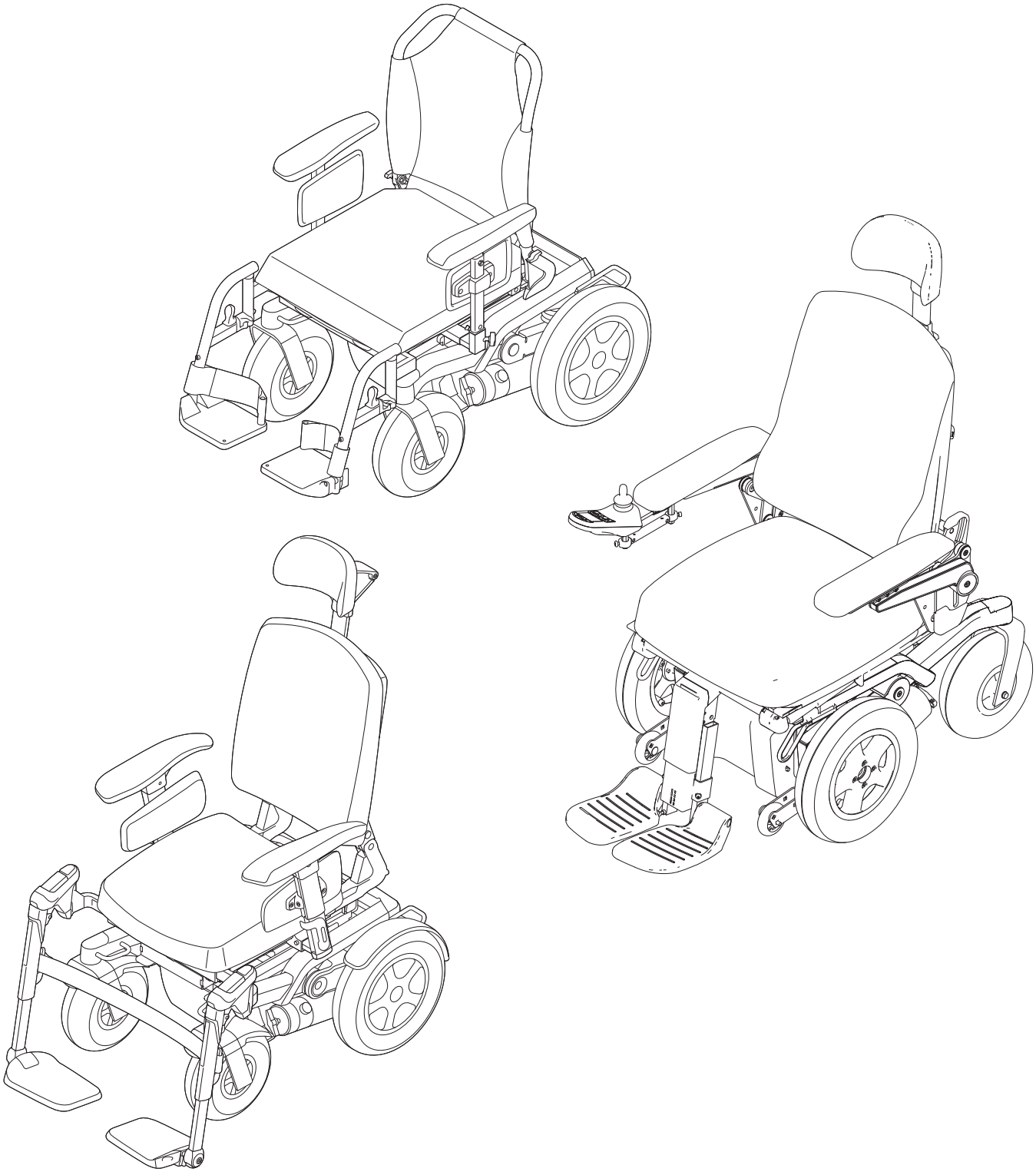
SERVICE MANUAL

EN

PUMA 20/40



VERSION 1 - 2016

Table of content

1 Introduction

1.1 This manual

This manual contains the instructions for repairs and general maintenance. Mechanics who do repairs on this wheelchair must be well trained and familiar with the repair methods and the maintenance of the wheelchair.
Always make sure that the work is carried out safely, particularly with respect to procedures requiring the wheelchair to be lifted up.
We advise that you contact our service department before doing repair work on a wheelchair that has been involved in an accident.
The following specifications are important when ordering parts:

- Model
- Year of manufacture
- Colour
- Identification number
- Part number
- Name of the part concerned

This information is provided on the identification plate. See 'Identification of the product'.

Available documentation
The following technical documentation is available / required to service this wheelchair:

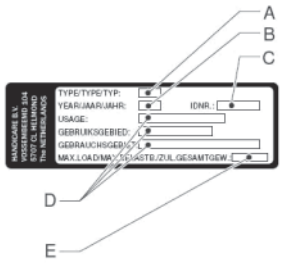
- User manual
- Service manual

Service and technical support
For information concerning specific settings, maintenance or repair works please contact your supplier. He is always prepared to help you.
Ensure you have at hand:

- Model
- Year of manufacture
- Identification number

This information is provided on the identification plate. See 'Identification of the product'.

1.2 Identification of the product



The identification plate contains the following data:

A. Model
B. Year of manufacture
C. Identification number
D. Use area indoors or outdoors
E. Maximum load in kg

1.3 Symbols used in this manual

Warning symbol

Follow the instructions next to this symbol closely.
Not paying careful attention to these instructions could result in physical injury or damage to the wheelchair or the environment.

Reference symbol

The symbol refers to a separate user manual. This reference will indicate the specific user manual and the section to which is being referred.

Pull the charge cord out of the battery charging connection of the electric wheelchair before carrying out any maintenance on the wheelchair.

2 Safety

2.1 Maximum User weight reduction when Puma 20 options are installed on a Puma 40!

In case one of the following Puma 20 options is installed on a Puma 40 carrier, the maximum user weight is reduced to 136 kg:
- Sedeo Lite seating system (or any Sedeo Lite component)
- Puma 20 motors
- Puma 20 Comfort suspension
- Puma 20 Electrical tilt adjustment (0 - 25º)

2.2 Personnel qualification

Service technicians:
Repairs may only be carried out by trained and authorised service technicians.
During the execution of their work, they are at all times fully responsible for the fulfilment of locally applicable safety guidelines and standards.
Temporary employees and persons in training may only carry out repair and replacement work under the supervision of an authorised service technician.

2.3 Cautions and warning statements

⚠ **Safety**
Safety information is indicated with the warning symbol.

- Follow the instructions carefully next to these warning symbols! Not paying careful attention to these instructions could result in physical injury or damage to the wheelchair or the environment. Where ever possible, safety information is provided in the relevant chapter.

⚠ **Temperature**
- Avoid physical contact with the wheelchair's motors at all times. Motors are continuously in motion during use and can reach high temperatures. After use, the motors will cool down slowly. Physical contact could cause burns.
- If you do not use the wheelchair, ensure that it is not exposed to direct sunlight for lengthy periods of time. Certain parts of the wheelchair, such as the seat, the back and the armrests can become hot if they have been exposed to full sunlight for too long. This may cause burns or allergic reactions to the skin.

⚠ **Interference precautions**

Precautions in combining seat adjustment settings
When fitting and optimizing different seating settings and functions, professionals should be aware that not all settings can be combined over the full range. There are limitations to take into account when using electrical tilt, although unlikely in average fitting situations*. Combining extremer settings can cause the back of the seat frame to touch the carrier when tilting. This should be avoided since it could damage the wheelchair and can be avoided by making some concessions to one or more settings.

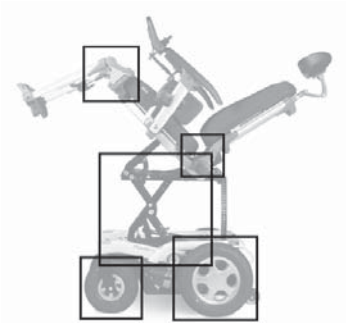
Practical guidelines
When fitting a Puma 20/40 with electrical tilt to the needs of a specific client, professionals should check that the seat frame can tilt freely without the covers with reflector at the back interfer with the carrier.

When to expect interference?
Interference is most likely to occur at low seat heights, especially in combination with large seat depth and centre of gravity set to the rear of the wheelchair. For detailed information, please refer to the seat tilt configuration tables.

How to avoid interference?
You can resolve interference by:
- Making the seat depth smaller (see seat adjustments, backrest adjustment)
- Positioning the center of gravity forward (see seat adjustments, centre of gravity setting)
- Increasing the seat height (see seat adjustments, seat height adjustment)
- Choosing a different tilt module, an alternative mounting of the 0- 25° tilt module (see seat adjustments, adjusting the electrical seat tilt) or no tilt at all.
- Also see the seat tilt configuration tables.

* In practice this rarely leads to problems. Firstly because interference mainly occurs when combining a low seat height and large seat depth, settings that rarely coincide in practice. Usually a low seat height means 'small under leg length', 'small person' so small seat depth. Secondly, in most cases a satisfactory solution can be created all the same.

Seat adjustment factory settings
Sunrise Medical HCM will deliver a Puma wheelchair with default factory settings. These settings depend on the options ticked on the order form. When a configuration is ordered that causes interference, Sunrise Medical HCM applies modified factory settings and informs the customer of this via a note included in the wheelchair delivery. The seat tilt configuration tables also provide detailed information about factory settings.



⚠ **Moving parts**
- A wheelchair has moving and rotating parts. Contact with moving parts may result in serious physical injury or damage to the wheelchair. Contact with the moving parts of the wheelchair should be avoided.
- Wheels (turning and castor)
- Electric tilt in space adjustment
- Electric high/low option
- Electric backrest adjustment
- Electric elavating legrests

⚠ **Electromagnetic radiation**
The standard version of your electric wheelchair has been tested on the applicable requirements with respect to electromagnetic radiation (EMC requirements) In spite of these tests:
- it cannot be excluded that electromagnetic radiation may have an influence on the wheelchair. For example:
- mobile telephony
- large-scale medical apparatus
- other sources of electromagnetic radiation
- it cannot be excluded that the wheelchair may interfere with electromagnetic fields.

For example:
- shop doors
- burglar alarm systems in shops
- garage door openers

In the unlikely event that such problems do occur, we request that you notify your supplier immediately.

⚠ **Decals and instructions on the wheelchair**
Decals and instructions on the wheelchair
- The signs, symbols and instructions affixed to the wheelchair comprise part of the safety facilities. They must never be covered or removed. They must remain present and clearly legible throughout the entire lifespan of the wheelchair.
- Replace or repair all illegible or damaged signs, symbols and instructions immediately. Please contact your supplier for assistance.

2.4 Used decals on the wheelchair

Check manual before using

Freewheel switch in ‘Drive’ mode
Freewheel switch in ‘Push’ mode.
Don’t put the freewheel switch in ‘Push’ mode on a slope

Battery charging connection

Attachment point of the tie-down system for transportation in a vehicle.

Danger of crushing!
Use caution when swinging the controller aside to avoid getting anything crushed.

Trap danger. Danger of getting fingers jammed.

3 Tools, parts and components

3.1 Tools

The tools below are needed for various mechanical settings and maintenance:

Quantity	Description	Size (mm)
1	Screwdriver, medium	5
1	Screwdriver, crosshead	-
1	Hammer (plastic)	-
1	Chaser	-
1	Pair of wire cutters	-
1	Circlip pliers	-
1	Water pump pliers	-
2	Open ended spanner	10, 13
2	Ring spanner	10, 13
1	Torque wrench, socket	10, 13
1	Torx key	T30
1	Allen key	2, 4, 6, 8
1	Loctite 243	-
1	Loctite 270	-
#	Tie wraps	
Remark Size: the EU key width (of the relevant tool).		

⚠ Use only high-quality tools for the adjustment(s) described.
Make sure that the hexagon of the spanner is attached securely to the hexagon of the fastening article. This prevents the 'rotation' of hexagons of fastening articles and spanners that may affect proper adjustment.

3.2 Tools electronics

The following tools are needed for various electronic settings:

Article numbers	Description	DX2	DX	Shark	Rnet	Pilot+	VR-2	PC	Hand	Brand
1001893	Shark Programming adaptor (DK-ADAPT)			X					X	Dynamic
00355.0440	Hand Held Programmer (DX-HHP-GDW)	X	X	X					X	Dynamic
1009567	Programming adaptor for DX2, Shark, A-series and R-series (DWIZ-ADAPT)	X	X	X*				X	X	Dynamic
00355.0469	Wizard programming cable (GSM61171)	X	X	X				X		Dynamic
1003236	Dynamic Wizard USB set (DWIZ-KIT + DWD-OEM-U)	X	X	X				X		Dynamic
9006857	R-net Diagnostic Test Tool (D50996)				X				X	PGDrivesTechnology
9006858	R-net Programming cable for R-net DTT (SA79174)				X				X	PGDrivesTechnology
PR0111	Pilot+ Hand Held Programmer PP1B (D49511)					X	X		X	PGDrivesTechnology
9006859	VR-2 Programming cable for R-net DTT (SA79176)						X		X	PGDrivesTechnology
PR0200	Pilot+ PC Programmer A (D50144)					X	X	X		PGDrivesTechnology
PR0210	PG Pilot+ PC Programmer B (D50145)					X	X	X		PGDrivesTechnology
9003295	R-net PC Programmer OEM (D50611)				X			X		PGDrivesTechnology
9003296	R-net PC programmer Dongle OEM				X			X		PGDrivesTechnology

X* = except the Hand Help Programmer

4 Spare parts

4.1 Use of the parts lists

This document is meant as a reference book to be used to order parts for the wheelchair that is shown on the front cover.

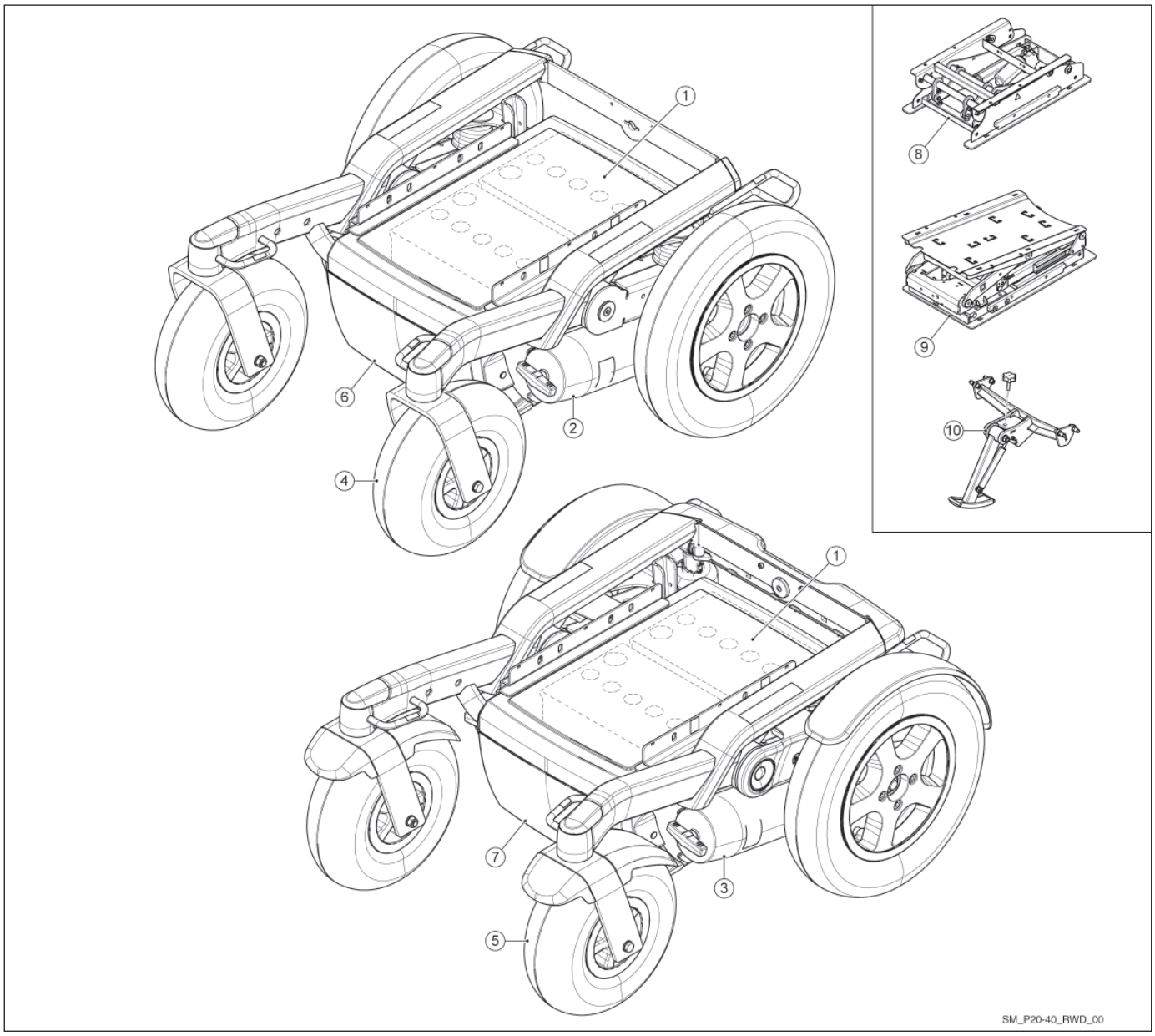
How to order:
When ordering parts, please specify:
- Serial number (see the identification plate)
- Group (to which the relevant part belongs)
- Article number
- Number of parts required
- Description (in the relevant language)
- Dimensions (if applicable)

Remark:
- If a part does not have a position number, it means that the part concerned cannot be purchased separately. The part concerned is part of the assembly shown. This assembly must be ordered as one piece. It has to be replaced in its entirety.
- Boxed position numbers refer to the relevant drawing.

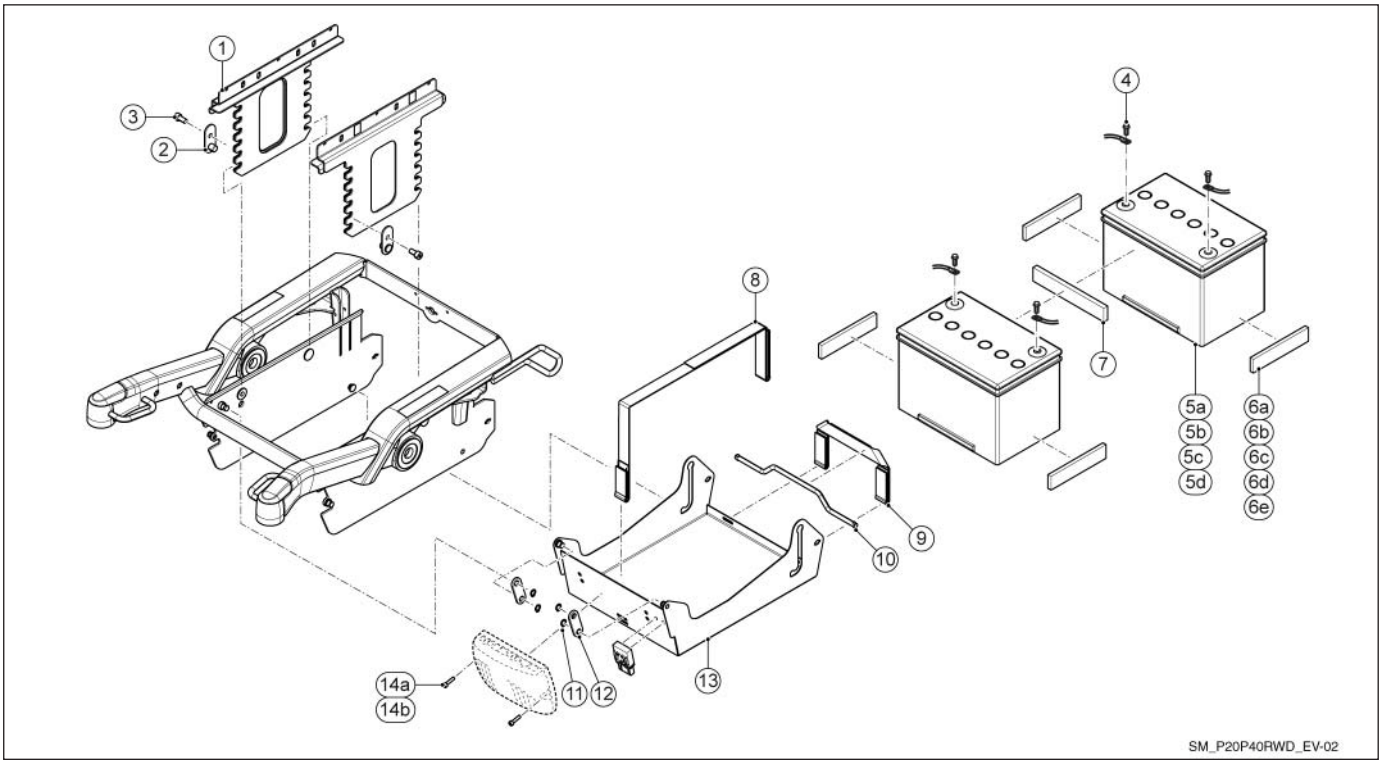
Order address:
Please mail or fax your orders to your supplier.

Service technicians:
Repairs may only be carried out by trained and authorised service technicians.
During the execution of their work they are at all times fully responsible for the fulfilment of locally applicable safety guidelines and standards.
Temporary employees and persons in training may only carry out repair and replacement work under the supervision of an authorised service technician.

4.2 Carrier and seat adjustments

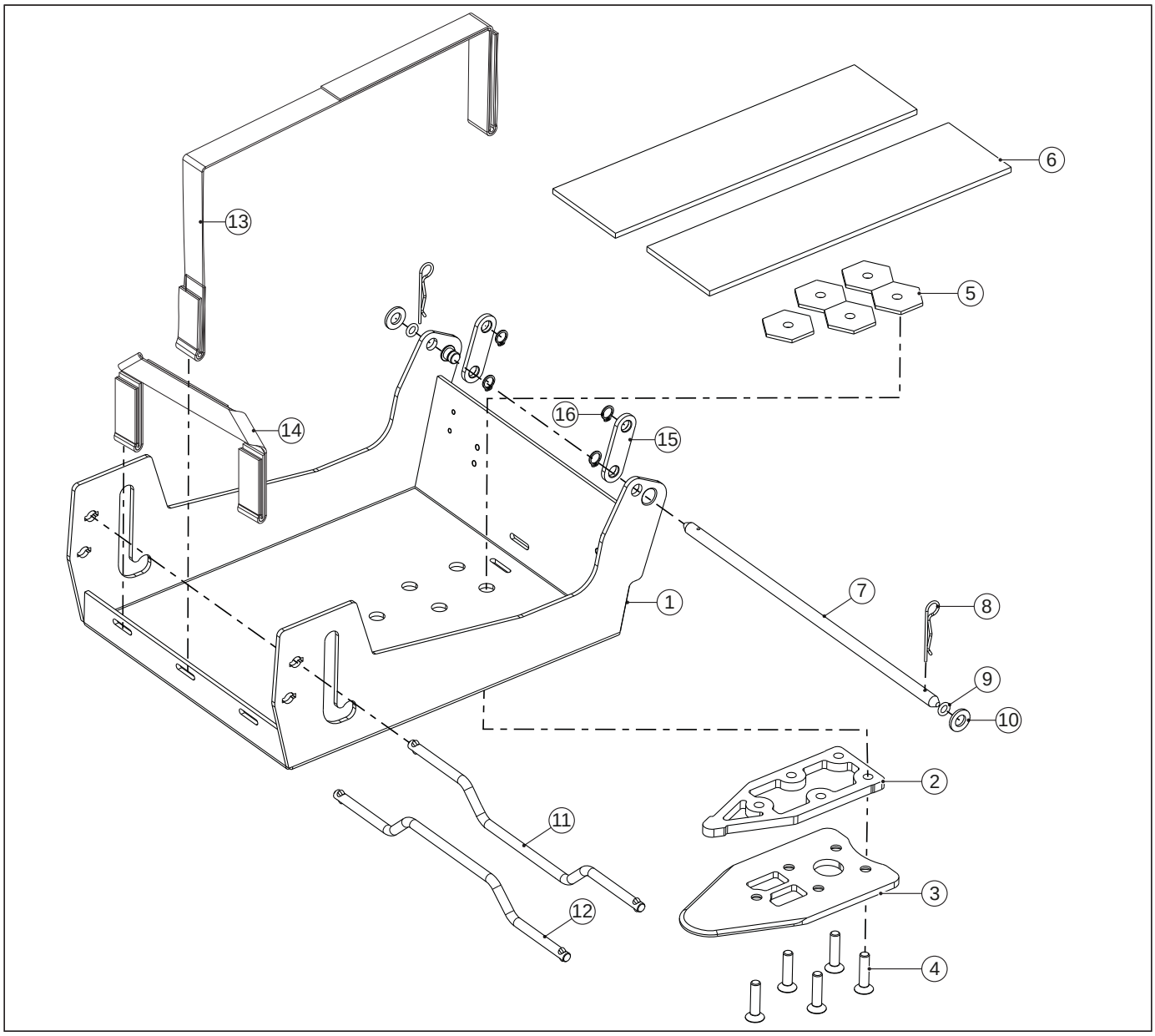


1 Battery tray and suspension and chair interface Puma 20/40



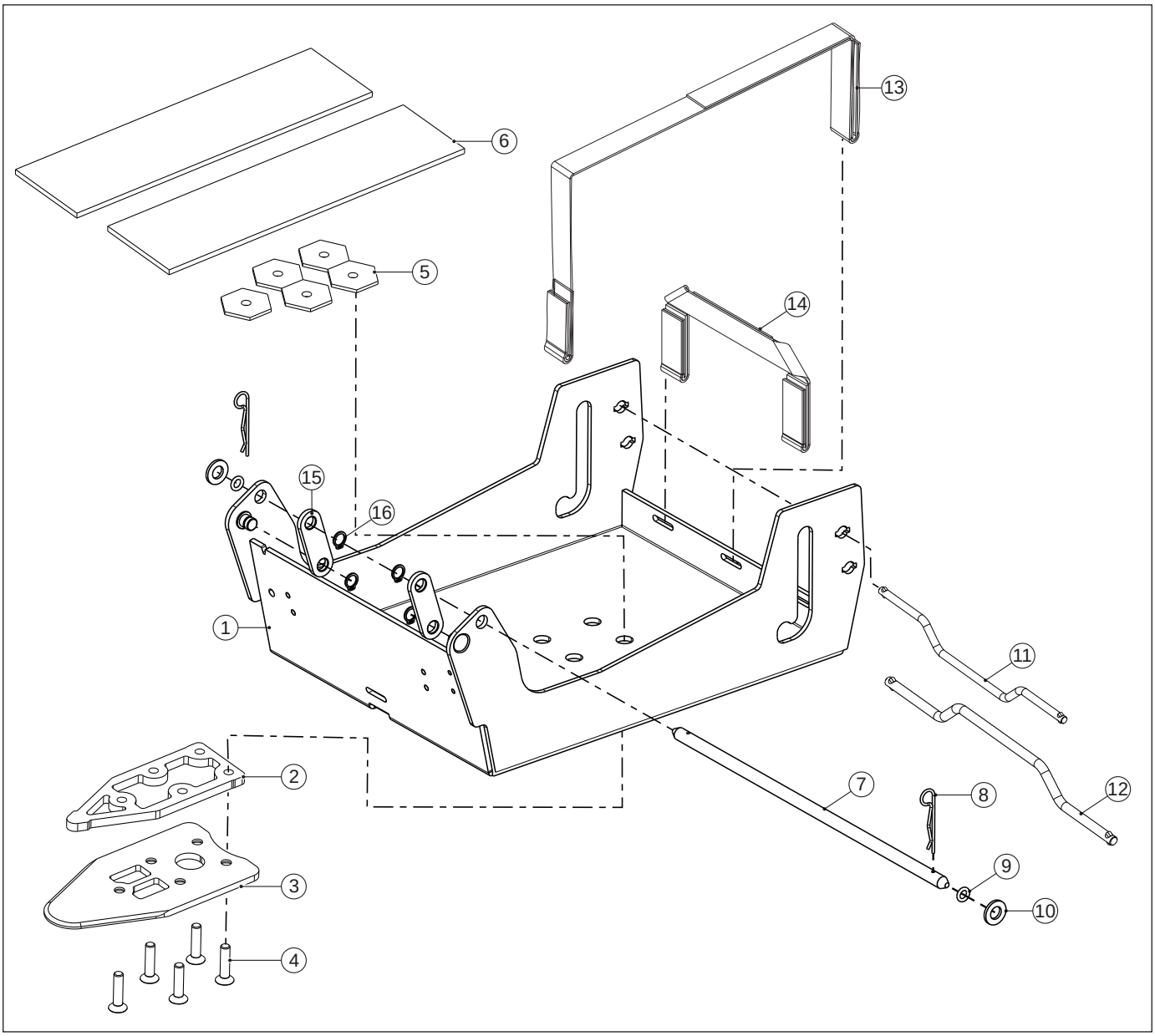
Pos	Qty	Article number	Description
1-3	1	9005935	Chair Interface set
4,5a	2	9002758	Battery 38 Ah (C20) Gel
4,5b	2	6000589	Battery 50 Ah (C20) AGM
4,5c	2	9002759	Battery 60 Ah (C20) Gel
4,5d	2	9002760	Battery 78 Ah (C20) Gel
-	2	9002752	Set battery connection covers
6a,6b,6c,6d,7	4	9005956	Battery spacer set universal
6a,6b,7	4	9005957	Battery spacer set MK (40/50A)
6c,6d,7	4	9005958	Battery spacer set MK (60/74A)
6,7*	1	9005959	Battery spacer set Sonnenschein
			*= spacers needed if equiped with Sonnenschein Batteries (not a standard item)
8,9	1	9005931	Battery straps
8-13	1	9005930	Battery box
14a	2	1007080	Socket head screw DX2
14b	2	9006237	Socket head screw Shark
14c	2	00000.4042	Socket head screw R-net 120
14d	2	00000.4035	Socket head screw R-net 90 / VR2
-	1	1015808	Battery charger 24V 5A CTE
-	1	1011502	Battery charger 24V 8A CTE
-	1	1017038	Battery charger buddy ECB801 8A

2 Dahl car docking system Puma 40 FWD (only i.c.w. Sedeo Pro+)



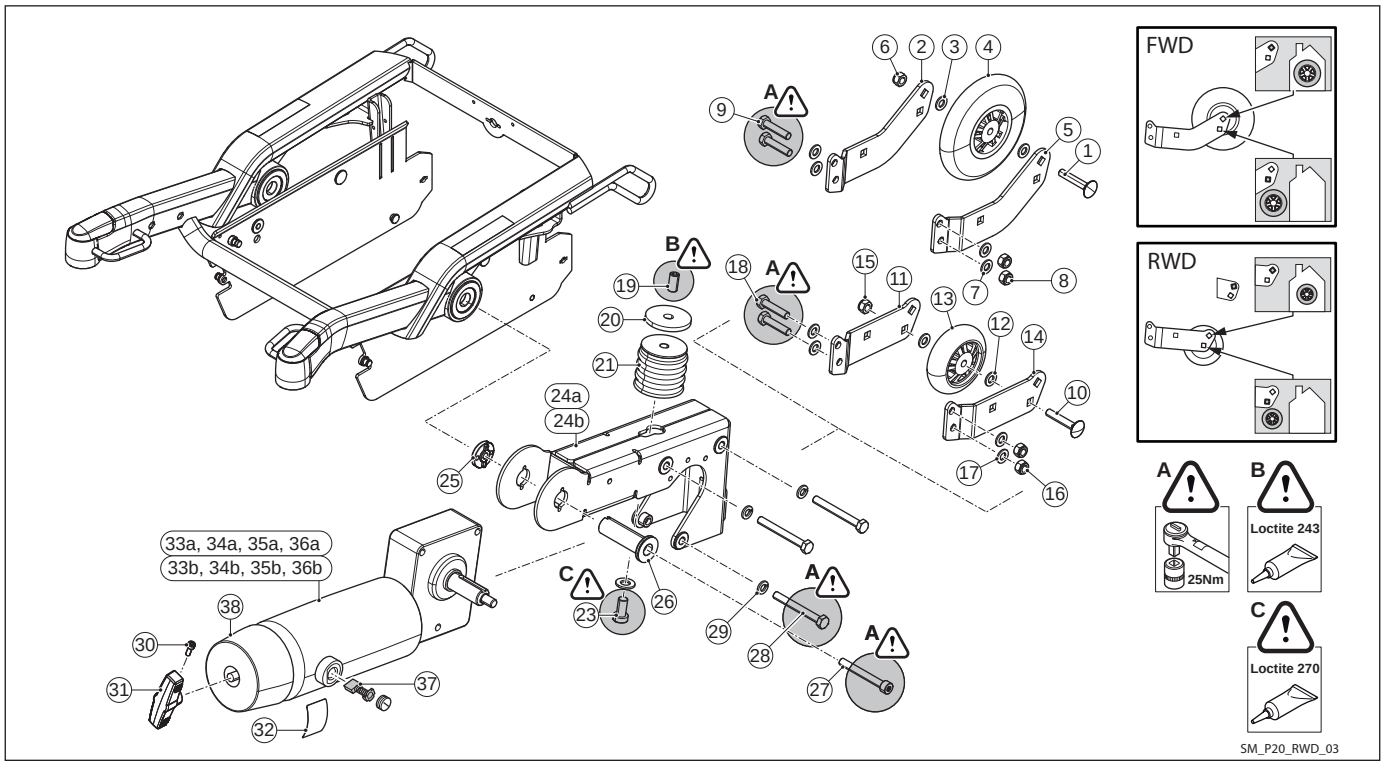
Pos	Qty	Article number	Description
1,12-16	1	1017025	Battery Box Car Docking FWD (only i.c.w. Sedeo Pro+)
2-6	1	9009478	Plate and bolts Dahl cardocking system (only i.c.w. Sedeo Pro+)
2-11	1	1017123	Dahl cardocking, set (only i.c.w. Sedeo Pro+)
9	1	-	O-ring 7x2,5 NBR 70
10	1	-	Washer Pa Di/Do 10.6/20 S=2.2

3 Dahl car docking system Puma 40 RWD (only i.c.w. Sedeo Pro+)



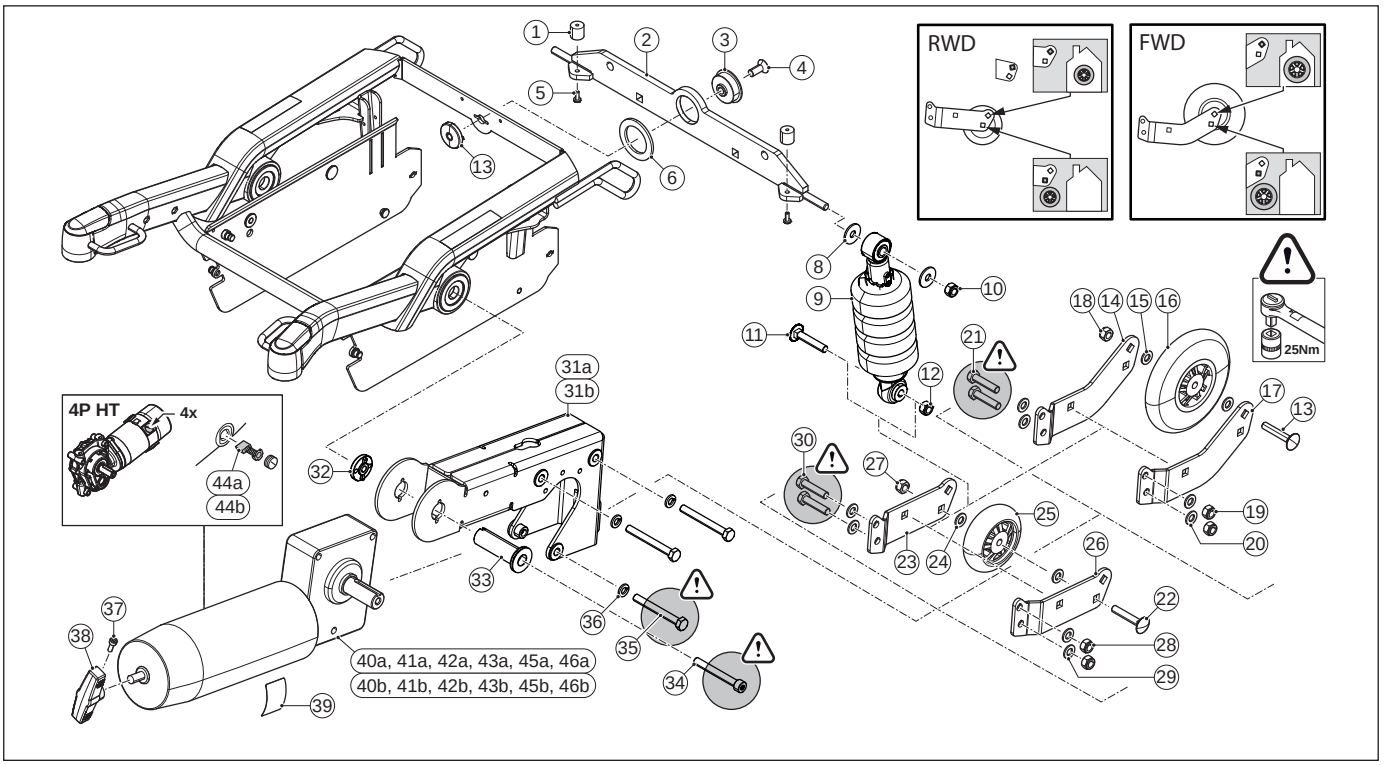
Pos	Qty	Article number	Description
1,12-16	1	1017026	Battery Box Car Docking RWD (only i.c.w. Sedeo Pro+)
2-6	1	9009478	Plate and bolts Dahl cardocking system (only i.c.w. Sedeo Pro+)
2-11	1	1017123	Dahl cardocking, set (only i.c.w. Sedeo Pro+)
9	1	-	O-ring 7x2,5 NBR 70
10	1	-	Washer Pa Di/Do 10.6/20 S=2.2

4 Suspension arm and motors Puma 20



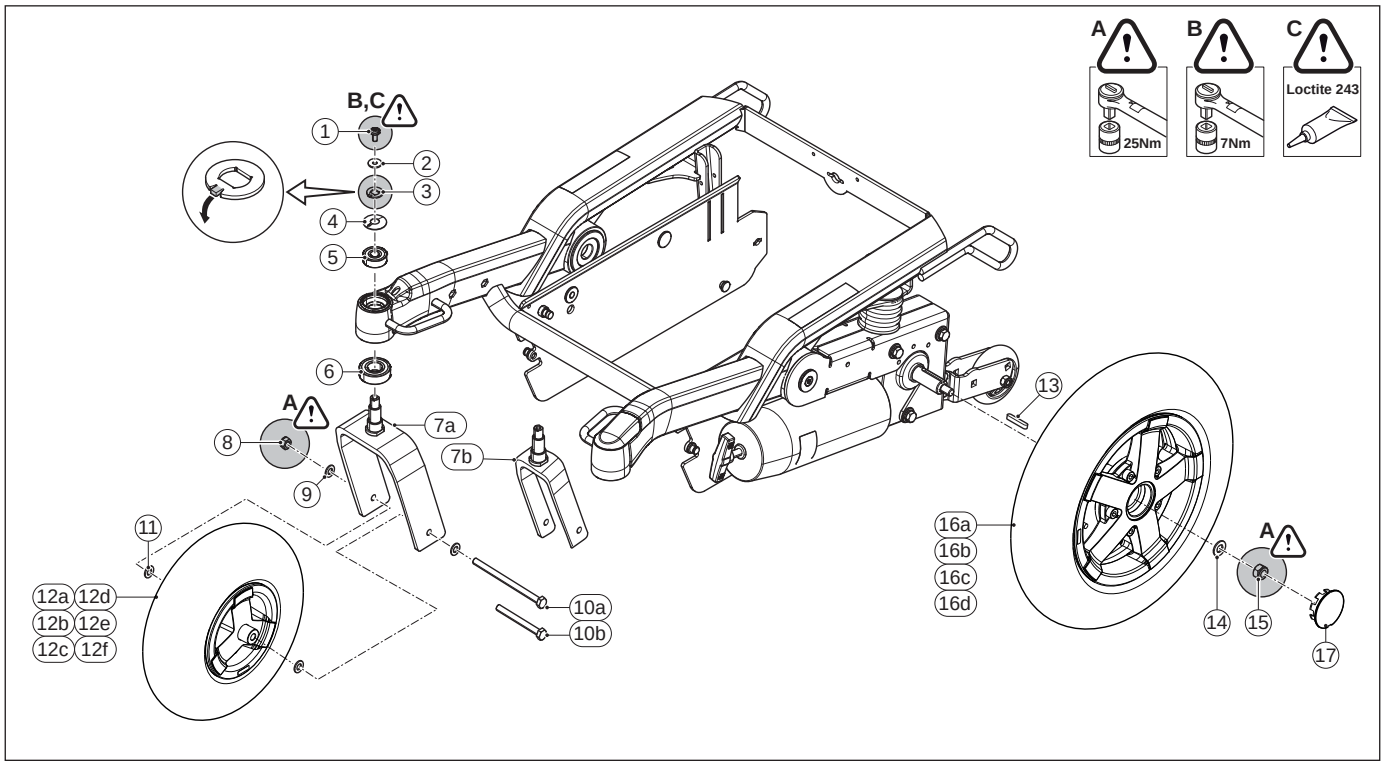
Pos	Qty	Article no	Description
1-9	2	9005963	Anti tip complete FWD
1,3,4,6	2	9002896	Anti tip wheel FWD
10-18	2	9005962	Anti tip complete RWD
10,12,13,15	2	9002897	Anti tip wheel RWD
19-21,23	1	9005964	Rubber suspension set
24a,25-29	1	9005939	Motor bracket right
24b,25-29	1	9005938	Motor bracket left
28-32,33,37,38	1	9007478	Motor set, 6 km/h DX and Shark, Puma 20
28-32,33a,37,38	1	9007479	Motor RWD right/FWD left, 6 km/h DX and Shark, Puma 20, see paragraph 5.2.1.
28-32,33b,37,38	1	9007480	Motor RWD left/FWD right, 6 km/h DX and Shark, Puma 20, see paragraph 5.2.1.
28-32,34,37,38	1	9007481	Motor set, 6 km/h PG (R-net and VR2), Puma 20
28-32,34a,37,38	1	9007482	Motor RWD right/FWD left, 6 km/h PG (R-net and VR2), Puma 20, see paragraph 5.2.1.
28-32,34b,37,38	1	9007483	Motor RWD left/FWD right, 6 km/h PG (R-net and VR2), Puma 20, see paragraph 5.2.1.
28-32,35,37,38	1	9007484	Motor set, 10 km/h DX and Shark, Puma 20
28-32,35a,37,38	1	9007485	Motor RWD right/ FWD left, 10 km/h DX and Shark, Puma 20, see paragraph 5.2.1.
28-32,35b,37,38	1	9007486	Motor RWD left/FWD right, 10 km/h DX and Shark, Puma 20, see paragraph 5.2.1.
28-32,36,37,38	1	9007487	Motor set, 10 km/h PG (R-net and VR2), Puma 20
28-32,36a,37,38	1	9007488	Motor RWD right/FWD left, 10 km/h PG (R-net and VR2), Puma 20, see paragraph 5.2.1.
28-32,36b,37,38	1	9007489	Motor RWD left/FWD right, 10 km/h PG (R-net and VR2), Puma 20, see paragraph 5.2.1.
30-31	2	1015807	Freewheel lever
32	2	9002784	Brake Release Sticker
37	1	9006360	Puma 20 Motor Brushes 4pc service
38	2	9006452	Puma 20 Motor Brake Cover service

5 Suspension arm and motors Puma 40



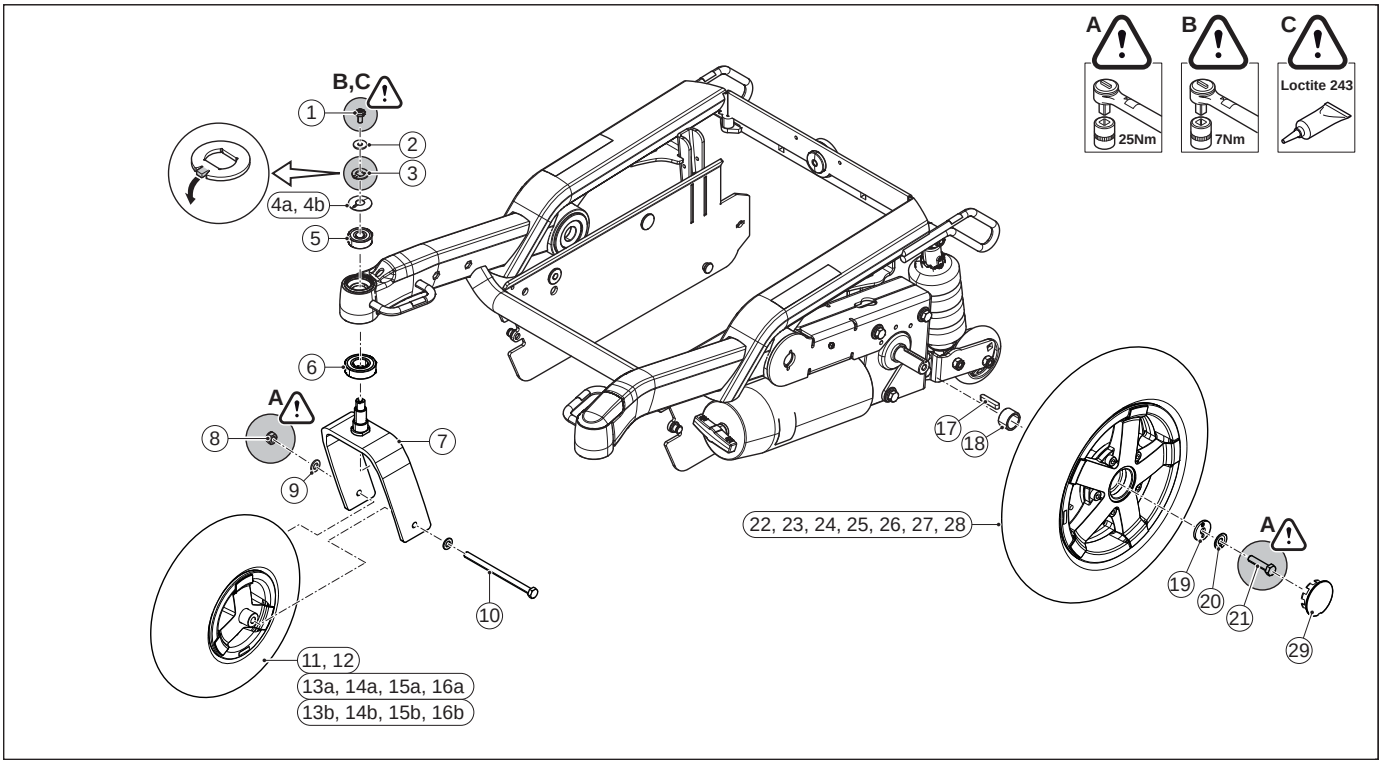
Pos	Qty	Article number	Description
1-12	1	9005965	Rubber suspension + bridge
8-12	1	9005966	Rubber suspension set
13-21	2	9005963	Anti tip complete FWD
13,15,16,18	2	9002896	Anti tip wheel FWD
22-30	2	9005962	Anti tip complete RWD
22,24,25,27	2	9002897	Anti tip wheel RWD
31a,32-36	1	9006782	Motor bracket 4 pole, right
31b,32-36	1	9006781	Motor bracket 4 pole, left
35-39, 40a, 44a	1	9006783	Motor 4-pole RWD left/FWD right, 6 km/h DX and Shark, Puma 40
35-39, 40b, 44a	1	9006784	Motor 4-pole RWD right/FWD left, 6 km/h DX and Shark, Puma 40
35-39, 41a, 44a	1	9006785	Motor 4-pole RWD left/FWD right, 6 km/h PG (R-net and VR2), Puma 40
35-39, 41b, 44a	1	9006786	Motor 4-pole RWD right/FWD left, 6 km/h PG (R-net and VR2), Puma 40
35-39, 42a, 44a	1	9006787	Motor 4-pole RWD left/FWD right, 10 km/h DX and Shark, Puma 40
35-39, 42b, 44a	1	9006788	Motor 4-pole RWD right/FWD left, 10 km/h DX and Shark, Puma 40
35-39, 43a, 44a	1	9006789	Motor 4-pole RWD left/FWD right, 10 km/h PG (R-net and VR2), Puma 40
35-39, 43b, 44a	1	9006790	Motor 4-pole RWD right/FWD left, 10 km/h PG (R-net and VR2), Puma 40
35-39, 45a, 44b	1	9008626	Motor 4-pole RWD left/FWD right, 12,5 km/h DX and Shark, Puma 40
35-39, 45b, 44b	1	9008629	Motor 4-pole RWD right/FWD left, 12,5 km/h DX and Shark, Puma 40
35-39, 46a, 44b	1	9008630	Motor 4-pole RWD left/FWD right, 12,5 km/h PG (R-net and VR2), Puma 40
35-39, 46b, 44b	1	9008631	Motor 4-pole RWD right/FWD left, 12,5 km/h PG (R-net and VR2), Puma 40
37-38	2	1015807	Freewheel lever
39	2	9002784	Brake Release Sticker
44a	2	9005107	4PHT 8 mm motor brushes service (6 and 10 km/h)
44b	2	9008819	4PHT 5 mm motor brushes service (12,5 km/h)

6 Castor forks and wheels Puma 20



Pos	Qty	Article number	Description
1-6	2	9005934	Anti shimmy + bearings, set
7a,8,9,10a	2	9005932	Castor fork (9" and 10")
7b,8,9,10b	2	9007752	Castor fork 60 mm (8")
8,9,10b,11,12a	2	1016987	Castor wheel indoor 200x50 (8"), grey air
8,9,10b,11,12a	1	1017434	Castor wheel indoor 200x50 (8"), grey air, set
8,9,10b,11,12a	2	1016988	Castor wheel indoor 200x50 (8"), grey punctureproof
8,9,10b,11,12a	1	1017435	Castor wheel indoor 200x50 (8"), grey punctureproof, set
8-11,12a	2	1016998	Castor wheel indoor 2.80/2.50x4 (9"), air
8-11,12a	1	1017438	Castor wheel indoor 2.80/2.50x4 (9"), air, set
8-11,12b	2	1016999	Castor wheel indoor 2.80/2.50x4 (9"), punctureproof
8-11,12b	1	1017439	Castor wheel indoor 2.80/2.50x4 (9"), punctureproof, set
8-11,12c	1	1017000	Castor wheel outdoor 3.00x4 (10"), grey air, right
8-11,12d	1	1017001	Castor wheel outdoor 3.00x4 (10"), grey air, left
8-11,12c,12d	1	1017436	Castor wheel outdoor 3.00x4 (10"), grey air, set
8-11,12e	1	1017002	Castor wheel outdoor 3.00x4 (10"), grey punctureproof, right
8-11,12f	1	1017003	Castor wheel outdoor 3.00x4 (10"), grey punctureproof, left
8-11,12e,12f	1	1017437	Castor wheel outdoor 3.00x4 (10"), grey punctureproof, set
13-15,17	2	9006792	Drive wheel mounting set, Puma 20
13-15,16a,17	2	1017314	Drive wheel Indoor 12 1/2 x 2 1/4 (13"), grey air
13-15,16a,17	1	1017958	Drive wheel Indoor 12 1/2 x 2 1/4 (13"), grey air, set
13-15,16b,17	2	1017315	Drive wheel Indoor 12 1/2 x 2 1/4 (13"), grey punctureproof
13-15,16b,17	1	1017959	Drive wheel Indoor 12 1/2 x 2 1/4 (13"), grey punctureproof, set
13-15,16c,17	2	1017312	Drive wheel outdoor 3.00x8 (14"), grey air
13-15,16c,17	1	1017956	Drive wheel outdoor 3.00x8 (14"), grey air, set
13-15,16d,17	2	1017313	Drive wheel outdoor 3.00x8 (14"), grey punctureproof
13-15,16d,17	1	1017957	Drive wheel outdoor 3.00x8 (14"), grey punctureproof, set
17	2	9007193	Wheelcover grey
-	2	1015297	Inner tube 200x50 (8")
-	2	1015298	Outer tyre 200x50 (8") grey line profile
-	2	1015116	Inner tube 2.80/2.50x4 (9")
-	2	1015107	Outer tyre 2.80/2.50x4 (9") grey line profile
-	2	1015115	Inner tube 3.00x4 (10")
-	2	1015105	Outer tyre 3.00x4 (10") grey block profile
-	2	1015118	Inner tube 12 1/2 x 2 1/4 (13")
-	2	1015112	Outer tyre 12 1/2 x 2 1/4 (13") grey block profile
-	2	1015117	Inner tube 3.00x8 (14")
-	2	1015111	Outer tyre 3.00x8 (14") grey block profile

7 Castor forks and wheels Puma 40

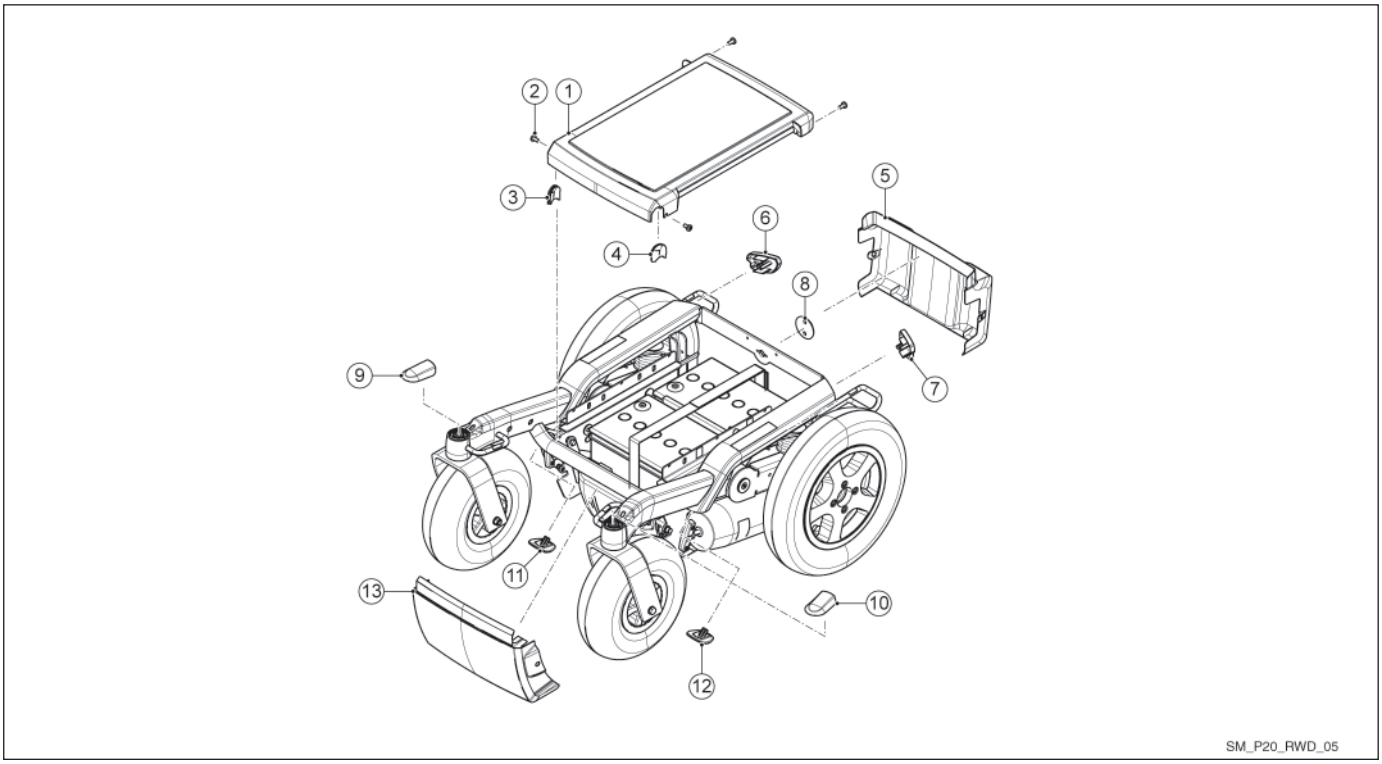


Pos	Qty	Article number	Description
1-3,4a,5,6	2	9005934	Anti shimmy + bearings, set
1-3,4b,5,6	2	9008818	Anti shimmy XT + bearings, set (12,5 km/h)
7-10	2	9005932	Castor fork (9" and 10")
8-11	2	1016998	Castor wheel indoor 2.80/2.50x4 (9"), air
8-11	2	1017438	Castor wheel indoor 2.80/2.50x4 (9"), air, set
8-10,12	2	1016999	Castor wheel indoor 2.80/2.50x4 (9"), punctureproof
8-10,12	2	1017439	Castor wheel indoor 2.80/2.50x4 (9"), punctureproof, set
8-10,13a	1	1017000	Castor wheel outdoor 3.00x4 (10"), grey air, right
8-10,13b	1	1017001	Castor wheel outdoor 3.00x4 (10"), grey air, left
8-10,13a,13b	1	1017436	Castor wheel outdoor 3.00x4 (10"), grey air, set
8-10,14a	1	1017002	Castor wheel outdoor 3.00x4 (10"), grey punctureproof, right
8-10,14b	1	1017003	Castor wheel outdoor 3.00x4 (10"), grey punctureproof, left
8-10,14a,14b	1	1017437	Castor wheel outdoor 3.00x4 (10"), grey punctureproof, set
8-10,15a	1	1017004	Castor wheel outdoor 3.00x4 (10"), black air, right
8-10,15b	1	1017005	Castor wheel outdoor 3.00x4 (10"), black air, left
8-10,15a,15b	1	1017444	Castor wheel outdoor 3.00x4 (10"), black air, set
8-10,16a	1	1017006	Castor wheel outdoor 3.00x4 (10"), black punctureproof, right
8-10,16b	1	1017007	Castor wheel outdoor 3.00x4 (10"), black punctureproof, left
8-10,16a,16b	1	1017445	Castor wheel outdoor 3.00x4 (10"), black punctureproof, set
17-21,29	2	9006008	Drive wheel mounting set, Puma 40
17-22,29	2	1017008	Drive wheel indoor 12 1/2 x 2 1/4 (13"), air
17-22,29	2	1017442	Drive wheel indoor 12 1/2 x 2 1/4 (13"), air, set
17-21,23,29	2	1017009	Drive wheel indoor 12 1/2 x 2 1/4 (13"), punctureproof
17-21,23,29	2	1017443	Drive wheel indoor 12 1/2 x 2 1/4 (13"), punctureproof, set
17-21,24,29	2	1017010	Drive wheel outdoor 3.00x8 (14"), grey air
17-21,24,29	2	1017440	Drive wheel outdoor 3.00x8 (14"), grey air, set
17-21,25,29	2	1017011	Drive wheel outdoor 3.00x8 (14"), grey punctureproof
17-21,25,29	2	1017441	Drive wheel outdoor 3.00x8 (14"), grey punctureproof, set
17-21,26,29	2	1017046	Drive wheel outdoor 3.00x8 (14"), grey air, All Weather
17-21,26,29	2	9010254	Drive wheel outdoor 3.00x8 (14"), grey punctureproof, All Weather
17-21,27,29	2	1017012	Drive wheel outdoor 3.00x8 (14"), black air
17-21,27,29	2	1017446	Drive wheel outdoor 3.00x8 (14"), black air, set
17-21,28,29	2	1017013	Drive wheel outdoor 3.00x8 (14"), black punctureproof
17-21,28,29	2	1017447	Drive wheel outdoor 3.00x8 (14"), black punctureproof, set
29	2	9007193	Wheelcover grey
-	2	9005933	Anti shimmy set
-	2	9008817	Anti shimmy set XT (12,5 km/h)

Continued from **Castor forks and wheels Puma 40**

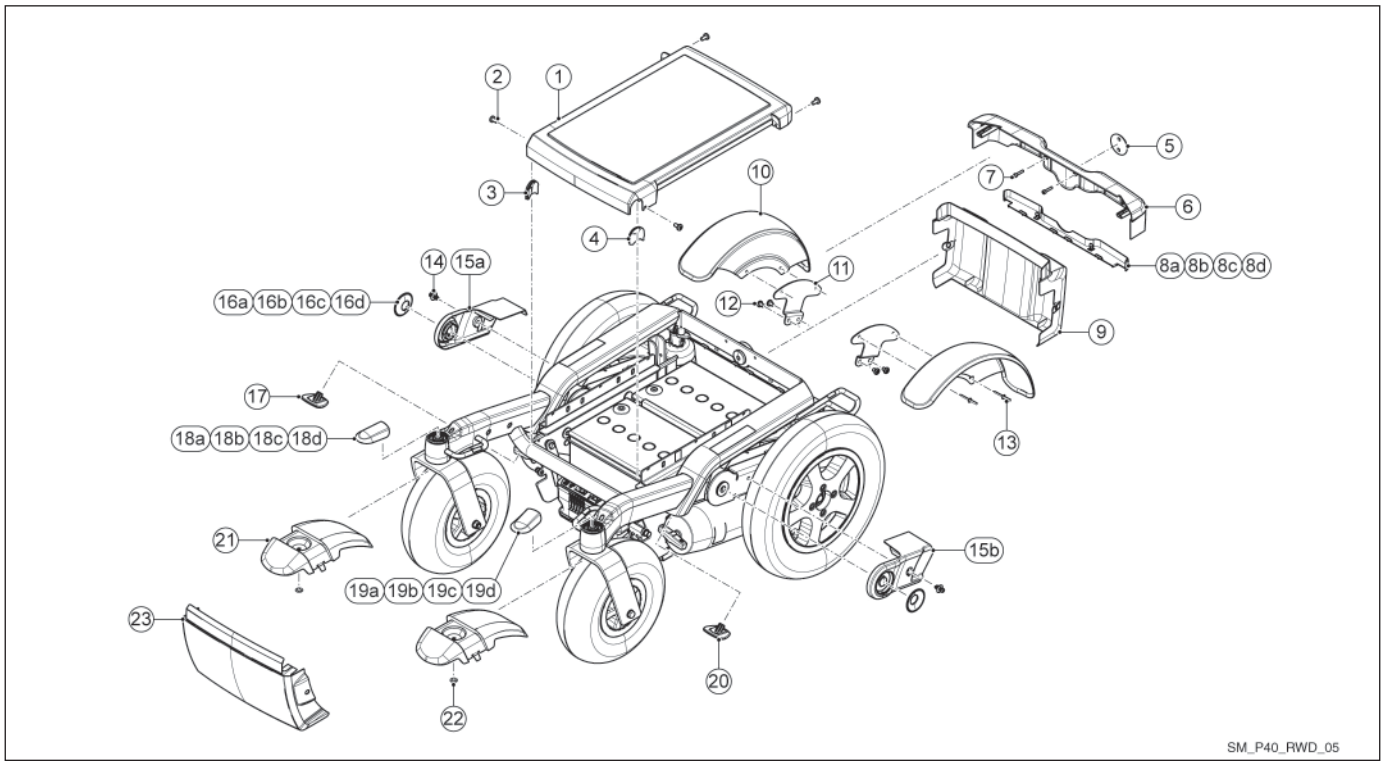
Pos	Qty	Article number	Description
-	2	1015116	Inner tube 2.80/2.50x4 (9")
-	2	1015107	Outer tyre 2.80/2.50x4 (9") grey line profile
-	2	1015115	Inner tube 3.00x4 (10")
-	2	1015105	Outer tyre 3.00x4 (10") grey highway profile
-	2	1015106	Outer tyre 3.00x4 (10") black highway profile
-	2	1015118	Inner tube 12 1/2 x 2 1/4 (13")
-	2	1015112	Outer tyre 12 1/2 x 2 1/4 (13") grey block profile
-	2	1015113	Outer tyre 12 1/2 x 2 1/4 (13") black block profile
-	2	1015117	Inner tube 3.00x8 (14")
-	2	1015111	Outer tyre 3.00x8 (14") grey block profile
-	2	1015110	Outer tyre 3.00x8 (14") black block profile

8 Covers Puma 20



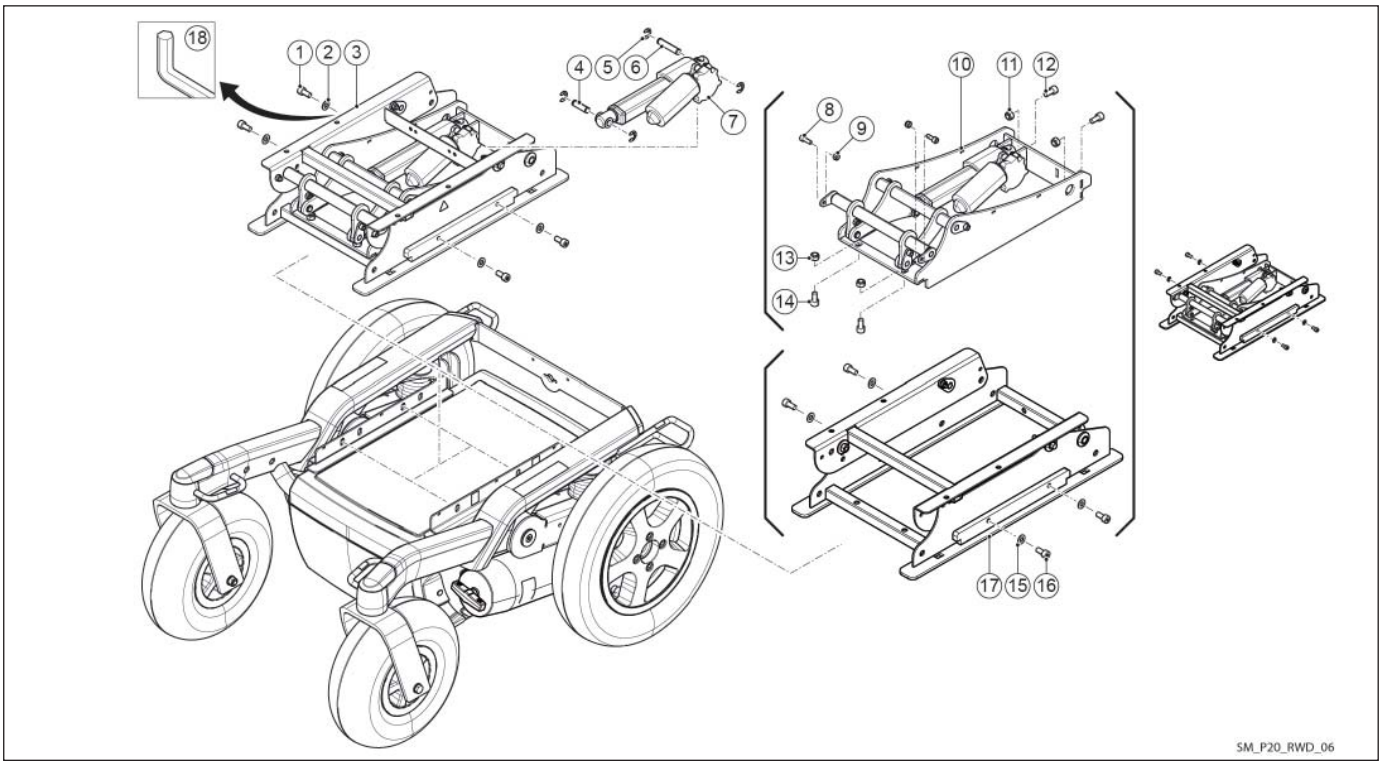
Pos	Qty	Article number	Description
1-4	1	9005971	Battery cover black
3-4	1	9005972	Battery cover clips set
5	1	9009305	Battery access cover
6-7	1	9005973	Tube end covers dark grey set
8	1	9005970	Logo Service
9-10	1	9005981	Ballhead covers dark grey set
11-12	1	9005969	Tube bottom cover set
13	1	9004515	Power module cover

9 Covers Puma 40



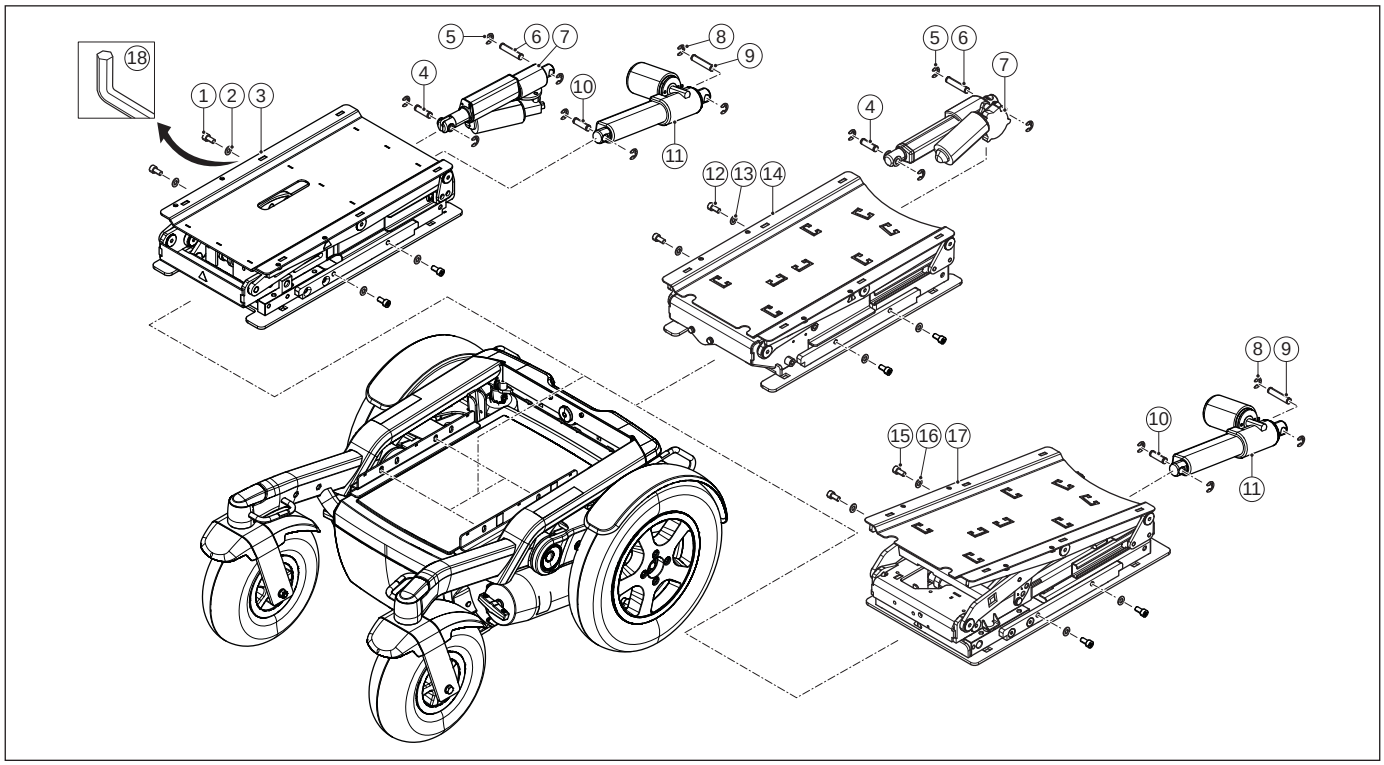
Pos	Qty	Article number	Description
1-4	1	9005971	Battery cover black
3-4	1	9005972	Battery cover clips set
5	1	9005970	Logo
6,7	1	9009308	Suspension bridge cover dark grey
8a,16a,18a,19a	1	9009748	Deco covers green
8b,16b,18b,19b	1	9009749	Deco covers blue
8c,16c,18c,19c	1	9009750	Deco covers orange
8d,16d,18d,19d	1	9009751	Deco covers silver
9	1	9009305	Battery access cover
10,13	2	9005978	Drive wheel fender black with bracket
11,12	1	9005979	Drive wheel fender bracket
14,15a,15b	1	9005975	Motor arm covers dark grey set
17,20	1	9005969	Tube bottom cover set
21-22	2	9005976	Castor wheel fender black
23	1	9004515	Power module cover
-	1	1017871	Deco cover set (accessoire kit)

