en

Electric wheelchair

Model 2.322; OPTIMUS 2

Maintenance and Service manual

CE

MEYRA®

Contents

GENERAL

Foreword

This maintenance and service manual is intended for the specialist dealer and describes all adaptations and adjustments as well as the required service, maintenance, repair and replacement jobs.

☞ This maintenance and service manual is supplemented by the following documents:

– the model dependent operating manual, (an operating manual is supplied with each vehicle),

– the model dependent operating manual < Operating module > (an operating manual is supplied with each vehicle),

– the safety and general handling instructions < Electronic vehicles >,

– the model dependent spare parts list, (the required spare parts list can be retrieved through the specialist dealer access of our internet address).

All required documents as well as additional information to our products are located on our website under:

< www.meyra.com >.

Requirements concerning workshop personnel

During all corresponding work there is always a danger of jamming or skin abrasions!

Knowledge of this maintenance and service manual as well as the supplementing documents (view chapter foreword) is mandatory for the correct and safe execution of the work required on the wheelchair.

Special knowledge is required to carry out the maintenance and service work described in this maintenance and service manual and may therefore only be carried out by educated qualified personnel.

☞ We therefore offer vehicle specific courses that provide the specialised personnel with the required qualification.

☞ The document, especially the chapter *Safety instructions* on page 10, must therefore be read carefully and observed by all persons, that are assigned to work on the wheelchair.

Customer support

Technical questions will gladly be answered by your national Meyra distribution partner.

Information to maintenance and service work

☞ Every wheelchair should undergo inspection once a year.

– The inspection increases the safety and extends the life span of the wheelchair.

☞ For highly strained wheelchairs for example in case of:

– extreme strain,

– user still growing,

– users with changing disease patterns,

it is recommended to have the wheelchair checked, maintained and if required adjusted semi-annually.

– Only original spare parts are to be used for all maintenance and service.

☞ Before beginning with the service work check the general condition of the wheelchair.

☞ All screwed connections, if not otherwise noted, tightened according to table *Torque according to DIN for screwed connections* on page 52.

☞ The maintenance schedule (Checklist) should serve as a master for copying.

– Maintenance schedules that have been filled out are to be kept on file and a copy handed to the customer!

Working on the vehicle

☞ For maintenance and repairs the vehicle is to be switched off and secured against unintentionally rolling away.

☞ Additionally the main-/battery fuse is to be removed.

☞ Before working on electric parts, the plugged connection from the battery cable to the power module might also need to be disconnected.

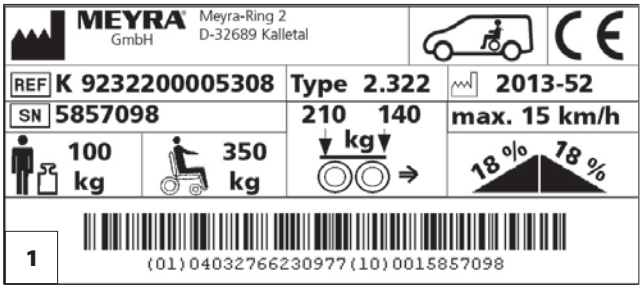
☞ Before working on electric adjustment the corresponding plug of the connection cable is to be pulled.

VEHICLE IDENTIFICATION

For a definite vehicle identification in case you have questions, or for spare parts orders, the following data can be read off of the type plate:

☞ view sample-type plate [1]

1. The model description (in the field Type resp. Type)
2. The serial number (beside the field SN)



1

TERM DEFINITIONS

Here you will find explanations to the term used in this manual:

Service position

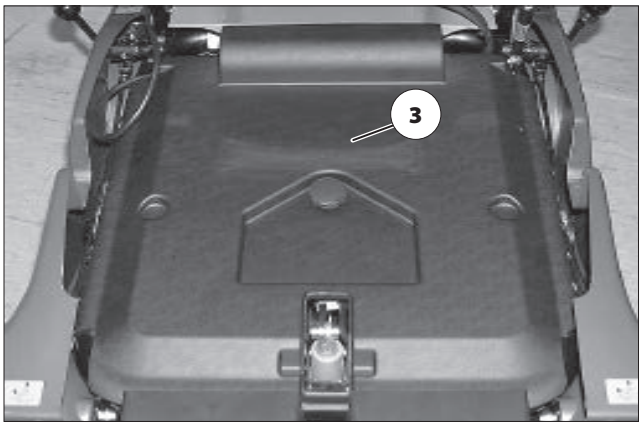
☞ Before adjusting the service position, remove the leg supports.

The service position [2] describes a vehicle with corresponding seat position in order to enable e. g. unencumbered maintenance jobs.

In order to reach the electronic module you have to remove the battery cover (3).

For adjustment of the service position, pull the release lever (4) underneath the seat upward and afterwards swivel the seat upward.

2



OVERVIEW

Model 2.322

R-Net-operating module

SAFETY INSTRUCTIONS

☞ Wear suitable clothing during service-jobs as well as gloves and protective glasses when required.

– Danger of injuries caused by inappropriate work clothes.

☞ Secure the product against unintentional rolling motions, tilting over or falling down e. g. from a mounting rack.

– Damages due to a not secured wheelchair.

☞ Clean/disinfect the product before inspection.

☞ If necessary, observe the care instructions and product specific inspection instructions included in the corresponding operating manual as well as the safety and general handling instructions < *Electronic vehicles* >.

– Damages due to neglected cleaning.

☞ Keep your workspace clean and only use clean cloths.

– Damages caused by shavings and dirt particles.

☞ Use only suitable tools.

☞ View chapter *Required tools and aids* on page 10.

– Damages caused by the use of incorrect tools.

☞ Replace loose screwed connections with thread safety with the respective nut or screw and new thread safety.

☞ If new screws or nuts with thread safety not be available, apply liquid thread safety compound with medium hardness e. g. Loctite® 241 or Euro Lock A24.20.

– Damages caused by loose screwed connections.

Storage

Dismantled parts are to be placed resp. stored safely and protected as well as sorted by commission.

REQUIRED TOOLS AND AIDS

For adjustments and maintenance we recommend the use of high quality tools.

☞ High quality tools can prevent for example damages to the surface of the frame as well as minor injuries to the hand.

The tools required most frequently are:

– Socket wrench

– Open-end or ring spanner

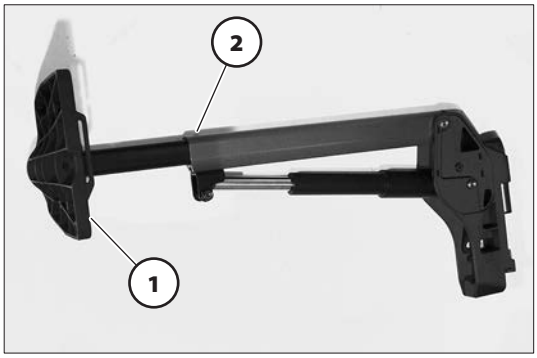
– Hexagon socket spanner

– Phillips screwdriver

– Slot screw driver

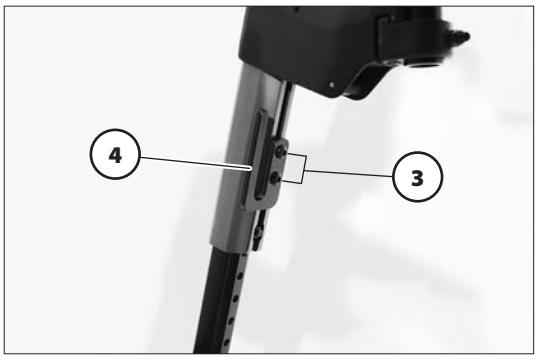
ADAPTATION AND ADJUSTMENT JOBS

The following chapters describe the fitting of the wheelchair to the changing individual demands of the user.



LEG SUPPORT (FROM JANUARY 2024)

It is to be observed that other functions on the wheelchair are not impaired by the respective setting!

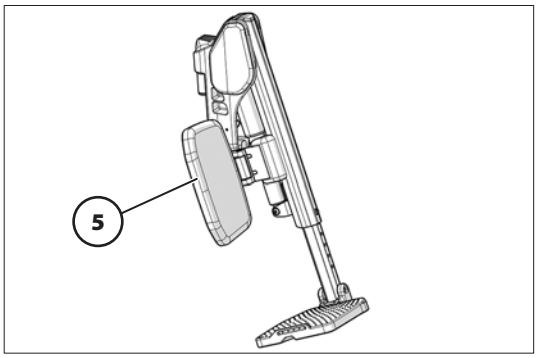


Adjusting the height of the footplate

1. Remove the screw (2) to adjust the height of the footplate (1).
2. Telescope the footplate (1) to the desired height and remount the screw (2) in the next possible position.

Adjusting the calf belt

1. For height adjustment of the calf belt, loosen the screws (3) of the calf belt bracket (4).
2. Slide the calf belt bracket (4) to the desired height and retighten the screws (3) of the calf belt bracket.



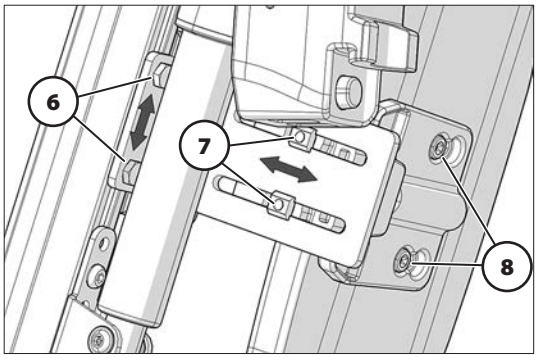
Adjusting the height of the calf pads

Loosen the clamping screw (6) to adjust the height of the calf pad.

Adjusting the depth of the calf pads

The calf pad (5) can be swivelled to the side and adjusted continuously in depth.

Loosen the screws (7) for continuous adjustment the depth of the calf pad.



Width adjustment of the calf pad

1. Remove the attachment screws (8) to adjust the width of the calf pad.
2. Place the calf pad to the other attachment position and remount the attachment screws (8).

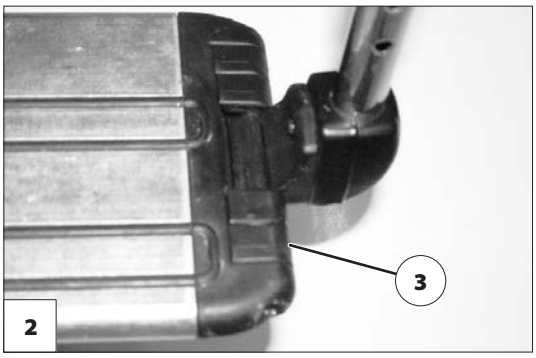
Angle adjustment of the footplate

1. For this loosen the screw (1) so far that it no longer catches.
2. Disconnect the toothing of the footplate and adjust the angle of the footplate.
3. Retighten the screw (1) of the footplate.

☞ In doing so the teeth of the angle adjustment must join again.

Angle adjustment of the footboard

1. Swivel the footboard down for angle adjustment [2]. Afterwards loosen the screws (4) on both sides.
2. Tilt the footplate to the desired angle and retighten the screws (4) on both sides.



Depth adjustment of the footboard

The depth adjustment of the footboard is done by repositioning the removable distancer pieces (3).

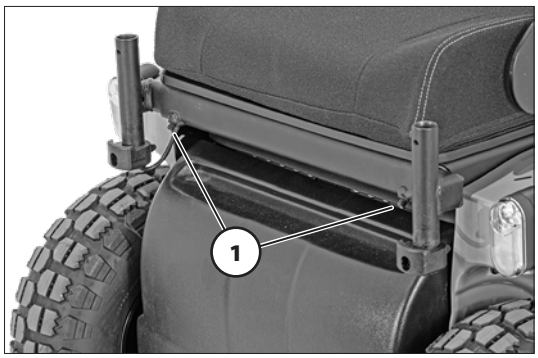
1. Lift the loose side of the footboard slightly.
2. Reposition the desired amount of distancer pieces on the lifted side.
3. Pull/press the distancers that are to be repositioned on the right side of the footboard outward from the retaining rod [5].

☞ In certain angle settings of the footboard it is possible that a removal or placing of certain distancer pieces is not possible. Then fold up the footboard.

4. Reposition the footboard and insert the distancer pieces back again as far as possible to the right retaining rod.
5. Swivel the footboard down and hook it into place.

Width adjustment of the leg supports

1. For width adjustment of the leg supports, loosen the screw (1) on each side.
2. Telescope both leg supports evenly to the desired width and retighten the screw (1) on each side.

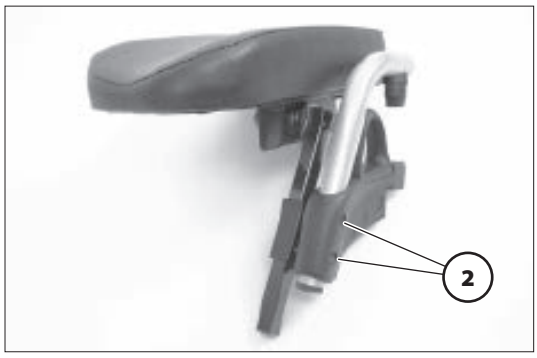


Stump support

The leg stump support can be used on the left and right side by repositioning the bracket.

