

<b>ADDRESSEES</b>	: ABC Customer Care and Parts Source Owners and operators of coaches equipped with electronic controlled air suspension (ELC)
<b>VEHICLE MODEL</b>	: TD925US, TDX25US
<b>MANUAL SECTION</b>	: 3.6 Air suspension – Control system
<b>BULLETIN TYPE</b>	: Service Information
<b>DATE</b>	: March 18th, 2016
<b>SUBJECT</b>	: <b>Introduction to electronic controlled air suspension (ELC)</b>
<b>TERMS &amp; CONDITIONS</b>	: -

### 1. APPLICATION:

Following double-deck busses are fitted with an electronic controlled air suspension (ELC):

Model	VIN
TD925US	42780, 42846→42888, 42890→42891, 42920→...
TDX25US	42801→...

### 2. SYSTEM OVERVIEW

The electronic controlled air suspension maintains the ride height by using an electronic control unit (ECU), height sensors, pressure sensors and solenoid valve blocks. The ECU uses the information of the height sensors and the pressure sensors to determine the proper vehicle ride height. If necessary, the ECU will change the pressure within the air bags by actuating specified solenoids in the valve blocks.

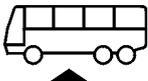
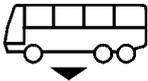
### 3. BENEFITS

- Less air consumption
- Easy installation
- High system flexibility (kneeling, lowering, raising, ...)
- Diagnostics capabilities

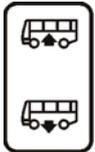
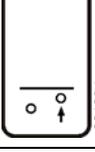
### 4. DASHBOARD DISPLAY MESSAGES

Symbol	Message
 012059	ELC system fault
 012081	ELC correct electrically supplied by the towing vehicle

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Symbol	Message
 012062	Kneeling system switched on
 001864	Raising system switched on
 001865	Lowering system switched on
 001095	Trailing axle unloading system activated
 010434 im 1	Axle overload (1 stands for axle 1) (optional)

## 5. DASHBOARD SWITCHES

Symbol	Message
 009181	To raise/lower air suspension from ride height (if present)
 003260	To switch on limited lowering system (if present)
 000818	To kneel vehicle
 001094	To switch on trailing axle unloading system

## 6. DRIVER'S INSTRUCTIONS

Refer to the operating manual of your vehicle.

## 7. PRECAUTION WHEN WORKING ON VEHICLES WITH ELC

Switch off the electronic controlled air suspension (ELC) before carry out works at components located underneath the vehicle or before working in the wheel housing.



### **WARNING!**

Failure to switch off the ELC system can cause dangerous situations due to "unexpected" movements of the body, as well as damage to the vehicle.

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## WARNING!

Body will lower beyond normal ride height, if air is depleted from the air bags. Make sure no object or person gets trapped under the body edge or between a wheel housing and a wheel.

### 8. TO SWITCH OFF ELC

Step	Action
1	Shut off the engine.
2	Switch off the vehicle ignition and prevent somebody from switching on the ignition again by using the safety switch of figure 1.

#### 7.1 Safety switch to prevent vehicle ignition from being switched on

With this safety switch you can prevent someone from switching on (intentionally or unintentionally) the vehicle ignition while you are working on the vehicle (e.g. in case of working underneath the vehicle or in the wheel housing during which the electronic controlled air suspension (ELC) should not be activated).



Figure 1: Safety switch on the control panel in the engine compartment (photo shows control panel of a TD925/TDX25 vehicle)

#### 7.2 To activate safety system

Step	Action
1	Switch off the vehicle ignition
2	Press the safety switch and equip it with a key lock. It is now impossible to switch on the vehicle ignition.

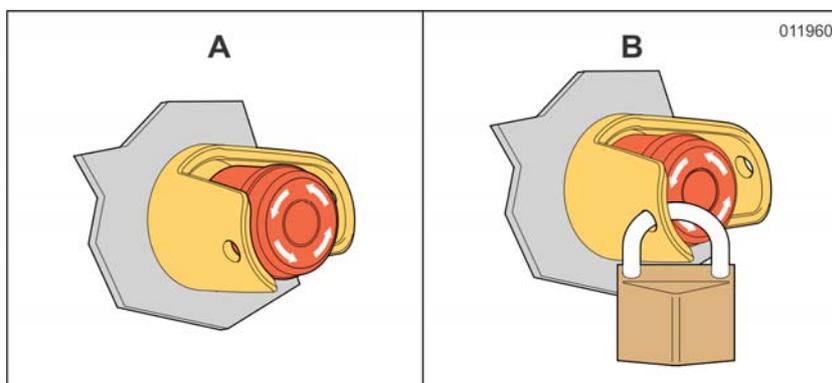
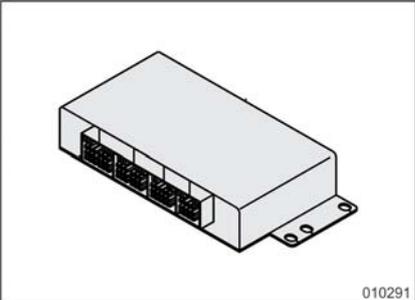
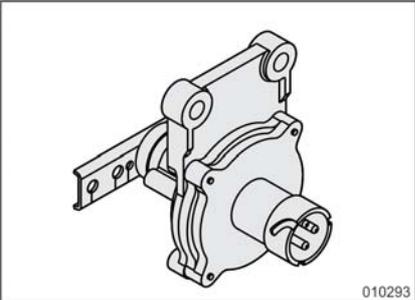
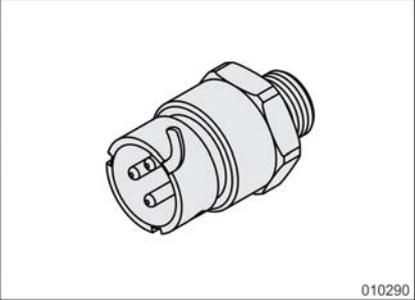