10 Tilt modules Puma 20



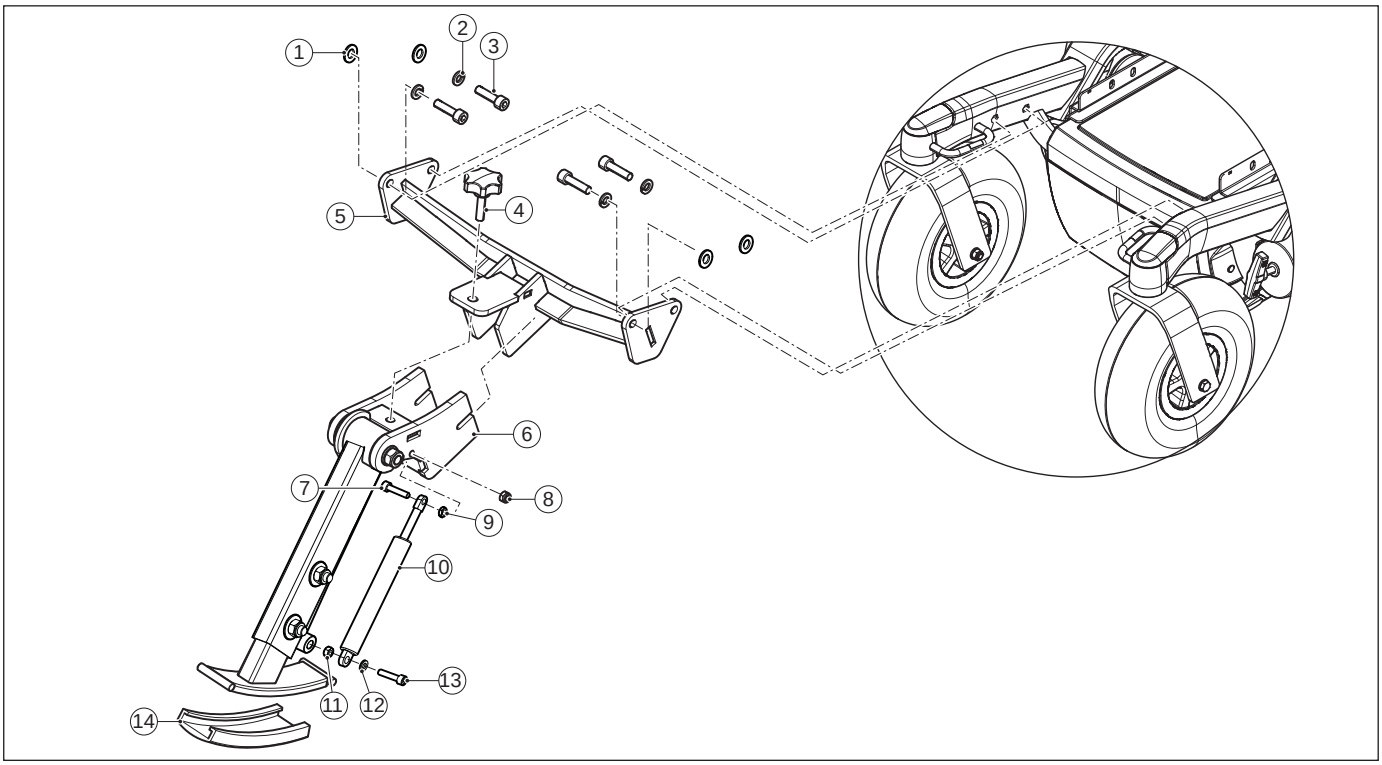
Pos	Qty	Article number	Description
1-7	1	9006017	Electrical tilt 25º
4-6	1	9006025	Til actuator mounting set
4-7	1	9006023	Tilt actuator < mid October 2012 (1 micro switch)
4-7	1	1017466	Tilt actuator > mid October 2012 (2 micro switches)
8-14	1	9006018	Electrical tilt 25º Add-on
15-17	1	9006016	Mechanical tilt
18	1	9007749	Square Allan key 6 mm

11 Tilt and lift modules Puma 40



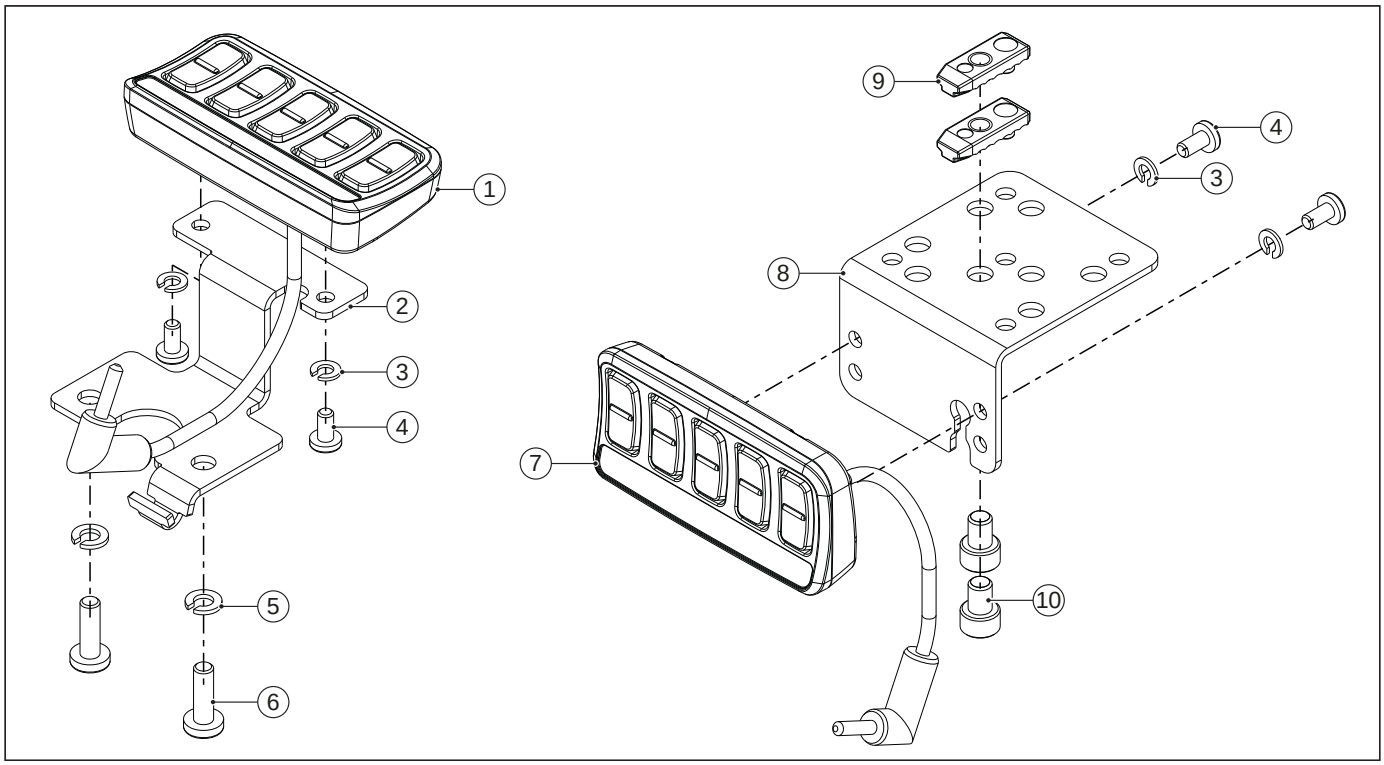
Pos	Qty	Article number	Description
1-2,4-7,12-14	1	9006019	Electrical lift with fixed tilt
1-2,8-11,15-17	1	9006021	Electrical tilt 45º
1-11	1	9006020	Electrical lift with electrical tilt 45º
4-6	1	9006025	Til actuator mounting set
4-7	1	9006023	Tilt actuator < mid October 2012 (1 micro switch)
4-7	1	1017466	Tilt actuator > mid October 2012 (2 micro switches)
8-10	1	9006024	Lift actuator mounting set
8-11	1	9006022	Lift actuator
18	1	9007749	Square Allan key 6 mm
-	1	9007683	Down limit switch
-	1	9007684	Inhibit switch for electrical lift
-	1	9009963	Inhibit switch for electrical tilt

12 Kerb climber Puma 20/40



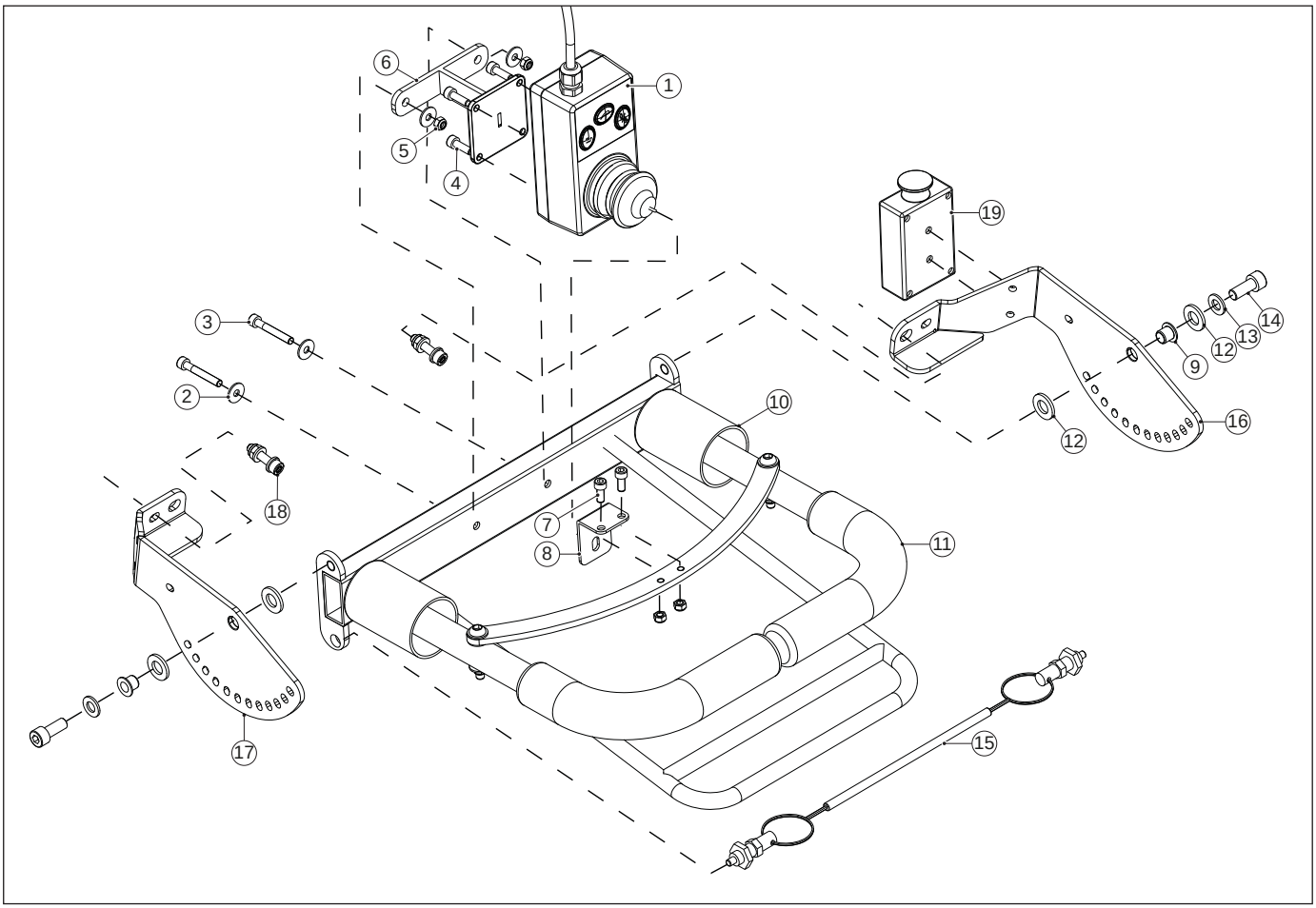
Pos	Qty	Article number	Description
1-14	1	9007864	Kerb climber, adjustable
7-13	1	9003571	Kerb climber gas spring
14	1	03411.0190	Kerb climber shoe

13 Direct access Puma 20/40



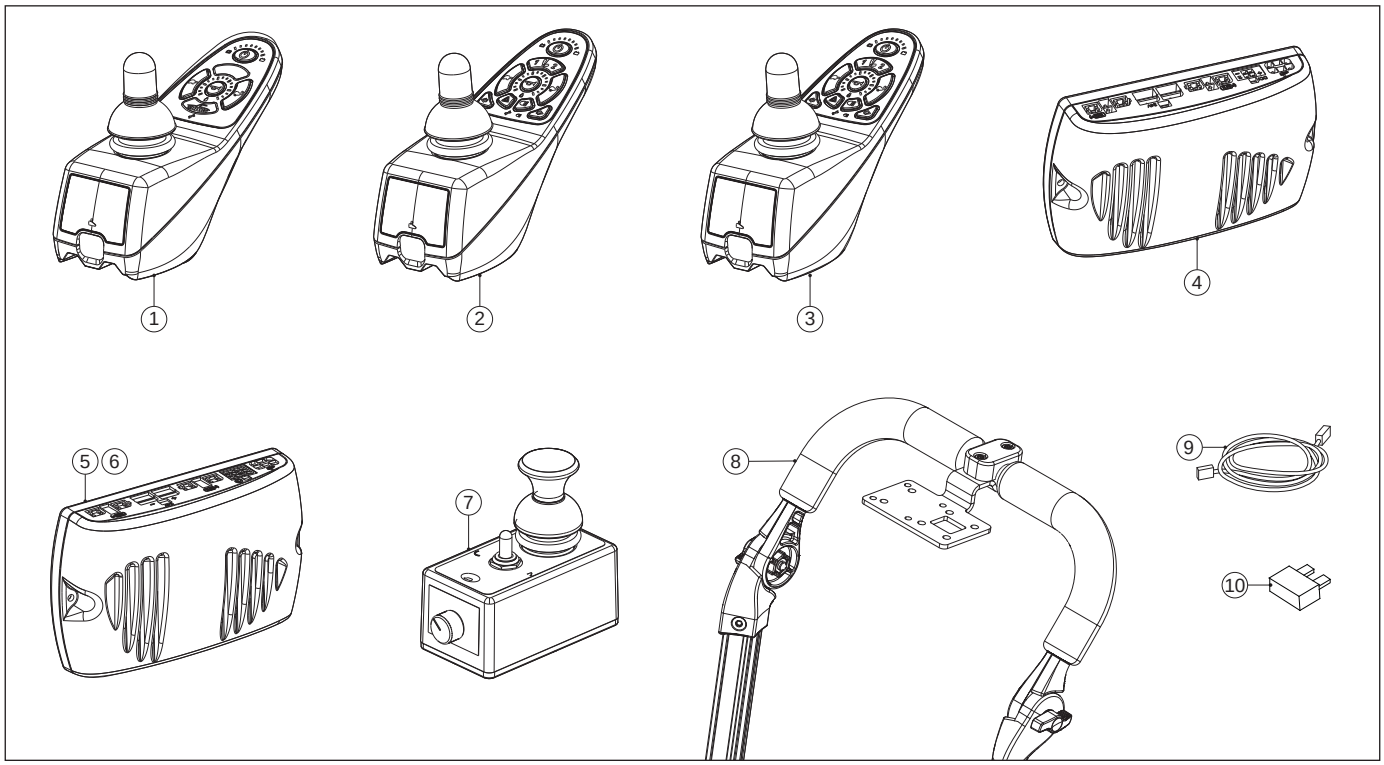
Pos	Qty	Article number	Description
1,3-4	1	1016970	R-net direct access keypad joystick side
1-6	1	1016968	R-net direct access keypad joystick side, set
2,5-6	1	1016971	Direct access keypad bracket joystick side
3	2	-	Spring washer M4 DIN127B VZ
3-4,7	1	1016973	R-net direct access keypad not joystick side
3-4,7-10	1	1016969	R-net direct access keypad not joystick side, set
4	2	-	Round head screw with Phillips head M4x8 DIN7985
5	2	-	Spring washer M5 DIN127B VZ
6	2	-	Round head screw with Phillips head M5x16 DIN7985
8-10	1	1016972	Direct access keypad bracket not joystick side
10	2	1015330	Torx socket head screw M6x8 DIN7984 (100 pieces)

14 Attendant Z-steering (only for Norwegian market)



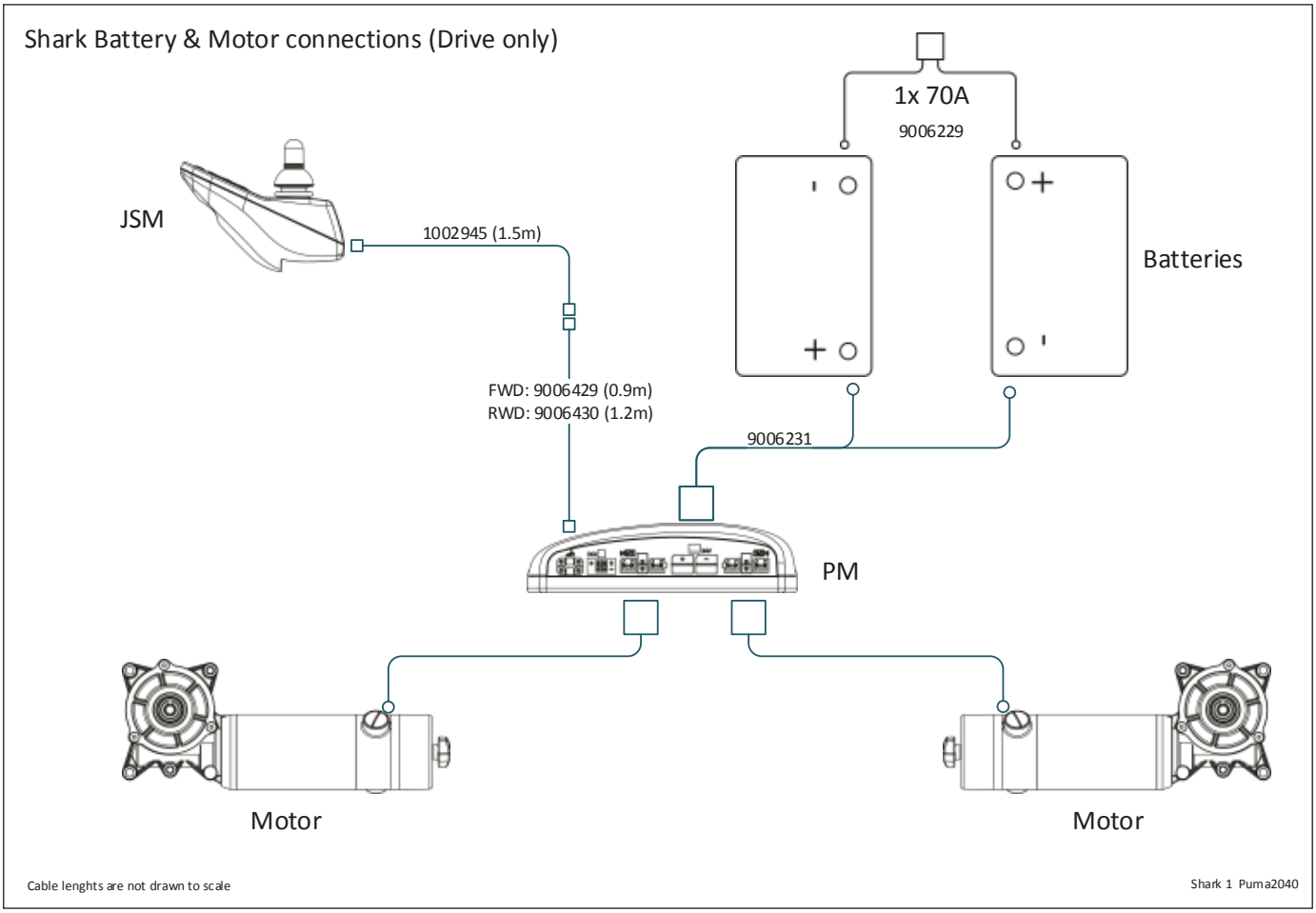
Pos	Qty	Article number	Description
1,4	1	9006030	R-net attendant module service
1-8	1	1017223	R-net attendent module for Z-steering, Sedeo Pro+
1-18	1	1017034	R-net Z-steering incl. electronics and mounting set, Sedeo Pro+
2	4	-	Washer D9021 M5
3	2	-	Bolt D912 M5x35
4	4	-	Screw cross M5x16 Din7985
5	4	-	Nut D985 M5
6	1	-	Joystick holder
7	2	-	Bolt D912 M5x12
8	1	-	Joystick plate
9	2	-	Iglidur GFM 0810-10
9-15	1	1017224	Z-steering complete
10	1	1016909	Z-steering
11	2	1017226	Z-steering foam
12	4	-	Washer nylon M10
13	2	-	Washer D125 M8
14	2	-	Bolt D912 M8x20
15	1	1017225	Z-steering index plunjer, set
16	1	9009765	Z-steering holder, right
16-17	1	9009618	Z-steering holder, set
17	1	9009914	Z-steering holder, left
18	2	1015335	Torx countersunk socket head screw M6x30 iso14579 (100 pieces)
19	1	1017227	Emergency stop button

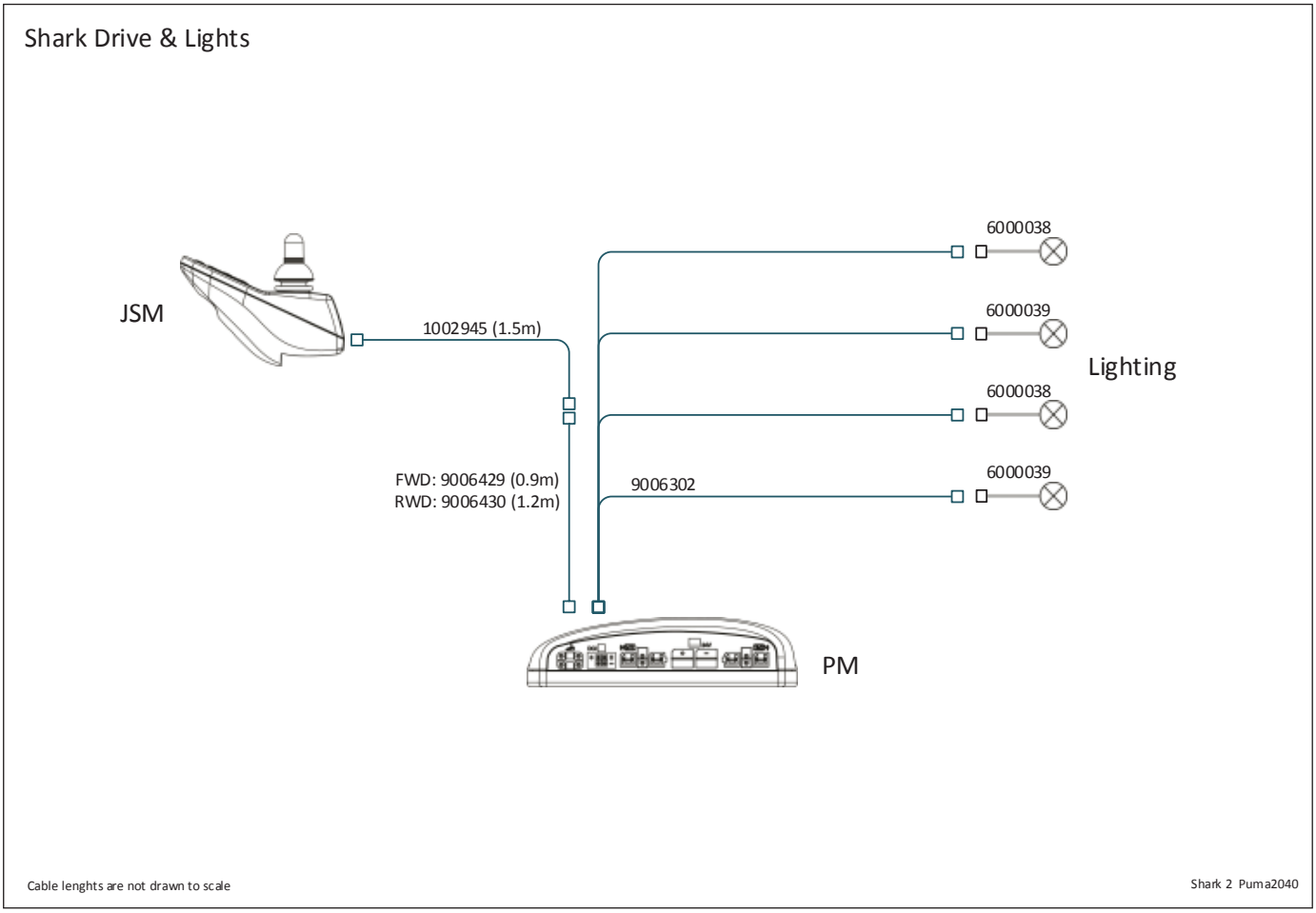
4.3 Wiring and modules Shark



Pos	Qty	Article number	Description
1	1	9007143	Shark Remote Drive Only DK-REMD01 service
2	1	9007144	Shark Remote Drive+Lights DK-REMD31 service
3	1	9007145	Shark Remote Drive+Lights+2Act. DK-REMD21 service
4	1	9007150	Shark Power Module (Drive only) DK-PMB01 (60 + 15A) service
5	1	9007151	Shark Power Module (Drive and lights) DK-PMB31 (60+15A) service
6	1	9007152	Shark Power Module (Seats and lights) DK-PMB21 (60+15A) service
7	1	9006027	Shark Attendant Remote DK-ACU service
7,8	1	9006031	Shark Attendant Remote DK-ACU +bracket service
9	1	1002945	Shark bus cable 1.5m
9	1	1003094	Shark ACU connection cable 1.5m
9	1	9006429	Shark bus extension cable 0.9m
9	1	9006430	Shark bus extension cable 1.2m
9	1	9006431	Shark bus extension cable 0.64m
9	1	9006432	Shark bus cable 1.0m
9	1	9006298	P2040 Shark Cable Light (for +Act)
9	1	9006301	P2040 Cable Inhibit Loop
9	1	9006302	P2040 Shark Cable Light (for No Act)
9	1	9006303	P2040 Shark Cable Light+Tilt+Back
9	1	9006304	P2040 Shark Cable Light+Lift+Act FWD
9	1	9006305	P2040 Shark Cable Light+Lift+Act RWD
9	1	9006231	Dynamic Battery Cable
9	1	9006229	Fuse Cable 70A
10	1	99164	Plug-in fuse 70A
-	1	00355.0441	Joystick knob mushroom 60 mm
-	1	00355.0458	Joystick knob T-shaped (round)
-	1	00355.0454	Joystick knob chin control
-	1	00355.0444	Joystick knob ball 32mm
-	1	00355.0443	Joystick knob foam ball

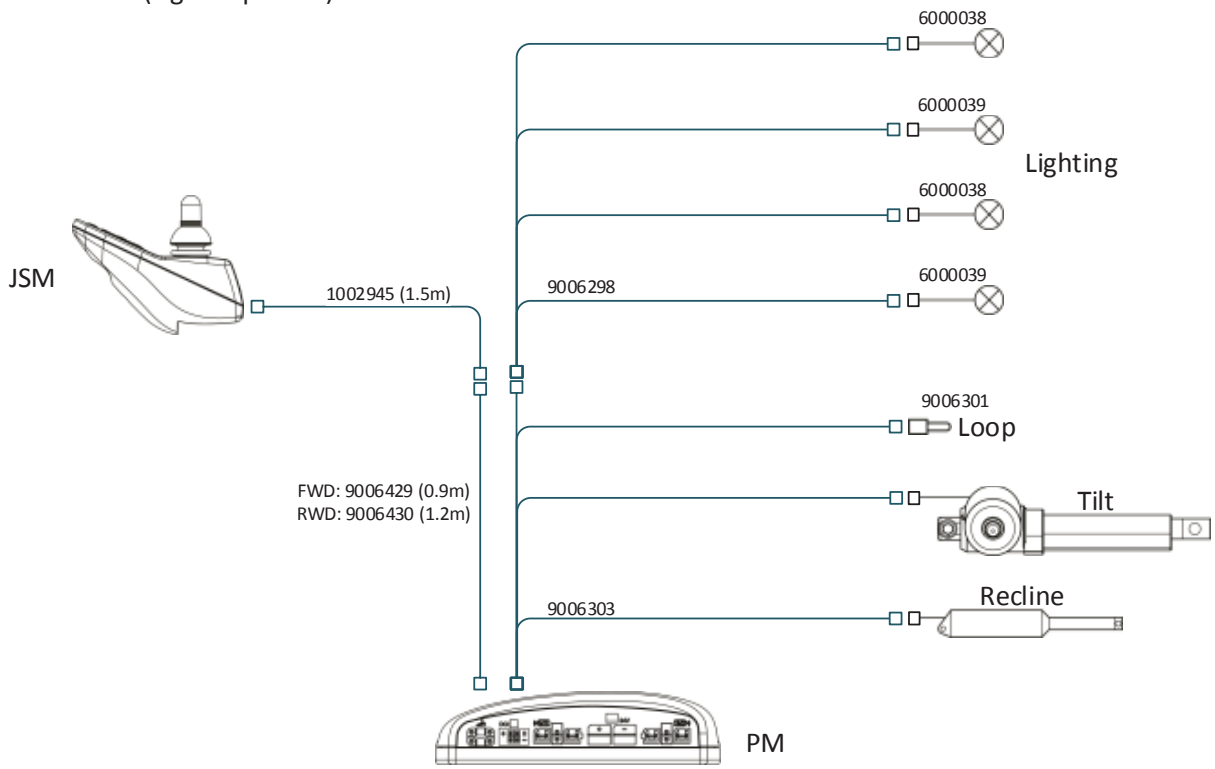
Electric diagrams Shark (1)





Electric diagrams Shark (2)

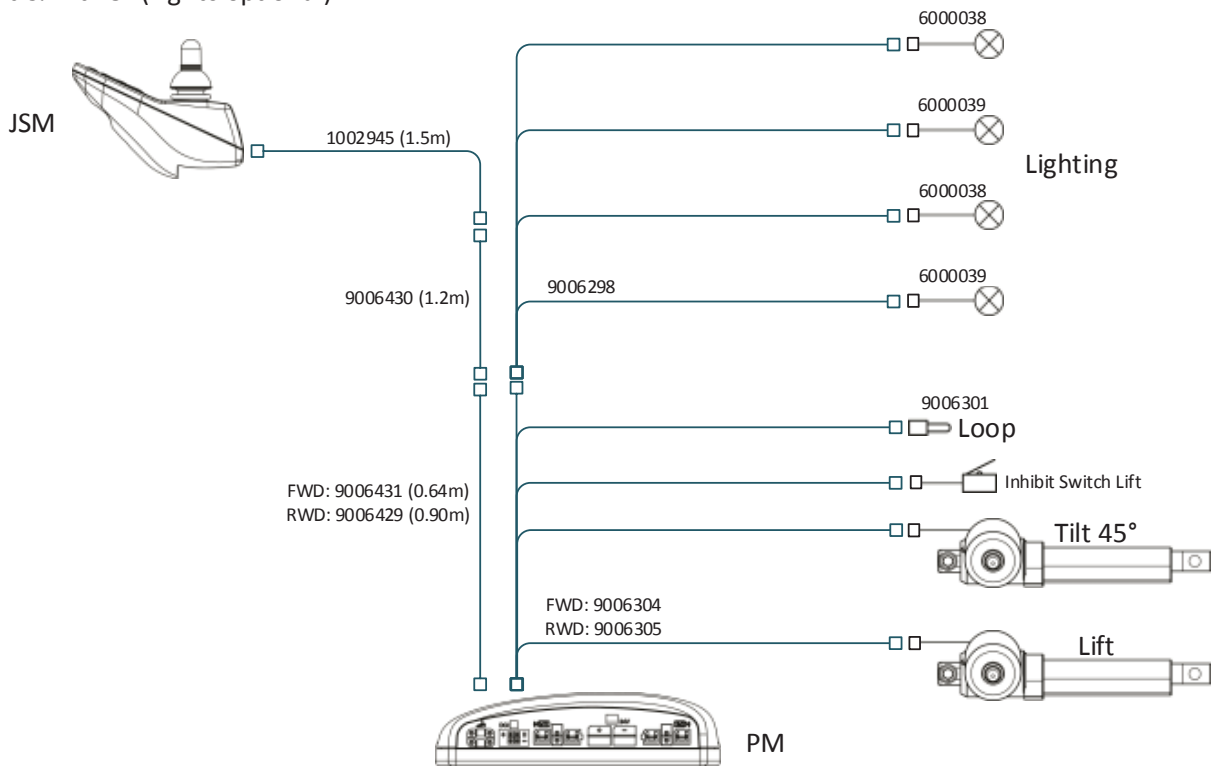
Shark Recline & Tilt (Lights optional)



Cable lenghts are not drawn to scale

Shark 3 Puma2040

Shark Lift & Tilt 45° (Lights optional)

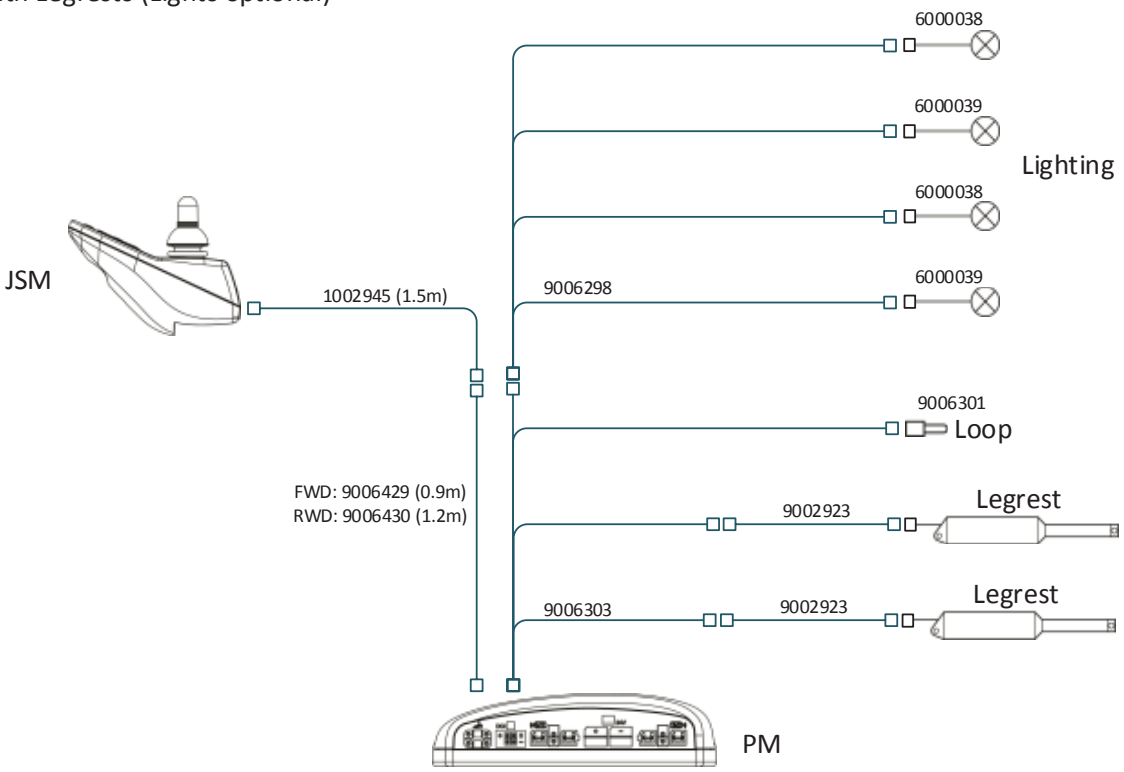


Cable lenghts are not drawn to scale

Shark 4 Puma2040

Electric diagrams Shark (3)

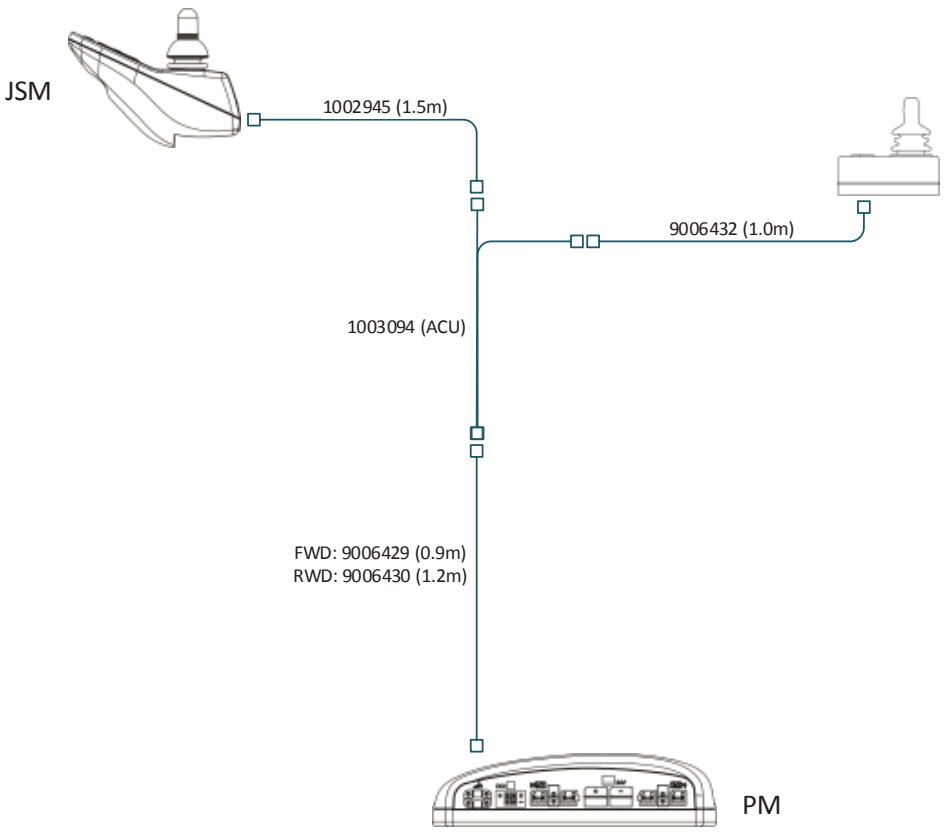
Shark with Legrests (Lights optional)



Cable lenghts are not drawn to scale

Shark 5 Puma2040

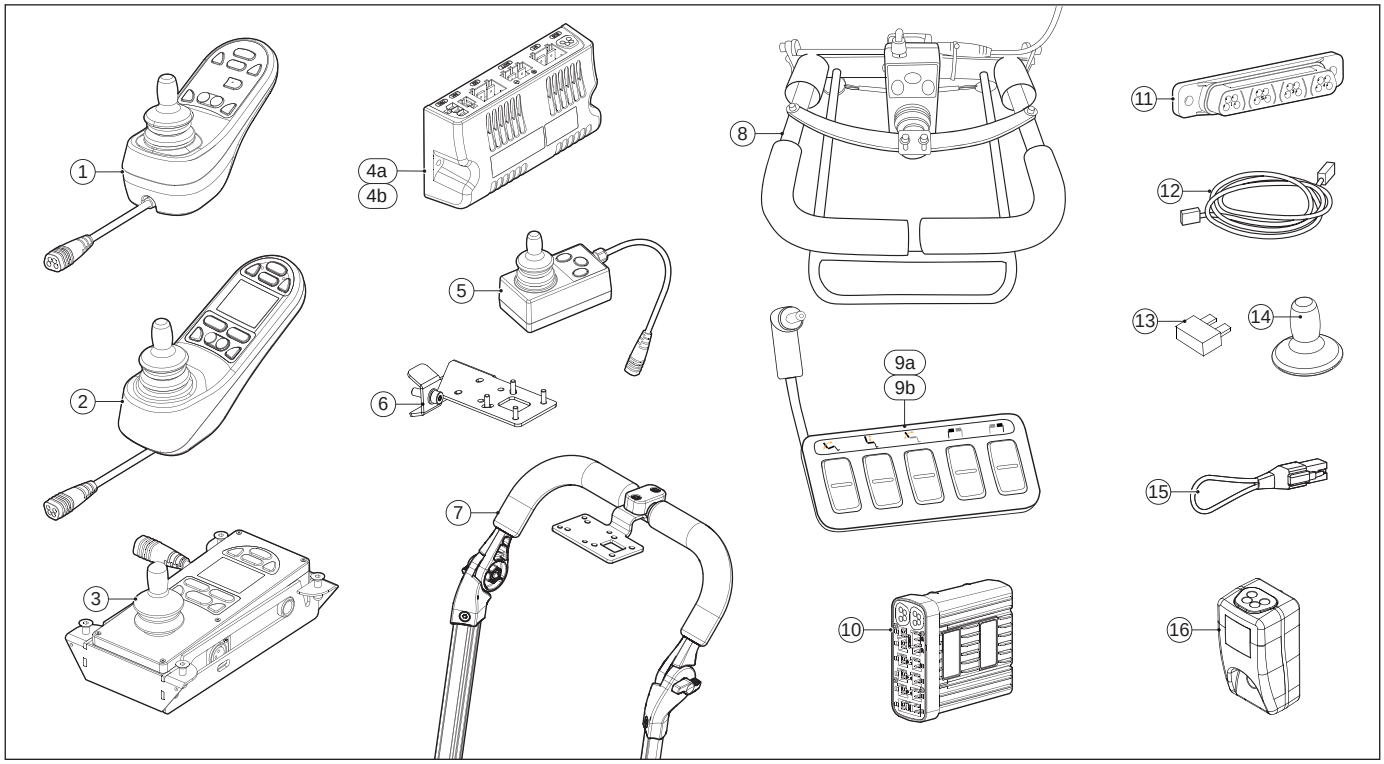
Shark with Attendant Control



Cable lenghts are not drawn to scale

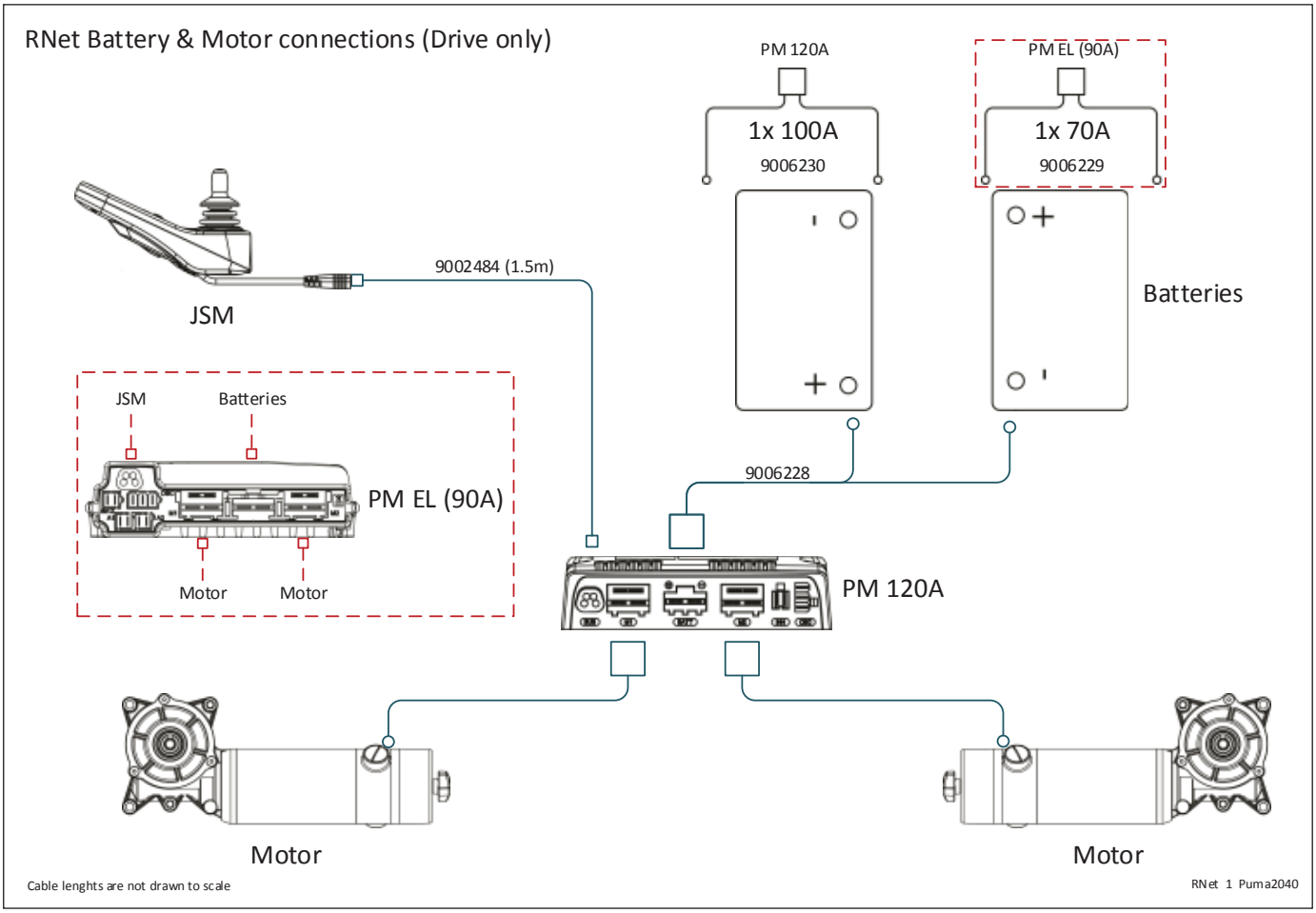
Shark 6 Puma2040

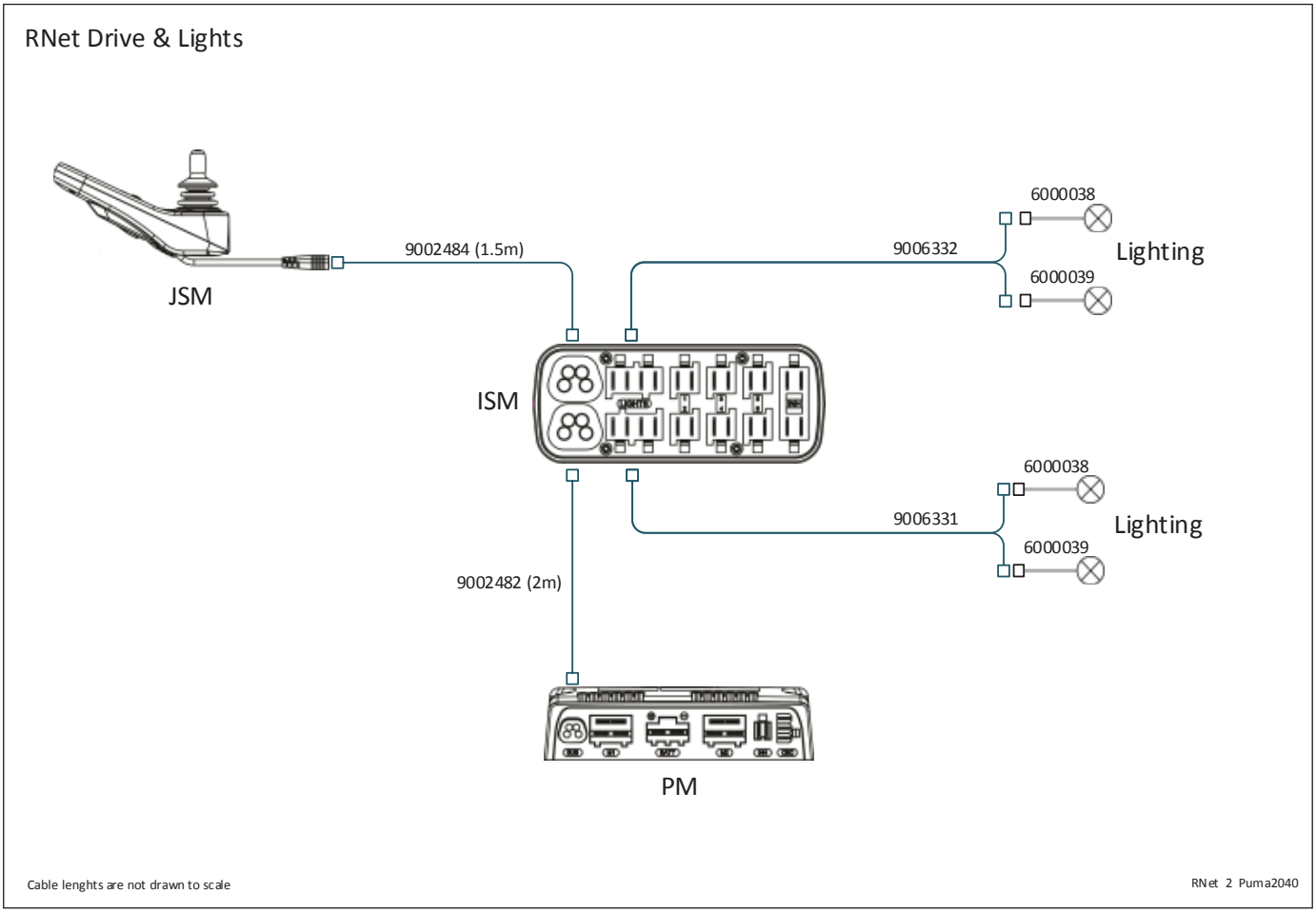
4.4 Wiring and modules R-net



Pos	Qty	Article number	Description
1	1	9007156	R-net Joystick Module Lights JSM LED-L service
2	1	9002910	R-net Joystick Module Colour CJSM-L-sw service
3	1	9007165	R-net Joystick Module Colour CJSM-L-sw Worktop service
4a	1	9002918	R-net Power Module 120A service (10 and 12,5 km/h)
4a,16	1	1017477	R-net Gyro set service
4b	1	9007158	R-net Power Module 90A service (6 km/h)
5	1	9006030	Attendant steering R-net service
5,6	1	1017036	Attendant steering R-net incl. mounting set and electronics, Sedeo Pro+
5,7	1	9006034	Attendant steering R-net incl. push bar, mounting set and electronics, Sedeo Pro
8	1	1017034	R-net Z-steer incl. mounting set, Sedeo Pro+ (only for Norwegian market)
9a	1	1016968	R-net direct access keypad joystick side, set
9b	1	1016969	R-net direct access keypad not joystick side, set
10	1	9002912	R-net Seating/Lighting Module ISM-6L (6Act+Lights) service
11	1	9006238	R-net 4-way Connector Block service
12	1	9002480	R-net extension cable 1.0m
12	1	9002482	R-net Cable 2.0m
12	1	9002484	R-net Cable 1.5m
12	1	9002579	R-net Cable 0.5m
12	1	9006319	P2040 PGDT Cable Act 500mm
12	1	9006320	P2040 PGDT Cable Act 1050mm
12	1	9006323	P2040 PGDT Cable Tilt45 950mm
12	1	9006330	P2040 PGDT Cable Lift 1520mm
12	1	9006331	P2040 R-net Cable Light
12	1	9006332	P2040 R-net Cable Light+Horn
12	1	9006228	PGDT Battery Cable
12	1	9006230	Fuse Cable 100A
12	1	9006229	Fuse Cable 70A
13	1	99164	Plug-in fuse 70A
13	1	99117	Plug-in fuse 100A
14	1	1010114	R-net/VR2 joystick knob
15	1	9006327	P2040 PGDT Cable Inhibit Loop
16	1	1017476	R-net Gyro module service
-	1	9003607	R-net keypad kit full color + tray remote
-	1	19052	Joystick knob mushroom
-	1	19063	Joystick knob T-grip
-	1	19065	Joystick knob chin control
-	1	19054	Joystick knob ball 32mm
-	1	19032	Joystick knob foam ball

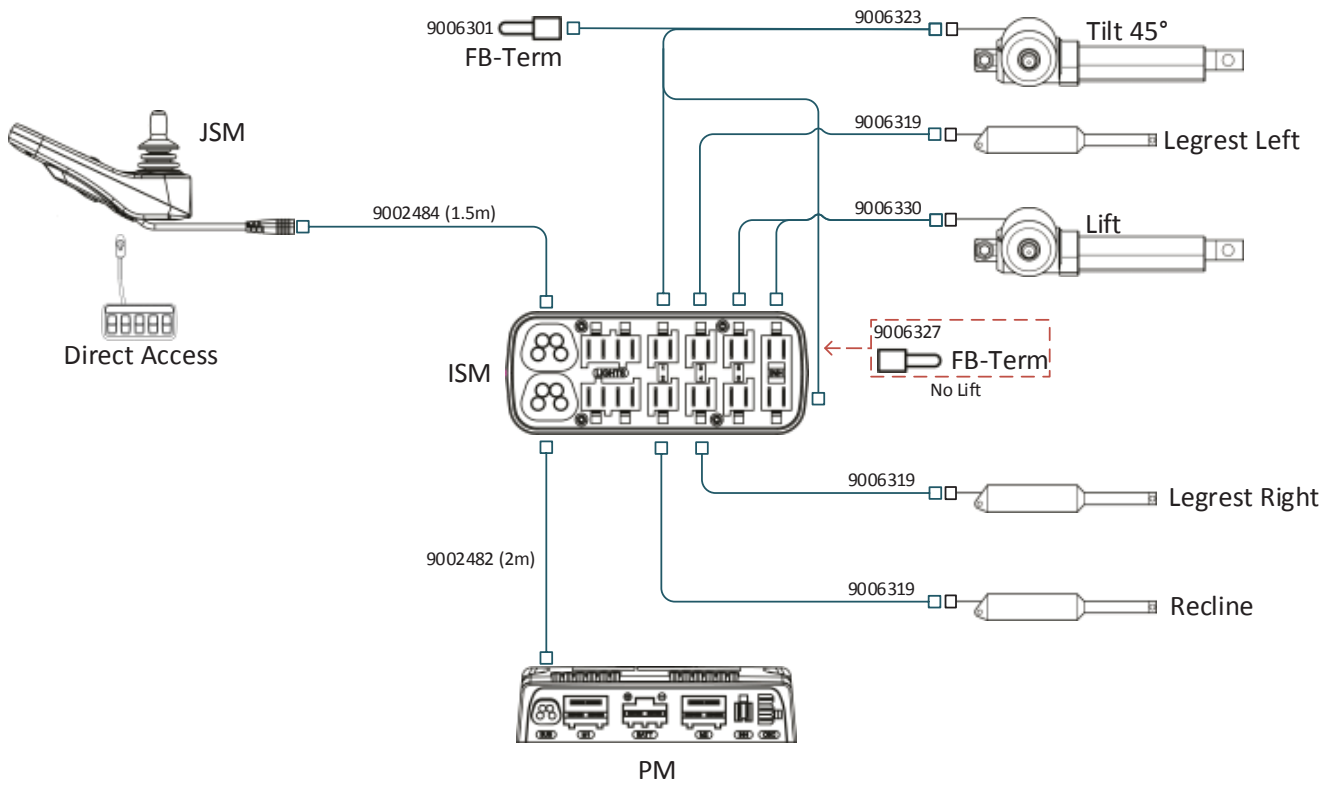
Electric diagrams R-net (1)





Electric diagrams R-net (2)

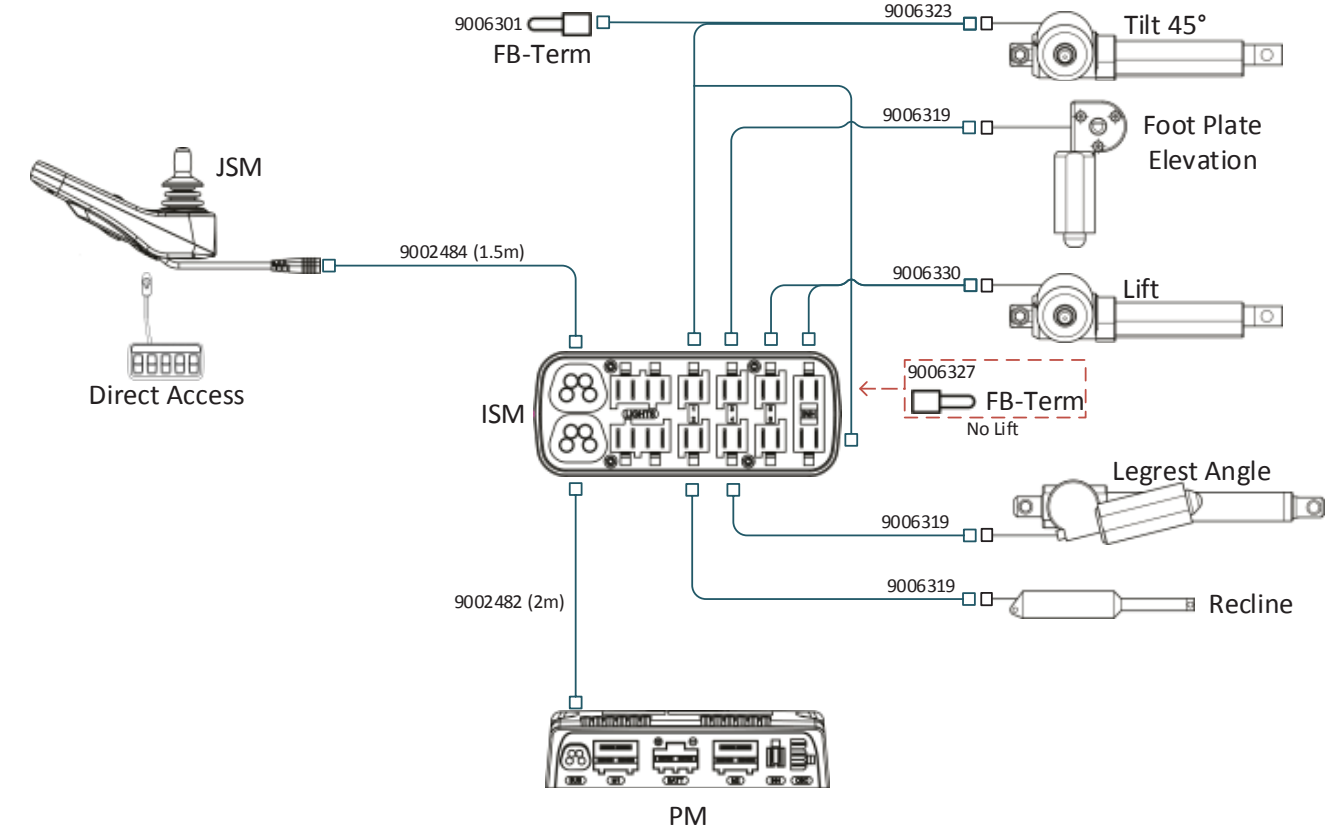
RNet Lift, Tilt, Recline & Legrests (Lights optional)



Cable lenghts are not drawn to scale

RNet 3 Puma2040

RNet Lift, Tilt, Recline & Central Legrest (Lights optional)

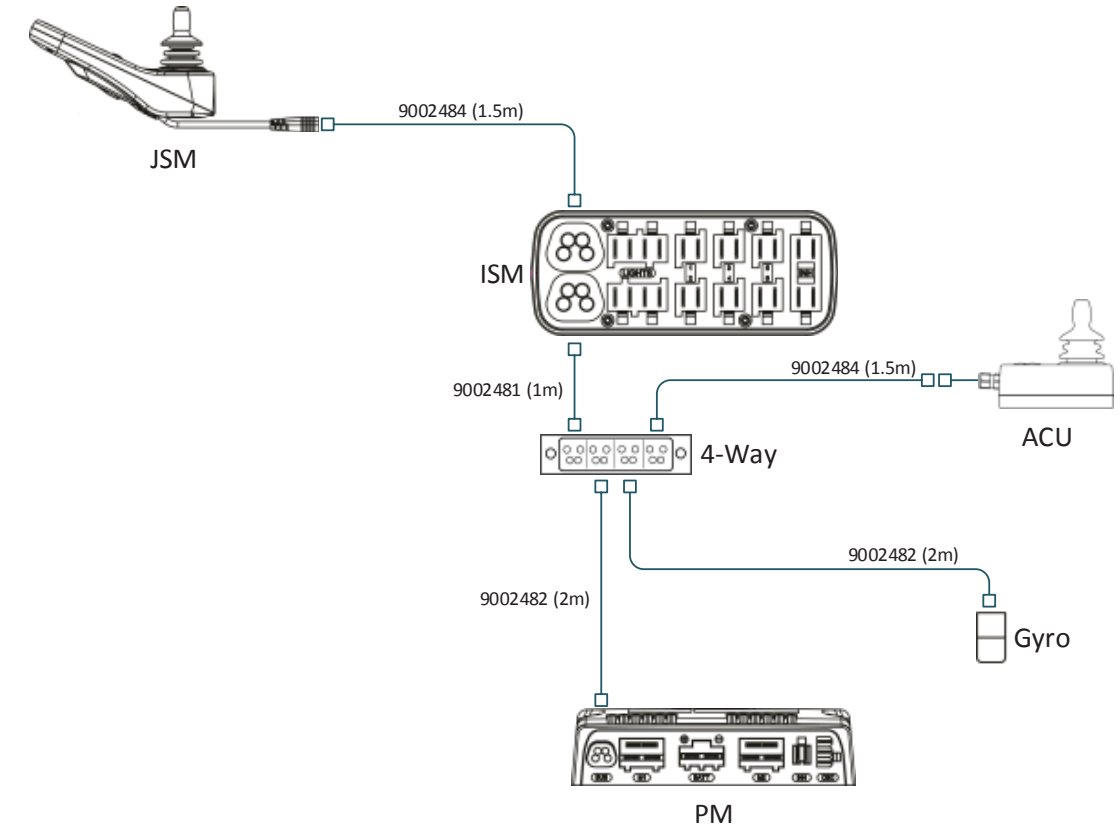


Cable lenghts are not drawn to scale

RNet 4 Puma2040

Electric diagrams R-net (3)

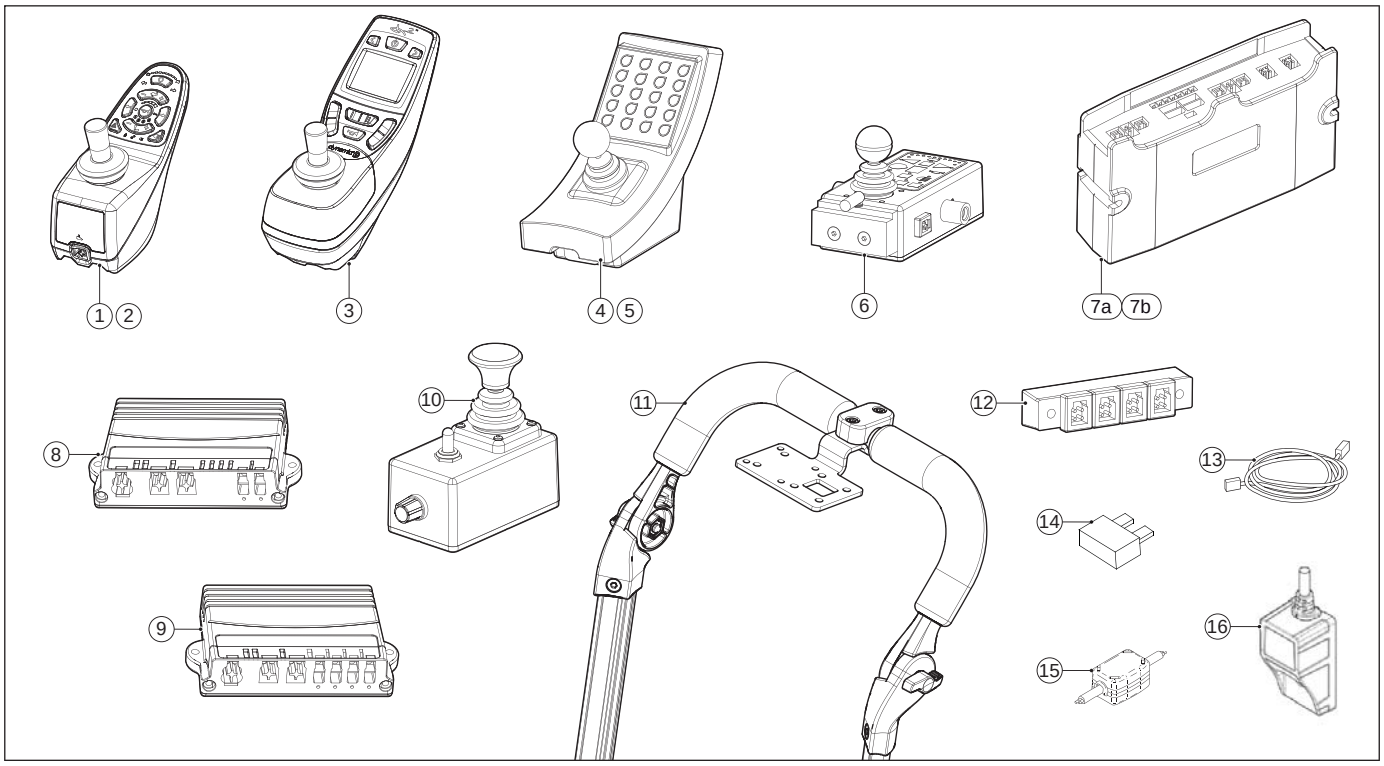
RNet with Gyro Module and/or Attendant Remote (Lights optional)



Cable lenghts are not drawn to scale

Rnet 5 Puma2040

4.5 Wiring and modules DX2



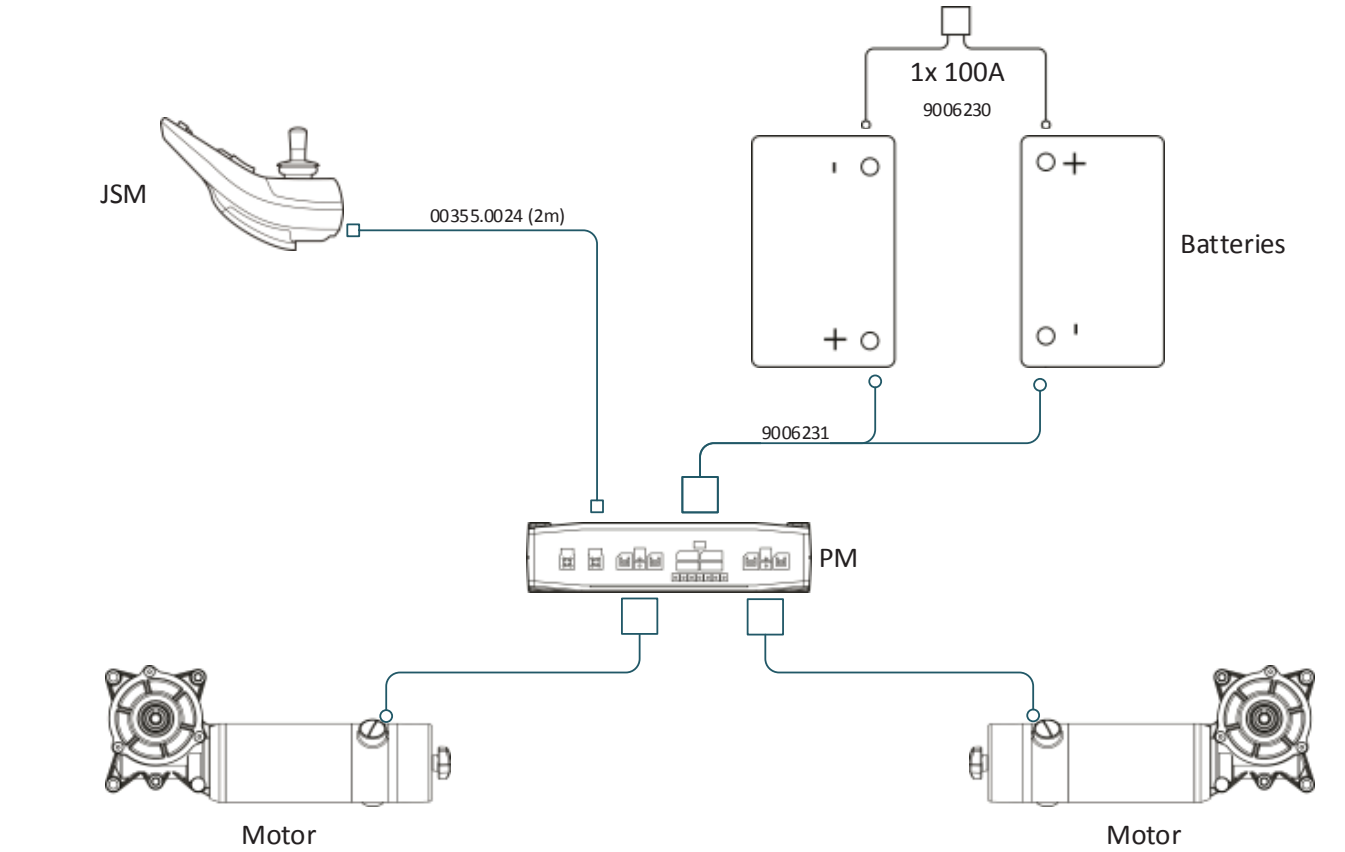
Pos	Qty	Article number	Description
1	1	9007146	DX2 Remote REM420 service
2	1	9007147	DX2 Remote REM421 service
3	1	9007148	DX2 Remote REM550 service
4	1	9007154	DX 16 key Remote REM48 Rev-C
5	1	9007155	DX 16 key Remote PLUS REM48A Rev-C
6	1	9007167	DX-12 key Remote Worktop REM41 Rev-E
7a	1	9007159	DX2 Power Module PMA90L 90A+Lights service
7b	1	9007620	DX2 Power Module PMA90L Gyro service
7b,13,16	1	9007619	DX2 Gyro set service
8	1	9007162	DX2 Actuator Module 2channel ACT2 service
9	1	9007163	DX2 Actuator Module 4channel ACT4 service
10	1	9006028	DX(2) Attendant Remote ACU1 service
10,11	1	9006032	DX(2) Attendant Remote ACU1 + bracket service
12	1	9006239	DX(2) BUS 4 Way Socket (DX-SKT-X4) service
13	1	00355.0023	DX(2) bus cable 1.0 m
13	1	00355.0024	DX(2) bus cable 2.0 m
13	1	055.00111.000	DX(2) bus cable 1.5 m
13	1	00355.0074	DX(2) bus cable 2.7 m
13	1	00355.0013	DX(2) bus extension cable 1.0 m
13	1	9006307	P2040 DX(2) Cable Act 500 mm
13	1	9006308	P2040 DX(2) Cable Act 1050 mm
13	1	9007586	P2040 DX2 Lift cable set
13	1	9007587	P2040 DX2 Tilt45 cable set
13	1	9007591	P2040 DX2 Cable inhibit loop
13	1	9006312	P2040 DX(2) Cable Light 1300 mm
13	1	9006313	P2040 DX(2) Cable Light 1800 mm
13	1	9007576	DX2 Inhibit splitter
13	1	9007581	DX2 Bus splitter
13	1	9006231	Dynamic Battery Cable
13	1	9006230	Fuse Cable 100A
14	1	99117	Plug-in fuse 100A
15	1	9006250	Ferrite Clamp DX2 Bus
15	1	9006970	Ferrite Clamp DX2 Lights
15	1	9008828	Ferrite Clamp DX2 Bus JSM
16	1	9007621	DX2 Gyro module service
-	1	00355.0441	Joystick knob mushroom 60 mm

Continued from **Wiring and modules DX2**

Pos	Qty	Article number	Description
-	1	00355.0458	Joystick knob T-shaped (round)
-	1	00355.0454	Joystick knob chin control
-	1	00355.0444	Joystick knob ball 32mm
-	1	00355.0443	Joystick knob foam ball
-	1	00355.0509	DX charger socket external
-	1	1003305	DX remote G90A

Electric diagrams DX2 (1)

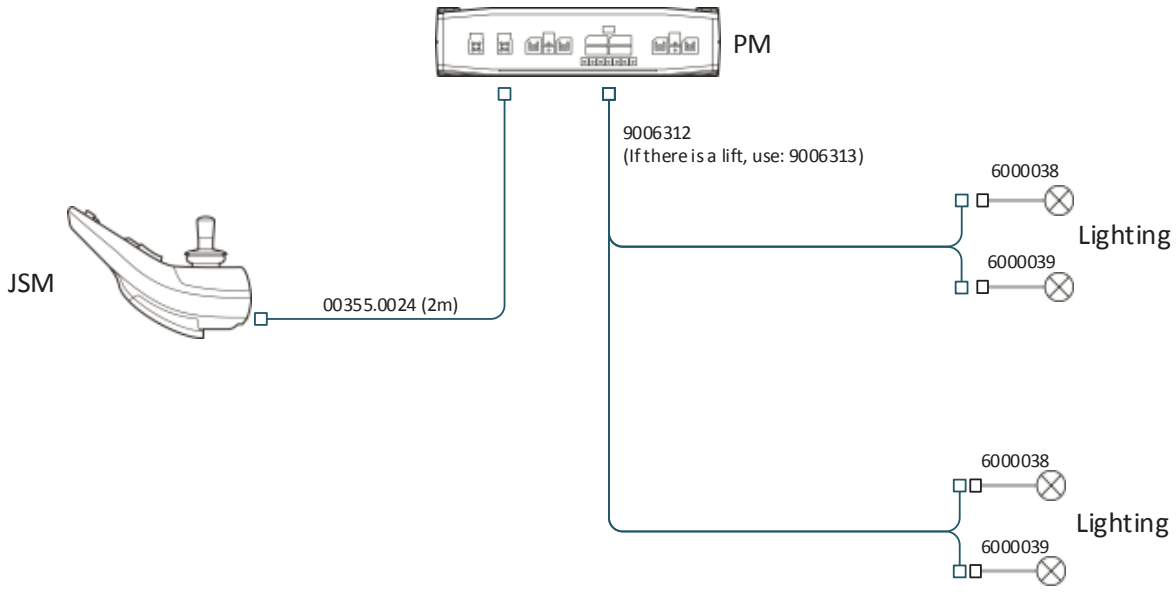
DX2 Battery & Motor connections (Drive only)



