

SERVICE MANUAL

US

Permobil ***M300 Corpus HD***

Power Wheelchair



permobil

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Introduction

The Service Manual is intended for technical personnel who maintain and repair power wheelchairs. It is important that anyone who performs maintenance and repairs described in this manual reads and understands the content of this manual so that the work is performed professionally. Always state the chassis number when contacting Permobil to ensure that the correct information is provided.

Spare parts

Spare parts must be ordered through your dealer.

Warranties

Contact your dealer or Permobil Inc. USA for information about the warranties for this chair.

Maintenance

See the information in the Owner's Manual.

Serial Number labels

Chassis



Chassis ID number.

R-net Power Module



R-net Power Module ID number.

R-net control panel



R-net Control panel ID number.

Covers

Removing the front chassis cover

1. Move/fold the leg rests out.
2. Switch off the main power switch on the control panel.
3. Remove the two knobs that hold the cover in place (see fig.).
4. Lift the lower edge of the cover upwards/forwards. Note that the cover is mounted partially inside the chassis at the lower edge.



The front cover is fitted with two knobs.

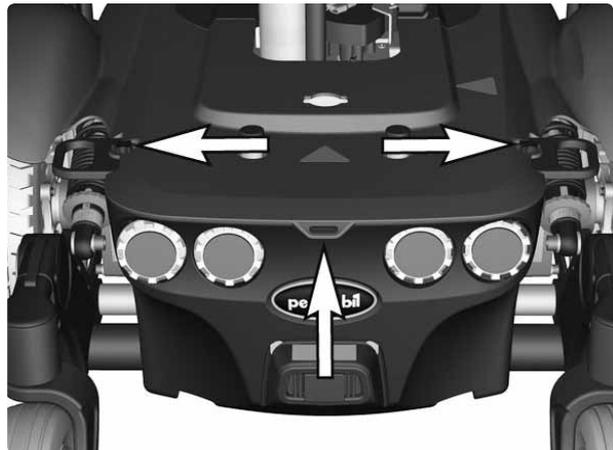
Assembly

Assemble in the reverse order.

1. Fit the cover partially inside the chassis at the lower edge (see fig.).
2. Fit the two knobs that hold the cover in place (see fig.).

Removing the rear chassis cover

1. Switch off the main power switch on the control panel.
2. If the upper chassis cover isn't removed, remove its rear knobs and lift its rear end to release the rear chassis cover, raise the seat if needed. Remove the rear chassis cover by lifting it upwards/backwards.
3. On wheelchairs equipped with lights, disconnect the rear lights cabling (see fig. below.).

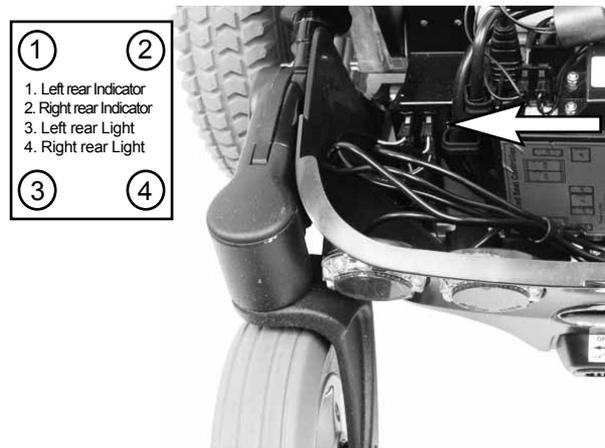


The rear cover is fitted with the upper chassis cover.

Assembly

Assemble in the reverse order.

1. On wheelchairs equipped with lights, reconnect the rear lights cabling (see fig.).
2. Fit the cover partially inside the chassis at the lower edge (see fig. above).
3. Make sure the upper cover holds the rear cover and Remount the two knobs (see fig. above).



Rear lights cabling connections.

Covers

Removing the upper chassis cover

The cover is fitted with four knobs (see fig.).

1. Move/fold the leg rests out and, if necessary, raise the seat.
2. Switch off the main power switch on the control panel.
3. If fitted, remove the front chassis cover. See page 7.
4. Remove the two remaining knobs holding the cover. (see fig.).
5. Remove the cover by pulling/lifting it backwards.

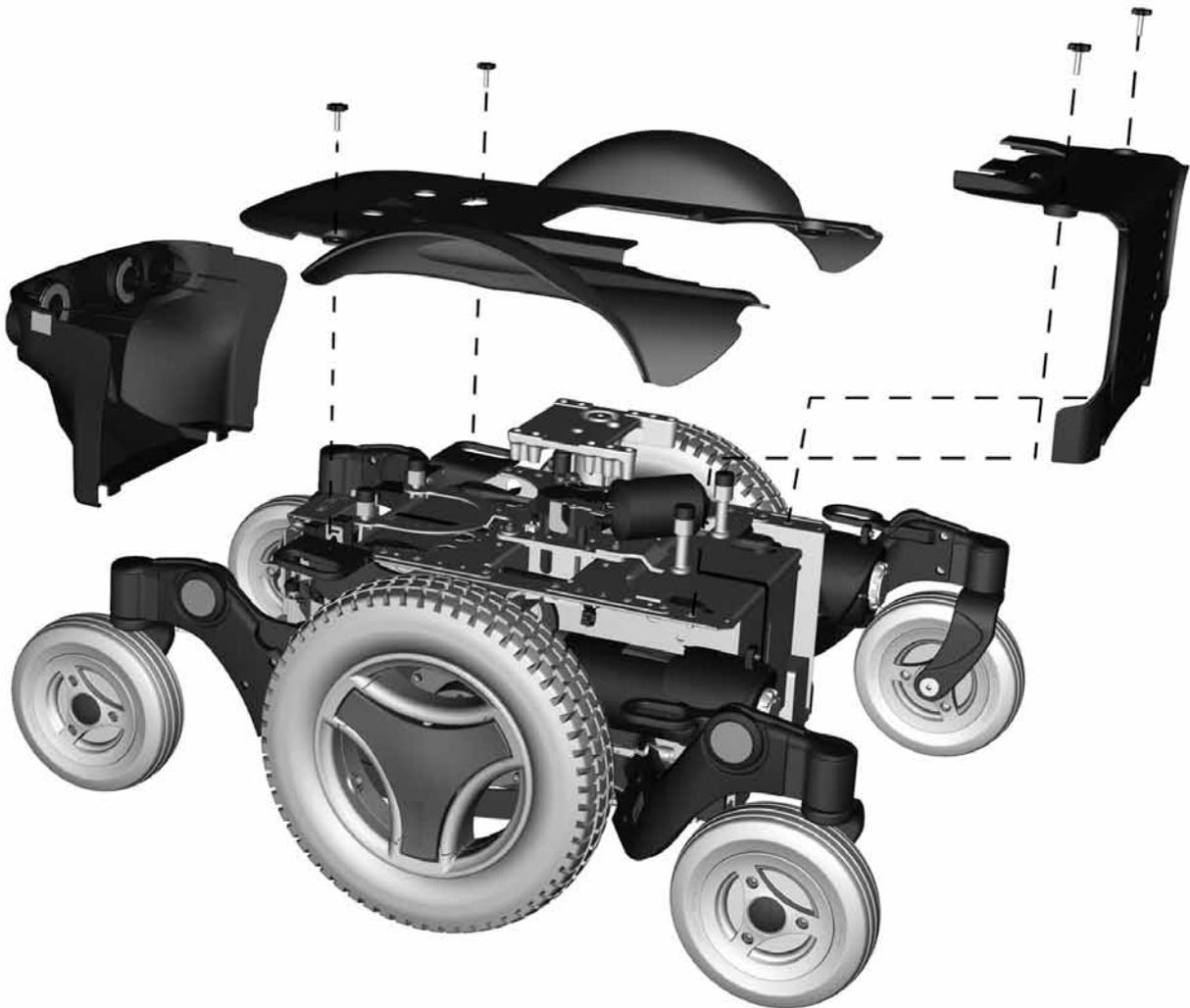


The upper cover is fitted with four knobs.

Covers

Fitting the upper chassis cover

1. Move/fold the leg rests out and, if necessary, raise the seat.
2. Switch off the main power switch on the control panel.
3. Fit the rear chassis cover before the two rear knobs on the upper chassis cover is fitted (see fig.).
4. Fit the front chassis cover before the two front knobs on the upper chassis cover is fitted (see fig.).



Chassis covers.

Covers

Removing the front link arm covers.

Both sides of the link arms have covers fitted. The covers are fitted with four screws.

1. Switch off the main power switch on the control panel.
2. Remove the drive wheel on the side in question (see page 16).
3. Remove the four screws holding the covers (see fig.).

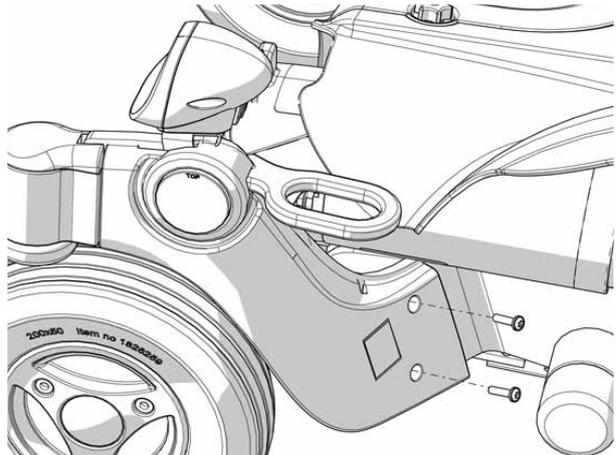
Assembly

Assemble in the reverse order.

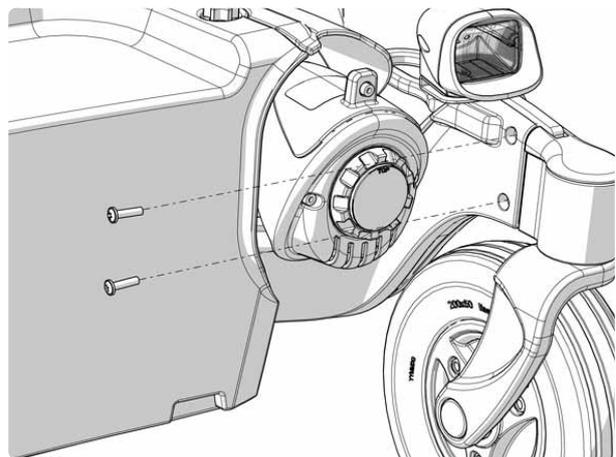
1. Fit the covers using the four screws (see fig.).
2. Fit the drive wheel on the side in question (see page 16).

For this task the following tools are necessary:

- 1 Torx key TX20.



Front link arm covers.



Front link arm covers.

Covers

Removing the rear link arm covers.

Both sides of the link arms have covers fitted. The covers are fitted with four screws.

1. Switch off the main power switch on the control panel.
2. Remove the chassis rear cover. See page 7.
3. Remove the four screws holding the covers (see fig.).

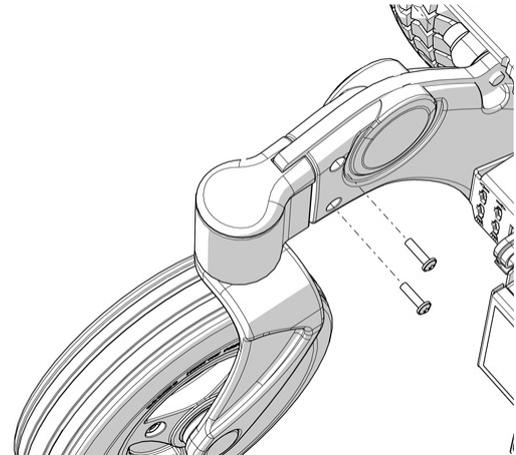
Assembly

Assemble in the reverse order.