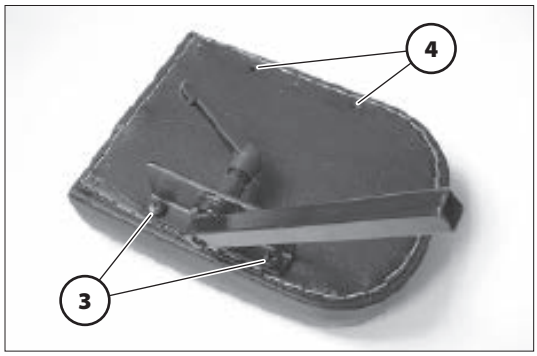
Repositioning the leg stump support

First unscrew the attachment screws (2) to reposition the leg stump support. The reposition the bracket to the other side and attach it.



Repositioning the leg stump cushion

First unscrew the screws (3) to reposition the leg stump cushion. Then position the bracket turned by 180° on the other side aligned with the holes (4) and retighten with the screws.



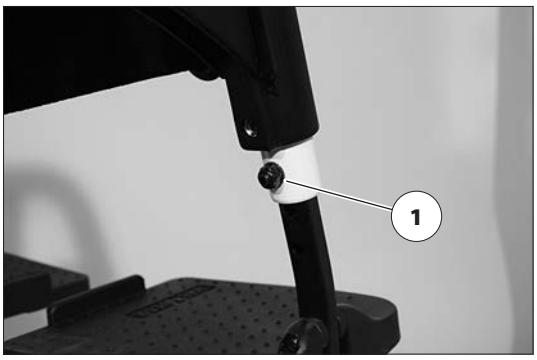
LEG SUPPORT (UP TO JANUARY 2024)

Lower leg support

Height adjustment footplate/footboard

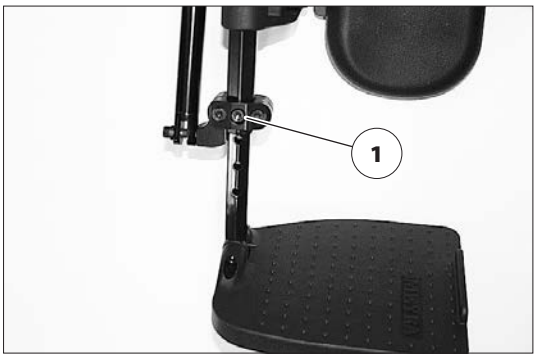
Version 1:

For adjustment of the height, loosen the respective clamping screw (1).



Version 2:

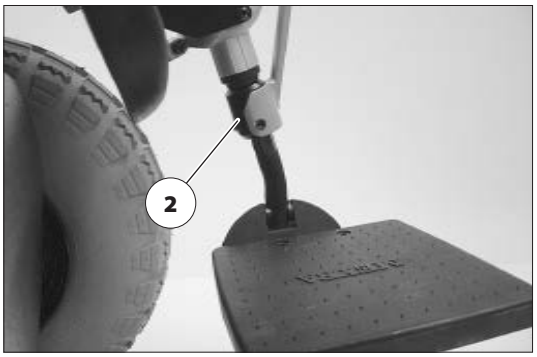
Loosen the clamping screw (2) to adjust the height.



Angle adjustment of the footplate

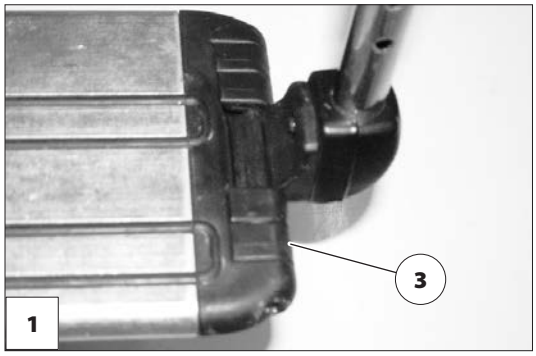
1. For this loosen the screw (3) so far that it no longer catches.
2. Disconnect the toothing of the footplate and adjust the angle of the footplate.
3. Retighten the screw (3) of the footplate.

☞ In doing so the teeth of the angle adjustment must join again.



Angle adjustment of the footboard

1. Swivel the footboard down for angle adjustment [1]. Afterwards loosen the screws (2) on both sides.
2. Tilt the footplate to the desired angle and retighten the screws (2) on both sides.



Depth adjustment of the footboard

The depth adjustment of the footboard is done by repositioning the removable distancer pieces (3).

1. Lift the loose side of the footboard slightly.
2. Reposition the desired amount of distancer pieces on the lifted side.
3. Pull/press the distancers that are to be repositioned on the right side of the footboard outward from the retaining rod [4].

☞ In certain angle settings of the footboard it is possible that a removal or placing of certain distancer pieces is not possible. Then fold up the footboard.

4. Reposition the footboard and insert the distancer pieces back again as far as possible to the right retaining rod.
5. Swivel the footboard down and hook it into place.

Leg support upper part

Adjusting the depth of the calf pads

Loosen the screws (4) to adjust the depth of the calf pad.

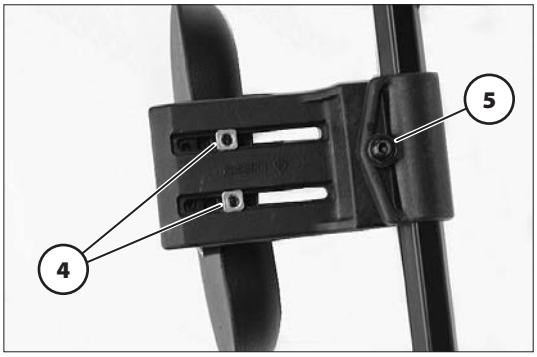
Adjusting the height of the calf pads

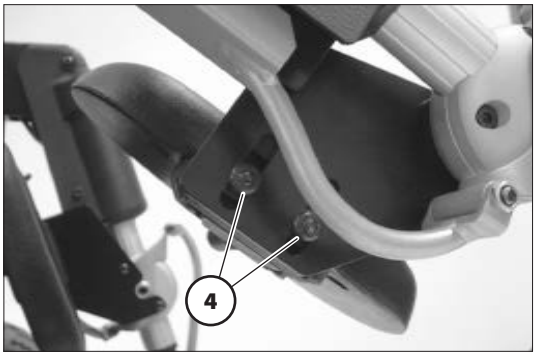
Loosen the clamping screw (5) to adjust the height of the calf pad.

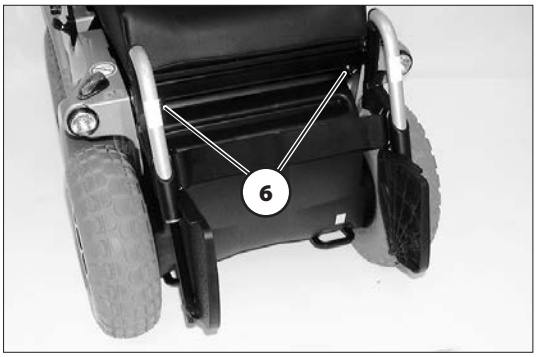
Width adjustment of the leg supports

Width adjustment of the leg supports is achieved by repositioning the two leg support brackets.

– Loosen the respective clamping screw (6) to adjust the width of the leg supports.





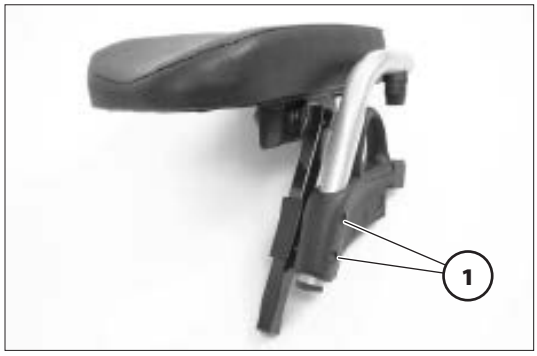


Stump support

The leg stump support can be used on the left and right side by repositioning the bracket.

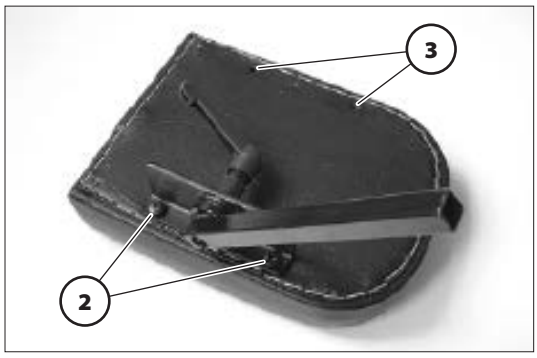
Repositioning the leg stump support

First unscrew the attachment screws (1) to reposition the leg stump support. The reposition the bracket to the other side and attach it.



Repositioning the leg stump cushion

First unscrew the screws (2) to reposition the leg stump cushion. Then position the bracket turned by 180° on the other side aligned with the holes (3) and retighten with the screws.



ARM SUPPORTS

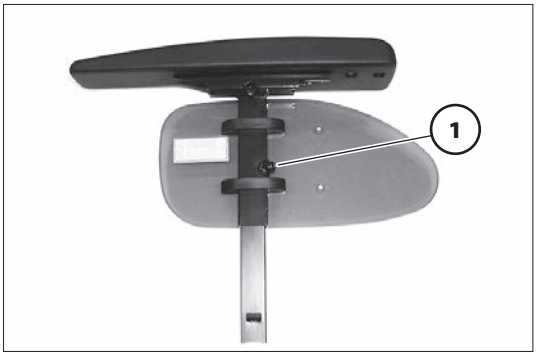
Adjusting the height of the arm supports

To adjust the height of the arm support, loosen the clamping screw (1), hold the arm support in the desired height and retighten the clamping screw (1).

☞ Before loosening the clamping screws (1) secure the arm support against falling down with your hand. – Danger of jamming with disassembled or too loosely screwed clamping screw (1)!

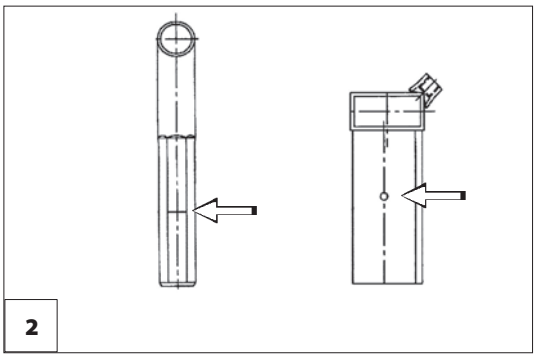
☞ During the adjustment the maximum arm support height is reached when a mark becomes visible above the receptacle tube [2].

☞ Ensure the tight fit of the clamping screw (1) in order to prevent the arm support from sliding down.



Depth adjustment of the arm support pad

The attachment screws (3) are to be removed for depth adjustment of the arm support pad, e. g. after changing the seat depth.

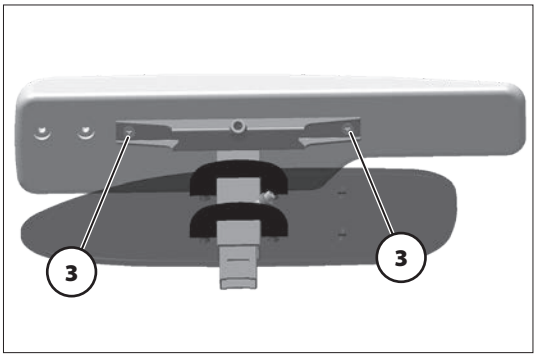


Adjusting the clothes guard

Loosen the clamping screws (4) to adjust the height of the clothes guard.

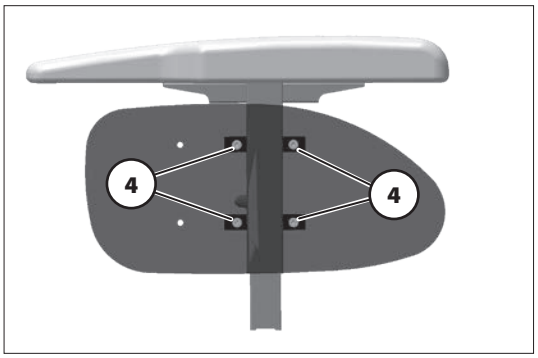
Depth adjustment of the clothes guard

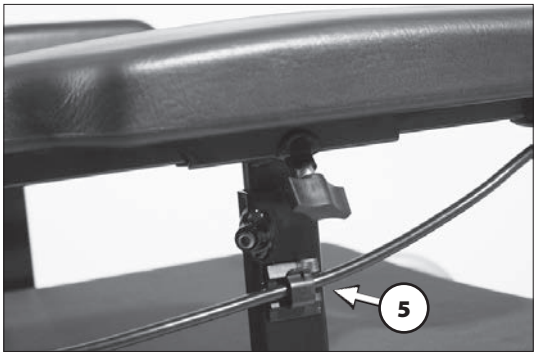
Remove the clamping screws (4) for depth adjustment of the clothes guard.