Cable lenghts are not drawn to scale

DX2 1 Puma2040

DX2 Drive & Lights

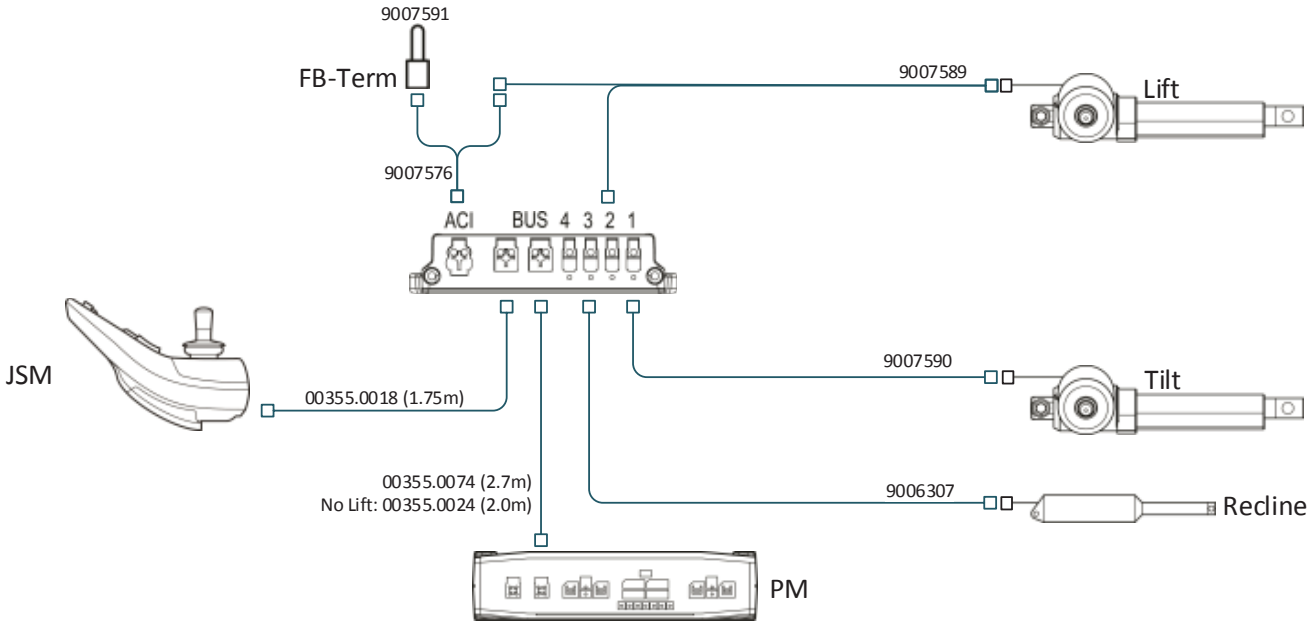


Cable lenghts are not drawn to scale

DX2 2 Puma2040

Electric diagrams DX2 (2)

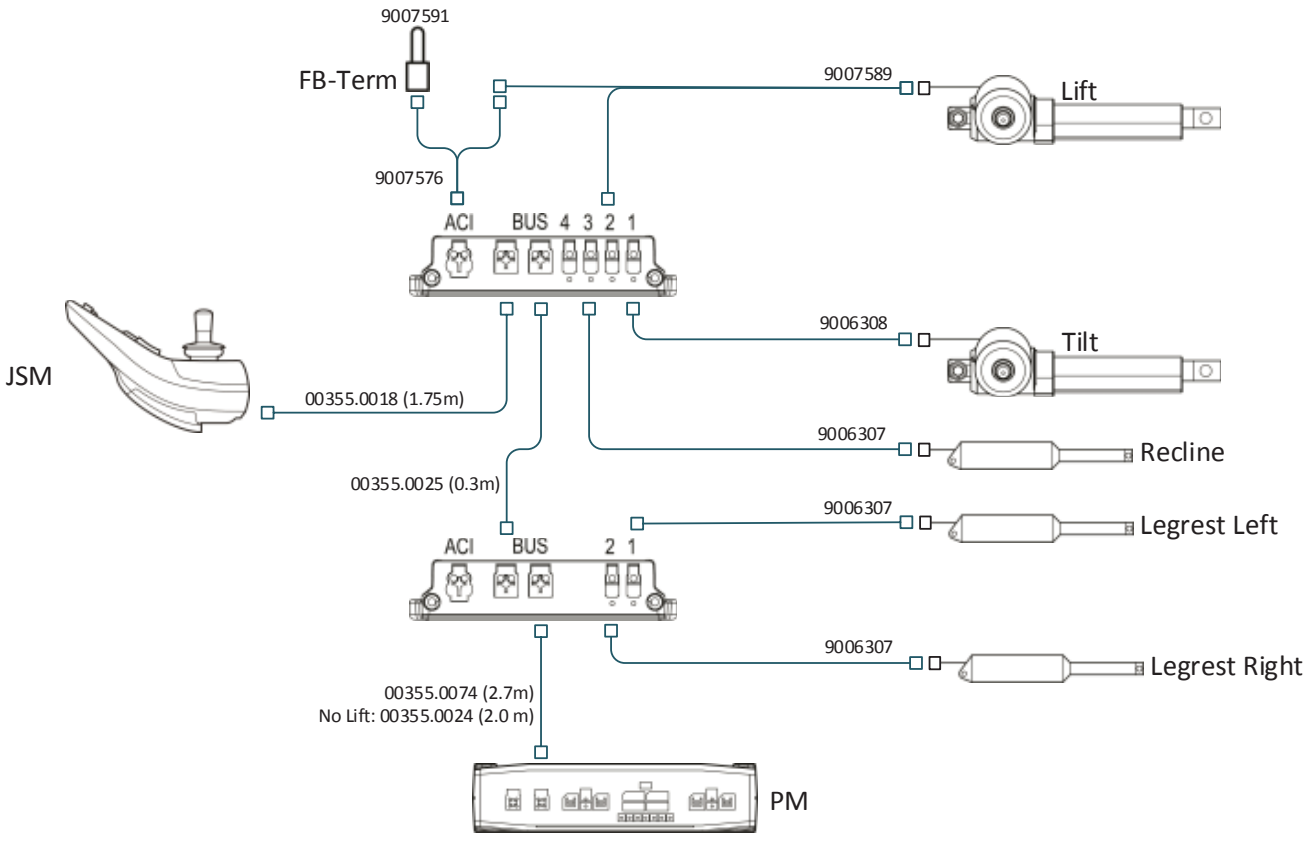
DX2 Lift, Tilt & Recline (Lights optional)



Cable lenghts are not drawn to scale

DX2 3 Puma2040

DX2 Lift, Tilt, Recline & Legrest (Lights optional)

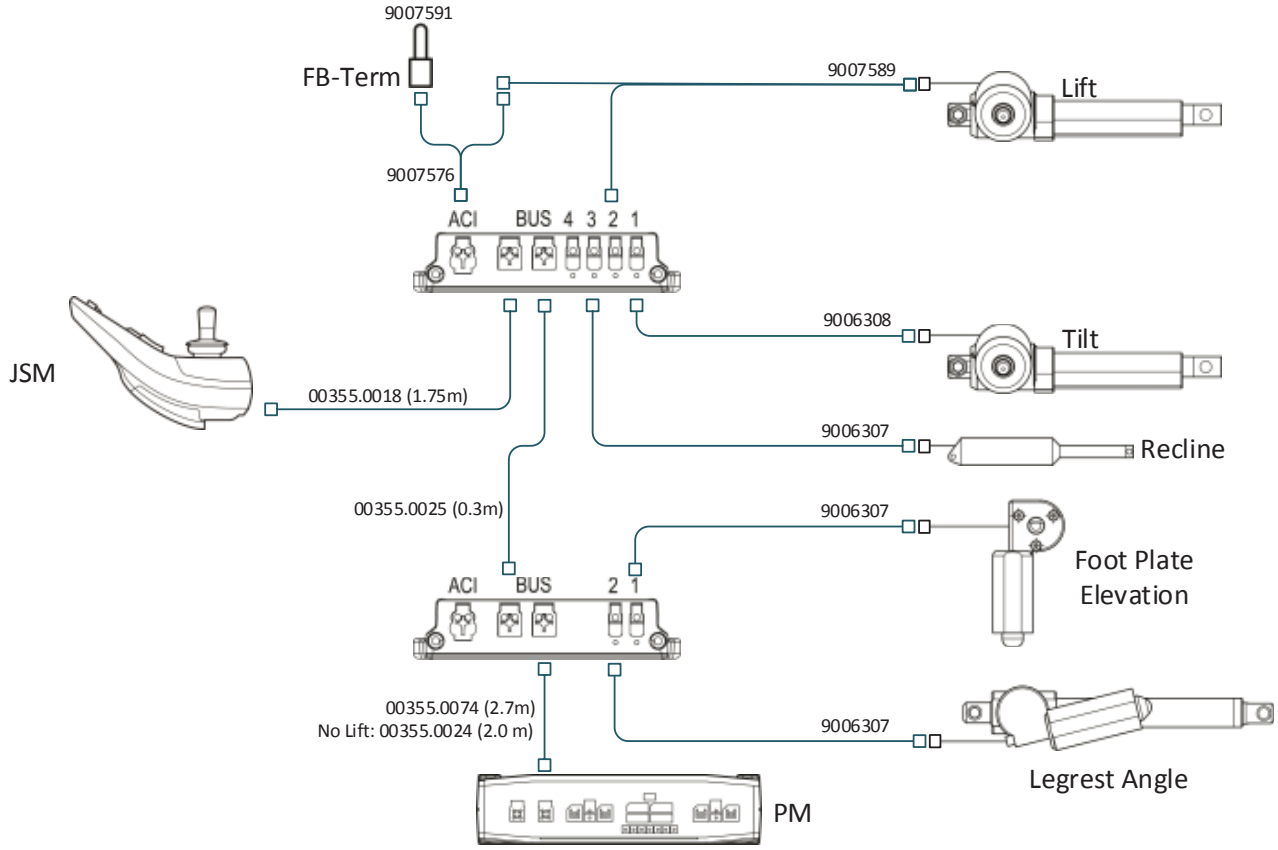


Cable lenghts are not drawn to scale

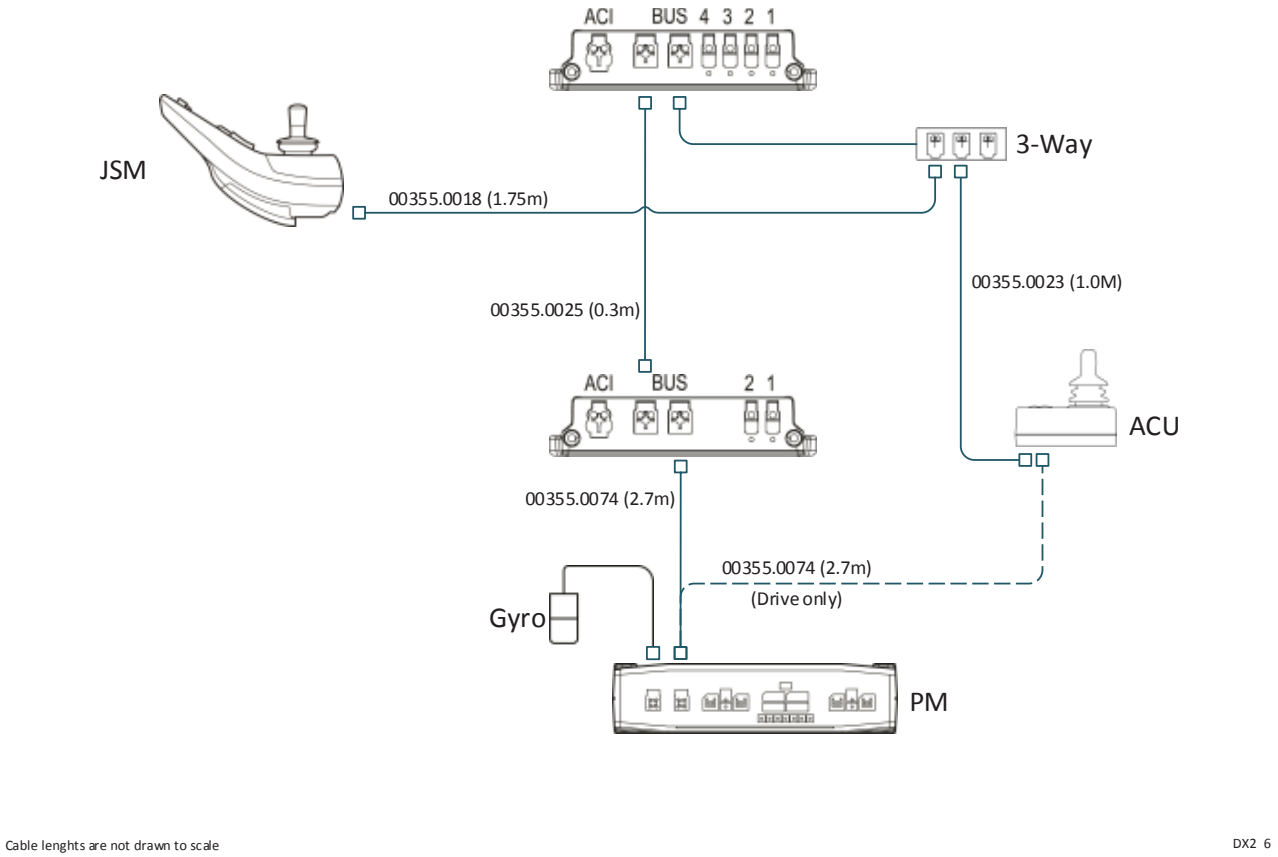
DX2 4 Puma2040

Electric diagrams DX2 (3)

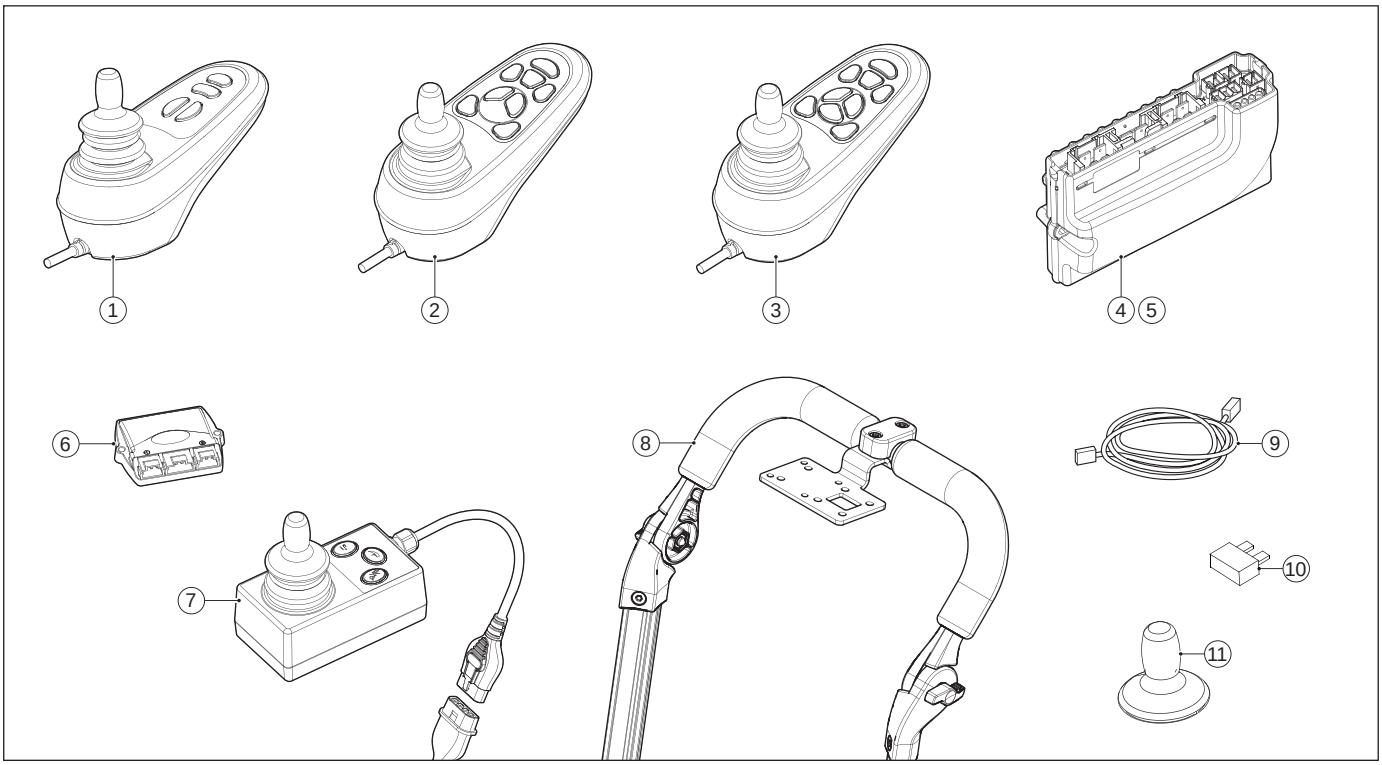
DX2 Lift, Tilt, Recline & Central Legrest (Lights optional)



DX2 with Gyro Module and/or Attendant Remote (Lights optional)

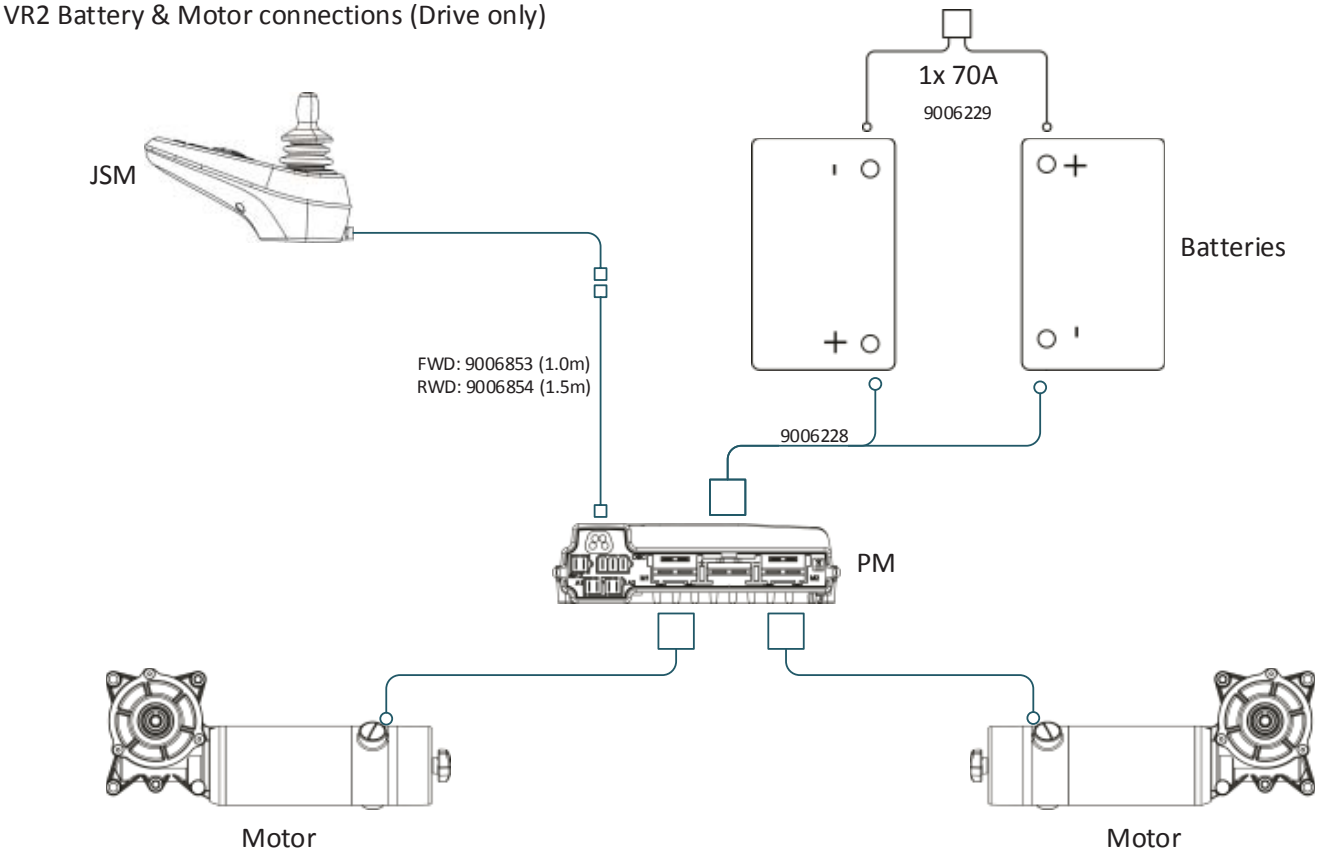


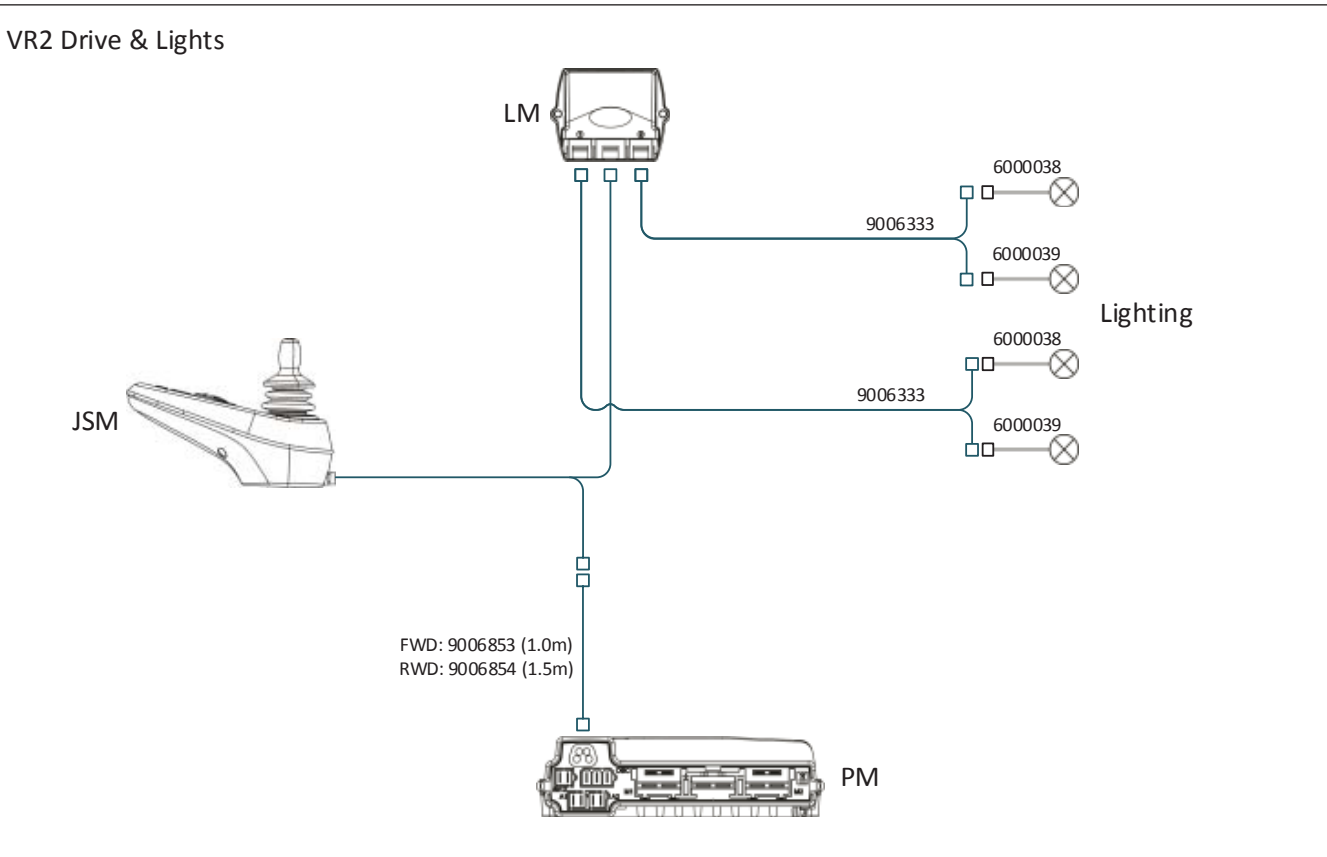
4.6 Wiring and modules VR-2



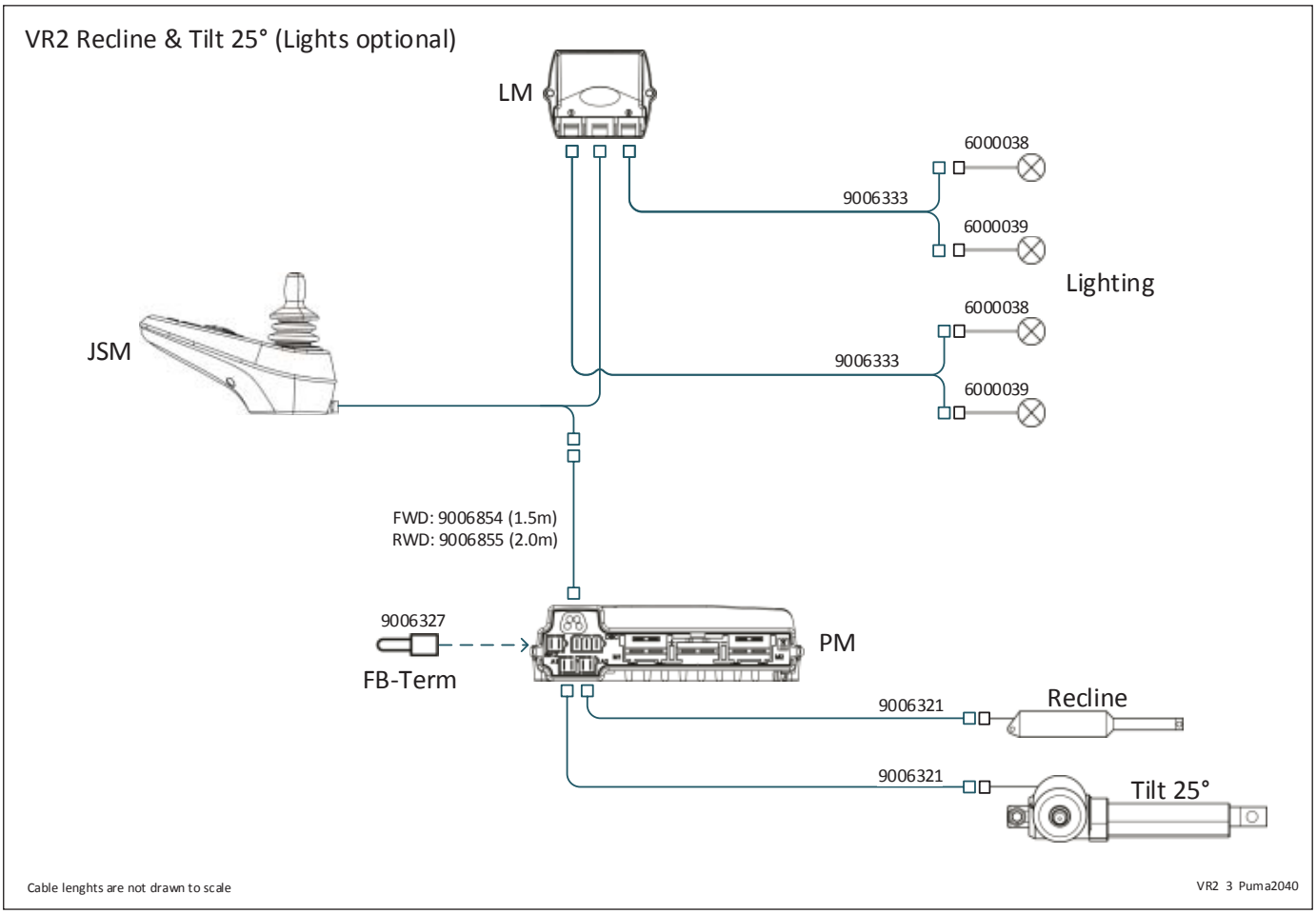
Pos	Qty	Article number	Description
1	1	9002907	VR-2 Joystick Module Drive Only JSM service
2	1	9002908	VR-2 Joystick Module Lights JSM-L service
3	1	9002909	VR-2 Joystick Module Act & Lights JSM-A-L service
4	1	9002916	VR-2 Power Module VR2-90 (90A) service
5	1	9002917	VR-2 Power Module +2Act VR2-90-2A (90A) service
6	1	9002911	VR-2 Lighting Module service
7	1	9006029	VR-2 Dual Attendant Module service
7,8	1	9006033	VR-2 Dual Attendant Module + bracket service
9	1	9002305	VR-2 Extension Cable 0.5m
9	1	9006853	VR-2 Extension Cable 1m
9	1	9006854	VR-2 Extension Cable 1,5m
9	1	9006855	VR-2 Extension Cable 2m
9	1	9006301	P2040 Cable Inhibit Loop
9	1	9006321	P2040 PGDT Cable Act 1350mm
9	1	9006323	P2040 PGDT Cable Tilt45 950mm
9	1	9006325	P2040 VR-2 Cable Lift+Act FWD
9	1	9006326	P2040 VR-2 Cable Lift+Act RWD
9	1	9006327	P2040 PGDT Cable Inhibit Loop
9	1	9006328	P2040 PGDT Cable Lift 900mm
9	1	9006329	P2040 PGDT Cable Lift 1100mm
9	1	9006333	P2040 VR-2 Cable Lights
9	1	9006228	PGDT Battery Cable
9	1	9006229	Fuse Cable 70A
10	1	99164	Plug-in fuse 70A
11	1	1010114	VR2/R-net joystick knob
-	1	19052	Joystick knob mushroom
-	1	19063	Joystick knob T-grip
-	1	19065	Joystick knob chin control
-	1	19054	Joystick knob ball 32mm
-	1	19032	Joystick knob foam ball

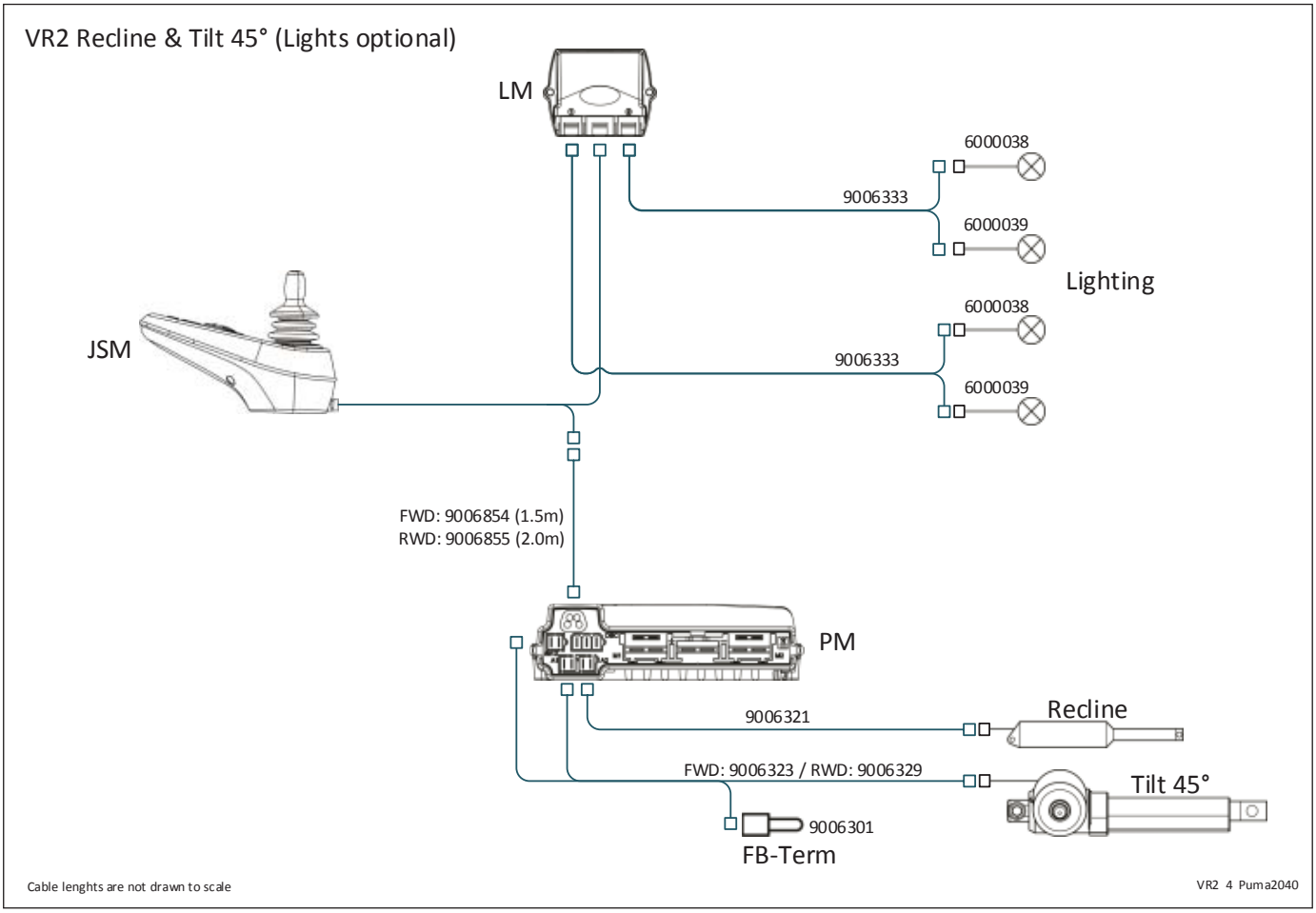
Electric diagrams VR-2 (1)



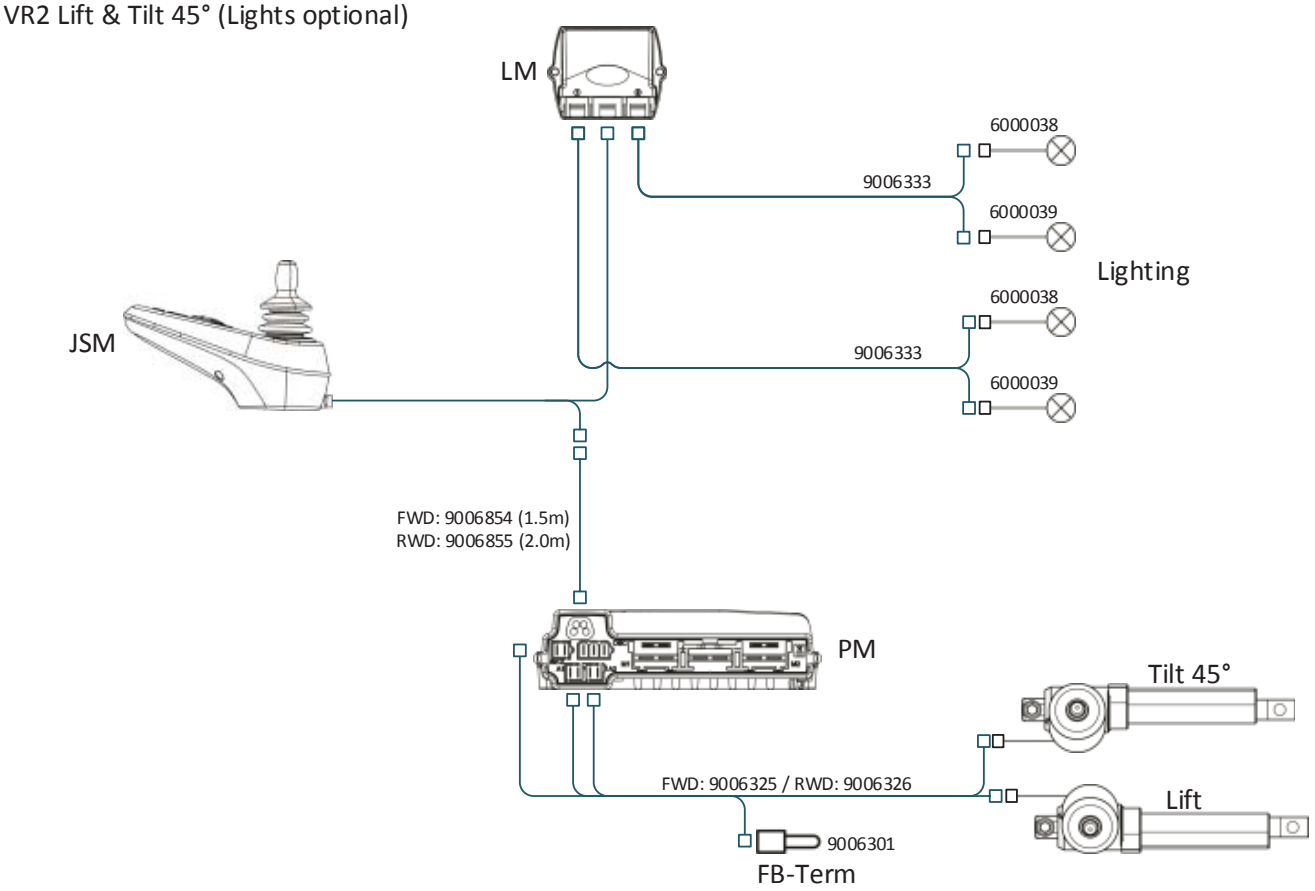


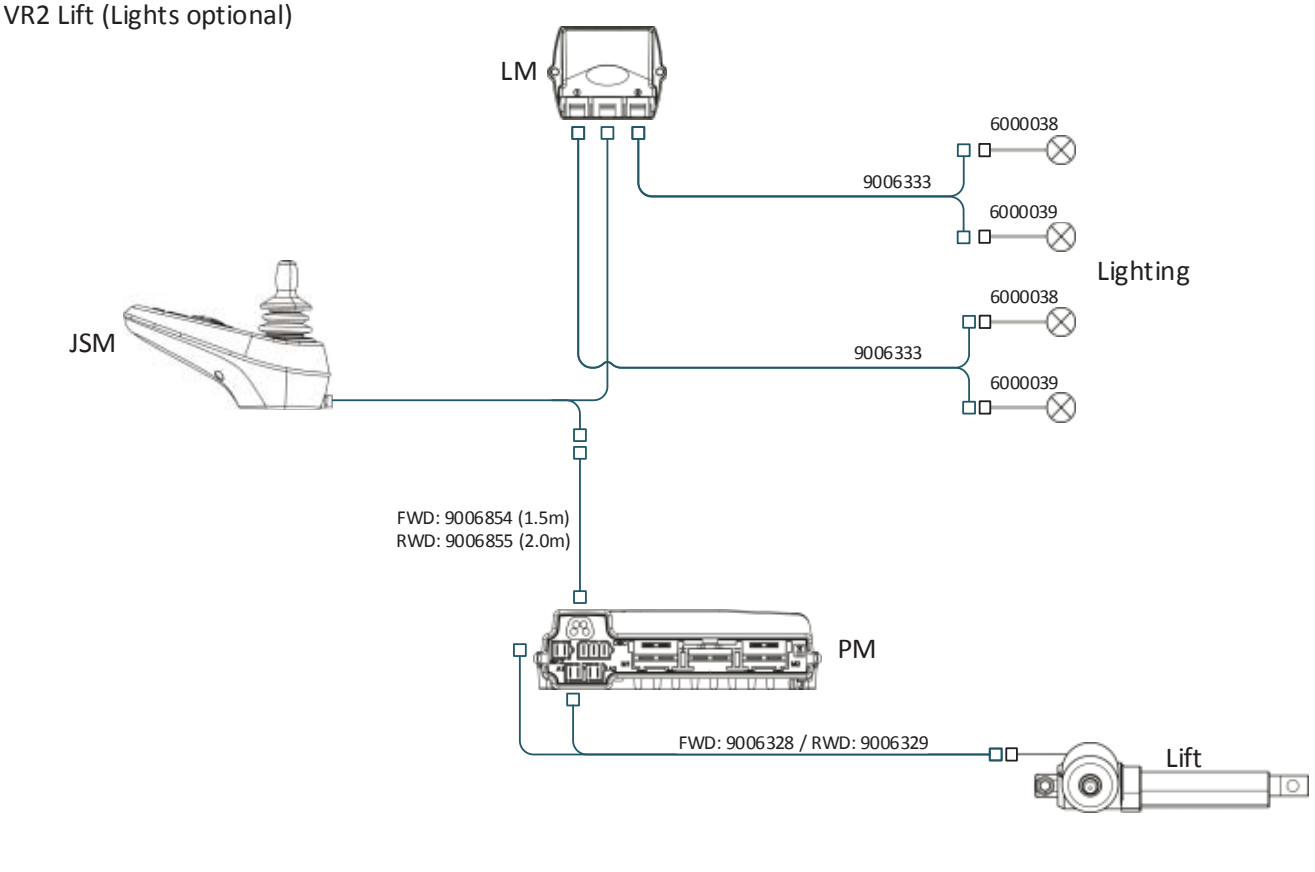
Electric diagrams VR-2 (2)





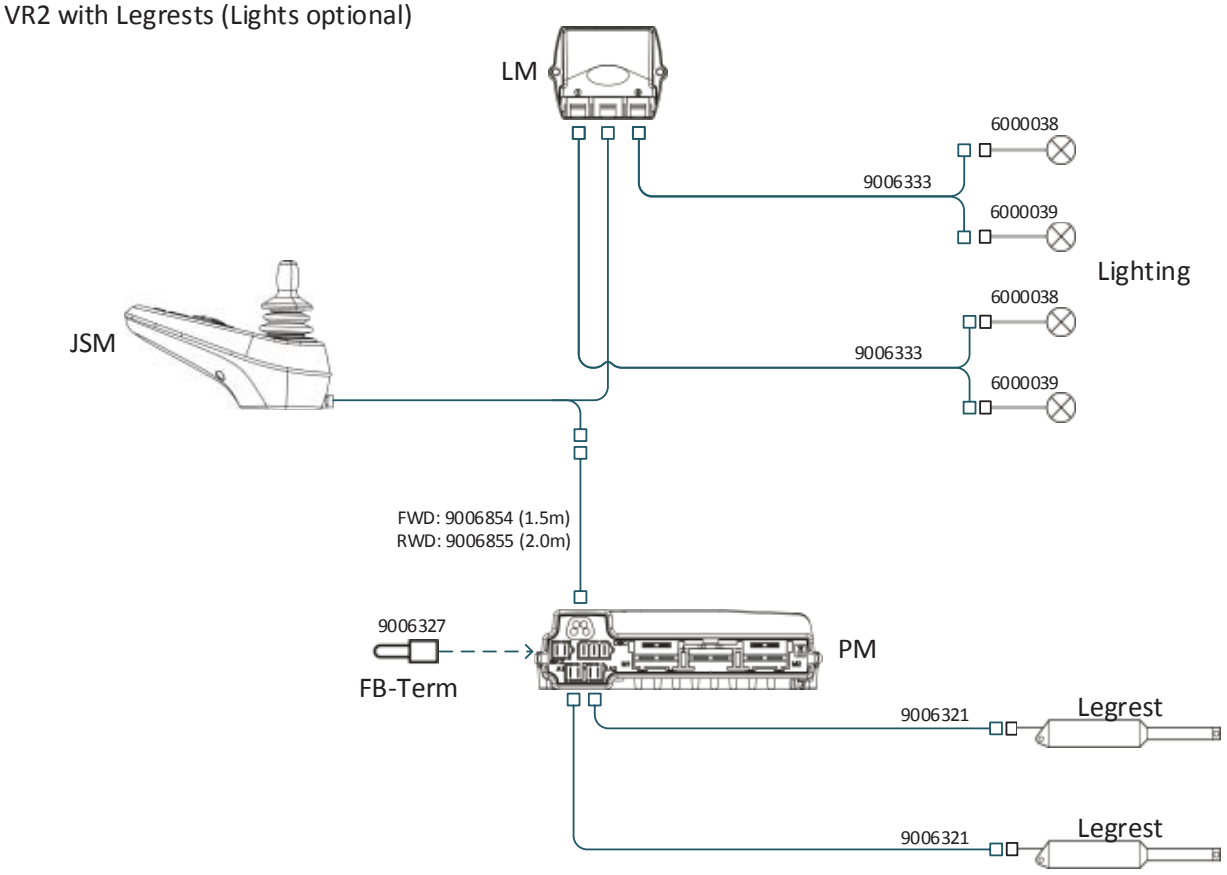
Electric diagrams VR-2 (3)





Electric diagrams VR-2 (4)

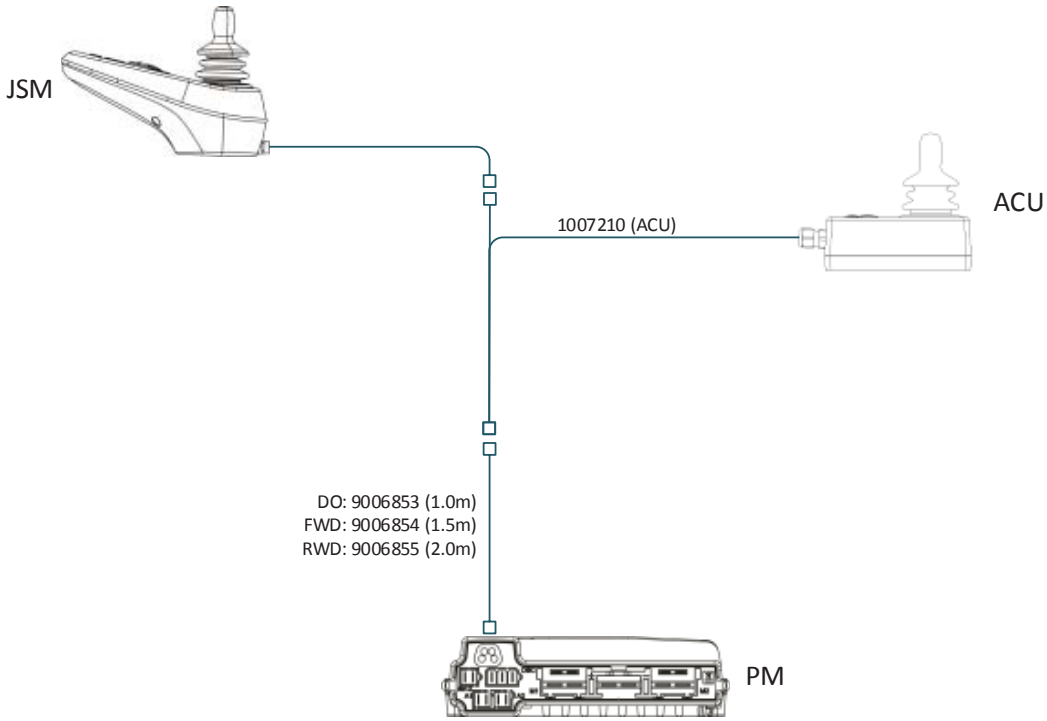
VR2 with Legrests (Lights optional)



Cable lenghts are not drawn to scale

VR2 7 Puma2040

VR2 with Attendant Control



Cable lenghts are not drawn to scale

VR2 8 Puma2040

5 Service instructions

5.1 Maintenance plan

Below, we have indicated what needs to be checked, how often this should be done and by whom.

Time	Description	To be carried out by	
		User	Supplier
Daily	• Charging the batteries, after each use.	x	-
Weekly	• Checking the tyre pressures.	x	-
Monthly	• Cleaning the wheelchair.	x	-
	• Cleaning the upholstery (if necessary).	x	-
Annually	• Inspecting the electrical system.	-	x
	• Checking the batteries.	-	x
	• Inspecting the drive.	-	x
	• Inspecting the mechanical parts.	-	x
	• Inspecting the bearings.	-	x
	• Inspecting the suspension.	-	x
	• Checking the tyres.	-	x
	• Checking all fastenings and bolts: tighten if necessary	-	x

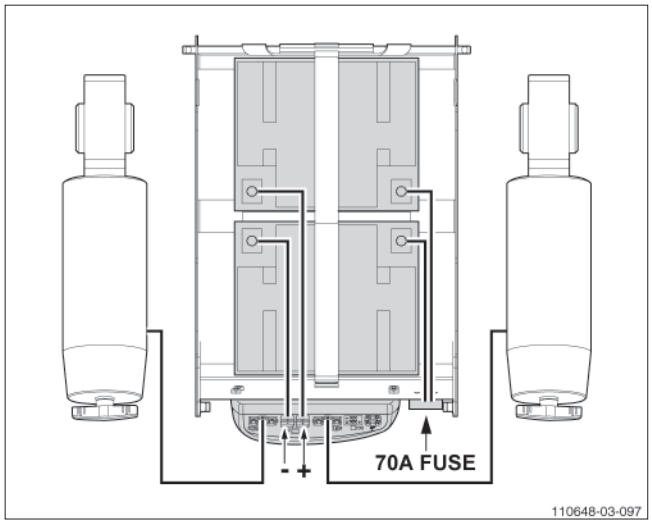
This document is a reference book to be used to order parts for the wheelchair model shown on the front cover.

Batteries
For maintenance, see the following documentation:
- Battery instructions.
- Battery charger user manual.

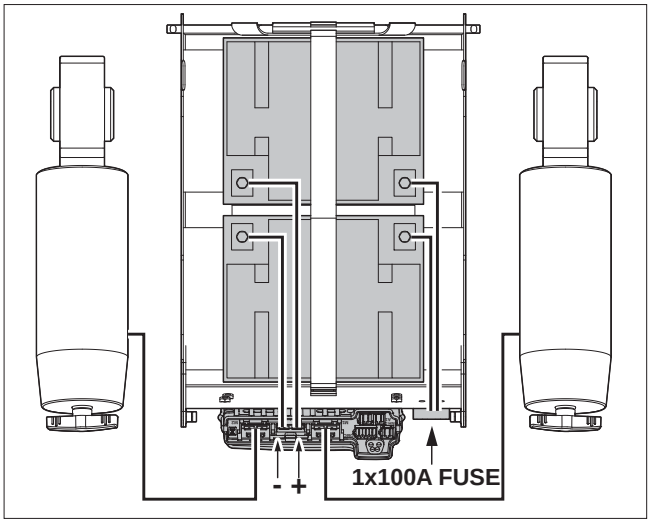
The wheelchair uses dry gel batteries. These dry batteries (dry fit) are sealed and are maintenance free.
The battery wiring diagram is located on a sticker inside the battery tray.

Shark Diagrams / R-net Diagram / DX2 Diagram / VR-2 Diagram

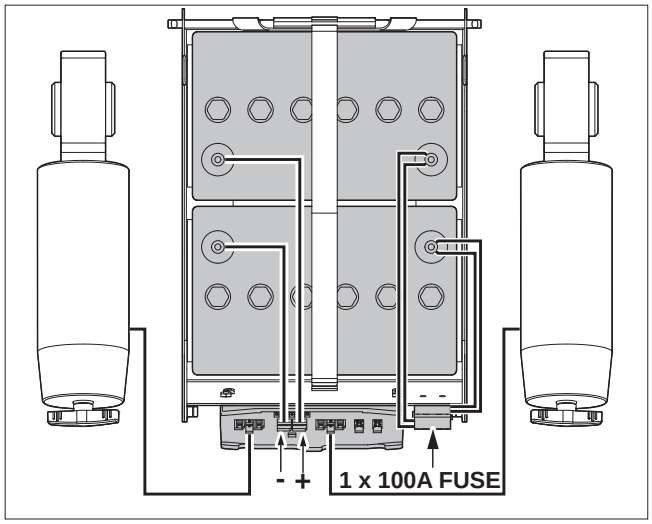
Shark



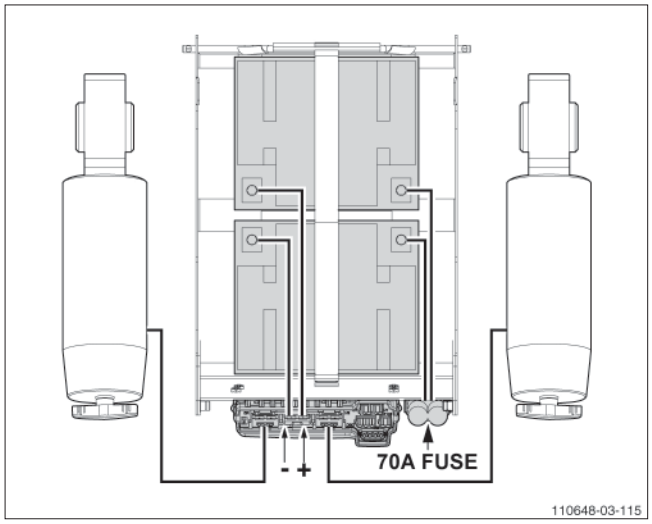
R-net



DX2



VR-2



⚠
- Make sure that the batteries are always well charged.
- Do not use the wheelchair if the batteries are almost flat. This may damage the batteries and you run the risk of an unintended standstill.
- The use of 'wet' batteries is not permitted. If the batteries have to be replaced, use only dry batteries.

5.2 Assembly, replacement and adjustment instructions

This chapter covers illustrated assembly, replacement and adjustment instructions.

Every separate visual instruction is prefaced with:
- Preparation instructions
- Relevant article numbers
- Tools used
- Info (suggestions and advice to help you carry out tasks or procedures more easily)
- Notices (extra notes covering information you need when executing the specific task)

In the visual instructions illustrate the tools needed for the specific task.

5.2.1 Replacing Puma 20 motors

All types of motors on Puma 20 wheelchairs are gradually replaced with motors which have a higher rpm and therefore require a lower voltage. This has a positive effect on maintaining the wheelchairs maximum driving speed which tends to diminish as battery levels fall. Puma 20 motors delivered as spare part also have the new specifications. When replacing Puma 20 motors, please note the following:
- New and old motors on the same wheelchair are not compatible. Replace both motors if the motor that needs replacement has one of the following article numbers (the article number can be found on the ID plate): 9004277, 9004278, 9004279, 9004280, 9004281, 9004282, 9004283, 9004284
- Re-program the controller with the latest drive settings, after replacement. Drive-programs can be obtained through Sunrise Medical HCM Customer Service +31 (0)492 593 888
  Following Voltage and Speed settings must be set:
  - DX2 Maximum motor Volts (V) = 22 Speed demand scalar = 95
  - Shark Maximum motor Volts (V) = 22 Maximum forward speed (%) = 95
  - RNET Output Voltage (V) = 22 Maximum forward speed (%) = 95 (in last drive profile)
  - VR2 Output Voltage (dV) = 220 Maximum forward speed (%) = 95
- In case of problems and/or questions contact Sunrise Medical HCM Customer Service / Technical Support

5.2.2 Converting front wheel drive (FWD) to rear wheel drive (RWD) and vice versa.

Preparation
- Switch off the wheelchair via the remote control.
- Be sure that the freewheel switch is in ‘drive’ mode. If the freewheel switch is in ‘push’ mode this will make loosening the bolts impossible.
- Remove the legrests.
- Remove the entire seating unit (incl. electrical lift, electrical tilt or mechanical tilt) from the carrier. Two people are needed to carry out this operation.

Instructions
Note! Suitable work area required!
- Change the direction of drive wheels and the mudguards (not valid for Puma 20).
- Replace the anti-tip wheels and the anti-tip brackets (RWD wheels and brackets into FWD wheels and brackets).
- Remount the interface and seating.
- Reprogram the wheel chair.

Note! The visual instructions show all actions only on one side. Carry out all actions also on the other side of the carrier!

Relevant article numbers
9005962 P2040 Anti-Tip RWD Complete Service
9005963 P2040 Anti-Tip FWD Complete Service
For more information see the eletrical diagrams at § 7.3.

Tools used
- Lifting device
- Allen key, 6 mm
- Open ended or ring spanners, 13 mm, 2x
- Torx key T30
- Screwdriver, medium, 5 mm
- Hammer (plastic)
- Chaser
- Torque wrench, socket, 13 mm
- Pair of wire-cutters
- Water pump pliers
- Tie wraps

Icons


Parts need to be replaced. Dispose of waste parts in accordance with local regulations.

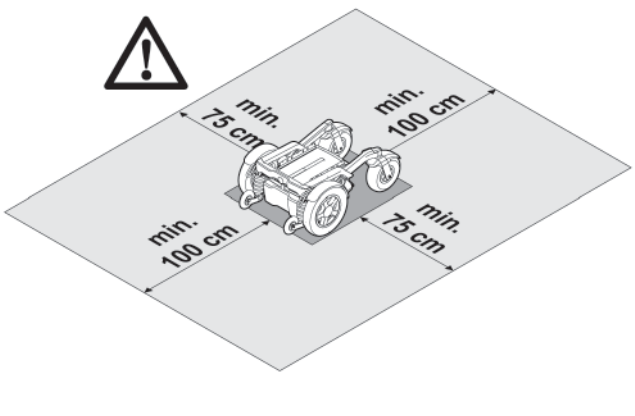

Action must be carried out by two persons!


Bolts are provided with Loctite thread locker!


Note! Be aware of the issue!

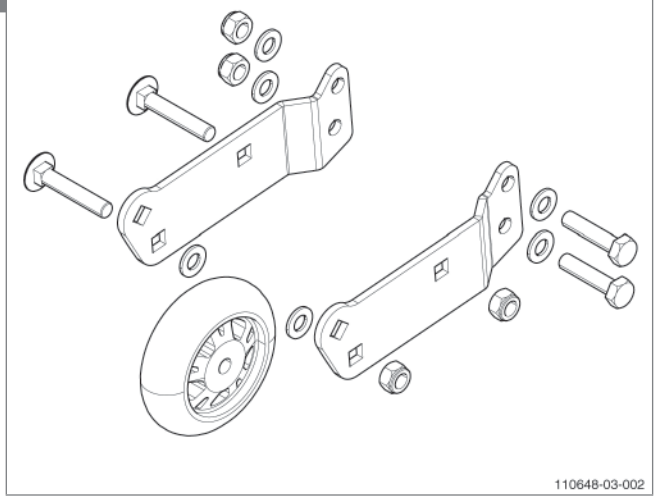
Step 1 Preparation.

1



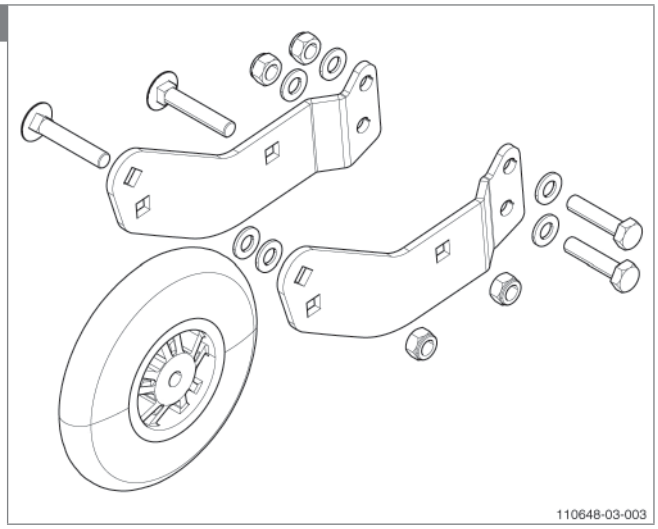
Note! Suitable work area required!

2



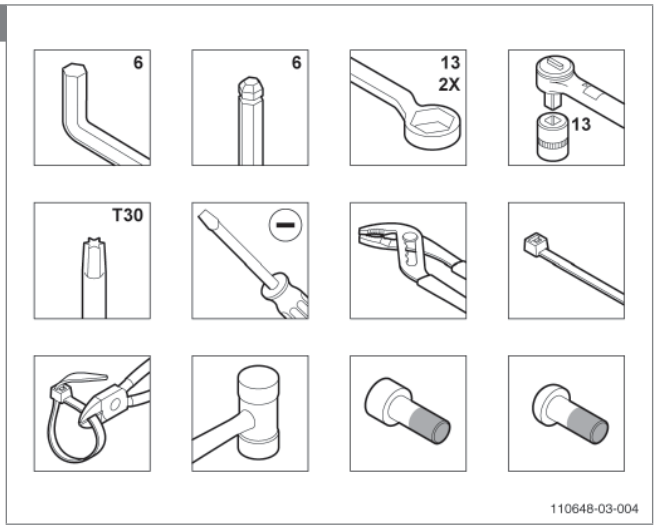
Conversion set for converting FWD to RWD.

3



Conversion set for converting RWD to FWD.

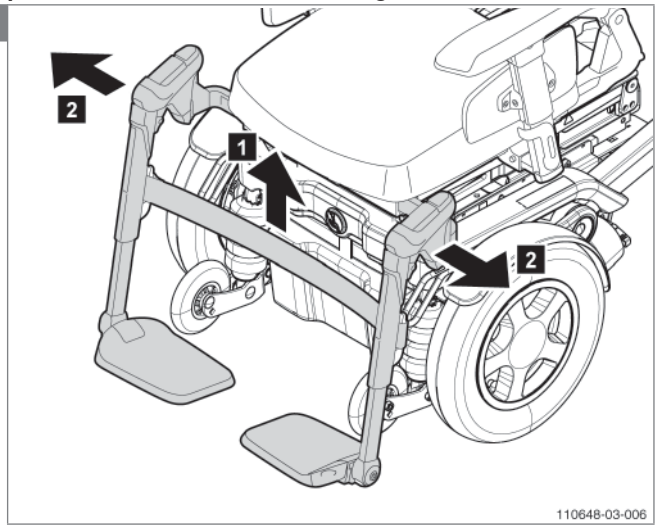
4



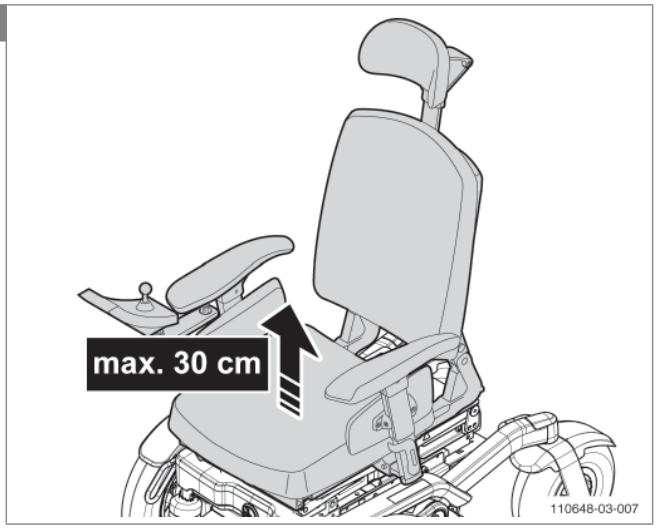
Tools required.

Step 2 Remove interface and seating.

1

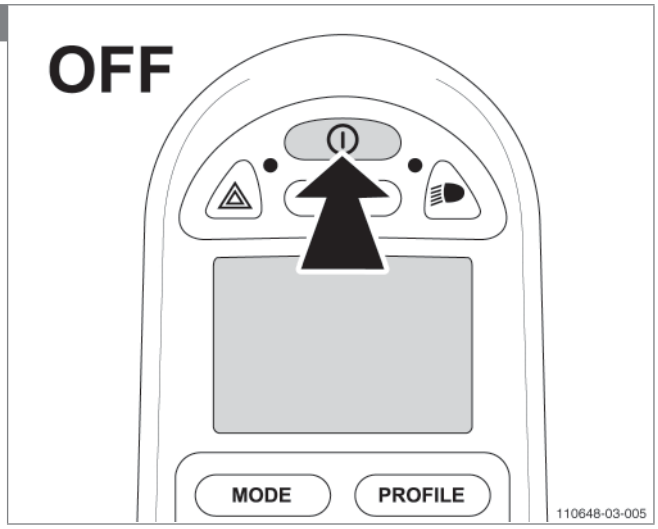


2

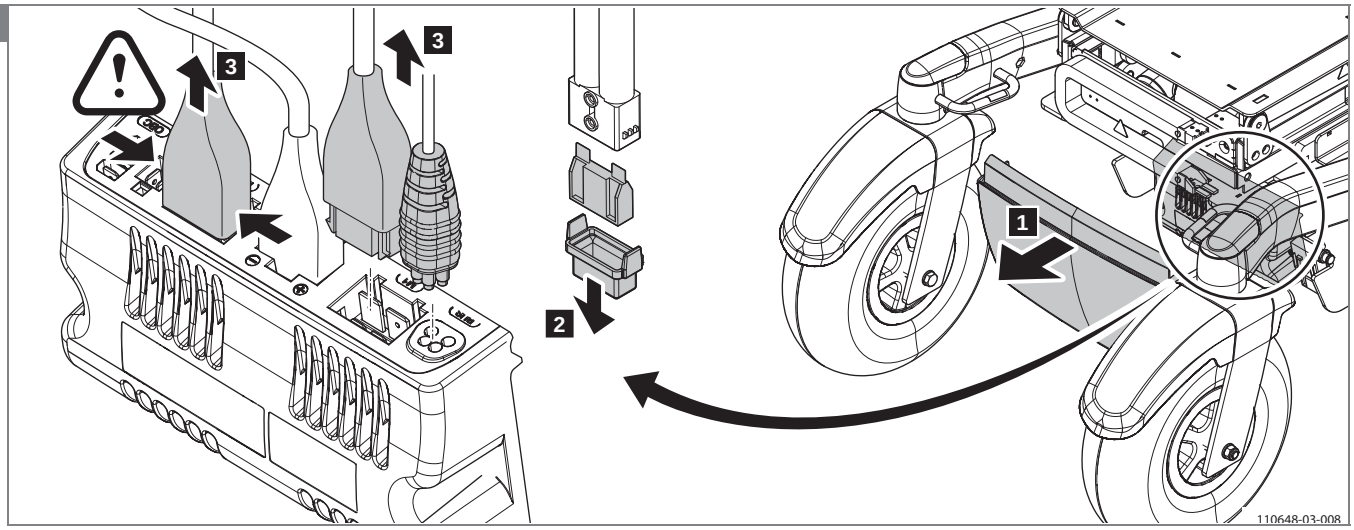


Note! Lift the chair in case the wheel chair has an electrical lift.

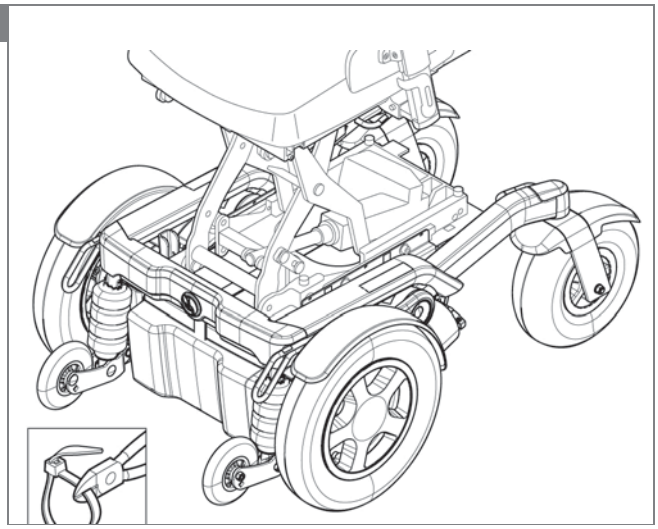
3



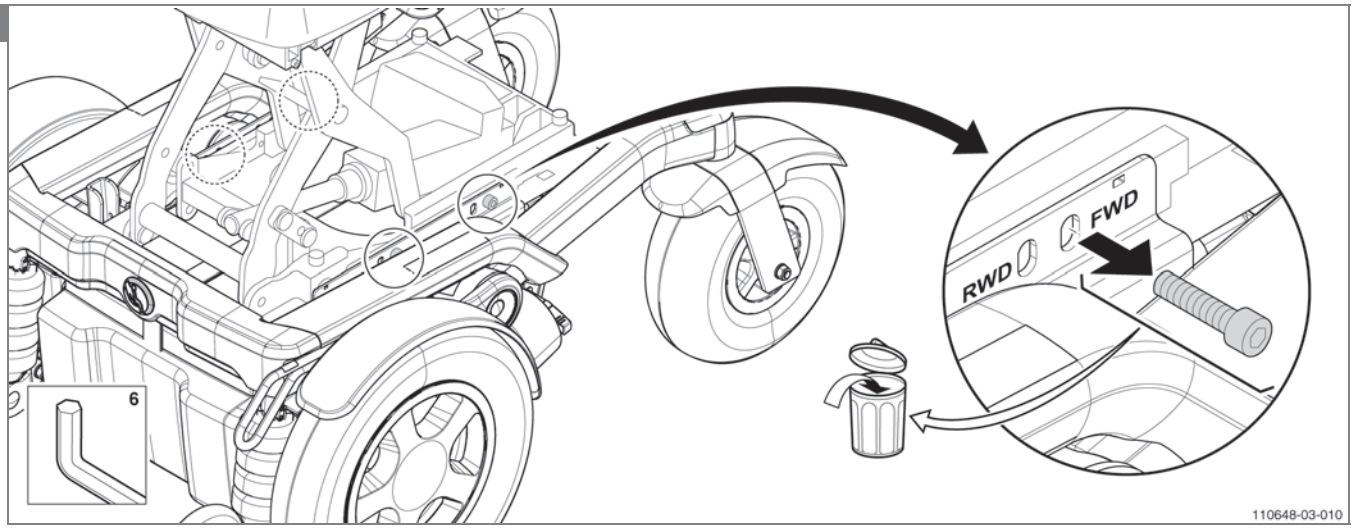
4



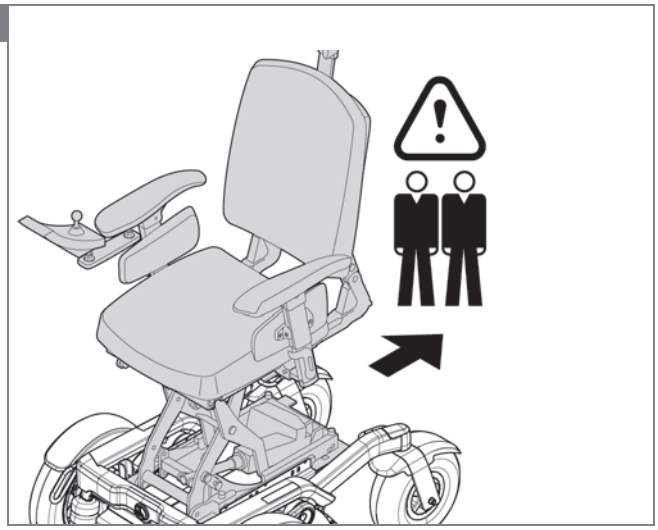
5



6



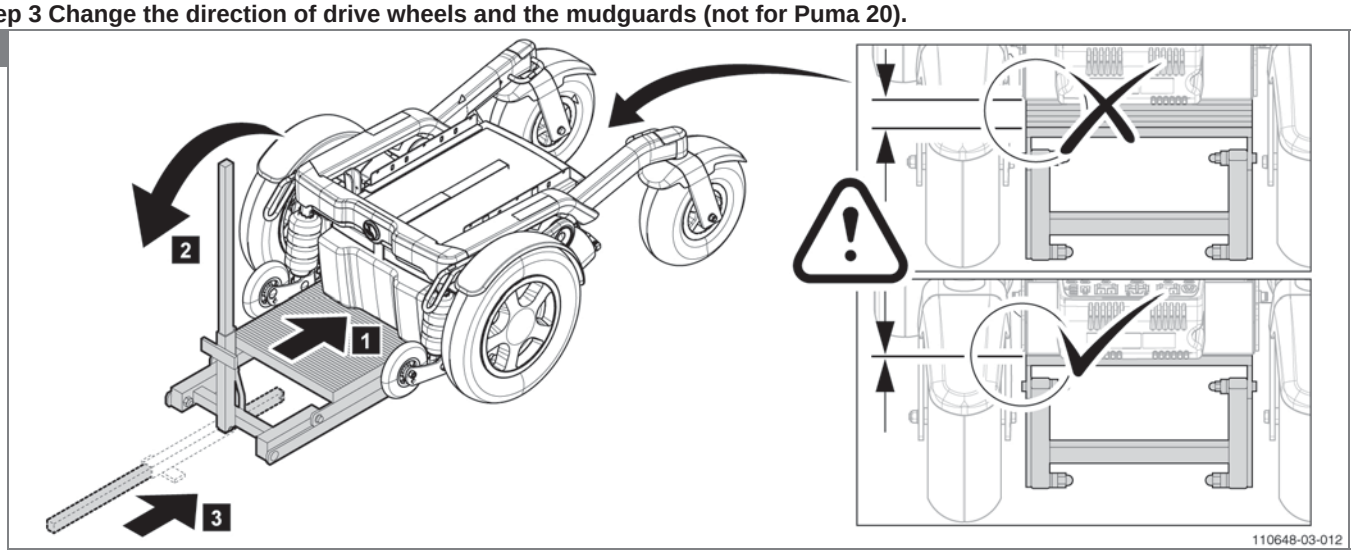
7



Note! Keep the spacers for reuse at step 5.2!

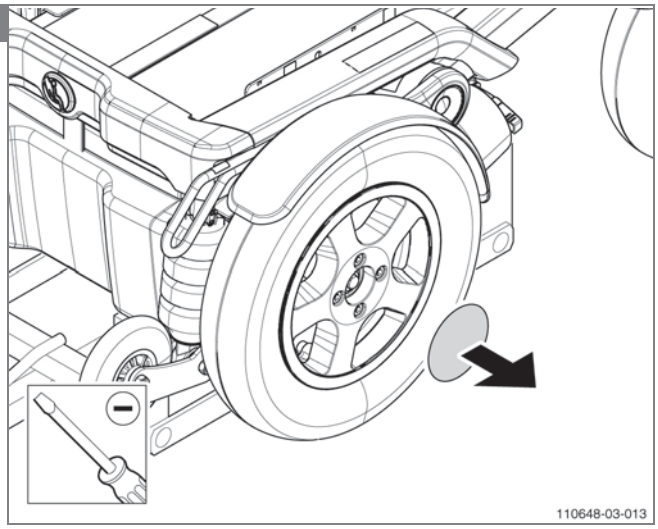
Step 3 Change the direction of drive wheels and the mudguards (not for Puma 20).

