



# Avantgarde 4

EN Instructions for use (qualified personnel) ..... 3



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# 1 Foreword

## INFORMATION

Date of last update: 2023-04-26

- ▶ Please read this document carefully before using the product and observe the safety notices.
- ▶ Instruct the user in the safe use of the product.
- ▶ Please contact the manufacturer if you have questions about the product or in case of problems.
- ▶ Report each serious incident related to the product to the manufacturer and to the relevant authority in your country. This is particularly important when there is a decline in the health state.
- ▶ Please keep this document for your records.

## INFORMATION

- ▶ New information regarding product safety and product recalls as well as the declaration of conformity can be obtained at [ccc@ottobock.com](mailto:ccc@ottobock.com) or from the manufacturer's service department (visit [www.ottobock.com](http://www.ottobock.com) for addresses).
- ▶ You can request this document as a PDF file at [ccc@ottobock.com](mailto:ccc@ottobock.com) or from the manufacturer's service department. The PDF file can also be displayed in a larger size.

Initial adjustments to the product were made according to the order form. Nevertheless, fine adjustments and settings may have to be made depending on the medical situation or the user's requirements.

These instructions for use provide the information necessary for adjusting the settings. This work should be closely coordinated with the user.

### Please note the following:

- The instructions for use (qualified personnel) are intended only for qualified personnel and remain with them.
- The product has been adapted to the needs of the user. We recommend checking the product settings **once per year** to ensure that the product provides optimal treatment over the long term. Especially in the case of users with a changing anatomy (such as body dimensions or weight), an adjustment at least **once every six months** is recommended.
- The manufacturer reserves the right to make technical changes to the model described in these instructions for use.

## 2 Intended use

### 2.1 Indications for use

For additional information about the indications for use, see the instructions for use (user).

The operational safety of the product can only be ensured in case of intended use in accordance with the information contained in these instructions for use (qualified personnel) and in the instructions for use (user). The user is ultimately responsible for accident-free operation.

### 2.2 Indications, contraindications


See the instructions for use (user) for more information about indications and contraindications.

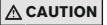
### 2.3 Qualification


The tasks described below may only be carried out by qualified personnel. Compliance with all manufacturer specifications and all applicable legal provisions is required. Please contact the manufacturer's service department for further information.

## 3 Safety

### 3.1 Explanation of warning symbols

 **WARNING** Warning regarding possible serious risks of accident or injury.

 **CAUTION** Warning regarding possible risks of accident or injury.

 **NOTICE** Warning regarding possible technical damage.

### 3.2 General safety instructions

**CAUTION**

**Use of unsuitable tools**  
 Pinching, crushing or damaging the product due to use of unsuitable tools

- ▶ When completing the tasks, only use tools that are suitable for the conditions at the place of work and for which safety and the protection of health are assured with proper use.
- ▶ Observe the specifications in the section "Required Tools".

**NOTICE**

**Tipping or falling of the product**  
 Damage to product due to lack of attachment

- ▶ When you work on the product, secure it so that it cannot tip over or fall over.
- ▶ Use a clamping fixture to secure the product whenever you work on it at a workbench.

### 3.3 Safety Instructions for Assembly

**WARNING**

**Changed diameter/installation position of the wheels**  
 Tipping, falling over of the user due to blocked wheels

- ▶ Modification of the size and position of the front wheels and of the drive wheel size can lead to wobbling of the front wheels at higher speeds. If changes are required, verify the horizontal alignment of the wheelchair frame (see the section "Adjusting the drive wheels", "Adjusting the caster wheels").

**WARNING**

**Improper assembly of removable wheels**  
 Tipping, falling over of the user due to wheels coming off

- ▶ After each assembly, verify the proper fit of the removable wheels. The quick-release axles must be firmly locked in the wheel attachment.












### 3.4 Further information

**INFORMATION**

The serial number required for enquiries and ordering spare parts and accessories is found on the nameplate. For explanations of the nameplate, see the section "Nameplate" (see page 6).

### 3.5 Nameplate

The nameplates are found on the crossbrace.

Label	Meaning
	<b>A</b> Manufacturer's product name
	<b>B</b> CE marking
	<b>C</b> Maximum load (see section "Technical data")
	<b>D</b> Manufacturer information/address
	<b>E</b> Serial number <sup>1)</sup>
	<b>F</b> Manufacturing date <sup>2)</sup>
	<b>G</b> Symbol for medical device
	<b>H</b> <b>WARNING!</b> Read the instructions for use before using the product. Observe important safety-related information (e.g. warnings, precautions).
	<b>I</b> Manufacturer's reference number for the product variant
	<b>J</b> Serial number (PI) <sup>3),1)</sup>
	<b>K</b> Global Trade Item Number (DI) <sup>4)</sup>

<sup>1)</sup> YYYY = year of manufacture; WW = week of manufacture; PP = production site; XXXX = sequential production number

2) YYYY = year of manufacture; MM = month of manufacture; DD = day of manufacture

3) UDI-PI to GS1 standard; UDI = Unique Device Identifier, PI = Product Identifier

4) UDI-DI to GS1 standard; UDI = Unique Device Identifier, DI = Device Identifier

See the instructions for use (user) for additional warning labels.

## 4 Delivery

### 4.1 Scope of delivery

- Preassembled wheelchair
- Two drive wheels (installed or included)
- Options according to the order
- Instructions for use (qualified personnel), instructions for use (user)
- Instructions for use for accessories (depending on equipment)

The seat cushion is not included in the standard package.

### 4.2 Options

The functionality and operation of the options are described in more detail in the instructions for use (user).

All of the available options/accessories are listed on the order form.

### 4.3 Storage

Store the wheelchair in a dry, enclosed room, protected from external influences. Specific information about storage conditions: see page 37.

During extended storage, the knee lever wheel lock on wheelchairs with PU tyres must be released since tyre deformation may otherwise result.

Maintain sufficient clearance from sources of heat. If the product is parked for an extended period of time or the tyres overheat (e.g. in the vicinity of radiators or in case of exposure to strong sunlight behind glass), the tyres may become permanently deformed.

## 5 Preparing the product for use

### 5.1 Assembly

#### CAUTION

##### Exposed pinch points

Crushing, pinching due to incorrect handling

- ▶ When folding the wheelchair out or together, only grip by the specified components.

#### CAUTION

##### Failure to verify readiness for use before putting into operation

Tipping, falling due to incorrect adjustment or installation

- ▶ Check the existing settings prior to first use.
- ▶ After every assembly, check for proper mounting of the drive wheels. The quick-release axles must be securely locked in the receiver bushings.
- ▶ Pay particular attention to the stability against tipping, free running of the drive wheels and correct function of the wheel locks.
- ▶ Check the tyre pressure. The correct tyre pressure is printed on the sidewall. Ensure that the pressure is the same in both tyres.

It only takes a few simple steps to prepare the wheelchair for use:

- 1) Attach the drive wheels to the quick-release axle mounting. The quick-release axles must not be removable after releasing the push-button.
- 2) Loosen the safety strap.
- 3) Unfold the wheelchair.
- 4) **Only when equipped with a drive wheel with one-handed operation:** Insert the telescoping rod (see instructions for use (user)).
- 5) **If necessary:** Attach the leg supports. Fold the foot plate(s) down. When using a single-panel foot plate, be sure the support of the foot plate is locked into the receiver.

- 6) **If necessary:** Secure the seat cushion against sliding by pressing it onto the hook-and-loop fastener.

## 6 Settings

### 6.1 Prerequisites

#### WARNING

##### Faulty settings

Tipping over, falling or malposition of the user due to incorrect adjustments

- ▶ Adjustment and assembly work may be carried out only by qualified personnel.
- ▶ Only the adjustments described in these instructions for use may be carried out.
- ▶ Settings may be changed only within the allowable adjustment ranges; otherwise, the stability of the product may be impaired (see this section and the "Technical data" section). If you have questions, contact the manufacturer's service (see [www.ottobock.com](http://www.ottobock.com) for addresses).
- ▶ Conduct tests only in the presence of an assistant.
- ▶ Unless expressly described, you may not change any settings with a person sitting in the product.
- ▶ Secure the user against falling out during all tests.
- ▶ Before testing setting changes with the user seated, firmly tighten all screw connections.
- ▶ Check for safe function before delivering the product.

#### CAUTION

##### Unsecured screw connections

Pinching, crushing, tipping over, falling of user due to assembly errors

- ▶ Always firmly re-tighten the mounting screws and nuts after changing settings. Observe the specified torques in doing so.
- ▶ Any time you loosen a screw connection with thread lock, replace it with a new screw connection with thread lock or secure the old screw connection with medium strength thread locker (e.g. Loctite 241).
- ▶ Always replace self-locking screws and nuts with new self-locking screws and nuts after disassembly.

Fine-tuning and adjustments should always be carried out in the presence of the user. The user should be sitting upright in the wheelchair while making adjustments.

All parts of the product should be cleaned thoroughly before adjustments are made.

The tools required for configuration and maintenance are summarised in the section "Appendices" (see page 41 ff.).

### 6.2 Adjusting the drive wheels

#### WARNING

##### Lack of fine adjustment of the drive wheels

Tipping over, falling of the user due to incorrect adjustment

- ▶ Check the standard adjustments of the wheelchair for stability against tipping and function of the drive wheels. Avoid any extreme settings.

#### WARNING

##### Incorrectly adjusted wheelbase

Tipping over, falling of the user due to unstable settings

- ▶ Please note that with the drive wheel in a more forward mounting position and with an unfavourable body position, the user may tip backwards even on level ground.
- ▶ Use an anti-tipper for inexperienced users and with extreme settings of the drive wheel.
- ▶ Be sure to position the drive wheels towards the rear for transfemoral amputees. This improves the stability of the wheelchair.

#### INFORMATION

Changing the drive wheel position can also change the angle between the caster wheel journal and the ground. However, this must always be **approx. 90°** and thus readjusted accordingly. The knee lever wheel lock also has to be readjusted.



## 6.2.1 Setting the drive wheels horizontally

### INFORMATION

The adjustments described below may **not be carried out on the CLT or CLT Ultra model**.

The horizontal drive wheel position is changed by moving the drive wheel adapter or the shock absorber horizontally in the frame. This has the following effects:

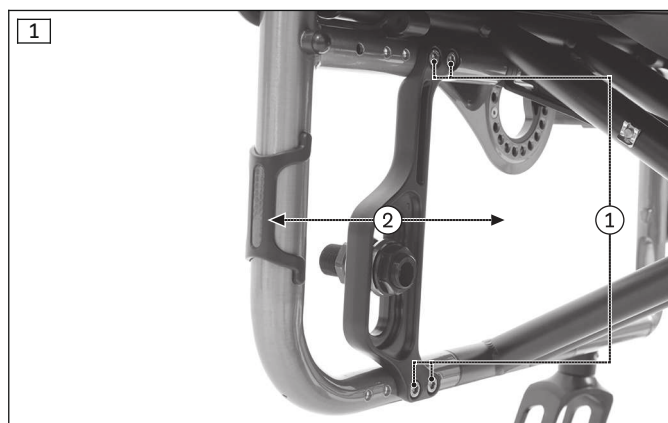
Position of drive wheel	Effects
Move backwards (passive setting)	<ul style="list-style-type: none"> <li>• Larger wheelbase</li> <li>• Larger turning circle</li> <li>• Greater stability of the wheelchair</li> <li>• Wheelchair is harder to tip backwards when crossing obstacles</li> <li>• Position recommended for inexperienced users</li> </ul>
Move forwards (active setting)	<ul style="list-style-type: none"> <li>• Smaller wheelbase</li> <li>• Less load on caster wheels = greater manoeuvrability</li> <li>• Less stability of the wheelchair</li> <li>• Wheelchair is easier to tip backwards when crossing obstacles</li> </ul> <p><b>INFORMATION: An anti-tipper should be installed if necessary.</b></p> <ul style="list-style-type: none"> <li>• Setting recommended only for experienced users</li> </ul>

### 6.2.1.1 Adjusting the drive wheel adapter position in the frame

The drive wheel adapter can be adjusted horizontally to four positions (see fig. 100 in the section “Technical data”). Additional positions for very active wheelchair settings are obtained by rotating the drive wheel adapter by 180° (2404273 in the section “Technical data”).

#### Adjusting the horizontal position of the drive wheel adapter

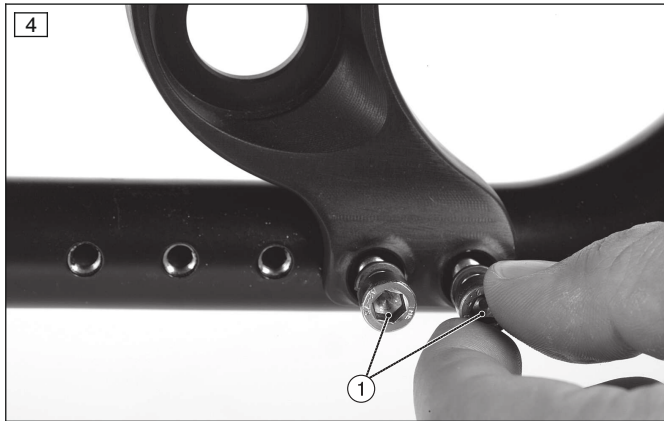
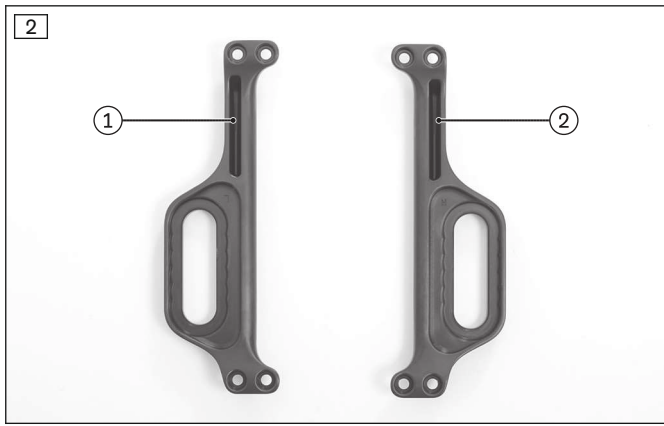
- 1) Loosen and remove the Allen head screws (see fig. 1, item 1).
  - 2) Move the drive wheel adapter to the desired position (see fig. 1, item 2).
  - 3) Insert the Schnorr washers and tighten the Allen head screws to **8 Nm** (see fig. 1, item 1).
- After the adjustment, the left and right drive wheel adapters must have the same horizontal position on the frame.



