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Preface

Notes on these instructions

This repair manual includes information and instructions on how to perform repair work on the GRAMMER Seat MSG 75 of the following seat models:

- Driver's seat MSG 75G(L)/511 (narrow cushion and short back),
- Driver's seat MSG 75G(L)/521 (wide seat cushion and short back),
- Driver's seat MSG 75G(L)/522 (wide seat cushion and long back).
- Driver's seat MSG 75E(L)/731 and 741.

The repair of the upper seat parts 731 and 741 is described in the repair manual for the upper seat part S721 - S742, to which a reference is made, if required (see repair manual for upper seat part).

Example:
The cable harness for the upper seat part has been inspected and found to be OK (see repair manual for upper seat part).

The driver's seat of the MSG 75G(L)/521 type forms the basis for illustration. In the case of technical deviations in work procedures (due to different seat models), 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. This work is described in separate chapters and shall be carried out without the preparatory steps described there.

At the beginning of each description for repair you will find an overview diagram. All parts included in the overview diagrams within one chapter are consecutively numbered starting with "1". Each component is referred to by the same number throughout the document.
With the help of these overview diagrams, an experienced technician will gain a quick overview.

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

The description of the work steps refers to the dismounted seat. Depending on the individual installation situation, some work may also be performed while the seat remains installed. For this reason, check the environment of the installed seat for this possibility before starting work. The safety instructions of the specific vehicle manufacturer and those stated in Chapter 1.1 of this repair manual must be strictly observed.

This repair manual also includes some information on optional extras and delivery options, in case further explanation is required. Since the scope of delivery depends on the specific customer order, the actual seat design may deviate from the descriptions and illustrations in this manual.

If not stated otherwise, the directional indications "front, back" and "right, left" refer to the installed seat 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. A navigation line was entered below the heading for this. This navigation line includes the chapter titles and it allows the user to jump directly to these chapters after the corresponding hyperlinks have been set.

Basic information about the seat

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.

Cables and air hoses may only be fastened with cable ties at the defined spots by hand (loose). Make sure that 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.

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

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, gained through regular training. 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 or damage to the seat resulting from improperly performed work, all information and instructions, in particular the safety instructions stated in Chapter 1.1, 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 a seat 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 seats 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.

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1 Description

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

1.1 Safety instructions

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

2 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 of the work to be carried out.

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

4 Before starting repair work
- disconnect the battery from power supply,
- disconnect the seat switch from the vehicle supply network
- for seats with integrated seat heater, disconnect the heater switch from the vehicle supply network.
- Take care with the backrest frame - it may jerk forward and cause injury.
  Prior to installation or removal or any repair work of the seat, the backrest frame has to be folded forwards by operating the handle for backrest adjustment.
  Do not put your hands in the area of moving parts while operating the handle for backrest adjustment. **Risk of injury!**

1.1 Safety instructions

5 Prior to working at the pneumatic system, reduce the pressure in the pneumatic system to 0 bar.

WARNING Hydrostatic test!
The hydraulic test of the seat suspension should be performed after having worked on the pneumatic system. To do this, apply 60 kg load to the seat suspension for 24 hours without actuating the seat occupancy detection system. The lowering within this time must not exceed 15 mm.

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 at the front middle of the lower part of the suspension or at the rear left of the backrest frame (delivery option).

The rating plate shows the following information (example):

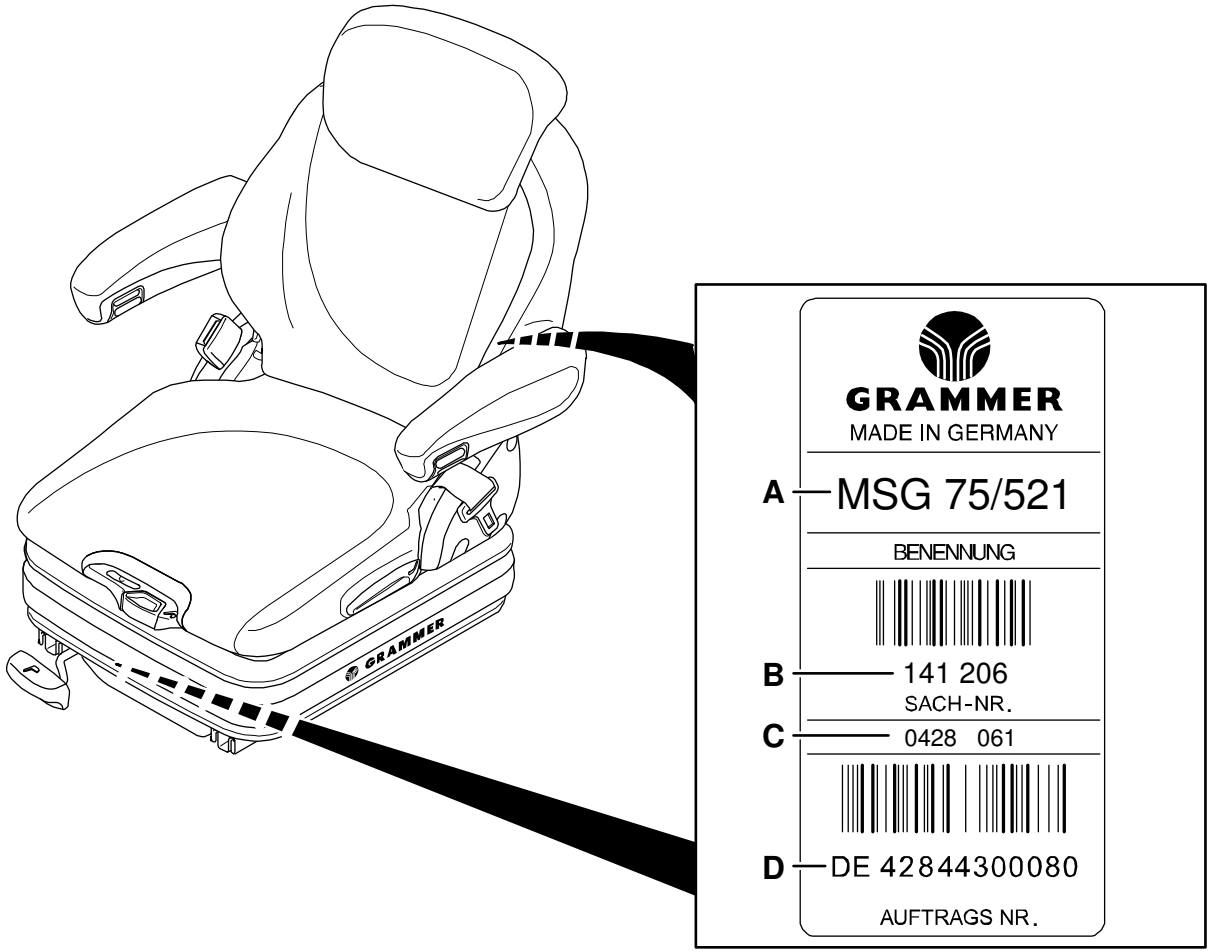
(A) **BENENNUNG (DENOMINATION)**
= MSG 75/521

(B) **SACHNUMMER (INVENTORY No.)**
= 141 206

(C) **Year** / **CW** / **Assembly** = 0428 061
- Year of manufacture = 04 (2004)
- Built in week = 28 (July)
- Assembly = 061

(D) **AUFTRAGS NR. (ORDER NO.)** = DE 42844300080

Note:
The inventory no. (B) is always to be quoted when orders are placed.



2 Diagnosis

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2.1 Overview of components

Controls and indicators

(1) Knob for lumbar support

(2) Armrest

(3) Knob for armrest angle adjustment

(4) Belt roller

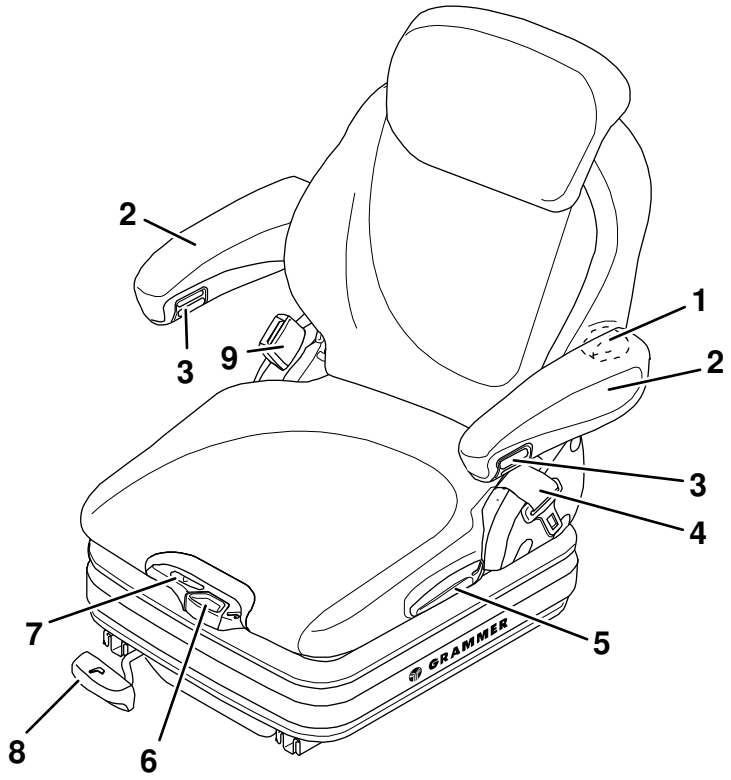
(5) Handle for backrest adjustment
Note:
MSG 75/511 seat type (narrow cushion) is equipped with a loop for backrest adjustment.

(6) Handle for level adjustment

(7) Seat level indicator

(8) Handle for fore/aft adjustment

(9) Belt buckle



MeDok-865

Pneumatic connecting diagram (MSG 75G)

(1) Housing with control and seat level indicator

(2) Compressor

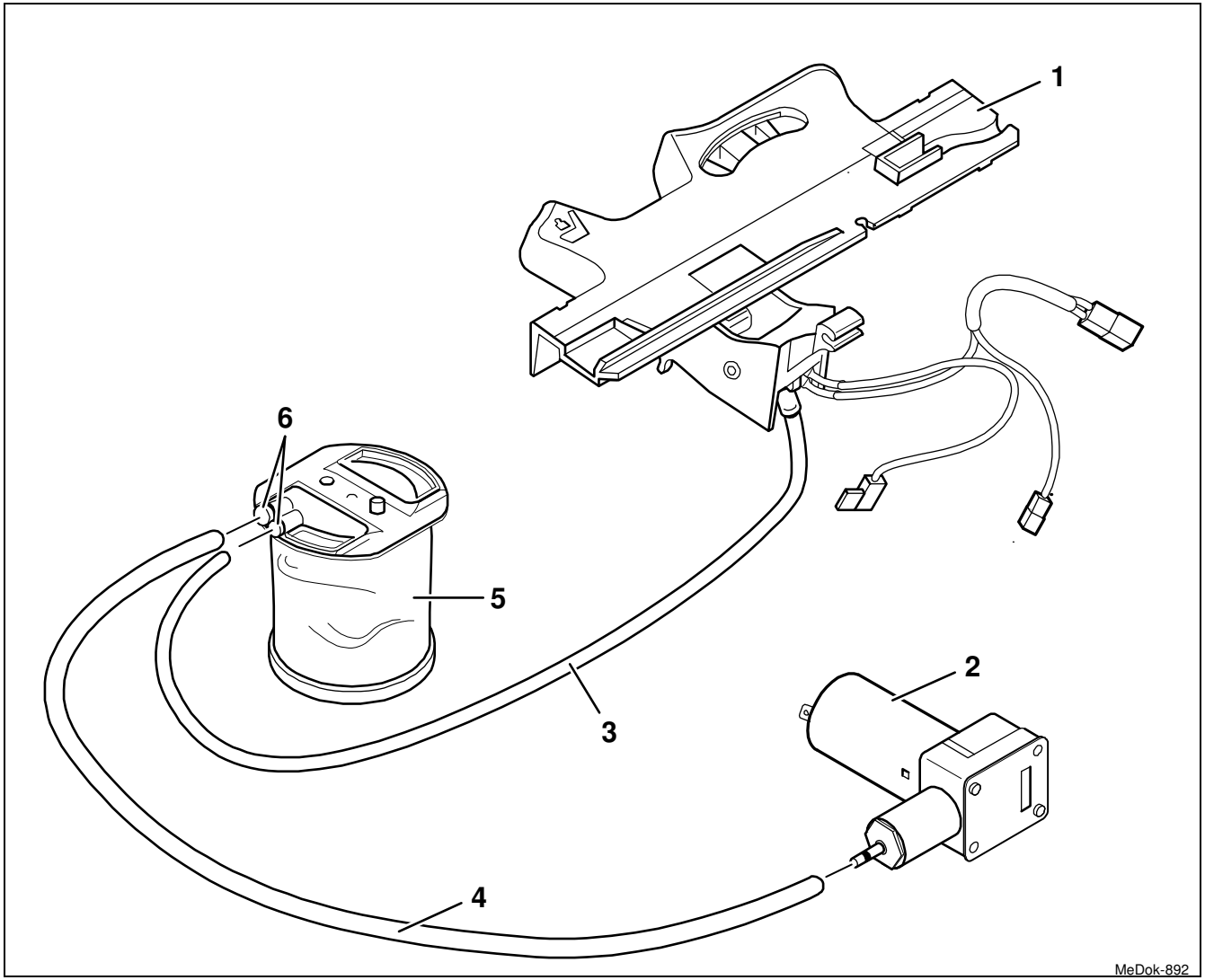
(3) Air hose
Note:
Insert length: A = 10 mm.

(4) Compressed-air hose
Note:
Insert length: A = 10 mm.

(5) Air spring

(6) Retaining ring of the quick coupling

WARNING Damage! Please pay attention to the instructions given in Chapter 3.22 when pulling the hoses out of the retaining rings of the quick coupling!



Pneumatic connecting diagram (MSG 75GL)

(1) Housing with control and seat level indicator

(2) Additional air supply

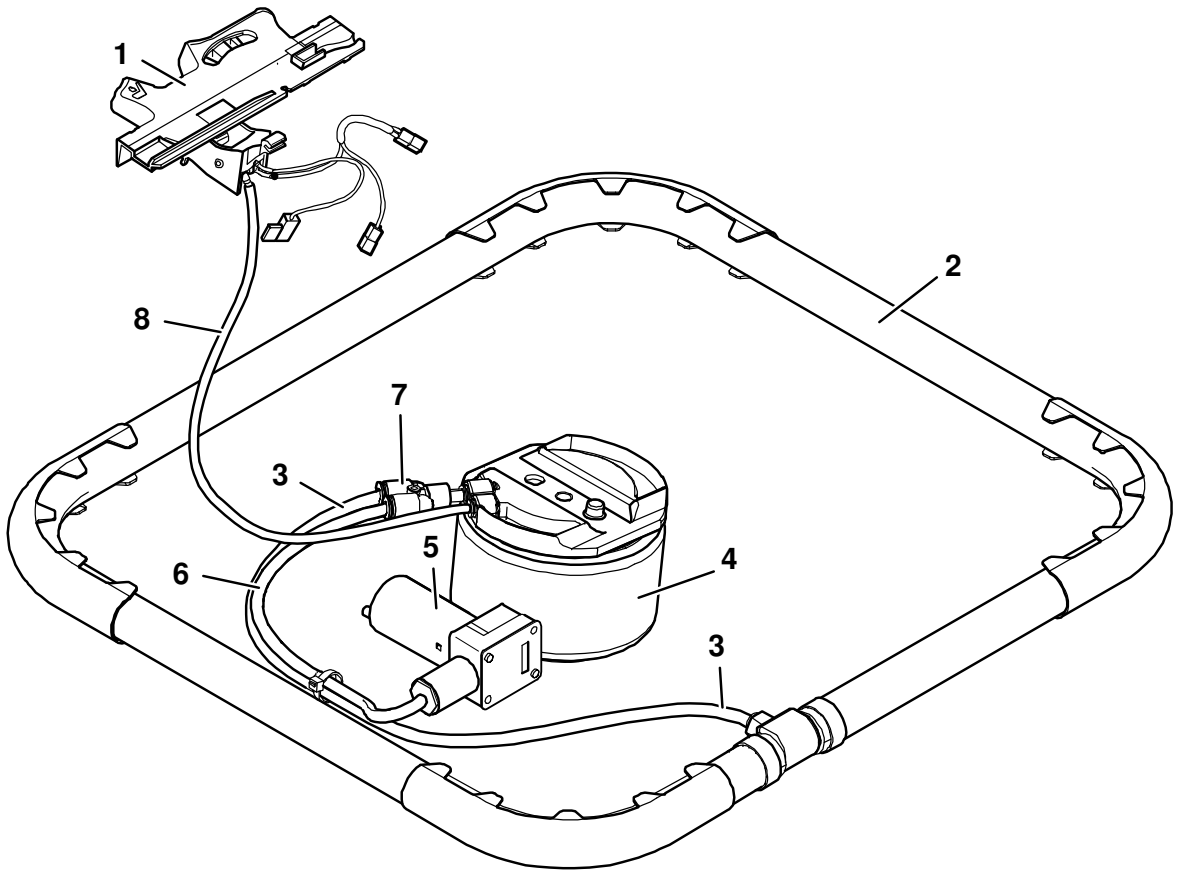
(3) Compressed-air hose between quick-release coupling and additional air supply

(4) Air spring

(5) Compressor

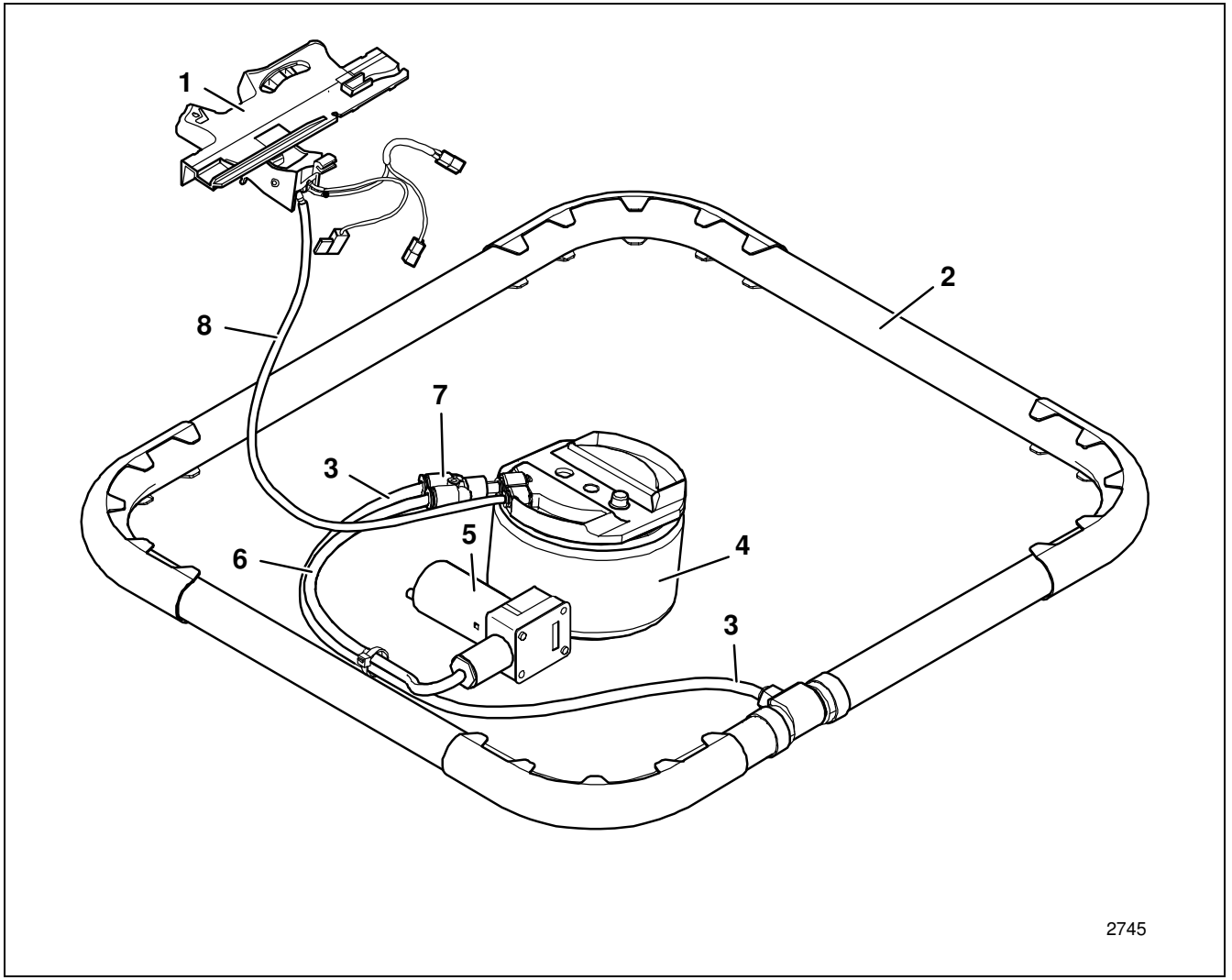
(6) Compressed-air hose between quick-release coupling and compressor

(7) Quick-release coupling



(8) Air hose between air spring and valve for level adjustment

WARNING Damage! Please pay attention to the instructions given in Chapter 3.22 when pulling the hoses out of the retaining rings of the quick coupling!



Pneumatic connecting diagram (MSG 75E)

(1) Compressor

(2) Compressed-air hose between air spring and compressor

(3) Outlet valve of the control

(4) Control

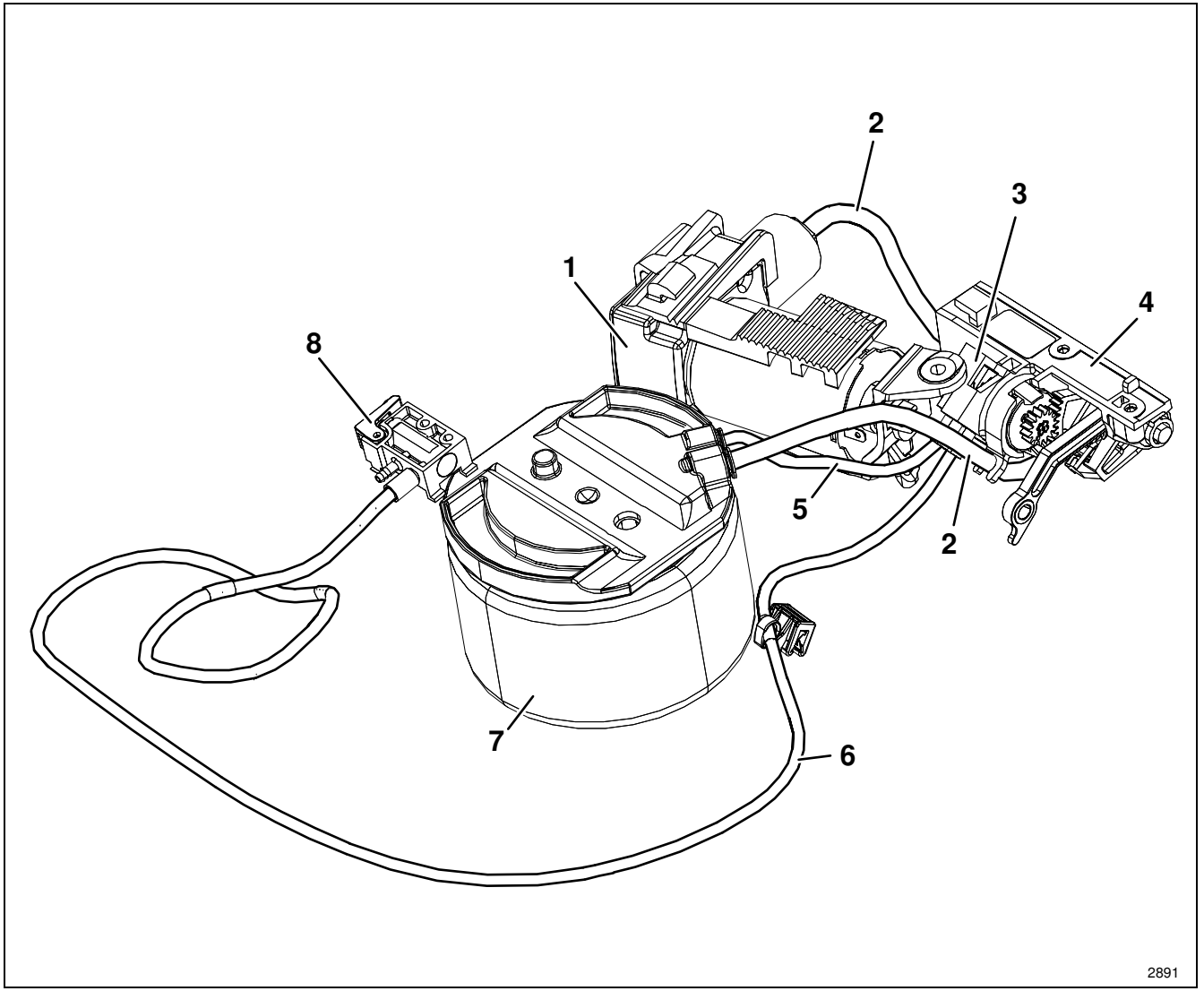
(5) Compressed-air hose between control and air spring

(6) Compressed-air hose between control and outlet valve of the seat occupancy detection system

(7) Air spring

(8) Outlet valve of the seat occupancy detection system

WARNING Damage! Please pay attention to the instructions given in Chapter 3.22 when pulling the hoses out of the retaining rings of the quick coupling!



Pneumatic connecting diagram (MSG 75EL)

(1) Additional air supply

(2) Compressed-air hose between additional air supply and air spring

(3) Compressor

(4) Compressed-air hose between air spring and compressor

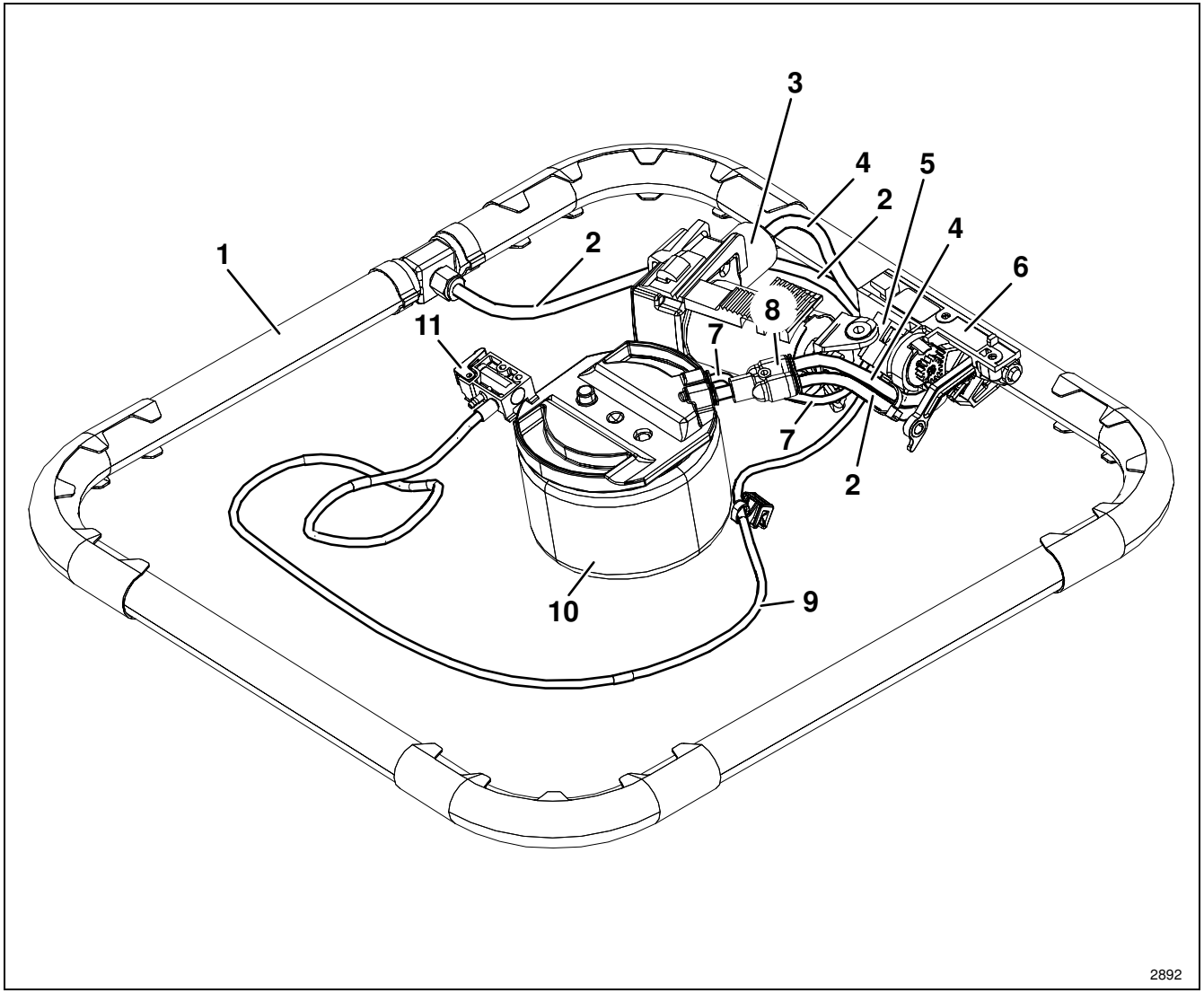
(5) Outlet valve of the control

(6) Control

(7) Compressed-air hose between control and air spring

(8) Quick-release coupling

(9) Compressed-air hose between control and outlet valve of the seat occupancy detection system

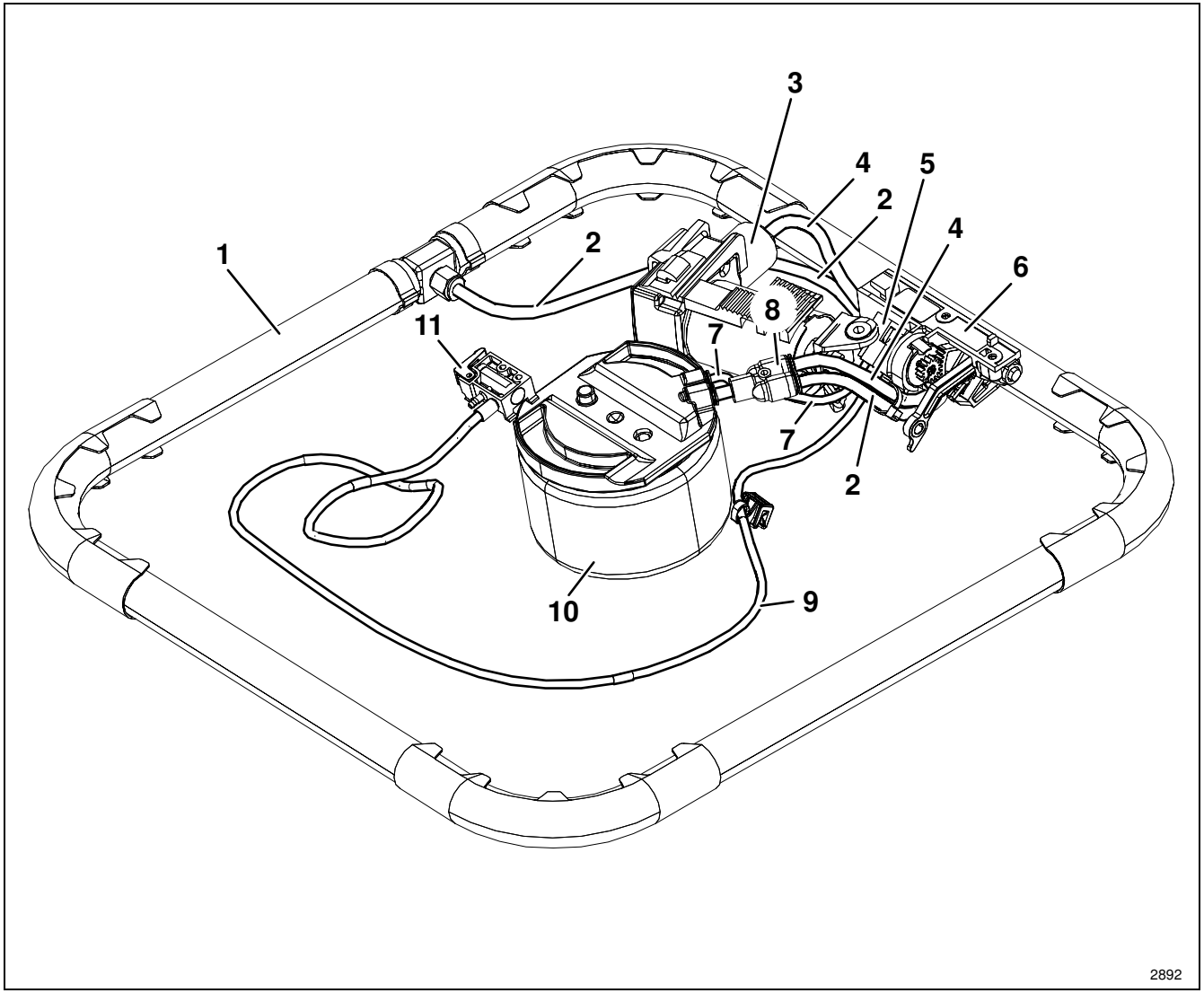


2.1 Overview of components

(10) Air spring

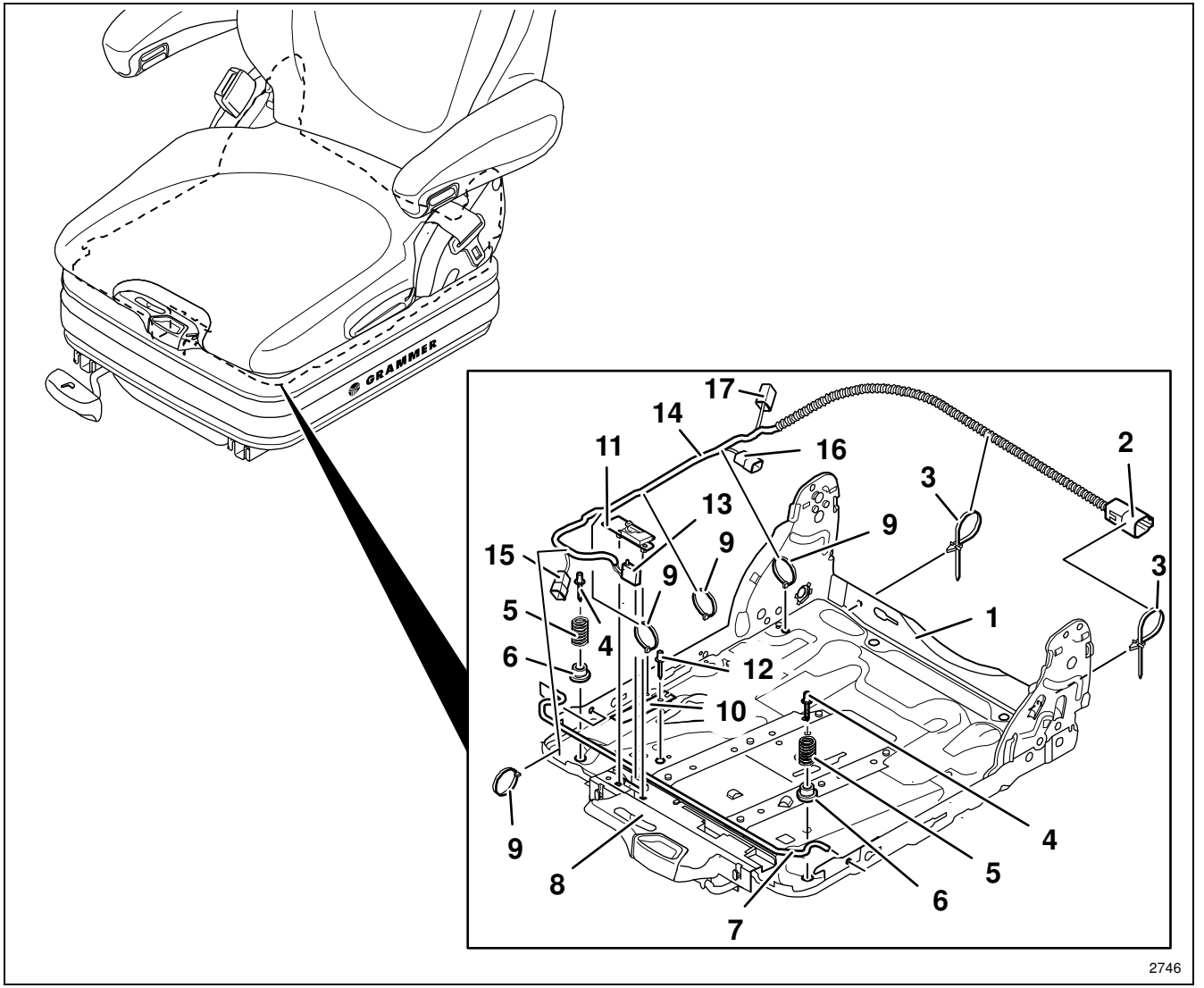
(11) Outlet valve of the seat occupancy detection system

WARNING Damage! Please pay attention to the instructions given in Chapters 3.22 and 3.24 when pulling the hoses out of the retaining rings of the quick coupling!



Installation overview of the cable harness of the seat switch with switch mechanism

(1) Seat plate
(2) Vehicle power connector
(3) Push mount tie with wings
(4) Blind rivet
(5) Compression spring
(6) Socket
(7) Switching bracket
(8) Housing with control and seat level indicator
(9) Cable tie
(10) Switch plate
(11) Cover
(12) Blind rivet
(13) Seat switch
(14) Cable harness of the seat switch

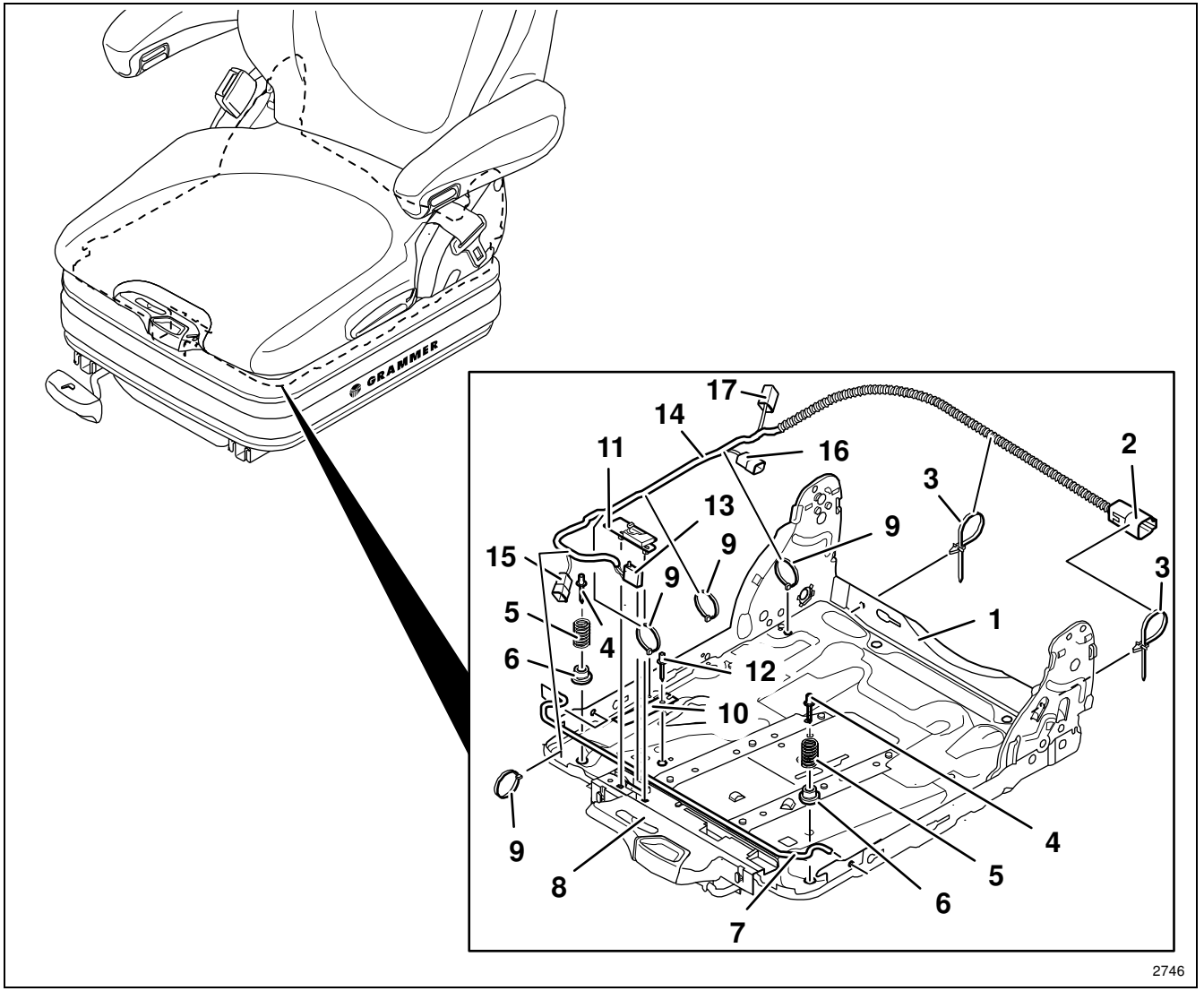


2.1 Overview of components

(15) Connector plug of the switch/control

(16) Connector plug of the seat heater (if fitted)

(17) Connector plug of the belt buckle switch (if fitted)



Seat switch and pin assignment with circuit diagram

(1) Seat switch actuator

(2) Switch/seat occupation

(3) Vehicle power connector (depending on seat model)

(4) Connector plug of the seat heater (if fitted)

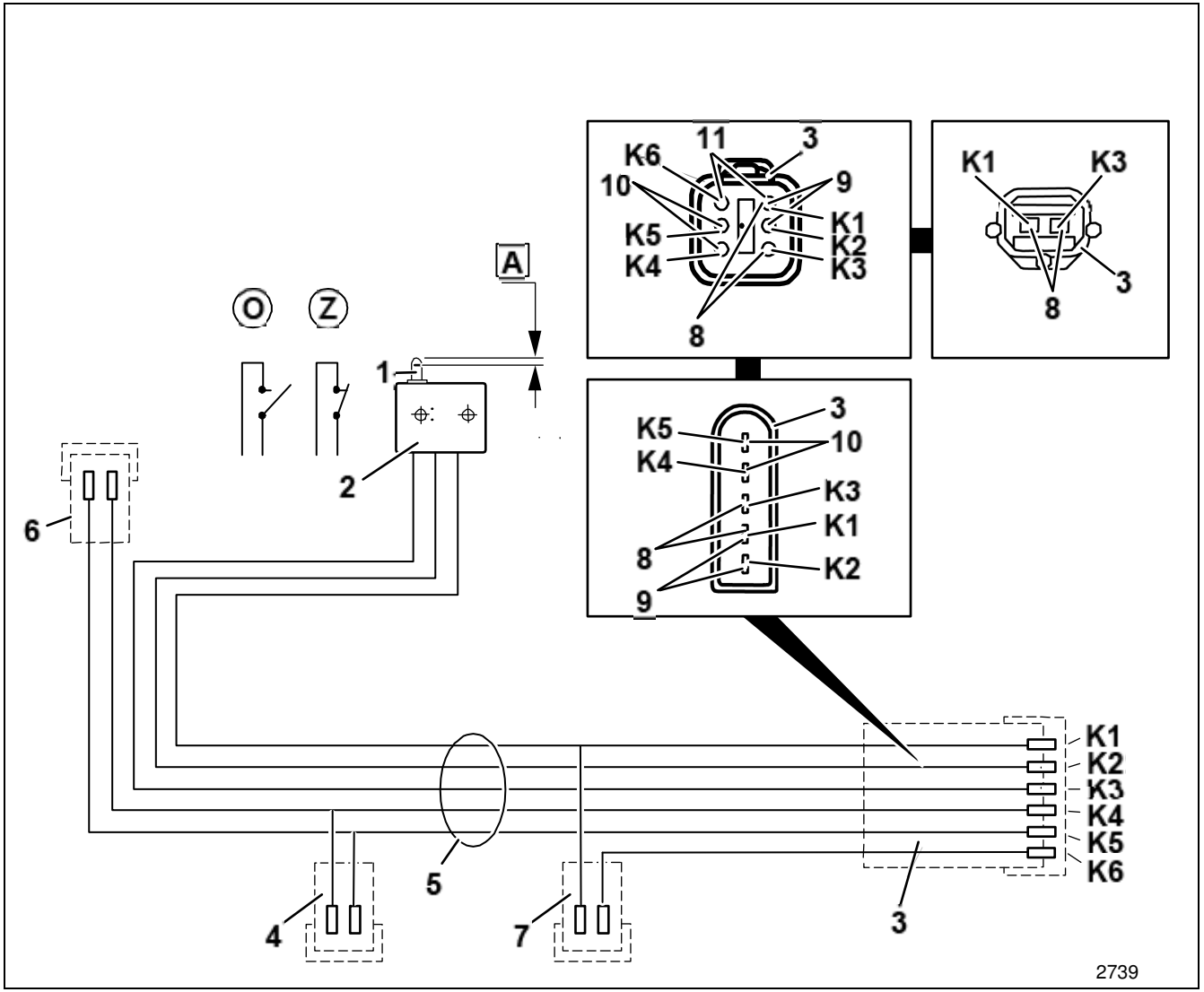
(5) Cable harness of the seat switch

(6) Connector plug of the switch/control

(7) Connector plug of the belt buckle switch (if fitted)

(8) Assignment as make contact (contacts: K1 and K3)

Note:
Distance (A) between idle position and switching point of the push-rod switch (1) = 1.2 mm.



(9) Assignment as break contact (contacts: K1 and K2)

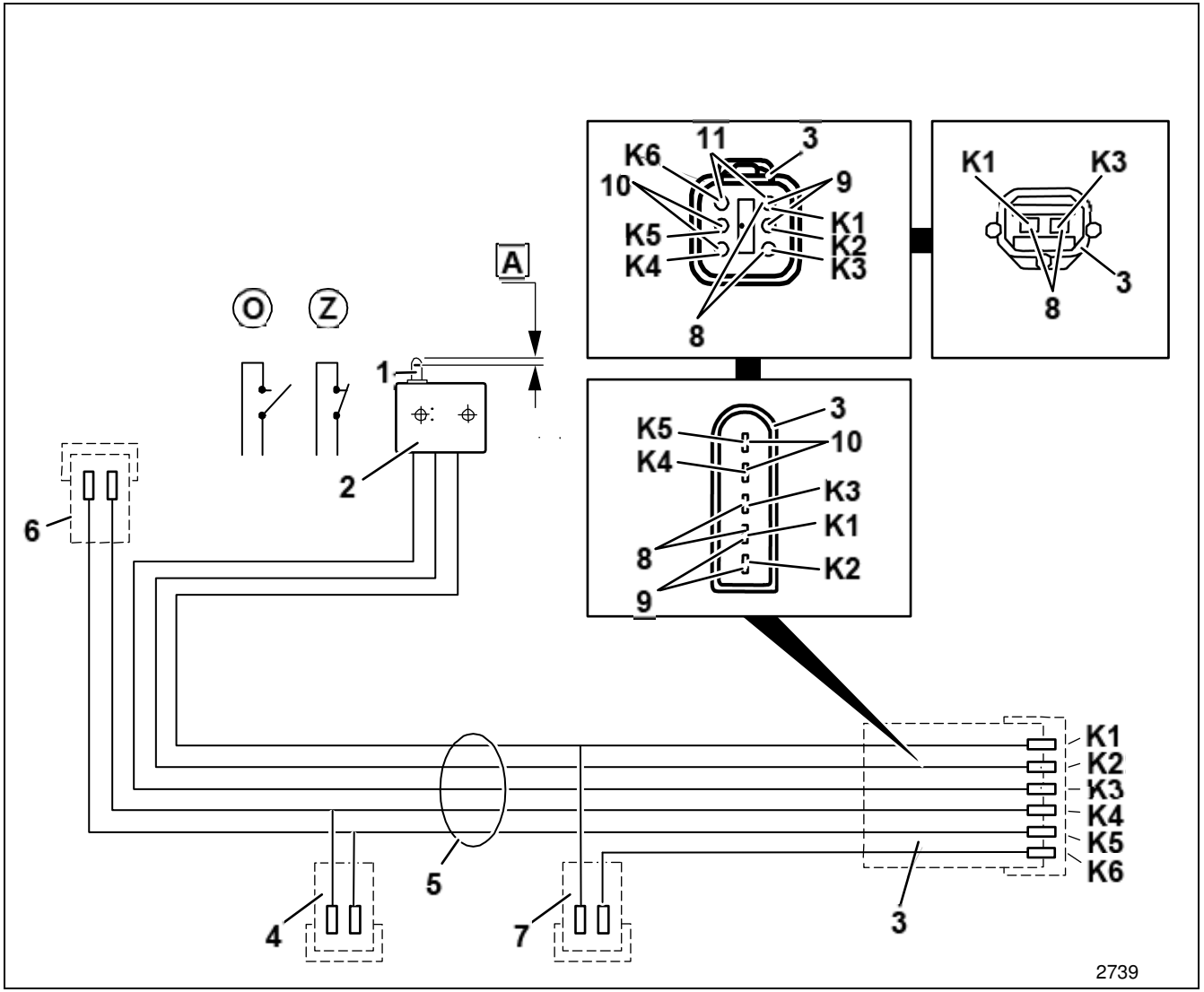
(10) Assignment for heater and control (if fitted)

(11) Assignment for belt buckle switch (if fitted)

Example of switch/seat occupation (2) switched as make contact (8):

(O) If no load is applied to the seat, the switch/seat occupation (2) is open. The vehicle cannot be driven or is switched off.

(Z) If load is applied to the seat, the switch/seat occupation (2) is closed. The vehicle can be driven.



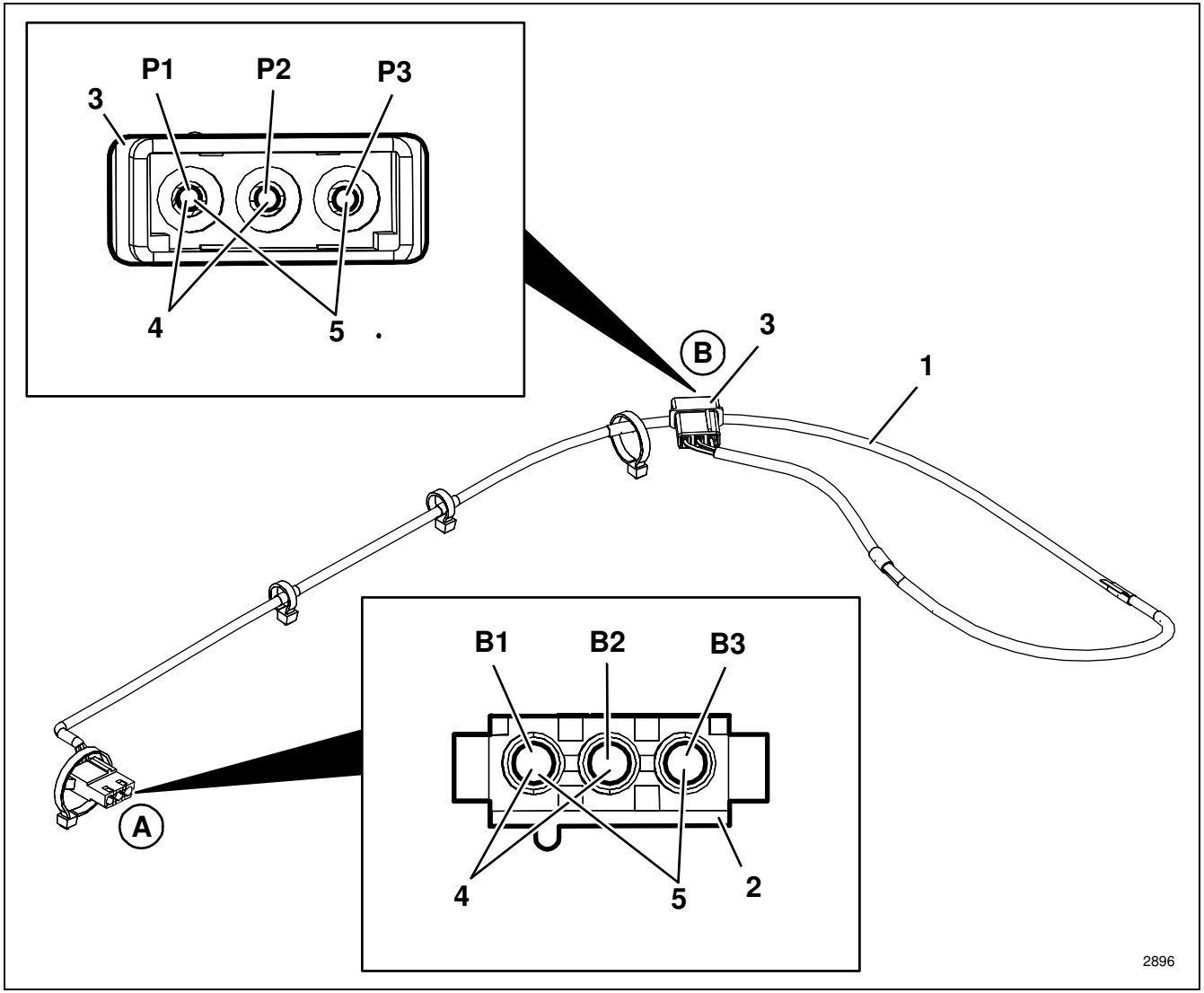
Cable harness of the power supply – pin assignment of electrical connection (MSG 75E(L))

(1) Cable harness of the power supply

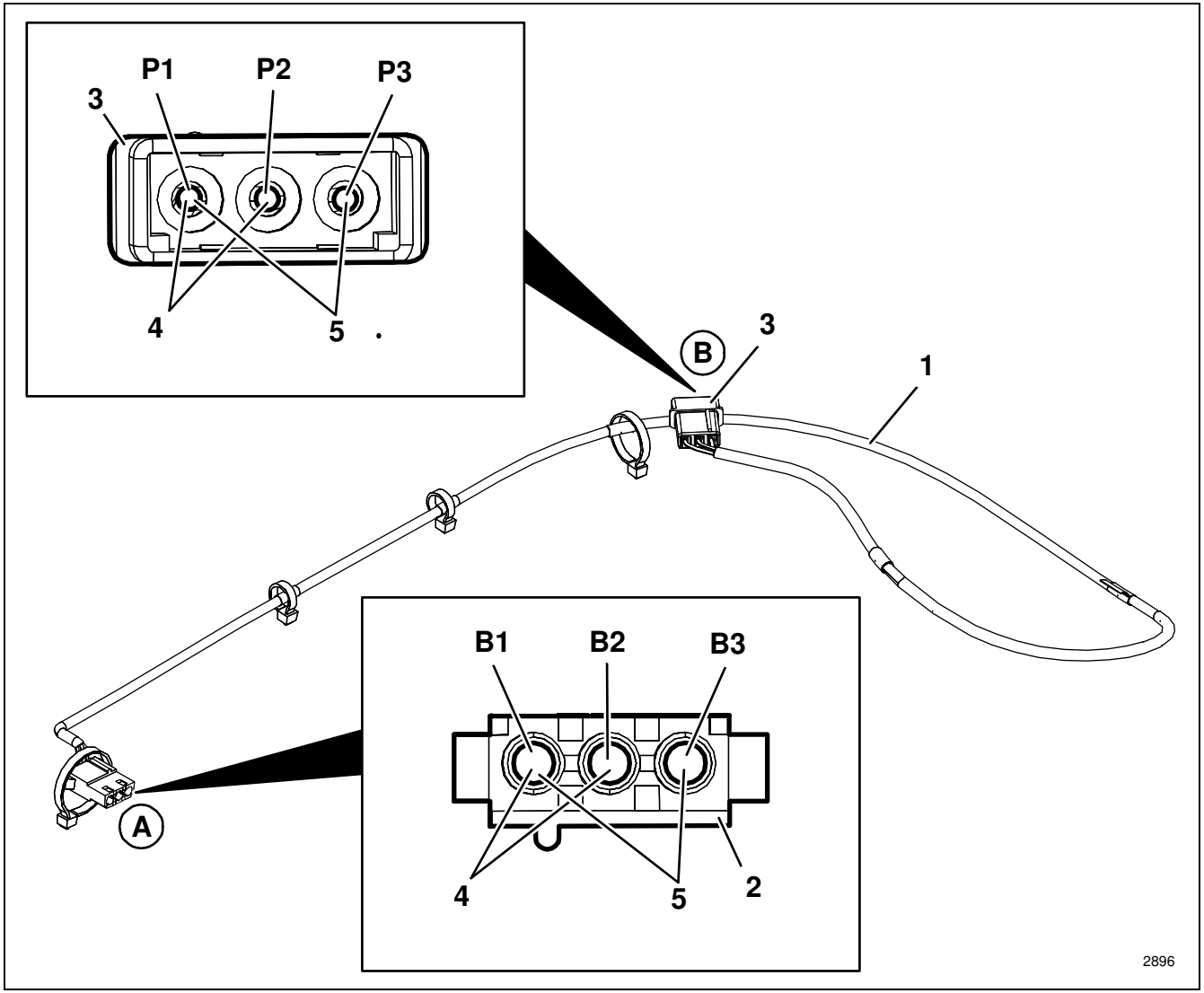
(2) Plug of cable harness of the power supply
(3-pin socket contact)

(3) Plug of cable harness of the power supply
(3-pole pin contact)

(4) Pin assignment for compressor at the plug (2 and 3)
Pin:
P1 (ground)
P2 (voltage)
Socket:
B1 (ground)
B2 (voltage)



(5) Pin assignment for the heater at the plug (2 and 3)
Pin:
P1 (ground)
P3 (voltage)
Socket:
B1 (ground)
B3 (voltage)



Electrical connections:

(A) Electrical connection between cable harness of the power supply and cable harness of the control

(B) Electrical connection between cable harness of the power supply and cable harness for upper seat part

Control with compressor cable and heater cable – pin assignment of electrical connection (MSG 75E(L))

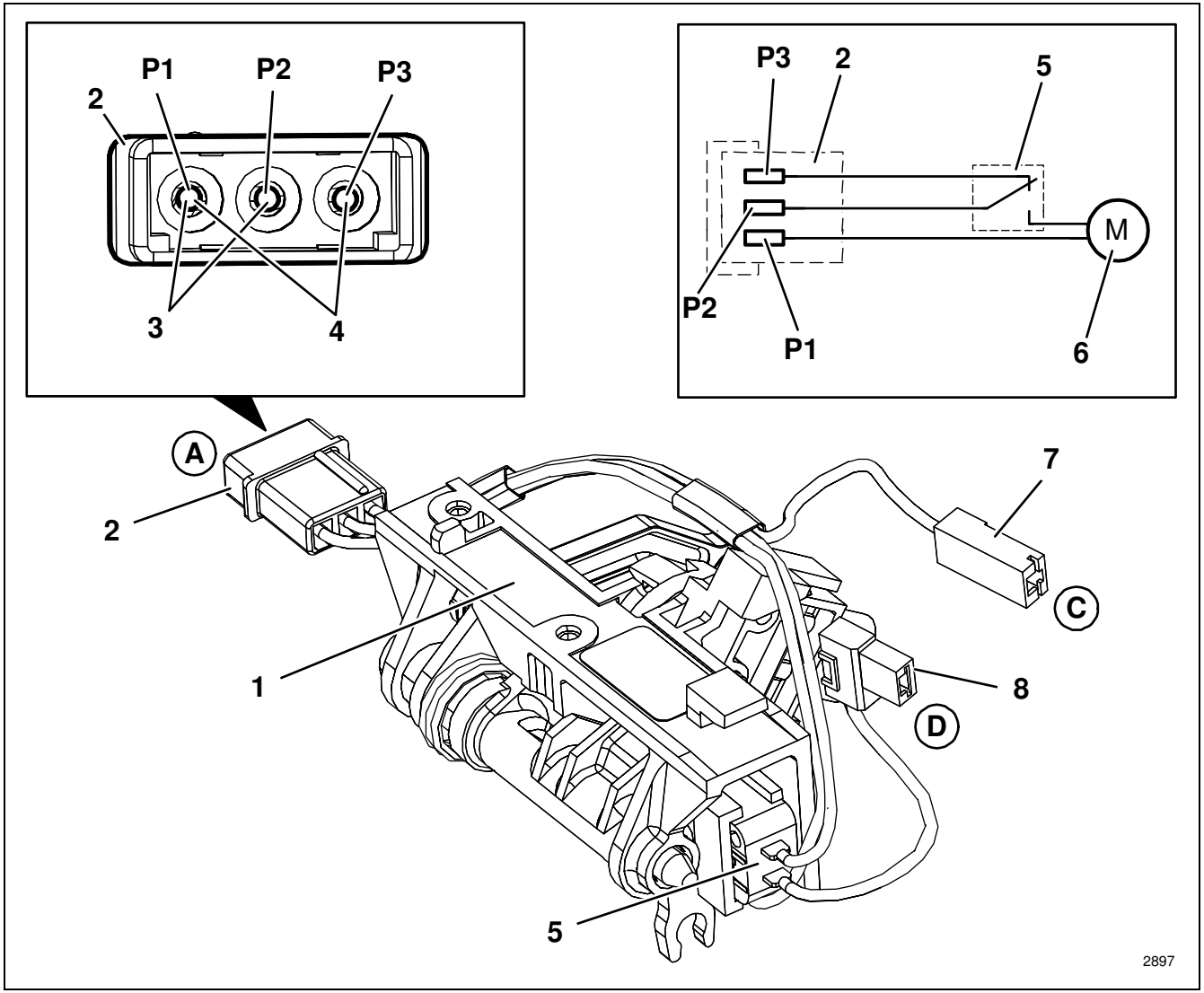
(1) Control

(2) Plug of cable harness of the control (3-pole pin contact)

(3) Pin assignment for the compressor at the plug (2)
Pin:
P1 (ground) and
P2 (voltage)

(4) Pin assignment for the heater at the plug (2)
Pin:
P1 (ground) and
P3 (voltage)

(5) Micro-switch of the control (1)



(6) Compressor motor

(7) Plug (black line) ground at the compressor motor (6)

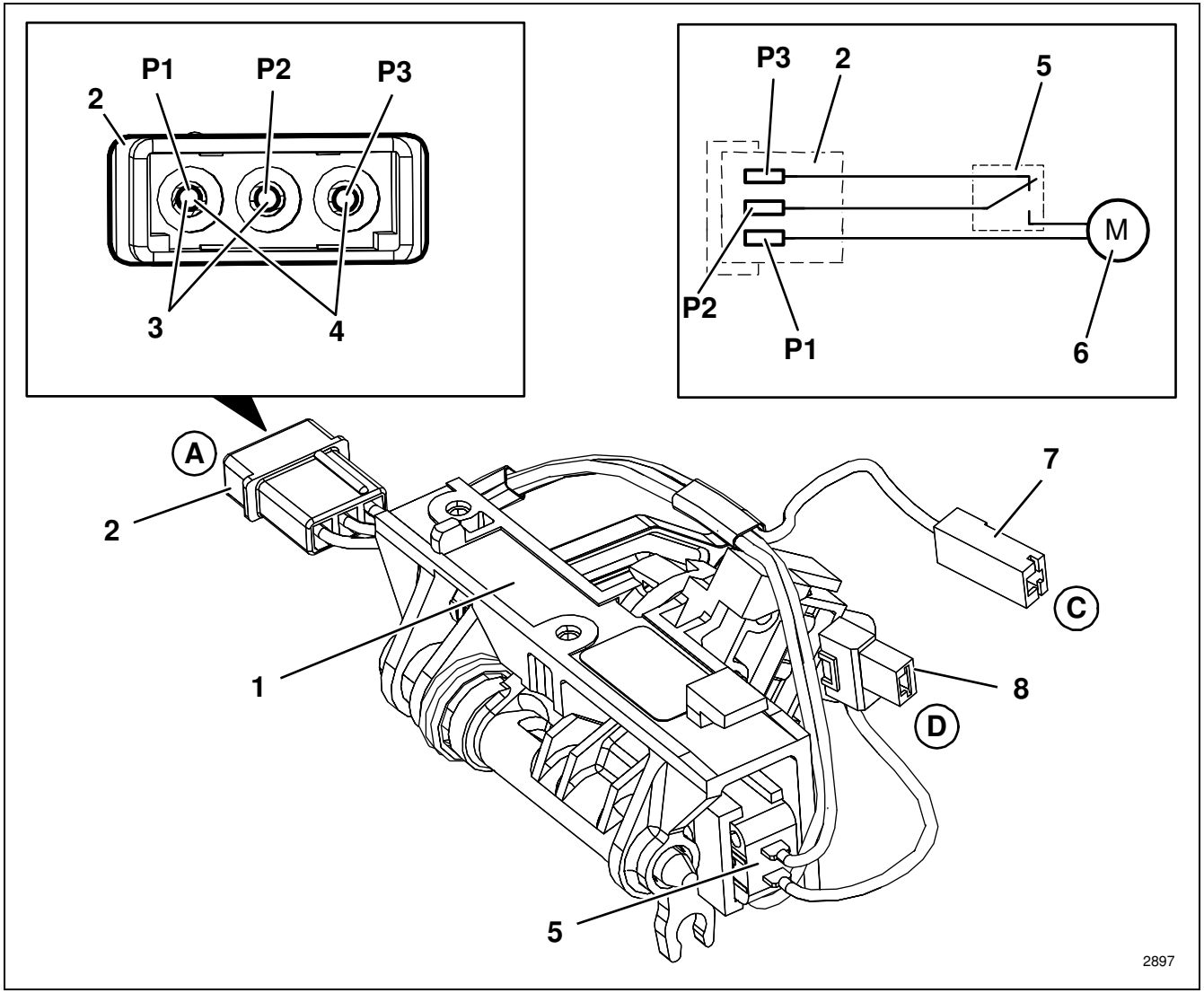
(8) Right-angle plug (red line) voltage at the compressor motor

Electrical connections:

(A) Electrical connection between cable harness of the power supply and cable harness of the control

(C) Electrical connection (black line) between plug (7) and compressor motor

(D) Electrical connection (red line) between right-angle plug (8) and compressor motor



2.2 Functional test – testing the specified status of functions

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A functional test is used to circumscribe all possible malfunctions; it must be performed before and after repair work on the seat at any rate.

Preconditions for testing:
- 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 OK in compliance with the operating instructions.

Note: The components stated above are illustrated in Chapter 2.1.

