

SERVICE MANUAL



Multifunctional chair **PURA**

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MANUFACTURER:

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Multifunctional chair PURA

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Related links: www.linnet.com

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1 Service and Repairs

1.1 Caution



All service inspections, safety and technical inspections or service action may be carried out exclusively by the technician trained by LINET s.r.o.

Diagrams, product part lists, descriptions or other information intended to assist service staff in repairs of product parts repairable by service staff as identified by the manufacturer are available from manufacturer upon request.



1.2 Warranty

The product is provided with a 2-year warranty period provided that annual service inspections are carried out regularly. The warranty covers all faults and defects in materials or manufacture. Faults and defects caused by incorrect use and external effects are not covered by the warranty. For all medical devices produced by BORCAD Medical a.s., the operator should ensure regular technical and safety inspections as recommended by manufacturer, i.e. inspections should be carried out once a year or after any repair of a medical device, or after any tampering with medical device electrical system.

The following is not covered by an extended warranty:

1 – Batteries (provided with the 6-month warranty period); batteries should be replaced every 2 years as recommended by the manufacturer.

Practical test results showed that technical lifespan of the product is 15 years; lifespan of the battery is limited so it needs to be replaced every 12 years.

For repairs, use only original spare parts made by BORCAD MEDICAL A.S. and service of trained service technicians authorized to repair products of this type. Unprofessional repairs shall be deemed a material breach of warranty conditions, and at the same time, the manufacturer disclaims any responsibility for any further damage of the product caused by unprofessional tampering.

1.3 Standards

The product complies with requirements of valid standards EN 60601-1 ed. 2 and IEC 60601-1-2 ed. 3. According to the current version of Directive on Medical Instrumentation 93/42/EEC, the chair is classified as “class I medical device” without the measurement feature.

The chair complies with the following standards and directives:

IEC 60601-1
CAN/CSA C22.2 NO. 60601-1
ANSI/AAMI ES60601-1
IEC 60601-1-2
IEC 60601-1-6
IEC 60601-2-52
ISO 14971

The manufacturer complies with the following standards:

ISO 9001
ISO 14001
ISO 13485
MDSAP (Medical Device Single Audit Program)

1.4 External parts of the product

External parts of the product are **type B** – providing medium level of patient protection.

- Upholstery/mattress
- armrests
- siderails

External parts of the product are **type BF** – providing higher level of patient protection.











- hand controller

2 Product identification

2.1 Nameplate

The nameplate is located on the right outer side of the seat framework



<p>Manufacturer address</p>  <p>BORCAD MEDICAL</p> <p>BORCAD Medical a.s. Fryčovice 673, 739 45 Czech Republic www.borcadmedical.com</p>	<p>Serial number</p> <p>PURA REF ODA-AB30 SN ODA0020 MODEL: 4BCODA-3XL0020</p> 	<p>Type designation</p> <p>Manufacture date (Year-Month-Day)</p> <p>2019-04-15</p> <p>  = 190 kg (418 lb)  = 205 kg (451 lb)  = 125 kg (275 lb) </p>
<p>1D bar code EAN128 (serial number)</p>	<p>Specification electro</p> <p>V_{in}: 230 V~, 50/60 Hz P_{in}: max. 370 VA INT.: max. 2 min ON/18 min OFF IPX4</p>	<p>Symbols</p>     

Meaning of type designation:

ODA-XYZ0

- X – chair version
- Y – colour of artificial leather
- Z – type of artificial leather
- 0 – special requirement

2.2 List of basic versions

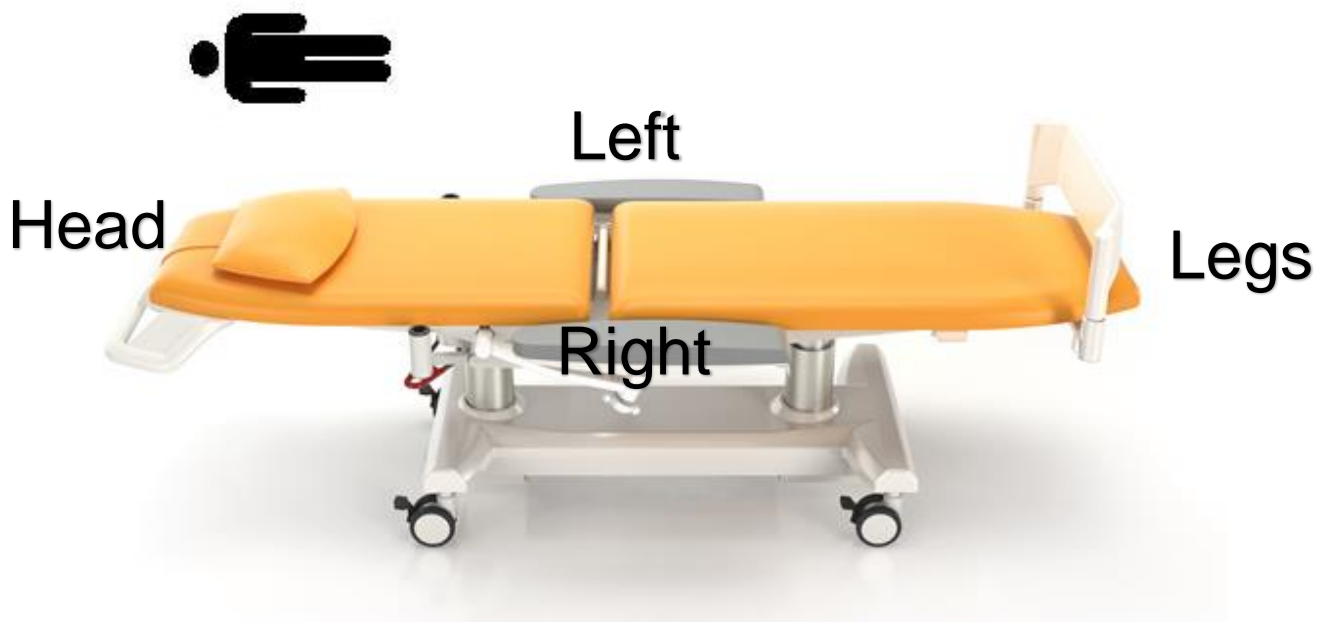
ODA-AX	Basic type
--------	------------

2.3 List of colour versions




Substituted by letter "X".















A – Violet	M – Yellow
B – Blue	P – Orange
F – Green	







2.4 Identification of chair sides



2.5 Symbols

Pictogram	Meaning
	Hazard
	DANGER! Dangerous voltage
	This symbol refers to all information which may help you to prevent complications in operation

Pictogram	Meaning
	Applied parts of type B
	Applied parts of type BF
SN	Serial number
int x/y	Symbol for discontinuous operation – it means that if the product is continuously used for the period of “x”, it may not be used then for the period of “y”. For example, int 10 / 20 means that after 10 minutes of use / continuous positioning the product may not be used / positioned for the period of 20 minutes.
IP X #	Structural protection against water penetration, dangerous contact and resistance against foreign objects.
	Safe working load
	Safe patient's weight
	Total product weight
	Manufacturer
	Manufacture date
	Follow the operation manual
	Equipotentiality
	Symbol of packaging material: “Store in a dry place”
	Symbol of packaging material: “Caution! Fragile”
	Symbol of packaging material: “Hold in vertical position”
	Temperature limit
	Symbol for transport Symbol for “relative air humidity”.

Pictogram	Meaning
	<p>Symbol for transport Symbol for "air pressure".</p>
	<p>Symbol in accordance with Directive 2002/96/CE (Waste Electrical and Electronic Equipment Directive). Symbol for "Do not dispose of this product in the local collection points for waste electrical and electronic equipment".</p>
	<p>Recycling sign</p>
	<p>GO BUTTON</p>
	<p>STOP BUTTON</p>
	<p>Warning: Do not place objects in this area</p>
	<p>Warning: The maximum load of the foot section</p>
	<p>Warning: The maximum load of the backrest</p>
	<p>Warning: Do not place any objects on this cover Hand injury hazard</p>
	<p>Warning: Hand injury hazard</p>
	<p>Warning: Do not push / pull infusion stand</p>
	<p>Cardiopulmonary resuscitation (Czech equivalent CPR)</p>
	<p>Warning: Always use plastic hook to anchor the power cord at the selected place of chair! Follow the Instructions for Use!</p>

3 Parameters

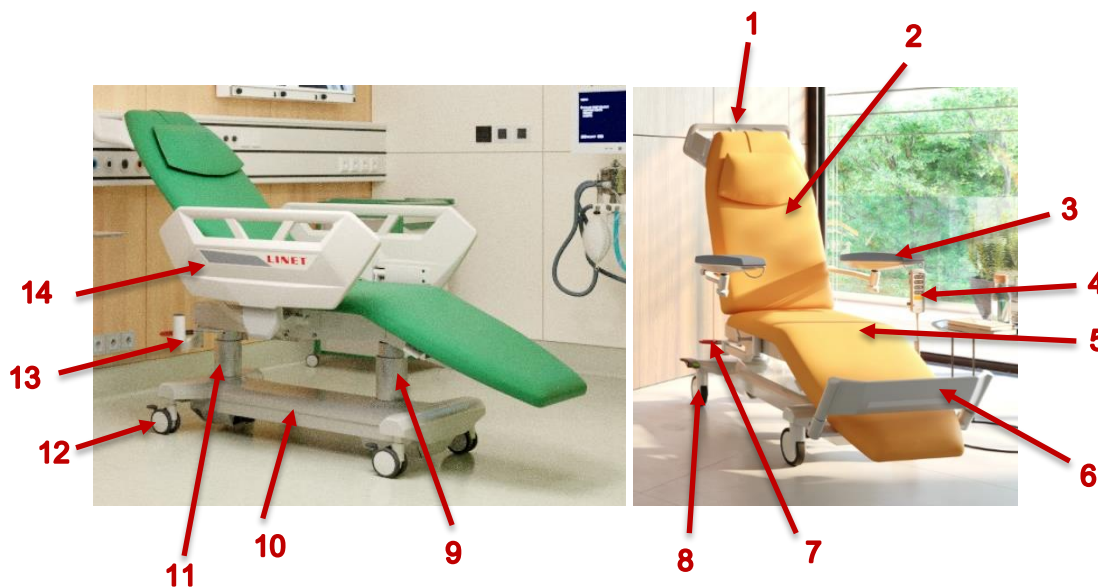
3.1 Technical parameters

Support area	
Total length of the support area	2123 ± 3 mm
Length of the backrest	965 ± 2 mm
Length of the sitting section	528 ± 2 mm
Length of the foot section	630 ± 2 mm
Width of the backrest	590 – 385 ± 10mm
Width of the sitting section	590 ± 10mm
Width of the foot section	590 - 388 ± 10mm
Thickness of the backrest mattress	90 – 58 ± 5mm
Thickness of the sitting section mattress	100 ± 5mm
Thickness of the foot section mattress	100 – 75 ± 5mm
Dimensions	
Minimum height – castors 100 mm	554 ± 3mm
Maximum height – castors 100 mm	934 ± 3mm
Minimum height – castors 150 mm	590 ± 3mm
Maximum height – castors 150 mm	970 ± 3mm
Vertical lift	380 ± 3mm
Maximum height of the chair – seating position (lower) – castors 100 mm	1417 ± 5mm
Maximum height of the chair – sitting position (lower) – castors 150 mm	1454 ± 5mm
Maximum length of the chair – lying position – rear section with the handle + empty foot section	2203 ± 5 mm
Maximum length of the chair – lying position – rear section with the handle + foot section with the handle / foot support	2278 ± 5 mm
Maximum length of the chair – seating position	1715 ± mm
Width of the chair – side supports in upper position	740 ± 5 mm
Width of the chair – side supports in lower position	778 ± 5 mm
Width of the chair – hand rests in basic position	892 ± 5 mm
Castors	
Castor diameter / brake	150 mm / central, total
Castor diameter / brake	100 mm / without central, total
Adjustment angles	
Rear section adjustment angle	0° ± 1° / +70° ± 2°
Seat section adjustment angle	0° ± 1° / -12° ± 1°
Foot section adjustment angle	0° ± 1° / +33° ± 2°
Trendelenburg position	-12° ± 1°
CPR position	0° ± 1°
Hand rest adjustment angle – vertical	+42° ± 3° / -8.5 ± 3°
Hand rest adjustment angle – horizontal	360°
Turning up – measured in seating position	Turning by 122°
Permissible load	
SWL (safe working load)	205kg
Patient load	190 kg
Product weight (with barriers)	113 kg
Product weight (with armrests)	104.5 kg
Permissible load of the rear section (125 mm from the edge)	30 kg
Permissible load of the foot section (125 mm from the edge)	45 kg
Permissible load of the side grate – vertical force	70 kg
Permissible load of the side grate – side and horizontal force	50 kg
Permissible load of hand rests – vertical force at the end of the rest	30 kg
Permissible load of the infusion stand holder – vertical	8 kg (2 kg per each hook)
Permissible load of the infusion stand holder – horizontal, 1 m above the holder	10 kg

3.2 Electrical parameters

Battery – backup	24V/1.2 Ah
Voltage – input power	100/110/120/127/240 V*
Frequency	50/60 Hz
Motor voltage	24 V
Protection against water penetration	IPX4
Device protection class	I
Classification of the used parts	B
Maximum power input	370 VA
Battery	Pb AKU 2 x 12 V / 1.2 Ah / Fuse 15A
*Depending on the power supply unit used	

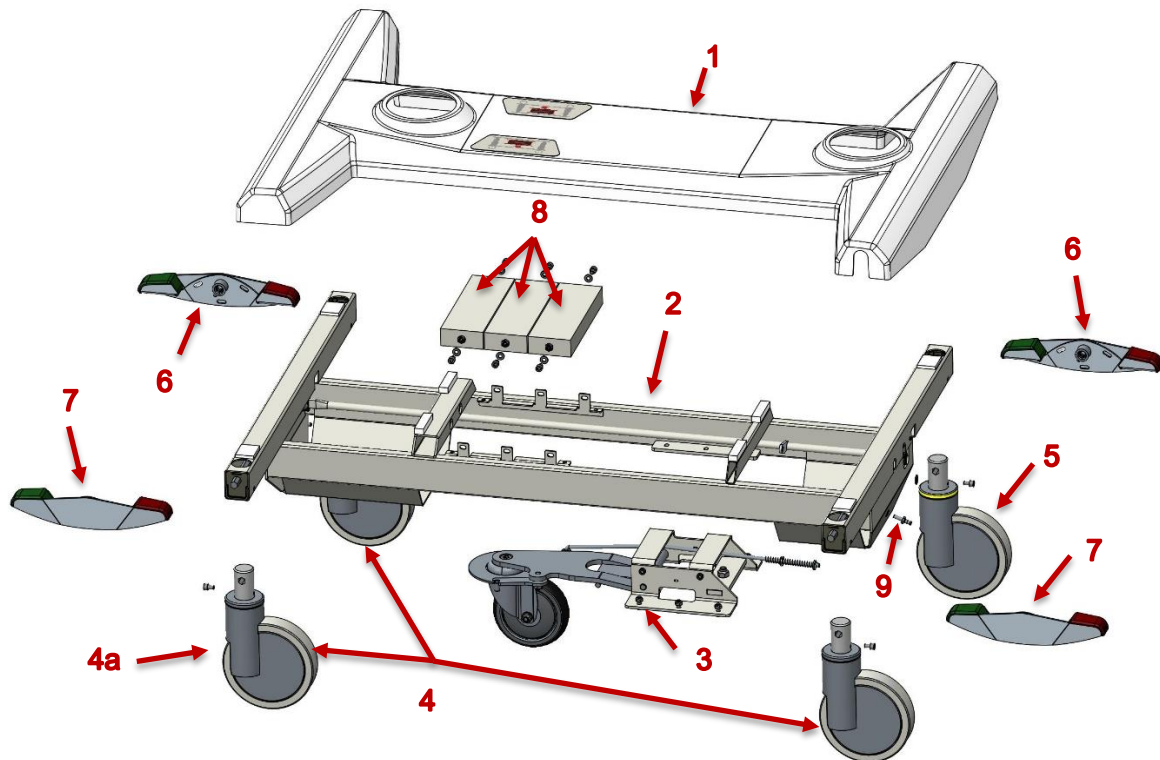
4 List of basic parts



- 1 - Rear handle
- 2 - Back section upholstery
- 3 - Armrests
- 4 - ACP controller
- 5 - Seat upholstery
- 6 - Footrest
- 7 - CPR draw bar
- 8 - 150mm castors with the central brake
- 9 - Foot lifting column
- 10 - Underframe
- 11 - Head lifting column
- 12 - Lockable castors 100 mm
- 13 - Infusion stand holder
- 14 - Siderail

