# User Guide

ZF[pro] Diagnostics
Installation and Interface User Guide
Commercial Vehicles

ZF | AFTERMARKET

LEMFÖRDER    SACHS    TRW    WABCO

# Table of Contents

# 1 Preface

## 1.1 Validity and field of application

This document applies to ZF [pro]Diagnostics Suite and ZF DCI.

All product versions can be set up and operated with this document.

## 1.2 Further information

Currently available **repair kits and spare parts** on the online product page:

www.wabco-customercentre.com

Local **contact**:

https://www.zf.com/site/locations/en/home/locations_worldwide.html

ZF **[pro]Academy**:

https://proacademy.zf.com

## 2 Safety

### 2.1 Signal words and symbols

This document contains particularly highlighted safety instructions which are marked with one of the following signal words depending on the severity of the danger.

| ⚠ **DANGER** |
|---|
| DANGER<br>The signal word DANGER indicates a dangerous situation that, if not prevented, will lead to a severe injury or death.<br>⇨ Information as to how the danger can be prevented. |

| ⚠ **WARNING** |
|---|
| WARNING<br>The signal word WARNING indicates a dangerous situation that, if not prevented, can lead to a severe injury or death.<br>⇨ Information as to how the danger can be prevented. |

| ⚠ **CAUTION** |
|---|
| CAUTION<br>The signal word CAUTION indicates a dangerous situation that, if not prevented, can lead to a slight or moderate injury.<br>⇨ Information as to how the danger can be prevented. |

| *NOTICE* |
|---|
| The signal word NOTICE indicates a situation that, if not prevented, can lead to property damage.<br>⇨ Information as to how the property damage can be prevented. |

The following symbols are additionally used:

⚠ This symbol refers to additional, safety-relevant information.

ⓘ This symbol indicates information concerning special workflows, methods, application of auxiliaries, etc.

## 2.2 General safety instructions

Read all safety instructions and information. Non-compliance may lead to property damage, serious injuries or death.

Observe safety instructions, applicable safety regulations and legal requirements to prevent malfunctions and damage.

Country-specific safety regulations, accident prevention regulations and environmental protection provisions apply additionally.

Wear safety-relevant workwear for all work. Depending on the work, also wear personal protective equipment.

After completing the work, check correct function and operational safety.

### Intended use

The ZF product is exclusively intended for the application as defined in the contract and as agreed on delivery. Any other or extended form of use does not comply with this definition of intended use. The intended use includes compliance with this documentation and other applicable documents in order to avoid malfunctions and damage during operation. The ZF product is designed and produced in line with state-of-the-art technology and is safe to operate when used as intended. However, this ZF product may pose dangers if improperly used by unauthorized, untrained and uninstructed personnel, or if not used according to its intended use.

### Figures

Figures might deviate from the ZF product and are not drawn to scale. No conclusions can be drawn with regard to size and weight.

### Assembly, start-up, maintenance and repair

Only perform assembly, start-up, maintenance and repair work according to this documentation and other applicable documents.

- Work must be performed in a professional manner and according to the technical provisions.
- Only use genuine ZF spare parts.
- Only use genuine ZF accessories.
- Only use genuine ZF special tools.
- Changes, modifications and calibrations of the ZF product can impair operational safety and may lead to the expiry of the operator's license, warranty or guarantee.

### Qualification and knowledge of the authorized, specialized staff

The activities described in this documentation require basic knowledge of automotive engineering and knowledge of the associated technical terms. To ensure safe use, these activities may therefore only be carried out by an appropriate specialist or a person instructed by a specialist (fitter).

A specialist is someone who, based on their technical training, knowledge and experience, as well as their knowledge of the relevant regulations, can assess the work assigned to them, recognize possible dangers and take suitable safety measures. A specialist must comply with the relevant technical rules.

A fitter is someone who, based on their knowledge and experience, as well as their knowledge of the relevant regulations, can assess the work assigned to them, recognize possible dangers and take suitable safety measures. A fitter must comply with the relevant technical rules.

### Procedure in the case of complaints or damage

In the case of damage or complaints, contact the ZF partner and have the following information on the product ready:

- Type
- Part number
- Serial number
- Mileage
- Diagnostic memory log for electronics
- Detailed description of damage

### When working on the ZF product

- Secure workspace.
- Depressurize the pneumatic system. Completely open spring-loaded accumulator and mechanically secure it in this position.
- Depressurize the hydraulic system.
- Only carry out work when in a voltage-free state.
- Protect vehicle against being started accidentally. Attach instruction plate where it is clearly visible.
- Perform work when engine is switched off.
- Secure vehicle against rolling away or moving.
- Keep unauthorized persons away from the vehicle during work.
- Do not stand beneath a suspended load.
- Do not work on a suspended load.
- Only use permitted means of transport and lifting equipment with sufficient load rating.
- Secure parts against falling down using suitable bracket, e.g., vise.
- Close open piping and hoses and avoid damage.
- Observe tightening torques.
- Protect cables against mechanical damage.

### Operating supplies and auxiliary materials

Operating supplies and auxiliary materials might cause permanent damage to health and environmental damage. Observe material safety data sheets.

# 3 Information regarding work on the ZF product

## 3.1 General Information

- Read this documentation prior to starting repair, maintenance or assembly work.
- Consult your ZF partner if you have any questions.
- All work on the ZF product must be performed expertly and under clean conditions.
- Use the specified special tools and equipment intended for the working procedures described.
- Perform all work according to the working procedure described.
- Cover opened ZF products to prevent entry of foreign matter.
- Cover parts that have been removed and that are reusable and protect them against dirt and damage.
- After completion of work and inspections, authorized, specialized staff must ensure that the WABCO product is again functioning perfectly and is safe to operate.

## 3.2 Cleaning the ZF product

Clean the ZF product with an appropriate cleaning agent prior to repair or assembly works.

| **NOTICE** |
| --- |
| Possible damage to ZF product due to penetrating water. |
| ⇨ Be careful when using a pressure washer on the ZF product. |

## 3.3 Dismantling the ZF product

- To avoid mixing up parts, the parts must be clearly assigned to the disassembled ZF product.
- Inspect the parts during disassembly in order to find a potential cause of damage.

## 3.4 Assembling the ZF product

Assemble the ZF product at a clean workplace. The order of work steps, configuration data, and tightening torques must be observed. Use the special tools specified in the work steps.

## 3.5 Cleaning parts

Clean all reusable parts.

# 4 Admin Portal

The Admin Portal is used to manage users and the ZF [pro]Diagnostics Suite via which the specific diagnostic programs are launched later.

## 4.1 Creating an account

After purchasing the ZF [pro]Diagnostics Suite, the buyer automatically receives an email invitation to the Admin Portal sent to the address provided during the purchase. The buyer is automatically made an administrator on the Admin Portal. The following section explains the initial creation of an account on the Admin Portal.