Step no.	Scope of inspection	Function to be operated	Result/Specified state	Notes, cause/remedial measures
1	Compressor	Pull the handle for level adjustment upwards.	Compressor is running and seat moves upwards.	See Overview of faults (Chapter 2.3).
2		Release the handle for level adjustment.	Compressor stops.	See Overview of faults (Chapter 2.3).
3	Control	Press the handle for level adjustment down.	Seat lowers down.	See Overview of faults (Chapter 2.3).
4		Release the handle for level adjustment.	Seat stops lowering down.	See Overview of faults (Chapter 2.3).

2.2 Functional test – testing the specified status of functions

Step no.	Scope of inspection	Function to be operated	Result/Specified state	Notes, cause/remedial measures
5	Weight adjustment and seat level indicator	Pull the handle for level adjustment upwards or press it downwards (while there is load on the driver's seat) and let it go off.	The pointer of the seat level indicator moves to the right or left, respectively.	See Overview of faults (Chapter 2.3).
6	Suspension	Apply your body weight to the seat and adjust it to your individual weight. The pointer of the seat level indicator must be in the middle of the indicator window.	The suspension is within its maximum swinging range.	The loaded seat can spring without hitting the end stop within the range of 60 mm. See Overview of faults (Chapter 2.3).
7		Apply load to the seat and spring up and down several times.	No noise. High lateral stability in horizontal direction.	See Overview of faults (Chapter 2.3).
8	Backrest angle	Pull the handle for backrest adjustment upwards.	The backrest folds forwards.	See Overview of faults (Chapter 2.3).

2.2 Functional test – testing the specified status of functions

Step no.	Scope of inspection	Function to be operated	Result/Specified state	Notes, cause/remedial measures
9	Backrest angle	Pull the backrest adjustment handle up while loading and unloading the backrest, and then release the handle.	The backrest latches into the desired position. It should not be possible to move the backrest into another position when it is locked.	Adjustment angle of the backrest in 15 increments of 2.5° each. See Overview of faults (Chapter 2.3).
10	Seat fore/aft adjustment	Pull the handle for seat fore/aft adjustment upwards.	The seat moves forwards or backwards.	The maximum adjustment travel of 225 mm in increments of 15 mm each. See Overview of faults (Chapter 2.3).
11		Release the handle for fore/aft adjustment.	The seat locks into place in the selected position. It should not be possible to move the seat into another position when it is locked.	See Overview of faults (Chapter 2.3).

2.2 Functional test – testing the specified status of functions

Step no.	Scope of inspection	Function to be operated	Result/Specified state	Notes, cause/remedial measures
12	Lumbar support	Turn the knob for lumbar support up or down.	The backrest cushion arches outwards at the bottom or top.	See Overview of faults (Chapter 2.3).
13	Seat switch	Load and unload the seat cushion on the front left and right sides several times.	The seat switch snaps (audible snap). Switching function: • loaded = on • unloaded = off (for shutting down mechanical equipment when the driver leaves his/her seat)	See Overview of faults (Chapter 2.3).
14	Belt roller	Pull the safety belt out and let it go back.	The safety belt automatically retracts.	See Overview of faults (Chapter 2.3).
15	Belt buckle	Insert the belt latch (safety belt) into the belt buckle.	The belt buckle audibly clicks into place and cannot be easily withdrawn even by pulling it vigorously.	See Overview of faults (Chapter 2.3).

2.2 Functional test – testing the specified status of functions

Step no.	Scope of inspection	Function to be operated	Result/Specified state	Notes, cause/remedial measures
	Belt buckle switch	Insert the belt latch (safety belt) into the belt buckle.	The belt buckle switch is contacted Switching function: • engaged = on • disengaged = off	See Overview of faults (Chapter 2.3).
16	Belt buckle	Press the red release button of the belt buckle.	The belt buckle releases and the belt latch can be opened.	See Overview of faults (Chapter 2.3).
17	Armrest	Turn the knob of the armrests inwards or outwards, respectively.	The front part of the armrests is lifted or lowered.	See Overview of faults (Chapter 2.3).
18	Armrest	Tilt the armrests backwards.	The armrests move continuously until the vertical end position is reached. Tilting the armrests too much backwards is not possible.	See Overview of faults (Chapter 2.3).
19	Backrest extension	Slowly pull the backrest extension out until the end stop is reached and then push it back.	The backrest extension locks into place (audibly) in any locking position.	See Overview of faults (Chapter 2.3).

2.3 Overview of faults – pointing out possible faults that might occur

This chapter contains notes on possible seat faults. The notes and information provided in Chapter 2.4 "Fault Diagnosis" are intended to ease troubleshooting of faults.
Faults caused due to insufficient maintenance or improper repair are not covered here.

Note:
The components stated above are illustrated in Chapter 2.1. Further possible seat-specific faults which might occur for different delivery options of the seat are listed on page 10 ff.

Fault description	Possible cause	Troubleshooting
Suspension travels up and down and hits the upper and lower end stop.	• The weight adjustment is not set to the individual weight of the driver.	Adjust the seat to the driver's weight (refer to seat operating instructions).
	• Shock absorber is defective.	Replace the shock absorber (Chapter 3.18).
	• Compressed-air hose between air spring and compressor is leaky.	Replace the compressed-air hose (see Chapter 3.21).
	MSG 75GL: Compressed-air hose or additional air supply is leaky.	Replace the additional air supply (Chapter 3.24).
	• Air spring is untight.	Replace the air spring (Chapter 3.22).
	• Air hose is leaky.	Replace the housing with control and seat level indicator (Chapter 3.15).
	• Compressor is defective.	Replace the compressor (Chapter 3.21).

Fault description	Possible cause	Troubleshooting
	• Valve of the control is defective.	Replace the housing with control and seat level indicator (Chapter 3.15).
Seat wobbles.	• The bushings on the fixed bearing axles or roller axles of the swinging structure are defective.	Replace the bushings (see Chapter 3.23).
Seat does not respond when operating the handle for level adjustment in upward direction.	• Compressor is not active.	Check the compressor (Chapter 2.4, step no. 2.1).
	• Air spring is untight.	Check the air spring (Chapter 2.4, step no. 1.1).
	• Air escapes from the valve of the control.	Check the valve at the housing with control and seat level indicator (Chapter 2.4, step no. 1.2).
	• Lever is broken.	Replace the lever at the housing with control and seat level indicator (see Chapter 3.15).
Seat does not respond when operating the handle for level adjustment in downward direction.	• Valve of the control is defective.	Replace the housing with control and seat level indicator (Chapter 3.15).
	• Lever is broken.	Replace the lever at the housing with control and seat level indicator (see Chapter 3.15).

2.3 Overview of faults – pointing out possible faults that might occur

Fault description	Possible cause	Troubleshooting
Seat changes its position during operation, deflates and lowers down.	• Air spring is untight.	Check the air spring (Chapter 2.4, step no. 1.1).
	• Compressor leakage (return valve).	Replace the compressor (see Chapter 3.21).
	• Air escapes from the valve of the control.	Check the valve at the housing with control and seat level indicator (Chapter 2.4, step no. 1.2).
	• Compressed-air hose between air spring and compressor is leaky.	Replace the compressed-air hose (see Chapter 3.21).
	MSG 75GL: Compressed-air hose or additional air supply is leaky.	Replace the additional air supply (Chapter 3.24).
	• Air hose is leaky.	Replace the housing with control and seat level indicator (see Chapter 3.15).

2.3 Overview of faults – pointing out possible faults that might occur

Fault description	Possible cause	Troubleshooting
Seat squeaks.	• Too little lubrication of the shock absorber axle of the swinging structure.	Apply acid-free multi-purpose lubricant to the shock absorber axle (see Chapter 3.18).
	• Too little lubrication of axles and rollers of the swinging structure.	Apply acid-free multi-purpose lubricant to the roller or fixed bushing axles of the swinging structure and the front of the plastic rollers (see Chapter 3.23). **Note:** You should dose lubrication so that the rollers can still rotate.
Seat level indicator does not work.	• Linkage rod of the pointer is detached from the lower part of the suspension.	Hang in the linkage rod of the pointer into the lower part of the suspension (see Chapter 3.15).
	• Linkage rod of the pointer is detached from the housing with control and seat level indicator.	Hang in the linkage rod of the pointer into the housing with control and seat level indicator (see Chapter 3.15).
	• Upper part of the linkage rod does not grip onto the longitudinal guide of the pointer.	Thread the upper end of the pointer linkage rod through the guide of the pointer (see Chapter 3.15).

2.3 Overview of faults – pointing out possible faults that might occur

Fault description	Possible cause	Troubleshooting
Seat fore/aft adjustment does not work.	• Locking lever of the entire adjusting rail assembly is defective.	Replace the adjusting rail completely (see Chapter 3.17).
Seat fore/aft adjustment does not securely lock into position or does not snap into place after being adjusted.	• Particles are between the adjusting and locking rails.	Remove/install the seat fore/aft adjustment completely (Chapter 3.17).
	• Locking lever of the entire adjusting rail assembly is defective.	Replace the adjusting rail completely (see Chapter 3.17).
	• Adjusting or locking rails are defective.	Replace the seat fore/aft adjustment (Chapter 3.17).
Backrest does not fold forwards by itself after being unlocked.	• The retaining spring is loosened.	Hang in the retaining spring (see Chapter 3.7).
	• The retaining spring is defective.	Replace the retaining spring (see Chapter 3.7).

2.3 Overview of faults – pointing out possible faults that might occur

Fault description	Possible cause	Troubleshooting
The backrest frame cannot be unlocked.	• Actuator lever jams.	Remove/install the entire backrest lock (Chapter 3.13).
	• The control lug on the tooth sheet of the backrest lock is broken.	Replace the tooth sheet (see Chapter 3.7).
	• Backrest lock is defective.	Replace the entire backrest lock (Chapter 3.13).
The angle of the backrest frame cannot be adjusted.	• The retaining spring is loosened.	Hang in the retaining spring (see Chapter 3.7).
	• The retaining spring is defective.	Replace the retaining spring (see Chapter 3.7).
	• Backrest lock is defective.	Replace the entire backrest lock (Chapter 3.13).
	• Backrest frame is defective.	Replace the backrest frame (see Chapter 3.7).
No or insufficient curvature of the lumbar support in the seat cushion.	• Knob for lumbar support is defective.	Replace the knob for lumbar support (Chapter 3.14).
	• Lumbar support is defective.	Replace the backrest frame (see Chapter 3.7).

2.3 Overview of faults – pointing out possible faults that might occur

Fault description	Possible cause	Troubleshooting
The seat switch does not contact when the seat cushion is loaded.	• Switching bracket is detached from the seat plate.	Hang in the switching bracket into the seat plate (see Chapter 3.16).
	• Switching bracket does not seat properly on compression springs.	Place the switching bracket on the compression springs (see Chapter 3.16).
	• Compression springs are detached from the bushings.	Fasten the compression springs on the bushings (see Chapter 3.16).
	• Bellows is caught between seat cushion and seat plate.	Slide your hand between the bellows and the seat cushion to release the tension. Remove and install the seat cushion, if required (Chapter 3.2).
	• Switch push-rod is defective.	Replace the cable harness of the seat switch with switch mechanism (see Chapter 3.16).

Fault description	Possible cause	Troubleshooting
Seat switch does not work.	• The vehicle power supply or electronics is defective.	Check electrical system of the vehicle.
	• Plug-in connection (vehicle power connector, seat - vehicle) is defective.	Check the plug and socket connection, restore it, if necessary.
	• The seat switch is defective.	Check the seat switch (Chapter 2.4, step no. 3.1), replace the cable harness of the seat switch with switch mechanism, if required (see Chapter 3.16).
Belt roller does not wind up automatically.	• The belt jams.	Briefly pull the belt and let it retract back.
	• Belt roller is defective.	Replace the belt roller (Chapter 3.9).
The belt latch does not lock into the belt buckle.	• The belt buckle is defective.	Replace the belt buckle (Chapter 3.9).
The belt buckle does not release the belt latch after operating the red unlocking button.	• The belt buckle is defective.	Replace the belt buckle (Chapter 3.9).
Belt buckle switch does not operate.	• Belt buckle switch is defective.	Check the belt buckle switch, replace the belt buckle switch, if required (Chapter 3.9)

2.3 Overview of faults – pointing out possible faults that might occur

Fault description	Possible cause	Troubleshooting
Armrest does not lift or lower when turning the knob outwards or inwards.	• The inclination of the armrest is defective.	Replace the armrest (see Chapter 3.6).
The armrest does not hold when it is folded backwards. Armrest falls forwards.	• The armrest is defective.	Replace the armrest (see Chapter 3.6).
Backrest extension does not hold in the locking position.	• The omega springs are broken.	Replace the omega springs (see Chapter 3.3).
	• The holder is damaged.	Replace the holder (see Chapter 3.3).

MSG 75E(L)

Fault description	Possible cause	Troubleshooting
Suspension travels up and down and hits the upper and lower end stop.	• The seat suspension is not set to the individual weight of the driver.	Check the control (Chapter 2.4, inspection step no. 4.1).
	• Shock absorber is defective.	Replace the shock absorber (see Chapter 3.18).
	• Compressor is defective.	Check the compressor (Chapter 2.4, inspection step no. 4.1).
	• Connecting rod or connecting rod bearing are defective.	Replace the control (see Chapter 3.27).
	• Control is defective.	Replace the control (see Chapter 3.27).
	• Air system is leaky.	Check the air system and replace defective components.

Fault description	Possible cause	Troubleshooting
Seat lowers after unloading the seat cushion.	• Compressed-air hose between control and outlet valve of the seat occupancy detection system is leaky.	Replace the control (see Chapter 3.27).
	• Outlet valve of the seat occupancy detection system is leaky.	Replace the control (see Chapter 3.27).
Seat suspension is not set to the driver's weight automatically.	• Connecting rod or connecting rod bearing is broken.	Replace the control (see Chapter 3.27).
	• Compressor is defective.	Check the compressor (Chapter 2.4, inspection step no. 4.1).
	• Control is defective.	Check the control (Chapter 2.4, inspection step no. 4.1).
	• Compressed-air hose between control and outlet valve is bent.	Replace the compressed-air hose (see Chapter 3.27).
	• Electrical connection (A) is disconnected.	Establish the electrical connection (A) (see Chapter 3.27).
	• The L-bar of the rocker switch is bent too far to the outside.	Bend the L-bar of the rocker switch to the inside (see Chapter 3.28). Replace the rocker switch with magnet, if required (see repair manual for upper seat part).
	• Outlet valve is defective.	Replace the outlet valve (see Chapter 3.27).

Fault description	Possible cause	Troubleshooting
Seat changes its position while driving (lowers and moves upwards again).	• Air spring is untight.	Replace the air spring (see Chapter 3.22).
	• Compressor is leaky (return valve).	Replace the compressor (see Chapter 3.21).
	• Outlet valve of the control is leaky.	Replace the control (see Chapter 3.27).
	• Compressed-air hose between air spring and compressor is leaky.	Replace the compressed-air hose (see Chapter 3.21).
	MSG 75EL:	
	Compressed-air hose or additional air supply is leaky.	Replace the additional air supply (Chapter 3.24).
	• Compressed-air hose between air spring and control is leaky.	Replace the control (see Chapter 3.27).
	• Delay element of the control is defective.	Replace the control (see Chapter 3.27).

1 Checking the air spring / control

Preconditions for fault diagnosis:
- The individual functions are activated in compliance with the instructions of the seat operating instructions.
- The compressed-air hose and air hose have been inspected with regard to kinks and tightness.

Note: The components stated above are illustrated in Chapter 2.1.

Step no.	Inspect/Operate	Result/Specified state	Troubleshooting
1.1	Check the air spring for abrasion.	Air spring is tight. Air spring is untight.	Proceed with inspection step 1.2. Replace the air spring (see Chapter 3.22).
1.2	Apply load to the seat.	Air escapes from the valve of the control. **MSG 75GL:** Air escapes at the additional air supply. Control is untight.	Replace the housing with control and seat level indicator (see Chapter 3.15). Replace the additional air supply (Chapter 3.24). End of inspection.

2 Checking the compressor

Preconditions for fault diagnosis:
- The individual functions are activated in compliance with the instructions of the seat operating instructions.
- Electrical system of the vehicle has been inspected and found OK in compliance with the vehicle operating instructions.
- The compressed-air hose has been inspected with regard to kinks and tightness.
- Battery voltage 12 V, ignition is on.

Note: The components stated above are illustrated in Chapter 2.1.

Step no.	Inspect/Operate	Result/Specified state	Troubleshooting
2.1	Pull the handle for seat height adjustment upwards.	Compressor is active. Compressor is not active.	End of inspection. • Check and replace the fuse, cable and plug-in connectors, if necessary. • Proceed with inspection step 2.2.
2.2	Pull the handle for seat height adjustment upwards.	Compressor is active. Compressor is not active.	End of inspection. Replace the compressor (see Chapter 3.21).

3 Checking the seat switch

Preconditions for fault diagnosis:
• Electrical system of the vehicle has been checked and is OK.

Note: The components stated above are illustrated in Chapter 2.1.

Step no.	Inspect/Operate	Result/Specified state	Troubleshooting
3.1	• Disconnect the plug-in connection (Vehicle power connector Seat - Vehicle). • Measure the resistance of contacts 1 and 3 (make contact) of the seat power connector: white .....**Ω** .....yellow	>> **0.2 Ω (→ ∞)** **≤ 0.2 Ω**	Proceed with inspection step 3.2. Replace the cable harness of the seat switch with switch mechanism (see Chapter 3.16).

Step no.	Inspect/Operate	Result/Specified state	Troubleshooting
3.2	• Apply load to the seat cushion with the current weight adjustment. • Measure the resistance of contacts 1 and 3 (make contact) of the seat power connector: white.....**Ω** .....yellow	≤ **0.2 Ω** **> 0.2 Ω**	End of inspection. Replace the cable harness of the seat switch with switch mechanism (see Chapter 3.16).

4 Inspection of the control and compressor (MSG 75E(L))

Preconditions for fault diagnosis:

- 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.
- Electrical connection at the components produced according to instruction and 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.
- Ignition switched off (no voltage that might cause a current flow must be applied to the seat suspension).
- Pneumatic air system has been inspected and found to be OK.
- Bellows at the upper suspension part removed (see Chapter 3.8) and pressed down.
- Seat cushion has been removed (see repair manual for upper seat part).
- Heater is switched off.

Notes:

- The components mentioned above are illustrated in chapter 2.1, if not stated otherwise in this text.
- The work steps required during diagnosis are described in Chapter 3.
- Repeat the inspection after defective assemblies have been replaced.
- Assemble the seat after the end of inspection or before repeating inspection (e.g. re-establish electrical connections).

Step no.	Inspect/Operate	Result/Specified status	Troubleshooting
4.1	• Disconnect the electrical connection between the cable harness for vehicle connection and the vehicle power connector. • Connect a multimeter to pins P4 and P5 of the vehicle power connector. • Operate the outlet valve of the seat occupancy detection system until no compressed air escapes anymore. • Press the seat plate down and measure the resistance at the pins P4 and P5 after approx. 5 seconds: P4 Ω P5	**= 0.8 Ω (± 10%)** (total resistance to the compressor)	Proceed with inspection step 4.5.
		>> 0.8 Ω (R→ ∞) (interruption) or << 0.8 Ω (R→ 0) (short-circuit)	Proceed with inspection step 4.2.

Step no.	Inspect/Operate	Result/Specified status	Troubleshooting
4.2	• Disconnect the electrical connection (A). • Bridge the sockets B1 and B2 in the plug of the cable harness of the power supply. • Measure the resistance at the pins P4 and P5: P4 Ω P5	**<< 1 Ω (R → 0)** (pass)	Proceed with inspection step 4.3.
		≥ 1 Ω (R→∞) (interruption)	Replace the cable harness of the power supply (see Chapter 3.26).

Step no.	Inspect/Operate	Result/Specified status	Troubleshooting
4.3	• Remove the control at the spring assembly. **Note:** Do not remove the compressed-air hoses. • Disconnect the electrical connection (C and D) at the compressor. • Install the control. • Connect a multimeter to pins P1 and P2 in the plug of the cable harness of the control. • Press the seat plate down and measure the resistance at the pins P1 and P2 after approx. 5 seconds:		
	P1 Ω P2	**= ∞ Ω**	Proceed with inspection step 4.4.
		<< ∞ Ω (R→ 0) (short-circuit)	Replace the control (see Chapter 2.27).

Step no.	Inspect/Operate	Result/Specified status	Troubleshooting
4.4	• Bridge the contacts of the plug and right-angle plug at the cable harness of the control. • Press the seat plate down and measure the resistance at the pins P1 and P2 after approx. 5 seconds: P1 Ω P2	**<< 1 Ω** >> 1 Ω (R→ ∞**)** (interruption)	Replace the compressor (see Chapter 3.21). Replace the control (see Chapter 3.27).
4.5	• Disconnect the electrical connection (A). • Connect a multimeter to pins P2 and P3 in the plug of the cable harness of the control. • Measure the resistance at the pins P2 and P3 in the plug of the cable harness of the control: P2 Ω P3	**<< 1 Ω (R → 0)** (pass) ≥ 1 Ω (R→∞) (interruption)	Proceed with inspection step 4.6. Replace the control (see Chapter 3.27).

Step no.	Inspect/Operate	Result/Specified status	Troubleshooting
4.6	• Press the seat plate down and measure the resistance at the pins P2 and P3 after approx. 5 seconds: P2 Ω P3	≥ **1 Ω (R→∞)** (interruption)	Proceed with inspection step 4.7.
		<< 1 Ω (R→ **0**) (pass)	Replace the control (see Chapter 3.27).
4.7	• Assemble the seat. • Apply the vehicle electrical system voltage to pins P4 and P5 of the vehicle power connector.		
	• Press the seat plate down and wait for approx. 5 seconds.	Compressor is running and seat suspension moves upwards.	End of inspection.
		Compressor is running and seat suspension does not move upwards; compressor is leaky (return valve).	Replace the compressor (see Chapter 3.21).

3 Repair work

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3.1 Backrest cushion – removal and installation

REMOVAL / INSTALLATION

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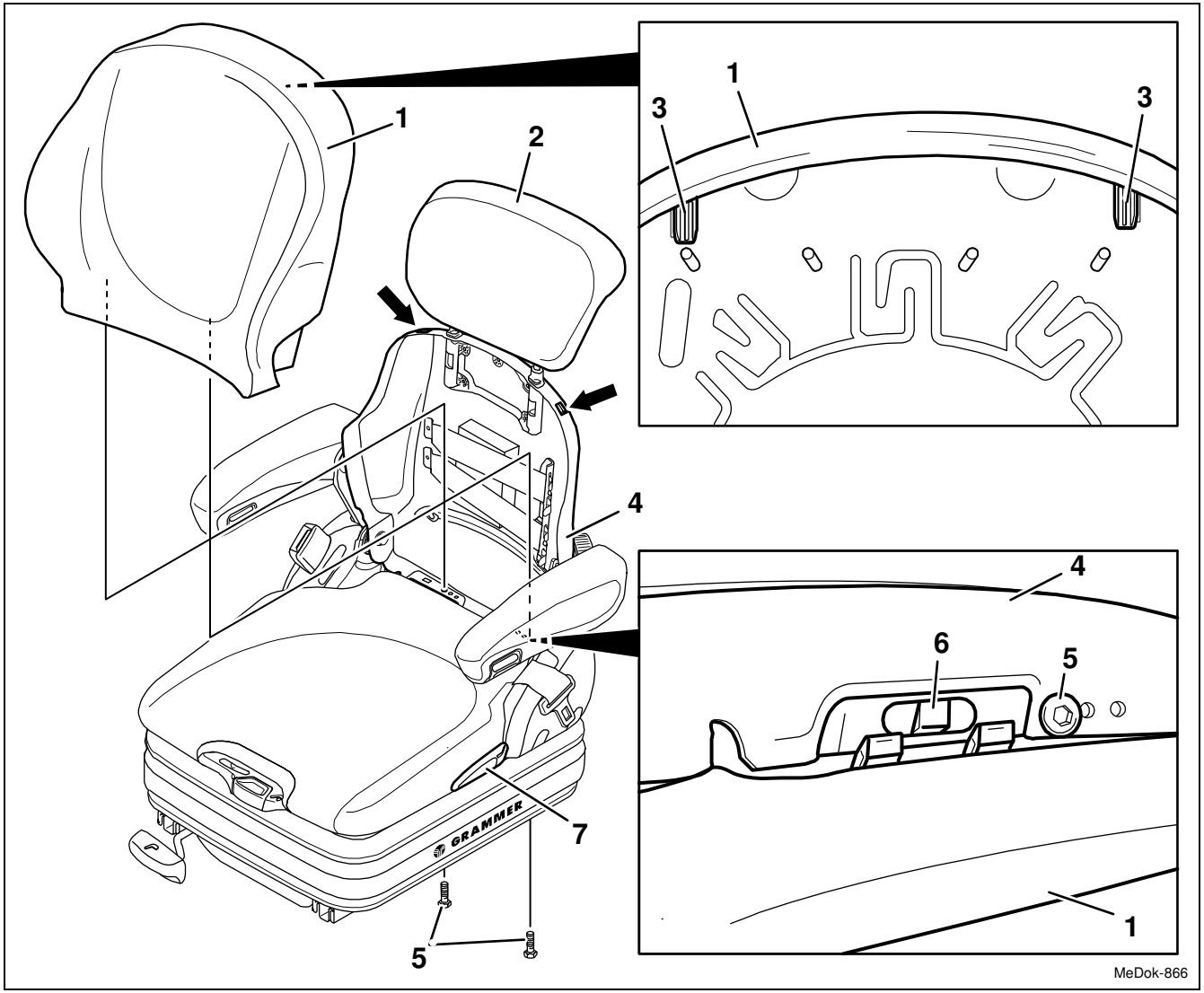
(1) Backrest cushion
(2) Backrest extension
(3) Hook (backrest cushion)
(4) Backrest frame
(5) Torx screw ..... 2.5 Nm
(6) Catcher (backrest cushion)
(7) Handle for backrest adjustment



3.1 Backrest cushion – removal and installation

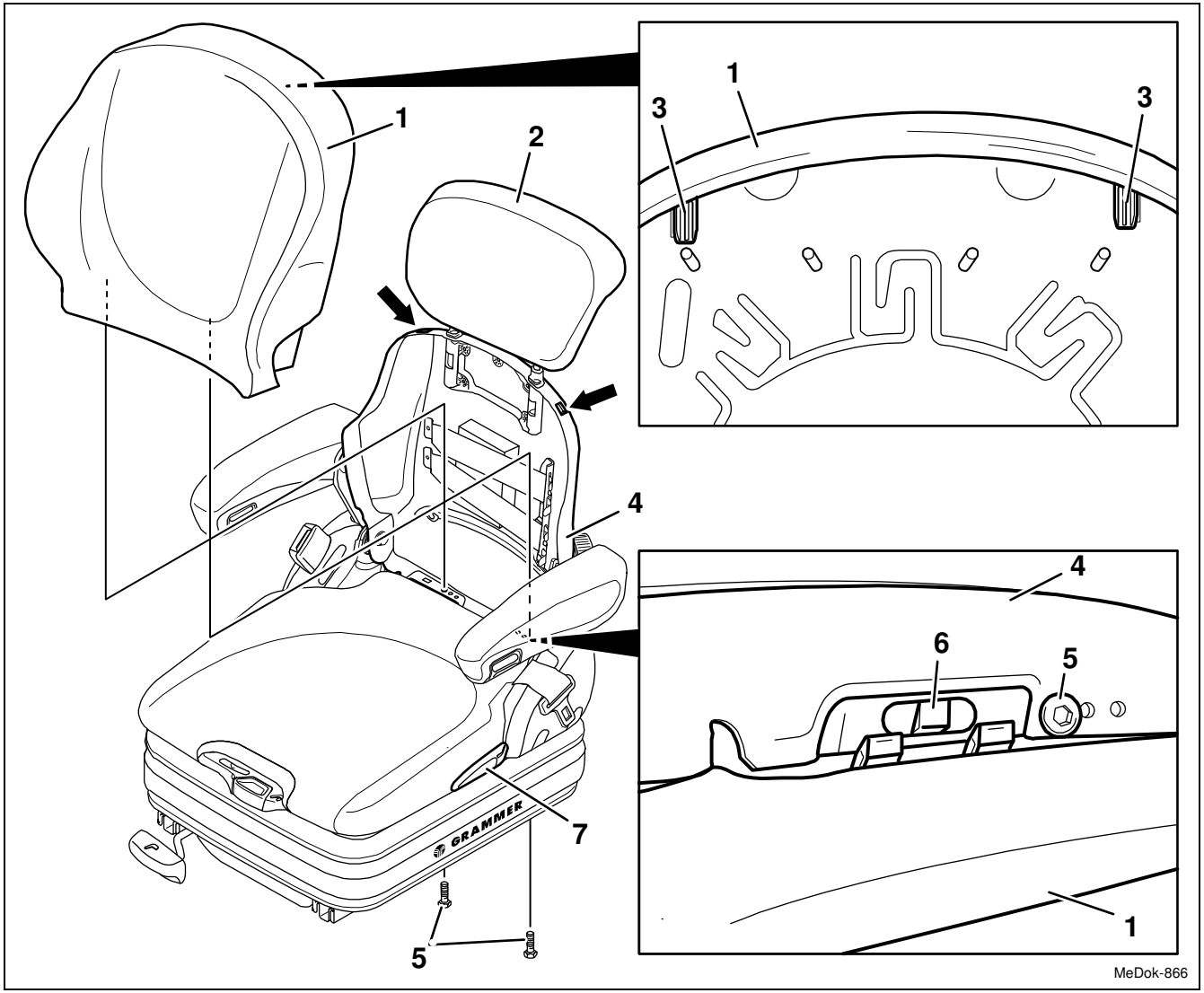
Removal and installation

1 Pull out the backrest extension (2) to the end position.

2 Fold the backrest frame (4) completely forwards and remove two Torx screws (5).
Installation note:
Torx screw (5), 2.5 Nm.

3 Release two catchers (6). Use a screwdriver to press on the catches (6) from below.

4 Fold up the backrest frame (4) and pull the backrest cushion (1) out in forward direction.

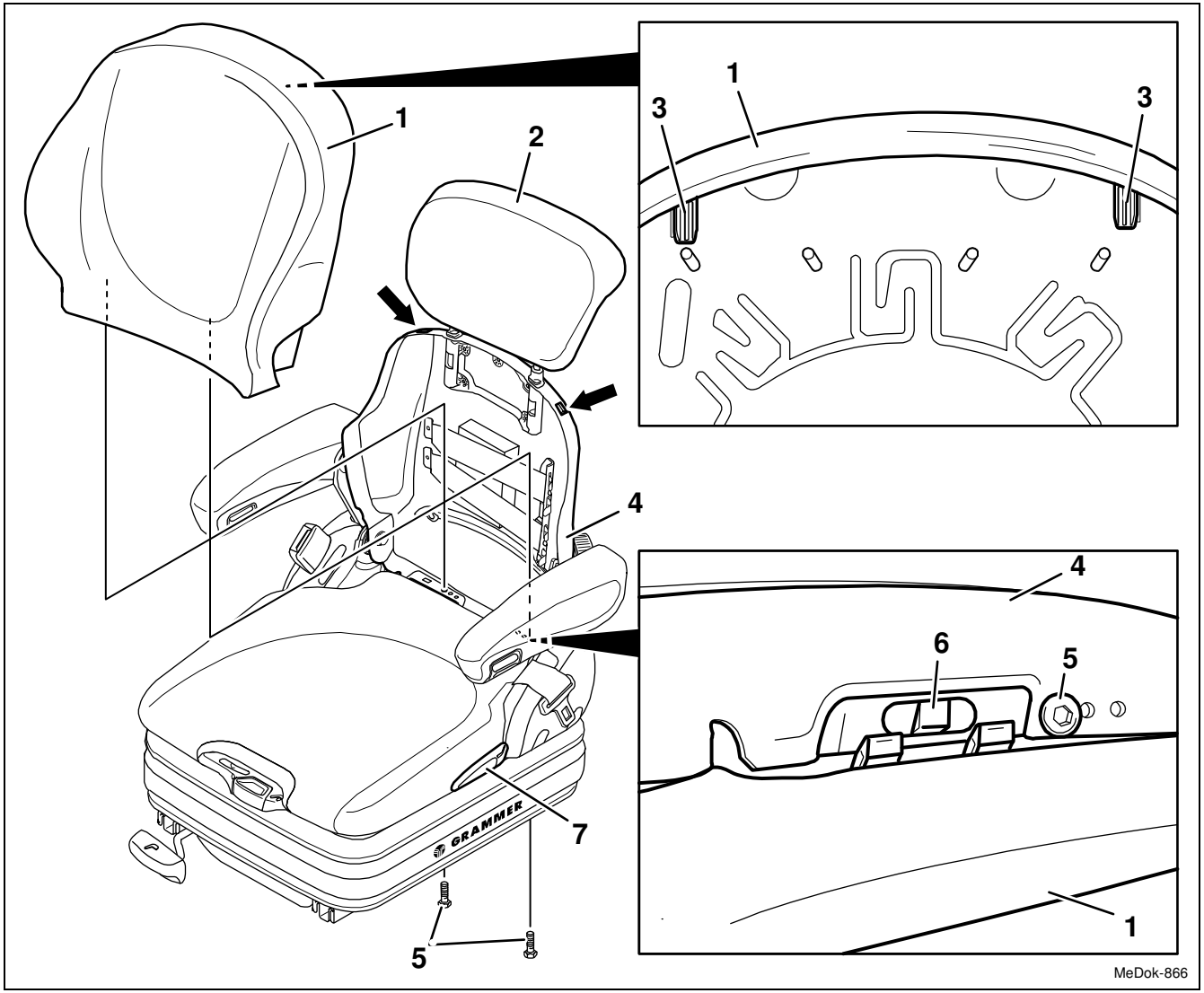


3.1 Backrest cushion – removal and installation

5 Unhook the two hooks (3) on the backrest cushion (1) from the longitudinal hole (arrow) of the backrest frame (4) and take off the backrest cushion (1) in upward direction.

WARNING Risk of injury due to the backrest frame (4) which might jerk forward!
When the backrest cushion (1) has been removed, the backrest frame (4) must be supported, for example held in place, before the handle for backrest adjustment (7) is operated.

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



3.2 Seat cushion – removal and installation

REMOVAL INSTALLATION

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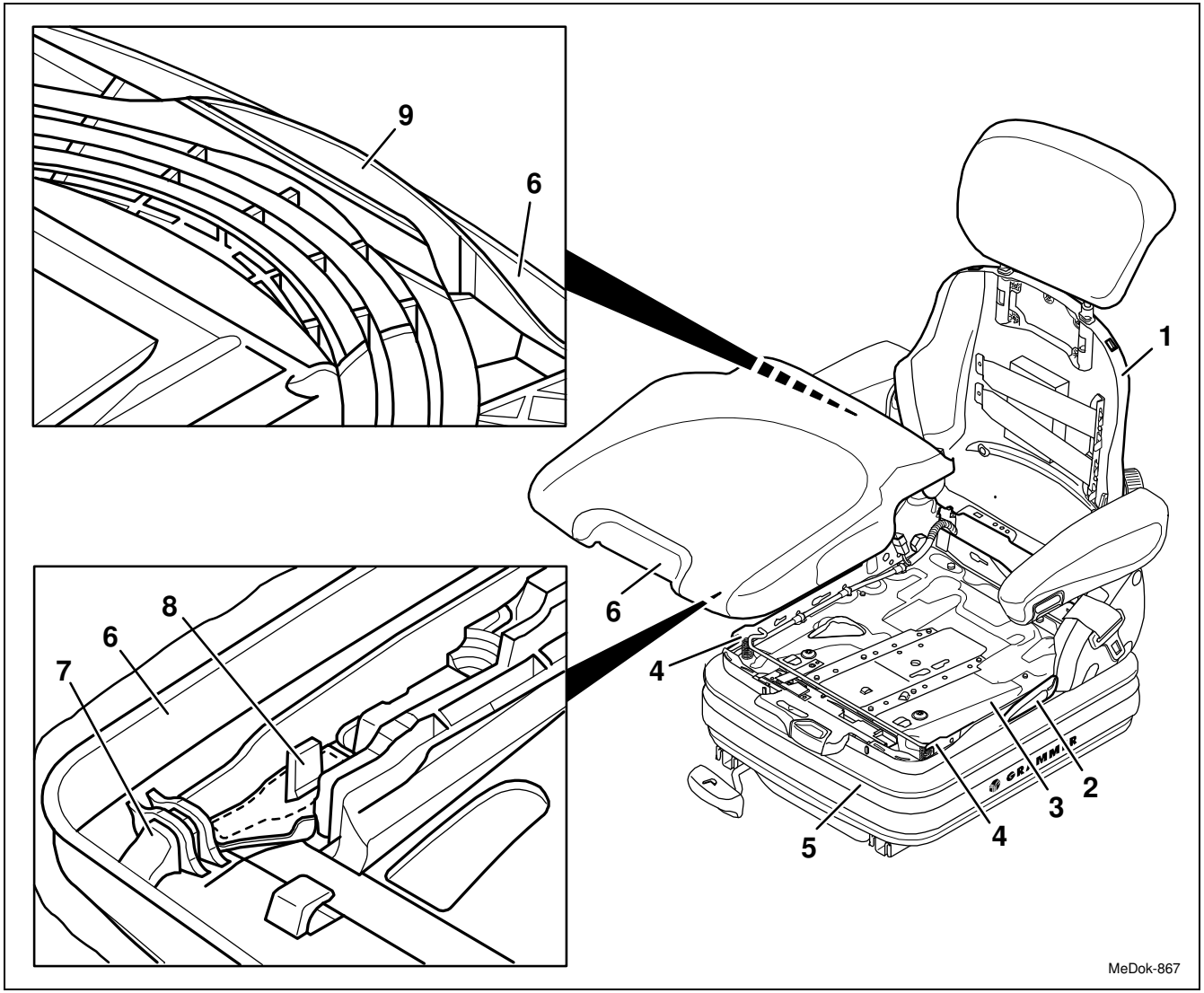
(1) Backrest frame
(2) Handle for backrest adjustment
(3) Seat plate
(4) Hook (seat plate)
(5) Bellows
(6) Seat cushion
(7) Support (seat cushion)
(8) Locking hook (seat cushion)
(9) Catcher grip (seat cushion)



1 Remove the backrest cushion (Chapter 3.1).

3.2 Seat cushion – removal and installation

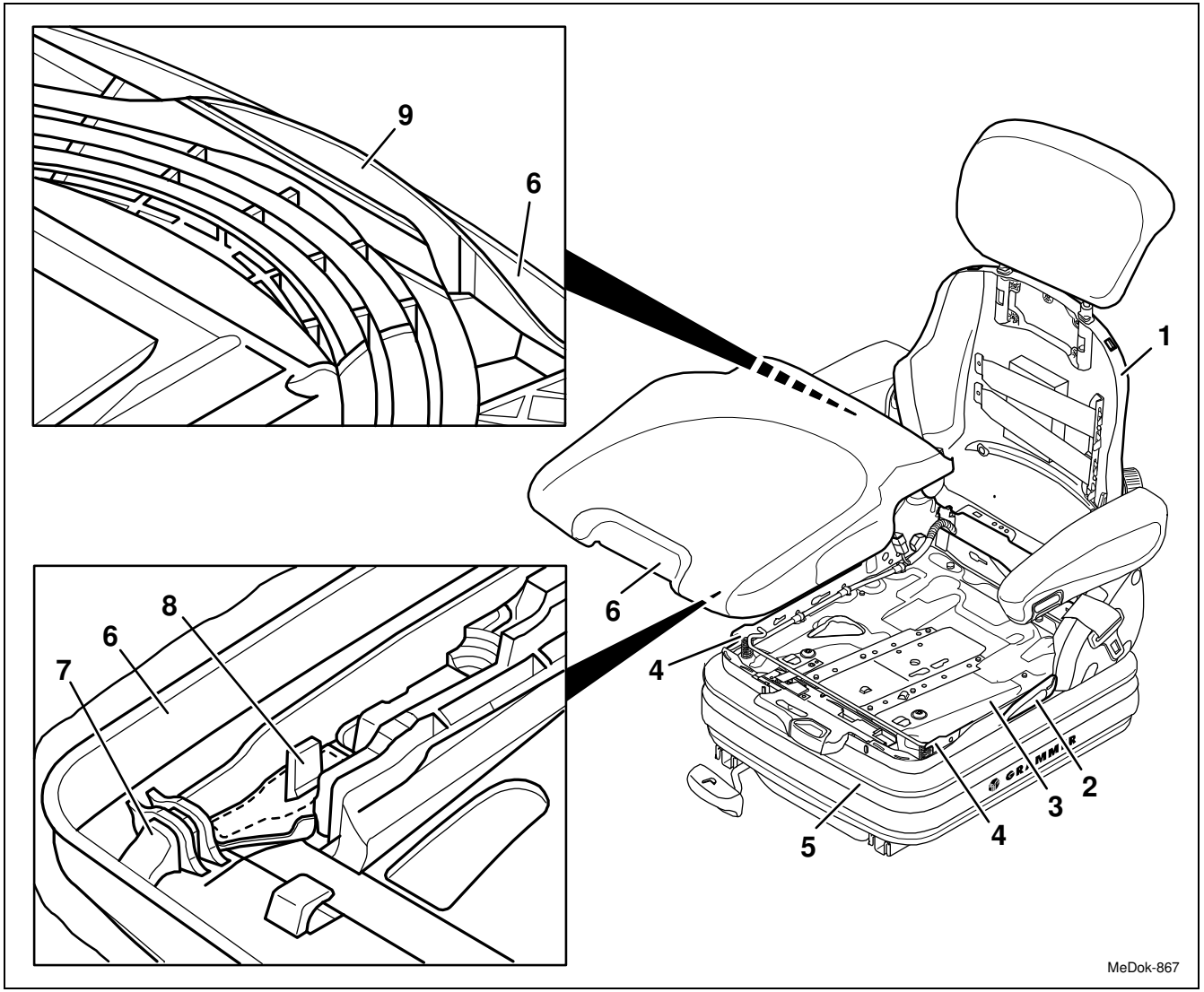
Removal

2 Lock the backrest frame (1) into place in the front position.

WARNING Risk of injury due to the backrest frame (1) which might jerk forward!
When the backrest cushion has been removed, the backrest frame (1) must be supported, for example held in place, before the handle for backrest adjustment (2) is operated.

3 Unhook the seat cushion (6) from the seat plate (3). First, pull the catcher grip (9) backwards and then upwards.

4 Grasp the seat cushion (6) on the front right and left side with both hands, press it downwards and pull it out in forward direction. Then, remove it.

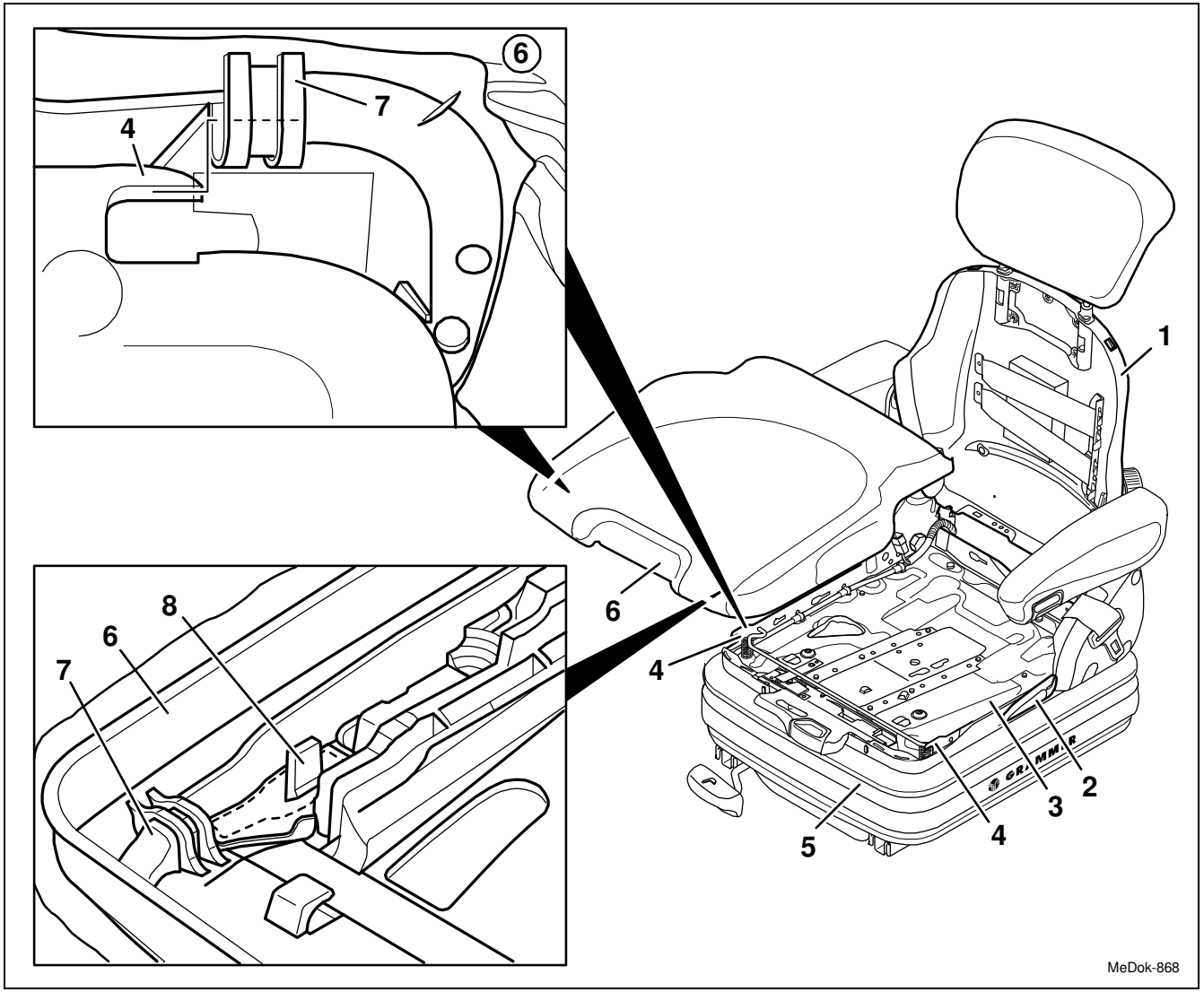


3.2 Seat cushion – removal and installation

Installation

1 Place the seat cushion (6) onto the seat plate (3). Both holders (7) at the bottom of the seat cushion (6) must be situated at the height of the hooks (4) on the seat plate (3).
Notes:
● When installing a new seat cushion (6), the two locking hooks (8) must first be broken at the perforation.
● If the seat is equipped with a switch, make sure the springs and the switching bracket are in the correct position during the installation of the seat cushion (6) to guarantee the correct function of the seat switch (see Chapter 3.16).

2 Press down the front part of the seat cushion (6) on the left and right sides, and then slide it backwards with the two holders (7) onto the two hooks (4).

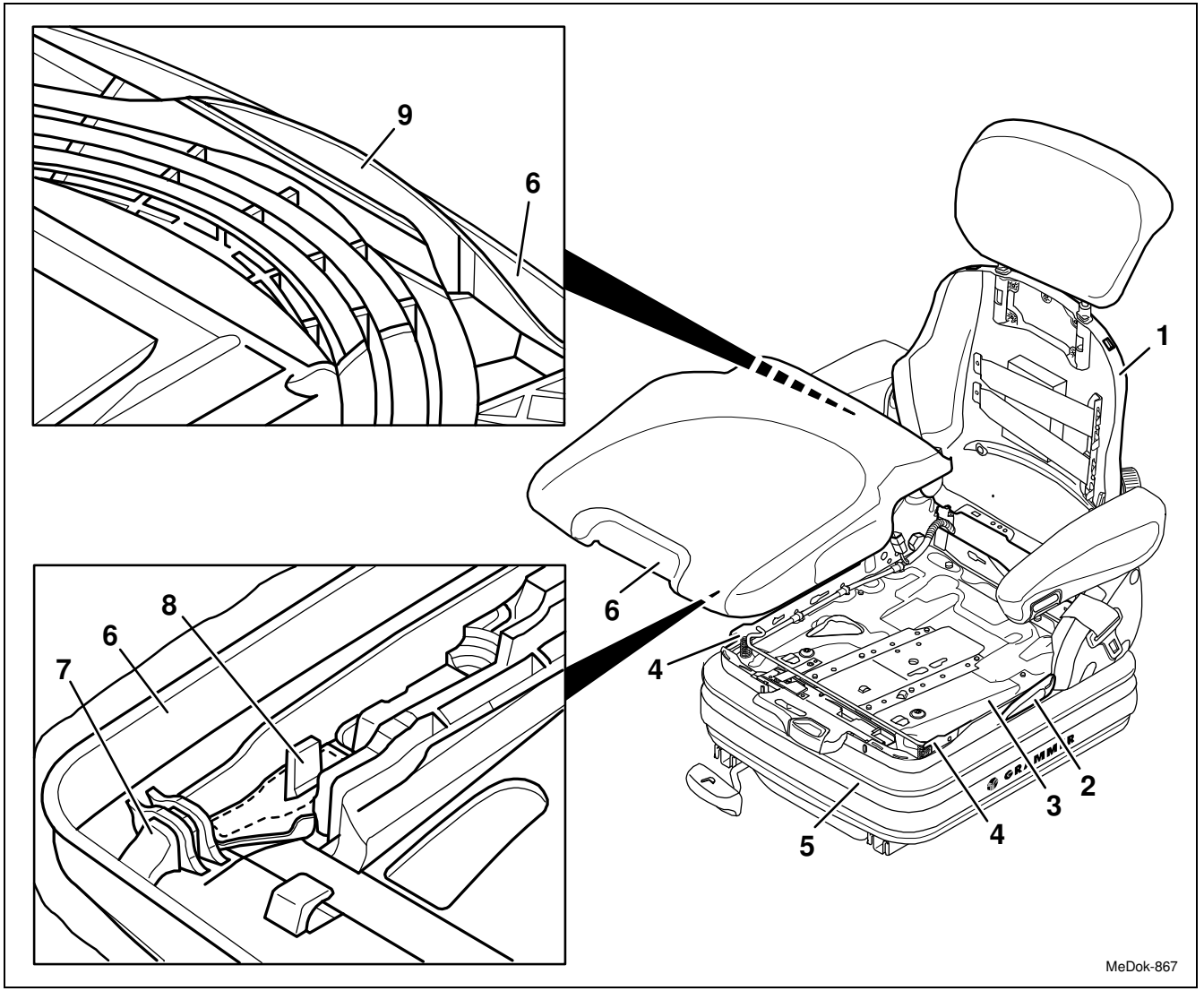


3.2 Seat cushion – removal and installation

3 Press onto the middle part of the seat cushion (6) at the back until you hear the catcher grip (9) locking.

Notes:

- Check the function of the seat switch: Press onto the front left and right sides of the seat cushion (6) several times and check whether you hear an audible snap of the switch (see Chapter 3.16).
- Check the bellows (5) for being squeezed or distorted between seat cushion (6) and seat plate (3). Release it, if necessary.



3.3 Backrest extension with guide – removal and installation (optional extra)

REMOVAL / INSTALLATION

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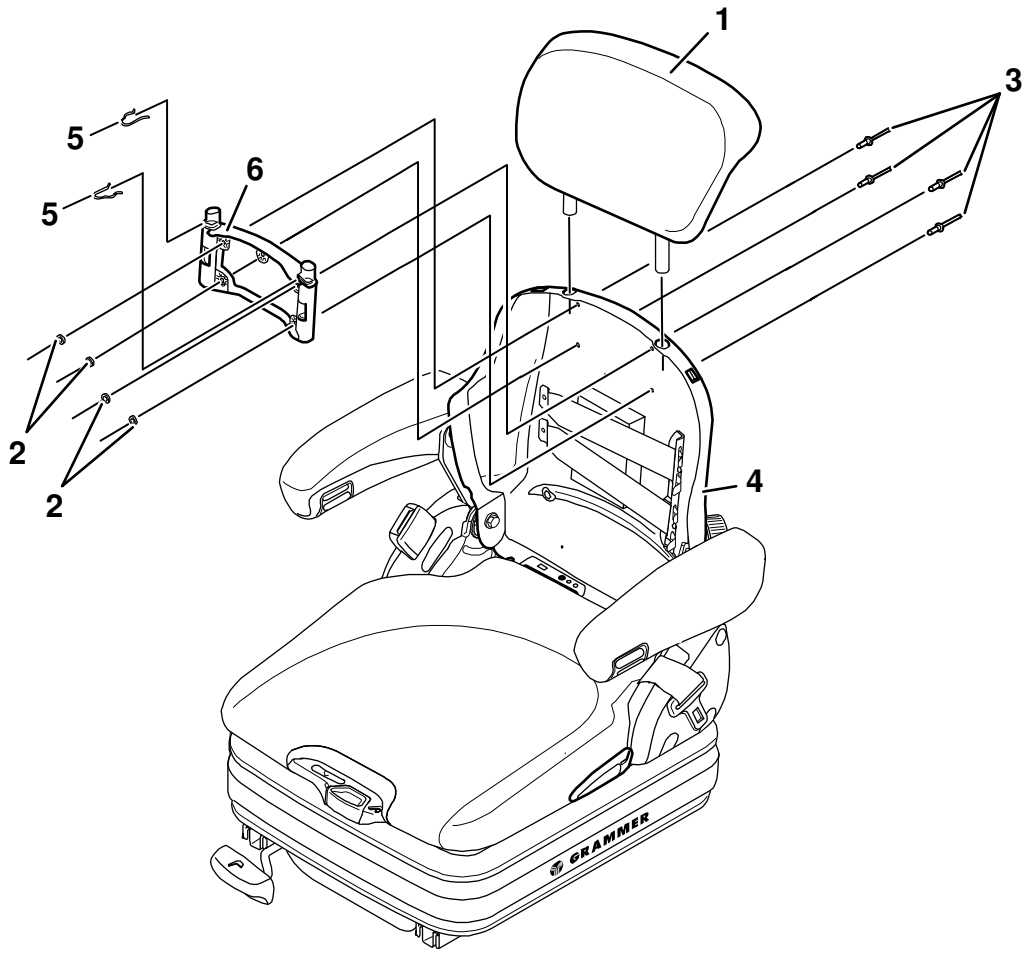
(1) Backrest extension
(2) Washer
(3) Blind rivet
(4) Backrest frame
(5) Omega springs replace, if necessary
(6) Support



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1 Remove the backrest cushion (Chapter 3.1).

2 Seat with a storage box:
Remove the storage box (Chapter 3.5).

3.3 Backrest extension with guide – removal and installation (optional extra)

Removal and installation

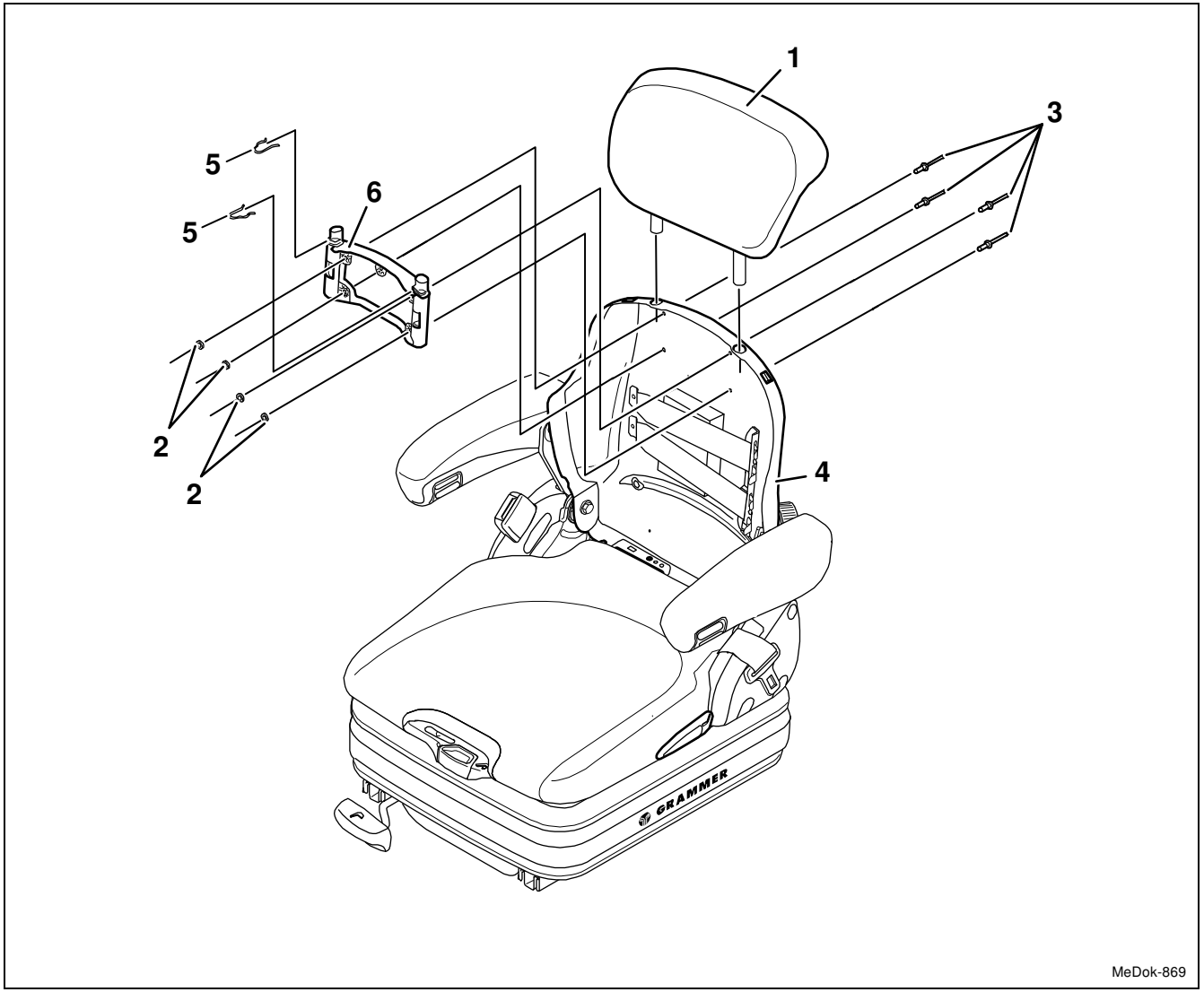
3 Remove the backrest extension (1) by pulling it upwards over the end stop.

4 Bore out the four rivet heads, drive out the blind rivets (3) and remove the washers (2).

5 Pull out the holder (6) from the backrest frame (4) in downward direction and then remove it.

6 Replace the omega springs (5) - if any:
Remove the two omega springs (5) from the holder (6).

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



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3.4 Cover, right and left – removal and installation

REMOVAL / INSTALLATION

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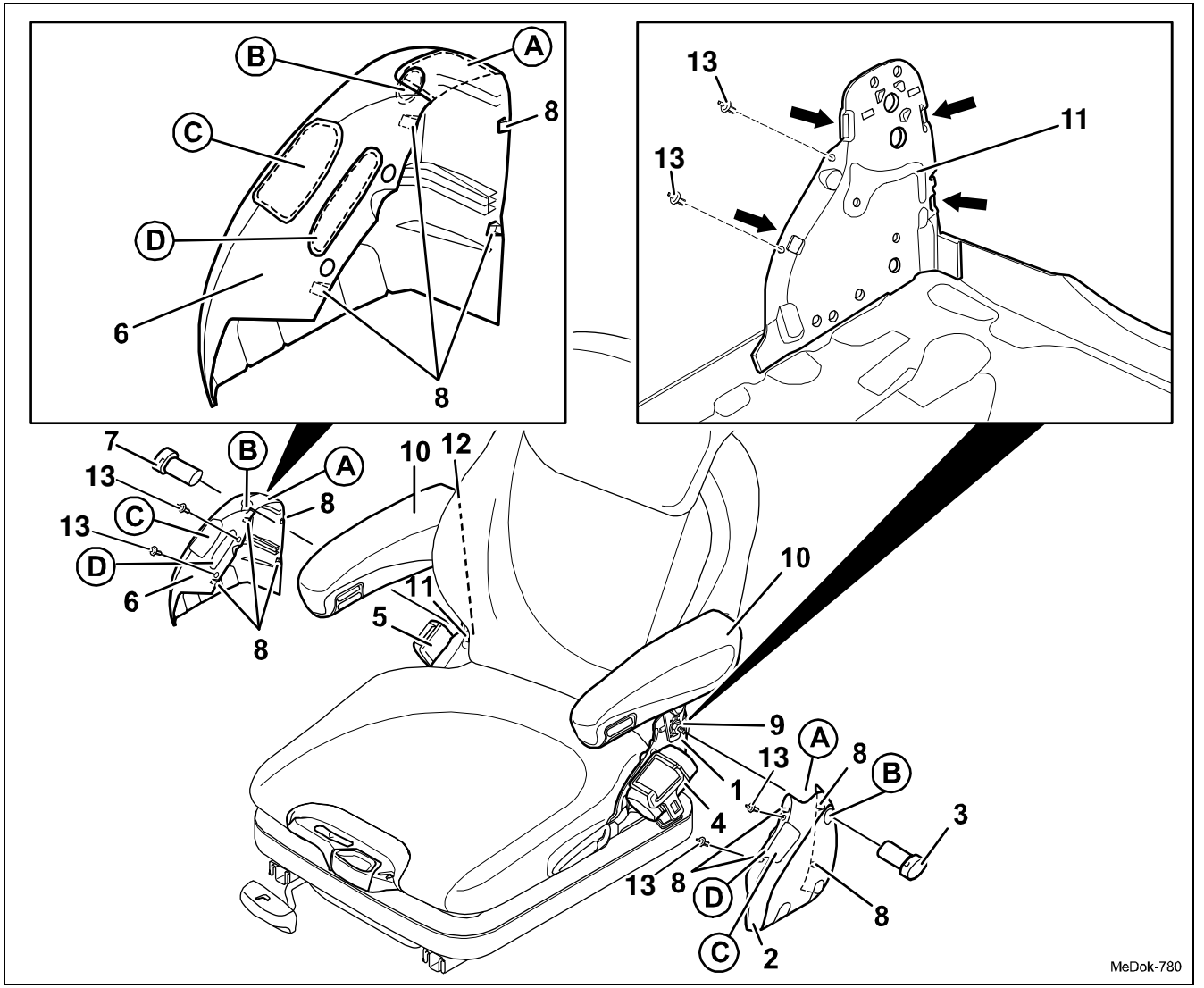
(1) Left backrest fixture (spring pack)
(2) Left cover
(3) Left cap cover
(4) Belt roller
(5) Seat belt buckle
(6) Right cover
(7) Right cap cover
(8) Catchers
(9) Left hexagon nut
(10) Armrest
(11) Right backrest fixture (spring pack)
(12) Right hexagon nut
(13) Expanding rivet



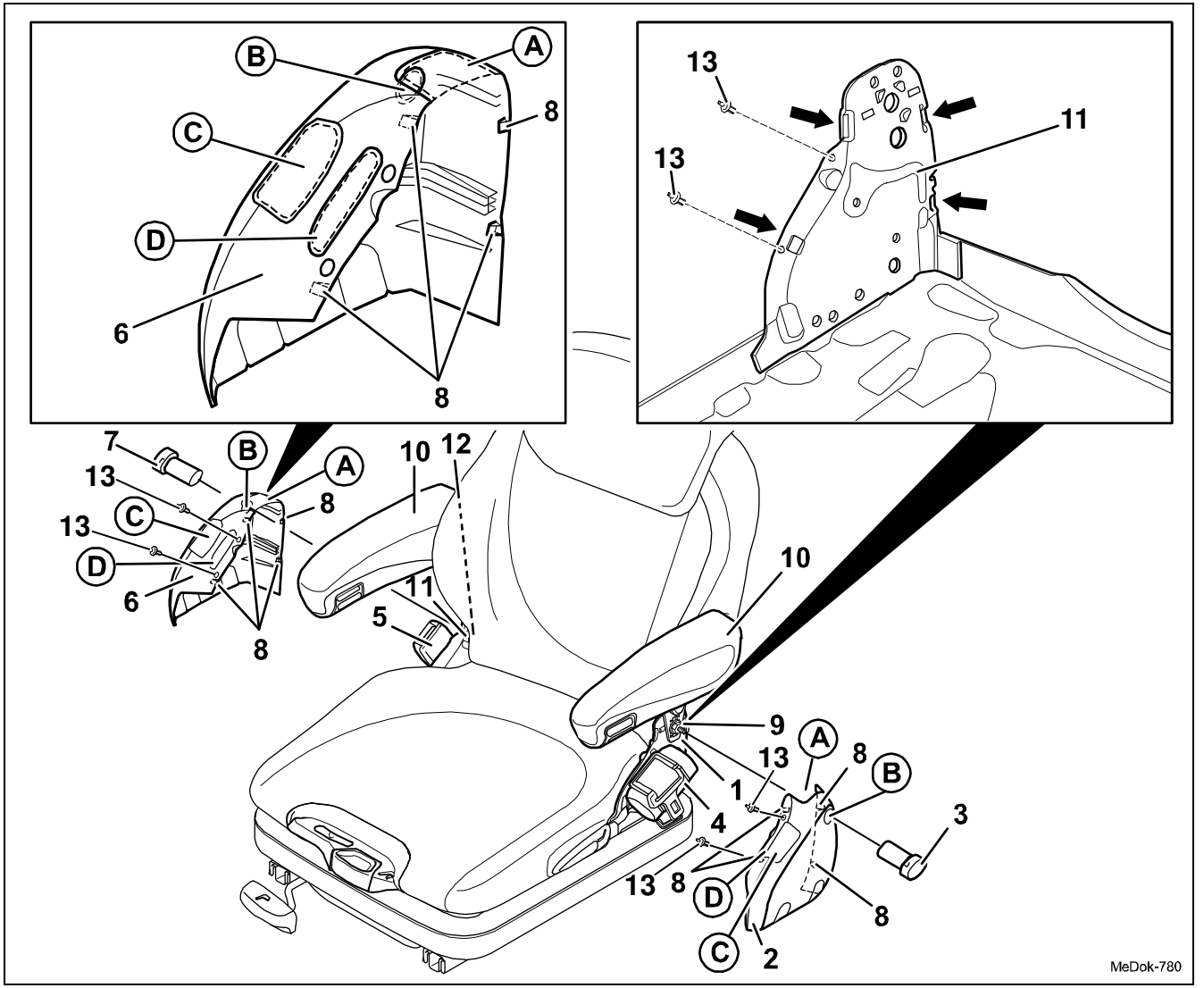
3.4 Cover, right and left – removal and installation

Removal, installation

1 **Seat with armrests (10):**
User a screw-driver to lever out the left cap cover (3) from the hexagon nut (9) and the right one (7) from the hexagon nut (12) and then remove them.
Installation note:
When attaching the left cap cover (3) or the right one (7), make sure the cap cover (3 or 7) is put on the hexagon nut (9 or 12).

