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Notes on these instructions

This repair manual includes information and instructions on how to perform repair work on the seat suspension MSG97EL of GRAMMER seats.

The repair of the upper seat part is described in the respective repair manual for the upper seat part to which a reference is made, if required (see repair manual for upper seat part).

Example:
Remove the cable of the seat occupancy detection system at the upper seat part (see repair manual for upper seat part).

The seat suspension MSG95EAC forms the basis for illustrations in this repair manual. In the case of technical deviations in work procedures (due to different seat suspension designs), refer to the current text or individual chapters of the manual.

Each chapter starts with a list of all preparatory work to be completed before starting repair. These preparations are described in separate chapters and shall be carried out without the preparatory steps described there.

For spare part orders, please use the numbers stated in the latest issue of the relevant spare parts catalogue.

The description of the work procedures refers to the removed seat suspension and the dismounted upper part of the seat. Depending on the individual installation situation, some work may also be performed on the installed seat suspension and/or with upper seat part. For this reason, check the environment of the installed seat suspension for this possibility before starting work. The safety instructions of the specific vehicle manufacturer and those stated in Chapter 1 of this repair manual must be strictly observed.

This repair manual also includes some information on delivery options, if these require further explanation. Since the scope of delivery depends on the specific customer order, the actual seat suspension design may deviate from the descriptions and illustrations in this manual.

The illustrated repair steps refer to the seat suspension for left-hand drive. Different work steps are to be performed laterally reversed when repairing vehicle models with right-hand drive.

If not stated otherwise, the directional indications "front, back" and "right, left" refer to the installed seat suspension regarded in the driving direction of the vehicle.

The document layout is suitable for later use of this repair manual via CD-ROM / INTERNET / INTRANET.

Basic information on the seat suspension

The seat suspension is provided with a long-lasting lubrication (approx. 10 years). The lubricating points must be re-greased only after repair work, using an acid-free multi-purpose lubricant.

In the description of the present repair manual, not all fastening parts might be mentioned. After repair, it might be necessary to check fastening parts regarding their factory-made laying, support and securing and to correct them respectively, if required.
Preface

Bowden pull wires, cables and air hoses may only be fastened with cable ties at the defined spots by hand (loose). Make sure that Bowden pull wires, cables and air hoses cannot be squeezed or distorted when the seat suspension is adjusted and the seat moved.

Replace all removed old parts with enclosed new ones. If there is no new part included, the old one is to be cleaned and checked for its suitability for re-use. Defective parts and worn parts must be replaced by new ones.

Grammer AG rejects any warranty claims if damaged or worn parts and assemblies are not replaced by spare parts released by Grammer AG.

Qualified personnel

These instructions offer basic information on proper technical seat repair. The contents of the work procedures described are intended for professionally educated technicians with profound product knowledge. This level of knowledge is an imperative requirement when performing the work and procedures described in this document.

In order to avoid bodily injury, reduced operational safety of the seat suspension or damage to it resulting from improperly performed work, all information and instructions, in particular the safety instructions stated in Chapter 1, must be read carefully and strictly observed.

As an inevitable matter of fact, Grammer AG cannot evaluate all situations and consequences that may bear a risk of injury for the persons involved in the described work procedures. For this reason it is absolutely necessary that every person who carries out repair work at the seat suspension uses his/her professional knowledge to make sure that his/her own safety will not be put at risk and that the selected type of repair will not cause any negative effects, in particular with regard to technical safety.

For this reason, Grammer AG disclaims liability for any possible damage of this kind.

We point out explicitly that all work steps and procedures described are to be performed with consideration to the applicable directives and regulations stipulated by the relevant local authorities and in compliance with the provisions on health protection, prevention of accidents and environmental protection.

Change notification and copyright

The seat suspensions are subject to continuous development. Please understand that we must reserve the right to make changes in shape, equipment and technical design. For this reason, the contents of this repair manual cannot be used to substantiate any possible claims.

Reprint, translation and copies of this manual or parts thereof are admissible only after written approval.

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D-92245 Kümmerbruck
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1.1 Safety instructions
1.2 Rating plate

Note:
Please refer to the applicable seat operating instructions for further details.
1.1 Safety instructions

1 All inspection, test and repair work must be performed exclusively by adequately trained personnel.

2 We point out explicitly that all work steps and procedures described are to be performed with consideration to the applicable directives and regulations stipulated by the relevant local authorities and in compliance with the provisions on health protection, prevention of accidents and environmental protection.

3 Special notes in this repair manual are highlighted as follows:

⚠️ WARNING ...
indicates possible risks for persons and their prevention.

⚠️ ATTENTION ...
indicates possible damage or deterioration of material and their prevention.

Note: ...
introduces an additional explanation for better understanding the work to be carried out.

Installation note: ...
introduces an additional explanation for better understanding the installation work to be carried out.

4 Before starting repair work, the following work has to be carried out:
   • Disconnect the seat suspension from the power supply.
   • Move the seat suspension to the end stops of the lower position.

5 When using oil, grease and other chemical substances, the relevant safety regulations for the handling and use of these products must be observed.
### 1.2 Rating plate

The rating plate is located on the upper suspension part at the rear left.

The rating plate shows the following information (example):

(A) **Country of manufacture** = MADE IN XXXXXXX

(B) **DESIGNATION** = MSG95EAC/741 12V

(C) **INVENTORY NO.** = 1240014

(D) **Year / CW / Assembly**
   - Year of manufacture = 12 (2012)
   - Built in week = 19 (May)
   - Assembly = 141

(E) **ORDER NO.** = XX 98786400005
   - Country indicator = XX

**Note:**

When orders are placed, the correct INVENTORY NO. (C) on the rating plate is always to be quoted.
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- Pneumatic modules and connecting diagram (page 1)
- Sensor module with pin assignment (page 2)
- Control / air reservoir with pin assignment (page 3)
- Active module and cable harness of energy bundle with pin assignment
  (page 4)
- Compressor, compressor cable and pin assignment (page 5)
- Cable harness of seat suspension, electrical connections with pin
  assignment (pages 6-7)

2.2 Overview of faults – Pointing out possible faults that might occur
  (pages 1-4)

2.3 Troubleshooting – Locating the fault (pages 1-15)
  Preconditions for fault diagnosis for each test (page 1)
  1 Inspection of the air spring and air distributor (page 1)
  2 Inspection of the sensor module (page 2-6)
  3 Inspection of the compressor and of the compressor cable (page 7)
  4 Inspection of the active module (pages 8-10)
  5 Inspection of the cable harness for seat suspension (page 11-13)
  6 Inspection of the control / air reservoir (page 14)
  7 Deactivation of the emergency programme / reset to normal operation
    (page 15)
### 2.1 Overview of components

**Pneumatic modules and connecting diagram**

1. **Active module**
2. **Control / air reservoir**
3. **Quick-release fastener**
4. **Air hose (black):** Hose from air distributor (15) to control (2)
5. **Air hose (blue):** Hose from air distributor (15) to sensor module (6)
6. **Sensor module**
7. **Energy bundle**
8. **Air hose (thin):** Hose from air distributor (15) to 2/2 directional valve in the active module (1)
9. **Air hose (thick):** Hose from air distributor (15) to 3/2 directional valve in the active module (1)
10. **Air spring**
11. **Catch spring**
12. **Quick coupling**
13. **Air intake hose / air exhaust hose**
14. **Air intake hose / air exhaust hose**
15. **Air distributor**
16. **Quick-release fastener screw**

#### WARNING Damage!

Observe the instructions stated in Chapter 3.9 and in Chapters 3.14 to 3.16 when pulling off the air hoses (4, 5, 8) from the quick-release fastener screw!

17. **Air hose**
18. **Nozzle**
19. **Compressor**

#### WARNING Damage!

Please observe the notes stated in Chapter 3.8 when pulling off the air hose (17) at the connection of the compressor (19).

20. **Retaining ring of quick coupling**
2.1 Overview of components

Sensor module with pin assignment

1. Sensor module
2. Retractor (sensor module)
3. Webbing
4. Plug of sensor module (3-pin)
5. Plug of sensor module (4-pin)
6. Socket (cable harness for seat suspension) (3-pin)
7. Socket (cable harness for seat suspension) (4-pin)
8. Air hose (black): hose connecting magnet valve block to retractor
9. Air hose (blue): Hose from the sensor module to the air distributor
10. Cable harness for seat suspension
11. Socket of cable harness for seat suspension (18-pin)
12. Retaining ring of quick coupling

⚠️ WARNING Damage!

Observe the instructions stated in Chapter 3.9 before pulling out the air hose (9) at the retaining ring of the quick coupling (12)!

Electrical plug and socket connections:

(A) Electrical connection (3-pin) between sensor module (1) and cable harness for seat suspension (10)

(B) Electrical connection (4-pin) between electromagnet for 2/2 and 3/2 directional valve at the sensor module (1) and cable harness for seat suspension (10).