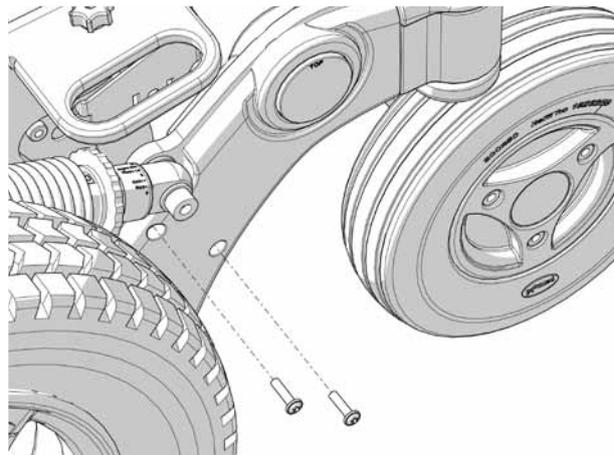
1. Fit the covers using the four screws (see fig.).
2. Fit the chassis rear cover. See page 7.

For this task the following tools are necessary:

- 1 Torx key TX20.



Rear link arm covers.



Rear link arm covers.

Covers

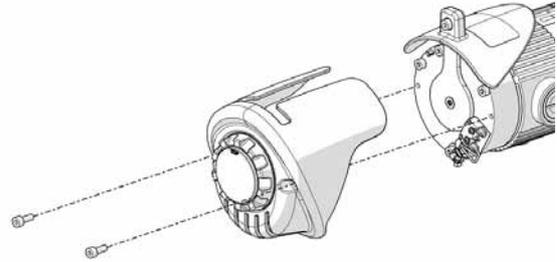
Removing the drive motor covers

The drive motor covers are fitted with two screws each. The associated brake release covers are fitted with one screw each.

1. On wheelchairs equipped with lights and indicators, remove the front and upper chassis cover. (See page 7-9).
2. Remove the drive motor cover, it is attached with two screws (see fig.).

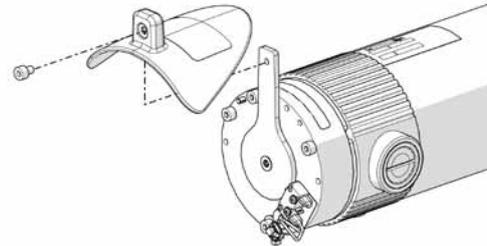
For this task the following tools are necessary:

- 1 Allen key 3 mm.
- 1 Allen key 2,5 mm.



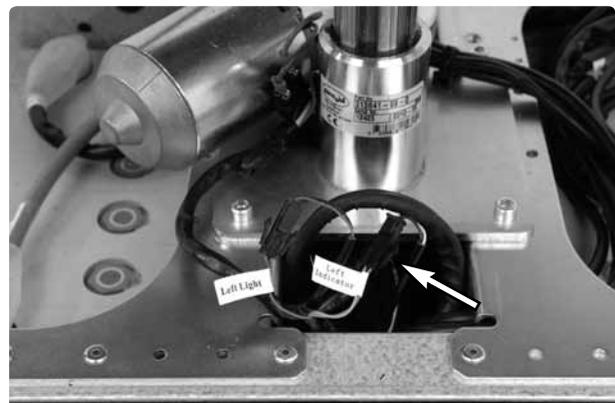
The drive motor cover is fitted with two screws.

3. Remove the brake release cover, it is attached with one screw (see fig.).



The brake release cover is fitted with one screw.

4. On wheelchairs equipped with lights and indicators, separate the indicators' cabling at the contact on the cabling. This is positioned on the inside of the chassis, next to the seat lift.



The connector on the front indicator cabling.

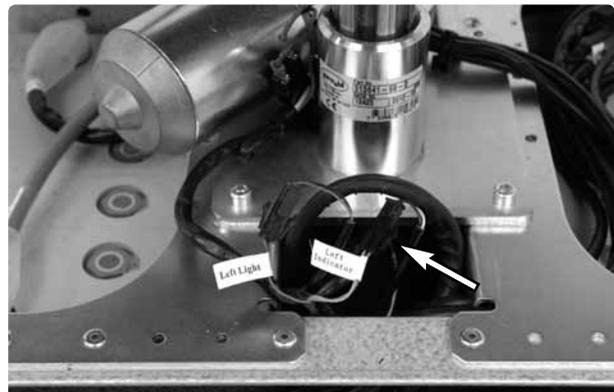
Covers

Fitting the drive motor covers

1. On wheelchairs equipped with lights and indicators, connect the indicators cabling at the contact on the cabling. This is positioned on the inside of the chassis, next to the seat lift.

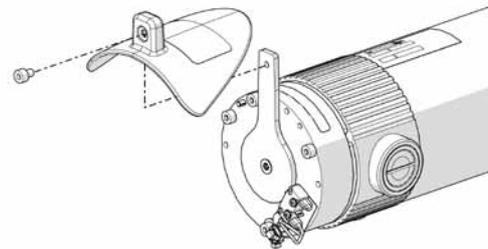
For this task the following tools are necessary:

- 1 Allen key 3 mm.
- 1 Allen key 2,5 mm.



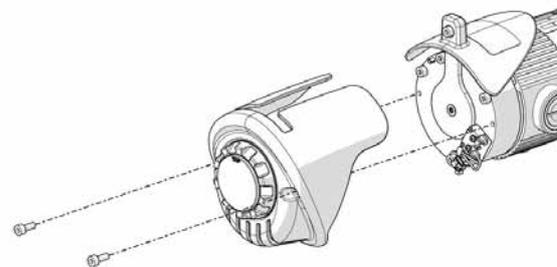
The connector on the front indicator cabling.

2. Install the brake release cover using the screw (see fig.).



The brake release cover is fitted with one screw.

3. Replace the Drive motor cover with the two screws as per diagram.
4. On wheelchairs equipped with lights and indicators, Remount the front and upper chassis cover. (See page 8-9).



The drive motor cover is fitted with two screws.

Battery replacement

For this task the following tools are necessary:

1 Wrench 10 mm.



1. Place the wheelchair on a level surface.
2. Run/fold out the leg rest and raise the seat lift.
3. Turn off the main power switch on the control panel.
4. Put the circuit breaker in the "OFF" position (see fig.).
5. Remove the chassis covers. See pages 7-8.
6. Remove the electronics. See page 38.
7. Remove the front and rear seat support. See page 32.
8. Loosen the battery terminals on the front and rear battery. See figures below. Also see the sticker on the inside of the chassis front cover.



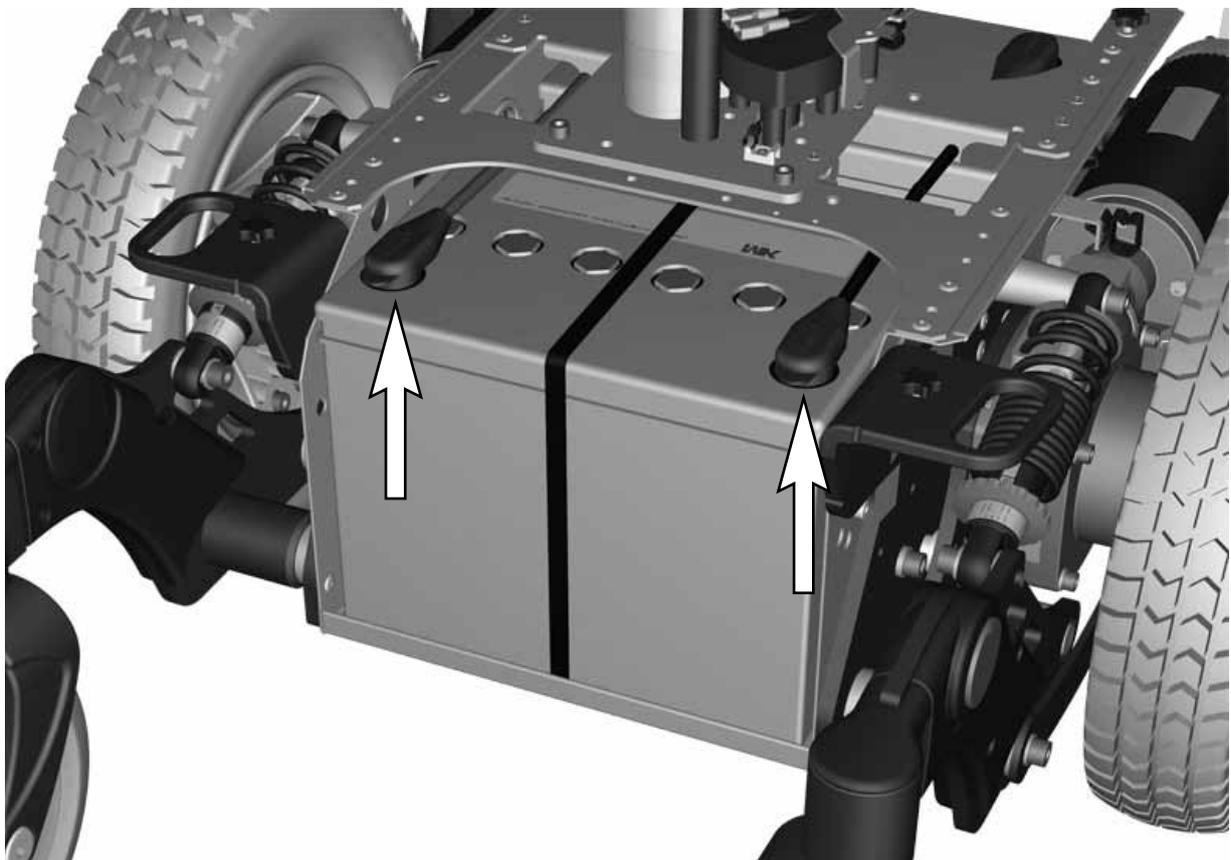
Main fuse/battery isolator (On/Off).

⚠ WARNING!

Observe care in the use of metallic objects when working with batteries. A short-circuit can easily cause an explosion. Always use protective gloves and protective eye-glasses.

The batteries are heavy and must be handled with care.

Used or broken drive batteries should be taken care of in an environmentally correct manner in accordance with locally applicable recycling directions.



Rear battery connections.

Battery replacement

10. Lift/pull the batteries out using the battery straps.
11. Lift/push the new batteries in to the chassis using the battery straps.
12. Connect the battery terminals on the new batteries. Also see the sticker on the inside of the chassis front cover.