#### Rotating and adjusting the horizontal position of the drive wheel adapter

From position E, the drive wheel adapter must be rotated (2404273 in the section “Technical data”) in order to be able to adjust the position of the drive wheel adapter even further forwards (for very active settings).

- 1) Loosen and remove the Allen head screws (see fig. 1, item 1).
- 2) Turn the drive wheel adapters **180°** about their own axis and swap them over:
  - Drive wheel adapter L (see fig. 2, item 1) goes on the right side.
  - Drive wheel adapter R (see fig. 2, item 2) goes on the left side.
- 3) Move the drive wheel adapter to the desired position (see fig. 3).
- 4) Insert the Schnorr washers and tighten the Allen head screws to **8 Nm** (see fig. 4).

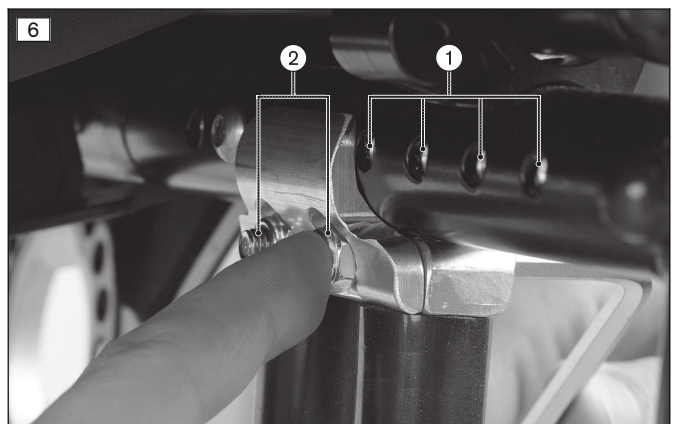
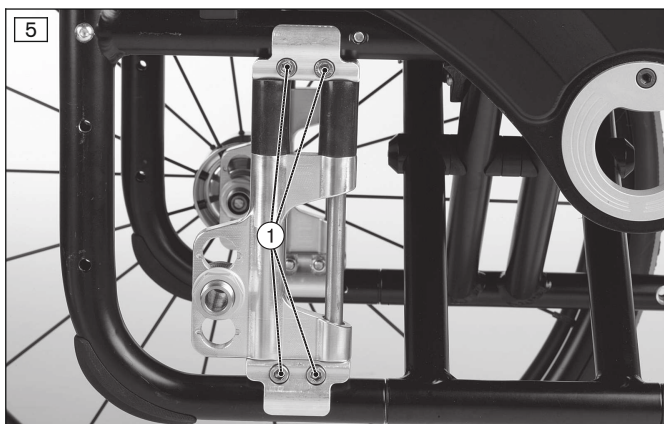


### 6.2.1.2 Adjusting the shock absorber in the frame

The shock absorber can be continuously adjusted in the horizontal direction in the frame.

- 1) Loosen the clamping bolts on the half shells of the shock absorber top and bottom (see fig. 5, item 1).
- 2) Move the shock absorber. Use the bores in the frame for orientation (see fig. 6, item 1).
- 3) Tighten the clamping bolts to **8 Nm** (see fig. 6, item 2).

→ Once changed, the left and right shock absorber must have the same horizontal position on the frame.



### 6.2.2 Adjusting the seat height and seat inclination

#### INFORMATION

The adjustments described below may **not be carried out on the CLT or CLT Ultra model**.

The seat height and the seat inclination are adjusted by moving the quick-release axle mounting (fitting)<sup>1)</sup> vertically in the drive wheel adapter. This has the following effects:

Position of drive wheel	Effects
Move upwards	<ul style="list-style-type: none"> <li>• The higher the drive wheel position, the more the seat surface is tilted to the rear.</li> <li>• Wheelchair is easier to tip backwards when crossing obstacles.</li> <li>• The change in the centre of gravity results in a lower, more stable seat position in the wheelchair.</li> <li>• The seat height can be further adjusted in combination with a height adjustment of the caster wheels.</li> </ul>
Move downwards	<ul style="list-style-type: none"> <li>• The lower the drive wheel position, the less the seat surface is tilted to the rear.</li> <li>• Wheelchair is harder to tip backwards when crossing obstacles.</li> <li>• The seat height can be further adjusted in combination with a height adjustment of the caster wheels.</li> </ul>

<sup>1)</sup> The term “fitting” is the term used in the German and English spare parts catalogue. Alternatively, the instructions for use explain the function of the component, which is why the term quick-release axle mounting is used there.

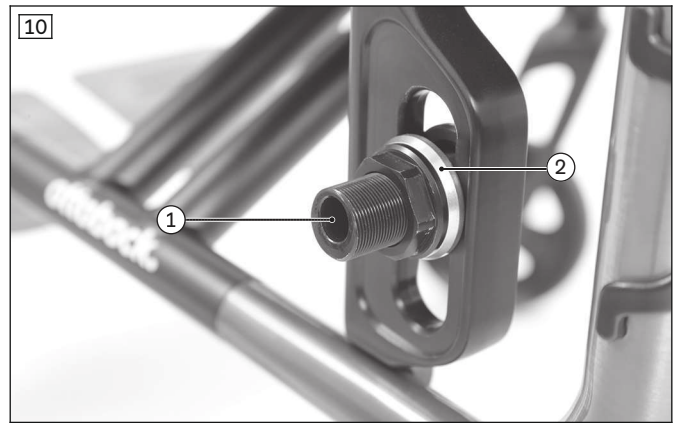
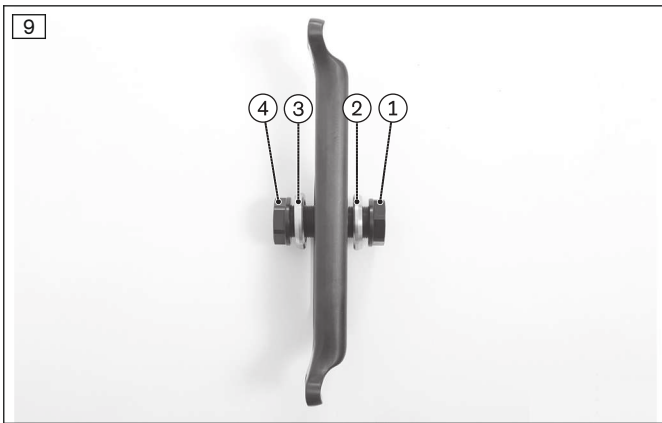
### 6.2.2.1 Adjustment in the drive wheel adapter

The drive wheel can be installed at six height positions in the drive wheel adapter (see fig. 100/2404273). Six additional height positions can be obtained by swapping the drive wheel adapters on the right and left sides and rotating them at the same time (see fig. 101/2404275).

#### Height adjustment within the drive wheel adapter (adjustment of the quick-release axle mounting for one-handed operation is adequate)

- 1) Loosen the hexagon nuts on both sides of the quick-release axle mounting (see fig. 7, see fig. 8).
- 2) Pull the quick-release axle mounting washers (see fig. 9, items 2/3) out until the quick-release axle mounting is moveable.
- 3) Slide the quick-release axle mounting with the hexagon nuts, quick-release axle mounting washers and sleeve to the desired position.
- 4) Note the following during assembly of the quick-release axle mounting:
  - Camber setting: This is adjusted via the angle of the bore in the quick-release axle mounting (see fig. 10, item 1, description: see page 12).
  - Quick-release axle mounting washers: The respective chamfered edge of the quick-release axle mounting washers faces out (see fig. 10, item 2).
  - Alignment: Once changed, the left and right quick-release axle mountings must both have the same vertical and horizontal position in the drive wheel adapter.
- 5) Tighten the hexagon nuts on both sides of the quick-release axle mounting:
  - Standard quick-release axle mounting: **40 Nm**,
  - Quick-release axle mounting for one-handed operation/drum brake for attendant: **50 Nm**.





**Six additional height positions by swapping the drive wheel adapters and rotating from top to bottom**

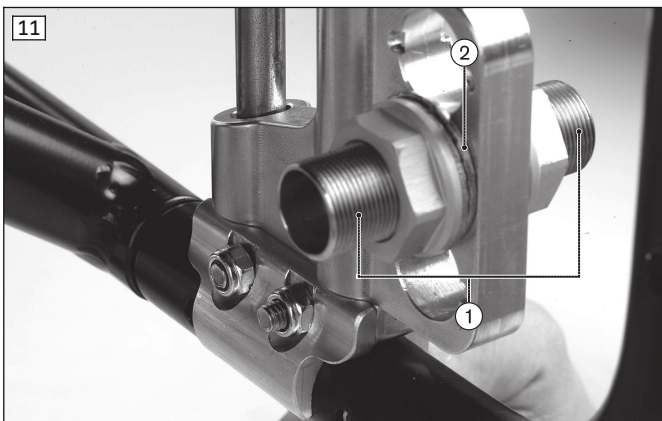
- 1) Note the horizontal installation position of the drive wheel adapter. Loosen and remove the hexagon socket screws (see fig. 1, item 1).
- 2) Turn the drive wheel adapters **180°** from top to bottom and swap them over:
  - Drive wheel adapter L (see fig. 2, item 1) goes on the right side.
  - Drive wheel adapter R (see fig. 2, item 2) goes on the left side.
- 3) Apply the drive wheel adapter in the horizontal installation position from step 1 (see fig. 3).
- 4) Insert the Schnorr washers and tighten the hexagon socket screws to **8 Nm** (see fig. 4).
- 5) Adjust the height of the quick-release axle mounting (see above, "Height adjustment within the drive wheel adapter").

**6.2.2.2 Adjustment in the shock absorber**

The drive wheel can be installed at 3 height positions on the shock absorber.

- 1) Loosen and remove the nut on one side of the quick-release axle mounting (see fig. 11, item 1).
  - 2) Remove and adjust the quick-release axle mounting.
  - 3) Reinsert the nut and tighten it to **40 Nm**.
- Once changed, the left and right quick-release axle mountings must both have the same vertical position in the shock absorber.

The drive wheel camber can also be adjusted in combination with the shock absorber. This is done by inserting a quick-release axle mounting with the desired angle into the shock absorber (see page 12).



**6.2.3 Adjusting the drive wheel camber**

**INFORMATION**  
 The adjustments described below may **not be carried out on the CLT or CLT Ultra model**.

The modular system of the product offers quick-release axle mountings with angled bores for different sloped settings of the drive wheels (see fig. 12).

The drive wheel camber is adjusted by exchanging the quick-release axle mounting. This has the following effects:

Position of drive wheel	Effects
0° position	<ul style="list-style-type: none"> <li>• Narrow track, excellent straight-line stability</li> <li>• Low rolling resistance</li> </ul>
Wheel camber	<ul style="list-style-type: none"> <li>• Wheelchair becomes more manoeuvrable, turns faster and tips less easily to the side</li> <li>• The wheel position protects the hands when turning the handrim</li> <li>• Overall width increases</li> <li>• Increased rolling resistance</li> </ul>

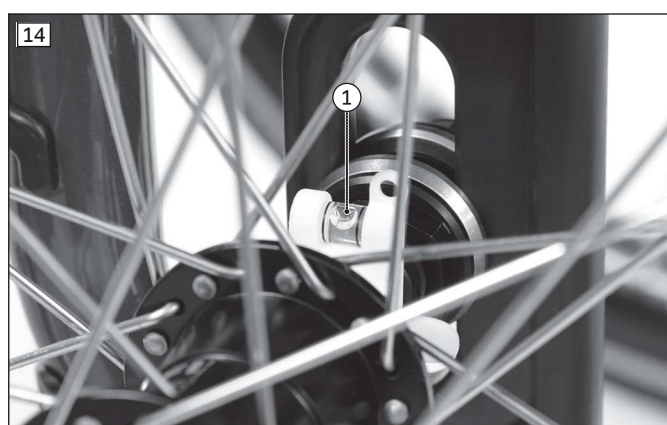
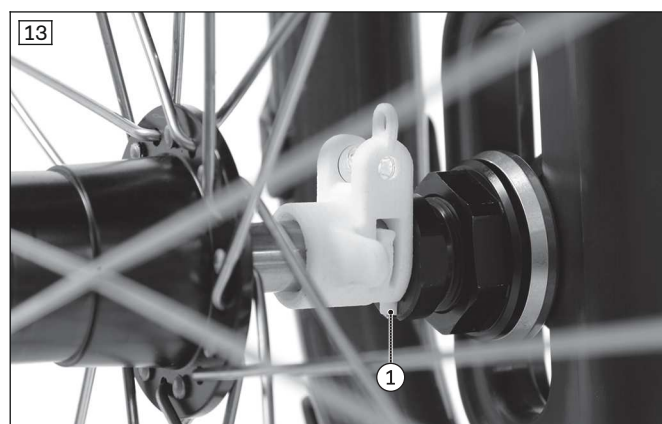
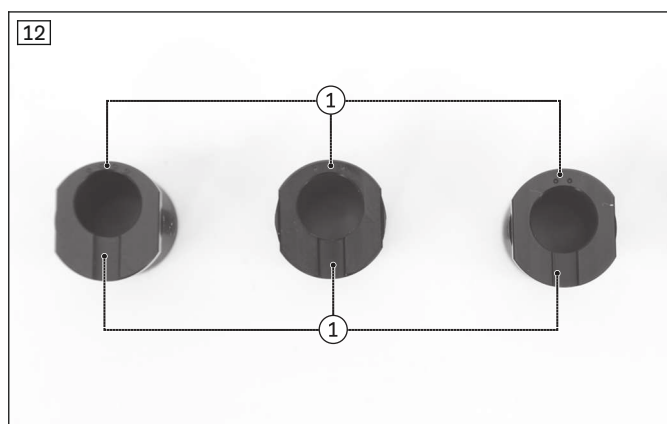
The drive wheel camber can be set to **0°**, **2°**, **3°** and **4°**.