1

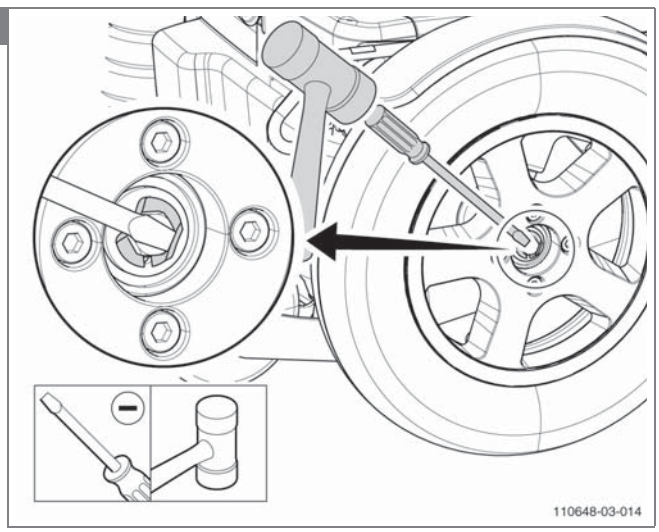


Note! Use a lifting device to provide a proper working platform.
Note! Position the lift completely under the carrier!
Caution! Check no cables are caught between the lift and the carrier!

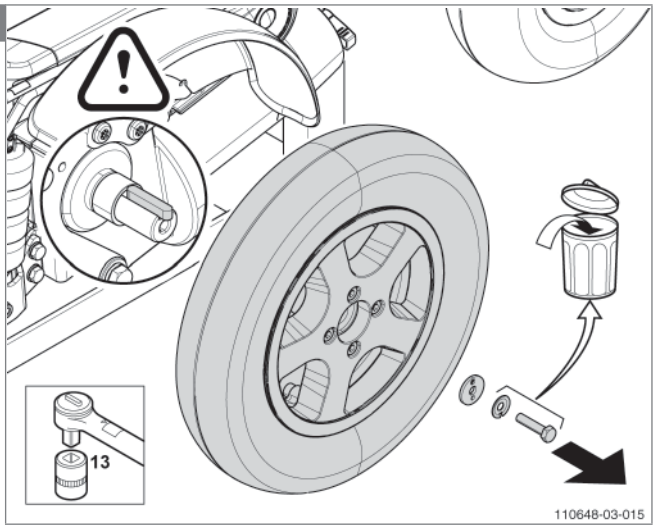
2



3

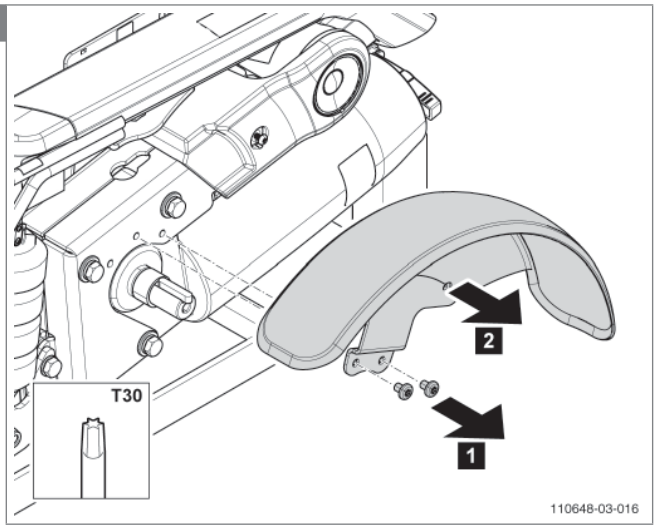


4



Note! Check the key is still in place!
Note! Dispose the ring and bolt!

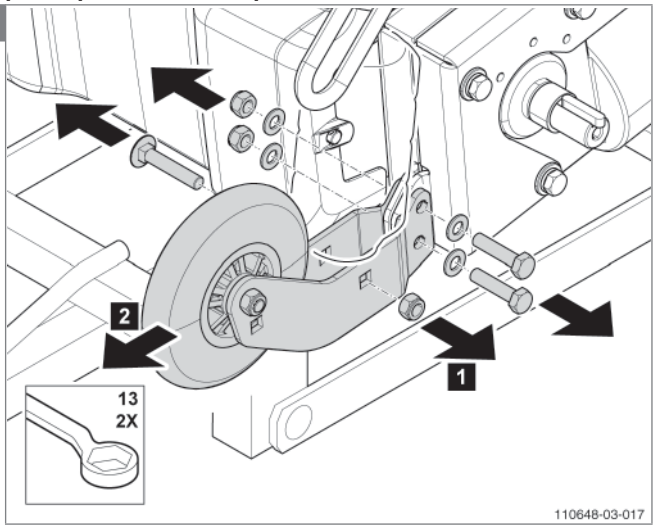
5



Note! The Puma 40 has mudguards, take them off!

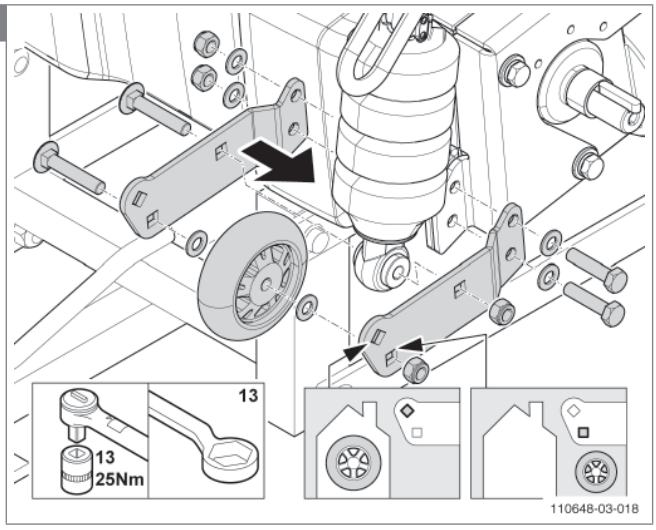
Step 4 Replace the anti-tip wheels and brackets.

1



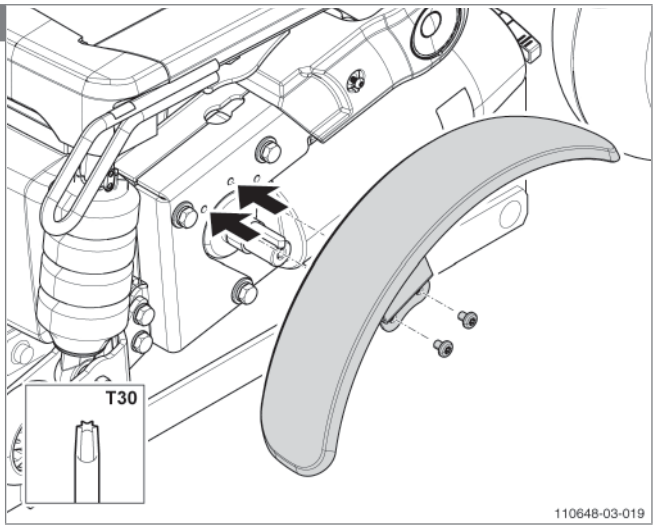
Note! Replace the anti-tip wheels and brackets! FWD into RWD!

2



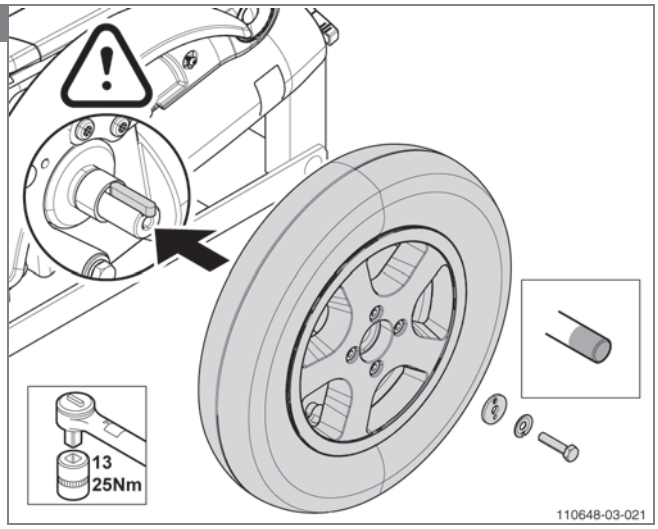
Note! Use top mounting holes for Indoor anti-tip wheel!
Note! Use bottom mounting holes for Outdoor anti-tip wheel!
Note! Tighten the bolts of the anti-tip wheels and brackets with 25 Nm!

3



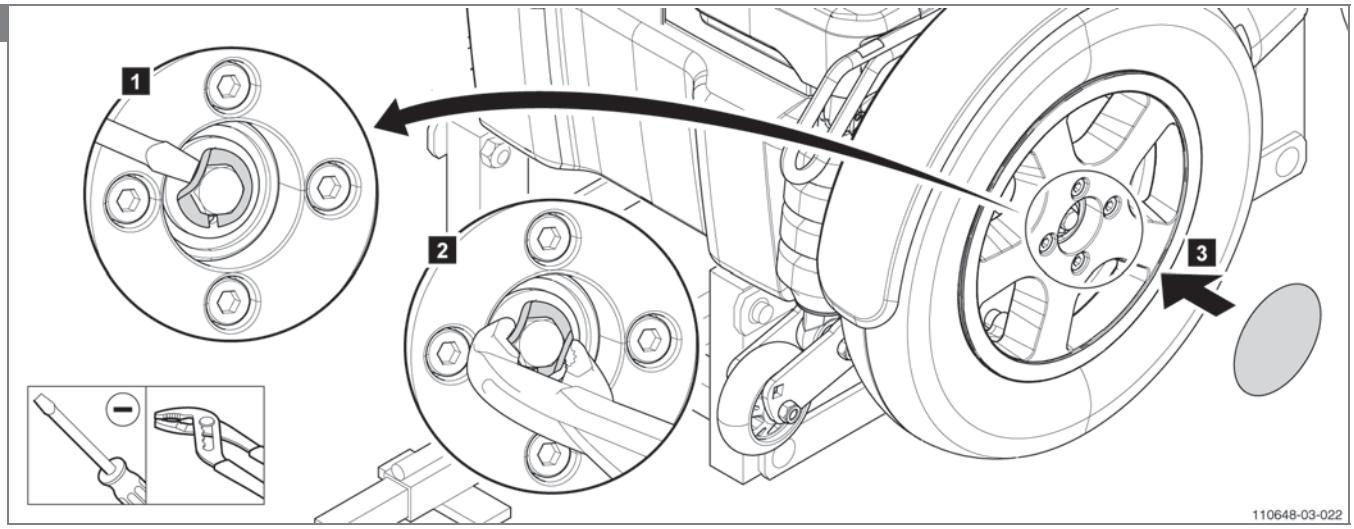
Step 5 Remount the drive wheels.

1



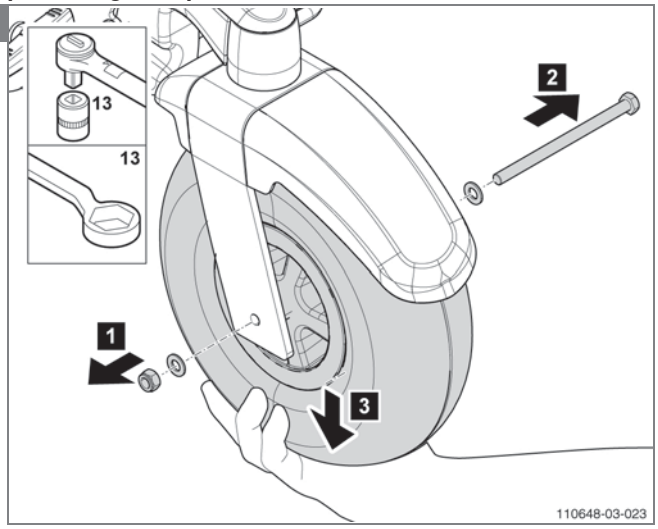
Note! Check the key is still in place!
Note! Tighten the bolts of the drive wheels with 25 Nm!

2

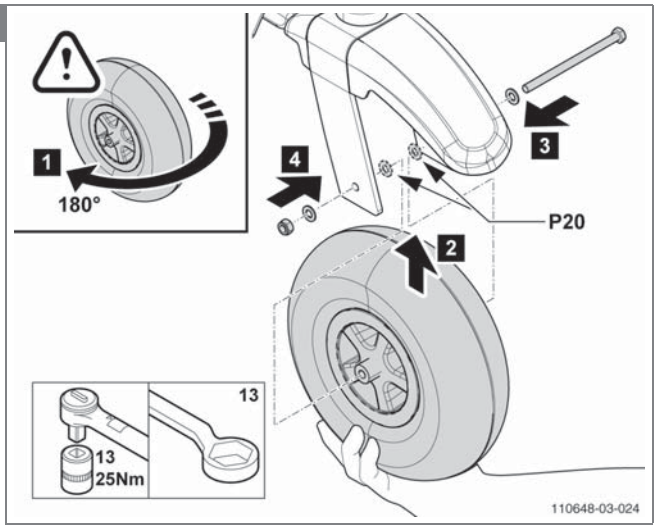


Step 6 Change the position of the castor wheels.

1

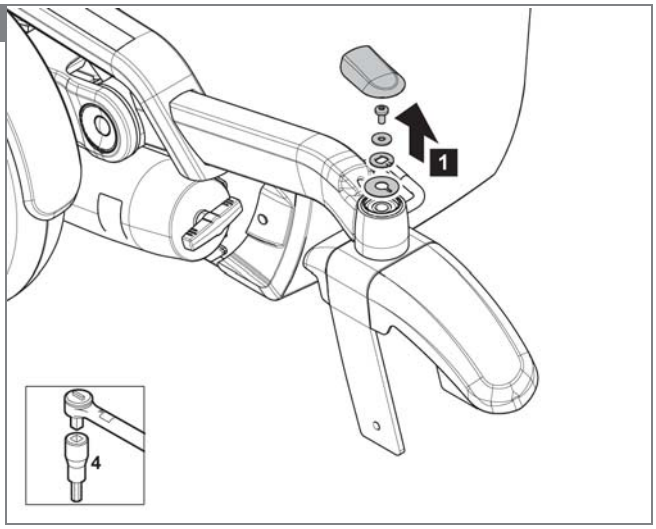


2



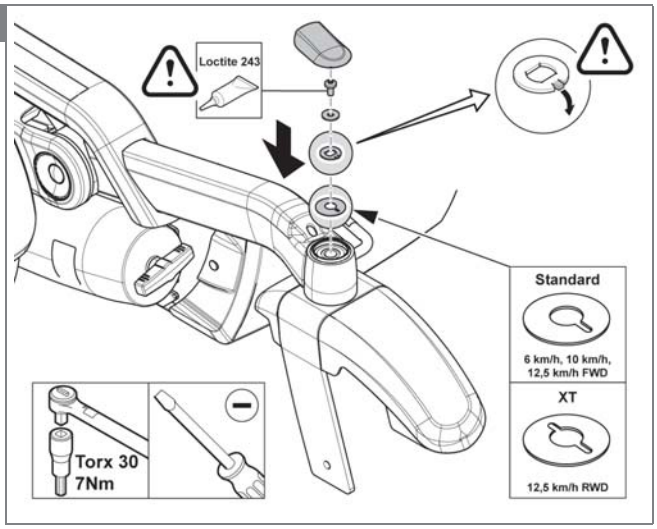
Note! Tighten the shaft and nut of the castor wheels with 25 Nm!
Caution! Place at the Puma 20 on both sides of the castor wheel an extra ring between the wheel and the fork!

3



Note! Only in case of 12,5 km/h!

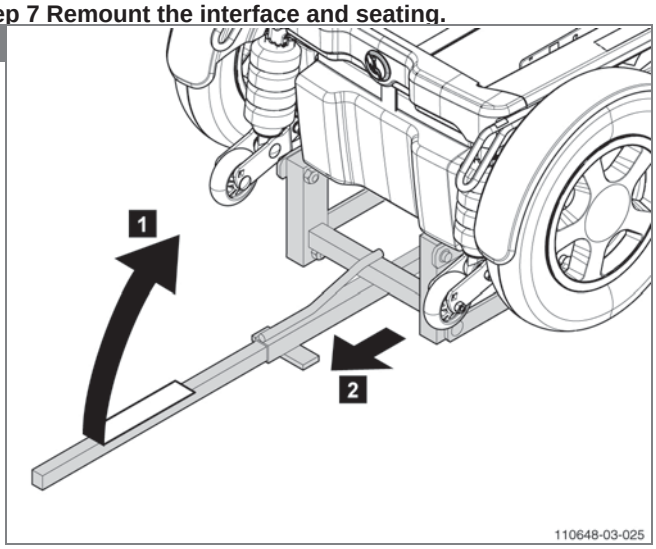
4



Note! Only in case of 12,5 km/h!

Step 7 Remount the interface and seating.

1



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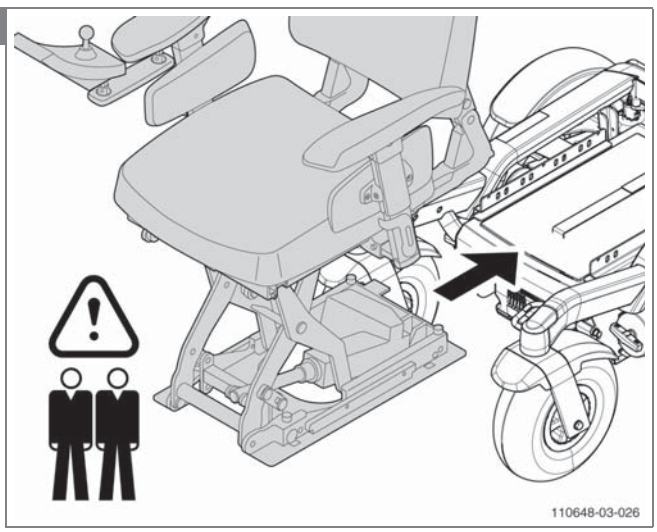

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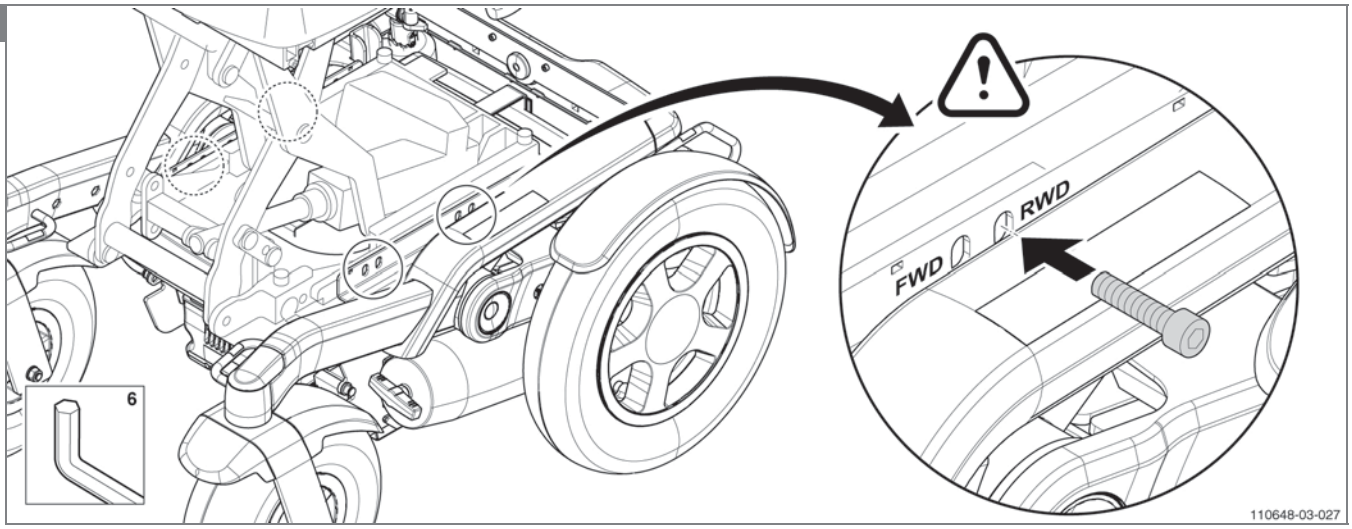

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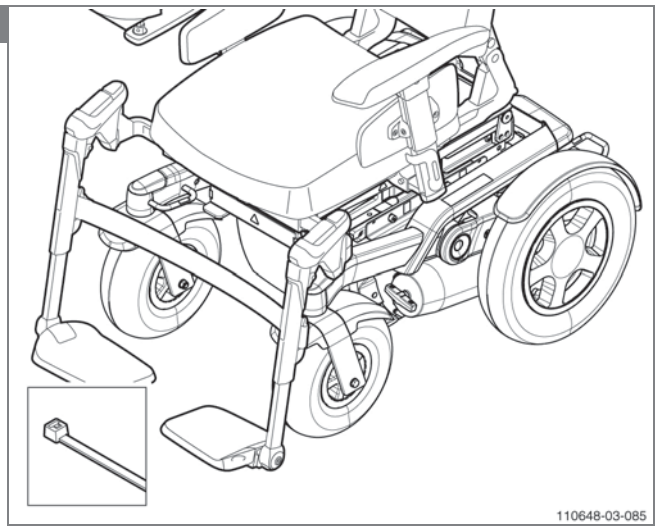

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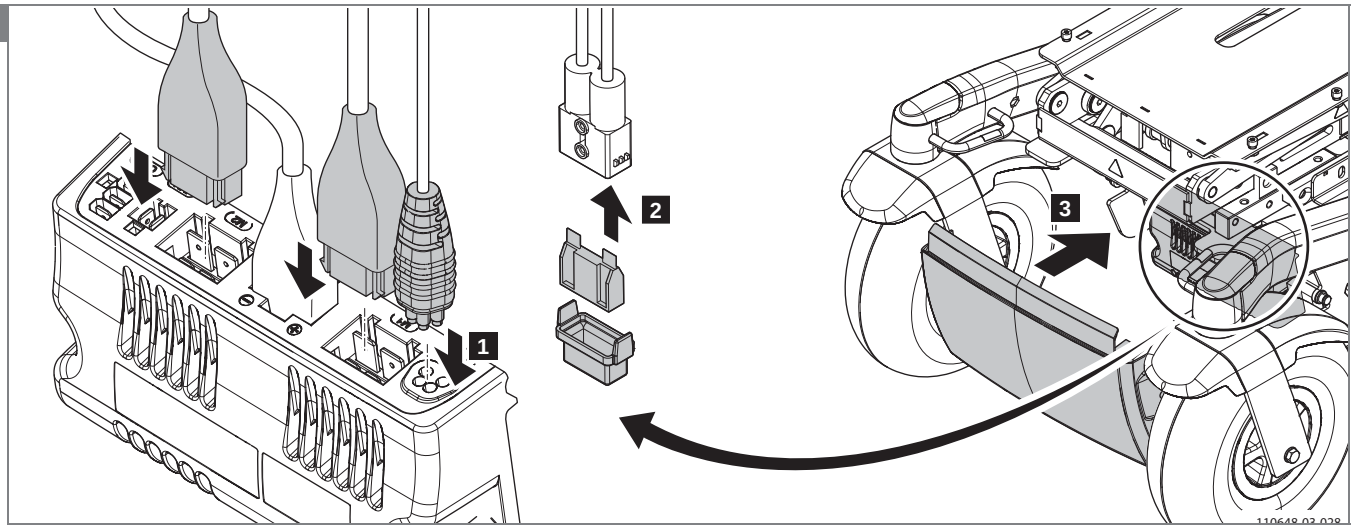

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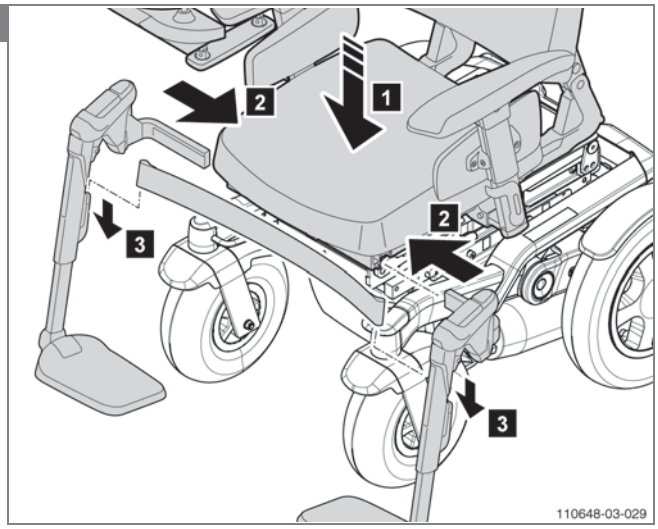


	FWD		RWD	
Shark	9006429	Shark bus extension cable 0.9m	9006430	Shark bus extension cable 1.2m
Shark with Lift	9006431	Shark bus extension cable 0.64m	9006429	Shark bus extension cable 0.9m
	9006304	P2040 Shark Cable Light+Lift+Act FWD	9006305	P2040 Shark Cable Light+Lift+Act RWD
DX2	00355.0023	DX(2) bus cable 1.0 m.-	055.00111.000	DX(2) bus cable 1.5 m.
DX2 with Lift	00355.0024	DX(2) bus cable 2.0 m.	055.00121.000	DX(2) bus cable 2.5 m.
R-net with Lift	9002482	R-net Cable 2.0m	9002484	R-net Cable 1.5m
VR-2	9006853	VR-2 Extension Cable 1m	9006854	VR-2 Extension Cable 1,5m
VR-2 with attendant	9002305	VR-2 Extension Cable 0.5m	9006853	VR-2 Extension Cable 1m
VR-2 with Lift & Tilt / Back	9006854	VR-2 Extension Cable 1,5m	9006855	VR-2 Extension Cable 2m
	9006325	P2040 VR-2 Cable Lift+Act FWD	9006326	P2040 VR-2 Cable Lift+Act RWD
VR-2 with Lift	9006853	VR-2 Extension Cable 1m	9006854	VR-2 Extension Cable 1,5m
	9006328	P2040 PGDT Cable Lift 900mm	9006329	P2040 PGDT Cable Lift 1100mm

Step 8 Reprogram the wheelchair.

1

Note! Program the correct standard RWD program to the wheelchair.

5.2.3 Mounting the kerb climber (RWD)

Preparation
- Switch off the wheelchair via the remote control.
- Use a lifting device to raise the drive wheels clear of the ground.

Instructions
- Remove the legrests.
- Mount the mounting bracket of the kerb climber on the castor arms.
- Adjust the kerb climber shoe in the right position:
  - Indoor use: mounting in the lower holes
  - Outdoor use: mounting in the upper holes
- Mount the kerb climber on the mounting bracket.
- Put back the legrests.

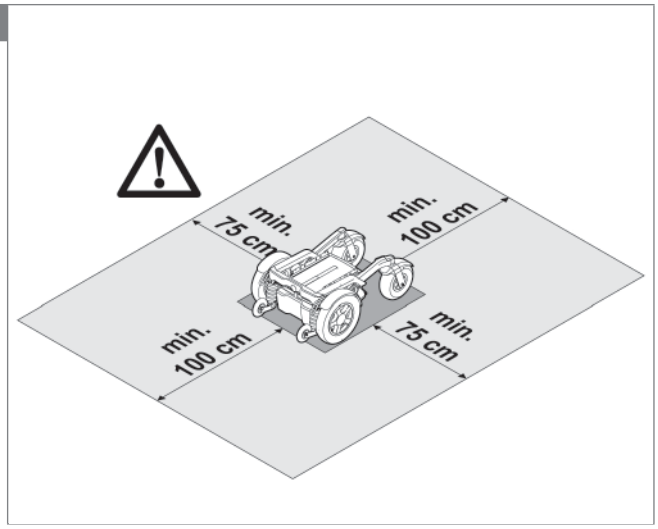
Notice
The kerb climber can only be mounted on a RWD!

Relevant article numbers
9007864 Kerb climber Puma 20/40

Tools used
Allen key, 8 mm

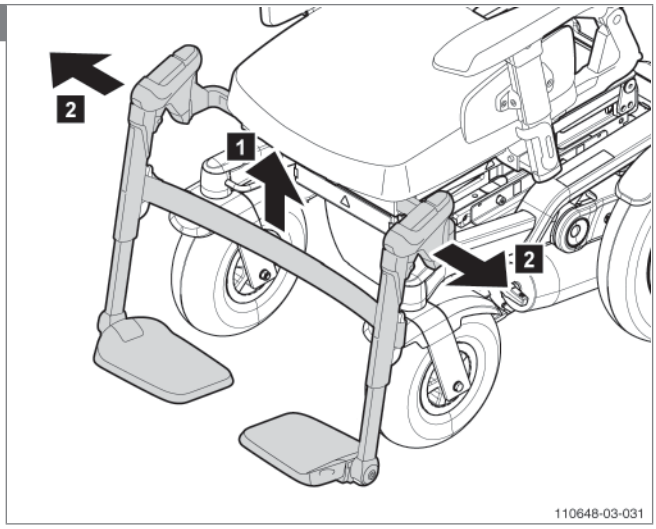
Icons
N.a.

1



Note! Suitable work area required!

2



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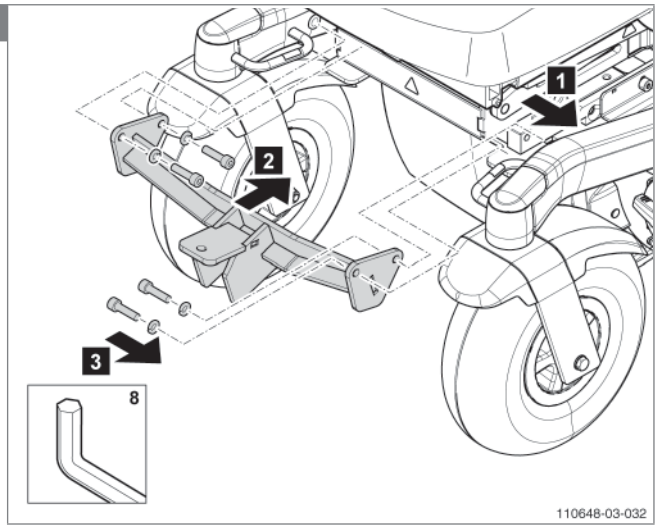

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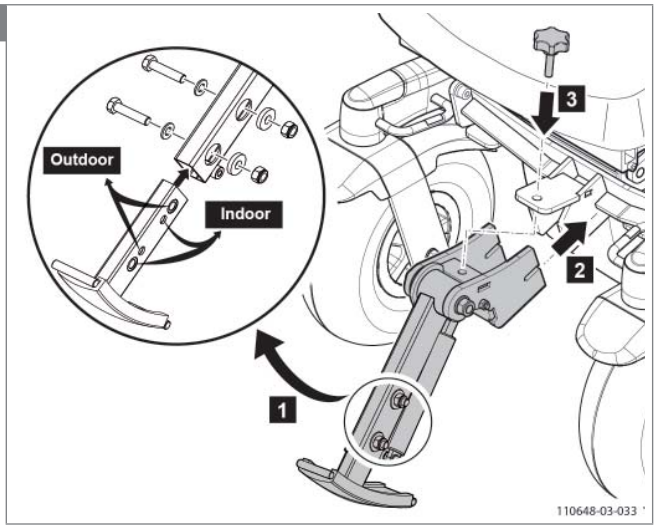

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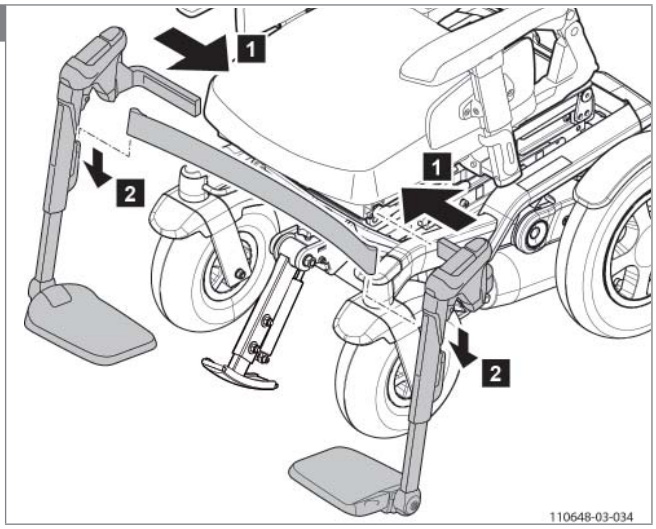

5.2.4 Replacing the carbon brushes

Preparation
- Switch off the wheelchair via the remote control.
- Be sure that the freewheel switch is in ‘drive’ mode. If the freewheel switch is in ‘push’ mode this will make loosening the bolts impossible.
- Use a lifting device to raise the drive wheels clear of the ground.

Instructions
The following operations are required to replace the 4 or 8 carbon brushes:
- Remove the bolt/nut and the locking washers of the drive wheel.
- Remove the drive wheel from the motor axle.
- Remove the mudguards and the anti-tip wheels.
- Loosen the three bolts from motor arm to loosen the motor.
- Unscrew the 2 or 4 caps to get access to the carbon brushes.
- Pull the carbon brush out of the housing and remove the brush.
- Inspect the collector on the anchor of the motor; if the collector is seriously worn, replace the entire drive unit.
- Place the carbon brush in the holder; this can be done in one way only.
- Screw the new plastic screw cap onto the carbon brush holder.
- Mount the motor, mudguard, anti-tip wheel and driving wheel on the carrier.
- Check the tyre pressures.

Relevant article numbers
9006360 Puma 20 Motor brush set (2x2pcs with cover)
9005107 4PHT 8 mm motor brushes service (6 and 10 km/h)
9008819 4PHT 5 mm motor brushes service (12,5 km/h)
9002600 Drive wheel bolt and ring

If complete drive units need to be replaced see spare parts list 'Suspension arm and motors' for article numbers:

Tools used
- Lifting device
- Screwdriver
- Hammer (plastic)
- Open ended or ring spanner, 13 mm
- Torque wrench, socket, 13 mm
- Torx key, T30
- Water pump pliers

Icons


Parts need to be replaced. Dispose of waste parts in accordance with local regulations.


Bolts are provided with Loctite thread locker!


Note! Be aware of the issue!

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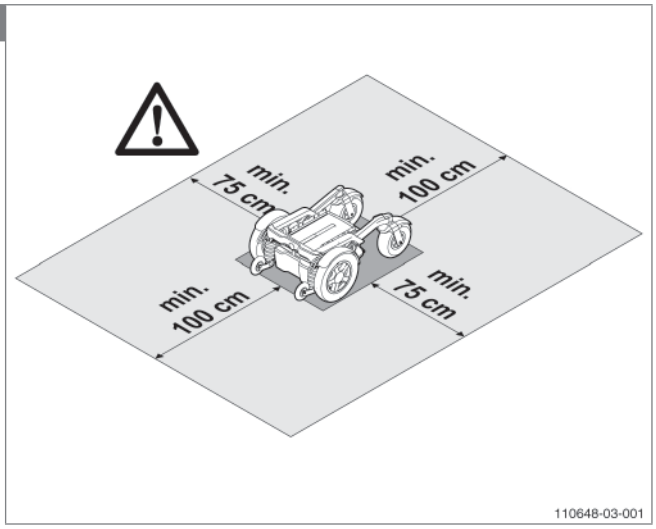
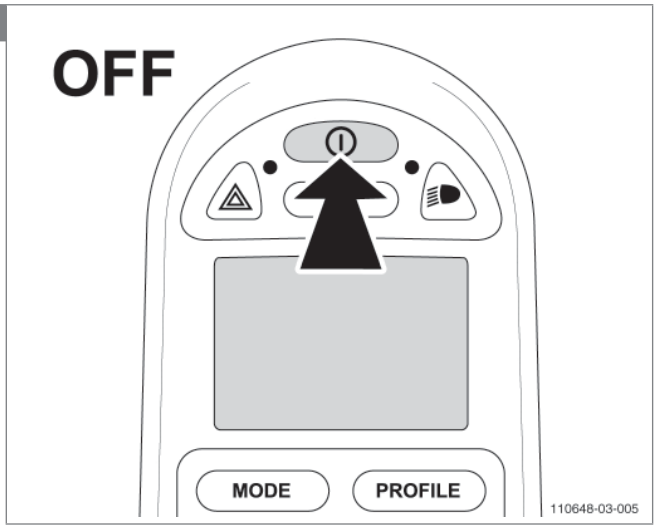


Note! Suitable work area required!

2



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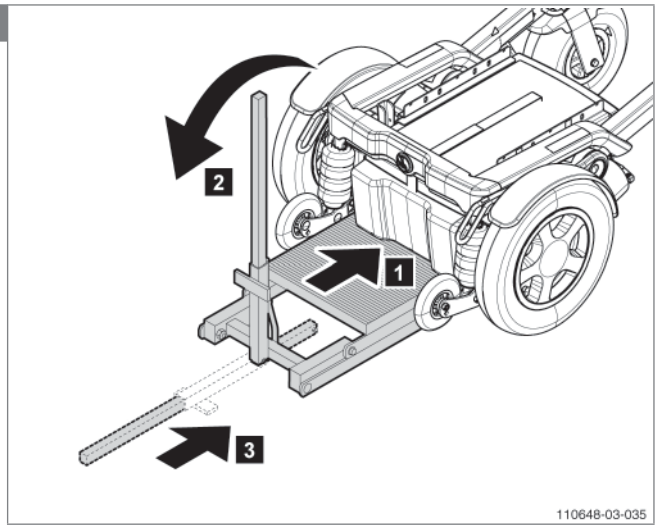
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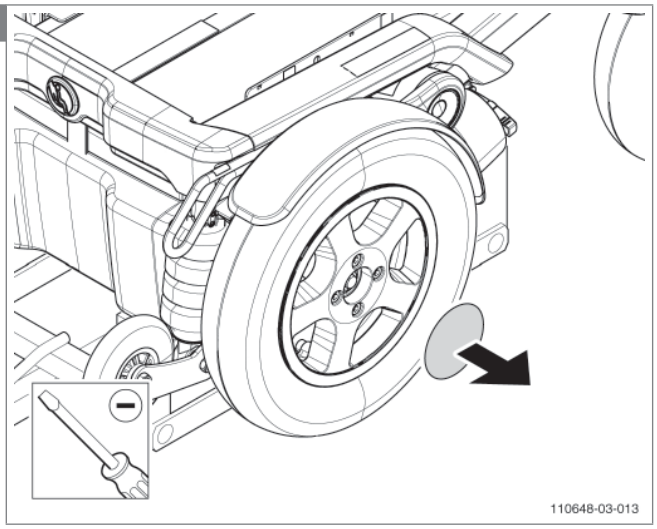
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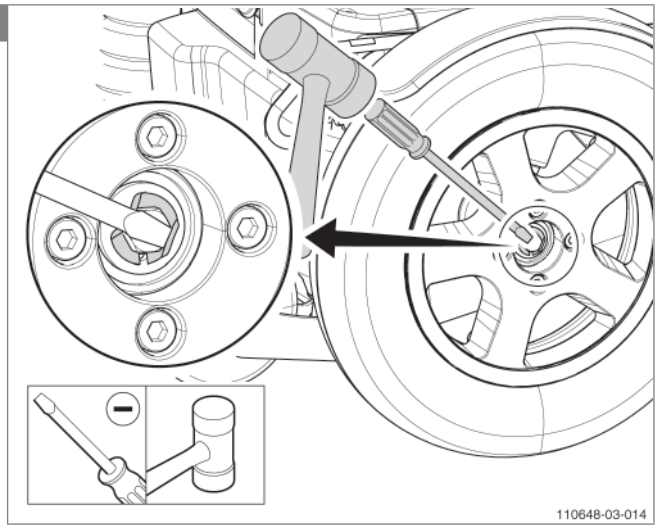
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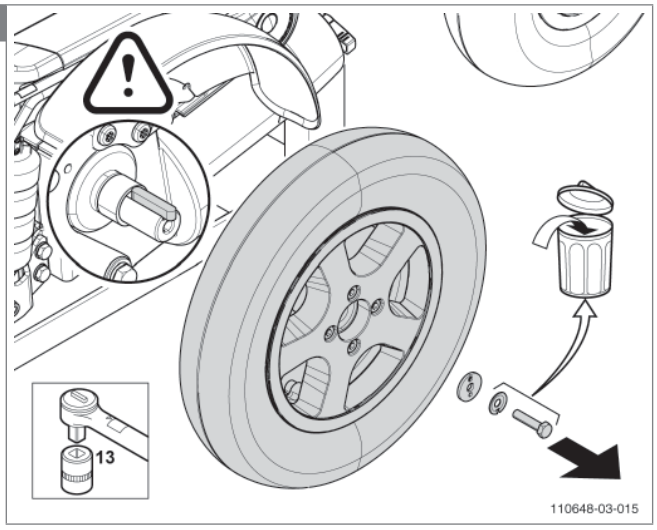
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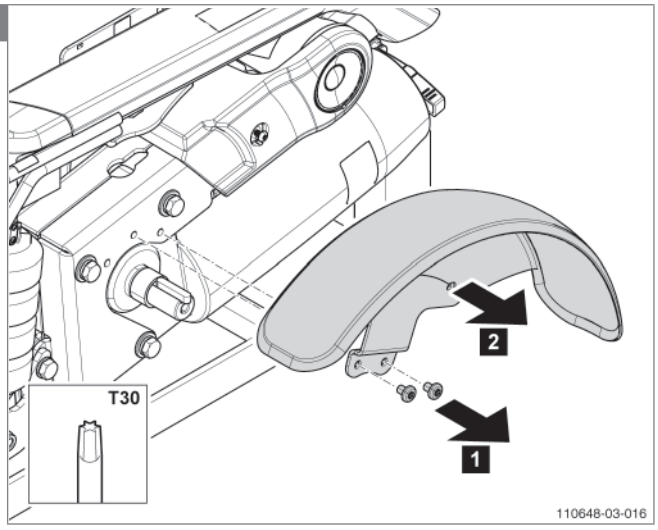
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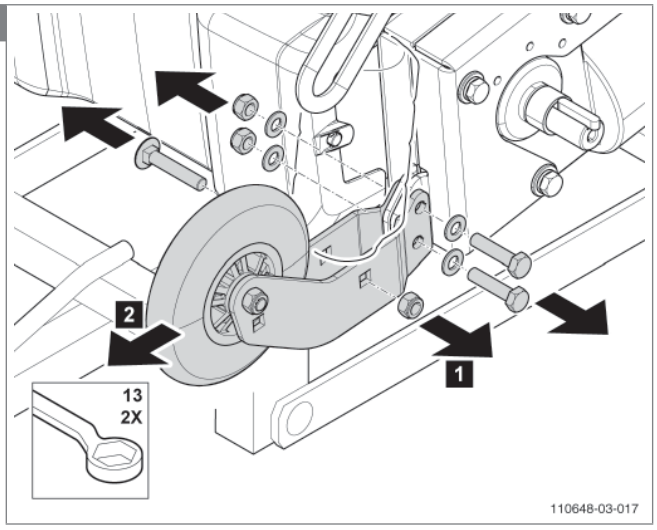
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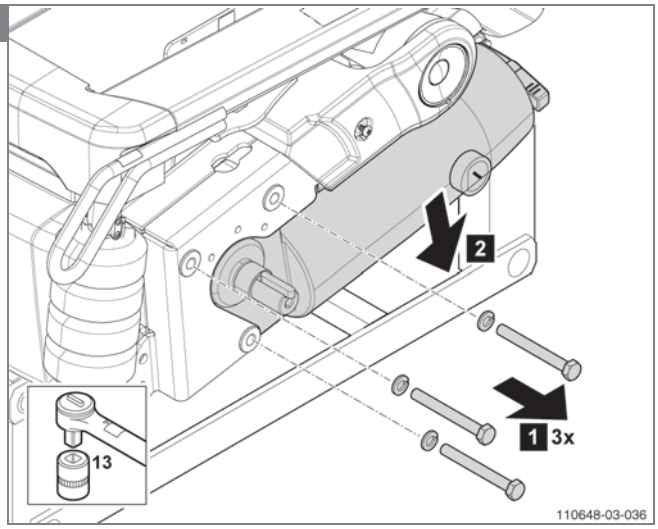

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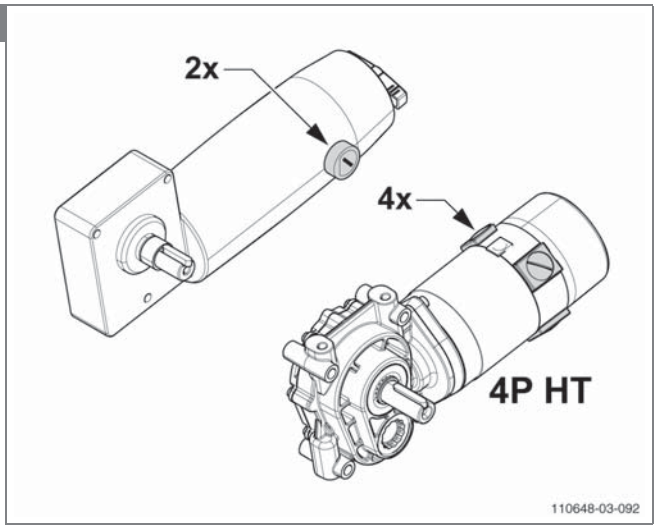

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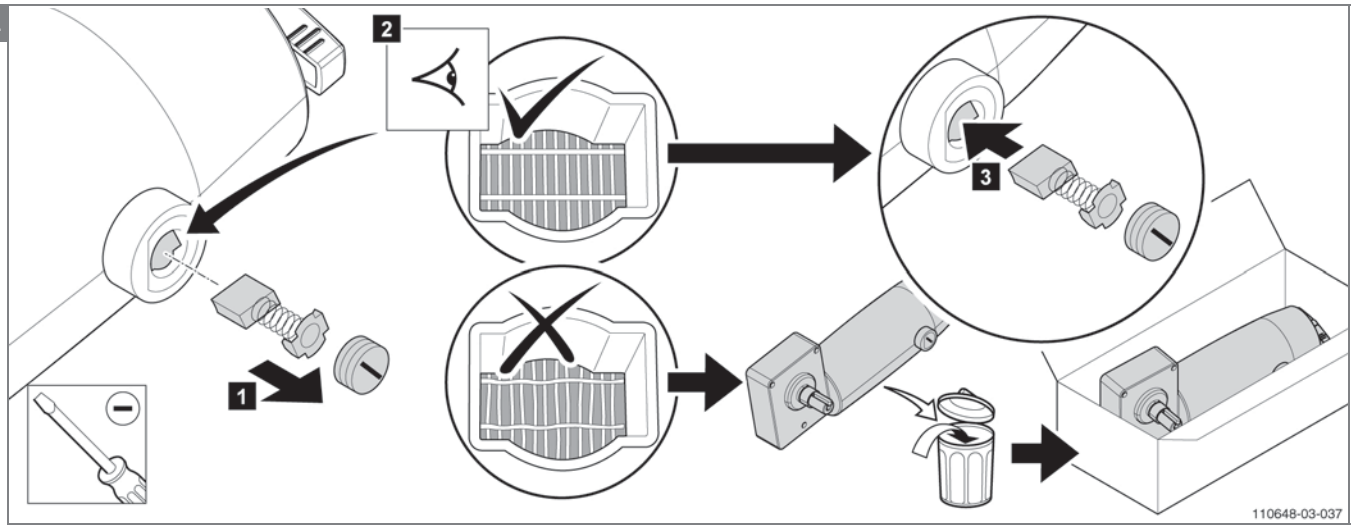
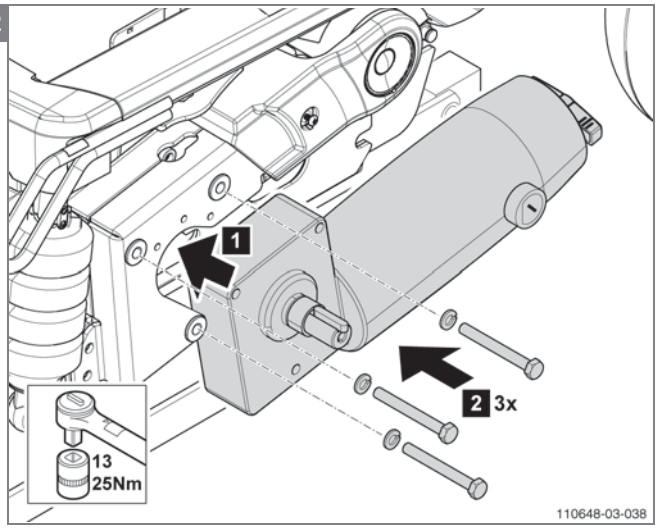


Note! Inspect the collector on the anchor of the motor; if the collector is seriously worn, replace the entire drive unit.

12



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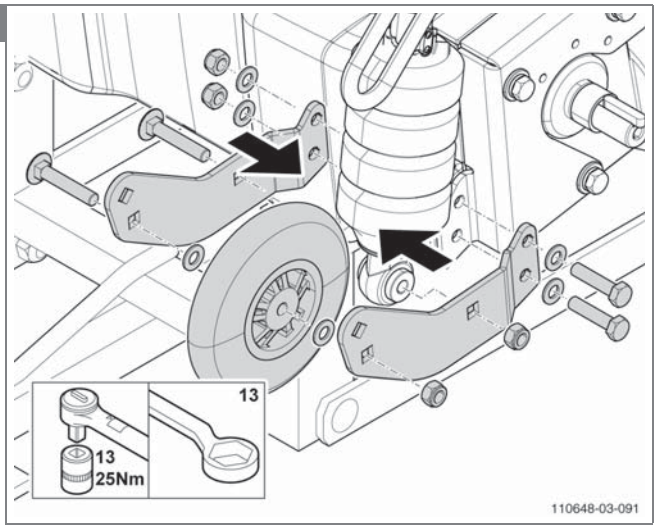

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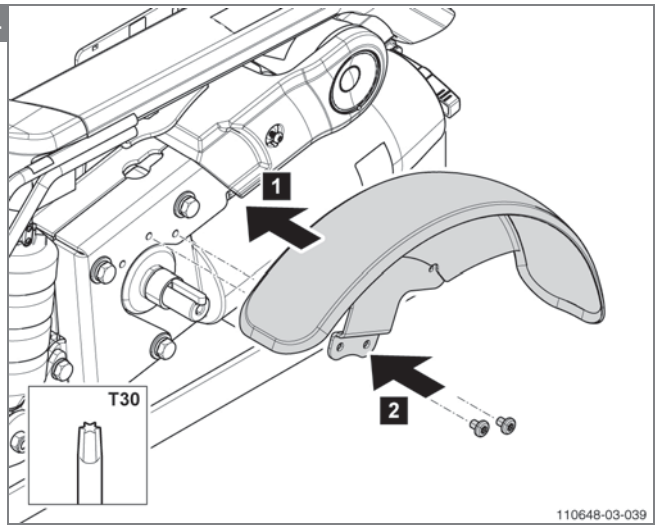

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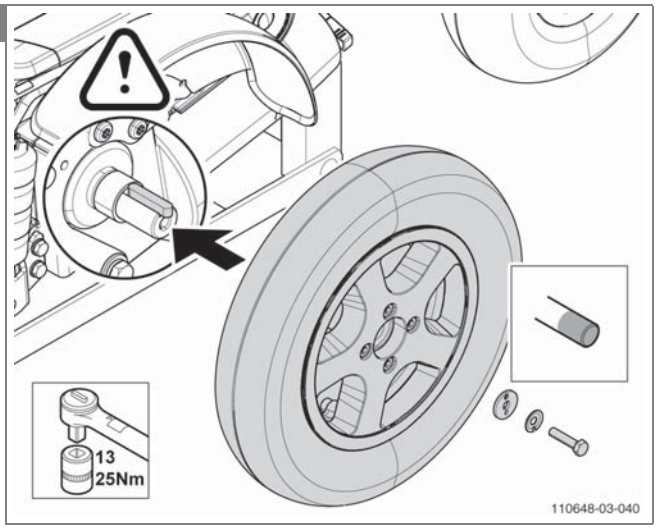
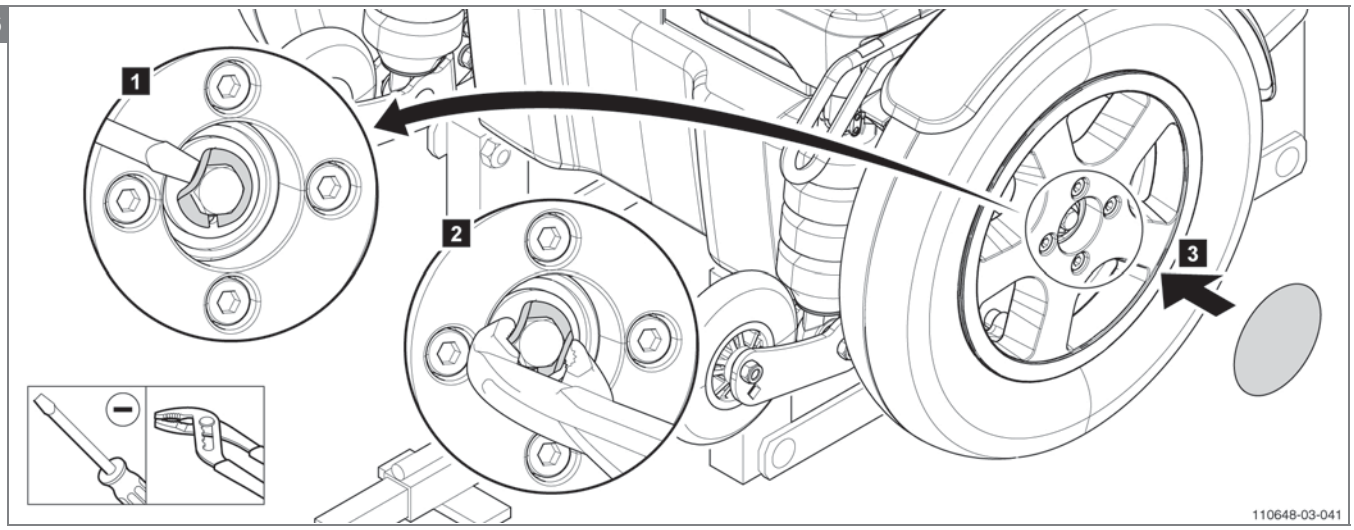


Note! Check the key is still in place!
Note! Tighten the bolts of the drive wheels with 25 Nm!
Note! Bolts are provided with Loctite thread locker!

16



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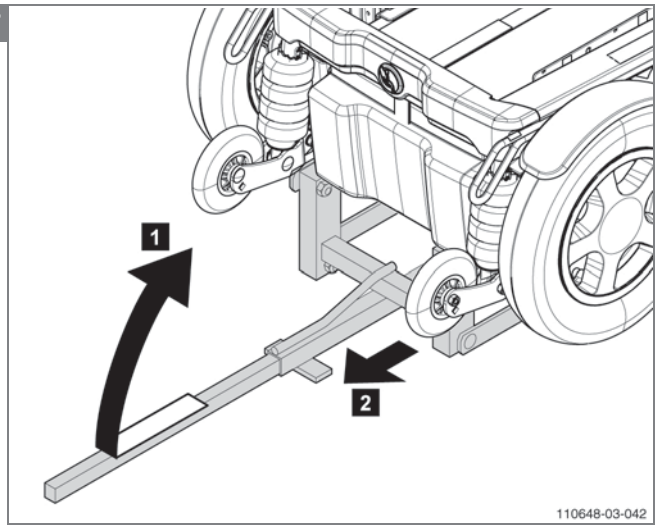


5.2.5 Replacing the drive wheel, indoor/outdoor Puma 20

Preparation
- Switch off the wheelchair via the remote control.
- Be sure that the freewheel switch is in ‘drive’ mode. If the freewheel switch is in ‘push’ mode this will make loosening the nuts impossible.
- Use a lifting device to raise the drive wheels clear of the ground.

Instructions
- Remove the nut and the locking washer.
- Replace the (new) drive wheel.
- Apply Loctite 270 to motor shaft
- Screw the nut with washer on to the shaft.
- Check the tyre pressures.

Notice
Inflate the tube to the correct pressure! (See ‘Technical specifications’)

Relevant article numbers
9006792 Drive wheel mounting set, Puma 20
1017314 Drive wheel Indoor 12 1/2 x 2 1/4 (13"), grey air
1017958 Drive wheel Indoor 12 1/2 x 2 1/4 (13"), grey air, set
1017315 Drive wheel Indoor 12 1/2 x 2 1/4 (13"), grey punctureproof
1017959 Drive wheel Indoor 12 1/2 x 2 1/4 (13"), grey punctureproof, set
1017312 Drive wheel outdoor 3.00x8 (14"), grey air
1017956 Drive wheel outdoor 3.00x8 (14"), grey air, set
1017313 Drive wheel outdoor 3.00x8 (14"), grey punctureproof
1017957 Drive wheel outdoor 3.00x8 (14"), grey punctureproof, set

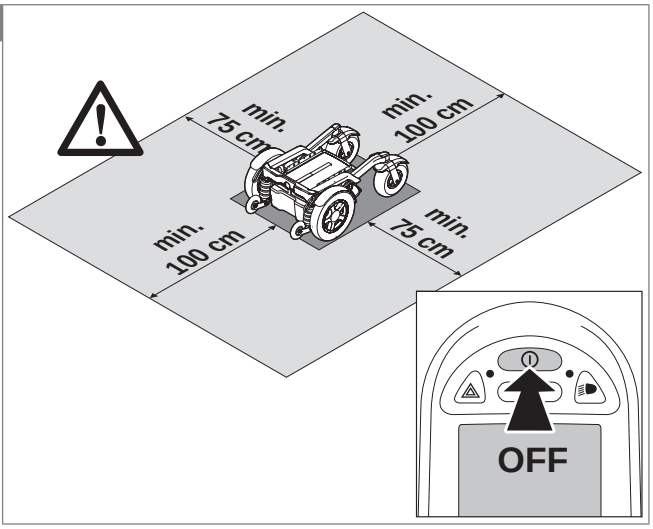
Tools used
- Lifting device
- Torque wrench, socket, 17 mm
- Loctite 270

Icons


Parts need to be replaced. Dispose of waste parts in accordance with local regulations

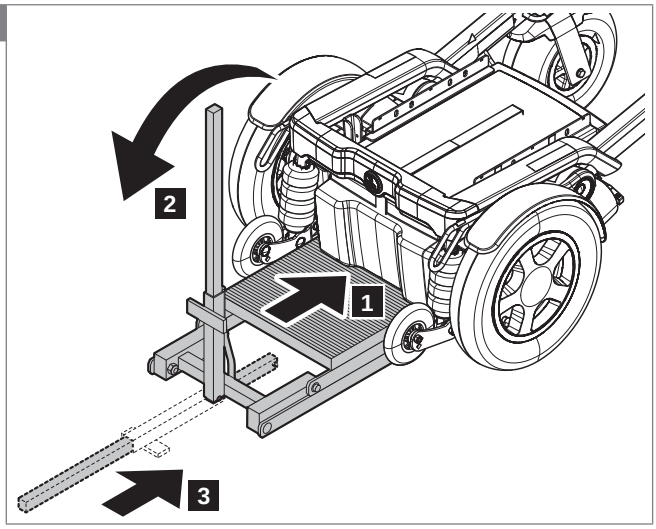

Note! Be aware of the issue!

1



Note! Suitable work area required!

2



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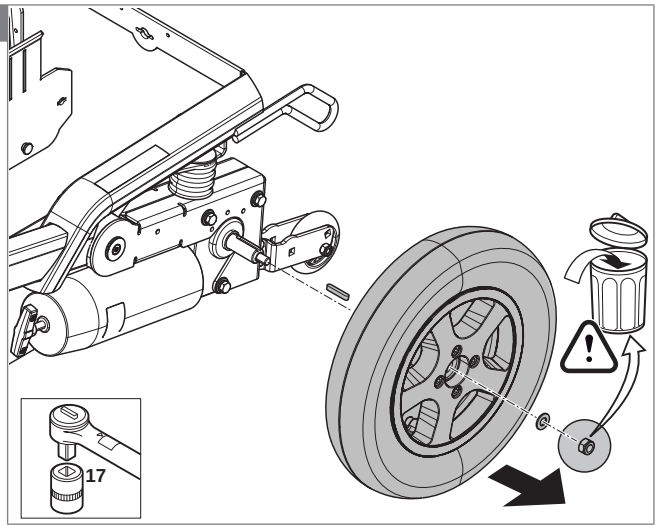

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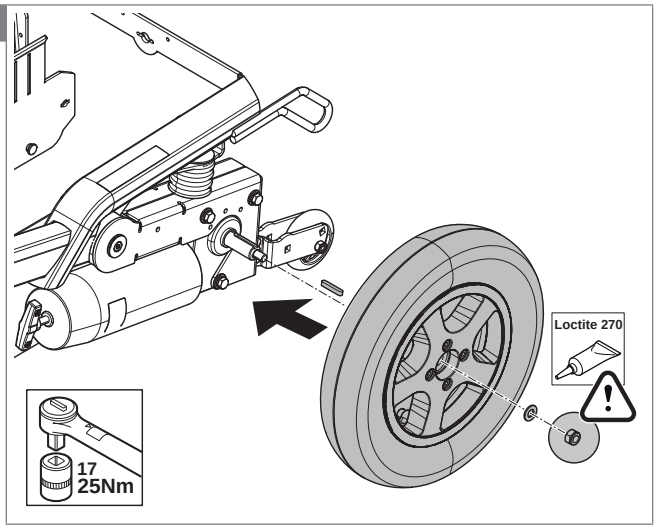


5.2.6 Replacing the drive wheel, indoor/outdoor Puma 40

Preparation
- Switch off the wheelchair via the remote control.
- Be sure that the freewheel switch is in ‘drive’ mode. If the freewheel switch is in ‘push’ mode this will make loosening the bolts impossible.
- Use a lifting device to raise the drive wheels clear of the ground.

Instructions
- Remove the cap, unlock the locking plate, remove the bolt and the locking washer.
- Replace the new drive wheel.
- Screw the bolt with ring and a new locking plate into the shaft, lock the locking plate and put the cap back again.
- Check the tyre pressures.

Notice
Inflate the tube to the correct pressure! (See ‘Technical specifications’)

Relevant article numbers
9006008 Drive wheel mounting set, Puma 40
1017008 Drive wheel indoor 12 1/2 x 2 1/4 (13"), air
1017442 Drive wheel indoor 12 1/2 x 2 1/4 (13"), air, set
1017009 Drive wheel indoor 12 1/2 x 2 1/4 (13"), punctureproof
1017443 Drive wheel indoor 12 1/2 x 2 1/4 (13"), punctureproof, set
1017010 Drive wheel outdoor 3.00x8 (14"), grey air
1017440 Drive wheel outdoor 3.00x8 (14"), grey air, set
1017011 Drive wheel outdoor 3.00x8 (14"), grey punctureproof
1017441 Drive wheel outdoor 3.00x8 (14"), grey punctureproof, set
1017046 Drive wheel silver-grey outdoor 3.00x8 (14"), grey air, All Weather
1017012 Drive wheel outdoor 3.00x8 (14"), black air
1017446 Drive wheel outdoor 3.00x8 (14"), black air, set
1017013 Drive wheel outdoor 3.00x8 (14"), black punctureproof
1017447 Drive wheel outdoor 3.00x8 (14"), black punctureproof, sett

Tools used
- Lifting device
- Screwdriver
- Hammer (plastic)
- Torque wrench, socket, 13 mm
- Water pump pliers

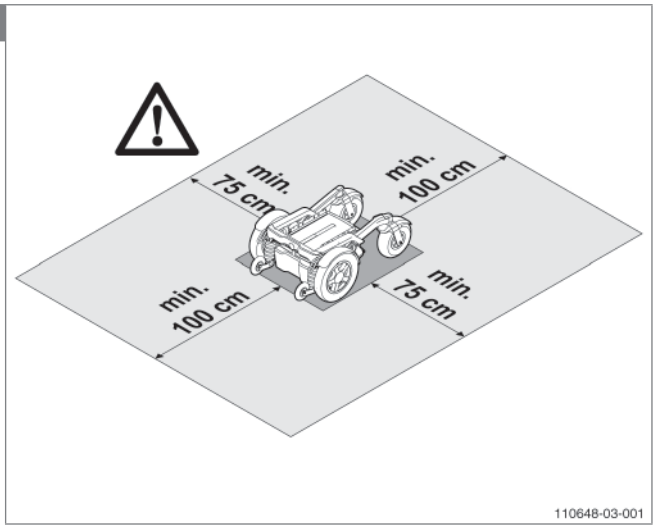
Icons


Parts need to be replaced. Dispose of waste parts in accordance with local regulations


Bolts are provided with Loctite thread locker!


Note! Be aware of the issue!

1



Note! Suitable work area required!

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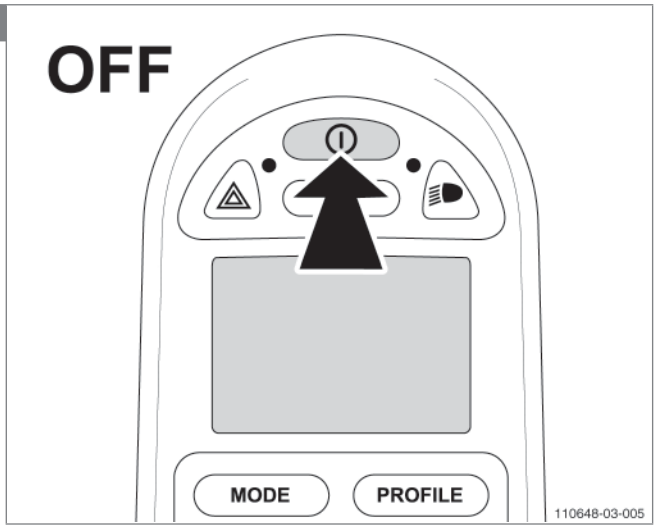

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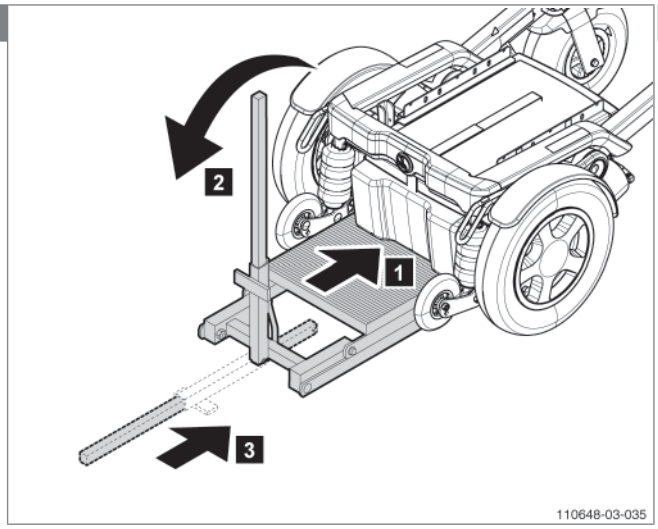

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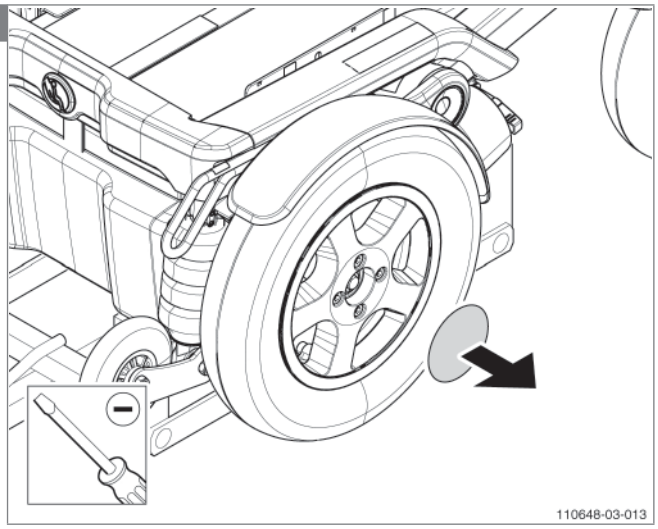

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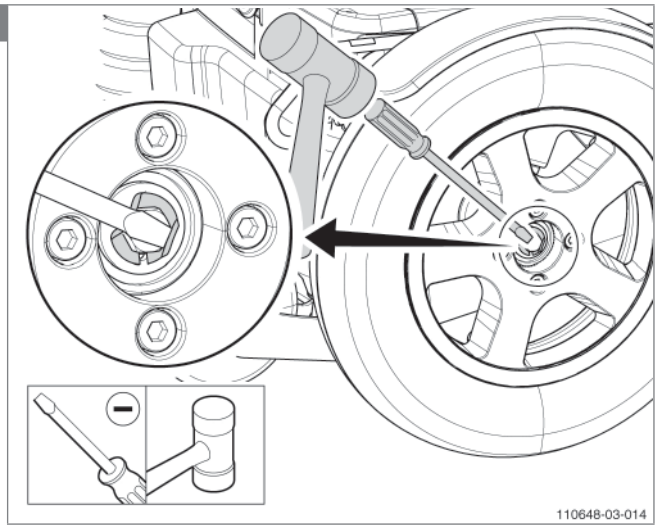

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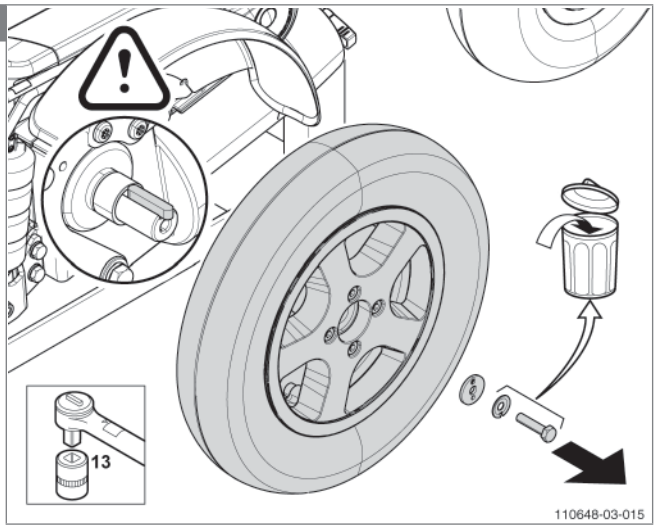

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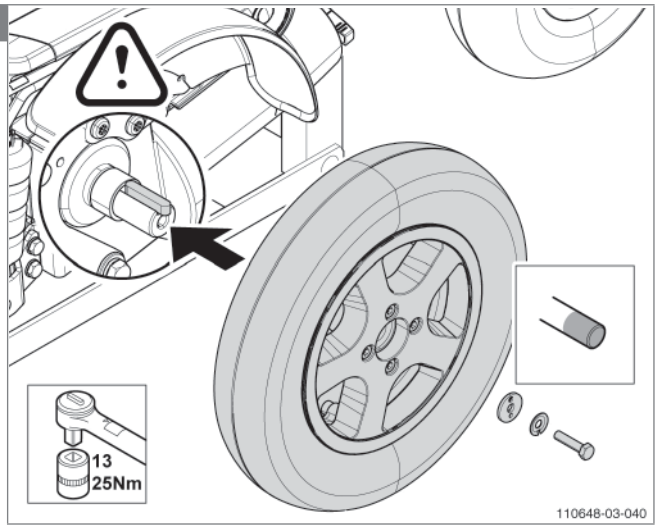
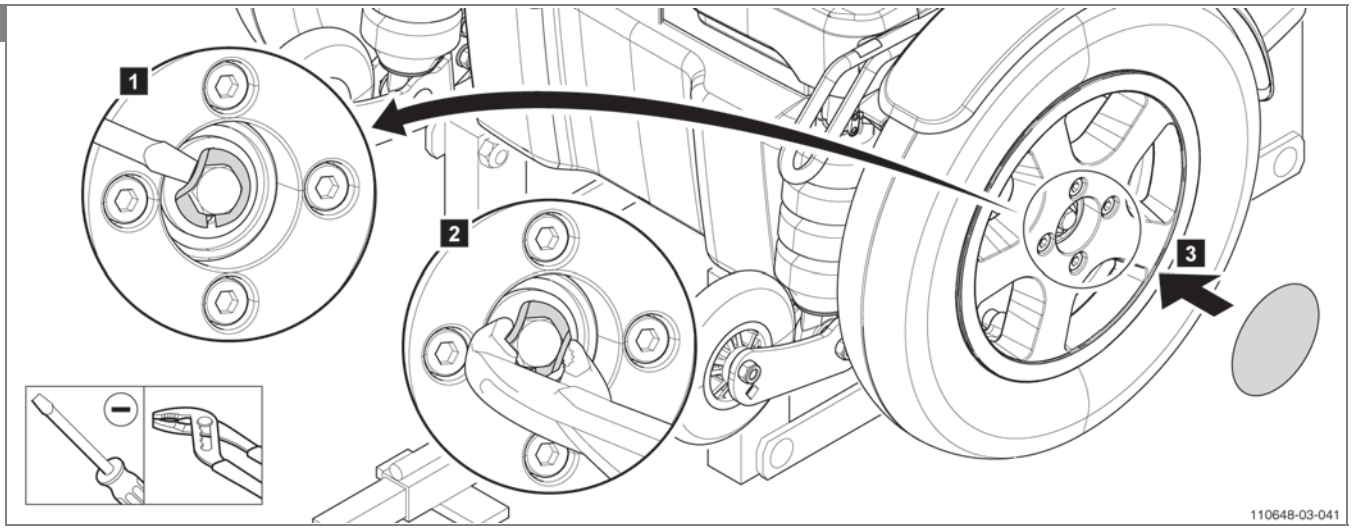


Note! Check the key is still in place!
Note! Tighten the bolts of the drive wheels with 25 Nm!
Note! Bolts are provided with Loctite thread locker!