(C) Electrical connection (18-pin) between the control / air reservoir and the cable harness for seat suspension (10)
2.1 Overview of components

Control / air reservoir with pin assignment

(1) Control / air reservoir
(2) Plug of control (18-pin)
(3) Socket of cable harness for seat suspension (18-pin)
(4) Cable harness for seat suspension

Electrical plug and socket connection:

(C) Electrical connection (18-pin) between control / air reservoir (1) and cable harness for seat suspension (4)
2.1 Overview of components

Active module and cable harness for the energy bundle with pin assignment

1. Active module
2. Plug of active module (3-pin/large)
3. Plug of active module (3-pin/small)
4. Seal (large)
5. Seal (small)
6. Socket (cable harness for energy bundle, 2-pin/small)
7. Socket (cable harness for energy bundle, 2-pin/large)
8. Energy bundle
9. Air hose (thick)
10. Air hose (thin)
11. Cable harness for energy bundle
12. Socket of cable harness for energy bundle (4-pin)
13. Socket of cable harness for seat suspension (4-pin)
14. Cable harness for seat suspension
15. Circlip
16. Quick-release fastener screw
17. Socket of cable harness for seat suspension (18-pin)

Electrical plug and socket connection:

(C) Electrical connection (18-pin) between the control / air reservoir and the cable harness for seat suspension (14)
(D) Electrical connection (3-pin/large) between electromagnet for 3/2 directional valve at the active module (1) and cable harness for energy bundle (11)
(E) Electrical connection (3-pin/small) between electromagnet for 2/2 directional valve at the active module (1) and cable harness for energy bundle (11)
(F) Electrical connection (4-pin) between cable harness for energy bundle (11) and cable harness for seat suspension (14)
2.1 Overview of components

Compressor, compressor cable with pin assignment

(1) Compressor
(2) Right-angle plug (blue cable)
(3) Right-angle plug (black cable)
(4) Cable harness for seat suspension
(5) Socket of cable harness for seat suspension (18-pin)
(6) Control / air reservoir

Electrical plug and socket connections:

(C) Electrical connection (18-pin) between cable harness for seat suspension (4) and control / air reservoir (6)

(G) Electrical connection between compressor (1) and right-angle plug of black cable (3)

(H) Electrical connection between compressor (1) and right-angle plug of blue cable (2)

Cable colours:

sw = black
bl = blue
## 2.1 Overview of components

### Cable harness of seat suspension with pin assignment

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Cable harness for seat suspension</td>
</tr>
<tr>
<td>(2)</td>
<td>Socket (cable harness for seat suspension) (4-pin)</td>
</tr>
<tr>
<td>(3)</td>
<td>Cable tie</td>
</tr>
<tr>
<td>(4)</td>
<td>Socket (cable harness for seat suspension) (3-pin)</td>
</tr>
<tr>
<td>(5)</td>
<td>Plug (cable harness of seat suspension) (6-pin)</td>
</tr>
<tr>
<td>(6)</td>
<td>Socket of cable harness for seat suspension (18-pin)</td>
</tr>
<tr>
<td>(7)</td>
<td>Push mount tie with wings</td>
</tr>
<tr>
<td>(8)</td>
<td>Cable tie with bracket</td>
</tr>
<tr>
<td>(9)</td>
<td>Connector plug (vehicle) (12-pin)</td>
</tr>
<tr>
<td>(10)</td>
<td>U-shaped profile</td>
</tr>
<tr>
<td>(11)</td>
<td>Fuse (Si = 15A)</td>
</tr>
<tr>
<td>(12)</td>
<td>Plug (cable harness of seat suspension) (4-pin)</td>
</tr>
<tr>
<td>(13)</td>
<td>Corrugated pipe support</td>
</tr>
<tr>
<td>(14)</td>
<td>Right-angle plug (black cable)</td>
</tr>
<tr>
<td>(15)</td>
<td>Right-angle plug (blue cable)</td>
</tr>
<tr>
<td>(16)</td>
<td>Plug (cable harness of seat suspension) (8-pin)</td>
</tr>
</tbody>
</table>

### Electrical plug and socket connections:

- **(A)** Electrical connection (3-pin) between sensor module and cable harness for seat suspension (1), see page 2
- **(B)** Electrical connection (4-polig) between electromagnet for 2/2 and 3/2 directional valve at the sensor module and cable harness for seat suspension (1), see page 2
- **(C)** Electrical connection (18-pin) between control / air reservoir and cable harness for seat suspension (1), see pages 2, 3, 4, 5
- **(F)** Electrical connection (4-pin) between cable harness for energy bundle and cable harness for seat suspension (1), see page 4
- **(G)** Electrical connection between compressor and cable harness for seat suspension (1), see page 5
- **(H)** Electrical connection between compressor and cable harness for seat suspension (1), see page 5
2.1 Overview of components

Electrical plug and socket connections:

(I) Electrical connection (6-pin) between cable harness for seat suspension (1) and cable harness for upper seat part

(J) Electrical connection (8-pin) between cable harness for seat suspension (1) and cable harness for upper seat part

(K) Electrical connection (12-pin) between cable harness for seat suspension (1) and cable harness for vehicle connection
2.2 Overview of faults – Pointing out possible faults that might occur

This chapter contains notes on possible faults of the seat suspension. The notes and information provided in Chapter 2.3 “Troubleshooting – Locating the fault” are intended to ease troubleshooting of faults. The upper seat part has been inspected and found to be OK with respect to the faults described here (see Diagnosis in the repair manual for the upper part of the seat).

Faults caused due to insufficient maintenance or improper repair are not covered here.

**Note:** The components mentioned above are illustrated in Chapter 2.1 and the functional components are illustrated in the repair manual of the upper seat part, if not stated otherwise in this text.

After having eliminated a fault in the pneumatic system, the possibly activated emergency programme must be deactivated (Chap. 2.3, inspection step no. 7.1).

<table>
<thead>
<tr>
<th>Fault description</th>
<th>Possible cause</th>
<th>Troubleshooting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seat suspension does not respond when operating the height adjustment in upward direction.</td>
<td>• Compressor is not active.</td>
<td>Check compressor (Chap. 2.3, inspection step no. 3.1).</td>
</tr>
<tr>
<td></td>
<td>• Control / air reservoir is defective.</td>
<td>Replace the control / air reservoir (see Chapter. 3.11).</td>
</tr>
<tr>
<td></td>
<td>• Cable harness for seat suspension is defective.</td>
<td>Check the cable harness for seat suspension (Chap. 2.3, inspection step no. 5.1).</td>
</tr>
<tr>
<td></td>
<td>• Air intake valve at the active module is defective.</td>
<td>Check the active module (Chap. 2.3, inspection step no. 4.1).</td>
</tr>
<tr>
<td></td>
<td>• Sensor module is defective.</td>
<td>Check the sensor module (Chap. 2.3, inspection step no. 2.1).</td>
</tr>
<tr>
<td></td>
<td>• No voltage.</td>
<td>Check and, if necessary, replace the fuse, current path and electrical connections.</td>
</tr>
<tr>
<td></td>
<td>• Switch for height adjustment</td>
<td>See Diagnosis in the repair manual for the upper seat part.</td>
</tr>
<tr>
<td></td>
<td>• Switch for seat occupancy detection system</td>
<td>See Diagnosis in the repair manual for the upper seat part.</td>
</tr>
</tbody>
</table>
# 2.2 Overview of faults – Pointing out possible faults that might occur

<table>
<thead>
<tr>
<th>Fault description</th>
<th>Possible cause</th>
<th>Troubleshooting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seat suspension responds after the height adjustment has been operated, but then returns to its original position.</td>
<td>• Free running is not given due to the webbing in the sensor module being pinched.</td>
<td>Fix the webbing in the middle of the retractor (no contact to the black plastic roller)</td>
</tr>
<tr>
<td></td>
<td>• Sensor module is defective.</td>
<td>Check the sensor module (Chap. 2.3, inspection step no. 2.1).</td>
</tr>
<tr>
<td></td>
<td>• Control / air reservoir is defective.</td>
<td>Replace the control / air reservoir (see Chapter 3.11).</td>
</tr>
<tr>
<td>After the height adjustment the seat lowers, but continues to vent automatically after unloading the seat suspension (driver gets off the seat).</td>
<td>• Seat occupancy detection system is defective.</td>
<td>See Diagnosis in the repair manual for the upper seat part</td>
</tr>
<tr>
<td>Seat suspension does not respond when operating the handle for seat height adjustment in downward direction.</td>
<td>• Cable harness for seat suspension is defective.</td>
<td>Check the cable harness for seat suspension (Chap. 2.3, inspection step no. 5.1).</td>
</tr>
<tr>
<td></td>
<td>• Seat occupancy detection system is defective.</td>
<td>See Diagnosis in the repair manual for the upper seat part</td>
</tr>
<tr>
<td>Seat suspension does not respond when operating the handle for seat height adjustment in downward direction.</td>
<td>• Cable harness for seat suspension is defective.</td>
<td>Check the cable harness for seat suspension (Chap. 2.3, inspection step no. 5.1).</td>
</tr>
<tr>
<td></td>
<td>• Sensor module is defective.</td>
<td>Check the sensor module (Chap. 2.3, inspection step no. 2.1).</td>
</tr>
<tr>
<td></td>
<td>• No voltage.</td>
<td>Check and, if necessary, replace the fuse, current path and electrical connections.</td>
</tr>
<tr>
<td></td>
<td>• Control / air reservoir is defective.</td>
<td>Replace the control / air reservoir (see Chapter 3.11).</td>
</tr>
</tbody>
</table>
## 2.2 Overview of faults – Pointing out possible faults that might occur