Cable fitting

☞ The cable of the operating module is fastened above the clothes guard with a cable clamp (5).



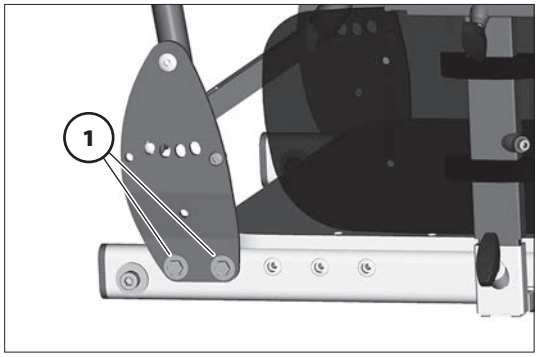


BACK SUPPORT

Adjusting the seat depth

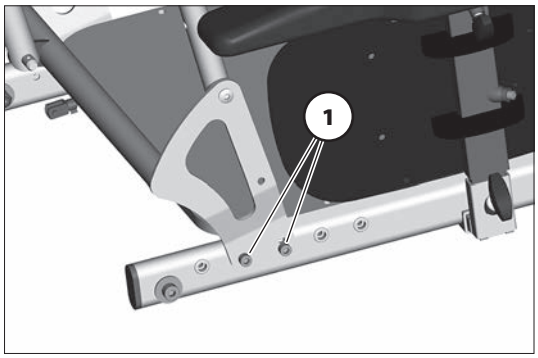
The seat depth can be changed by moving the back support to a different position.

Therefore remove up to three attachment screws (1) on both sides.



☞ Parallel repositioning of the back support.

☞ Therefore observe the chapters *Seat depth* on page 22 and *Depth adjustment of the arm support pad* on page 18.

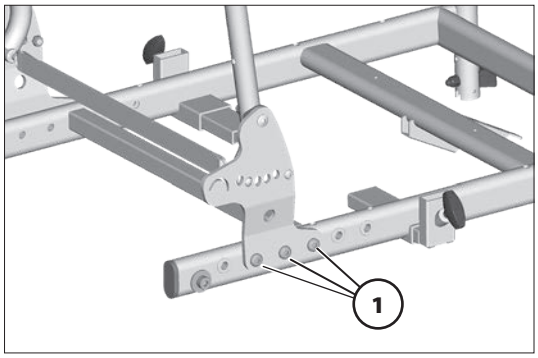


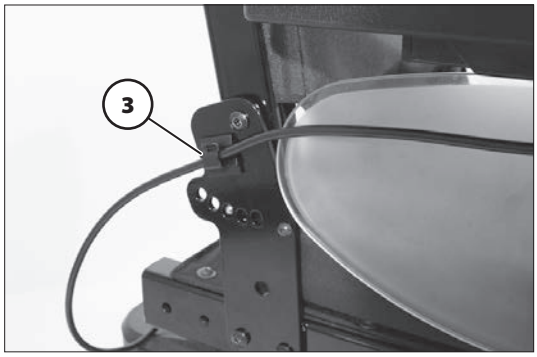
Back support upholstery

The back support upholstery [2] can be removed from the back shell by opening the velcro fastener.

Cable fitting

The cable of the operating module is fastened back support bracket with a cable clamp (3).

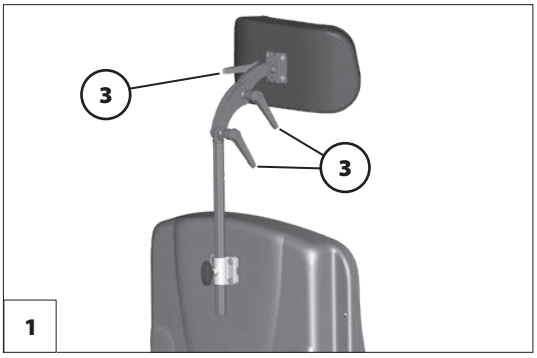




HEAD SUPPORT

The head support [1] is swivel proof, height and depth adjustable as well as removable.

☞ We recommend the fitting of two rear-view mirrors for driving with a head support.

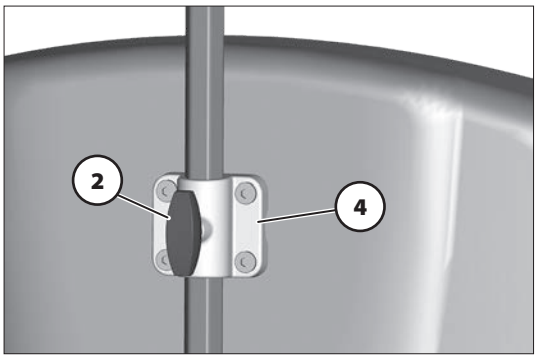


Height adjustment and removal of the head support

The head support can be detached or adjusted in height after the clamping screw (2) has been slackened.

☞ The maximum height adjustment is indicated by the marking!

Afterwards retighten the clamping screw (2).



Adjusting the position of the head support

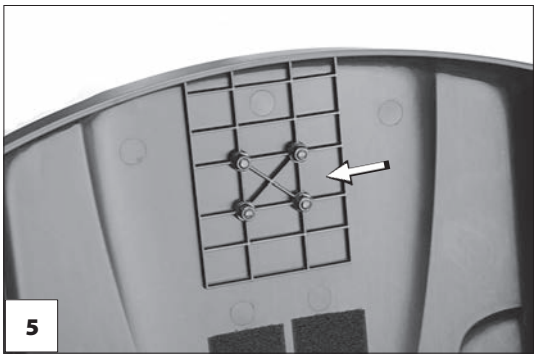
Loosen the clamping screws (3) to adjust the position of the head support.

Afterwards retighten the screws (3).

Mounting the head support

ErgoSeat:

The bracket (6) of the head support is mounted from the back onto the designated position of the back support shell [7].



SEAT WIDTH

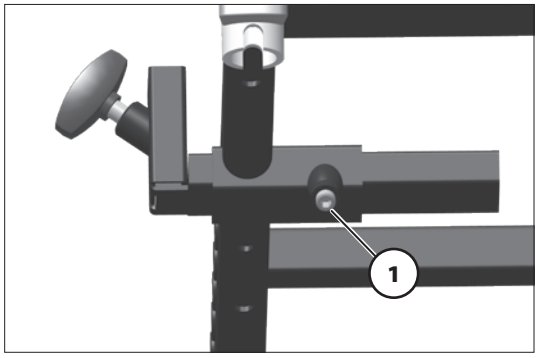
Adjusting the seat width over the arm supports

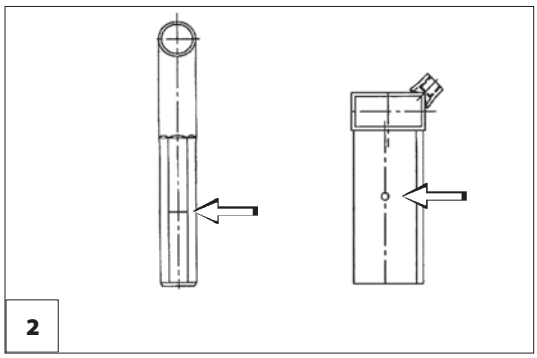
The seat width is adjustable by repositioning the arm supports outward/inward.

To reposition the arm supports loosen the clamping screw (1) of the clamping guide.

☞ Displace both arm supports by an equal distance after slackening the clamping screw (1) on both sides.

☞ The maximum seat width has been reached when a marking [2] is visible on the square tube.





SEAT DEPTH

Adjusting the seat depth through the position of the back support

The seat depth can be adjusted by repositioning the back support.

After removing the three attachment screws on both sides, the back support can be positioned according to table *< Seat depth – position of the back support >*.

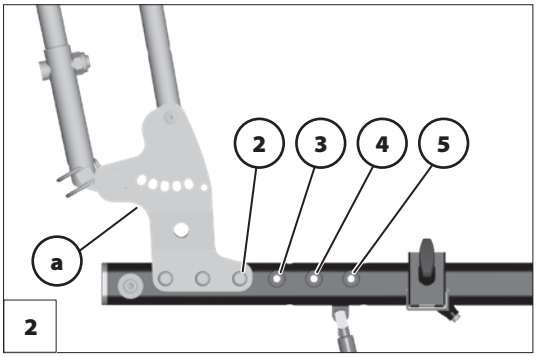


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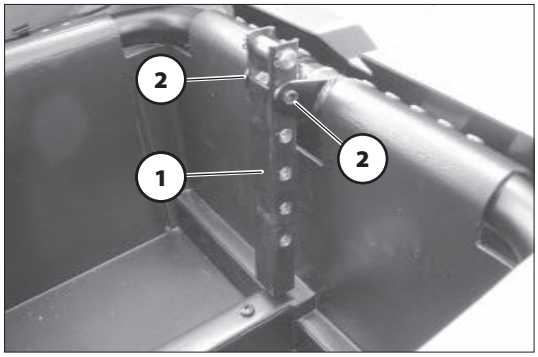
Table: Seat depth – Position of the back support				
Seat depth [cm]	43	46	49	53
Pos. back shell *	5	4	3	2
* Corresponds to the front assembly position of the adjustment plate (a)				

SEAT INCLINATION

Mechanical seat angle adjustment



The mechanical seat gradient angle can be set into 4 further positions by repositioning the support brace (1).

1. Remove the screws (3) to reposition the support brace.
2. Position the support brace according to table < *front seat height* >.
3. Reassemble the screwed connections (2).

☞ Then carry out a function test.

☞ For this observe chapter *Functional checks* on page 48.

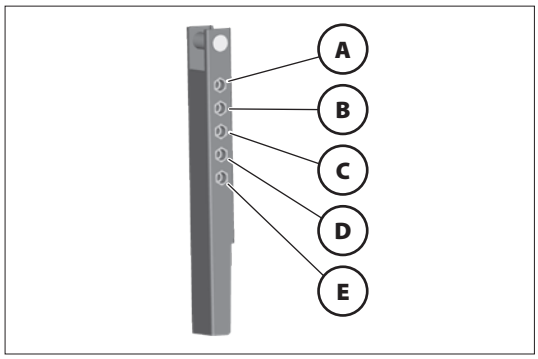


Table: Front seat height					
Seat inclination (upper edge seat frame)	2°	4°	6°	8°	10°
Attachment position for screws	A	B	C	D	E

ELECTRICAL ADJUSTMENTS

Adjusting the angle of the back support

Replacing the adjustment for angle adjustment

1. Pull the attachment plug of the adjustment motor (1) for angle adjustment from the adjustment module (2) underneath the seat frame.

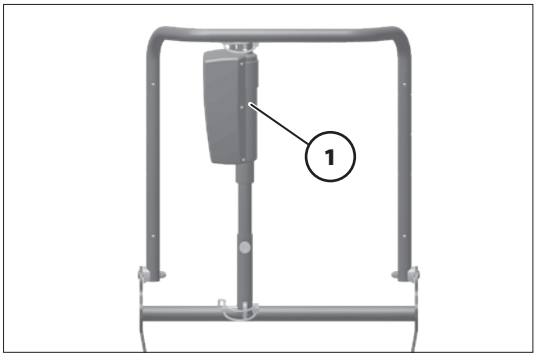
2. Remove the upper and lower tube clip (3) of the adjustment motor attachment.

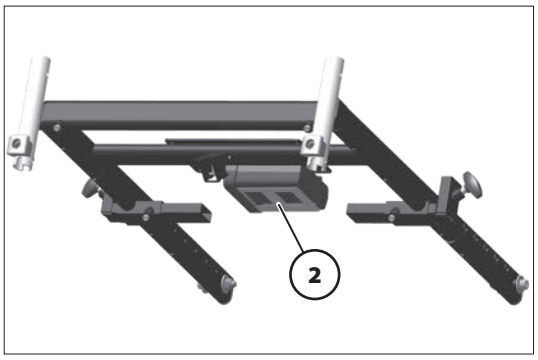
☞ In doing so watch for cables that might still be attached. – If required, remove corresponding cable binders.

Assembly of the adjustment motor is done analogue in reverse order.

☞ Then carry out a function test.

☞ For this observe chapter *Functional checks* on page 48.





Seat inclination (camber)

Replacing the adjustment motor for seat inclination

3. Pull the attachment plug of the adjustment motor (4) for seat inclination adjustment from the adjustment module (5) underneath the seat frame.