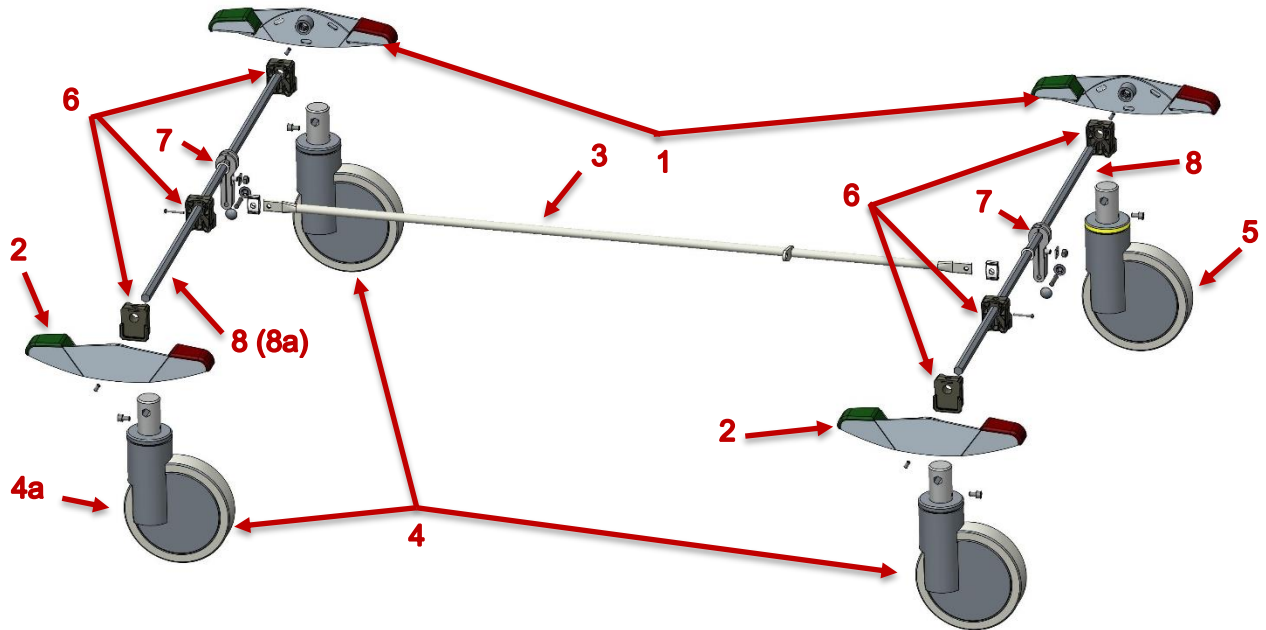
5 Components

5.1 Underframe



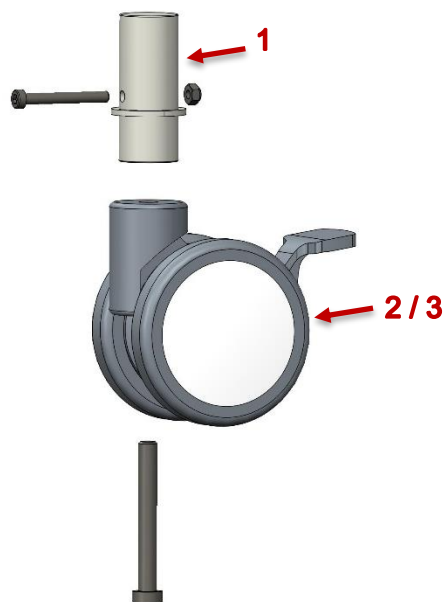
- 1 - Underframe cover
- 2 - Underframe base
- 3 - Fifth castor
- 4 - 150 mm braked castor
- 4a - 150 mm directional castor (version without the fifth castor)
- 5 - 150 mm antistatic castor
- 6 - Brake pedal – right
- 7 - Brake pedal – left
- 8 - Weights
- 9 - Equipotential clamp

5.1.1 Castors and controlling brake pedals



- 1 - Brake pedal – right
- 2 - Brake pedal –left
- 3 - Brake control rod
- 4 - 150 mm braked castor
- 4a - 150 mm directional castor (version without the fifth castor)
- 5 - 150 mm antistatic castor
- 6 - Insert
- 7 - Brake lever
- 8 - Hexagon 1
- 8a - Hexagon 2 (version with one pair of brake pedals)

Version with 100 mm lockable castors



- 1 - Axis adaptor
- 2 - 100 mm braked castor
- 3 - 100 mm antistatic castor (rear right)

5.1.1.1 Dismounting

1. Unscrew the lock screw of the brake lever and remove the lever (1) (Fig. 6.1.1.1.)
2. Loosen the nut of the brake control rod (2) (Fig. 6.1.1.1.2)
3. Push out the hexagon by about 15 cm (3), unscrew the screws locking the castor (4) (Fig. 6.1.1.1.3)
4. Support the chair appropriately and remove the castor

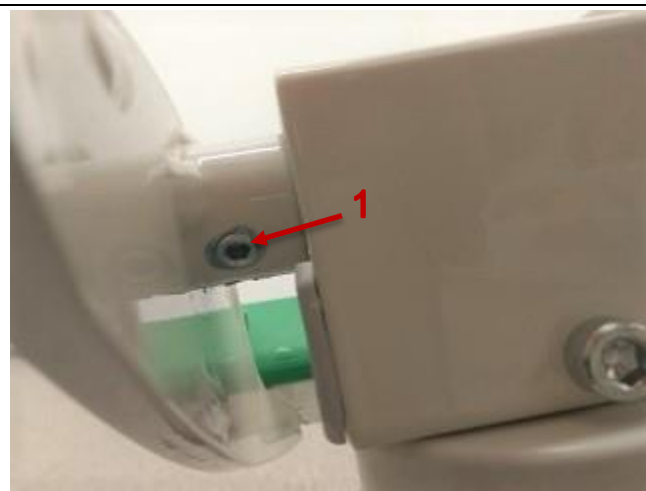


Figure 6.1.1.1.1



Figure 6.1.1.1.2

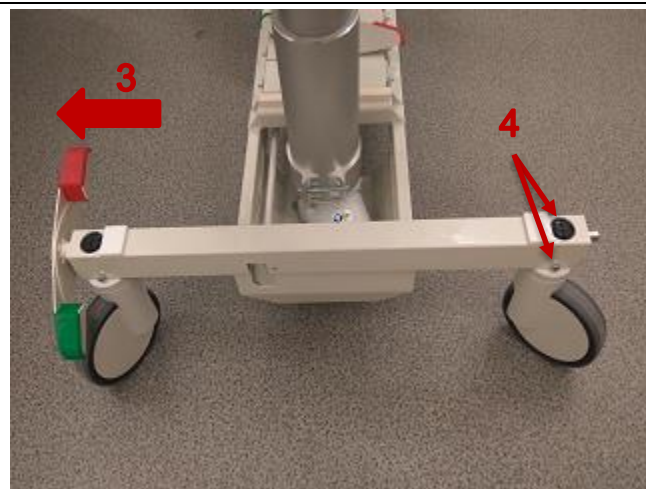
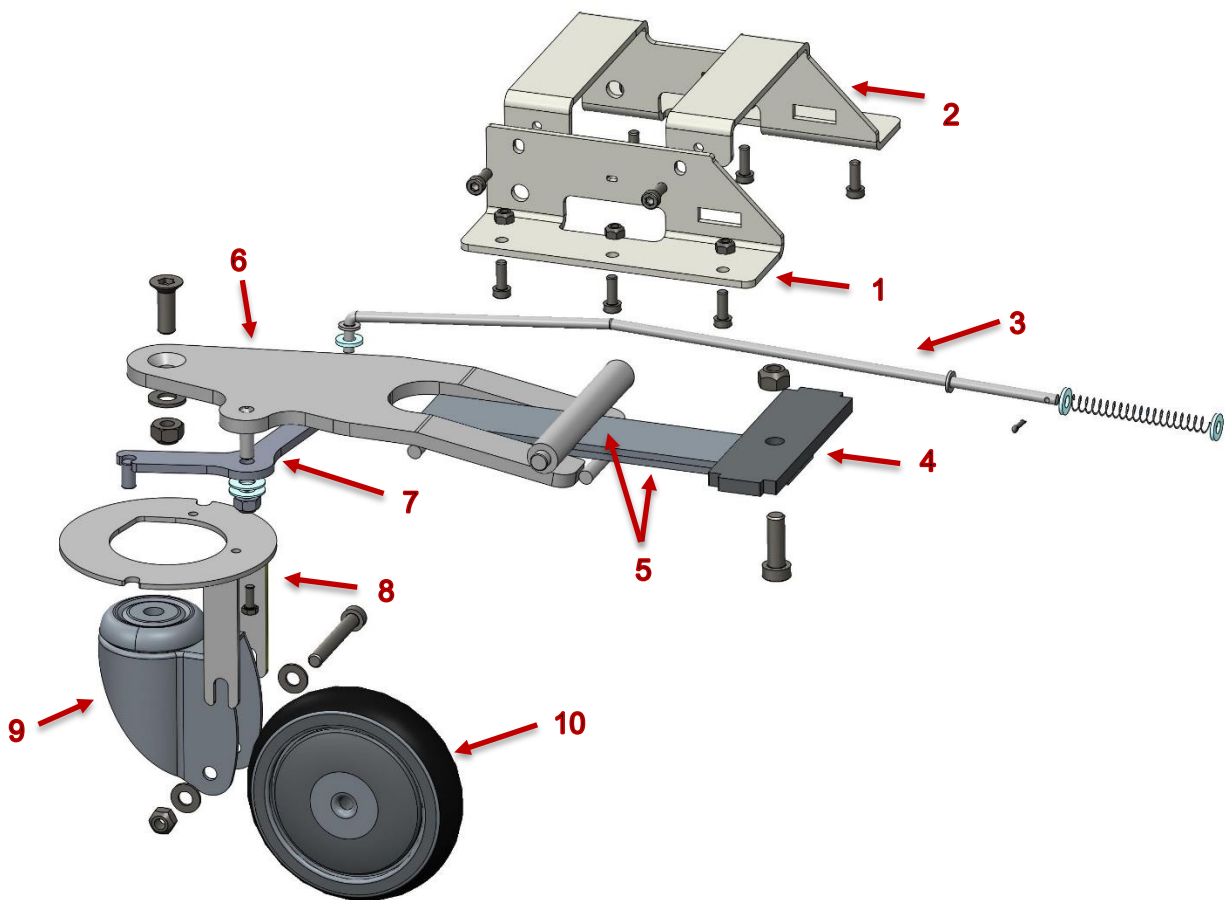


Figure 6.1.1.1.3

5.1.2 Fifth castor



- 1 - Girdler bracket 1 of 5th castor
- 2 - Girdler bracket 2 of 5th castor
- 3 - Control rod lock of the 5th castor
- 4 - Spring bracket
- 5 - Spring
- 6 - Arm
- 7 - Arresting lever
- 8 - Castor lock
- 9 - Castor holder
- 10 - 125 mm castor

5.1.2.1 Dismounting:

1. Unscrew locking screws (1) and remove the weight (Fig. 6.1.2.1.1)
2. Pull out the cotter pin (2) and remove plastic washers (3) and the spring (4) (Fig. 6.1.2.1.2)
3. Push out the draw bar of the 5th castor brake from the control rod
4. Unscrew the locking screw (5) and remove leaf springs (6) (Fig. 6.1.2.1.3)
5. Unscrew the attachment of the 5th castor mechanism (7) and remove the same (Fig. 6.1.2.1.3)