- 1) Unscrew the hexagon nuts on the quick-release axle mounting (see fig. 7).
- 2) Remove the quick-release axle mounting (see fig. 8).
- 3) Prepare the new quick-release axle mounting. The camber is embossed in the quick-release axle mounting (1°, 2°, 4° = 1, 2, 3 dots: see fig. 12, item 1).
- 4) Insert the chosen quick-release axle mounting together with the quick-release axle mounting washers (see fig. 9, items 2 and 3) and the hexagon nuts (see fig. 9, items 1 and 4) and tighten it slightly.

**INFORMATION: The groove on the quick-release axle mounting respectively faces vertically down and out (see fig. 12, item 2).**

**INFORMATION: The respective chamfered edge of the quick-release axle mounting washers faces out (see fig. 10).**

- 5) Slide the supplied assembly aid (spirit level) onto the quick-release axle with the drive wheel and insert the quick-release axle into the quick-release axle mounting (see fig. 13).
  - 6) The assembly aid must engage in the groove of the quick-release axle mounting (see fig. 13, item 1).
  - 7) Align the quick-release axle mounting so the spirit level is in the centre position (see fig. 14). Tighten the hexagon nuts to **40 Nm** (see fig. 15).
  - 8) Remove the drive wheel and take off the assembly aid.
  - 9) Reinstall the drive wheel.
- After adjustment, the camber of the left and right drive wheels must be the same.



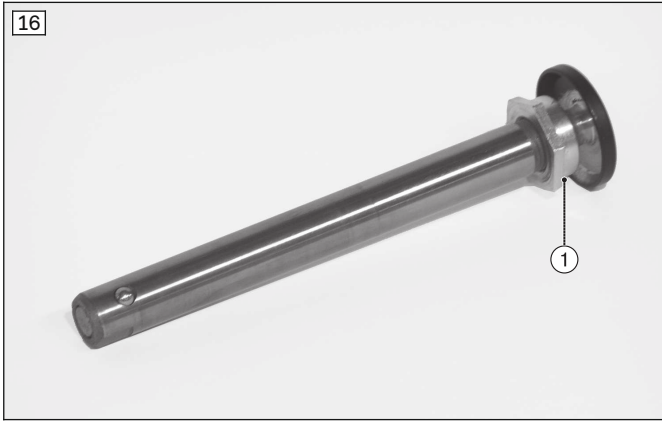
### 6.2.4 Adjusting the track width (additional adjustment)

After the mounting nuts have been loosened, the position of the quick-release axle mounting can be adjusted in or out. This allows the distance between the drive wheel and the side panel to be continuously adjusted.

### 6.2.5 Adjusting the quick-release axle

The quick-release axle should be set so the wheel is correctly engaged, with no play on the axle.

- 1) Hold the quick-release axle by the head (wrench size: **19 mm**) and by the tip (wrench size: **11 mm**) with a ring and open-ended wrench respectively.
- 2) Adjust the play by turning the nut on the end of the quick-release axle (see fig. 16, item 1) in or out.



### 6.2.6 Adjusting the handrims

All handrims are designed for a spacing from the drive wheel of **15 mm** (standard setting) and **25 mm** (see fig. 17).

- 1) Loosen/remove the handrim screw connection from the rim.
- 2) Tightly screw the handrims onto the rim in the narrow or wide installation position (see fig. 18).



## 6.3 Adjusting the caster wheels

### INFORMATION

The adjustments described below may **not be carried out on the CLT or CLT Ultra model**.

### 6.3.1 Adjusting the caster journal angle for the Avantgarde DS/DV

When the drive wheels have been adjusted for the user, the caster journal angle must be adjusted at the caster wheel adapter.

The bolt of the caster fork in the caster wheel mounting (see fig. 26, item 1) must be perpendicular to the ground to ensure optimum wheelchair driving characteristics. The caster wheel adapter permits adjustment of this angle in 1.5° increments.

**INFORMATION:** Note that the caster wheel mounting has to be perpendicular to the ground both in the direction of travel and crosswise to the direction of travel after an angle adjustment. Therefore, always check the perpendicular position of the caster fork bolt crosswise to the direction of travel while adjusting the caster wheel journal angle. Adjust this correctly as needed.

**INFORMATION**

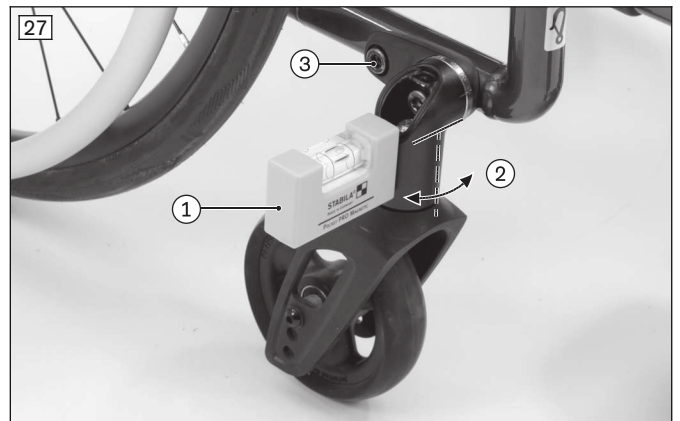
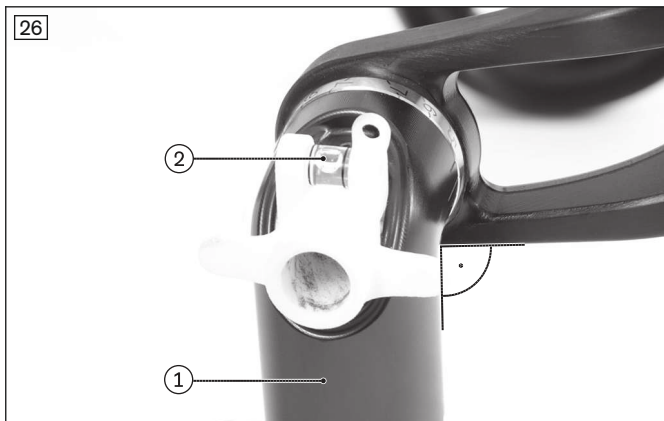
The markings that are visible when looking at the wheelchair or caster wheel adapter from the front are relevant for the adjustments described below. The setting in the range up to  $\pm 10.5^\circ$  (long marking line) is shown in the following.

By moving the tenon jointing wheel on the caster wheel adapter, the caster wheel journal angle can be corrected in  $1.5^\circ$  increments starting from the zero position (see fig. 19) (scale value 1 corresponds to  $1.5^\circ$ , scale value 2 corresponds to  $3^\circ$  (see fig. 20), etc.):

- Long marking line (see fig. 20): settings in the range of 0 to  $\pm 10.5^\circ$
- Short marking lines (see fig. 21): settings in the extended range from  $\pm 12^\circ$



- 1) Loosen the Allen head screw on the caster wheel adapter (see fig. 22) and remove the cover.
- 2) Loosen the mounting screw for the caster wheel journal angle (see fig. 23) until the tenon jointing wheel on one side can be loosened from the caster wheel adapter and moves freely on one side (see fig. 24).
- 3) Set the expected appropriate angle (the long marking line on the retainer is applicable). Push the tenon jointing wheel back into the retainer on one side.
- 4) Loosen the other side of the tenon jointing wheel from the retainer. Turn the caster wheel adapter until the long marking line also indicates the same scale position on the tenon jointing wheel (see fig. 25).
- 5) Slightly tighten the mounting screw for the caster wheel journal angle (see fig. 23) and, by applying the supplied assembly aid, check whether the angle in the direction of travel is close to  $90^\circ$  (see fig. 26, item 1/2). If this is not the case, correct it again (see starting at step 2).
- 6) Also check the perpendicular position of the threaded axle crosswise to the direction of travel:
  - To do so, set a spirit level onto the caster head (see fig. 27, item 1) and check the perpendicular position (see fig. 27, item 2).
  - If necessary, also slightly loosen the mounting screw of the caster wheel adapter (see fig. 27, item 3). Move the threaded axle into the perpendicular position by hand.
- 7) Tighten the mounting screw for the caster wheel journal angle to **30 Nm** (see fig. 23). Tighten the mounting screw of the caster wheel adapter to **30 Nm** (see fig. 27, item 3).
- 8) Put on the cover and tighten the Allen head screw (see fig. 22).
- 9) For the caster head on the opposite side, set the tenon jointing wheel to the same scale value.



### 6.3.2 Adjusting the caster journal angle for the Avantgarde DF

**⚠ WARNING**

**Damage to the eccentric during adjustment work**

Loss of the caster fork

- ▶ When changing the position of the caster head on the frame, check the M8 interior thread on the eccentric for damage and replace the eccentric if necessary.

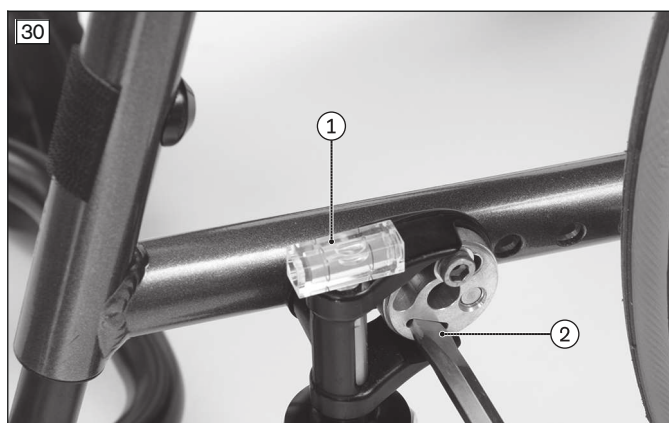
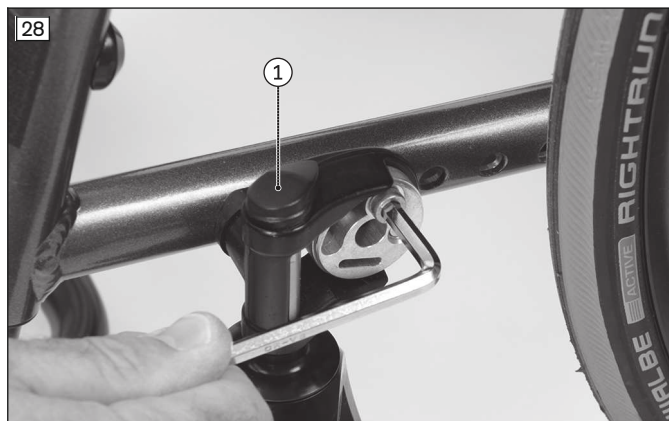
When the drive wheels have been adjusted for the user, the caster journal angle must be adjusted at the caster wheel adapter.

The threaded axle in the caster wheel adapter should be perpendicular to the ground to ensure optimum rolling behaviour of the wheelchair. The caster wheel adapter permits a continuous adjustment of this angle.

- 1) Remove the cover (see fig. 28, item 1).
- 2) Slightly loosen the hexagon socket screw on the eccentric (see fig. 28).
- 3) Slightly loosen the hexagon socket screws on the inside of the frame (see fig. 29).
- 4) Place the spirit level on the caster attachment device in the direction of travel (see fig. 30, item 1).



- 5) Adjust the positive/negative caster to 90° using a wide flat screwdriver (see fig. 30, item 2). The bubble in the spirit level must be in the centre position (see fig. 30, item 1).
  - 6) Then turn the spirit level by 90° and place it crosswise in the direction of travel (see fig. 31). Move the spirit level to the centre position (see step 6).
  - 7) Tighten the hexagon socket screw on the eccentric to **8 Nm** (see fig. 28).
  - 8) Tighten the hexagon socket screws on the inside of the frame to **23 Nm** (see fig. 29).
  - 9) Put on the cover (see fig. 28, item 1).
- The threaded axle on each of the two caster wheel adapters must be positioned vertically.