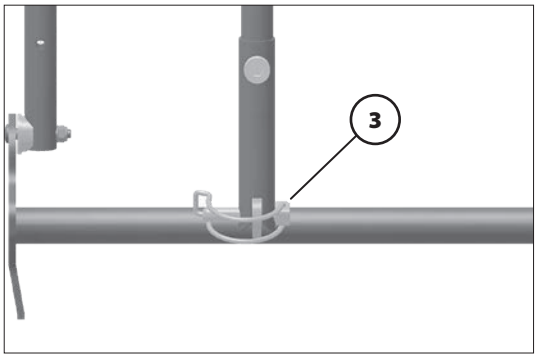
4. Remove the screws (6) for attachment of the adjustment motor for seat inclination adjustment.

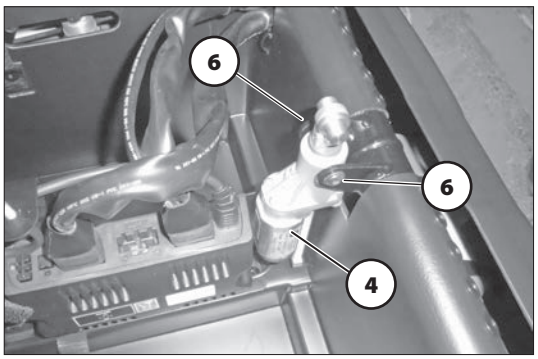
☞ In doing so watch for cables that might still be attached. – If required, remove corresponding cable binders.

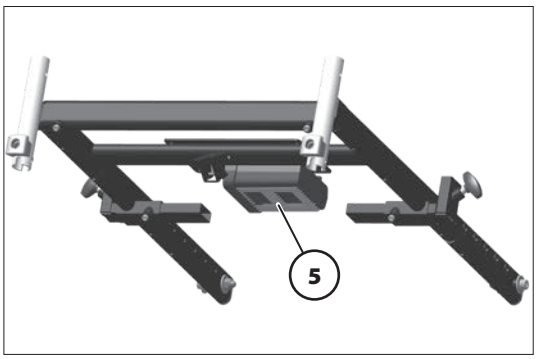
Assembly of the adjustment motor is done analogue in reverse order.

☞ Then carry out a function test.

☞ For this observe chapter *Functional checks* on page 48.







WHEELS

Wheel change

Before starting the disassembly work, support the frame to prevent the wheelchair from tipping over and secure it to prevent an unwanted movement or tipping over.

☞ Always change tyres in pairs.

Never loosen the connection screws of the rim halves (1) to disassemble the wheel.

☞ Danger of injury!

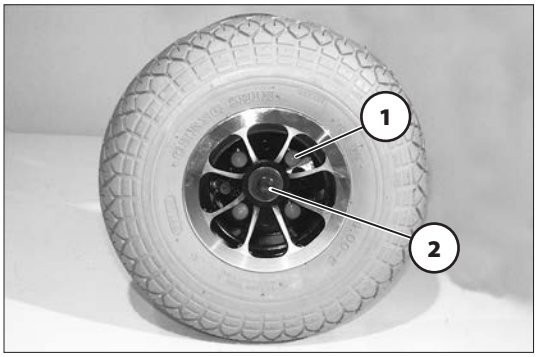
Disassembly of the wheels

Take off the wheel by removing the respective wheel screw (2).

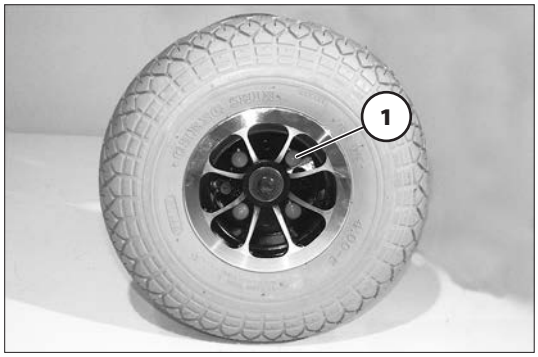
Assembly of the wheels

After replacing/attaching the wheel secure the respective wheel screw (2) again with Loctite 243 and tighten.

☞ For this observe chapter *Torque according to DIN for screwed connections* on page 52.



Changing the tyres



Disassembly of the tyres

Never loosen the rim half connection screws (1) in order to disassemble the tyre before previously completely deflating the tyre!

☞ Danger of injury!

1. Disassemble the wheel.
2. Completely deflate the tyre.
3. Unscrew the rim-half connection screws (1).

Assembly of the tyres

During assembly the rim halves may not damage the tube or let it be jammed.

1. Place the tyre cover with crease free tube between the rim halves.
2. Tighten the rim-half connection screws (1) evenly.

   ☞ For this observe chapter *Torque according to DIN for screwed connections* on page 52.
3. Assemble the wheel.

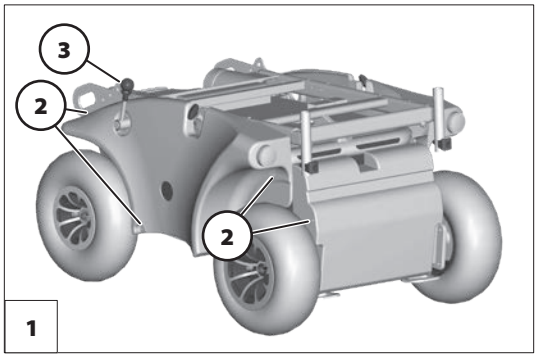
   ☞ For this observe chapter *Assembly of the wheels* on page 25.

REVETMENT

Replacing revetment parts

The revetment [1] consists of four parts, that can be replaced independently.

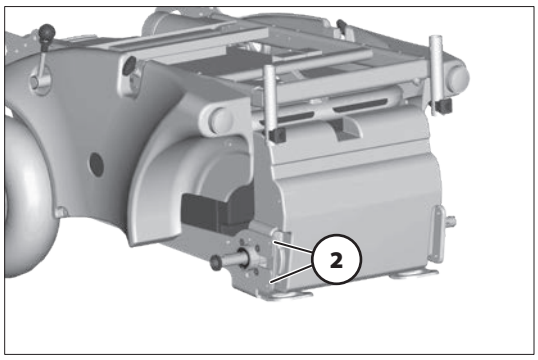
Therefore remove the respective screws (2).



☞ When replacing the side revetment observe that before disassembly, the respective existing lever (3) needs to be removed first.

  ☞ Therefore loosen the retaining ring and pull off the lever.

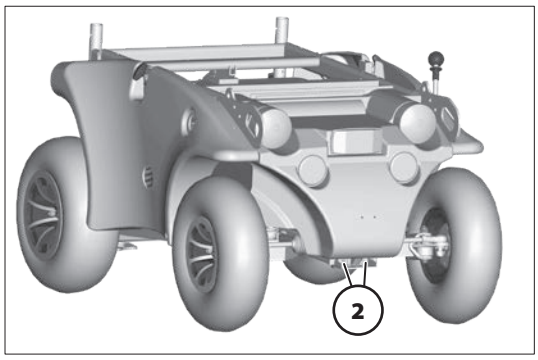
☞ Before replacing the rear or side revetment, the cable connections for the lighting need to be opened and the cables made visible.



After assembly the respective levers need to the reattached with the retaining rings and the previously disconnected cable connections re-established.

☞ Then carry out a function test.

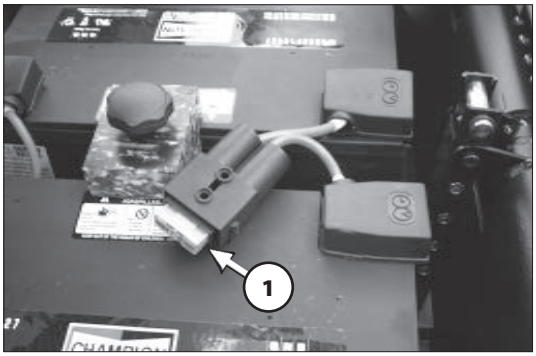
  ☞ For this observe chapter *Functional checks* on page 48.



FUSES

Main fuse

The main-/battery fuse (1) is switched in line between the two batteries and is inserted in the fuse holder between the batteries.

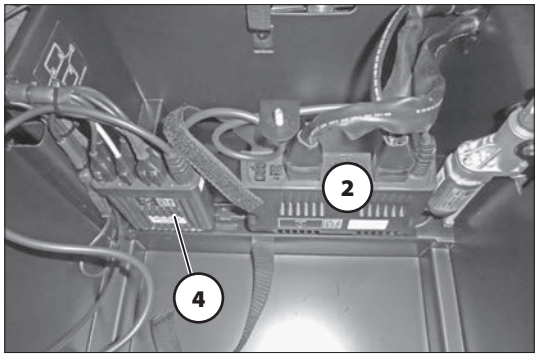


Electronic security

In case if a shortage only the defective component is deactivated. All other components (e.g. all other lights except for the defective one) remain available. After removal of the shortage, the affected component is automatically activated again.

Power module

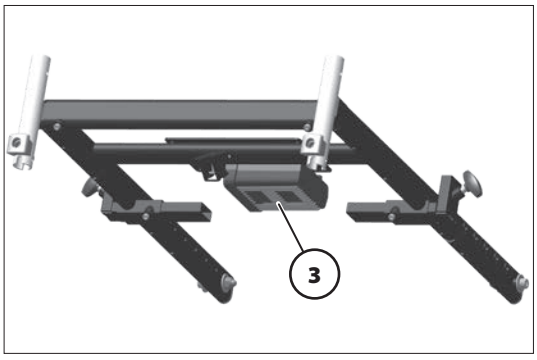
All electrical components (except for the batteries) are electronically protected by the power module (2). The power module also sees to a power limitation of the motors.



Particularities of the 15km/h-version

On the wheelchair version with a max. final speed of 15km/h, a bridge is located in the < *Inhibit* > socket (5) of the power module, that limits the speed to 12km/h.

☞ Herefore also observe the document supplied with the power module < *Supplementary information 2.322 with R-Net speed 15 km/* >.

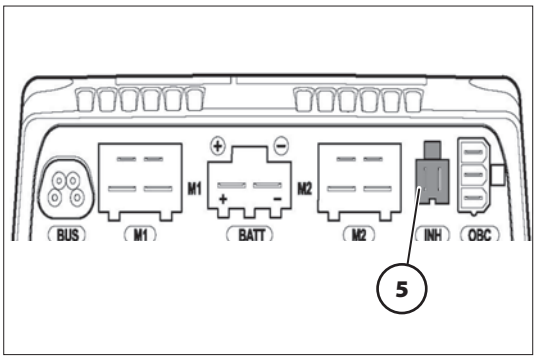


Adjustment module R-Net

All electric adjustments are electronically protected through the adjustment module (3).
The adjustment module is mounted, depending on model, onto the seat frame.

Steering-/Lighting module

The steering as well as lighting equipment are electronically secured by the combined steering-/Lighting module (4).
The steering-/lighting module is mounted beside the power module.



LIGHTING (FROM JANUARY 2024)

Observe chapter *Checking the cable layout* on page 48.

The lighting [1]+[2] is equipped with longlife LED-technology.

☞ If a turn-signal is defective, the remaining one blinks at double frequency.

☞ Only use original light bulbs for replacement.

☞ For this observe chapter *Replacing the lighting fixture* on page 30.

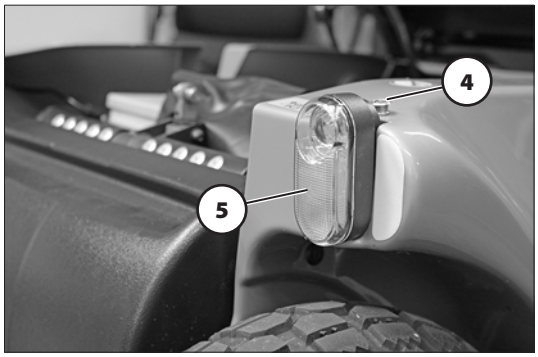
Headlight / front turn signal

The headlights [2] should be set in such a way that the light cone is visible on the road. – The lower edge of the light cone should be set at distance of 3 meters to the front of the electric wheelchair.

☞ The headlights might need to be readjusted after adjustment of the seat angle.

Adjusting the headlights

For adjustment of the headlights, pull the cover cap (3) off toward the top, afterwards loosen the adjustment screw (4) and adjust the lighting equipment accordingly (5). Then retighten the adjustment screw (4) and place the cover cap (3) back onto the screw.



Replacing the lighting fixture

A defective lighting fixture can only be exchanged completely.

☞ For safe identification of the defect (lighting fixture or lighting module) switch the plugs on the lighting module for left, resp. right lighting.

☞ The defect switches sides. – The lighting module is defective.

☞ The defect remains on the same side. – The lighting fixture is defective.

Replacing the headlight / front turn signal

1. Set the electric wheelchair into the service position.

   ☞ For this observe chapter *Service position* on page 8.