8



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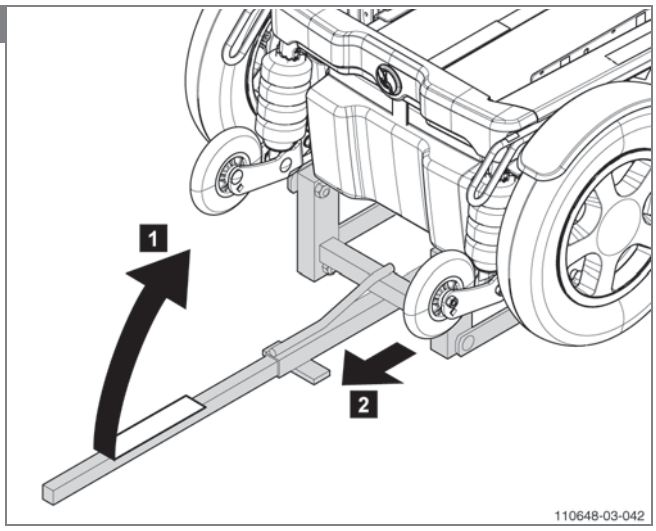


5.2.7 Replacing the tube and/or tyre of a drive wheel, indoor/outdoor

Preparation
- Switch off the wheelchair via the remote control.
- Be sure that the freewheel switch is in ‘drive’ mode. If the freewheel switch is in ‘push’ mode this will make loosening the bolts impossible.
- Use a lifting device to raise the drive wheels clear of the ground.

Instructions
- Remove the wheel from the axle. (See instruction: Replacing the drive wheel, indoor/outdoor)
- Deflate the tyre (not necessary for replacing the complete drive wheel!).
- Loosen all Allen bolts and remove the front of the rim half.
- Remove the tyre and the tube, replace a new tube and/ or tyre.
- Replace the tyre and tube on the rim half.
- Mount the front of the rim half.
- Replace the drive wheel on the axle.
- Inflate the tube to the correct pressure. (See: ‘Technical specifications’)

Notice
Inflate the tube to the correct pressure! (See ‘Technical specifications’)

Relevant article numbers
Puma 20/40
9006792 Drive wheel mounting set, Puma 20
9006008 Drive wheel mounting set, Puma 40
1015118 Inner tube 12 1/2 x 2 1/4 (13")
1015112 Outer tyre 12 1/2 x 2 1/4 (13") grey block profile
1015117 Inner tube 3.00x8 (14")
1015111 Outer tyre 3.00x8 (14") grey block profile

Puma 40
1015113 Outer tyre 12 1/2 x 2 1/4 (13") black block profile
1015110 Outer tyre 3.00x8 (14") black block profile

Tools used
- Lifting device
- Screwdriver
- Hammer (plastic)
- Torque wrench, socket, 13 mm
- Allen key, 6 mm

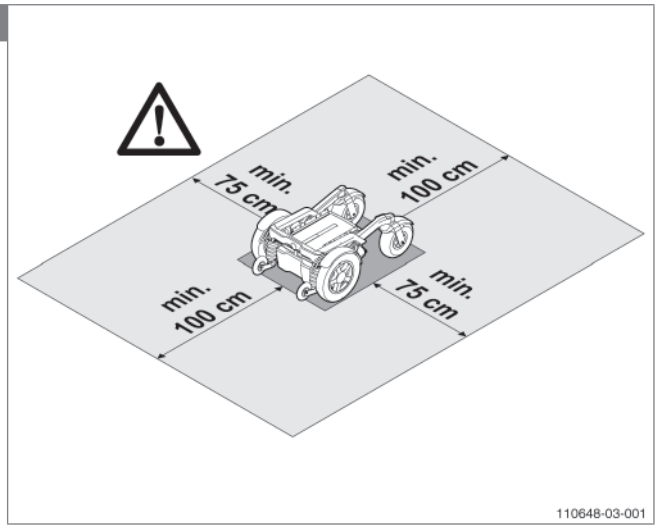
Icons


Parts need to be replaced. Dispose of waste parts in accordance with local regulations


Bolts are provided with Loctite thread locker!

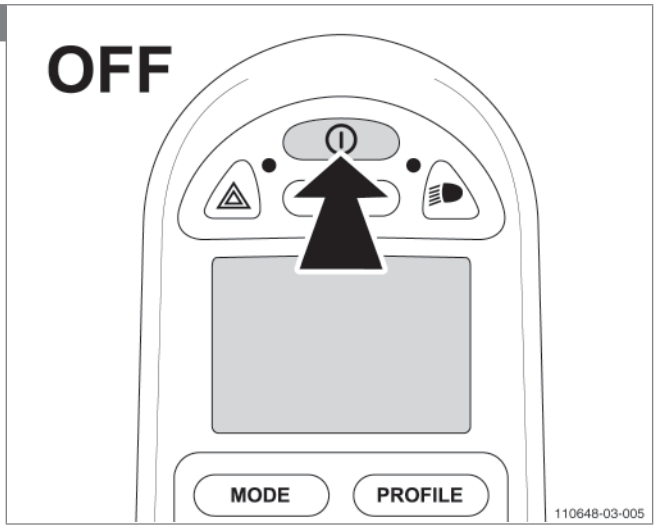

Note! Be aware of the issue!

1



Note! Suitable work area required!

2



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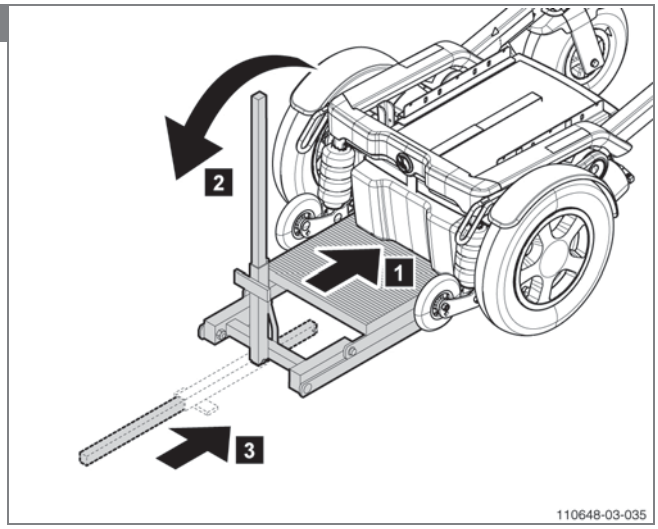

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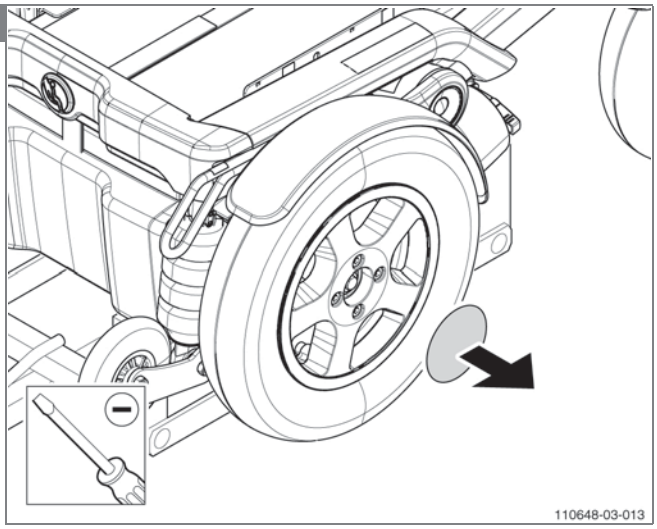

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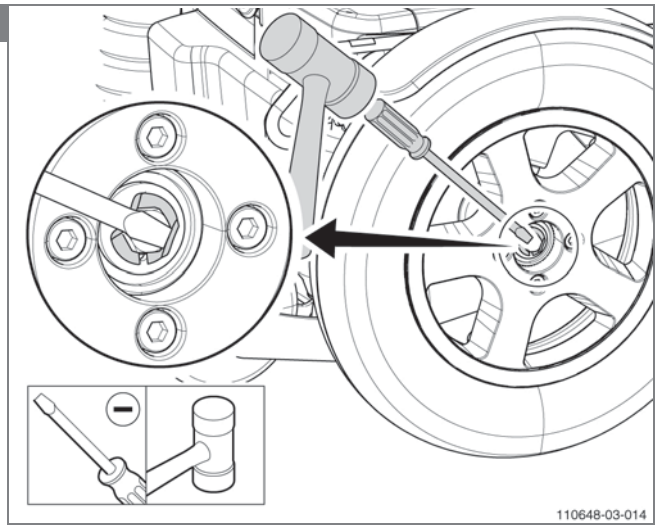

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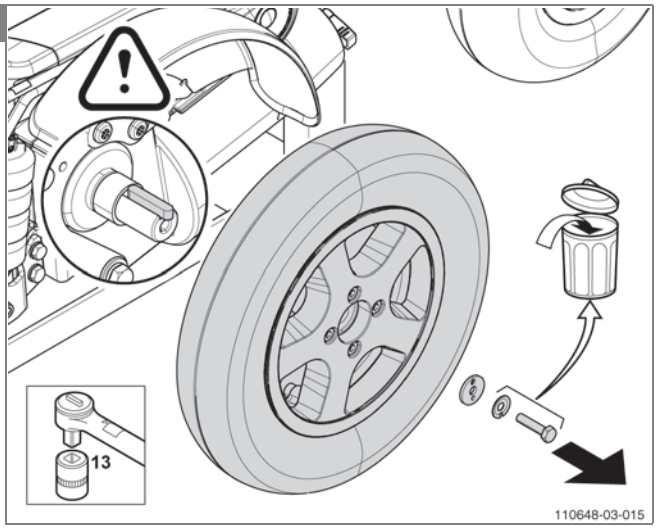

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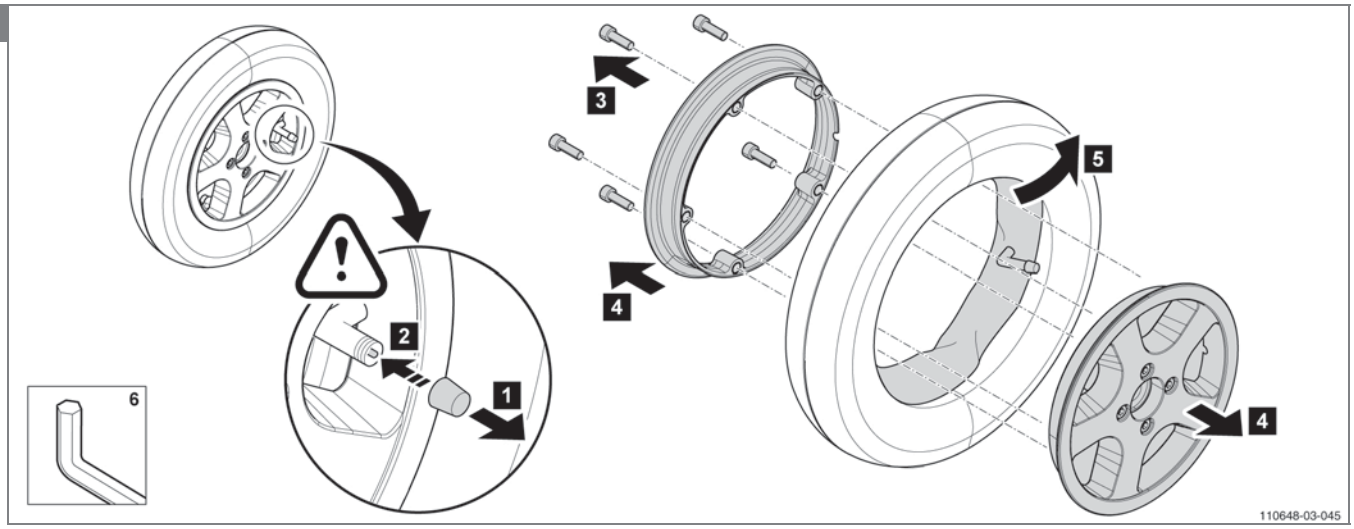
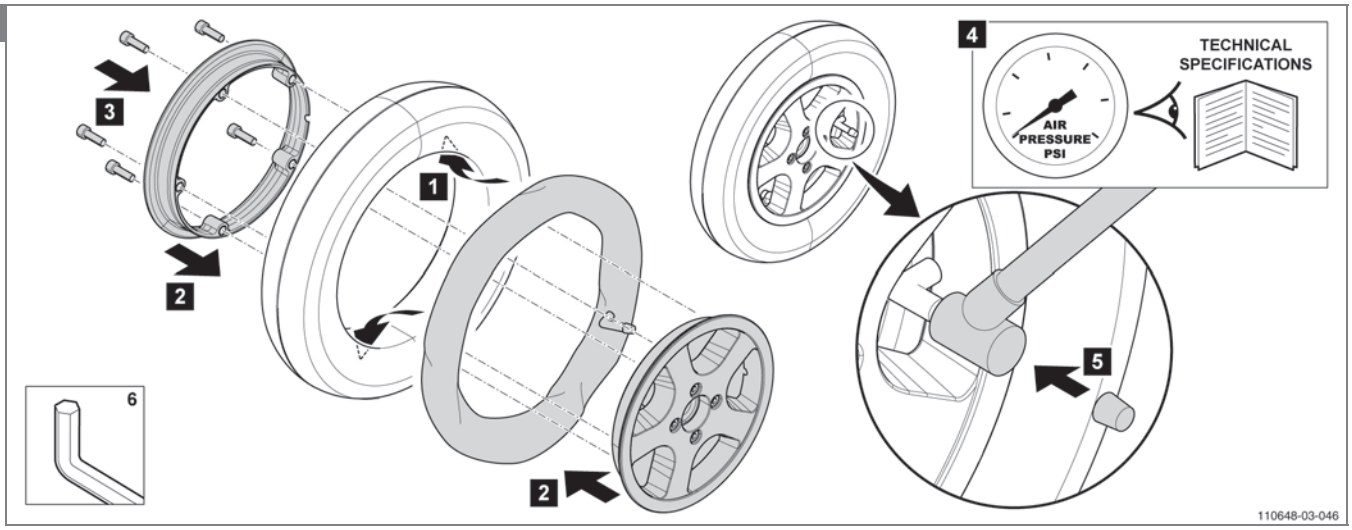


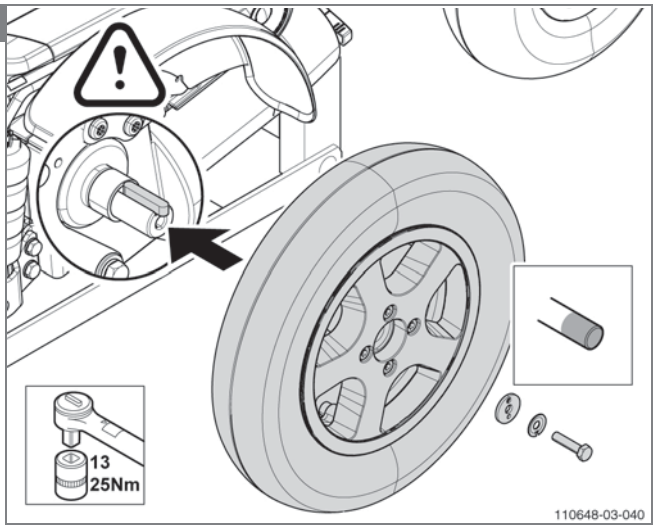
Caution! Deflate the tyre first, before you dismantle the wheel. Follow the steps as shown!

8



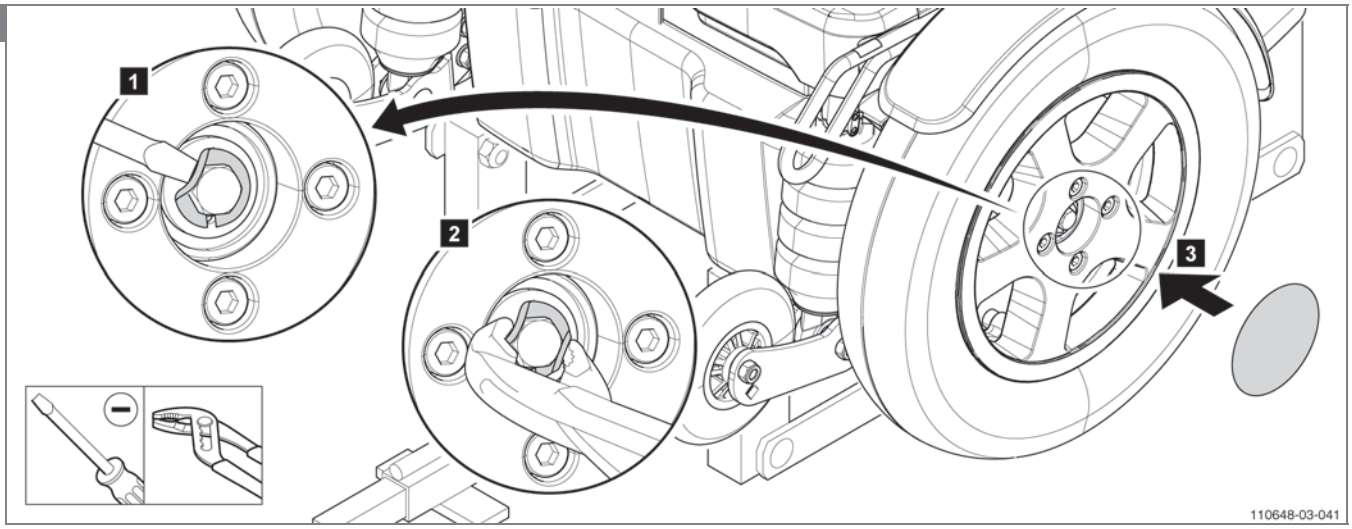
Caution! Ensure tube and tyre are properly positioned on the rim!
Caution! Make sure the tube is not jammed between the two rim halves!
Note! Inflate the tube to the correct pressure! (See: 'Technical specifications')

9



Note! Check the key is still in place!
Note! Tighten the bolts of the drive wheels with 25 Nm!
Note! Bolts are provided with Loctite thread locker!

10



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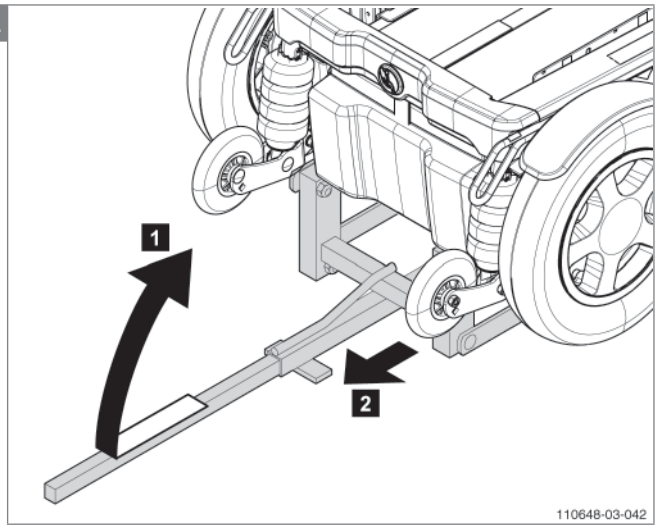


5.2.8 Replacing the castor wheel

Preparation
- Switch off the wheelchair via the remote control.
- Use a lifting device to raise the drive and castor wheels clear of the ground.

Instructions
- Loosen the shaft and locking nut.
- Hold the wheel tight and remove the shaft.
- Take the castor wheel out of the fork.
- Mount the new castor wheel in the reverse order.

Relevant article numbers
Puma 20
1016987 Castor wheel indoor 200x50 (8"), grey air
1017434 Castor wheel indoor 200x50 (8"), grey air, set
1016988 Castor wheel indoor 200x50 (8"), grey punctureproof
1017435 Castor wheel indoor 200x50 (8"), grey punctureproof, set

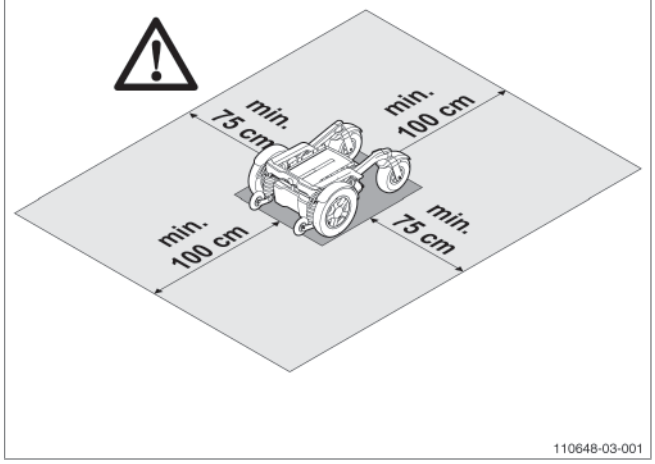
Puma 20/40
1016998 Castor wheel indoor 2.80/2.50x4 (9"), air
1017438 Castor wheel indoor 2.80/2.50x4 (9"), air, set
1016999 Castor wheel indoor 2.80/2.50x4 (9"), punctureproof
1017439 Castor wheel indoor 2.80/2.50x4 (9"), punctureproof, set
1017000 Castor wheel outdoor 3.00x4 (10"), grey air, right
1017001 Castor wheel outdoor 3.00x4 (10"), grey air, left
1017436 Castor wheel outdoor 3.00x4 (10"), grey air, set
1017002 Castor wheel outdoor 3.00x4 (10"), grey punctureproof, right
1017003 Castor wheel outdoor 3.00x4 (10"), grey punctureproof, left
1017437 Castor wheel outdoor 3.00x4 (10"), grey punctureproof, set

Puma 40
1017004 Castor wheel outdoor 3.00x4 (10”), black air, right
1017005 Castor wheel outdoor 3.00x4 (10”), black air, left
1017444 Castor wheel outdoor 3.00x4 (10”), black air, set
1017006 Castor wheel outdoor 3.00x4 (10”), black punctureproof, right
1017007 Castor wheel outdoor 3.00x4 (10”), black punctureproof, left
1017445 Castor wheel outdoor 3.00x4 (10”), black punctureproof, set

Tools used
- Lifting device
- Open-ended or ring spanners, 13 mm
- Torque wrench, socket, 13 mm

Icons
N.a.

1



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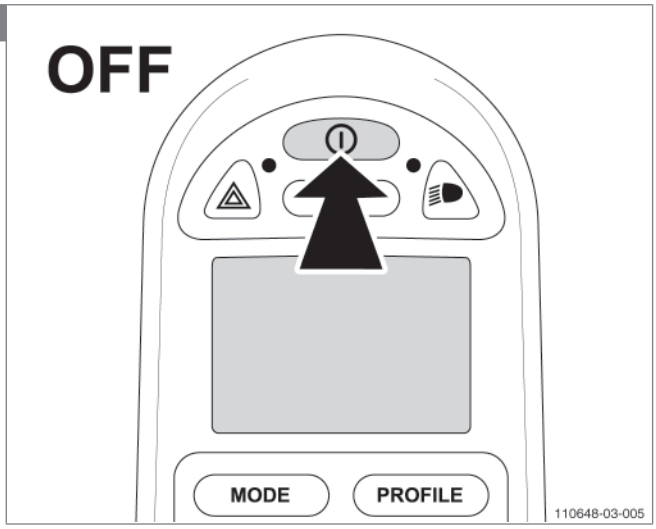
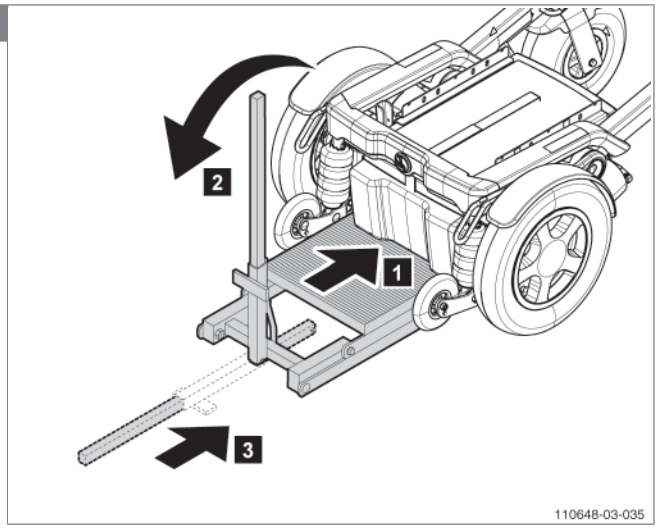


Note! Suitable work area required!

3



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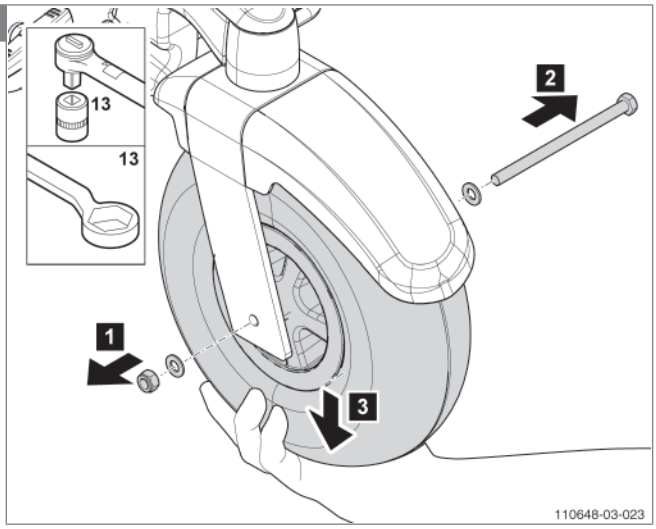

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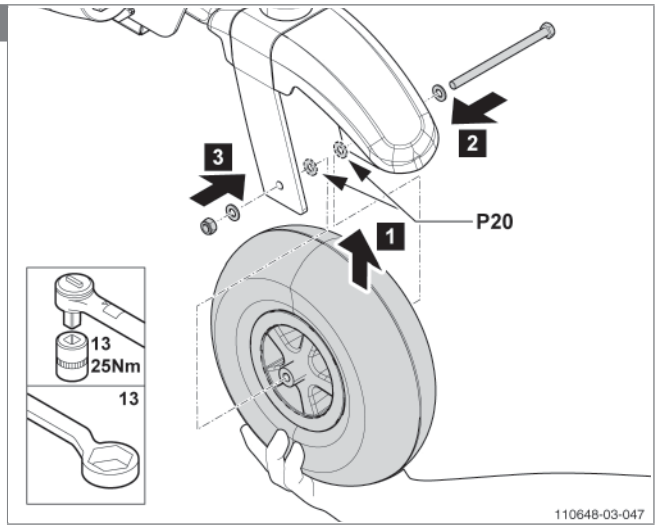

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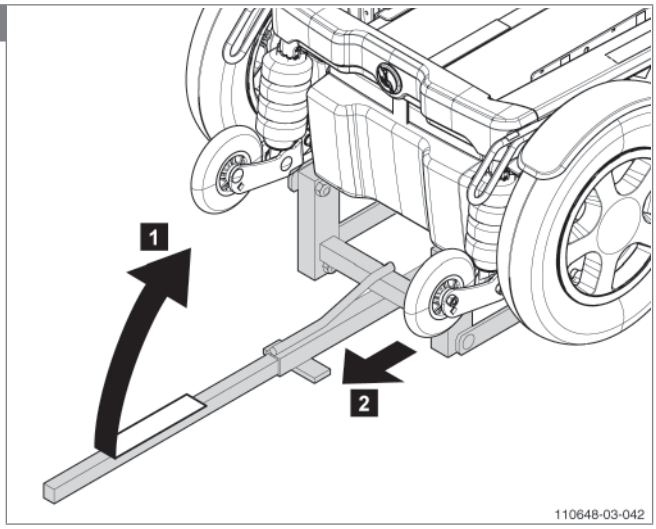


Note! Tighten the shaft and nut of the castor wheels with 25 Nm!
Caution! Place at the Puma 20 on both sides of the castor wheel an extra ring between the wheel and the fork!

5.2.9 Replacing the tyre and/or tube of the castor wheel

Preparation
- Switch off the wheelchair via the remote control.
- Use a lifting device to raise the drive and castor wheels clear of the ground.

Instructions
- Deflate the tyre (not necessary for replacing the complete castor wheel!).
- Loosen the shaft and locking nut. (See instruction: Replacing the castor wheel)
- Hold the wheel tight and remove the shaft.
- Take the castor wheel out of the fork.
- Loosen all Allen bolts and remove the front of the rim half.
- Remove the tyre and the tube, replace a new tube and/ or tyre.
- Replace the tyre and tube on the rim half.
- Mount the front of the rim half and remount the wheel.
- Inflate the tube to the correct pressure. (See: 'Technical specifications')

Relevant article numbers
Puma 20
1015297 Inner tube 200x50 (8")
1015298 Outer tyre 200x50 (8") grey line profile

Puma 20/40
1015116 Inner tube 2.80/2.50x4 (9")
1015107 Outer tyre 2.80/2.50x4 (9") grey line profile
1015115 Inner tube 3.00x4 (10")
1015105 Outer tyre 3.00x4 (10") grey block profile

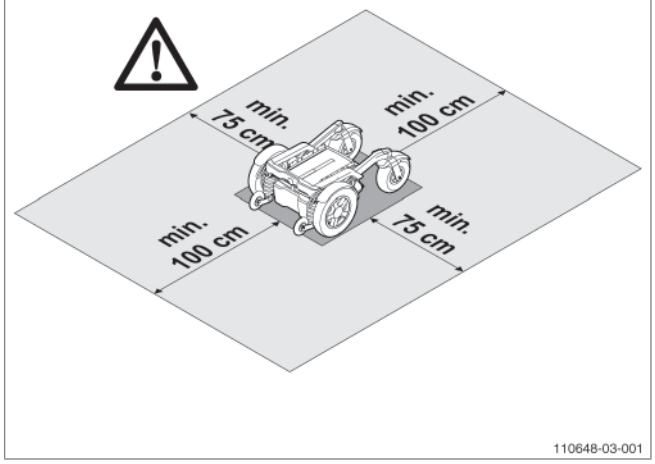
Puma 40
1015106 Outer tyre 3.00x4 (10") black highway profile

Tools used
- Lifting device
- Open-ended or ring spanners, 13 mm
- Torque wrench, socket, 13 mm
- Allen key, 5 mm

Icons

Note! Be aware of the issue!

1



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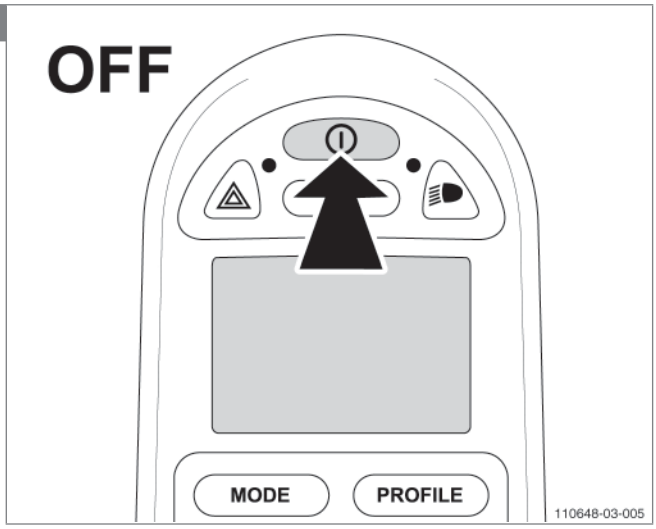
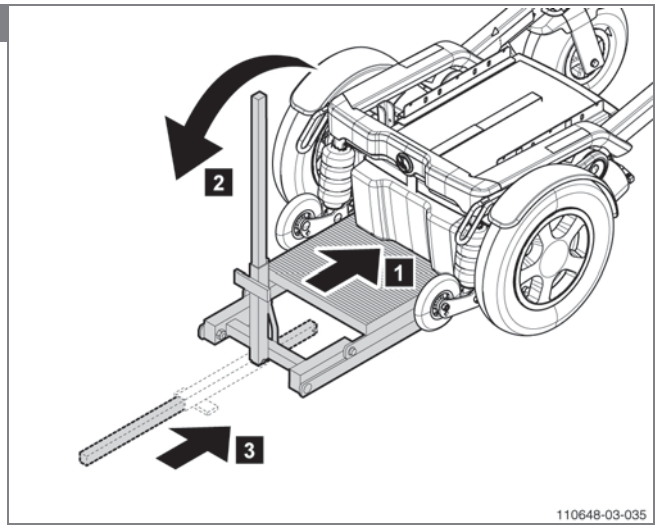


Note! Suitable work area required!

3



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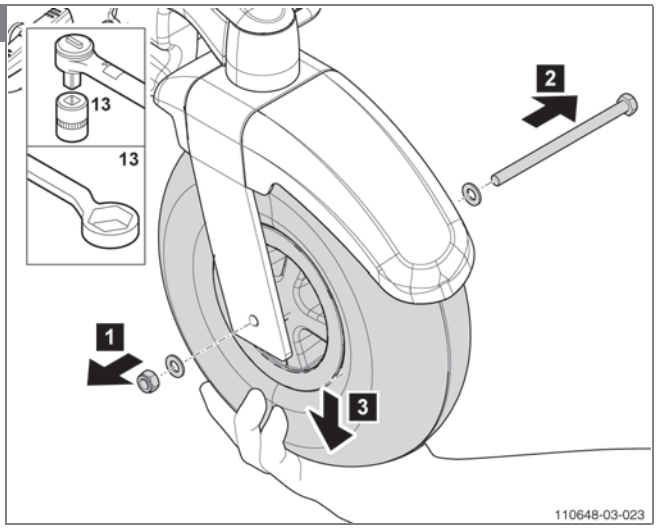

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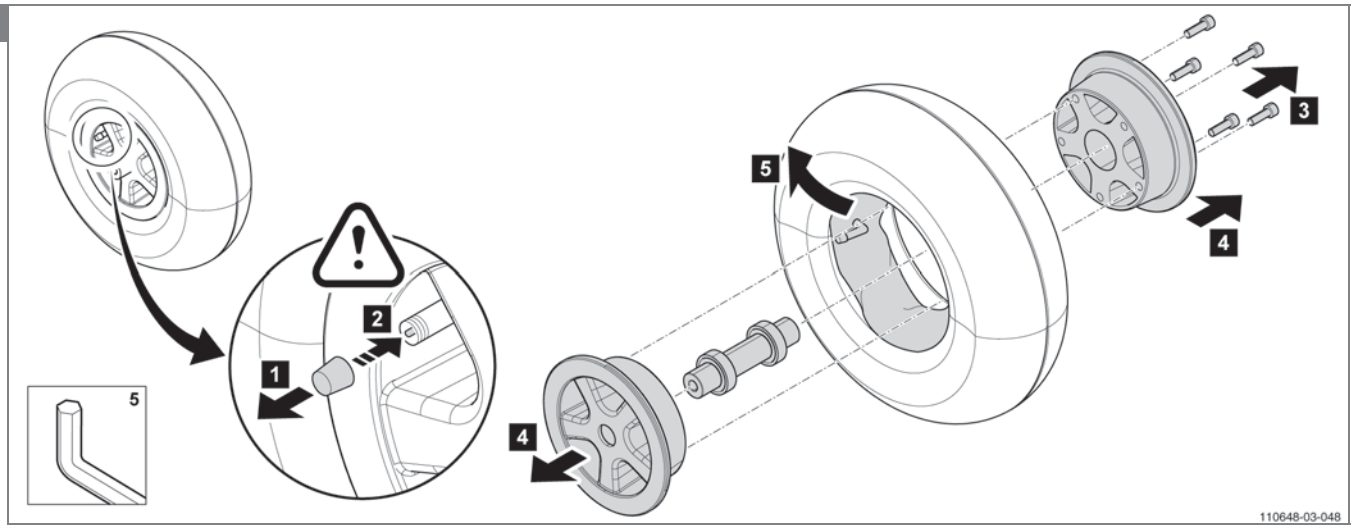
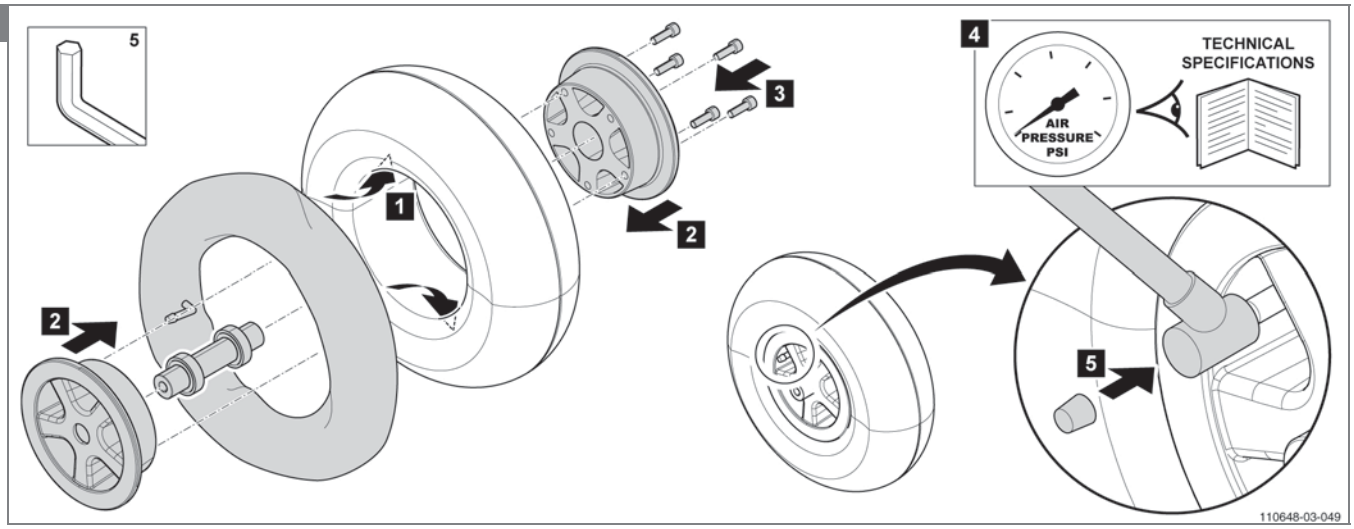


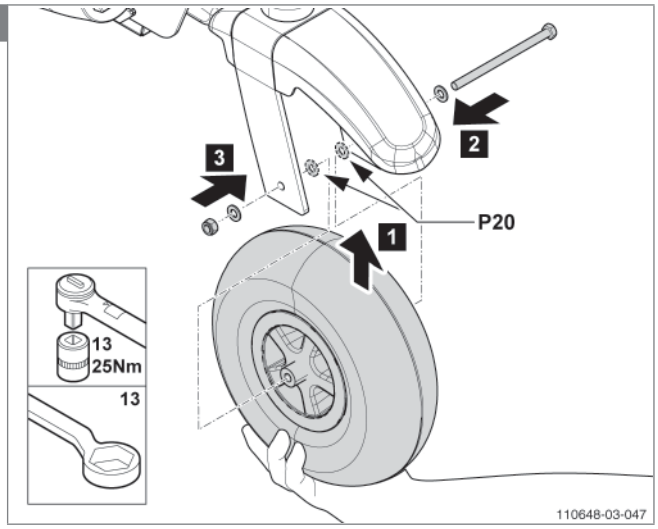
Caution! Deflate the tyre first, before you dismantle the wheel. Follow the steps as shown!

6



Caution! Ensure tube and tyre are properly positioned on the rim!
Caution! Make sure the tube is not jammed between the two rim halves!
Note! Inflate the tube to the correct pressure! (See: ‘Technical specifications’)

7



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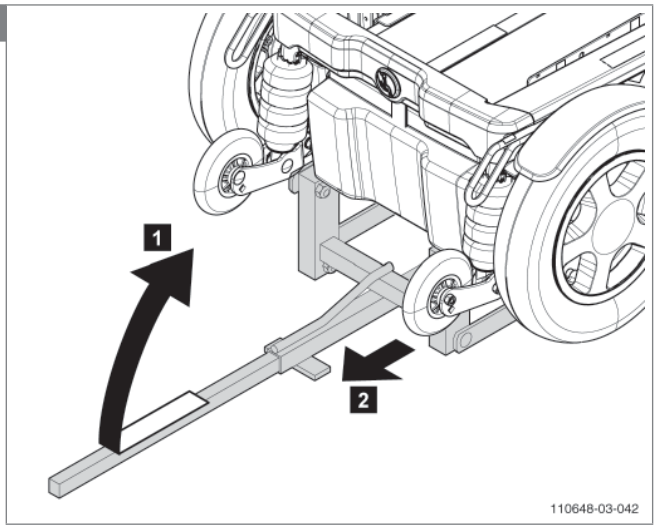


Caution! Deflate the tyre first, before you dismantle the wheel. Follow the steps as shown!

5.2.10 Replacing the castor fork

Preparation
- Switch off the wheelchair via the remote control.
- Use a lifting device to raise the drive and castor wheels clear of the ground.

Instructions
- Remove the castor wheel. (See instruction: Replacing the castor wheel)
- Remove the ball head cover and loosen the bolt, washers and shaft that hold the castor fork in the castor arm.
- Take the castor fork out of the castor arm.
- Remove the fender from the castor fork (not valid for Puma 20).
- Replace the fender on the new castor fork.
- Mount the castor fork and wheel in the reverse order.

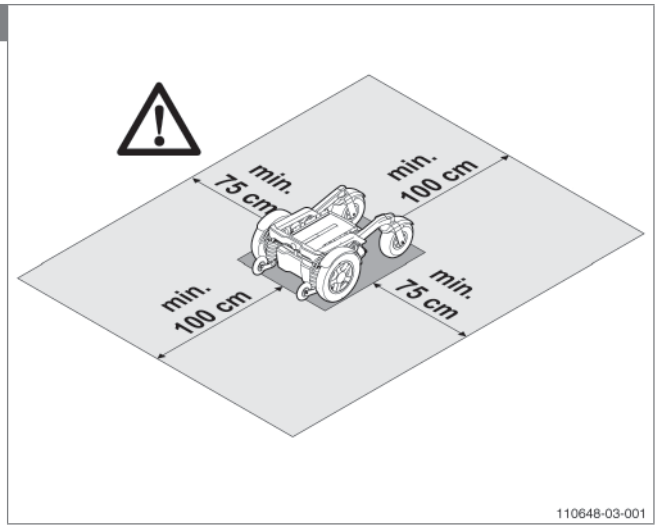
Relevant article numbers
9005932 Castor fork (9" and 10")
9007752 Castor fork 60 mm (8") (only for Puma 20)

Tools used
- Lifting device
- Torque wrench, socket, 13 mm
- Torque wrench, Torx key T30
- Circlip pliers
- Loctite 243

Icons

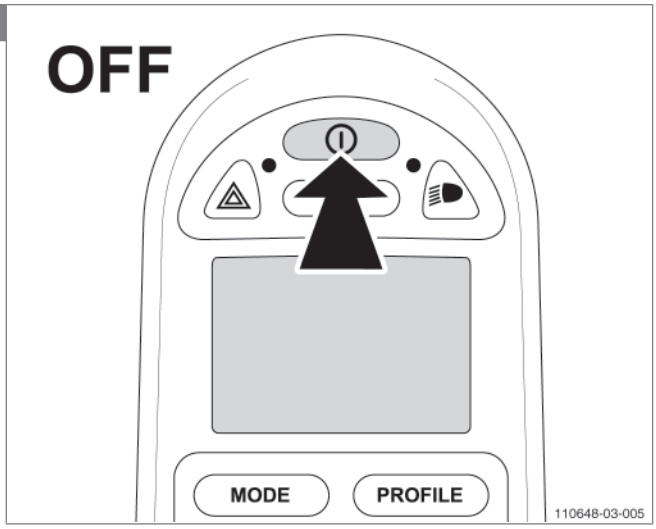
Note! Be aware of the issue!

1



Note! Suitable work area required!

2



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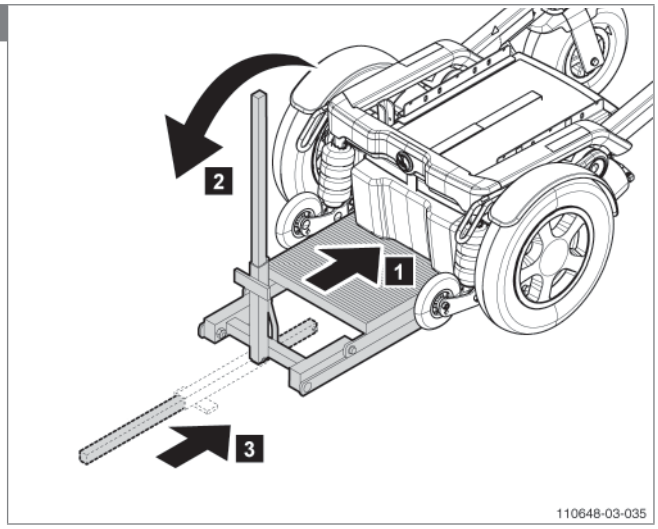

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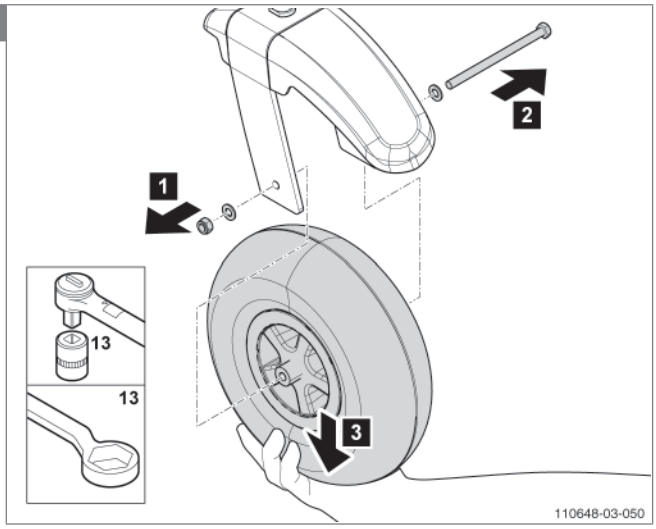

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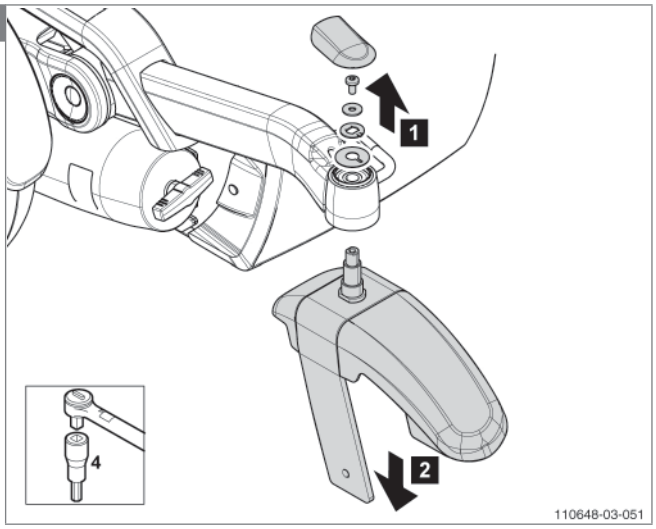

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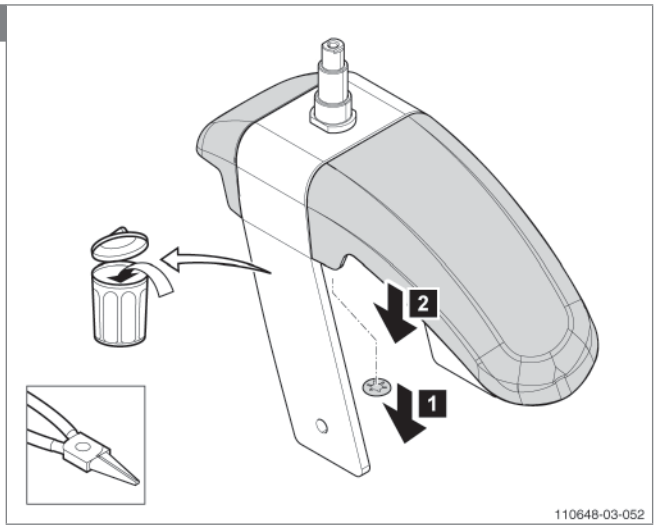

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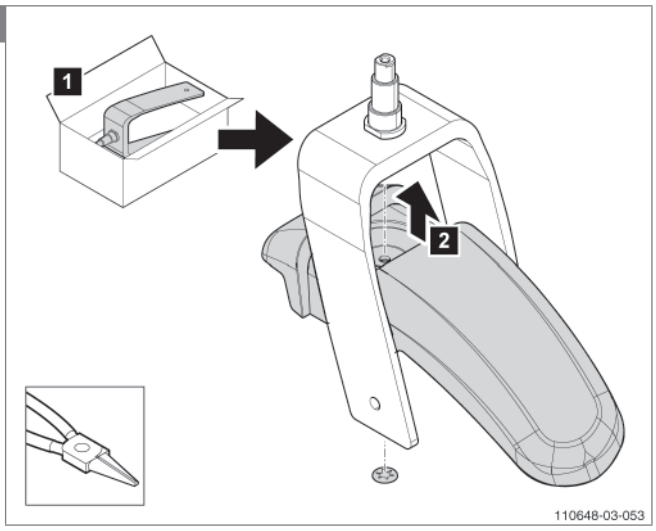

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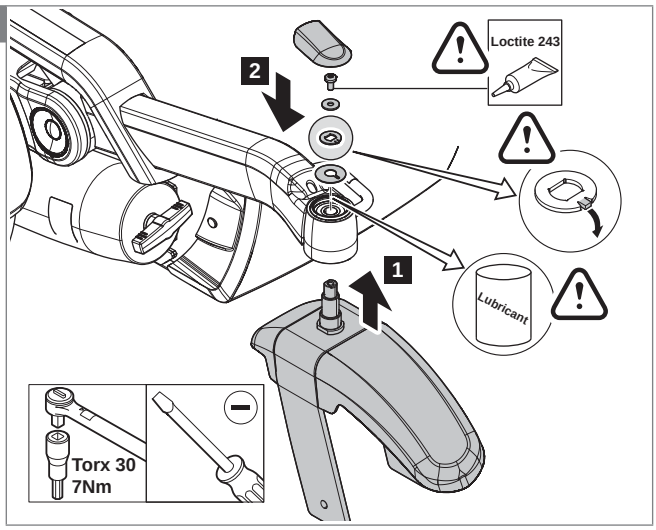
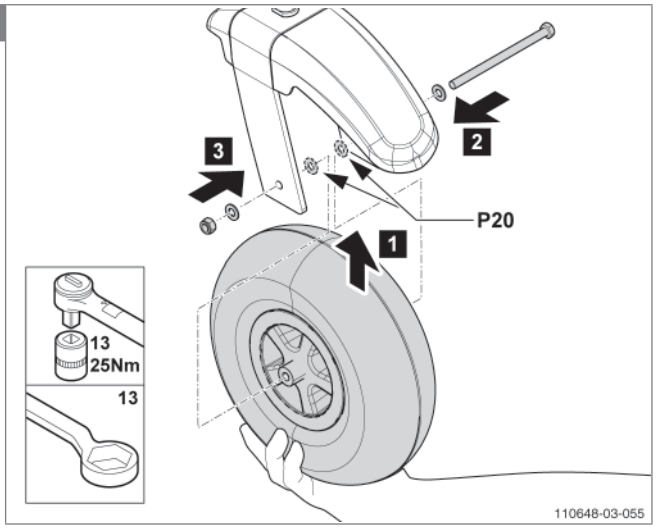


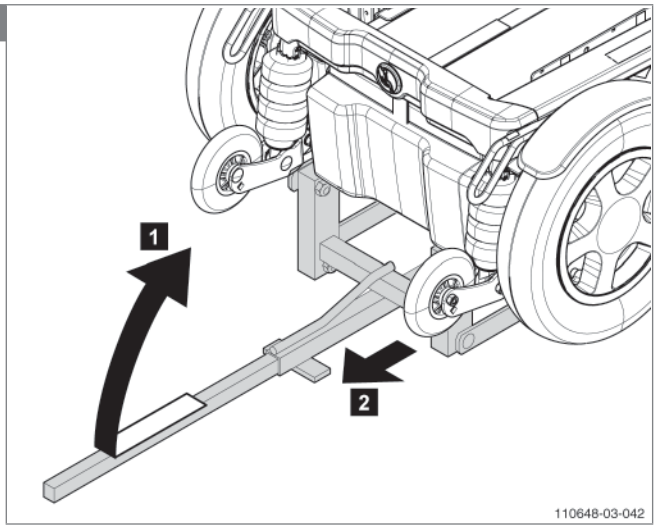
Caution! Apply Loctite 243 to the bolt of the castor fork!
Note! Tighten the bolt of the castor fork with 7 Nm!

9



Note! Tighten the shaft and nut of the castor wheels with 25 Nm!
Caution! Place at the Puma 20 on both sides of the castor wheel an extra ring between the wheel and the fork!

10



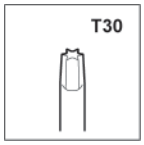
5.2.11 Mounting the direct access

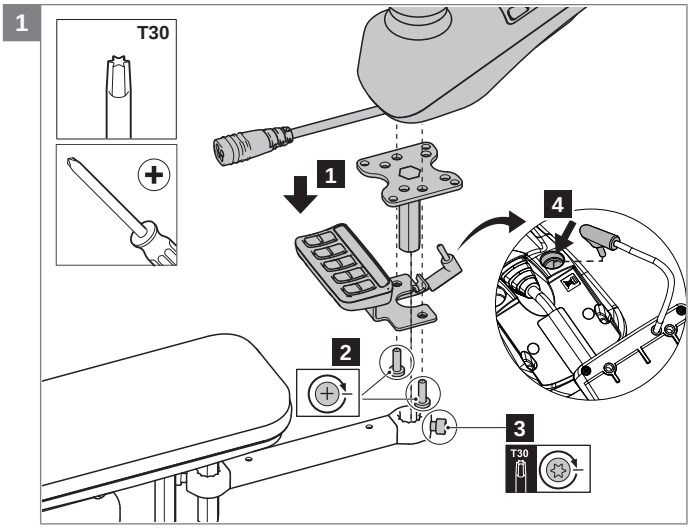
Preparation
Note! Switch off the wheelchair via remote control.

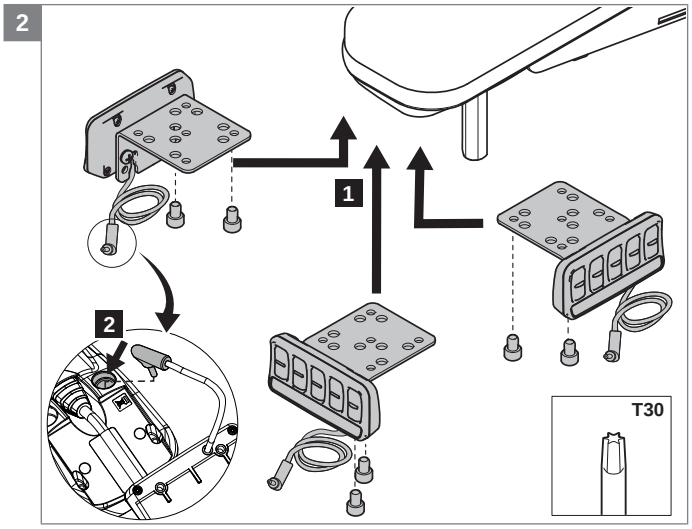
Instructions
Note! Suitable work area required!
Follow the illustrated instructions.
1. Joystick side
2. Not joystick side

Relevant article numbers
1016968 R-net direct access keypad joystick side, set
1016969 R-net direct access keypad not joystick side, set

Tools used







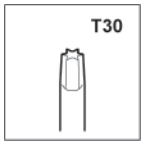
5.2.12 Mounting the attendant steering on backrest frame Sedeo Pro+

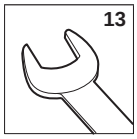
Preparation
Note! Switch off the wheelchair via remote control.

Instructions
Note! Suitable work area required!
Note! Attendant steering bracket can be mounted right or left
Follow the illustrated instructions.

Relevant article numbers
1017036 Attendant steering R-net including mounting set and electronics, set, Sedeo Pro+

Tools used





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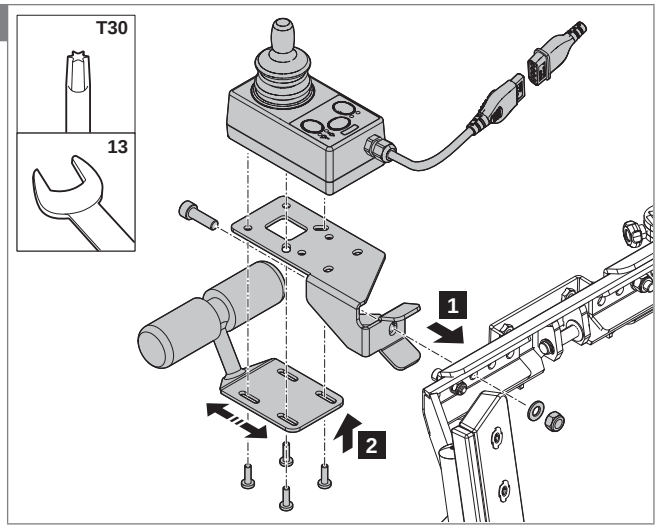


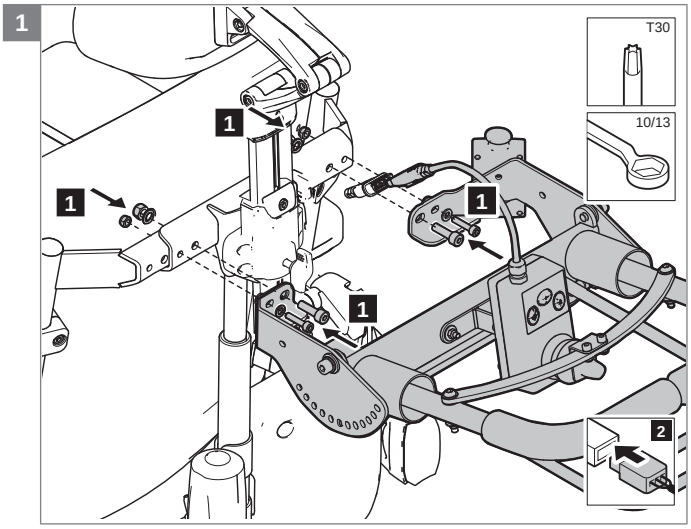
5.2.13 Mounting the attendant Z-steering mechanisme Sedeo Pro+ (only for Norwegian market)

Preparation
Note! Switch off the wheelchair via remote control.

Instructions
Note! Suitable work area required!
Follow the illustrated instructions.

Relevant article numbers
1017034 R-net Z-steering incl. electronics and mounting set, Sedeo Pro+

Tools used



5.2.14 Replacing the batteries

Preparation
- Switch off the wheelchair via the remote control.
- Remove the fuses from the battery compartment before carrying out any work on the electrical system.

Instructions
- Remove the leg rests and the chair.
- Remove the battery access cover, the battery-guard and the battery strap rear.
- Remove the power module cover and disconnect all connections from the power module.
- Release the battery strap from the battery-guard and slide the battery-guard out of the battery box.
- Release the battery tray by tilting the battery-guard.
- Release the battery strap top and remove the batteries from the battery tray.
- Disconnect all connections from the batteries.
- Replace the new batteries in reverse order.

Notice
- Contact your supplier, who will advise about disposing the batteries as required.
- Avoid damage to the batteries when replacing them; this may cause the batteries to leak.

Relevant article numbers
9002592 M8x12 CKS BZK PRECOTE 85
00000.2003 Locking ring, flat M8
9002758 Battery 38 Ah (C20) Gel
6000589 Battery 50 Ah (C20) AGM
9002759 Battery 60 Ah (C20) Gel
9002760 Battery 78 Ah (C20) Gel
9005956 Battery spacer set universal
9005957 Battery spacer set MK (40/50A)
9005958 Battery spacer set MK (60/74A)
9005959 Battery spacer set Sonnenschein

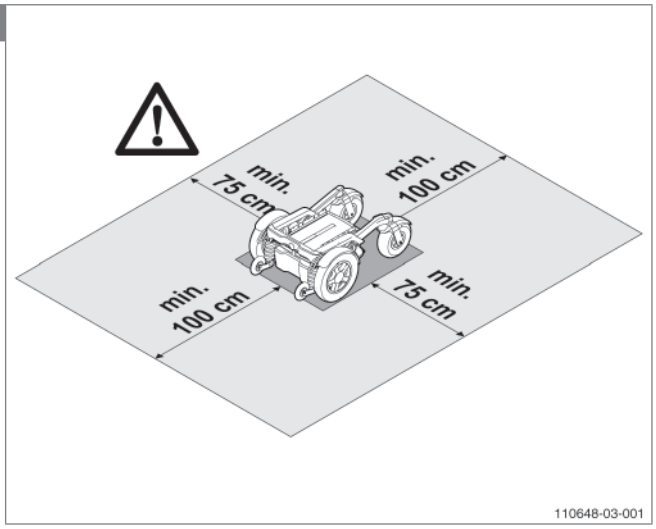
Tools used
Torque wrench, socket, 10 mm

Icons


Parts need to be replaced. Dispose of waste parts in accordance with local regulations.

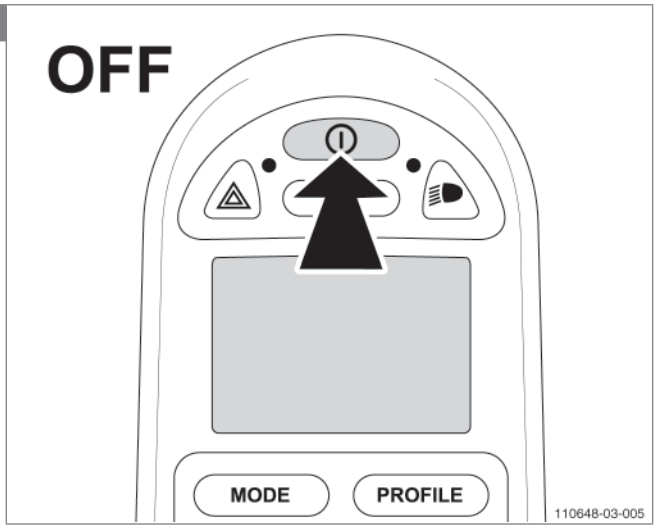

Note! Be aware of the issue!

1



Note! Suitable work area required!

2



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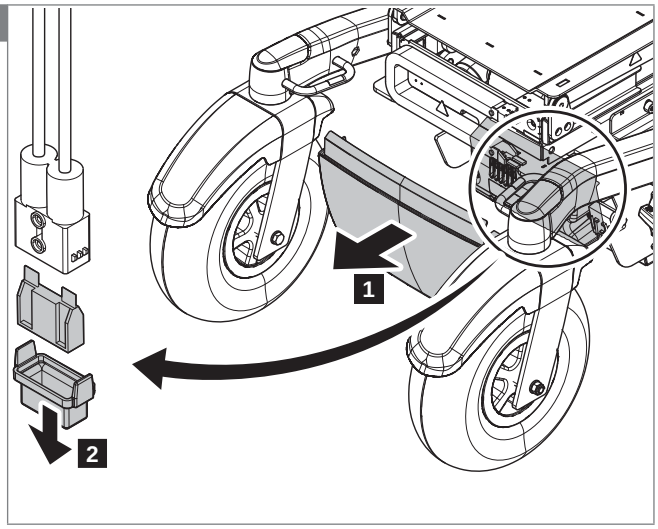

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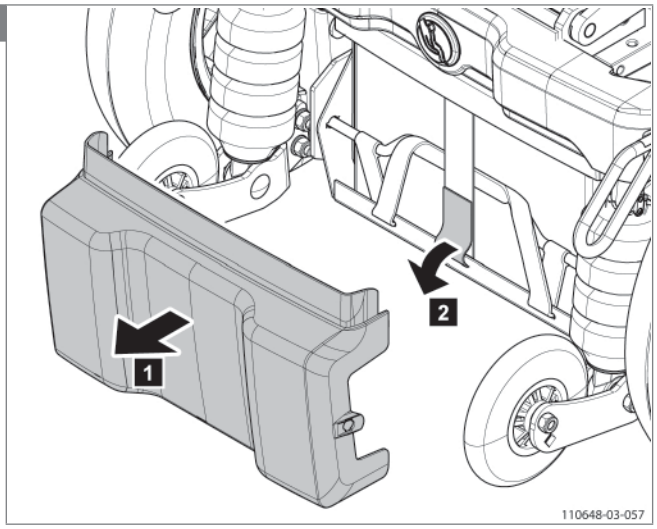

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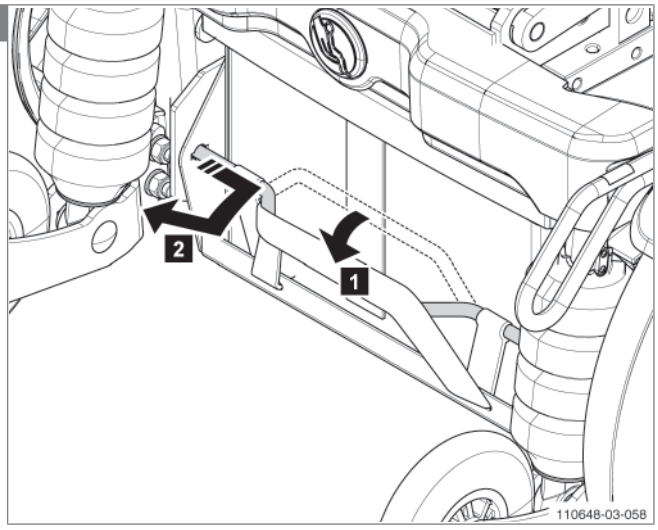

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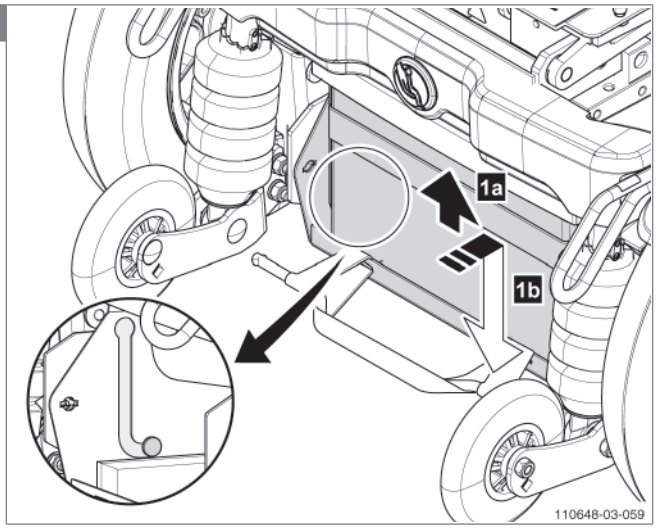
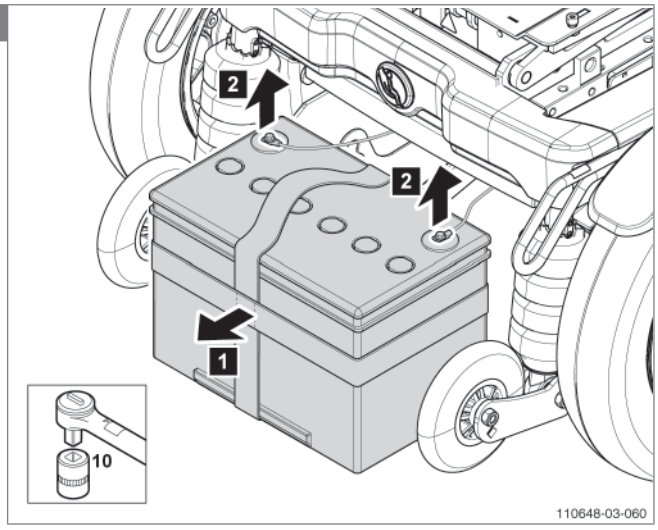


Caution! A battery tray with batteries is a heavy load! Be careful at the moment you undock the battery tray from the battery box!
Caution! Undock the battery tray slowly from projection in the battery box!

7



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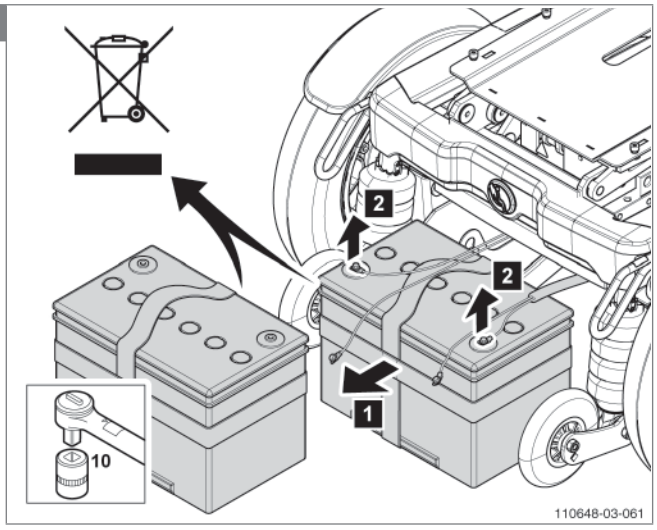
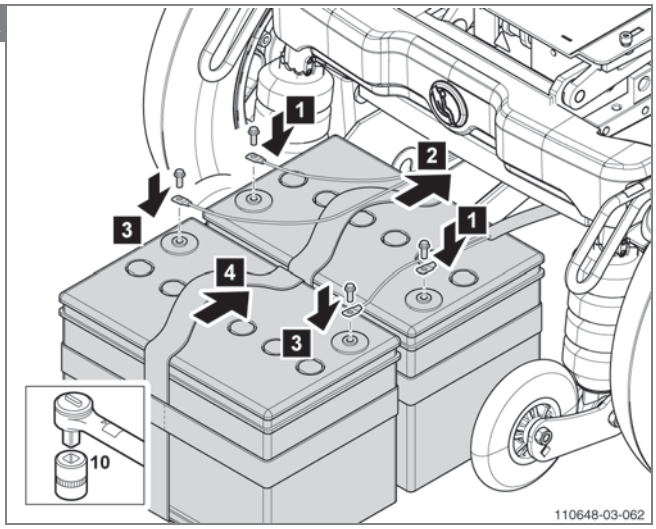


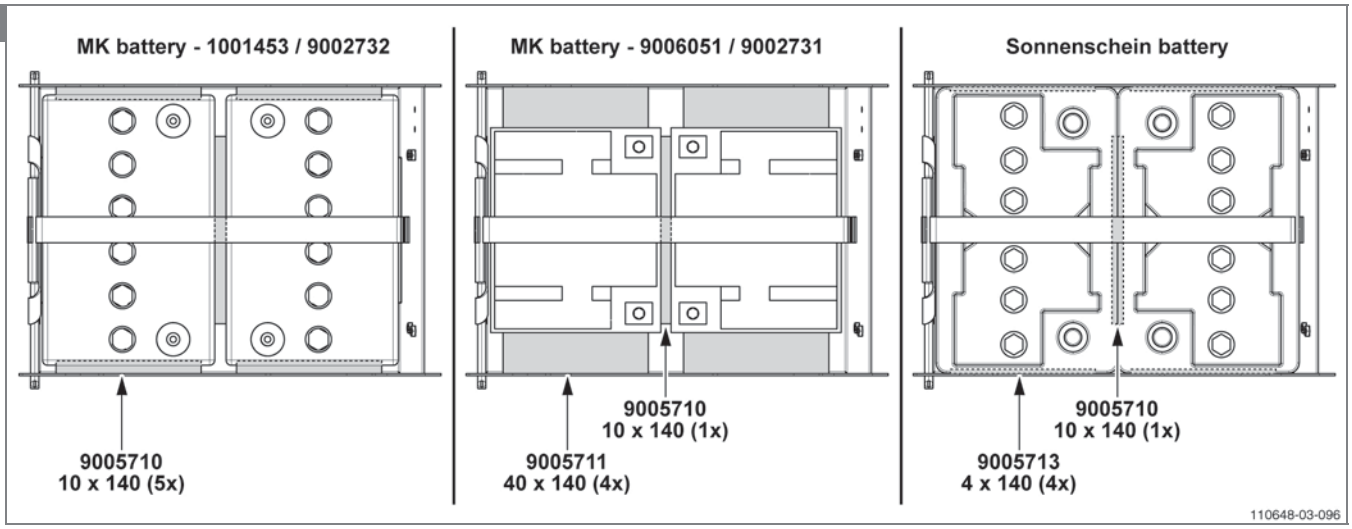
Caution! Dispose of the batteries has to be done in accordance with local regulations!

9a



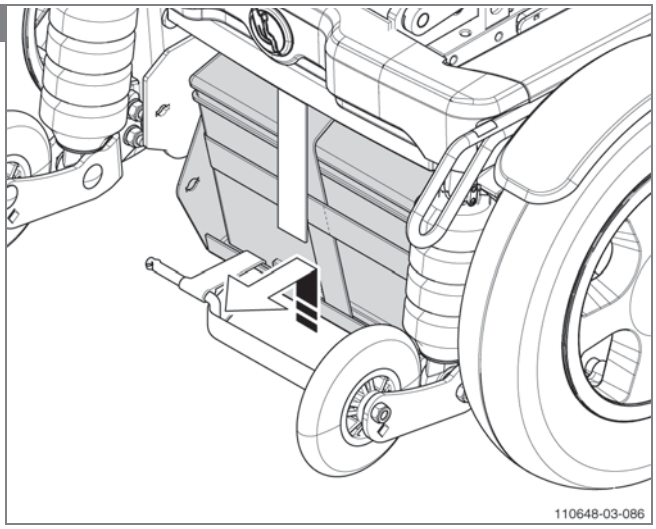
Note! Insert the battery spacer set correctly, as shown in the next diagrams!