<table>
<thead>
<tr>
<th>Fault description</th>
<th>Possible cause</th>
<th>Troubleshooting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seat suspension changes its position while driving, deflates and lowers down.</td>
<td>• Air spring and air distributor are leaky.</td>
<td>Check the air spring and the air distributor (Chap. 2.3, inspection step no. 1.1).</td>
</tr>
<tr>
<td></td>
<td>• Sensor module is leaky.</td>
<td>Check the sensor module (Chap. 2.3, inspection step no. 2.1).</td>
</tr>
<tr>
<td></td>
<td>• Air hose connections are leaky.</td>
<td>Check all air hose connections for air leakage and, if necessary, replace the defective air hose connection or seal the leaky connection professionally.</td>
</tr>
<tr>
<td></td>
<td>• Air hoses are leaky.</td>
<td>Check all air hoses for air leakage and replace the defective air hose, if necessary.</td>
</tr>
<tr>
<td>It is possible to set the seat suspension to the highest position, but it does</td>
<td>• Sensor module is defective.</td>
<td>Check the sensor module (Chap. 2.3, inspection step no. 2.1).</td>
</tr>
<tr>
<td>not deflate any longer.</td>
<td>• Emergency programme is activated.</td>
<td>Deactivate the emergency programme (Chap. 2.3, step no. 7.1).</td>
</tr>
<tr>
<td>Seat suspension can be lowered, but does not pump up from the lowest position,</td>
<td>• Air spring and air distributor are leaky.</td>
<td>Check the air spring and the air distributor (Chap. 2.3, inspection step no. 1.1).</td>
</tr>
<tr>
<td>while the compressor is running.</td>
<td>• Air hose connections are leaky.</td>
<td>Check all air hose connections for air leakage and, if necessary, replace the defective air hose connection or seal the leaky connection professionally.</td>
</tr>
<tr>
<td></td>
<td>• Air hoses are leaky.</td>
<td>Check all air hoses for air leakage and replace the defective air hose, if necessary.</td>
</tr>
<tr>
<td></td>
<td>• Sensor module is leaky.</td>
<td>Check the sensor module (Chap. 2.3, inspection step no. 2.1).</td>
</tr>
<tr>
<td></td>
<td>• Compressor is leaky (return valve).</td>
<td>Replace the compressor (see Chapter 3.8).</td>
</tr>
<tr>
<td></td>
<td>• Control / air reservoir is leaky.</td>
<td>Check the control / air reservoir (Chap. 2.3, inspection step no. 6.1).</td>
</tr>
</tbody>
</table>
## 2.2 Overview of faults – Pointing out possible faults that might occur

<table>
<thead>
<tr>
<th>Fault description</th>
<th>Possible cause</th>
<th>Troubleshooting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seat suspension pumps up and remains in the middle position, while the compressor is running.</td>
<td>• Sensor module is leaky.</td>
<td>Replace the sensor module (see Chapter 3.9).</td>
</tr>
<tr>
<td>Seat suspension pumps up automatically (e.g. during compression and expansion or when getting off the seat); compressor starts running.</td>
<td>• Short-circuit in the compressor cable (e.g. caused by abrasion).</td>
<td>Check compressor (Chap. 2.3, inspection step no. 3.1). Check the sensor module (Chap. 2.3, inspection step no. 2.3).</td>
</tr>
<tr>
<td>After longer operation of the handle for height adjustment in downward direction when there is no load on the seat (for at least 6 seconds), no valve switching can be heard.</td>
<td>• Cable harness for seat suspension is defective.</td>
<td>Check the cable harness for seat suspension (Chap. 2.3, inspection step no. 5.1). See Diagnosis in the repair manual for the upper seat part.</td>
</tr>
<tr>
<td>After having operated the handle for height adjustment in downward direction when there is no load on the seat, valve switching can be heard immediately.</td>
<td>• Seat occupancy detection system is defective.</td>
<td>See Diagnosis in the repair manual for the upper seat part. Replace the sensor module (see Chapter 3.9).</td>
</tr>
<tr>
<td>Seat suspension travels up and down and hits the upper and/or lower end stop.</td>
<td>• Vertical shock absorber is defective.</td>
<td>Replace the vertical shock absorber (see Chapter 3.4). Check the air spring and the air distributor (Chap. 2.3, inspection step no. 1.1). Check all air hose connections for air leakage and, if necessary, replace the defective air hose connection or seal the leaky connection professionally. Check all air hoses for air leakage and replace the defective air hose, if necessary. Check the sensor module (Chap. 2.3, inspection step no. 2.1). Check the active module (Chap. 2.3, inspection step no. 4.1).</td>
</tr>
</tbody>
</table>

- **Possible cause**
  - Sensor module is leaky.
  - Short-circuit in the compressor cable (e.g. caused by abrasion).
  - Sensor module is defective.
  - Cable harness for seat suspension is defective.
  - Seat occupancy detection system is defective.
  - Switch for height adjustment is defective.
  - Valves in the sensor module are defective.
  - Vertical shock absorber is defective.
  - Air spring and air distributor are leaky.
  - Air hose connections are leaky.
  - Air hoses are leaky.
  - Sensor module is leaky.
  - Active module defective.

- **Troubleshooting**
  - Replace the sensor module (see Chapter 3.9).
  - Check compressor (Chap. 2.3, inspection step no. 3.1).
  - Check the sensor module (Chap. 2.3, inspection step no. 2.3).
  - Check the cable harness for seat suspension (Chap. 2.3, inspection step no. 5.1).
  - See Diagnosis in the repair manual for the upper seat part.
  - Replace the sensor module (see Chapter 3.9).
  - See Diagnosis in the repair manual for the upper seat part.
  - Replace the sensor module (see Chapter 3.9).
  - Replace the vertical shock absorber (see Chapter 3.4).
  - Check the air spring and the air distributor (Chap. 2.3, inspection step no. 1.1).
  - Check all air hose connections for air leakage and, if necessary, replace the defective air hose connection or seal the leaky connection professionally.
  - Check all air hoses for air leakage and replace the defective air hose, if necessary.
  - Check the sensor module (Chap. 2.3, inspection step no. 2.1).
  - Check the active module (Chap. 2.3, inspection step no. 4.1).
## 2.3 Troubleshooting – Locating the fault

### Preconditions for fault diagnosis for each test:

- The individual functions are activated in compliance with the instructions of the seat operating instructions.
- The electrical system of the vehicle has been inspected and found to be OK in compliance with the vehicle operating instructions.
- The electrical connections (STVB) have been inspected with regard to continuity and corrosion and found to be OK; they have been manufactured properly and are locked, if possible.
- Cable harness for seat suspension has been inspected with regard to arcing spots and broken leads (kinks) and found to be OK.
- The seat suspension is disconnected (no voltage that might cause a current flow must be applied to the seat suspension).
- Bellows at the upper suspension part removed (see Chapter 3.4) and pressed down.

### Notes:

- The components stated above are illustrated in Chapter 2.1.
- Descriptions of the work required during the diagnosis can be found in Chapter 3.
- Repeat the inspection after replacement of defective components.
- Assemble the seat after the end of the inspection or before repeating the inspection (e.g. reconnecting electrical connections (STVB)).

### 1 Inspection of air spring and air distributor

#### Preconditions for fault diagnosis:

- See “Preconditions for fault diagnosis for each test”.
- Air hoses and air intake and exhaust hose have been inspected with regard to kinks and tightness and found to be OK.

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</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Check the air spring for abrasion.</td>
<td>Visible abrasion, air spring is leaky.</td>
<td>Replace air spring (see Chapter 3.10). Proceed with inspection step no. 1.2.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No abrasion.</td>
<td></td>
</tr>
<tr>
<td>1.2</td>
<td>Apply load to the seat suspension.</td>
<td>Air escapes at the air spring.</td>
<td>Replace air spring (see Chapter 3.10). Proceed with inspection step no. 1.3.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The air spring is airtight.</td>
<td></td>
</tr>
<tr>
<td>1.3</td>
<td>Apply load to the seat suspension.</td>
<td>Air escapes at the air distributor.</td>
<td>Replace the air distributor (see Chapter 3.14). End of inspection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The air distributor is airtight.</td>
<td></td>
</tr>
</tbody>
</table>
## 2.3 Troubleshooting – Locating the fault

### 2 Inspection of the sensor module

**Preconditions for fault diagnosis:**
- See “Preconditions for fault diagnosis for each test”.
- Upper seat part removed at the seat suspension and put aside.
- The air hose to the sensor module has been inspected with regard to kinks, scoring and tightness and found to be OK.

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<tbody>
<tr>
<td>2.1</td>
<td>Apply load to the seat suspension.</td>
<td>Air escapes at the retaining ring of the quick coupling of the sensor module. The air hose is not connected correctly. No air escaped at the retaining ring of the quick coupling.</td>
<td>Plug the air hose completely into the retaining ring of the quick coupling (see Chapter 3.9). Proceed with inspection step no. 2.2.</td>
</tr>
<tr>
<td>2.2</td>
<td>Apply load to the seat suspension.</td>
<td>Air escapes at the sensor module. The sensor module is airtight.</td>
<td>Replace the sensor module (see Chapter 3.9). Proceed with inspection step no. 2.3.</td>
</tr>
<tr>
<td>2.3</td>
<td>Disconnect the electrical connection (C) between the control / air reservoir and the cable harness for seat suspension. <strong>Measuring instructions:</strong> Connect the negative line from the ohmmeter to K11. Measure the resistance at the contacts K11 and K14 in the socket of the cable harness of the seat suspension (STVB C): K11 (ground) Ω K14 (signal)</td>
<td>20 MΩ (± 1%) &gt;&gt; 20 MΩ (R → ∞) (interruption) or &lt;&lt; 20 MΩ (R → 0) (short-circuit)</td>
<td>Proceed with inspection step no. 2.4. Proceed with inspection step no. 2.5.</td>
</tr>
</tbody>
</table>
## 2.3 Troubleshooting – Locating the fault