2. To remove the headlights we recommend to take off the side revetment first.

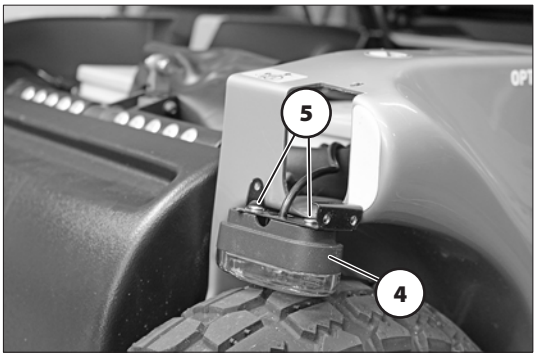
   ☞ For this observe chapter *Replacing revetment parts* on page 27.

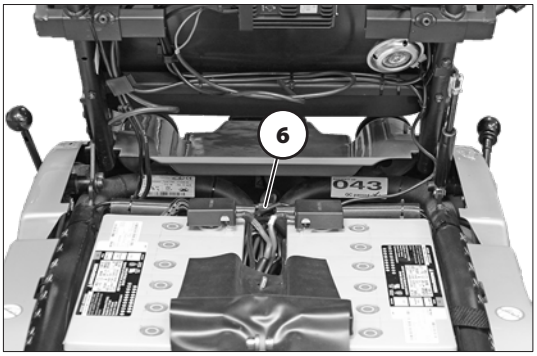
3. Pull the cover cap (1) off toward the top.
4. Remove the adjustment screw (2) and the attachment screw (3).
5. Pull the headlight (4) out of the revetment.
6. Loosen the attachment screws (5) and separate the headlight from the attachment plate.
7. Open the electric connection (6) of the headlight / front turn signal.
8. Remove the cable ties.
9. Guide the cable of the new headlight to the lighting module and re-establish the electric connection (6).
10. For mounting the new headlight / front turn signal carry out the further steps analogue in reverse order as the disassembly.

    ☞ Replace removed cable binders by new ones.

11. Then carry out a function test.

    ☞ For this observe chapter *Functional checks* on page 48.





Replacing the back light

1. Remove the rear revetment [1].

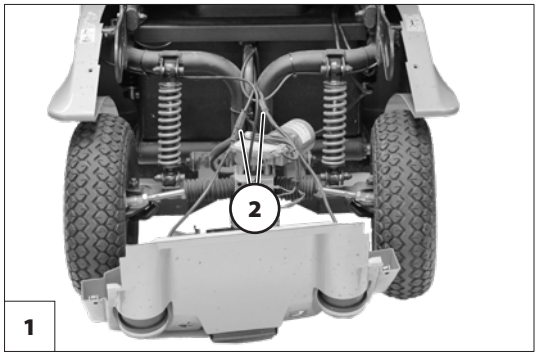
   ☞ Therefore observe chapter *Replacing revetment parts* on page 27.

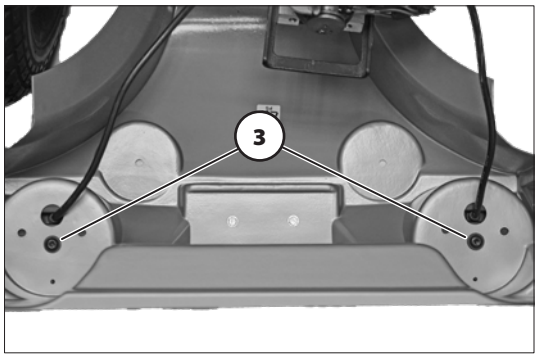
2. Open the electric connection (2).
3. Remove the cable ties.
4. Loosen the attachment screws (3) of the back light.
5. Pull the taillight out of the revetment.
6. Guide the cable of the back light to the lighting module / power module and re-establish the electric connection (2).
7. Screw the new back light back on (3).

   ☞ Replace removed cable binders by new ones.

8. Remount the rear revetment.
9. Then carry out a function test.

   ☞ For this observe chapter *Functional checks* on page 48.





LIGHTING (UP TO JANUARY 2024)

It is to be observed that the cables are not damaged or bent when being placed.

☞ Otherwise danger of fire through short circuits!

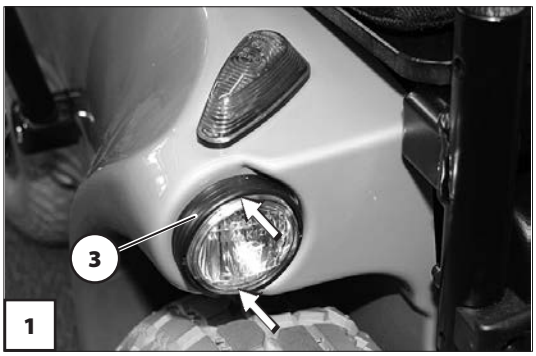
The electric wheelchair is equipped with a lighting system [1]+[2].

☞ Only use original light bulbs for replacement.

☞ Previously removed cable ties are to be replaced.

☞ Then carry out a function test.

☞ For this observe chapter *Functional checks* on page 48.



Headlights

The headlights (3) should be set in such a way that the light cone is visible on the road. – The lower edge of the light cone should be set at distance of 3 meters to the front of the electric wheelchair.

☞ The headlights might need to be readjusted after mechanical adjustment of the seat angle.

Adjusting the headlights

Press down the dispersion disc at the upper or lower edge in order to adjust the headlights (3).

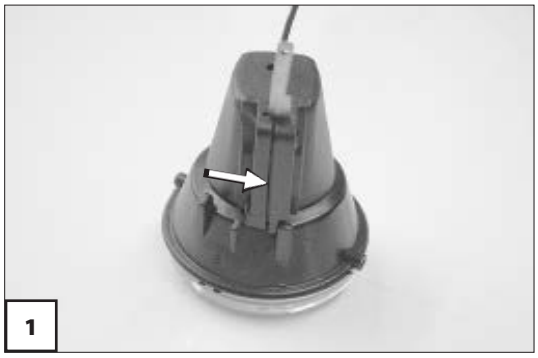
Replacing a light bulb

Before changing a light bulb, observe the following:

– Switch off the operating module.

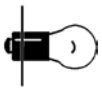
– Pull the mains-/battery fuse.

– Do not touch the glass body of the new bulb with your bare fingers. For assembly of a new bulb you can for example use a clean, dry cloth.



Headlights

Filament bulb:



6V/2.4W PX 13.5s

Removal

☞ To remove the lamp housing we recommend to take off the side revetment first.

☞ For this observe chapter *Revetment* on page 27.

1. Turn the rear lamp housing counter-clockwise [1] by about 15° and remove it [2]. – In doing so hold onto the dispersion disc to prevent it from also turning.
2. Pull the defective bulb out of the dispersion disc.

Fitting

1. Insert the new bulb into the dispersion disc (2).
2. Place the rear lamp housing onto the dispersion disc with an about 15° counter-clockwise turn [1] and turn clockwise about 15° to let it lock into place [3]. – In doing so hold onto the dispersion disc to prevent it from also turning.
3. If necessary remount he side revetment.

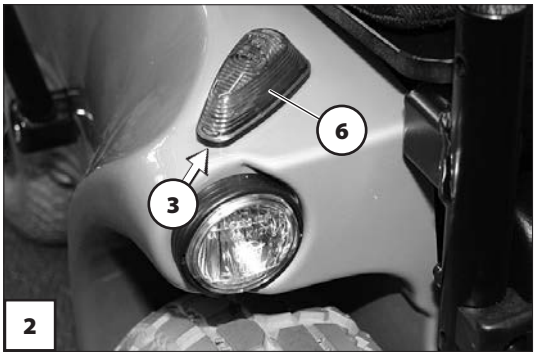
Front indicator

☞ If a turn-signal bulb is defective, the remaining one blinks at double frequency.

Filament bulb:

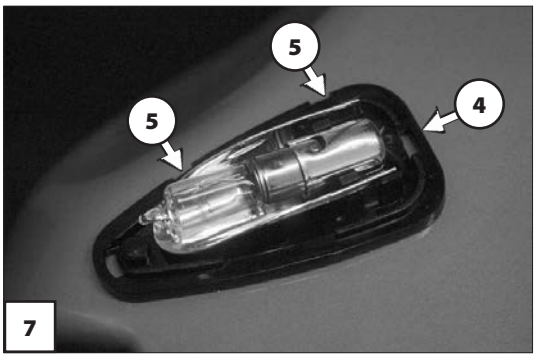
12V/R10W BA 15s

☞ **Note:**
For removal or renewing the bulbs, wrap the glass body for example in a clean, dry paper strip.



Removal

1. Lever off one of the two frontal locking springs (3) or (4). – Therefore press a small slot screw driver into one of the two lateral slots (5) and the wedge off the dispersion disc (6) carefully upward (7).
2. Press the faulty spherical bulb slightly inwards, turn and remove from the socket.



Fitting

1. Insert a new spherical bulb. – Push the side pins (bayonet catch) into the recesses of the bulb holder, press lightly against the spring and then turn the bulb until the bayonet catch clicks into place.
2. Mount the lens. – Therefore first insert the rear spring (4), then press down the dispersion disc (6) (2).

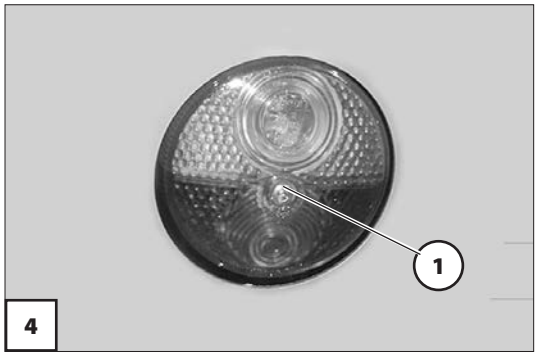
☞ The locking device of the front spring (3) must audibly engage.

Rear indicator

☞ If a turn-signal bulb is defective, the remaining one blinks at double frequency.

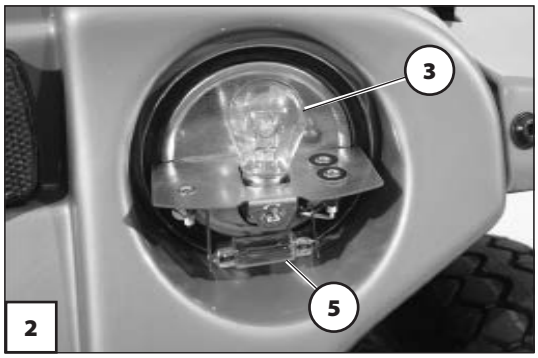
Filament bulb:

12V/P21W BA15s



Removal

1. Undo the securing screw (1) and remove the lens [2].
2. Press the defective spherical bulb (3) lightly into the holder against the spring and then turn the bulb and pull it out of the bulb holder.

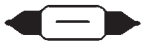


Fitting

1. Insert a new spherical bulb. – For this push the sideward pin (bayonet-catch) into the recess of the bulb holder, press and turn lightly against the spring until the bayonet-catch snaps into place [2].
2. Mount the lens, [4].

Rear light

Festoon bulb:



6V/C5W S8.5

Removal

1. Undo the securing screw (1) and remove the lens [2].
2. Press the defective festoon bulb (5) against the holding pin and then pull it out of the holder.

Fitting

1. Insert the new festoon bulb [2]. – For this press one tip of the soffitte into the hole in the holding pin and then press the other tip into the hole of the other holding pin [2].
2. Mount the lens, [4].

REPLACING THE BATTERIES

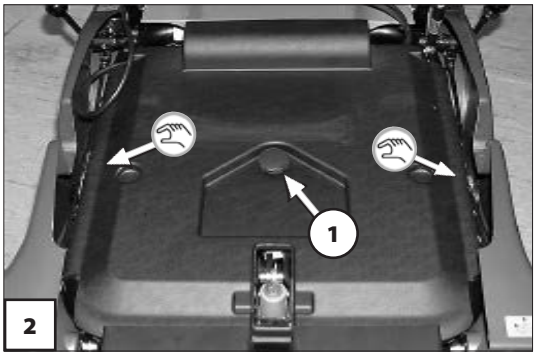
Removing the batteries

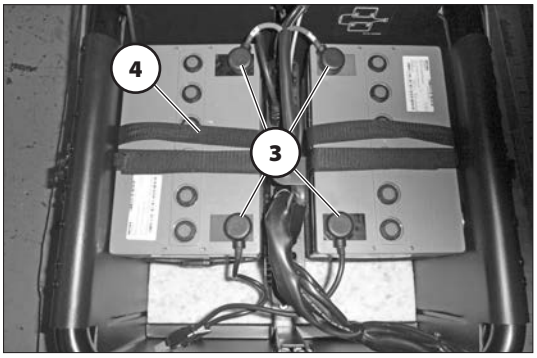
1. Unscrew the handwheel (1) and lift off the lid of the battery case [2].