1. Click on "Complete account" in the email.

2. Enter your data.



Fig. 1

3. Set a password.

4. Click on "Create account" to finish the process.
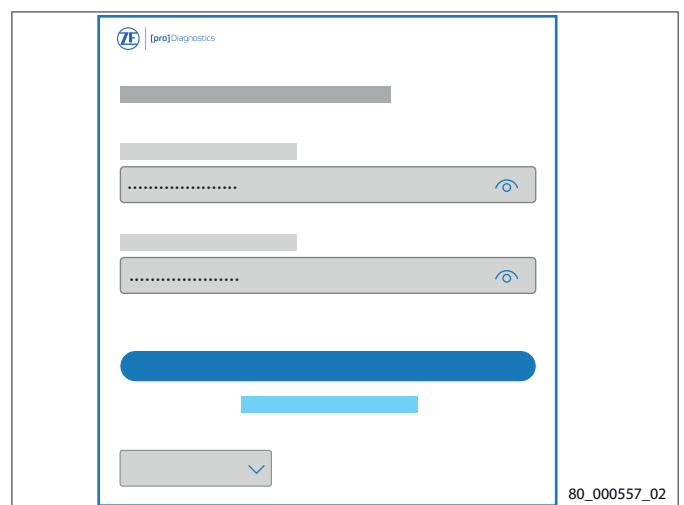
5. Click on "Back to login".



Fig. 2

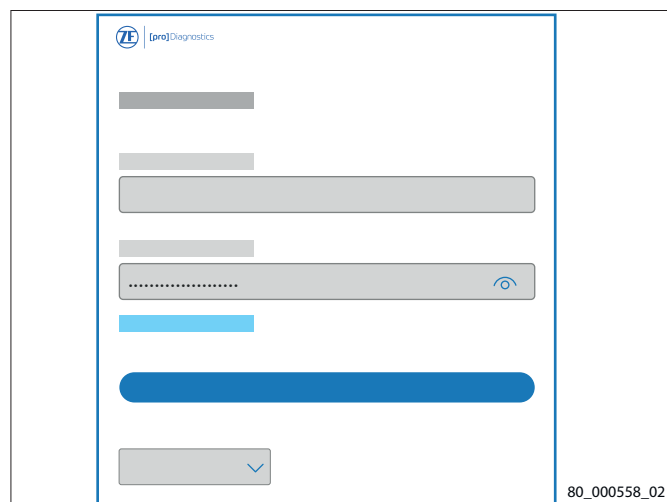6.   Log in with the previously set credentials
     (user name and password).



Fig. 3

## 4.2   Overview with legend

ⓘ Only administrators have access to all functions. Users (technicians) are automatically redirected to
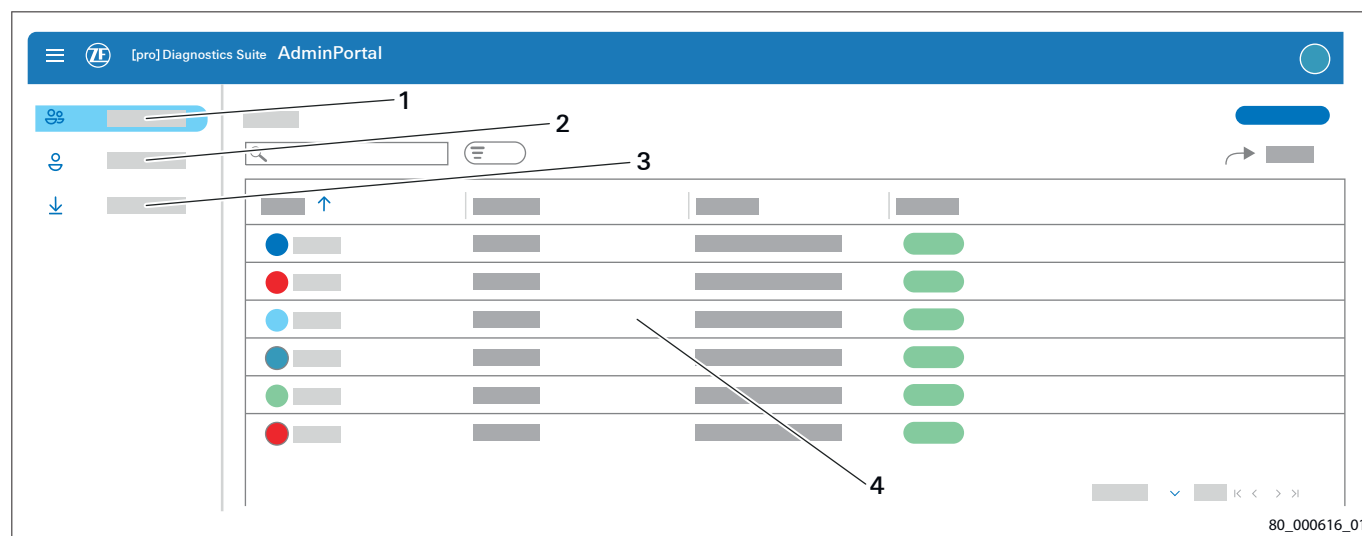the download area after their first login.



Fig. 4

| Item | Designation | Description |
|---|---|---|
| 1 | User management | Add, remove and manage users (technicians). |
| 2 | My profile | Personal data, password, settings, account owner (administrator only: transfer account to another person). |
| 3 | Downloads | Download and manage ZF [pro]Diagnostics Suite. |
| 4 | Users | Users (technicians) to be managed. |

Tab. 1
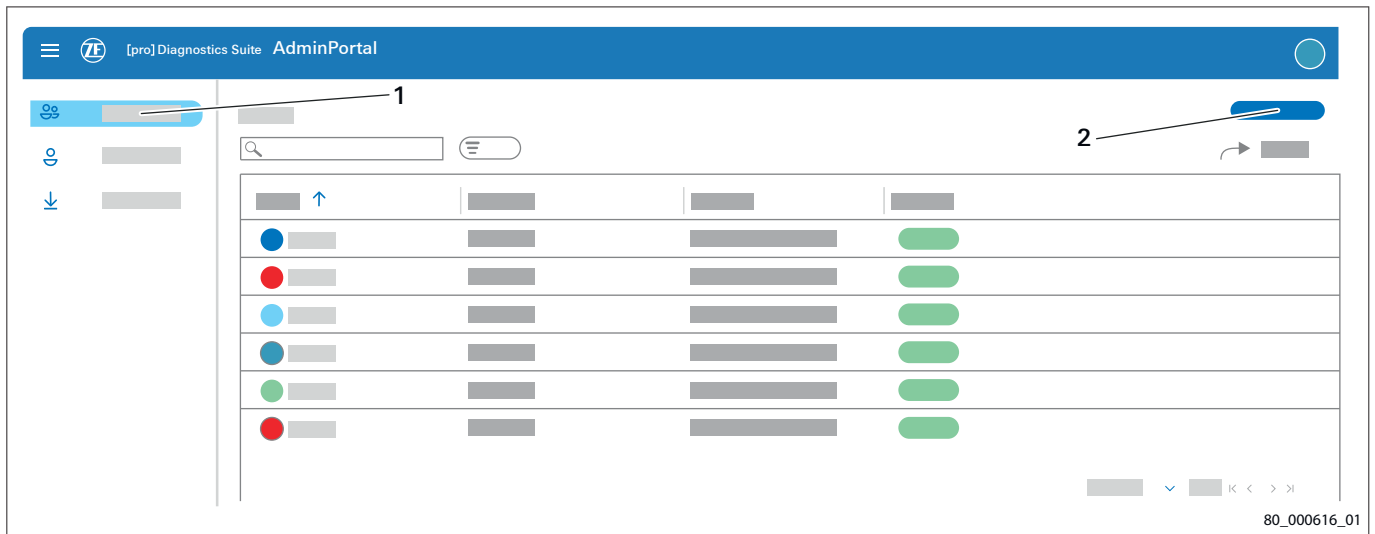
## 4.3 Inviting users (administrators and managers only)