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</thead>
<tbody>
<tr>
<td>2.4</td>
<td>• Measure the resistance at the contacts K11 and K8 in the socket of the cable harness of the seat suspension (STVB C):</td>
<td>K11 (ground) $\Omega$  K8 (sensor 8.5V) = 7.6 M$\Omega$ (±1%)</td>
<td>Proceed with inspection step no. 2.7.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt;&gt; 7.6 M$\Omega$ (R $\rightarrow$ $\infty$) (interruption) or</td>
<td>Proceed with inspection step no. 2.6.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;&lt; 7.6 M$\Omega$ (R $\rightarrow$ 0) (short-circuit)</td>
<td></td>
</tr>
<tr>
<td>2.5</td>
<td>• Disconnect the electrical connection (A) between the sensor module and the cable harness for seat suspension.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Measuring instructions: Connect the negative line from the ohmmeter to P3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Measure the resistance at the pins P3 and P2 at the plug of the sensor module (STVB A):</td>
<td>P3 (ground) $\Omega$  P2 (signal) = 20 M$\Omega$ (±1%)</td>
<td>Replace the cable harness of the seat suspension (see Chapter 3.16).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt;&gt; 20 M$\Omega$ (R $\rightarrow$ $\infty$) (interruption) or</td>
<td>Replace the sensor module (see Chapter 3.9).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;&lt; 20 M$\Omega$ (R $\rightarrow$ 0) (short-circuit)</td>
<td></td>
</tr>
</tbody>
</table>
## 2.3 Troubleshooting – Locating the fault

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</tr>
</thead>
<tbody>
<tr>
<td>2.6</td>
<td>• Disconnect the electrical connection (A) between the sensor module and the cable harness for seat suspension. <strong>Measuring instructions:</strong> Connect the negative line from the ohmmeter to P3. • Measure the resistance at the pins P3 and P1 at the plug of the sensor module (STVB A):</td>
<td>= 7.6 MΩ (± 1%)</td>
<td>Replace the cable harness of the seat suspension (see Chapter 3.16). Replace the sensor module (see Chapter 3.9).</td>
</tr>
<tr>
<td></td>
<td>P3 (ground) Ω P1 (sensor 8.5V)</td>
<td>&gt;&gt; 7.6 MΩ (R → ∞) (interruption) or &lt;&lt; 7.6 MΩ (R → 0) (short-circuit)</td>
<td></td>
</tr>
<tr>
<td>2.7</td>
<td>• Measure the resistance at the contacts K10 and K4 in the socket of the cable harness of the seat suspension (STVB C):</td>
<td>= 28.5 Ω (± 1%)</td>
<td>Proceed with inspection step no. 2.8. Proceed with inspection step no. 2.9.</td>
</tr>
<tr>
<td></td>
<td>K10 (ground) Ω K4 (voltage 12 V at the electromagnet for 3/2)</td>
<td>&gt;&gt; 28.5 Ω (R → ∞) (interruption) or &lt;&lt; 28.5 Ω (R → 0) (short-circuit)</td>
<td></td>
</tr>
</tbody>
</table>
## 2.3 Troubleshooting – Locating the fault

<table>
<thead>
<tr>
<th>Step no.</th>
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</tr>
</thead>
<tbody>
<tr>
<td>2.8</td>
<td>• Measure the resistance at the contacts K10 and K7 in the socket of the cable harness of the seat suspension (STVB C):</td>
<td>= 28.5 Ω (± 1%)</td>
<td>End of inspection.</td>
</tr>
<tr>
<td></td>
<td>K10 (ground) Ω K7 (voltage 12 V at the electromagnet for 2/2)</td>
<td>&gt;&gt; 28.5 Ω (R (\rightarrow) ∞) (interruption) or</td>
<td>Proceed with inspection step no. 2.10.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;&lt; 28.5Ω (R (\rightarrow) 0) (short-circuit)</td>
<td></td>
</tr>
<tr>
<td>2.9</td>
<td>• Disconnect the electrical connection (B) between the sensor module and the cable harness for seat suspension.</td>
<td></td>
<td>Replace the cable harness of the seat suspension (see Chapter 3.16).</td>
</tr>
<tr>
<td></td>
<td>• Measure the resistance at the pins P3 and P1 at the plug of the sensor module (STVB B):</td>
<td>= 28.5 Ω (± 1%)</td>
<td>Replace the sensor module (see Chapter 3.9).</td>
</tr>
<tr>
<td></td>
<td>P3 (ground) Ω P1 (voltage 12 V at the electromagnet for 3/2)</td>
<td>&gt;&gt; 28.5 Ω (R (\rightarrow) ∞) (interruption) or</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;&lt; 28.5Ω (R (\rightarrow) 0) (short-circuit)</td>
<td></td>
</tr>
</tbody>
</table>
## 2.3 Troubleshooting – Locating the fault

<table>
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</tr>
</thead>
</table>
| 2.10     | • Disconnect the electrical connection (B) between the sensor module and the cable harness for seat suspension.  
          | • Measure the resistance at the pins P2 and P4 at the plug of the sensor module (STVB B):  
          | P2 (ground) Ω  P4 (voltage 12 V at the electromagnet for 2/2)  
          | = 28.5 Ω (± 1%)                                                                | Replace the cable harness of the seat suspension (see Chapter 3.16).  
          | >> 28.5 Ω (R → ∞) (interruption) or  
          | << 28.5Ω (R → 0) (short-circuit)                                               | Replace the sensor module (see Chapter 3.9). |
## 3 Checking the compressor

### Preconditions for fault diagnosis:
- See “Preconditions for fault diagnosis for each test”.
- The air hose to the air distributor has been inspected with regard to kinks, scoring and tightness and found to be OK.

<table>
<thead>
<tr>
<th>Step no.</th>
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<th>Troubleshooting</th>
</tr>
</thead>
</table>
| 3.1      | • Disconnect the electrical connection (C) between the control / air reservoir and the cable harness for seat suspension.  
          • Measure the resistance at the contacts K10 and K2 in the socket of the cable harness of the seat suspension (STVB C):  
            K10 (ground) Ω K2 (voltage 12V)  
            = 0.8 Ω (± 10%) (total resistance)  
            >> 0.8 Ω (R → ∞) (interruption) or  
            << 0.8Ω (R → 0) (short-circuit)  
          | End of inspection. | Proceed with inspection step no. 3.2. |
| 3.2      | • Disconnect the electrical connection (H) between the compressor and the right-angle plug of the blue cable.  
          • Disconnect the electrical connection (G) between the compressor and the right-angle plug of the black cable.  
          • Measure the resistance at the contacts of the compressor:  
            Contact Ω contact  
            = 0.8 Ω (± 10%)  
            >> 0.8 Ω (R → ∞) (interruption) or  
            << 0.8Ω (R → 0) (short-circuit)  
          | Replace the cable harness of the seat suspension (see Chapter 3.16). | Replace compressor (see Chapter 3.8). |
4 Check the active module

Preconditions for fault diagnosis:
- See “Preconditions for fault diagnosis for each test”.
- The seat suspension is not disconnected (voltage that might cause a current flow must be applied to the seat suspension) and must be levelled.
- The thin air hose and the thick air hose have been inspected with regard to kinks and tightness and found to be OK.

<table>
<thead>
<tr>
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<th>Troubleshooting</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>Apply load to the seat suspension.</td>
<td>Air escapes at the circlip and/or at the quick-release fastener screw. The air hoses are not connected correctly.</td>
<td>Plug the air hoses completely and correctly into the circlip and into the quick-release fastener screw (see Chapter 3.14). Proceed with inspection step no. 4.2.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No air escapes at the circlip and/or at the quick-release fastener screw.</td>
<td></td>
</tr>
<tr>
<td>4.2</td>
<td>Apply load to the seat suspension.</td>
<td>Air escapes at the active module.</td>
<td>Replace the active module (see Chapter 3.13). Proceed with inspection step no. 4.3.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The sensor module is airtight.</td>
<td></td>
</tr>
<tr>
<td>4.3</td>
<td>• Disconnect the electrical connection (C) between the control / air reservoir and the cable harness for seat suspension.</td>
<td></td>
<td>Proceed with inspection step no. 4.4.</td>
</tr>
<tr>
<td></td>
<td>• Measure the resistance at the contacts K10 and K6 in the socket of the cable harness of the seat suspension (STVB C):</td>
<td></td>
<td>Proceed with inspection step no. 4.5.</td>
</tr>
<tr>
<td></td>
<td>K10 (ground) Ω K6 (voltage 12 V at the electromagnet for 2/2)</td>
<td>= 8.8 Ω (± 10%) &lt;&lt; 8.8 Ω (R → 0) (short-circuit) &gt;&gt; 8.8 Ω (R → ∞) (interruption)</td>
<td></td>
</tr>
</tbody>
</table>
### 2.3 Troubleshooting – Locating the fault

<table>
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<tr>
<th>Step no.</th>
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</tr>
</thead>
<tbody>
<tr>
<td>4.4</td>
<td>• Measure the resistance at the contacts K10 and K5 in the socket of the cable harness of the seat suspension (STVB C):&lt;br&gt;K10 (ground) Ω K5 (voltage 12 V at the electromagnet for 3/2)&lt;br&gt;[= 28 , \Omega \pm (10%)]</td>
<td><a href="#">End of inspection.</a>&lt;br&gt;&gt;() <a href="#">Proceed with inspection step no. 4.6.</a></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Disconnect the electrical connection (F) between the cable harness for seat suspension and the cable harness for the energy bundle.&lt;br&gt;• Measure the resistance at the contacts K2 and K1 of the socket of the cable harness for the energy bundle (STVB F):&lt;br&gt;K2 (ground) Ω K1 (voltage 12 V at the electromagnet for 2/2)&lt;br&gt;[= 8.6 , \Omega (\pm 10%)]</td>
<td><a href="#">Replace the cable harness of the seat suspension (see Chapter 3.16).</a>&lt;br&gt;() <a href="#">Proceed with inspection step no. 4.7.</a></td>
<td></td>
</tr>
<tr>
<td>4.5</td>
<td>• Disconnect the electrical connection (F) between the cable harness for seat suspension and the cable harness for the energy bundle.&lt;br&gt;• Measure the resistance at the contacts K4 and K3 of the socket of the cable harness for the energy bundle (STVB F):&lt;br&gt;K4 (ground) Ω K3 (voltage 12 V at the electromagnet for 3/2)&lt;br&gt;[= 28 , \Omega \pm (10%)]</td>
<td><a href="#">Replace the cable harness of the seat suspension (see Chapter 3.16).</a>&lt;br&gt;() <a href="#">Proceed with inspection step no. 4.8.</a></td>
<td></td>
</tr>
</tbody>
</table>
### Troubleshooting – Locating the fault