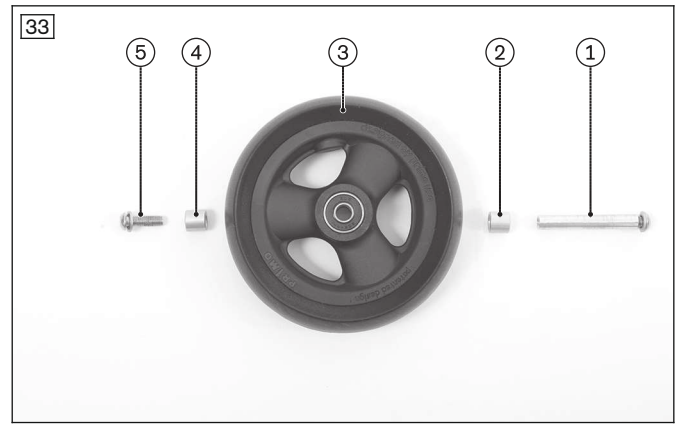
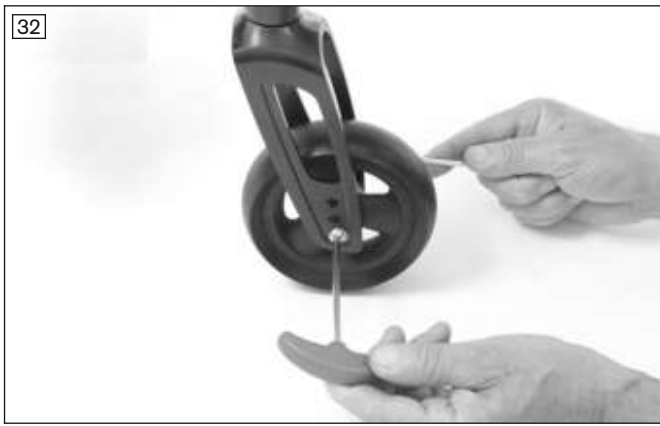
### 6.3.3 Adjusting the caster wheels of the Avantgarde DS/DV

#### INFORMATION

Please refer to the seat height table in the technical data.

The front seat height is adjusted using the row of holes in the fork and the diameter of the caster wheels.

- 1) Loosen the screw connection on the threaded sleeve (see fig. 32).
  - 2) Remove the threaded sleeve and spacer bushings.  
**INFORMATION: Note that the illustrated and described spacer bushings are not present with all available caster wheels.**
  - 3) Remove the caster wheel.
  - 4) Insert the threaded sleeve (see fig. 33, item 1) into the desired hole in the fork and slide on the first spacer bushing (see fig. 33, item 2) from the inside.
  - 5) Install the caster wheel (see fig. 33, item 3).
  - 6) Slide the 2nd spacer bushing on (see fig. 33, item 4).
  - 7) Insert the mounting screw (see fig. 33, item 5) and tighten the threaded sleeve to **8 Nm**.
- Once adjusted, the left and right caster wheels must have the same vertical position in the caster fork.
- After changing the front seat height, always check the caster wheel journal angle and adjust it if necessary (Adjusting the caster journal angle).



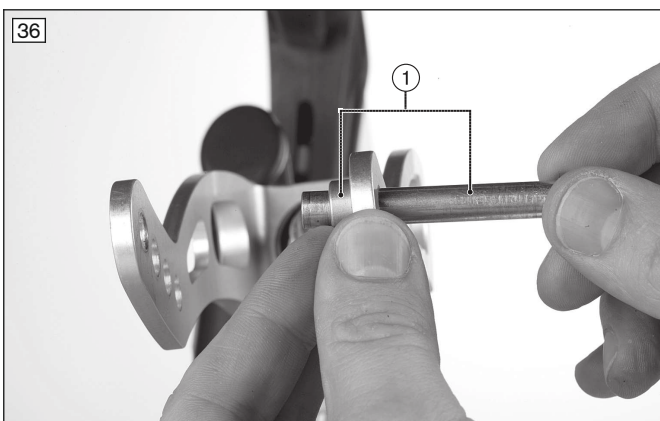
### 6.3.4 Adjusting the castor wheels of the Avantgarde DF

#### INFORMATION

Please refer to the seat height table in the technical data.

The front seat height is adjusted using the row of holes in the fork and the diameter of the castor wheels.

- 1) Unscrew the screw connection of the threaded axle (see fig. 34).
  - 2) Remove the threaded axle/spacers (see fig. 35).
  - 3) Remove the castor wheel.
  - 4) Insert the threaded axle with the first spacer bushing offset (see fig. 36, item 1).
  - 5) Install the castor wheel.
  - 6) Slide the 2nd spacer bushing on (see fig. 37, item 1).
  - 7) Tighten the threaded axle to **8 Nm**.
- Once adjusted, the left and right castor wheels must have the same vertical position in the castor fork.



## 6.4 Adjusting the wheel locks

### ⚠ WARNING

#### Failure to verify brake functionality

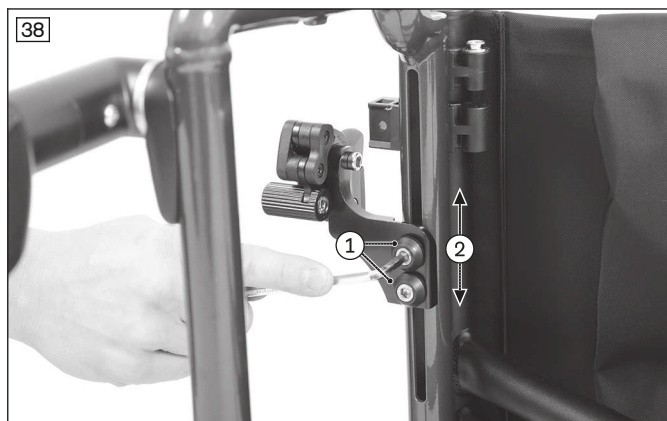
Accident, user falls due to incorrect adjustment and improperly inflated tyres

- ▶ Check the correct spacing between the wheel lock bolt and tyre (see the following section for details).
- ▶ Check the correct position of the wheel lock bolt relative to the tyre. During braking, the wheel lock bolt has to cover at least half the tyre width.
- ▶ Always carry out adjustments to the wheel lock on both sides.
- ▶ Ensure that the user can operate the wheel lock without great effort. The force required to do so must not exceed 60 N.
- ▶ Check the tyre pressure of the drive wheels. Note the information in the section “Technical data” or on the tyre sidewall.
- ▶ Only use original drive wheels with a verified maximum radial out-of-round of **1 mm**.

This adjustment must be made after the drive wheel has been repositioned or during fine adjustment.

### 6.4.1 Adjusting the knee lever wheel locks

- 1) Loosen the Allen head screws between the knee lever wheel lock and the threaded stud in the frame tube (see fig. 38, item 1).
- 2) Adjust the knee lever wheel lock by sliding it (see fig. 38, item 2). When the wheel lock is disengaged, the gap between the tyre and wheel lock bolt must not exceed **5 mm**. (see fig. 39).
  - The distance between the wheel lock bolt and the drive wheel must be **1–5 mm** in the unbraked condition.
  - It must be possible to operate the wheel lock evenly and easily on both sides.
  - The wheel lock bolt must lock the drive wheel securely when stationary.
- 3) Evenly tighten the Allen head screws in the threaded stud to **8 Nm**.
  - After adjustment, the left and right knee lever wheel locks must both have the same braking force.



### 6.4.2 Adjusting the scissor wheel locks

- 1) Loosen the hexagon socket screws in the clamps (see fig. 40, item 1).
- 2) Adjust/move the support for the scissor wheel lock to any position in the clamp (see fig. 40, item 2).
- 3) Install the scissor wheel lock so that the full braking force is reached and the swivelling parts can also move freely without colliding.
  - The scissor wheel lock must not hit the frame when it is open (see fig. 40).
  - It must be possible to operate the brake evenly and easily on both sides.
  - The wheel lock bolt must lock the drive wheel securely when stationary (see fig. 41).
- 4) Tighten both hexagon socket screws evenly to **12 Nm** in two passes (see fig. 40, item 1).
  - After adjustment, the left and right scissor wheel locks must both have the same braking force.



### 6.4.3 Adjusting the knee lever wheel lock for user and attendant

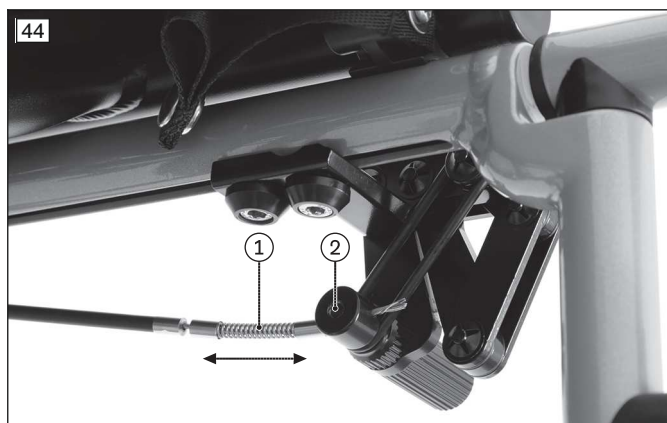
#### Presetting (as needed)

- 1) Loosen the hexagon socket screws between the knee lever wheel lock and the threaded stud in the frame tube (see fig. 42).
- 2) Adjust the knee lever wheel lock by sliding it.  
When the wheel lock is disengaged, the gap between the tyre and wheel lock bolt must not exceed **5 mm** (see fig. 43).  
→ The distance between the wheel lock bolt and the drive wheel may be **1 – 5 mm** when the wheel lock is not engaged.
- 3) Evenly tighten the hexagon socket screws in the threaded stud to **8 Nm**.

#### Fine adjustment

- 1) Separate the Bowden cable mounting from the wheel lock bolt (see fig. 44, item 2).
- 2) Adjust the Bowden cable in the spring (see fig. 44, item 1).
- 3) Clamp the Bowden cable again by tightening the mounting.  
→ The wheel lock has to operate easily.  
→ The braking force must be the same at both wheel lock bolts.  
→ The wheel lock bolt must lock the drive wheel securely when stationary.
- 4) **If necessary:** Shorten the Bowden cable to **10 mm** after making the adjustments and attach a cable end cap (not illustrated).





#### 6.4.4 Adjusting the knee lever wheel lock for one-handed operation

##### INFORMATION

To adjust the brake block on the active side: see the section "Adjusting the knee lever wheel lock".

This adjustment must be made after the drive wheel has been repositioned or during fine adjustment.

##### Presetting (as needed)

- 1) Loosen the hexagon socket screws between the knee lever wheel lock and the threaded stud in the frame tube (not illustrated, similar process: see fig. 42).
- 2) Adjust the knee lever wheel lock by sliding it.  
When the wheel lock is disengaged, the gap between the tyre and wheel lock bolt must not exceed **5 mm** (similar illustration: see fig. 43).  
→ The distance between the wheel lock bolt and the drive wheel may be **1 – 5 mm** when the wheel lock is not engaged.
- 3) Evenly tighten the hexagon socket screws in the threaded stud to **8 Nm**.

##### Fine adjustment

- 1) Separate the sleeve from the wheel lock bolt (see fig. 45).
- 2) Slide the sleeve onto the Bowden cable (see fig. 46).
- 3) Clamp the Bowden cable by tightening the nut (see fig. 45).  
→ The wheel lock has to operate easily.  
→ The braking force must be the same at both wheel lock bolts.  
→ The wheel lock bolt must lock the drive wheel securely when stationary.
- 4) **If necessary:** Shorten the Bowden cable to **10 mm** after making the adjustments and attach a cable end cap (not illustrated).



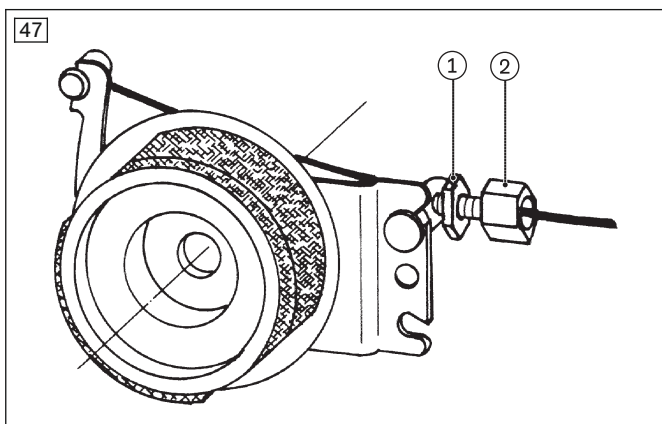
### 6.4.5 Adjusting the braking force of the drum brake

#### INFORMATION

After making adjustments, check that activating the manual brake lever creates a sufficient braking effect. Note that the drum brake must still be able to produce sufficient braking force even when the manual brake lever is locked into a ratchet position.

To achieve an optimum braking effect, the braking force is adjusted using the adjustment screw (see fig. 47, item 2).

- **Increase the braking force:** Back off the adjusting screw.
  - **Reduce the braking force:** Screw in the adjustment screw.
- 1) Loosen the counter nut (see fig. 47, item 1) and back off the adjustment screw until a scraping noise can be heard when the rear wheel is rotated.
  - 2) Screw in the adjustment screw (see fig. 47, item 2) until the scraping noise at the rear wheel disappears and the wheel runs freely.
  - 3) Tighten the counter nut (see fig. 47, item 1) until the adjustment screw is fixed.
- The braking force of both rear wheels must be adjusted equally.



### 6.5 Adjusting the back support

#### INFORMATION

The adjustments described below may **not be carried out on the CLT or CLT Ultra model**.

#### 6.5.1 Adjusting the back support height

Depending on the back support system, the back support height can be adjusted by **50 mm**, **75 mm** or **100 mm**. The back support tube integrated into the rear frame allows the back support height to be adjusted in increments of **25 mm**.

- 1) Remove the back support pad.
  - 2) **If necessary:** Loosen the rear side panel mounting on the frame (see fig. 48, item 1) and fold away the side panel.
  - 3) Loosen the back support upholstery (see fig. 49).
  - 4) Remove the protective caps and remove the two back support tube mounting screws from the rear frame (see fig. 50).
  - 5) Adjust the back support height as desired (see fig. 51, item 1).
  - 6) Tighten the removed hexagon socket screws to **7 Nm**. Install the protective caps on the hexagon nuts.
- Both back support tubes must be adjusted to the same height.

Properly reassemble all components upon completion of the adjustments. To adjust the back support upholstery: see page 24.