Fig. 5

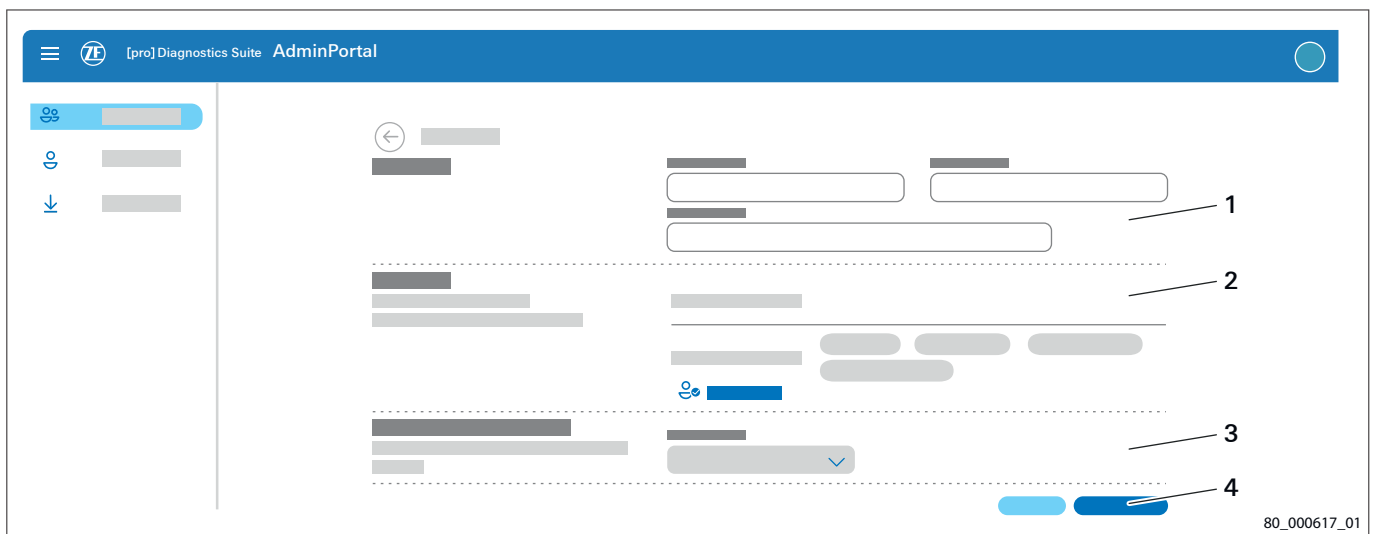1. Click on "User management" (1).

2. Click on "Invite user" (2).



Fig. 6

3. Enter the user's details in the "User information" (1) section.

4. ⓘ Available roles:

Administrator: Can invite new users.

Manager: Can see and edit the "Diagnostic sessions" and "User management" menu items.

Technician: Can see and edit all diagnostic functions.

ℹ️ One user can be assigned several roles.

Select the authorization role and language in the "Manage access" (2) section.

5.  Select the language of the invitation in the "Customize invitation" (3) section.

6.  Click on "Send invitation" (4).

## 4.4 Downloading ZF [pro]Diagnostics Suite

Users (technicians are automatically redirected to the "Downloads" area after creating their account.



80_000618_01

Fig. 7

1.  Click on "Downoads" (1).

2.  Click on "Download" (2).

3.  Follow the on-screen instructions.

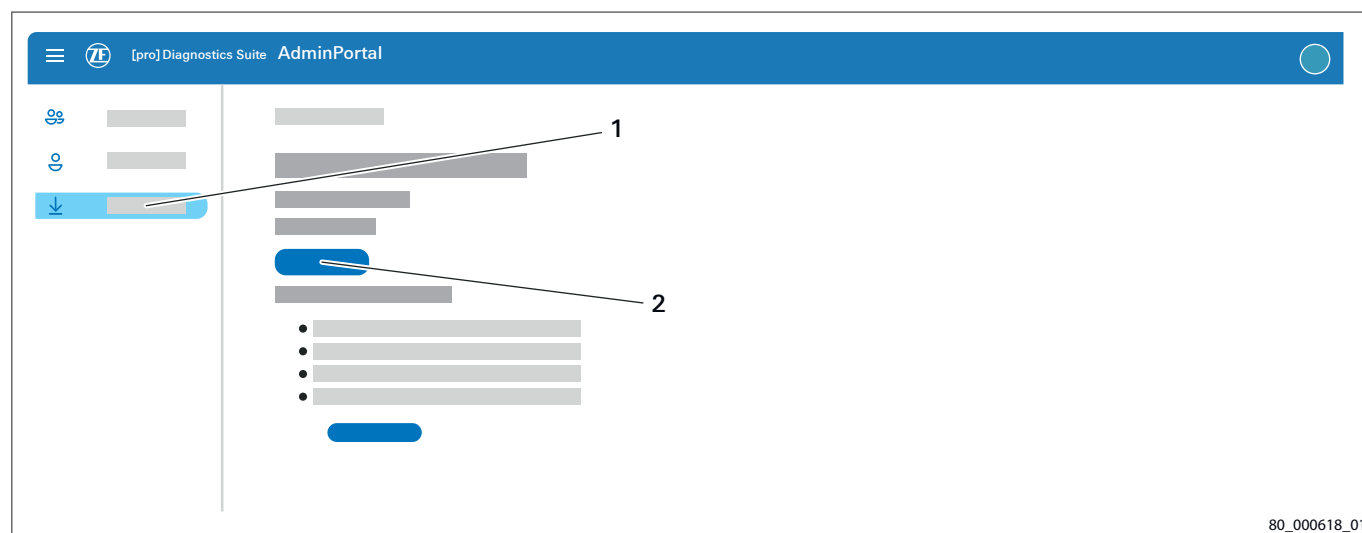# 5 ZF [pro]Diagnostics Suite

The ZF [pro]Diagnostics Suite is the platform for managing and performing vehicle diagnostics. Diagnostic software for all the different systems in the vehicle is managed and operated through the Graphical User Interface (GUI) of the ZF [pro]Diagnostics Suite.