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</table>
| 4.7      | • Disconnect the electrical connection (D) between the active module and the cable harness for the energy bundle. <br>• Measure the resistance at the pins P2 and P1 at the plug of the active module (STVB D/large): <br>  
  - P2 (ground) \( \Omega \)  
  - P1 (voltage 12 V at the electromagnet for 3/2)  
  
  \[ R = 8.6 \, \Omega \pm 10\% \]  
  
  \( \gg 8.6 \, \Omega \) (\( R \to \infty \)) (interruption) or \( \ll 8.6 \, \Omega \) (\( R \to 0 \)) (short-circuit)  
  
  Cable harness for the energy bundle is defective. Replace the energy bundle (see Chapter 3.15). | Replace the active module (see Chapter 3.13). |

| 4.8      | • Disconnect the electrical connection (E) between the active module and the cable harness for the energy bundle. <br>• Measure the resistance at the pins P2 and P1 at the plug of the active module (STVB E/small): <br>  
  - P2 (ground) \( \Omega \)  
  - P1 (voltage 12 V at the electromagnet for 2/2)  
  
  \[ R = 27.9 \, \Omega \pm 10\% \]  
  
  \( \gg 27.9 \, \Omega \) (\( R \to \infty \)) (interruption) or \( \ll 27.9 \, M\Omega \) (\( R \to 0 \)) short-circuit)  
  
  Cable harness for the energy bundle is defective. Replace the energy bundle (see Chapter 3.15). | Replace the active module (see Chapter 3.13). |
### 5 Inspection of the cable harness for seat suspension

**Preconditions for fault diagnosis:**
- See “Preconditions for fault diagnosis for each test”.
- Upper seat part removed.
- Fuse (Si = 15A) has been inspected and found to be OK.
- Sensor module, active module and compressor have been inspected and found to be OK.
- Disconnect the electrical connection (K) between the connector plug of the vehicle and the cable harness for seat suspension.

<table>
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</thead>
</table>
| 5.1      | • Disconnect the electrical connection (C) between the control / air reservoir and the cable harness for seat suspension.  
          • Bridge the contacts K10 and K1 in the socket of the cable harness of the seat suspension (STCB C) (voltage supply for control):  
          • Measure the resistance at the pins P1 and P2 at the plug of the vehicle (STVB K):  
            P1 (ground): Ω  
            P2 (voltage): Ω | < 1 Ω (R → 0) (pass)  
          >> 1 Ω (R → ∞) (cable break) | Proceed with inspection step no. 5.2.  
          Replace the cable harness of the seat suspension (see Chapter 3.16). |
| 5.2      | • Bridge the pins P6 and P8 in the plug of the cable harness for the seat suspension (STCB J) (pin assignment for the heater).  
          • Measure the resistance at the pins P3 and P6 at the plug of the vehicle (STVB K):  
            P3 (ground): Ω  
            P6 (voltage): Ω | < 1 Ω (R → 0) (pass)  
          >> 1 Ω (R → ∞) (cable break) | Proceed with inspection step no. 5.3.  
          Replace the cable harness of the seat suspension (see Chapter 3.16). |
## 2.3 Troubleshooting – Locating the fault

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</table>
| 5.3      | • Bridge the pins P6 and P7 in the plug of the cable harness for seat suspension (STCB J) (assignment for lumbar support).  
• Measure the resistance at the pins P3 and P6 at the plug of the vehicle (STVB K):  
  P3 (ground) Ω P5 (voltage) | < 1 Ω (R → 0) (pass)  
>> 1 Ω (R → ∞) (cable break) | Proceed with inspection step no. 5.4.  
Replace the cable harness of the seat suspension (see Chapter 3.16). |
| 5.4      | • Measure resistance between pins P1, P2, P4 and P5 in the cable harness plug for the seat suspension (STVB J), and the pins P12, P9, P10 and P11 in the plug of the vehicle (STVB K) (pin assignment for belt buckle contact and seat occupancy detection system):  
  P1 Ω P12  
P2 Ω P9  
P4 Ω P10  
P5 Ω P11 | < 1 Ω (R → 0) (pass)  
>> 1 Ω (R → ∞) (cable break) | Proceed with inspection step no. 5.5.  
Replace the cable harness of the seat suspension (see Chapter 3.16). |
| 5.5      | • Measure the resistance between pin P3 in the plug of the cable harness of the seat suspension (STVB J) and contact K9 in the socket of the cable harness of the seat suspension (STCB C) (fan for climate control system):  
  P3 Ω K9 | < 1 Ω (R → 0) (pass)  
>> 1 Ω (R → ∞) (cable break) | Proceed with inspection step no. 5.6.  
Replace the cable harness of the seat suspension (see Chapter 3.16). |
## Troubleshooting – Locating the fault

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</thead>
</table>
| 5.6     | • Bridge the pins P5 and P4 in the plug of the cable harness for seat suspension (STCB I) (assignment for height adjustment, UP signal).  
          • Measure the resistance at the contacts K11 and K17 in the socket of the cable harness of the seat suspension (STCB C): K11 (ground) Ω K17 (signal) | < 1 Ω (R → 0) (pass)  
          >> 1 Ω (R → ∞) (cable break)                                                                 | Proceed with inspection step no. 5.7.  
          Replace the cable harness of the seat suspension (see Chapter 3.16).                      |
| 5.7     | • Bridge the pins P5 and P6 in the plug of the cable harness for seat suspension (STCB I) (assignment for height adjustment, DOWN signal).  
          • Measure the resistance at the contacts K11 and K17 in the socket of the cable harness of the seat suspension (STCB C): K11 (ground) Ω K18 (signal) | < 1 Ω (R → 0) (pass)  
          >> 1 Ω (R → ∞) (cable break)                                                                 | Proceed with inspection step no. 5.8.  
          Replace the cable harness of the seat suspension (see Chapter 3.16).                      |
| 5.8     | • Measure resistance between pins P1, P1, P2 and P3 in the cable harness plug for the seat suspension (STVB I) and the contacts K15, K11 and K16 in the cable harness socket for the seat suspension (STVB C) (pin assignment for operating mode switch and seat occupancy detection system): P1 Ω P15  
          P2 Ω P11  
          P3 Ω P16                                                                                     | < 1 Ω (R → 0) (pass)  
          >> 1 Ω (R → ∞) (cable break)                                                                 | End of inspection.  
          Replace the cable harness of the seat suspension (see Chapter 3.16).                      |
### 6 Inspection of the control / air reservoir

**Preconditions for fault diagnosis:**
- See “Preconditions for fault diagnosis for each test”.
- The air hose has been inspected with regard to kinks and tightness and found to be OK.

<table>
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<tr>
<th>Step no.</th>
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<th>Troubleshooting</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1</td>
<td>• Apply load to the seat suspension.</td>
<td>Air escapes at the quick-release fastener. The air hose is not connected correctly.</td>
<td>Plug the air hose completely and correctly into the quick-release fastener (see Chapter 3.11). Proceed with inspection step no. 6.2.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No air escapes at the quick-release fastener.</td>
<td></td>
</tr>
<tr>
<td>6.2</td>
<td>• Apply load to the seat suspension.</td>
<td>Air escapes at the control / air reservoir. The control is airtight.</td>
<td>Replace control / air reservoir (see Chapter 3.11). Proceed with inspection step no. 6.3.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.3</td>
<td>• Apply load to the seat suspension.</td>
<td>The electrical connection between the cable harness for seat suspension and the control is not locked correctly.</td>
<td>The locking bracket must engage in the catcher of the plug (see Chapter 3.11).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The electrical connection is locked correctly.</td>
<td>End of inspection.</td>
</tr>
</tbody>
</table>
## Troubleshooting – Locating the fault

### 7 Deactivation of the emergency programme / reset to normal operation

**Preconditions for fault diagnosis:**
- See “Preconditions for fault diagnosis for each test”.
- The operation of the height adjustment has been inspected and found to be OK*.
- The pneumatic system has been inspected and found to be OK.
- The emergency programme is activated (two subsequent weight adjustment / levelling attempts have not been successful).

<table>
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</thead>
</table>
| 7.1      | • The activated emergency programme is reset to normal operation by means of a coded operation:  
• Do not apply any load to the seat. | | |
| 7.2      | • Pull / press the handle / switch for height adjustment upwards three times within 0.7 to 2 seconds according to the diagram shown on the right (**A**) and then immediately press the handle / switch for height adjustment downwards for 5 to 9 seconds according to the diagram shown on the right (**B**). | Depending on the adjusted operating mode, the deactivation will be acknowledged by the compressor being started once or several times. | If the levelling still does not to start automatically when load is applied to the seat, replace sensor module (see Chapter 3.9). |

A:  
B:  
\[ S = \text{seconds}, \ t = \text{time} \]
# Repair work

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3.1 Seat suspension – removal and installation

Note:
For the removal and installation of the seat suspension (1) at the vehicle, ask the vehicle manufacturer for the necessary assembly work to be carried out.