### 6.5.2 Adjusting the back support angle

#### **⚠ WARNING**

##### **Missing anti-tipper**

Tipping over, falling of the user due to missing safety devices

- ▶ If the back support is tilted far back and the wheelbase is short, 2 anti-tippers (one on each side) must be mounted and in a functional position; if the wheelbase is long, at least one anti-tipper must be mounted and in a functional position.
- ▶ Verify that the anti-tipper is securely fitted.

When using a back support with angle adjustment, the back support angle can be adjusted from **+9° to -15°** in 6° steps to meet the needs of the user.

When using the angle-adjustable back support in combination with a side panel with arm pad, the back support angle can only be adjusted from **+3° to -9°**.

- 1) Loosen the hexagon socket screw on the positioning joint on both sides.  
**NOTICE! Ensure that the hexagon socket screw is loosened sufficiently to avoid damage to the ratchet mechanism.**
- 2) Position the back support unit at the desired angle.
- 3) Tighten the hexagon socket screw on the positioning joint to **10 Nm** on both sides.



## 6.6 Adjusting the back support upholstery / seat upholstery

### 6.6.1 Adjusting the back support upholstery

#### INFORMATION

A well-adjusted backrest provides lasting comfort for the wheelchair user and reduces the risk of secondary damage and pressure zones. Do not create too much pressure.

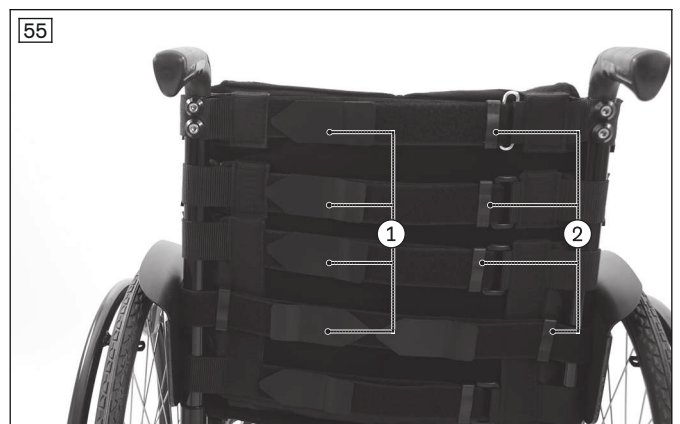
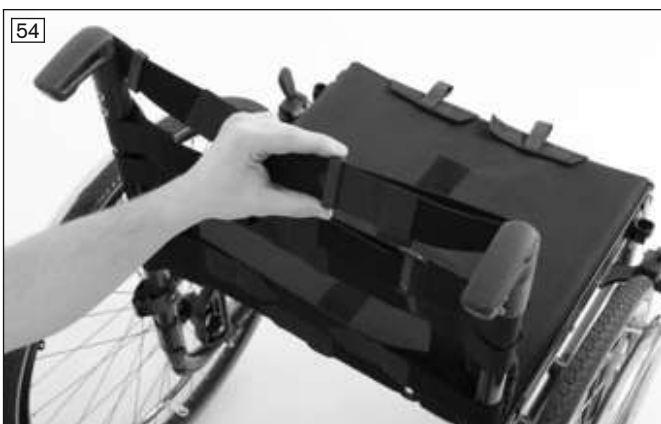
#### INFORMATION

Ensure that the user's pelvis is positioned as far back in the wheelchair as possible, i.e. between the back support tubes.

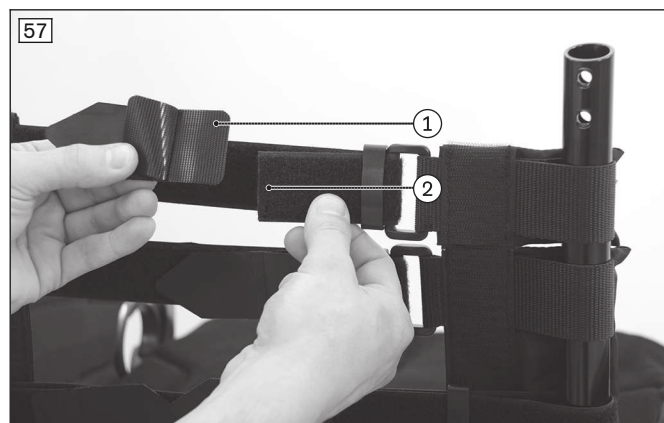
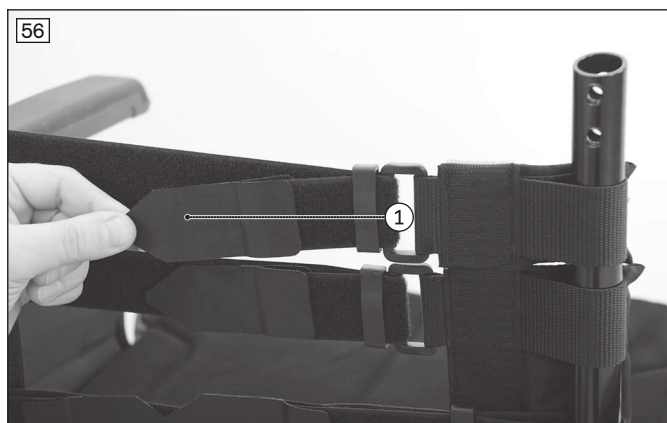
#### 6.6.1.1 Adapting the adjustable back support upholstery

The back support upholstery can be adapted in segments to the needs of the user (see fig. 54).

- 1) Remove the back support pad.
- 2) Loosen the hook-and-loop fastener of the upholstery straps (see fig. 55, item 1; see fig. 56, item 1).
- 3) Fasten the upholstery straps with the desired tension using the hook-and-loop fastener.  
If necessary, unthread/thread the upholstery straps from/through the flaps to do so (see fig. 55, item 2).
- 4) If the upholstery straps are too long, they can be shortened. To do so, remove the end pieces from the upholstery straps (see fig. 57, item 1), trim the upholstery straps (see fig. 57, item 2) and reinstall the end pieces.
- 5) Put on the back support pad and attach it with the hook-and-loop fastener.







### 6.6.1.2 Adjusting the “ultralight” back support upholstery

The back support upholstery can be adapted somewhat to the needs of the user by adjusting the length of the upper strap.

- 1) Remove the back support pad.
- 2) Loosen the hook-and-loop fastener of the upper strap (see fig. 58).
- 3) Use the hook-and-loop fastener to fasten the upper strap with the desired tension.



### 6.6.2 Adjusting the seat upholstery

The seat upholstery usually does not need to be adjusted during the initial fitting. However, re-tightening the slack is possible. Corrections to the centre of gravity must be made by making changes to the settings on the frame, the axle unit and the caster wheels.

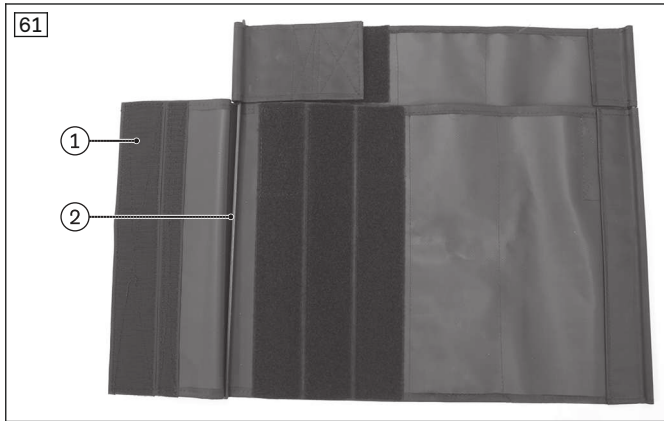
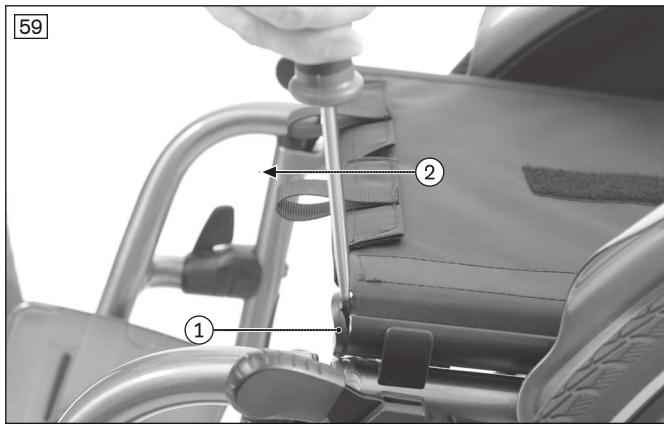
#### “Ultralight” seat upholstery

There are no adjustment possibilities for the “ultralight” seat upholstery.

#### “Complete” seat upholstery (two-piece) and seat upholstery with storage compartments

> **Prerequisite:** The seat cushion has been removed.

- 1) Remove the caps (see fig. 59, item 1/2).
- 2) Slightly fold the crossbrace and pull the seat upholstery out of the crossbrace (see fig. 60).
- 3) Loosen the hook-and-loop fastener on the underside of the seat upholstery (see fig. 61, item 1).
- 4) Tighten or loosen the seat upholstery. Close the hook-and-loop fastener again. Make sure the upholstery bars are inserted correctly (see fig. 61, item 2).
- 5) Slide the seat upholstery onto the crossbrace with the help of the upholstery bars (see fig. 62, item 1).
- 6) Replace the caps and insert them into the frame tube using a soft-faced hammer.
- 7) Unfold the wheelchair. In doing so, the crossbrace must be seated fully in the support guides.



## 6.7 Adjusting the leg supports

The distance between the footplates and the sitting surface influences sitting stability. The height adjustment acts on the pelvis and ischial bones.

### 6.7.1 Adjusting the lower leg length on the Avantgarde DS/DV

The required leg support height depends on the lower leg length of the user and the thickness of the seat cushion.

#### Legrests/tube footrest on the Avantgarde DS

- 1) Loosen the Allen head screw on the front frame (see fig. 63).
- 2) Adjust the lower leg length (measurement to the top edge of the seat upholstery, see fig. 64).  
**INFORMATION: There are several threaded holes on the frame tube. Depending on the desired setting, the Allen head screw may have to be completely removed and inserted into a different hole.**  
**INFORMATION: There are three threaded holes in the tube foot support. These have to be aligned with the threaded holes in the frame tube. Using one Allen head screw per tube foot support is sufficient for installation.**
- 3) Tighten each Allen head screw to **7 Nm**.



### Legrests/tube footrest on the Avantgarde DV

- 1) Loosen the hexagon socket screw (see fig. 65).
- 2) Continuously adjust the lower leg length (measurement to the top edge of the seat upholstery, see fig. 66).  
**INFORMATION: Ensure that the tube foot support is inserted at least 40 mm into the leg support holder during assembly.**
- 3) Tighten the hexagon socket screw to **7 Nm**.



### Elevating legrest on Avantgarde DV

- 1) For adjustment, loosen the hexagon socket screw (see fig. 67). Then the tube foot support can be moved as needed.
- 2) Adjust the tube foot support to the desired lower leg length.
- 3) Retighten the hexagon socket screw to **7 Nm** wieder festziehen (see fig. 67).



### 6.7.2 Adjusting the lower leg length on the Avantgarde DF

The required leg support height (residual limb support with amputation leg supports) depends on the lower leg length of the user and the thickness of the seat cushion used.

#### Leg supports/tube foot support on the Avantgarde DF version S

- 1) Loosen the hexagon socket screw on the front frame (see fig. 68).
- 2) Adjust the lower leg length.  
**INFORMATION: There are two threaded holes in the tube foot support. Depending on the desired setting, the hexagon socket screw may have to be completely removed and inserted into the second hole.**
- 3) Tighten the hexagon socket screw to **10 Nm**.



**Leg supports/tube foot support on the Avantgarde DF version V**

- 1) Loosen the set screws (see fig. 69, see fig. 70).
- 2) Adjust the lower leg length (continuously adjustable).  
**INFORMATION: Ensure that the tube foot support is inserted at least 40 mm into the swivel segment during assembly.**
- 3) Tighten the set screws to **8 Nm**.



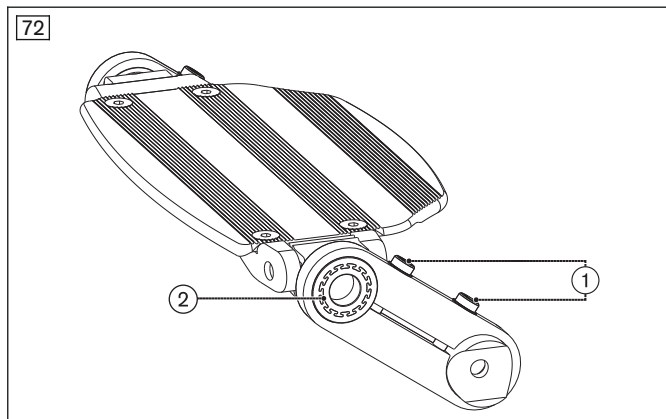
**Elevating leg support with automatic length adjustment on the Avantgarde DF version V**

- 1) Remove the hexagon socket screw from the tube foot support (see fig. 71).
- 2) Select one of the three threaded holes.  
**INFORMATION: Depending on the setting, it may be necessary to remove or add one or more spacer sleeves.**
- 3) Insert the hexagon socket screw.
- 4) Tighten the hexagon socket screw to **8 Nm**.



### Leg support for short lower leg lengths

- 1) Loosen the clamping screws (see fig. 72, item 1).
- 2) Move the foot support to the desired position (see fig. 72, item 2).
- 3) Tighten the clamping screw to **9 Nm**.



### Amputation leg support on the Avantgarde DF version V

- 1) Open the hexagon socket screws (see fig. 73).
- 2) Move the leg support to the desired height (see fig. 74).
- 3) Fasten the hexagon socket screws.



### 6.7.3 Adjusting the support angle for the Avantgarde DS/DV

The leg support angle setting should be chosen so that the ankle is in a relaxed, comfortable position.