## 5.1 Graphical User Interface (GUI) overview

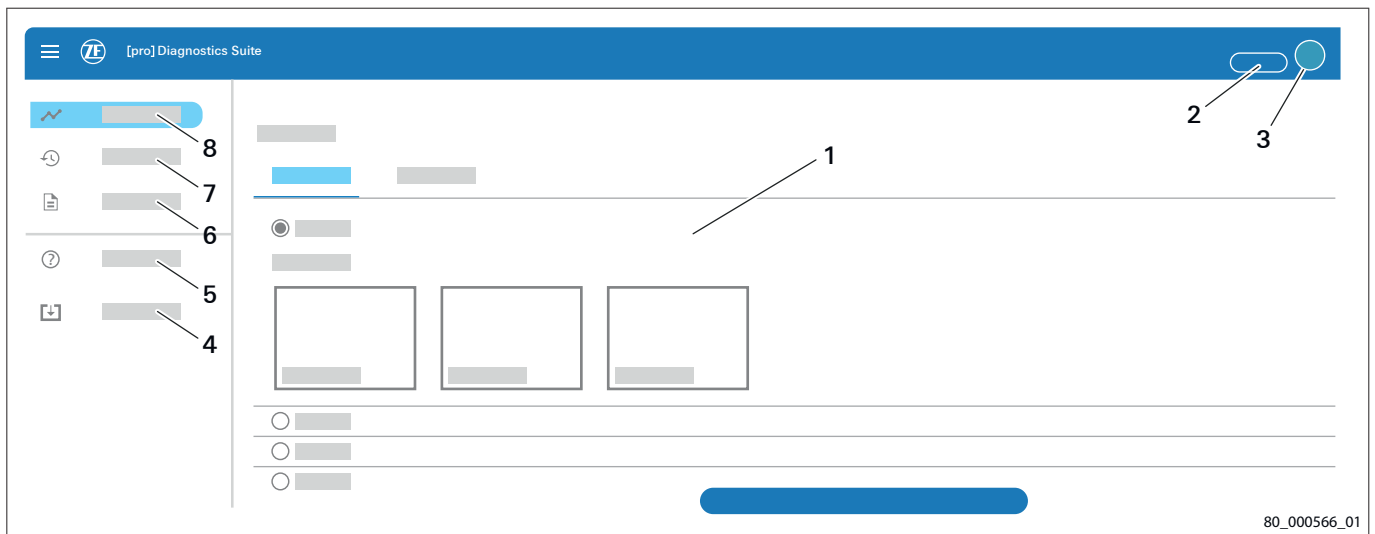This section explains the GUI of the ZF [pro]Diagnostics Suite.



Fig. 8

| Item | Designation | Description |
|---|---|---|
| 1 | Workspace | View and edit the selected menu item. |
| 2 | Connection status | Status of the connection to the vehicle's diagnostic interface. |
| 3 | ZF account | Manage account and log out. |
| 4 | Updates | Manage and download diagnostic modules, updates and language packs. |
| 5 | About | ZF [pro]Diagnostics Suite release notes and copyright. |
| 6 | Licenses | Manage licenses for the device on which the ZF [pro]Diagnostics Suite is installed. |
| 7 | Vehicle history | Access and view previously conducted diagnostic sessions. |
| 8 | Diagnostics | Scan the vehicle and access system-specific diagnostics. |

Tab. 2

## 5.2 Installing and setting up the ZF [pro]Diagnostics Suite

Requirements:
- To be able to use the ZF [pro]Diagnostics Suite, at least one license must be assigned to the device after installation.
- Admin rights are required to install the ZF [pro]Diagnostics Suite.

1. Run EXE file (refer to Section *Downloading ZF [pro]Diagnostics Suite*).

2.   Follow the on-screen instructions and complete the
     installation.

3.   Restart the computer when instructed.

4.   Launch the ZF [pro]Diagnostics Suite from the Start menu.
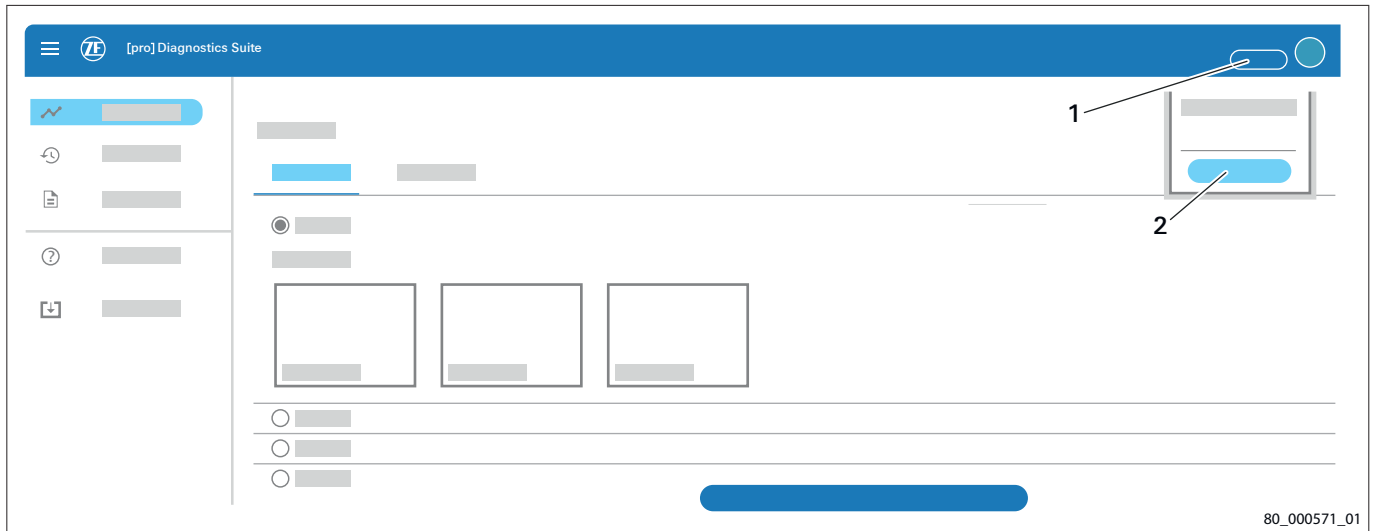


Fig. 9

5.   Click on Connection status (1).

6.   Click on "Manage VCI" (2).

7.   Select an existing diagnostic interface (VCI: Vehicle Communication Interface).

8.   Click on "OK".

     → The ZF [pro]Diagnostics Suite is fully set up and ready for vehicle
        diagnostics.