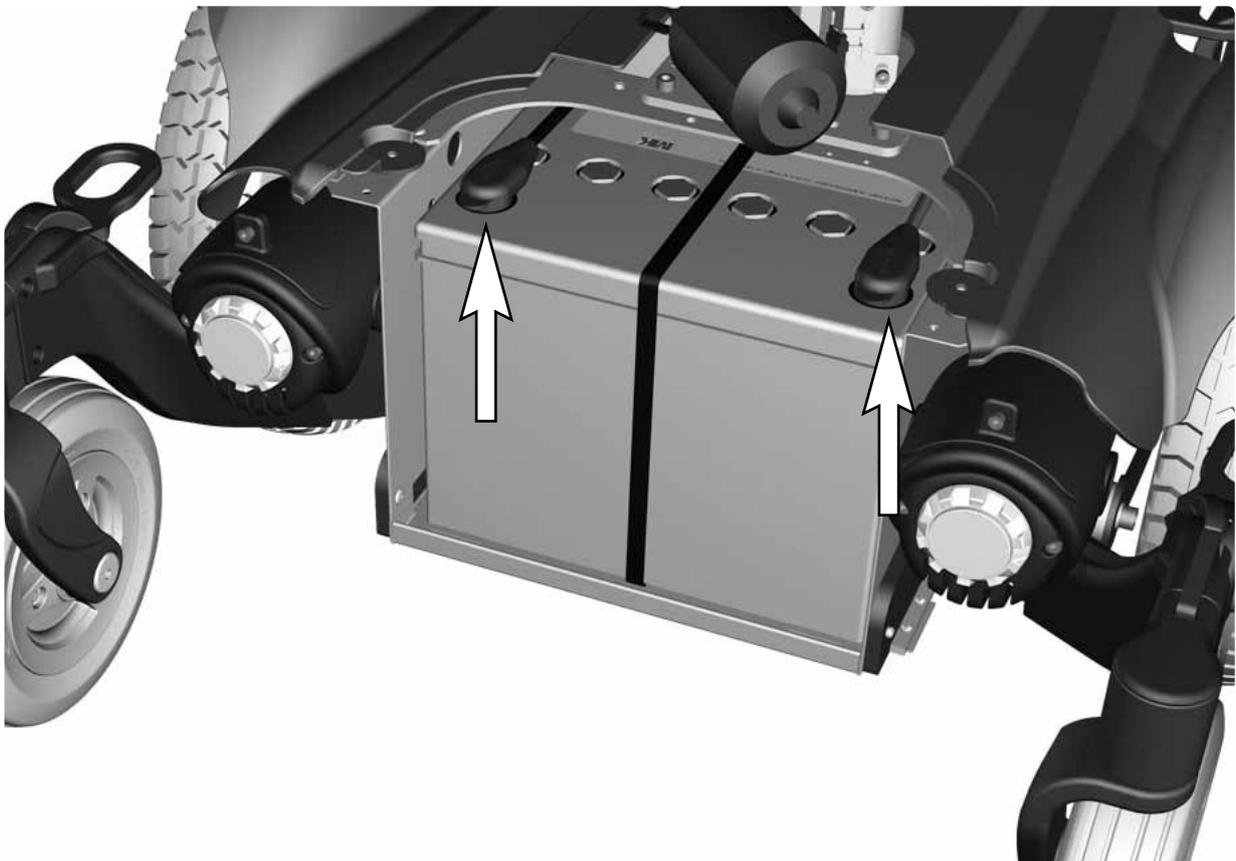
⚠ WARNING!

Observe care in the use of metallic objects when working with batteries. A short-circuit can easily cause an explosion. Always use protective gloves and protective eye-glasses.

The batteries are heavy and must be handled with care.

Used or broken drive batteries should be taken care of in an environmentally correct manner in accordance with locally applicable recycling directions.

13. Remount the front and rear seat support. See page 33.
14. Remount the electronics. See page 39.
15. Remount the chassis covers. See pages 7-9.
16. Put the circuit breaker in the "ON" position.



Front battery connections.

Drive wheels

For this task the following tools are necessary:

- 1 Allen key 6 mm.



Removal

1. Switch off the main power switch on the control panel.
2. Lift up and chock up the wheelchair chassis so that the wheel in question is free of the ground.
3. Remove the hub cap by pulling it straight out. If necessary, carefully lever it out using a screwdriver in the slot on the cap.
4. Remove the four screws that hold the wheel in place.

⚠ WARNING!

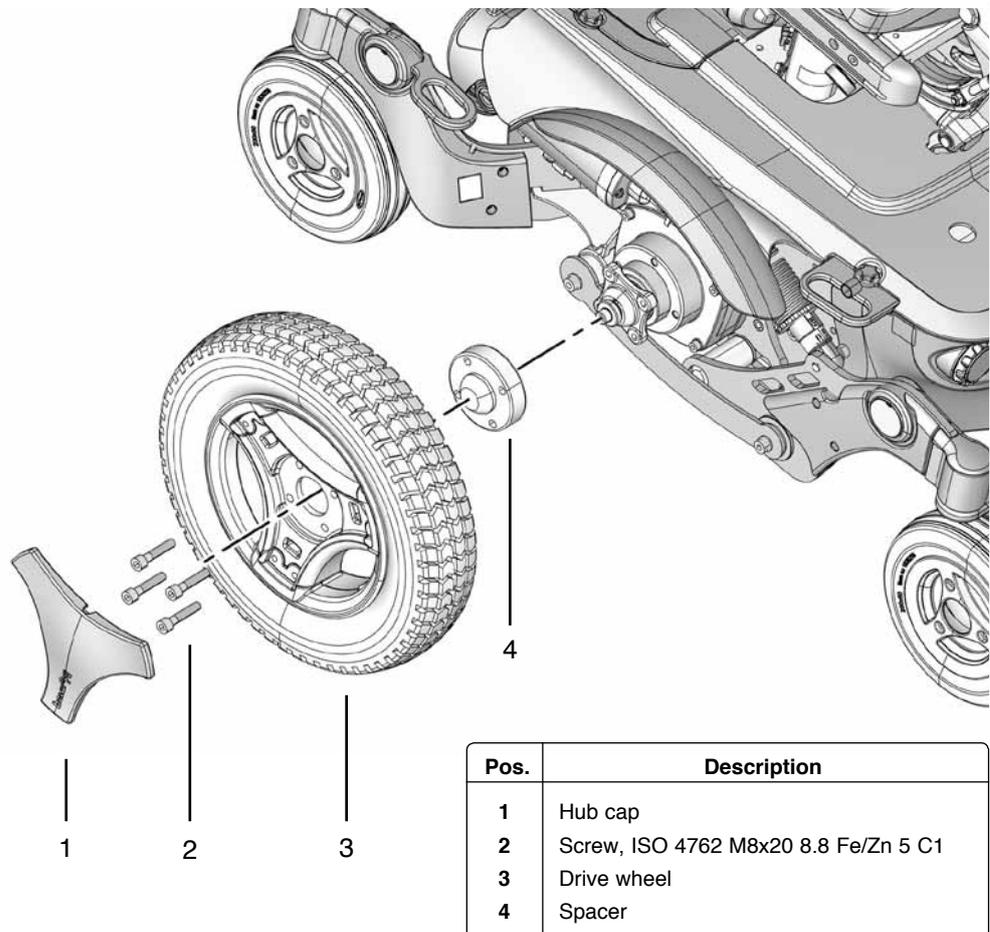
The central screw must not be removed.

5. Remove the wheel by pulling it straight out.

Assembly

Assemble in the reverse order.

1. Fit the wheel with the four screws (2). Tighten the four screws using a torque wrench.
Tightening torque 17.7 ft-lbs (24Nm)
2. Align the hubcap on the rim and fit it by pushing it straight in.



Pos.	Description
1	Hub cap
2	Screw, ISO 4762 M8x20 8.8 Fe/Zn 5 C1
3	Drive wheel
4	Spacer

Fitting/removing the Drive wheels.

Drive wheels

Taking the rim apart

The rim can be taken apart to make it possible to fit/remove solid or pneumatic tires.

1. Remove the wheel in question from the wheelchair. See the previous page.
2. If the tire is pneumatic, release the air.

For this task the following tools are necessary:

- 1 Allen key 6 mm.



⚠ WARNING!

Ensure that pneumatic tires are not pressurized before the rim is taken apart, otherwise there is a risk of personal injury.

3. Remove the six screws holding the two halves of the rim together (see illustration).
4. Take the rim apart.

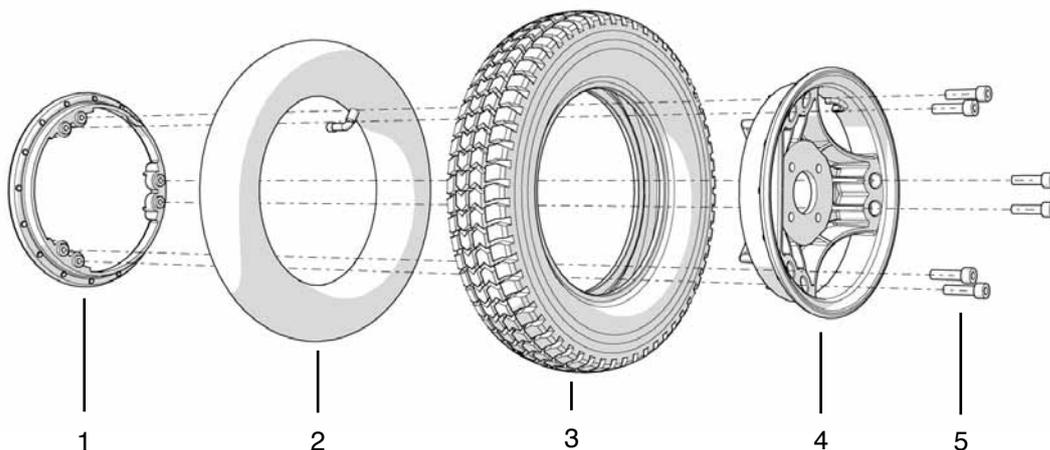
Assembly

Assemble in the reverse order.

1. Fit the two rim halves (1&4) together with tire (3) and if pneumatic tire is used, it's inner tube (2). Tighten the six screws using a torque wrench.
Tightening torque: 16.2 ft-lbs (22Nm)
2. On wheels with pneumatic tires, fill the tire to recommended tire pressure, 29 psi (200 kPa).
3. Fit the wheel on to the wheelchair. See previous page.

⚠ WARNING!

The recommended tire pressure for pneumatic tires is 29 psi (200 kPa). Overfilling entails a risk of explosion. Incorrect tire pressure may result in lower stability and maneuverability. Check regularly that the tires have the correct pressure.



Pos.	Description
1	Rim, outer section
2	Inner tube
3	Tire
4	Rim, outer section
5	Screw, ISO 4762 M8x30 8.8 Fe/Zn

Fitting a tire to a split rim.

Casters

Removal

1. Switch off the main power switch on the control panel.
2. Lift up and chock up the wheelchair chassis so that the wheel in question is free of the ground.
3. Remove the hub cap (4) (see fig. below).
4. Remove the screw (3) and washer (2) (see fig. below).
5. Remove the wheel (1) by pulling it of the axle (see fig. below).

For this task the following tools are necessary:

- 1 Allen key 6 mm.



Assembly

Assemble in the reverse order.

1. Check that the axle and rim are not damaged. If necessary, clean to remove dirt and rust. Replace damaged parts.
2. Fit the wheel on the axle using just your hands. Check that the wheel is fully located on the axle.
3. Fit the washer (2) on to the screw (3).
4. Fit the screw (3) and washer (2) on to the axle. Tighten the screw with a torque wrench.
Tightening torque: 24 ft-lbs (33Nm)
5. Fit the hubcap (4).

