

Voith Turbo

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**Installation instructions for the transmission
connector/cable (cable 1)
DIWA.5**

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On the document

This document is intended for vehicle manufacturers. It describes the information and facts required by the OEM for integrating the transmission cable (cable1) and the corresponding plug connection on the transmission into the vehicle.

Further guidelines not described in this document may be provided for installing the transmission.

The contents of the document has been checked thoroughly using the described hardware. Deviations, however, cannot be excluded.

Furthermore, the data specified does not represent any guaranteed features.

This document is not subject to a change service.

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1 About this manual

This manual uses symbols and signs that help you to find information quickly. Please read the comments on the symbols in the section below.

Pay special attention to the safety instructions in this manual.

Safety instructions can be found before the action instructions.

1.1 Description of the warnings, symbols and signs

1.1.1 Warnings

This manual uses warnings to prevent any personal injury or property damage.

Please always read and observe these warnings!

Warnings are marked by the following symbols:

Caution

Dangerous situation! Non-observance might result in property damage.

1.1.2 Symbols and signs

This manual uses symbols and signs to provide you with a fast access to information.

Symbol	Use	Description
⇒	Action instruction	You are required to do something here.
1. 2. .	Action instruction comprising several steps	Action instructions have to be carried out in the given order. Deviations from the given order may cause damage to the machine or accidents
□	Please note especially!	–
• –	Listing with two stages	Listings do not imply any activities.
↗	Cross reference	References to pictures, tables, other chapters or other manuals

2 Installation

2.1 Introduction

The installation instructions for the transmission connector/cable of DIWA.5 transmissions include the most important information for installing the transmission cable and the corresponding plug connection in the vehicle's cable harness.

The transmission cable and the corresponding plug connections on the transmission are used to transfer signals from the electronic control unit to the sensors and actuators in the transmission. These signals are necessary for safe driving and braking. The signal transmission can be impaired by improper installation of the components (control unit, transmission cables and transmission connectors). The installation instructions for the transmission cable and transmission connector are described below. Deviations from the installation instructions given are not permissible.

If a deviation cannot be avoided, a special release by Voith Turbo GmbH & Co. KG is required.

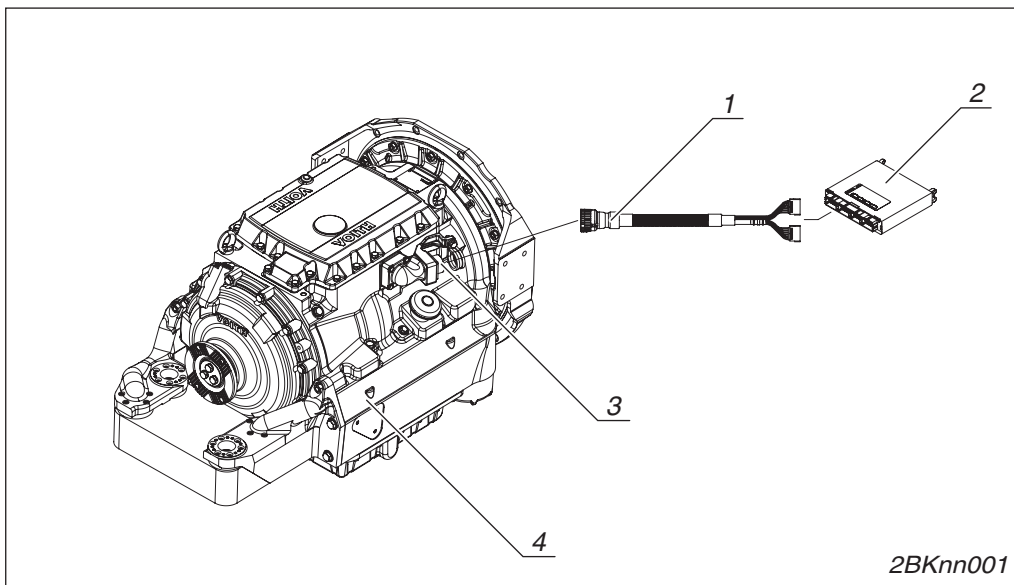


Fig. 2-1 System overview

- | | |
|-------------------------------|--------------------------|
| 1 Transmission cable (cable1) | 3 Transmission connector |
| 2 Electronic control unit | 4 Transmission |

2.2 Transmission cable (cable1)

Caution

Risk of damaging the connector/plug connection

1. Contact lubricant or contact enhancer must not be used in the connector.
2. The union nut of the connector must be properly locked in place.
3. Connect the transmission cable and extension cable only manually.
4. The use of tools (e.g., pliers) for engaging the plug connections may damage the connector (e.g., break of the union nut).