## 5.3          Scanning vehicle
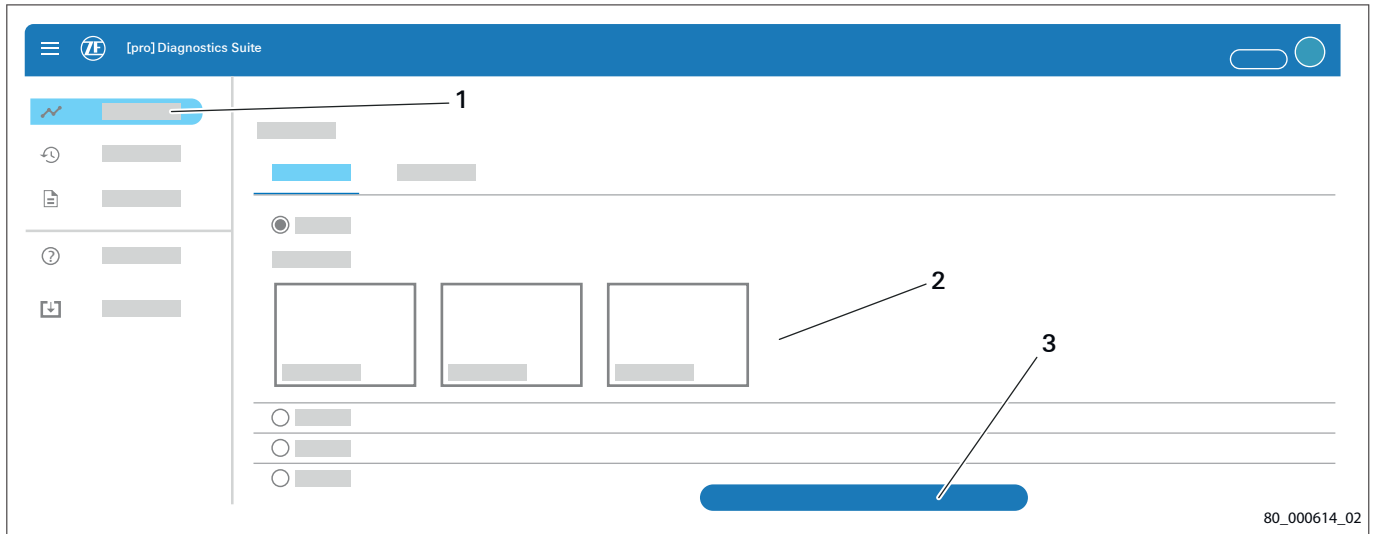


Fig. 10

1.     Click on "Diagnostics" (1).

2.     Select the vehicle type and connection type (2).

3.     Click on "Start scan" (3).

4.     Wait until the scanning process is complete or click on "Cancel scan" to stop the scanning process.

5.     Enter vehicle data.
       Entering the vehicle identification number (VIN) is mandatory. All other entries are optional. The vehicle data is used in the vehicle history (refer to Section *Vehicle history*).

   → After the scanning process has been successfully completed, the "Vehicle health state" window appears (refer to Section "*Vehicle health state*").

## 5.4  Vehicle health state
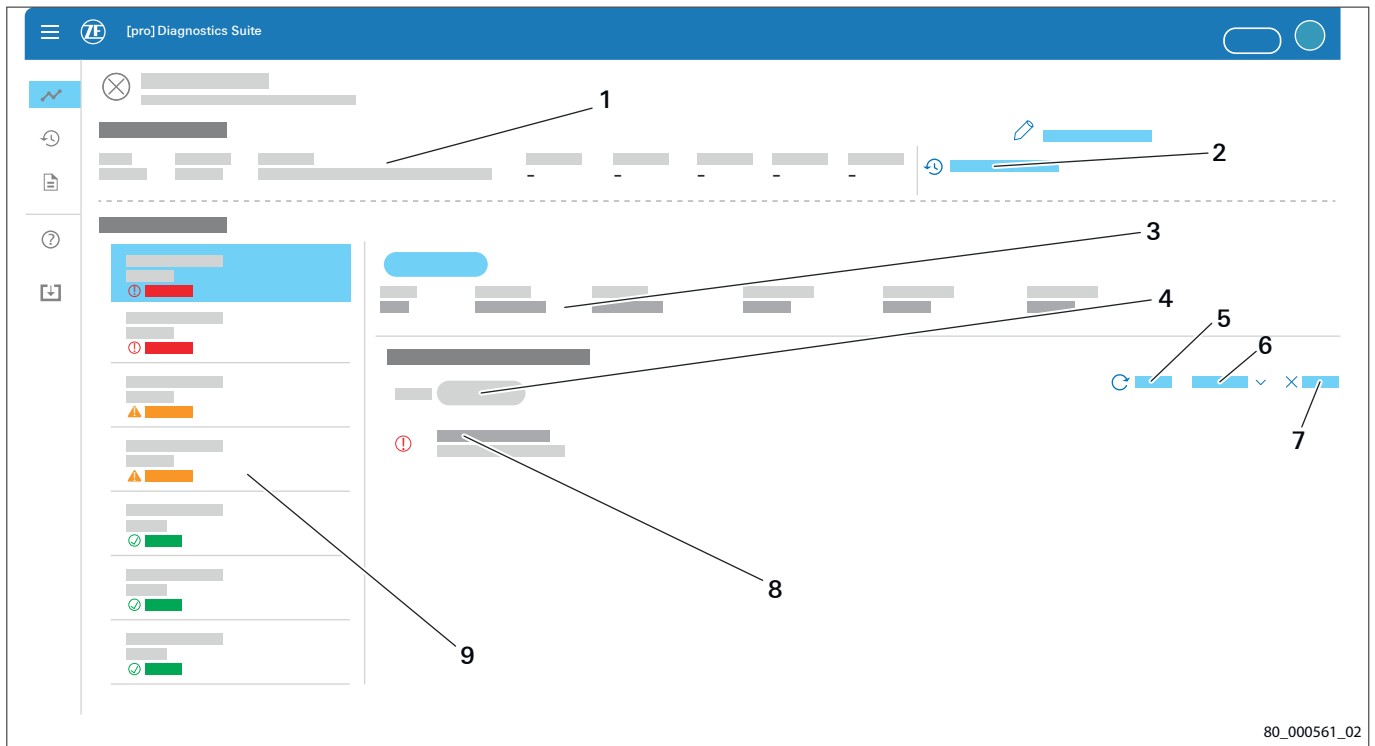


Fig. 11

| Item | Designation | Description |
|------|-------------|-------------|
| 1 | Vehicle data | Previously determined data of the scanned vehicle. |
| 2 | View vehicle history | View list of diagnostic sessions of the currently diagnosed vehicle. |
| 3 | Scanned system | Data from the system that displays a fault code. |
| 4 | Sort fault codes | Sort fault codes by status: active or inactive. |
| 5 | Update | Update the fault memory. |
| 6 | Automatic update | Automatically update the fault memory at defined intervals (selection). |
| 7 | Delete fault code | Delete the selected fault code from the fault memory. |
| 8 | Currently selected fault code | |
| 9 | List of all fault codes found (active and inactive). | |

Tab. 3

Click on the selected fault code (8) to display details and repair instructions, or to start system diagnostics.