#### Single panel footplate

- 1) Loosen and remove the Allen head screw on the footplate suspension on the left side (see fig. 75).
- 2) Turn the footplate to the desired angle (see fig. 76).
- 3) Tighten the Allen head screw to **8 Nm**.



**Segmented footplate**

- 1) Loosen the Allen head screw on the footplate suspension (see fig. 77).
- 2) Turn the footplate joint to the desired angle (see fig. 78).
- 3) Tighten the Allen head screw to **8 Nm**.



**Elevating legrest on Avantgarde DV**

- 1) Loosen the countersunk screw on the foot plate (see fig. 79).
- 2) Turn the foot plate to the desired angle (see fig. 80).
- 3) Tighten the countersunk screw to at least **6 Nm** (see fig. 79).



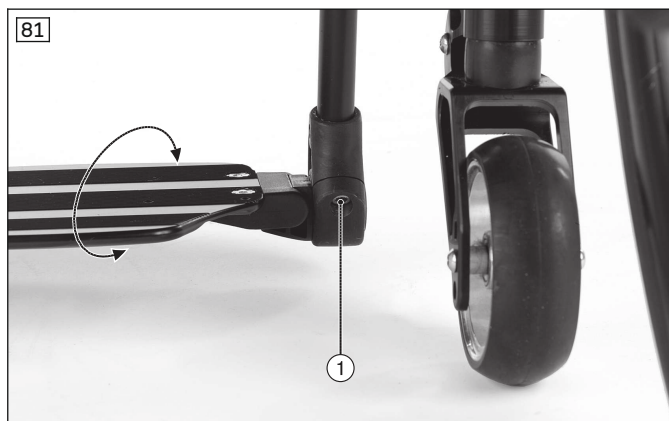
**6.7.4 Adjusting the support angle on the Avantgarde DF**

The leg support angle setting should be chosen so that the ankle is in a relaxed, comfortable position. When adjusting to the amputation leg support, note the residual limb flexion.

**Angle-adjustable foot supports with supports/bearings**

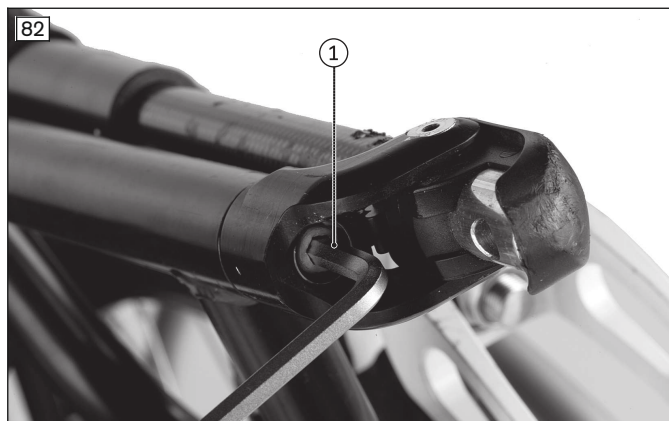
The angle-adjustable support/bearing is used with various foot supports.

- 1) Loosen the hexagon socket screw on the rear suspension of the foot plate or foot support (see fig. 81, item 1).
- 2) Turn the support/bearing of the foot plate or foot support to the desired angle (see fig. 81).
- 3) Tighten the hexagon socket screw to **8 Nm**.



### Angle-adjustable foot supports

- 1) Release the foot support from the locking device and fold it up.
- 2) Loosen the hexagon socket screw (see fig. 82, item 1).
- 3) Turn the foot support to the desired angle (see fig. 83).
- 4) Tighten the hexagon socket screw to **10 Nm**.
- 5) Fold down and engage the foot support.



### Amputation leg support on the Avantgarde DF version V

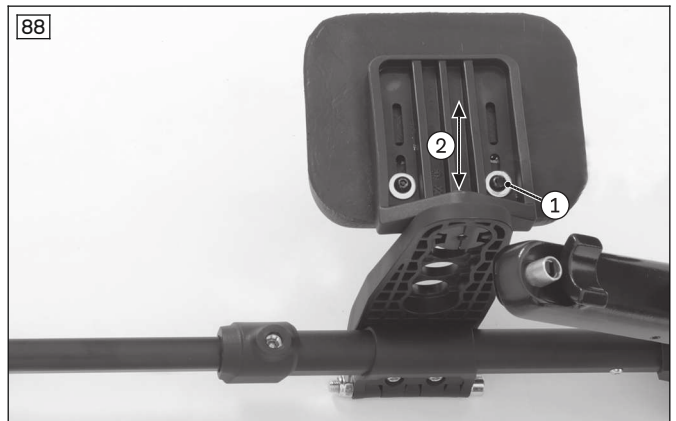
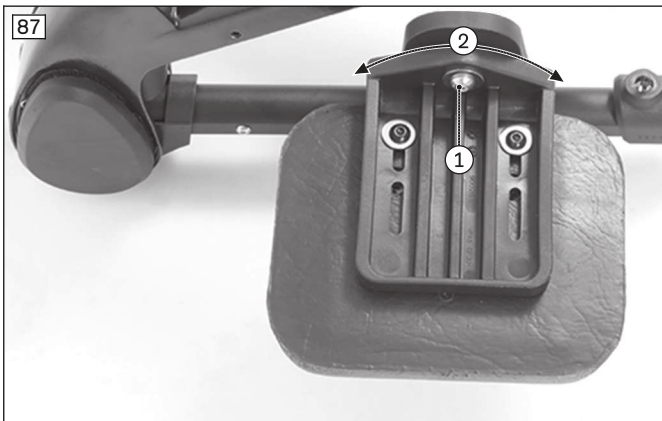
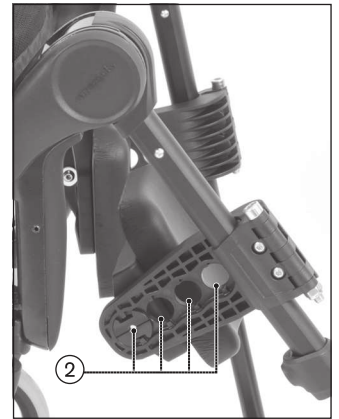
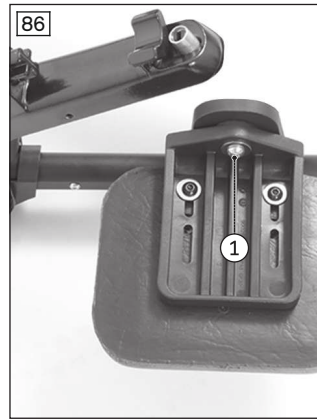
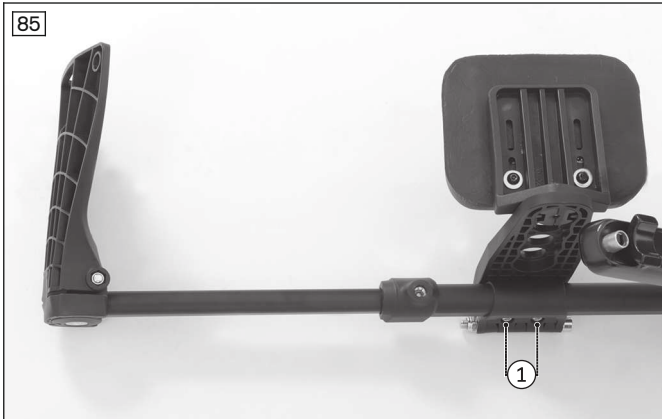
- 1) Release the clamping lever (see fig. 84).
- 2) Rotate the leg support to the desired angle.
- 3) Engage the clamping lever.



### 6.7.5 Adjusting the posterior lower leg pad on the elevating leg support

The posterior lower leg pad on this leg support is adjustable in height, depth, width and angle.

- 1) **Height adjustment:** Loosen the Allen head screws on the clamp brackets (see fig. 85, item 1). Slide the posterior lower leg pad to the desired height and firmly retighten the Allen head screws.
- 2) **Depth adjustment:** Loosen and remove the Allen head screw on the posterior lower leg pad: (see fig. 86, item 1). Move the posterior lower leg pad to one of the 4 possible positions (see fig. 86, item 2) and firmly retighten the Allen head screw.
- 3) **Angle adjustment:** Loosen the Allen head screw on the posterior lower leg pad (see fig. 87, item 1). Set the desired angle and firmly retighten the Allen head screw.
- 4) **Width adjustment:** Loosen the Allen head screws on the posterior lower leg pad (see fig. 88, item 1). Slide the posterior lower leg pad to the desired position (see fig. 88, item 2) and firmly retighten the Allen head screws.



## 6.8 Adjusting the side panels

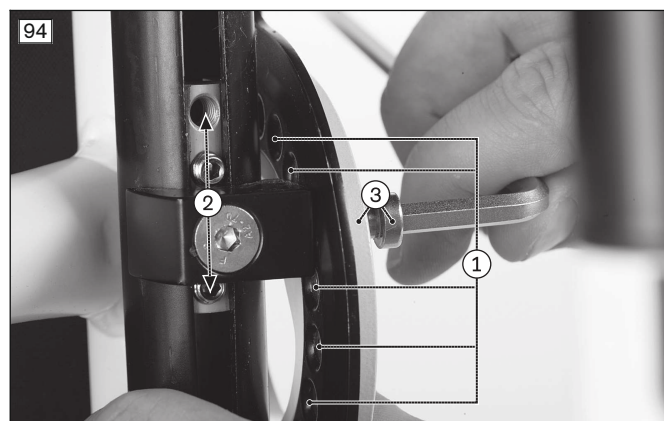
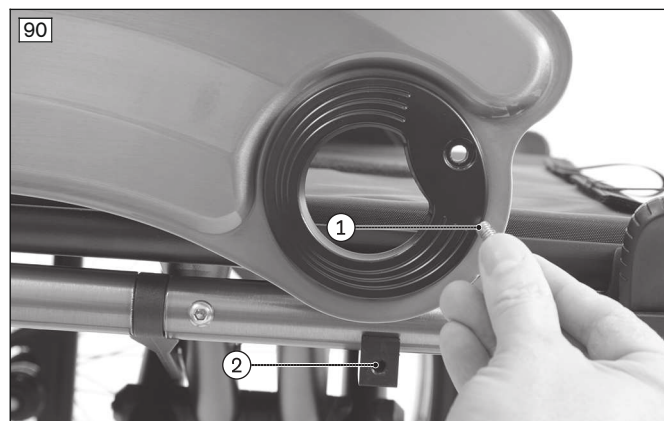
### 6.8.1 Adjusting the “standard” and “clothing guard” side panels

If the drive wheel position is changed, fine adjustment of the side panels is necessary. The clothing protector (see fig. 89) can be adjusted continuously to the position of the drive wheels.

- 1) Remove the drive wheel.
- 2) Loosen the mounting screw between the side panel and slide block (see fig. 90, items 1/2).
- 3) Loosen the bolt in the adjustment groove of the backrest tube from the inside (see fig. 91).
- 4) If necessary, slightly loosen the slide block on the bottom of the frame (see fig. 92).
- 5) Unscrew and remove the cover from the adjustment disc (see fig. 93).
- 6) Push on the drive wheel to determine the position.
- 7) Adjust the position:
  - Front: align the correct hole on the adjustment disc with the mounting point on the slide block (see fig. 94, item 1).
  - Drive: Adjust the angle (see fig. 91).
  - Slide block: If necessary, adjust the depth position (see fig. 94, item 2).



- 8) Screw on the cover of the adjustment disc (see fig. 93). The marks on the disc help to find the position. Ensure that the side panel can be fastened to the slide block through the cover (see fig. 94, item 3).
  - 9) Securely retighten all the screws.
  - 10) Push on the drive wheel and ensure that it can rotate freely.
- After adjustment of both side panels, both drive wheels must rotate freely without scraping noises.



### 6.8.2 Adjusting the forearm support height

Adjusting the armrest height is described in more detail in the included instructions for use (user).

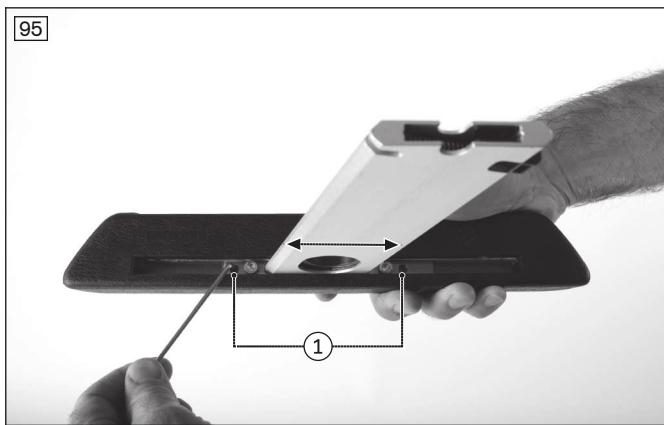
### 6.8.3 Adjusting the forearm support depth

#### Adjusting the forearm support depth with long forearm support, “depth-adjustable”

Adjusting the forearm support depth with the long forearm support, “depth-adjustable”, is described in more detail in the enclosed instructions for use (user).

#### Adjusting the forearm support depth with long forearm support

- 1) Loosen the hexagon socket screws under the forearm support and set the desired depth (see fig. 95, item 1).
- 2) Firmly re-tighten the hexagon socket screws.



#### 6.8.4 Installing and adjusting the swivel unit and forearm supports

The swivel unit is mounted on the side panel of the wheelchair with a tube clamp. The channel forearm pad (modular arm support) is mounted on the moveable part of the swivel unit.

Assembly is described in more detail in the instructions for use supplied with the swivel unit – reference number 647H564=ALL\_INT.