- ☐ The cable harness must be installed without stress and protected against sharp edges in the vehicle.
- ☐ The permissible minimum bending radius $R_{min.} = 75 \text{ mm}$ must not be exceeded. The minimum bending radius must be observed on the inside of the cable (→ Seite 2-2, Fig. 2-2).
- ☐ The cable must be fixed or secured at regular intervals.
- ☐ The permissible temperature range for the module must not be exceeded. The temperature range is defined as follows:

Component	Permissible temperature range
Transmission cable in corrugated pipe / transmission connector	-40°C...+120°C
Transmission cable in fabric tube	-40°C...+80°C
Electronic control unit connection	-40°C...+80°C

- ☐ Protect the cable harness against direct heat sources (e.g., exhaust system). If the minimum clearance of 100 mm is not reached, a screening plate or a comparable heat protection system must be mounted.

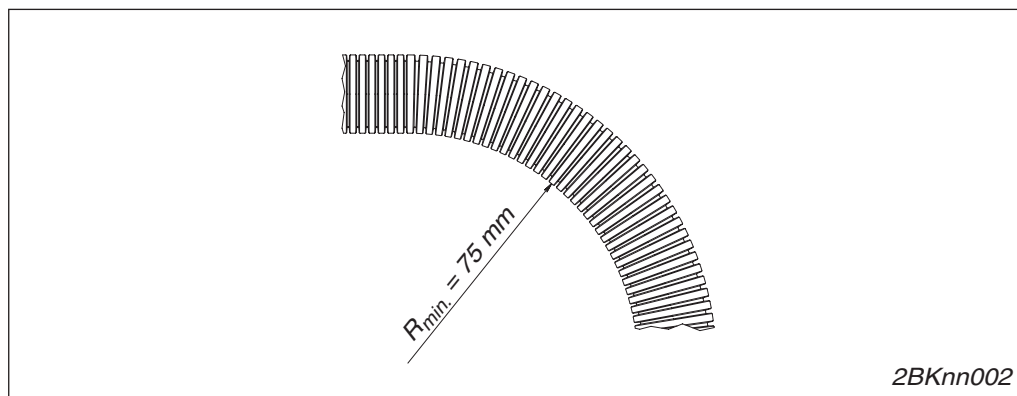


Fig. 2-2 Permissible minimum bending radius

2.3 Plug connection between transmission and transmission cable (cable1)

The following installation instructions are specified by Voith for the plug connection between the transmission (internal cable harness) and the transmission cable.

Two variants are differentiated between:

- Transmission connector on the transmission housing (➔ and ➔)
- Transmission connector on cable feedthrough (➔)

Installing the "Transmission connector on transmission housing" variant

Caution

Risk of damaging the connector/plug connection

1. Contact lubricant or contact enhancer must not be used in the connector.
2. The union nut of the connector must be properly locked in place.
3. Connect the transmission cable and extension cable only manually.
4. The use of tools (e.g., pliers) for engaging the plug connections may damage the connector (e.g., break of the union nut).

Installation sequence and checks

1. Remove the protection cap from the connector.
2. Check the connectors and their pins on the transmission and transmission cable.
3. Establish the plug connection between the transmission and the transmission cable and lock it.
 - ☐ Make sure the union nut on the connector of the transmission cable is properly locked in place.
4. Fasten the transmission cable on the support using a cable clip.
5. Checking the complete installation:
 - ☐ Plug connection between transmission and transmission cable established.
 - ☐ Transmission cable fastened using cable clip.
 - ☐ The cable length is sufficient for the relative motion between transmission and chassis (not mounted under tensile stress).
 - ☐ Permissible bending radius observed.
 - ☐ No abrasion between transmission cable and vehicle.