Fig. 12

| Item | Designation | Description |
|------|-------------|-------------|
| 1 | Details | Specific details about the selected fault code. |
| 2 | Start diagnosis | Redirect to system-specific diagnostic software. |
| 3 | Environmental data | Vehicle parameters when a fault code occurs. |
| 4 | Repair note | Suggestion for troubleshooting. |
| 5 | Extended help | Detailed troubleshooting assistance. |

Tab. 4

ℹ️ System-specific diagnostics can only be started if they are installed and licensed on the device (refer to Section *"Updates"*).

Click on "Start diagnosis" to launch the system-specific diagnostic software for the selected module (separate installation required).

## 5.5    System access

Through the "System access" tab, it is possible to launch the system-specific diagnostic software for individual systems installed in the vehicle (separate installation required).



Fig. 13

1.    Click on "Diagnostics" (1).
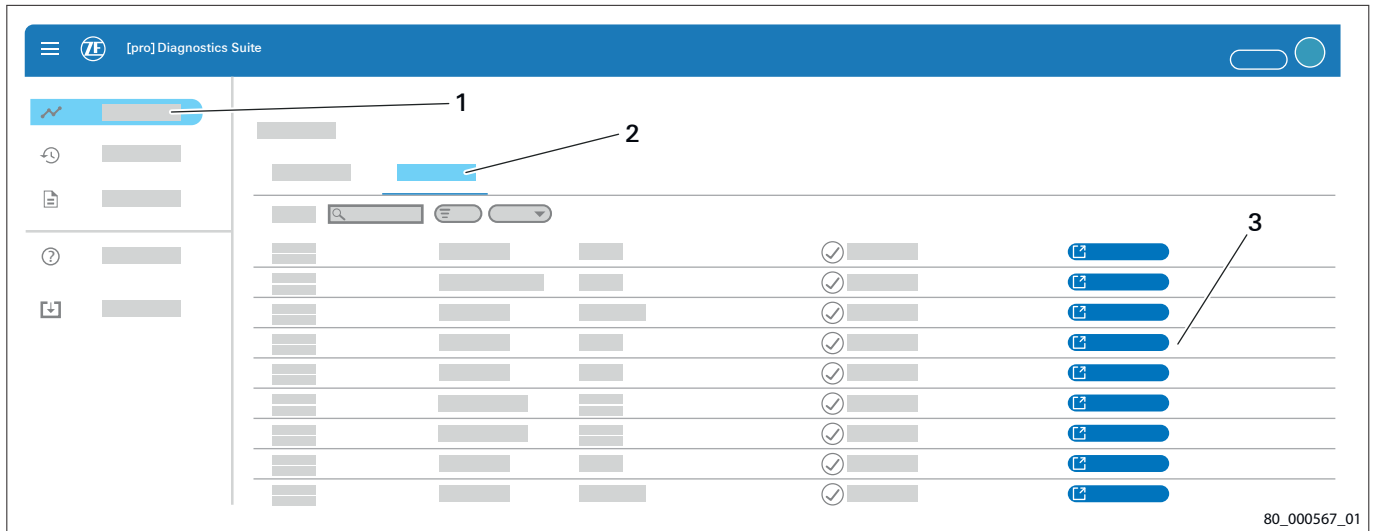
2.    Click on "System access" (2).

3.    Click on "Diagnose" (3) for the desired system.

→ The selected diagnostic software will start in a separate window.

## 5.6    Vehicle history

In this section, you can view a list of vehicles that were scanned with the ZF [pro]Diagnostics Suite. The vehicle history is available for all diagnostic sessions carried out within your organization.
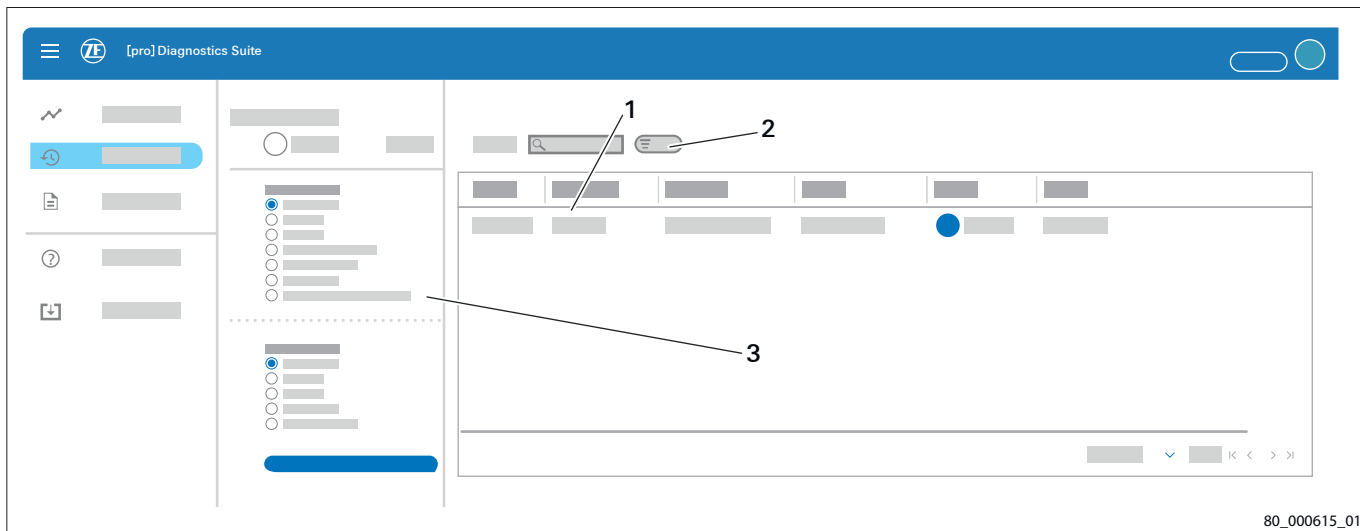
Fig. 14

| Item | Designation | Description |
|------|-------------|-------------|
| 1 | Vehicle data | Information on all vehicles logged with the ZF [pro]Diagnostics Suite. |
| 2 | Show/hide filters | A list of filters that can be used to sort and display the logged vehicles. |
| 3 | Filter options | A list of possible filter parameters. |

Tab. 5

## 5.7 Licenses

In this section, you can manage a user's licenses for system-specific diagnostic software. You can remove existing licenses from a device. You can add new licenses available to the user.