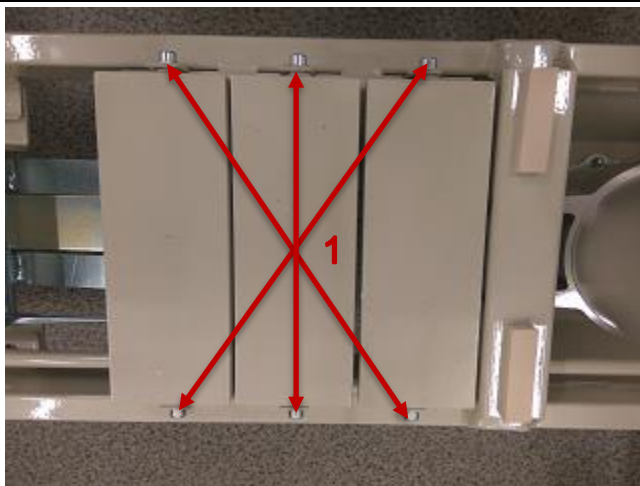


Figure 6.1.2.1.1

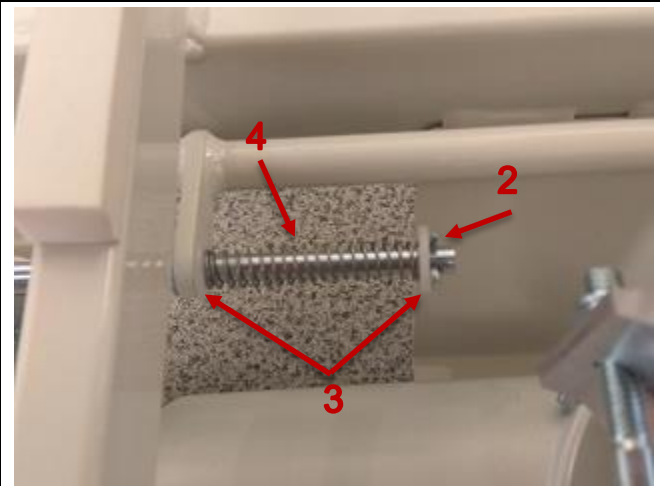


Figure 6.1.2.1.2

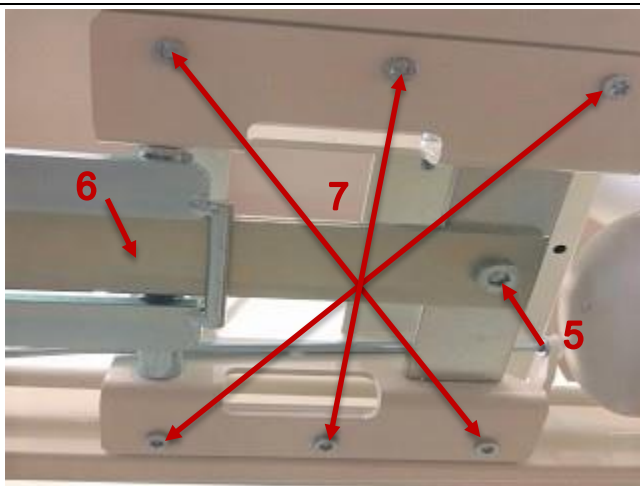
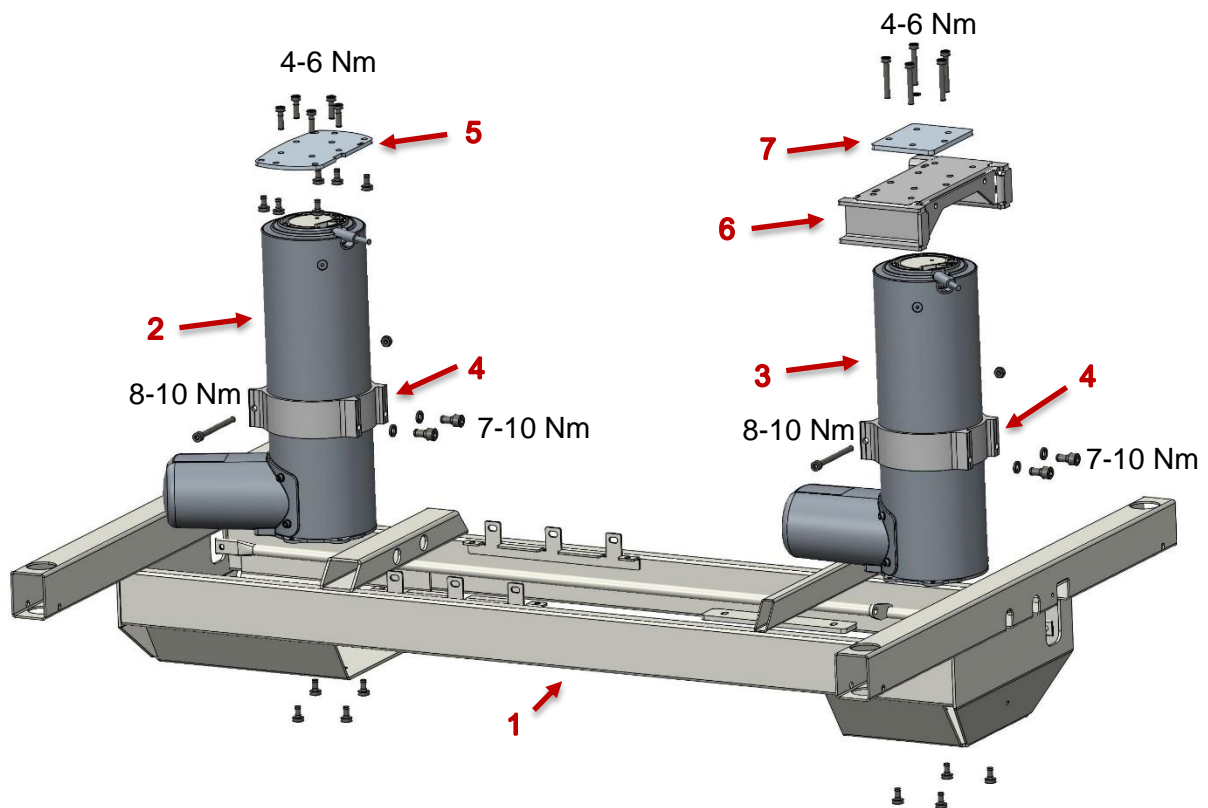


Figure 6.1.2.1.3

5.2 Lifting columns



- 1 - Underframe base
- 2 - Foot lifting column
- 3 - Head lifting column
- 4 - Collar
- 5 - Lower plate
- 6 - Head column yoke
- 7 - Column screw washer

5.2.1 Head column

5.2.1.1 Technical parameters

Coverage:	IP54
Input voltage:	24V
Maximum current:	5.5A
Load factor:	10%, Max. 2min on/ Min. 18min off
Maximum pressure load:	2000N
Maximum tensile load:	500N

5.2.1.2 Dismounting

1. Remove the plastic cover (1) (Fig. 6.2.1.2.1) and the control unit cover (Chapter 6.7.5, par. 1 and 2)
2. **Support and secure the chair against fall appropriately**
3. Unscrew the lifting motor yoke (2) and remove it (Fig. 6.2.1.2.2)

4. If the column may be positioned, disconnect the foot lifting column (connector No. 4) and position the head lifting column in the lowest position, then disconnect connector No. 5 from the control unit
5. Loosen the column collar (3) (Fig. 6.2.1.2.3)
6. Unscrew the screws in lower part of the column attaching the column to the under-frame (4) (Fig. 6.2.1.2.4)
7. Unscrew collar screws (5) and remove the column (Fig. 6.2.1.2.5)
8. If the lifting column is replaced, it needs to be calibrated (Chapter 6.7.6.2)

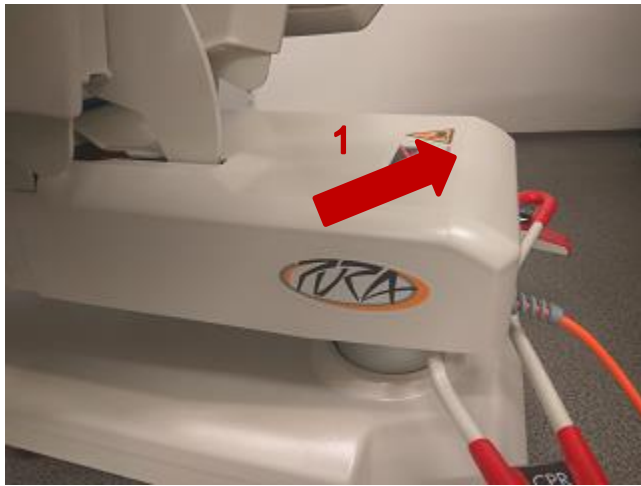


Figure 6.2.1.2.1

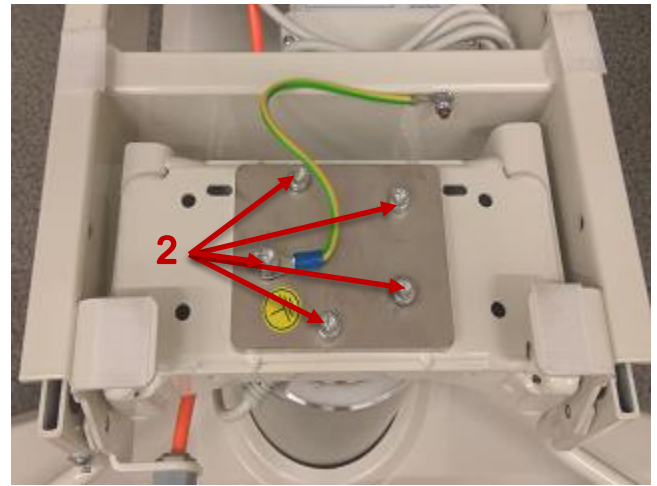


Figure 6.2.1.2.2

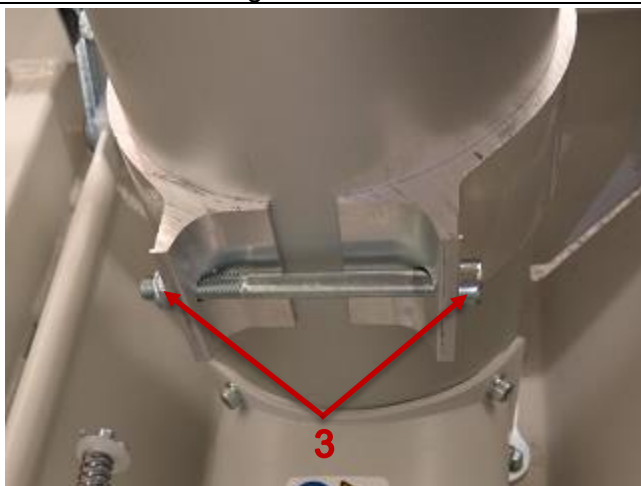


Figure 6.2.1.2.3

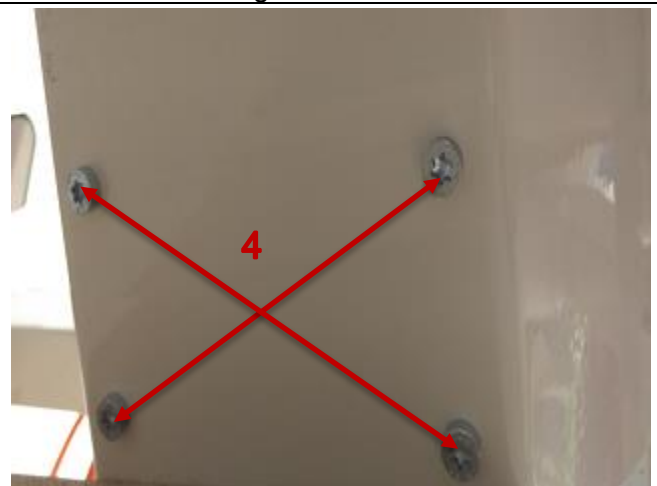


Figure 6.2.1.2.4

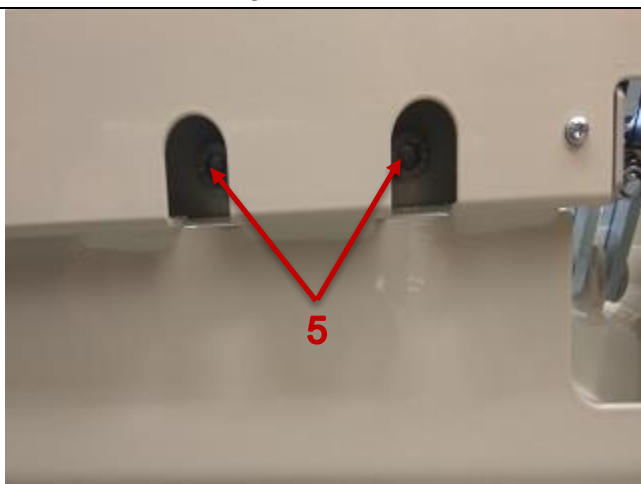


Figure 6.2.1.2.5

5.2.2 Foot column

5.2.2.1 Technical parameters

Coverage:	IP54
Input voltage:	24V
Maximum current:	5.5A
Load factor:	10%, Max. 2min on/ Min. 18min off
Maximum pressure load:	2000N
Maximum tensile load:	500N

5.2.2.2 Dismounting

1. Remove the cover of the control unit (Chapter 6.7.5, paragraphs 1 and 2)
2. Unscrew locking screws (1) and remove the weight (Fig. 6.2.2.2.1)
3. **Support and secure the chair against fall appropriately**
4. Cut the lacing course (2) and unscrew the lifting motor yoke (3) (Fig. 6.2.2.2.2). If the column may be positioned, disconnect the head lifting column (connector No. 5) and position the foot lifting column in the lowest position, then disconnect it (connector No. 4) from the control unit
5. Loosen the column collar (4) (Fig. 6.2.2.2.3)
6. Unscrew the screws in lower part of the column attaching the column to the under-frame (5) (Fig. 6.2.2.2.4)
7. Unscrew collar screws (6) and remove the column (Fig. 6.2.2.2.5)
8. If the lifting column is replaced, it needs to be calibrated (Chapter 6.7.6.2)