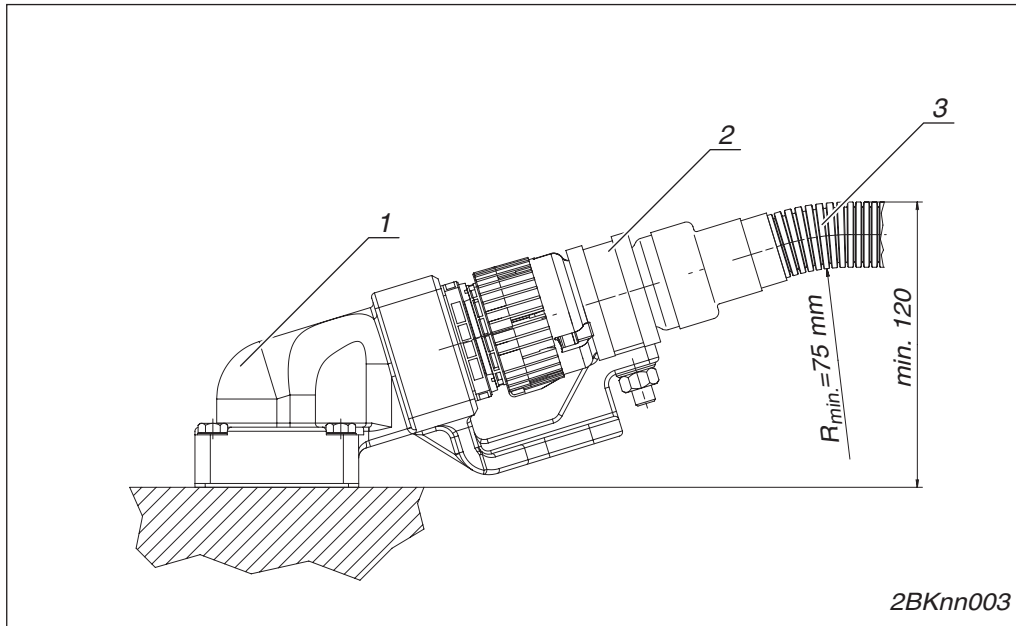


Fig. 2-3 Plug connection between 17° transmission and transmission cable (cable 1)

- | | |
|--------------------------|----------------------|
| 1 Transmission connector | 3 Transmission cable |
| 2 Cable clip | |

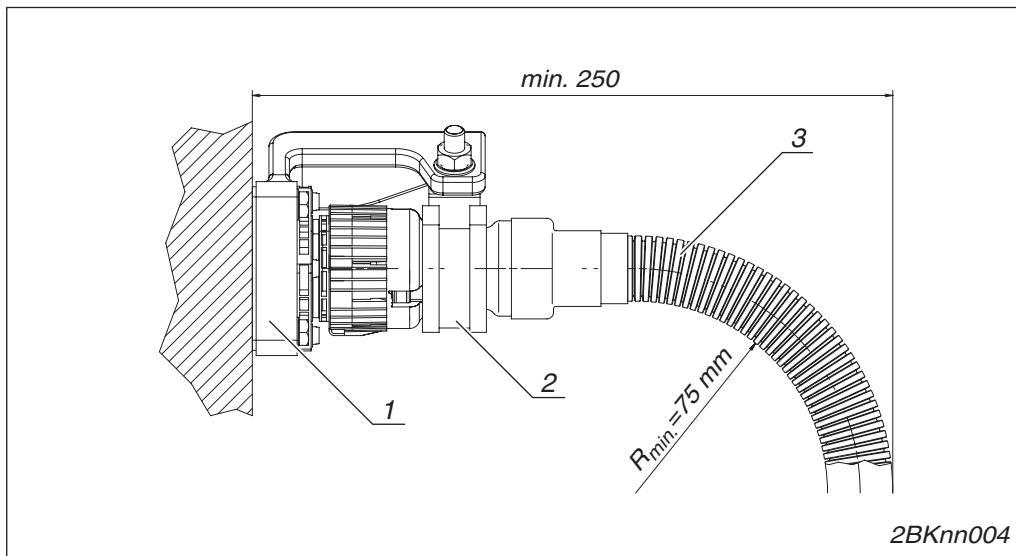


Fig. 2-4 Plug connection between 90° transmission and transmission cable (cable 1)