Fig. 15

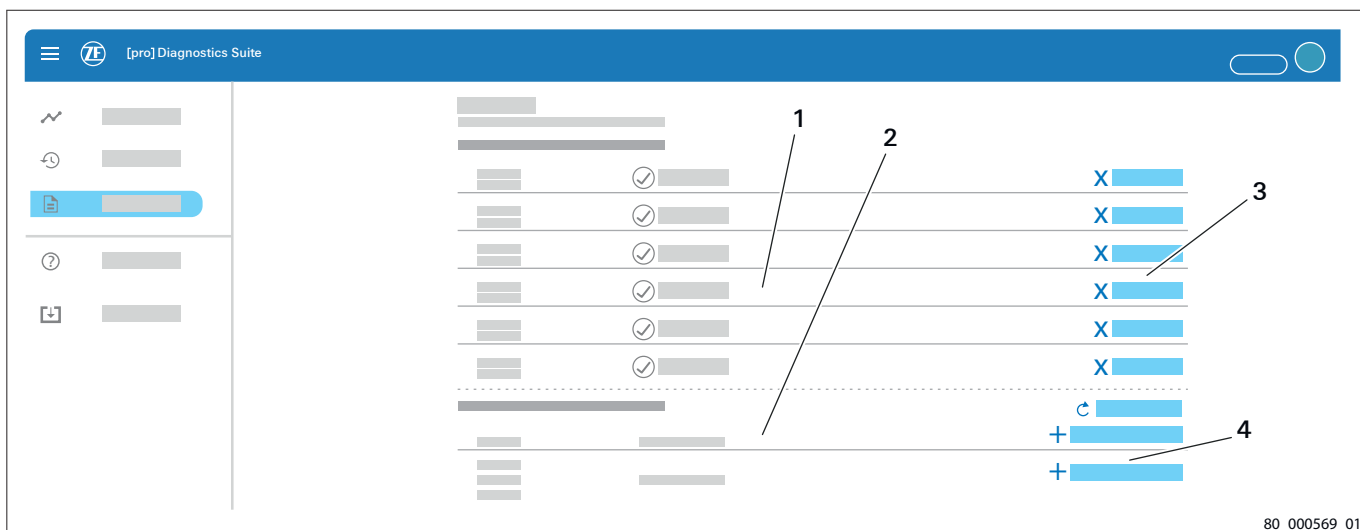| Item | Designation | Description |
|------|-------------|-------------|
| 1 | Licenses associated with this device and this user | Licenses for system diagnostics assigned to the current user in the ZF [pro]Diagnostics Suite. |
| 2 | Add another license | Assign licenses available within the organization to the device. |
| 3 | Remove | Remove assigned license from the device. |
| 4 | Add | Add new available license. |

Tab. 6

## 5.8 Updates

In this section, you can check for updates available for the ZF [pro]Diagnostics Suite and any installed system-specific diagnostic software.

The software shown depends on the licenses assigned to the current device.
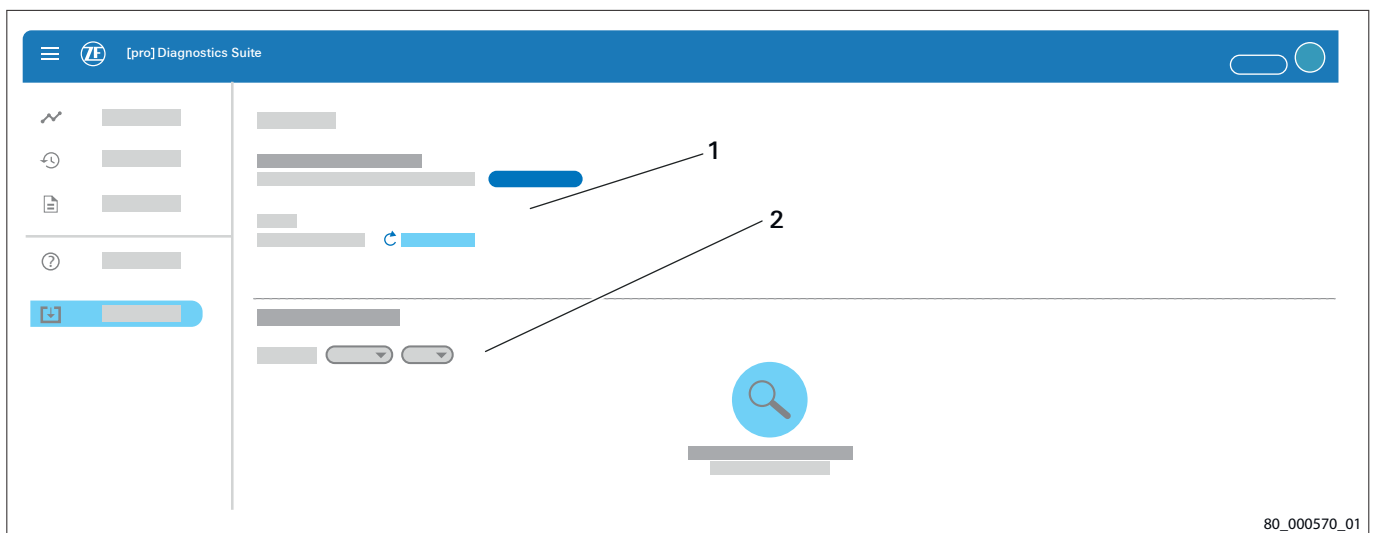


Fig. 16

| Item | Designation | Description |
|------|-------------|-------------|
| 1 | Remote vehicle diagnostics | Download the latest version of the ZF [pro]Diagnostics Suite and view the change history. |
| 2 | Diagnostic modules | View, filter and update any installed system-specific diagnostic software. |

Tab. 7

6 DCI

# 7 Description

## 7.1 Brief product description

The Diagnostic Communication Interface (DCI) is a connection device between the test device (for example laptop or PC) and the vehicle in order to be able to use diagnostic software on the vehicle. Diagnostics is required for repair, parameterization or production purposes.

The DCI is a stand-alone device that is not installed in the vehicle. It can be connected to a test device via USB. For connection to the vehicle side, all diagnostic protocols used by ZF are supported.

The DCI replaces the WABCO Diagnostic Interface 2 and the ZF DPA 06.

The Smart Adapter enables the use of cables for ZF DPA 06 (Testman) and WABCO Diagnostic Interface 2.

ⓘ The 9 PIN plug is exclusively intended for WABCO Diagnostic Interface 2 cables and cannot be used with ZF DPA 05 cables.

The DCI can be used for future applications and older diagnostic applications.