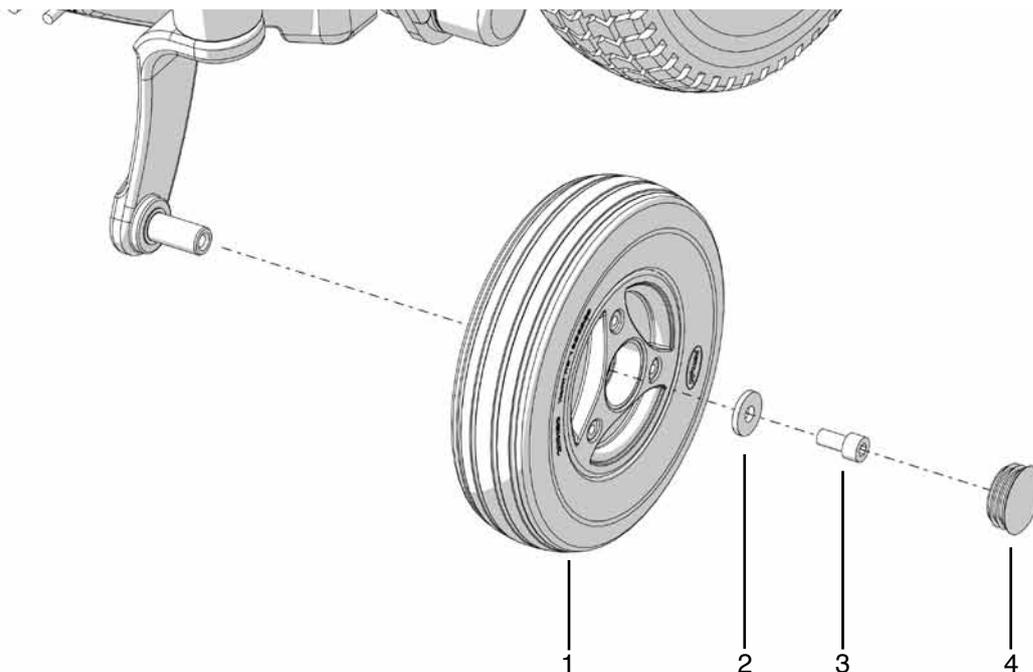
⚠ CAUTION!

The screw must only be used once. Once removed, the screw must therefore never be Remounted. Do not use an impact wrench for the tightening torque.

⚠ WARNING!

No type of screw and washer other than those stated here may be used.

Pos.	Description
1	Wheel
2	Washer, 8,5x23x3
3	Screw, ISO 4762 M8x16 10.9 Fe/Zn
4	Hub cap



Attaching/removing the casters.

Casters

Taking the rim apart

The rim can be taken apart to make it possible to fit/remove solid tires.

1. Remove the wheel in question from the wheelchair. See the previous page.
2. Remove the three screws holding the two halves of the rim together (see illustration).
3. Take the rim apart.

For this task the following tools are necessary:

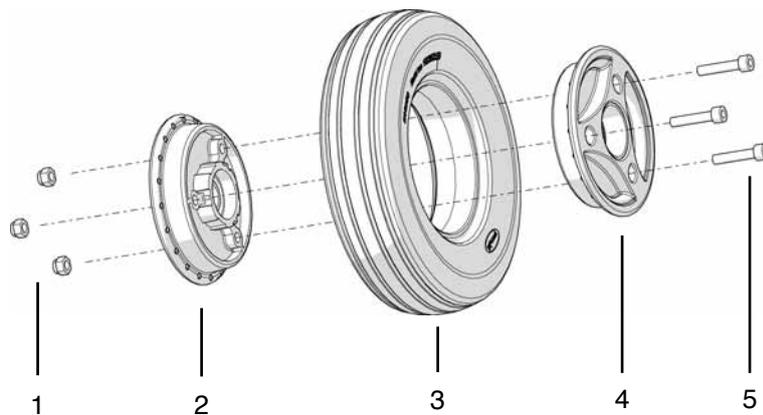
- 1 Allen key 5 mm.



Assembly

Assemble in the reverse order.

1. Fit the two rim halves (2&4) together with tire (3).
2. Tighten the three screws using a torque wrench.
Tightening torque: 7.2 ft-lbs (9.8Nm)
3. Fit the wheel on to the wheelchair. See previous page.



Pos.	Description
1	Locking nut, ISO 7040 M6 8 FE/n
2	Rim, inner section
3	Tire, Solid 200x50
4	Rim, outer section
5	Screw, ISO 4762 M6x30 8.8 Fe/Zn

Fitting a tire on the split rim.

Shock absorbers

For this task the following tools are necessary:

1 Allen key 6 mm.



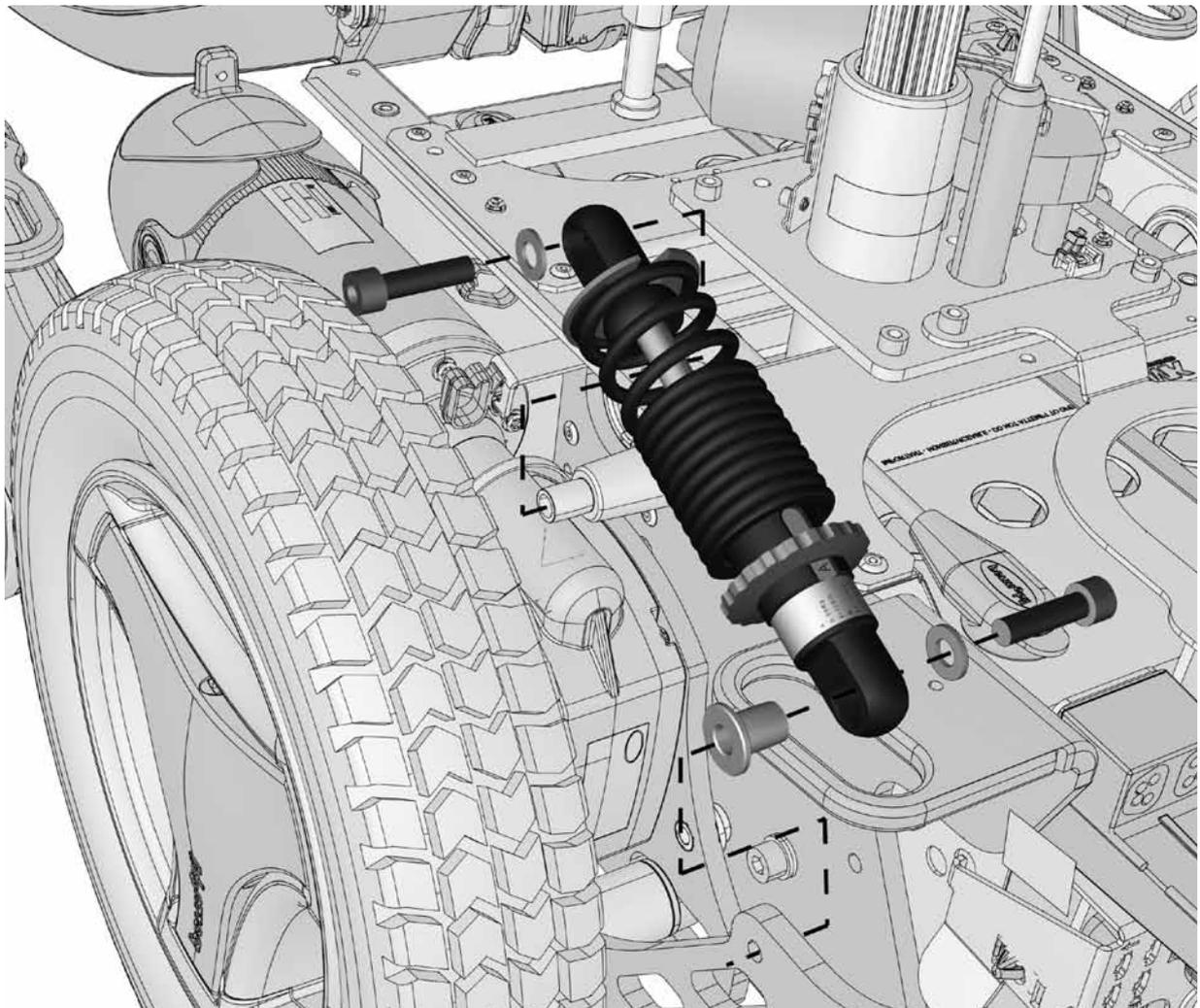
Removal

1. Raise the seat to the highest position. If the wheelchair is equipped with a fixed seat post or if the seat lift does not work normally because the batteries are discharged or the adjustment device is defective, the seat can be raised/lowered manually. See page 29.
2. Switch off the main power switch on the control panel.
3. Remove the chassis covers. See page 7-8.
4. Lift up and chock up the wheelchair chassis so that the wheel in question is free of the ground.
6. Remove the shock absorber, it's fitted with two screws (see fig. below).

Assembly

Assemble in the reverse order.

1. Lubricate the bearing points of the shock absorber with grease before fitting.
2. Fit the shock absorber using the two screws and washers (see fig. below).
3. Adjust the shock absorber spring force. See page 21.
4. Remount the chassis covers. See page 7-9.



Fitting/removing the Shock absorber.

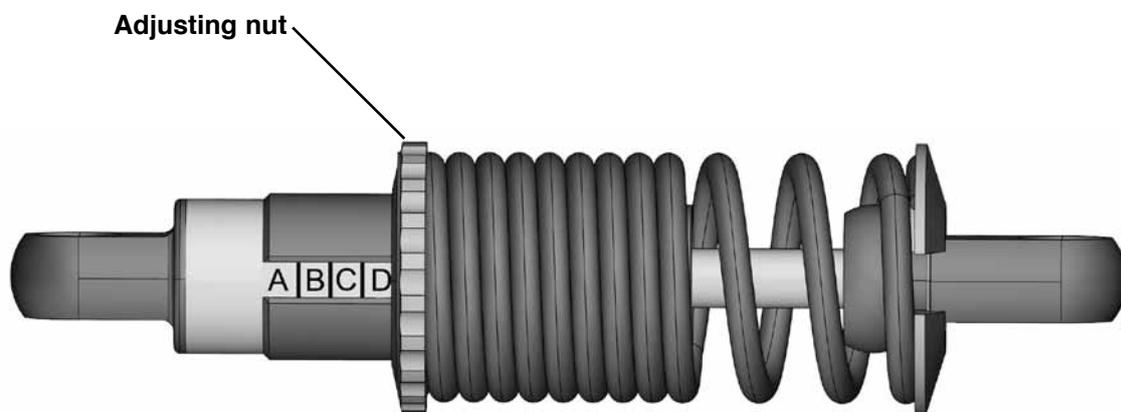
Shock absorbers

Adjusting shock absorber spring force

The spring force of the shock absorber must be adjusted to the correct value.

The spring force can be adjusted to suit different body weights by means of the adjusting nut. To get the best comfort and performance the shock absorber should be adjusted according to the table below.

Setting	User weight
A	91-159Kg / 200-350lbs
B	136-180Kg / 300-400lbs
C	160-204 Kg / 350-450lbs
D	180-204 Kg / 400-450lbs



Shock absorber adjusted to setting "D".

Link arms

For this task the following tools are necessary:

- 1 Allen key 6 mm.



Removal of rear link arms

1. Switch off the main power switch on the control panel.
2. Lift up and chock up the wheelchair chassis so that the wheel in question is free of the ground.
3. Remove the drive wheel. See page 16.
4. Remove the lower shock absorber bracket (4) (see fig.).
5. Remove the reinforcementbar (1), it's fitted with two screws (see fig. below).
6. Remove the link arm (2).

For removal of wheel forks and wheels, see the respective chapters.

Assembly of rear link arms

Assemble in the reverse order.