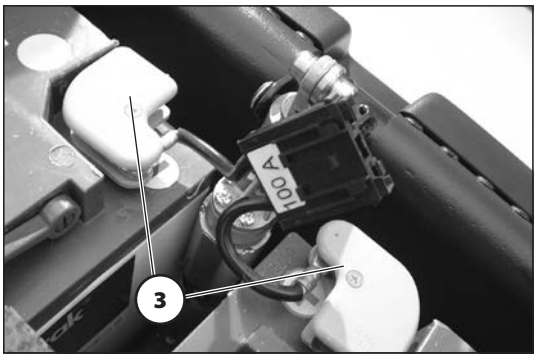
   ☞ For this lift the battery lid and pull it slightly forward, then lift off the rear part of the battery case lid and remove it slanted toward the top.

2. Lift all four pole clamps from the battery poles (3).

3. Lift out the batteries with the handles resp. straps (4) [5].







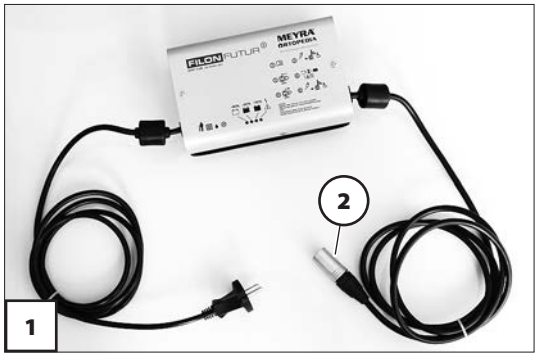
Mounting the batteries

It is to be observed that the pole clamp cover is fastened correctly above the battery poles.

☞ Danger of fire through short circuits!

Assembly of the batteries is carried out analogue in reverse order to chapter *Removing the batteries* on page 36.

BATTERY CHARGER



☞ When changing to batteries with considerably different capacity also use a corresponding charger [1], so that the charging periods remain limited and the batteries are charged completely.

Technical requirements:

for the following drive batteries,

– max. charging voltage: 28.5 V

– up to 66 Ah – 5 h / 80 Ah – 20 h
  – Charging current: 8 A

– from 88 Ah – 5 h / 107 Ah – 20 h
  – Charging current: 12 A

Marginally increased transition resistance (> 0.2 Ohm) in the charging cables and -plugs already prevent a complete charging. Chargers, where the plug (2) gets hot during the charging procedure are to be replaced.

DRIVE

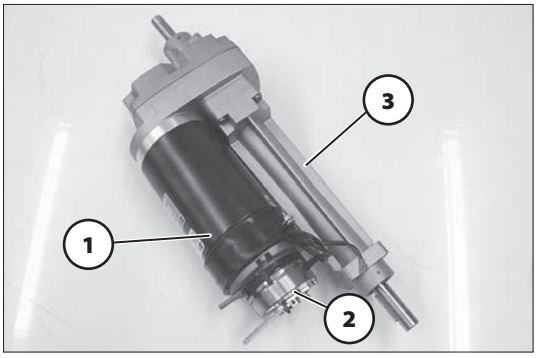
The vehicle is fitted with a drive on each side. The drive consists of:

(1) the motor,

(2) the magnetic brake,

(3) the maintenance free differential gear.

☞ The drive can only be replaced completely.



Removing the drive

The following describes the replacement of the drive.

1. Securely jack-up the vehicle.
2. Switch the vehicle off and pull the battery-/mains fuse.

   ☞ Therefore also observe chapter *Working on the vehicle* on page 7.
3. Detach the drive wheels [4].

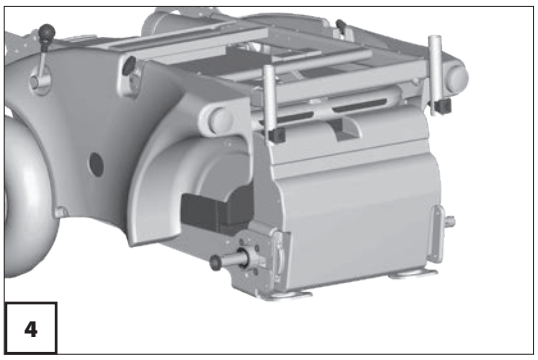
   ☞ For this observe chapter *Disassembly of the wheels* on page 25.
4. Remove the front panel [5].

   ☞ For this observe chapter *Revetment* on page 27.
5. Pull the motor plug from the power module.

   ☞ For this observe chapter *Plug assignment* on page 44.

   ☞ Open all necessary cable binders required for disassembly.
6. Remove the attachment screws (6) of the drive on both sides.
7. Pull the drive out toward the front out of the rockers.

   ☞ In doing so you might need to pull the rockers apart slightly.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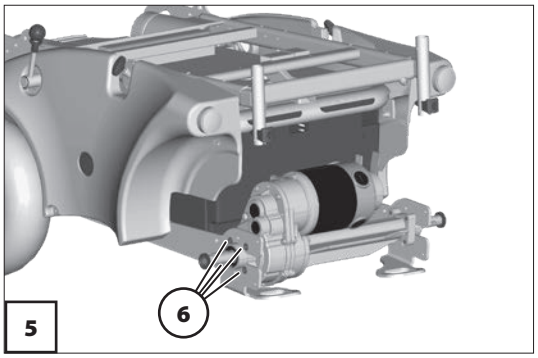


5

Mounting the drive

Assembly of the drive is done analogue in reverse order to chapter *Removing the drive* on page 38.

☞ Retighten all loosened screwed connection The torque can be found in chapter *Torque according to DIN for screwed connections* on page 52 .

☞

☞ Previously removed cable ties are to be replaced.

☞ Then carry out a function test.

   ☞ For this observe chapter *Functional checks* on page 48.

Carbon brushes

When the motor is not running flawless and defects in the incoming lines can be excluded the four carbon brushes have to be checked one after the other.

☞ The carbon brushes are supplied in a set, completely assembled with brackets and are always to be replaced as a set!

☞ Do not touch the friction surface of the carbon brushes!

Disassembly of the carbon brushes

1. Switch the vehicle off and pull the battery-/mains fuse.

   ☞ For this observe chapter *Main fuse* on page 28.

2. Remove the front panel.

   ☞ For this observe chapter and chapter *Revetment* on page 27.

3. Remove the plus cable and the minus cable from the motor.

4. Pull back the rubber buffer (1) from the motor.

5. Remove the fixing screw (3) from the carbon brushes (2).

6. Push the carbon brush retainer in the direction of the screw hole (4).

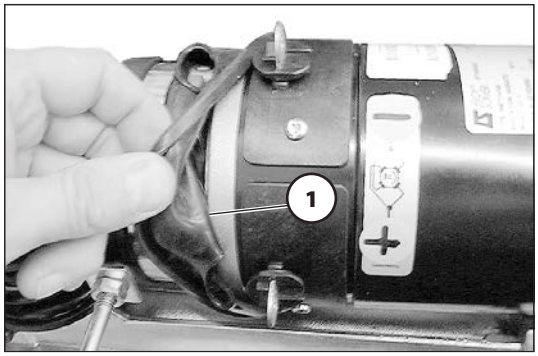
7. Slightly pull the carbon brush retainer back form the motor opposite of the screw holder (5).

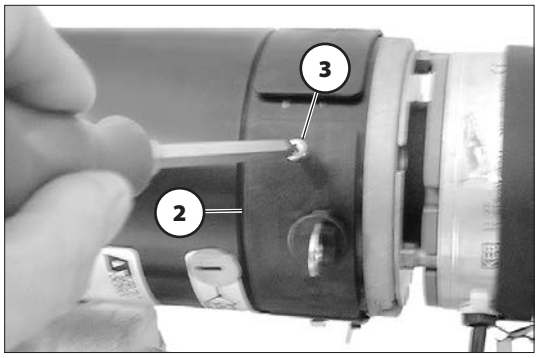
8. Press the carbon brush retainer in the opposite direction of the screw hole [6].

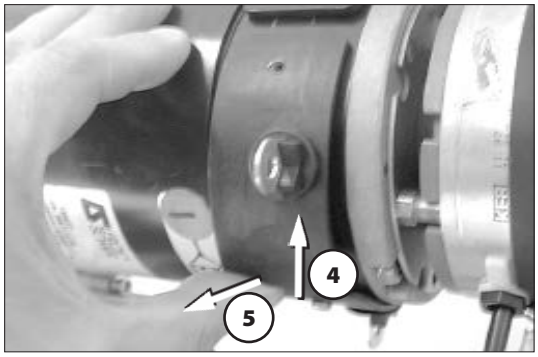
9. Slightly pull out the carbon brush retainer [7].

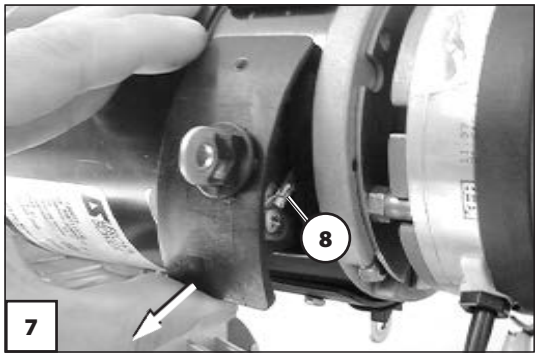
☞ Two opposite carbon brushes each are connected with each other through a cable (8) that runs over the motor.

10. Remove the philister head screw (9) of the connecting cable.

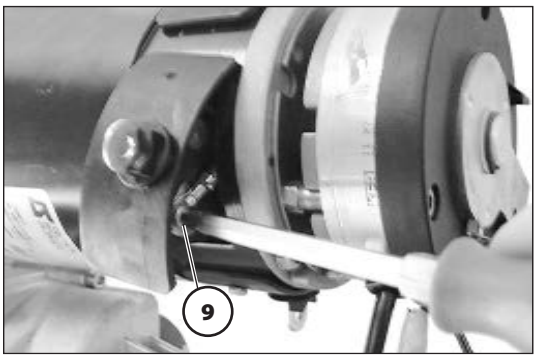








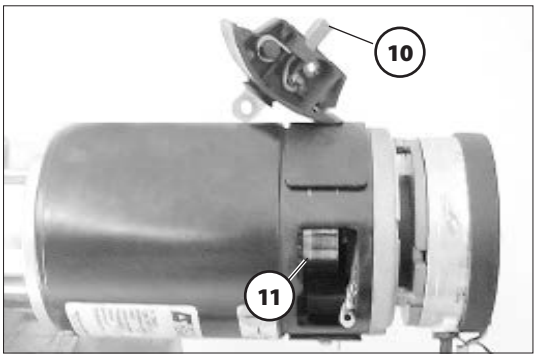
11. Completely remove the carbon brush retainer.



☞ The carbon brush retainers cannot be pulled straight out of the opening.

☞ While pulling out the carbon brush bracket, turn it slightly.

☞ The carbon brushes are worn when the pressure springs come to rest on the retainer without the carbon brushes reaching over their guide way.
They are also to be replaced when the contacts (10) appear black and dull. – On intact carbon brushes the contacts are anthracite coloured and shining.



☞ Do not touch the friction surface of the carbon brushes!

12. If the carbon brush is completely intact reassemble the carbon brush retainer and check the next one.

Assembly of the carbon brushes

Assembly of the carbon brush is done analogue in reverse order to chapter *Disassembly of the carbon brushes* on page 39.

☞ When mounting the carbon brush after a visual check, observe that the carbon brush receives the same position as when being removed.

Collector

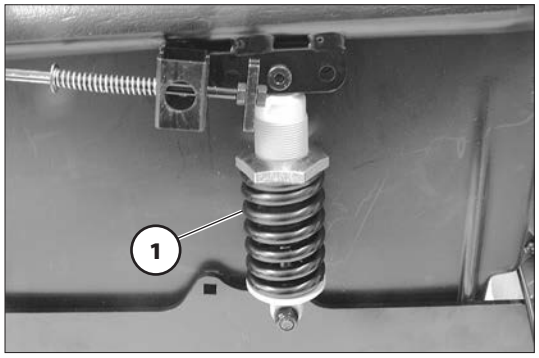
The collector (11) located between the carbon brushes is also to be checked for damages. – To check them remove a carbon brush retainer.

☞ The slight grinding marks caused by the carbon brushes correspond to their normal wear and have no influence on the performance of the motor. Extreme recesses have to be smoothed out. If partial segments have been broken out or are extremely burnt the drive unit has to be replaced.

VEHICLE SUSPENSION

Suspension of the chassis

Make sure that the adjustment ring sits securely before starting to drive.
Screw a loose adjustment ring tight enough, until the pressure of the spring prevents further loosening.

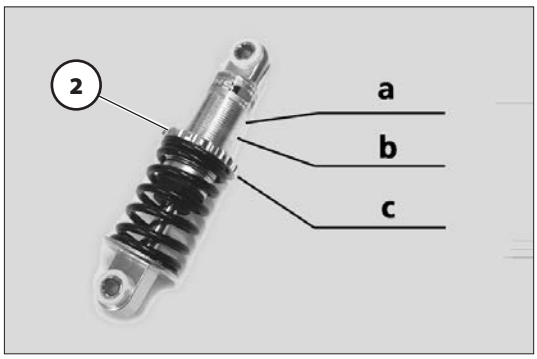


For optimal sitting comfort the suspension (1) can be adjusted according to the desire of the user.