## 7.2 Connections



80_000623_01

Fig. 17

1 Vehicle connection (25 pin D-sub plug)

   (i)   Currently only to be used in conjunction with Smart Adapter!

2 LAN connection (currently not used)
3 USB B connection port
4 Power plug for power supply outside a vehicle (EOL station)
5 Diagnostic connection of ZF Adapter 6008.207.XXX
6 Currently not used
7 WABCO Diagnostic Interface 2 (9 PIN)

## 7.3 Switch



Fig. 18

1 Currently not used
2 R-CAN1
   R-CAN1 terminating resistor
3 R-CAN2
   R-CAN2 terminating resistor
4 UPRG
   Programming voltage for flash process of some transmission control units
5 Terminal 15 / ECU
   Switching of terminal 15 for flash process of some transmission control units

## 7.4 Lamps
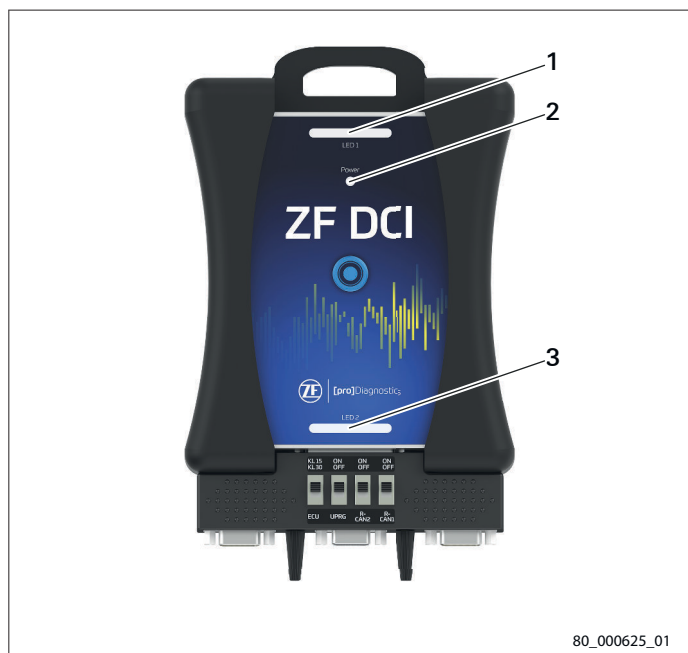


Fig. 19

| Item | Designation | Behavior |
|---|---|---|
| 1 | LED 1 | Steady yellow light: standby<br>Steady green light: connected to diagnostic software |
| 2 | Power | Steady green light: power supply connected |
| 3 | LED 2 | Steady yellow light: standby<br>Steady green light: connected to vehicle |

Tab. 8

## 8 Technical Data

### 8.1 Data sheet for DCI

The technical data in the table applies to all product versions. Further product-specific data on the online product page.

| Technical data | | |
|---|---|---|
| Operating temperature | °C | -40 - +70 |
| Reverse polarity protection | – | The system is protected against reverse polarity of the towing vehicle battery. |
| Overvoltage protection | – | The system is protected against overvoltage. |
| Nominal voltage | V | 6<br>30 |

Tab. 9  Technical Data DCI

### 8.2 Dimensions of DCI



80_000622_01

Fig. 20

| Data | Unit | Value |
|---|---|---|
| Width X | mm | 140 |
| Length Y* | mm | 228 |
| Height Z | mm | 37 |
| Weight** | g | 500 |
| *with smart adapter<br>**without smart adapter | | |

Tab. 10

# 9 Transport and Storage

## 9.1 Transportation

### 9.1.1 General transport instructions

- Product is supplied in a carton. Larger deliveries are shipped in a lattice box or on a pallet.
- Observe total weight, dimensions and required space for transporting and setting down *(refer to Chapter Technical Data)*.
- Secure the load carrier to the transport vehicle using suitable devices.
- Protect the product against dirt, moisture, and damage with suitable covers.
- Do not set down or store the load carrier outdoors.
- Immediately notify the ZF partner of transport damage. Obvious transport damage must be noted on the delivery papers.
- With long transport times, high demands are placed on corrosion protection.

> ⓘ Observe the described transport instructions for a return delivery to ZF. If necessary, request a load carrier from ZF.

## 9.2 Storage

### 9.2.1 Short-term storage and long-term storage

| **NOTICE** |
| --- |
| Damage to ZF product due to inappropriate storage possible. |
| ⇨ Store the ZF product in dry, closed rooms and protect from detrimental influences such as dirt, moisture, temperature and damage. |
| ⇨ Failure to comply will void the warranty. |

Storage conditions:

- Store the ZF product in dry, closed rooms with as few temperature fluctuations and low relative humidity as possible.
- Protect the ZF product against dirt, moisture, and damage by means of suitable covers and load carriers.
- Store the ZF product in such a way that adverse impacts on quality and damage are prevented.

## 10        Decommissioning

### 10.1       Disposal

| NOTICE |
|---|
| **Inappropriate disposal may cause environmental damage.**<br>⇨ Please dispose of the ZF product, parts, operating supplies and auxiliary materials in accordance with the applicable regional, national, and international regulations of the respective operating country.<br>⇨ Please use an authorized disposal specialist to dispose of the ZF product, parts, operating supplies and auxiliary materials. |

⚠️ Operating supplies and auxiliary materials might cause permanent damage to health and environmental damage. Observe material safety data sheets *(refer to Section Further information)*.

The ZF product consists of various materials. Each of these materials must be treated, disposed of or recycled in accordance with the regional, national, and international regulations of the respective operating country.

### Disposal of packaging

- Nonreturnable packaging
  Separate the individual parts of the nonreturnable packaging by type and dispose of them in accordance with the applicable regulations of the operating country.
- Reusable packaging
  Please get in touch with your ZF partner if you require further information on returning or disposing of reusable packaging.

### Preparing and dismantling the ZF product for disposal Please
note the following steps and carry them out if required:

- Release the pressure from the hydraulic system.
- Release the pressure from the pneumatic system.
- Drain and/or remove operating supplies and auxiliary materials from the ZF product.
- Clean ZF product.
- If possible, have authorized, specialized staff dismantle the ZF product completely.

### Disposal of parts
Clean parts and separate them by material type. Dispose of the parts in accordance with the applicable regulations of the operating country.

### Disposal of electrical and electronic components
Dispose of electrical and electronic components in accordance with manufacturer's specifications and the regulations of the operating country.

### Disposal of operating supplies and auxiliary materials
Collect and dispose of operating supplies and auxiliary materials in accordance with the applicable safety data sheets, manufacturer's specifications and the regulations of the operating country.

**WABCO deposit system for end-of-life parts**

Send end-of-life parts to WABCO and receive your deposit in return. More information on the return procedure for end-of-life parts: http://www.wabco.info/i/1639