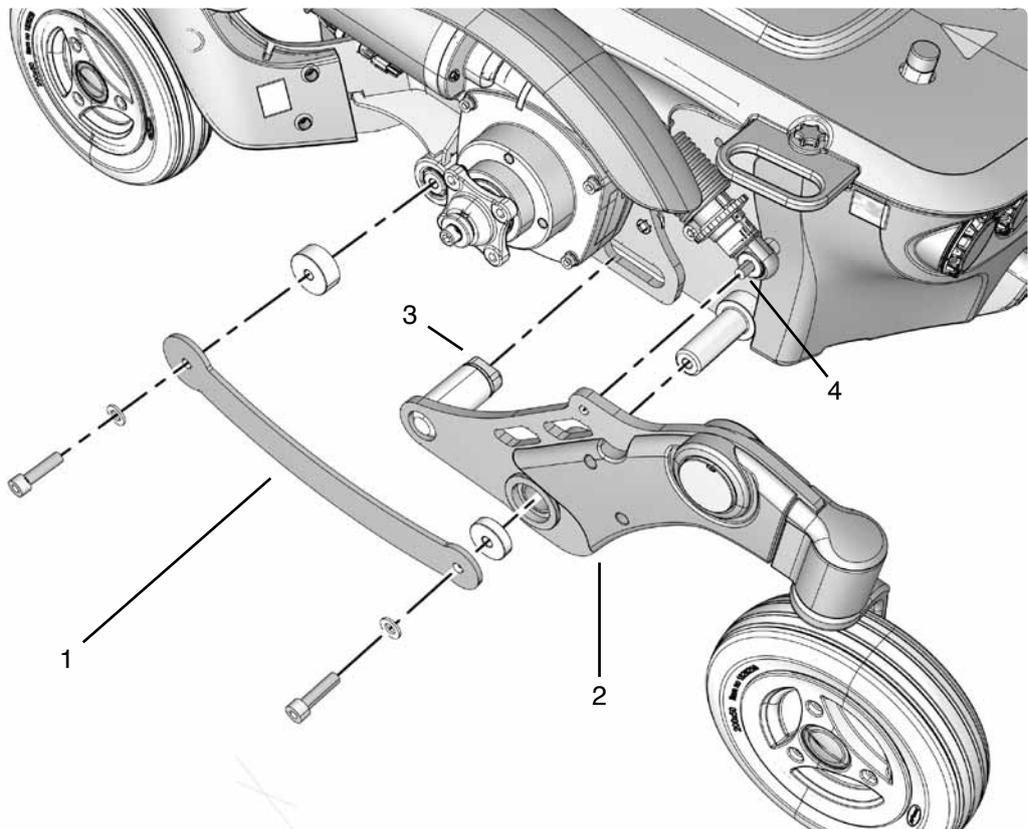
1. Check that the axle and link arm are not damaged. If necessary, clean to remove dirt and rust. Replaced damaged parts.
2. Fit the link arm on the axle using just your hands. Check that the guide (3) of the rear link arm is correct positioned in the groove of the front link arm and that the link arm is fully located on the axle (see fig. below).

3. Remount the reinforcementbar (1), it's fitted with two screws (see fig. below). Tighten the screw with a torque wrench.

Tightening torque: 17.7 ft-lbs (24Nm)

5. Fit the lower shock absorber bracket (4) (see fig.).
6. Fit the drive wheel. See page 16.

Item	Description
1	Rear Link Arm.
2	Washer, 32x8,1x3
3	Screw ISO 4762 M8x20 8.8 Fe/Zn
4	Cover



Fitting/removing the Rear Link Arm.

Link arms

Removal of front link arms

For this task the following tools are necessary:

1 Allen key 6 mm.



1. Raise the seat to the highest position. If the wheelchair is equipped with a fixed seat post or if the seat lift does not work normally because the batteries are discharged or the adjustment device is defective, the seat can be raised/lowered manually. See page 29.
2. Switch off the main power switch on the control panel.
3. If the wheelchair is equipped with lights, disconnect the front light in question. See page 42.
4. Lift up and chock up the wheelchair chassis so that the wheel in question is free of the ground.
5. Remove the drive wheel. See page 16.
6. Remove the rear link arm. See previous page.
7. Remove the front link arm by pulling it straight out from its axle. See fig. below.

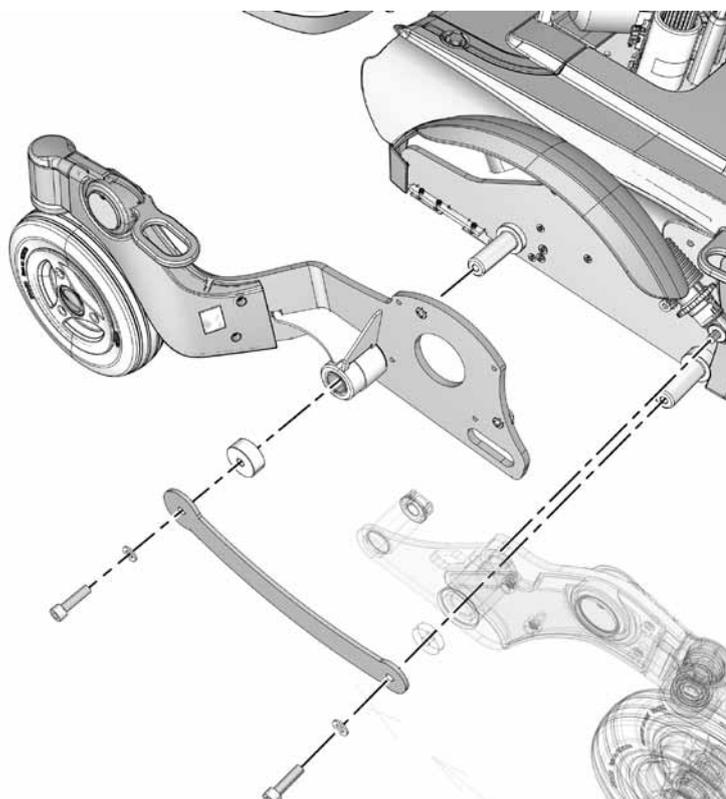
For removal of wheel forks and wheels, see the respective chapters.

Assembly of front link arms

Assemble in the reverse order.

1. Check that the axle and link arm are not damaged. If necessary, clean to remove dirt and rust. Replace damaged parts.
2. Fit the link arm on the axle using just your hands. Check that the link arm is fully located on the axle (see fig. below).
3. Fit the rear link arm. See previous page.
4. Fit the drive wheel. See page 16.
5. If the wheelchair is equipped with lights, connect the front light in question. See page 42.

Item	Description
1	Front link arm.
2	Washer, 32x8,1x3
3	Screw ISO 4762 M8x20 8.8 Fe/Zn
4	Cover



Fitting/removing the Front Link Arm.

Wheel forks

Removal

1. Switch off the main power switch on the control panel.
2. Lift up and chock up the wheelchair chassis so that the wheel in question is free of the ground.
3. Remove the wheel. See page 18.
4. Remove the cover (1) on top of the link arm.
5. Remove the wheelfork, it's fitted with the screw (2) and washer (3) from above (see fig.). Also remove the friction brake (4) by pulling it straight out of the bearing house of the link arm.

Assembly

Assemble in the reverse order.

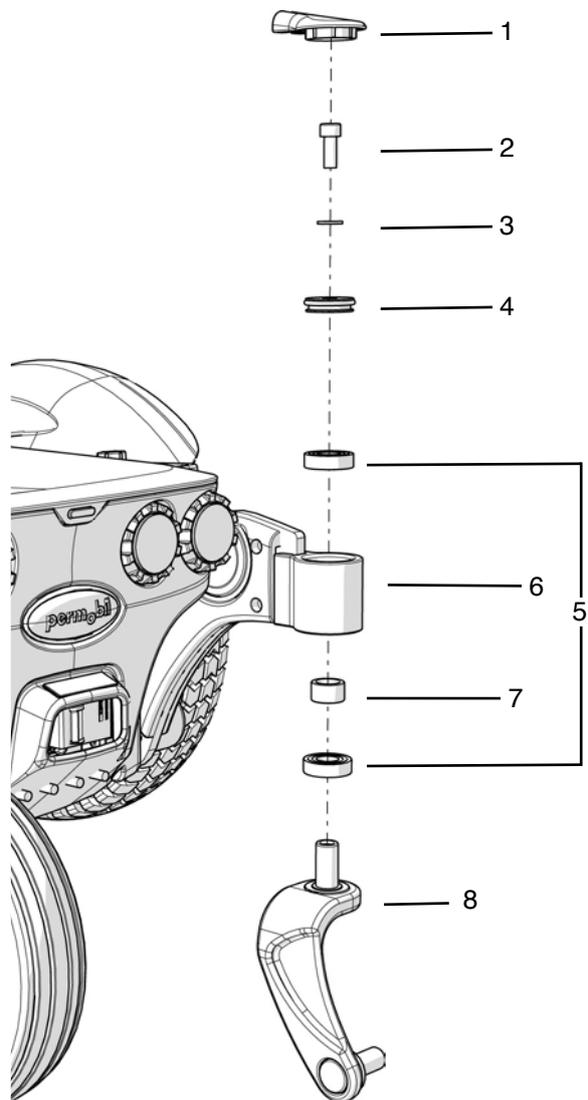
1. Check that the wheel fork and link arm with bearings and friction brake are not damaged. If necessary, clean to remove dirt and rust. Replaced damaged parts.
2. Fit the wheel fork on the linkarm using just your hands. Check that the wheel fork is fully located on the linkarm.
3. If needed, clean the friction brake and then lubricate it with Friction brake grease, order no: 1820405 before fitting it in the bearing house of the link arm, see page. 25.
4. Fit the screw (2) and washer (3) from above (see fig.). Tighten the screw with a torque wrench. **Tightening torque: 17.7 ft-lbs (24Nm)**

CAUTION!

Do not use an impact wrench for the tightening torque.

5. Fit the cover (1) on the link arm (see fig.).
6. Fit the wheel. See page 18.

For this task the following tools are necessary:
1 Allen key 6 mm.



Wheel fork.

Item	Description
1	Cover
2	Screw, ISO 4762 M8x20 8.8 FE/Zn
3	Washer, ISO 7089 8 200 HV Fe/Zn (8,4x16x1,6)
4	Friction brake
5	Bearing, 6002-2RS1 (15x32x9)
6	Link arm
7	Spacer, Ø16xØ22x12,5
8	Wheel fork

Friction brakes

The casters are equipped with friction brakes working as anti flutter devices.

Removal

1. Switch off the main power switch on the control panel.
2. Remove the cover (1) on the link arm (see fig.).
3. Remove the friction brake (4), it is fitted with the screw (2) and washer (3) from above (see fig.).
4. Remove the two o-rings from the friction brake.

Assembly

Assemble in the reverse order.

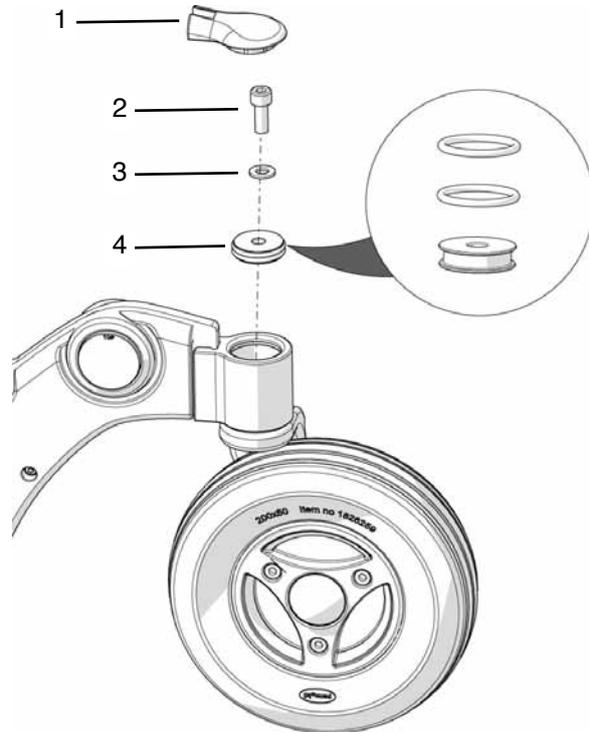
1. If needed, clean the friction brake parts. Lubricate the parts with Friction brake grease, order no: 1820405 before fitting them together.
2. If needed, clean the link arm bearing house before the friction brake is fitted.
3. Fit the friction brake (4) with the screw (2) and washer (3) (see fig.). Tighten the screw with a torque wrench.