2 Drive out four expanding rivets (13) on the covers at the left side (2) and at the right side (6)

3 Release the four catchers (8) of the left cover (2) from the imprints (arrow) on the backrest fixture (1) on the left.



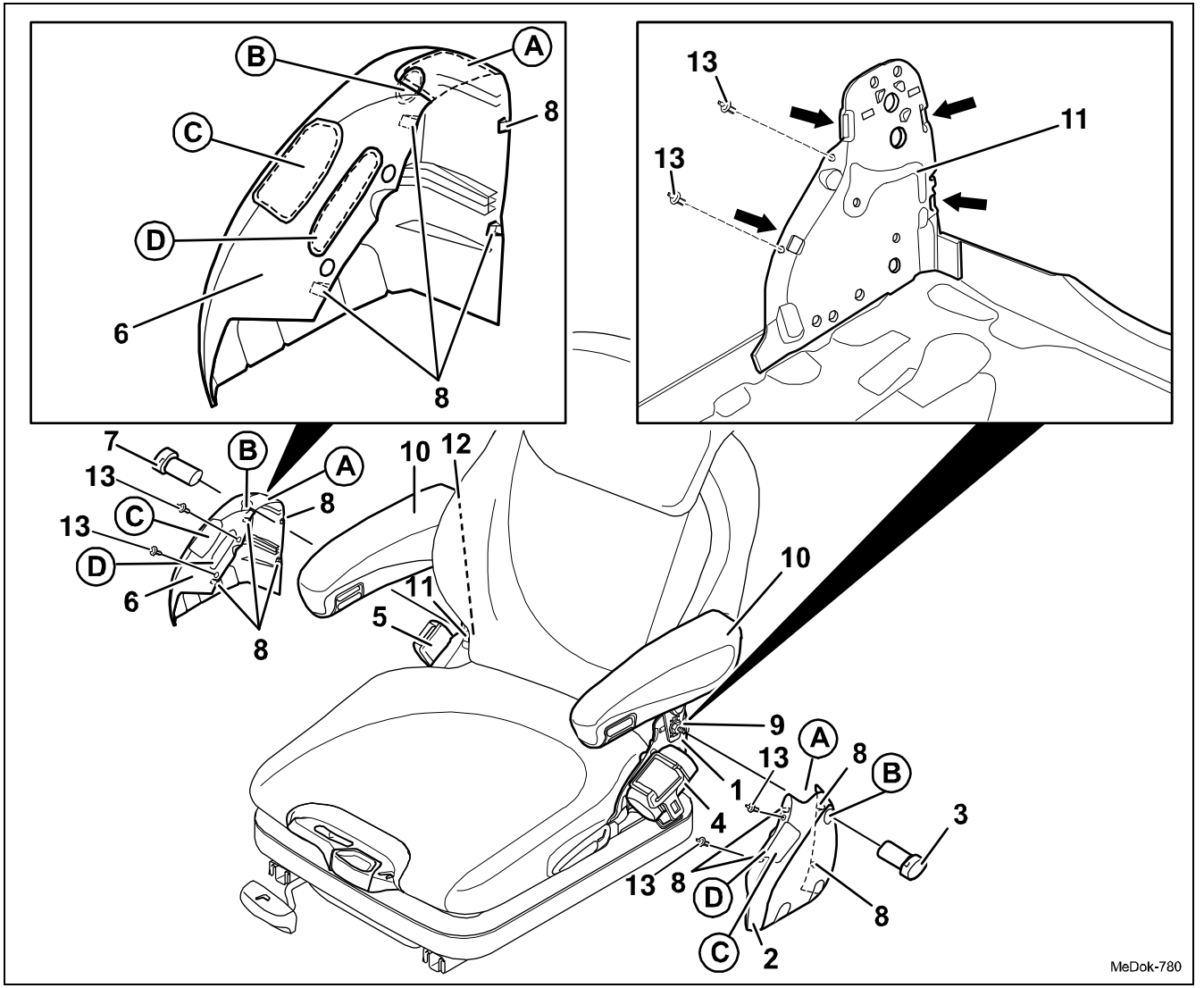
4 Pull out the belt of the belt roller (4) through the notch (D) of the left cover (2) and remove the cover on the left (2).

5 Release the four catchers (8) of the right cover (6) from the imprints (arrow) on the backrest fixture (11) on the right.

6 Pull the right cover (6) over the belt buckle (5) and remove it.

7 Replacement of the left (2) or right (6) cover:
When replacing the left (2) or right cover (6), break off the predetermined breaking points (A, B, C, D) for armrest (10), cap cover (3 or 7), belt buckle (5) and belt roller (4), if required.

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



3.5 Storage box – removal and installation (optional extra)

REMOVAL / INSTALLATION

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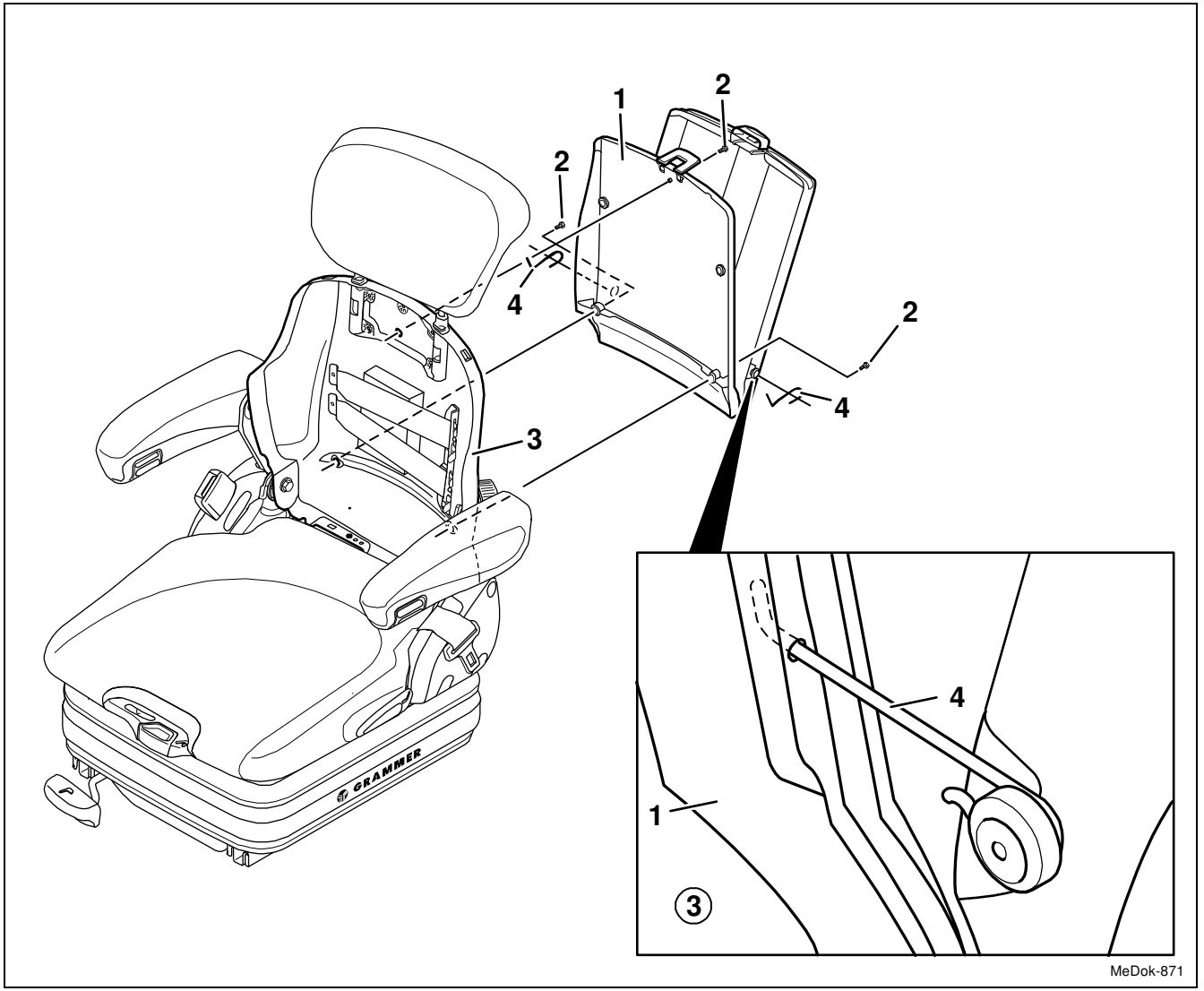
(1) Storage box
(2) Self-tapping screw ..... 1.6 Nm
(3) Backrest frame
(4) Hook



3.5 Storage box – removal and installation (optional extra)

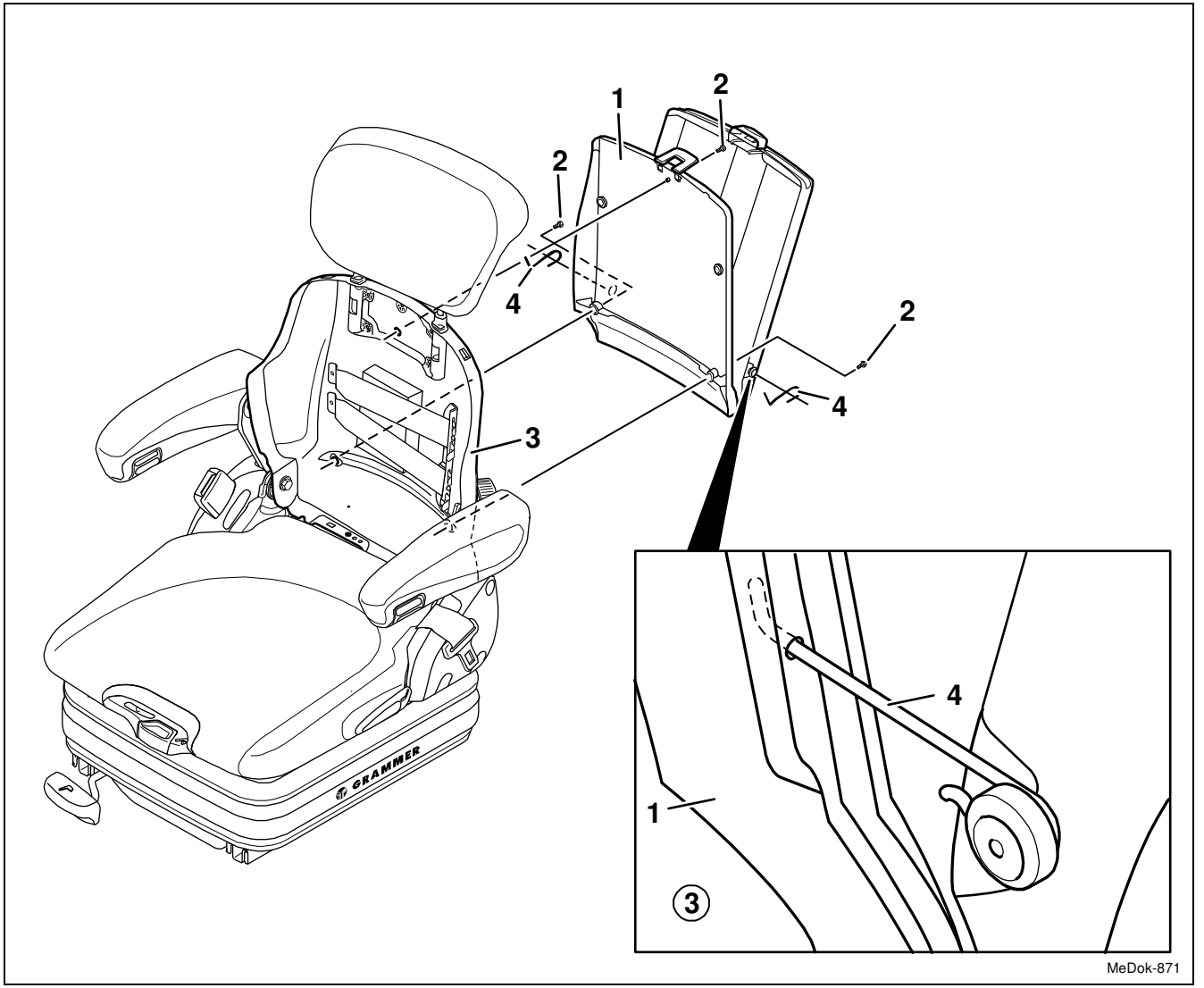
Removal and installation

1 Open the storage box (1).

2 Model with hooks (4):
Remove the hooks (4) from the storage box (1).

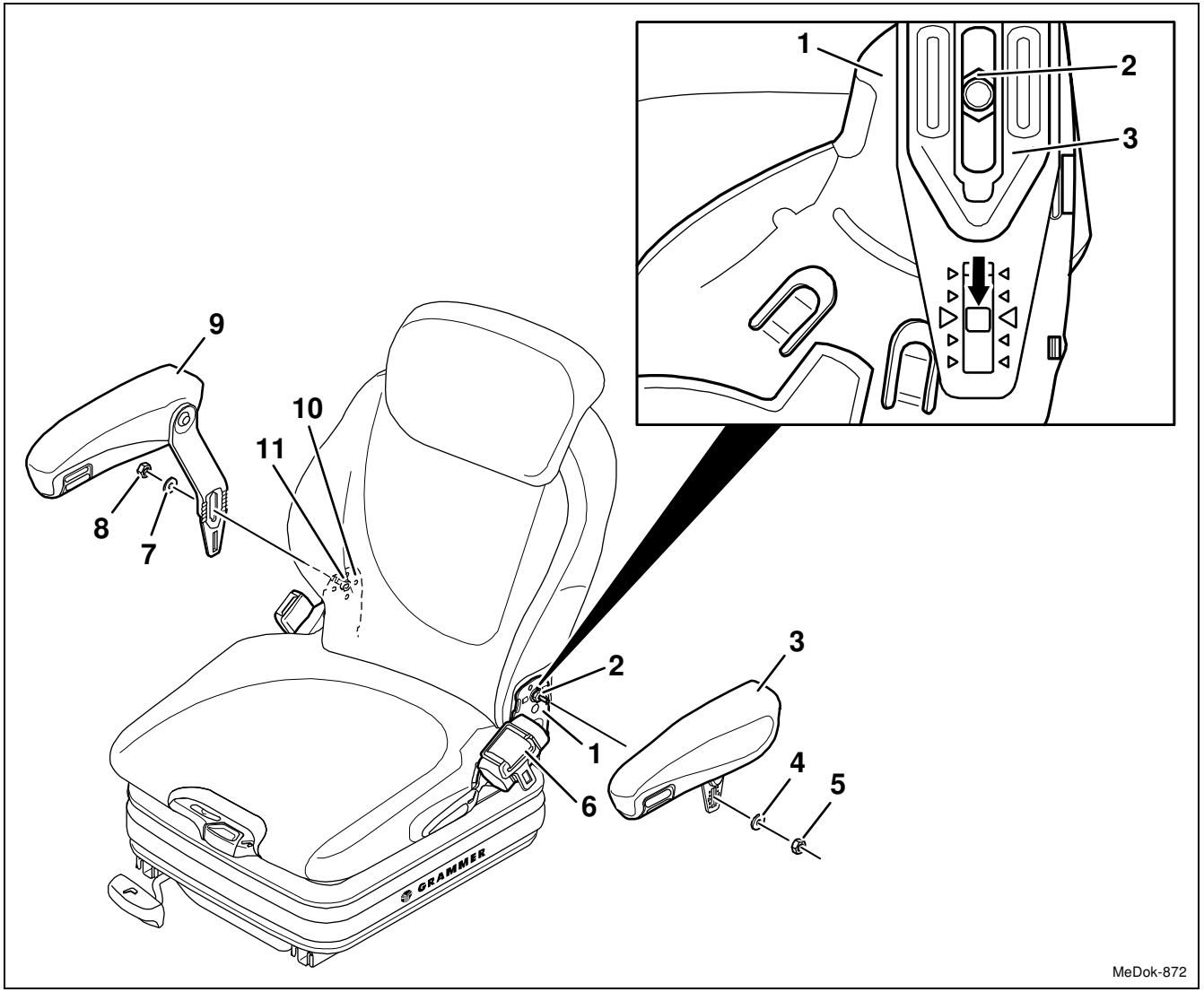
3 Undo the three self-tapping screws (2) and remove the storage box (1) from the backrest frame (3).
Installation note:
Self-tapping screw, 1.6 Nm.

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



3.6 Armrests – removal and installation (optional extra)

(1) Left backrest support (seat plate)
(2) Hexagon nut
(3) Armrest on the left
(4) Washer
(5) Hexagon nut ..... 11 Nm
(6) Belt roller
(7) Washer
(8) Hexagon nut..... 11 Nm
(9) Armrest on the right
(10) Right backrest support (seat plate)
(11) Hexagon nut



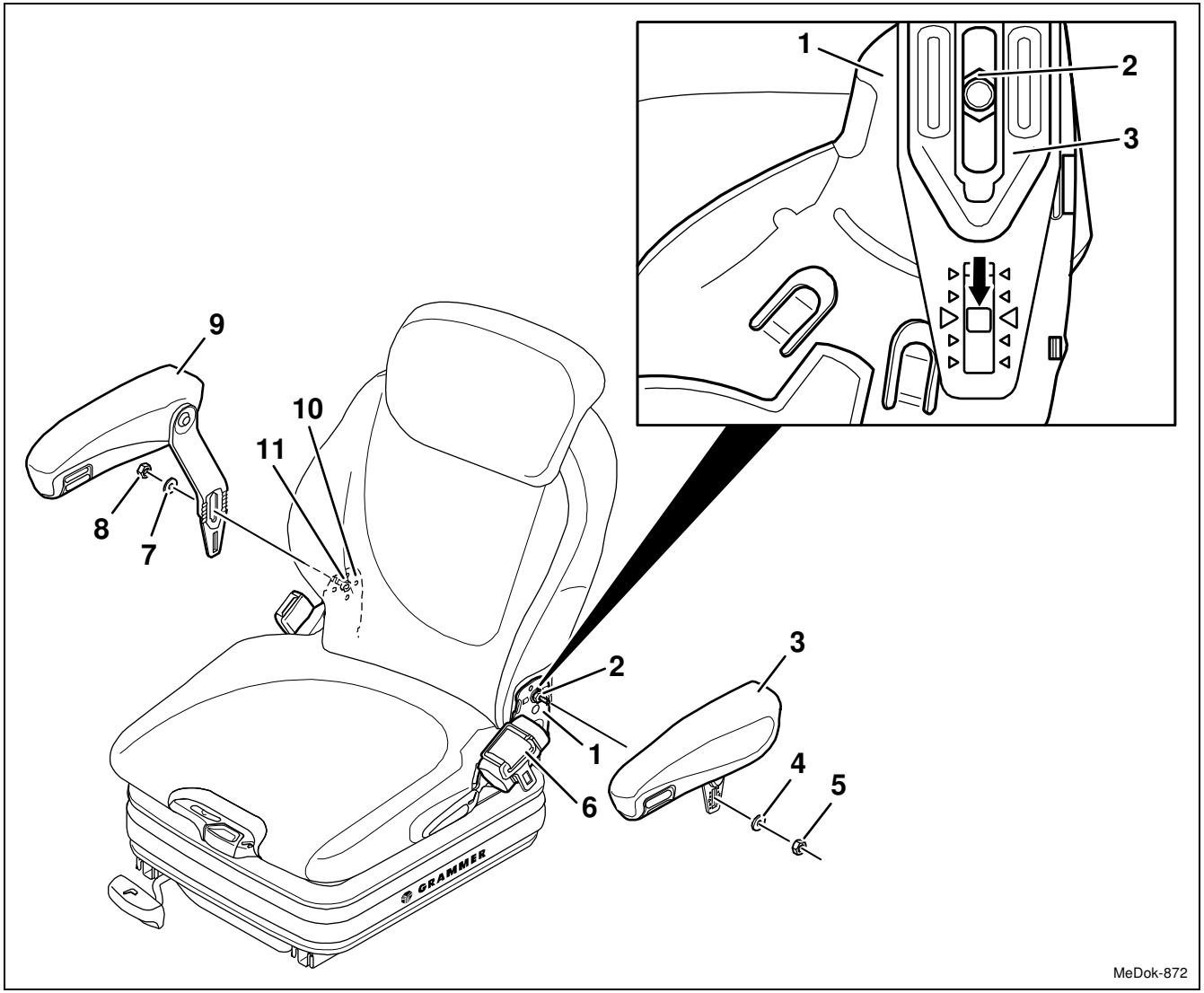
1 Remove the left and right covers (Chapter 3.4).

Removal and installation

2 Loosen the belt roller (6) to remove the left armrest (3) (see Chapter 3.9).
Note:
Loosen the belt roller (6) by turning the hexagon nut not more than two turns, otherwise the seat cushion has to be removed to secure the hexagon bolt.
Installation note:
Retighten the belt roller (6) upon the replacement of the left armrest (3).

3 Undo the hexagon nut (5 or 8) and remove the washer (4 or 7).
Installation note:
Hexagon nut (5 or 8), 11 Nm.

4 Remove the left (3) or right (9) armrest from the hexagon nut (2 or 11) and put it to the side.



Note:

The hexagon nut (2 or 11) acts as anti-rotation device and guide for the left (3) or right (9) armrest .

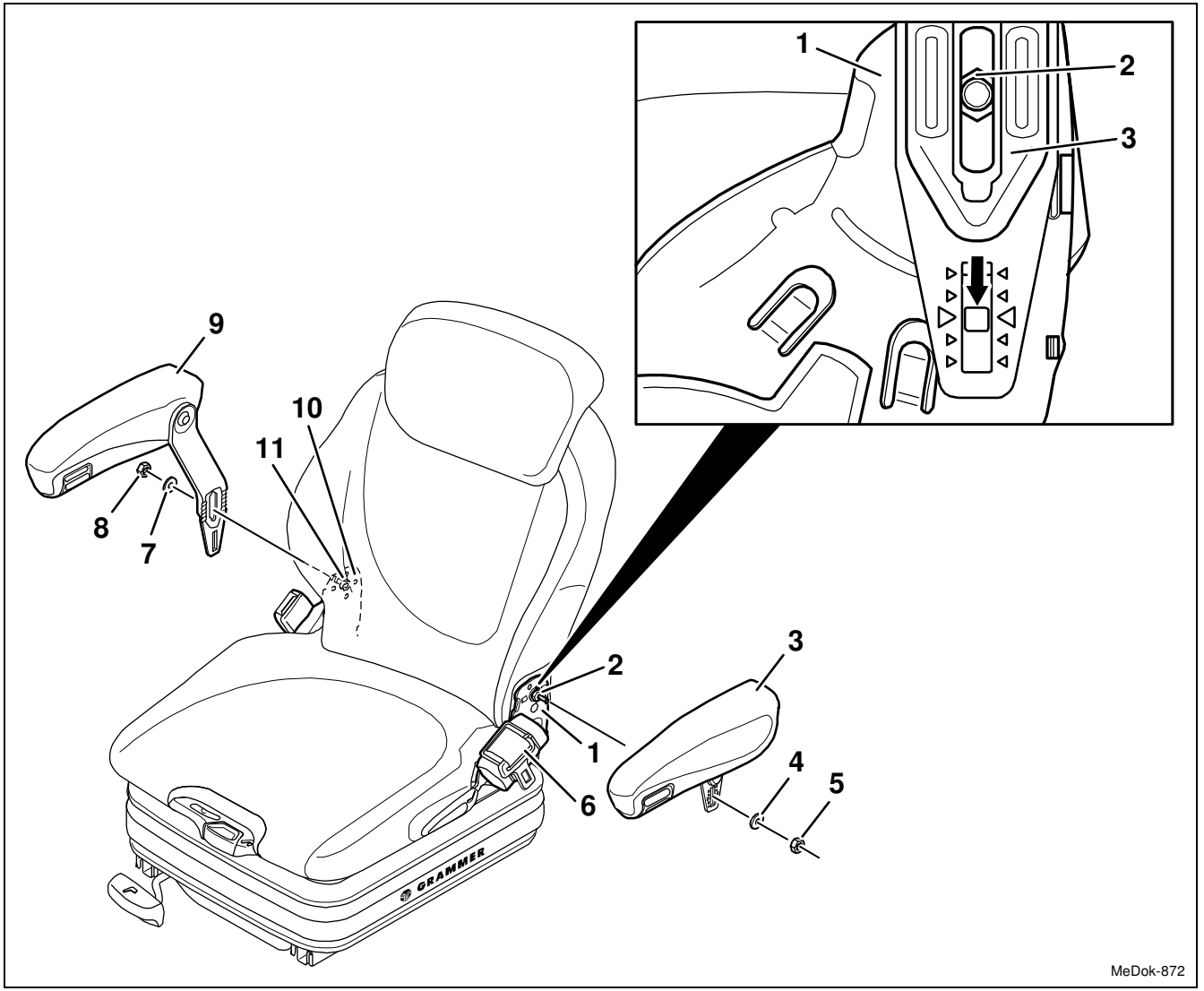
Installation note:

The two big imprinted triangles on the lower longitudinal hole of the left (3) or right (9) armrest mark the lock-in position for the middle screw position. When screwing, the marking should be located on the support of the backrest frame (1 or 10) at the height of the nose (arrow). Two further steps upwards and downwards are possible.

If the belt roller is fitted, do not install the armrest in the lowest position as otherwise the belt roller might not function correctly.

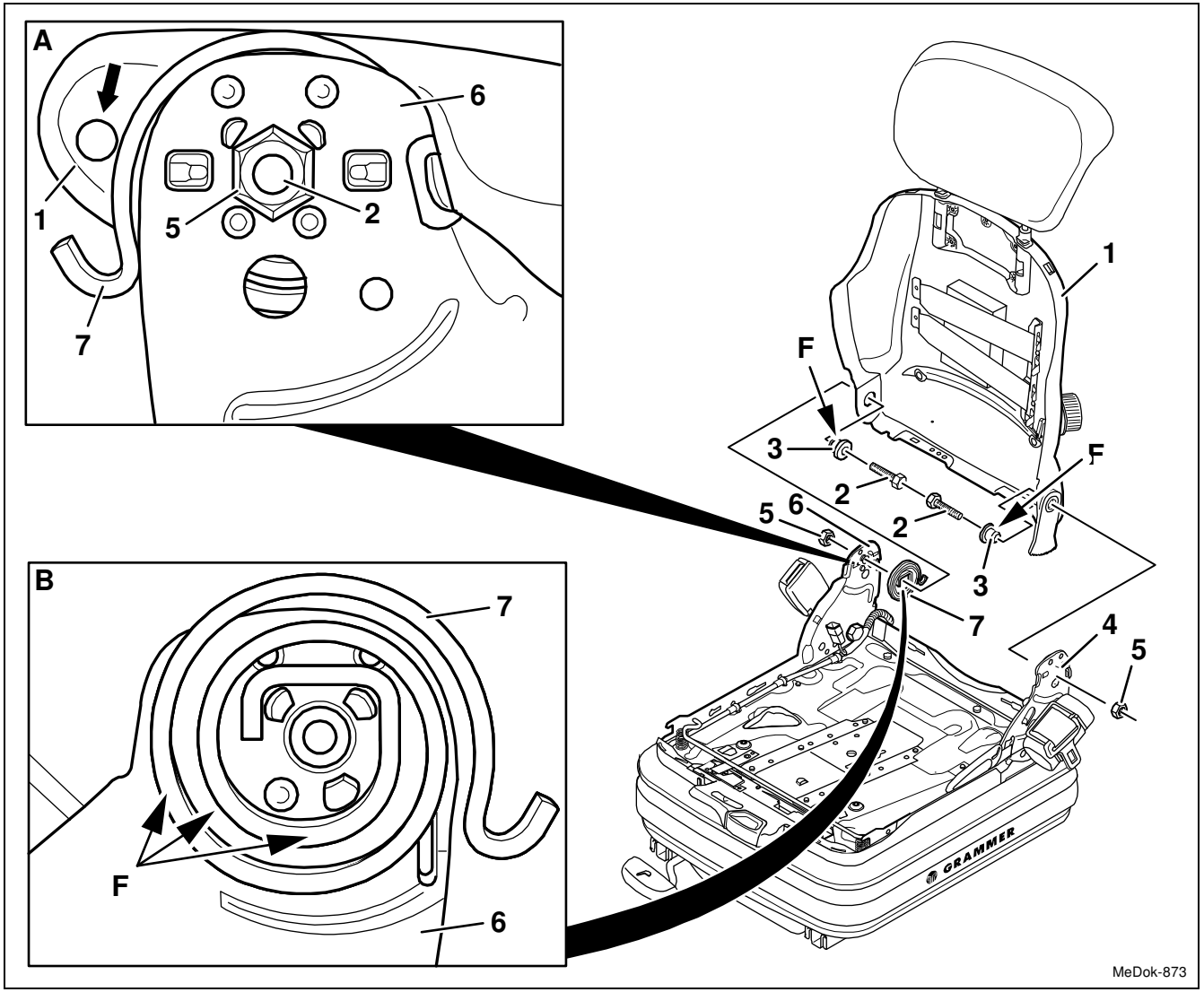
Carry out a **functional test** of the belt roller.

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



3.7 Backrest frame with retaining spring – removal and installation

(1) Backrest frame
(2) Flange bolt ..... 25 Nm
(3) Socket .....to grease
(4) Left backrest support (seat plate)
(5) Hexagon nut
(6) Right backrest support (seat plate)
(7) Retaining spring .....to grease



1 Remove the backrest cushion (Chapter 3.1).

2 Remove the seat cushion (Chapter 3.2).

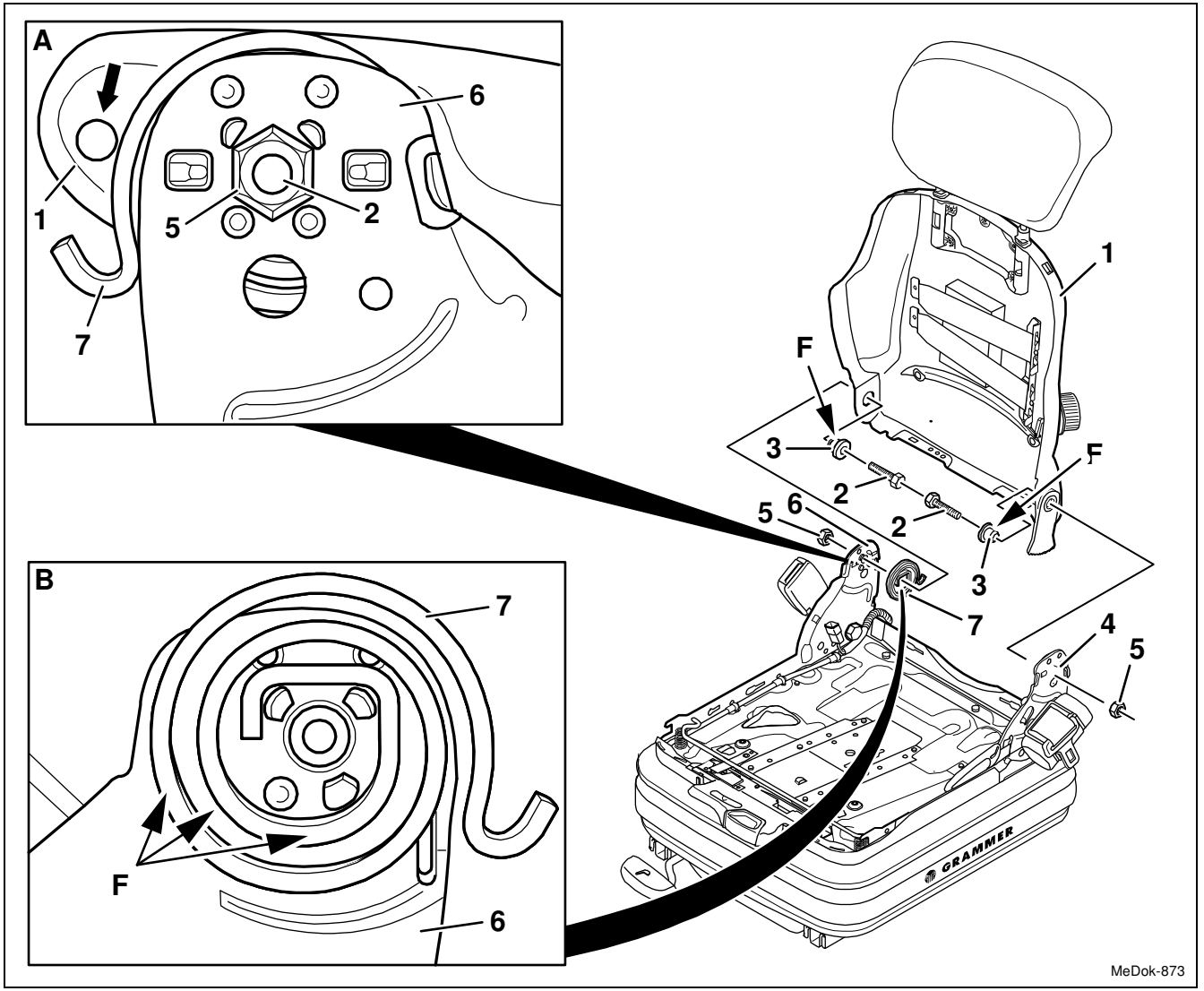
3 Remove the left and right covers (Chapter 3.4).

4 Seat with armrests:
Remove the armrests (Chapter 3.6).

Removal and installation

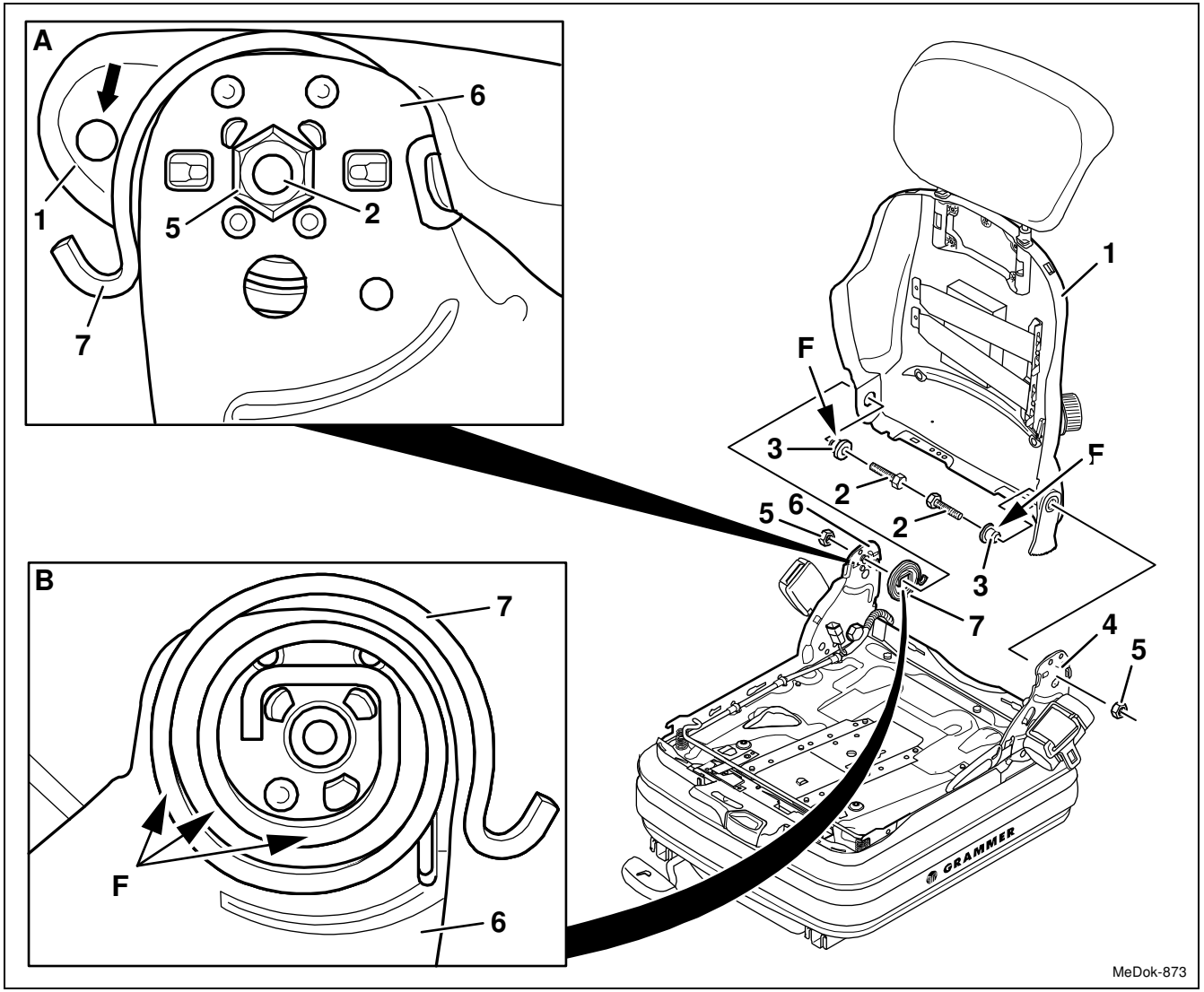
5 Fold the backrest frame (1) completely forwards to release the retaining spring (7).

6 Undo the two flange bolts (2) and take off the hexagon nuts (5).
Installation notes:
- Flange bolt (2), 25 Nm.
- The hexagon nut (5) acts as anti-rotation device and guide for the armrest (see Chapter 3.6). When tightening the flange bolt (2), the hexagon nut (5) must be held so that two opposite outer surfaces of the hexagon nut (5) are located vertically.



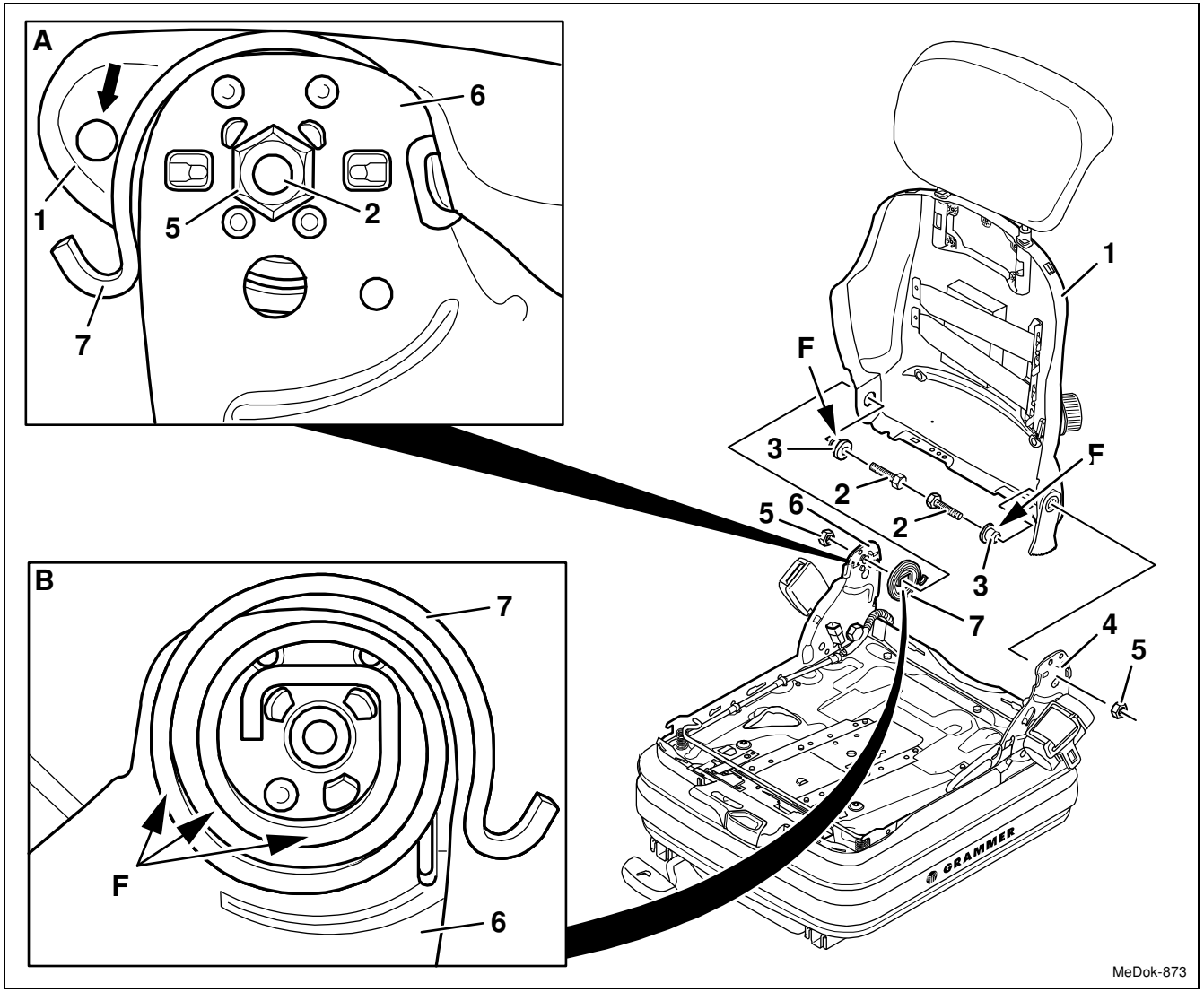
7 Slightly press the backrest frame (1) against the right backrest support (6) and simultaneously lever it out from the left backrest support (4) in upward direction, and then remove it.
Installation note:
When fitting the backrest frame (Fig. A/1), make sure the cam (arrow) is located over the hook of the retaining spring (Fig. A/7).

8 Remove the two bushings (3) from the left (4) and right backrest support (6).
Installation note:
Apply acid-free multi-purpose lubricant to the entire surface (F) of the bushing **(3)**.



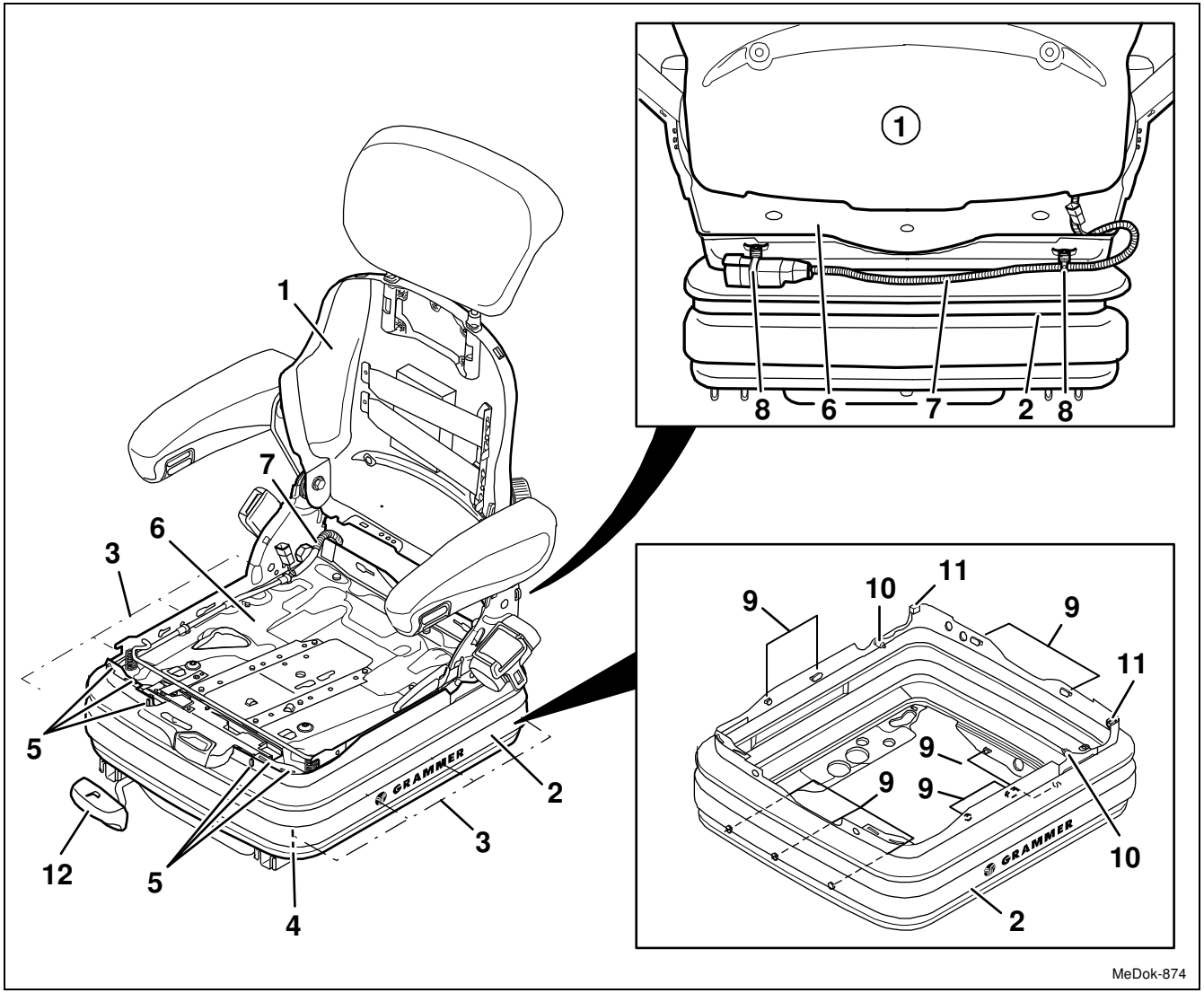
9 Remove the retaining spring (7) from the right backrest support (6).
Installation notes:
● Apply acid-free multi-purpose lubricant to the entire outer surface (F) of the retaining spring (Fig. B/7).
● Place the slightly tensioned retaining spring (Fig. B/7) onto the three punched noses of the backrest support (Fig. B/6), the hook of the retaining spring must show backwards (Fig. B/7).

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



3.8 Bellows – removal and installation

(1) Backrest frame
(2) Bellows
(3) Hook (lower suspension part)
(4) Lower suspension part
(5) Hook (seat plate)
(6) Seat plate
(7) Cable harness of the seat switch
(8) Push mount tie with wings
(9) Keyhole nub
(10) Mushroom-shaped nub
(11) Bellows lug
(12) Handle for fore/aft adjustment



3.8 Bellows – removal and installation

1 Remove the backrest cushion (Chapter 3.1).

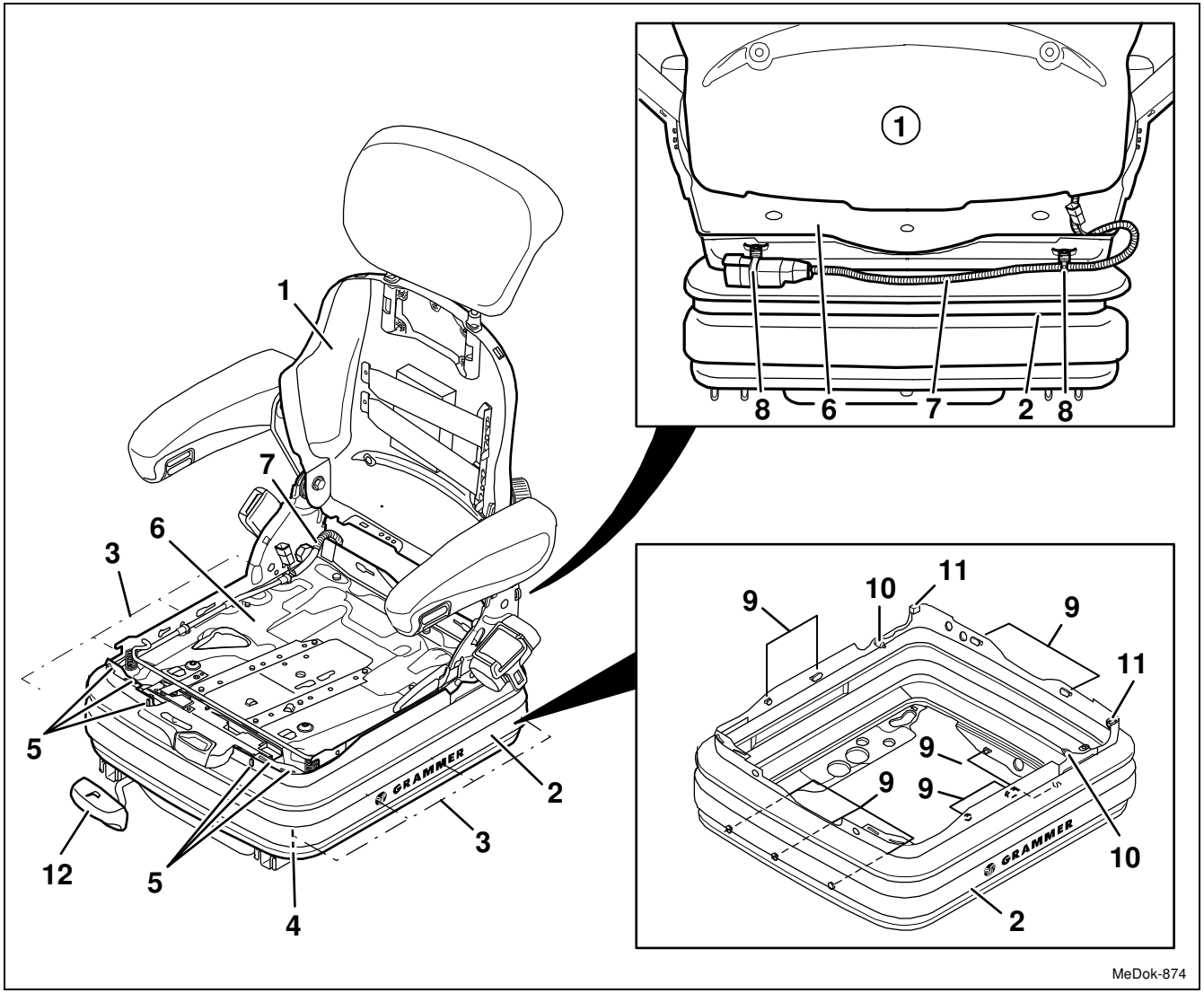
2 Remove the seat cushion (Chapter 3.2).

3 Remove the left and right covers (Chapter 3.4).

4 MSG 75E(L):
Remove the front cover (Chapter 3.25)

Removal and installation

5 Pull out the two push mount ties with wings (8) from the seat plate (6) and the bellows (2).
Note:
Push the cable harness of the seat switch (7) forwards between the seat plate (6) and the backrest frame (1) and place it onto the seat plate (6) to protect the cable harness of the seat switch (7) against possible impacts.

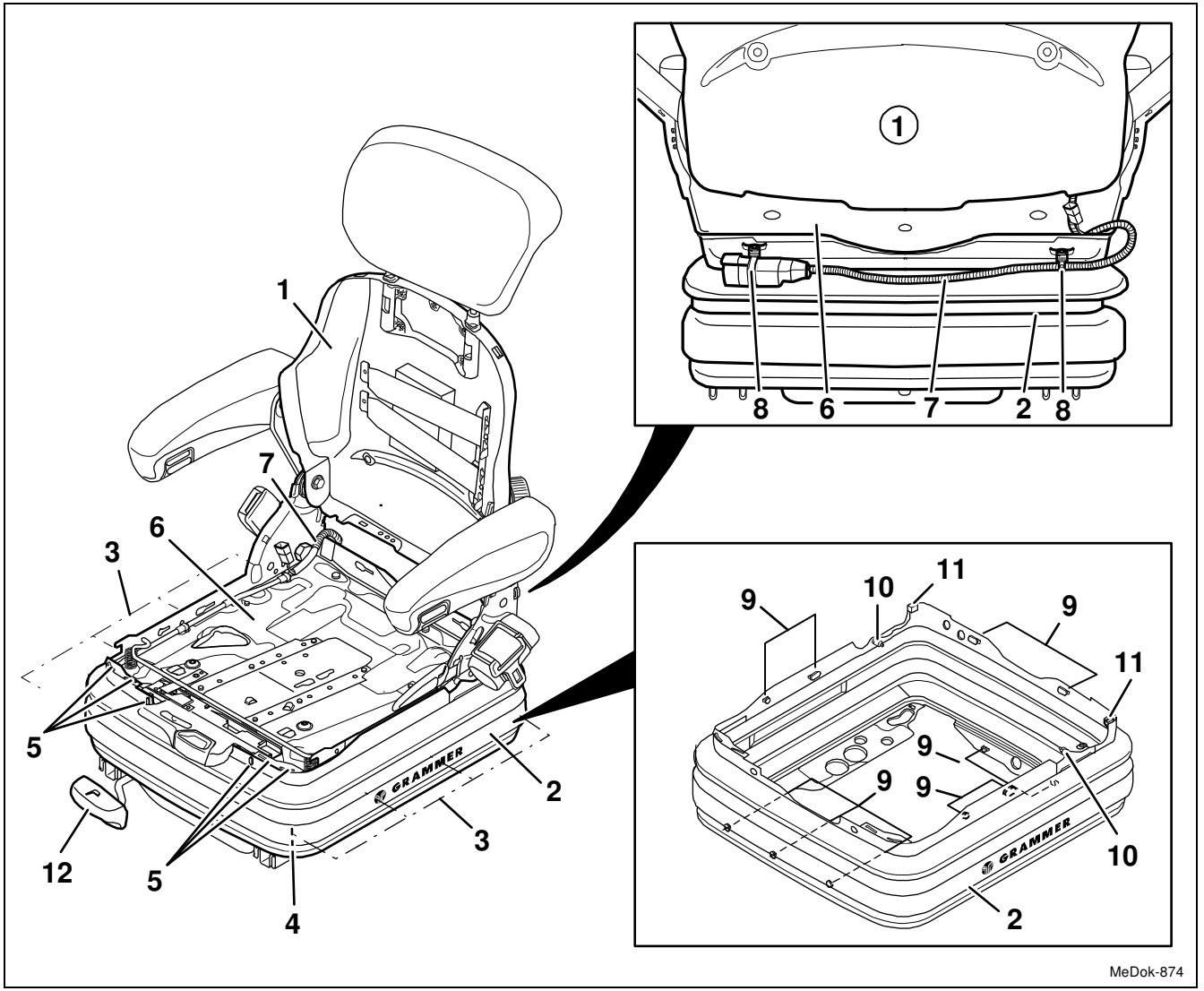


5 Remove the two mushroom-shaped nubs (10) from the seat plate (6).
Installation note:
Stick a mandrel (size 3) through the opening in the bellows (2) into the mushroom-shaped nub (10) to the end stop. For stretching the mushroom-shaped nub (10), pull the bellows (2) slightly towards the mandrel while sticking the mushroom-shaped nub (10) into the hole of the seat plate (6). Pull out the mandrel from the mushroom-shaped nub (10).

6 Take off two bellows lugs (11) from the seat plate (6).

7 Take off the six keyhole nubs (9) from the seat plate (6) on the right, left and back sides.

8 Take off the bellows (2) on the front side from the six hooks (5).



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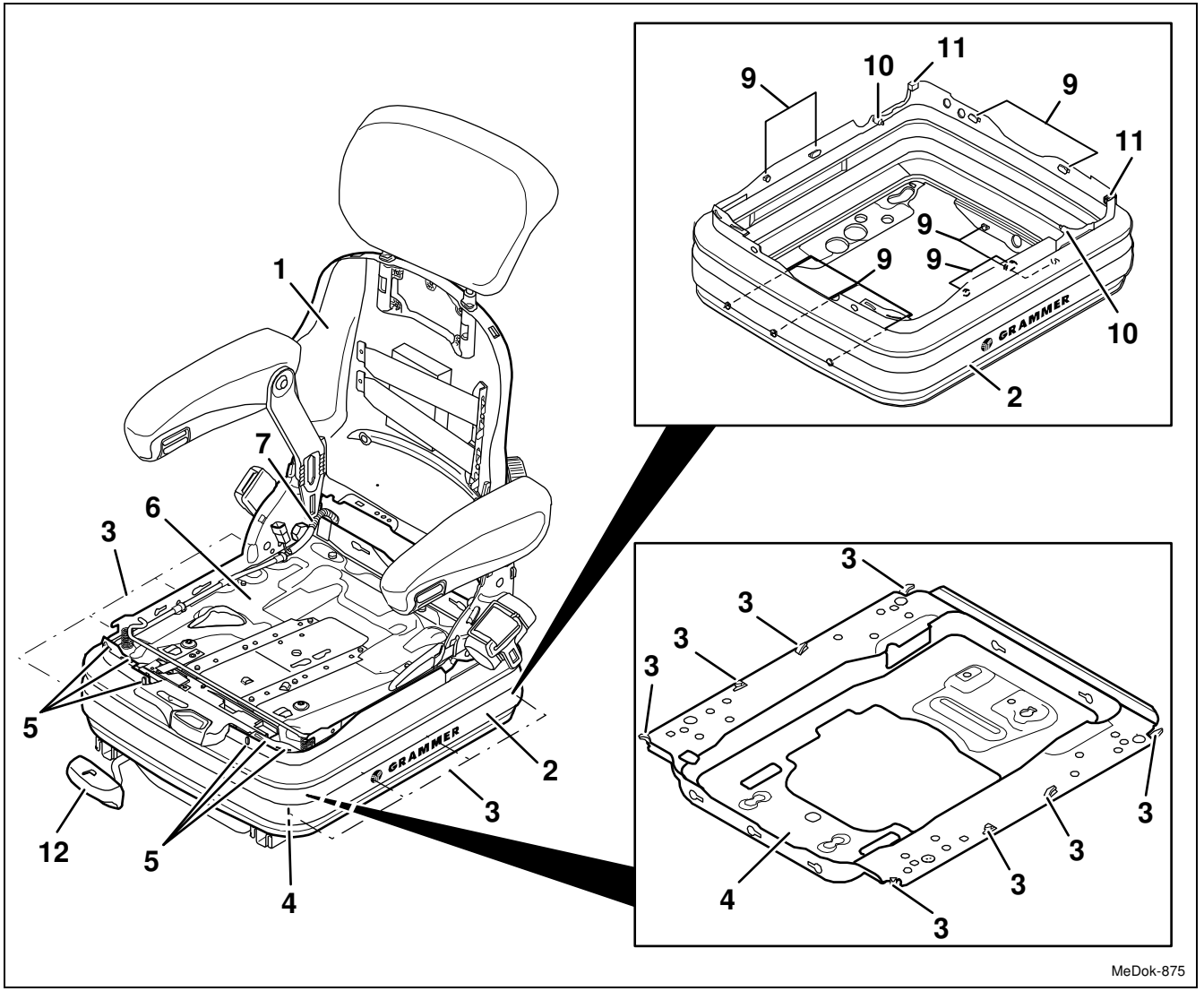
9 Take off three keyhole nubs (9) from the lower part of the suspension (4) at the front and two keyhole nubs (9) from the lower part of the suspension (4) at the back.

10 Take off the bellows (2) from the eight hooks (3) on the left and right sides from the lower part of the suspension (4).

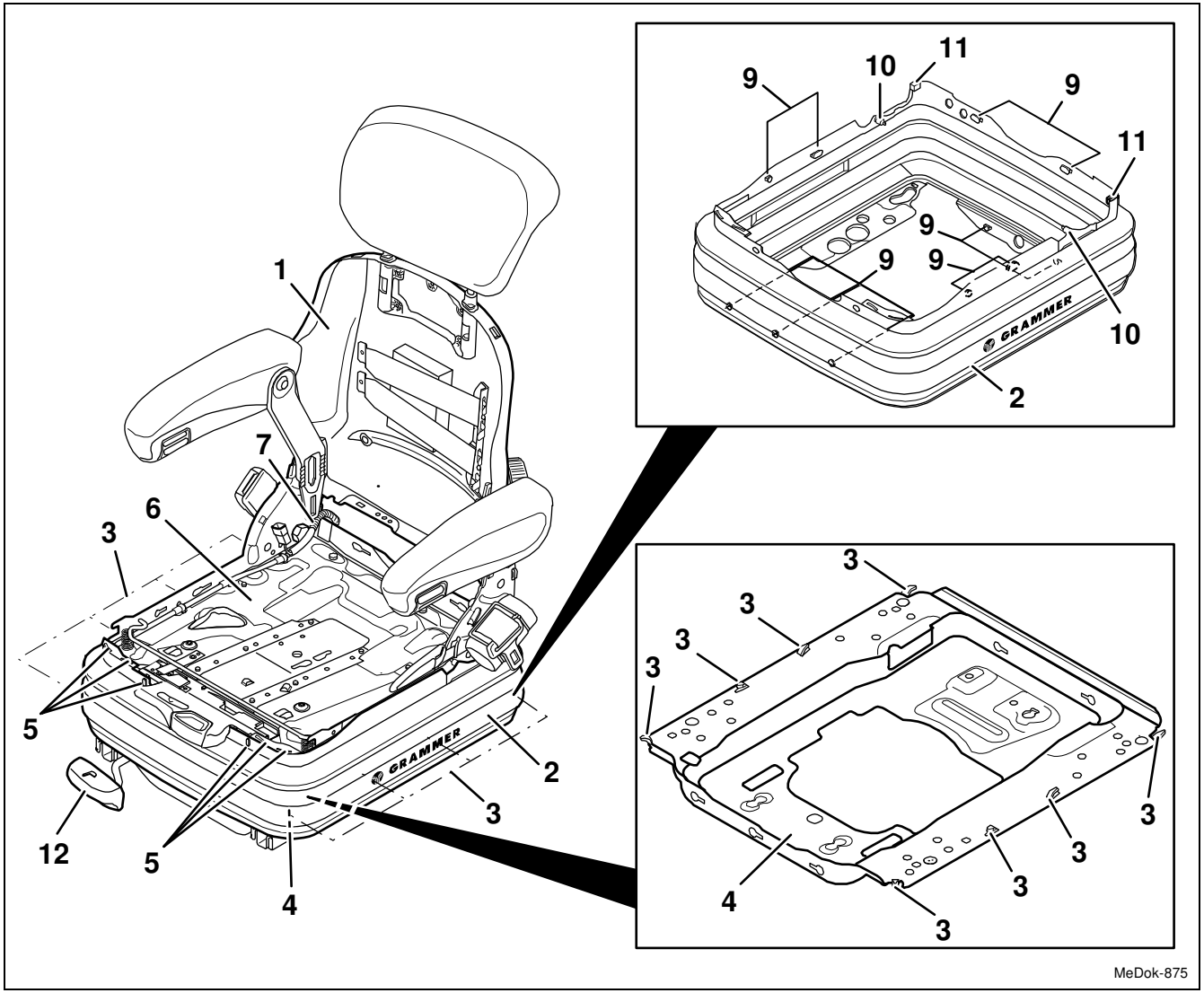
11 Pull the back part of the bellows (2) down over the lower part of the suspension (4).

12 Pull the front part of the bellows (2) over the lower part of the suspension (4) and the handle for fore/aft adjustment (12). Remove the bellows (2) in downward direction.



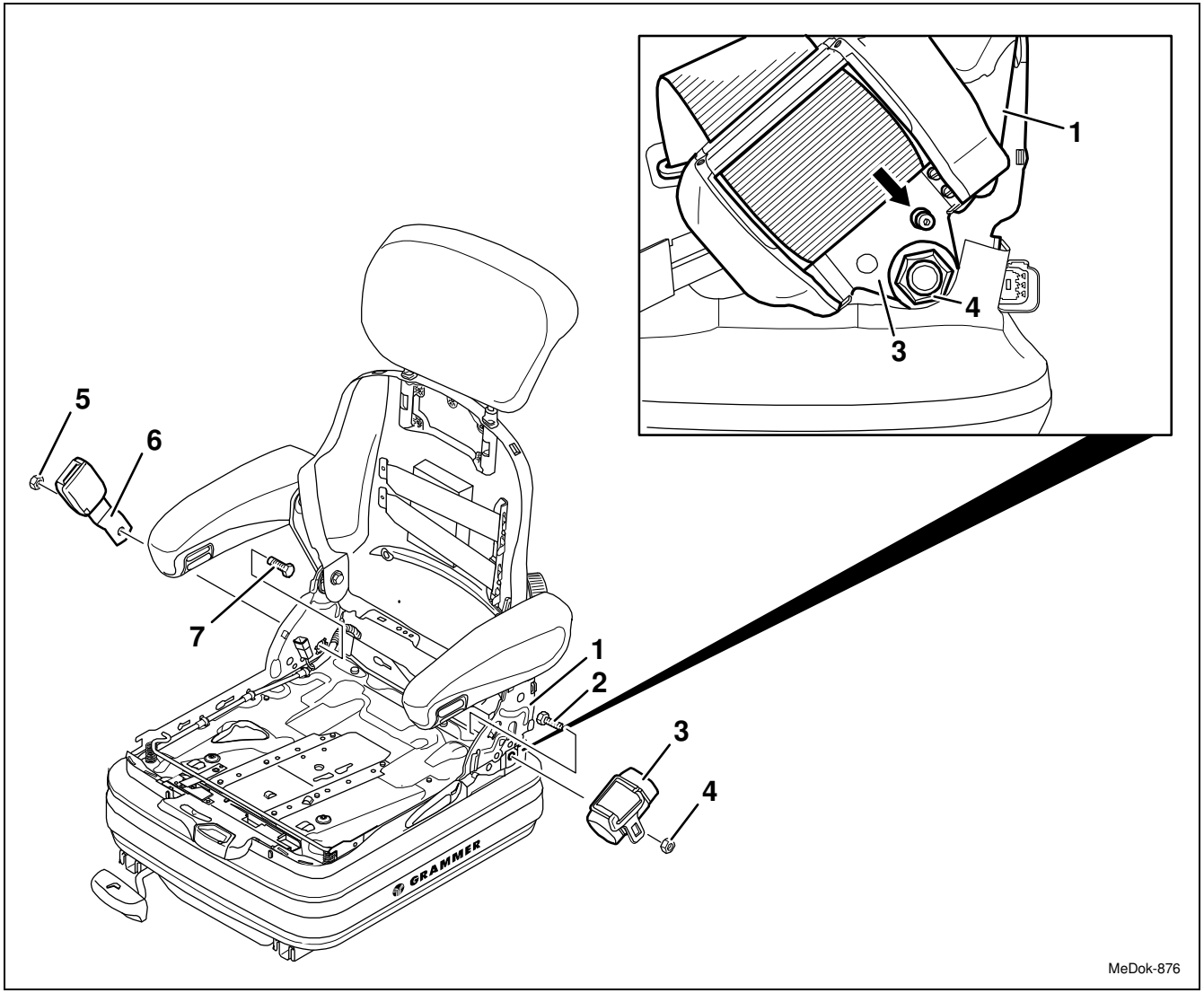
13 MSG 75GL / EL:
Pull the additional air supply out of the bellows.
Installation note:
Place the additional air supply in the middle fold with the compressed-air hose connection on the left (see Chapter 3.24).