- | | |
|--------------------------|----------------------|
| 1 Transmission connector | 3 Transmission cable |
| 2 Cable clip | |

Installing the "Transmission connector on cable feedthrough" variant**Caution**

Risk of damaging the connector/plug connection

1. Contact lubricant or contact enhancer must not be used in the connector.
2. The union nut of the connector must be properly locked in place.
3. Connect the transmission cable and extension cable only manually.
4. The use of tools (e.g., pliers) for engaging the plug connections may damage the connector (e.g., break of the union nut).
5. Do not use screws to fasten the connector to the holder. Fastening is allowed only using an O-ring (automatic fastening when the transmission cable is connected).
6. The connector holder must not be mounted to the transmission.

Installation sequence and checks

1. Fasten the connector holder (cable holder) on the chassis.
 - ☐ If the Voith cable holder is not used, an adequate means of fastening must be provided. It is imperative that a material thickness of $t=4\pm0.15$ mm be observed.
2. Remove the protection cap from the connector.
3. Check the connectors and their pins on the transmission and transmission cable.
 - ☐ An O-ring → Seite 2-6, Fig. 2-5 is provided. O-Ring 40x4 - FKM 70sw - DIN 3771.
4. Establish the plug connection between the transmission and the transmission cable and lock it.
 - ☐ Make sure the union nut on the connector of the transmission cable is properly locked in place.
5. Checking the complete installation:
 - ☐ Plug connection between transmission and transmission cable established.
 - ☐ Plug connection fastened to the holder with minimum rotational load on the cable harnesses.
 - ☐ The cable length is sufficient for the relative motion between transmission and chassis (not mounted under tensile stress).
 - ☐ Permissible bending radius observed.
 - ☐ No abrasion between transmission cable and vehicle.

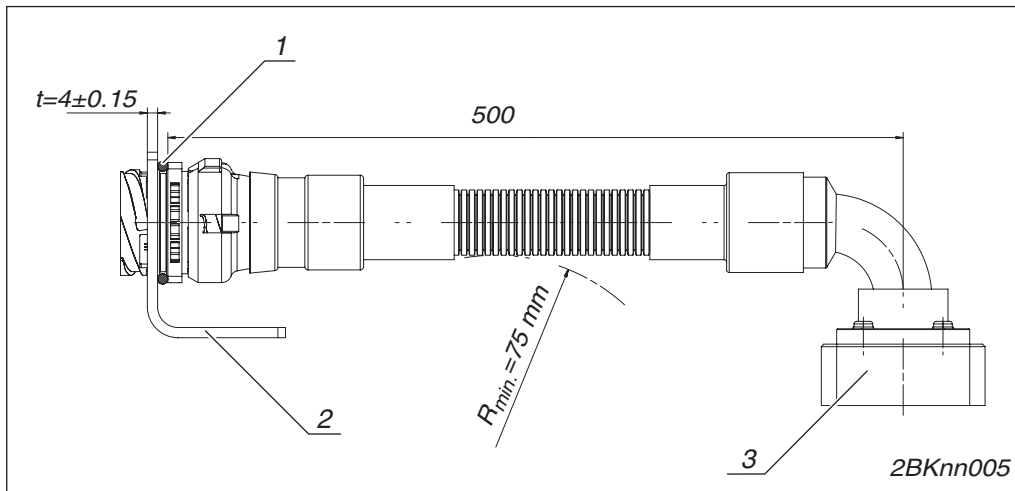


Fig. 2-5 Plug connection between cable feedthrough and transmission cable (cable1)

- | | |
|----------------|---------------------|
| 1 O-ring | 3 Cable feedthrough |
| 2 Cable holder | |

2.4 Permissible cable combination

When connecting the transmission cable (cable1) to the transmission connector, only specific combinations are permitted. A distinction is made between the various cable harness variants and transmission cables with extension.