Tightening torque: 17.7 ft-lbs (24Nm)

4. Fit the cover(1) on top of the link arm (see fig.).

For this task the following tools are necessary:

- 1 Allen key 6 mm.



Friction brake.

⚠ CAUTION!

Do not use an Impact Wrench to tighten

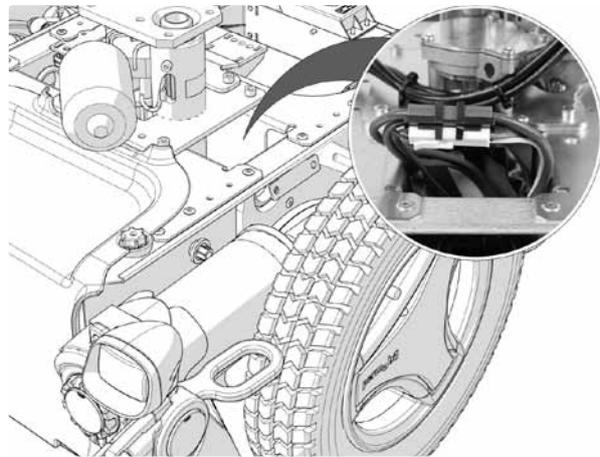
Drive motors

Removal

1. Raise the seat to the highest position. If the wheelchair is equipped with a fixed seat post or if the seat lift does not work normally because the batteries are discharged or the adjustment device is defective, the seat can be raised/lowered manually.. See page 29.
2. Switch off the main power switch on the control panel.
3. Remove the chassis covers. See page 7-8.
4. Lift up and chock up the wheelchair chassis so that the wheel in question is free of the ground.
5. Remove the drive wheel. See page 16.
6. Separate the magnetic brake and drive motor cabling at the contacts on the cabling. These are positioned on the inside of the chassis, next to the seat lift. (see fig.). The contacts are mounted together in a holder.
7. Run the connection cables out through the chassis cable duct.
8. Remove the drive motor, it's fitted with four screws (see fig.).

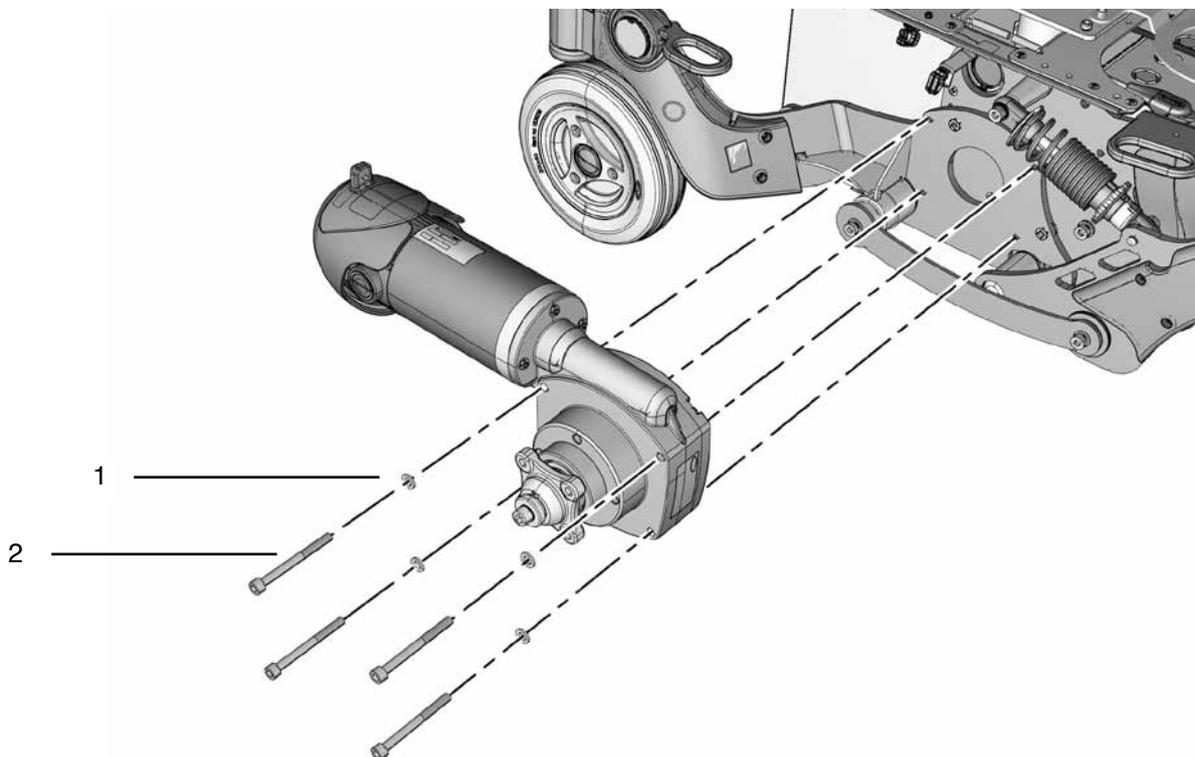
For this task the following tools are necessary:

- 1 Allen key 5 mm.
- 1 Allen key 6 mm.



The contacts are mounted together in a holder.

Item	Description
1	Screw ISO 4762 M6x60 8.8 Fe/Zn
2	Washer, ISO 7089 6 200 HV Fe/Zn 5 C1(6,4x12x1,6)



Fitting/removing the Drive motor.

Drive motors

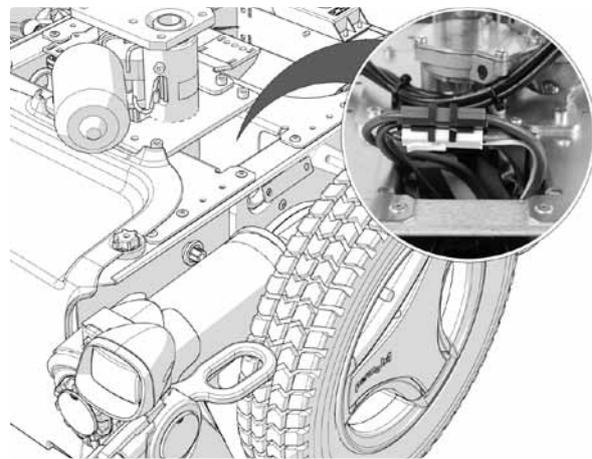
Assembly

Assemble in the reverse order.

1. Fit the drive motor with the four screws and washers (see fig. below).
2. Run the connection cables in through the chassis cable duct.
3. Connect the magnetic brake and drive motor cabling at the contacts on the cabling. These are positioned on the inside of the chassis, next to the seat lift/seat tube (see fig.). Fit the contacts together in their holder.
4. Fit the drive wheel. See page 18.
5. Fit the chassis covers. See page 8-9.

For this task the following tools are necessary:

- 1 Allen key 5 mm.
- 1 Allen key 6 mm.

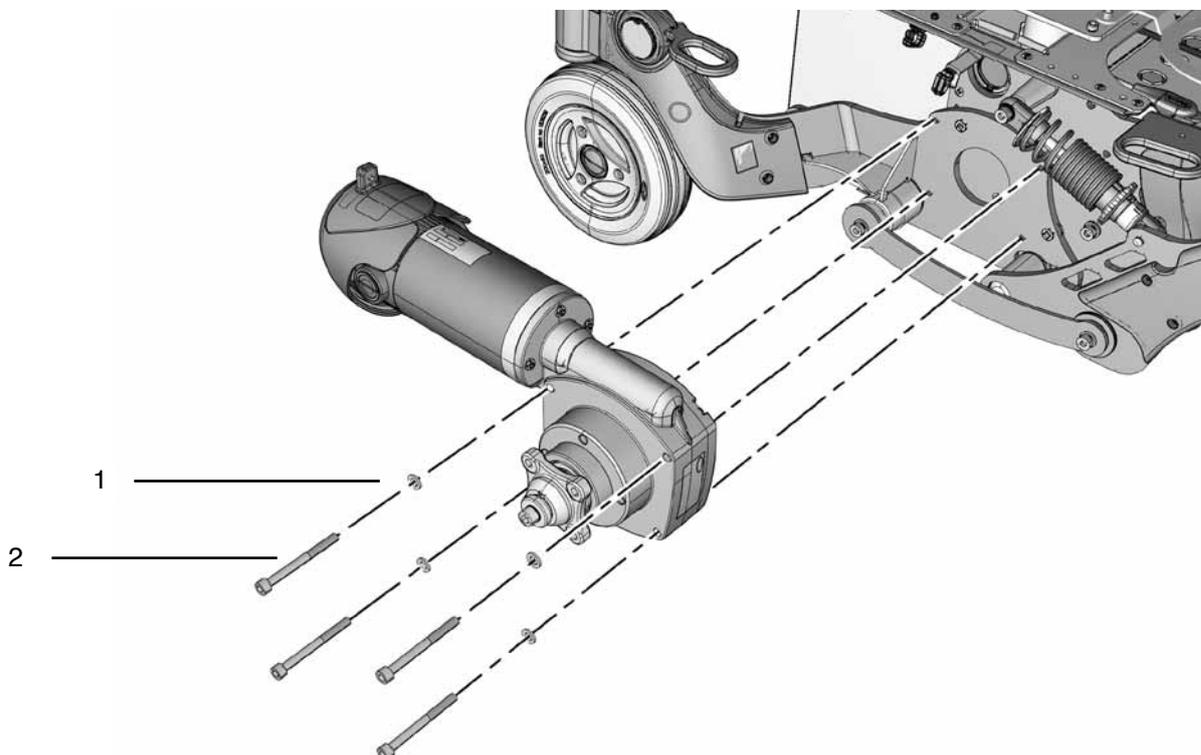


The contacts are mounted together in a holder.

⚠ CAUTION!

Check the function of the brake release after fitting. When the brakes are released, it should not be possible to drive the wheelchair.

Item	Description
1	Screw ISO 4762 M6x60 8.8 Fe/Zn
2	Washer, ISO 7089 6 200 HV Fe/Zn 5 C1(6,4x12x1,6)



Fitting/removing the Drive motor.

Magnetic brakes

The wheelchair is equipped with a magnetic brake on the left and right drive motor. The magnetic brakes are both equipped with a brake release lever which is used to manually release the brakes.

Removal of magnetic brake.

1. Switch off the main power switch on the control panel.
2. Remove the upper chassis cover. See page 7-8.
3. Remove the drive motor cover. See page 12.
4. Separate the magnetic brake cabling at the contacts on the cabling. This is positioned on the inside of the chassis, next to the seat lift. The contact is mounted together with the drive motor contact in a holder.
5. Run the connection cable out through the chassis cable duct.
6. Remove the magnetic brake, it's fitted with three screws (see fig.).

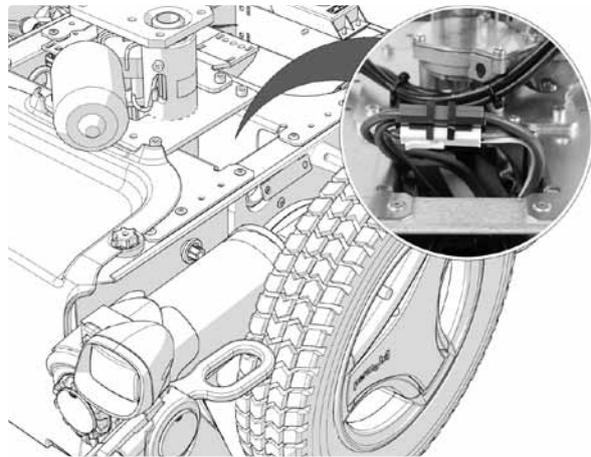
Assembly

Assemble in the reverse order.