9b



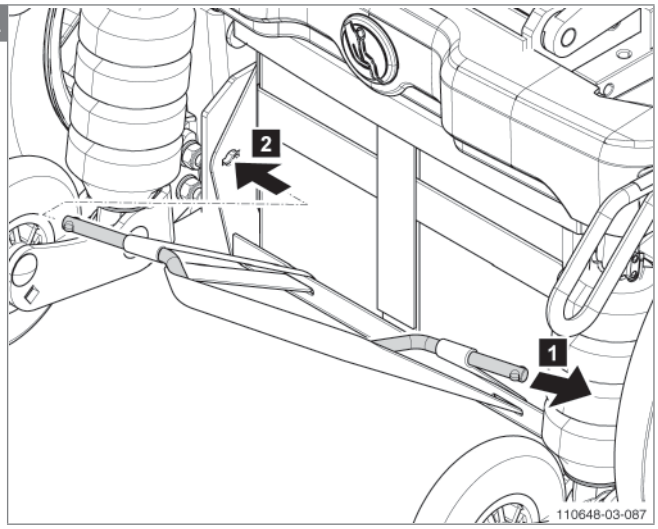
Note! Insert the battery spacer set correctly, as shown in the next diagrams!

10



Caution! Dock the battery tray slowly on the projection in the battery box!

11



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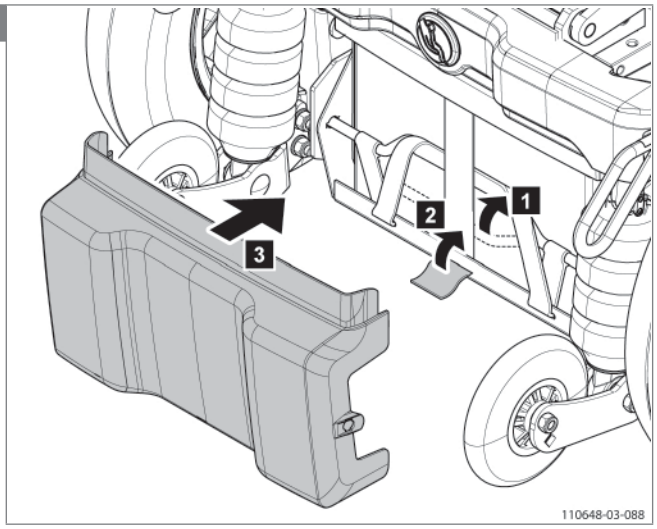


5.2.15 Replacing the power module

Preparation
- Switch off the wheelchair via the remote control.
- Remove the fuses from the battery compartment before carrying out any work on the electrical system.
- Use a lifting device to raise the drive wheels clear of the ground.

Instructions
- Remove the power module cover.
- Disconnect all connections of the power module and the battery fuses.
- Unscrew both screws and washers from the battery box.
- Remove the old power module, replace the new power module in the reverse order.
- Reprogram the wheelchair.

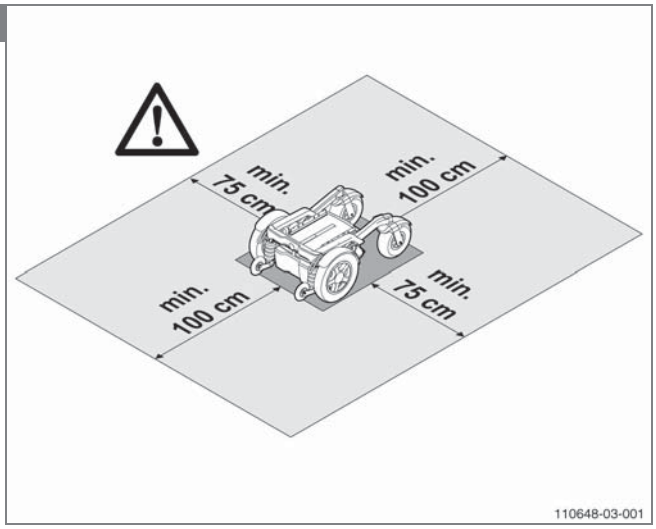
Notice
Always remove the fuses from the battery compartment before carrying out any work on the electrical system!

Relevant article numbers
9007150 Shark power module DK-PMB01 (60+15A)
9007151 Shark power module DK-PMB31 (60+15A)
9007152 Shark power module DK-PMB21 (60+15A)
9007158 R-net power module 90A
9002918 R-net power module 120A
9007159 DX2 power module PMA90L 90A
9007620 DX2 power module PMA90L Gyro
9002916 VR-2 power module VR2-90 (90A)
9002917 VR-2 power module VR2-90-2A (90A)

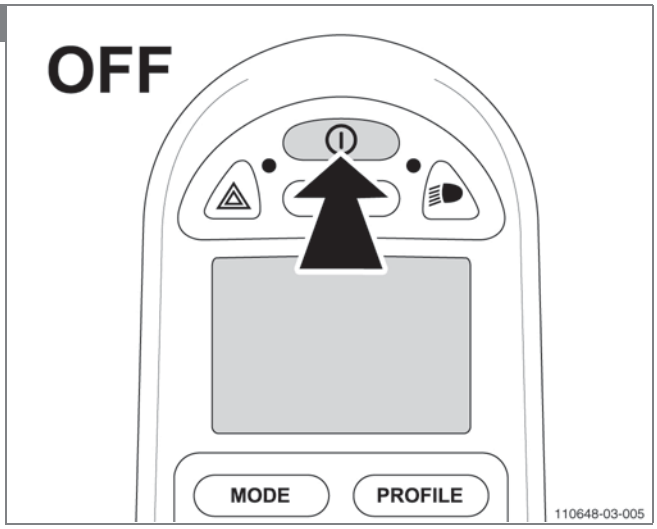
Tools used
- Lifting device
- Allen key 4 mm

Icons

Parts need to be replaced. Dispose of waste parts in accordance with local regulations.

1


Note! Suitable work area required!

2


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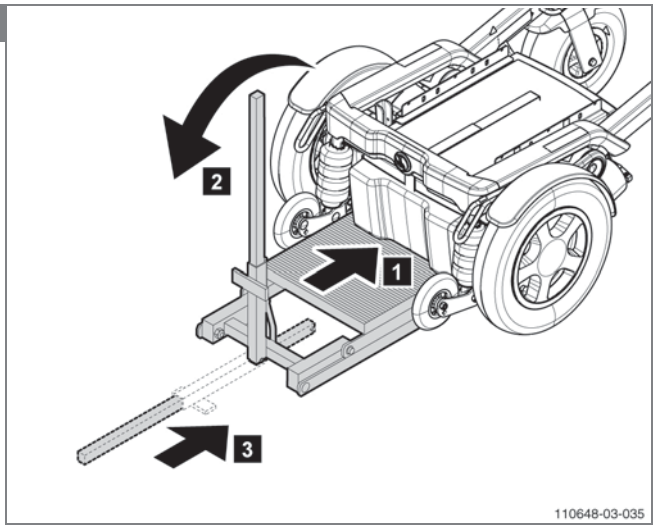

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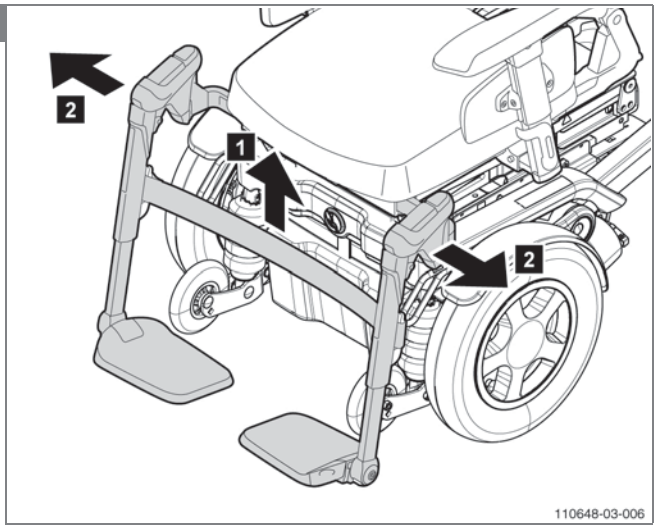

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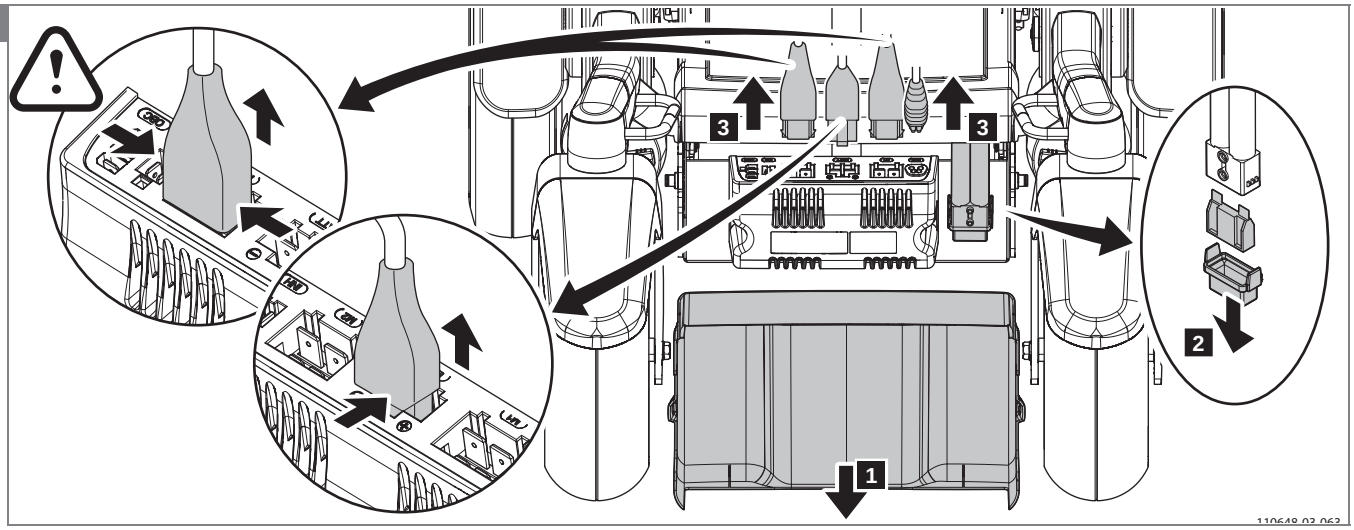

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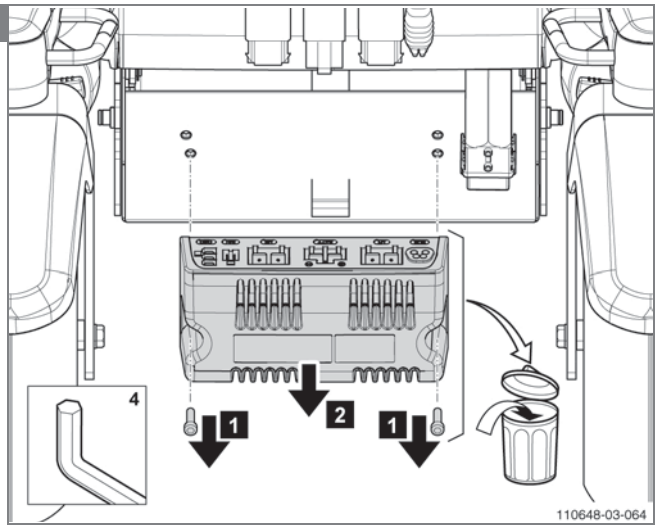
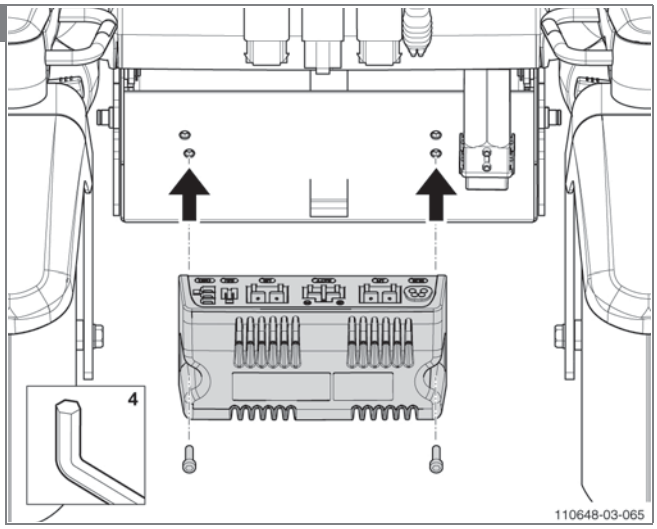


Caution! Dispose of the power module has to be done in accordance with local regulations!

7



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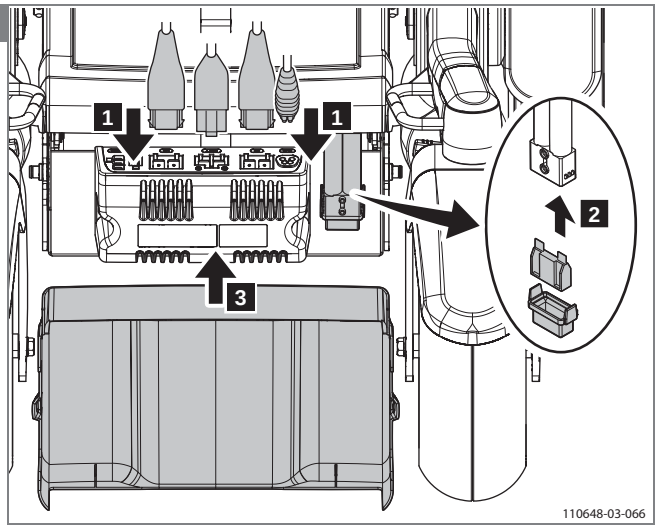

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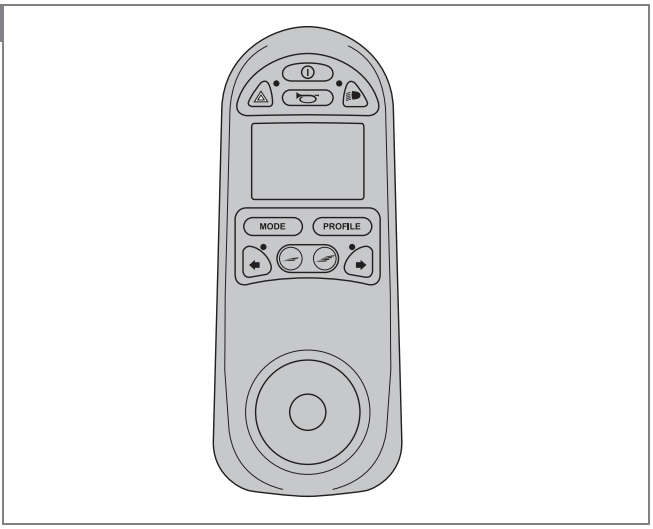


Note! Reprogram the wheelchair

5.2.16 Replacing the mudguards

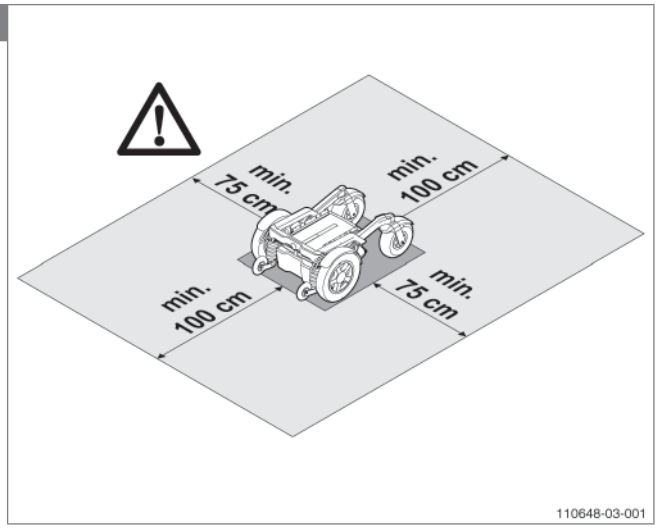
Preparation
- Switch off the wheelchair via the remote control.
- Use a lifting device to raise the drive wheels clear of the ground.

Instructions
- Turn the drive wheel in the correct position.
- Loosen (through the rim) the 2 bolts of the mudguard brackets on the motor arm.
- Remove the mudguards with brackets.
- Tighten the new mudguard with brackets on the motor arm.

Relevant article numbers
0001.1110 Rivets alu 3,2 x 10
9002600 Drive wheel bolt and ring
9005978 Drive wheel fender with bracket

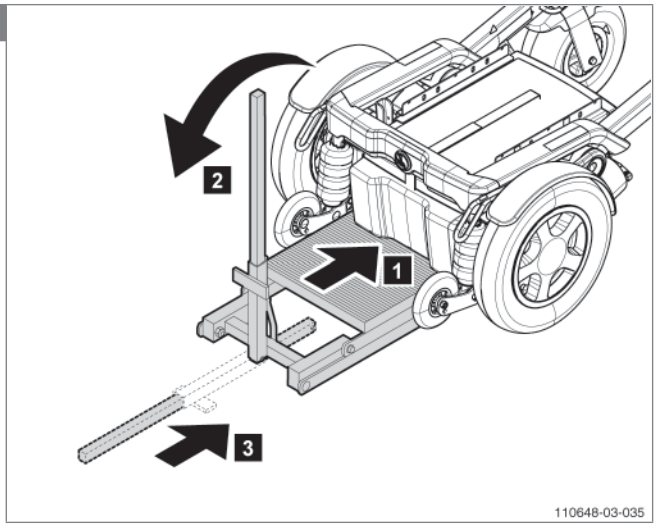
Tools used
- Lifting device
- Torx key T30

1



Note! Suitable work area required!

2



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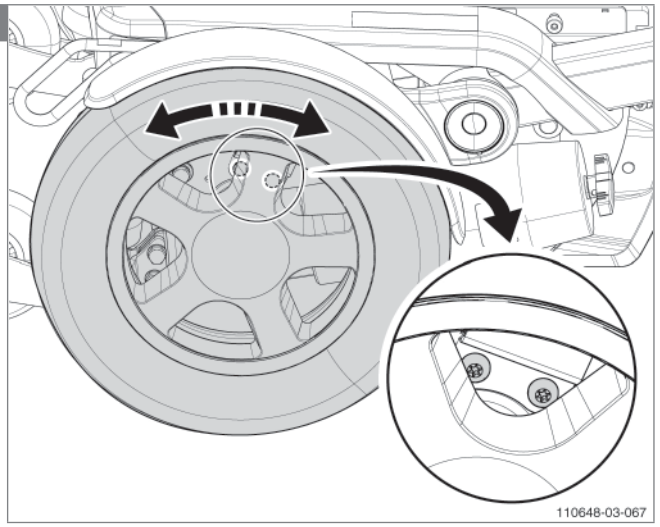

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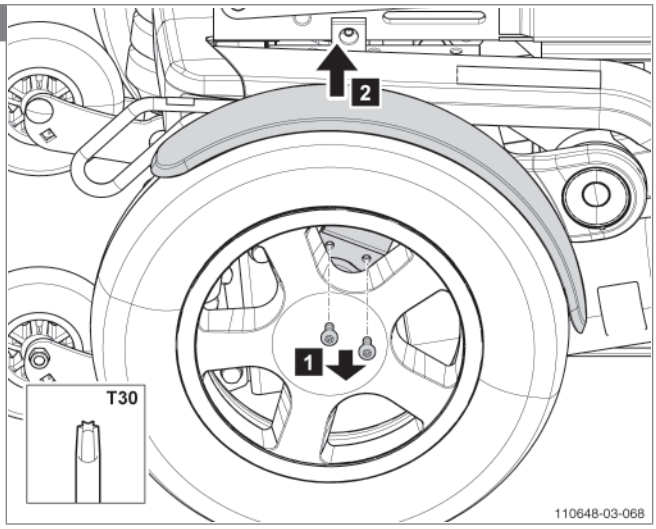

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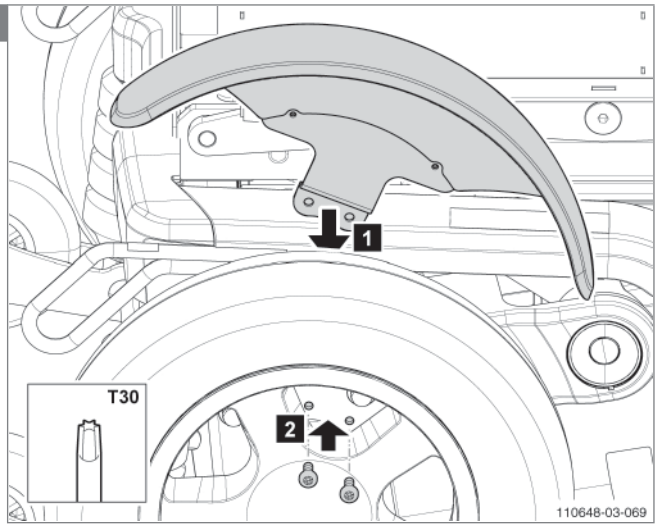

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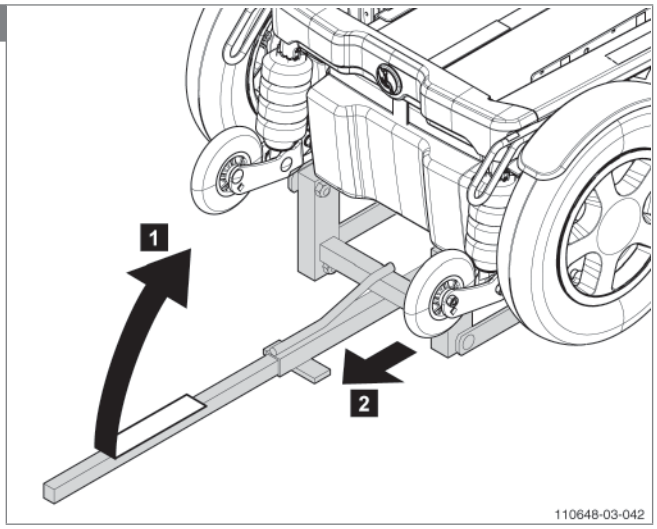


5.2.17 Replacing the coloured covers (not valid for Puma 20)

Ball head cover / Deco ring motor arm / Deco strip suspension bridge cover

Preparation
Switch off the wheelchair via the remote control.

Instructions
Ball head cover set:
- Take away the old cover and click back the new cover.

Deco ring motor arm set:
- Take away the old cover and click back the new cover.

Deco strip under the suspension bridge cover:
- Take away the old cover
- Click the new cover with turning movement back under the suspension bridge cover.

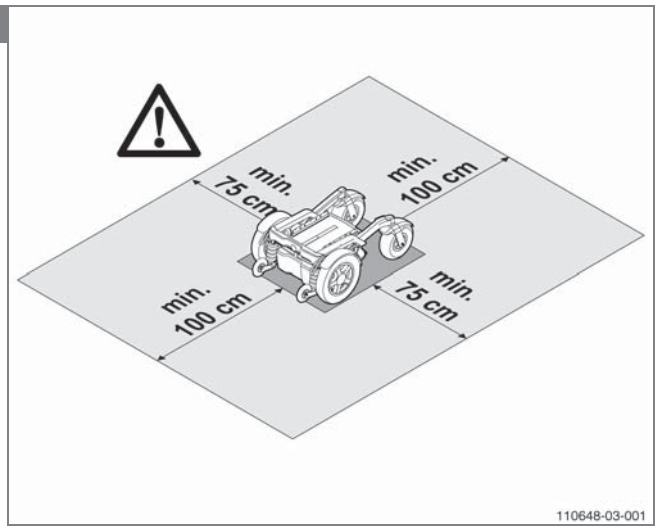
Notice
Use a screwdriver in case you can't get off the covers by hand.

Relevant article numbers
9009748 Deco covers green
9009749 Deco covers blue
9009750 Deco covers orange
9009751 Deco covers silver

Tools used
Screwdriver

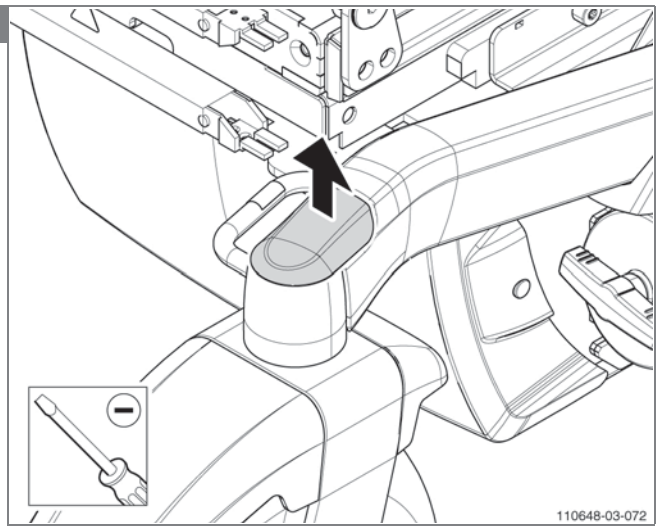
Icons
N.a.

1



Note! Suitable work area required!

2



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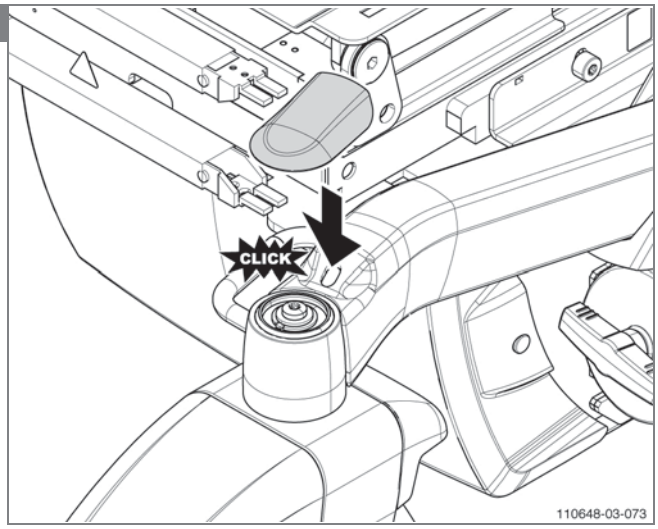

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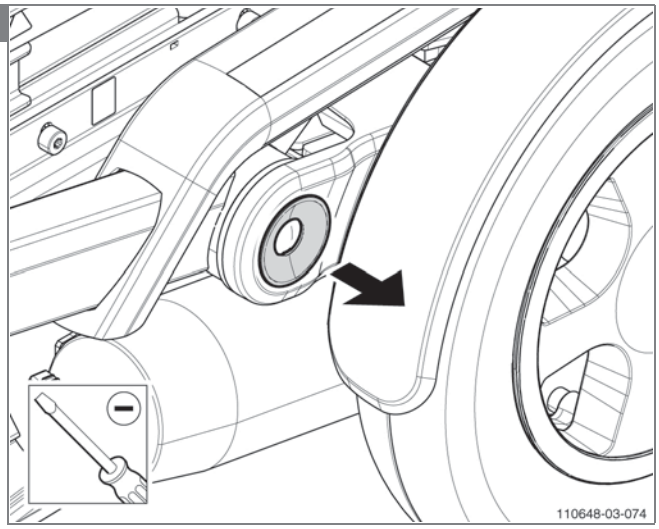

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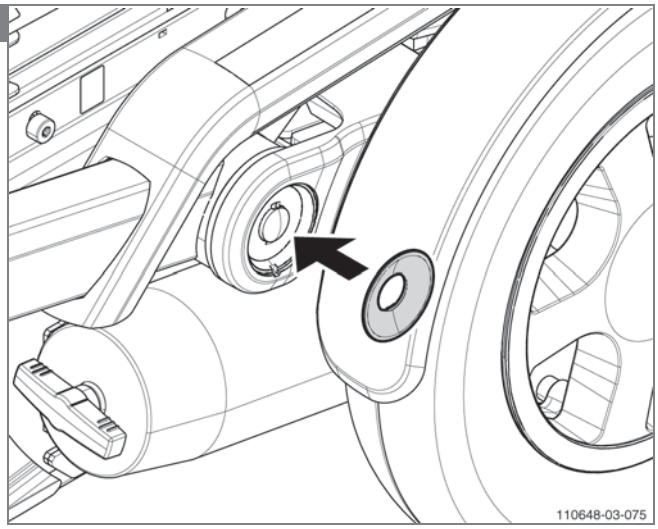

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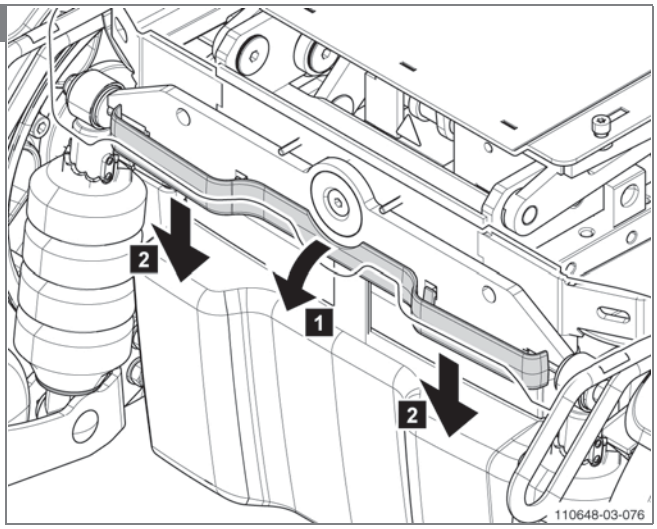

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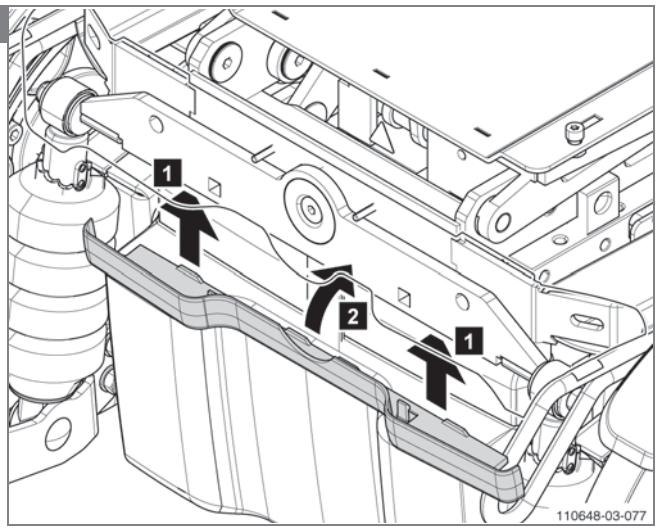


5.2.18 Replacing the anti-tip wheels and bracket

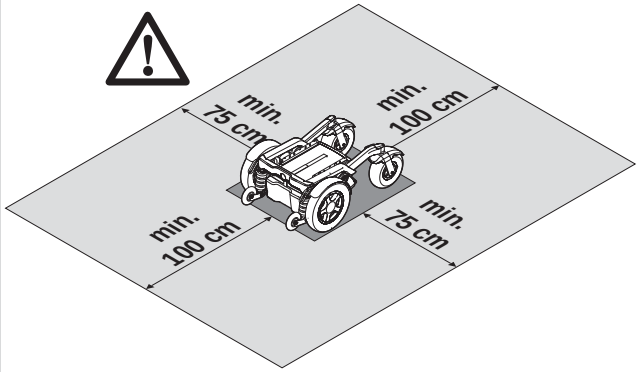
Preparation
Switch off the wheelchair via the remote control.

Instructions
Follow the illustrated instructions.

Relevant article numbers
9005962 P2040 Anti-Tip RWD Complete Service
9005963 P2040 Anti-Tip FWD Complete Service

Tools used
- Open ended or ring spanners, 13 mm, 2x
- Torque wrench, socket, 13 mm

1



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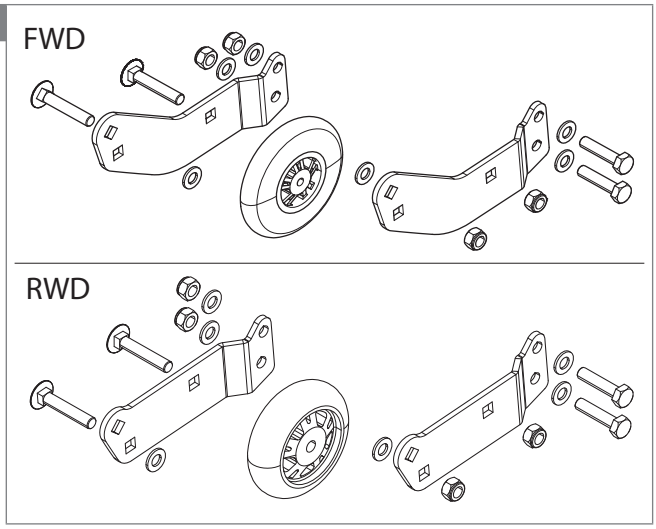

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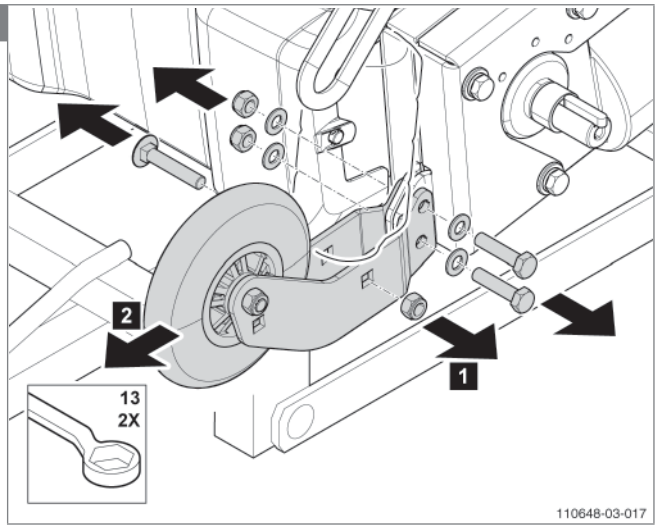
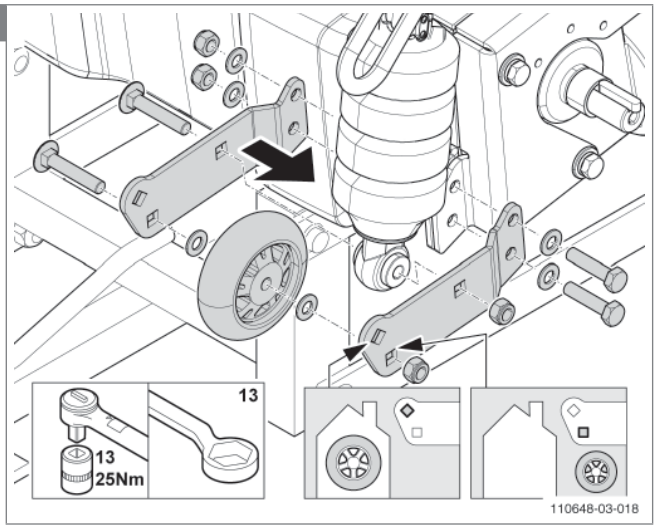


Note! Replace the anti-tip wheels and brackets!

4



Note! Use top mounting holes for Indoor anti-tip wheel!
Note! Use bottom mounting holes for Outdoor anti-tip wheel!
Note! Tighten the bolts of the anti-tip wheels and brackets with 25 Nm!

5.2.19 Adjusting the seating height

Preparation
- Switch off the wheelchair via the remote control.
- Remove the fuses from the battery compartment before carrying out any work on the electrical system.
- Use a lifting device to raise the drive wheels clear of the ground.

Instructions
- Remove the legrests.
- Lift the chair, in case the wheelchair has a lift.
- Disconnect all connections of the power module and the battery fuses.
- Remove the entire seating unit (incl. electrical lift, electrical tilt or mechanical tilt) from the carrier.
- Loosen the mounting supports (l/r) of the lift supports.
- Adjust the height of lift support; 5 height adjustments are possible (0/+25/+50/+75/+100).
- Is the lift support in the lowest position? Mount also the battery cover in the lowest position!
- Replace the entire seating unit on the carrier. Two people are needed to carry out this operation.
- Tighten the interface and seat on the carrier.
- Replace the legrests.

Notice
Raising the seat height has a negative effect on dynamic stability, because of the centre of gravity rises. Please read the user manual or contact your supplier, who will advise about the seat adjustments.

Relevant article numbers
9002592 M8x12 CKS BZK PRECOTE 85
00000.2003 Locking ring, flat M8

Tools used
- Lifting device
- Screwdriver
- Allen key, 6 mm
- Torx key, T30
- Open ended or ring spanner, 10 mm
- Pair of wire-cutters
- Tie wraps

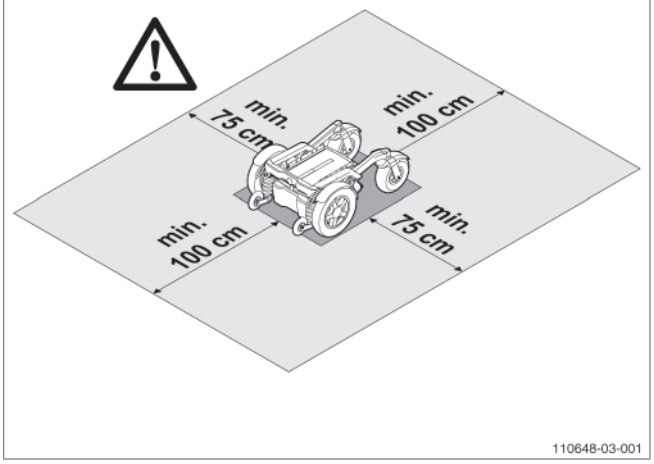
Icons


Parts need to be replaced. Dispose of waste parts in accordance with local regulations.


Note! Be aware of the issue!

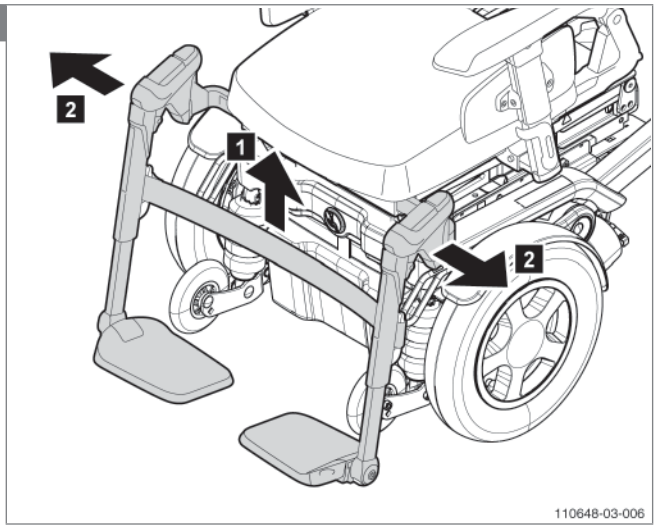

Action must be carried out by two persons!

1



Note! Suitable work area required!

2



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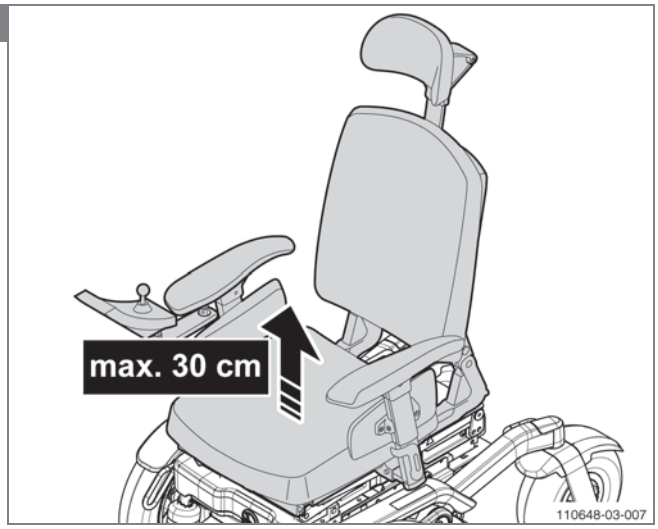
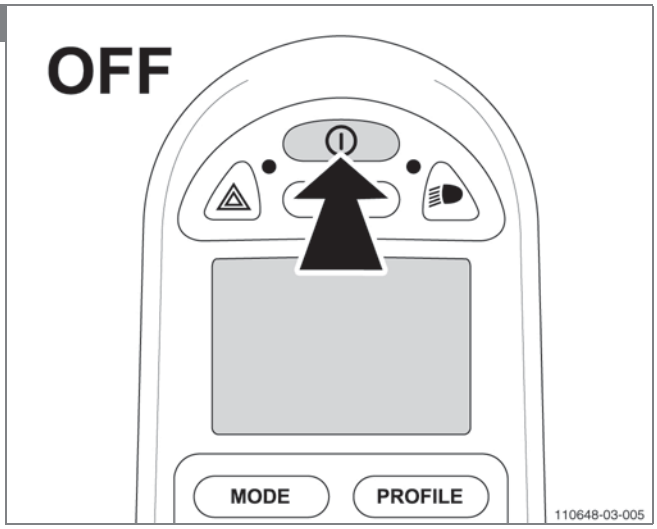


Note! Lift the chair, in case the wheelchair has a lift.

4



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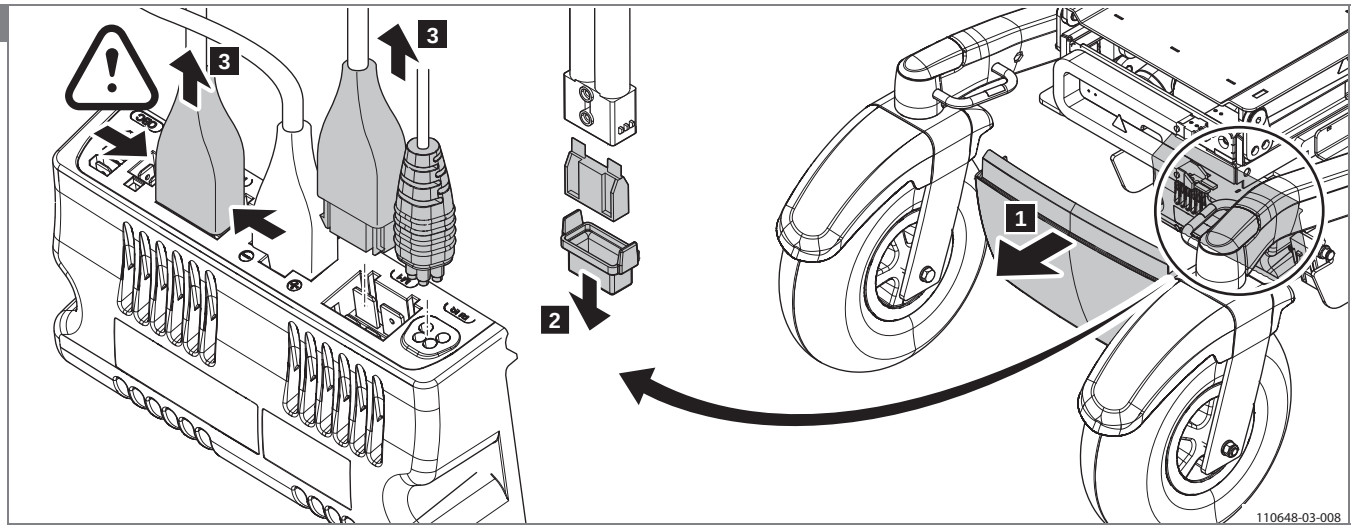

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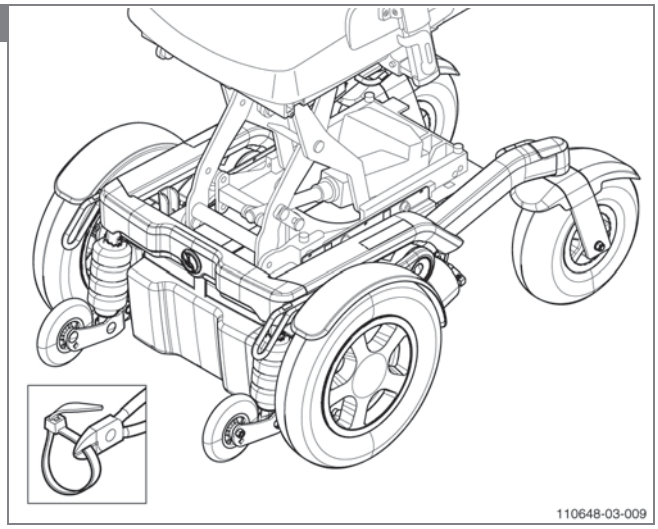

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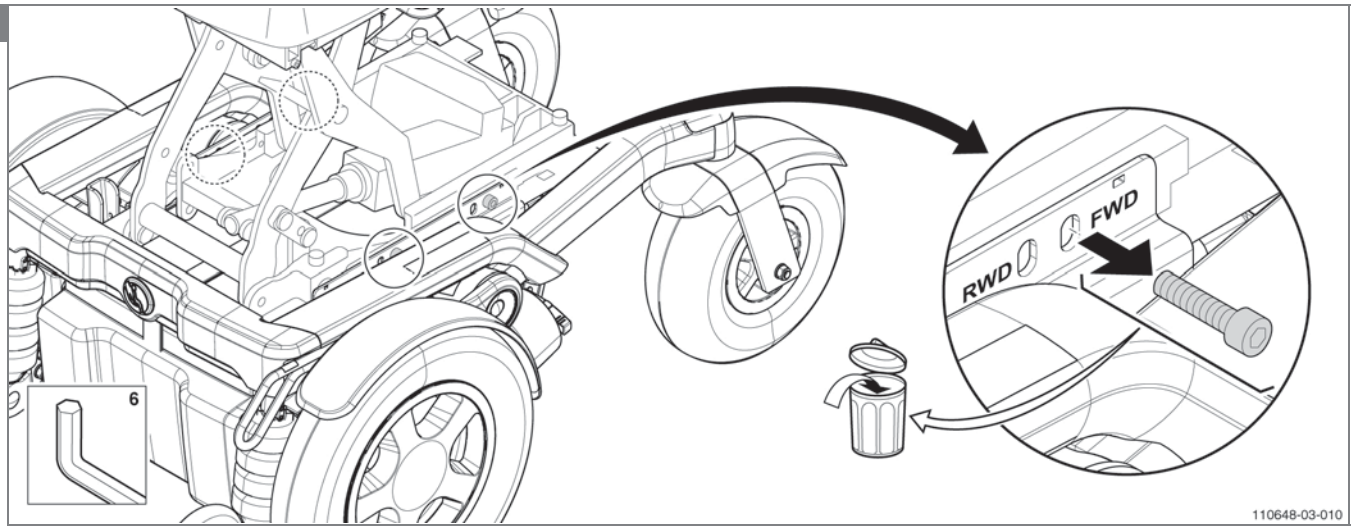
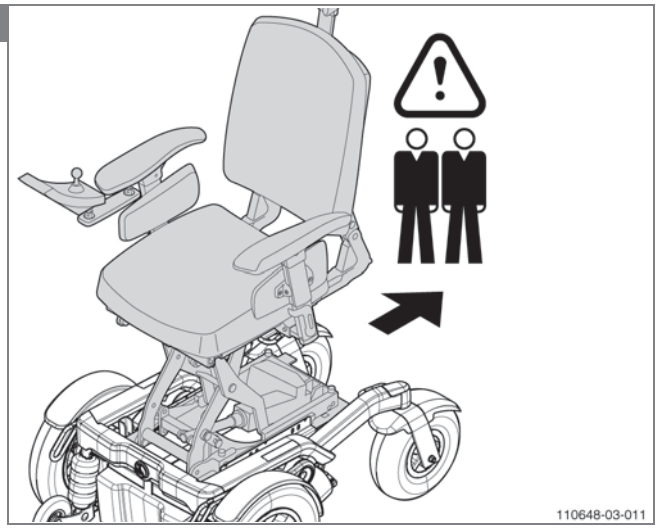


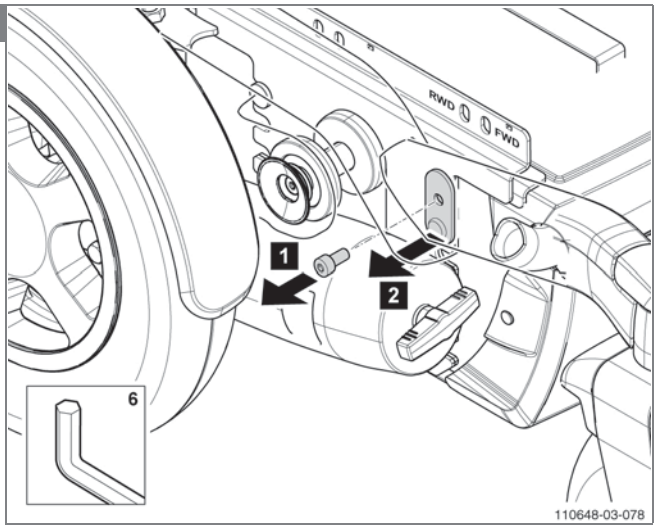
Note! Keep the spacers for reuse for rebuilding the wheelchair.

8



Caution! Two people are needed to carry out this operation.

9



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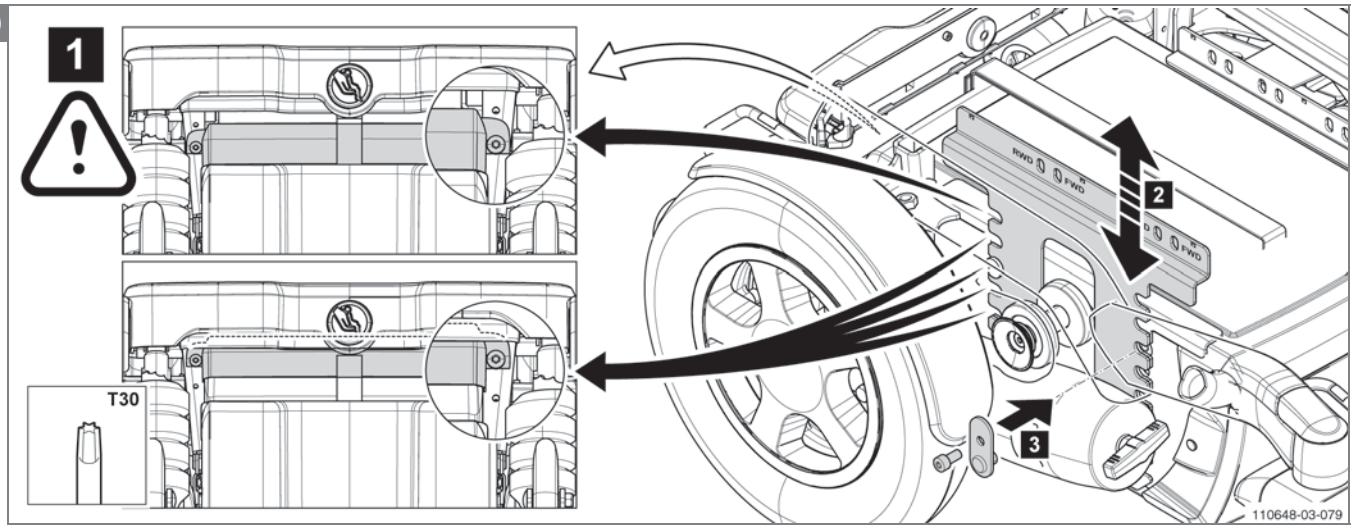

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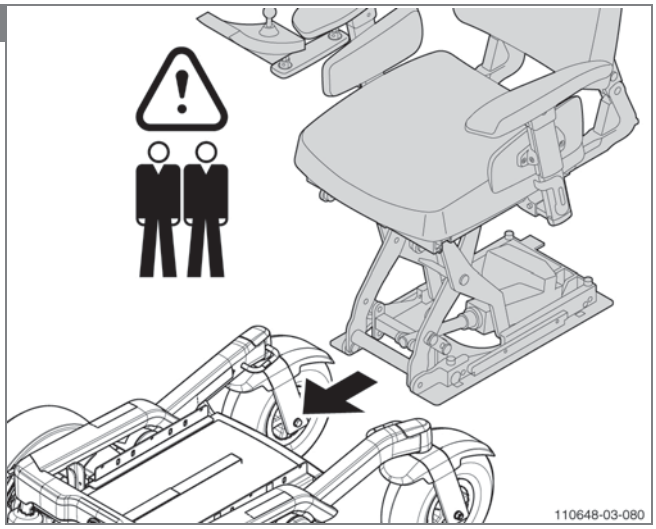
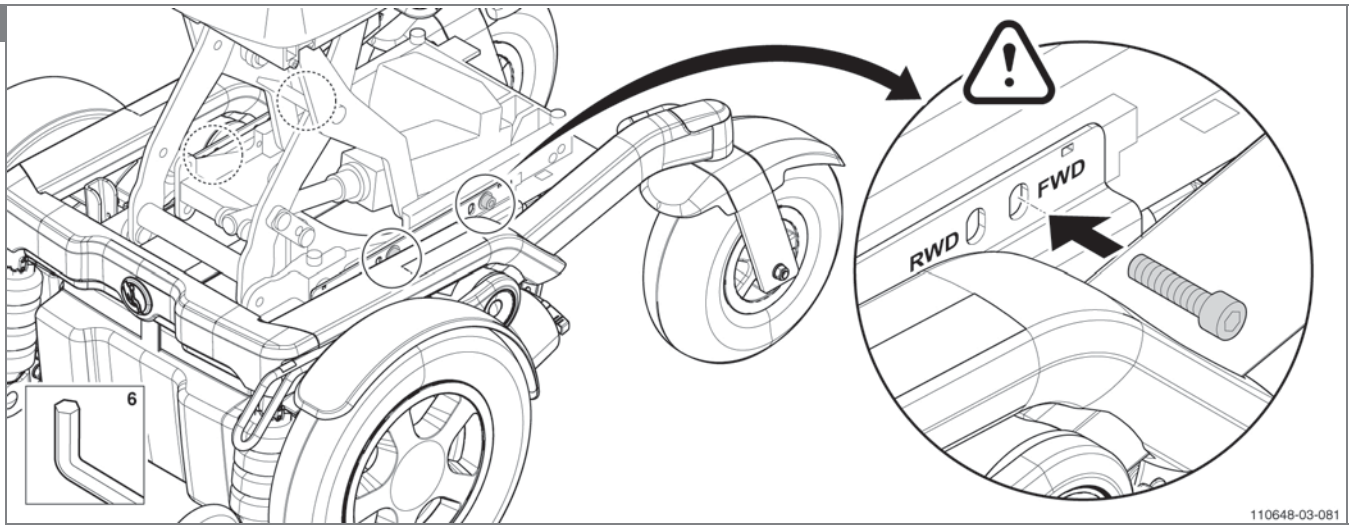


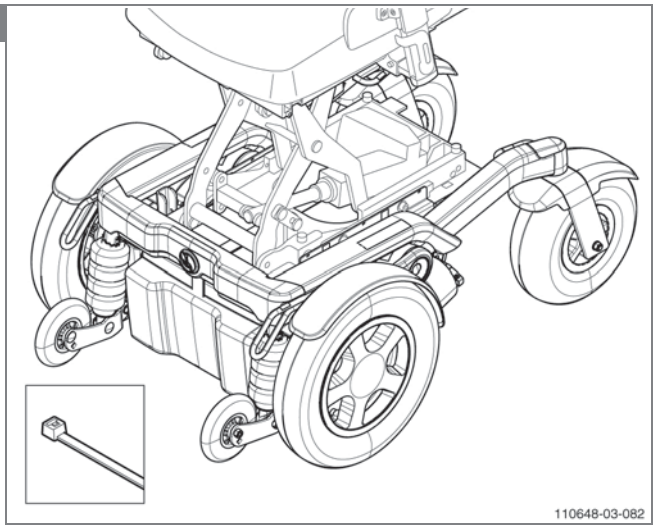
Caution! Two people are needed to carry out this operation.

12



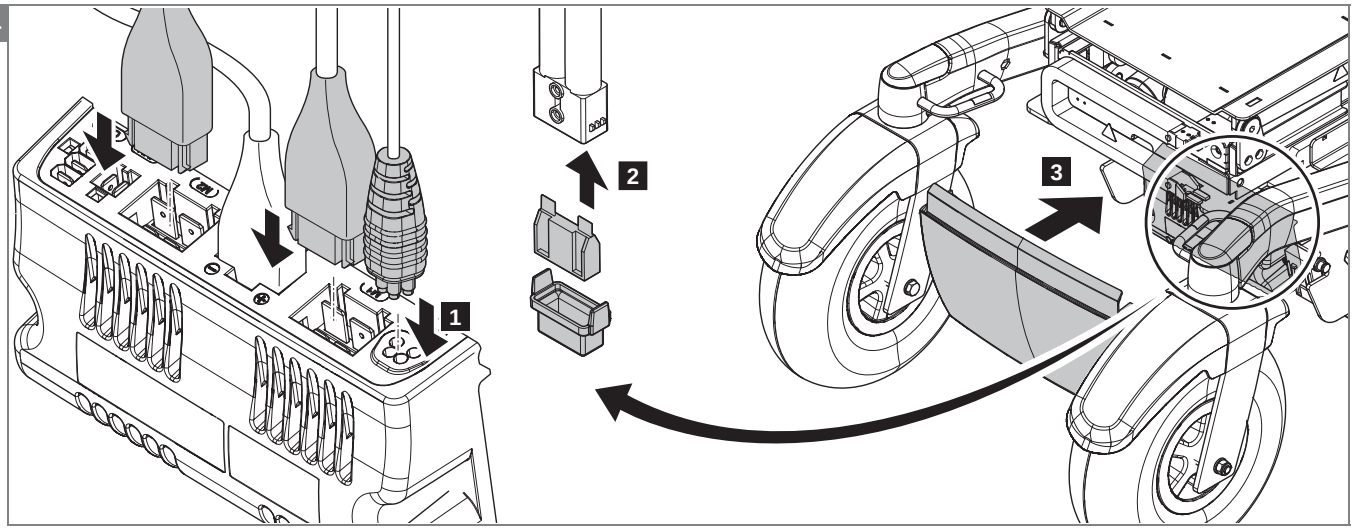
Note! Reuse the spacers.

13



Note! Fasten the cables with tie wraps!

14



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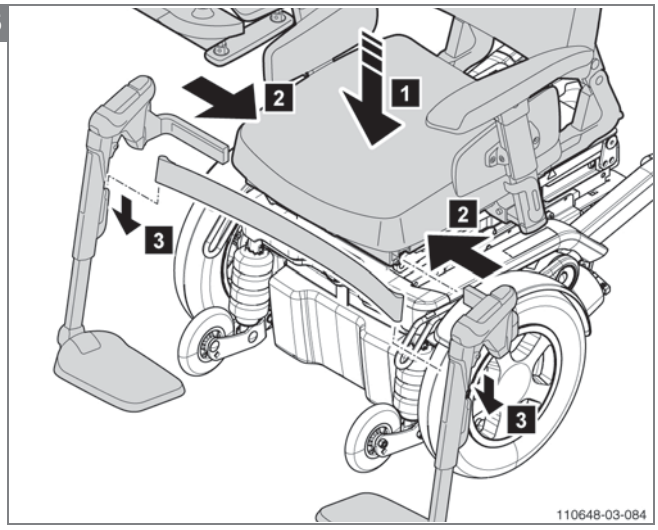


5.2.20 Adjusting the centre point of gravity

Preparation
Switch off the wheelchair via the remote control.

Instructions
- Remove the leg rests.
- Loosen the 4 bolts.
- Move the whole chair unit to the correct position.
- Remount the 4 bolts.
- Replace the leg rests.

Notice
Changing the wheelchair's centre of gravity may negatively influence the wheelchair's driving characteristics and/or its dynamic stability! Therefore it might be sensible to use the RWD hole for a FWD and vice versa

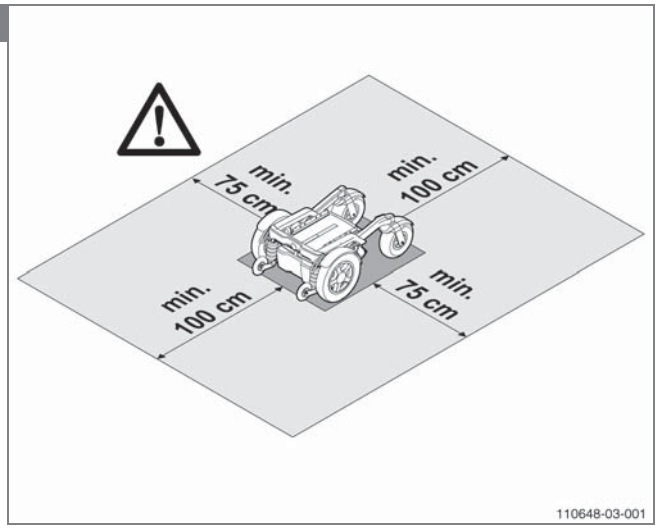
Relevant article numbers
9002592 M8x12 CKS BZK PRECOTE 85
00000.2003 Locking ring, flat M8

Tools used
Allen key, 6 mm

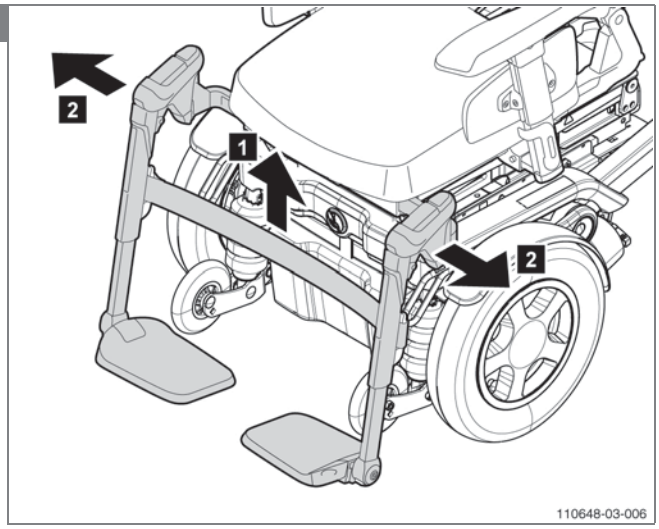
Icons

Parts need to be replaced. Dispose of waste parts in accordance with local regulations.


Note! Be aware of the issue!

1


Note! Suitable work area required!

2


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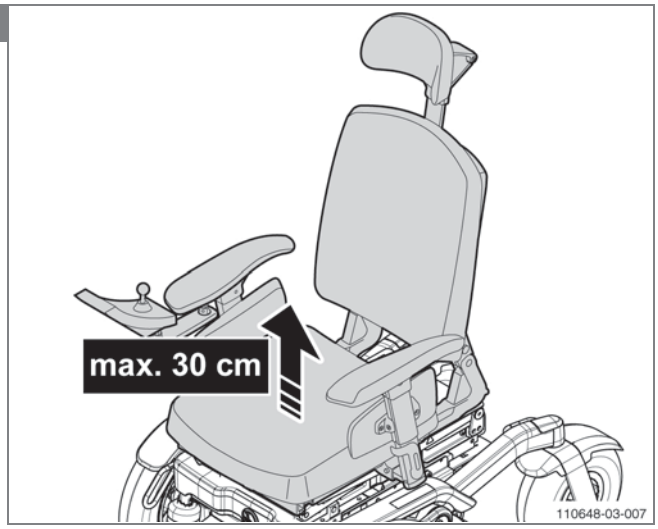
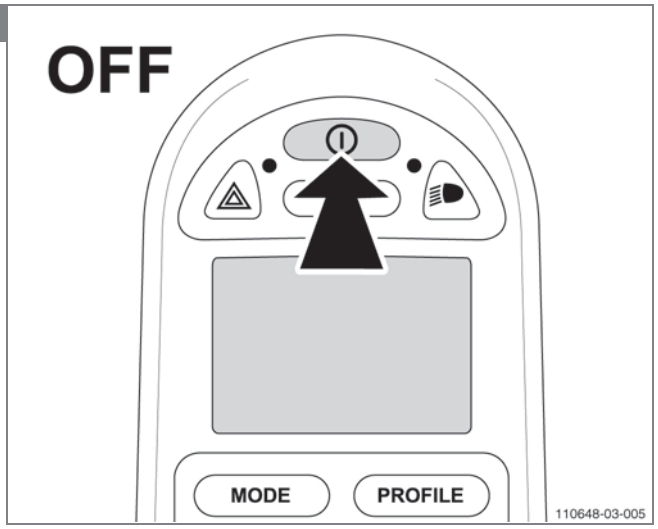
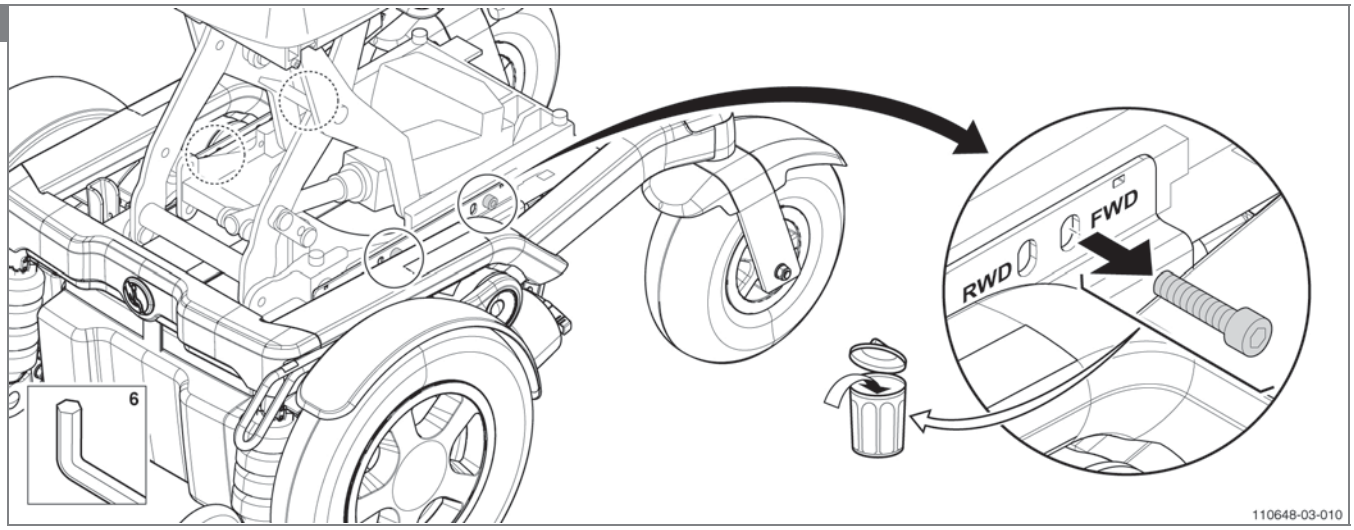


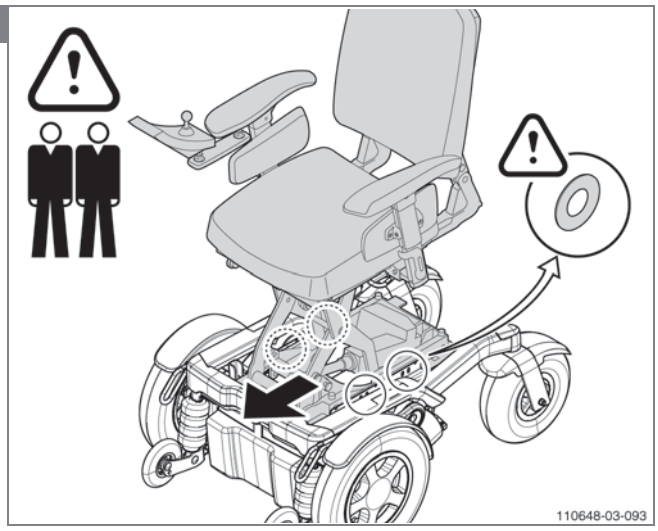
Note! Lift the chair in case the wheel chair has an electrical lift.

4


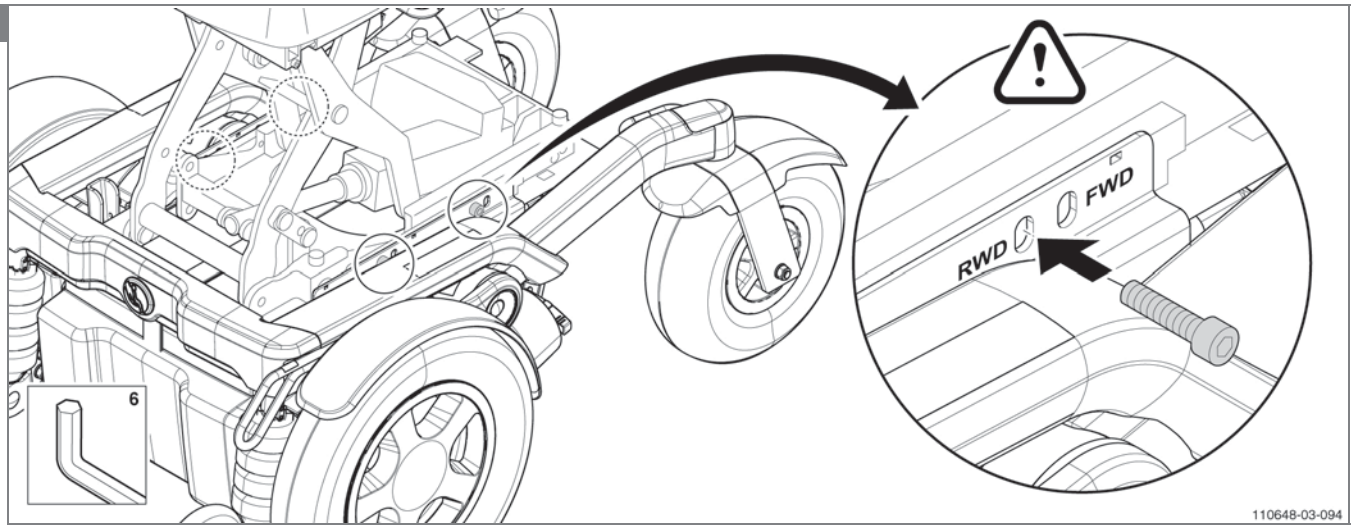
5



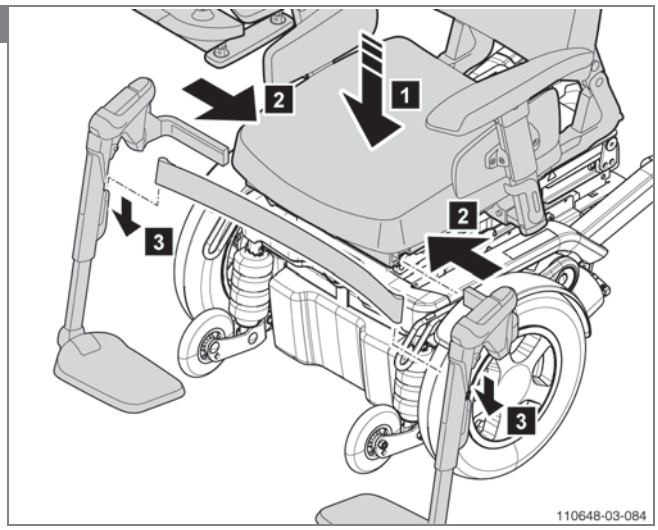
6



7



8



5.2.21 Adjusting the mechanical seat tilt

Preparation
Switch off the wheelchair via the remote control.

Instructions
- Remove the entire seating unit from the carrier. Two people are needed to carry out this operation. (See instruction: Converting front wheel drive (FWD) to rear wheel drive (RWD), Step 2 Remove interface and seating.)
- Loosen the 2 bolts in the interface frame
- Move the upper part of the interface in the desired position
- Tighten the 2 bolts
- Replace the seat on the interface

Relevant article numbers
9006016 Mechanical tilt

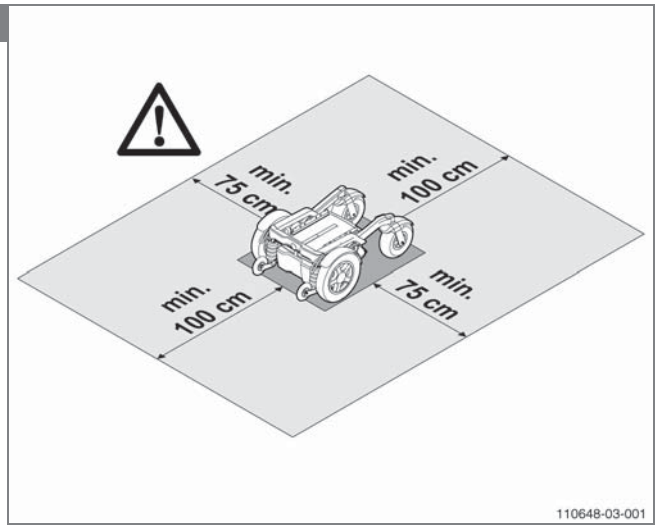
Tools used
- Torque wrench, socket, 13 mm
- Allen key, 6 mm

Icons

Action must be carried out by two persons!

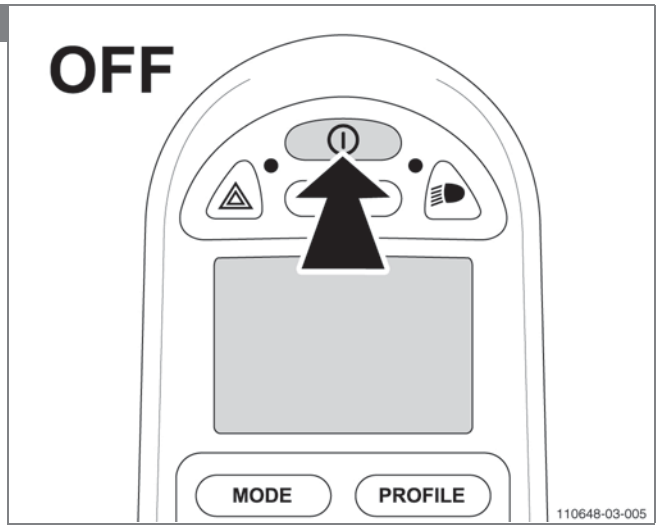
Note! Be aware of the issue!