Figure 6.2.2.2.1

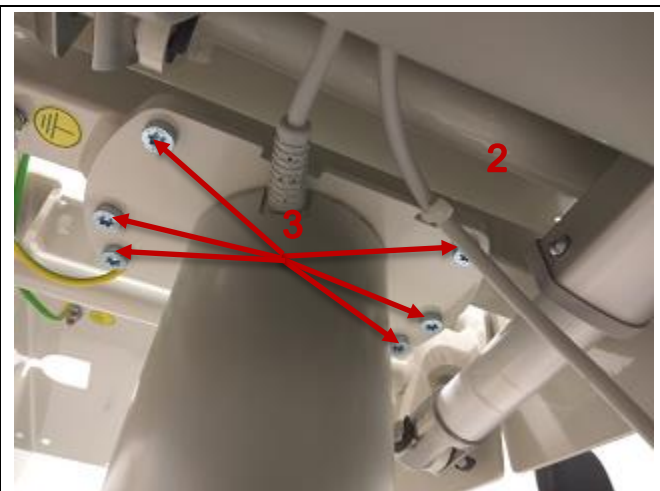


Figure 6.2.2.2.2



Figure 6.2.2.2.3

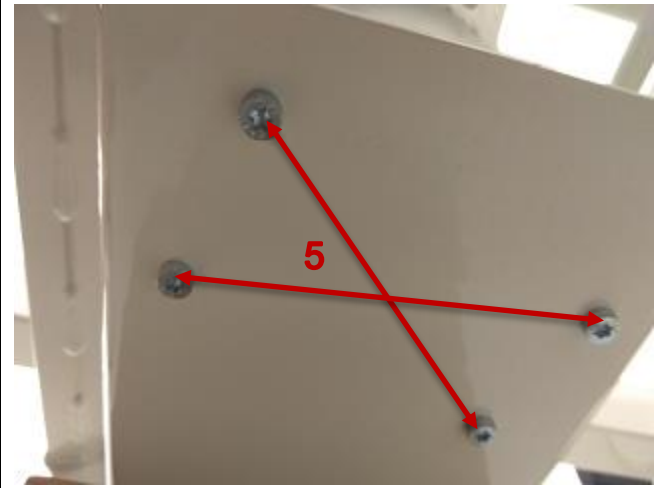


Figure 6.2.2.2.4

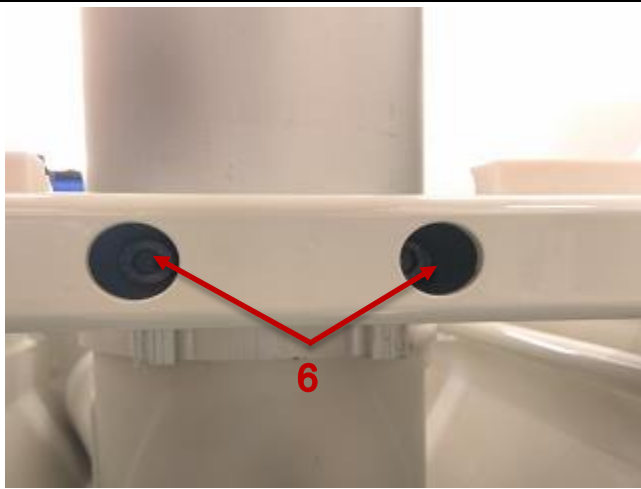
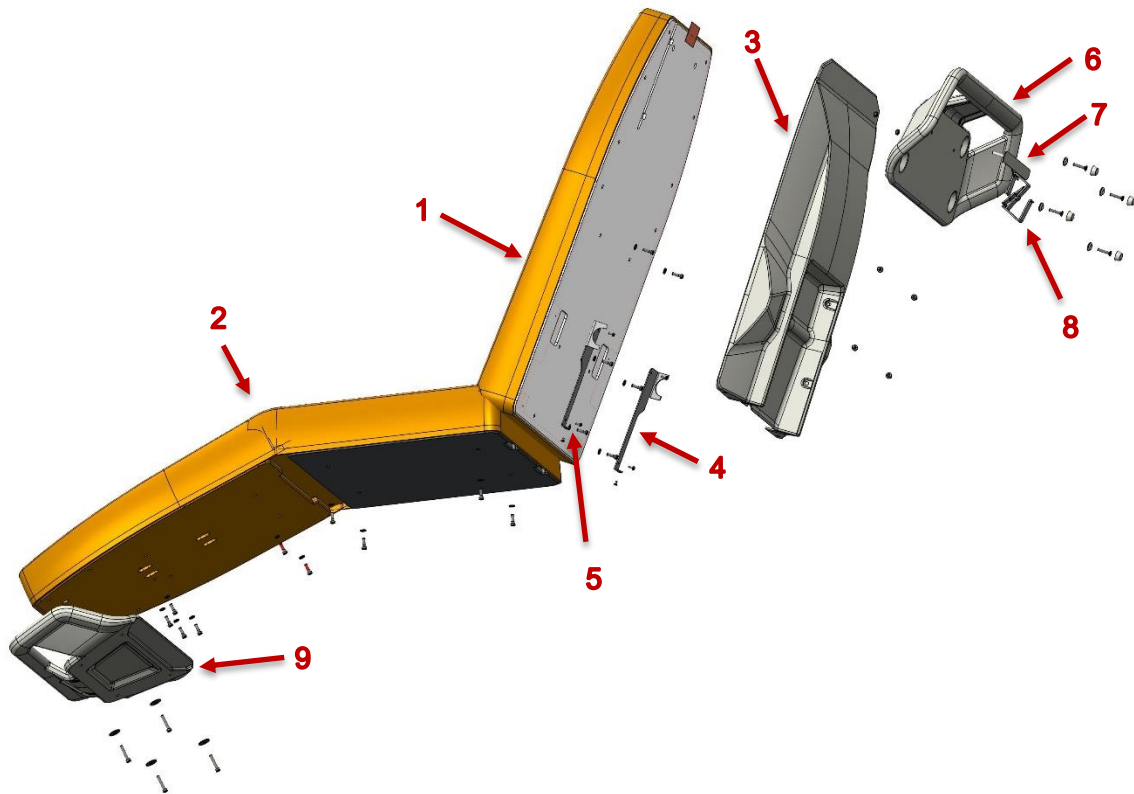


Figure 6.2.2.2.5

5.3 Rest area upholstery



- 1 - Back section upholstery
- 2 - Seat upholstery
- 3 - Back section cover
- 4 - Back cover holder – right
- 5 - Back cover holder – left
- 6 - Rear handle
- 7 - Cable holder
- 8 - Hook
- 9 - Front handle

5.3.1 Back section upholstery

5.3.1.1 Dismounting:

1. Use wide flat bladed screwdriver to remove covers (1) (Fig. 6.3.1.1.1)
2. Unscrew (2) and remove the handle of the back section (Fig. 6.3.1.1.2)
3. Unscrew (3) and remove the plastic handle of the back section (Fig. 6.3.1.1.2)
4. Unscrew plastic cover screws (4) (Fig. 6.3.1.1.3)
5. Unscrew and remove back section upholstery (5) (Fig. 6.3.1.1.3)

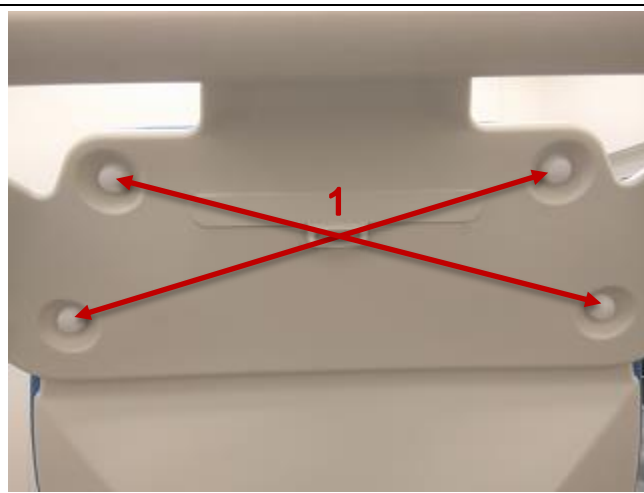


Figure 6.3.1.1.1

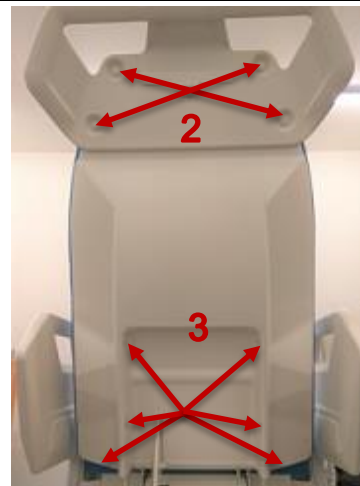


Figure 6.3.1.1.2

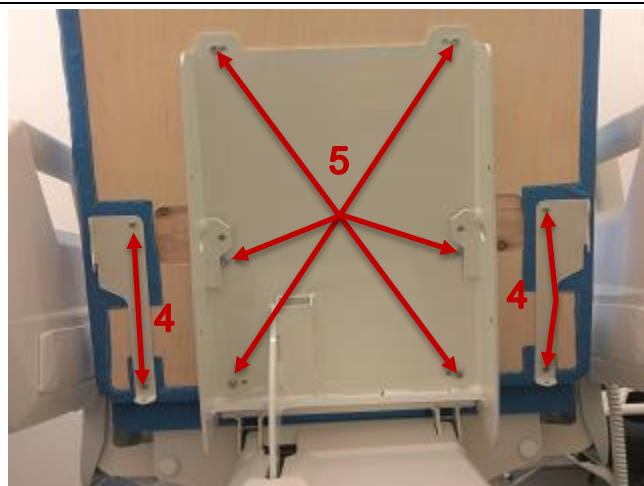


Figure 6.3.1.1.3

5.3.2 Seat upholstery

5.3.2.1 Dismounting:

1. Unscrew locking screws (1) and remove the foot bumper (Fig. 6.3.2.1.1)
2. Unscrew locking screws of upholstery (2) and remove upholstery (Fig. 6.3.2.1.2)

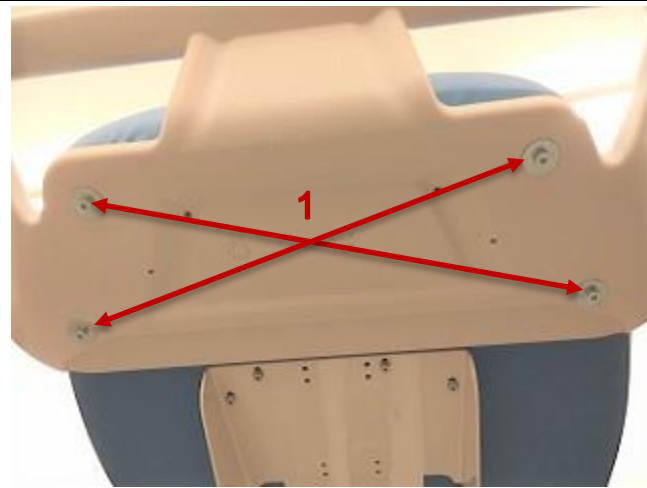


Figure 6.3.2.1.1

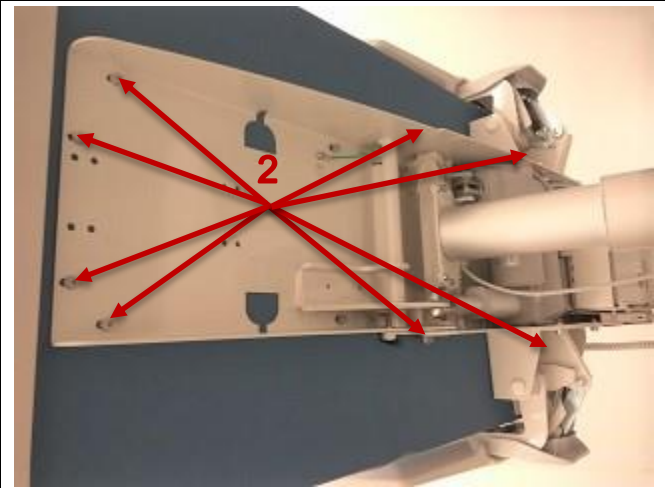
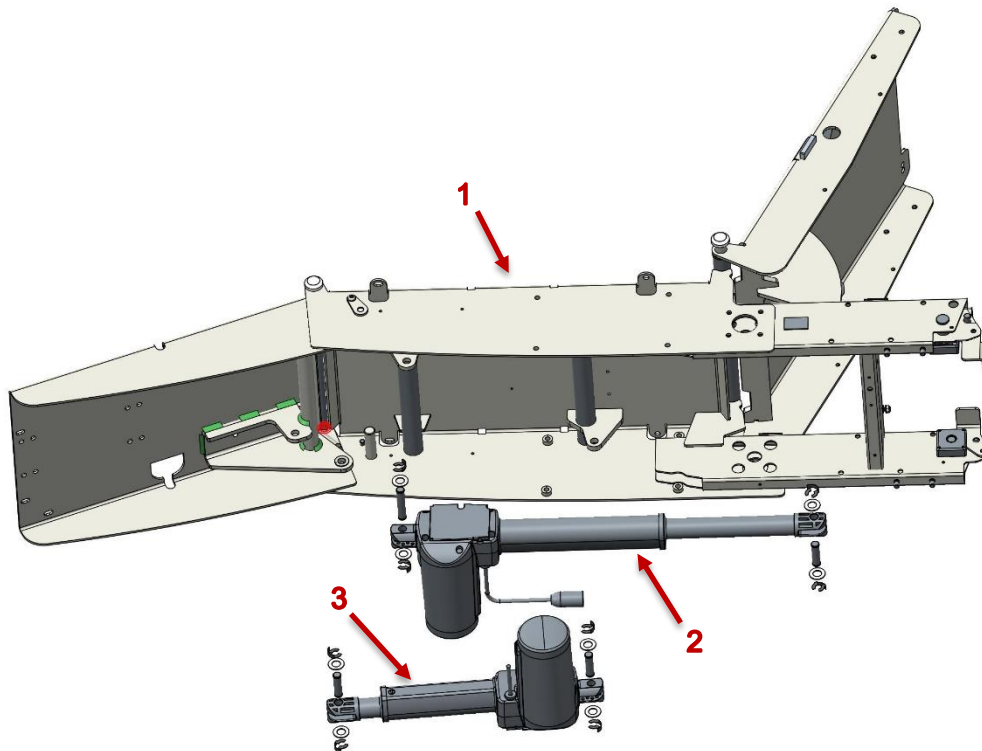


Figure 6.3.2.1.2

5.4 Rest area drives



- 1 - Rest area frame
- 2 - Back section drive
- 3 - Foot section drive

5.4.1 Back section drive

5.4.1.1 Technical parameters

Drive with CPR	
Coverage:	IP54
Input voltage:	24V
Maximum current:	9A
Load factor:	10%, Max. 2min on/ Min. 18min off
Maximum pressure load:	10000N

Drive without CPR	
Coverage:	IP54
Input voltage:	24V
Maximum current:	5A
Load factor:	10%, Max. 2min on/ Min. 18min off
Maximum pressure load:	6000N

5.4.1.2 Dismounting of the drive with CPR

1. **If the back section motor is not in its lowest position and manual or controlled positioning is impossible, secure the back section appropriately**
2. Remove the cover of the control unit (Chapter 6.7.5, paragraphs 1 and 2)
3. Disconnect motor from the control unit (connector 6)
4. Remove the retaining ring (1) and pull out the motor pin (2) (Fig. 6.4.1.2.1)
5. Loosen the nut (3) and fully screw the tension screw (4), this will loosen the manual motor unlocking wire (Fig. 6.4.1.2.2)
6. Remove the wire from the plastic clip
7. Remove the retaining ring (6), pull out the motor pin (7) and remove the motor of the back section

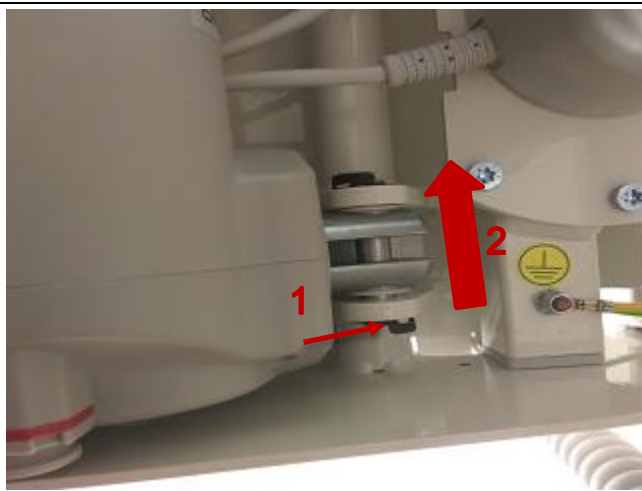


Figure 6.4.1.2.1

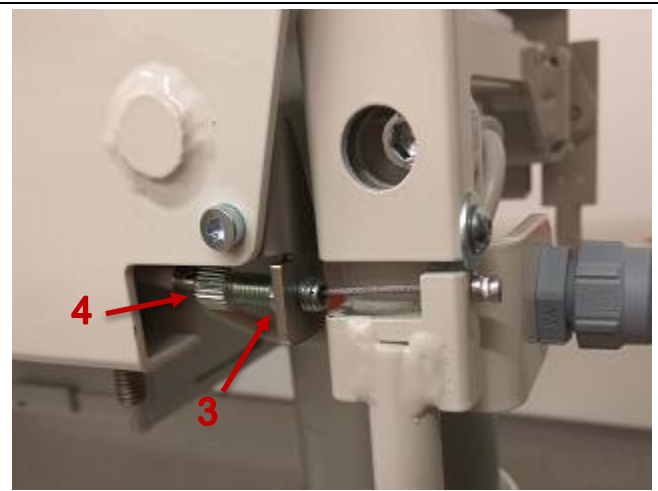


Figure 6.4.1.2.2

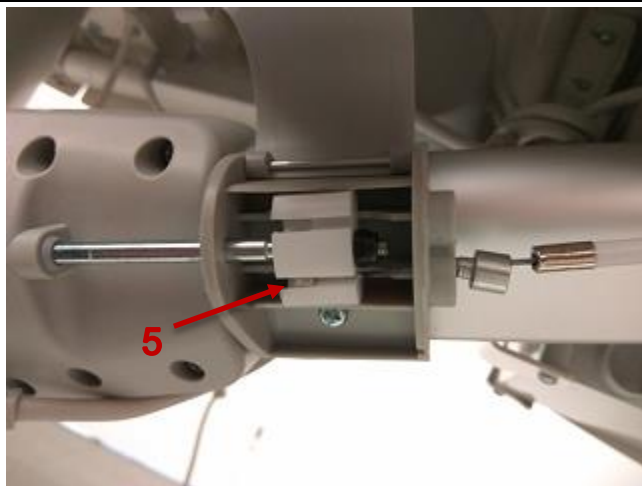


Figure 6.4.1.2.3

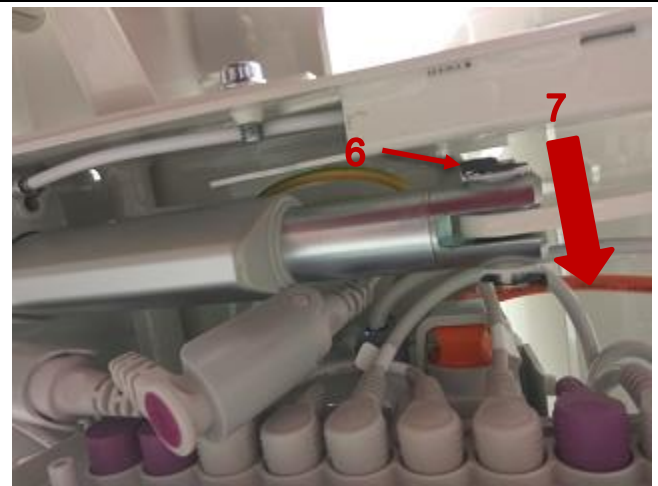
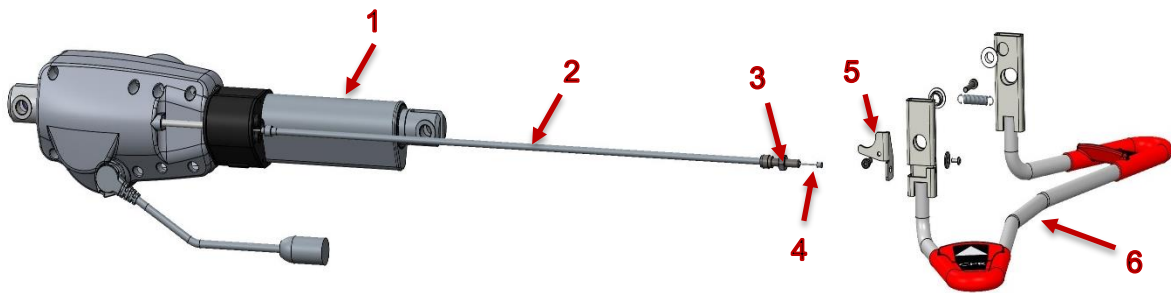