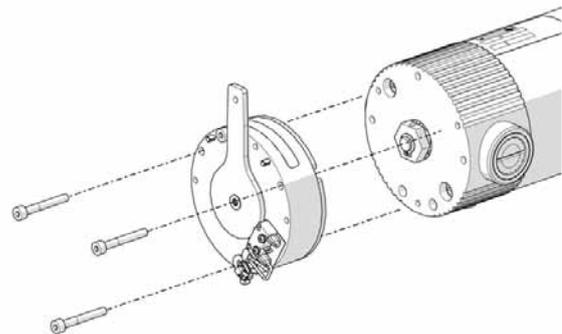
1. Fit the magnetic brake with the brake release lever pointing upwards using the three screws (see fig.).
2. The brake release lever has an end position screw which is mounted in different positions depending on if the magnetic brake is mounted on the chassis right or left drive motor. On delivery of a new brake release, the end position screw is mounted on the end of the brake release lever. Fit the end position screw to the side of the brake release lever that points against the center of the chassis (see fig. below).
3. Connect the magnetic brake cable at the connector. This is positioned on the inside of the chassis, next to the seat lift. Fit the contact together with the drive motor contact in a holder.
4. Fit the drive motor cover. See page 13.
5. Fit the chassis cover. See page 7-9.

For this task the following tools are necessary:

- 1 Allen key 3 mm.
- 1 Allen key 2,5 mm.



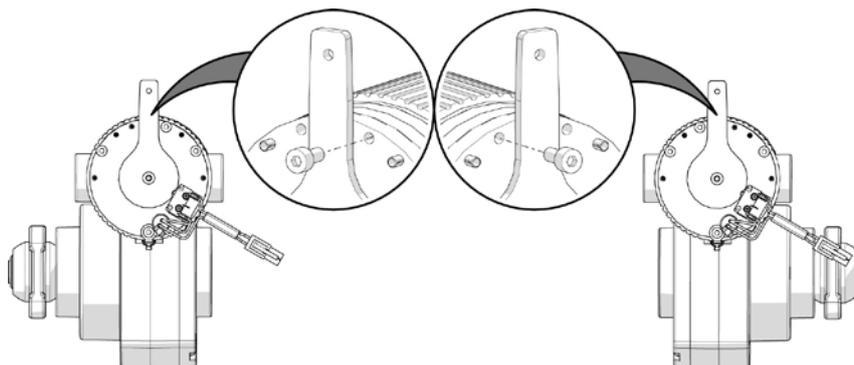
The contacts are mounted together in a holder.



The magnetic brake is fitted with three screws.

⚠ CAUTION!

Check the function of the brake release after fitting. When the brakes are released, it should not be possible to drive the wheelchair.



The brake release lever has an end position screw which is mounted in different positions depending on if the magnetic brake is mounted on the chassis right or left drive motor.

Electric Seat lift/ Fixed Seat Tube

Manual operation

If the wheelchair is equipped with a fixed seat post or if the seat lift does not work normally because the batteries are discharged or the adjustment device is defective, the seat can be raised/lowered manually.

1. Switch off the main power switch on the control panel.
2. Remove the cushion from the seat by lifting it straight up.
3. Remove the seat plate.
4. Raise/lower the seat using the seat lift crank supplied.

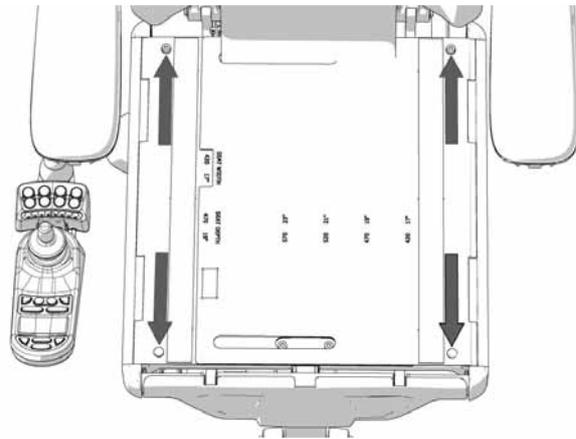
⚠ WARNING!

Drills must not be used in connection with manual operation of the seat lift. There is a risk of damage to materials.

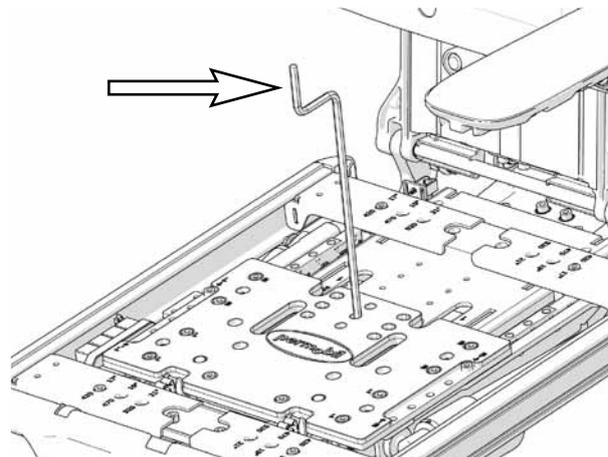
On wheelchair equipped with a fixed seat tube, the seat must always be positioned in its lowest position when the wheelchair is used. The lowest position can be adjusted using spacers on the seat supports, see page 38.

For this task the following tools are necessary:

- 1 Allen key 4 mm.
- 1 Seat Lift Crank



The seat plates on Corpus 3G are held in place by two screws at the back edge and two quick-mount clamps at the front.



Manual raising/lowering of the Corpus seat using the seat lift crank.

Electric Seat lift/ Fixed Seat Tube

Removal

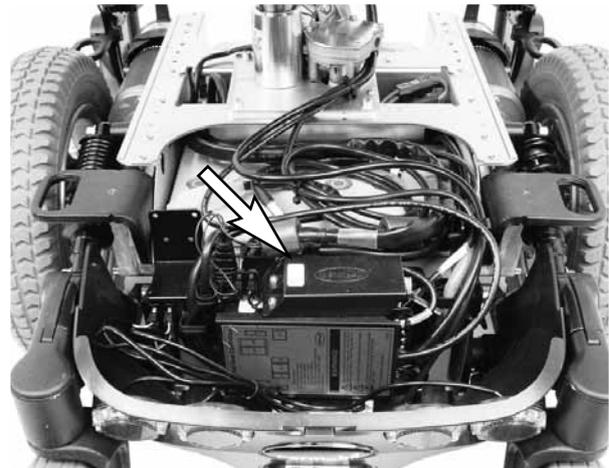
1. Raise the seat to the highest position. If the wheelchair is equipped with a fixed seat post or if the seat lift does not work normally because the batteries are discharged or the adjustment device is defective, the seat can be raised/ lowered manually.. See page 29.
2. Switch off the main power switch on the control panel.
3. Remove the upper chassis cover. See page 9.
4. Remove the seat including the seat tilt mechanism if the wheelchair is equipped with such device. See page 48.

⚠ WARNING!

The seat is heavy. This work should therefore always be performed by two people. Be careful with the cabling.

5. Remove the four fixing screws (see fig. below).
6. **Electric seat lift on wheelchair with VR2**
Separate the seat lift cabling at the contacts on the cabling.
- Electric seat lift on wheelchair with R-net**
Disconnect the seat lift cabling from the ICS general module.
7. Lift the Electric Seat Lift/Fixed Seat Post straight up out of the chassis.

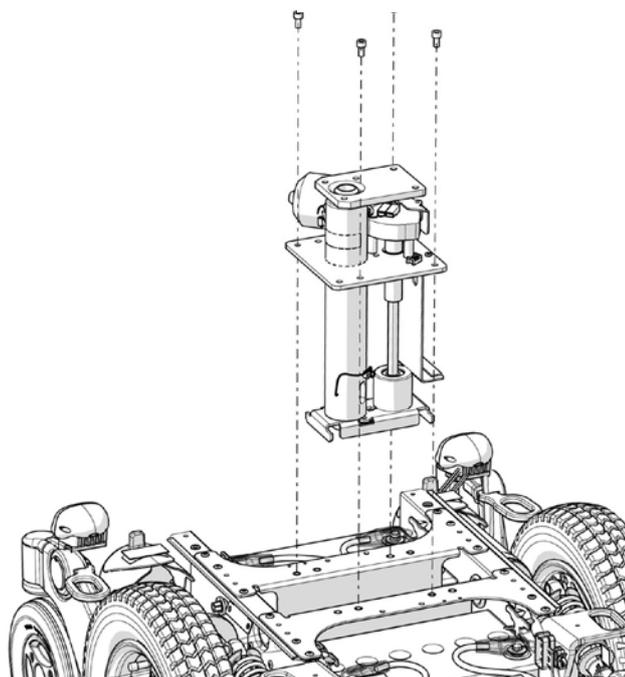
For this task the following tools are necessary:
1 Allen key 5 mm.



ICS General Module is fitted at the rear of the chassis.



ICS General Module.



The Fixed Seat Tube/Electric Seat Lift is attached with four screws.

Electric Seat lift/ Fixed Seat Tube

Assembly

Assemble in the reverse order.

1. Fit the Electric seat lift/Fixed seat post into the chassis using the four screws (see fig. below). See page 36.
2. **Electric seat lift on wheelchair with VR2**
Connect the seat lift cabling at the connector on the cabling.

Electric seat lift on wheelchair with R-net

Connect the seat lift cabling to the ICS general module.

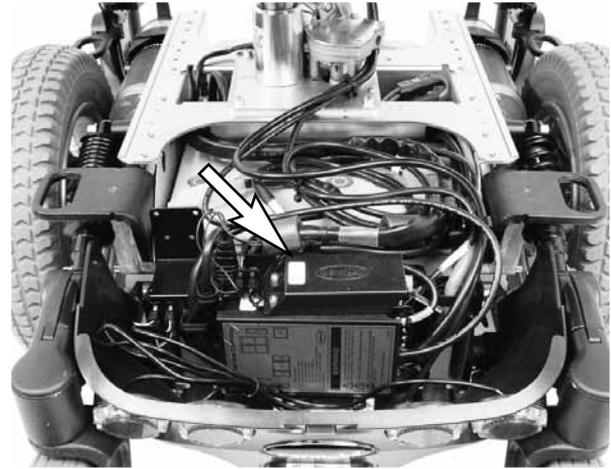
3. Fit the seat including the seat tilt mechanism if the wheelchair is equipped with such device. See page 36-40.

⚠ WARNING!

The seat is heavy. This work should therefore always be performed by two people. Be careful with the cabling.

4. Fit the upper chassis cover. See page 9.

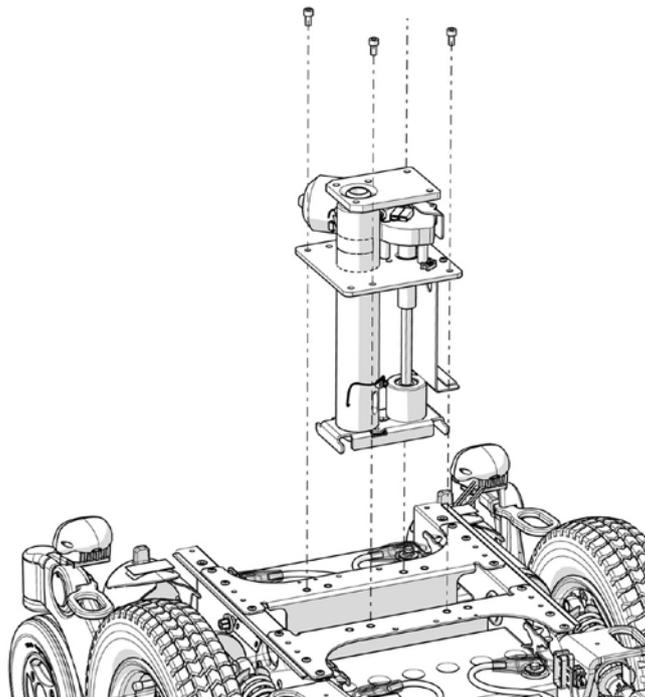
For this task the following tools are necessary:
1 Allen key 5 mm.