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



3.9 Belt roller and belt buckle – removal and installation

(1) Left backrest support (seat plate)
(2) Hexagon bolt
(3) Belt roller
(4) Hexagon nut ..... 50 Nm
(5) Hexagon nut ..... 50 Nm
(6) Belt buckle
(7) Hexagon bolt



1 Remove the backrest cushion (Chapter 3.1).

2 Remove the seat cushion (Chapter 3.2).

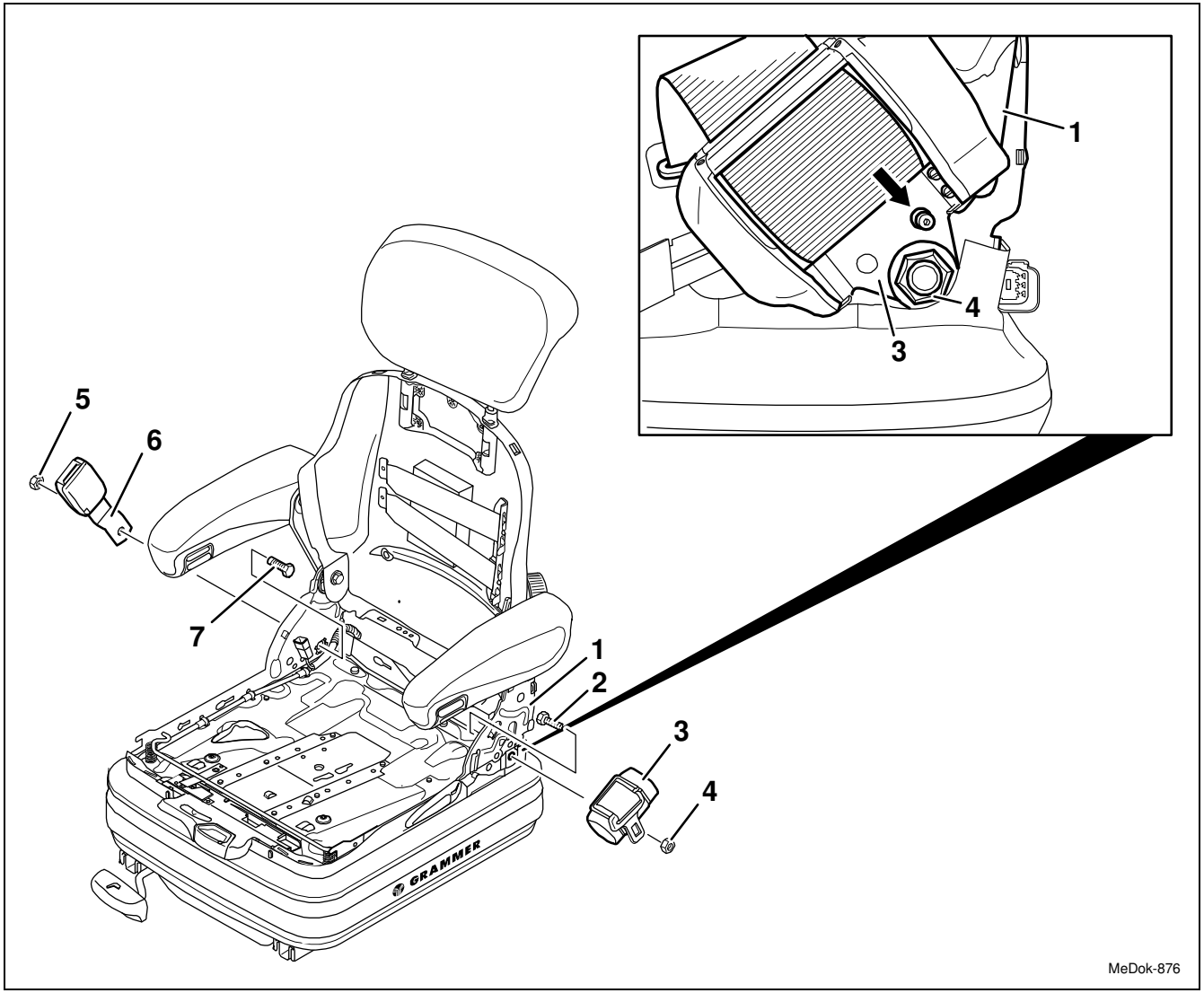
3 Remove the left and right covers (Chapter 3.4).

Removal and installation

4 Unscrew the hexagon nut (4).
Installation note:
Hexagon nut (4), 50 Nm.

5 Pull out the hexagon bolt (2) and take off the belt roller (3).
Installation notes:
● The hole on the belt roller (3) must be pushed over the rivet (arrow) on the backrest support (1) on the left side.
● When subsequently installing the belt roller (3), the respective predetermined breaking point of the left cover is to be broken (see Chapter 3.4).

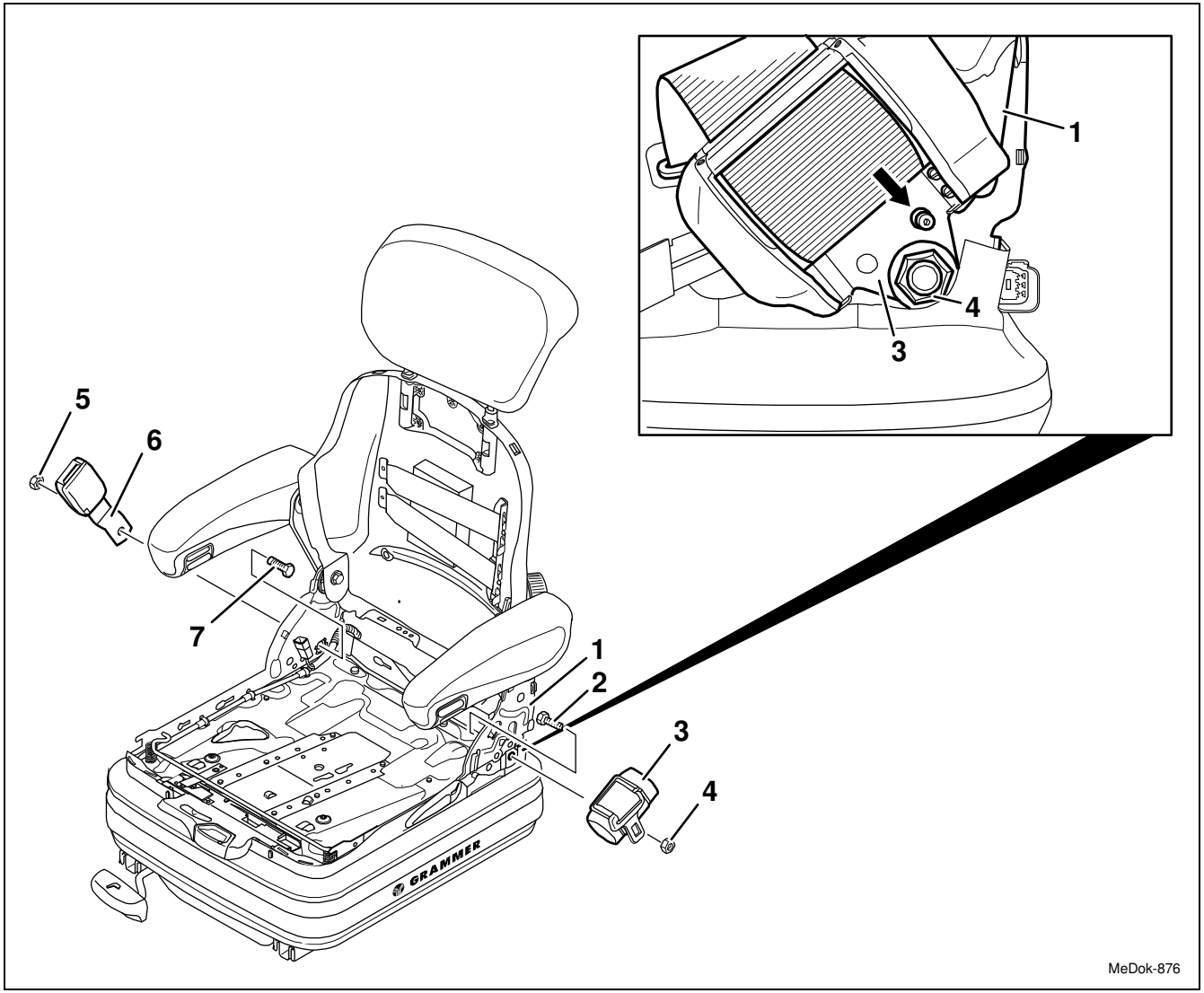
If a belt roller is fitted, do not mount the armrest in the lowest position as otherwise the function of the belt roller might be impaired.
Carry out a **functional test** of the belt roller.



6 Unscrew the hexagon nut (5).
Installation note:
Hexagon nut (5), 50 Nm.

7 Pull out the hexagon bolt (7) and take off the belt buckle (6).
Installation notes:
● Turn the belt buckle (6) to the correct position before tightening the hexagon nut (5) for the belt buckle (6) to pass through the cover hole (see Chapter 3.4).
● When subsequently installing the belt buckle (6), the respective predetermined breaking point of the right cover is to be broken (see Chapter 3.4).

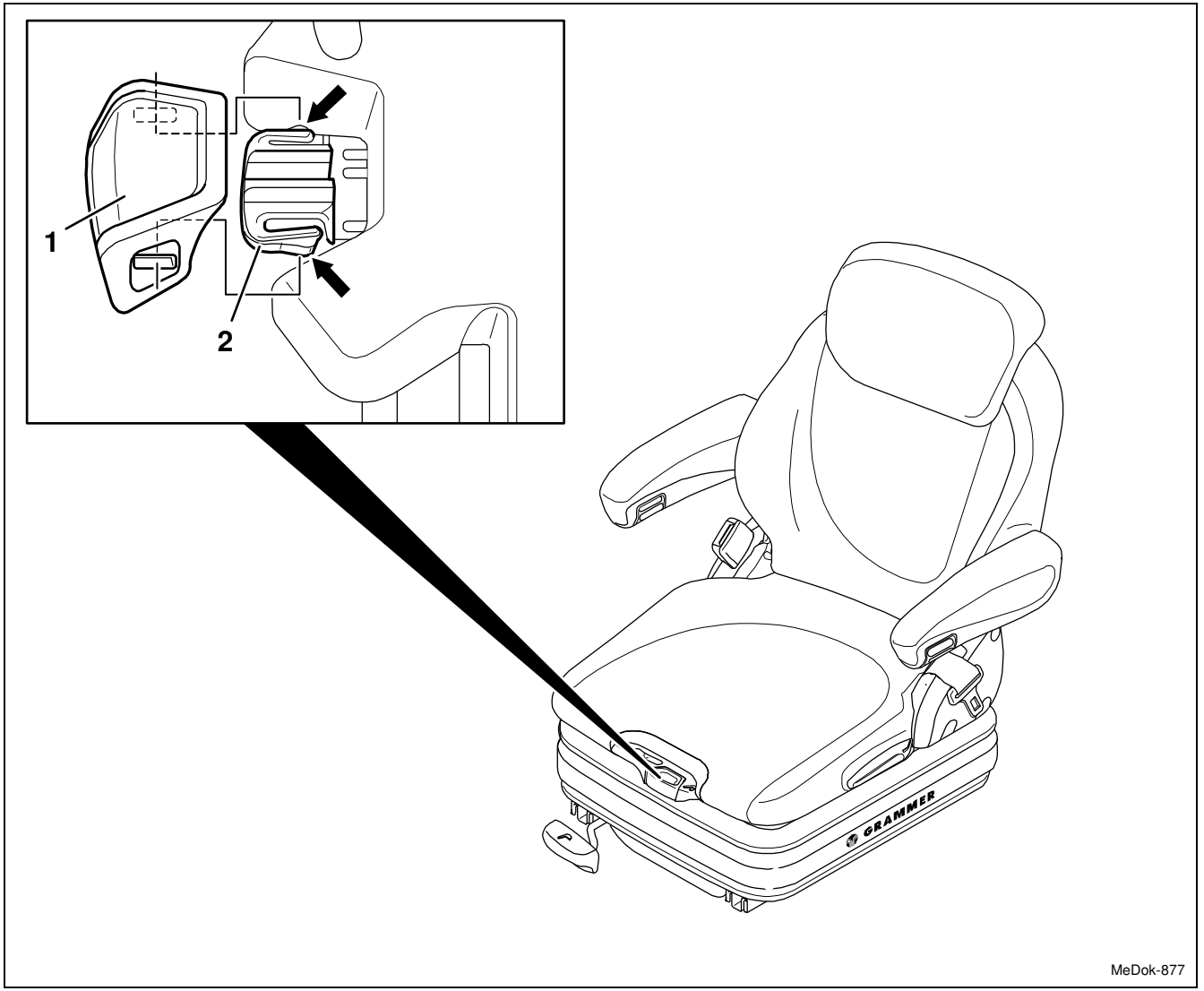
8 Re-install the components in the reverse order of their removal.



3.10 Handle for level adjustment – removal and installation

(1) Handle for level adjustment

(2) Lever (control)



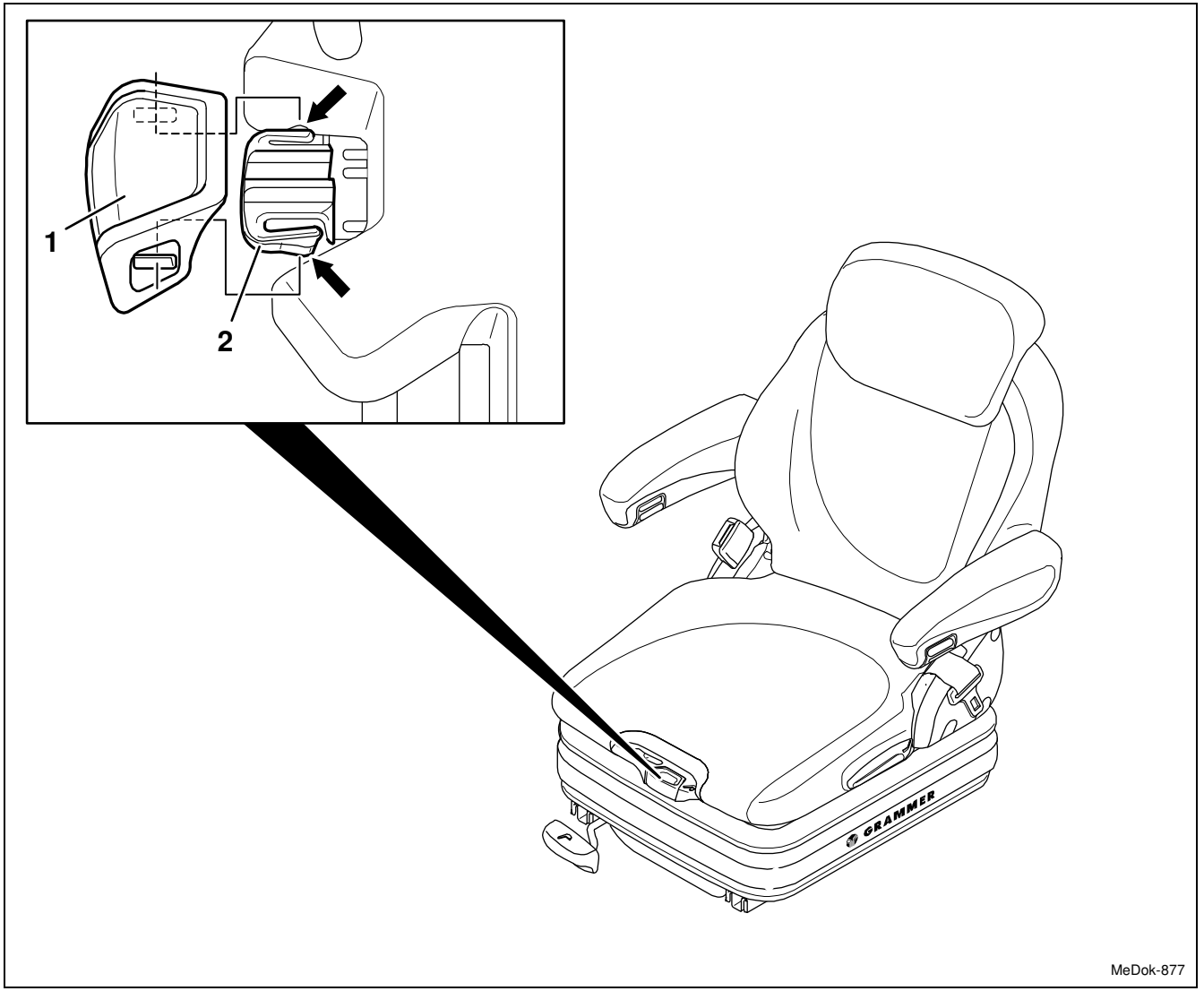
3.10 Handle for level adjustment – removal and installation

Removal and installation

1 Press the handle for level adjustment (1) down.

2 **WARNING** Deformation!
The handle for level adjustment (11) is wedged with the handle (2) into two latching noses (arrows) on the left and right side (11). Carefully separate the parts. If the handle for level adjustment (1) is deformed, replace it.
Use a screwdriver to press on the catches through the lateral openings in the handle for level adjustment (1). Firmly grasp the handle for level adjustment (1) and pull it off the lever (2).

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



3.11 Handle for fore/aft adjustment – removal and installation

REMOVAL / INSTALLATION

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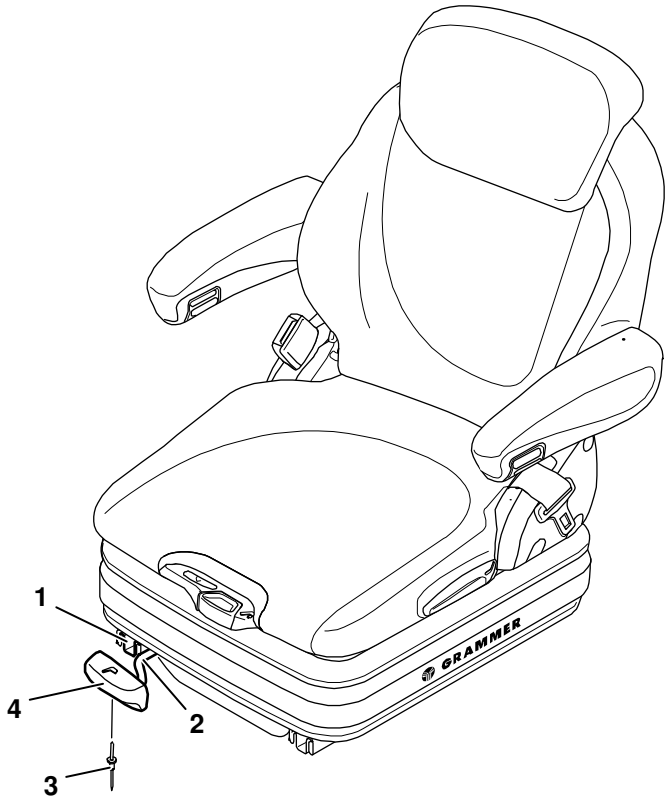
(1) Entire adjusting rail assembly
(2) Locking lever
(3) Blind rivet
(4) Handle for fore/aft adjustment



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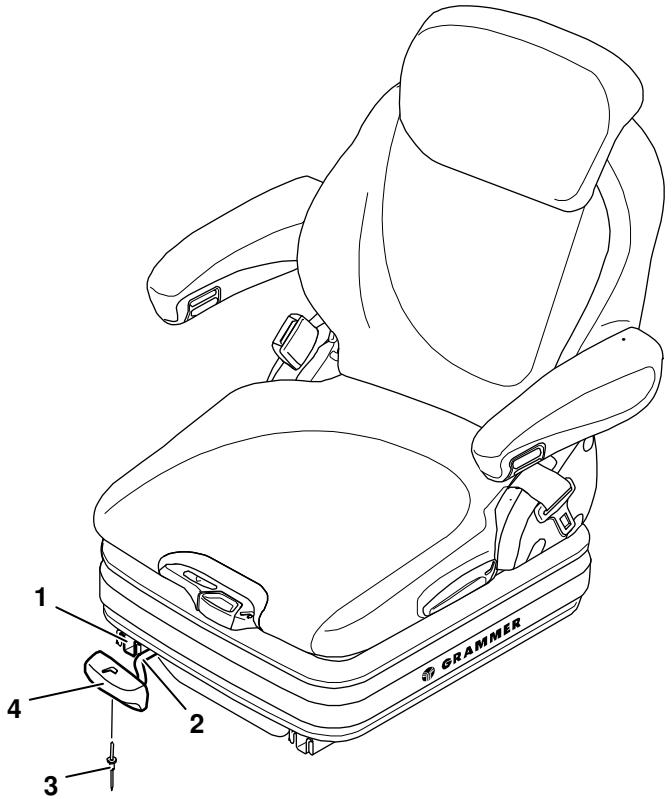
3.11 Handle for fore/aft adjustment – removal and installation

Removal and installation

1 Bore out the rivet head and drive out the blind rivet (3).

2 Pull off the handle for fore/aft adjustment (4) from the locking lever (2) of the entire adjusting rail (1).

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



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3.12 Handle for backrest adjustment – removal and installation

(1) Handle for backrest adjustment ..... to replace

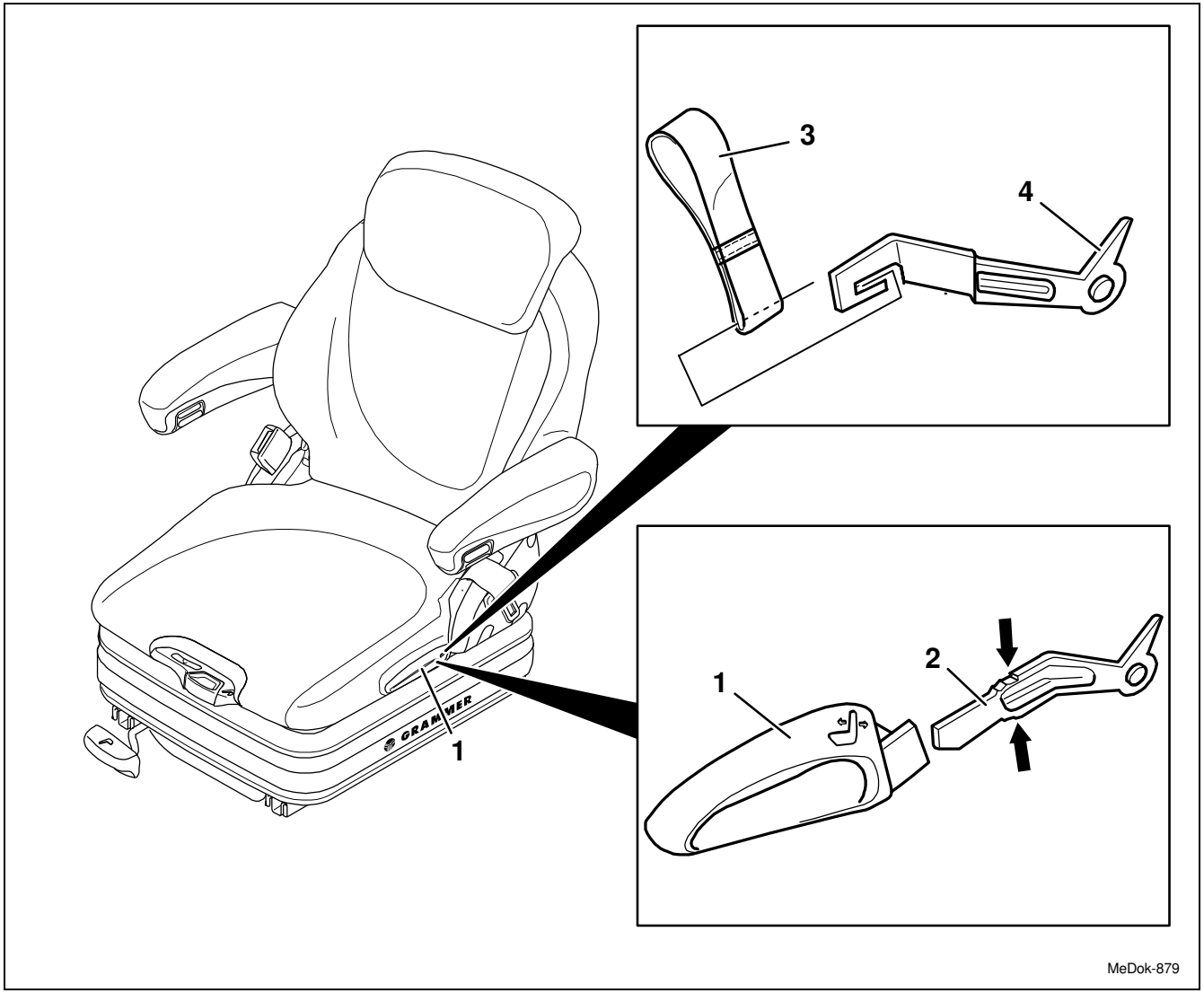
(2) Adjustment lever

(3) Loop for backrest adjustment (special design: MSG 75/511 seat type)

(4) Actuator lever (special design: MSG 75/511 seat type)

1 Remove the backrest cushion (Chapter 3.1).

2 Remove the seat cushion (Chapter 3.2).



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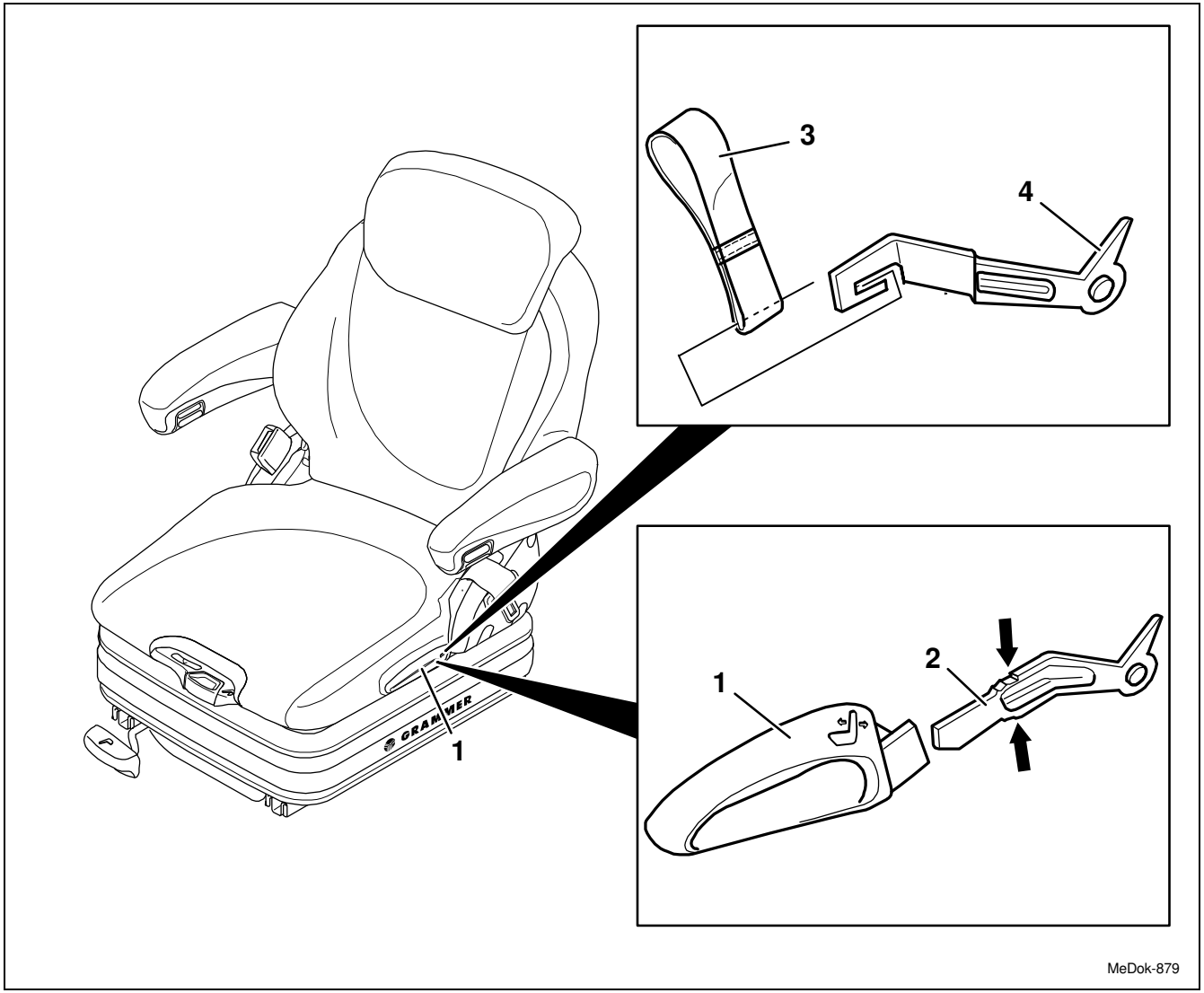
3.12 Handle for backrest adjustment – removal and installation

Removal and installation

3 Firmly grasp the handle for backrest adjustment (1) and pull it off the adjustment lever (2).

Installation notes:

- The handle for backrest adjustment (1) is wedged on the adjustment lever (2) and will be damaged while pulling it off. The handle for backrest adjustment (1) must always be replaced by a new one.
- The handle for backrest adjustment (1) must be slid on the adjustment lever (2) until the end stop is reached (arrow).



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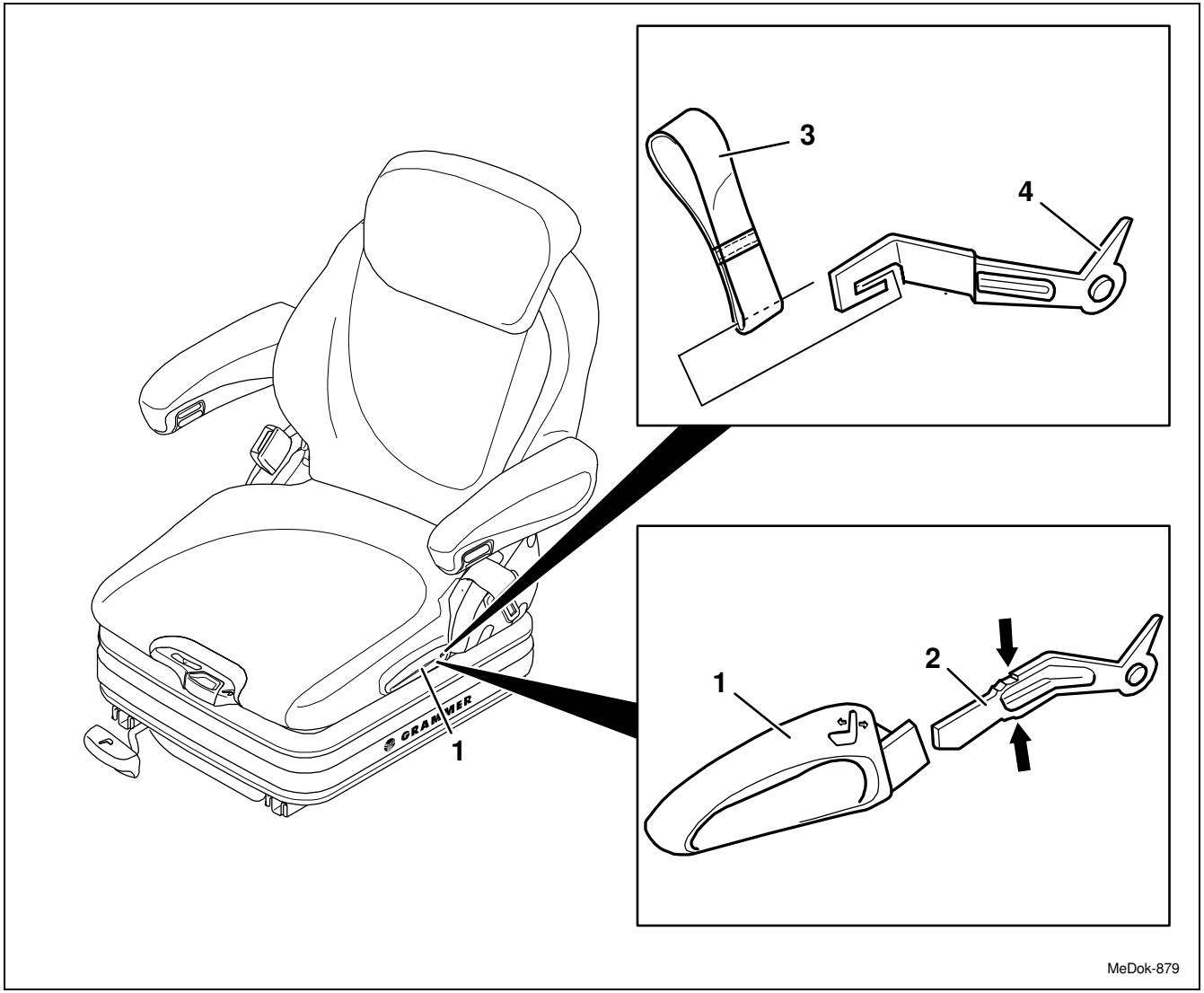
4 Special design: Seat MSG 75/511 with narrow cushion
Thread the loop for backrest adjustment (3) from the adjustment lever (4).

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



3.13 Backrest lock – removal and installation of the entire assembly

REMOVAL / INSTALLATION

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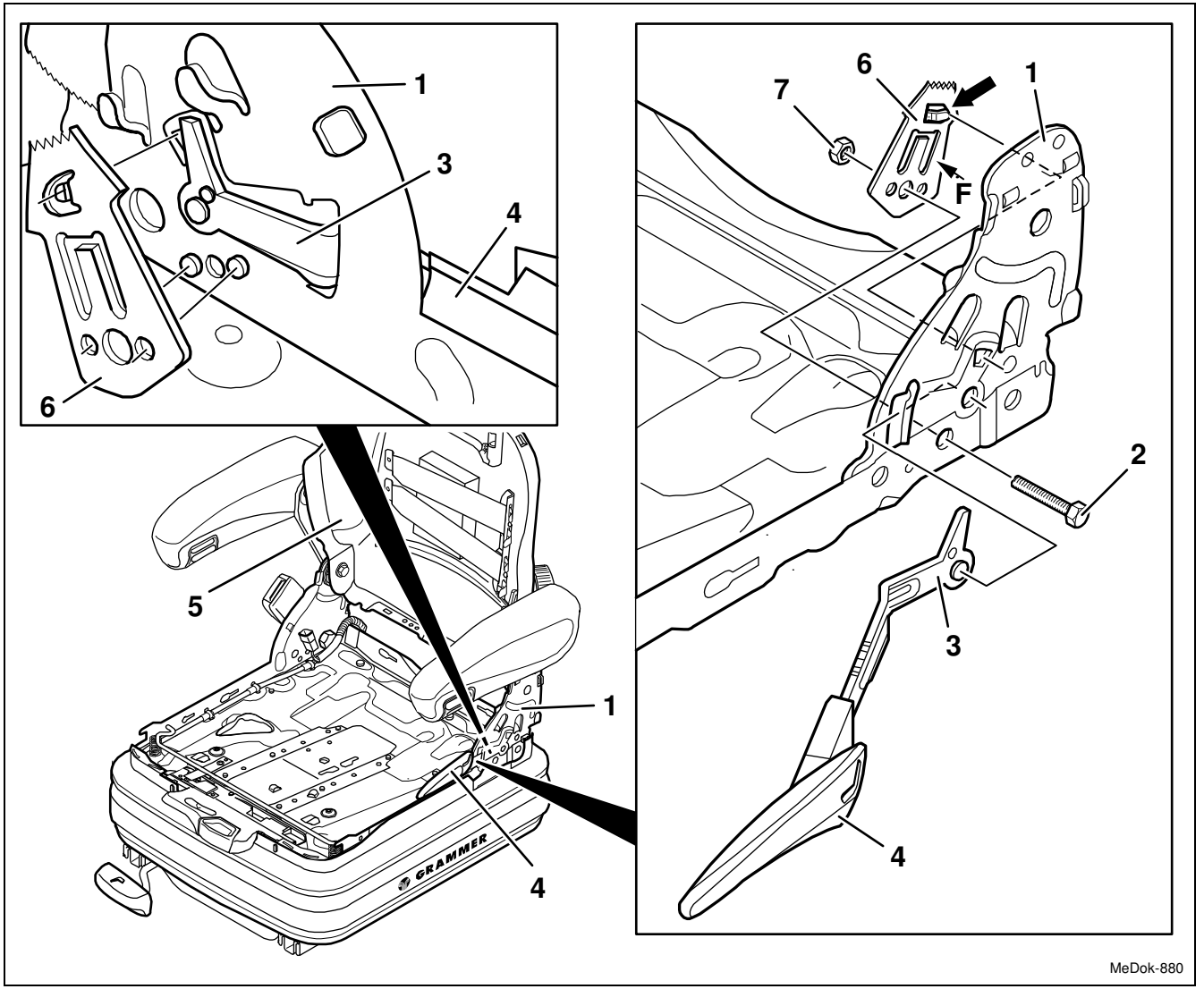
(1) Left backrest support (seat plate)
(2) Micro-encapsulated hexagon bolt to r
(3) Adjustment lever
(4) Handle for backrest adjustment
(5) Backrest frame
(6) Tooth sheet .....to grease
(7) Hexagon nut

1 Remove the backrest cushion (Chapter 3.1).

2 Remove the seat cushion (Chapter 3.2).



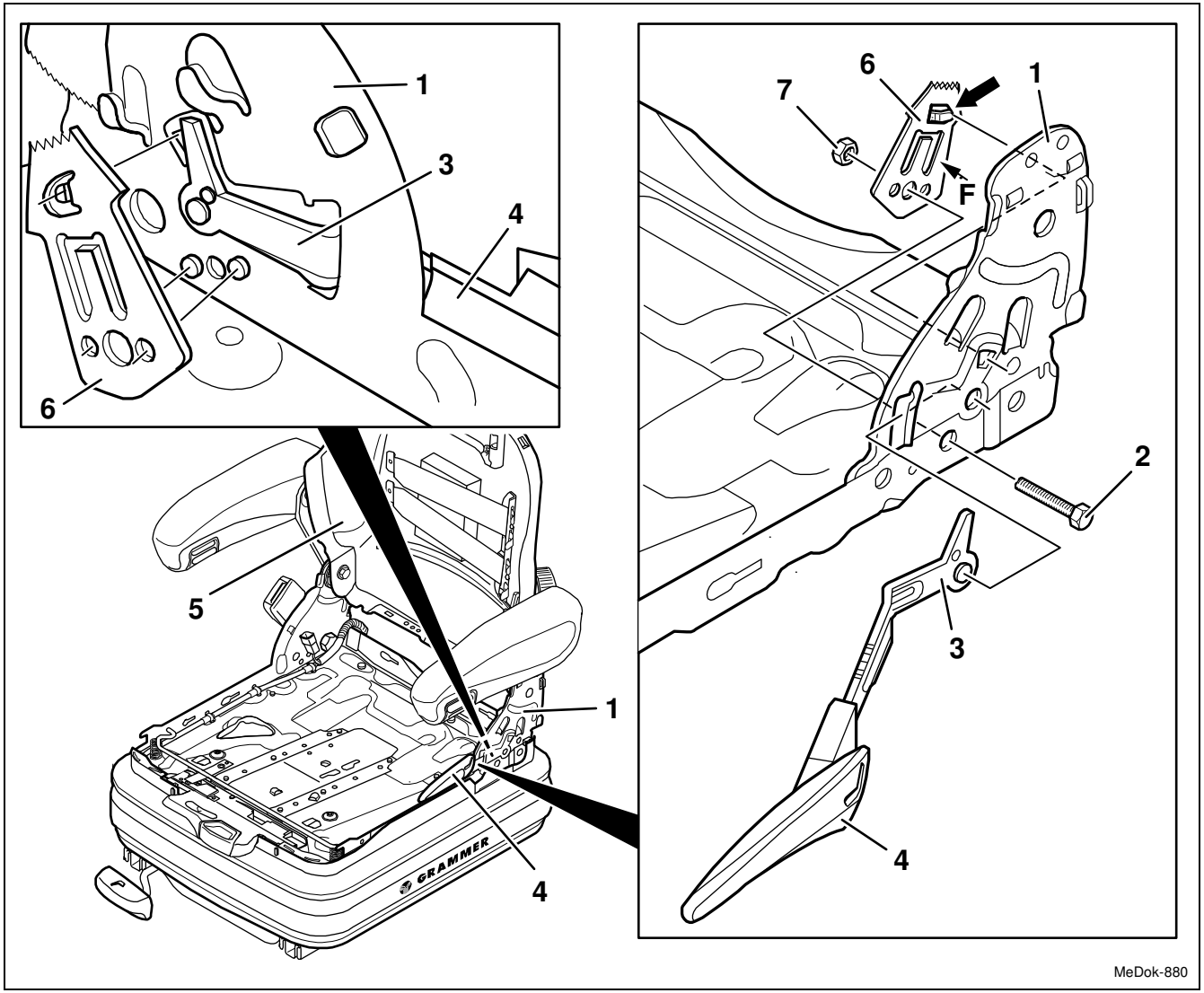
3 Remove the left cover (see Chapter 3.4).

4 Remove the belt roller (see Chapter 3.9).

Removal and installation

5 Unlock the backrest frame (5) by pulling the handle for backrest adjustment (4) and fold it completely forwards.

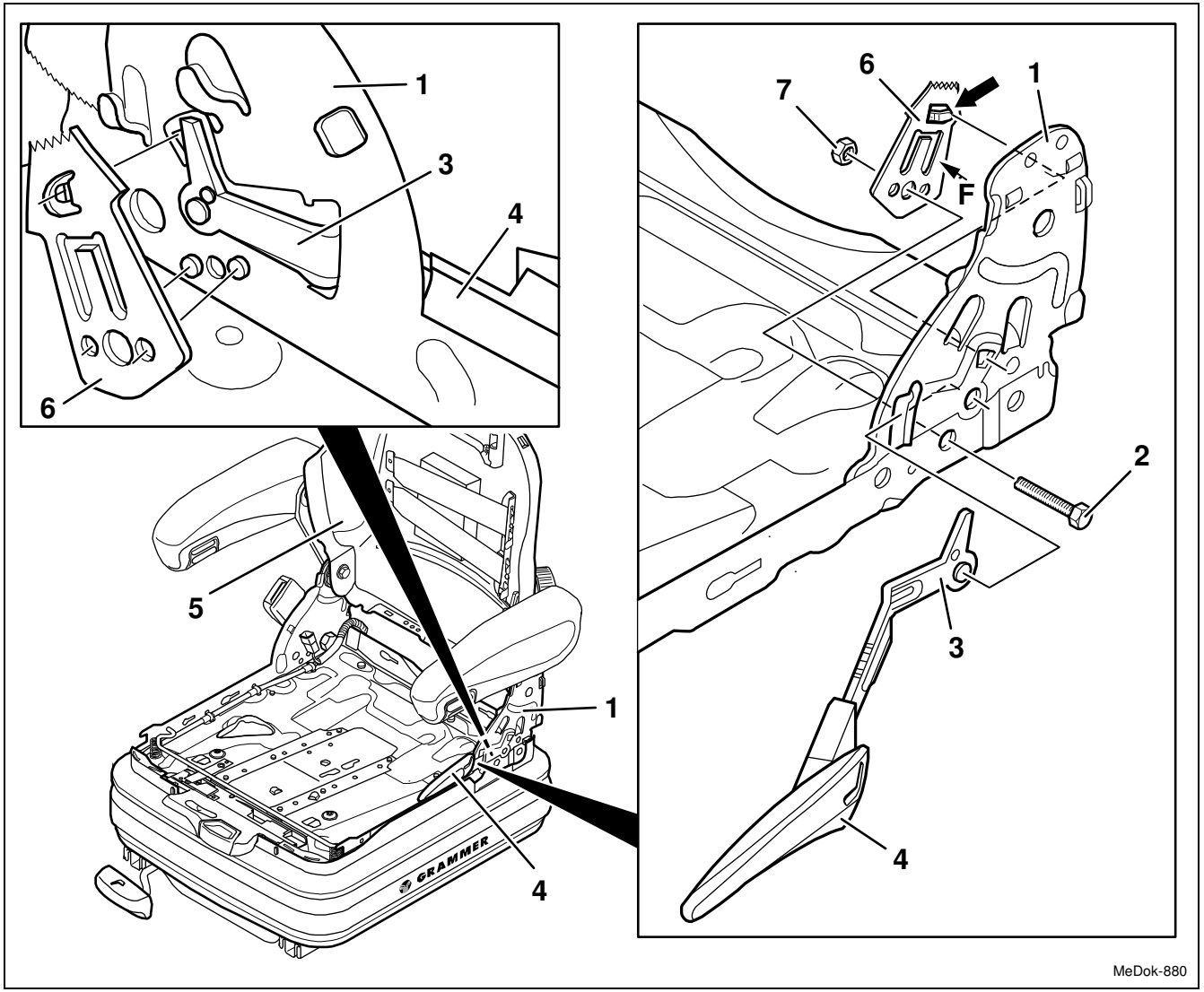
WARNING Risk of injury due to the backrest frame (5) which might jerk forward!
When the backrest cushion has been removed, the backrest frame (5) must be supported, for example held in place, before the handle for backrest adjustment (4) is operated.



6 Undo the micro-encapsulated hexagon bolt (2) and take off the hexagon nut (7).
Installation note:
Replace the micro-encapsulated hexagon bolt (2) by a new one, 25 Nm.

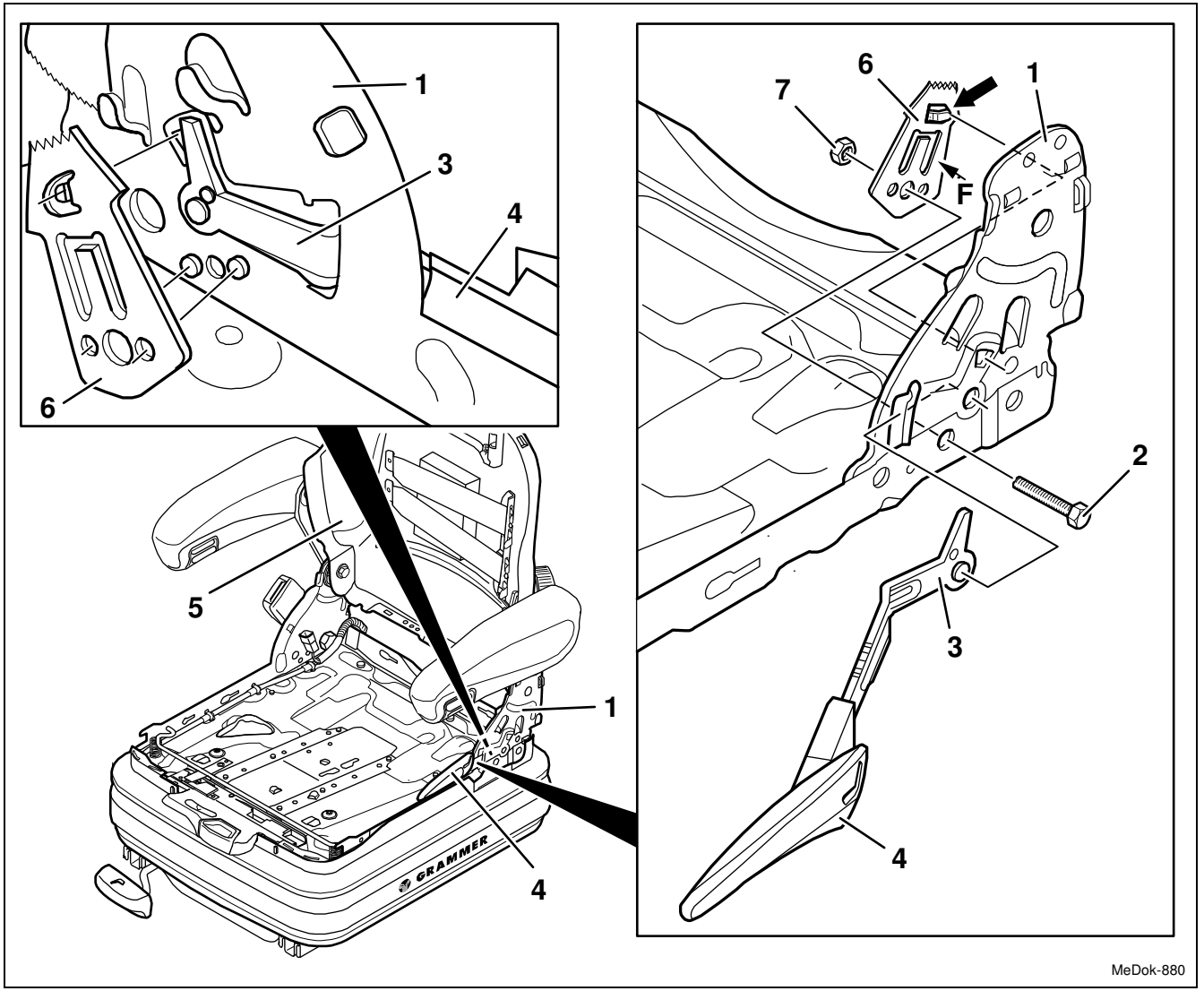
7 Remove the tooth sheet (6).
Installation notes:
● Apply acid-free multi-purpose lubricant to the entire inner surface (F) of the tooth sheet **(6)**.
● The control lug (arrow) on the tooth sheet (6) must show to the backrest support on the left (1).

8 Pull out the adjustment lever (3) with the handle for backrest adjustment (4) from the left backrest support (1).



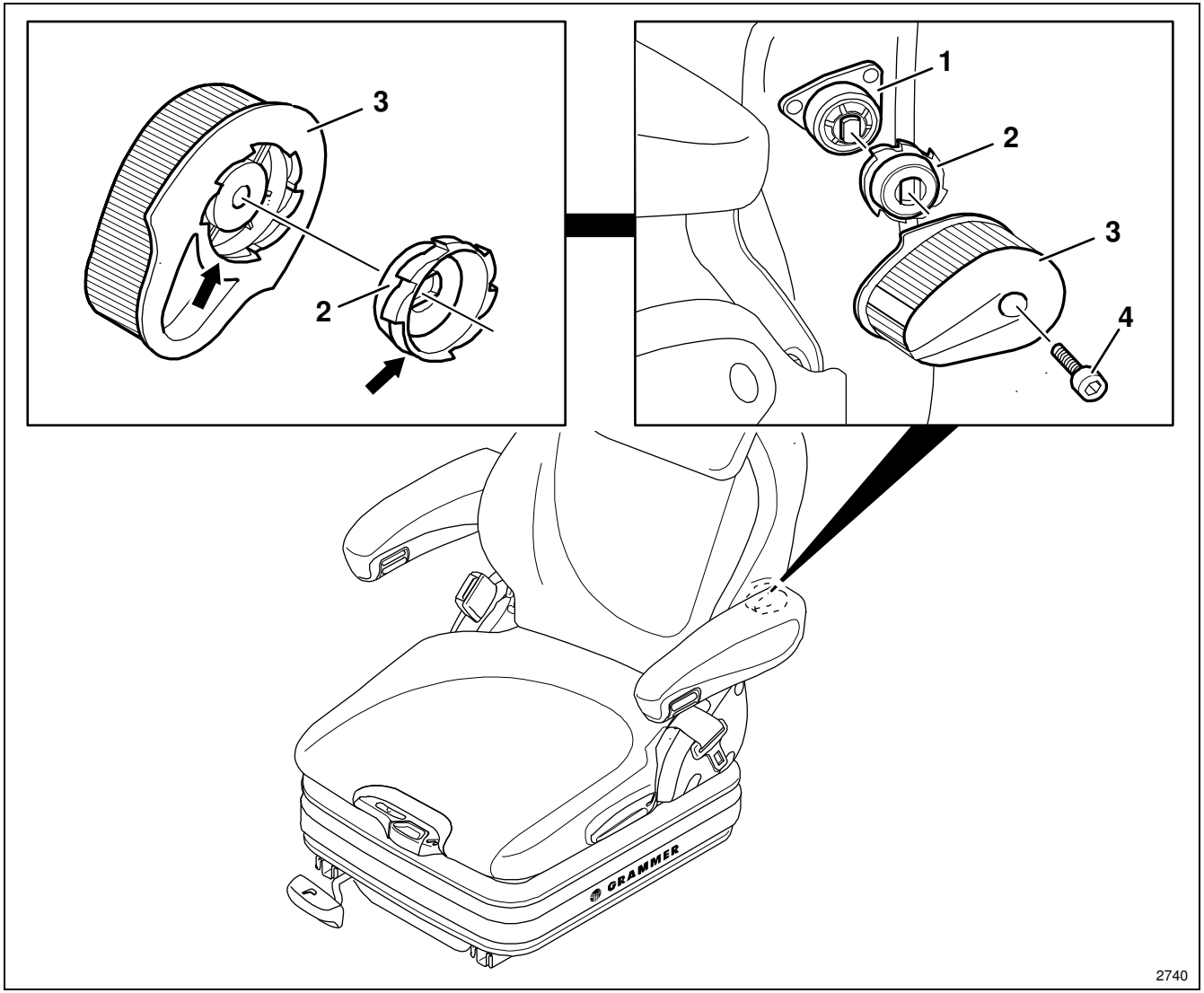
9 Replace the handle for backrest adjustment (4):
Remove the handle for backrest adjustment (4) (Chapter 3.12).

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



3.14 Knob for lumbar support – removal and installation

(1) Fixture (backrest frame)
(2) Toothed wheel
(3) Knob for lumbar support
(4) Micro-encapsulated cap screw
.....to replace, 6 Nm

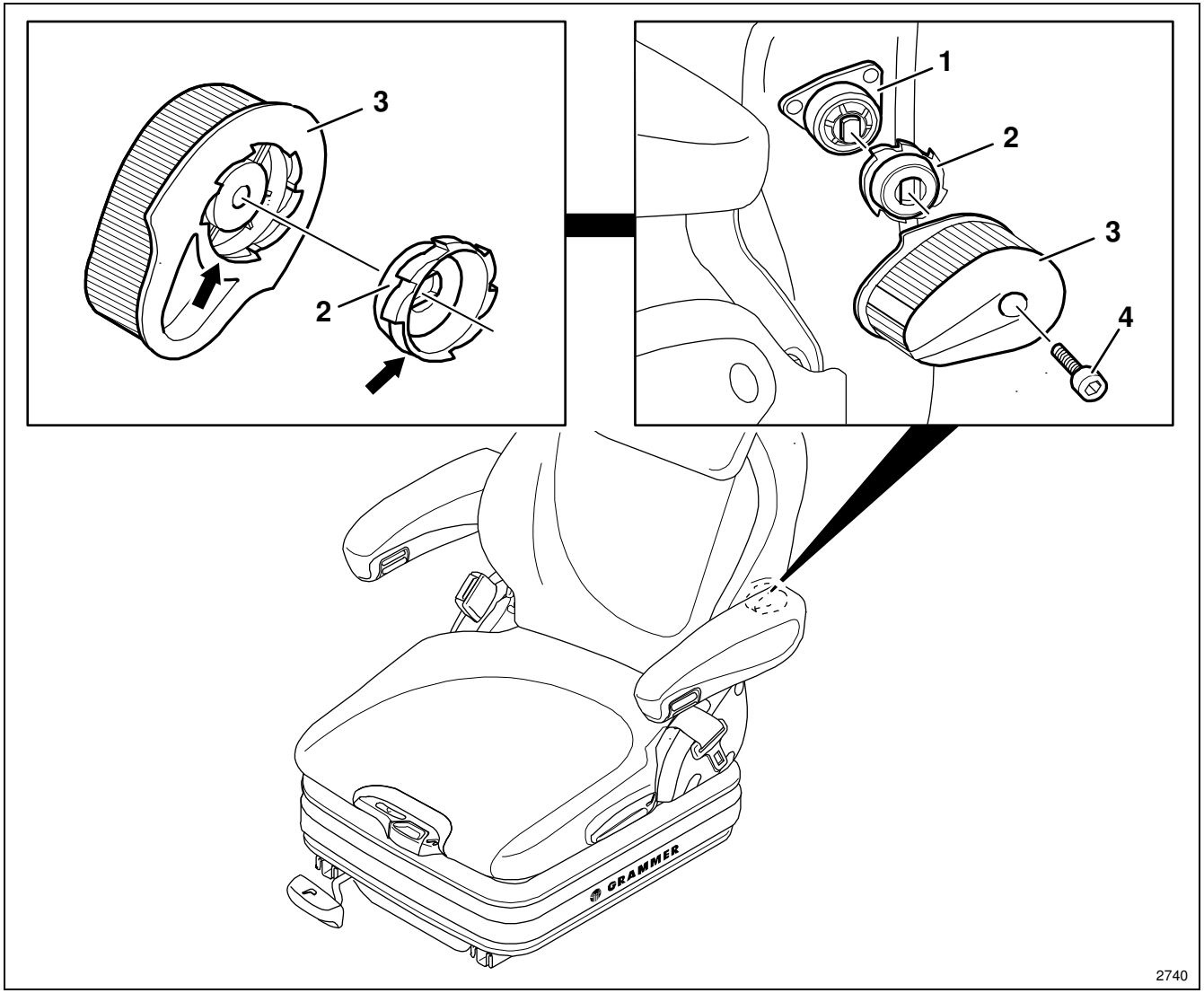


3.14 Knob for lumbar support – removal and installation

Removal and installation

1 Turn the knob for lumbar support (3) to the normal position (horizontal).

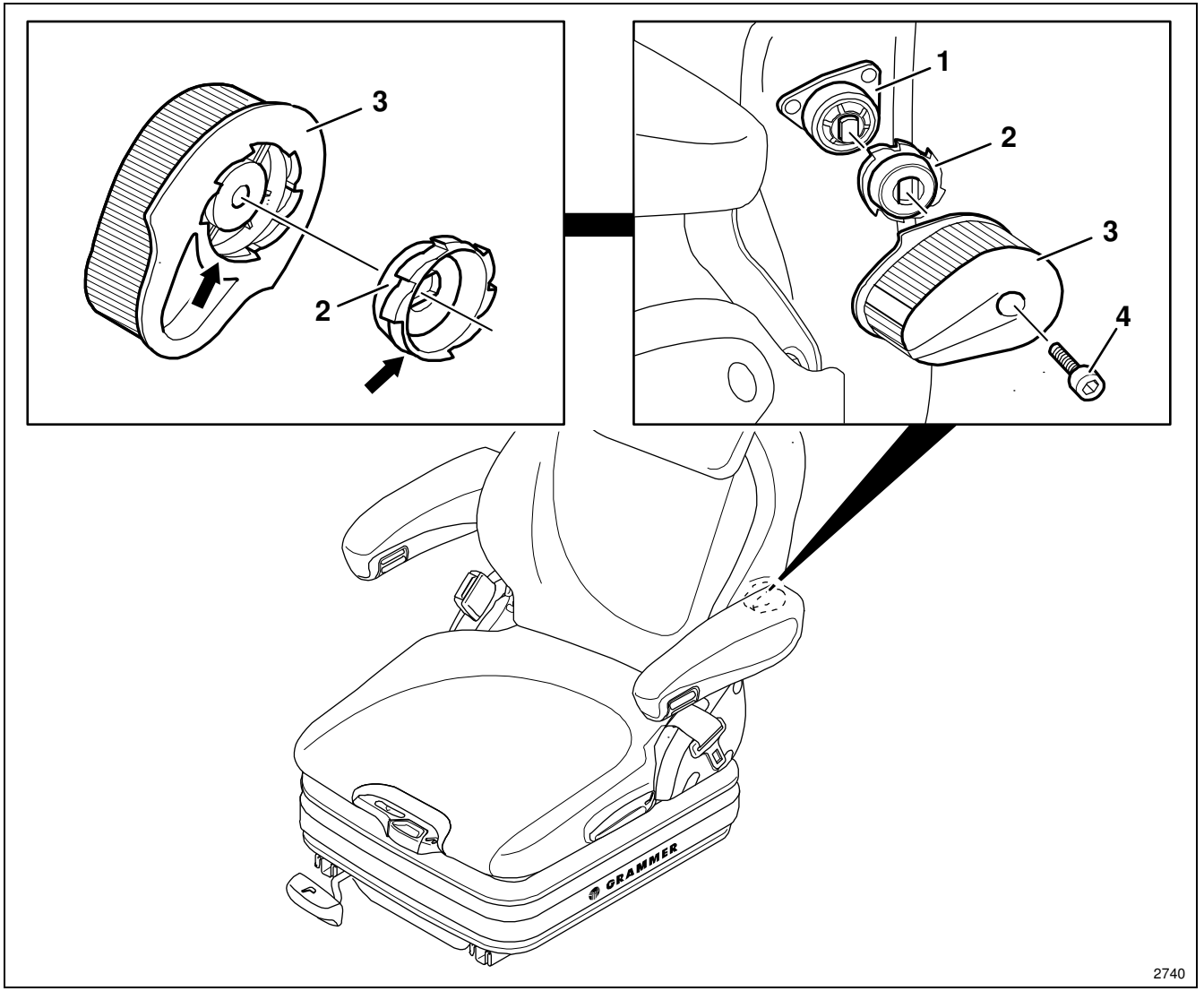
2 Undo the micro-encapsulated cap screw (4) and remove the knob for lumbar support (3) from the holder (1).
Installation note:
Replace the micro-encapsulated cap screw (4) by a new one, 6 Nm.



3.14 Knob for lumbar support – removal and installation

3 Pull out the toothed wheel (2) from the knob for lumbar support (3).
Installation note:
When fitting the toothed wheel (2) in the knob for lumbar support (3), the two spaces with the missing tooth (arrows) must be positioned exactly on top of each other.

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



3.15 Housing with control and seat level indicator – removal and installation

REMOVAL / INSTALLATION

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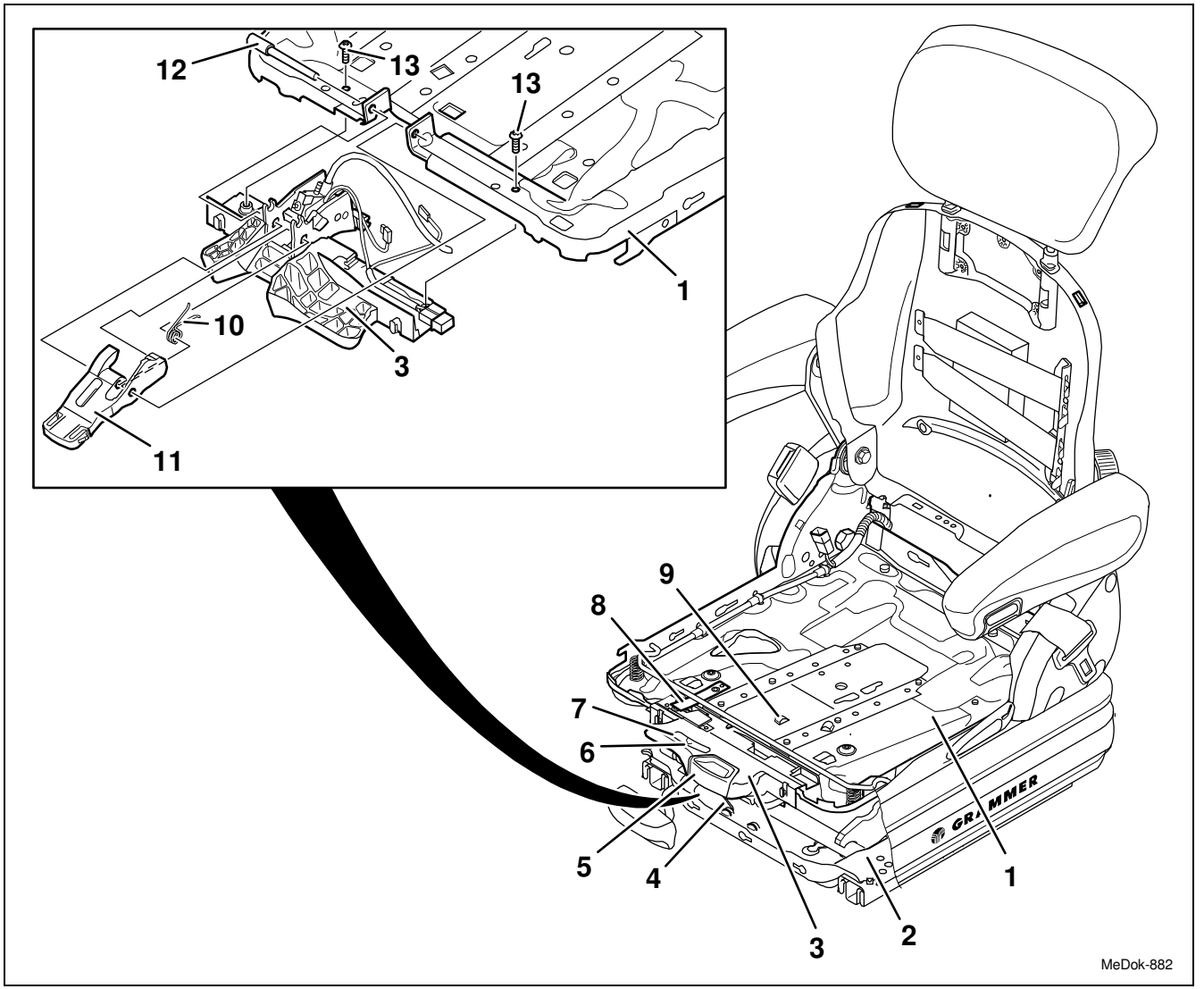
(1) Seat plate
(2) Lower suspension part
(3) Housing (control and seat level indicator)
(4) Linkage rod of the pointer
(5) Handle for weight adjustment
(6) Pointer
(7) Indicator window
..... replace, if necessary
(8) Switch plate
(9) Hook (housing)
(10) Torsion spring
(11) Lever
(12) Stud
(13) Cross-head screw



3.15 Housing with control and seat level indicator – removal and installation

REMOVAL / INSTALLATION

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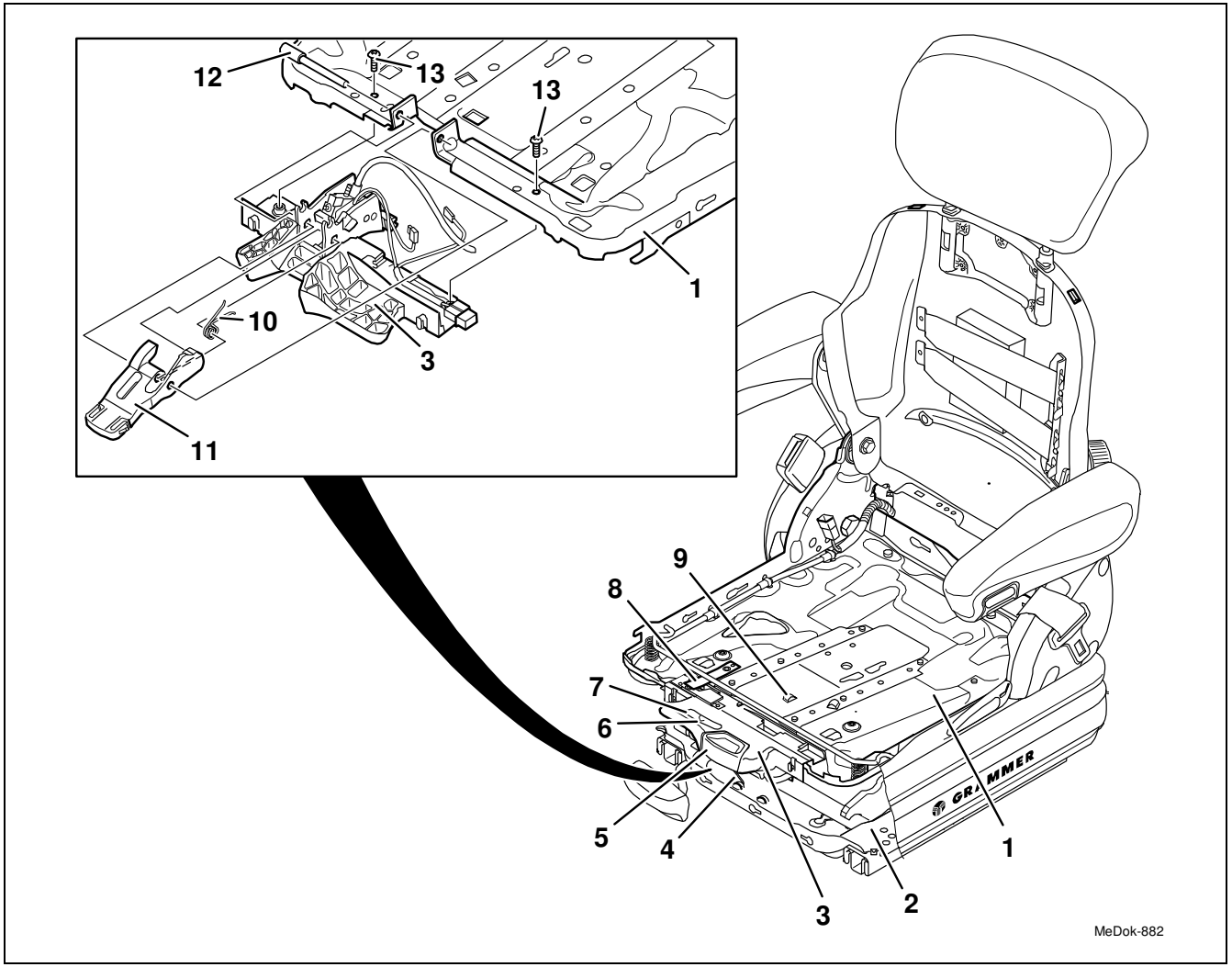
WARNING The pressure in the pneumatic system may cause injury!
The pneumatic system is to be vented before removing the housing with control and seat level indicator.