Removal and installation

1. Push the upper seat part (2) backwards over the fore/aft adjustment (4) as far as possible.

2. Mark the screw positioning diagram and unscrew two hexagon socket screws (3) at the front of the fore/aft adjustment (4).
   **Installation notes:**
   - Install the fore/aft adjustment (4) according to the marking.
   - Hexagon socket screws (3), 25 Nm.

3. Push the upper seat part (2) forwards over the fore/aft adjustment (4) as far as possible.

4. Mark the screw positioning diagram and unscrew two hexagon socket screws (3) at the rear of the fore/aft adjustment (4).
   **Installation notes:**
   - Install the fore/aft adjustment (4) according to the marking.
   - Hexagon socket screws (3), 25 Nm.

5. Mark the route of the cable harness of the upper seat part (6).

6. Mark the points where the cable harness of the upper seat part (6) is secured with four cable ties (5) and remove the cable ties (5).

7. Disconnect the electrical connection (I and J).
   **Installation note:**
   Run the cable harness of the upper seat part (6) and secure it with cable ties (5) according to the marking.

8. Lift the upper seat part (2) from the seat suspension (1).

9. Re-install the components in the reverse order of their removal.
3.2 Top cover – removal and installation

Removal and installation

1. Remove the upper seat part at the seat suspension and put it aside (see Chapter 3.1).
   **Notes:**
   - Cable ties at cable harness for upper seat part need not be removed and the electrical connections need not be disconnected.
   - Do not overstretch the cable harness for the upper seat part when putting it aside.

2. Knock out the expanding rivet (1).
   **Installation note:**
   Replace the expanding rivet (1).

3. Push the three cover lugs at the top cover (2) out of the seat suspension (3) and remove the top cover (2).

4. Re-install the components in the reverse order of their removal.
3.3 Bellows – removal and installation

Removal and installation

1 Remove the seat (see Chapter 3.1).
2 Pull out two bellows pins (6) from the upper suspension part (2).
3 Detach eight keyhole nubs (4) at the upper suspension part (2).

4 **WARNING** Damage!

In order to prevent tearing off the mushroom-shaped nub (5) when pulling it out, longitudinally stretch the mushroom-shaped nub (5). Insert an appropriate tool, e.g. a mandrel (size 3) into the mushroom-shaped nub (5) through the corresponding opening at the outside of the bellows (1) and slightly pull the bellows (1) against the mandrel. Pull out the stretched mushroom-shaped nub (5) at the upper suspension part (2).

Pull out six mushroom-shaped nub (5) at the upper suspension part (2).

**Note:**

In case of defective mushroom-shaped nubs (5), the bellows (1) has to be fastened by means of bellows pins (6).

5 Take off the keyhole nubs (4) from the lower part of the suspension (8).

6 Pull the bellows (1) in downward direction over the lower suspension part (8) and remove it.

**Installation note:**
The cable harness for vehicle connection is guided along the right side of the lower suspension part (8) and out under the bellows (1).

7 **Wire insert (3) is defective:**
Remove the wire insert (3) at the bellows (1).

**Installation notes:**
- Place the wire insert (3) in the middle fold of the bellows (1).
- The welding joint (arrow) of the wire insert (3) must be inside the bellows (1) on the right side.

8 Re-install the components in the reverse order of their removal.
3.4 Vertical shock absorber – removal and installation

Removal and installation

1. Remove the upper seat part at the seat suspension (see Chapter 3.1).

2. Remove the top cover (see Chapter 3.2).

3. Remove the bellows at the upper suspension part (see Chapter 3.3) and press it down.

4. **WARNING** Risk of crushing!

   Move the seat suspension to high position and secure it at the back between the swinging structure and the lower suspension part by means of suitable spacers.

5. Loosen the lock washer (5) at the stud (4).

6. Pull out the bolt (4) from the swinging structure (1) and the vertical shock absorber (2) and remove two washers (7).

   **Installation note:**
   Apply acid-free multi-purpose lubricant to the entire surface (F) of the stud (4).

7. Loosen the lock washer (3) at the stud (6).

8. Pull out the bolt (6) from the swinging structure (1) and the vertical shock absorber (2) and remove two washers (7).

   **Installation note:**
   Apply acid-free multi-purpose lubricant to the entire surface (F) of the stud (6).

9. Remove the vertical shock absorber (2) in upward direction.

   **Installation note:**
   When re-installing the vertical shock absorber (2), make sure the labelling is on top.

10. Re-install the components in the reverse order of their removal.
3.5 Locking mechanism for fore/aft isolator – removal and installation

Removal and installation

1. Remove the upper seat part at the seat suspension and put it aside (see Chapter 3.1).
   **Notes:**
   - Cable ties at cable harness for upper seat part need not be removed and the electrical connection need not be disconnected.
   - Do not overstretch the cable harness for the upper seat part when putting it aside.

2. Detach the bellows at the front and on the left of the upper suspension part (see Chapter 3.3) and press it down.

3. **WARNING** Risk of crushing!

   Move the seat suspension to the highest position and secure at the back between the swinging structure and the lower suspension part by means of suitable spacers.

4. Turn the handle for the fore/aft isolator (9) forwards.

5. Unscrew the rounded head screw (10).
   **Installation note:**
   Rounded head screw (10), 2.5 Nm.

6. Mark the drill hole for the clamping sleeve (11) and drive out the clamping sleeve (11).
   **Installation note:**
   Install the clamping sleeve (11) according to the marking.

7. Carefully pull off the linkage rod (3) at the handle for the fore/aft isolator (9).

8. Remove the handle of the fore/aft isolator (9) at the L-bar (2).
   **Installation note:**
   Apply acid-free multi-purpose lubricant to the L-bar (2) in the rotary motion area (F).

9. Mark the drill hole (arrow) for hanging in the tension springs (5, 8) and hang out the tension spring (8) at the upper suspension part (1) and the linkage rod (3).
   **Installation note:**
   Hang in the tension spring (8) according to the marking.

10. Detach the linkage rod (3) at the stop lever (4).
3.5 Locking mechanism for fore/aft isolator – removal and installation

11 Detach the tension spring (5) from the upper part of the suspension (1) and the stop lever (4).

**Installation note:**
Hang in the tension spring (5) according to the marking.

12 Unscrew the collar screw (6) and remove the washer (7) and stop lever (4).

**Installation notes:**
• Collar screw (6), 2.5 ± 0.5 Nm
• Apply acid-free multi-purpose lubricant to the side surfaces (F) of the stop lever (4).

13 Re-install the components in the reverse order of their removal.
3.6 Longitudinal horizontal shock absorber – removal and installation

Removal and installation

1. Remove the upper seat part at the seat suspension and put it aside (see Chapter 3.1).

   **Notes:**
   - Cable ties at cable harness for upper seat part need not be removed and the electrical connections need not be disconnected.
   - Do not overstretch the cable harness for the upper seat part when putting it aside.

2. Remove the top cover (see Chapter 3.2).

3. Remove the bellows from the front upper suspension part (see Chapter 3.3).

4. **WARNING** Risk of crushing!

   Move the seat suspension to the highest position and secure at the back between the swinging structure and the lower suspension part by means of suitable spacers.

5. Lock the fore/aft isolator.

6. Lift off the longitudinal horizontal shock absorber (1) at the tube of the swinging structure (2).

   **Installation note:**
   Press the longitudinal horizontal shock absorber (1) onto the tube of the swinging structure (3) without using driving or hammering tools.

7. Loosen the lock washer (5) at the axle (6) and remove the washer (4).

8. Pull down the longitudinal horizontal shock absorber (1) at the axle (6) of the upper suspension part (3).

   **Installation note:**
   Apply acid-free multi-purpose lubricant to the mounting surfaces (F) of the longitudinal horizontal shock absorber (1).

9. Re-install the components in the reverse order of their removal.
3.7 Fore/aft isolator unit – removal and installation

Removal and installation

1 Remove the upper seat part at the seat suspension and put it aside (see Chapter 3.1).

Notes:
• Cable ties at cable harness for upper seat part need not be removed and the electrical connections need not be disconnected.
• Do not overstretch the cable harness for the upper seat part when putting it aside.

2 Remove the top cover (see Chapter 3.2).

3 Remove the bellows at the upper suspension part (see Chapter 3.3) and press it down.

4 \textbf{WARNING} Risk of crushing!

Move the seat suspension to the highest position and secure at the back between the swinging structure and the lower suspension part by means of suitable spacers.

5 Longitudinal horizontal shock absorber is defective:
Replace the longitudinal horizontal shock absorber (see Chapter 3.6).

6 Longitudinal horizontal shock absorber is not defective:
Lever out the longitudinal horizontal shock absorber from the tube of the swinging structure (see Chapter 3.6).

7 Turn the handle of the fore/aft isolator (9) backwards to unlock the locking mechanism of the fore/aft isolator.

8 Undo the two collar screws (8).

\textbf{Installation notes:}
• Collar screws (8), 25 \pm 5 Nm.
• During installation, the tension spring (5) is screwed on under tension.
• Apply acid-free multi-purpose lubricant to the entire surface (F) of the collar screws (8).

9 Push the upper suspension part (1) forwards until the right (arrow) and left cut-outs in the guiding rail (2) are located at the same height as the front rollers.
3.7 Fore/aft isolator unit – removal and installation

10 Lift out the upper suspension part (1) over the front rollers and lay it to the back.
   **Installation note:**
   Apply acid-free multi-purpose lubricant to the side surfaces (F) of two guiding rails (2) of the front rollers.