Adjusting the seat suspension

For adjustment of the suspension the adjustment ring (2) is screwed forward or backward accordingly.

In doing so the following indications are valid:



a. Adjustment ring slightly screwed: soft suspension

☞ Also for people with little user weight.

b. Adjustment ring regularly pre-tightened: medium suspension (manufacturer setting)

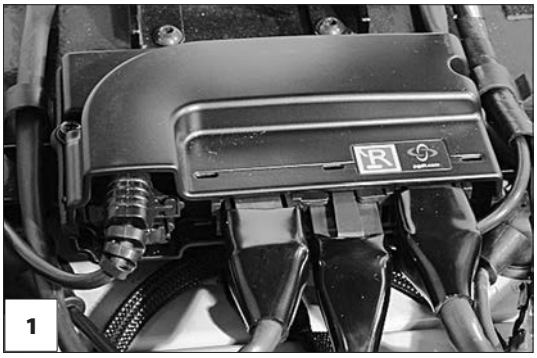
☞ For regular sitting comfort.

c. Adjustment ring extremely screwed: hard suspension

☞ Also for people with high user weight.

☞ In Position "a" and "c" at least three screw threads must be visible!

POWER MODULE


1

The power module R-Net [1] stores the settings of the driving parameters and adopts as the power electronic the addressing of the drive motor respectively on two motor wheelchairs the addressing of both drive motors.

The inlets and outlets of the power module are short circuit proof, so that the lead fuse is not applicable.

Programming the driving behaviour

The driving behaviour of the electronic vehicle can, vehicle dependently be adjusted through a programming device.

The parameter values of the delivery configuration are selected in such a fashion that the requirements of the EG-directive 93/42 (CE-marks) are fulfilled. Programming that differs from these requirements might not fulfil the regulations.

The driving behaviour of the wheelchair should be adjusted to the individual requirements and the learning process of the respective user at regular intervals.

In doing so the driving experience, the physical limits of the user and the main field of operation must be considered:

- ☞ When programming the delay value observe that on one hand extreme braking can endanger the driver, on the other hand the braking distance must correspond to the maximum values of EN 12184 (view chapter *Braking distance* on page 48).
- ☞ The programming must be specially tailored to the user. The capacity of reaction, the constitution as well as physical and psychical abilities are to be considered. A talk with the doctor or therapist can be very helpful.
- ☞ An adjustment to the manufacturer settings of the driving parameters changes the optimal driving behaviour of the vehicle.

Independent of this the safety of the wheelchair and especially the driver must be guaranteed after a change of the parameters.

- ☞ All changes to the parameters underlie solely the responsibility of the person making the modifications.
- ☞ Parameters can accidentally be adjusted to settings that cannot generally exempt hazards.

Driving parameter

You can obtain the driving parameters of the delivery condition through out national sales partners.

Replace power-, steering-/lighting- resp. adjustment module

Observe chapter *Checking the cable layout* on page 48.

1. Before replacing a module all plugged connections are to be disconnected.

   ☞ In doing so it is recommended to place each plug that is pulled directly into the new module. This prevents establishing incorrect plugged connections.

2. Afterwards remove the screws of the defective module.

   ☞ For this it is recommendable to remove the two screws (1) on the power- (2), resp. steering-/lighting module (4) and to lift the module with the assembly plate out of the battery well and afterwards to remove the attachment screws of the module.

3. Remount the new module analogue in reverse order.

☞ Then carry out a function test.

   ☞ For this observe chapter *Functional checks* on page 48.

Power module

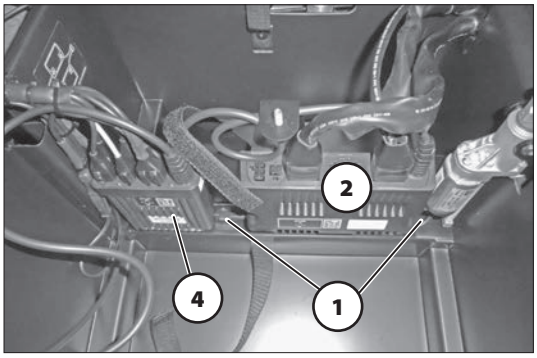
The power module (2) is mounted to the assembly plate between the batteries.

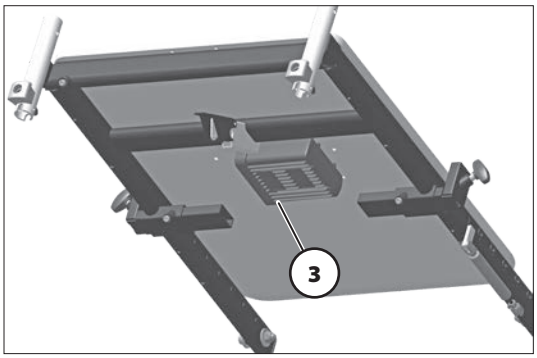
Steering-/Lighting module

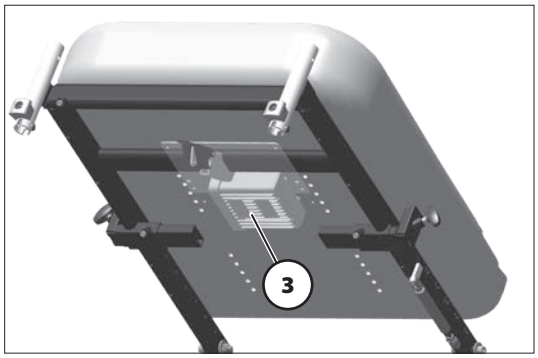
The combined steering-/lighting module is mounted beside the power module onto the assembly plate between the batteries.

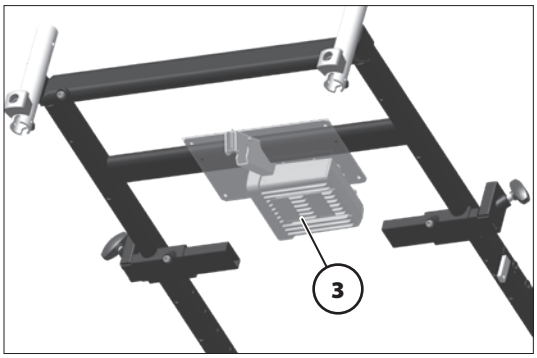
Adjustment module

The adjustment module (3), depending on seat version, is mounted to the seat frame.



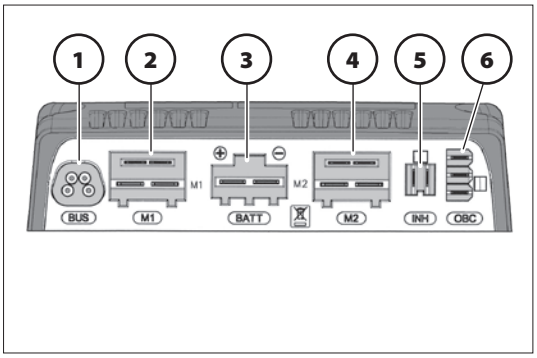






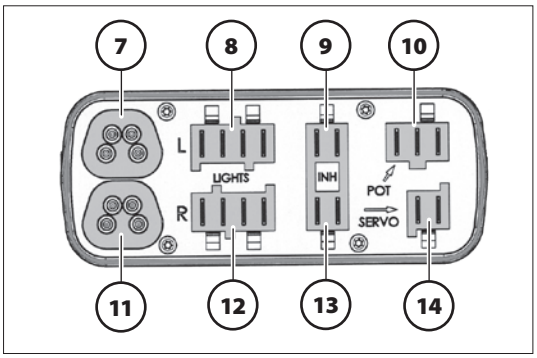
Plug assignment

Power module



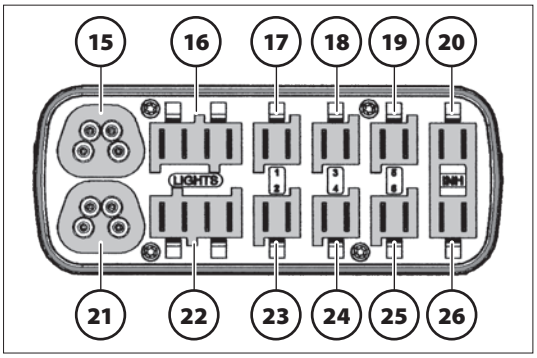
(1) R-Net bus
(2) Motor (with magnetic brake)
(3) Battery
(4) Motor (w/o magnetic brake)
(5) Speed reduction on 15km/h
(6) free

Steering-/Lighting module



(7) R-Net bus
(8) Left lighting
(9) Switch drive/push
(10) Steering potentiometer
(11) R-Net bus
(12) Right lighting
(13) Switch hand brake
(14) Steering motor

Adjustment module



(15) R-Net bus
(16) free
(17) Adjustment motor: electric back support
(18) Adjustment motor: left leg support
(19) free
(20) free
(21) R-Net bus
(22) free
(23) Adjustment motor: camber
(24) Adjustment motor: right leg support
(25) Adjustment motor: Recaro
(26) free

ERROR INDICATION

Error indication R-Net

LCD-display

Errors will be shown in the LCD-display (15) of the operating module in the following error code.

(a) Shows the cause of the error.
(b) Shows the error code.

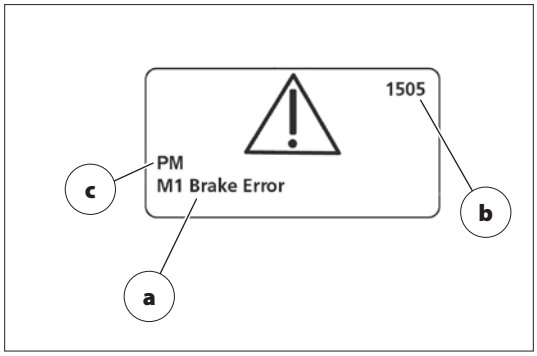
Error-Code	Cause of error
1E01	The battery charger is still connected.
2C00	Battery discharged.
1505 1506	A magnetic brake is disengaged and the push mode activated.
3800 3C00	A motor or its cable connection is defect.
7205	Lamp short circuit, left side
7209	Lamp short circuit, right side
7206	Short circuit in cable, left side
720A	Short circuit in cable, right side
7207	No connection signal, left side
7208	No connection signal, right side

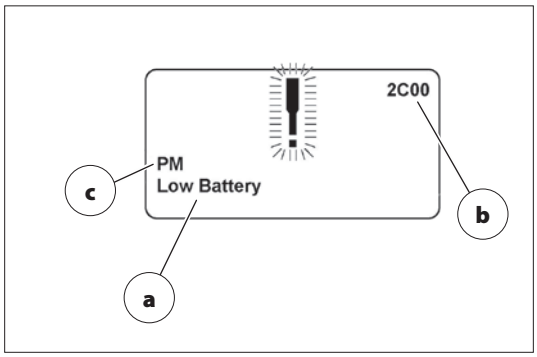
(c) Shows the location of the error.

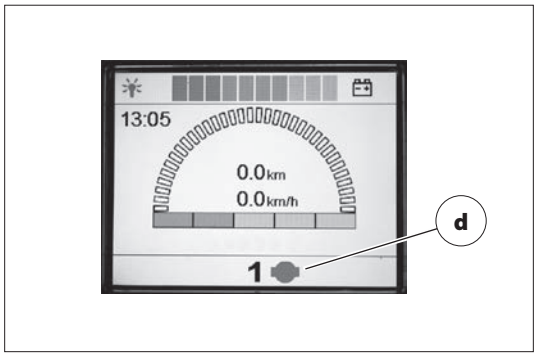
Display	Location of error
JSM	Operating module
PM	Power module
ISM	Lighting / Adjustment module
STLM	Lighting / Steering module
DUAL	Control unit for accompanying person

(d) Shows the type of error.

Display	Type of error
	Overload of the drives
	System performance reduced. Self protection against overheating





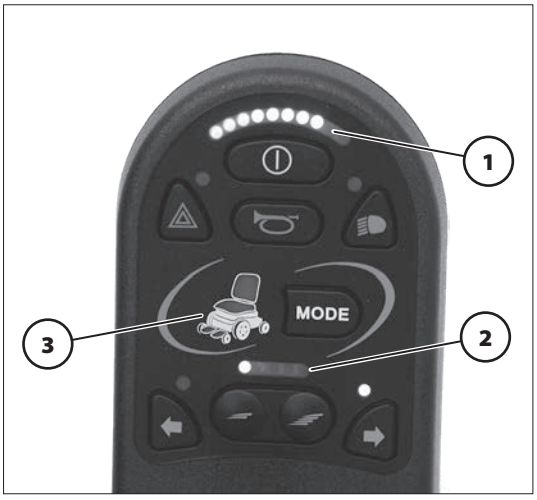


LED indicator

In case of an error the number of blinking light segments (1)-(2)-(3) indicate the possible cause of the malfunction.

☞ Therefore observe table < *Error diagnostics* >.