Caution

Risk of damaging the plug connection

The combination of different contact materials causes electrochemical corrosion. This considerably impairs the signal quality.

Transmission connector on transmission housing:

Due to the high vibration load, the transmission connector has been designed with gold-plated contacts in this variant.

That is why transmission cables (cable1), which are connected to this plug connection, are marked red.

The colour code indicates that the connector has gold-plated contacts (→).

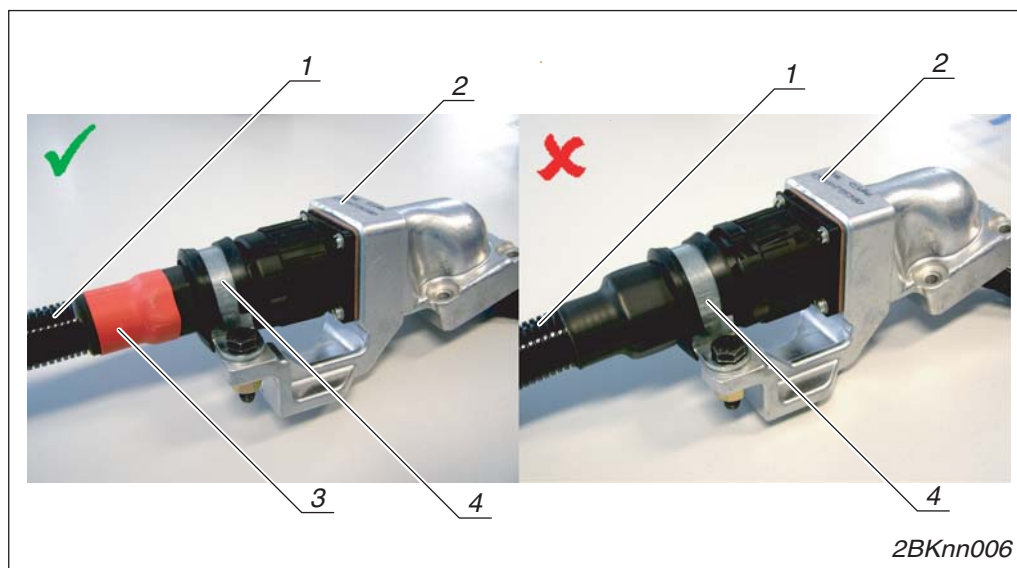


Fig. 2-6 Permissible combination of transmission connector and transmission cable (cable1)

- | | |
|--------------------------|-------------------|
| 1 Transmission cable | 3 Red colour code |
| 2 Transmission connector | 4 Pipe clamp |

Transmission connector on cable feedthrough

Due to the lower vibration load (fastening to chassis), the transmission connector has been designed with tin-plated contacts in this variant.

That is why transmission cables (cable1), which are connected to this plug connection, must not be marked red.

If the connector is not colour-coded, tin-plated contacts have been installed (→).