1 Remove the backrest cushion (Chapter 3.1).

2 Remove the seat cushion (Chapter 3.2).

3 Remove the bellows from the seat plate (1) (see Chapter 3.8) and lay it down.

4 Remove the seat switch from the housing (3) (see Chapter 3.16).
Note:
The switch plate (8) on the seat plate (1) need not be removed.



3.15 Housing with control and seat level indicator – removal and installation

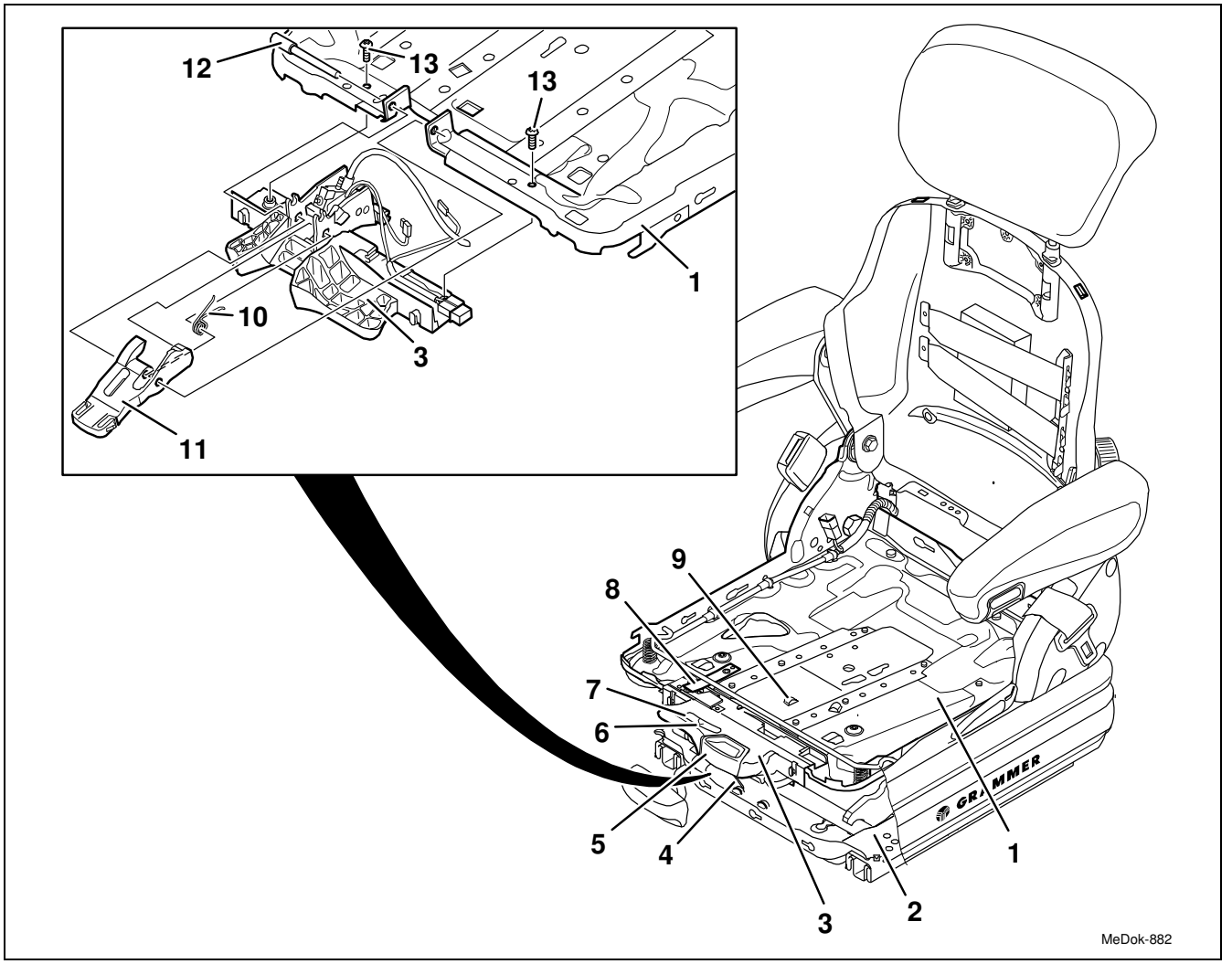
5 Disconnect the plug-in connection between the cable harness of the control and the cable harness of the seat switch (see Chapter 3.16).

6 Disconnect the right-angle plug and plug from the compressor (see Chapter 3.21).

7 Remove the air hose from the air spring (see Chapter 3.22).

8 Take off the air hose from the compressor holder (see Chapter 3.21).

9 Take off the compressed-air hose from the housing (3) (see Chapter 3.21).



3.15 Housing with control and seat level indicator – removal and installation

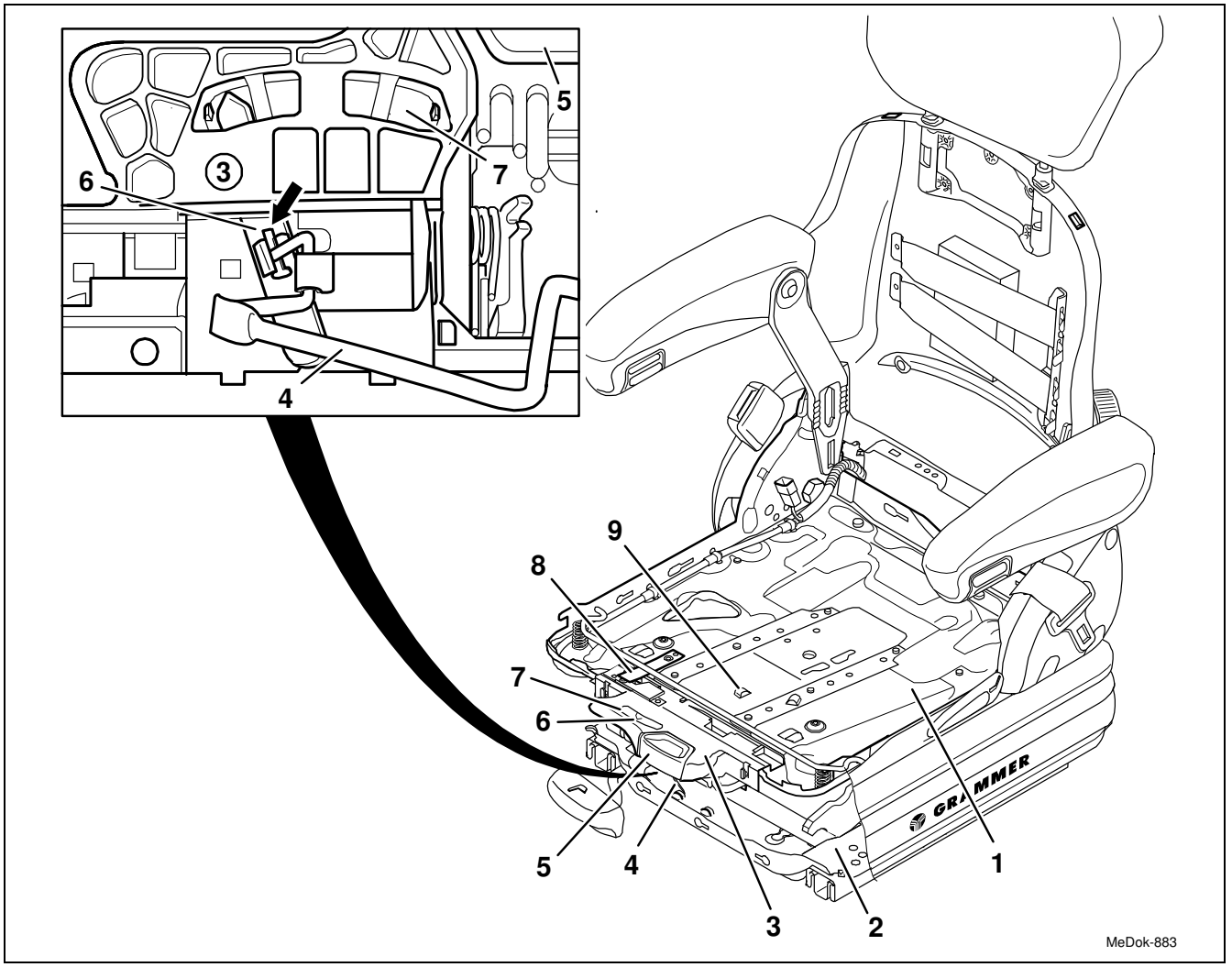
Removal and installation

10 Move the seat to the highest position and secure it there.

WARNING!
Risk of crushing!
Secure the suspension at the back between the lower part and the upper part of the suspension with suitable spacers.

11 Take off the linkage rod of the pointer (4) from the lower part of the suspension (2).

12 Take off the linkage rod of the pointer (4) from the housing (3) and then remove it.
Installation note:
When hanging it in, make sure the upper end of the linkage rod of the pointer (4) engages in the longitudinal guide (arrow) of the pointer (6).



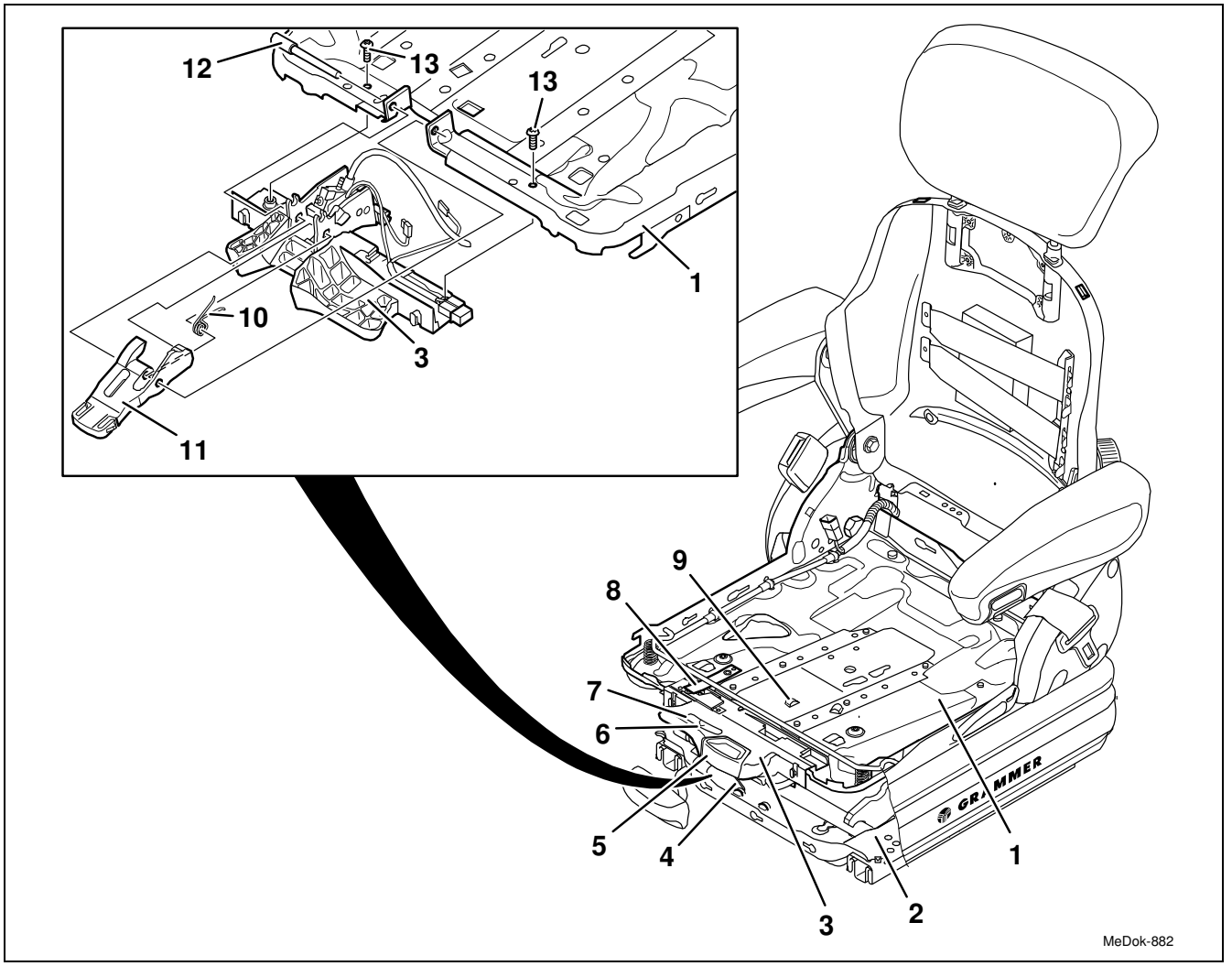
3.15 Housing with control and seat level indicator – removal and installation

13 Knock out and remove the stud (12) from the seat plate (1) and housing (3).

14 Undo the two cross-head screws (13) from the housing (3).

15 Take off the hook (9) from the seat plate (1) and press it down.

16 Remove the housing (3) from the seat plate (1) diagonally in upward direction.
Installation note:
When installing the housing (3), slightly pull the switch plate (8) at the front in upward direction. When doing this, take care not to bend it.

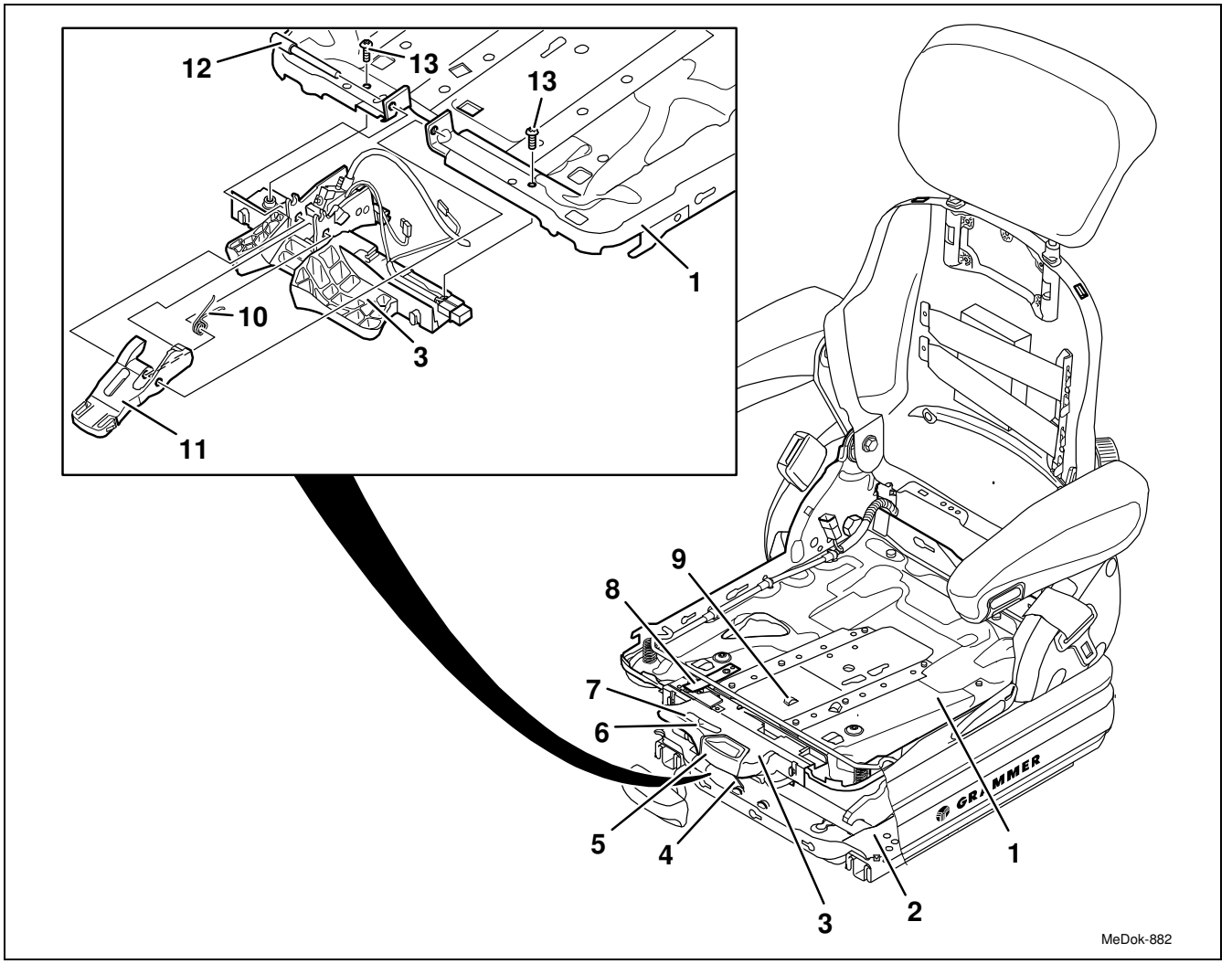


3.15 Housing with control and seat level indicator – removal and installation

17 Replace the lever (11):
Remove the lever (11) with the handle for weight adjustment (5) and torsion spring (10) from the housing (3).

18 Replace the indicator window (7):
Use a screwdriver to release the indicator window (7) by pressing on the catchers from below which is on the left or right side of the indicator window (7).

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

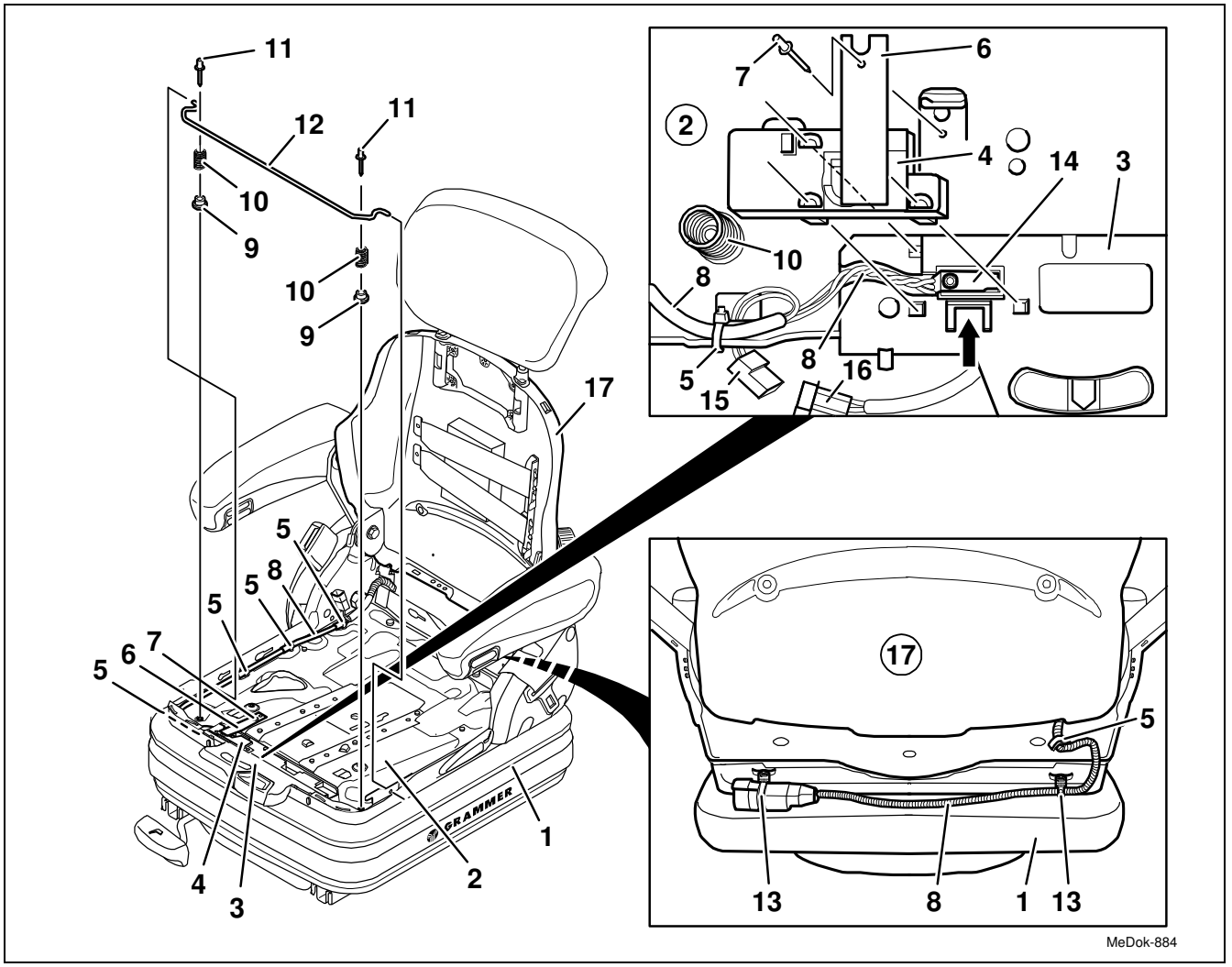


3.16 Cable harness of the seat switch with switch mechanism – removal and installation

REMOVAL / INSTALLATION

TABLE OF CONTENTS

(1) Bellows
(2) Seat plate
(3) Housing (control and seat level indicator)
(4) Cover
(5) Cable tie
(6) Switch plate
(7) Blind rivet
(8) Cable harness
(9) Socket
(10) Compression spring
(11) Blind rivet
(12) Switching bracket
(13) Push mount tie with wings
(14) Seat switch
(15) Connector plug of the switch/control
(16) Connector plug of the control
(17) Backrest frame



3.16 Cable harness of the seat switch with switch mechanism – removal and installation

1 Remove the backrest cushion (Chapter 3.1).

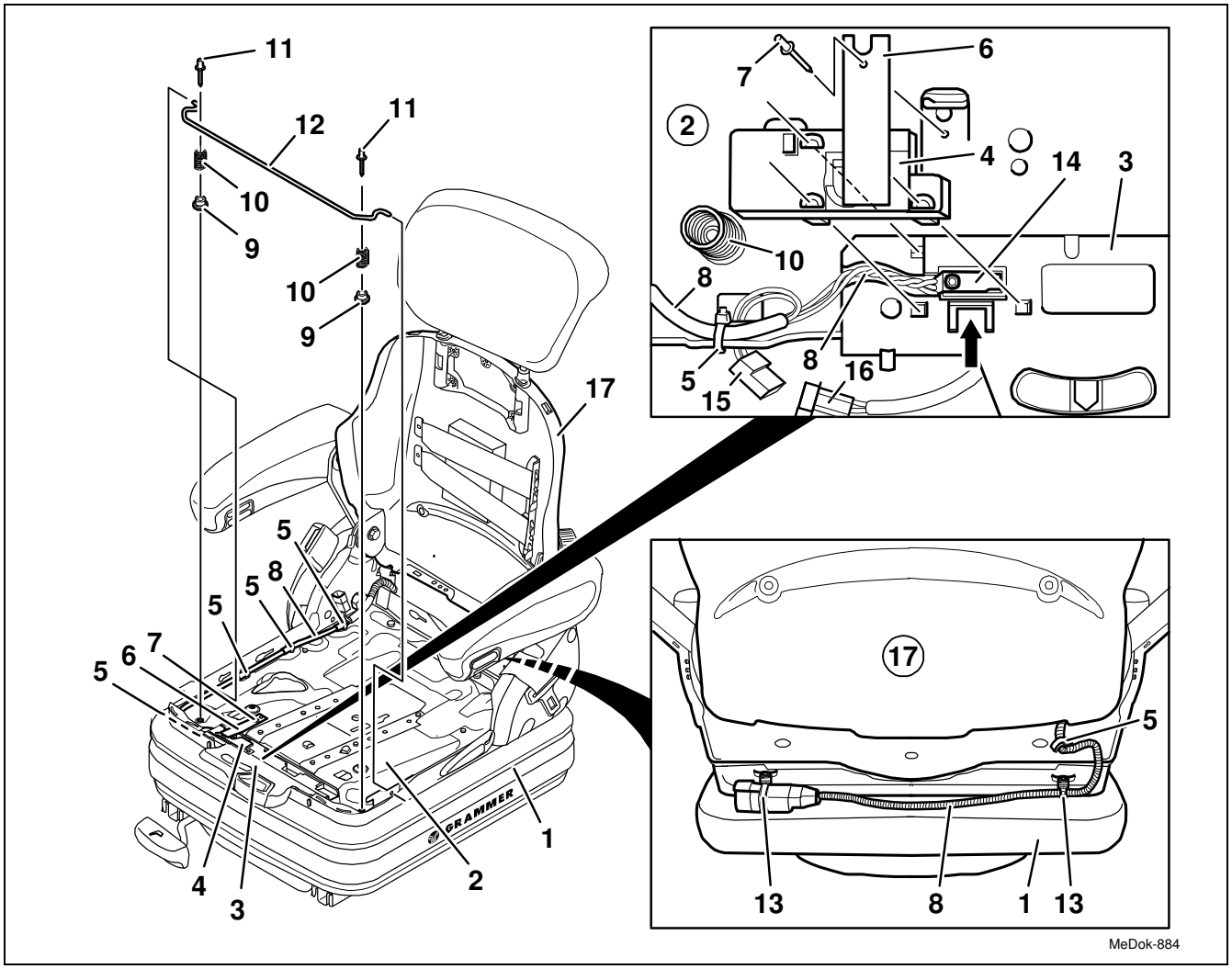
2 Remove the seat cushion (Chapter 3.2).

3 Remove the cover on the right side (see Chapter 3.4).

Removal and installation

4 Pull out the two push mount ties with wings (13) from the seat plate (2) and bellows (1).

5 Detach the bellows (1) from the seat plate (2) along the cable harness (8) (see Chapter 3.8) and lay it down.



3.16 Cable harness of the seat switch with switch mechanism – removal and installation

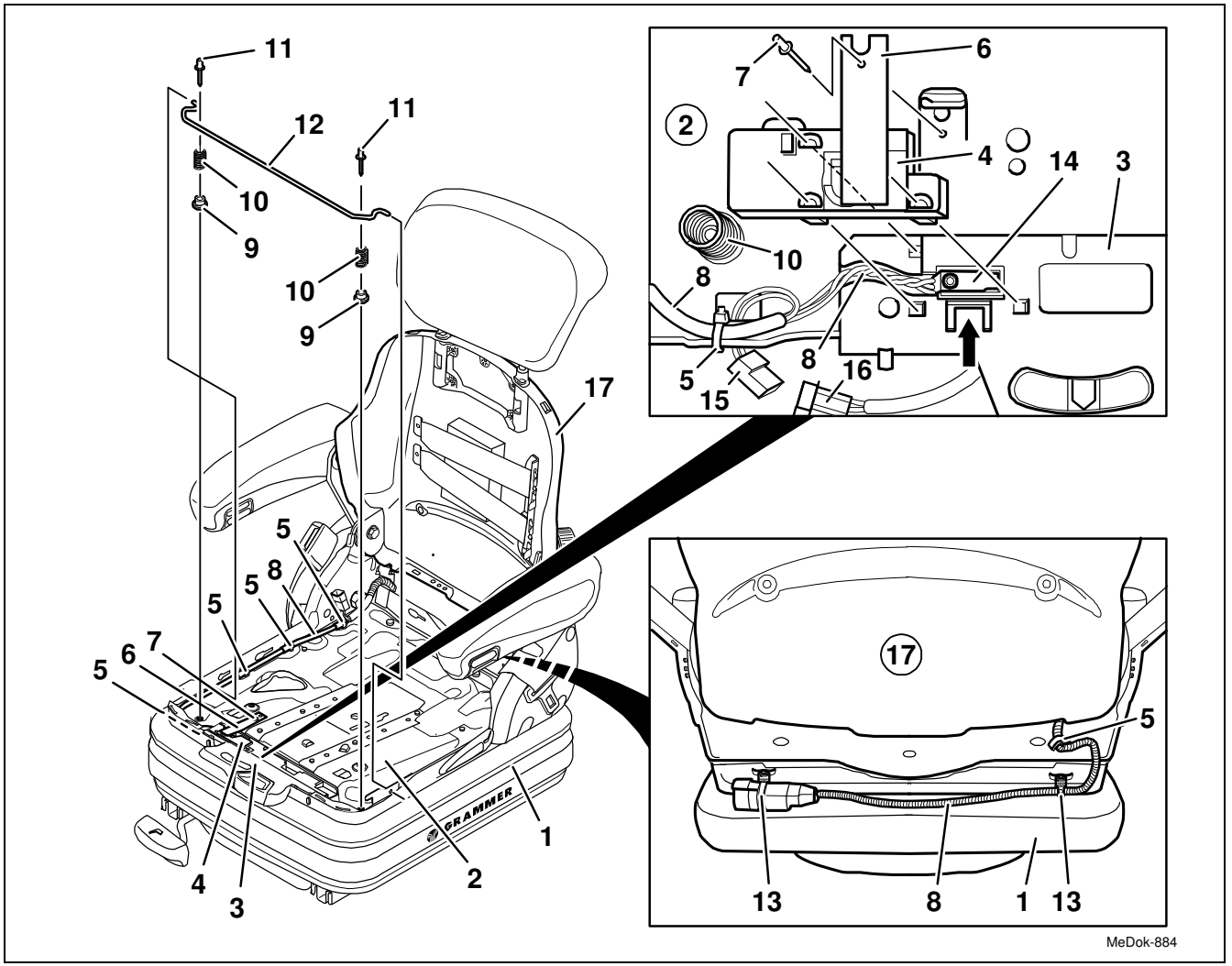
6 Unhook the switching bracket (12) from the seat plate (2). Turn the switching bracket (12) up, then press it slightly to the right and simultaneously pull it out in upward direction on the left side of the seat plate (2). Then pull it out on the right side of the seat plate (2) and remove it.

Installation note:

The switching bracket (12) must seat on the two compression springs (10) to guarantee the correct switching function of the seat switch (14).

7 Pull off the two compression springs (10) from the bushings (9) in upward direction.

8 Bore out the two rivet heads and drive out the blind rivets (11). Remove the two bushings (9).



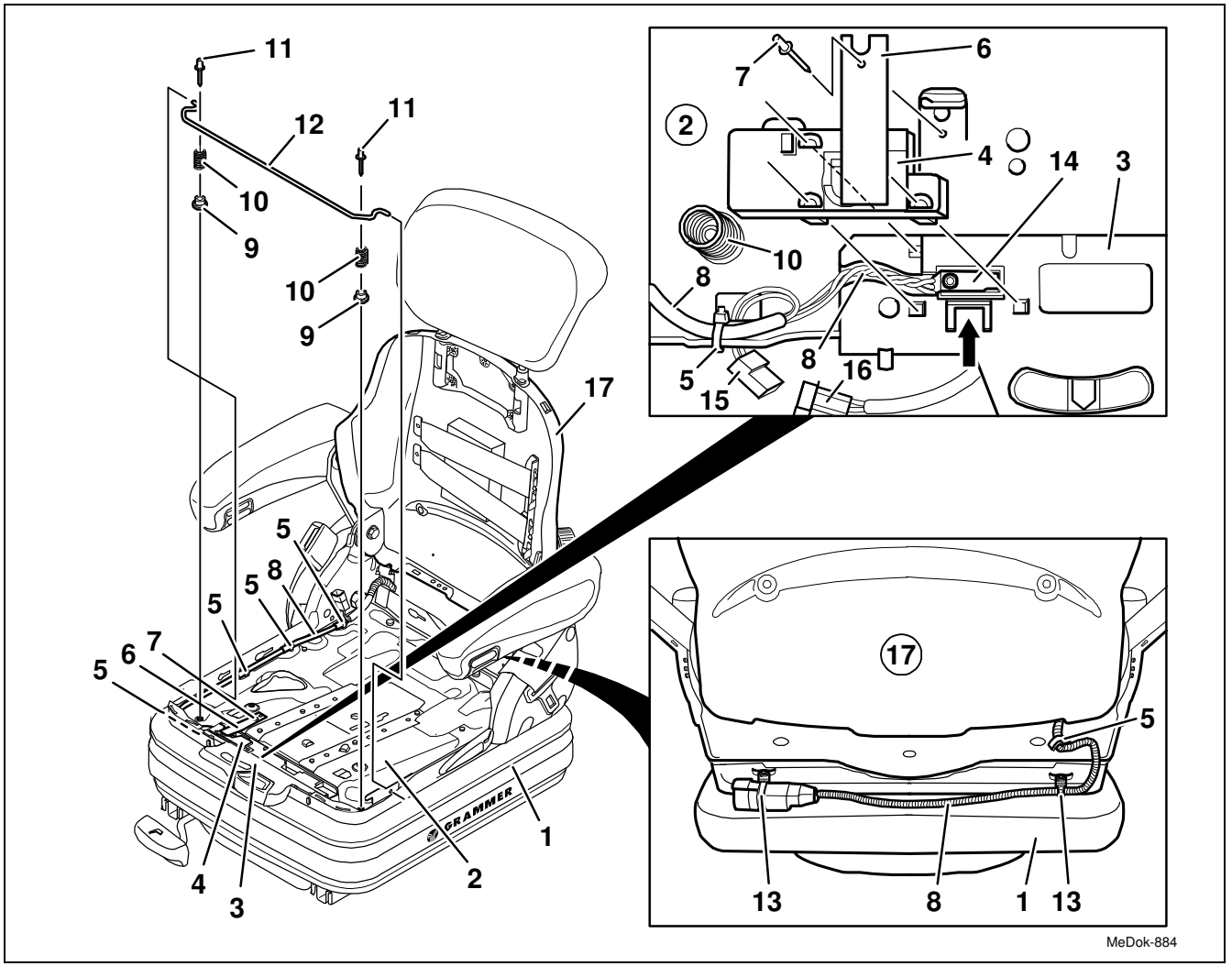
3.16 Cable harness of the seat switch with switch mechanism – removal and installation

9 Replace the switch plate (6):
Bore out the rivet head and drive out the blind rivet (7). Remove the switch plate (6).

10 Remove the cover (4) from the housing (3). To do this, press down the catchers (arrow) on the housing (3), push the cover (4) forwards over the catcher and remove it in upward direction.

11 Pull out the seat switch (14) from the housing (3) and lay it down on the seat plate (2).

12 Disconnect the plug-in connection between the connector plug of the switch/control (15) and the connector plug of the control (16).



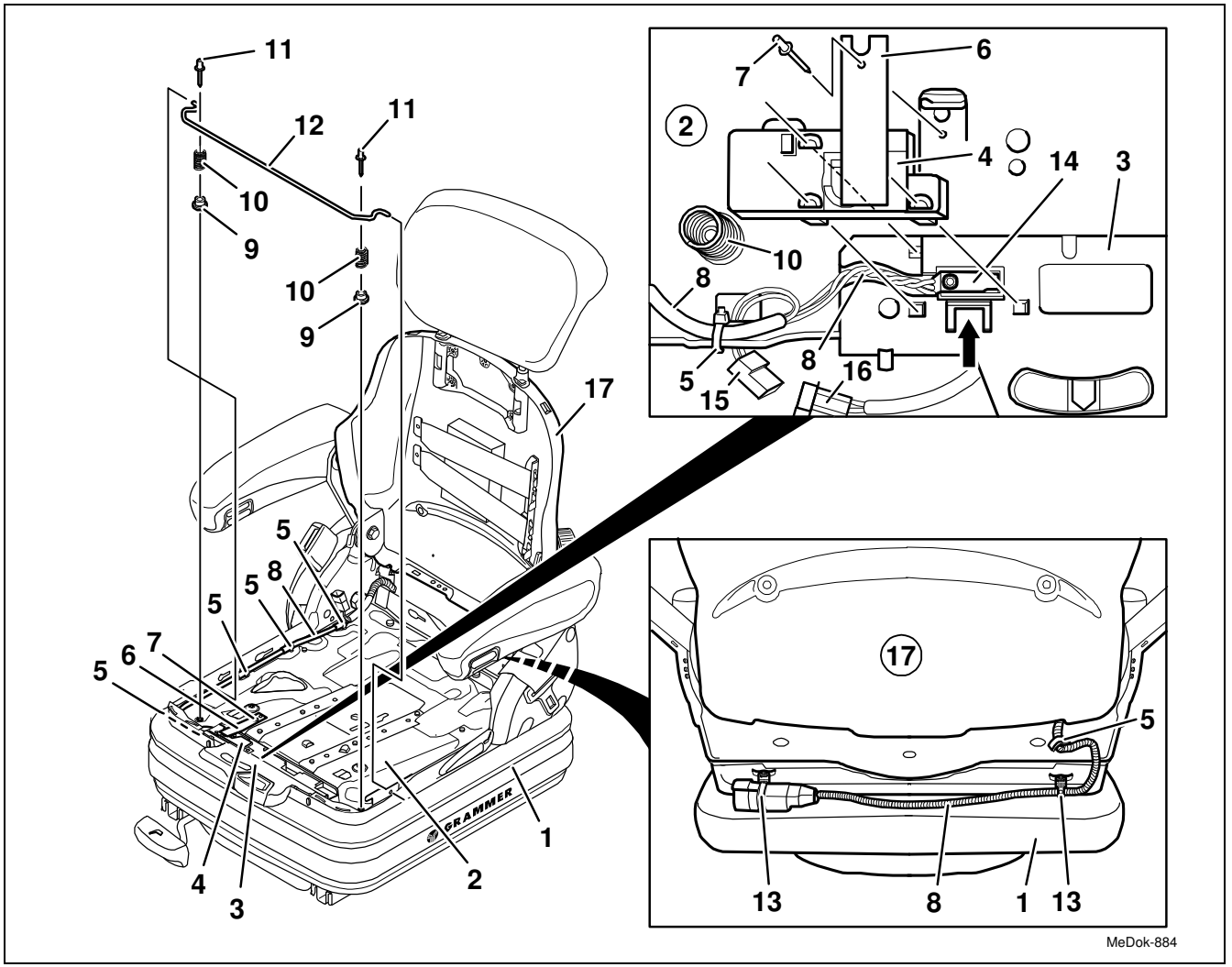
3.16 Cable harness of the seat switch with switch mechanism – removal and installation

13 Mark the places where the cable harness (2) is fixed to the seat plate with four cable ties (5) and remove the cable ties (5).
Installation note:
The locking heads of the cable ties (5) must be tightened on the outside below the seat plate (2).

14 Push the connector plug of the switch/control (15) upwards through the opening of the seat plate (2).

15 Pull out the cable harness (8) in forward direction between the seat plate (2) and backrest frame (17) and then remove it.

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

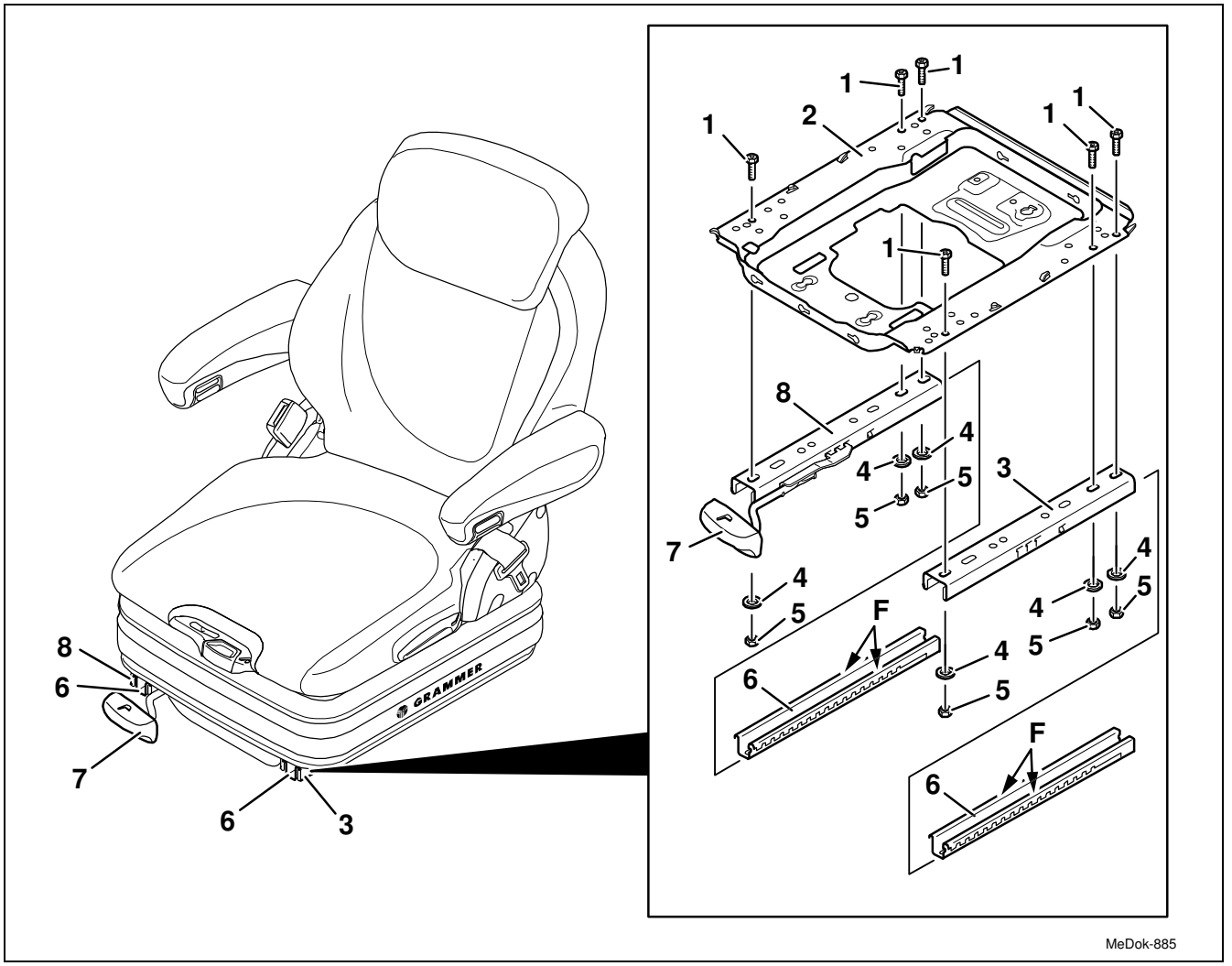


3.17 Seat fore/aft adjustment – removal and installation of the entire assembly

REMOVAL / INSTALLATION

TABLE OF CONTENTS

(1) Micro-encapsulated cap screw ..... to replace, 25 Nm
(2) Lower suspension part
(3) Adjusting rail .....to grease
(4) Washer
(5) Hexagon nut
(6) Locking rail
(7) Handle for fore/aft adjustment ..... replace, if necessary
(8) Entire adjusting rail assembly to grea



1 Take off the bellows from the lower part of the suspension (2) (see Chapter 3.8), push it upwards and fix it to the upper part of the suspension.

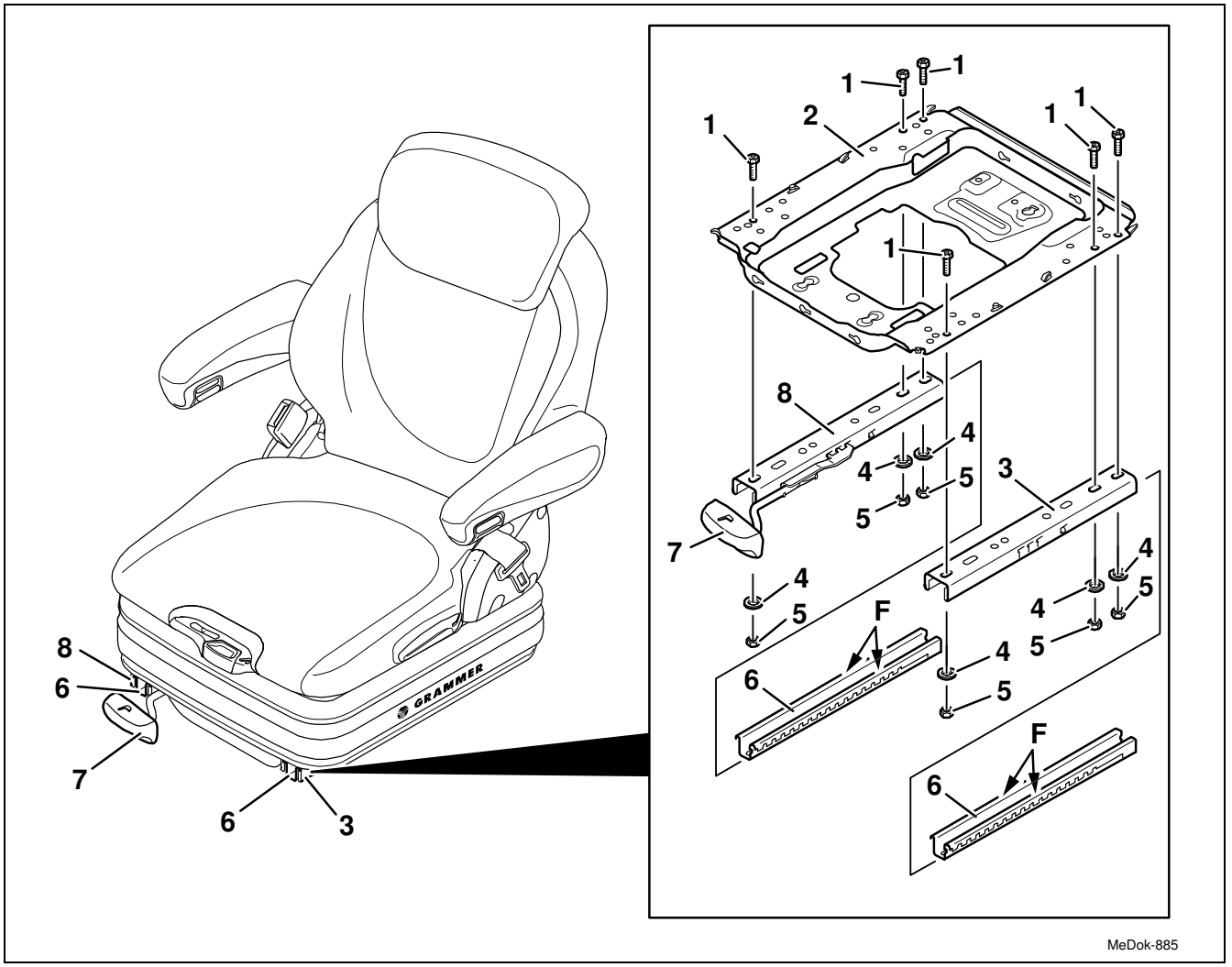
3.17 Seat fore/aft adjustment – removal and installation of the entire assembly

Removal and installation

2 Move the seat to the highest position and secure it there.

WARNING!
Risk of crushing!
Secure the suspension at the back between the lower part and the upper part of the suspension with suitable spacers.

3 Pull out the two locking rails (6) off the adjusting rail (3) and the entire adjusting rail assembly (8).
Note:
To unlock the locking rail (6) from the entire adjusting rail assembly (8), pull the handle for fore/aft adjustment (7) in upward direction.
Installation note:
Apply acid-free multi-purpose lubricant to the rail surfaces (F) of the two locking rails (6).



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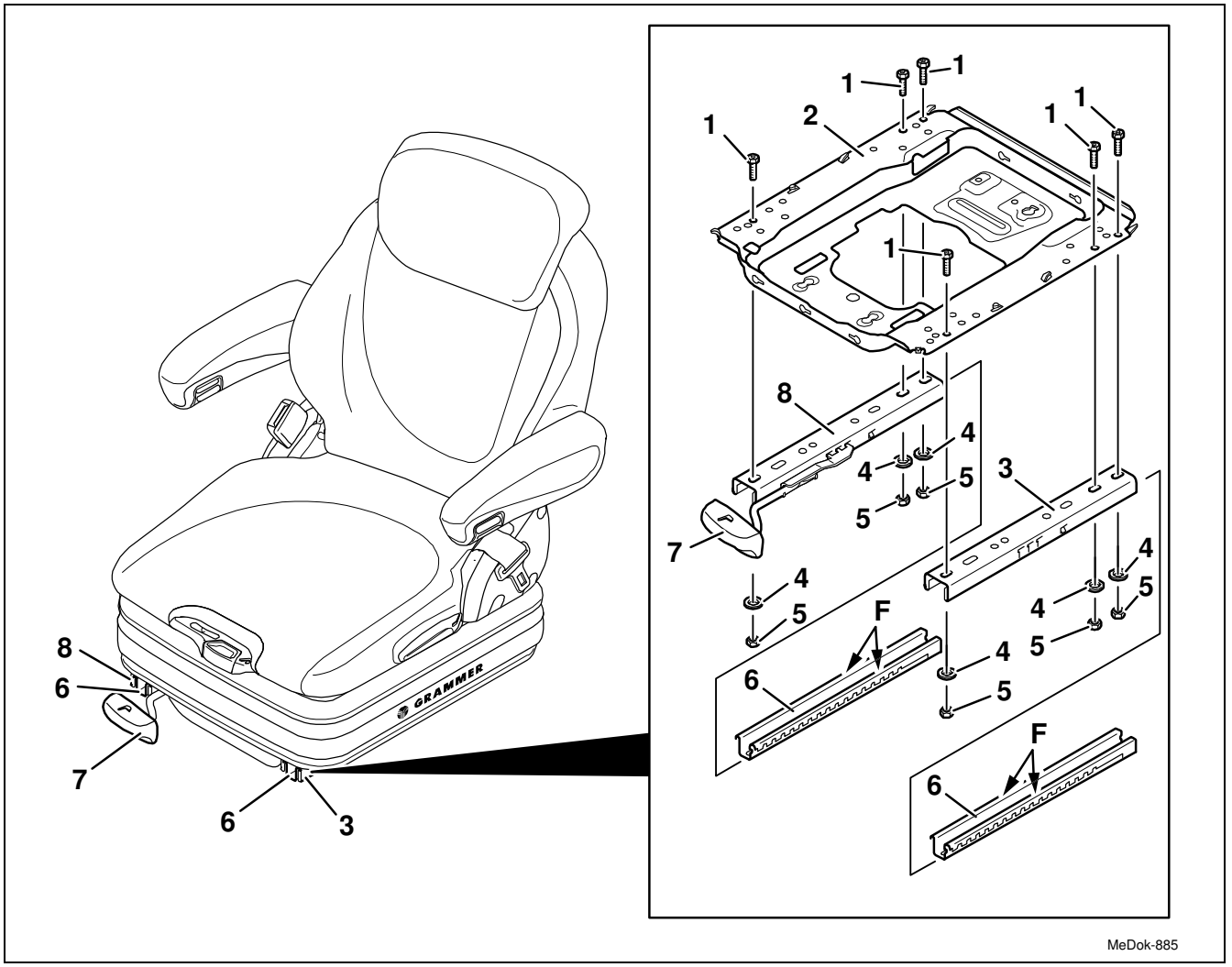
3.17 Seat fore/aft adjustment – removal and installation of the entire assembly

4 Mark the mounting holes for the six micro-encapsulated cap screws (1), undo the micro-encapsulated cap screws (1) and remove the hexagon nuts (5) with the washers (4).
Installation notes:
● Replace the micro-encapsulated cap screw (1) by a new one, 25 Nm.
● Screw tight the micro-encapsulated cap screws (1) in acc. with the respective screw positioning diagram.

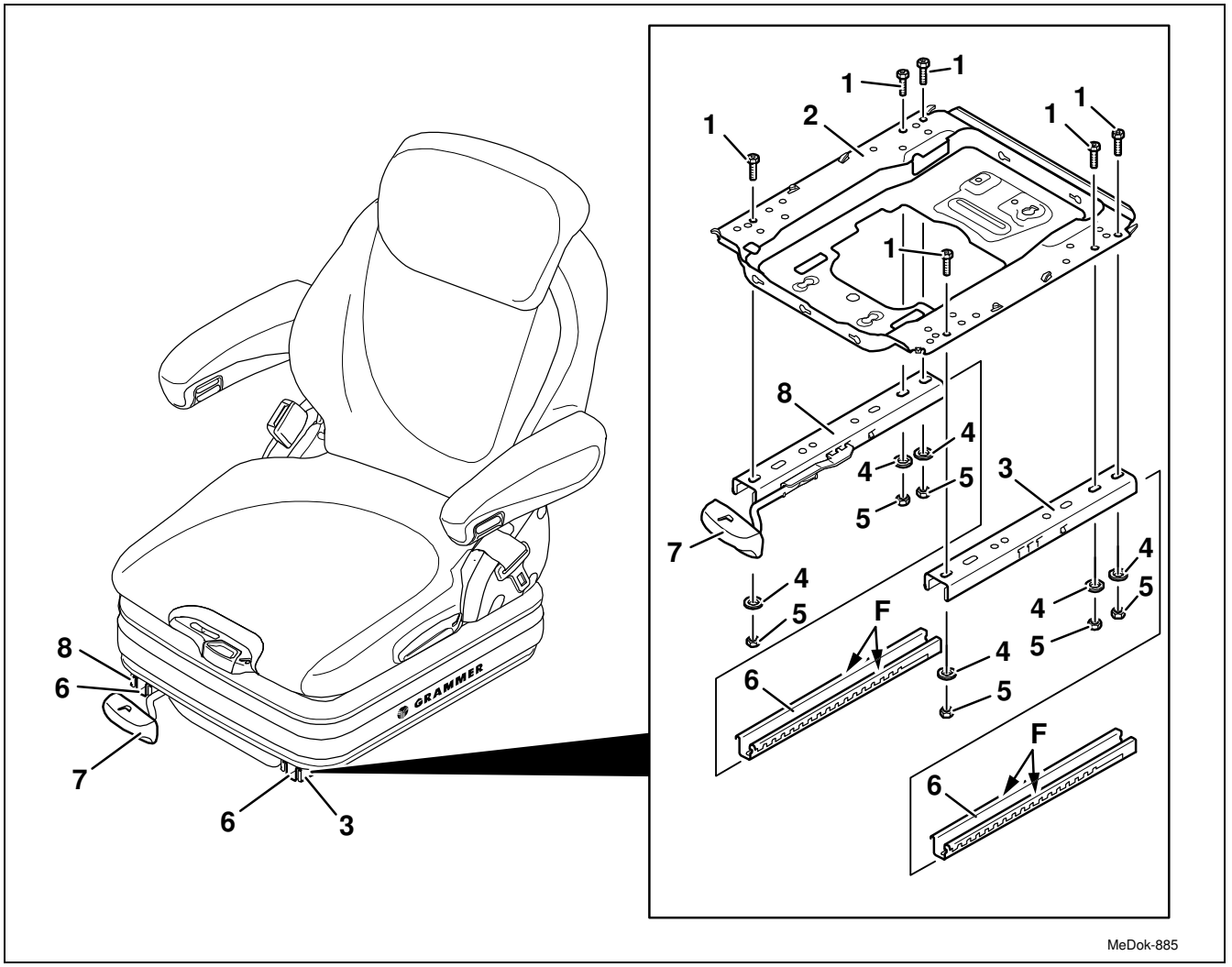
5 Remove the adjusting rail (3) and the entire adjusting rail assembly (8).



3.17 Seat fore/aft adjustment – removal and installation of the entire assembly

6 Replace the handle for fore/aft adjustment (7):
Remove the handle for fore/aft adjustment (7) (Chapter 3.11).

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



3.18 Shock absorber – removal and installation

REMOVAL / INSTALLATION

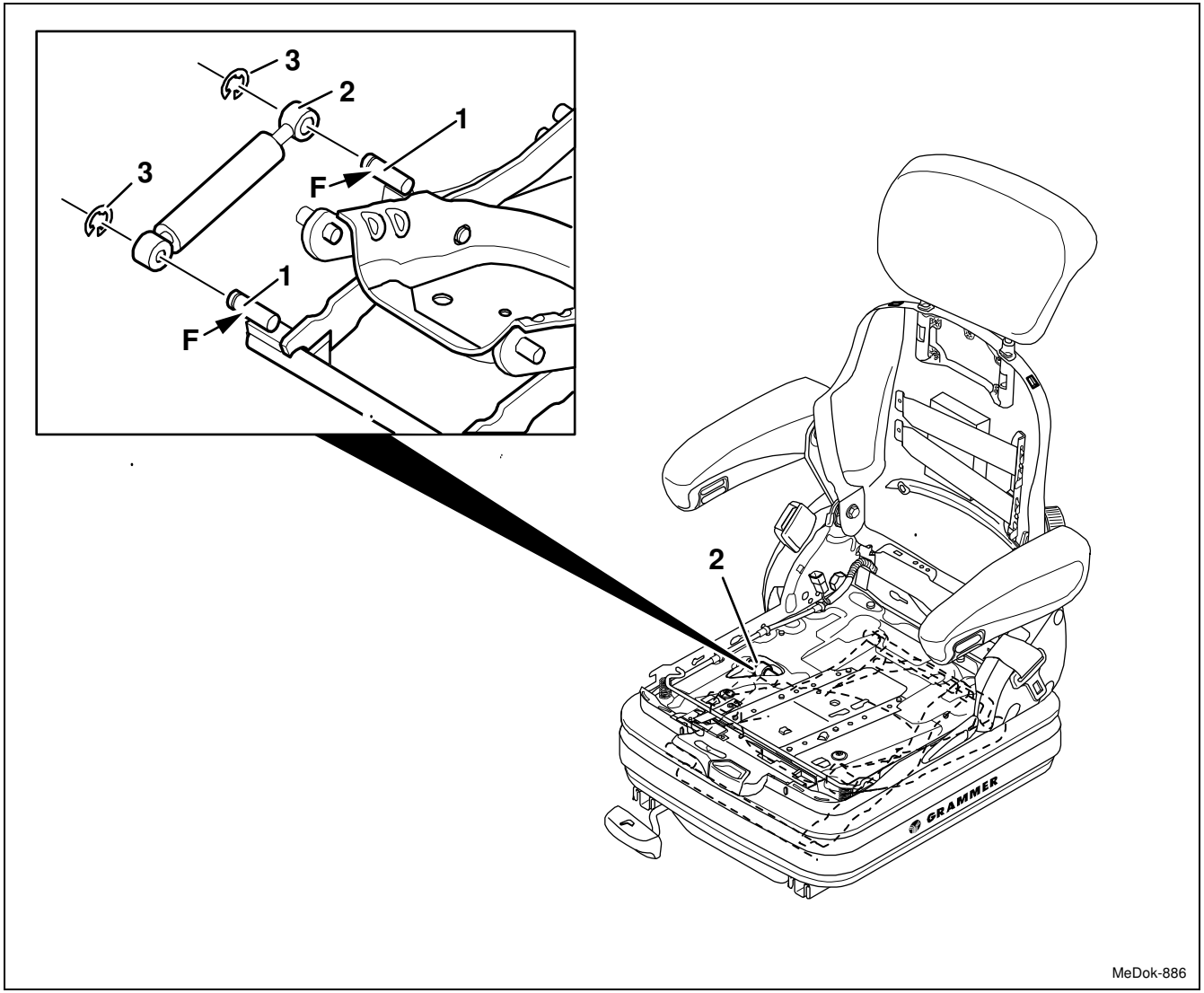
TABLE OF CONTENTS

(1) Axle (swinging structure)
(2) Shock absorber
(3) Circlip

1 Remove the backrest cushion (Chapter 3.1).

2 Remove the seat cushion (Chapter 3.2).

3 Remove the bellows at the front and right side from the seat plate (1) (see Chapter 3.8) and press it down.



3.18 Shock absorber – removal and installation

Removal and installation

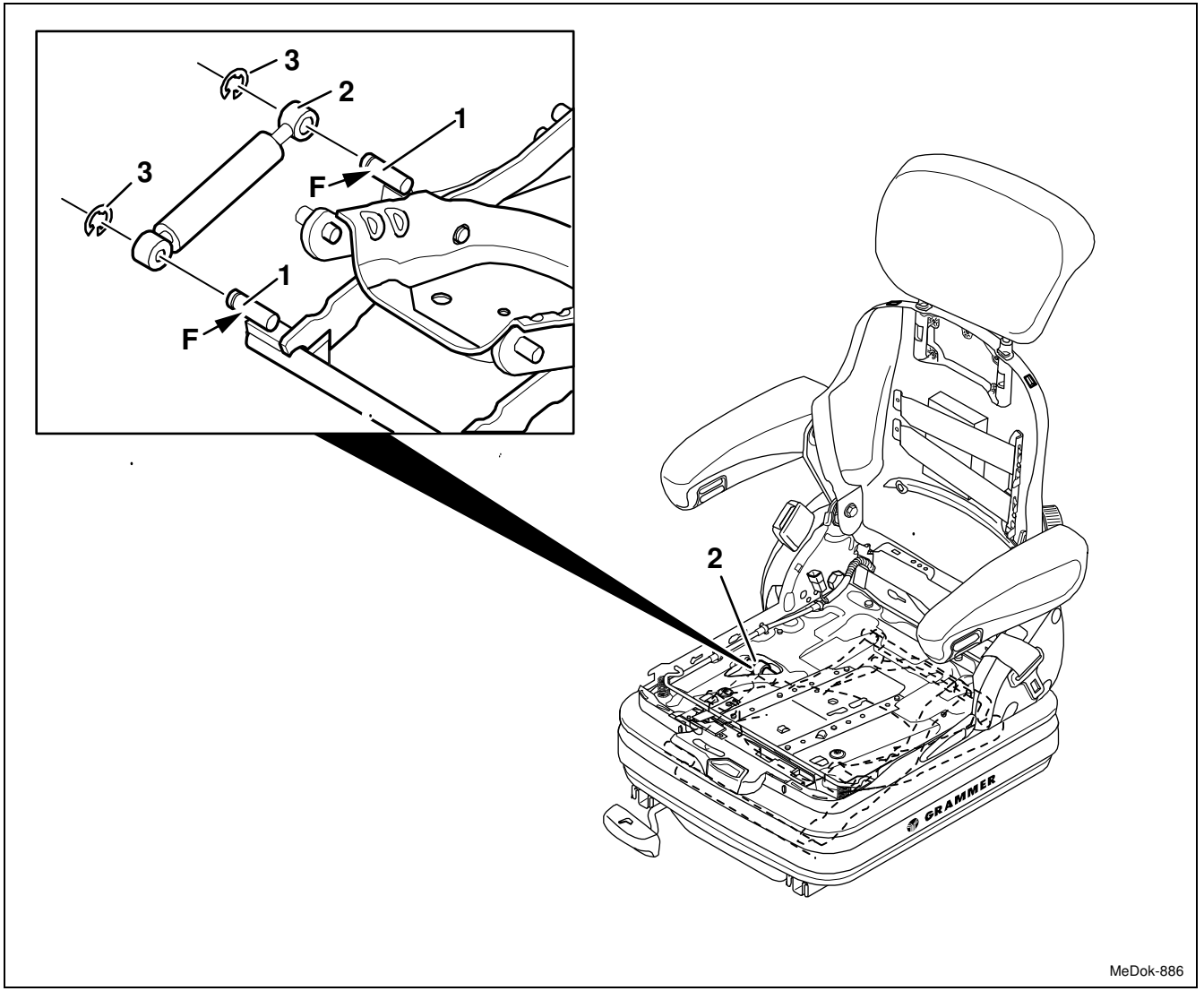
4 Move the seat to the highest position and secure it there.

WARNING!
Risk of crushing!
Secure the suspension at the back between the lower part and the upper part of the suspension with suitable spacers.

5 Loosen the two circlips (3) on the axles (1) and remove them.

6 Pull off the shock absorber (2) from the axles (1) and then remove it.
Installation note:
Apply acid-free multi-purpose lubricant to the entire surface (F) of the axle (1).

