

Safety

Safety instructions

2015-09-15

xxx, Protection class 0: public

Contact

Voith Turbo GmbH & Co. KG

Commercial Vehicles

Alexanderstr. 2

89522 Heidenheim, Germany

Tel. +49 7321 37-4152

Fax +49 7321 37-7618

service-diwa@voith.com

www.voith.com

This document describes the state of design of the product at the time of the editorial deadline on 2015-09-19

Copyright © by
Voith Turbo GmbH & Co. KG

The document is protected by copyright. It must not be translated, duplicated (mechanically or electronically) in whole or in part, nor passed on third parties without the publisher's written approval.

Contents

Chapter 1	User information	1-1
1.1	Symbols and signs	1-1
Chapter 2	Safety	2-1
2.1	Safety information on DIWA transmissions	2-1
2.1.1	General	2-1
2.1.2	State of the Art	2-1
2.1.3	Proper use	2-1
2.1.4	Conditions for Use	2-2
2.1.5	Staff qualification	2-2
2.1.6	Responsibilities	2-2
2.1.7	Unsafe instructions	2-2
2.1.8	Lifting appliances	2-2
2.1.9	Risk of burns	2-3
2.1.10	Risk of accidents caused by oil	2-3
2.1.11	Spare parts	2-3
2.1.12	Works on the transmission	2-3
2.1.13	Cleaning the transmission	2-4
2.1.14	Conversion or modification of the transmission	2-4
2.1.15	Disposal	2-4
2.1.16	Towing	2-5

1 User information

1.1 Symbols and signs

This manual uses symbols and signs which will help you find information easily. Please read the explanations on the symbols in the following section.

Please pay special attention to the safety information contained in this manual.

Symbols used in the text

Text type	Symbol	Function
Action instruction, 1st level	⇒	Prompts an action
Action instruction, comprising several steps	1. 2.	Denotes a step in a sequence of actions
List	•	Indicates individual elements of the list
Hightlighting	■	Identifies important comments
Cross-reference	→	Refers the reader to another chapter or document
Note		For useful additional information for proper handling of the product only

Safety information

Safety information is classified as follows:

**DANGER**

DANGER indicates an immediate threat to a person's life or health. Failure to observe this note will result in death or most serious injury.

**WARNING**

WARNING indicates a potentially hazardous situation to a person's life and health. Failure to observe this note could result in death or most serious injury.

**CAUTION**

CAUTION indicates a potential threat to a person's health. Failure to observe this note may result in minor injuries.

NOTICE

NOTICE indicates indicates potentially imminent damages to property. Failure to observe this note may result in damage to the product or to other objects.

2 Safety

2.1 Safety information on DIWA transmissions

2.1.1 General

For operation, maintenance and repair of the transmission, the local regulations for safety and for the prevention of accidents are binding in any case.

These regulations may, for example, apply to the handling of hazardous materials, the provision and wearing of personal protective equipment or motor vehicle regulations.

Anyone operating the transmission or performing installation, repair or maintenance work needs to acquaint himself/herself with the warning notes and precautions described in this document.

Anyone operating the transmission or performing installation, repair or maintenance work needs to absolutely ensure that his/her personal safety or other people's safety is not at risk.

2.1.2 State of the Art

This transmission is designed and constructed according to the state of the art in technology and acknowledged safety regulations. Nevertheless, operation, installation, repair or maintenance of the transmission may involve the risk of injury and death of persons or damage to the transmission and other material assets if:

- the transmission is used improperly,
- the transmission is operated, maintained or repaired by untrained staff,
- the transmission is modified or rebuilt improperly and/or
- the safety information is not observed.

2.1.3 Proper use

The DIWA transmission is designed to be used as an automatic transmission in busses.

Any other application is considered improper use. Voith Turbo GmbH & Co. KG does not assume any liability for improper use. The risk has to be borne solely by the user.

It is imperative that the guidelines for proper and correct use of the transmission be observed by the persons responsible, especially by the staff involved in operation and maintenance.

2.1.4 Conditions for Use

The transmission must only be operated:

- in technically perfect condition,
- in accordance with its designated use,
- by safety-conscious persons who are fully aware of the risks involved in operating the transmission while adhering to the operating manual and other technical documents.

Malfunctions impairing the safety must be eliminated immediately.

2.1.5 Staff qualification

Work on the transmission may only be carried out by staff properly trained, instructed and authorized by the operator. The legal age has to be observed.

Maintenance and repair work requires special knowledge and training (e.g. Voith diagnostics and repair training course) and may only be carried out by qualified staff.