11 Press the clamp (7) off at the swinging structure (3).
   **Installation note:**
   Apply acid-free multi-purpose lubricant to the clamp (7) on the running surface (F) of the swinging structure.

12 Remove the buffer (4) and two bushings (6) from the legs of the tension spring (5).

13 Remove the tension spring (5) from the clamp (7).

14 **Buffer (11) is defective:**
   Bore out the rivet head and drive out the blind rivet (10), remove buffer (11).

15 Re-install the components in the reverse order of their removal.
3.8 Compressor – removal and installation

Removal and installation

\[ \text{ATTENTION} \text{ Leak test!} \]

Perform a hydrostatic test of the seat suspension upon installation of the compressor (1). To do this, apply a 60 kg load to the seat suspension for 24 hours. The lowering within this time must not exceed 15 mm.

1. Remove the seat (see Chapter 3.1).

2. Remove the bellows at the lower suspension part (see Chapter 3.3). Push it upwards and fix it in this position.

\[ \text{WARNING} \text{ Risk of crushing!} \]

Move the seat suspension to the highest position and secure at the back between the swinging structure and the lower suspension part by means of suitable spacers.

\[ \text{WARNING} \text{ The pressure in the pneumatic system may cause injury!} \]

Vent the pneumatic system before removing the compressor (1).

5. Mark and remove two right-angle plugs (8).

**Installation notes:**
- Reconnect the electrical connection according to the marking.
- When establishing the electrical connection, the cable output of the compressor cable (7) at the right-angle plug (8) must point downwards.

6. Mark the points where the compressor (1) is secured to the lower suspension part (5) with two cable ties (6) and remove the cable ties (6).

**Installation notes:**
- Run the cable ties (6) through the corresponding cut-outs in the lower part of the suspension (5) in such a way that the locking head of the cable ties (6) points forwards (arrow).
- Loosely close the cable ties (6) in such a way that the compressor (1) can still be moved.
- Align the compressor (1) so a collision with the swinging structure (9) is avoided and then use pliers to tighten the locking head of the cable ties (6) to 360 ± 30 N in the tensile direction.
3.8 Compressor – removal and installation

7 Pull off the hose nozzle (2) at the connection (10) of the compressor (1) and push it backwards at the air hose (3).

**ATTENTION** Do not damage the connection (10) at the compressor (1)!

Do not use a screwdriver or similar tools to lift off the air hose (3) at the connection (10) of the compressor (1).

8 Cut off the air hose (3) with a sharp knife in a clean and straight way directly behind the connection (10) of the compressor (1).

**Notes:**
- The air hose (3) can be cut off only once.
- After cutting off, mark the air hose (3) in order not to cut it several times.

**Installation note:**
Push the air hose (3) completely onto the connection (10) of the compressor (1).

9 Pull off the hose nozzle (2) at the air hose (3).

10 Remove the compressor (1) in forward direction and remove the rest of the hose at the connection (10).

11 Remove the washer (4) from the lower suspension part (5).

**Installation note:**
Place the pad (4) between the lower part of the suspension (5) and the compressor (1) in such a way that the compressor (1) cannot come into contact with the lower part of the suspension (5).

12 Re-install the components in the reverse order of their removal.
3.9 Sensor module – removal and installation

Removal and installation

**ATTENTION** Leak test!

Hydraulic test of the seat suspension should be performed upon installation of the sensor module (1). To do this, apply a 60 kg load to the seat suspension for 24 hours. The lowering within this time must not exceed 15 mm.

1. Remove the upper seat part at the seat suspension and put it aside (see Chapter 3.1).
   **Notes:**
   - Cable ties at cable harness for upper seat part need not be removed and the electrical connections need not be disconnected.
   - Do not overstretched the cable harness for the upper seat part when putting it aside.

2. Remove the top cover (Chap. 3.2).

3. Remove the bellows at the upper suspension part (see Chapter 3.3) and press it down.

4. **WARNING** Risk of crushing!

   Move the seat suspension to the highest position and secure at the back between the swinging structure and the lower suspension part by means of suitable spacers.

5. **WARNING** The pressure in the pneumatic system may cause injury!

   Vent the pneumatic system before removing the sensor module (1).

6. Unscrew two hexagon nuts (9).
   **Installation notes:**
   - Hexagon nut (9), 25 Nm.
   - Make sure not to squeeze the webbing (8) when tightening the hexagon nuts (9).

7. Pull out the plate (10) at the lower suspension part (3) while holding the webbing (8) in position and slowly guiding it upwards to the sensor module (1).

8. Pull out the plate (10) at the webbing (8).

9. Push the retaining ring (11) of the quick coupling toward the sensor module and pull out the air hose (7) from the quick coupling. **Installation note:** Completely push the air hose (7) with pressure into the quick coupling.

10. Check the air hose (7) for damage (scoring).
3.9 Sensor module – removal and installation

11 Air hose (7) with scoring:
Cut off the air hose (7) with a sharp knife in a clean and straight way directly behind the scoring.

Notes:
• The air hose (7) can be cut off only once.
• After cutting off, mark the air hose (7) in order not to cut it several times.

12 Mark the point where the cable harness of the seat suspension (5) is fastened to the sensor module (1) by means of a cable tie (6) and remove the cable tie (6).

13 Disconnect the electrical connections (A) and (B) at the sensor module (1).

14 Unscrew two hexagon nuts (4).

Installation note:
Hexagon nut (4), 25 Nm.

15 Pull out the sensor module (1) at the upper suspension part (2) and remove it in downward direction.

16 Re-install the components in the reverse order of their removal.
3.10 Air spring – removal and installation

Removal and installation

⚠️ ATTENTION Leak test!

Hydraulic test of the seat suspension should be performed upon installation of the air spring (1). To do this, apply a 60 kg load to the seat suspension for 24 hours. The lowering within this time must not exceed 15 mm.

1. Remove the seat (see Chapter 3.1).
2. Remove the bellows at the upper suspension part (see Chapter 3.3) and press it down.
3. ⚠️ WARNING Risk of crushing!
   - Move the seat suspension to the highest position and secure at the back between the swinging structure and the lower suspension part by means of suitable spacers.
4. ⚠️ WARNING The pressure in the pneumatic system may cause injury!
   - Vent the pneumatic system before removing the air spring (1).
5. Pull the catch spring (7) out of the air spring (1).
6. Pull the quick couplings (3) of the air hoses (4, 5) out of the air spring (1).

   **Installation notes:**
   - First, plug the catch spring (7) into the air spring (1) and then plug the quick couplings (3) into the air spring (1) with an audible click.
   - **Connection at the front (6):**
     - Air hose (5) between air spring and the connection of the air distributor at the front.
   - **Connection at the back (2):**
     - Air hose (4) between air spring and the connection of the air distributor at the back.
7. Undo the countersunk screw (10) from the air spring (1).

   **Installation notes:**
   - Countersunk screw (10), 6 Nm.
   - The internal thread collar (arrow) at the bottom of the air spring (1) must lie flush on the cone (arrow) in the lower suspension part (9).
8. Turn the air spring (1) by 90° until the bayonet catch fits through the longitudinal hole in the swinging structure (8).
3.10 Air spring – removal and installation

9 Press the air spring (1) down and pull out of the swinging structure (8).

10 Remove the air spring (1) from the seat suspension.

**Installation note:**
The step (11) at the bottom of the air spring (1) must snap in the cut-out on the lower part of the suspension (9).

11 Re-install the components in the reverse order of their removal.
Removal and installation

⚠️ ATTENTION Leak test!

The hydraulic test of the seat suspension should be performed upon installation of the control / air reservoir (1). To do this, apply a 60 kg load to the seat suspension for 24 hours. The lowering within this time must not exceed 15 mm.

1 Remove the upper seat part at the seat suspension and put it aside (see Chapter 3.1).

**Notes:**
- Cable ties at cable harness for upper seat part need not be removed and the electrical connections need not be disconnected.
- Do not overstretche the cable harness for the upper seat part when putting it aside.

2 Remove the top cover (Chap. 3.2).

3 Remove the bellows at the upper suspension part (see Chapter 3.3) and press it down.

4 ⚠️ WARNING Risk of crushing!

Move the seat suspension to the highest position and secure at the back between the swinging structure and the lower suspension part by means of suitable spacers.

5 ⚠️ WARNING The pressure in the pneumatic system may cause injury!

Vent the pneumatic system before removing the control / air reservoir (1).

6 Unlock the bracket (13) at the catcher (12) of the connector (11) and disconnect the electrical connection between the cable harness for seat suspension (5) and the control / air reservoir (1).

7 Mark the point where the air hose (6) and cable harness of the seat suspension (5) are bundled by means of cable ties (16), and remove the cable ties (16).

8 Unscrew the quick-release fastener screw (7) from the quick-release fastener nut (8).
9 **ATTENTION** Damage! Take care not to damage the air hose (6).

Bend open the retaining ring (9) at the opening and pull it off at the air hose (6).

**Note:**
The quick fastener coupling (14) is preassembled at the new control / air reservoir (1).

**Installation notes:**
- Pull off the existing protective cap (15) at the quick-release fastener screw (7).
- Insert the air hose (6) into the quick-release fastener screw (7) as far as possible, then pull it back approx 1 mm.
- **Quick fastener coupling (14) is not preassembled at the new control / air reservoir (1):** Push the air hose (10) completely onto the mandrel profile (arrow) of the quick-release fastener nut (8).