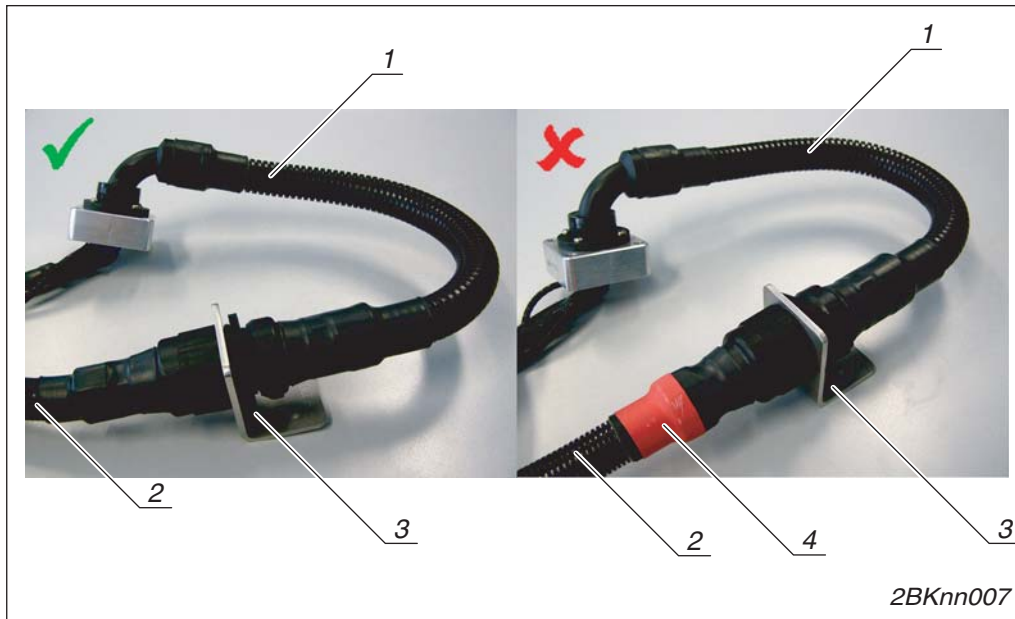


Fig. 2-7 Permissible combination of transmission connector and transmission cable

- | | |
|--------------------------|-------------------|
| 1 Transmission connector | 3 Cable holder |
| 2 Transmission cable | 4 Red colour code |

Extension cable for transmission cable

The following combinations of extension and transmission cables are released for the transmission cable (cable1).

Caution

Risk of damaging the plug connection

The combination of different contact materials causes electrochemical corrosion. This considerably impairs the signal quality.

The transmission cable can be extended by appropriate extension cables. The following is to be observed here:

- ❑ If the transmission cable is extended by an extension cable, make sure not to use an impermissible combination of contact materials for the plug connection between transmission cable and extension or between the extensions. Gold-plated contacts have been used in transmission and extension cables that are marked red on the connector. Cables without this colour code, however, have tin-plated contacts. A combination of different contact materials is not permissible!

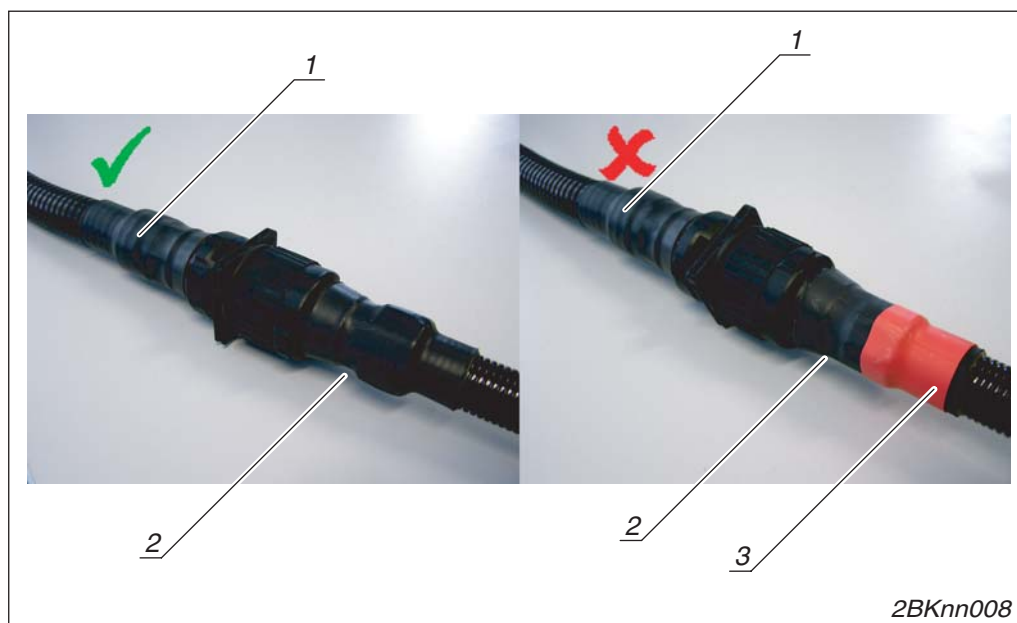


Fig. 2-8

- 1 Transmission cable extension
- 2 Transmission cable

- 3 Red colour code

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