Adjusting the swivel unit with forearm support is described in more detail in the supplied instructions for use (user).

### 6.9 Adjusting the anti-tipper

#### ⚠ WARNING

##### Incorrect installation of the anti-tipper/missing anti-tipper

Tipping over, falling of the user due to failure to observe the installation instructions and because of incorrect adjustment

- ▶ Depending upon the settings of the chassis, the centre of gravity, the back angle and the experience of the user, the use of an anti-tipper may be necessary.
- ▶ For a small wheelbase and a backrest that is tilted far back, an anti-tipper may need to be installed on both sides, depending upon the user's experience.
- ▶ Verify that the anti-tipper has been installed and adjusted properly. Find the appropriate position with the assistance of a helper.

#### ⚠ WARNING

##### Anti-tipper not intended

Tipping over of the user due to missing safety devices

- ▶ For the CLT and CLT Ultra versions with permanently welded drive wheel adapter, installation of an anti-tipper is not intended.
- ▶ Therefore examine the user intensively for suitability (adequate physiological capabilities) before fitting the user with this version. These wheelchair versions are intended only for experienced users with sporting ambitions who, thanks to their physiological capabilities, are able to handle the wheelchair proficiently.

#### INFORMATION

In order to adjust the anti-tipper correctly, it may be necessary to combine the steps to adjust the length and angle.

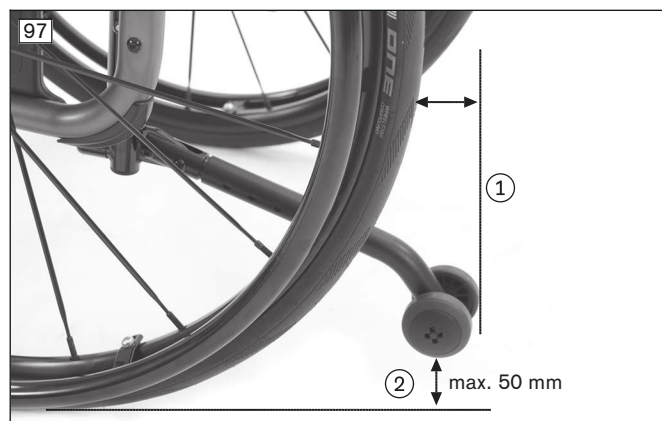
#### Adjusting the length of the wheel retainer

- 1) Remove the Allen head screw on the wheel retainer (see fig. 96, item 1).
- 2) Adjust the length of the wheel retainer (see fig. 96, item 2).
- 3) Tighten the wheel retainer. The outer edge of the anti-tipper roller has to project beyond the largest diameter of the tyre (see fig. 97, item 1).

#### Adjusting the wheel retainer angle

- 1) Remove the Allen head screw between the anti-tipper tube and the angle adjuster (see fig. 96, item 3).
- 2) Loosen the second Allen head screw on the angle adjuster (see fig. 96, item 4).
- 3) Set the angle of the wheel retainer.

- 4) Tighten the wheel retainer. The maximum permissible distance between the anti-tipper rollers and floor is **50 mm** (see fig. 97, item 2).



## 6.10 Adjusting the lap belt

### ⚠ CAUTION

#### Incorrect approach to the adjustment process

Injuries, malpositions, user discomfort due to adjustment errors

- ▶ The qualified personnel is responsible for the individual positioning and fitting of the belt system.
- ▶ Adjusting the belt system too tightly may lead to unnecessary pain or user discomfort.
- ▶ Adjusting the belt system too loosely can cause the user to slide into a dangerous position. In addition, the fastening snaps could open unintentionally if they slide against hard parts of clothing (e.g. buttons).

### ⚠ CAUTION

#### Lack of instruction

Injuries, malpositions, illness of the user due to incorrect information

- ▶ The qualified personnel is responsible for making sure that the user and/or attendant/nursing staff has understood the proper adjustment, use, maintenance and care of the belt system.
- ▶ In particular, ensure that the user and/or attendant/care staff knows how to quickly loosen and open the product to avoid delays in case of emergency.

Information on the settings can be found in the manufacturer's instructions for use accompanying each product.

## 6.11 Adjusting the tray

The tray slides onto the arm supports.

If the tray holder was not adapted to the arm support height, this can be done with the help of the enclosed instructions for use or assembly instructions.

## 7 Delivery

### 7.1 Final inspection

A final check must be carried out before the wheelchair can be handed over:

- Are all options installed according to the order form?
- Are the drive wheels correctly positioned?
- Do the quick-release axles rotate freely and lock securely?
- Were the tyres correctly inflated?

**INFORMATION: The correct tyre pressure is printed on the tyre sidewall. For drive wheels with high-pressure tyres, the minimum air pressure is 7 bar.**

- Only after adjustment: Have the brakes (wheel locks) been adjusted correctly?
- Only after adjustments: Has the respective caster journal angle been adjusted vertically?
- Only after adjustments: Has the anti-tipper been adjusted correctly?

## 7.2 Transport to the customer

### NOTICE

#### Use of unsuitable packaging

Damage to the product caused by transportation using incorrect packaging

- ▶ Use only the original packaging for delivery of the product.

The wheelchair should be transported to the user in disassembled state using the outer packaging.

## 7.3 Handing over the product

### ⚠ WARNING

#### Lack of instruction

Tipping over, falling of the user due to lack of knowledge

- ▶ Instruct the user or the attendant in the proper use of the product when handing it over.

The following steps must be performed for the safe delivery of the product:

- Conduct a sitting test with the user of the product. Pay special attention to proper positioning according to medical considerations.
- The user and any attendants must be instructed in the safe use of the product. In particular, the enclosed instructions for use (user) are to be used.
- The instructions for use (user) must be issued to the user/attendant during handover of the wheelchair.
- **Depending on equipment:** The supplied instructions for use for accessories have to be handed over in addition.

## 8 Maintenance and repair

The manufacturer recommends regular maintenance of the product every **12 months**.

Further information on caring for the product and on maintenance/repair can be found in the instructions for use (user).

Detailed information on repairs can be found in the service manual.

## 9 Disposal

### 9.1 Disposal information

All components of the product must be disposed of properly in accordance with the respective national environmental regulations.

### 9.2 Information on re-use

### ⚠ CAUTION

#### Used seat padding

Functional and/or hygienic risks due to re-use

- ▶ Replace the seat padding if the wheelchair is to be re-used.

The product is suitable for re-use.

Similar to second-hand machines or vehicles, products that are being re-used are subject to increased strain. Features and performance must not change in a way that could impair the safety of users or third parties during the period of use.

The relevant product must be thoroughly cleaned and disinfected before re-use. Then have the product inspected by qualified personnel with respect to its condition, wear and tear, and damage. Worn and damaged parts as well as components that do not fit or are unsuitable for the user must be replaced.

Detailed information on replacing components as well as information on the required tools can be found in the service manual.

## 10 Legal information

All legal conditions are subject to the respective national laws of the country of use and may vary accordingly.

## 10.1 Liability

The manufacturer will only assume liability if the product is used in accordance with the descriptions and instructions provided in this document. The manufacturer will not assume liability for damage caused by disregarding the information in this document, particularly due to improper use or unauthorised modification of the product.

## 10.2 Warranty

Further information on the warranty terms and conditions is available from the manufacturer's service department.

## 10.3 Lifetime

Expected lifetime: **4 years**

The design, manufacturing and requirements for the intended use of the product are based on the expected lifetime. These also include the requirements for maintenance, ensuring effectiveness and the safety of the product.

## 11 Technical data

### INFORMATION

- ▶ Much of the technical data below is given in mm. Please note that product settings – unless otherwise specified – cannot be adjusted in the mm range but only in increments of approx. **0.5 cm** or **1 cm**.
- ▶ Note that the values achieved during adjustment may deviate from the values specified below. The deviation can be **±10 mm** and **±2°**.

### Avantgarde DS/DV and Avantgarde DF version S and version V – general information

	DS	DV	DF version S	DF version V
Max. load [kg]	140 <sup>1)</sup>	140 <sup>1)</sup>	140	140
Weight [kg]	from 8.7 <sup>2)</sup>	from 9.7 <sup>2)</sup>	from 8.7 <sup>2)</sup>	from 9.7 <sup>2)</sup>
Transport weights [kg]	Frame: from 6.1 <sup>2)</sup> Drive wheel 24": from 1.3 (including quick-release axle) <sup>2)</sup>	Frame: from 5.6 <sup>2)</sup> Leg support: from 0.75 <sup>2)</sup> Drive wheel 24": from 1.3 (including quick-release axle) <sup>2)</sup>	Frame: from 6.1 <sup>2)</sup> Drive wheel 24": from 1.25 <sup>2)</sup>	Frame: from 5.6 <sup>2)</sup> Leg support: from 0.9 <sup>2)</sup> Drive wheel 24": from 1.25 <sup>2)</sup>
Seat width [mm]	320 – 520	320 – 520	320 – 520	320 – 520
Front seat height [mm]	380 – 540	380 – 540	390 – 550	390 – 550
Rear seat height [mm]	360 – 510	360 – 510	360 – 510	360 – 510
Seat depth [mm]	360 – 540	360 – 540	360 – 520	360 – 520
Overall length [mm]	720 – 1040 <sup>3)</sup>	720 – 1040 <sup>3)</sup>	720 – 1040 <sup>3)</sup>	785 – 1080 <sup>3)</sup>
Overall width [mm]	490 – 725	490 – 725	490 – 725	490 – 725
Overall height [mm]	580 – 1100	580 – 1100	580 – 1100	580 – 1100
Folding size from [mm]	260	260	260	260
Back support angle [°]	-9 – +15	-9 – +15	-9 – +15	-9 – +15
Back support height [mm]	250 – 550	250 – 550	250 – 550	250 – 550
Lower leg length [mm]	160 – 550 <sup>4)5)</sup>	160 – 550 <sup>4)5)</sup>	160 – 550 <sup>4)5)</sup>	160 – 550 <sup>4)5)</sup>
Angle between leg support and seat bottom [°]	0 – 15	0 – 15	0 – 15	0 – 15
Distance from arm support to seat [mm]	245 – 340	245 – 340	245 – 340	245 – 340
Positioning of the arm support [mm]	175 – 250	175 – 250	175 – 250	175 – 250
Horizontal axle position [mm]	32.5 – 150.5	32.5 – 150.5	32.5 – 150.5	32.5 – 150.5
Anterior frame angle [°]	70/80	75	70/80	75
Drive wheels	22", 24", 25"	22", 24", 25"	22", 24", 25"	22", 24", 25"
Caster wheels	3", 4", 5", 5.5", 6"	3", 4", 5", 5.5", 6"	4", 5", 5.5", 6", 7"	4", 5", 5.5", 6", 7"

	<b>DS</b>	<b>DV</b>	<b>DF version S</b>	<b>DF version V</b>
Permissible tyre type	Pneumatic, PU or solid rubber / 1", 1.1", 1 3/8"	Pneumatic, PU or solid rubber / 1", 1.1", 1 3/8"	Pneumatic, PU or solid rubber / 1", 1.1", 1 3/8"	Pneumatic, PU or solid rubber / 1", 1.1", 1 3/8"
Min. tyre pressure [bar]	7 <sup>6)</sup>	7 <sup>6)</sup>	7 <sup>6)</sup>	7 <sup>6)</sup>
Minimum turning radius [mm] <sup>7)</sup>	560 – 740	560 – 740	560 – 740	560 – 740
Handrim diameter [mm]	470 – 560	470 – 560	470 – 560	470 – 560
Maximum permissible inclination [°]/[%] <sup>8)9)10)</sup>	7 / 12.3	7 / 12.3	7 / 12.3	7 / 12.3

<sup>1)</sup> With CLT, CLT Ultra option, fixed welded drive wheel adapter version, CLT crossbrace: 100 kg

<sup>2)</sup> The specified weights vary according to the selected options and variant.

<sup>3)</sup> +95 mm with wheelbase extension

<sup>4)</sup> Measurement from top of seat upholstery to top of foot plate.

<sup>5)</sup> lower leg length minus thickness of seat cushion used.

<sup>6)</sup> Varies according to tyre option; see the marking on the tyre wall.

<sup>7)</sup> In accordance with ISO 7176-5.

<sup>8)</sup> Also applies for parking with wheel lock engaged.

<sup>9)</sup> Applies to all directions (upwards, downwards, sideways).

<sup>10)</sup> In accordance with ISO 7176-1.

#### Increase of the overall width because of the wheel camber setting of the drive wheels (all models) [mm]

Wheel camber	22" drive wheel	24" drive wheel	25" drive wheel
0°	0	0	0
2°	< 40	40	> 40
3°	< 60	60	> 60
4°	< 80	80	> 80

#### Avantgarde DS/DV – front seat height<sup>1), 2)</sup> [mm]

Caster fork	Caster fork bore (see fig. 98)	Seat height adapter 481F160=SE007	Resulting seat height [mm] for caster wheel size				
			3"	4"	5"	5.5"	6"
<b>Short fork (only 2 bores)</b>	1	X	420 / 430	440	–	–	–
		–	390	410	–	–	–
	2	X	410	–	–	–	–
		–	380	–	–	–	–
<b>Standard fork (see fig. 98)</b>	1	X	–	–	490	490	500
		–	–	–	450	460	470
	2	X	–	460	470	480	490
		–	–	430	440	450	460
	3	X	440	450	460	470	470
		–	400	420	430	440	450
<b>Long fork</b>	1	X	–	–	520	530	540
		–	–	–	490	500	500
	2	X	–	500	510	520	530
		–	–	470	480	490	490
	3	X	460 / 470	480 / 490	500	510	520
		–	450	460	470	470	480

<sup>1)</sup> The front seat height depends on the selected caster wheel size, caster fork and mounting position.