Staff currently being qualified, instructed, trained on the job or undergoing general training may work on the transmission only under the permanent supervision of a person assigned to this purpose.

2.1.6 Responsibilities

The responsibilities of the personnel for working on the transmission have to be clearly defined and observed.

Only staff explicitly ordered, authorized and trained for this purpose is allowed to work on the transmission.

Work on the chassis, brake or steering systems must be carried out by qualified staff only.

2.1.7 Unsafe instructions

Staff working on the transmission must refuse to comply with unsafe instructions issued by third parties.

2.1.8 Lifting appliances

Only use suitable lifting appliances and load carrying attachments which are in good condition and which offer sufficient load-carrying capacity.

When replacing transmissions, assemblies or individual parts, these have to be carefully attached to the lifting appliances and secured so that they do not pose any risk.

Never stay or work under suspended loads.

2.1.9 Risk of burns

The oil can become very hot - in extreme cases up to 130°C.

Improper handling may cause skin burns.

Therefore, let the transmission cool down to approx. 60 °C before changing the oil.

2.1.10 Risk of accidents caused by oil

Oil escaping from pipes, seals or O-rings which have been installed improperly or are leaking after a longer operation period may cause accidents.

The oil may be under high pressure in pipes and conduits or in the converter.

Switch off the driving engine before performing any maintenance work or repairs.

2.1.11 Spare parts

Only use original spare parts for repairs, since only they can guarantee that the transmission complies with the road safety regulations and the technical state on delivery.

When replacing parts, it is vital to observe the notes and information provided in the spare parts catalogue.

Original spare parts are designed especially for the Voith transmission. We would like to point out that original spare parts which are not supplied by Voith are neither tested nor approved by Voith. The installation and/or use of non-original spare parts may negatively impact the specified technical features of the transmission and thus impair safety.

In case of any damage due to the use of non-original spare parts, Voith does not assume any liability.

2.1.12 Works on the transmission

Prior to performing any maintenance or control work on the installed transmission and during the installation or removal of the transmission, the bus engine must be secured against starting.

Prior to performing any maintenance or control work on the installed transmission and during the installation or removal of the transmission, the bus must be secured in such a way that it cannot be put into motion, neither intentionally nor unintentionally, and that it cannot start moving automatically (slope!).

It is vital to perform the specified service work in regular intervals, on time and with the intended fuels and fluids.

Perform the service work in accordance with Voith provisions, e.g. the customer service information describing improvements and modifications to the transmission so that no parts and tools get damaged.

Works on the transmission require appropriate workshop equipment.

After working on the transmission, check all transmission oil lines for leaks, loose connections, chafes and damages. Immediately eliminate any defects.

After working on the transmission, check all joints for leaks.

Tighten all screwed connections loosened during work on the transmission to the tightening torques specified in the technical documents on the transmission.

After working on installed transmissions, the maintenance flap must be closed again and secured against unauthorized opening, e.g. by passengers.

2.1.13 Cleaning the transmission

Before cleaning the transmission with water or steam jet (high-pressure cleaner) or other cleaning agents, seal any openings into which no water, steam or cleaning agent must enter for reasons of safety and functioning.

Exterior oil hose lines must not be directly exposed to the jet of the high-pressure cleaner.

After cleaning, completely remove all covers/adhesives.

2.1.14 Conversion or modification of the transmission

Any modifications, attachments or conversions of the transmission must not be performed without the approval by Voith Turbo GmbH & Co. KG.

2.1.15 Disposal

Fluids and auxiliary substances (e.g. used oil) as well as disassembled parts must be disposed of in a safe and environmentally-sound manner.

The local regulations and laws on environmental protection and disposal of hazardous materials must be observed.

2.1.16 Towing

Shift the transmission to idle position (N-button).

Unplug the connecting cable between control and transmission from the control unit.

If the transmission is damaged: remove the prop shaft or stub shaft of the rear axle.

If no transmission damage has been detected, the vehicle can also be towed with the prop shaft:

- Maximum permissible distance: 10 km
- Max. permissible speed: 30 km/h

For transmissions with angle drives, at any rate remove the prop shaft or stub shaft of the rear axle.

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

Voith Turbo GmbH & Co. KG
Commercial Vehicles
Alexanderstraße 2
89522 Heidenheim, Deutschland
Tel. + 49 7321 37-0
Fax + 49 7321 37-7618
VTA-Support-DIWA@voith.com
www.voith.com

VOITH
Engineered Reliability