Figure 6.4.1.2.4

5.4.1.3 CPR mechanism



- 1 - Back section drive with CPR
- 2 - CPR Bowden
- 3 - Adjusting screw
- 4 - Wire
- 5 - Bowden holder
- 6 - CPR handle

5.4.2 Foot section drive

5.4.2.1 Technical parameters

Coverage:	IP54
Input voltage:	24V
Maximum current:	5A
Load factor:	10%, Max. 2min on/ Min. 18min off
Maximum pressure load:	6000N

5.4.2.2 Dismounting

1. Remove the cover of the control unit (Chapter 6.7.5, paragraphs 1 and 2)
2. Disconnect motor from the control unit (connector 7)
3. Remove the retaining ring (1) and pull out the motor pin (2) (Fig. 6.4.2.2.1)
4. Remove the retaining ring (3), pull out the motor pin (4) and remove the motor of the foot section (Fig. 6.4.2.2.2)

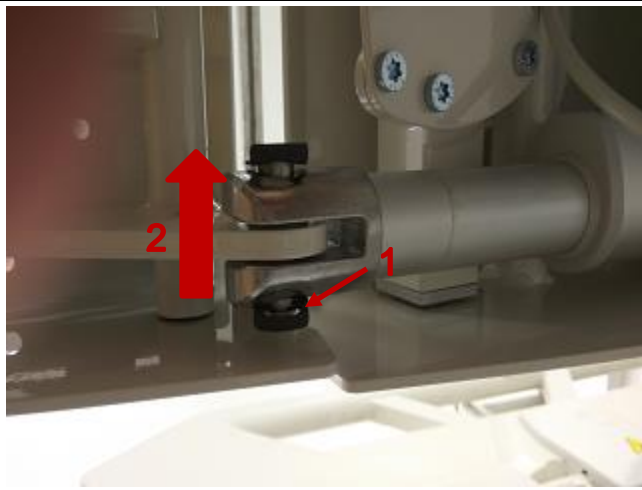


Figure 6.4.2.2.1

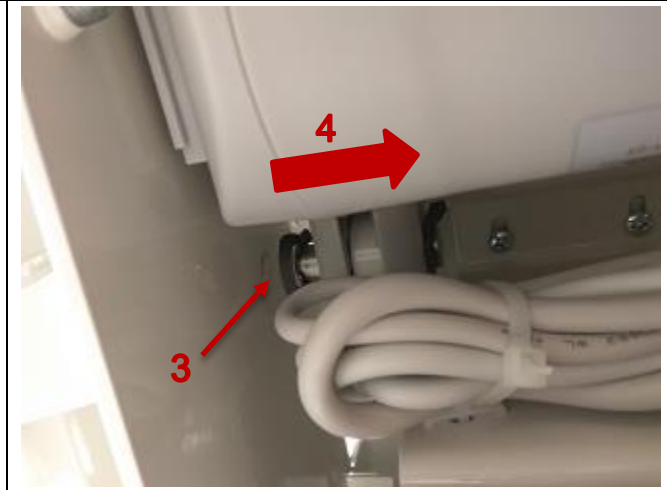
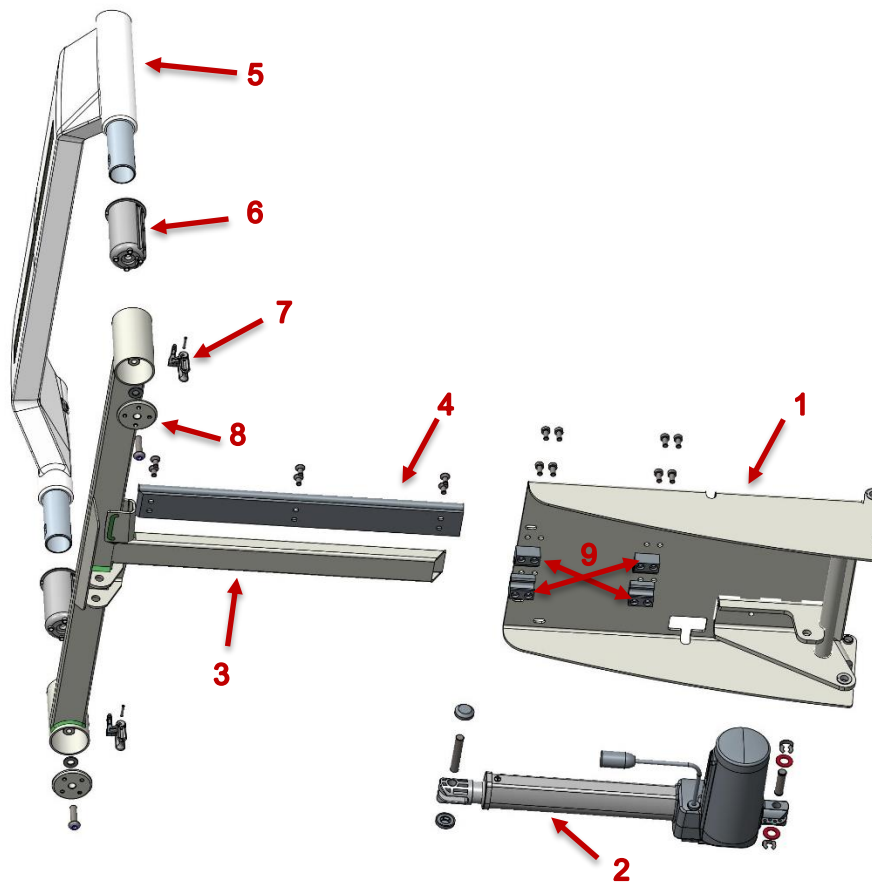


Figure 6.4.2.2.2

5.5 Footrest



- 1 - Foot section frame
- 2 - Footrest drive
- 3 - Footrest frame
- 4 - Slide rail
- 5 - Footrest
- 6 - Casing
- 7 - Latch
- 8 - Corner insert
- 9 - Bearing box

5.5.1 Footrest drive

5.5.1.1 Technical parameters

Coverage:	IP54
Input voltage:	24V
Maximum current:	5A
Load factor:	10%, Max. 2min on/ Min. 18min off
Maximum pressure load:	3500N

5.5.1.2 Dismounting

1. Remove the cover of the control unit (Chapter 6.7.5, paragraphs 1 and 2)
2. Disconnect motor from the control unit (connector 8)
3. Remove Starlock (1) and pull out motor pin (2) (Fig. 6.5.1.2.1)
4. Remove the retaining ring (3), pull out the motor pin (4) and remove footrests (Fig. 6.5.1.2.2)



Figure 6.5.1.2.1

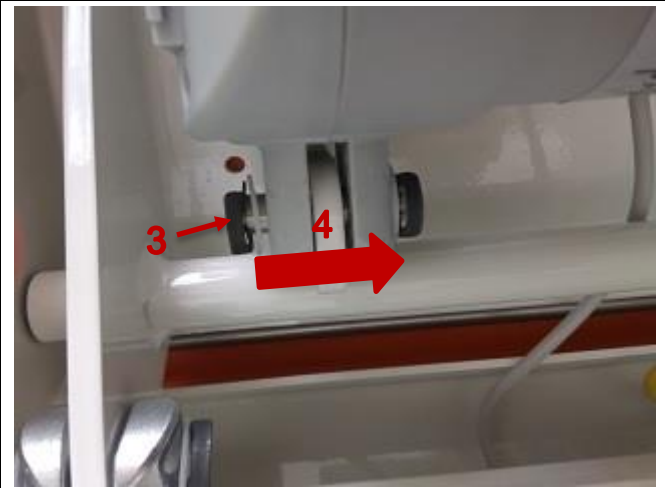
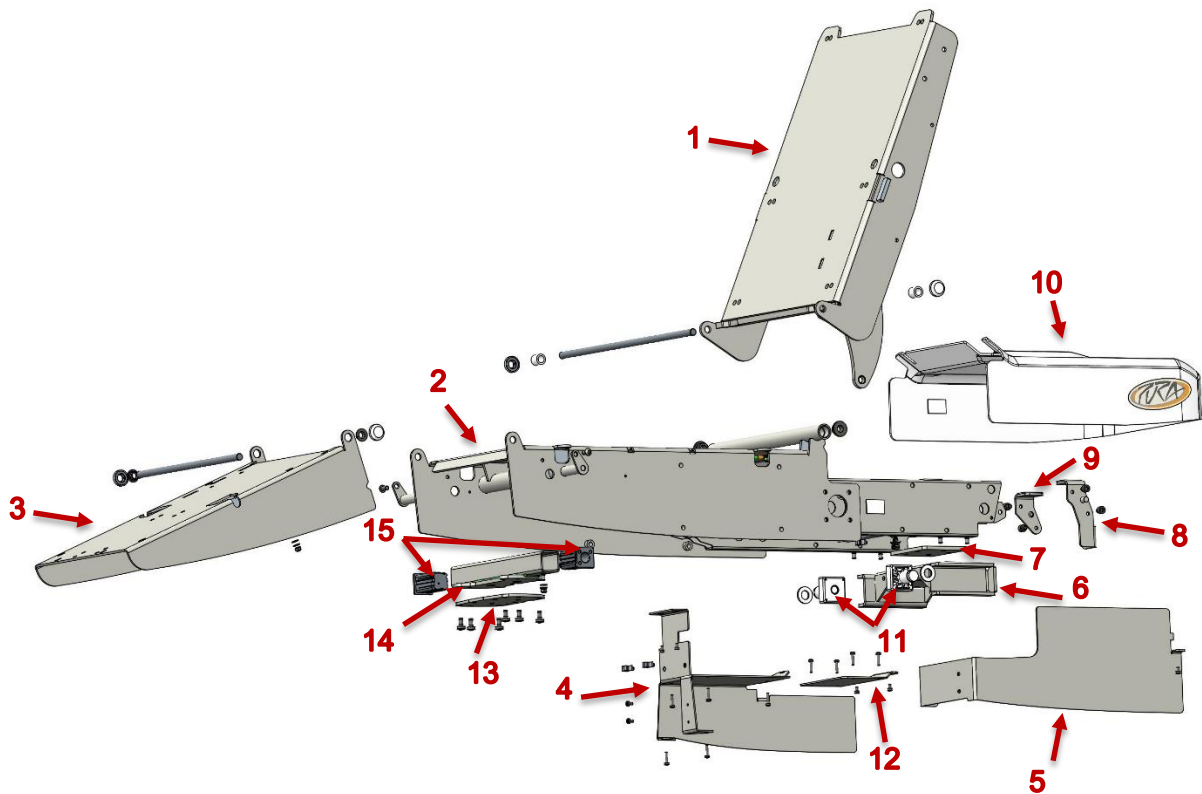


Figure 6.5.1.2.2

5.6 Rest area frame



- 1 - Back section frame
- 2 - Upper frame
- 3 - Foot section frame
- 4 - Control unit 1 panel
- 5 - Control unit cover
- 6 - Head column yoke
- 7 - Column screw washer
- 8 - Cable 1 holder
- 9 - Cable 2 holder
- 10 - Upper frame cover
- 11 - Slide
- 12 - Control unit 2 panel
- 13 - Lower plate
- 14 - Foot column bracket
- 15 - Casing

5.7 Control unit and power unit

Labelling:

PB53 ODA control unit: DB-F-00170

Power supply unit for PB53 ODA: DB-F-0024X

where X = 0 for 230V

X = 1 for 100V

X = 2 for 110V

X = 3 for 120V

X = 4 for 127V

5.7.1 Technical parameters:

Nominal supply voltage:	AC 230, 100, 120, 127V / 50-60Hz
Output voltage of power unit:	AC 23.5V / 50-60Hz
Maximum output current of the power unit:	10A
Protection:	2x tube fuse 5x20 mm T1.6AL for 230V; T3.15AL for 100-127V
Coverage:	IP54
Device class:	I
Operational ambient temperature:	+10 to +40°C
Air pressure:	80kPa – 106kPa
Basic dimensions:	320x125x75 (90 with uninterruptible power supply) mm
Weight including AC supply unit:	3.5kg
Number of outputs for motor units:	5
Output current for motors:	Internally limited
Current load of motor outputs:	See current table
The maximum voltage at the outputs for No Load motors:	42VDC *
Maximum performance:	Internally limited
The characteristic values of standby input power:	PB 53 without battery charging - 5W
	PB 53 with battery charging (1.2Ah) - 12W
The maximum tolerance of current limit settings:	±20%
Load factor for thermal stress:	max. 2 min operation / 18 min rest
Internal thermal protection of the transformer:	100°C (reversible fuse), 130-133°C (irreversible fuse)
Internal thermal protection of semi-conductor elements mounted on the cooler:	approx. 110 ° C; number of thermal overloads as a result of failure to comply with load factors are kept in memory of the control unit
Auxiliary source:	24V/1.2Ah – 2 12V/1.2Ah lead hermetic batteries connected in series, with a 15V automotive fuse and 84°C thermal fuse inside the battery box, charged automatically from PB53

The control unit stores:	Statistical values, overload and non-standard condition values, calibration values, list of features and conditions accessed
<p>*Can drop to 20V under load. Disturbing peak voltage generated by the lifting unit can be max. 60 V. The current peak when starting the motor can take up a maximum of 15A at 42V and it should drop to the maximum value of permanent current consumption in 0.5s.</p>	

5.7.2 Description of main functions

STOP button (on ACP panel) – system electronics assesses correct connection of the STOP button. An intermittent tone is heard when the STOP button is about to be disengaged. In case the STOP button is connected incorrectly, the function is active for 5s only when it is engaged using the GO button. STOP button allows blocking the system anytime as well as stopping not required function.