Figure 2: Positions of safety switch  
A Normal position  
B Safety system activated

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## 9. IDENTIFICATION OF ELC COMPONENTS

Denomination	Figure
<p>Electronic control unit (ECU)</p> <ul style="list-style-type: none"> <li>• Monitors the input signals and compares the signals with the values stored in the ECU.</li> <li>• Activates the solenoid valves in the various valve blocks to adjust the ride height</li> <li>• Monitors the function of all components and stores information about errors</li> <li>• Stores preset levels (normal, lower, raise)</li> </ul>	 <p style="text-align: right;">010291 <b>Figure 3</b></p>
<p>Height sensors</p> <p>A height sensor provides the ECU with a chassis height signal.</p>	 <p style="text-align: right;">010293 <b>Figure 4</b></p>
<p>Solenoid valve blocks</p> <p>Each valve block contains several solenoid valves which are actuated by the ECU. The solenoid valves convert the voltage into a pressurizing or venting process which either increases or reduces the air volume in the air bags. If not activated, the valves are closed and maintain the air bags volume.</p> <ul style="list-style-type: none"> <li>• Front-axle and trailing-axle valve block (Figure 5)</li> <li>• Drive-axle valve block (Figure 6)</li> </ul>	 <p style="text-align: right;">010289 <b>Figure 5</b></p>  <p style="text-align: right;">010292 <b>Figure 6</b></p>
<p>Pressure sensors</p> <p>A pressure sensor provides the ECU with an air bag pressure signal.</p>	 <p style="text-align: right;">010290 <b>Figure 7</b></p>

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## 10. STRUCTURE OF ELC:

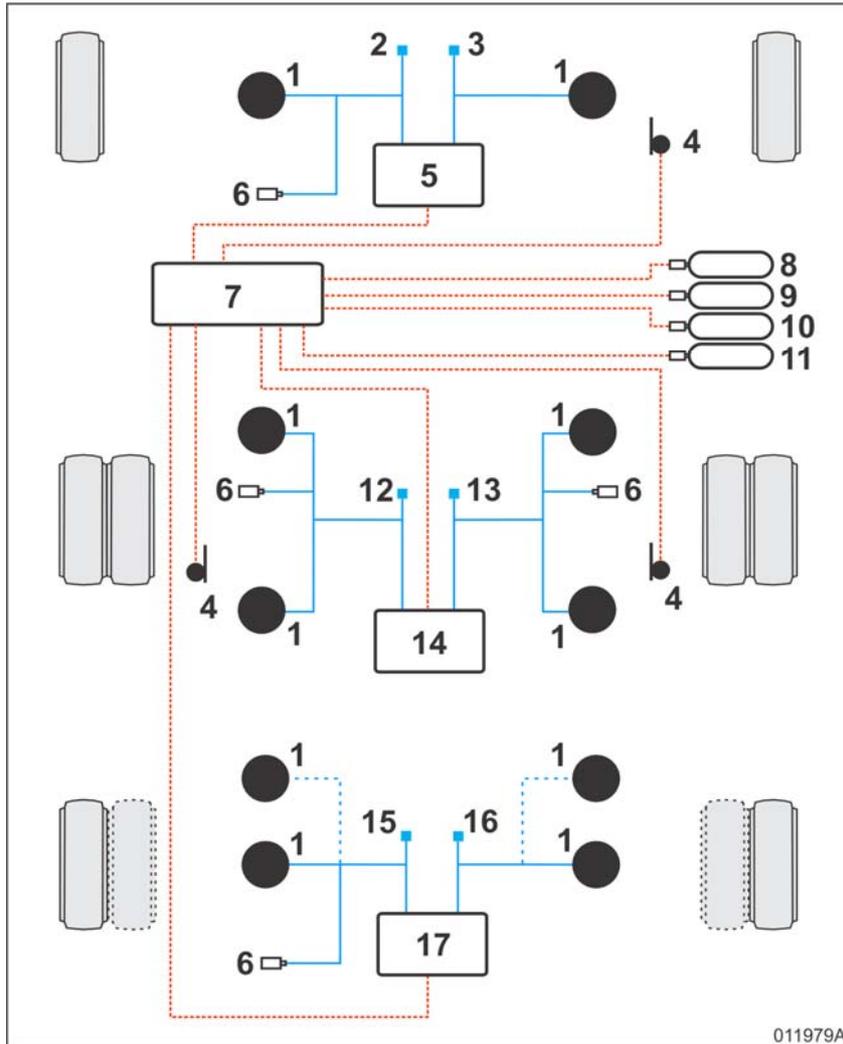


Figure 8: Structure of ELC on a three axle vehicle

Number in figure 8	Explanation
1	Air spring
2	Test fitting of front-axle left air spring
3	Test fitting of front-axle right air spring
4	Height sensor
5	Front-axle valve block
6	Pressure sensor
7	Electronic control unit (ECU)
8	Pressure sensor of drive-axle service brakes tank
9	Pressure sensor of front-axle brakes tank
10	Pressure sensor of trailing-axle brakes tank
11	Pressure sensor of accessories tank
12	Test fitting of drive-axle left air spring
13	Test fitting of drive-axle right air spring
14	Drive-axle valve block
15	Test fitting of trailing-axle left air spring
16	Test fitting of trailing-axle right air spring
17	Trailing-axle valve block

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## **11. "NEO GREEN" DIAGNOSTIC SOFTWARE**

This software is necessary:

- to read and/or erase the fault memory;
- to adjust the air-spring height;
- to display the parameters;
- to calibrate a new electronic control unit (ECU);
- to calibrate a new height sensor;
- to calibrate a new pressure sensor.

Ordering number for CD-ROM with "NEO" software: VH11479100

Refer to chapter 3.6 of your maintenance manual for installation instructions.

## **12. TO READ AND ERASE FAULT MEMORY OF ECU**

Refer to chapter 3.6 of your maintenance manual.

## **13. TO ADJUST AIR SPRING HEIGHT**

Refer to chapter 3.6 of your maintenance manual.

## **14. TO DISPLAY PARAMETERS**

Refer to chapter 3.6 of your maintenance manual.

## **15. COMPONENT REPLACEMENT**

- Park the vehicle on a level surface
- Block the wheels to prevent the vehicle from moving.
- Release all air from the suspension system before removing any components. Pressurized air can cause serious personal injury.

### **14.1 To calibrate a new ECU**

The ECU should be calibrated after replacement by using the "NEO" software. Refer to chapter 3.6 of your maintenance manual for instructions.

### **14.2 To calibrate a new height sensor**

The height sensor should be calibrated after replacement by using the "NEO" software. Refer to chapter 3.6 of your maintenance manual for instructions.

### **14.3 To calibrate a new pressure sensor**

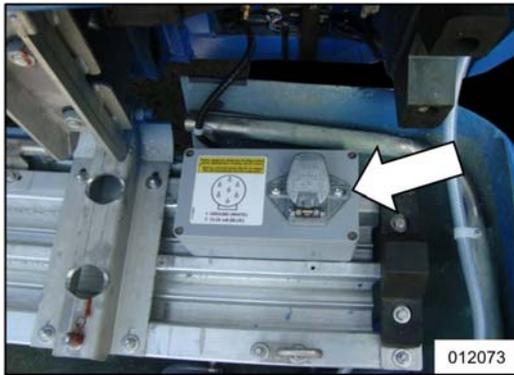
The pressure sensor should be calibrated after replacement by using the "NEO" software. Refer to chapter 3.6 of your maintenance manual for instructions.

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## 16. TO TOW A VEHICLE EQUIPPED WITH ELC

Refer to chapter 7 of your operating manual or chapter 1.1 of your maintenance manual for complete instructions.

The ECU of the ELC system must be supplied with electric power during towing. For that the vehicle is equipped with connecting sockets at the front and rear to which an electric supply of 12 to 24Vdc must be connected.



**Figure 9: ELC connecting socket behind front bumper of TD925US/TDX25US**



**Figure 10: ELC connecting socket in engine compartment of TD925/TDX25US**

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### **INFORMATION HANDLING:**

Important supplements to and modifications of the technical information not yet included in the Van Hool manuals are communicated by means of Service Bulletins.

### **VAN HOOL CUSTOMER PORTAL:**

Consult the Van Hool customer portal for the latest service documentation. Beside the maintenance manual, you will also find the operating manual and the spare parts catalogue of your vehicle on the customer portal. The customer portal is accessible through [www.vanhool.be](http://www.vanhool.be), and only with a code (password) from Van Hool. If you do not have a password yet, request it by using the link on the Van Hool website.