☞ If the malfunction cannot be repaired and the vehicle no longer operated, contact your national Meyra-Ortopedia sales partner.



Error diagnostics

LED	Cause of error	Fault correction
1 LED	The battery voltage is too low.	Check the plug on the operating module and the battery connections. Charge the batteries.
2 LED	The electrical connection to the left motor is open-circuit.	Check the motor connection cable, motor cable plug and motor.
3 LED	The electrical connection to the left motor is defective (short-circuit).	Check the motor connection cable, motor cable plug and motor.
4 LED	The electrical connection to the right motor is open-circuit.	Check the motor connection cable, motor cable plug and motor.
5 LED	The electrical connection to the right motor is defective (short-circuit).	Check the motor connection cable, motor cable plug and motor.
6 LED	The drive disable function is active.	The drive disable function is an electronic security function that prevents the wheelchair from being driven when a battery charger is connected.
7 LED	A system or joystick error.	Operating- or power module defective. Movement of the joystick during ignition, resp. during the test phase of the operating module can also lead to this error indication.
8 LED	Defective power module or a system fault.	Check cables and connecting plugs.
9 LED	Fault on the magnetic brakes of the motor.	Check cables and connecting plugs. This fault indication appears also if the lever of the drive motors is in the push mode position. – Move the lever to the drive mode position.
10 LED	The battery voltage is too high (downhill driving) or the electrical connections are not O.K.	Check the plug on the operating module and the battery connections.
7 LED+ (2)	The joystick communication is defective.	Check the connector cable.
	An electric adjustment is defective.	With two electric adjustments check which one is not working and then check the cables on this adjustment.

FUNCTIONAL CHECKS

Checking the cable layout

It is to be observed that the cables are not damaged or extremely bent when being placed.

The cables must be placed according to their diameter in a reasonable radius.

☞ Otherwise danger of fire through short circuits!

The cables may not reach out further than the contour of the vehicle.

The cable may not be jammed or twisted.

After replacing defective parts and during maintenance always check the correct cable layout.

☞ Replace previously removed cable binders by new ones.

Inspection during standstill

Check all screws, attachments and connections in the area of the assembly or service work carried out.

Do a visual check of the complete vehicle.

Switch to push mode and check the free movement of the wheelchair.

Switch to drive mode, switch the vehicle on and check the battery charging voltage.

Check all lighting components and electric adjustments for function.

Test drive

Initially drive carefully and observe if the driving behaviour of the vehicle has changed.

Watch for unusual sounds.

After a short drive check the temperature of the motor, worm drive and magnetic brake.

Conduct a braking test.

Braking distance

When programming the delay value observe the maximum value of the braking distance of EN 12184.

Maximum braking distance of EN 12184			
Speed		max. braking distance	
6	km/h	1,0	m
8	km/h	1,5	m
10	km/h	2,1	m
12	km/h	2,9	m
15	km/h	4,5	m

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MAINTENANCE

Electric wheelchairs are *medical devices of the class I-MDD*. As a medical device the electric wheelchairs fall under the operator ordinance in Germany. National regulations / ordinance may vary from the ones in Germany. We recommend to conduct maintenance at least once a year. The work done and replacement of essential components is to be documented.
For the documentation in the course of the maintenance the itemised maintenance checklist can be used.

The maintenance checklist is intended for copying. The filled in maintenance checklists are to be added to the documentation.

With the signature the undersigned declares to have duly performed the measured declared in the maintenance checklist.

Reinstallment

Before reimplementation the wheelchair is to undergo a complete inspection.

- ☞ The hygienic measures required for reinstallment are to be carried out in correspondence with the validated hygienic plan.
- ☞ A revision/renovation or particular amendment to the vehicle, without the use of original spare parts, may mean a renewed placing of the vehicle into the market.
- ☞ This will further entail that new conformity assessments and tests might need to be conducted.

Designation:	Maintenance/Inspection date:
SN-No. (Serial-no.):	Maintenance/Inspection done by:
Year of construction:	Signature:

Stamp of the executing workshop:

Maintenance checklists of the annual maintenance jobs	
	Preparation for visual check
❑	Removed seat and back support upholstery. If necessary, clean the electric wheelchair or the modules before the visual check.
	Visual check coachwork / frame
❑	Checked the frame, add-on components and accessories for damage, corrosion and damaged paintwork.
❑	Covers and revetments are free of dents and tears.
❑	Checked function of the designated attachment points such as screws or velcro straps.
	General checks
❑	Checked the securing screws for tightness.
❑	Checked the securing of all add-on parts and elements.
❑	Checked the attachment of the plastic parts, handgrips, add-on parts and accessories.
❑	Checked the material of the retaining strap
	Chassis
❑	Checked steering and drive wheel attachment.
❑	Wear of axle bushing: The axles of the drive wheels do not show radial run-out and run easily.
❑	Check rubber buffers / dampers / suspension struts for wear and replace if necessary.
❑	Wheel forks are not bent or torn.
❑	Checked the condition, functioning and smooth-operation of the steering wheel suspension.
❑	Screws, with which the drive is attached to the electric wheelchair, are tightened with the torque according to DIN.
	Tyres and rims
❑	Tread pattern depth of the tyres is greater than 1.5 mm.
❑	The tyres are free of damages or alien objects and are not porous.
❑	Checked tyre pressure front and rear.
❑	The lateral lag of the rims is max. 2 mm.
❑	Wheel attachment screws are tightened with torque according to DIN.

Maintenance checklists of the annual maintenance jobs

	Batteries
❑	No dirt or outer damage to the batteries.
❑	Checked the screwed connections of the battery poles.
❑	Poles and attachment clamps are clean and greased with Vaseline or Acid protector grease.
❑	Cover caps are placed onto the battery poles.
❑	Operation capability of the batteries ensured (capacity check conducted).
❑	The battery case is not damaged, the batteries are secured correctly.
	Electrical conduits and alignment
	Control- and charging cable as well as battery and cable are:
❑	a) undamaged
❑	b) lay out without tension or jamming points (acc. to chapter *Checking the cable layout* on page 48)
❑	Plugged connectors are undamaged and not corroded.
❑	The holders for the charging and controller fuse a well as the main fuse are filled correctly.
❑	The cables to the lighting units and sensors are undamaged and attached correctly.
	Control panel / Control
❑	The operating pad keys function bounce-free.
❑	Checked the control displays for function.
❑	The keypad symbols are visible.
❑	The director (e. g. joystick) functions easily and returns to its original position from any motion.
❑	The zero sector (the sector within which, even when the director is moved, no driving impulses are transmitted) for forward and backward driving are equal.
	Lighting
❑	Checked function of all components of the lighting equipment.
❑	The dispersion discs of the lights are undamaged.
❑	The headlights are adjusted correctly.
❑	Passive lighting (reflectors) complete, clean and undamaged.
	Brakes
❑	Checked the function of the brakes.
❑	The maximum braking distance corresponds to EN 12184.

Maintenance checklists of the annual maintenance jobs	
	Oil/Grease
❑	Checked turning points and bearing areas of operating levers and moveable parts for easy functioning.
	Final check
❑	Checked the lighting and signalling devices.
❑	Conducted brake-/steering-/driving test on inclinations and slopes.
❑	Conducted a general function test of the mechanical adjustment units.
❑	Pneumatic springs / spring buttons for service position checked for flawless function
❑	Conducted driving test.
❑	The inspection certificate filled out in the operating manual.

DIN norms and guidelines

The torque according to DIN for screwed connections can be extracted from the table at the side.

Tyres

.....Filling pressure front: 2.5 - 3.5 bar = 2500 - 3500 hPa = 36 -50 psi

Filling pressure rear: 2.5 - 3.5 bar = 2500 - 3500 hPa = 36 -50 psi

Minimal profile depth acc. to STVO:..... 1.5 mm

Items with order number

Loctite 243 (medium hard) 205 638 800

Torque according to DIN for screwed connections

Thread diameter		Tightening torque	
M	4	3	Nm
M	5	5	Nm
M	6	10	Nm
M	8	25	Nm
M	10	50	Nm
M	12	85	Nm

MEYRA®

CIRCUIT DIAGRAM

Legend:

Power module

B1	Bridge (12 km/h with / 15 km/h without)
F1	Battery fuse
G1	Battery
G2	Battery
M1	Driving motor (4-pole)
Y1	Magnetic brake

Adjustment module

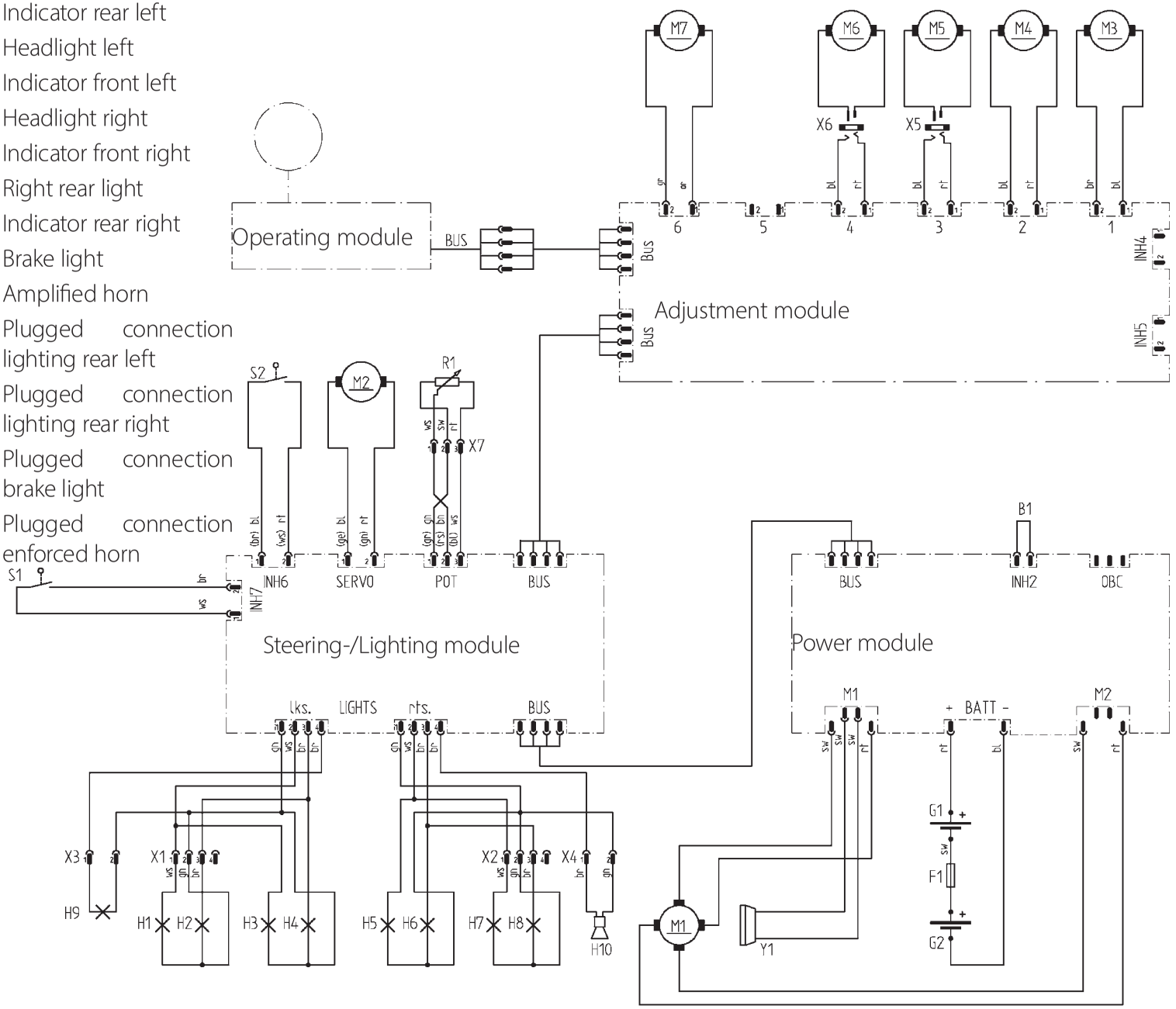
M3	Back support adjustment motor
M4	Seat camber motor
M5	Leg support motor left
M6	Leg support motor right
M7	Back support adjustment motor (Recaro)
X5	plugged contact leg support left
X6	plugged contact leg support right

Steering-/Lighting module

M2	Steering motor
R1	Steering potentiometer
S1	Switch hand brake
S2	Switch drive/push
X7	Plugged connection steering potentiometer

Lighting

H1	Left rear light
H2	Indicator rear left
H3	Headlight left
H4	Indicator front left
H5	Headlight right
H6	Indicator front right
H7	Right rear light
H8	Indicator rear right
H9	Brake light
H10	Amplified horn
X1	Plugged connection lighting rear left
X2	Plugged connection lighting rear right
X3	Plugged connection brake light
X4	Plugged connection enforced horn



NOTES

NOTES

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