GO button (on ACP panel) – all control functions are enabled when GO button is pushed, this enables the control system for the period of 3 minutes (except for STOP button circuit malfunction). The control electronics is disabled 3 minutes after the last selected function and any other function is conditioned by repeatedly pressing the GO button. Pressing the GO button is valid only if no other control button is simultaneously pressed.

Simultaneous pressing of two or more buttons – if two or more buttons are pressed simultaneously (i.e. as a result of jammed button or controller short circuit), movements of the chair are blocked. Unblocking is automatic after releasing all keystrokes.

Duplicate power breakers – the main switch is relay and it is controlled by microprocessor. Engagement of this switch is primarily conditioned by evaluation of external controller requirements, smooth connection of the STOP button and internal fault diagnostics. Relay provides switching and commutation of electric motor lifting units. The second switch is a semiconductor. It ensures safety and motor current limitation. Flawlessness of the function of both the switching elements is independently monitored. Failure of these elements, which causes the electronics to no longer be resistant to the first error, is signalled by a uniform LED 4 blinking on ACP controller. At the moment, only one movement of the bed is allowed and this condition is signalled by a homogeneous flashing of LED 3 and LED 4. Another movement can be executed only after pressing STOP button.

Lock function – the lock is electronic and its current status is always stored in the CU memory. The fault of the lock is signalled by LED 3 flashing.

Overload evaluation – currents consumed by four motor units (output for footrest motor is controlled electronically together with the foot section motor) are measured and maximum current and partially also motor starting peaks are limited electronically. Upon detection of a continuous overcurrent, the motion is stopped after about 1.2 sec.

Thermal Protection – built-in thermal protection signals exceeding the temperature on the internal cooler and around switching transistors (approx. 110°C) during overloading. This condition is signalled by a continuous tone. After a further increase of the temperature by approx. 10°C, power switching elements will be disconnected (to prevent positioning) and signalling continues with an intermittent tone. At the same time, this information on the thermal overload is recorded in the permanent memory of the control unit. The toroidal low dispersion transformer has a reversible 100°C thermal fuse built in the winding with an irreversible 130-133°C thermal fuse.

Leakage resistance and short circuit measurement – ACP controller contains a RC cell, if the function is disabled, the value of resistance is close to infinity. The value of resistance changes to 390Ω upon pressing the button and the function is considered valid and executed. In case of short circuit and resistance reduction below 200Ω, the function is considered to be invalid.

Nominal values of current limit		
Output for motor (connector No.):	Retraction	Extension:
Foot column (4)	5.5A	2.0A
Head column (5)	5.5A	2.0A
Back section motor (6)	8.0A	4.0A
Foot section motor (7)	3.7A	2.0A
Footrest motor(8)	3.7A	2.0A

5.7.3 Sound signals:

Limited in time:

Short 0.3sec. signal - the function cannot be executed because it is blocked (lock, limit switch)

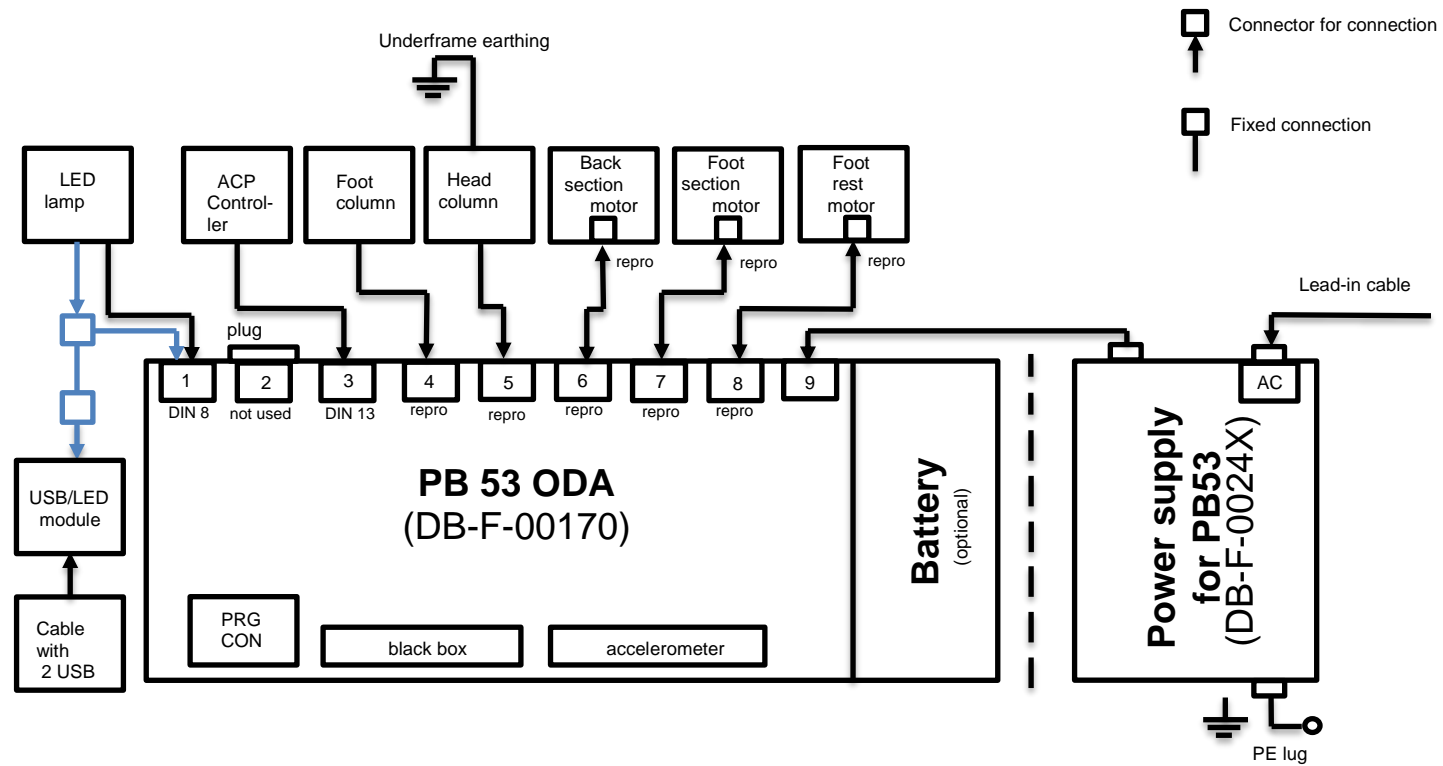
Short 0.5sec. signal - start or end of service mode, transition of the lead to the function

Unlimited:

Intermittent signal 0.5sec/2.5sec (sound/gap) - fault detected in safety circuit
STOP function

Continuous signal - exceeded internal temperature of electronics (approx. 108°C)
 - Battery overcurrent causing its overheating
 - Motor overloading

5.7.4 Block diagram of the control unit:



5.7.5 Control unit dismounting:

1. Unscrew (1) and remove the control unit cover (Fig. 6.7.5.1)
2. Unscrew (2) and remove connector cover (Fig. 6.7.5.2)
3. Disconnect all connectors
4. Unscrew control unit screws (3) and remove it (Fig. 6.7.5.3)
5. If the control unit is replaced, it needs to be calibrated (Chapter 6.7.6.2)

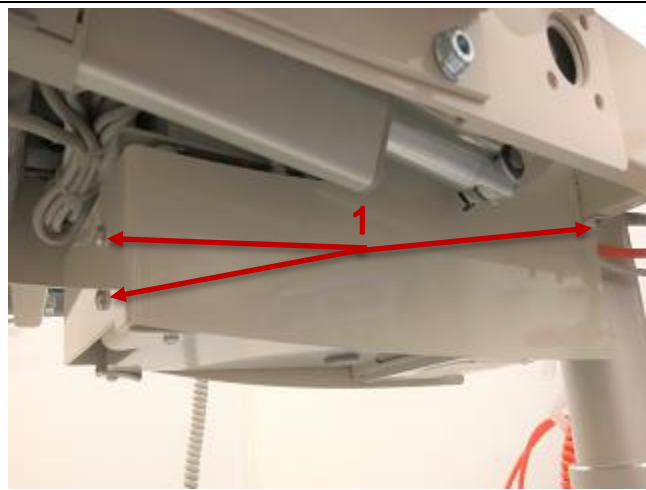


Figure 6.7.5.1

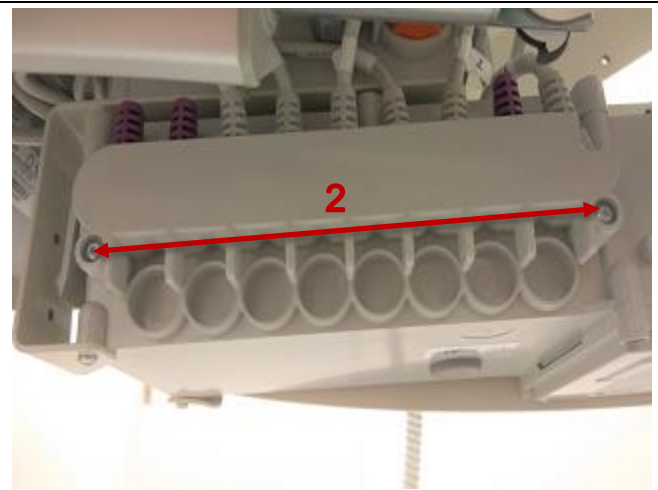


Figure 6.7.5.2

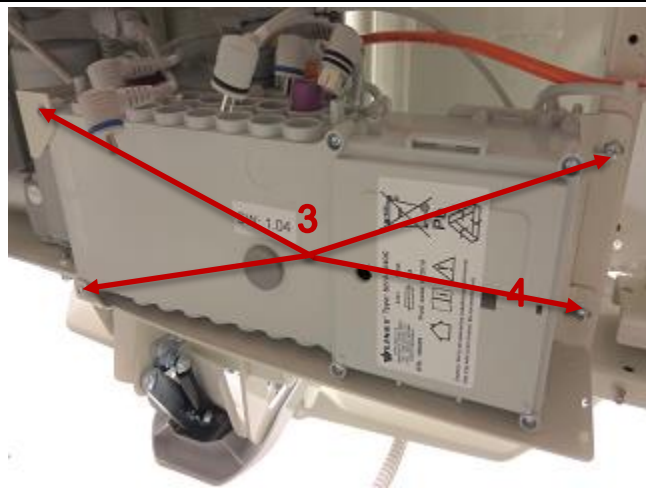






Figure 6.7.5.3

5.7.6 ACP Controller

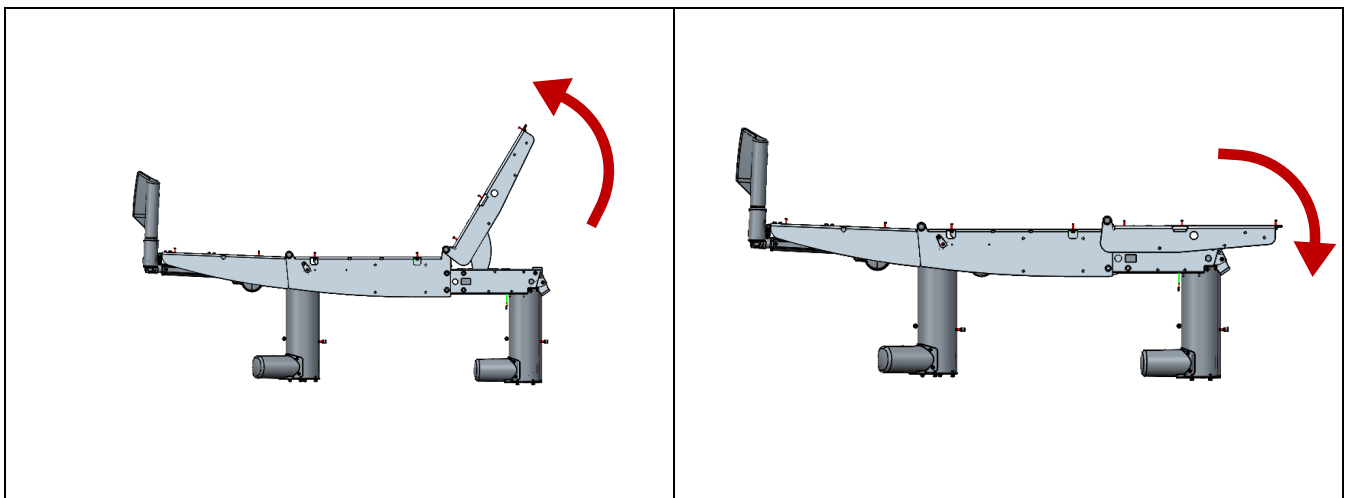
ACP controller versions:

 <p>The panel features four motor control buttons (each with a top and bottom sub-button), a central orange bar with 'STOP', 'power', and 'emergency stop' icons, and a bottom section with the LINET logo, a lock icon, and a power plug icon.</p>	 <p>The panel features four motor control buttons, a central orange bar with 'STOP', 'power', and 'emergency stop' icons, and a bottom section with the LINET logo, a lock icon, a battery icon, and a power plug icon.</p>
<p>Version with 4 motors without a battery</p>	<p>Version with 4 motors with a battery</p>
 <p>The panel features five motor control buttons, a central orange bar with 'STOP', 'power', and 'emergency stop' icons, and a bottom section with the LINET logo, a lock icon, and a power plug icon.</p>	 <p>The panel features five motor control buttons, a central orange bar with 'STOP', 'power', and 'emergency stop' icons, and a bottom section with the LINET logo, a lock icon, a battery icon, and a power plug icon.</p>
<p>Version with 5 motors without a battery</p>	<p>Version with 5 motors with a battery</p>

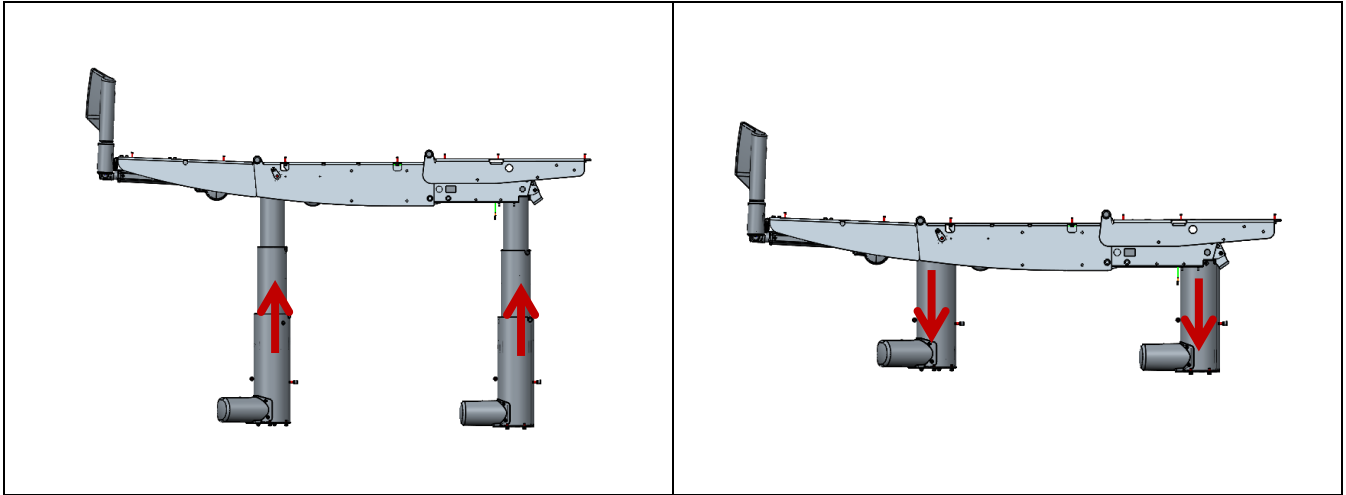
ACP controller functions:



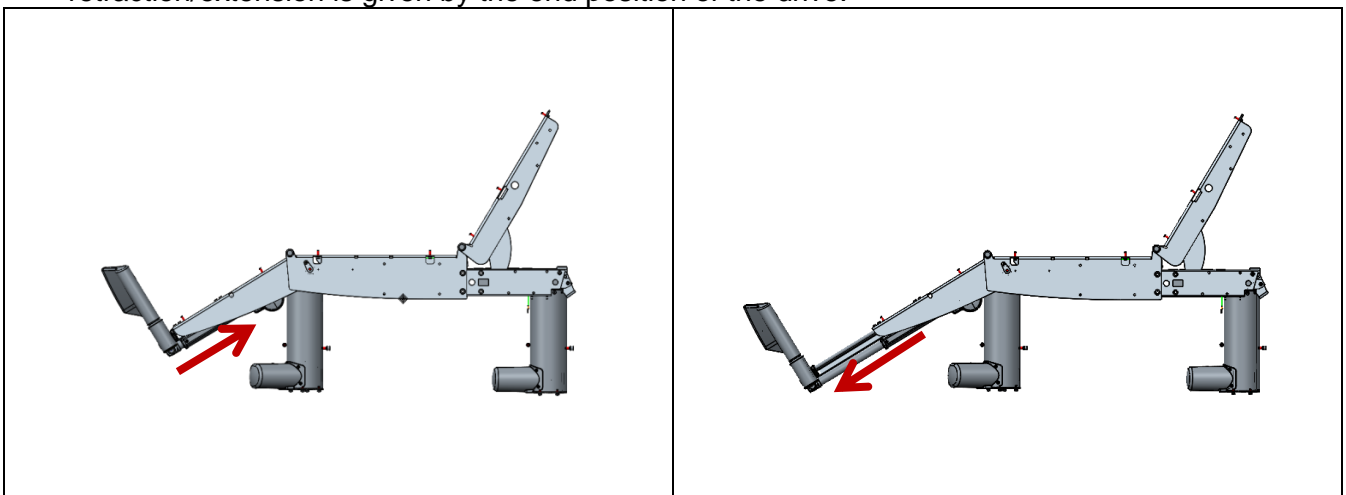
Buttons 1 and 2 – back section up/down: Retraction (1) and extension (2) of the back section drive. Full extension/retraction is given by the end position of the drive.



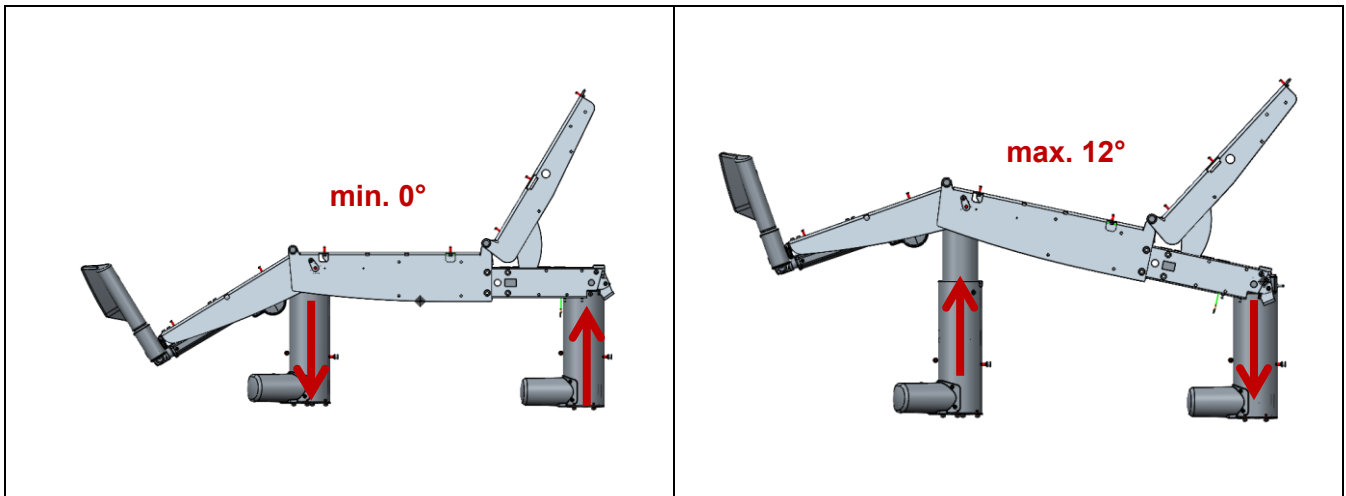
Buttons 3 and 4 – chair up/down: Simultaneous extension (3) and retraction (4) of lifting columns. Full extension/retraction is given by the end position of the column. If one of the columns reaches its end position earlier, other column continues extension/retraction until the button is released or end position reached.



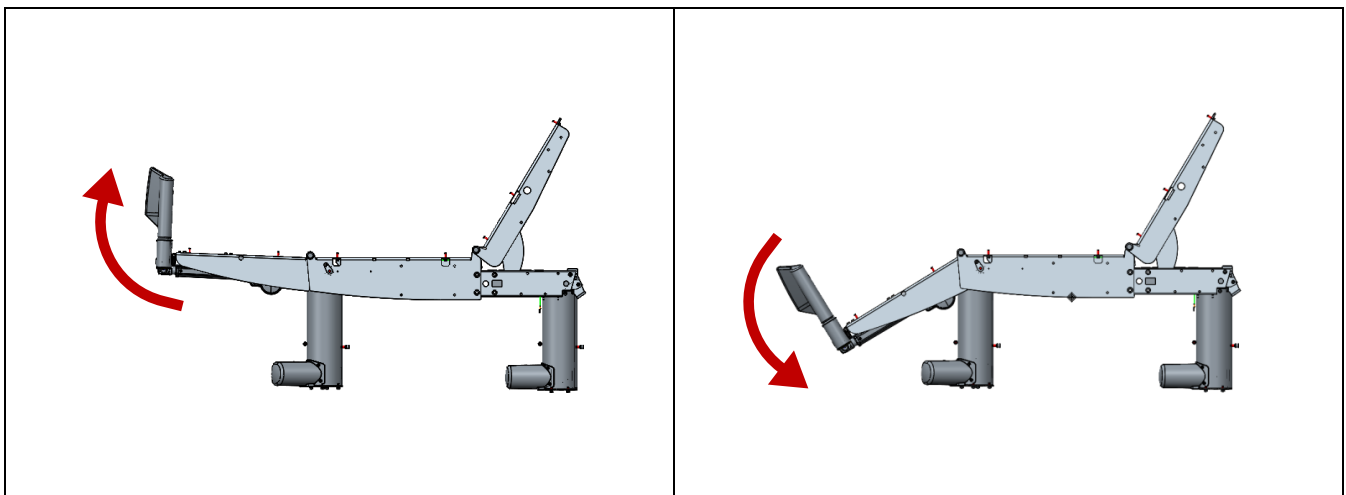
Buttons 5 a 6 – footrest up/down: Retraction (5) and extension (6) of the footrest drive. Full retraction/extension is given by the end position of the drive.



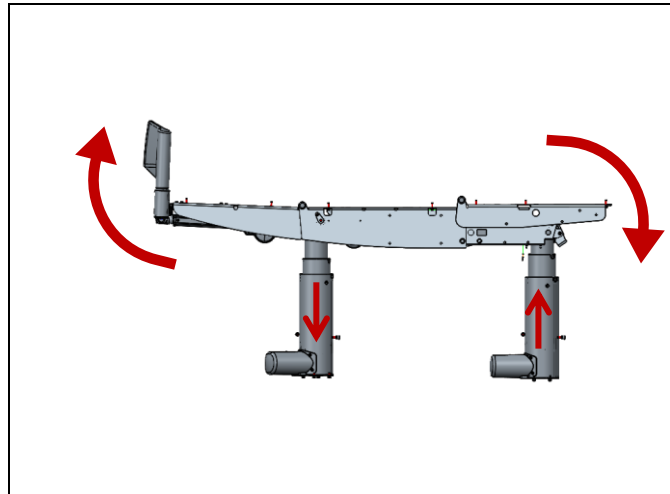
Buttons 7 and 8 – tilt forward/backward: Retraction (7) / extension (8) of the foot column + extension (7) / retraction (8) of the head column. If any of the columns reaches its end position, only the second column moves until the button is released or min. 0° or max. 12° of the seat tilt is reached.



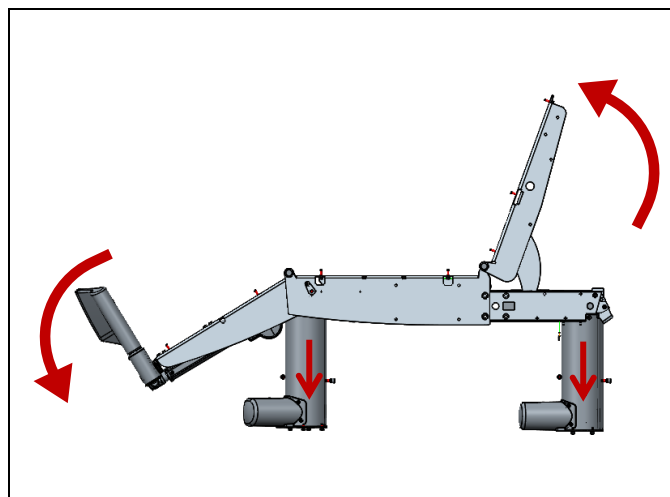
Buttons 9 and 10 – foot section up/down: Extension (9) and retraction (10) of the foot section. Full extension/retraction is given by the end position of the drive.



Button 11 – preprogrammed lying position: If the seat angle is 0° , the back section drive starts retracting + foot section starts extending until the button is released or end positions are reached. If the angle is different, the foot column starts retracting + the head column starts extending until the button is released or 0° angle of seat tilt is reached. If any of the columns reaches its end position, only the second column moves until the button is released or min. 0° angle is reached.



Button 12 – preprogrammed seating position: The back section extension + foot section drive retraction until the button is released or their end positions are reached. Seat tilt angle must be 0° . Retraction of foot and head columns until the button is released or both columns reach their end positions. If any of the columns reaches its end position, only the second column moves until the button is released or end position is reached.

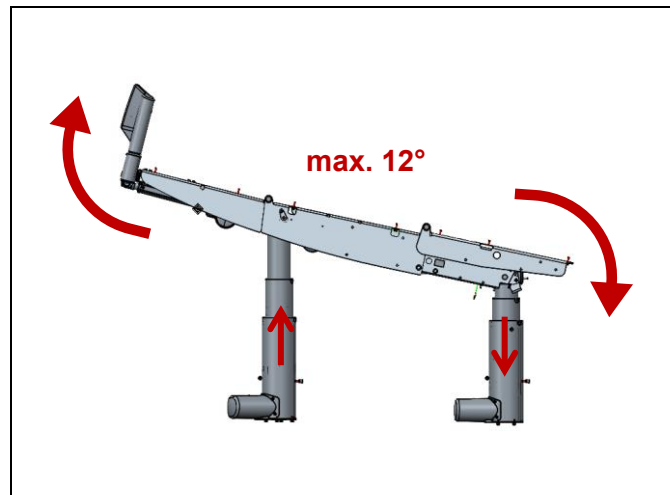


Button 13 – STOP: Immediate stopping of all movements and keyboard deactivation.

Button 14 – GO: Keyboard activation, after 3 minutes of inactivity the keyboard deactivates automatically. Active keyboard is signalled by lit **LED 1**, when positioning is attempted on an inactive keyboard, **LED 1** starts flashing.

Button 15 – Trendelenburg: The back section retraction + foot section drive extension until the button is released or their end positions are reached.

Foot column extension + head column retraction until the button is released or 12° angle of seat tilt is reached. If any of the columns reaches its end position, only the second column moves until the button is released or max. 12° angle is reached.



Button 16 – Keyboard lock: Immediate locking of the keyboard signalled by the lit **LED 2**. For locked keyboard, pressing the button (**16**) again unlocks it.

5.7.6.1 Light signals using LEDs



LED 1: continuous light – the keyboard is active (using GO button (14))
 flashing – positioning attempted using inactive keyboard
 No light – the keyboard is not activated

LED 2: continuous light – positioning functions are locked
 flashing 0.5s/0.5s – error saving the status in memory, movement blockage, detection of el. leakage of the controller
 flashing 0.1s/0.1s – signalling calibration mode status
 For locked keyboard, pressing the button (16) again unlocks it.
 no light – positioning functions are unlocked

LED 3: continuous light – battery is undetected (interrupted supply, faulty fuse, missing battery)
 flashing 0.1s/1.5sec. (light/no light) – battery is charged
 flashing 1.5s/0.1sec. (light/no light) – very low battery voltage
 flashing 0.1s/0.1sec. – drop in battery voltage
 no light – battery is charged

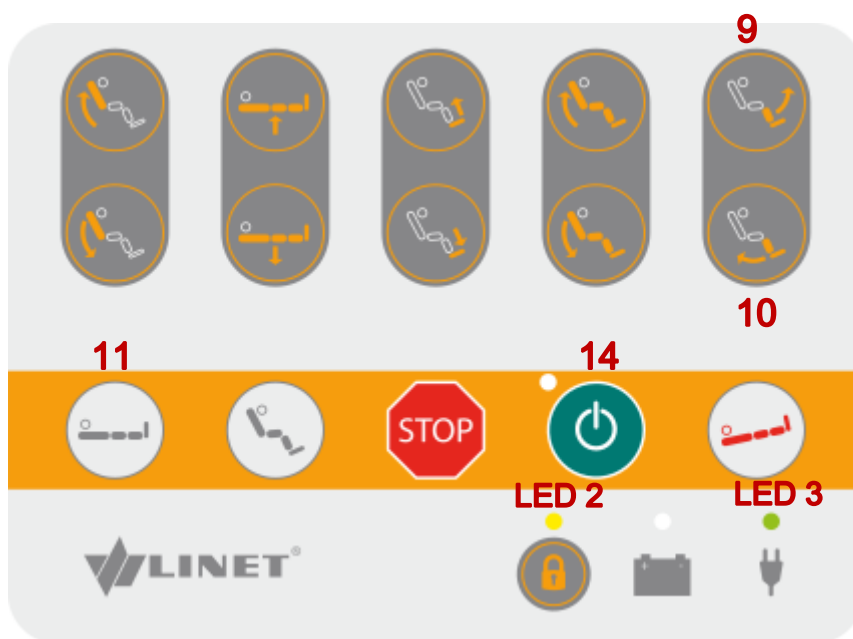
LED 4: continuous light – signalling electricity network
 flashing 0.5sec./0.5sec. – signalling error in resistance against the first error, detection of el. leakage of controllers, function blockage
 flashing 0.1sec./0.1sec. – signalling configuration or calibration mode

5.7.6.2 Lifting column and accelerometer calibration

Replaced lifting column or control unit need to be calibrated in order to synchronize column positioning and determine correct chair tilt angle.