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

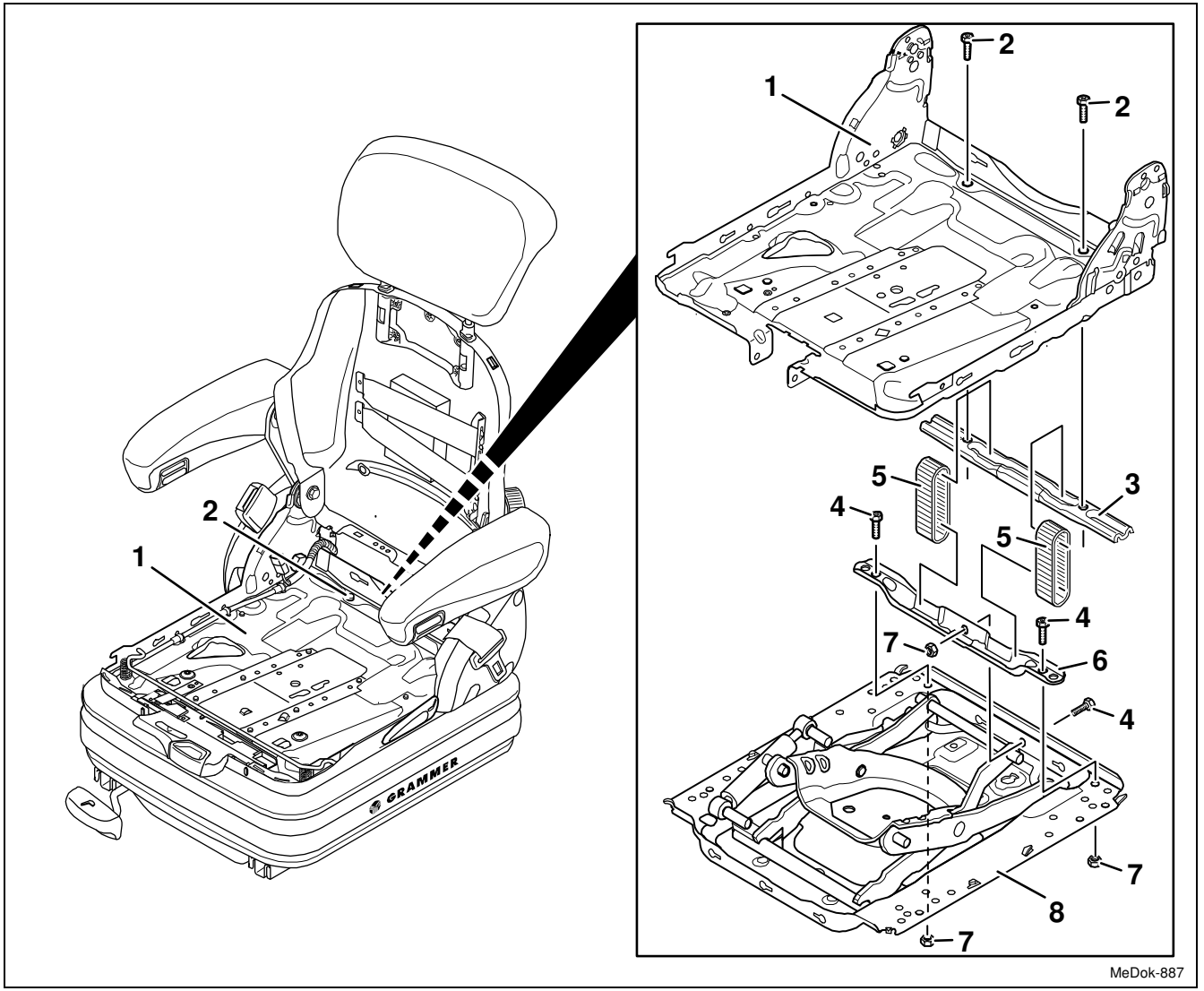


3.19 Webbings (static belt) / worn parts – removal and installation

REMOVAL / INSTALLATION

TABLE OF CONTENTS

(1) Upper suspension part
(2) Micro-encapsulated cap screw
.....to replace, 25 Nm
(3) Upper strip
(4) Micro-encapsulated cap screw
.....to replace, 25 Nm
(5) Webbing (static belt)
(6) Lower strip
(7) Hexagon nut
(8) Lower suspension part



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3.19 Webbings (static belt) / worn parts – removal and installation

1 Remove the backrest cushion (Chapter 3.1).

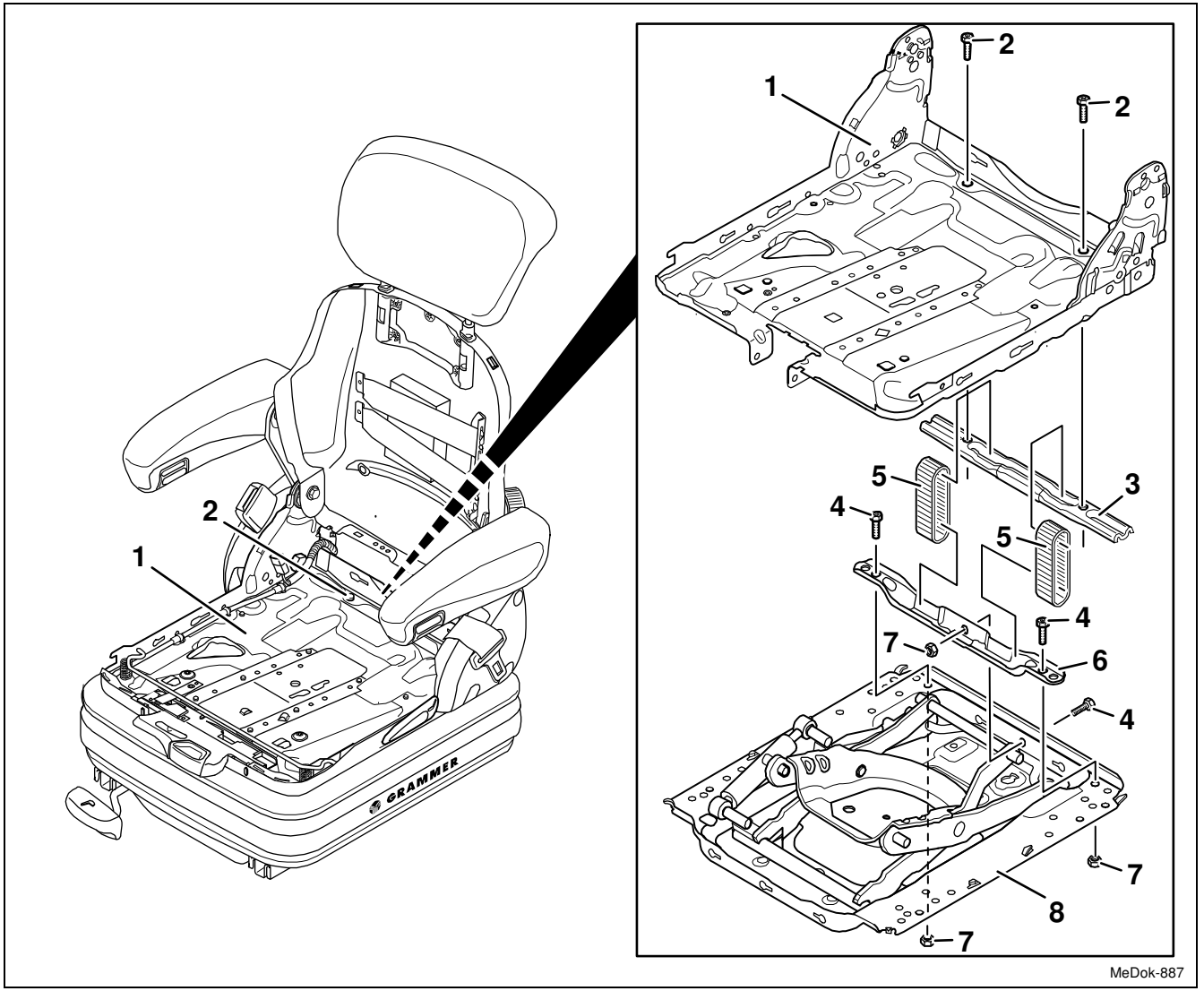
2 Remove the seat cushion (Chapter 3.2).

3 Remove the bellows on the back and side and pull it down over the lower part of the suspension (see Chapter 3.8).

Removal and installation

4 Move the seat to the highest position and secure it there (the webbings (5) must not be under tension).

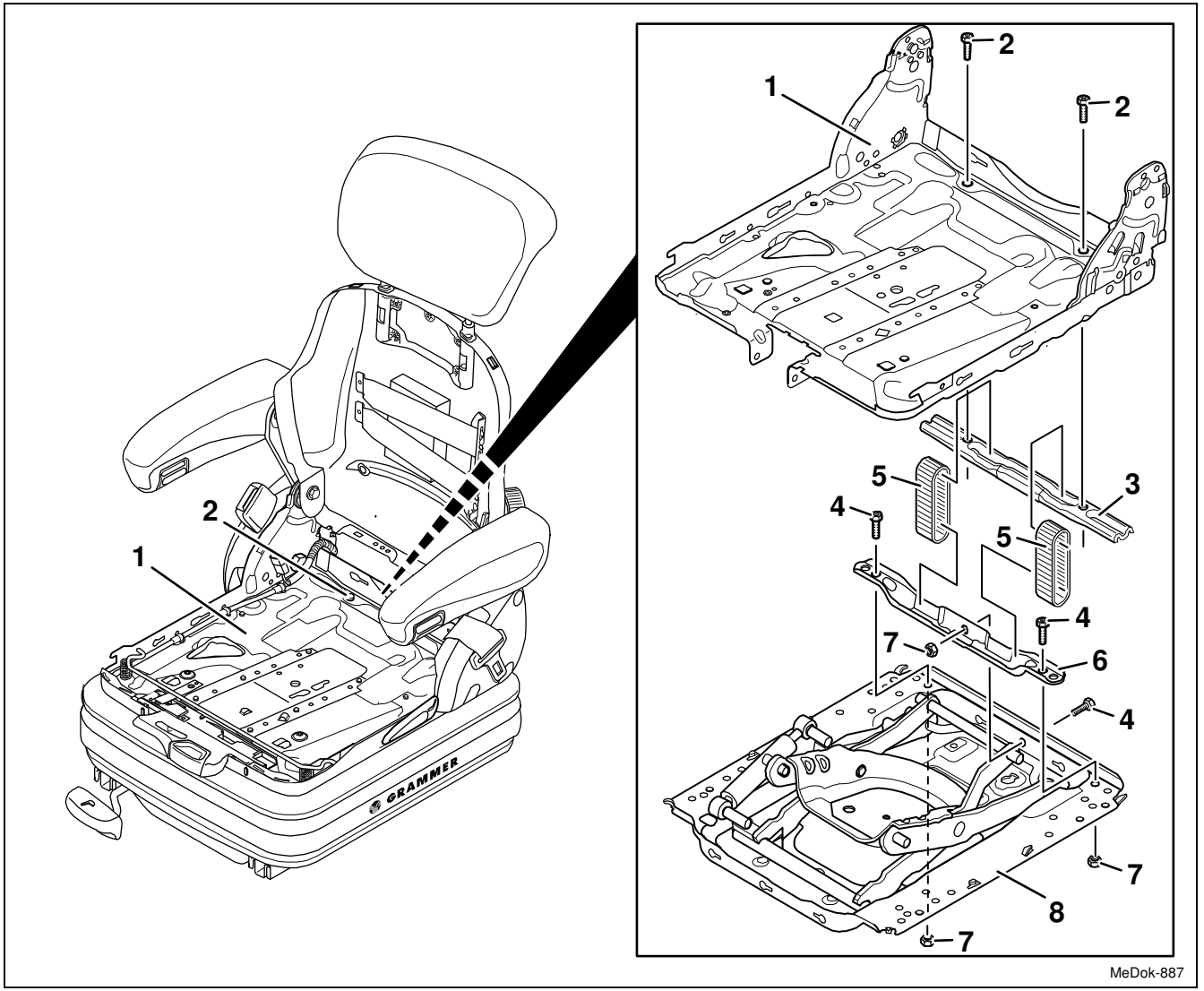
WARNING!
Risk of crushing!
Secure the suspension at the back between the lower part and the upper part of the suspension with suitable spacers.



5 Unscrew two micro-encapsulated cap screws (2) out of the upper part of the suspension (1).
Installation note:
Replace the micro-encapsulated cap screw (2) by a new one, 25 Nm.

6 Pull out the upper strip (3) from the two webbings (5).
Installation notes:
● The depressions of the upper strip (3) must show upwards.
● The two webbings (5) must be situated in the depressions of the upper strip (3).

7 Unscrew the three micro-encapsulated cap screws (4) out of the lower part of the suspension (8) and take off the hexagon nuts (7).
Installation note:
Replace the micro-encapsulated cap screw (4) by a new one, 25 Nm.



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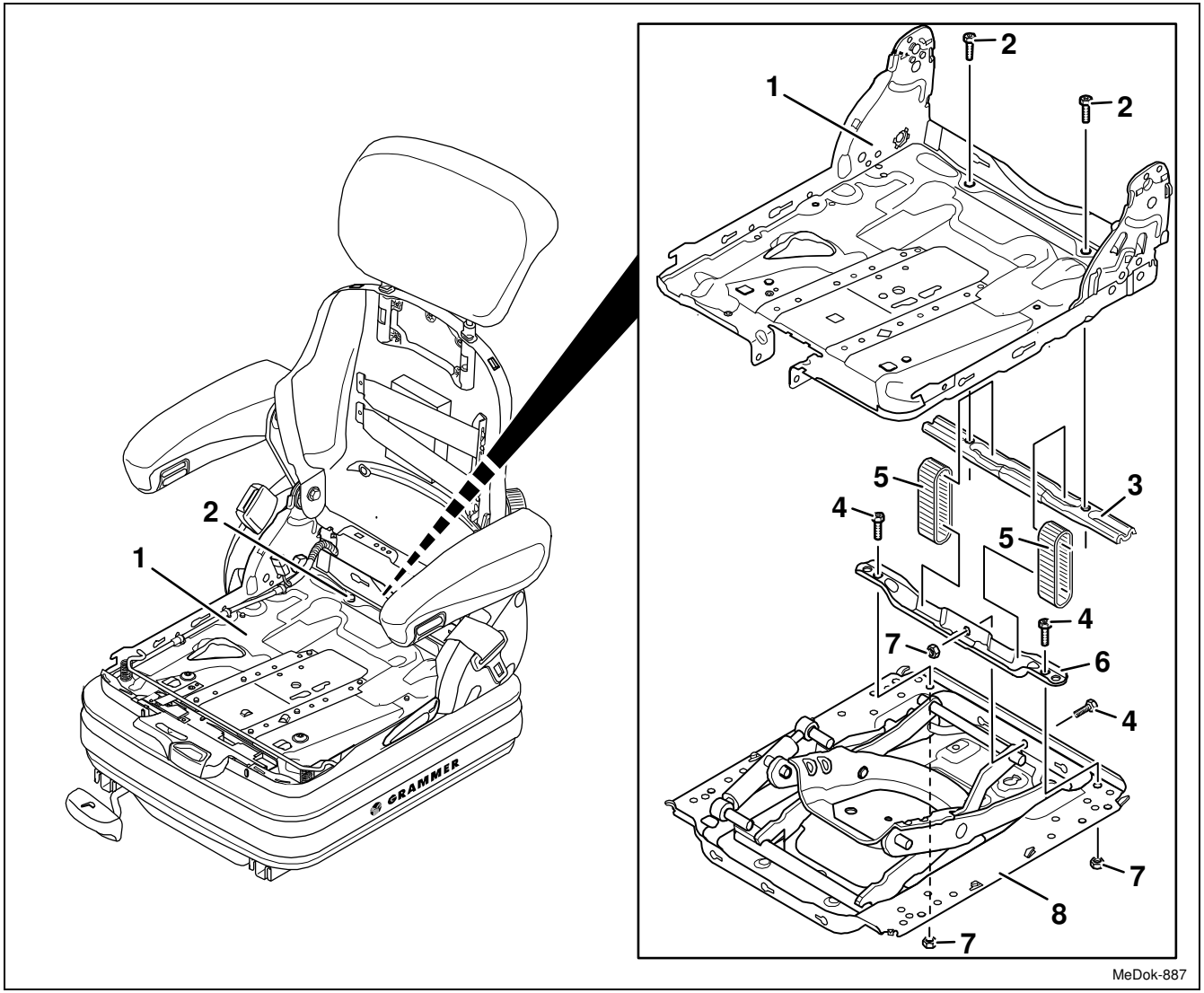
8 Remove the lower strip (6) and the two webbings (5).
Installation notes:

● **WARNING** Risk of accident! The seat displacement is limited by the webbings. With different webbing variants, please make sure that the same webbing length is installed on the right and left side.
● The two webbings (5) must be situated in the depressions of the lower strip (6).

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



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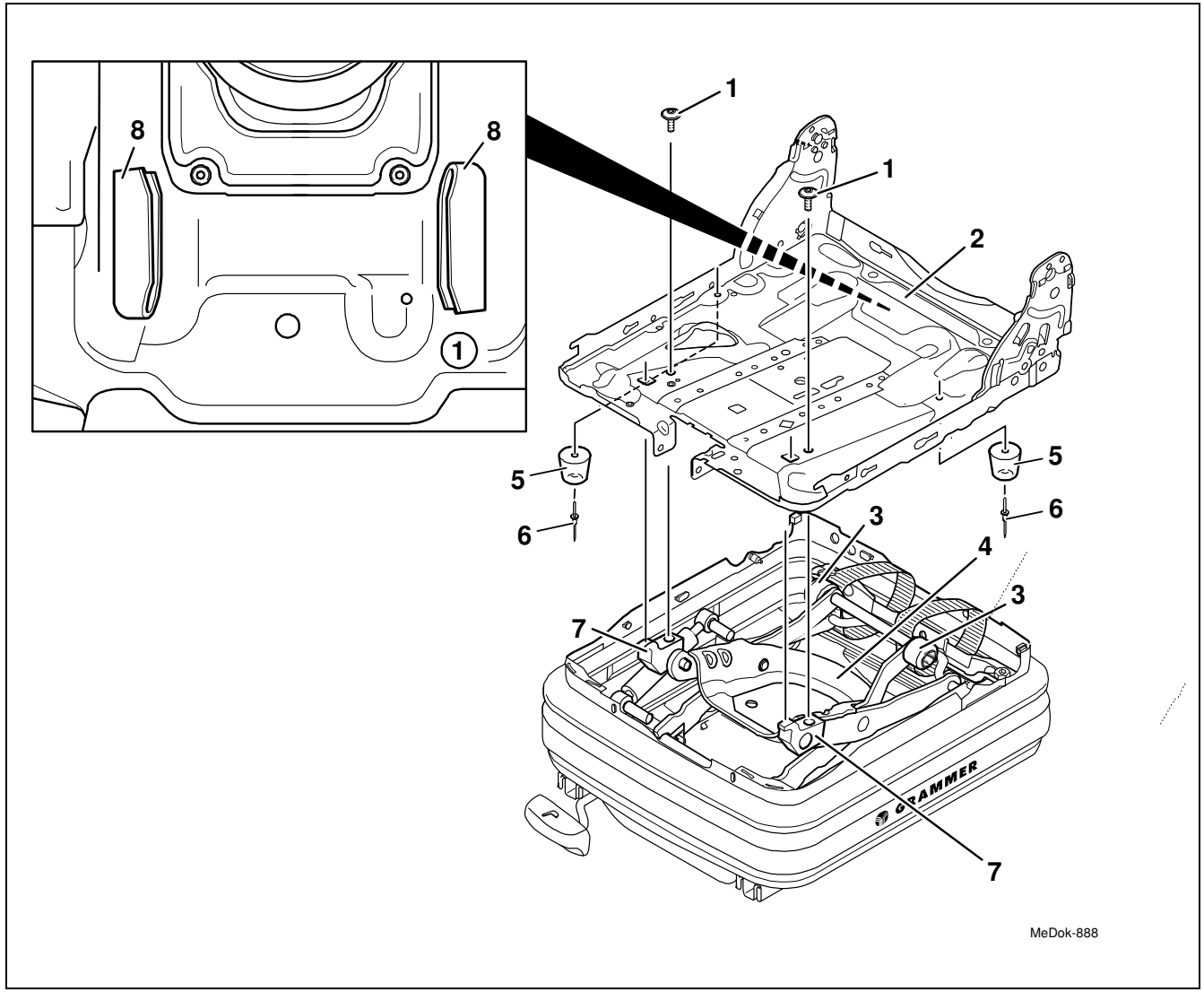
3.20 Spring assembly – removal and installation

TABLE OF CONTENTS

3.20.1 Spring assembly – removal and installation (seat plate)

(1) Special torx screw ..... 25 Nm
(2) Spring assembly (seat plate)
(3) Plastic roller
(4) Swinging structure
(5) Buffer
(6) Blind rivet
(7) Fixed bearing
(8) Guiding rail

WARNING The pressure in the pneumatic system may cause injury! The pneumatic system is to be vented before removing the spring assembly.



3.20.1 Spring assembly – removal and installation (seat plate)

REMOVAL / INSTALLATION

TABLE OF CONTENTS

1 Remove the backrest cushion (Chapter 3.1).

2 Remove the seat cushion (Chapter 3.2).

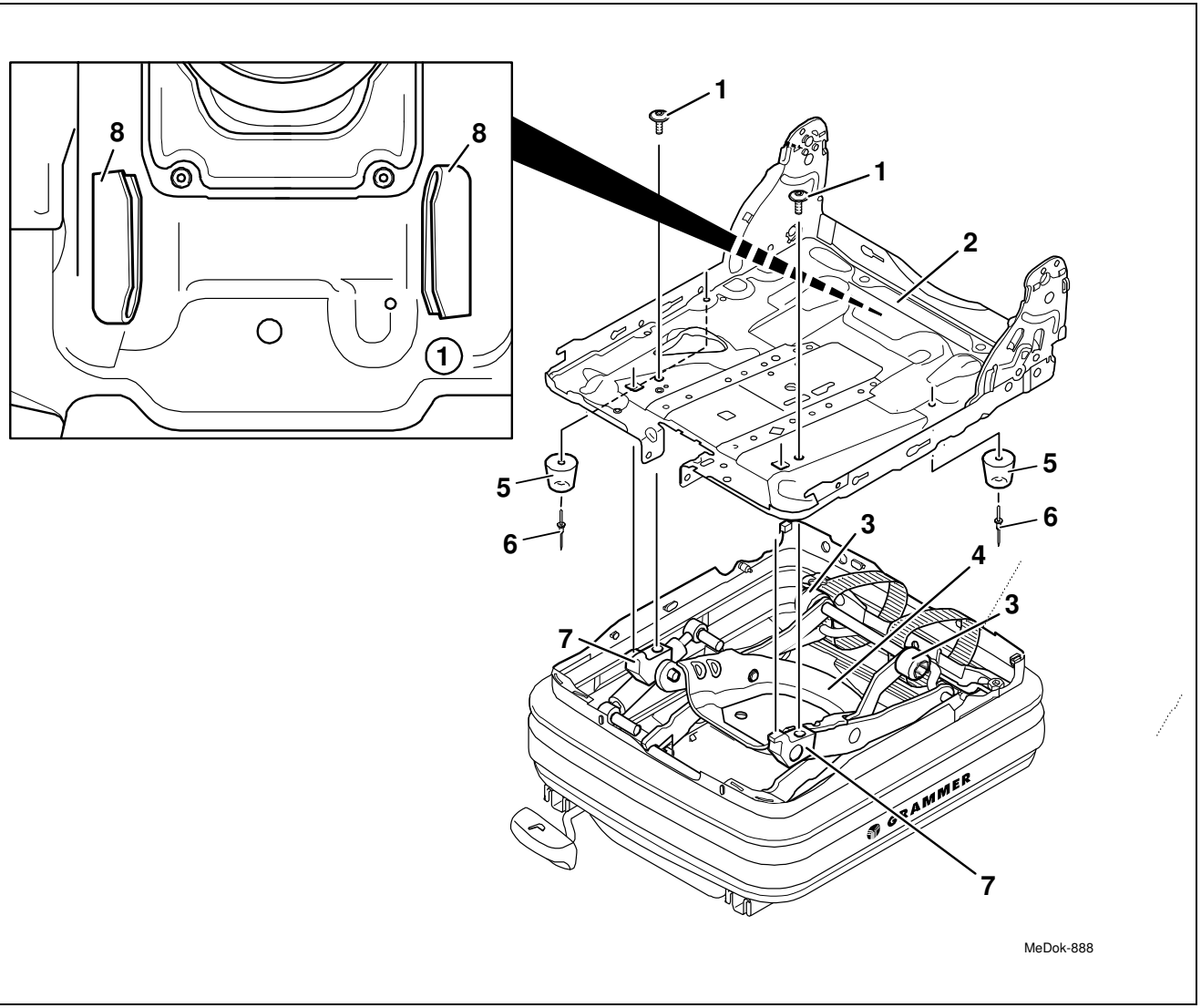
3 Remove the left and right covers (Chapter 3.4).

4 Seat with armrests:
Remove the armrests (Chapter 3.6).

5 Remove the backrest frame with retaining spring (Chapter 3.7).

6 Remove the bellows from the spring assembly (2) (see Chapter 3.8) and lay it down.

7 Remove the belt roller and belt buckle (Chapter 3.9).



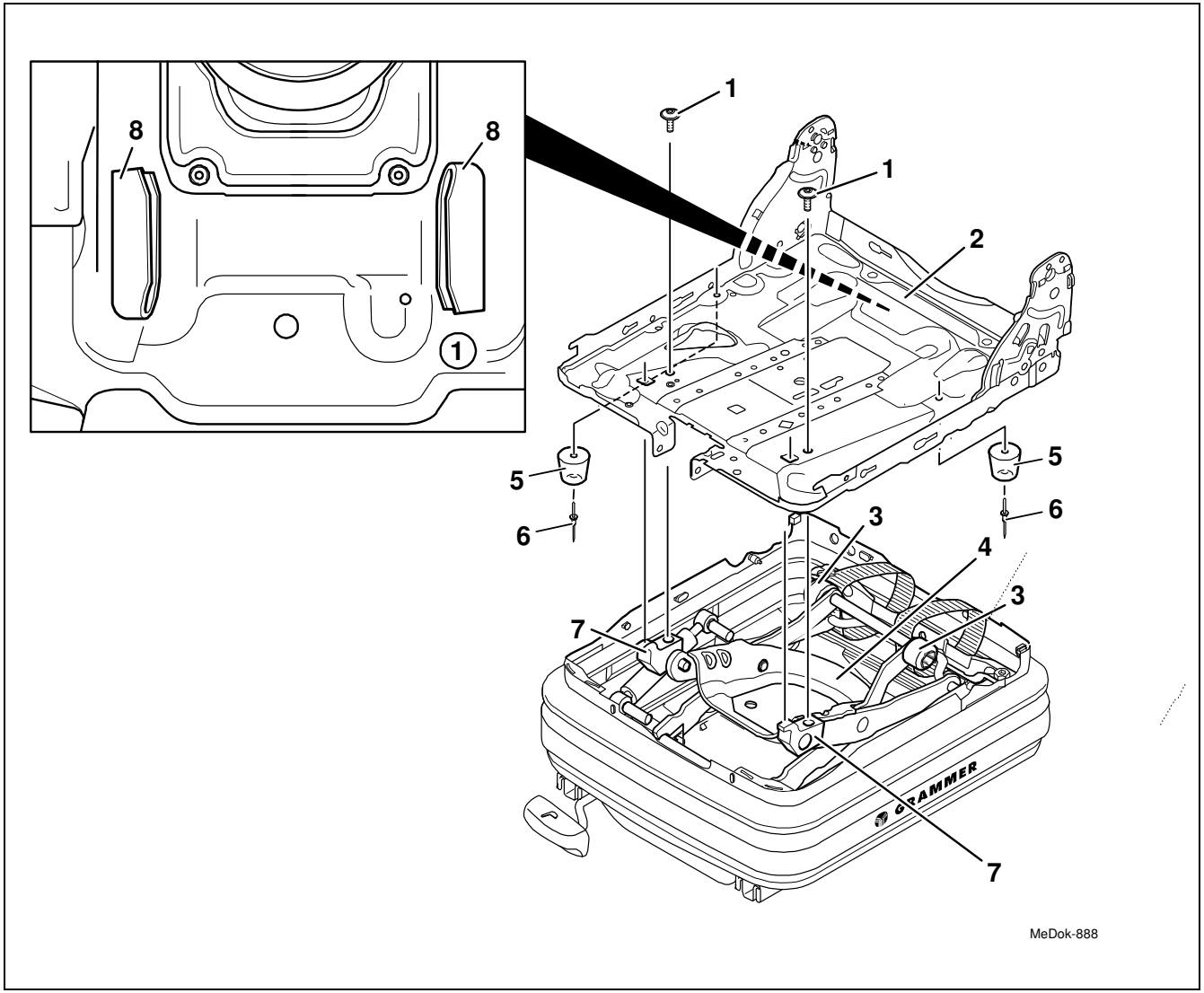
8 Remove the entire backrest lock (Chapter 3.13).

9 Remove the housing with control and seat level indicator (Chapter 3.15).

10 Remove the cable harness of the seat switch with switch mechanism (Chapter 3.16).

11 Remove the two webbings from the spring assembly (2) (see Chapter 3.19).

12 Remove the air spring from the swinging structure (see Chapter 3.22).



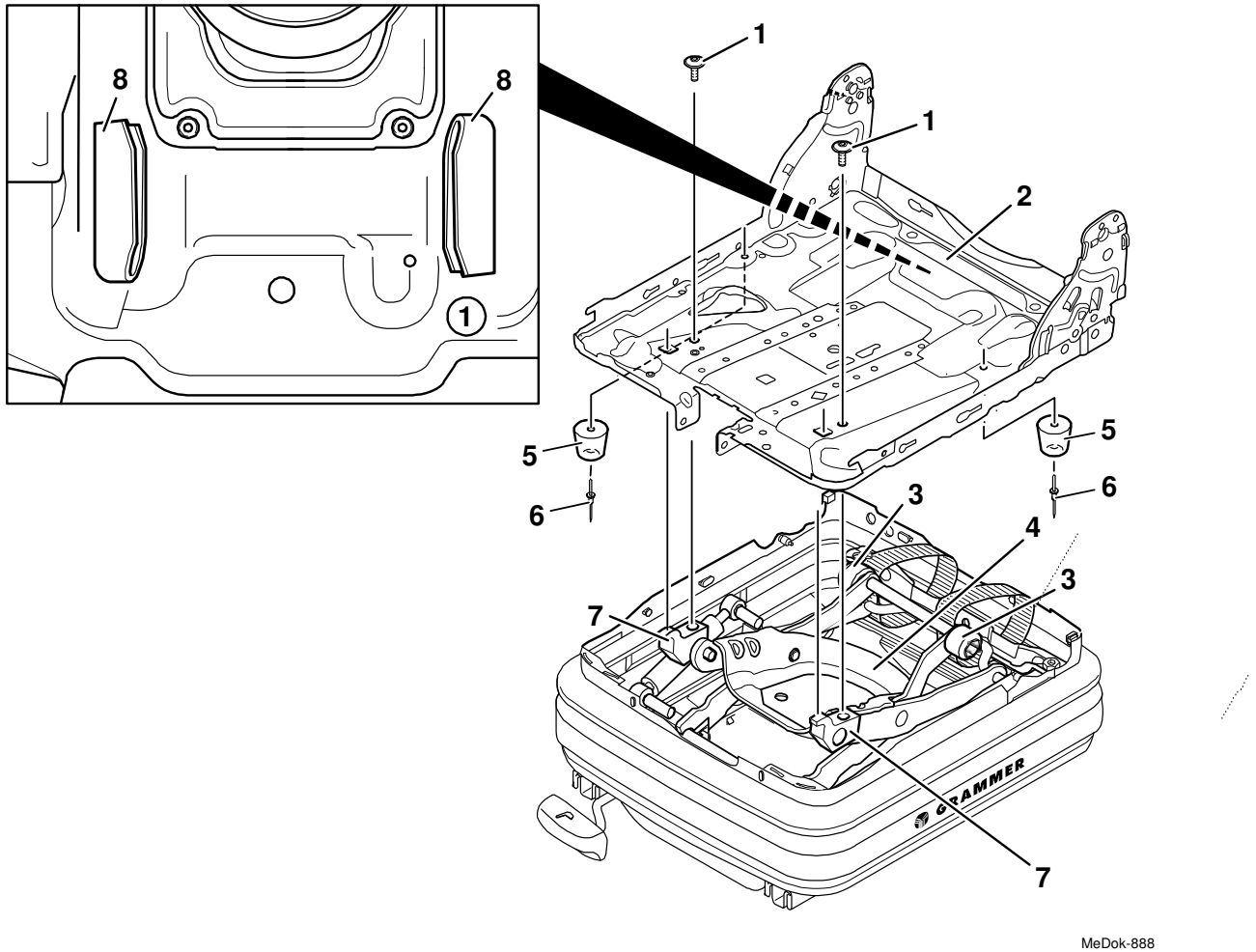
Removal and installation

13 Move the seat to the highest position and secure it there.

WARNING!
Risk of crushing!
Secure the suspension at the back between the swinging structure and the lower part of suspension with suitable spacers.

14 Unscrew the two special torx screws (1) from the fixed bearing (7).
Installation note:
Special torx screw (1), 25 Nm.

15 Take off two fixed bearings (7) from the spring assembly (2).



16 Push the spring assembly (2) backwards as far as possible and then swivel the two plastic rollers (3) out of the two guiding rails by turning it sideways to the right.

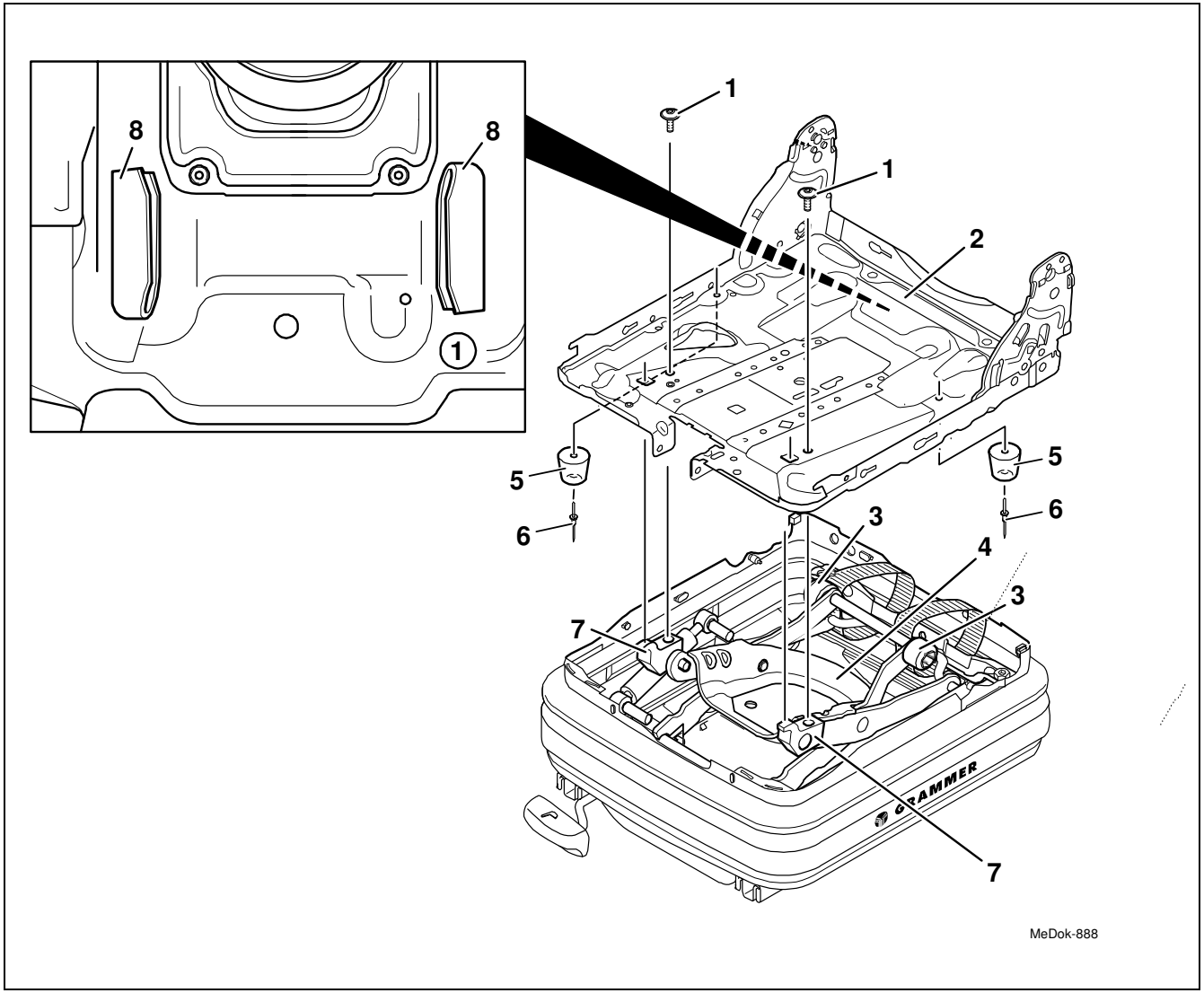
17 Remove the spring assembly (2) in upward direction.

18 Remove the compressor (Chapter 3.21).

19 Remove the air spring (2) (see Chapter 3.22).

20 Bore out the two rivet heads and drive out the blind rivets (6). Remove the two buffers (5).

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

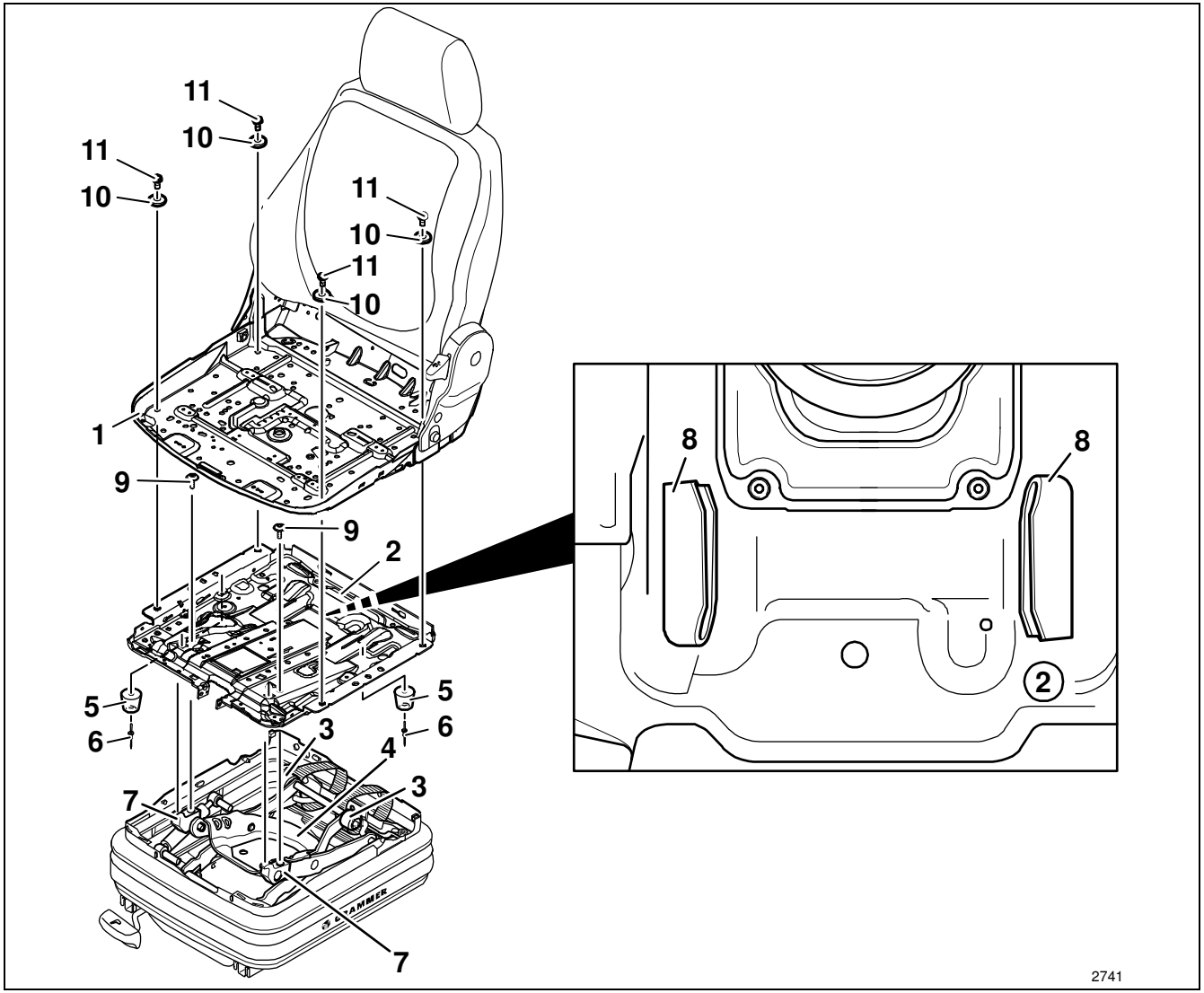


3.20.2 Spring assembly – removal and installation (upper suspension part)

REMOVAL / INSTALLATION

TABLE OF CONTENTS

(1) Upper seat part
(2) Spring assembly (upper suspension part)
(3) Plastic roller
(4) Swinging structure
(5) Buffer
(6) Blind rivet
(7) Fixed bearing
(8) Guiding rail
(9) Special torx screw ..... 25 Nm
(10) Washer
(11) Hexagon bolt ..... 25 Nm



WARNING The pressure in the pneumatic system may cause injury! The pneumatic system is to be vented before removing the spring assembly.

3.20.2 Spring assembly – removal and installation (upper suspension part)

REMOVAL / INSTALLATION

TABLE OF CONTENTS

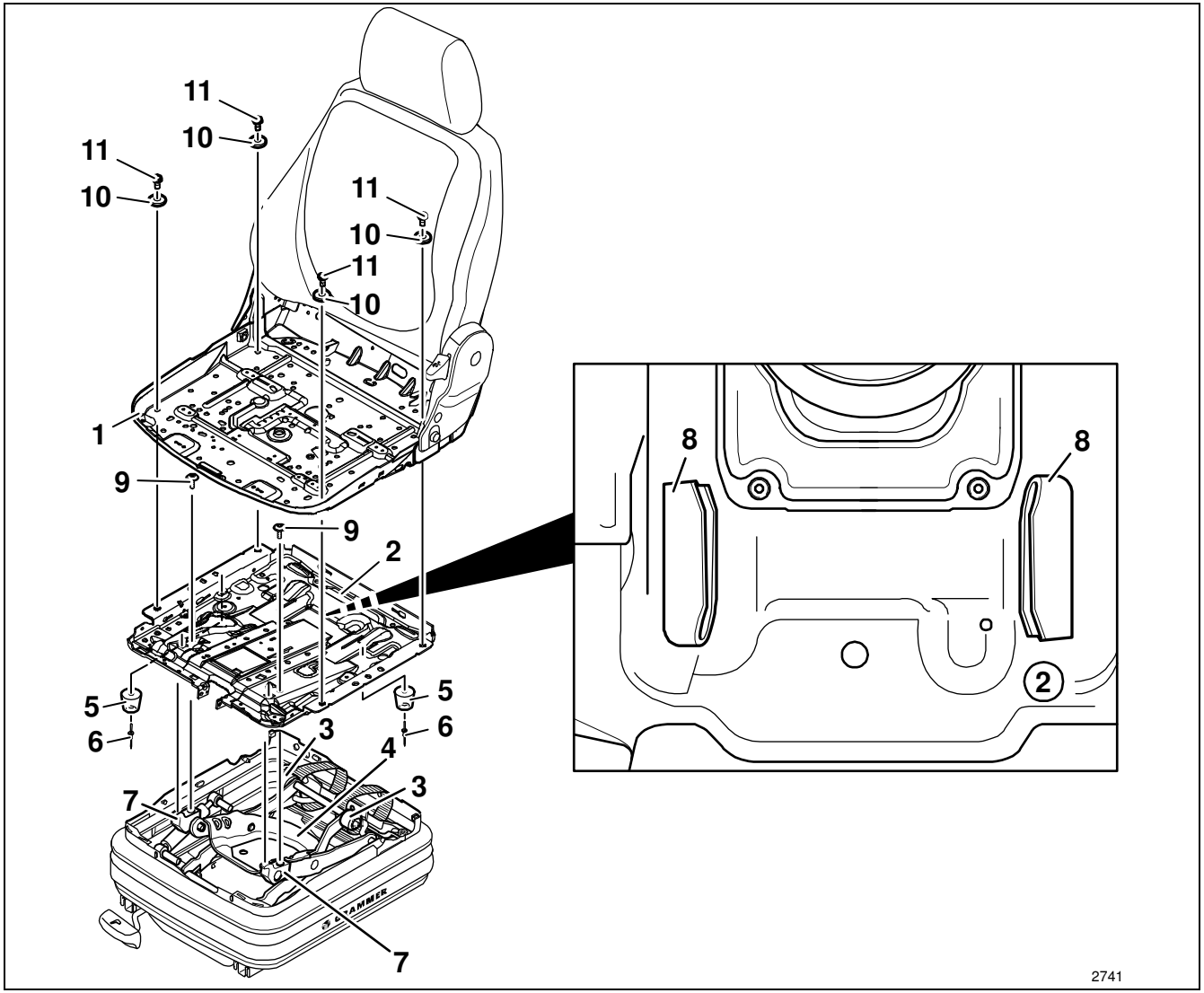
1 Remove the seat cushion (see repair manual for the upper seat part).

2 Remove the bellows from the spring assembly (2) (see Chapter 3.8) and lay it down.

3 Remove the housing with control and seat level indicator (Chapter 3.15).

4 Remove the two webbings from the spring assembly (2) (see Chapter 3.19).

5 Remove the air spring from the swinging structure (see Chapter 3.22).



3.20.2 Spring assembly – removal and installation (upper suspension part)

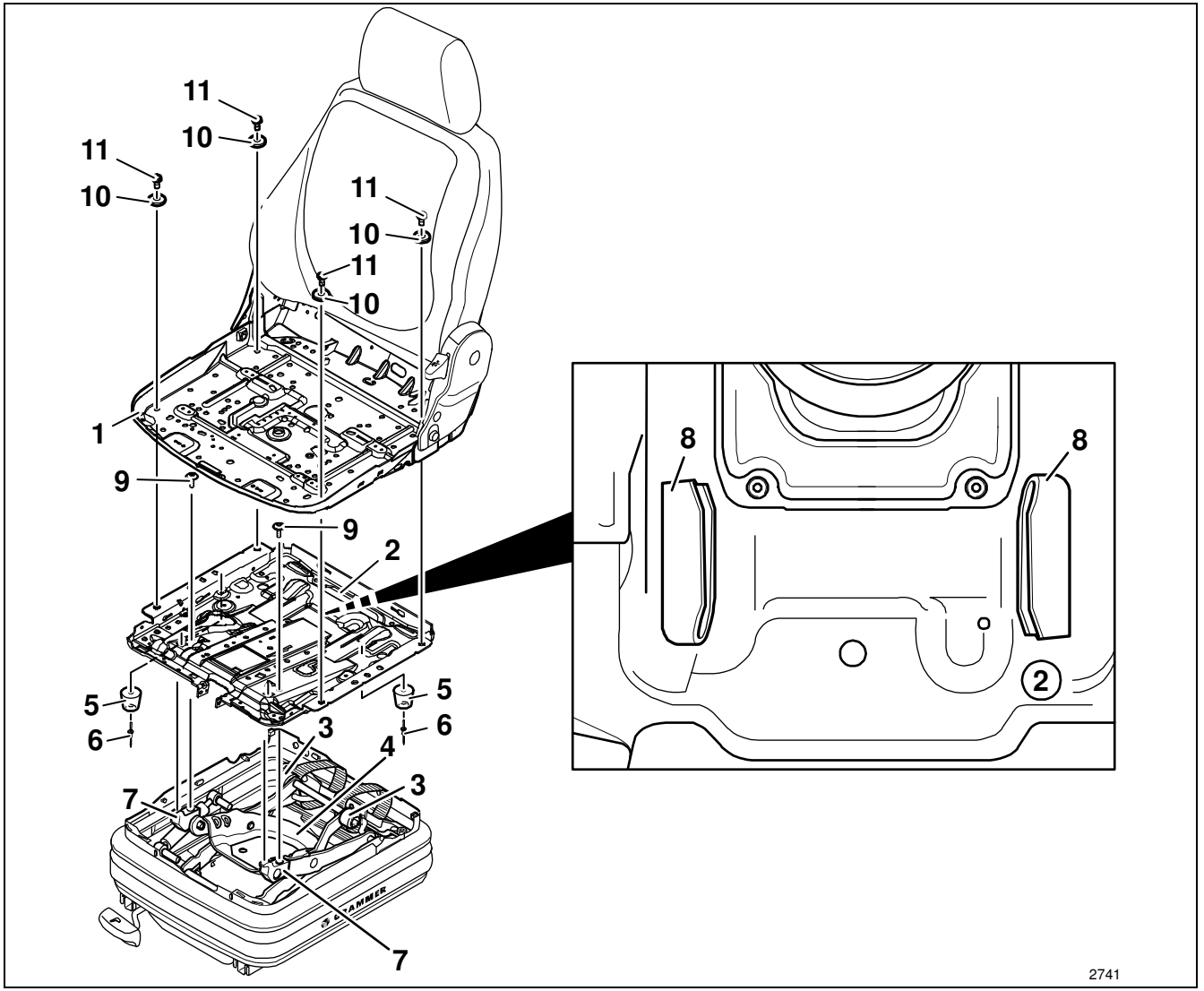
Removal and installation

6 Move the seat to the highest position and secure it there.

WARNING!
Risk of crushing!
Secure the suspension at the back between the swinging structure and the lower part of suspension with suitable spacers.

7 Unscrew four hexagon bolts (11) and remove them together with the washers (10).
Installation note:
Hexagon bolts (11), 25 Nm.

8 Remove the upper seat part (1) from the spring assembly (2).



3.20.2 Spring assembly – removal and installation (upper suspension part)

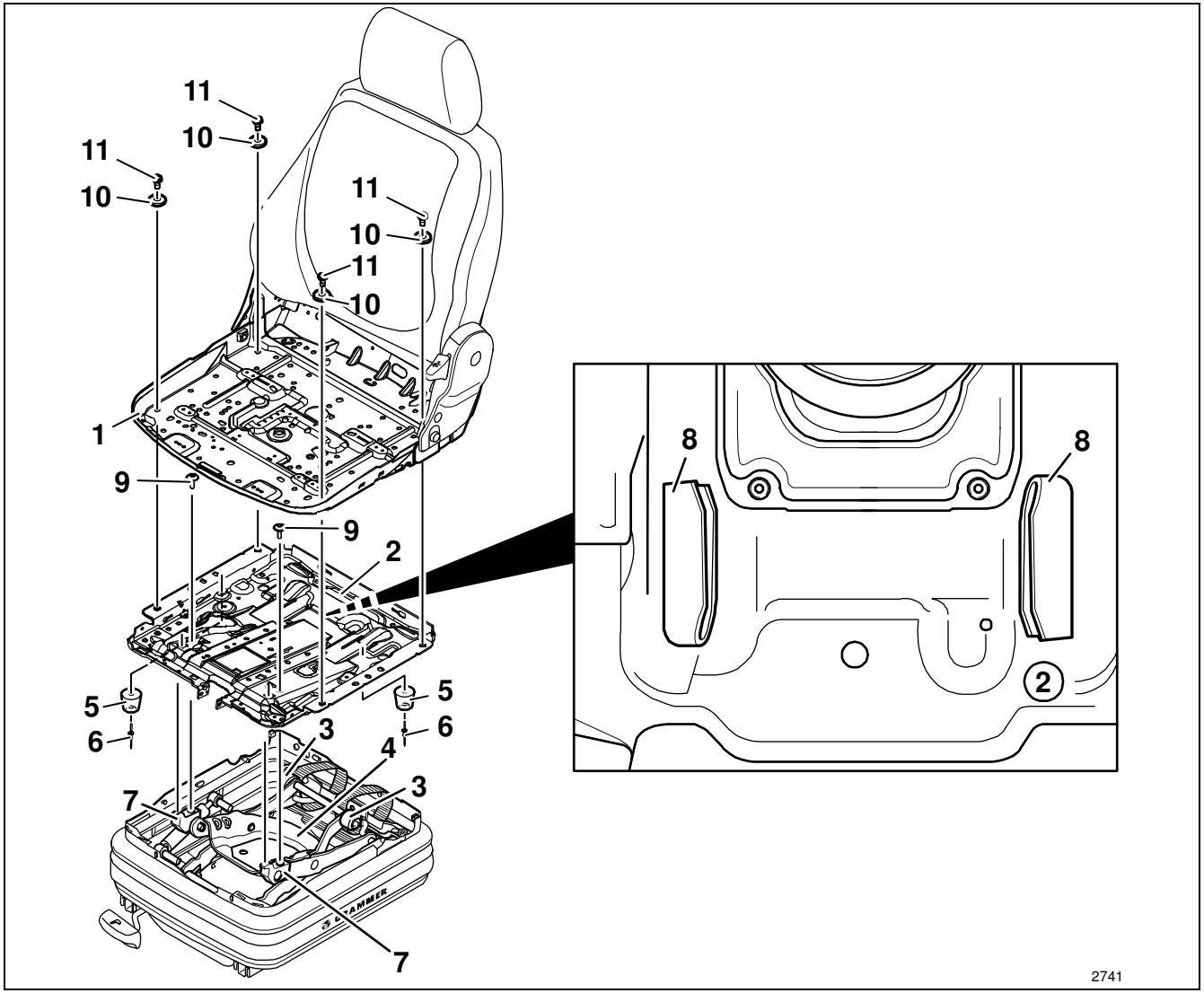
9 Unscrew the two special torx screws (9) from the fixed bearing (7).
Installation note:
Special torx screws (9), 25 Nm.

10 Take off two fixed bearings (7) from the spring assembly (2).

11 Push the spring assembly (2) backwards as far as possible and then swivel the two plastic rollers (3) out of the two guiding rails by turning it sideways to the right.

12 Remove the spring assembly (2) in upward direction.

13 Remove the compressor (Chapter 3.21).

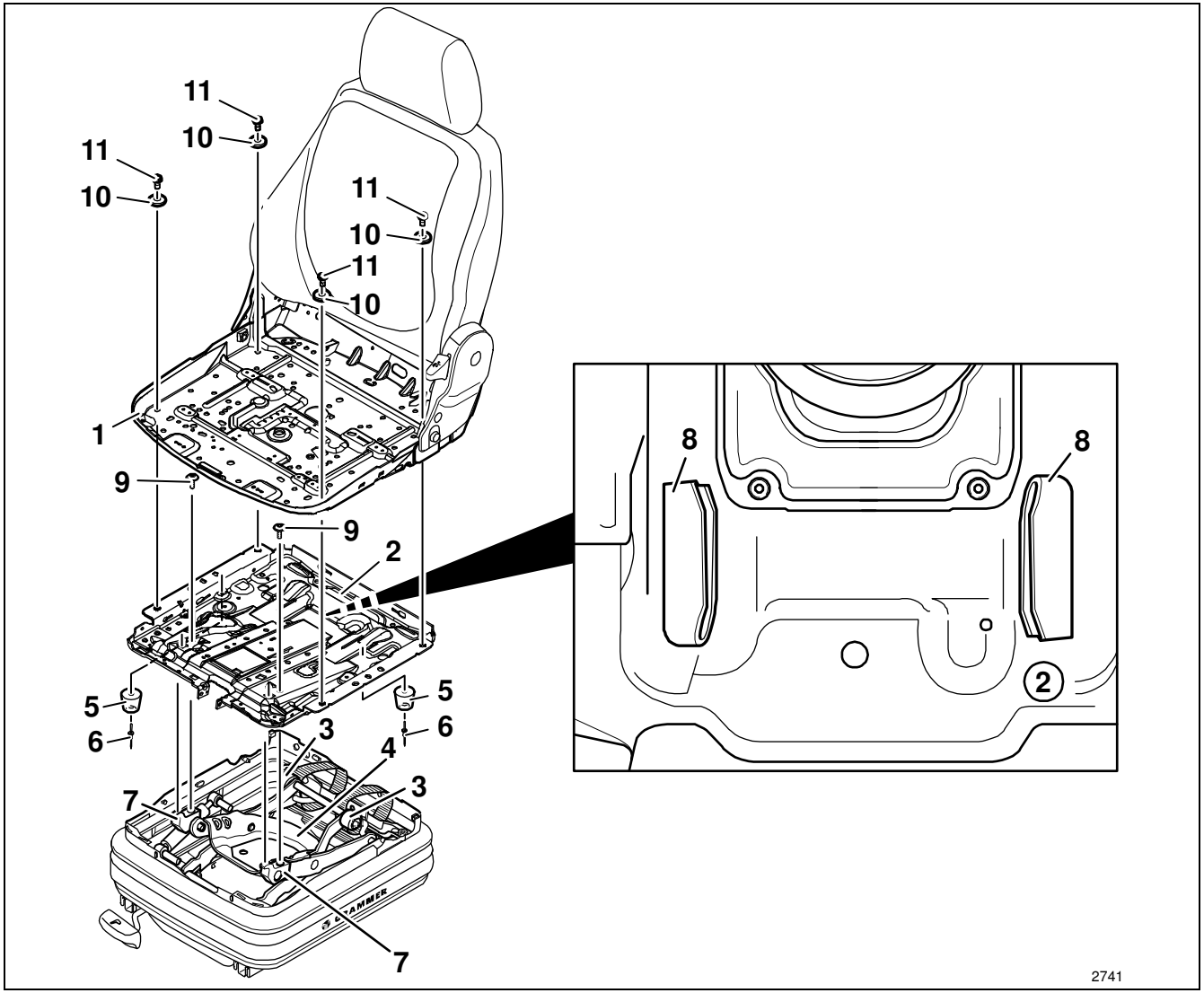


3.20.2 Spring assembly – removal and installation (upper suspension part)

14 Remove the air spring (2) (see Chapter 3.22).

15 Bore out the two rivet heads and drive out the blind rivets (6). Remove the two buffers (5).

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

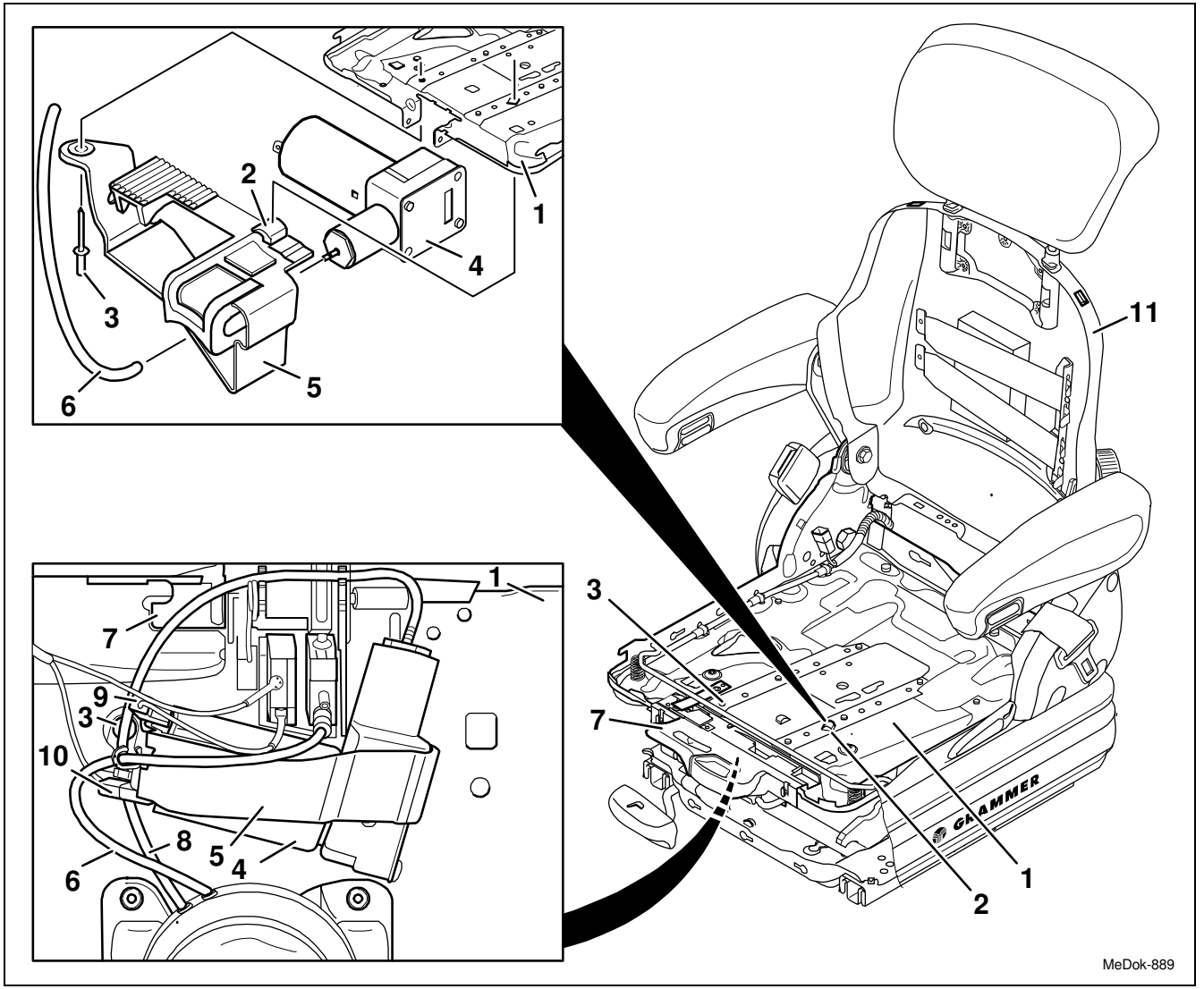


3.21 Compressor – removal and installation

REMOVAL / INSTALLATION

TABLE OF CONTENTS

(1) Seat plate
(2) Hook (compressor holder)
(3) Steel rivet
(4) Compressor
(5) Compressor holder
(6) Air hose
(7) Housing (control and seat level indicator)
(8) Compressed-air hose
(9) Right-angle plug
(10) Connector
(11) Backrest frame



WARNING The pressure in the pneumatic system may cause injury! The pneumatic system is to be vented before removing the compressor.

3.21 Compressor – removal and installation

REMOVAL / INSTALLATION

TABLE OF CONTENTS

1 Remove the backrest cushion (Chapter 3.1).

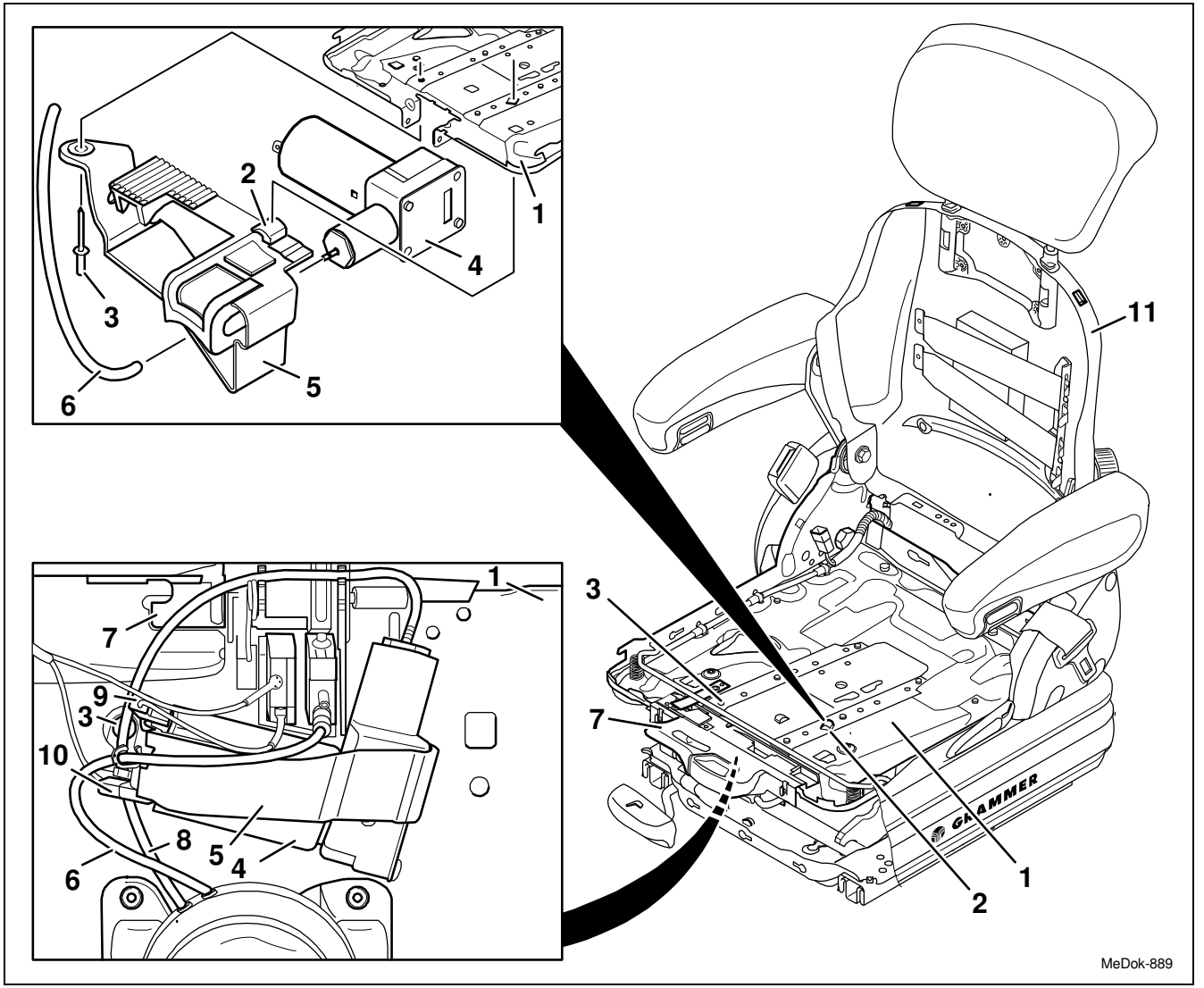
2 Remove the seat cushion (Chapter 3.2).