<sup>2)</sup> Specified at 0° seat inclination, without seat cushion.

**Avantgarde DF version S and version V – front seat height<sup>1), 2), 3)</sup> [mm]****Caster fork with threaded axle/quick-release axle**

Caster wheel size	Adjustment range – caster fork, short		
	With adapter for low anterior seat heights	Without seat height adapter	With adapter for high front seat heights
4"	390 – 410	420 – 440	450
5"	400 – 420	430 – 460	–
5.5"	–	440 – 460	–
6"	–	460; 470	–
7"	–	480	–

Caster wheel size	Adjustment range – long caster fork (see fig. 99)		
	With adapter for low anterior seat heights	Without seat height adapter	With adapter for high front seat heights
4"	450	460 – 480	500 – 520
5"	–	460 – 490	500 – 530
5.5"	430	470 – 500	510 – 540
6"	440; 450	470 – 500	510 – 540
7"	450 – 470	490 – 520	530 – 550

<sup>1)</sup> The front seat height depends on the selected wheel size, caster fork and mounting position.

<sup>2)</sup> Specified at 0° seat inclination, without seat cushion.

<sup>3)</sup> The values indicated are rounded values which have been theoretically determined. Max. deviation 10 mm.

**Avantgarde DS/DV and Avantgarde DF version S and version V – rear seat height<sup>1), 2), 3)</sup> [mm]**

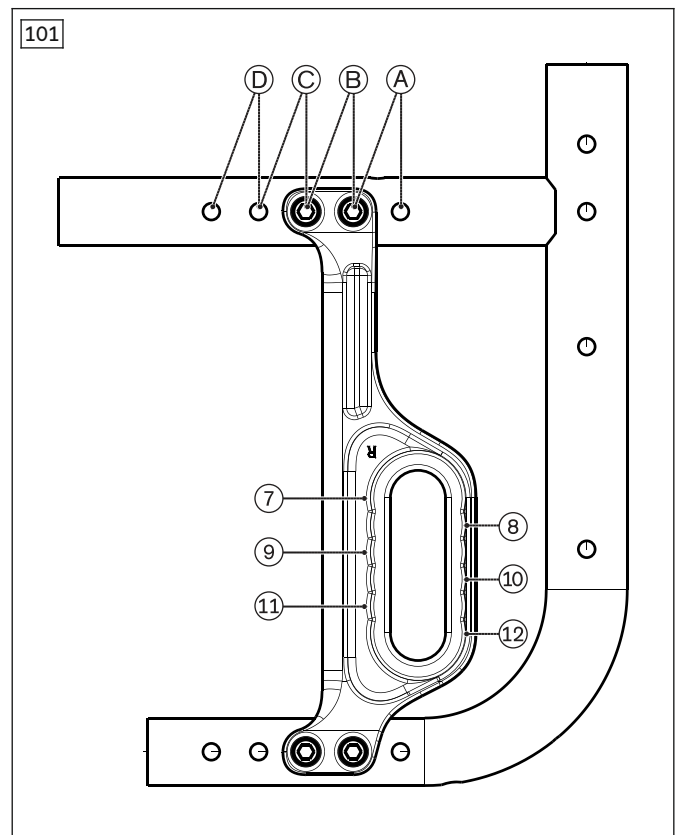
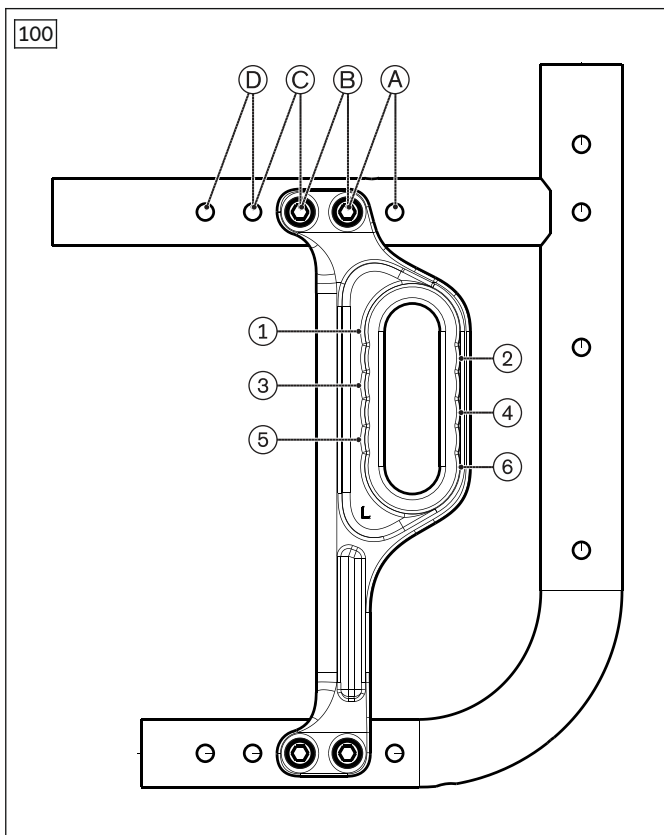
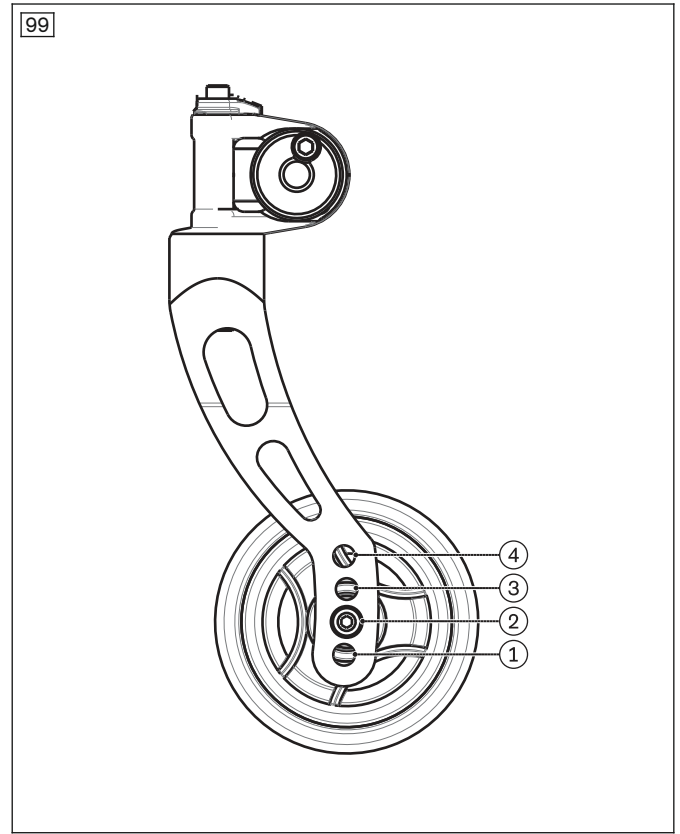
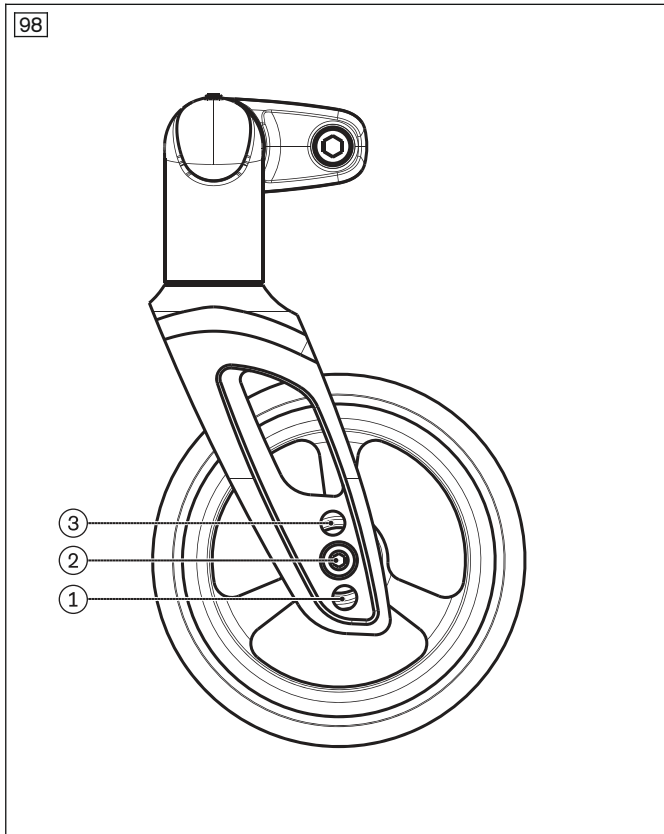
Drive wheel size	Setting range
22"	360 – 470
24"	380 – 490
25"	400 – 510

<sup>1)</sup> The rear seat height depends on the selected wheel size and mounting position in the drive wheel attachment device.

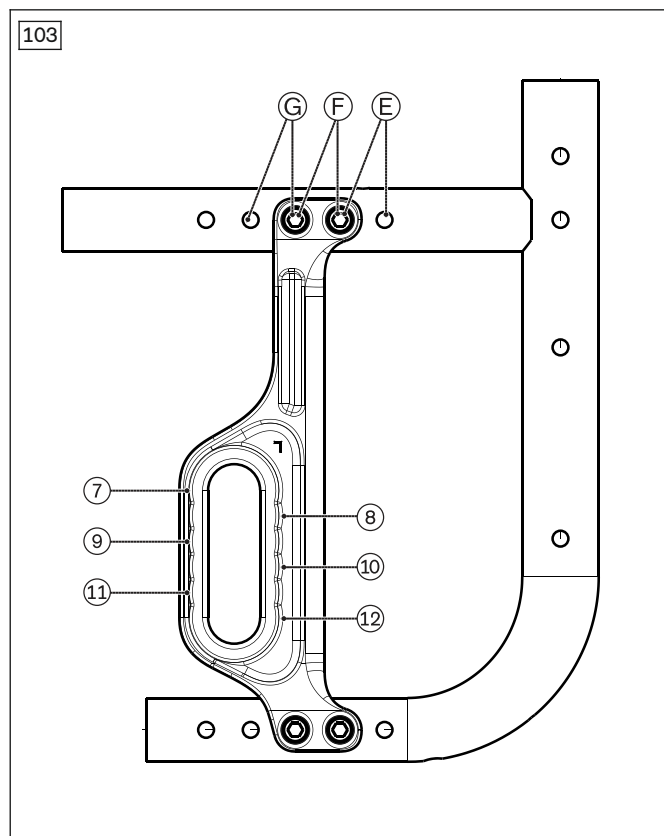
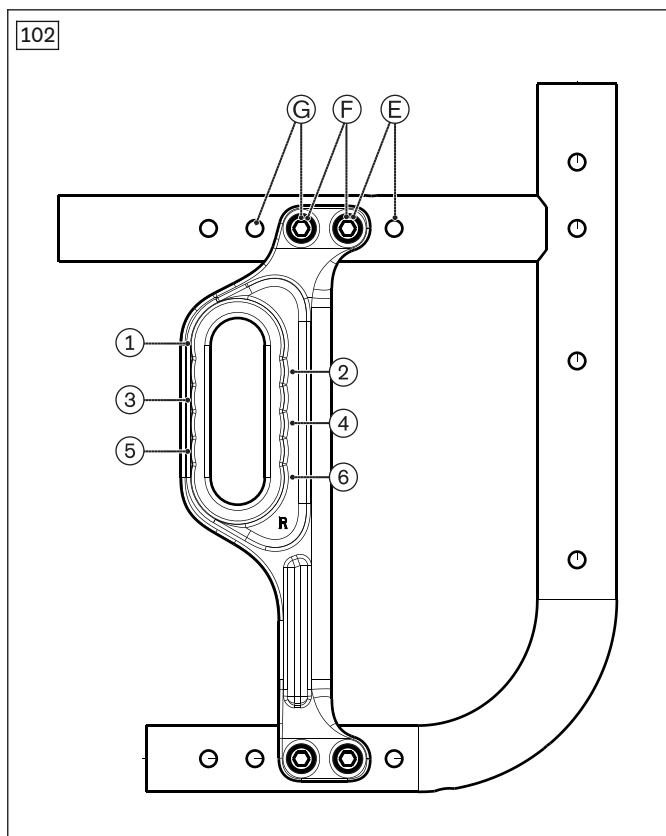
<sup>2)</sup> From position E, the drive wheel adapter must be turned around (see fig. 101): right side to the left side and left side to the right side.

<sup>3)</sup> CLT, CLT Ultra option: See the order form for the exact values for "rear seat height".

**Avantgarde DS/DV (see fig. 98) and Avantgarde DF version S and version V (see fig. 99) – drawings for seat height and wheelbase adjustment possibilities**







**Ambient conditions**

Temperatures and relative humidity	
Temperature during use [°C (°F)]	-10 to +40 (14 to 104)
Transport and storage temperature [°C (°F)]	-10 to +40 (14 to 104)
Relative humidity [%]	45 to 85; non-condensing

**12 Appendices**

**12.1 Required tools**

The following tools are required for adjustments and maintenance work:

- Allen keys in sizes 3, 4, 5
- Allen key (DIN 6911) of sizes 4, 5 and 6
- Ring and open-end wrenches in sizes 10, 11, 19, 24 and 27
- Socket wrenches in sizes 10, 19 and 27
- Phillips head screwdriver (size: 2)
- Screwdriver (blade width: 2.5 mm)
- Torque wrench (measurement range 3–50 Nm)

**12.2 Torque values of the screw connections**

Unless otherwise specified, screw connections are tightened with the following torque values:

- Thread diameter M4: 3 Nm
- Thread diameter M5: 5 Nm
- Thread diameter M6: 8 Nm
- Thread diameter M8: 20 Nm





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