Before calibration takes place, control unit must be installed correctly.

1. Hold the combination of the buttons to position the foot section (9), (10) and the button of the pre-programmed lying position (11), before **LED 2** and **LED 4** start flashing (approx. 5s)
2. Press and hold the GO button (14) until the process of calibration is completed (lifting columns are positioned to minimum, maximum and back to minimum position)
3. Successful calibration is signalled with an acoustic signal.



5.7.7 Power unit dismounting:

1. Disconnect the chair from power supply
2. Remove the control unit (Chapter 6.7.5)
3. Remove supply cable catch (1) and disconnect it from the power unit (Fig. 6.7.7.1)
4. Unscrew the power source screws (2) and cut the lacing course (3) (Fig. 6.7.7.2)
5. Unscrew the screws of the power unit cover (4) (Fig. 6.7.7.3)
6. Unscrew the power unit earthing (5) and remove the power unit (Fig. 6.7.7.4)



Figure 6.7.7.1

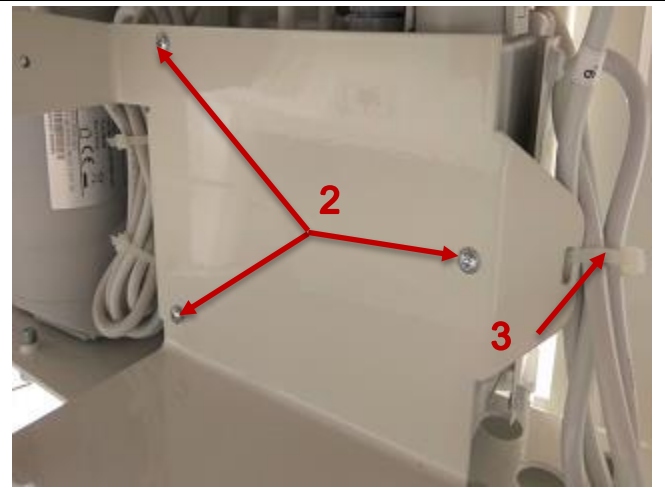


Figure 6.7.7.2

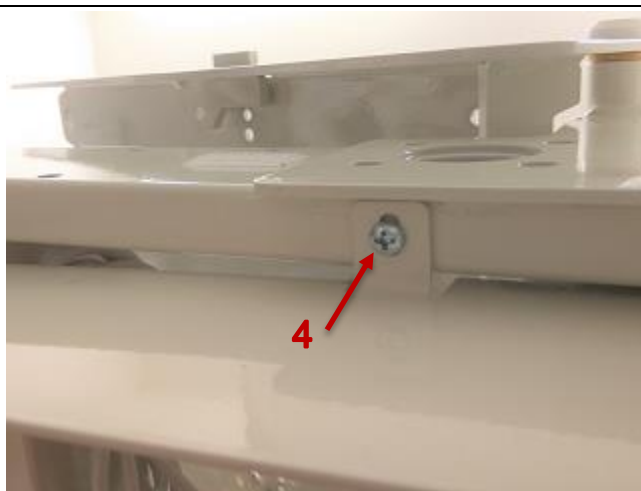


Figure 6.7.7.3



Figure 6.7.7.4

5.7.7.1 Power unit fuses

1. Dismount the power unit (Chapter 6.7.7)
2. Unscrew bayonet caps of fuses (1) (Fig. 6.7.7.1.1)
3. Replace fuses according to the power unit type (2) (Fig. 6.7.7.1.2)
T1.6AL for 230V; T3.15AL for 100-127V

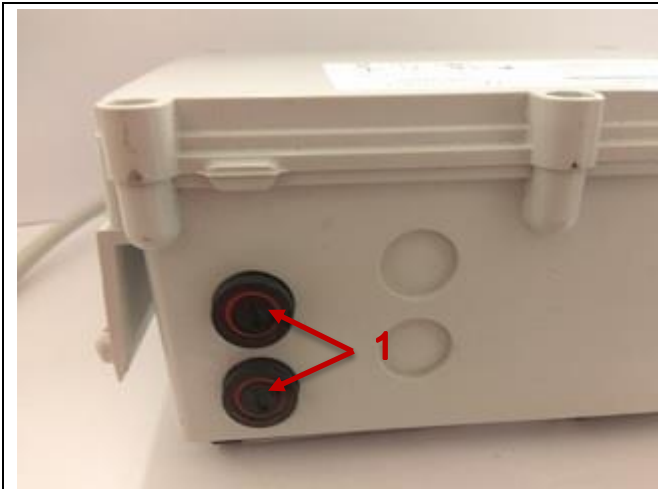
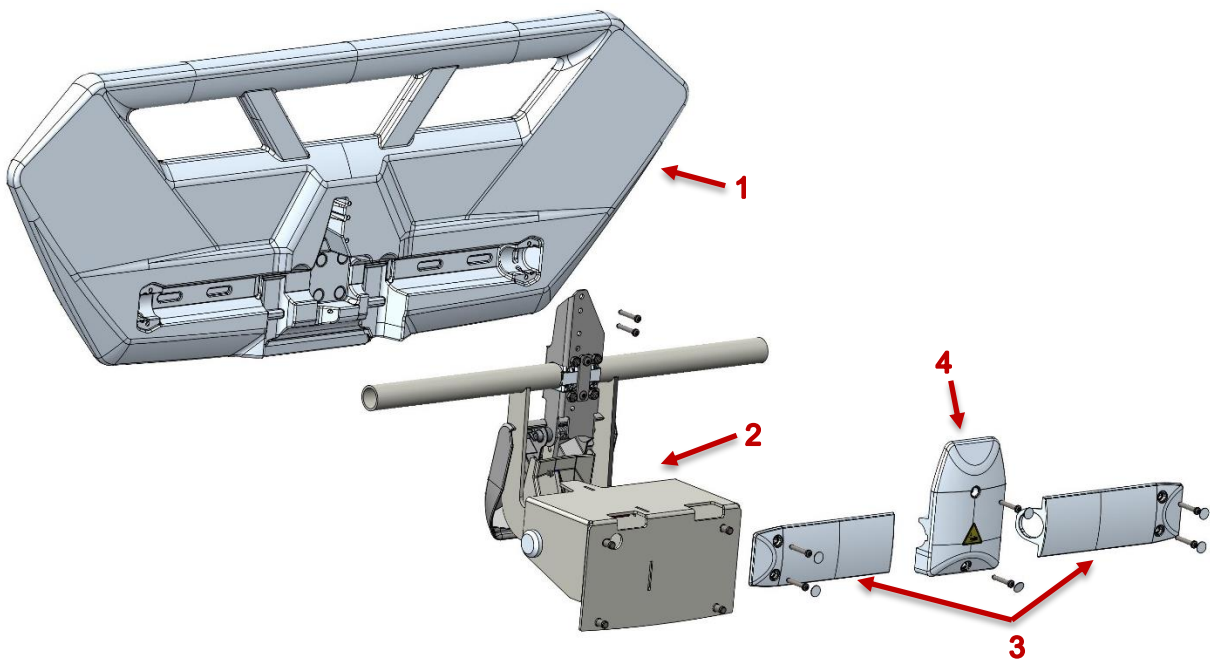


Figure 6.7.7.1.1



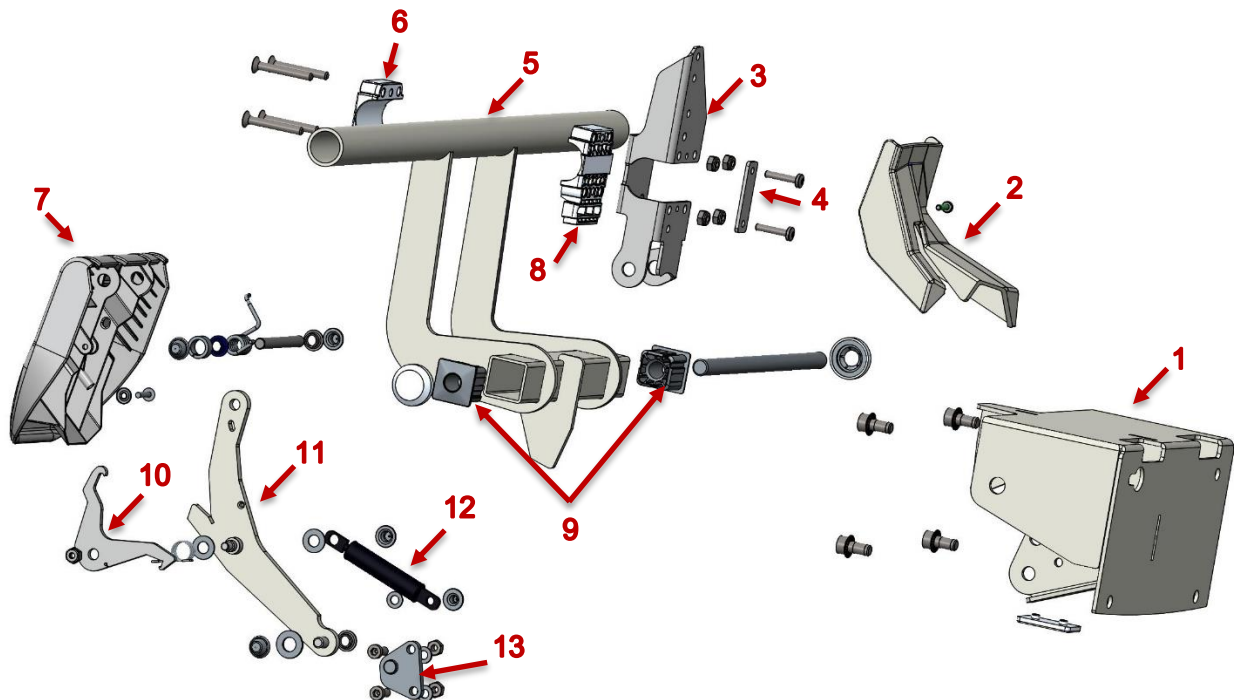
Figure 6.7.7.1.2

5.8 Siderails



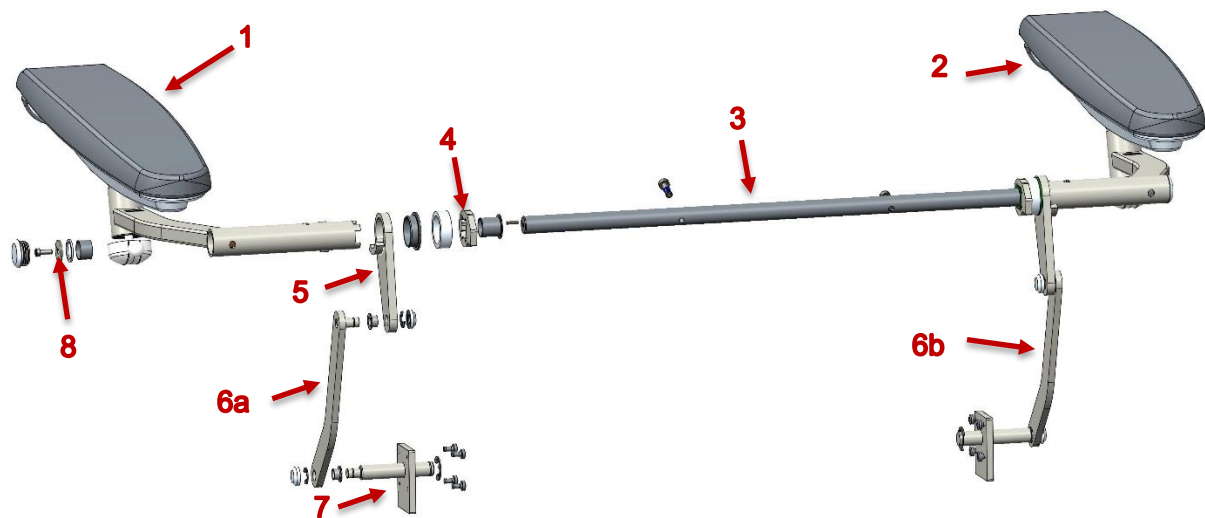
- 1 - Siderail body
- 2 - Siderail mechanism
- 3 - Siderail cover – side
- 4 - Siderail cover – central

Siderail mechanism



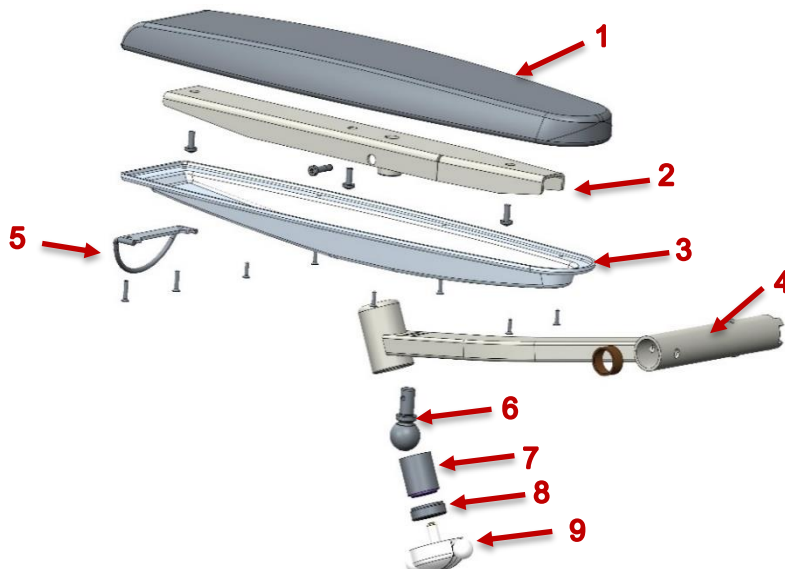
- 1 - Siderail closure
- 2 - ABS cover
- 3 - Siderail holder
- 4 - Siderail holder panel
- 5 - Siderail arm
- 6 - Slide bearing 1
- 7 - Siderail draw bar
- 8 - Slide bearing 2
- 9 - Slide bearing
- 10 - Latch
- 11 - Arm
- 12 - Hydraulic damper
- 13 - Special pin

5.9 Armrests



- 1 - Armrest arm –left
- 2 - Armrest arm –right
- 3 - Armrest axis
- 4 - Back stop
- 5 - Arm 1
- 6a - Arm 2 – left
- 6b - Arm 2 – right
- 7 - Axis of armrest arm
- 8 - Securing panel

Armrest arm:



- 1 - Armrest upholstery
- 2 - Armrest support
- 3 - Armrest cover
- 4 - Armrest support – left
- 5 - Controller holder
- 6 - Ball
- 7 - Armrest joint insert
- 8 - Nut
- 9 - Hand grip

6 List of tools and equipment necessary to service the chair

Tools
Gola set
Screwdriver set
Wrench set
Socket head bits
Torx bit set
Allan wrench set
Knife
Set of pliers
Torque wrench
Hammer, plastic stick
Metre
Multimetre