3 Remove the bellows from the seat plate (1) (see Chapter 3.8) and lay it down.

4 Take off the linkage rod of the pointer from the lower part of the suspension (see Chapter 3.15).

5 Remove the air spring from the swinging structure (see Chapter 3.22).

6 Unscrew the special torx screws and take off the fixed bearing (1) from the seat plate (see Chapter 3.20).



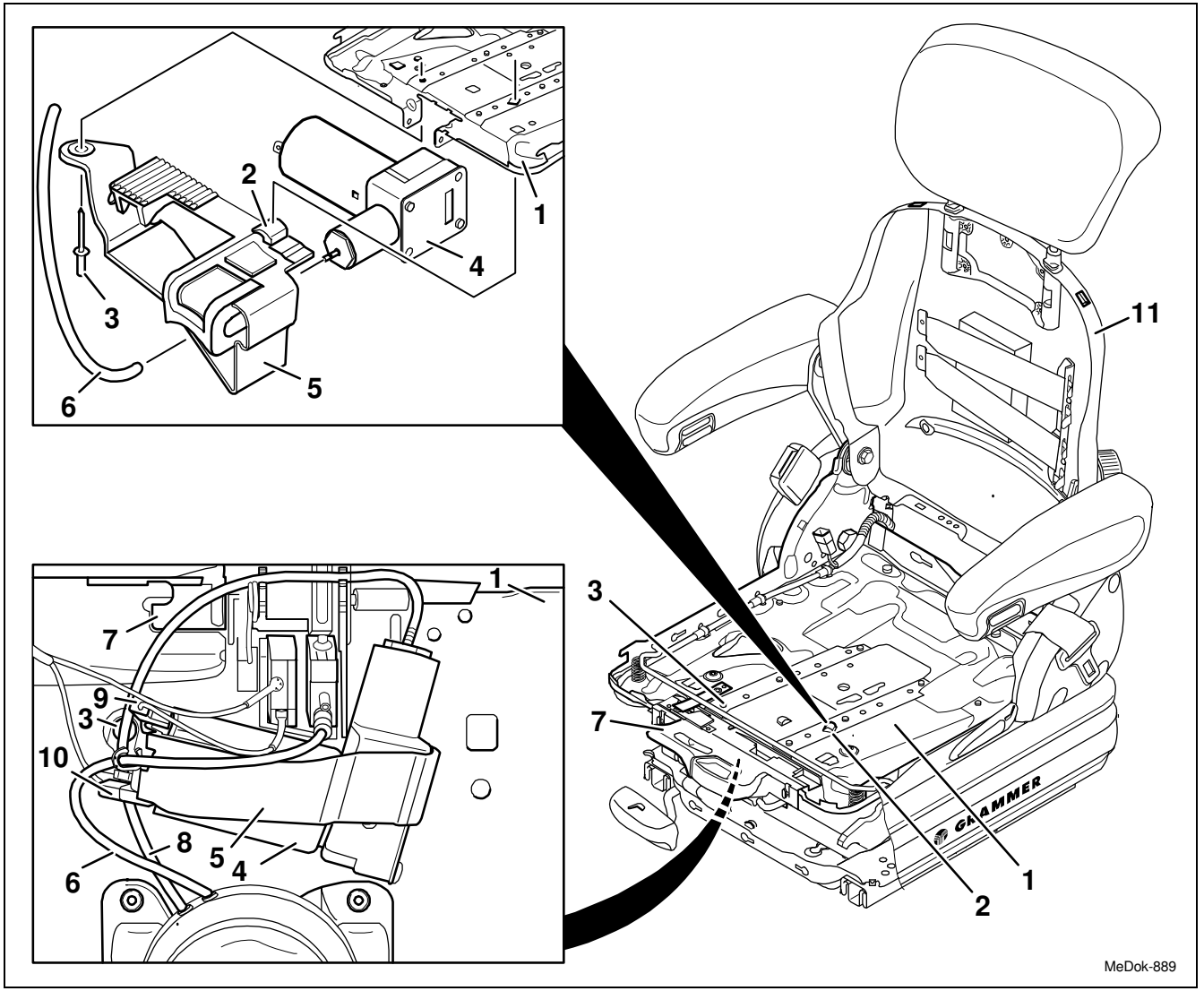
Removal and installation

7 Tilt the seat plate (1) with the backrest frame (11) backwards and lay it down on the backrest frame (11).
Note:
With short webbings, the upper or lower cross-head of the webbings has to be loosened before (see Chapter 3.19).

8 Take off the compressed-air hose (8) from the housing (7).

9 Take off the compressed-air hose (8) from the compressor holder (5).

10 Remove the compressed-air hose (8) from the air spring (see Chapter 3.16).



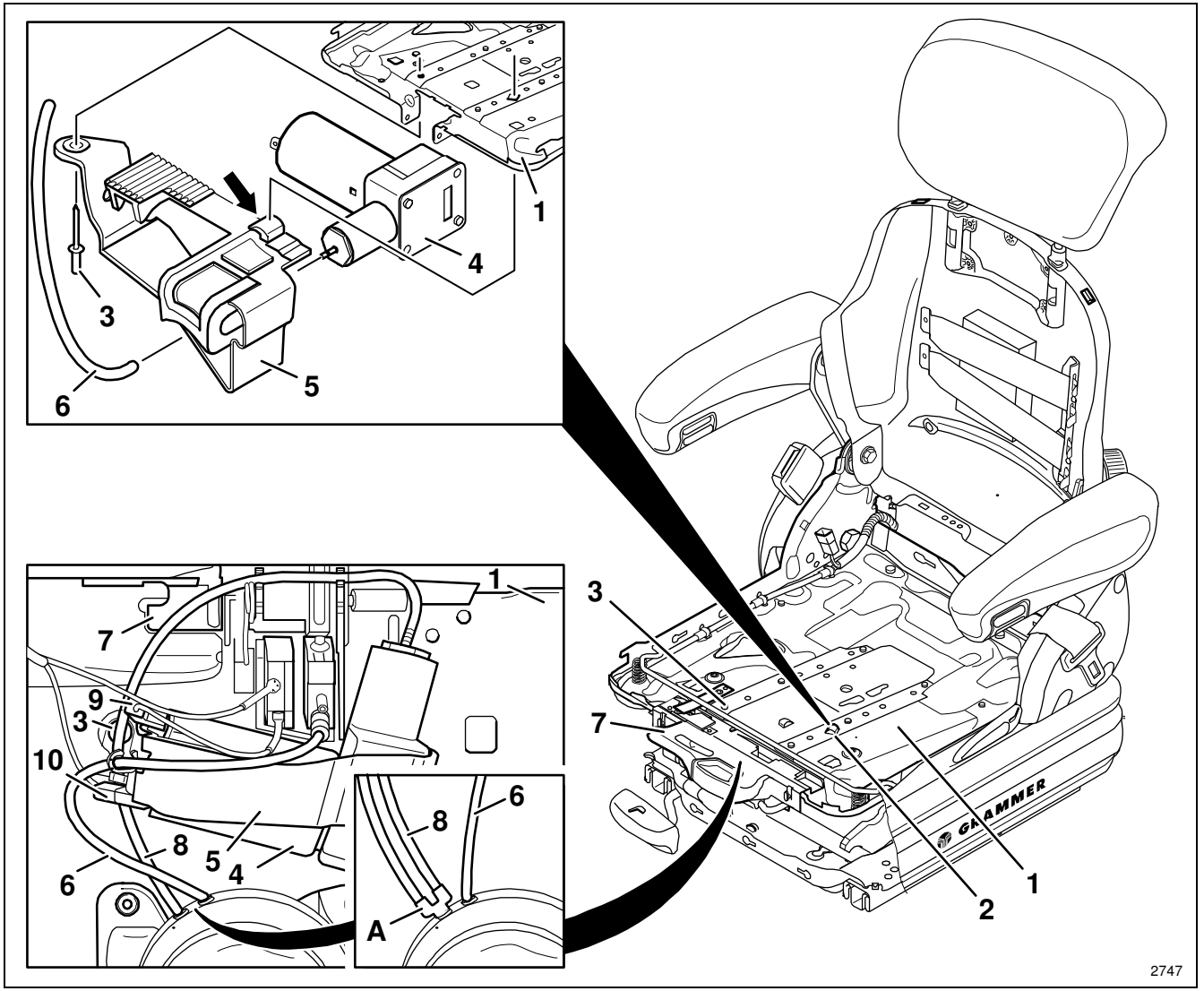
11 MSG 75 GL:
Press the retaining ring of the quick-release coupling (A) to the very back on both sides (e.g. using flat pliers) and pull the compressed-air hose (8) out of the quick-release coupling (A).

12 Take off the air hose (6) from the compressor holder (5).

13 Disconnect the right-angle plug (9) and plug (10) from the compressor.

14 Bore out the rivet head and drive out the steel rivet (3).

15 Take off the hook (2) from the seat plate (1) and press it down.



3.21 Compressor – removal and installation

16 Remove the compressor holder (5) with the compressor (4) in forward direction.

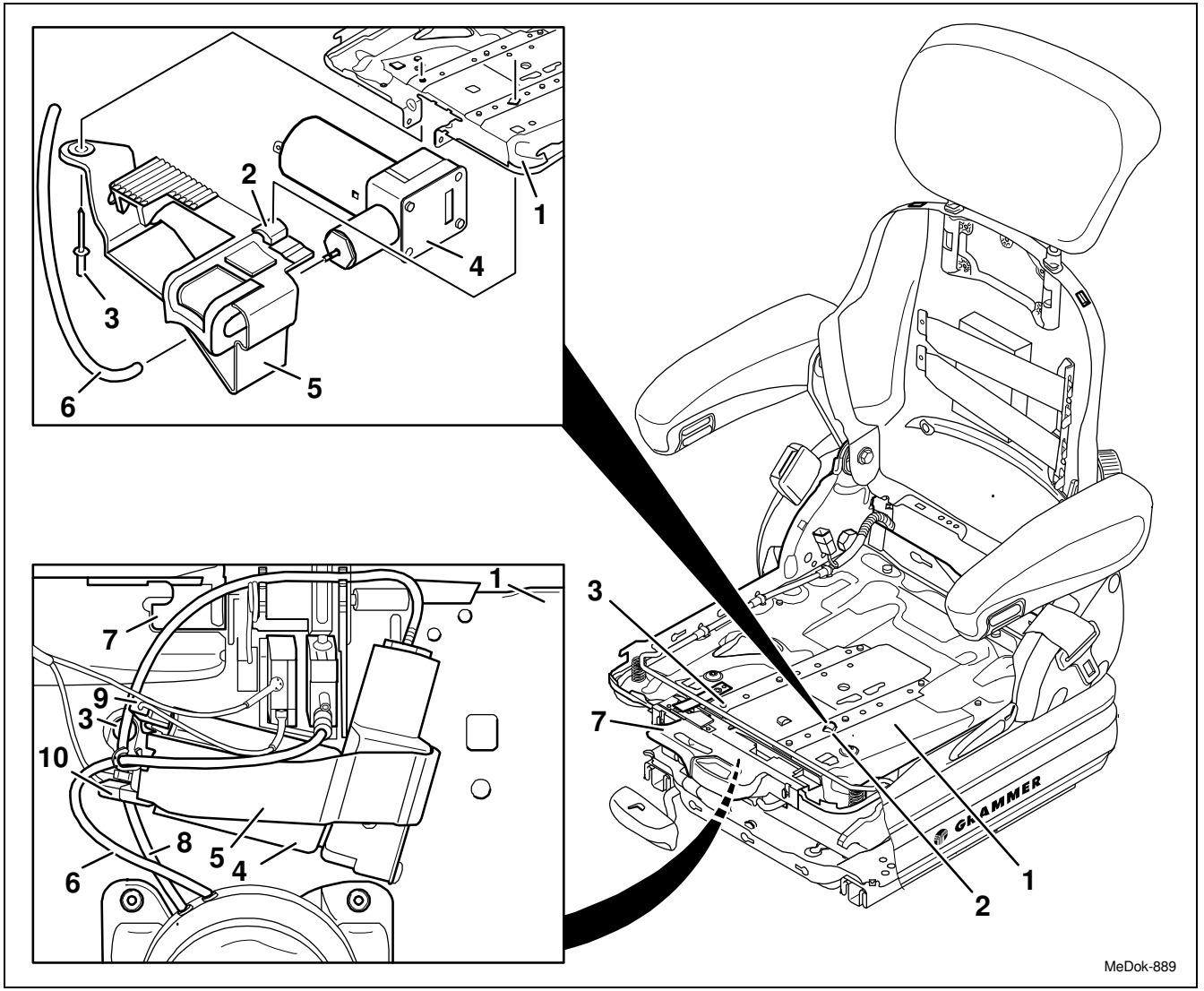
17 Pull out the compressor (4) from the compressor holder (5).

18 Pull off the compressed-air hose (8) from the compressor (4).

WARNING Damage!

- Do not use a screwdriver to lift the compressed-air hose (8) off the tapered end of the compressor (4).
- Heat the compressed-air hose (8) at the head of compressor (4) (e.g. using a hot-air blower) and then, pull it off in one move.

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



3.22 Air spring – removal and installation

REMOVAL / INSTALLATION

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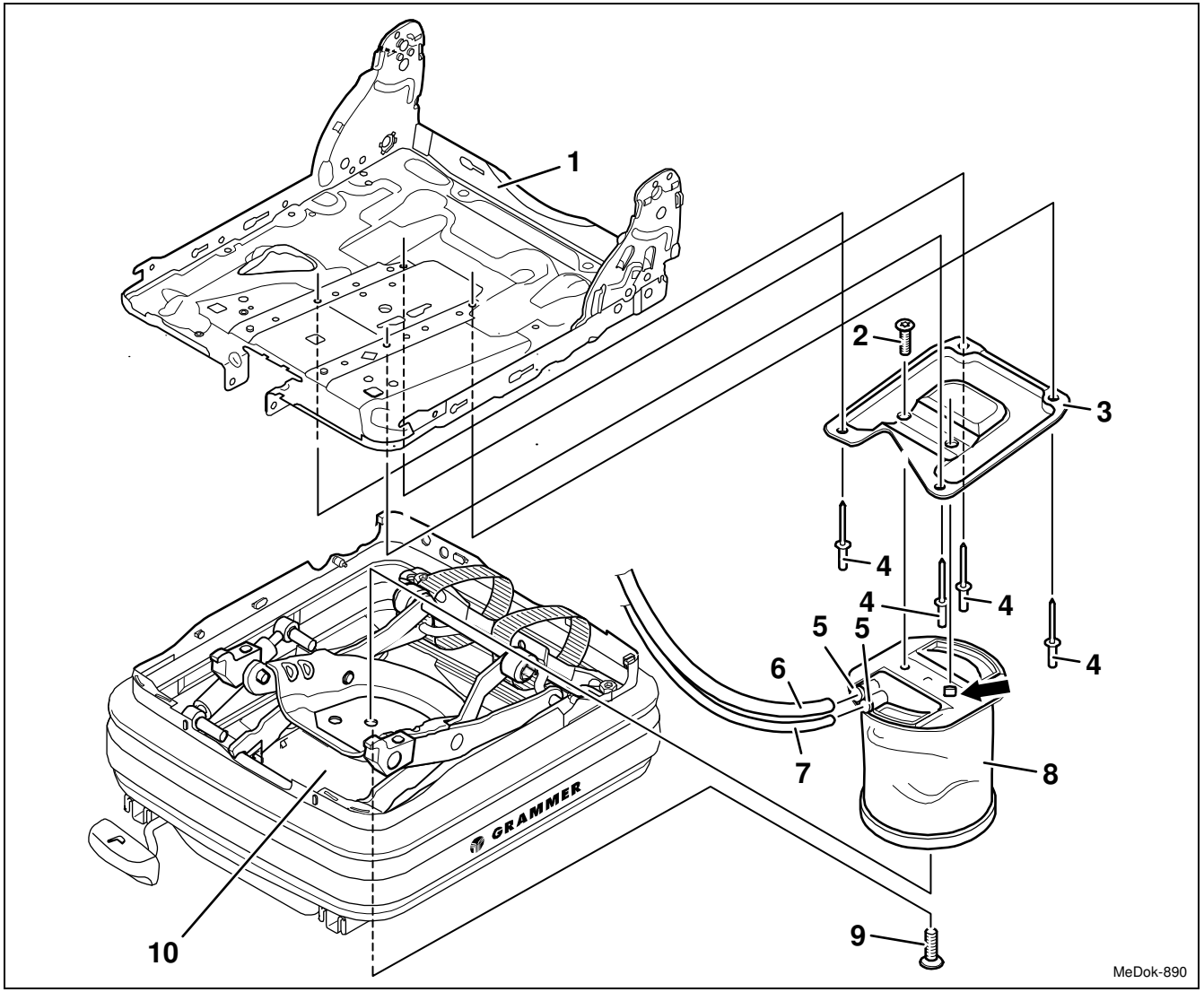
(1) Seat plate
(2) Countersunk screw ..... 6 Nm
(3) Plate
(4) Blind rivet
(5) Retaining ring of quick coupling
(6) Compressed-air hose *
(7) Air hose *
(8) Air spring
(9) Countersunk screw ..... 6 Nm
(10) Swinging structure

* Use a special tool for cutting into lengths.

WARNING The pressure in the pneumatic system may cause injury! The pneumatic system is to be vented before removing the air spring.



3.22 Air spring – removal and installation

REMOVAL / INSTALLATION

TABLE OF CONTENTS

1 Remove the backrest cushion (Chapter 3.1).

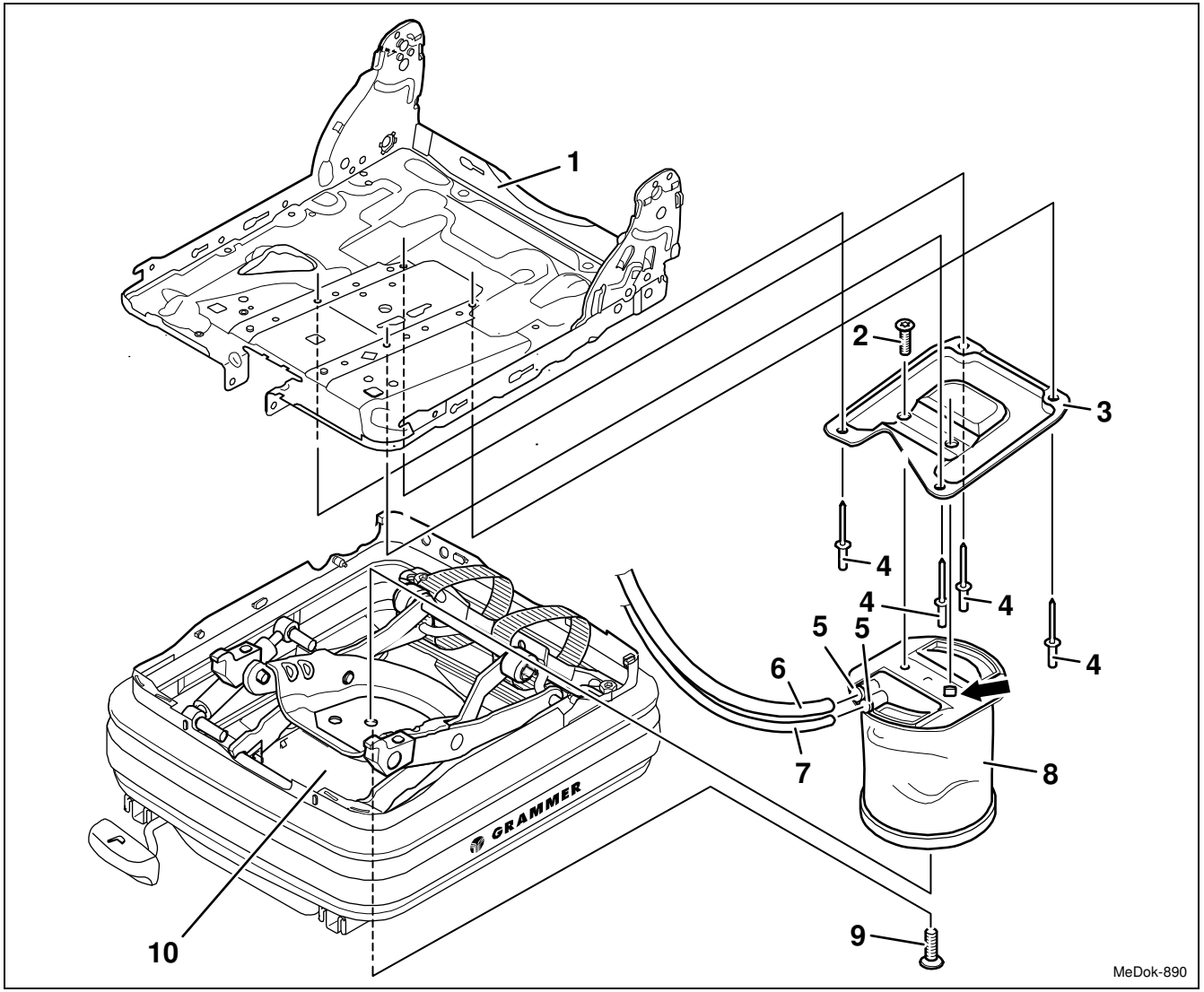
2 Remove the seat cushion (Chapter 3.2).

3 Remove the bellows from the seat plate (1) (see Chapter 3.8) and lay it down.

4 Take off the linkage rod of the pointer from the lower part of the suspension (see Chapter 3.15).

5 Remove the compressor and pull off the compressed-air hose (6) from the compressor (Chapter 3.21).

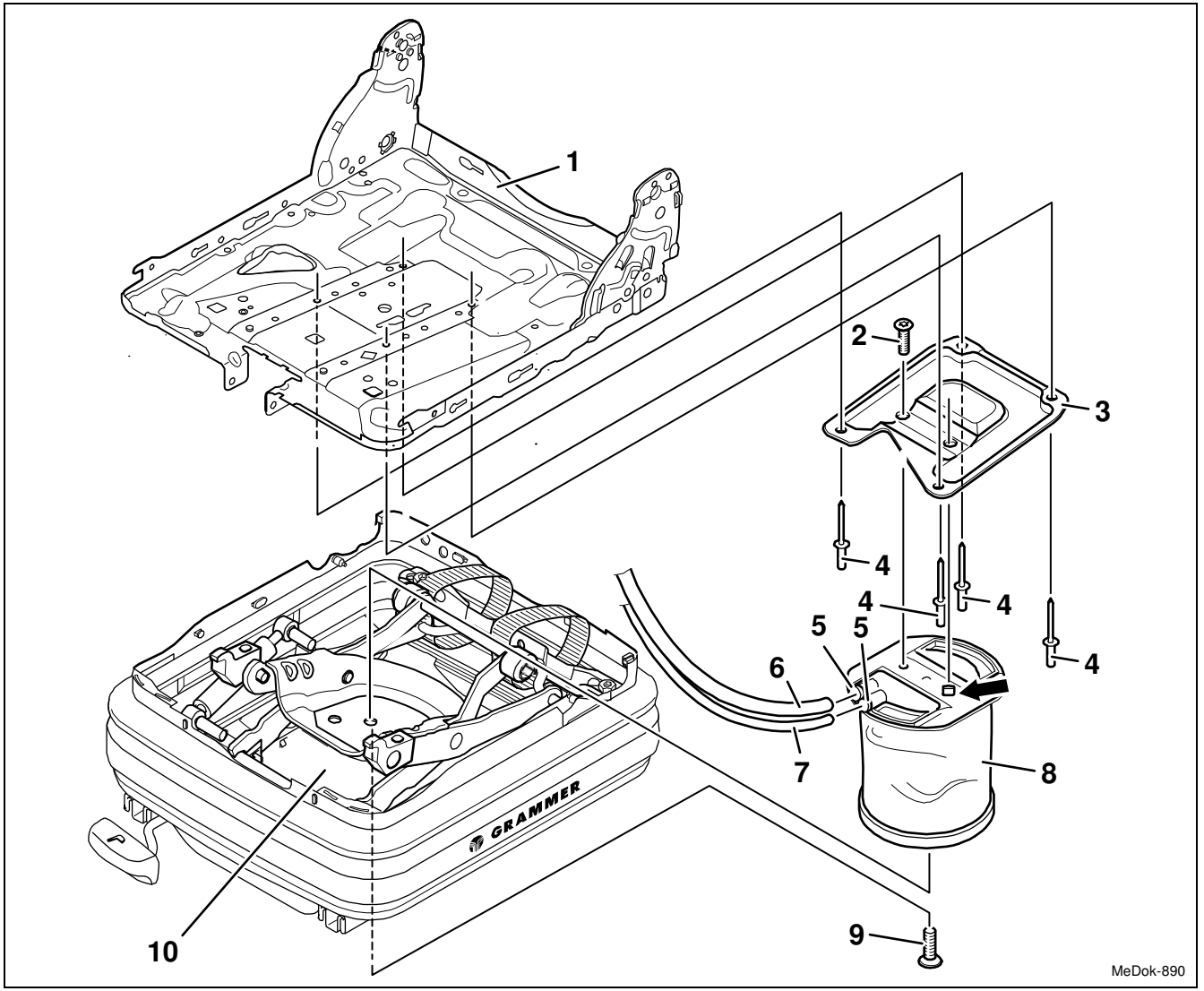
6 Unscrew the special torx screws and take off the fixed bearing (1) from the seat plate (see Chapter 3.20).



Removal and installation

WARNING Damage!

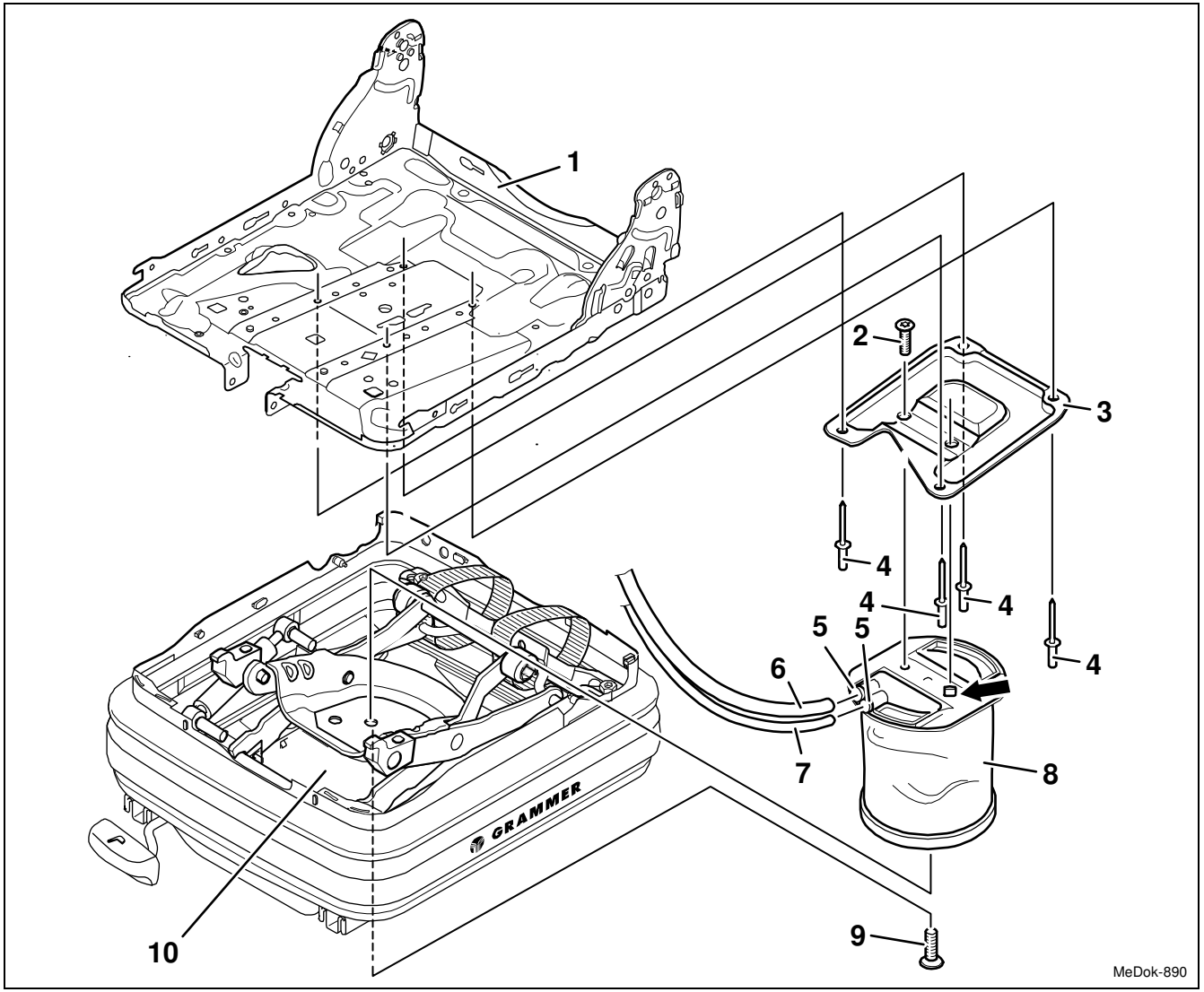
- Before pulling the hoses (compressed- air hose (6) and air hose (7)) from the air spring (8), the retaining ring of the quick coupling (5) must first be pressed to the very back on both sides (e.g. using flat pliers) so as to avoid scoring.
- Connect the hose not more than 1 to 2 times. Check the hose for damage before connecting it.
- Always replace a damaged hose (scoring) with a new one. It is possible to cut off the defective part (about 8 mm) in a straight and clean way only once.



7 Tilt the seat plate (1) with the backrest frame backwards and lay it down on the backrest frame.
Note:
With short webbings, the upper or lower cross-head of the webbings has to be loosened before (see Chapter 3.19).

8 Undo the countersunk screw (9) from the swinging structure (10).
Installation note:
Countersunk screw (9), 6 Nm.

9 Pull out the compressed-air hose (6) from the air spring (8).
Installation note:
Compressed-air hose (6) is automatically locked after it has been connected.

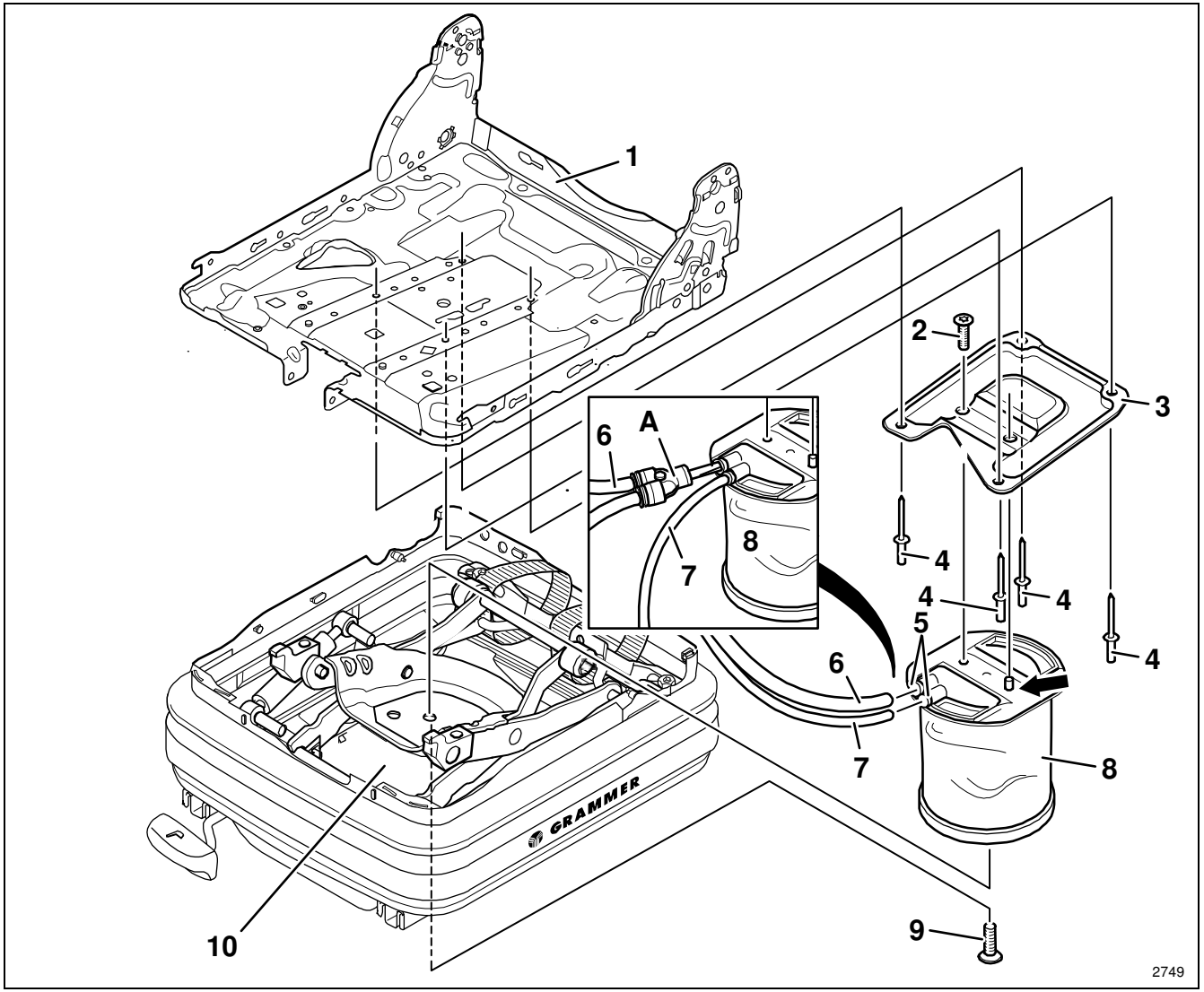


10 MSG 75 GL:
Pull out the quick-release coupling (A) from the air spring (8**)**.
Installation note:
Quick-release coupling (A) is automatically locked after it has been connected.

11 Pull out the air hose (7) from the air spring (8).
Installation note:
The air hose (7) is automatically locked after it has been connected.

12 Bore out the four rivet heads and drive out the blind rivets (4) from the seat plate (1).

13 Take off the plate (3) with the air spring (8).

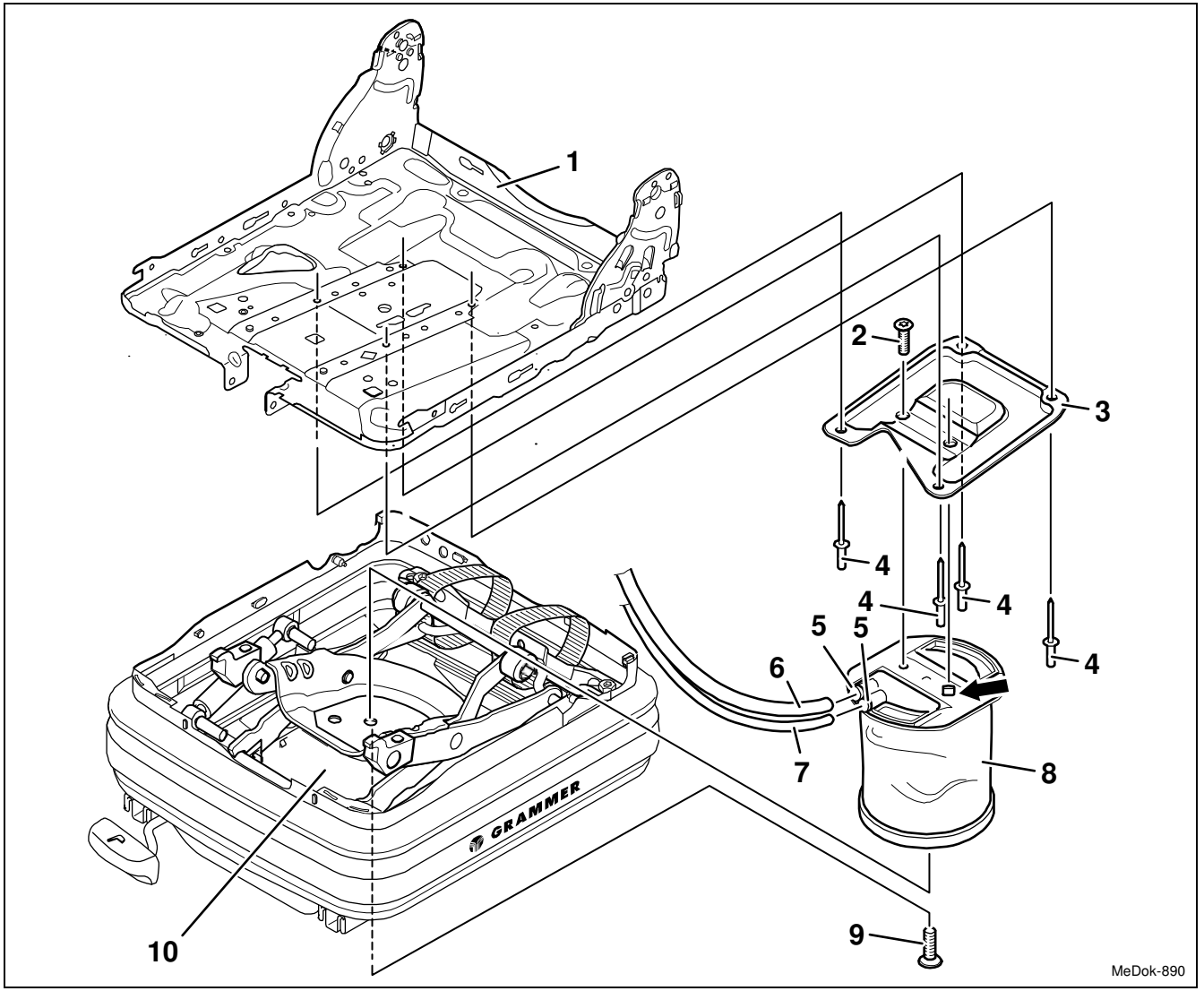


14 Undo the countersunk screw (2) from the plate (3) and remove the air spring (8).

Installation notes:

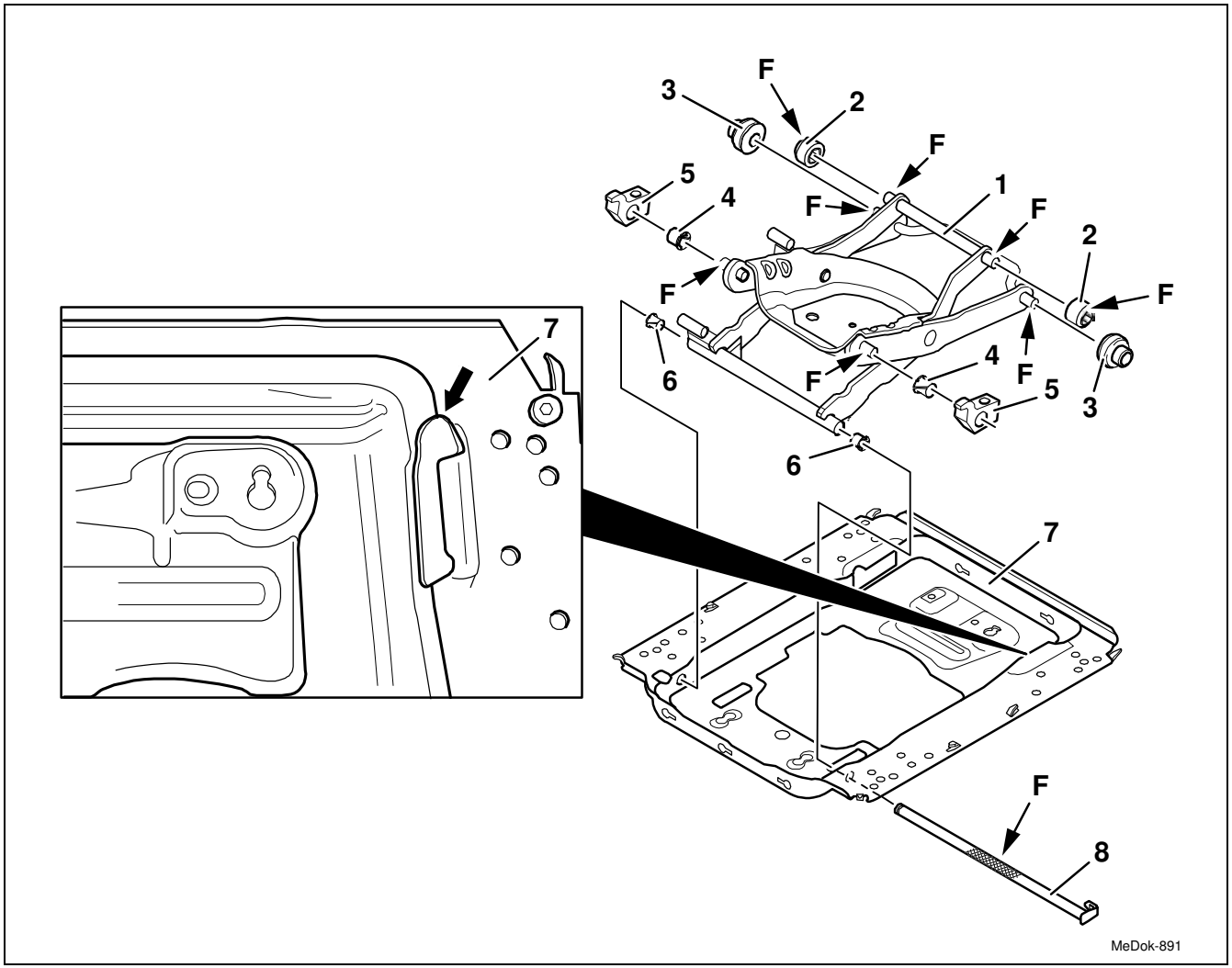
- Countersunk screw (2), 6 Nm.
- The nose (arrow) on the top side of the air spring (8) must snap into the hole (3) of the plate.

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



3.23 Swinging structure with the lower part of the suspension / worn parts – disassembly and assembly

(1) Swinging structure .....to grease
(2) Plastic roller, top .....to grease
(3) Plastic roller, bottom
(4) Socket
(5) Fixed bearing
(6) Socket
(7) Lower suspension part
(8) Swinging structure bolt .....to grease



1 Remove the backrest cushion (Chapter 3.1).

2 Remove the seat cushion (Chapter 3.2).

3 Remove the bellows (Chapter 3.8).

3.23 Swinging structure with the lower part of the suspension / worn parts – disassembly and assembly

4 Take off the linkage rod of the pointer from the lower part of the suspension (7) (see Chapter 3.15).

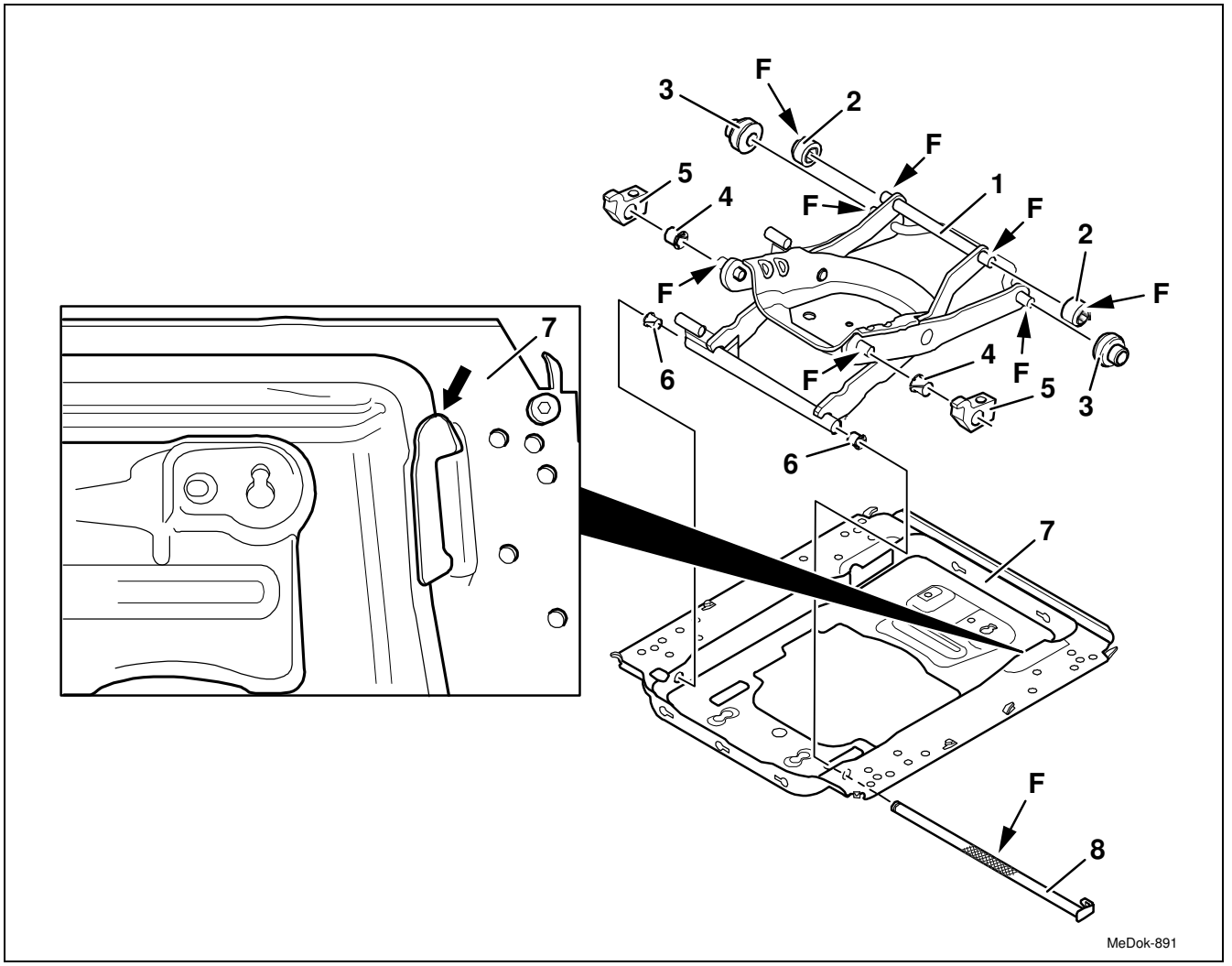
5 Remove the entire seat fore/aft adjustment (Chapter 3.17).

6 Remove the shock absorber (Chapter 3.18).

7 Remove the webbings (static belt) (Chapter 3.19).

8 Remove the spring assembly (Chapter 3.20).
Note:
The upper seat part can be removed completely together with the seat plate, backrest frame and all the components fixed to it.
For this reason, you do not need to perform preparatory work that is expected to be carried out according to this chapter.

9 Remove the air spring from the lower part of the suspension (7) (see Chapter 3.22).

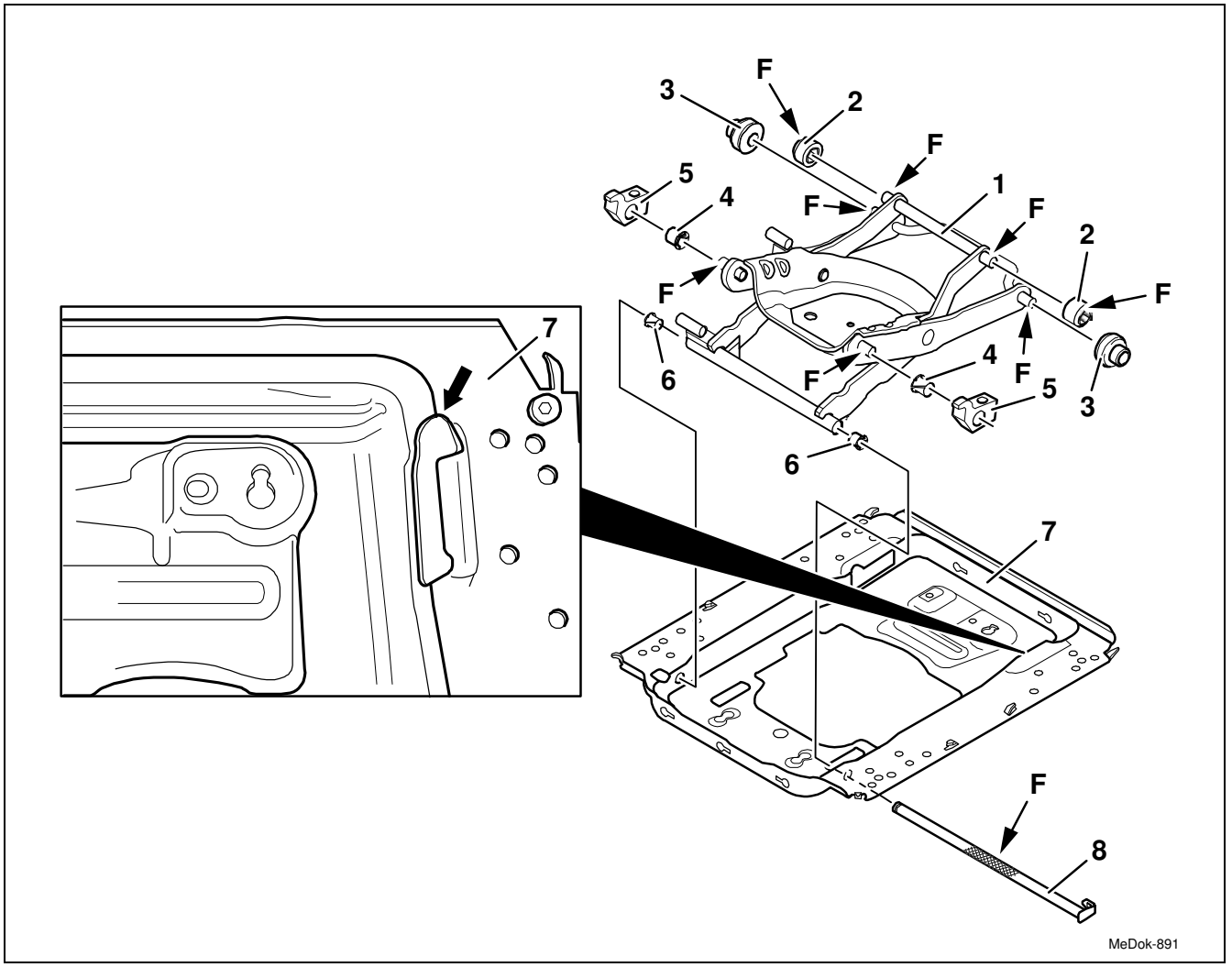


3.23 Swinging structure with the lower part of the suspension / worn parts – disassembly and assembly

Disassembly and assembly

10 Remove the two top plastic rollers (2) from the roller axles of the swinging structure (1).
Installation note:
Apply acid-free multi-purpose lubricant to the entire surface of the roller axles (F) of the swinging structure (1) and the face (F) of the two top plastic rollers (2).

11 Remove the two fixed bearings (5) with bushings (4) from the fixed bearing axles of the swinging structure (1). Take off the bushings (4) from the fixed bearing (5).
Installation note:
Apply acid-free multi-purpose lubricant to the entire surface of the fixed bearing axles (F) of the swinging structure **(1)**.

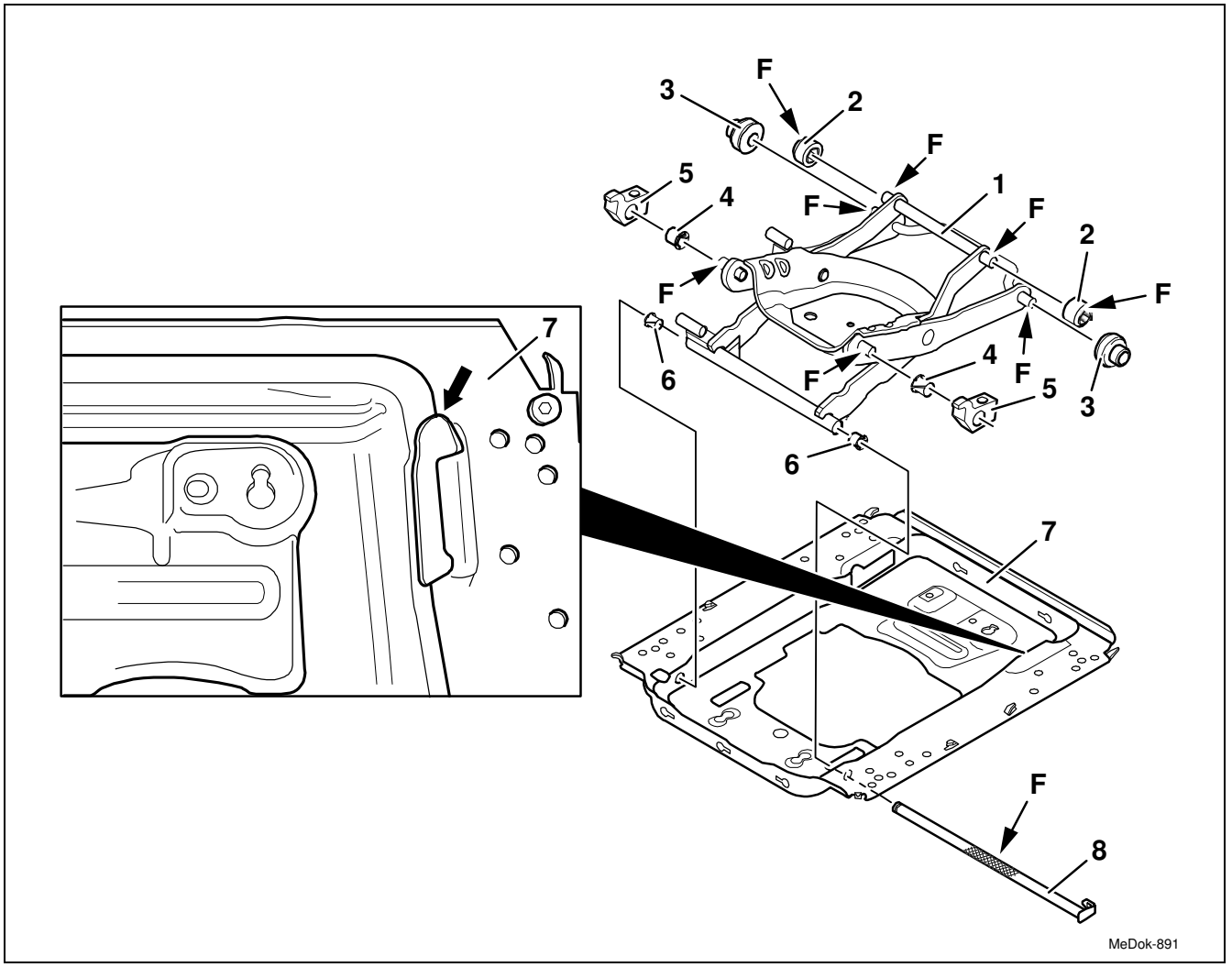


3.23 Swinging structure with the lower part of the suspension / worn parts – disassembly and assembly

12 Release the swinging structure bolt (8) and pull it out from the swinging structure (1) and the lower part of the suspension (7).
Installation note:
Apply acid-free multi-purpose lubricant to the entire surface (F) of the swinging structure bolt (8) in the width of a brush.

13 Remove the two bushings (6) from the swinging structure (1).

14 Push the swinging structure (1) backwards until the swinging structure (1) with the left plastic roller at the bottom (3) can be taken out through the cut-out (arrow) in the lower part of the suspension (7).



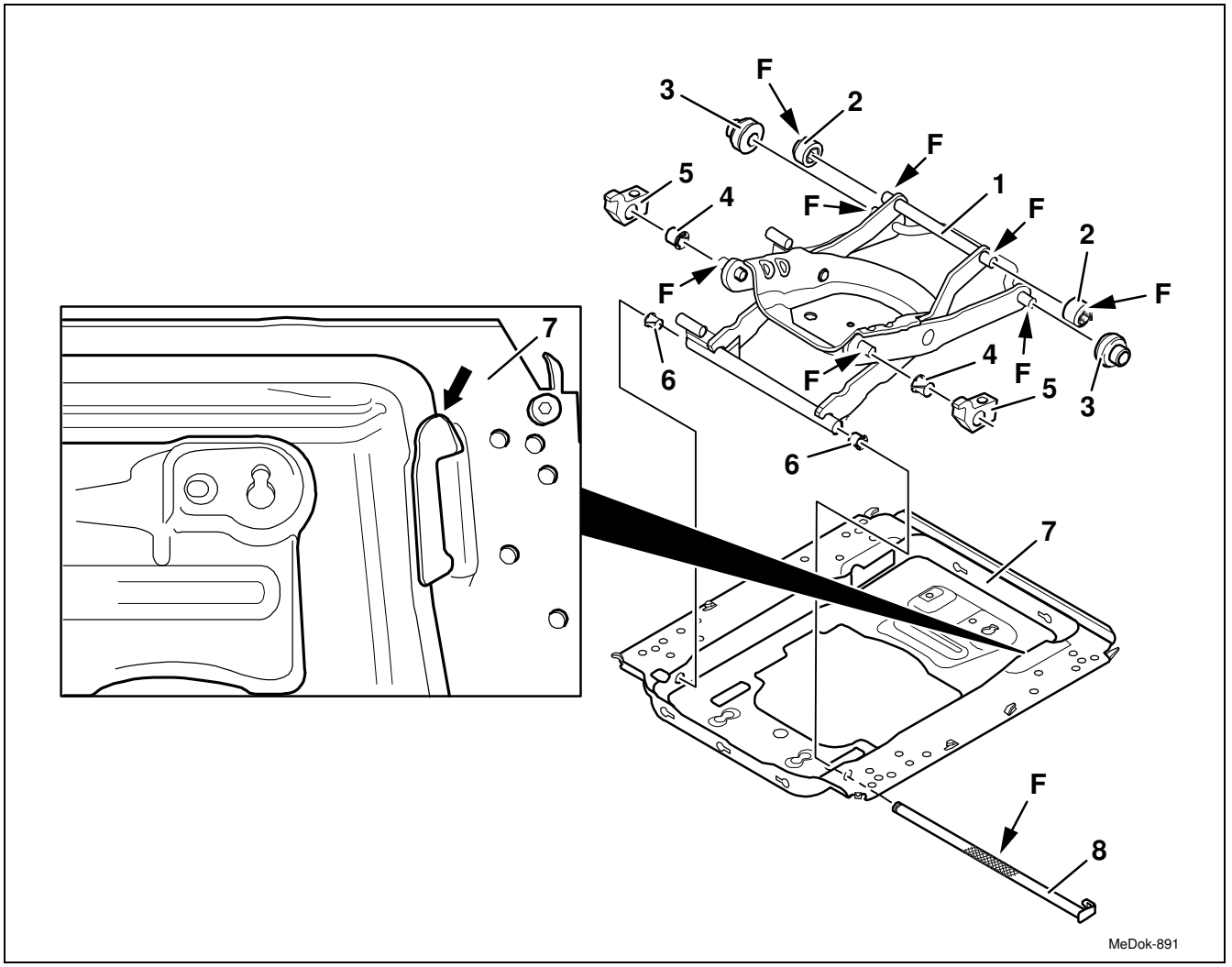
3.23 Swinging structure with the lower part of the suspension / worn parts – disassembly and assembly

15 Lift the swinging structure (1) on the left side and slide it with the bottom plastic roller (3) through the cut-out (arrow) on the lower part of the suspension (7).

16 Remove the swinging structure (1) with the right bottom plastic roller (3) from the running surface of the lower part of the suspension (7), and take it off in upward direction.

17 Remove the two bottom plastic rollers (3) from the roller axles of the swinging structure (1).
Installation note:
Apply acid-free multi-purpose lubricant to the entire surface of the roller axles (F) of the swinging structure (1).

18 Assemble the components in the reverse order of their disassembly.



3.24 Additional air supply – removal and installation (MSG 75GL and EL)

REMOVAL / INSTALLATION

TABLE OF CONTENTS

(1) Additional air supply

(2) Compressed-air hose to the additional air supply *

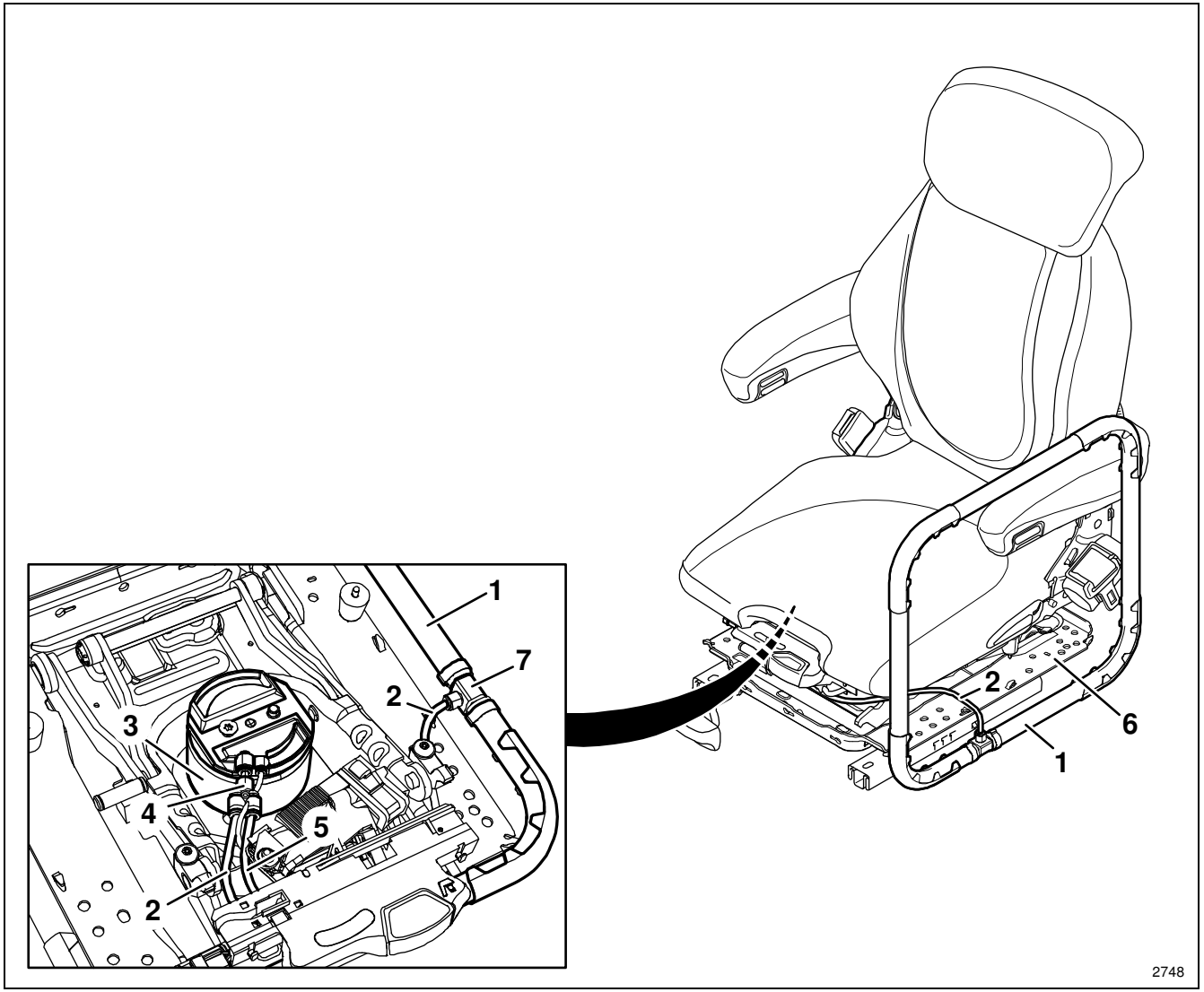
(3) Air spring

(4) Quick-release coupling

(5) Compressed-air hose to the valve for level adjustment *

(6) Lower suspension part

(7) Compressed-air hose connection



3.24 Additional air supply – removal and installation (MSG 75GL and EL)

REMOVAL / INSTALLATION

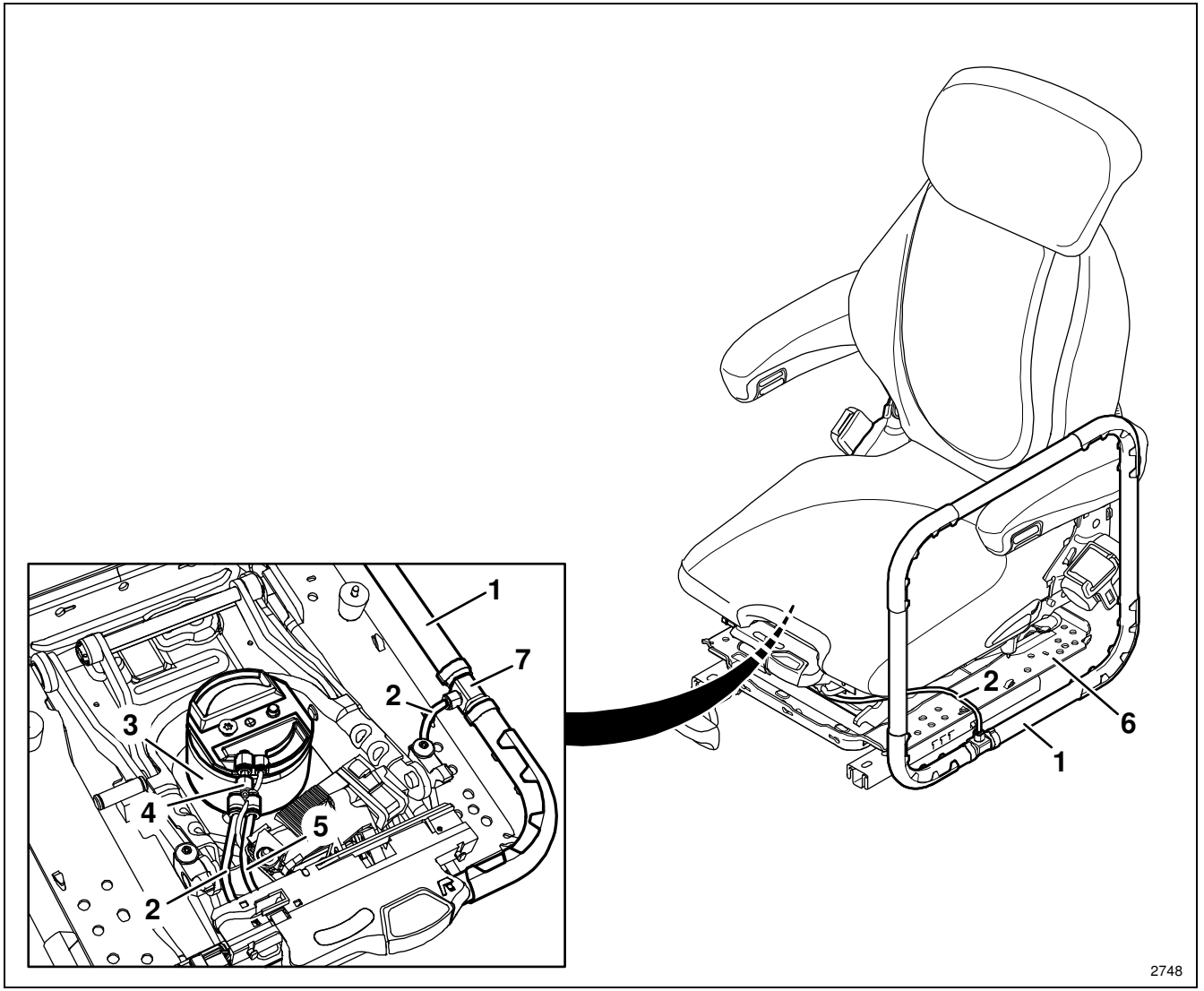
TABLE OF CONTENTS

WARNING The pressure in the pneumatic system may cause injury!
The pneumatic system is to be vented before removing the additional air supply.

1 Move the seat to the highest position and secure it there.

WARNING!
Risk of crushing!
Secure the suspension at the back between the lower part and the upper part of the suspension with suitable spacers.

2 Take off the bellows from the lower part of the suspension (6) (see Chapter 3.8), push it upwards and fix it to the upper part of the suspension.