1

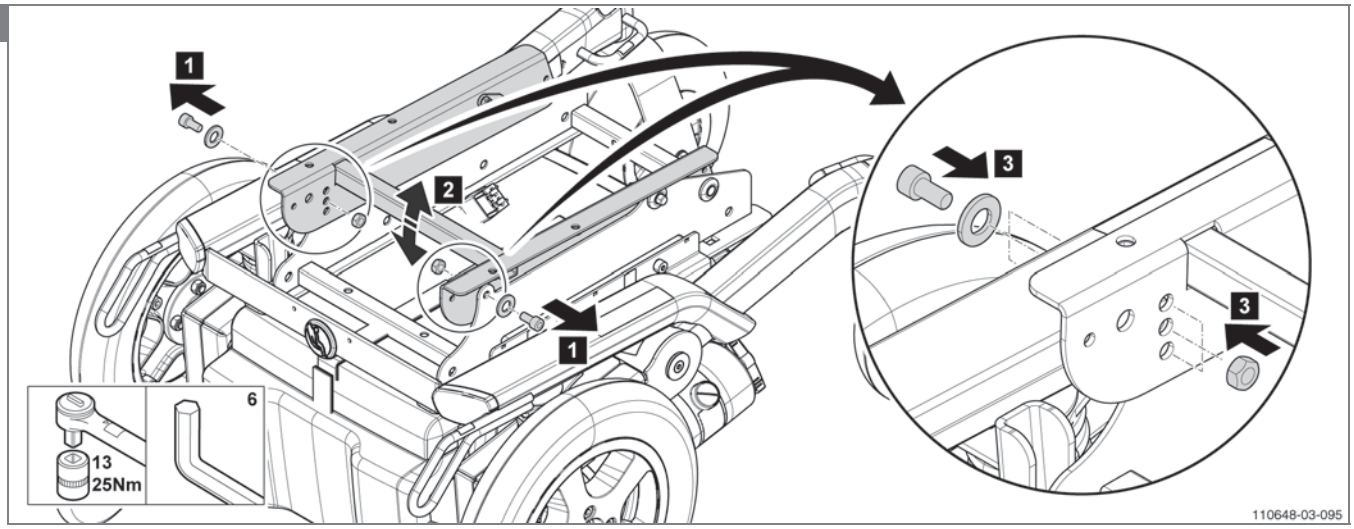


Note! Suitable work area required!

2



3



Caution! Changing the wheelchair's tilt position may negatively influence the wheelchair's driving characteristics! Please read the user manual!

5.2.22 Adjusting the electrical seat tilt 0 - 25°

Preparation
Switch off the wheelchair via the remote control.

Instructions
- Remove the entire seating unit from the carrier. Two people are needed to carry out this operation. (See instruction: Converting front wheel drive (FWD) to rear wheel drive (RWD), Step 2 Remove interface and seating.)
- Loosen the 2 bolts of hinge 1 or hinge 2 in the interface frame.
- Move the upper part of the interface in the desired position (hinge point 1 (hp1): 0 - 25°, hinge point 2 (hp2): 0 - 20°).
- Tighten the 2 bolts.
- Replace the seat on the interface.

Notice
Changing back the wheelchair's tilt position from 20° to 25° may negatively influence the wheelchair's driving characteristics.

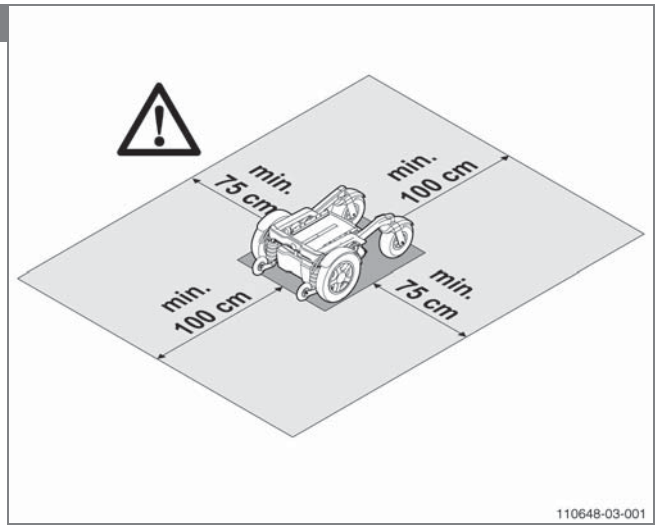
Relevant article numbers
9006017 Electrical tilt 25°

Tools used
Open ended or ring spanner 10 mm

Icons
Action must be carried out by two persons!

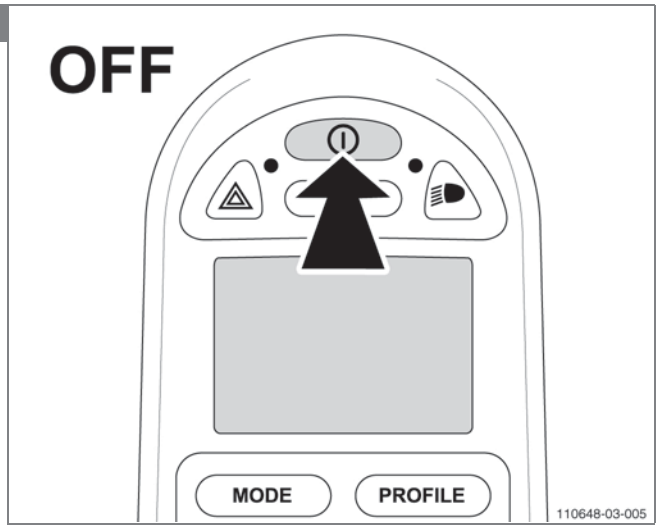
Note! Be aware of the issue!

1

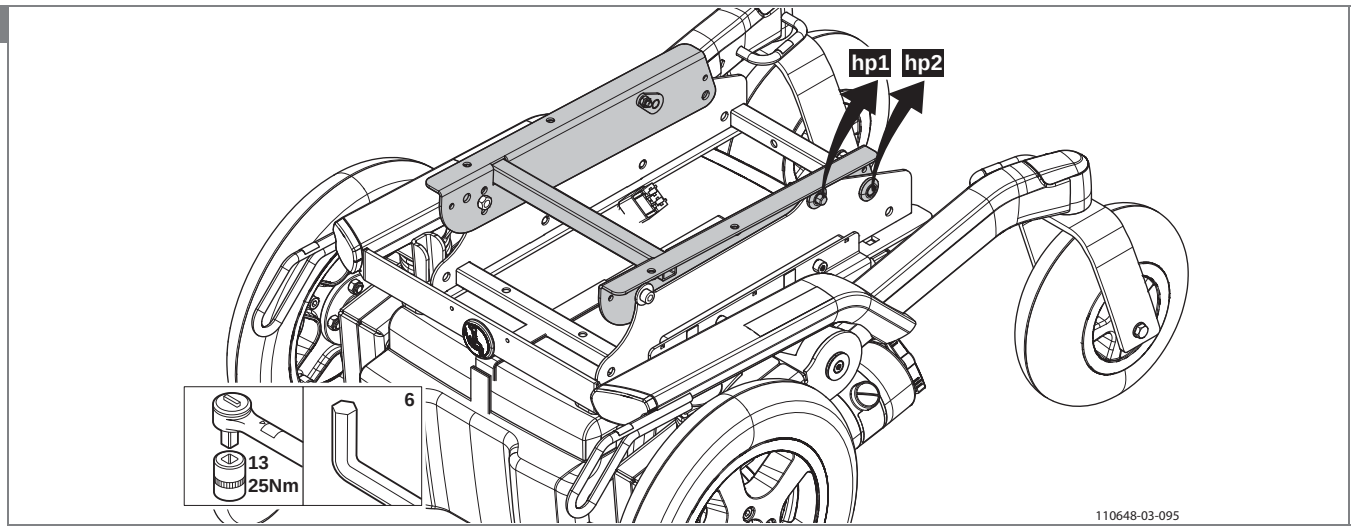


Note! Suitable work area required!

2



3



Caution! Changing the wheelchair's tilt position may negatively influence the wheelchair's driving characteristics! Please read the user manual!

5.2.23 Adjusting the electrical seat tilt 0 - 45°, the minimum tilt angle (0 – 9°)

With this adjustment the minimum / down limit angle of the tilt can be set. On the left rear corner of the tilt module a limit switch is placed which stops the downward movement. This switch is triggered by a set screw which moves past. Standard it is adjusted to stop at 0 degrees. The angle at which the switch is triggered can be adjusted by turning the set screw. The more the screw is turned inwards (clockwise), the earlier the switch is triggered, and the bigger the angle will be at which the tilt stops.

Preparation
Switch on the wheelchair via the remote control.

Instructions
- Tilt the seat backwards about 10 degrees
- Turn the set screw with use of a size 2 Allen key (a quarter turn equals approx. 1 degree).
  - Turning it clockwise will result in a bigger down limit angle
  - Turning it counterclockwise will result in a smaller down limit angle
- Carefully tilt the seat forward until it stops, and check if the resulting angle is as desired

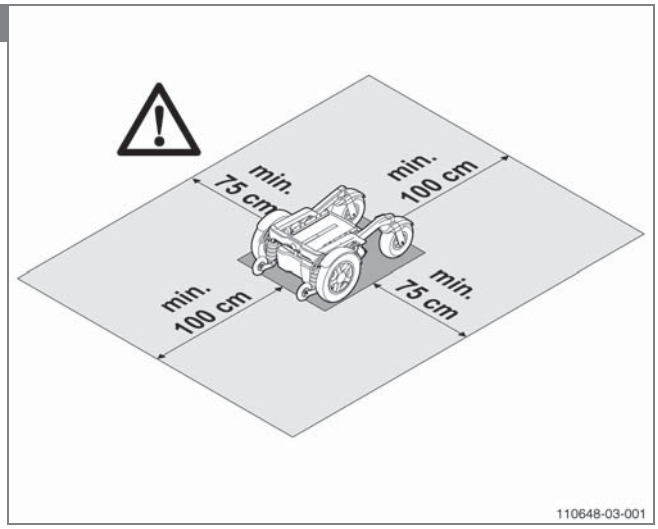
Notice
Minimum angle adjustments of greater than 9 degrees are not recommended. This is the angle at which the inhibit switch is activated (for safety reasons), and drive speed is automatically limited.

Relevant article numbers
9006021 Electrical tilt 45°
9006020 Electrical lift with electrical tilt 45°

Tools used
Allen key, size 2 mm

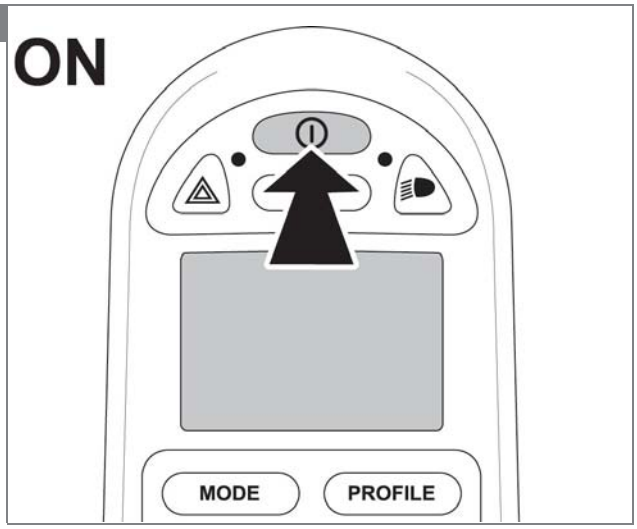
Icons
Note! Be aware of the issue!

1

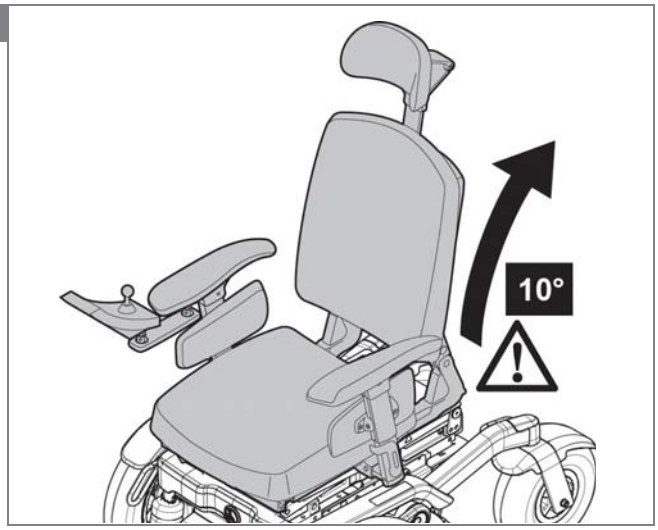


Note! Suitable work area required!

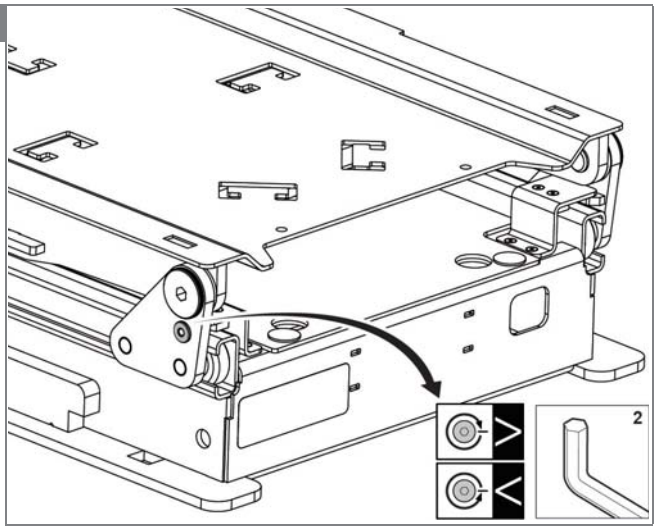
2



3

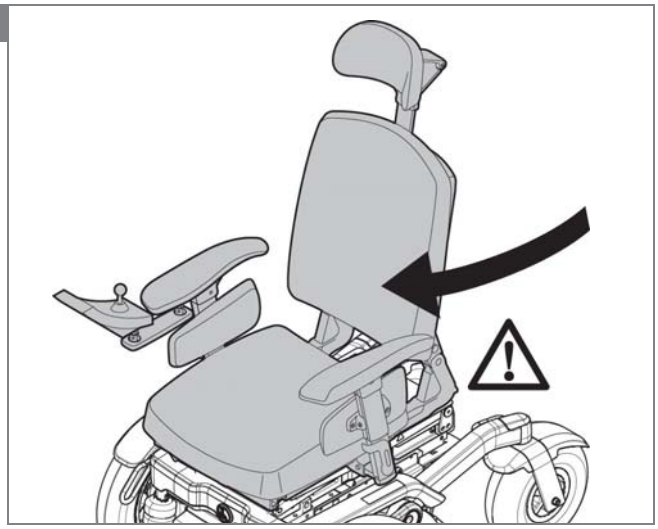


4



Caution! Adjusting the minimum angle should be done with caution. If the set screw is turned inward too much it can damage the limit switch.

5



5.2.24 Adjusting the electrical seat tilt 0 - 45°, the maximum tilt angle (< 45°)

There are certain settings of the carrier and seating system combination at which interference can occur between the Sedeo seating system and the Carrier (see 5.2.6). In these situations the maximum tilt angle must be limited to prevent serious damage.
The maximum tilt angle can be adjusted by use of the up limit switch which is placed in the profile on the right side of the tilt module. This switch stops the upward movement as soon as the triangular slider travels in to it.

Preparation
Switch on the wheelchair via the remote control.

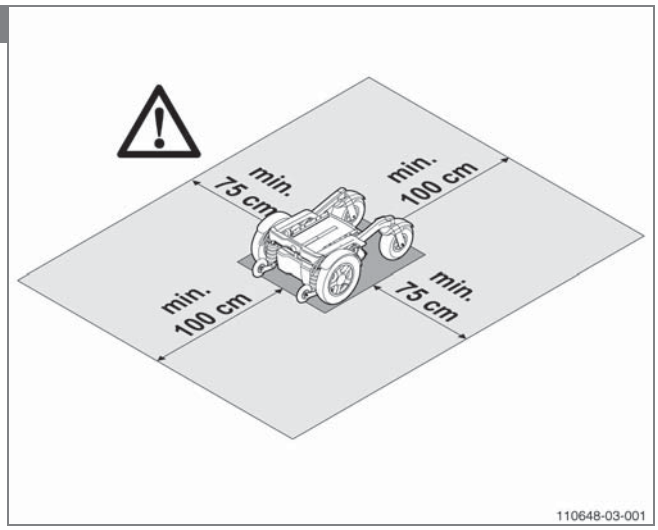
Instructions
- Adjust the seating height and seating system (see 5.2.5 seat adjustments) to the desired settings
- Carefully tilt the seat backwards to the point that it almost makes contact with the frame of the wheelchair.
- Loosen the up limit switch by unscrewing the cross head screws a little
- Move the switch to the point that it makes contact with the slider and push it just a little further until it clicks/ switches
- Tighten the screws again and if needed fixate the cable with a new tie wrap
- Tilt the seat forward and backward again to check if it stops at the correct angle

Relevant article numbers
9006021 Electrical tilt 45°
9006020 Electrical lift with electrical tilt 45°

Tools used
- Screwdriver, crosshead
- Pair of wire cutters (for tie-wraps)

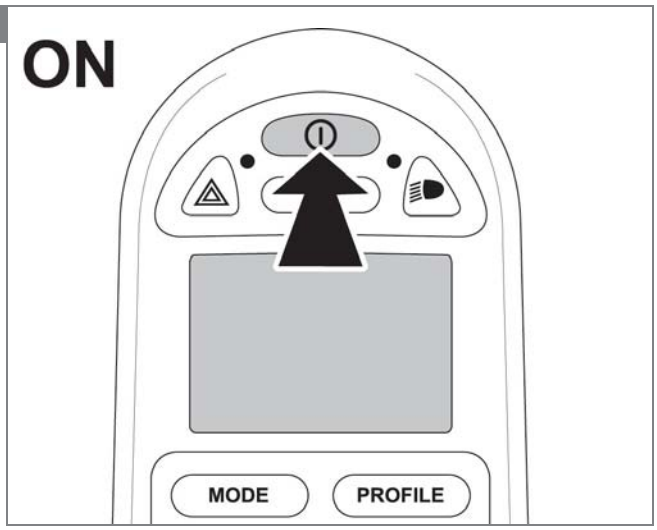
Icons
Note! Be aware of the issue!

1



Note! Suitable work area required!

2



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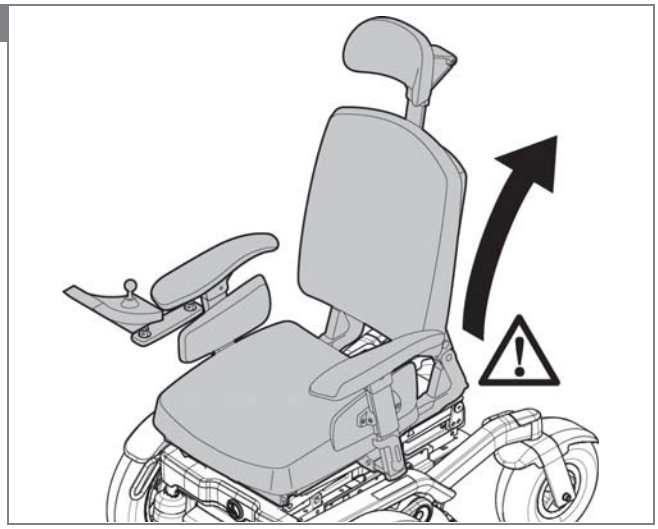
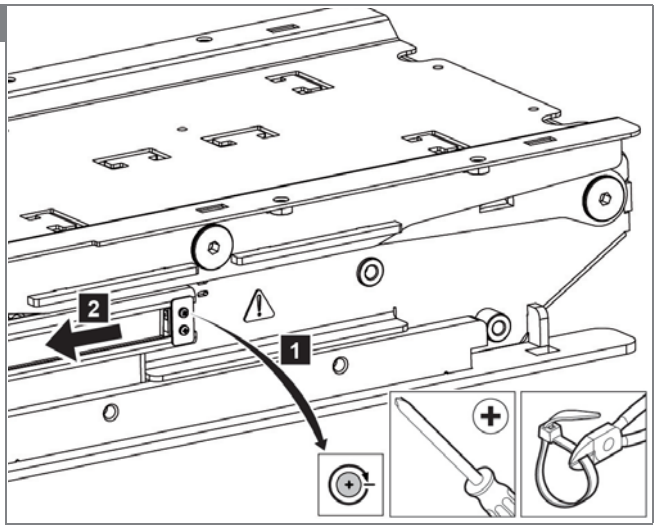


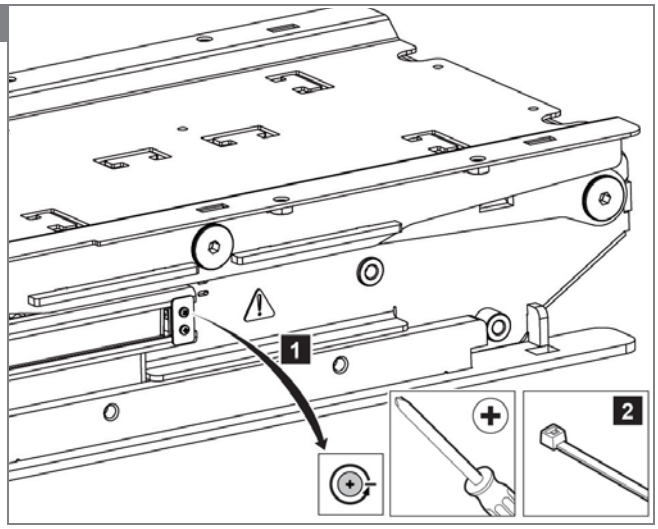
Note! Make sure to keep a gap of about one finger thickness

4



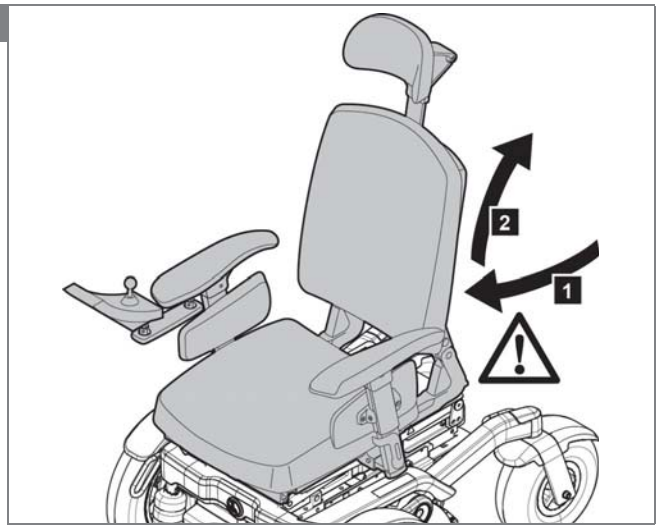
Note! It might be needed to loosen the switch cable

5



Note! If needed fixate the cable with a new tie wrap

6



5.2.25 Seat tilt configuration tables

The tables show in which configurations / adjustment settings seat tilt is limited due to interference. Several factors are involved: driving wheels (FWD or RWD), seating system (Sedeo Lite or Pro) tilt module type (0-45 ° or 0-25°), mounting of the 0-25° tilt module (on hinge point 1 or hinge point 2, see figure), seat height, seat depth, seat cushion, centre of gravity setting.

RWD, Sedeo Lite, electrical tilt adjustment 0 - 45°

Seat height Setting (i.c.w. 13" drive wheels in cm | i.c.w. 14" drive wheels in cm)			Warnings	CoG Setting (holes no.)	Backrest Adjustment Setting (hole no. | seat depth in cm)								
					Hole 1	Hole 2	Hole 3	Hole 4	Hole 5	Hole 6	Hole 7	Hole 8	Hole 9
					39 cm	41 cm	43 cm	45 cm	47 cm	49 cm	51 cm	53 cm	55 cm
	40,5 cm	41,5 cm		Hole 1 + 7	*holes 1 and 2 not available due to interference with seat frame*								
				Hole 2 + 8									
				Hole 3 + 9	45	45	45	45	25	5	X	X	X
				Hole 4 + 10	45	45	45	45	45	25	5	X	X
				Hole 5 + 11	45	45	45	45	45	45	25	5	X
				Hole 6 + 12	45	45	45	45	45	45	45	25	5
	43 cm	44 cm		Hole 1 + 7	*holes 1 and 2 not available due to interference with seat frame*								
				Hole 2 + 8									
				Hole 3 + 9	45	45	45	45	45	45	30	20	15
				Hole 4 + 10	45	45	45	45	45	45	45	30	20
				Hole 5 + 11	45	45	45	45	45	45	45	45	30
				Hole 6 + 12	45	45	45	45	45	45	45	45	45
	45,5 cm	46,5 cm		Hole 1 + 7	*holes 1 and 2 not available due to interference with seat frame*								
				Hole 2 + 8									
				Hole 3 + 9	45	45	45	45	45	45	45	45	30
				Hole 4 + 10	45	45	45	45	45	45	45	45	45
				Hole 5 + 11	45	45	45	45	45	45	45	45	45
				Hole 6 + 12	45	45	45	45	45	45	45	45	45
	48 cm	49 cm		Hole 1 + 7	*holes 1 and 2 not available due to interference with seat frame*								
				Hole 2 + 8									
				Hole 3 + 9	45	45	45	45	45	45	45	45	45
				Hole 4 + 10	45	45	45	45	45	45	45	45	45
				Hole 5 + 11	45	45	45	45	45	45	45	45	45
				Hole 6 + 12	45	45	45	45	45	45	45	45	45
	50,5 cm	51,5 cm		Hole 1 + 7	*holes 1 and 2 not available due to interference with seat frame*								
				Hole 2 + 8									
				Hole 3 + 9	45	45	45	45	45	45	45	45	45
				Hole 4 + 10	45	45	45	45	45	45	45	45	45
				Hole 5 + 11	45	45	45	45	45	45	45	45	45
				Hole 6 + 12	45	45	45	45	45	45	45	45	45
					Max. tilt (45 of 25°)								

Seat Tilt Range

45 = full tilt 0 - 45°

30 - 5 = limited tilt

X = no tilt possible

Default Factory Settings per Seat Height / Seat Cushion Depth

= setting for seat cushion depth 39 cm

= setting for seat cushion depth 45 cm

= setting for seat cushion depth 39 cm with Comfort backrest

= setting for seat cushion depth 45 cm with Comfort backrest

Warnings

= no tilt possible for seat cushion depth 39 cm with Comfort backrest

= no tilt possible for seat cushion depth 45 cm with Comfort backrest

FWD, Sedeo Lite, electrical tilt adjustment 0 - 45°

Seat height Setting (i.c.w. 13" drive wheels in cm | i.c.w. 14" drive wheels in cm)			Warnings	CoG Setting (holes no.)	Backrest Adjustment Setting (hole no. | seat depth in cm)								
					Hole 1	Hole 2	Hole 3	Hole 4	Hole 5	Hole 6	Hole 7	Hole 8	Hole 9
					39 cm	41 cm	43 cm	45 cm	47 cm	49 cm	51 cm	53 cm	55 cm
	40,5 cm	41,5 cm		Hole 1 + 7	*holes 1 and 2 not available due to interference with seat frame*								
				Hole 2 + 8									
				Hole 3 + 9	45	45	45	45	45	15	5	X	X
				Hole 4 + 10	45	45	45	45	45	45	15	5	X
				Hole 5 + 11	45	45	45	45	45	45	45	15	5
				Hole 6 + 12	45	45	45	45	45	45	45	45	15
	43 cm	44 cm		Hole 1 + 7	*holes 1 and 2 not available due to interference with seat frame*								
				Hole 2 + 8									
				Hole 3 + 9	45	45	45	45	45	45	45	20	15
				Hole 4 + 10	45	45	45	45	45	45	45	45	20
				Hole 5 + 11	45	45	45	45	45	45	45	45	45
				Hole 6 + 12	45	45	45	45	45	45	45	45	45
	45,5 cm	46,5 cm		Hole 1 + 7	*holes 1 and 2 not available due to interference with seat frame*								
				Hole 2 + 8									
				Hole 3 + 9	45	45	45	45	45	45	45	45	45
				Hole 4 + 10	45	45	45	45	45	45	45	45	45
				Hole 5 + 11	45	45	45	45	45	45	45	45	45
				Hole 6 + 12	45	45	45	45	45	45	45	45	45
	48 cm	49 cm		Hole 1 + 7	*holes 1 and 2 not available due to interference with seat frame*								
				Hole 2 + 8									
				Hole 3 + 9	45	45	45	45	45	45	45	45	45
				Hole 4 + 10	45	45	45	45	45	45	45	45	45
				Hole 5 + 11	45	45	45	45	45	45	45	45	45
				Hole 6 + 12	45	45	45	45	45	45	45	45	45
	50,5 cm	51,5 cm		Hole 1 + 7	*holes 1 and 2 not available due to interference with seat frame*								
				Hole 2 + 8									
				Hole 3 + 9	45	45	45	45	45	45	45	45	45
				Hole 4 + 10	45	45	45	45	45	45	45	45	45
				Hole 5 + 11	45	45	45	45	45	45	45	45	45
				Hole 6 + 12	45	45	45	45	45	45	45	45	45
					Max. tilt (45 of 25°)								

Seat Tilt Range

45 = full tilt 0 - 45°

20 - 5 = limited tilt

X = no tilt possible

Default Factory Settings per Seat Height / Seat Cushion Depth

= setting for seat cushion depth 39 cm

= setting for seat cushion depth 45 cm

= setting for seat cushion depth 39 cm with Comfort backrest

= setting for seat cushion depth 45 cm with Comfort backrest

Warnings

= no tilt possible for seat cushion depth 39 cm with Comfort backrest

= no tilt possible for seat cushion depth 45 cm with Comfort backrest

Position of tilt changed for FWD; has consequences for max. tilt

RWD, Sedeo Lite, electrical tilt adjustment 0 - 25°

Seat height Setting (i.c.w. 13" drive wheels in cm | i.c.w. 14" drive wheels in cm)	CoG Setting (holes no.)	Backrest Adjustment Setting (hole no. | seat depth in cm)																		Warnings
		Hole 1 39 cm		Hole 2 41 cm		Hole 3 43 cm		Hole 4 45 cm		Hole 5 47 cm		Hole 6 49 cm		Hole 7 51 cm		Hole 8 53 cm		Hole 9 55 cm		
		HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	
40,5 cm	Hole 1 + 7	*holes 1 and 2 not available due to interference with castor wheels*																		
	Hole 2 + 8																			
	Hole 3 + 9	X	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	Hole 4 + 10	X	20	X	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	Hole 5 + 11	25	20	X	20	X	20	X	X	X	X	X	X	X	X	X	X	X	X	
	Hole 6 + 12	25	20	25	20	X	20	X	20	X	X	X	X	X	X	X	X	X	X	
43 cm	Hole 1 + 7	X	20	X	20	X	20	X	20	X	20	X	X	X	X	X	X	X	X	
	Hole 2 + 8	25	20	X	20	X	20	X	20	X	20	X	X	X	X	X	X	X	X	
	Hole 3 + 9	25	20	25	20	X	20	X	20	X	20	X	20	X	X	X	X	X	X	
	Hole 4 + 10	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	X	X	X	
	Hole 5 + 11	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	X	
	Hole 6 + 12	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	X	
44 cm	Hole 1 + 7	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	
	Hole 2 + 8	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	
	Hole 3 + 9	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	
	Hole 4 + 10	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	
	Hole 5 + 11	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	
	Hole 6 + 12	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	
46,5 cm	Hole 1 + 7	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	
	Hole 2 + 8	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	
	Hole 3 + 9	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	
	Hole 4 + 10	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	
	Hole 5 + 11	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	
	Hole 6 + 12	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	
49 cm	Hole 1 + 7	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	
	Hole 2 + 8	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	
	Hole 3 + 9	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	
	Hole 4 + 10	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	
	Hole 5 + 11	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	
	Hole 6 + 12	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	
51,5 cm	Hole 1 + 7	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	
	Hole 2 + 8	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	
	Hole 3 + 9	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	
	Hole 4 + 10	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	
	Hole 5 + 11	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	
	Hole 6 + 12	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	

Seat Tilt Range

25 = **full tilt 0 - 25° (only if tilt module is mounted on hinge point 1*)**

20 = **limited tilt 0 - 20° (only if tilt module is mounted on hinge point 2*)**
* see Service Manual chapter 5.2.5 'Adjusting the electrical seat tilt 0-25°'

X = **no tilt possible**

Default Factory Settings per Seat Height / Seat Cushion Depth

= **setting for seat cushion depth 39 cm**

= **setting for seat cushion depth 45 cm**

= **setting for seat cushion depth 39 cm with Comfort backrest**

= **setting for seat cushion depth 45 cm with Comfort backrest**

Warnings

= **no tilt possible for seat cushion depth 39 cm with Comfort backrest**

= **no tilt possible for seat cushion depth 45 cm with Comfort backrest**

FWD, Sedeo Lite, electrical tilt adjustment 0 - 25°

Seat height Setting (i.c.w. 13" drive wheels in cm | i.c.w. 14" drive wheels in cm)			Warnings	CoG Setting (holes no.)	Backrest Adjustment Setting (hole no. | seat depth in cm)																	
					Hole 1		Hole 2		Hole 3		Hole 4		Hole 5		Hole 6		Hole 7		Hole 8		Hole 9	
					39 cm		41 cm		43 cm		45 cm		47 cm		49 cm		51 cm		53 cm		55 cm	
					HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2
	40,5 cm	41,5 cm		Hole 1 + 7	X	20	X	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X
				Hole 2 + 8	X	20	X	20	X	20	X	X	X	X	X	X	X	X	X	X	X	X
				Hole 3 + 9	25	20	X	20	X	20	X	20	X	X	X	X	X	X	X	X	X	X
				Hole 4 + 10	25	20	25	20	X	20	X	20	X	20	X	X	X	X	X	X	X	X
				Hole 5 + 11	25	20	25	20	25	20	X	20	X	20	X	20	X	X	X	X	X	X
				Hole 6 + 12	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	X	X	X
	43 cm	44 cm		Hole 1 + 7	25	20	X	20	X	20	X	20	X	X	X	X	X	X	X	X	X	X
				Hole 2 + 8	25	20	25	20	X	20	X	20	X	20	X	X	X	X	X	X	X	X
				Hole 3 + 9	25	20	25	20	25	20	X	20	X	20	X	20	X	X	X	X	X	X
				Hole 4 + 10	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	X	X	X
				Hole 5 + 11	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	X
				Hole 6 + 12	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20
	45,5 cm	46,5 cm		Hole 1 + 7	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20
				Hole 2 + 8	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20
				Hole 3 + 9	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20
				Hole 4 + 10	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20
				Hole 5 + 11	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20
				Hole 6 + 12	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20
	48 cm	49 cm		Hole 1 + 7	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20
				Hole 2 + 8	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20
				Hole 3 + 9	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20
				Hole 4 + 10	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
				Hole 5 + 11	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
				Hole 6 + 12	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
	50,5 cm	51,5 cm		Hole 1 + 7	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
				Hole 2 + 8	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
				Hole 3 + 9	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
				Hole 4 + 10	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
				Hole 5 + 11	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
				Hole 6 + 12	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20

Seat Tilt Range

25 = **full tilt 0 - 25° (only if tilt module is mounted on hinge point 1*)**

20 = **limited tilt 0 - 20° (only if tilt module is mounted on hinge point 2*)**
* see Service Manual chapter 5.2.5 'Adjusting the electrical seat tilt 0-25° '

X = **no tilt possible**

Default Factory Settings per Seat Height / Seat Cushion Depth

= **setting for seat cushion depth 39 cm**

= **setting for seat cushion depth 45 cm**

= **setting for seat cushion depth 39 cm with Comfort backrest**

= **setting for seat cushion depth 45 cm with Comfort backrest**

Warnings

= **no tilt possible for seat cushion depth 39 cm with Comfort backrest**

= **no tilt possible for seat cushion depth 45 cm with Comfort backrest**

RWD, Sedeo Pro, electrical tilt adjustment 0 - 45°

Seat height Setting (i.c.w. 13" drive wheels in cm | i.c.w. 14" drive wheels in cm)			Warnings	CoG Setting (position no.)	Backrest Adjustment Setting (position no. | seat depth in cm)																
					1	2	3	4	5	**6**	7	8	9	10	11	12	13	14	15	16	17	Max
					43 cm	44 cm	45 cm	46 cm	47 cm	**48 cm**	49 cm	50 cm	51 cm	52 cm	53 cm	54 cm	55 cm	56 cm	57 cm	58 cm	59 cm	Max
	40,5 cm	41,5 cm		2	*CoG position 2 not possible on 45deg Tilt*																	
				4	45	45	35	30	15	15	10	10	10	X	X	X	X	X	X	X	X	X
				6	45	45	45	35	30	15	15	10	10	10	X	X	X	X	X	X	X	X
				8	45	45	45	45	35	30	15	15	10	10	10	X	X	X	X	X	X	X
				10	45	45	45	45	45	35	30	15	15	10	10	10	X	X	X	X	X	X
				12	45	45	45	45	45	45	35	30	15	15	10	10	10	X	X	X	X	X
				14	45	45	45	45	45	45	45	35	30	15	15	10	10	10	X	X	X	X
				16	45	45	45	45	45	45	45	45	35	30	15	15	10	10	10	X	X	X
				18	45	45	45	45	45	45	45	45	45	35	30	15	15	10	10	10	X	X
	43 cm	44 cm		2	*CoG position 2 not possible on 45deg Tilt*																	
				4	45	45	45	45	45	40	35	30	20	20	20	20	15	15	15	15	15	15
				6	45	45	45	45	45	45	40	35	30	20	20	20	20	15	15	15	15	15
				8	45	45	45	45	45	45	45	40	35	30	20	20	20	20	15	15	15	15
				10	45	45	45	45	45	45	45	45	40	35	30	20	20	20	20	15	15	15
				12	45	45	45	45	45	45	45	45	45	40	35	30	20	20	20	20	15	15
				14	45	45	45	45	45	45	45	45	45	45	40	35	30	20	20	20	20	15
				16	45	45	45	45	45	45	45	45	45	45	45	40	35	30	20	20	20	20
				18	45	45	45	45	45	45	45	45	45	45	45	45	40	35	30	20	20	20
	45,5 cm	46,5 cm		2	*CoG position 2 not possible on 45deg Tilt*																	
				4	45	45	45	45	45	45	45	45	45	40	35	25	25	25	25	25	25	25
				6	45	45	45	45	45	45	45	45	45	45	40	35	25	25	25	25	25	25
				8	45	45	45	45	45	45	45	45	45	45	45	40	35	25	25	25	25	25
				10	45	45	45	45	45	45	45	45	45	45	45	45	40	35	25	25	25	25
				12	45	45	45	45	45	45	45	45	45	45	45	45	45	40	35	25	25	25
				14	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40	35	25	25
				16	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40	35	25
				18	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40	35
	48 cm	49 cm		2	*CoG position 2 not possible on 45deg Tilt*																	
				4	45	45	45	45	45	45	45	45	45	45	45	45	40	35	30	30	30	30
				6	45	45	45	45	45	45	45	45	45	45	45	45	45	40	35	30	30	30
				8	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40	35	30	30
				10	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40	35	30
				12	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40	35
				14	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40
				16	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
				18	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
	50,5 cm	51,5 cm		2	*CoG position 2 not possible on 45deg Tilt*																	
				4	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40	35
				6	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40
				8	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
				10	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
				12	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
				14	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
				16	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
				18	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
					Max. tilt (45 of 25°)																	

Seat Tilt Range

45 = full tilt 0 - 45°

35-10 = limited tilt

X = no tilt possible

Default Factory Settings per Seat Height / Seat Cushion Depth

= setting for seat cushion depth 50 cm

= setting for seat cushion depth 54 cm

= setting for seat cushion depth 58 cm

Warnings

= no tilt possible for seat cushion depth 54 cm

= no tilt possible for seat cushion depth 58 cm

Basic setting

6 = basic setting marked bold on frame

FWD, Sedeo Pro, electrical tilt adjustment 0 - 45°

Seat height Setting (i.c.w. 13'' drive wheels in cm | i.c.w. 14'' drive wheels in cm)

		Warnings	CoG Setting (position no.)	Backrest Adjustment Setting (position no. | seat depth in cm)																	
				1	2	3	4	5	**6**	7	8	9	10	11	12	13	14	15	16	17	Max
				43 cm	44 cm	45 cm	46 cm	47 cm	**48 cm**	49 cm	50 cm	51 cm	52 cm	53 cm	54 cm	55 cm	56 cm	57 cm	58 cm	59 cm	Max
40,5 cm	41,5 cm	⊘ / ⊘	2	*CoG position 2 not possible on 45deg Tilt*																	
			4	45	45	45	45	45	45	45	25	20	20	20	20	20	20	20	20	20	20
			6	45	45	45	45	45	45	45	45	25	20	20	20	20	20	20	20	20	20
			8	45	45	45	45	45	45	45	45	45	25	20	20	20	20	20	20	20	20
			10	45	45	45	45	45	45	45	45	45	45	25	20	20	20	20	20	20	20
			12	45	45	45	45	45	45	45	45	45	45	45	25	20	20	20	20	20	20
			14	45	45	45	45	45	45	45	45	45	45	45	45	25	20	20	20	20	20
			16	45	45	45	45	45	45	45	45	45	45	45	45	45	25	20	20	20	20
			18	45	45	45	45	45	45	45	45	45	45	45	45	45	45	25	20	20	20
43 cm	44 cm		2	*CoG position 2 not possible on 45deg Tilt*																	
			4	45	45	45	45	45	45	45	45	45	45	30	30	30	25	25	25	25	25
			6	45	45	45	45	45	45	45	45	45	45	45	30	30	30	25	25	25	25
			8	45	45	45	45	45	45	45	45	45	45	45	45	30	30	30	25	25	25
			10	45	45	45	45	45	45	45	45	45	45	45	45	45	30	30	30	25	25
			12	45	45	45	45	45	45	45	45	45	45	45	45	45	45	30	30	30	25
			14	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	30	30	30
			16	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	30	30
			18	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	30
45,5 cm	46,5 cm		2	*CoG position 2 not possible on 45deg Tilt*																	
			4	45	45	45	45	45	45	45	45	45	45	45	45	45	35	35	30	30	30
			6	45	45	45	45	45	45	45	45	45	45	45	45	45	45	35	35	30	30
			8	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	35	35	30
			10	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	35	35
			12	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	35
			14	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
			16	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
			18	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
48 cm	49 cm		2	*CoG position 2 not possible on 45deg Tilt*																	
			4	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40	35
			6	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40
			8	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
			10	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
			12	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
			14	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
			16	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
			18	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
50,5 cm	51,5 cm		2	*CoG position 2 not possible on 45deg Tilt*																	
			4	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
			6	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
			8	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
			10	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
			12	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
			14	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
			16	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
			18	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
				Max. tilt (45 of 25°)																	

Seat Tilt Range

45 = full tilt 0 - 45°

40-20 = limited tilt

Default Factory Settings per Seat Height / Seat Cushion Depth

⬭ = setting for seat cushion depth 50 cm

△ = setting for seat cushion depth 54 cm

▭ = setting for seat cushion depth 58 cm

Warnings

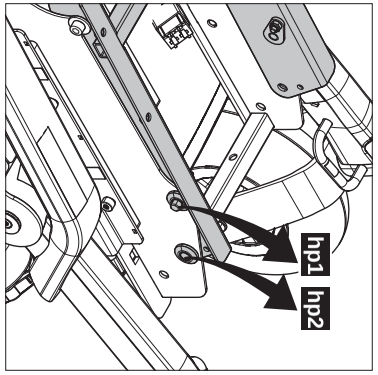
⊘ = no tilt possible for seat cushion depth 54 cm

⊘ = no tilt possible for seat cushion depth 58 cm

Position of tilt changed for FWD; has consequences for max. tilt

Basic setting

6 = basic setting marked bold on frame



RWD, Sedeo Pro, electrical tilt adjustment 0 - 25°

Seat height Setting (i.c.w. 13" drive wheels in cm | i.c.w. 14" drive wheels in cm)

		Warnings	CoG Setting (position no.)	Backrest Adjustment Setting (position no. | seat depth in cm)																													
				1		2		3		4		5		**6**		7		8		9		10		11		12		13		14		15		16		17		Max	
				43 cm		44 cm		45 cm		46 cm		47 cm		**48 cm**		49 cm		50 cm		51 cm		52 cm		53 cm		54 cm		55 cm		56 cm		57 cm		58 cm		59 cm		Max	
				HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2
40,5 cm	41,5 cm		2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
			4	X	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
			6	X	20	X	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
			8	X	20	X	20	X	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
			10	X	20	X	20	X	20	X	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
			12	X	20	X	20	X	20	X	20	X	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
			14	X	20	X	20	X	20	X	20	X	20	X	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
			16	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
			18	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
43 cm	44 cm		2	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
			4	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
			6	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
			8	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X
			10	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	X	X	X	X	X	X	X	X	X	X	X
			12	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	X	X	X	X	X	X	X	X	X
			14	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	X	X	X	X	X	X	X
			16	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	X	X	X	X	X
			18	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	X	X	X
45,5 cm	46,5 cm		2	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20
			4	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20
			6	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20
			8	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20
			10	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20
			12	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20
			14	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20
			16	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20
			18	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20
48 cm	49 cm		2	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20
			4	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20
			6	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20
			8	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20
			10	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20
			12	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20
			14	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20
			16	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20
			18	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
50,5 cm	51,5 cm		2	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
			4	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
			6	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
			8	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
			10	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
			12	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
			14	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
			16	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
			18	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20

Max. tilt at both hinge points (HP) (0,3,6,20 of 25°) ** HP1 (front) = max. 25° ** HP2 (rear) = max. 20°

Seat Tilt Range

25 = **full tilt 0 - 25° (only if tilt module is mounted on hinge point 1*)**

20 = **limited tilt 0 - 20° (only if tilt module is mounted on hinge point 2*)**
* see Service Manual chapter 5.2.5

X = **no tilt possible**

Default Factory Settings per Seat Height / Seat Cushion Depth

= **setting for seat cushion depth 50 cm**

= **setting for seat cushion depth 54 cm**

= **setting for seat cushion depth 58 cm**

Warnings

= **no tilt possible for seat cushion depth 54 cm**

= **no tilt possible for seat cushion depth 58 cm**

Basic setting

6 = **basic setting marked bold on frame**

FWD, Sedeo Pro, electrical tilt adjustment 0 - 25°

Seat height Setting (i.c.w. 13" drive wheels in cm | i.c.w. 14" drive wheels in cm)			Warnings	CoG Setting (position no.)	Backrest Adjustment Setting (position no. | seat depth in cm)																													
					1		2		3		4		5		**6**		7		8		9		10		11		12		13		14		15		16		17		Max	
					43 cm		44 cm		45 cm		46 cm		47 cm		**48 cm**		49 cm		50 cm		51 cm		52 cm		53 cm		54 cm		55 cm		56 cm		57 cm		58 cm		59 cm		Max	
					HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2	HP1	HP2
	40,5 cm	41,5 cm		2	X	20	X	20	X	20	X	20	X	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
				4	X	20	X	20	X	20	X	20	X	20	X	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
				6	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
				8	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
				10	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
				12	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
				14	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X
				16	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	X	X	X	X	X	X	X	X	X	X	X
				18	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	X	X	X	X	X	X	X	X	X
	43 cm	44 cm		2	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20
				4	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20
				6	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20
				8	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20
				10	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20
				12	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20
				14	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20
				16	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20
				18	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20
	45,5 cm	46,5 cm		2	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20
				4	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20
				6	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20
				8	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20	X	20
				10	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20	X	20
				12	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20	X	20
				14	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20	X	20
				16	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20	X	20
				18	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20	X	20
	48 cm	49 cm		2	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	X	20
				4	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
				6	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
				8	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
				10	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
				12	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
				14	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
				16	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
				18	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
	50,5 cm	51,5 cm		2	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
				4	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
				6	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
				8	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
				10	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
				12	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
				14	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
				16	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
				18	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20

Max. tilt at both hinge points (HP) (0,3,6,20 of 25°) ** HP1 (front) = max. 25° ** HP2 (rear) = max. 20°

Seat Tilt Range

25 = full tilt 0 - 25° (only if tilt module is mounted on hinge point 1*)

20 = limited tilt 0 - 20° (only if tilt module is mounted on hinge point 2*)
* see Service Manual chapter 5.2.5

X = no tilt possible

Default Factory Settings per Seat Height / Seat Cushion Depth

= setting for seat cushion depth 50 cm

= setting for seat cushion depth 54 cm

= setting for seat cushion depth 58 cm

Warnings

= no tilt possible for seat cushion depth 54 cm

= no tilt possible for seat cushion depth 58 cm

Basic setting

6 = basic setting marked bold on frame

RWD, Sedeo Pro+, electrical tilt adjustment 0 - 45° (no limitation FWD, Sedeo Pro+)

Seat tilt range		
45	=	full tilt 0 - 45°
35-10	=	limited tilt
X	=	no tilt possible

Basic setting		
6	=	basic setting marked bold on frame

Seat height Setting (i.c.w. 13" drive wheels in cm | i.c.w. 14" drive wheels in cm)	CoG Setting (position no.)	Backrest Adjustment Setting (position no. | seat depth in cm)																					
		1	2	3	4	5	**6**	7	8	9	10	11	12	13	14	15	16	17	Max
		43 cm	44 cm	45 cm	46 cm	47 cm	**48 cm**	49 cm	50 cm	51 cm	52 cm	53 cm	54 cm	55 cm	56 cm	57 cm	58 cm	59 cm	Max
40,5 cm	4	45	45	45	45	45	45	40	40	40	35	35	25	15	10	X	X	X	X
	6	45	45	45	45	45	45	45	40	40	40	35	35	25	15	10	X	X	X
	8	45	45	45	45	45	45	45	45	40	40	40	35	35	25	15	10	X	X
	10	45	45	45	45	45	45	45	45	45	40	40	40	35	35	25	15	10	X
	12	45	45	45	45	45	45	45	45	45	45	40	40	40	35	35	25	15	10
	14	45	45	45	45	45	45	45	45	45	45	45	40	40	40	35	35	25	15
	16	45	45	45	45	45	45	45	45	45	45	45	45	40	40	40	35	35	25
	18	45	45	45	45	45	45	45	45	45	45	45	45	45	40	40	35	35	25
41,5 cm	4	45	45	45	45	45	45	45	45	45	45	40	40	40	40	35	25	25	20
	6	45	45	45	45	45	45	45	45	45	45	45	40	40	40	40	35	25	25
	8	45	45	45	45	45	45	45	45	45	45	45	45	40	40	40	40	35	25
	10	45	45	45	45	45	45	45	45	45	45	45	45	45	40	40	40	40	35
	12	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40	40	40	40
	14	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40	40	40
	16	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40	40
	18	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40
44 cm	4	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40	40	40	40
	6	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40	40	40
	8	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40	40
	10	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40
	12	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
	14	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
	16	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
	18	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
46,5 cm	4	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
	6	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
	8	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
	10	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
	12	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
	14	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
	16	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
	18	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
49 cm	4	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
	6	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
	8	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
	10	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
	12	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
	14	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
	16	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
	18	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
51,5 cm	4	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
	6	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
	8	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
	10	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
	12	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
	14	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
	16	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
	18	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45

Max. tilt (45 to 10 in steps of 5)

5.2.26 Guidelines to solve shimmy problems

If the castor wheels shimmy at a higher speeds (≥10 km/h), check the following points:

Possible cause	Check	Solution
The anti-shimmy set does not function properly.	Check the anti-shimmy set: In case of a 10kmh Puma, the castor fork should only make a half/three-quarter turn when pushed (with its wheel of the ground). In case of a 12.5kmh RWD Puma, the castor fork should only rotate a quarter to a half turn (since this is equipped with a different disk spring).	If the castor fork turns to loose; replace the anti-shimmy set, as described in the mounting instruction 5.2.2 Step 6 Change the position of the castor wheels..
Not enough pressure on the castor wheels.	Check the setting of the seating system. Normally the Center of Gravity setting should be the same as the back depth (6-6, 10-10 etc).	In case of a light-weight user, it might help to set the CoG setting of the seating system a little more towards the castors. Adjust the setting as described in the Sedeo user manual. This will result in more pressure on the castor wheels. Note; adjustment of the seating system should always be done with caution, since incorrect weight distribution might negatively affect drive performance and comfort.
There is not enough friction in the front fork for this specific user and/or configuration.	Check the environment of use; is the wheelchair mainly used at higher speed outdoors, or more indoors (on carpet)?	In the case that the other solutions are not sufficient or unwanted: the anti-shimmy set can be adapted with a thicker disk spring (XT), which will increase the friction in the fork. (A 12.5 km/h RWD is standard equipped with this XT disk spring 9008818). Note; the thick disk spring will cause the fork to turn less easy. This can have a negative effect on behavior on carpet, in combination with heavy users.
High tire pressure (air castors only).	Check the tire pressure of the castor wheels.	The tires can be inflated up to 3.5 bar; in case of shimmy problems, it might help to lower the tire pressure of the castor wheels (min. is 1.5 bar). Note; This is not a preferred solution. Lower tire pressure will result in more friction between the wheel and ground. This can cause problems when turning on carpet and can have a negative effect on the range.

6 Trouble shooting

If your electric wheelchair is not working even though the batteries are fully charged, the following checks can be carried out before contacting your supplier.
Check whether all of the battery clips are firmly in place.
Check whether the freewheel handle is in the drive mode (and not in the freewheel / neutral mode).
Troubleshooting table
If your scooter is not working, or is not working as it should, go through the following list of possible problems before contacting your supplier. You may be able to solve the problem yourself.

6.1 Shark faultfinding table

Signal	Possible cause	Remedy
service indicator flashes once.	User error	This is probably a 'STALL' timeout. Place the joystick in neutral and try again
service indicator flashes twice	Battery fault	Check the batteries and the cabling Charge the batteries or replace them.
ON/OFF light flashes three times	The m1 motor connection is faulty	Check the motor connections and cabling.
	The m1 motor is defective	Replace this motor
ON/OFF light flashes four times	The connection of the m2 motor is faulty.	Check the motor connections and cabling.
	The m2 motor is defective	Replace this motor
ON/OFF light: flashes 5 times	The m1 parking brake connection is faulty or loose.	Correct the connection
	The m1 parking brake is defective.	Replace the parking brake
ON/OFF light: flashes 6 times	The m2 parking brake connection is faulty or loose.	Correct the connection
	The m2 parking brake is defective.	Replace the parking brake
ON/OFF light flashes 7 timest	There is a fault in the controller	Check all connections and correct as necessary If a fault signal is still present after this, replace the power module.
ON/OFF light flashes 8 times	There is a fault in the power module	Check all connections and correct as necessary If a fault signal is still present after this, replace the power module.
ON/OFF light flashes 9 times	There is a communication fault in the Shark system.	Check the connection and correct it if necessary. If a fault signal is still present after this, replace the controller.
ON/OFF light flashes 10 times	Unknown fault	Check all connections and correct as necessary Consult a service engineer.
ON/OFF light flashes 11 times	System does not 'fit'. System modules are not compatible.	Check that the type of the controller corresponds with the power module. Replace one of the two if necessary.

Note:
If all the plugs are connected properly and you have used the troubleshooting list but not found the cause, contact the Service Department of Sunrise Medical HCM.

⚠ Before changing Shark bus cables, fuses and/or modules, remove both fuses from the battery compartment, so that the system is dead.

6.2 R-net faultfinding table

Trip Text	Trip Code	Description
Joystick Error	-	The most common cause of this trip is if the joystick is deflected away from center before and during the time the control system is switched on. The joystick displaced screen will be displayed for 5 seconds, if the joystick is not released within that time then a trip is registered. Although a trip screen is not displayed the system log will show the trip and numbers of occurrences. • Ensure that the joystick is centered and power-up the control system. If the trip is still present then the joystick or Joystick Module may be defective.
Low Battery	-	This occurs when the control system detects that the battery voltage has fallen below 16V. • Check the condition of the batteries and the connections to the control system. If the trip is still present after the batteries and connections have been checked, then the Power Module may be defective.
High Battery	-	This occurs when the control system detects that the battery voltage has risen above 35V. The most common reasons for this are overcharging of the battery or bad connections between the control system and the batteries. • Check the condition of the batteries and the connections to the control system. If the trip is still present after the batteries and connections have been checked, then the Power Module may be defective.
M1 Brake Error	1505	This occurs when the control system detects a problem in the solenoid brakes or the connections to them. • Check the solenoid brakes, cables and connections to the control system. If the trip is still present after the above checks have been made, then the Power Module may be defective.
M2 Brake Error	1506	This occurs when the control system detects a problem in the solenoid brakes or the connections to them. • Check the solenoid brakes, cables and connections to the control system. If the trip is still present after the above checks have been made, then the Power Module may be defective.
M1 Motor Error	3B00	This occurs when the control system detects that a motor has become disconnected. • Check the motors, cables and connections to the control system. If the trip is still present after the above checks have been made, then the Power Module may be defective.
M2 Motor Error	3C00	This occurs when the control system detects that a motor has become disconnected. • Check the motors, cables and connections to the control system. If the trip is still present after the above checks have been made, then the Power Module may be defective.
Inhibit Active	1E01 1E09 1E0A	This occurs when any of the Inhibit inputs are active and in a latched state. The actual inhibit that is active is indicated by the last 2 digits in the Trip Code. • Cycle the power. This will drop out of Latched Mode which might clear the trip. • Check all wiring and switches connected to the indicated Inhibits. If the trip is still present after the above checks have been made, then the ISM may be defective.
Joystick Calibration Error	-	This occurs when the Joystick Calibration process has not been successful. • Enter OBP and attempt calibration. If the trip is still present after the above has been attempted, then the Joystick Module may be defective.
Latched Timeout	-	This occurs when the control system detects that the Latched Timeout programmed time has been exceeded. For example, the Input Device, Joystick, Head Aray, Sip and Puff, etc.) has not been operated frequently enough. The trip is a notification of why the control system has dropped out of Latched Mode. • Cycle the power. • Initiate Latched Mode. If the trip is still present after the above checks have been made, then the Input Device may be defective.
Brake Lamp Short	-	This occurs when the control system detects a short in the Brake Lamp Circuit. • Check the brake lamps, cables and connections to the control system. If the trip is still present after the above checks have been made, then the ISM may be defective.

Trip Text	Trip Code	Description
Left Lamp Short	7205	This occurs when the control system detects a short in either of the Lamp Circuits. • Check the lamps, cables and connections to the control system. If the trip is still present after the above checks have been made, then the ISM may be defective.
Right Lamp Short	7209	This occurs when the control system detects a short in either of the Lamp Circuits. • Check the lamps, cables and connections to the control system. If the trip is still present after the above checks have been made, then the ISM may be defective.
Left Indicator Lamp Short	7206	This occurs when the control system detects a short in either of the Indicator Circuits. • Check the indicators, cables and connections to the control system. If the trip is still present after the above checks have been made, then the ISM may be defective.
Right Indicator Lamp Short	720A	This occurs when the control system detects a short in either of the Indicator Circuits. • Check the indicators, cables and connections to the control system. If the trip is still present after the above checks have been made, then the ISM may be defective.
Left Indicator Lamp Failed	7207	This occurs when the control system detects a failure in either of the Indicator Circuits. This is most likely to be an indicator bulb failure. • Check the indicator bulbs, cables and connections to the control system. If the trip is still present after the above checks have been made, then the ISM may be defective.
Right Indicator Lamp Failed	7208	This occurs when the control system detects a failure in either of the Indicator Circuits. This is most likely to be an indicator bulb failure. • Check the indicator bulbs, cables and connections to the control system. If the trip is still present after the above checks have been made, then the ISM may be defective.
Over Current	-	This occurs when the control system detects that the ISM's actuator circuitry has become too hot. The control system will cease drive to the actuator motor in question. • Allow the ISM to cool. • If the ISM is frequently overheating check the condition of the actuator motors and the connections to them. • If the trip persists contact your service agent.
Overtemp. (Lamps)	-	This occurs when the control system detects that the ISM's actuator circuitry has become too hot. The control system will cease drive to the actuator motor in question. • Allow the ISM to cool. • If the ISM is frequently overheating check the condition of the actuator motors and the connections to them. • If the trip persists contact your service agent.
Overtemp. (Actuators)	-	This occurs when the control system detects that the ISM's actuator circuitry has become too hot. The control system will cease drive to the actuator motor in question. • Allow the ISM to cool. • If the ISM is frequently overheating check the condition of the actuator motors and the connections to them. • If the trip persists contact your service agent.
DIME Error	-	This occurs when the control system detects an identification conflict between two modules in the system. If a new module has been introduced: • Disconnect the new module and cycle the power. • If no trip is present connect the new module to the system and cycle the power. • If the trip reappears then the new module must be the cause of the problem. If there has been no additions: • Disconnect one module at a time and cycle the power. If the trip is still present after the above checks have been made, contact your service agent.

Trip Text	Trip Code	Description
Memory Error	-	This is a non specific memory error which could be caused by any of the modules within the system. • Check all cables and connections. • Cycle the power. If the trip is still present and the system contains 3rd party Modules: • Disconnect all the non PGDT modules and cycle the power. If this has cleared the trip: • Connect each 3rd party module in turn, cycling the power each time. • If the trip reappears after one of the power cycles then the last module to have been added to the system must be defective. If the trip is still present after the above checks have been made, then the PM may be defective.
PM Memory Error	-	This is a specific Power Module based trip. • Check all cables and connections. • Using the R-net PC Programmer, re-program the control system. This should be done with either the most current specific program file for the wheelchair or the manufacturers original programming file. If the trip is still present after the above checks have been made, then the PM may be defective.
Bad Cable	-	This occurs when the control system detects a fault in the wiring in the communication cables between any of the modules. • Check all cables and connections for continuity. • If there is any visible damage to cables, replace and cycle power. • Disconnect one cable from the system at a time cycling the power after each disconnection. If the trip is still present after the above checks have been made, then the PM may be defective.
Bad Settings	-	This occurs when the control system detects incorrect or invalid program settings. • Check all parameter settings and re-program the control system using the R-net PC Programmer. • Make a note of the current parameter settings and then reset the control system to default settings. • Re-program the required settings in small groups, cycling the power after each group to see if the trip occurs. If the trip is still present after the above checks have been made, then the PM may be defective.
Module Error	-	This occurs when the control system detects a trip within a specific module. The module will be identified on the diagnostics Screen. • Check all cables and connections. • Cycle the power. If the trip is still present after the above checks have been made, then the module identified may be defective.
System Error	-	This occurs when the system detects a trip which cannot be attributed to a specific module. • Check all cables and connections. • Cycle the power. If the trip is still present and the system contains 3rd party Modules: • Disconnect all the none PGDT modules and cycle the power. If this has cleared the trip: • Connect each 3rd party module in turn, cycling the power each time. • If the trip reappears after one of the power cycles then the last module to have been added to the system must be defective. If the trip is still present after the above checks have been made, then the PGDT control system may be defective
SID Detached	-	The Omni has detected that the Specialty Input Device (SID) has become disconnected. • Check all cables and connectors between the Omni and the SID. If the error persists: • Check that the setting of the parameter, 9-Way Detect, is appropriate for the SID that is being used. For example, if the SID has no detect-link, then this parameter should be set to Off. If the trip is still present after the above checks have been made, then the Input Device may be defective. Contact your service agent.

Trip Text	Trip Code	Description
User Switch detached	-	The Omni has detected that the User Switch has become disconnected. • Check all cables and connectors between the Omni and the User Switch. If the trip is still present after the above checks have been made, then the User Switch may be defective. Contact your service agent. If it is required to use the Omni without a User Switch being connected, then the parameter, Switch Detect, should be set to Off. If a User Switch is not used the responsibility for that decision lies with the healthcare professional.
Gone to Sleep		This occurs when the control system has been left inactive for a time greater than the parameter Sleep Timer. An entry is made in the system log each time this occurs.
Charging		This occurs when the control system detects that a charger is connected to either Inhibit 1 or Inhibit 3. Refer to section 2.3 for connection details The Battery charging screen will be displayed during charger connection. An entry is made in the system log each time this occurs. If an On-Board Charger is used: • Disconnect the charger from the AC supply. If an Off-Board Charger is used: • Disconnect the charger from the Wheelchair. If the trip is still present after the charger has been disconnected then the Joystick Module may be defective.

6.3 DX2 faultfinding table

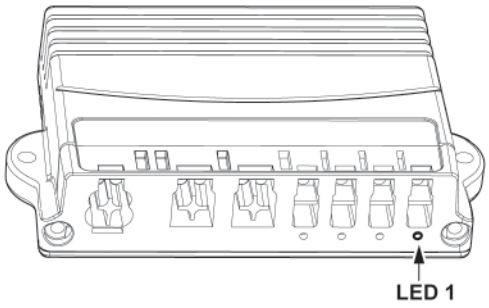
Signal	Possible cause	Remedy
ON/OFF light does not go on: the wheelchair does not move.	The controller plug is not properly inserted in the ‘power module’.	This is probably a 'STALL' timeout. Place the joystick in neutral and try again
	Both fuses are defective	Replace the defective fuses.
	The batteries are not properly connected.	Check the connections.
	A connection of the batteries is loose.	Secure the connection.
ON/OFF light: flashes once	DX module faulty.	Replace one or more modules. The "on/off" LED indicates the condition of the entire system. The modules all have a separate status LED: in this way, you can see which one is faulty.
ON/OFF light: flashes twice.	DX accessory faulty.	The module displays a fault as a result of a programming fault or short circuit and/or overload of the accessories.
		The (optional) electrical high/low adjustment is not in the lowest position. The LED flashes twice to indicate that the speed limitation has been switched on: the wheelchair will drive considerably more slowly.
ON/OFF light: flashes three times	The m1 motor connection is faulty or loose	Check the connection and secure it.
	The m1 motor is defective	Replace this motor.
	Short circuit in the m1 motor connections.	Correct the connections.
	Defective power module output.	Check the motor for a defect: an output of the power module will only become defective through a defect in the motor itself. Only replace the power module if the fault occurs immediately upon switching the unit on. If the fault occurs when you are starting to drive, the entire left-hand motor circuit is causing the fault. In this case, replace the entire drive unit concerned.
ON/OFF light: flashes four times	The m2 motor connection is faulty or loose.	Check the connection and secure it
	The m2 motor is defective	Replace this motor.
	Short circuit in the m2 motor connections.	Correct the connections.
	Defective power module output.	Check the motor for a defect: an output of the power module will only become defective through a defect in the motor itself. Only replace the power module if the fault occurs immediately upon switching the unit on. If the fault occurs when you are starting to drive, the entire left-hand motor circuit is causing the fault. In this case, replace the entire drive unit concerned.
ON/OFF light: flashes 5 times	The m1 parking brake connection is faulty or loose.	Correct the connection.
	The m1 parking brake is defective.	Replace the drive motor.
ON/OFF light: flashes 6 times	The m2 parking brake connection is faulty or loose.	Correct the connection.
	The m2 parking brake is defective.	Replace the drive motor.
ON/OFF light: flashes 7 times	The battery voltage is low, or the batteries are flat or bad	Charge the batteries or replace them. Note: If the voltage is low (< 12 V) the electronics will not work properly. A number of random LEDs of the ‘DX’ controller flash and the wheelchair will not function.
ON/OFF light: flashes 8 times	The battery voltage is high, above 32 V.	This usually occurs during (trickle) charging. Frequent occurrence will result in a defective power module. Set the charger correctly.
ON/OFF light: flashes 9 times	'BUS low' fault: cable breakage (in one of the DX bus cables) or short circuit in the DX bus system (entrances to the modules)	Check the cables and the modules and replace if necessary.

Signal	Possible cause	Remedy
ON/OFF light: flashes 10 times	Bus high fault: usually a communication fault caused by one of the DX bus cables or DX modules (entrances to the modules)	Check the cables and the modules and replace if necessary.
ON/OFF light: flashes 11 times	'STALL' overload fault: A motor is continually demands too much power.	Check the drive units. Note: This fault is often caused by taking obstacles that are too high, or driving against walls, and door frames, etc. This fault may also be caused by a difficult turn from a standing position. Check the weight distribution of the chair.
ON/OFF light: flashes 12 times	System does not 'fit'. System modules are not compatible.	*Program the entire drive system for the relevant wheelchair with the aid of the DX-Wizard program on the PC.* Always confirm the programming by switching the wheelchair on and off.

Note:
If all the plugs are connected properly and you have used the troubleshooting list but not found the cause, contact the Service Department of Sunrise Medical HCM.

⚠ Before changing DX bus cables, fuses and/or modules, remove both fuses from the battery compartment, so that the system is dead.

DX2-ACT Flash Code List



Note:
These flash codes are the Actuator Module flash codes that are visible on LED 1 of the Actuator Module. They are not the DX System flash codes that are visible on the DX System status LED on the Master Remote. For DX System flash codes, see DX2 faultfinding table

Flash Code	Fault source	Sub code (HHP)	Meaning
01	User	00	Wizard programming in progress • Finish programming and then turn the system off and on. • Make sure that you wait 10 seconds after you have turned the system off before you turn it on again.
		01	Power Down in progress • Wait 10 seconds before you turn the system on again.
		02	Joystick source changed to a joystick that is not in the centre position • Release the joystick to the centre
		03	Invalid Actuator Profile (A-F) or direction demand • If this happens often, contact the Service Department of Sunrise Medical HCM
02	Slow function battery	none	see DX2 System condition indications
		00	Battery Voltage too low or too high • Check the batteries and the cables • Batteries may be empty: charge the batteries • Batteries may be damaged: replace the batteries Batteries may be overcharged: if driving downhill, slow down
03	Actuator	00 01 02 03	Internal current or Voltage fault • Contact the Service Department of Sunrise Medical HCM
		04 05	Actuator motor voltage is not what it should be during drive Possible motor short circuit • check the actuator cables for damage • check that the actuator is not faulty • Otherwise internal controller fault, contact the Service Department of Sunrise Medical HCM
		06	Failed To Stop
		07	Too Many Fast Current Limit Events
		08	Driving Stopped Due To Trip
		All other	Internal fault • Contact the Service Department of Sunrise Medical HCM
06	Configuration	01	Module ID collision • Check that multiple Actuator Modules in the system do not have the same ID
		02	System check failed
		03	Missing system check
		05	DX System internal fault Actuators will not move when the DX System itself is in a fault state
		All other	Internal DX2-ACT configuration fault • Check DX BUS cables • Turn the system off and on several times. Make sure to wait 10 seconds before you turn the system on again. • If turning the system off and on does not help, contact the Service Department of Sunrise Medical HCM

Flash Code	Fault source	Sub code (HHP)	Meaning
09, 10	DX BUS	All	DX BUS hardware fault • Check DX BUS cables • Turn the system off and on several times. Make sure to wait 10 seconds before you turn the system on again. • If all DX BUS connections are OK and turning the system off and on does not help, contact the Service Department of Sunrise Medical HCM
All other	Internal fault	All	Contact the Service Department of Sunrise Medical HCM

DX2 System condition indications

	Condition	DX2-ACT indication	DX2-REM550 indication (DX2)	DX-REMG90 indication (DX)
DX System Faults	CLAM is enabled	None, but ACT will not drive actuators	None	None
	Master Remote in Fault State	FC6	FC according to fault	FC according to fault
	DX2-ACT detects CAN Fault	FC6/9/10, depending on actual fault	FC according to fault detected by Remote	FC according to fault detected by Remote
Actuator System Configuration Faults	Module ID Collision (2 modules with same ID)	FC6, No DX BUS communication	Actuator system will be "missing"*	None
	ACT Module Missing "Slow1/Slow2"	None	FC2, Drive inhibit*	Not detected
	ACT Module Missing "Stop"	None	FC2*	Not detected
	Actuator Module Local Fault	FC2 on remaining ACT Module	Drive Inhibit	Drive Inhibit
	Actuator Module Local Fault	See DX2-ACT Flash Code List	None	None
ACI “Slow” function active	ACI "Flash Code 2"	FC2	FC2	FC2
	ACI "Stop (Drive Inhibit)"	FC2	Drive inhibit	Drive inhibit
	ACI "System Slowdown"	FC2	FC2	FC2
	ACI "Local Slow"	FC2	Reduced speed on Speedometer	None
	ACI in Speed Pot or Speed Limit mode, with outputs less than 100%	FC2	Reduced speed on Speedometer	None

*The REM550 responds to a missing DX2 actuator system if the following parameters are set:

Parameter	Required Value
Actuator System Type	DX2 Actuator System
Actuator System Is Critical	Yes
Actuator System Missing	"Stop Drive" or "Slowdown Drive", as desired.

6.4 VR-2 faultfinding table

Trip types and their possible causes
Once the trip type has been established, refer to the relevant section below for further information.