10 Bore out the rivet head and drive out the blind rivet (4).

**Installation note:**
The control / air reservoir (1) is riveted onto the upper suspension part (2) from below.

11 Detach the control (1) at the upper suspension part (2) and remove it.

12 Pull off the sealing ring (3) at the control (1).

13 Re-install the components in the reverse order of their removal.

**Note:**
After installation of the new programmed control / air reservoir (1), a calibration with the sensor module has to be carried out (learning program).

Pull the handle for height adjustment quickly upwards three times *(within 2 seconds)* with the seat being empty.

Then *(within the next second)*, press the handle for height adjustment down for exactly 3 seconds. The completed calibration with the sensor module is acknowledged by the compressor being started twice. If this does not happen, the process has to be repeated.
3.12 Cable harness for vehicle connection – removal and installation

Removal and installation

1. Remove the seat (see Chapter 3.1).

2. Remove the bellows at the upper suspension part (see Chapter 3.3) and press it down.

3. Disconnect the electrical connection between the plug of the cable harness for the seat suspension (5) and the socket of the cable harness for vehicle connection (4).

4. Mark the points where the cable harness of the vehicle connection (1) is fastened on the upper part of the suspension (3) with corrugated pipe support and with cable ties with bracket at the lower part of the suspension (2) and remove the cable harness of the vehicle connection (1).

**Installation note:**
The cable harness for vehicle connection (1) is guided out of the seat suspension between the bellows and the lower suspension part (2) at the rear on the right.

5. Re-install the components in the reverse order of their removal.
### 3.13 Active module – removal and installation

#### Removal and installation

**Note:**
For the removal and installation of the active module at the vehicle, ask the vehicle manufacturer for the necessary assembly work to be carried out.

⚠️ **ATTENTION** Leak test!

Perform a hydraulic test of the seat suspension upon installation of the active module (1). To do this, apply a 60 kg load to the seat suspension for 24 hours. The lowering within this time must not exceed 15 mm.

1. Remove the active module (1) in the driving cab (see vehicle manufacturer’s manual).

2. **WARNING** The pressure in the pneumatic system may cause injury!

Vent the pneumatic system before removing the active module (1).

3. Mark the screw positioning diagram at the adapter plate (2) and unscrew three countersunk screws (3) at the active module (1).

**Installation notes:**
- Countersunk screw (3), 10 Nm.
- Screw the active module (1) tightly onto the adapter plate (2) according to the marking.

4. Unscrew two rounded head screws (9).

**Installation note:**
Rounded head screw (9), 0.4 Nm.

5. Disconnect the electrical connection between the connector plug (8) and the active module (1) and remove the seal (5).

6. Disconnect the electrical connection between the connector plug (7) and the active module (1) and remove the seal (6).

7. Press the circlip (12) back at the elbow (4) and pull the air hose (10) out of the elbow (4).

**Installation note:**
Insert the air hose (10) into the circlip (12) of the elbow (4) as far as possible.

8. Unscrew the quick-release fastener screw (13).

9. **ATTENTION** Damage!

Take care not to damage the air hose (11).

Bend open the retaining ring (14) at the opening (arrow) and pull it off at the air hose (11).
3.13 Active module – removal and installation

10 Pull off the quick-release fastener screw (13) at the air hose (11).

**Installation notes:**
- Pull off the existing protective cap (15) at the quick-release fastener screw (13) which is preassembled at the new active module (1).
- Insert the air hose (11) into the quick-release fastener screw (13) as far as possible, then pull it back approx. 1 mm.
- Quick-release fastener screw, 5 Nm

11 Remove the active module (1).

12 Re-install the components in the reverse order of their removal.
3.14 Air distributor – removal and installation

Removal and installation

⚠️ ATTENTION Leak test!

Perform a hydraulic test of the seat suspension upon installation of the air distributor (1). To do this, apply a 60 kg load to the seat suspension for 24 hours. The lowering within this time must not exceed 15 mm.

1. Remove the seat (see Chapter 3.1).

2. Remove the bellows at the lower suspension part (see Chapter 3.3), push it upwards and fix it in this position.

3 ⚠️ WARNING Risk of crushing!

Move the seat suspension to the highest position and secure at the back between the swinging structure and the lower suspension part by means of suitable spacers.

4 ⚠️ WARNING The pressure in the pneumatic system may cause injury!

Vent the pneumatic system before removing the air distributor (1).

5. Remove the air hose (12) from the compressor (8) (see Chapter 3.8).

6. Remove the air hoses (13 and 14) from the air spring (see Chapter 3.10).

7. Disconnect the electrical connection between socket (17) and plug (5).

8. Remove the screw (21) from the air distributor (1) and remove the plug (5) from the air distributor (1).

**Installation note:**
Screws (20), 3.5 ± 0.5 Nm


**Installation note:**
Countersunk screw (13), 10 ± 2 Nm

10. Mark three quick-release fastener screws (9, 10, 16) and unscrew them from the air distributor (1).

11 ⚠️ ATTENTION Damage!

Take care not to damage the air hoses (3, 6, 7).

Bend open the retaining ring (20) at the opening (arrow) and pull it off the air hoses (3, 6, 7).
3.14 Air distributor – removal and installation

12 Pull off the quick-release fastener screws (9, 10, 16) at the air hoses (3, 6, 7).

**Installation notes:**
- Pull off the existing protective caps (18) at the quick-release fastener screws (9, 10, 16) which are preassembled at the new air distributor (1).
- Insert the air hoses (3, 6, 7) into the quick-release fastener screws (9, 10, 16) as far as possible, then pull it back approx. 1 mm.

13 Press back the circlip (15) at the air distributor (1) and pull the air hose (2) out of the air distributor (1).

**Installation note:**
Insert the air hose (2) into the circlip (15) of the air distributor (1) as far as possible.

14 Pull the air hoses (12, 13, 14) out of the aperture in the lower suspension part (9) and remove them together with the air distributor (1).

**Installation notes:**
- Before installation of the new air distributor (1), push the new air hose (12) completely onto the mandrel profile (22) of the new air distributor (1).
- Pull off the existing protective caps at the air hoses (12, 13, 14) and at the circlip (15).

15 Re-install the components in the reverse order of their removal.
### 3.15 Cable harness for energy bundle – removal and installation

**Removal and installation**

⚠️ **ATTENTION** Leak test!

Perform a hydraulic test of the seat suspension upon installation of the energy bundle (1). To do this, apply a 60 kg load to the seat suspension for 24 hours. The lowering within this time must not exceed 15 mm.

1. Remove the seat (see Chapter 3.1).

2. Remove the bellows at the lower suspension part (see Chapter 3.3), push it upwards and fix it in this position.

3. ⚠️ **WARNING** The pressure in the pneumatic system may cause injury!

   Vent the pneumatic system before removing the air distributor (1).

4. Remove the connector plugs (10 and 11) at the active module (see Chapter 3.13).

5. Remove the air hose (8 and 9) from the active module (see Chapter 3.13).

6. Disconnect the electrical connection between the socket (5) and the plug (6).

7. Remove the air distributor (7) from the lower suspension part (2) (see Chapter 3.14).

8. Remove the air hose (3 and 4) from the air distributor (7) (see Chapter 3.14).

9. Remove the energy bundle (1) from the lower part of the suspension (2).

10. Re-install the components in the reverse order of their removal.
3.16 Cable harness for seat suspension – removal and installation

Removal and installation

1. Remove the upper seat part at the seat suspension (see Chapter 3.1).

2. Remove the top cover (see Chapter 3.2).

3. Remove the bellows at the upper suspension part (see Chapter 3.4) and press it down.

4. **WARNING** Risk of crushing!
   Move the seat suspension to the highest position and secure at the back between the swinging structure and the lower suspension part by means of suitable spacers.

5. **WARNING** The pressure in the pneumatic system may cause injury!
   Vent the pneumatic system before removing the cable harness for seat suspension (1).

6. Remove the control / air reservoir and put it aside (see Chapter 3.11).
   **Note:** The compressed-air hose and the electrical connection do not have to be removed from the control / air reservoir.

7. Disconnect two electrical connections (A and B) at the sensor module (5) and remove two cable ties (see Chapter 3.9).

8. Disconnect two electrical connections (G and H) at the compressor (see Chapter 3.8).

9. Disconnect the electrical connection (K) at the cable harness for vehicle connection (see Chapter 3.12).

10. Disconnect the electrical connection (C) at the control / air reservoir (see Chapter 3.11).

11. Remove the cable tie (5) and disconnect the air hose to the control / air reservoir at the quick-release fastener (see Chapter 3.11).

12. Remove the air distributor at the lower part of the suspension and disconnect the electrical connection (F) (see Chapter 3.14).

13. Remove the plug (8) at the air distributor (see Chapter 3.14).

14. Pull off two air hoses (9) at the air distributor (see Chapter 3.14).
3.16 Cable harness for seat suspension – removal and installation

15 Mark the points where the cable harness (1) is attached to the seat suspension.
   • 2 Corrugated pipe supports (10)
   • 3 Cable tie (5)
   • 2 cable ties with brackets (6)
   • 1 push mount tie with wings (4)

16 Remove the corrugated pipe support (10) and cable ties (4, 5 and 6).

17 Bore out four rivet heads (11) and drive out the remaining blind rivets at the holding plates (2, 3) and at the upper suspension part (12).

18 Lay the plugs (I and J) with the angle plates (2, 3) down.

19 Bore out the rivet head (13) and drive out the remaining blind rivet at the U-shaped profile (14) and at the upper suspension part (12).

20 Detach the U-shaped profile (14) at the upper suspension part (12) and lay it down with the cable harness.

21 Remove the cable harness from the seat suspension.

22 Re-install the components in the reverse order of their removal.