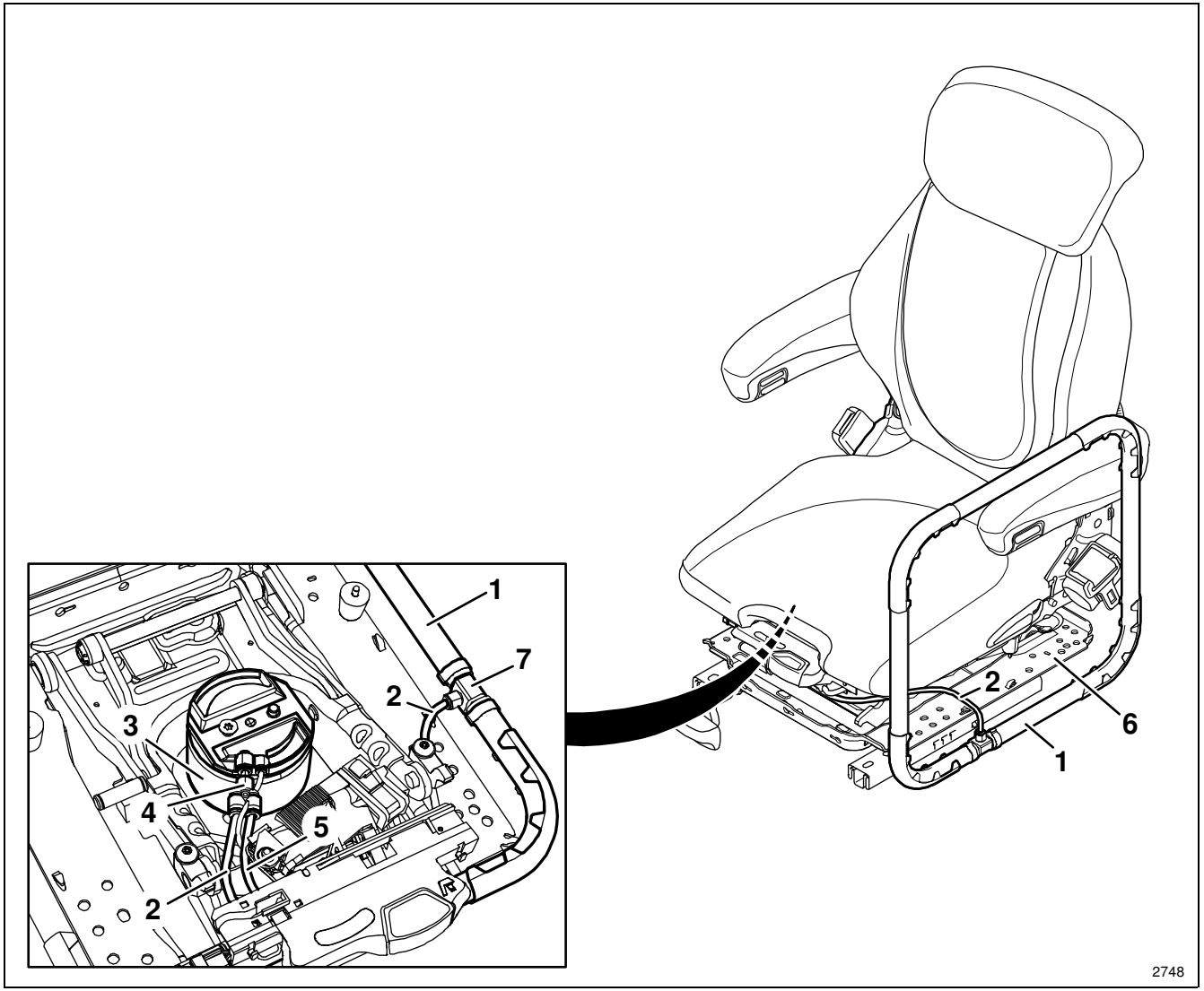
3.24 Additional air supply – removal and installation (MSG 75GL and EL)

Removal and installation

WARNING Damage!

- Before pulling out the compressed-air hose (2 and 5) from the compressed-air hose connection (4 and 7), the retaining ring of the compressed-air hose connection (4 and 7) must first be pressed to the very back on both sides (e.g. using flat pliers) in order to avoid damage (scoring).
- Connect the compressed-air hose (2 and 5) not more than 1 to 2 times. Always check the compressed-air hose (2 and 5) for damage (scoring) prior to connection.
- Always replace damaged (due to scoring) compressed-air hoses (2 and 5) with new ones.

It is possible to cut off the defective part (about 8 mm) in a straight and clean way only once.



3 Compressed-air hose (2) is leaky:

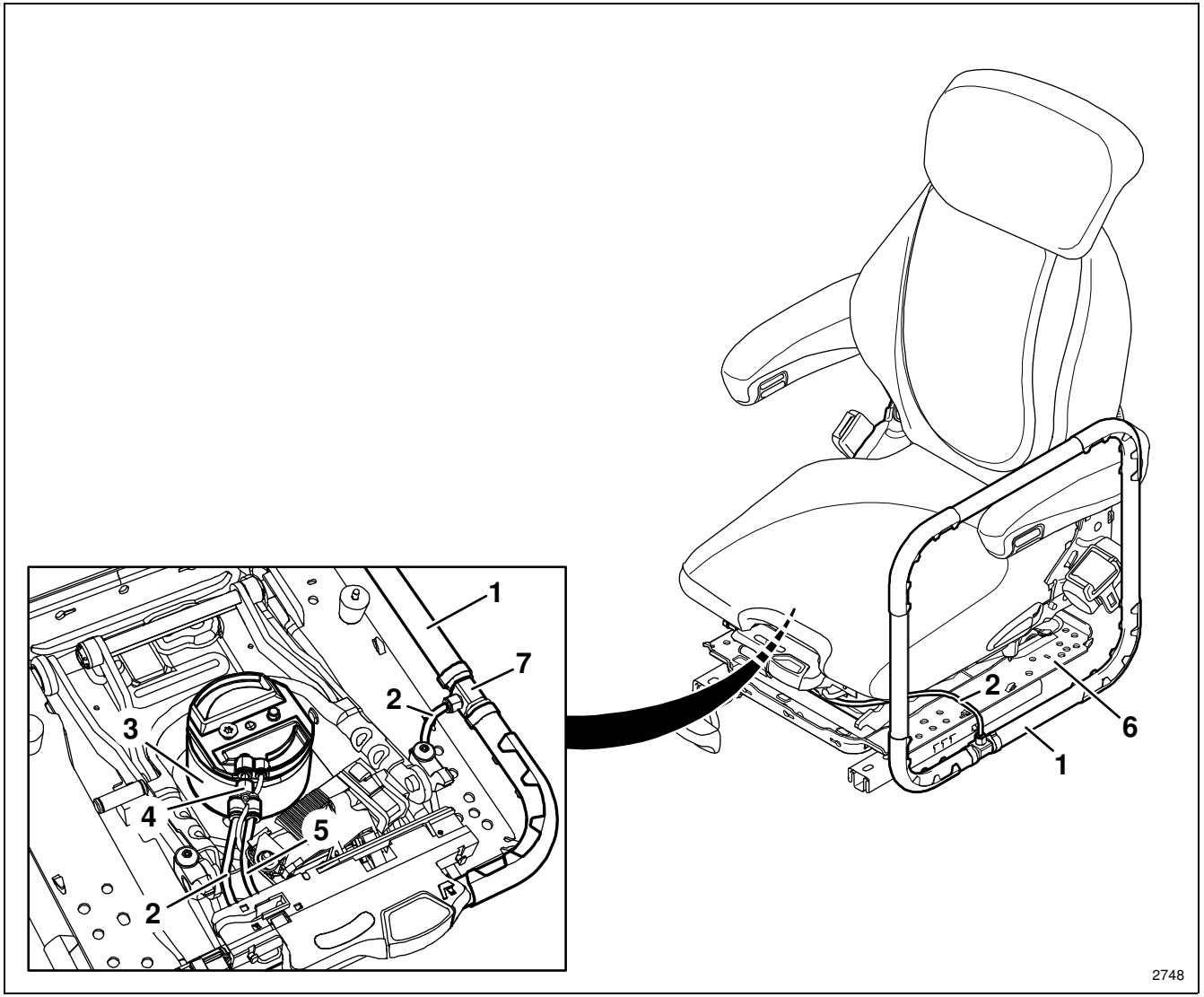
3.1 Pull the compressed-air hose (2) out of the quick-release coupling (4).
Installation note:
Compressed-air hose (2) is automatically locked after it has been connected.

3.2 Remove the cable ties, pull the additional air supply (1) out of the bellows together with the compressed-air hose (2) and remove it in downward direction.

4 Additional air supply is defective:

4.1 Pull the compressed-air hose (2) out of the compressed-air hose connection (7).
Installation note:
Compressed-air hose (2) is automatically locked after it has been connected.

4.2 Pull the additional air supply (1) out of the bellows and remove it in downward direction.



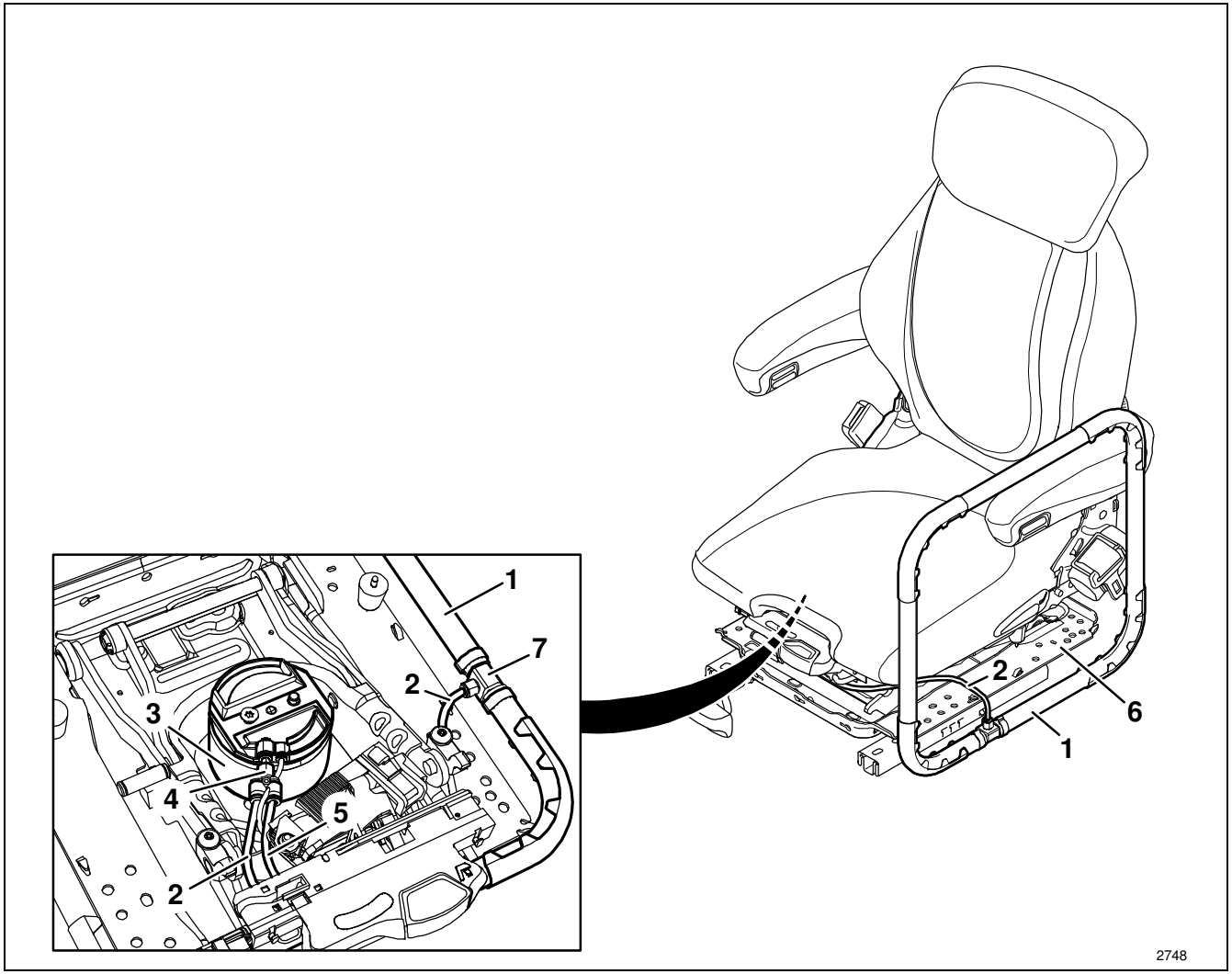
5 Replace the quick-release coupling (4):

5.2 Remove the quick-release coupling (4) from the air spring (3) (see Chapter 3.22).

5.1 Pull the compressed-air hose (2 and 5) out of the quick-release coupling (4).

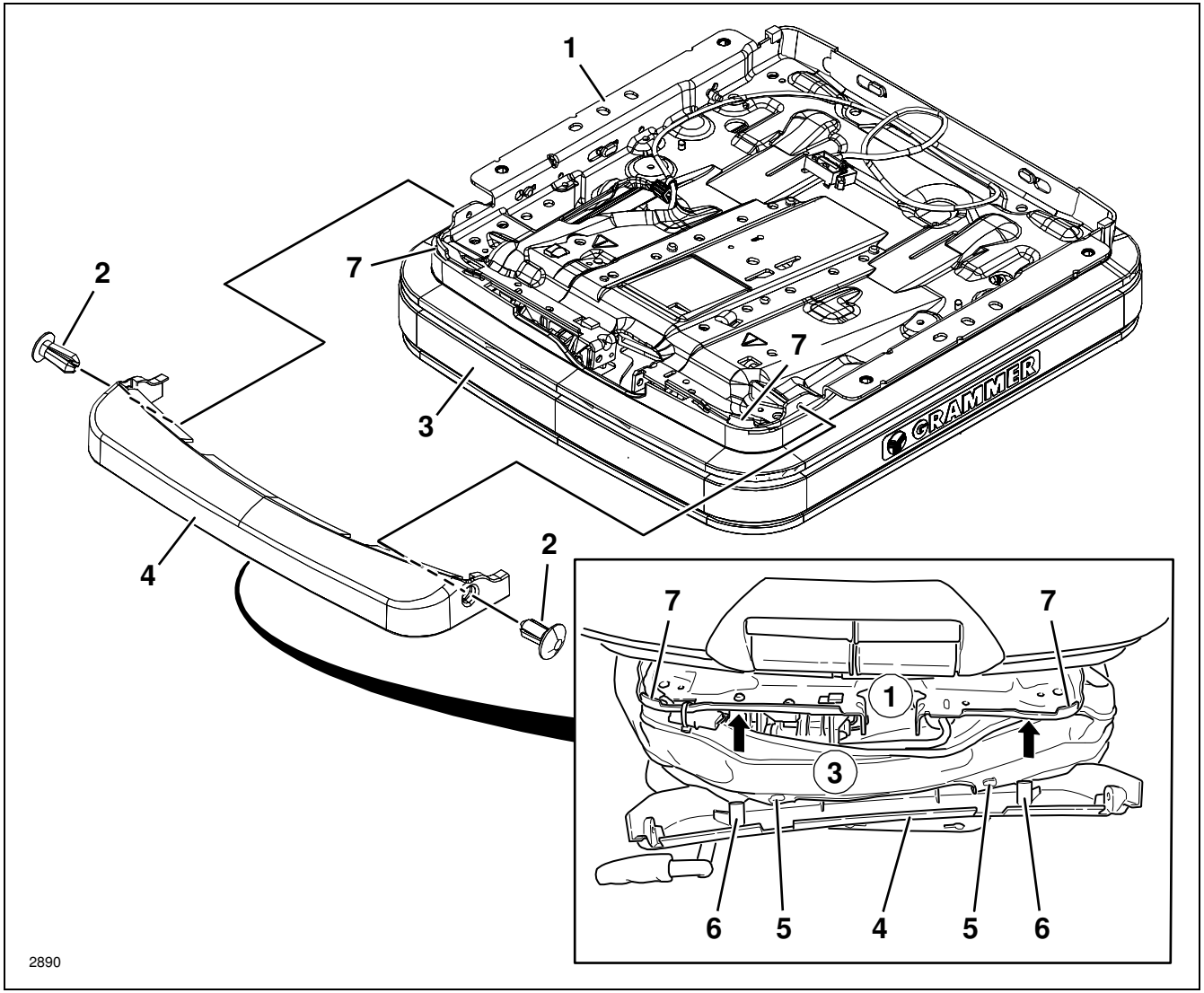
Installation note:
Compressed-air hose (2 and 5) is automatically locked after it has been connected.

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



3.25 Front cover – removal and installation (MSG 75E(L))

(1) Spring assembly
(2) Expanding rivet
(3) Bellows
(4) Front cover
(5) Hook
(6) Spacer
(7) Support



Removal and installation

1 Move the seat to the highest position and secure it there.

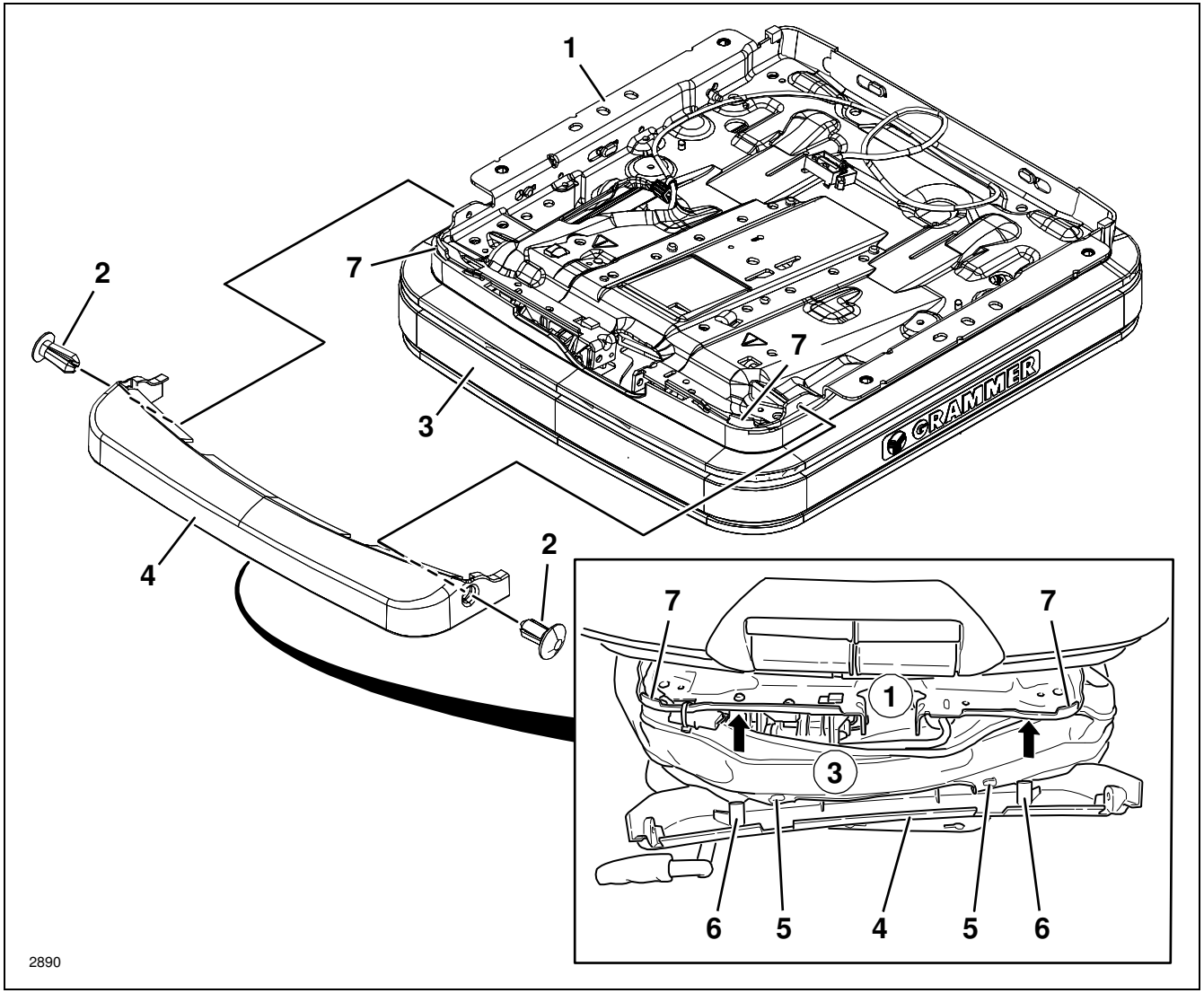
2 Push the seat cushion backwards.

3 Remove two expanding rivets (2).

3.25 Front cover – removal and installation (MSG 75E(L))

4 Detach the bellows (3) from the lower suspension part (3) (see Chapter 3.8).
- **Rear:** 2 keyhole nubs
- **Left:** 4 hooks
- **Right:** 4 hooks each
- **Front:** 3 keyhole nubs

5 Detach the bellows (3) from the spring assembly (1) (see Chapter 3.8).
- **Rear:** 2 keyhole nubs and 2 lugs at the corners pointing upwards
- **Left:** 1 mushroom-shaped nub and 2 keyhole nubs
- **Right:** 1 mushroom-shaped nub and 2 keyhole nubs



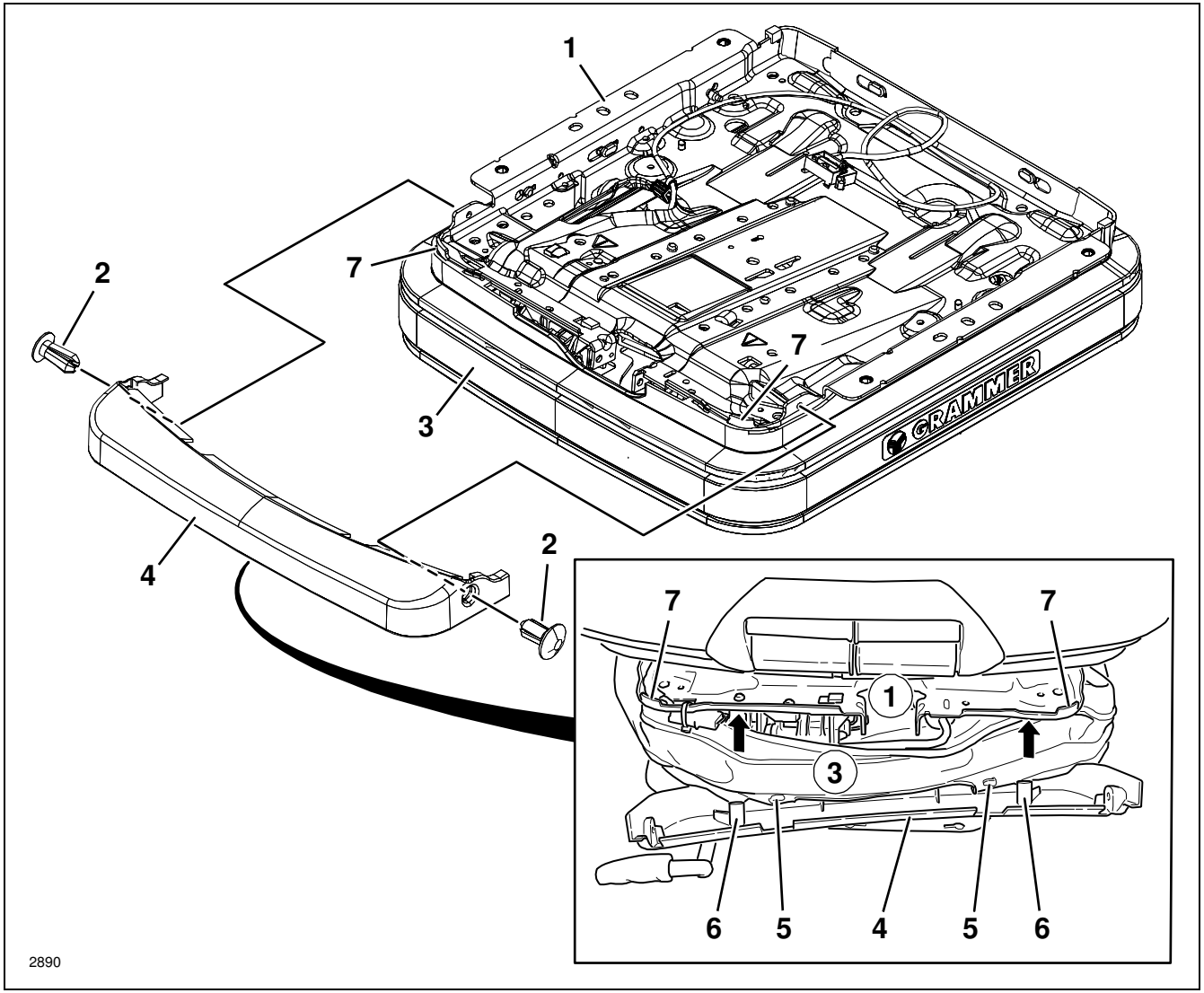
3.25 Front cover – removal and installation (MSG 75E(L))

6 Press the bellows (3) at the front upwards out of the two holders (7) from the inside.

7 Press the front cover (4) upwards and remove it from the spring assembly (1) in forward direction.
Installation note:
Press two spacers (6) behind the plate edge on the spring assembly (arrows).

8 Pull the bellows (3) off the two hooks (5) and remove the front cover.

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



3.26 Cable harness of the power supply – removal and installation (MSG 75E(L))

REMOVAL / INSTALLATION

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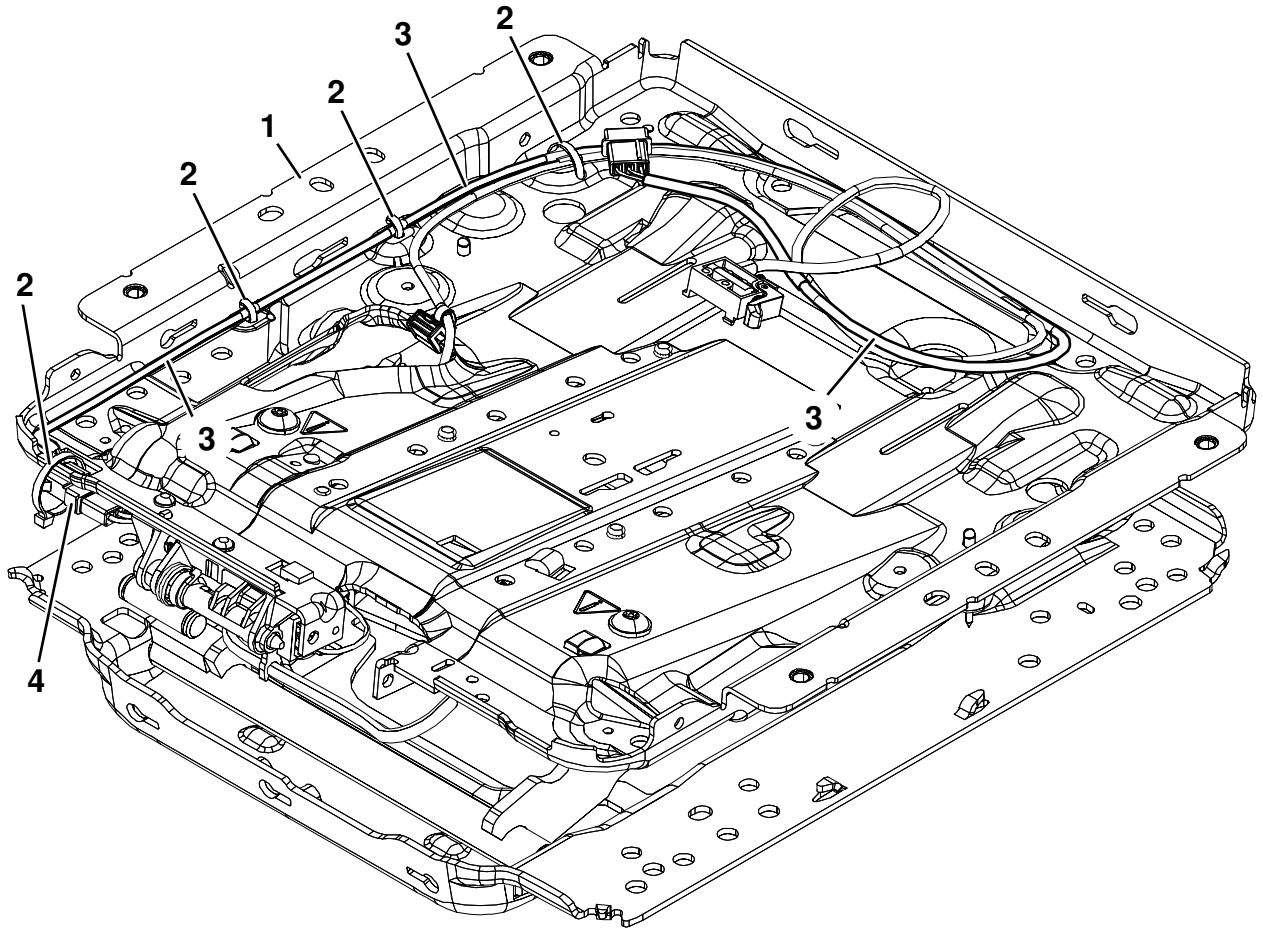
(1) Spring assembly
(2) Cable tie
(3) Cable of the power supply
(4) Plug-in connector



1 Remove the seat cushion (see repair manual for upper seat part).

2 Remove the front cover (Chap. 3.25) and press the bellows 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.

3.26 Cable harness of the power supply – removal and installation (MSG 75E(L))

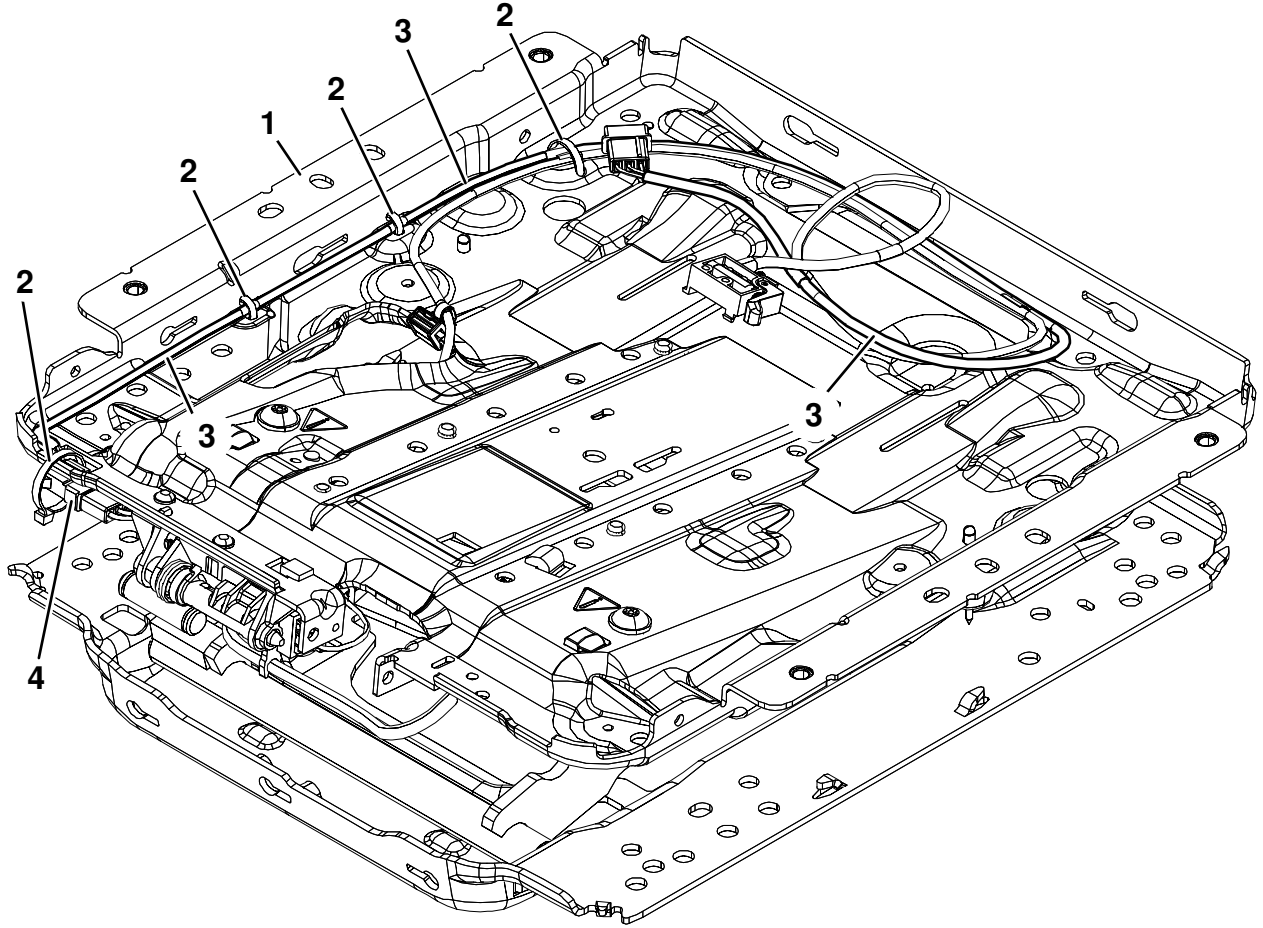
4 Remove the seat angle and seat depth adjustment (see repair manual for upper seat part).

Removal and installation

5 Mark the points where the cable harness of the power supply (3) is attached to the spring assembly (1) by means of cable ties (2).

6 Remove four cable ties (2).
Installation note:
Attach the cable harness of the power supply (3) to the spring assembly (1) according to the marking.

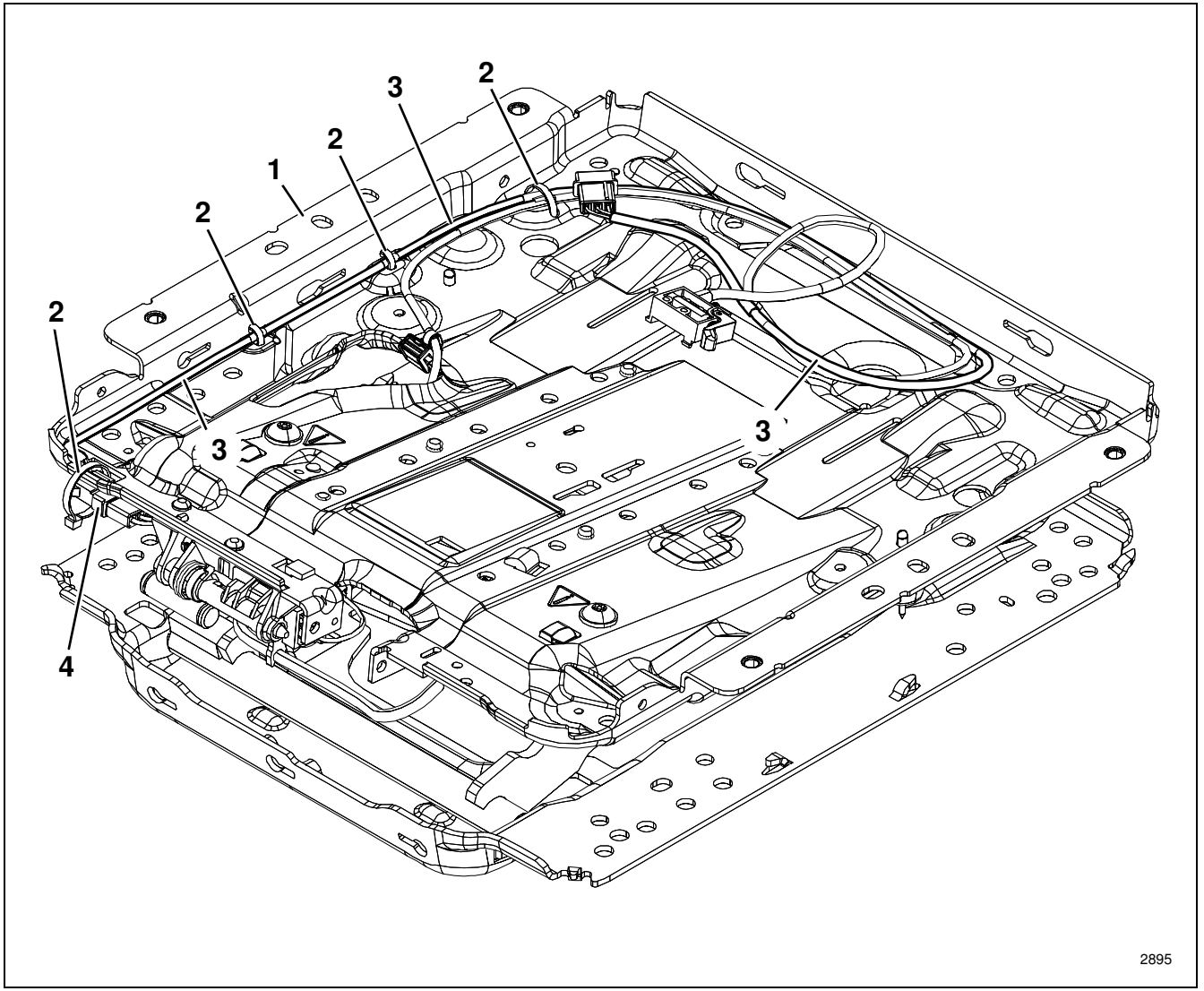
7 Pull off the plug-in connector (4)



3.26 Cable harness of the power supply – removal and installation (MSG 75E(L))

8 Mark the installation position for the cable harness of the power supply (3) and remove the cable harness of the power supply from the spring assembly (1).
Installation note:
Install the cable harness of the power supply (3) at the spring assembly (1) according to the marking.

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



3.27 Control – removal and installation (MSG 75E(L))

REMOVAL / INSTALLATION

TABLE OF CONTENTS

(1) Spring assembly

(2) Self-tapping screw..... 2.5 ± 0.25 Nm

(3) Cable tie with clamp

(4) Cable tie

(5) Compressed-air hose between outlet valve of the seat occupancy detection system (6) and outlet valve of the control (13)

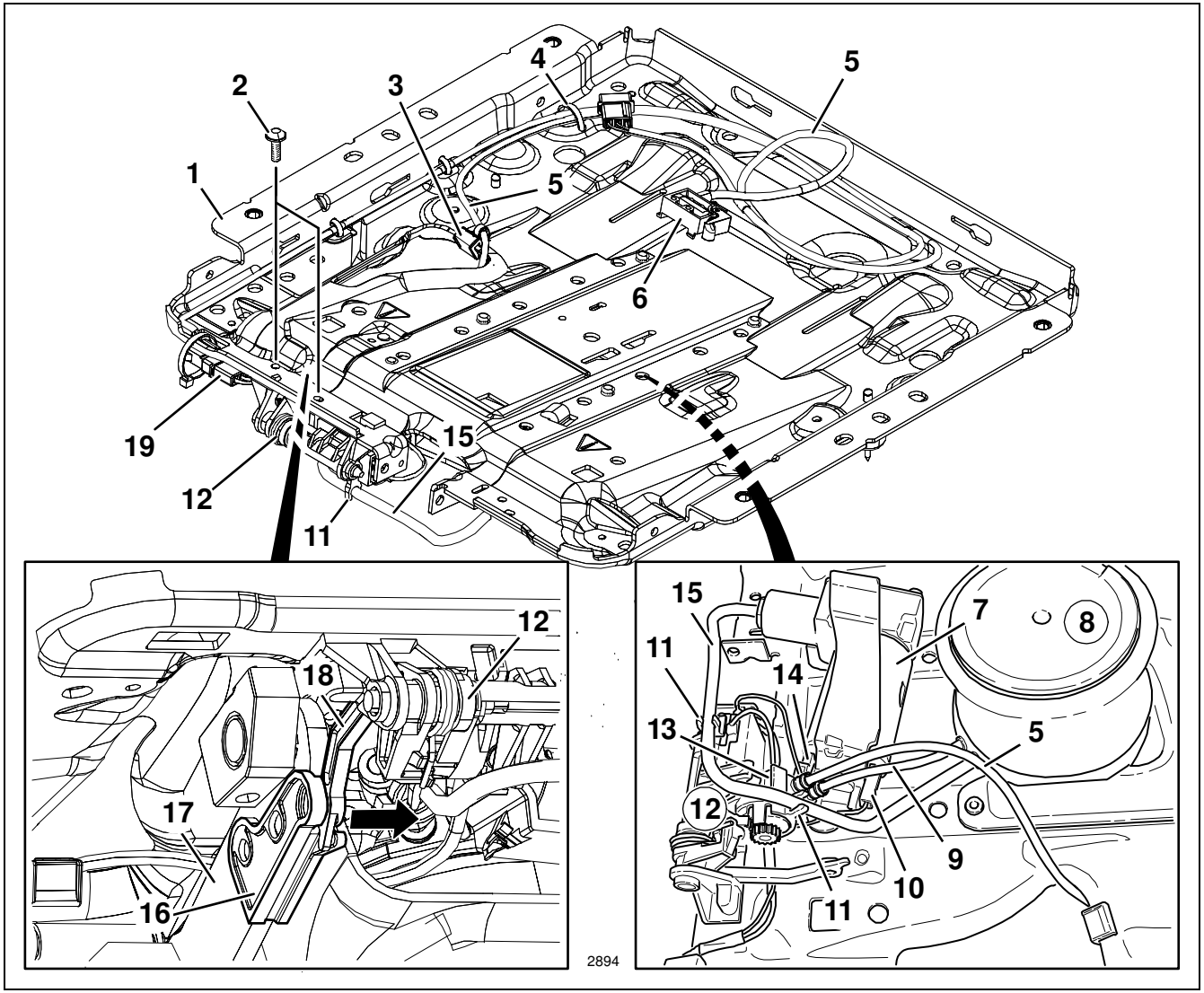
(6) Outlet valve of the seat occupancy detection system

(7) Compressor

(8) Air spring

(9) Compressed-air hose between air spring (8) and outlet valve of the control (13)

(10) Plug of compressor motor (ground)



3.27 Control – removal and installation (MSG 75E(L))

(11) Holder

(12) Control

(13) Outlet valve of the control (12)

(14) Right-angle plug of compressor motor (voltage)

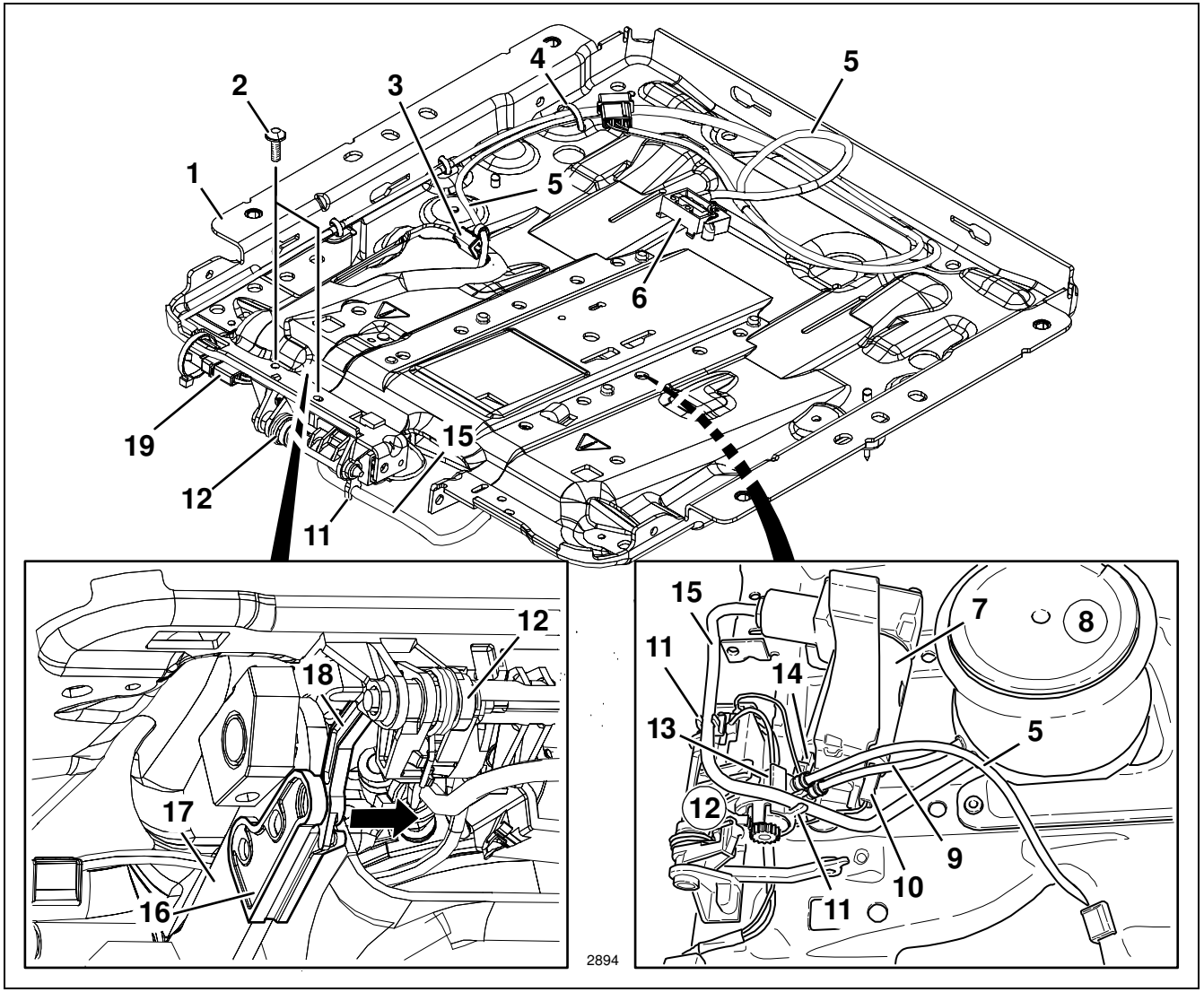
(15) Compressed-air hose between compressor (7) and air spring (8)

(16) Connecting rod bearing

(17) Swinging structure

(18) Connecting rod of the control (12)

(19) Plug-in connector between cable harness of the power supply and cable harness of the control



3.27 Control – removal and installation (MSG 75E(L))

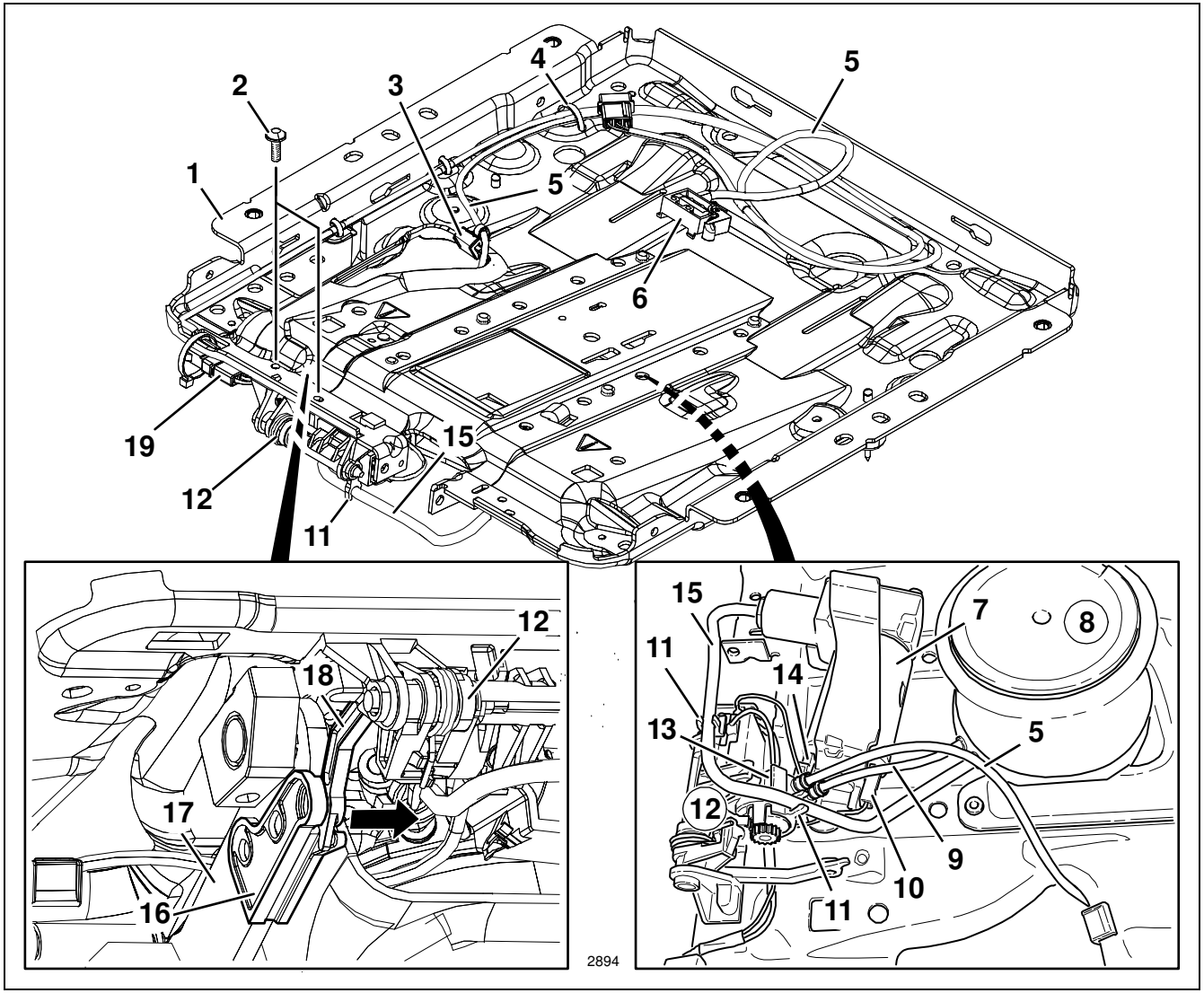
WARNING The pressure in the pneumatic system may cause injury!
The pneumatic system is to be vented before removing the control.

1 Remove the seat cushion (see repair manual for upper seat part).

2 Remove the front cover (Chapter 3.25) and press the bellows down.

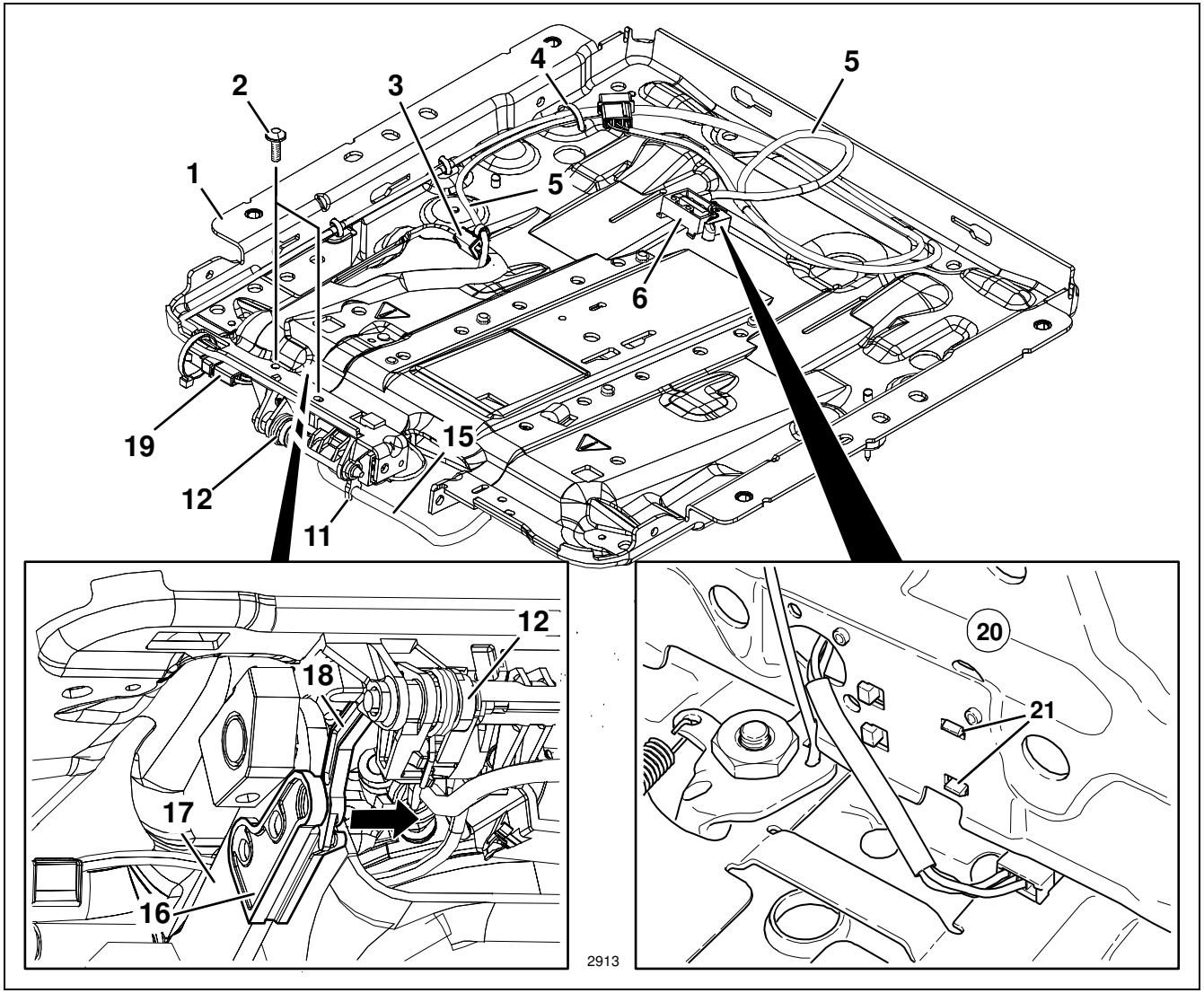
3 **WARNING!** Risk of crushing!

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 Remove the seat angle and seat depth adjustment (see repair manual for upper seat part).
Removal instructions:
Press the noses (21) at the outlet valve of the seat occupancy detection system (6) inwards and clip the outlet valve out of the seat angle adjustment (29) with the seat angle adjustment being folded upwards.

5 Remove the spring assembly (see Chapter 3.20.2).
Note on removal:
Press the connecting rod of the control (18) sidewards (arrow) with the spring assembly (1) being lifted and detach it from the connecting rod bearing (16).



6 Pull the compressed-air hose (9) out of the air spring (8) (see Chap. 3.22).

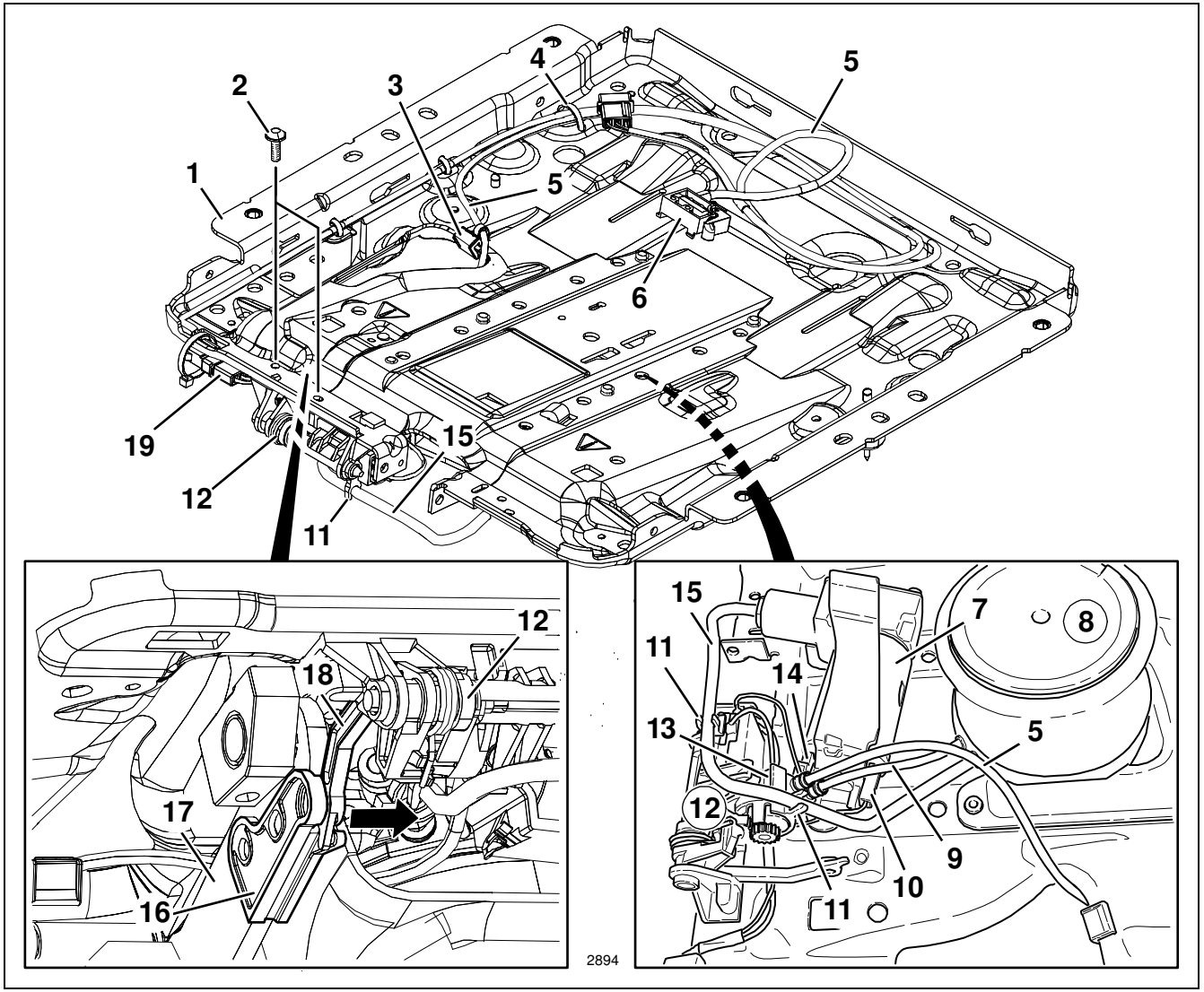
Removal and installation

7 Mark the points where the compressed-air hose (5) is attached to the spring assembly (1):
- 1 cable tie (4)
- 1 cable tie with clamp (3)

8 Remove the cable tie (4) and the cable tie with clamp (3).
Installation note:
Attach the compressed-air hose (5) to the spring assembly (1) according to the marking.

9 Pull off the plug-in connector (19)

10 Disconnect the plug (10) and the right-angle plug (14) at the compressor (7).

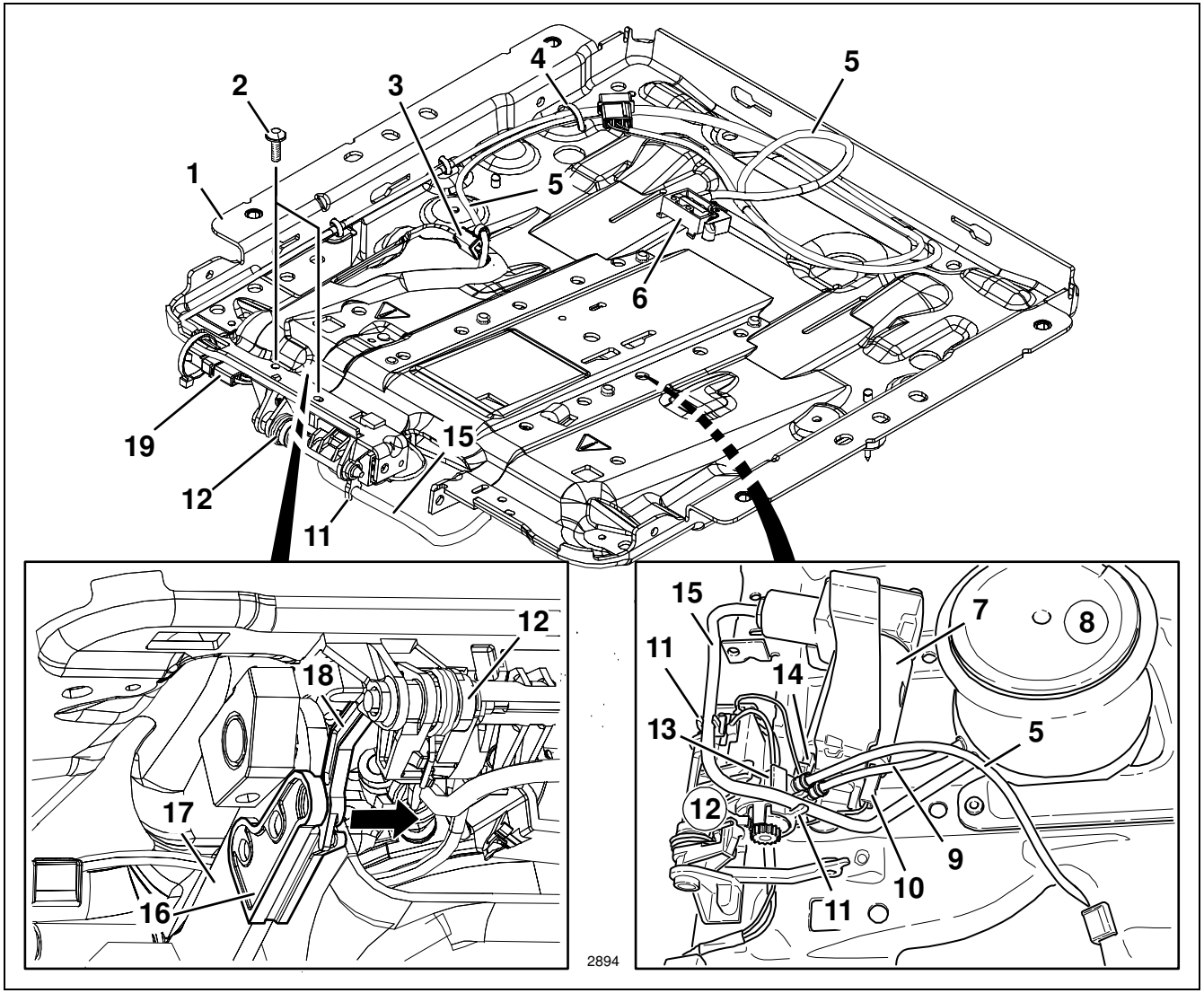


11 Press the compressed-air hose (15) out of two holders (11) of the control (12).

12 Unscrew two self-tapping screws (2), detach the control (12) at the spring assembly (1) and remove it from the spring assembly (1) together with the compressed-air hoses (5 and 9).
Installation note:
Self-tapping screw (2), 2.5 ± 0.25 Nm

13 If the connecting rod bearing (16) is defective:
Lever the connecting rod bearing (16) off the swinging structure (17) on both sides at the same time and clip a new connecting rod bearing onto the swinging structure.

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



3.28 Outlet valve of seat occupancy detection system – inspection and adjustment (MSG 75E(L))

(1) Rocker switch

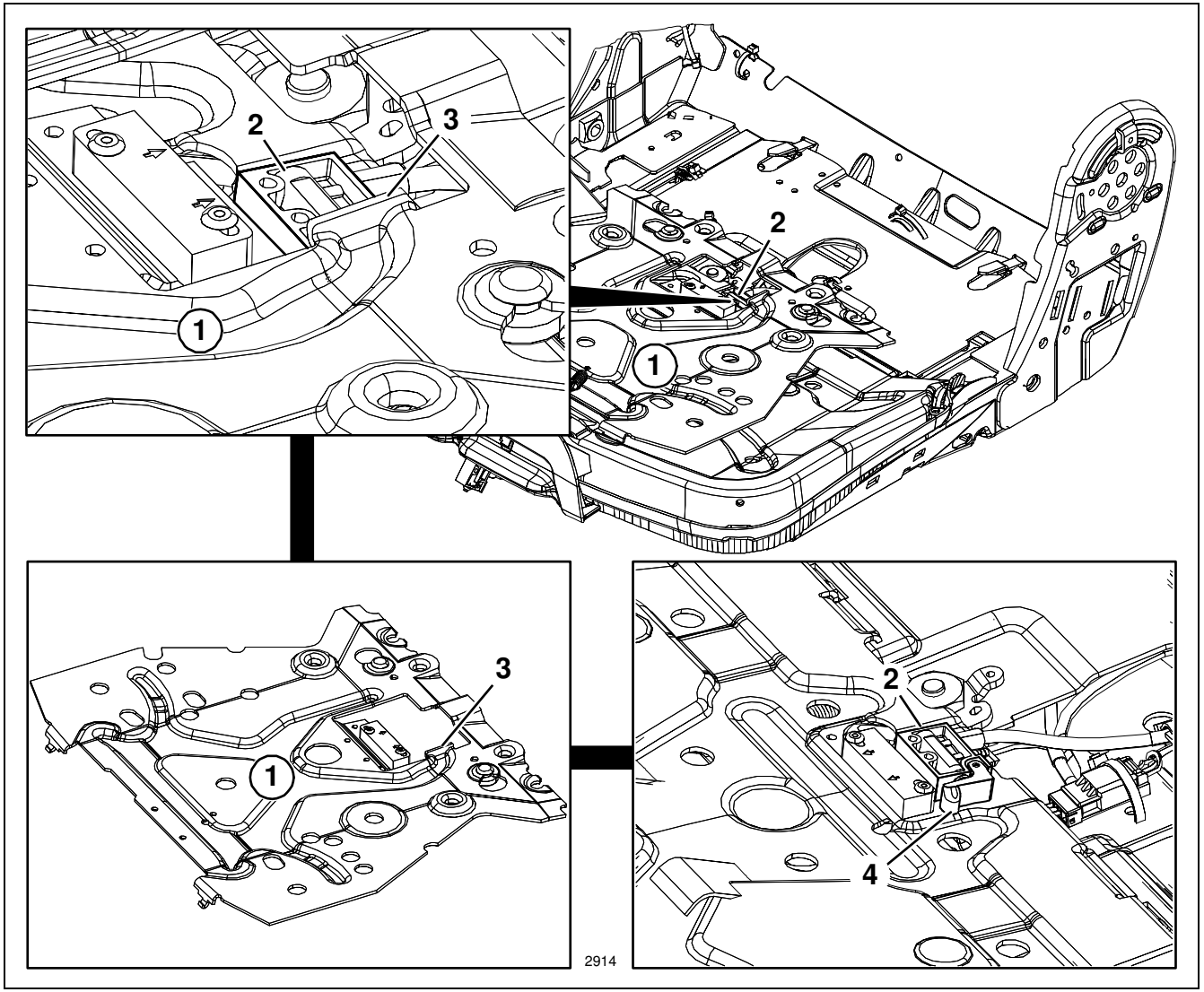
(2) Outlet valve of the seat occupancy detection system

(3) Nose

(4) Actuator lever

Inspection

In case of proper functioning, the rocker switch (1) pressed up by springs will be pressed down when the seat cushion is loaded.
The actuator lever (4) is pressed by the nose (3) bent upwards and the outlet valve of the seat occupancy detection system (2) opens.
The compressed air released by means of the control escapes and the seat lowers until it has reached the medium position of the suspension.



3.28 Outlet valve of seat occupancy detection system – inspection and adjustment (MSG 75E(L))

In the event of a fault, the actuator lever (4) is not moved sufficiently by the nose (3) so that the outlet valve will not open. As a result, the seat remains in the upper end position of the suspension.

Adjustment

1 Remove the seat cushion (see repair manual for upper seat part).

2 Bend the nose (3) towards the actuator lever (4) until the outlet valve (2) opens when the rocker switch (1) is pressed.