Trip code	Trip Type	Description & Reference
1320	-	Refer to "Current Limit Active"
1505	9	M1 Selenoid Brake Trip, refer to "Type 9 - Solenoid Brake Trip"
1506	9	M2 Selenoid Brake Trip, refer to "Type 9 - Solenoid Brake Trip"
1600	10	High Battery Voltage, refer to "Type 10 - High Battery Voltage"
1E03	Charging	Refer to "Type 6 - Charger Connected"
1E04	6	Refer to "Inhibit 2 Active"
1E05	Charging	Refer to "Inhibit 3 Active"
2C00	1	Low Battery Voltage, refer to "Type 1 - Low Battery Voltage"
2C02	-	Low Battery Lockout, refer to "Type 1 - Low Battery Voltage"
2F00	User	Refer to sections, refer to "Type 7 - Possible Joystick Trip" & "Joystick Displaced at Power-up"
3B00	2	M1 motor disconnected, refer to "Type 2 - m1 motor Disconnected"
3C00	4	M2 motor Disconnected, refer to "Type 4 - m2 motor Disconnected"
3D00	3	M1 motor Wiring Trip, refer to "Type 3 - m1 motor Wiring Trip"
3D01	3	M1 motor Wiring Trip, refer to "Type 3 - m1 motor Wiring Trip"
3E00	5	M2 motor Wiring Trip, refer to "Type 5 - m2 motor Wiring Trip"
3E01	5	M2 motor Wiring Trip, refer to "Type 5 - m2 motor Wiring Trip"
4401	8	Control System Trip, refer to "Type 8 - Possible Control System Trip"
5400	7 + S *	Communications Trip, refer to "Communication Error"
7A03	A Only **	Actuator Motor Wiring Trip, refer to "Actuator Motor Wiring Trip"
7100	7	Joystick Trip, refer to "Type 7 - Possible Joystick Trip"
7101	7	Joystick Trip, refer to "Type 7 - Possible Joystick Trip"
7102	7	Joystick Trip, refer to "Type 7 - Possible Joystick Trip"
7103	7	Joystick Trip, refer to "Type 7 - Possible Joystick Trip"
7104	7	Joystick Trip, refer to "Type 7 - Possible Joystick Trip"
7147	User	Dual Joystick Displaced Refer to "Joystick Displaced at Power-up"
7902	-	Refer to "High Temperature"
All Other Codes	7 or 8	Possible Control System Trip, refer to "Type 7 - Possible Joystick Trip" & "Type 8 - Possible Control System Trip"

* - S = Flashing Speed Indicator LED's.
** - A = Flashing Actuator LED's

Trip	Possible cause	Remedy
Type 1	Low Battery Voltage	This occurs when the control system detects that the battery voltage has fallen below 16V. Check the condition of the batteries and the connections to the control system. If the trip is still present after the batteries and connections have been checked, then the Power Module may be defective. Refer to Section 5. In the case of 2C02 the Control System is making a log of the times that the Low Battery Lockout has been initiated.
Type 2	Left Motor Disconnected	This occurs when the control system detects that the left motor has become disconnected. Check the left motor, motor connectors and wiring. If the trip is still present after the above checks have been made, then the Power Module may be defective. Refer to Section 5. The VR-2 control system may be programmed to exchange the left and right motor outputs. In this instance, this section will refer to the right motor. Consult the wheelchair manufacturer for more details.
Type 3	Left Motor Wiring Trip	This occurs when the control system detects a fault in the wiring to the left motor. In particular if a motor connection has short-circuited to a battery connection. Check the left motor connectors and wiring. If the trip is still present after the above checks have been made, then the Power Module may be defective. Refer to Section 5. The VR-2 control system may be programmed to exchange the left and right motor outputs. In this instance, this section will refer to the right motor. Consult the wheelchair manufacturer for more details.

Trip	Possible cause	Remedy
Type 4	Right Motor Disconnected	This occurs when the control system detects that the right motor has become disconnected. Check the right motor, motor connectors and wiring. If the trip is still present after the above checks have been made, then the Power Module may be defective. Refer to Section 5. The VR-2 control system may be programmed to exchange the left and right motor outputs. In this instance, this section will refer to the left motor. Consult the wheelchair manufacturer for more details.
Type 5	Right Motor Wiring Trip	This occurs when the control system detects a fault in the wiring to the right motor. In particular if a motor connection has short-circuited to a battery connection. Check the right motor connectors and wiring. If the trip is still present after the above checks have been made, then the Power Module may be defective. Refer to Section 5. The VR-2 control system may be programmed to exchange the left and right motor outputs. In this instance, this section will refer to the left motor. Consult the wheelchair manufacturer for more details.
Type 6	Charger Connected	This occurs when the control system detects that an off-board charger is connected. Check that the battery charger is disconnected. If the trip is still present after the charger has been disconnected then the Joystick Module may be defective. Refer to Section 5.
Type 7	Possible Joystick Trip	This occurs if the control system detects a problem within its own joystick, or there is a communications error between the Joystick Module and Power Module. The joystick can only be replaced by a person authorized by the wheelchair manufacturer. 7100 Loss of comms to the joystick, check the joystick cable and, if you have authorization the joystick ribbon cable, connections and mating sockets. 7101 Loss of comms to the joystick, check the joystick cable and, if you have authorization the joystick ribbon cable, connections and mating sockets. 7102 Loss of power to the joystick, check check the joystick cable and, if you have authorization the joystick ribbon cable, connections and mating sockets. 7103 Internal trip, if you have authorization check the joystick ribbon cable, connections and mating sockets. Ensure the cable is connected correctly to both the joystick and the PCB. 7104 Internal trip, if you have authorization check the joystick ribbon cable, connections and mating sockets. Ensure the cable is connected correctly to both the joystick and the PCB. Refer to Section 1.2 for details on removal, fitting and calibration of the joystick. If the trip is still present after the appropriate checks have been made then the Joystick Module may be defective. Refer to Section 5.
Type 8	Possible Control System Trip	This occurs if the control system detects a problem within itself. The control system can only be repaired by an authorized person. Refer to Section 5.
Type 9	Solenoid Brake Trip	This occurs when the control system detects a problem in the solenoid brakes of the connections to them. 1505 - Left Brake Trip 1506 - Right Brake Trip Check these connections and the solenoid brakes. If the trip is still present after the above checks have been made, then the Power Module may be defective. Refer to Section 5.
Type 10	High Battery Voltage	This occurs when the control system detects that the battery voltage has risen above 35V. The most common reason for this are overcharging of the battery or bad connections between the control system and the batteries. If the trip is still present after the batteries and connections have been checked, then the Power Module may be defective. Refer to Section 5.

Possible cause	Remedy
Joystick Displaced at Power-up	The most common cause of this trip is if the joystick is deflected away from the center when the control system is being switched on. When the control system is switched on, the battery gauge will blink for a short time. Check that the user is not deflecting the joystick before the blink finishes. If the problem persists, refer to section .37.
Communication Error	The most likely cause of a communication error is a defective cable between the Power Module and the Joystick Module. The cable should be checked for damage, and replaced if found to have a fault. The Joystick Cable can only be replaced by a person authorized by the wheelchair manufacturer. Refer to Section 1.3 for the replacement procedure. If the problem persists then either the Power Module or the Joystick Module could be defective. Refer to Section 5.
Inhibit 2 Active	This occurs when the Inhibit 2 Input is active. The Inhibit 2 input is via the INH-2 way connector and is normally associated with speed limit or actuator functions. The operation of Inhibit 2 will depend upon the programmed settings and the wheelchair on which it is being used. Check all wiring and switches connected to Inhibit 2. If these appear to be in working order, then the Power Module may be defective. Refer to Section 5.
Inhibit 3 Active	This occurs when the Inhibit 3 Input is active. The Inhibit 3 input is via the 3 way on-board charger (OBC) and is normally associated with this function. The operation of Inhibit 3 will depend upon the programmed settings and the wheelchair on which it is being used. Check all wiring, switches and OBC (if fitted) connected to Inhibit 3. If these appear to be in working order, then the Power Module may be defective. Refer to Section 5.
Actuator Motor Wiring Trip	This occurs when the control system detects a fault in the wiring to either actuator motor. Check the motor connectors and wiring. If the trip is still present after the above checks have been made, then the Power Module may be defective. Refer to Section 5.
Current Limit Active	This occurs when the control system operates above the Current Limit Threshold for a periode of time greater than the Current Limit Time. It has been designed to notify the Healthcare Technician that the control system has operated outside of its programmed range.
High Temperature	This occurs when the control system reaches its Temperature Threshold and thus becomes to hot. The controller will not allow drive until the controller to cooled down. An entry is made in the system log each time the controller gets too hot and goes out of drive.

7 Technical product information

7.1 CE Declaration and standards

This product complies with the COUNCIL DIRECTIVE 93/42/EEC of 14 June 1993 concerning medical devices. The product also meets the following requirements and standards. This has been verified by independent test organizations.

Standard	Definition/description	Test dummy weight
EU guideline 93/42 EEC	93/42 EEC Requirements as stated in Appendix 1 apply n/a	n/a
NEN-EN 12182	The EN 12182 requirements as stated in NEN-EN 12184 (2009): Technical aids for disabled persons - General requirements and test methods October 1999	Puma 20: 136 kg Puma 40: 160 kg
NEN-EN 12184 (2009) Class B	Electrically powered wheelchairs, scooters and their chargers - Requirements and test methods October 2009	Puma 20: 136 kg Puma 40: 160 kg
ISO 7176-8	Requirements and test methods for impact, static and fatigue strengths July 1998	n/a
ISO 7176-9	Climatic tests for electric wheelchairs IPX4	n/a
ISO 7176-14	Requirements and test methods for power and control systems for electrically powered wheelchairs 1997	n/a
ISO 7176-16	Requirements for resistance to ignition of upholstered parts May 1997	n/a
ISO 7176-19 (2008)	The Puma 20/40 meets the crash test requirements as described in ISO 7176-19 (2008)	77 kg

7.2 Technical information

Batteries	Max.	Unit
Maximum battery dimensions	260 x 172 x 210 (10.2 x 6.8 x 8.3)	mm (inch)
Maximum battery dimensions with Dahl system	260 x 172 x 190 (10.2 x 6.8 x 7.5)	mm (inch)
Battery capacity	40 / 60 / 74 GEL; 50 AGM (Puma 20 only)	Ah
Battery capacity with Dahl system	40 / 60	Ah
Maximum permissible charging voltage	24	V
Maximum charging current	12	A (rms)
Connector type	Controller	
Insulation Class 2 double insulated	Class 2 double insulated	

Model: PUMA 40 Sedeo Pro+		Class B	
Description	**Unit**	**FWD**	**RWD**
Maximum user weight	kg (st.)	160 (25.2)	160 (25.2)
Maximum user weight with car docking	kg (st.)	136 (21.4)	136 (21.4)
Total length including legrests	mm (inch)	1160 (45.7)	1115 (43.9)
Total width 13” drive wheels	mm (inch)	610 (24)	
Total width 14” drive wheels	mm (inch)	655 (25.8)	
Total weight without batteries:	kg (st.)	87,3 (13.7)	
Batteries 40 Ah (C20) (set of two)	kg (st.)	+ 28,4 (4.5)	
Batteries 60 Ah (C20) (set of two)	kg (st.)	+ 34,6 (5.5)	
Batteries 74 Ah (C20) (set of two)	kg (st.)	+ 45,8 (7.2)	
Electrical high/low adjustment	kg (st.)	+ 18,8 (3)	
Electrical tilt adjustment	kg (st.)	+ 9,8 (1.5)	
Electrically elevating central legrest	kg (st.)	+ 9,5 (1.5)	
Electrically elevating legrests	kg (st.)	+ 4 (8.8)	
Car docking	kg (st.)	+ 4,5 (0.7)	
Puncture-proof drive wheels (set of two)	kg (st.)	+ 8,4 (1.3)	
Transport weight of the heaviest part	kg (st.)	83,9 (13.2)	

All mesurements of dimensions etc. should be considered as value with a average tolerance of 1%

* The following aspects have a negative effect on the distance range: obstacles, rugged terrain, driving on slopes, exposure to temperatures below freezing point and frequent use of electronic adjustment options.

** Seat height incl. load, 0° set angle and 13" drive wheels

Model: PUMA 40 Sedeo Pro+		Class B	
Description	**Unit**	**FWD**	**RWD**
Maximum safe slope	°	6	
Static stability			
Downwards	°	18	
Upwards	°	15	
Sidewards	°	10	
Reversing distance	mm (inch)	1180 (46.5)	1700 (66.9)
Turning radius (ISO 7176-5)	mm (inch)	585 (23)	850 (33.5)
Distance range* 74 Ah (C20) approx. (ISO 7176-4)			
6 km/h	km (mi.)	42,5 (26.4)	
10 km/h	km (mi.)	37,2 (23.1)	
Climbing capacity for obstacles (outdoor)	mm (inch)	60 (2.4)	80 (3.1)
Maximum speed forwards	km/h	6 / 10 (3.7 / 6.2)	
Seat angle adjustment	°	0 - 6	
Electrical tilt adjustment	°	0 - 45	
Effective seat depth	mm (inch)	440 - 600 (17.3- 23.6)	
Effective seat width	mm (inch)	380 - 600 (15 - 23.6)	
Seat height (excl. cushion)**	mm (inch)	405 / 430 / 455 / 480 / 505 (15.9 / 16.9 / 17.9 / 18.9 / 19.9)	
Seat height (incl. cushion)**	mm (inch)	475 / 500 / 525 / 550 / 575 (18.7 / 19.7 / 20.7 / 21.7 / 22.6)	
Backrest recline	°	90 - 135	
Backrest height	mm (inch)	480 - 670 (18.9 - 26.4)	
Lower leg length standard legrest (with compressed seat cushion)	mm (inch)	340 - 510 (13.4 - 20.1)	

All mesurements of dimensions etc. should be considered as value with a average tolerance of 1%

* The following aspects have a negative effect on the distance range: obstacles, rugged terrain, driving on slopes, exposure to temperatures below freezing point and frequent use of electronic adjustment options.

** Seat height incl. load, 0° set angle and 13" drive wheels

Model: PUMA 40 Sedeo Pro		Class B	
Description	**Unit**	**FWD**	**RWD**
Maximum user weight	kg (st.)	160 (25.2)	160 (25.2)
Total length including legrests	mm (inch)	1190 (46.9)	1115 (43.9)
Total width 13” drive wheels	mm (inch)	610 (24)	
Total width 14” drive wheels	mm (inch)	655 (25.8)	
Total weight without batteries:	kg (st.)	97,6 (15.4)	
Batteries 40 Ah (C20) (set of two)	kg (st.)	+ 28,4 (4.5)	
Batteries 60 Ah (C20) (set of two)	kg (st.)	+ 34,6 (5.5)	
Batteries 74 Ah (C20) (set of two)	kg (st.)	+ 45,8 (7.2)	
Electrical high/low adjustment	kg (st.)	+ 18,8 (3)	
Electrical tilt adjustment	kg (st.)	+ 9,8 (1.5)	
Electrically reclining backrest	kg (st.)	+ 1,5 (3.3)	
Electrically elevating legrests	kg (st.)	+ 4 (8.8)	
Puncture-proof drive wheels (set of two)	kg (st.)	+ 8,4 (1.3)	
Transport weight of the heaviest part	kg (st.)	97,6 (15.4)	
Maximum safe slope	° (%)	10 (17.6)	
Static stability			
Downwards	°	15	
Upwards	°	15	
Sidewards	°	15	
Reversing distance	mm (inch)	1200 (47.2)	1700 (66.9)
Turning radius (incl. footrests)	mm (inch)	600 (23.6)	850 (33.5)
Distance range* 74 Ah (C20) approx. (ISO 7176-4)			
6 km/h	km (mi.)	49,9 (31)	
10 km/h	km (mi.)	43,7 (27.2)	
12,5 km/h	km (mi.)	39,9 (24.8)	

All mesurements of dimensions etc. should be considered as value with a average tolerance of 1%

* The following aspects have a negative effect on the distance range: obstacles, rugged terrain, driving on slopes, exposure to temperatures below freezing point and frequent use of electronic adjustment options.

** Seat height incl. load, 0° seat angle and 13" drive wheels

Model: PUMA 40 Sedeo Pro		Class B	
Description	**Unit**	**FWD**	**RWD**
Climbing capacity for obstacles (outdoor)	mm (inch)	60 (2.4)	80 (3.1)
Maximum speed forwards	km/h	6 / 10 / 12,5	
Seat angle adjustment	°	0 - 6	
Effective seat depth	mm (inch)	440 - 600 (17.3- 23.6)	
Effective seat width	mm (inch)	400 - 540 (15.7 - 21.3)	
Seat height (excl. cushion)**	mm (inch)	415 (16.3)	
Seat height (incl. cushion)**	mm (inch)	485 (19.1)	
Backrest recline	°	89 - 128	
Backrest height	mm (inch)	500 - 640 (19.7 - 25.2)	
Lower leg length	mm (inch)	360 - 530 (14.2 - 20.9)	

All mesurements of dimensions etc. should be considered as value with a average tolerance of 1%

* The following aspects have a negative effect on the distance range: obstacles, rugged terrain, driving on slopes, exposure to temperatures below freezing point and frequent use of electronic adjustment options.

** Seat height incl. load, 0° seat angle and 13" drive wheels

Model: PUMA 20 Sedeo Lite		Class B	
Description	**Unit**	**FWD**	**RWD**
Maximum user weight	kg (st.)	136 (21.4)	136 (21.4)
Total length including legrests	mm (inch)	1160 (45.7)	1095 (43.1)
Total width 13” drive wheels	mm (inch)	610 (24)	
Total width 14” drive wheels	mm (inch)	655 (25.8)	
Total weight without batteries:	kg (st.)	77,6 (12.2)	
Batteries 40 Ah (C20) (set of two)	kg (st.)	+ 28,4 (4.5)	
Batteries 50 Ah (C20) (set of two)	kg (st.)	+ 29,6 (4.7)	
Batteries 60 Ah (C20) (set of two)	kg (st.)	+ 34,6 (5.5)	
Batteries 74 Ah (C20) (set of two)	kg (st.)	+ 45,8 (7.2)	
Electrical tilt adjustment	kg (st.)	+ 6,5 (1)	
Puncture-proof drive wheels (set of two)	kg (st.)	+ 2 (0.3)	
Transport weight of the heaviest part	kg (st.)	77,6 (12.2)	
Maximum safe slope	° (%)	10 (17.6)	
Static stability			
Downwards	°	15	
Upwards	°	15	
Sidewards	°	15	
Reversing distance	mm (inch)	1200 (47.2)	1700 (66.9)
Turning radius (incl. footrests)	mm (inch)	600 (23.6)	850 (33.5)
Distance range* 74 Ah (C20) approx. (ISO 7176-4)			
6 km/h	km (mi.)	43.7 (27.2)	
10 km/h	km (mi.)	38.8 (24.1)	
Climbing capacity for obstacles (outdoor)	mm (inch)	60 (2.4)	80 (3.1)
Maximum speed forwards	km/h	6 / 10	
Seat angle adjustment	°	0 - 6	
Effective seat depth	mm (inch)	420 / 440 / 460 / 480 / 500 (16.5 / 17.3 / 18.1 / 18.9 / 19.7)	
Effective seat width	mm (inch)	400 - 510 (15.7 - 20.1)	
Seat height (excl. cushion)**	mm (inch)	405 (15.9)	
Seat height (incl. cushion)**	mm (inch)	465 (18.3)	
Backrest recline	°	92 / 97 / 102 / 107	
Backrest height	mm (inch)	480 (18.9)	
Lower leg length	mm (inch)	360 - 460 (14.2 - 18.1)	

All mesurements of dimensions etc. should be considered as value with a average tolerance of 1%

* The following aspects have a negative effect on the distance range: obstacles, rugged terrain, driving on slopes, exposure to temperatures below freezing point and frequent use of electronic adjustment options.

** Seat height incl. load, 0° seat angle and 13" drive wheels

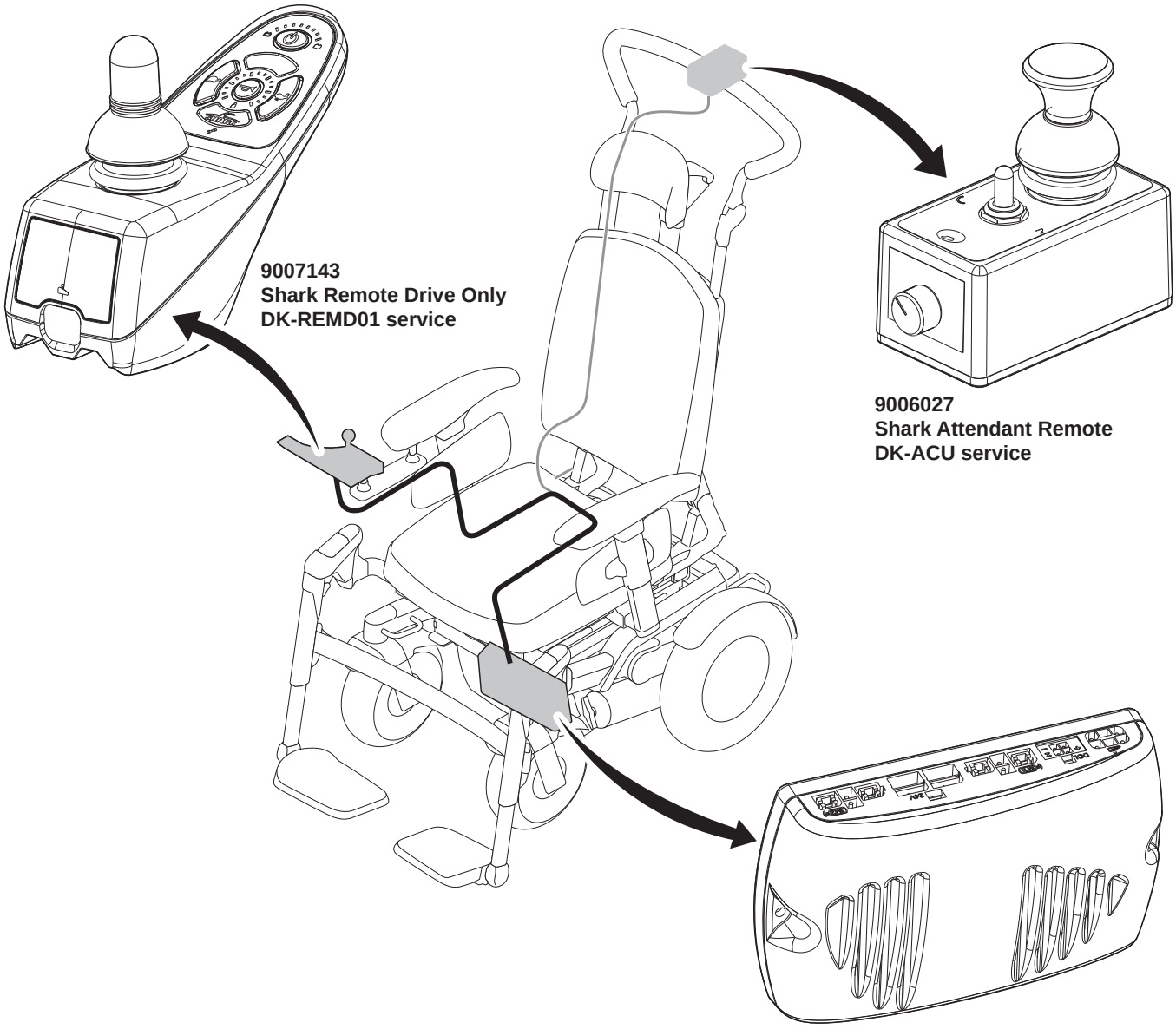
7.3 Electrical diagrams

Cable routing

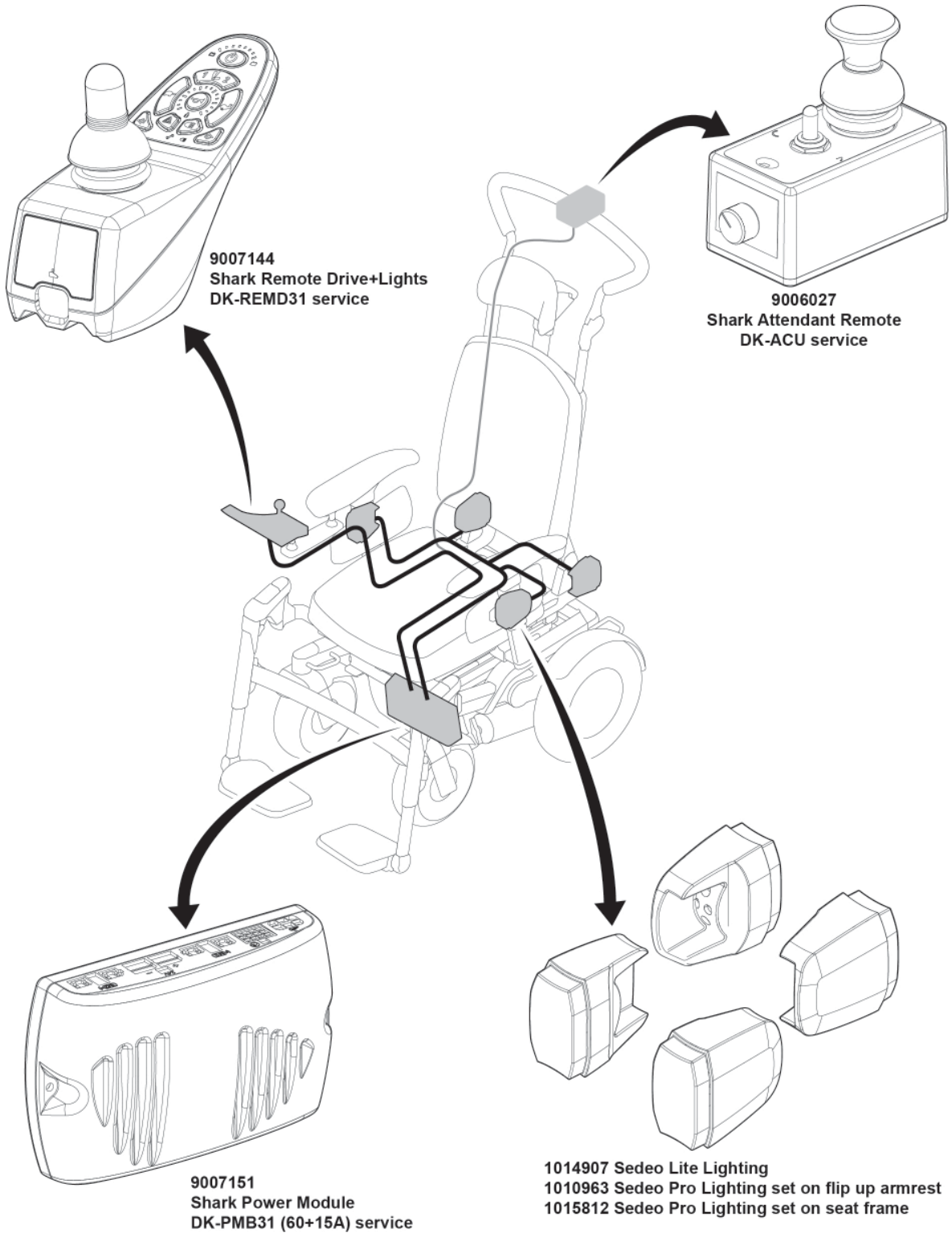
When connecting the cabling:

- Fix the cables with tie wraps to the seat to prevent entrapment of loose cables between parts.
- Ensure that the cables are not trapped under the seat.
- Replace cables immediately if they are damaged, because of possible risks when wires are broken or electrical breakdown.
- Never attempt to repair any damaged cables but replace them with original cables.
- Keep the actuator adjustments in mind when routing the cables (eg tilt). There has to be enough cable length to make the electrical adjustment possible. This is why there will be an overlength of the cable in use with the 45° tilt. In case of the lift the cables needs to be fitted in the cable track.
- Never roll up or cross loop the overlength cables to prevent EMC. Better practice is to route the cables up and down and keep the open loops next to each other.
- Take minimum bending radius into account when tracking routes and securing cables. Do not take too sharp turns.
- Do not pull cables tight over sharp corners or edges of the construction since this may damage the calbes.
- Make sure the cables are not too tight and/or under tension.
- Check all above points after each width, depth or height adjustment made to the chair.

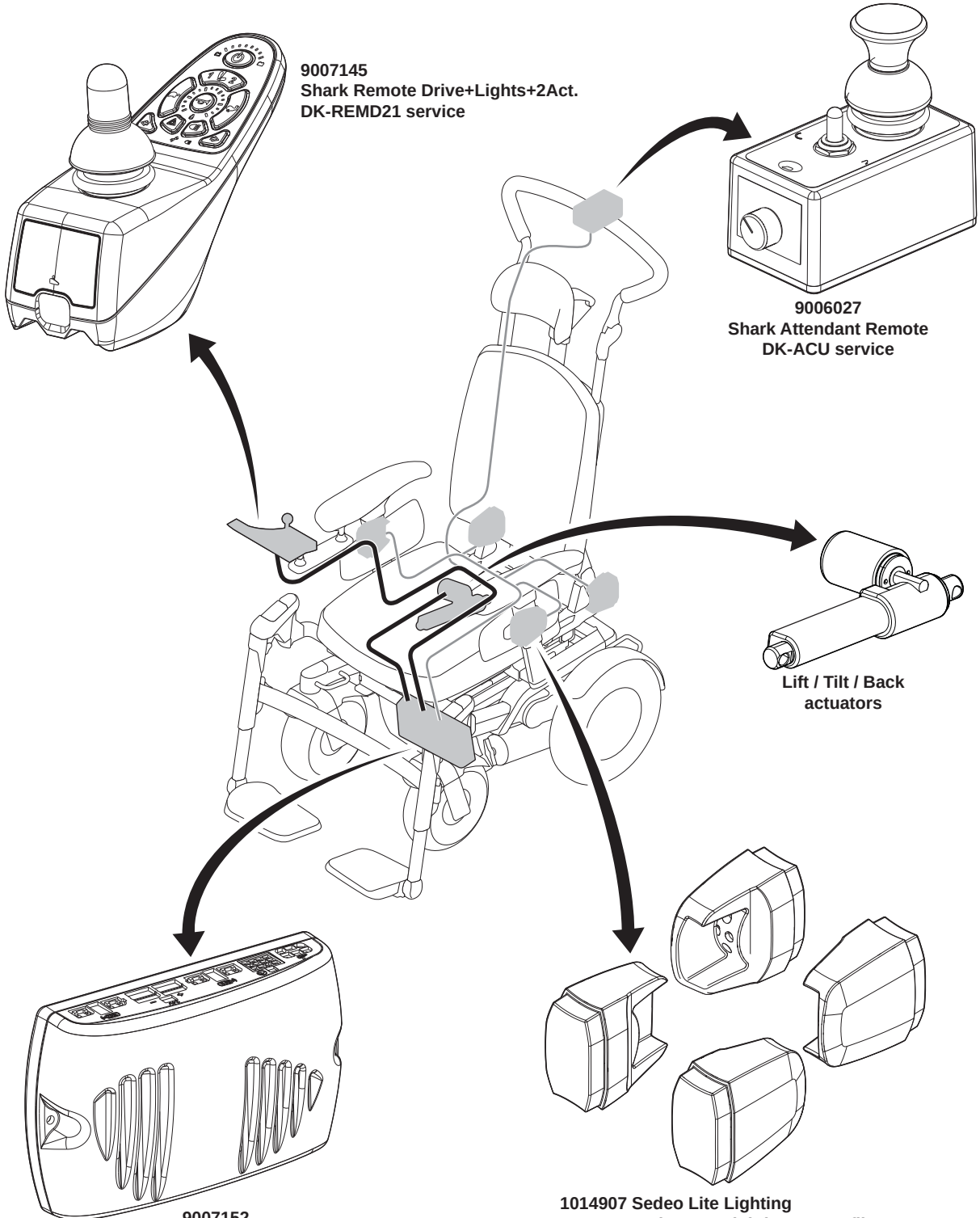
Shark; drive only



Shark; drive and lights

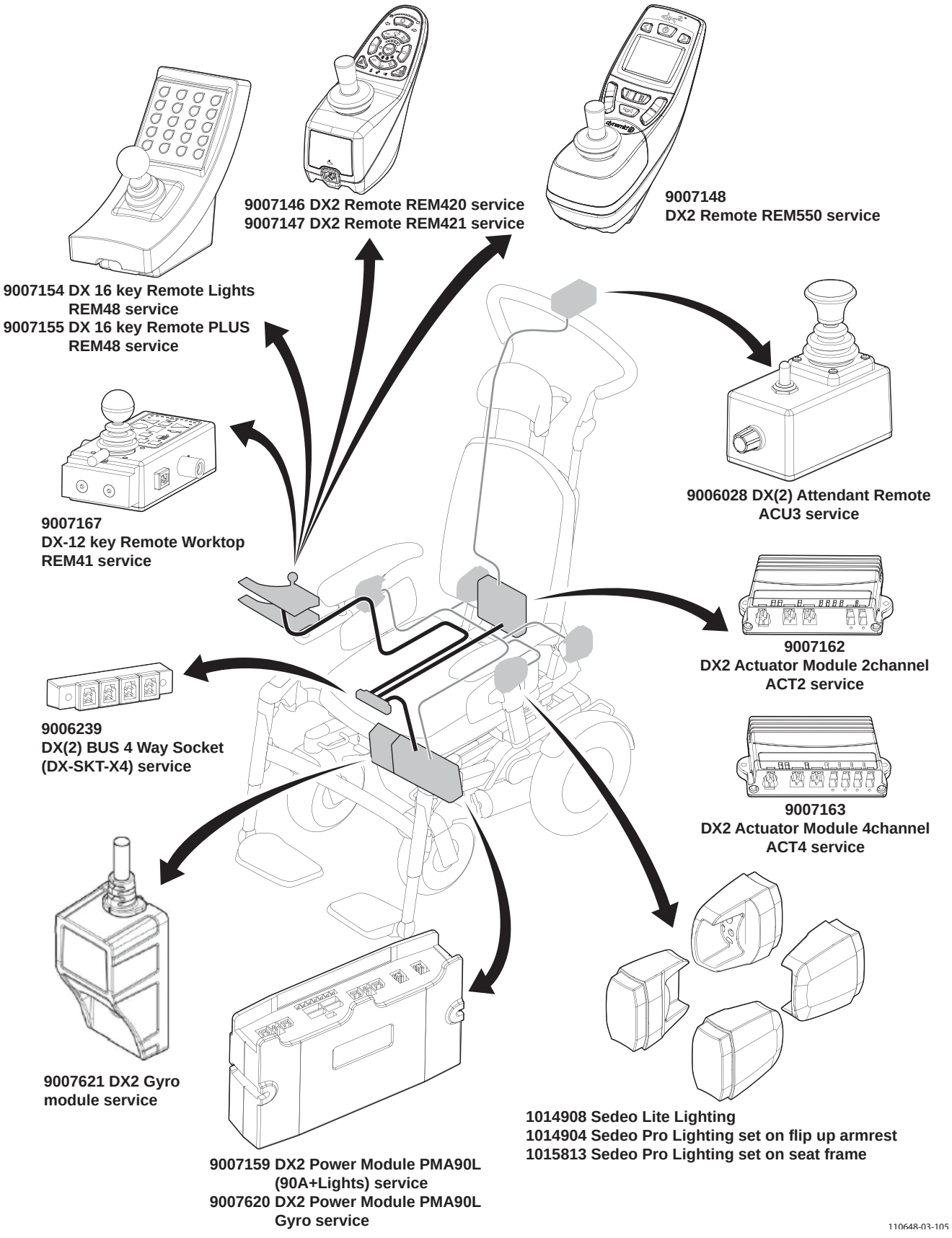


Shark; drive, lights & seats

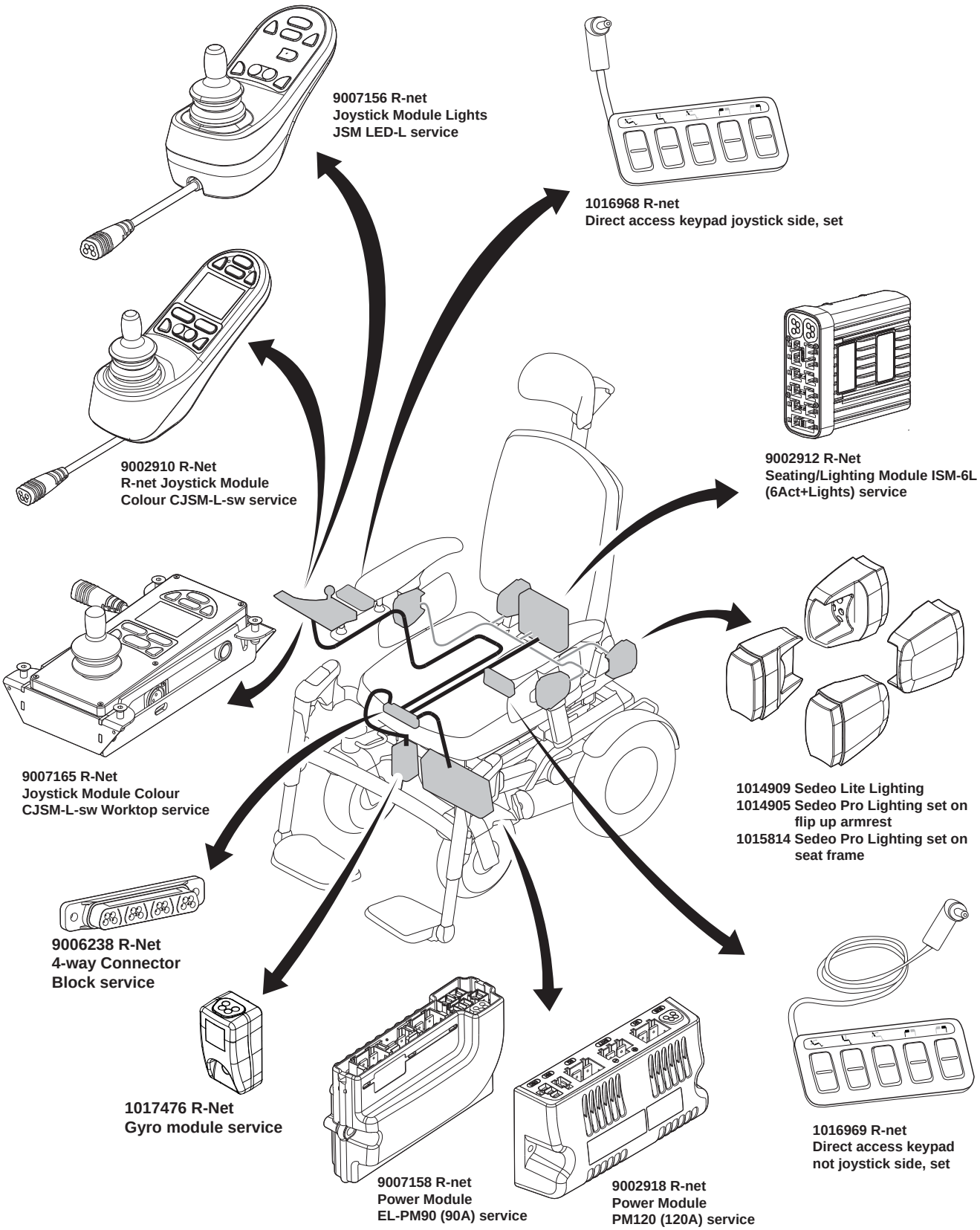


110648-03-104

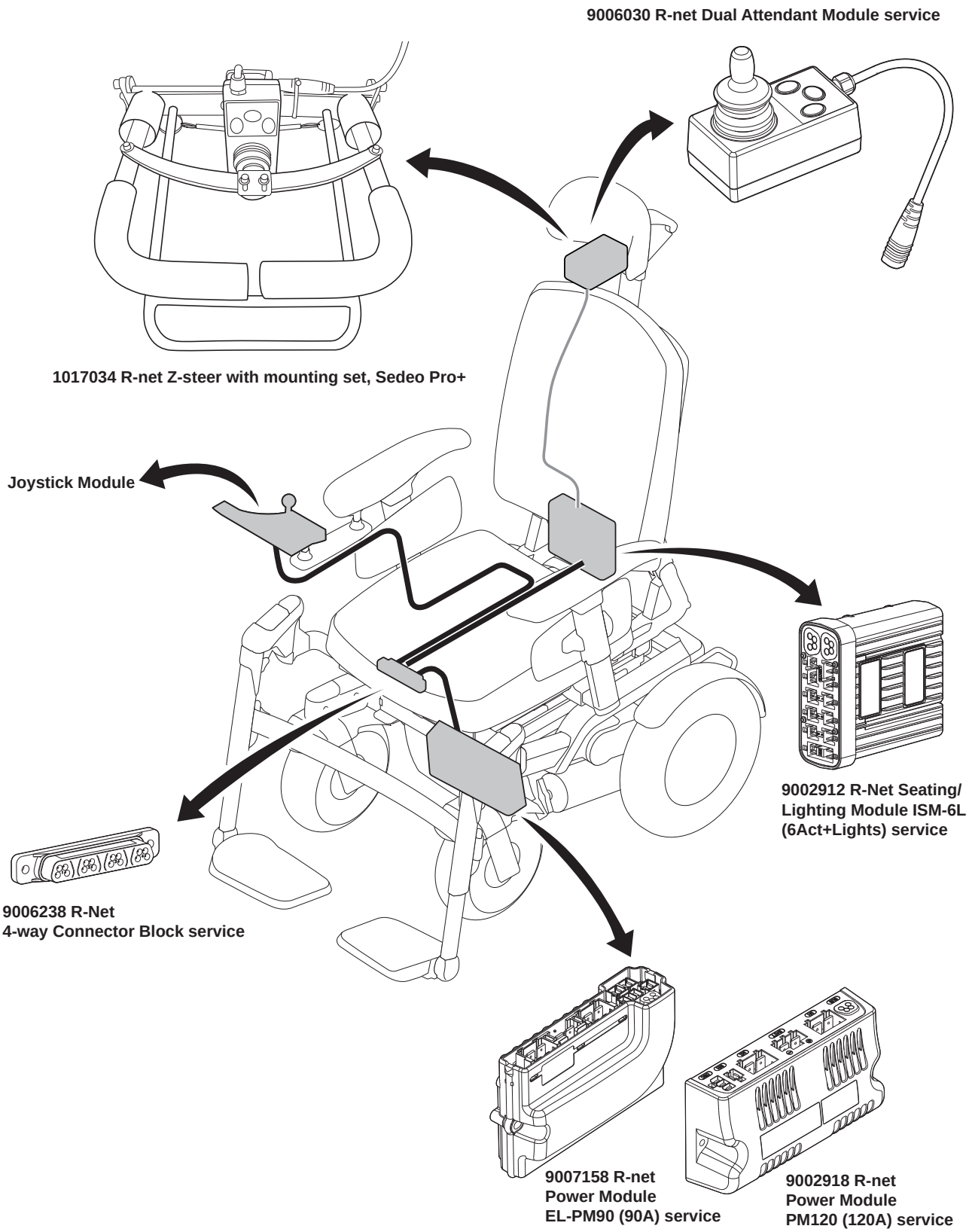
DX2


9007146 DX2 Remote REM420 service
9007147 DX2 Remote REM421 service
9007148
DX2 Remote REM550 service
9007154 DX 16 key Remote Lights
REM48 service
9007155 DX 16 key Remote PLUS
REM48 service
9006028 DX(2) Attendant Remote
ACU3 service
9007167
DX-12 key Remote Worktop
REM41 service
9007162
DX2 Actuator Module 2channel
ACT2 service
9006239
DX(2) BUS 4 Way Socket
(DX-SKT-X4) service
9007163
DX2 Actuator Module 4channel
ACT4 service
9007621 DX2 Gyro
module service
1014908 Sedeo Lite Lighting
1014904 Sedeo Pro Lighting set on flip up armrest
1015813 Sedeo Pro Lighting set on seat frame
9007159 DX2 Power Module PMA90L
(90A+Lights) service
9007620 DX2 Power Module PMA90L
Gyro service
110648-03-105

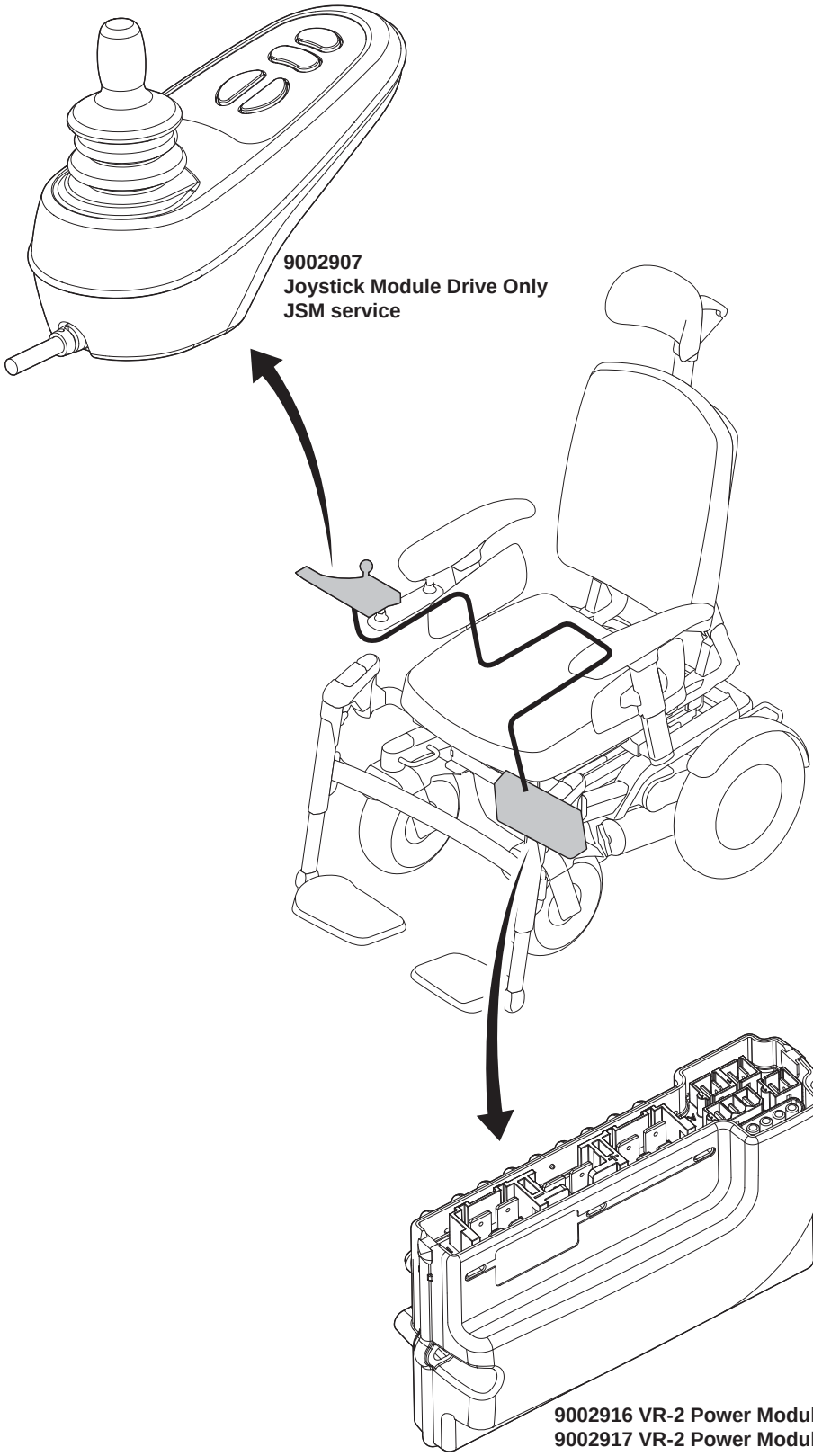
R-net


9007156 R-net
Joystick Module Lights
JSM LED-L service
1016968 R-net
Direct access keypad joystick side, set
9002910 R-Net
R-net Joystick Module
Colour CJSM-L-sw service
9002912 R-Net
Seating/Lighting Module ISM-6L
(6Act+Lights) service
9007165 R-Net
Joystick Module Colour
CJSM-L-sw Worktop service
1014909 Sedeo Lite Lighting
1014905 Sedeo Pro Lighting set on flip up armrest
1015814 Sedeo Pro Lighting set on seat frame
9006238 R-Net
4-way Connector
Block service
1017476 R-Net
Gyro module service
9007158 R-net
Power Module
EL-PM90 (90A) service
9002918 R-net
Power Module
PM120 (120A) service
1016969 R-net
Direct access keypad
not joystick side, set

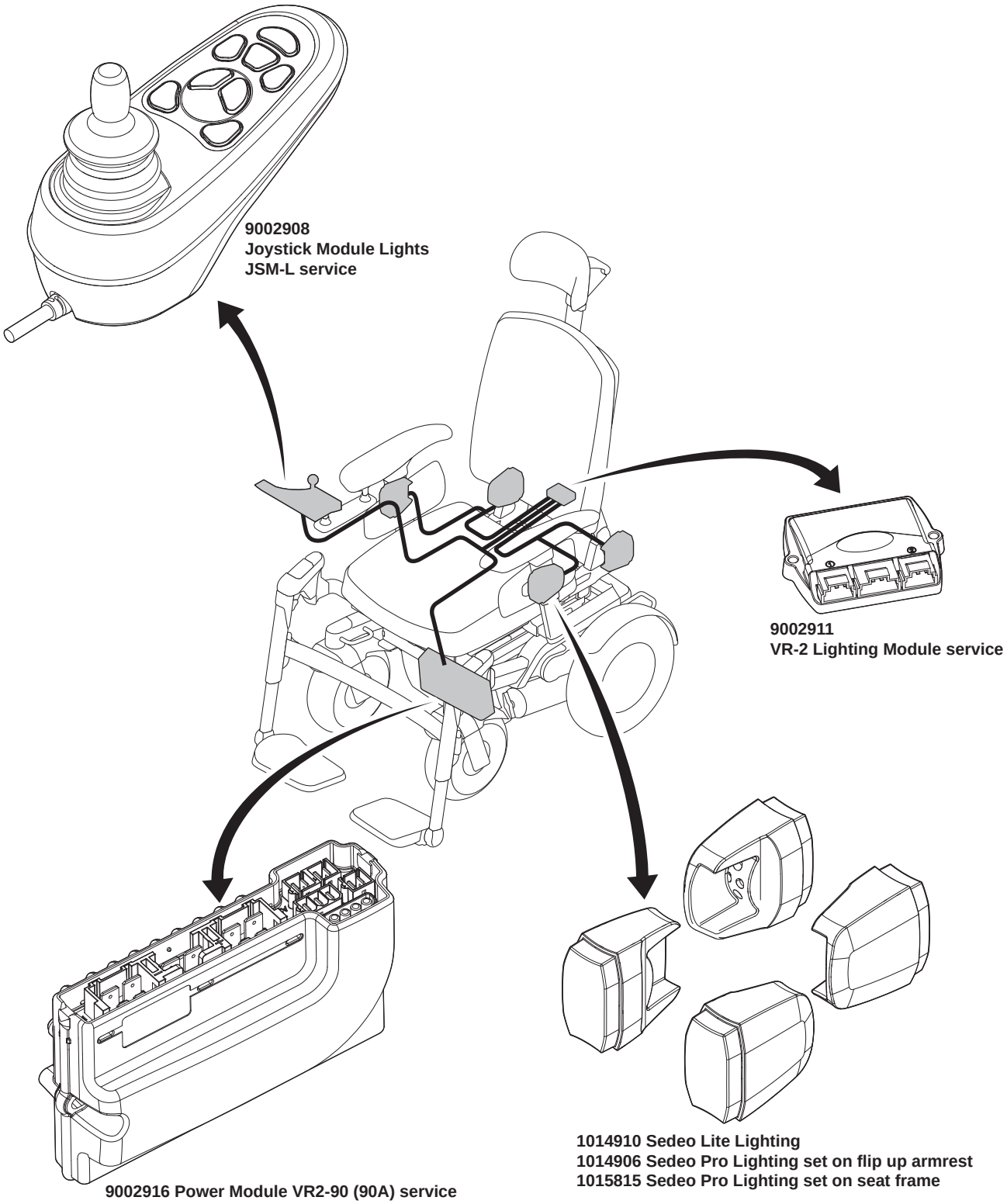
R-net Dual Attendant Module



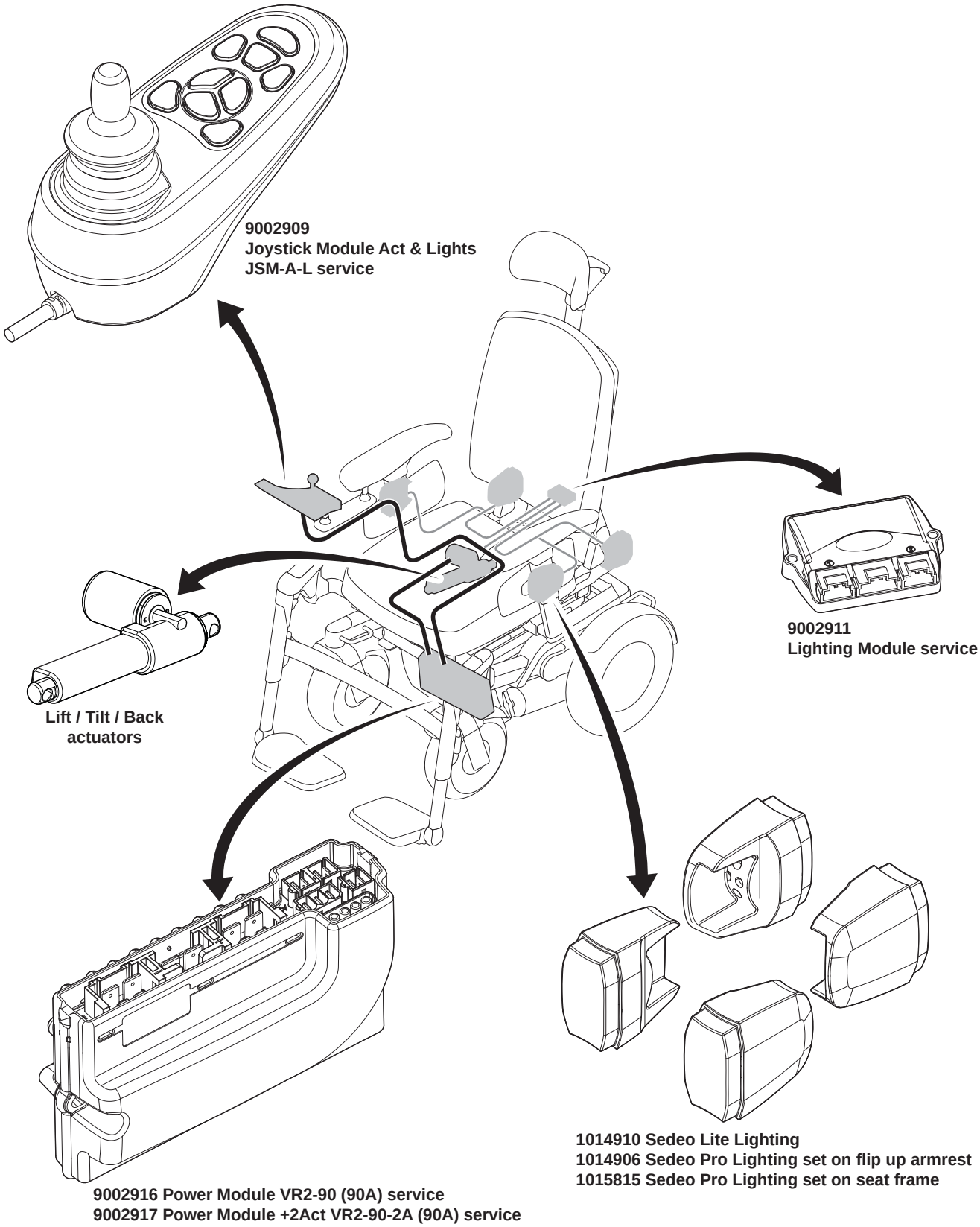
VR-2; drive only



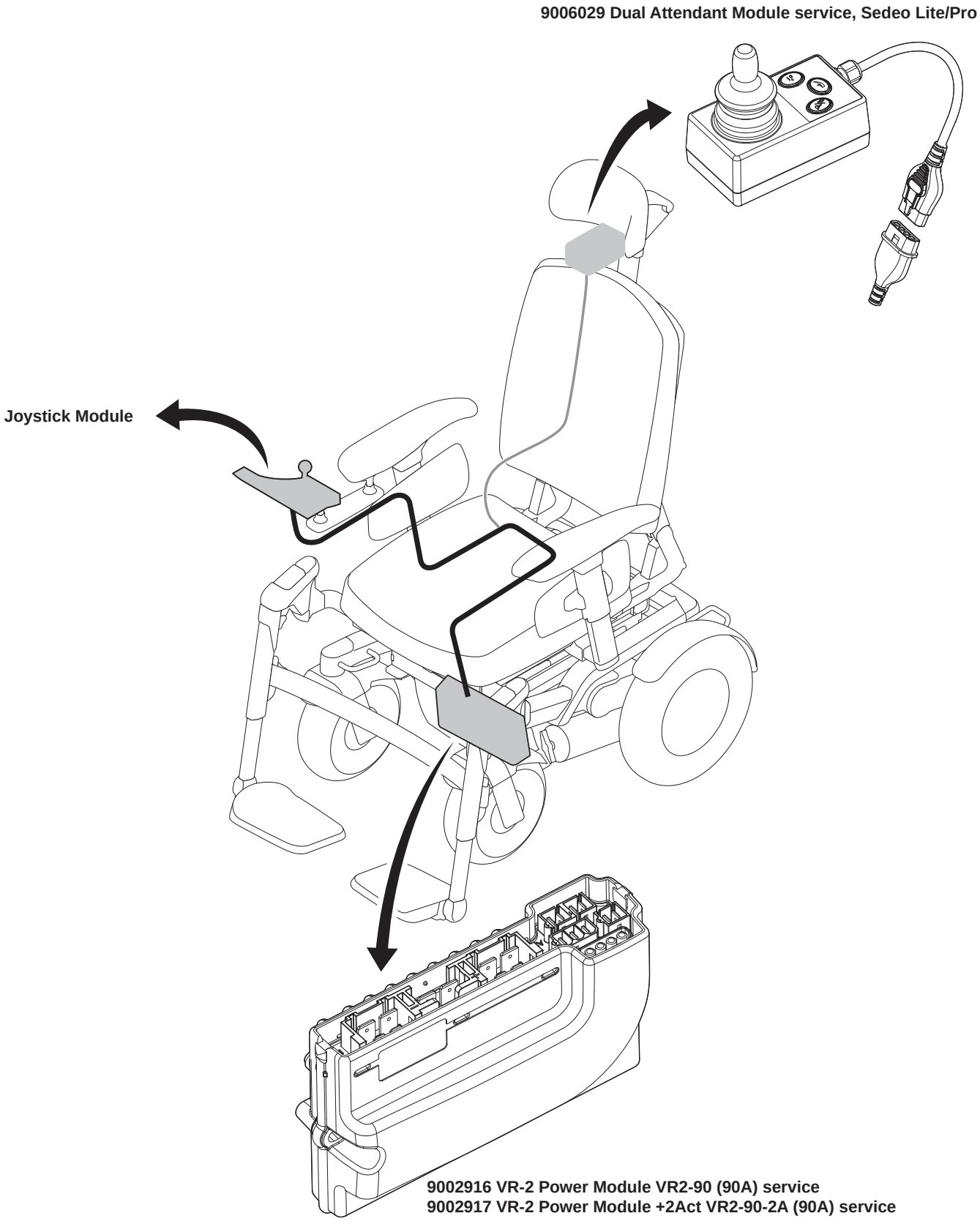
VR-2; drive & lights



VR-2; drive, lights & seats



VR-2 Dual attendant module



8 Warranty

8.1 Definitions of terms

Definitions of terms used in this warranty:
- After sales service part: Part purchased after the intial product that is durable and may be subjected to natural wear and tear or natural contamination during normal operation within the lifetime of the product.;
- Consumable part: Part that is subjected to natural wear and tear or natural contamination during normal operation within the lifetime of the product (section 9 of Sunrise Medical HCM's general terms and conditions of sale);
- Client: Those who purchase the product directly from Sunrise Medical HCM;
- Corrective action: Repair, replace or refund of the product;
- Dealer: Those who re-sell the product to the User;
- Defect: Any circumstance due to which the product is not sound or fit to use, caused by a lack of quality of the material used to manufacture the product as well as the quality of the manufacturing process;
- Option: An accessory delivered with the initial product by Sunrise Medical HCM to extend the standard product model;
- Product: Product that is delivered according to brochure or contract (e.g. wheelchair, scooter, battery-charger etc.);
- Part: Part of product that can be exchanged or replaced. This can be an option, accessory, service part or consumable part;
- Returns: Product or part that needs to be returned;
- RMA-process: Process to return goods, contact Sunrise Medical HCM's Customer service;
- User: Those who use the product;
- Warranty: The rights and obligations set forth in this document;
- Warranty period: The period of time during which the warranty is valid;
- Warranty provider: Sunrise Medical HCM B.V., Vossenbeemd 104, 5705 CL Helmond, The Netherlands.

Notwithstanding the rights and obligations of Sunrise Medical HCM, Client and User set forth in Sunrise Medical HCM's general terms and conditions of sale, the rights of the Client and/or User towards Sunrise Medical HCM in case of defects are limited to the provisions set forth in this warranty. For the duration of the warranty period Sunrise Medical HCM guarantees that the product is without defects.
In case of any defects the User is required –within two weeks after discovery of the defect- to contact the dealer. He has to complete a return form and return the product or part via the RMA-process. Sunrise Medical HCM will, at its sole discretion, take the corrective action it seems fit under the given circumstances within a reasonable period of time (depends on nature of claim) from receipt of the completed return form. The warranty period will not be extended after a corrective action.

8.2 Warranty period table

Power wheelchairs

Description	Warranty period	Examples include, but are not limited to the parts mentioned below
Frame	2 years	Weldment/frame
Drive system*	1 year	Transaxle, motor, motor brake
Electronics*	1 year	Controller, controlling mechanism, wiring harness, electronic components
After sales service parts	New: 1 year after invoice Repaired: 90 days after invoice	Brakes
Consumable parts	40 days after invoice	Carbon brushes, etc.
Options/Accessories	2 years	Mirror, mudguards etc. Delivered with the initial product

* also in case of after sales service part delivery

Sunrise Medical HCM will only accept shipment costs and corrective costs related to warranty on equipment during the warranty period.

This warranty will void in case of:
- The product and/or its parts being modified;
- Changes in cosmetic appearance by use;
- Failure to observe the instructions for use and maintenance, use other than normal use, wear and tear, negligence, collateral damage by neglect of earlier symptoms, overloading, third-party accidents, non-original parts used and defects not caused by the product;
- Circumstances beyond our control (flood, fire, etc.).

This warranty does not cover:
- Tyres and inner tubes
- Batteries (covered by the battery manufacturer’s warranty).

Clients and/or Users have legal (statutory) rights under applicable national laws relating to the sale of consumer products. This warranty does not affect statutory rights you may have nor those rights that cannot be excluded or limited, nor rights against the entity from whom the product was purchased. Clients may assert any rights they have at their sole discretion.

Version	Page	Draw	Changes
2011 V1			
2012 V1	7		Added warning 'Interference between carrier and tilt module at the lowest seat height'
			Deleted Sedeo Lite and Pro part. Became a seperated manual.
	12	01	Added article numbers 1007080, 9006237, 00000.4042 and 00000.4035 (position 14a - 14d, socket head screws)
	13	02	Added article numbers 9002784, 9006360 and 9006452 (position 32, 37 and 38)
	14	03	Added article numbers 9006781 till 9006790 Motor 4-pole Alpine
	14	03	Added article numbers 9002784, 9006361 and 9005107 (position 39, 44a and 44b)
	15	04	Changed article number 9005987 castor wheels outdoor into right version and added 9006820 left version
2012 V2	96	7.2	Changed minimum seat width 420 mm into 400 mm and added specifications turning radius and for Puma 40 changed minimum seat depth from 420 into 440 mm
	83-94	6	Replaced left / right indications by m1 or m2. Side is depending from FWD or RWD.
2012 v3	7	2.3	Changed text 'interference between carrier and tilt module at the lowest seat height' into 'interference precautions'
	79		Added text with notice by ´Adjusting the centre point of gravity´ instruction
	82		Deleted notice text with 'Adjusting the mechanical seat tilt' instruction
	83		Added 'Adjusting the electrical seat tilt 0 - 25°' instruction
	84-89		Added 5.2.6 'Seat tilt configuration tables'
2013 v1	13	1	• Added article number 9002752 Set battery connection covers
	14	2	• Deleted position 22. Added symbol C with position 23: fasten with locktite 270 • Changed description of article number 9005940, 9005941, 9005942 and 9005943 • Changed article numbers and description of position 28-32,35a/35b/36a/36b,37,38: 9005944 into 9007485, 9005945 into 9007486, 9005946 into 9007488 and 9005947 into 9007489 • Changed QTY of position 37 article number 9006360 from 2 into 1
	15	3	• Deleted article numbers 9005949, 9005948, 9005951, 9005950, 9005952, 9005953, 9005954 and 9005955 • Changed description and position numbers of 4 pole motors • Deleted position 44a: article number 9006361 and changed position 44b into 44
	20	8	• Changed article number 9006199 into 9006023 • Added article number 9007749
	21	9	• Changed position numbers of article number 9006020, 9006019 and 9006021 • Added article number 9007749
2013 v2	10	3.1	Added locktite 270 to tools table
	14	2	Changed article numbers of position 28-32,33a/33b/34a/34b,37,38: 9005940 into 9007479, 9005941 into 9007480, 9005942 into 9007482 and 9005943 into 9007483
	16	4	• Added article numbers 9007752,9007753 and 9007754 (Castor fork 60 mm and castor wheels 200x50) • Changed quantity article numbers 9005987 and 9006820 from 2 into 1 • Added article number 9006792 (position 13-15)
	17	5	• Changed quantity article numbers 9006000, 9005999, 9006005, 9006004, 9006002, 9006001, 9006007 and 9006006 from 2 into 1 • Added article number 9006008 (position 17-21)
	21	9	Added article numbers 9007683 and 9007684
	22	10	• Changed drawing fixed kerb climber into adjustable kerb climber • Changed articel number 9005740 into 9007864 • Changed article number 9003520 into 03411.0190
	23	4.5	Changed article number position 8; 9006030 into 9006031
	25	4.4	• Added article number 9007158 (position 4b) • Deleted article numbers 9006434 and 9002481 (position 9 and 10) and added article numbers 9002480 and 1010114 (position 9 and 10) • Added article number 9006229 (position 23) • Added article number 9003607 (position 24)
	27	4.4	Added Flowchart R-net system upward of mid-October 2012
	28	4.5	• Changed description article numbers 9006028 and 9006032 (ACU3 into ACU1) • Changed position 7 in 7a and added position 7b: 9007620 • Added article numbers 00355.0013, 9006970, 9007576, 9007581, 9007621 and 9007619 (position 17, 28, 29, 30 and 31) • Changed description and article numbers of position 16, 20, 21 and 22
	30	4.5	Added Flowchart DX2 system upward of mid-October 2012
	31	4.6	Added article number 1010114 (position 24)
	34	5.2.1	Added 'Replacing Puma 20 motors'
	42		Deleted article numbers 9006434 and 9002481

Version	Page	Draw	Changes
	44		• Added how to adjust the kerb climber length to the service instruction 'Mounting the kerb climber' • Changed article number 9005740 into 9007864
	57		Added article numbers 9007753 and 9007754
	62		Added article number 9007752
	84/85	5.2.6	Added relevant article numbers 9006016 and 9006017
	86-88	5.2.6	Added service instructions Adjusting the electrical seat tilt 0 - 45°, the minimum tilt angle (0 – 9°) and the maximum tilt angle (< 45°)
	90-96	5.2.7	Updated seat tilt configuration tables
	100	6.2	Added missing text with trip text 'system error'
	110		Changed specification reversing distance RWD
	112-115, 117, 118		• Changed the article numbers of the lighting left and right into the lighting set article numbers. • And deleted article number 9007160 in the DX2 Electrical diagram
2014 v1	14	2	Added article numbers motor sets: 9007478, 9007481, 9007484 and 9007487
	15	3	Added article numbers 12,5 km/h: 9008626, 9008629, 9008630, 9008631 and 9008819
	17	5	Added article number 9008818
	27	4.4	Updated Flowchart R-net system upward of mid-October 2012 because of 12,5 km/h option
	28	4.5	• Added revision number to description article numbers 9007154, 9007155 and 9007167 • Added article number 9008828 (position 32)
	30	4.5	Updated Flowchart DX2 system upward of mid-October 2012 because of 12,5 km/h option
	34	5.2.1	Instruction how to replace the Puma 20 motors
	41	5.2.2	Added instruction how to replace the anti-shimmy set: picture 3 and 4 of step 6
	65-67	5.2.5	Updated drawing 4 and 12 of replacing the batteries, because of changed battery strap length
	97	5.2.8	Added guidelines to solve shimmy problems
	109-110		Added specifications Puma 40 12,5 km/h
2015 v1	13	1	Changed article number 1001453 into 9002760
	14	2	• Changed description article numbers 9007478 - 9007489 • Changed article number 9005644 into 1015807 • Changed pricing of article numbers 9007478, 9007481, 9007484 and 9007487
	15	3	• Deleted article number 9005939 and 9005938 • Changed position numbers article numbers 9006782 and 9006781 • Changed description article numbers 9006783 - 9006790, 9008626, 9008629 - 9008631, 9005107 and 9008819 • Changed article number 9005644 into 1015807 • Updated drawing
	16	4	• Changed description article numbers 9005932, 9007752, 9005986, 9007753, 9007754, 9005989, 9005987, 9006820, 9005990, 9005992, 9005995, 9005993 and 9005996 • Added article number 1015297, 1015298, 1015116, 1015107, 1015115, 1015105, 1015118, 1015112, 1015117 and 1015111
	17	5	• Changed description article numbers 9008818 and 9005932 • Changed article numbers of all castor and drive wheels (9005998-9006007 / 9006009-9006014 into 1016998-1017013) and updated drawing • Added article numbers 1015105-1015107 / 1015110-1015113, 1015115-1015118, 9005933 and 9008817
	19	7	Added article number 9005979 and 9005874
	21	9	• Changed position numbers article numbers 9006019, 9006021 and 9007749
	23	4.3	• Changed description article number 9007150 - 907152 • Added article number 99164 • Updated drawing
	24-26		Deleted flowcharts
	24	4.4	• Added article numbers 1017477, 99117, 99164 and 1017476 • Updated drawing
	25	4.5	• Added article number 99117 • Updated drawing
	26	4.6	• Added article number 99164 • Updated drawing
	27	5	Updated all changed article numbers and descriptions in the service instructions
	44	5.2.3	Added instruction 'Replacing the drive wheel Puma 20'
	103		Updated test dummy weights
	111		Added Cable routing
	114		Added Gyro to DX2 electrical diagram
	115		Added Gyro to R-net electrical diagram
	119		Updated warranty text

Version	Page	Draw	Changes
2015 v2	13	1	• Changed description article numbers 9002758, 9002759 and 9002760 • Changed article number 9006051 into 6000589 • Added article numbers 1015808, 1011502 and 1017038
	14-15	2-3	Added exploded views Dahl car docking system FWD and RWD
	18	6	• Changed article numbers 9007753, 9007754, 9005986, 9005989, 9005987, 9006820, 9005992, 9005993, 9005995 and 9005996 into 1016987, 1016988, 1016998, 1016999, 1017000, 1017001, 1017314, 1017312, 1017315 and 1017313 • Changed article number 9005990 into 1017002 and 1017003 • Added article numbers 1017434 - 1017439 and 1017956 - 1017959
	19	7	• Added article numbers 1017436 - 1017447 • Changed article number 1015111 into 1015110 and vice versa
	21	8	Changed article number 9004517 into 9009305
	22	9	Changed article numbers 9005974, 9005982, 9005983, 9005984, 9005985 and 9004517 into 9009308, 9009748, 9009749, 9009750, 9009751 and 9009305
	23	10	Changed description article number 9006023 and added article number 1017466
	24	11	• Changed description article number 9006023 and added article number 1017466 • Changed description article number 9007684 and added article number 9009963
	26	13	Added exploded view Direct access
	27	14	Added exploded view Attendant Z-steering (only for Norwegian market)
	28	4.3	Added position 8 in drawing
	29	4.4	• Added article numbers 1017036, 1017034 (only NO), 1016968, 1016969 • Updated drawing
	30	4.5	Added position 11 in drawing
	31	4.6	Added position 8 in drawing
	34-92		Updated all changed article numbers and descriptions in the service instructions
2016 v1	-	-	Replaced Handicare by Sunrise Medical HCM
	16	2	Changed article number 1017124 into 9009478 and changed position numbers
	17	3	Changed article number 1017124 into 9009478 and changed position numbers
	20	6	• Deleted HC out of article descriptions • Updated pos numbers article number 9006792 • Added article number 9007193
	21	7	• Deleted HC out of article descriptions • Added article number 9010254 and 9007193
	30-33	4.3	• Added article number 00355.0441, 00355.0458, 00355.0454, 00355.0444 and 00355.0443 • Added electric diagrams Shark
	34-37	4.4	• Changed description article number 9002918 and 9007158 (add speed) • Added article number 19052, 19063, 19065, 19054 and 19032 • Added electric diagrams R-net
	38-42	4.5	• Added article number 00355.0441, 00355.0458, 00355.0454, 00355.0444, 00355.0443, 00355.0509 and 1003305 • Added electric diagrams DX2
	43-47	4.6	• Added article number 19052, 19063, 19065, 19054 and 19032 • Added electric diagrams VR-2
	72	5.2.15	Updated all article numbers in mounting instruction

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