ICS General Module is fitted at the rear of the chassis.



ICS General Module.



The Fixed Seat Tube/Electric Seat Lift is attached with four screws.

Seat support

The chassis is equipped with seat support at the front and rear of the chassis.

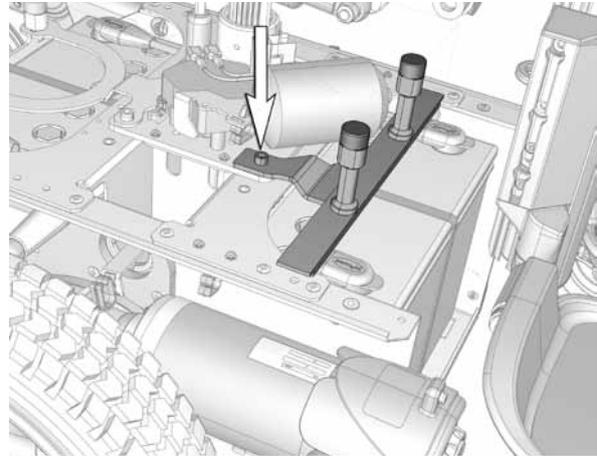
For this task the following tools are necessary:

- 1 Allen key 5 mm.

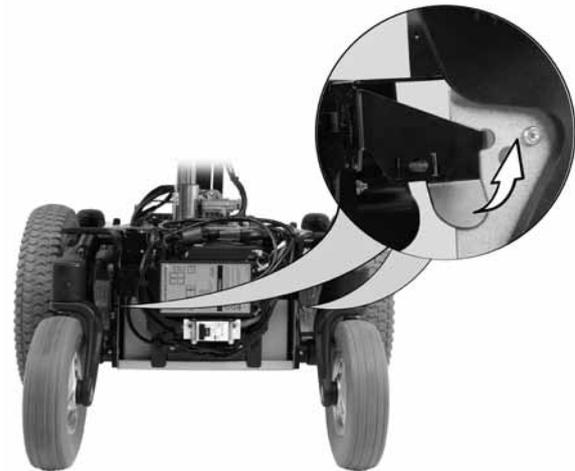


Removal

1. Raise the seat to the highest position. If the wheelchair is equipped with a fixed seat post or if the seat lift does not work normally because the batteries are discharged or the adjustment device is defective, the seat can be raised/lowered manually. See page 29.
2. Switch off the main power switch on the control panel.
3. Remove the front and upper chassis cover. See page 9.
4. Remove the front seat support, it is fitted with one screw. See fig.
5. Remove the electronics by pulling the locking handles on the left and right handside of the chassis outwards (see fig. below).

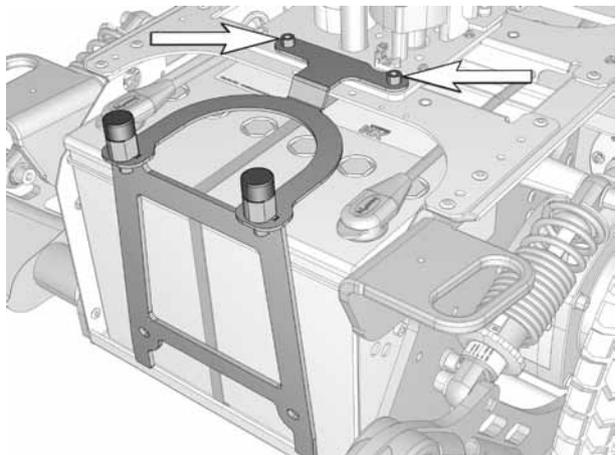


The front Seat support is fitted with one screw.



Remove the electronics by pulling the lockig handles on the left and right handside of the chassis outwards.

6. Remove the rear seat support, it is fitted with two screws. See fig.



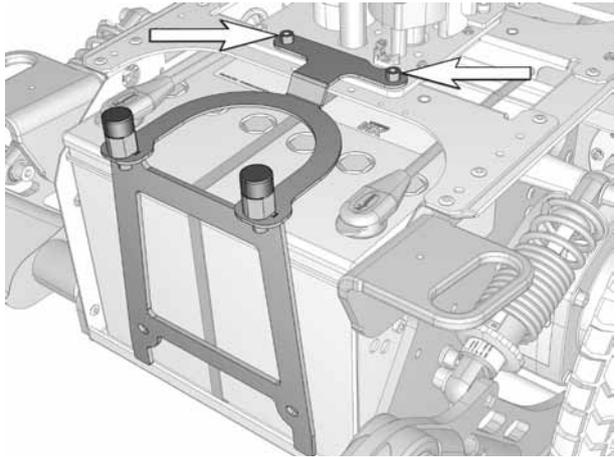
The rear Seat support is fitted with two screws.

Seat support

Assembly

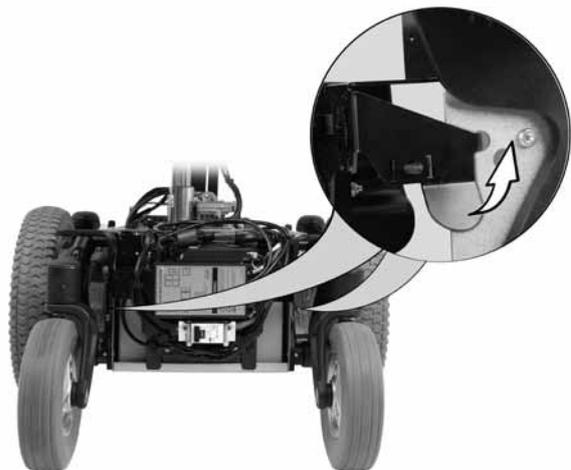
Assemble in the reverse order.

1. Fit the rear seat support, it is fitted with two screws. See fig.



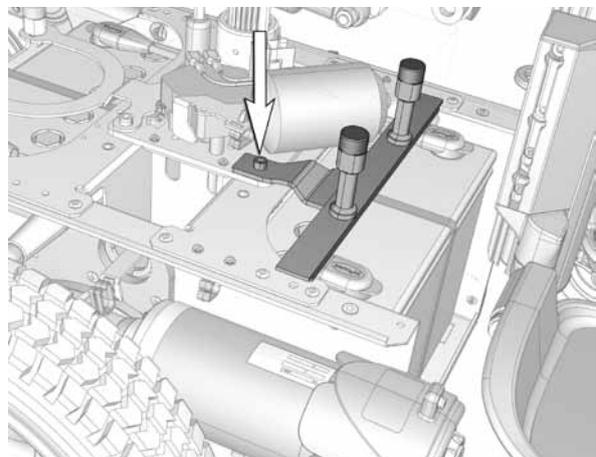
The rear Seat support is fitted with two screws.

2. Remount the electronics, make sure the locking mechanism on the left and right handside of the chassis are placed into correct position (see fig. below).



Remount the electronics, make sure the locking mechanism on the left and right handside of the chassis are placed into correct position.

3. Fit the front seat support, it is fitted with one screw. See fig.
4. Remount the front and upper chassis cover. See pages 7-9.



The front Seat support is fitted with one screw.

Seat support

Lowest position of Seat Lift/ Fixed Seat Post

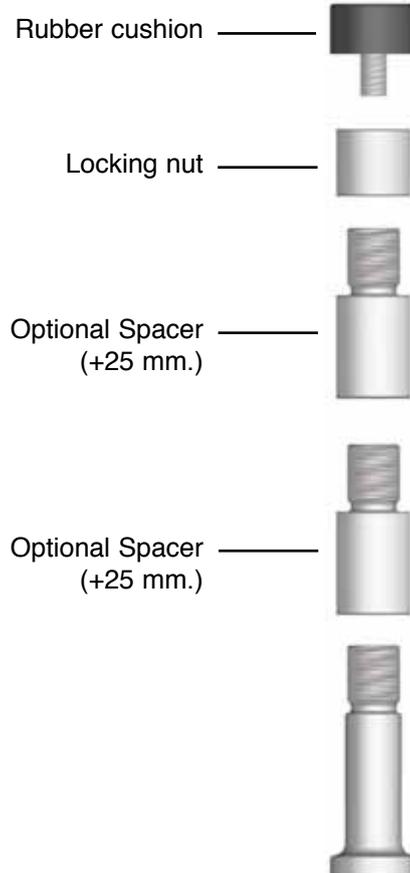
For this task the following tools are necessary:

1 Allen key 5 mm.

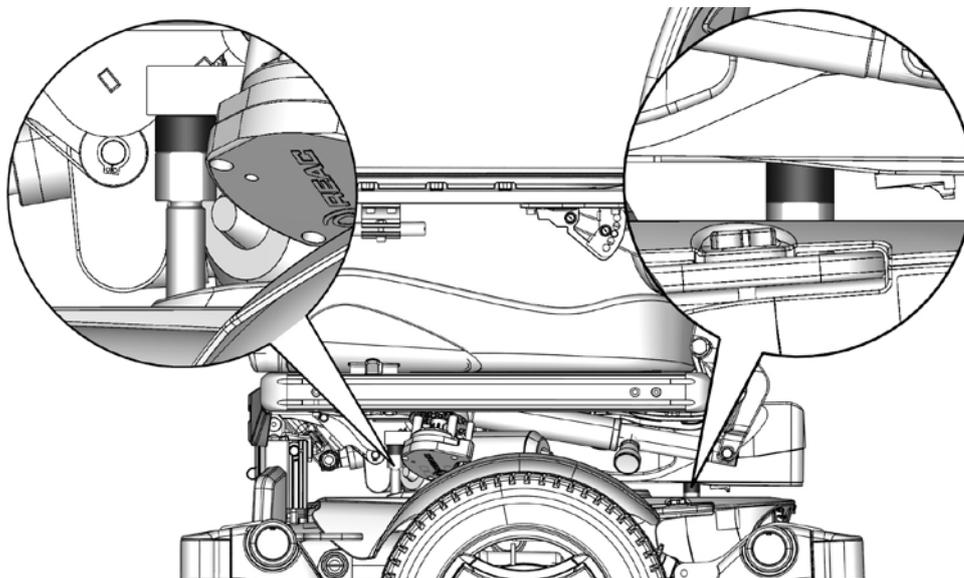


If desired, the lowest position can be adjusted +1" or +2" by adding spacers. A maximum of two spacers on each rubber cushion are allowed (+2"). Always make sure that equal amount of spacers on all four rubber cushions are fitted.

1. Raise the seat to the highest position. If the wheelchair is equipped with a fixed seat post or if the seat lift does not work normally because the batteries are discharged or the adjustment device is defective, the seat can be raised/lowered manually. See page 29.
2. Release the locking nuts on all four support points by turning the nuts clockwise.
3. To add or remove spacers, remove the rubber cushions and locking nuts by turning them counter clockwise.
4. Add or remove equal amount of spacers on all four support points and then remount the locking nuts and rubber cushions.
5. Lock the position of the rubber cushion by turning the locking nut counter clockwise.
6. Lower the seat lift. Verify how the height of the seat supports four rubber cushions correspond with the height of the seat when the seat lift has reached its lowest position. At the correct height the rubber cushions should be compressed approx. 2 mm. as the seat lift reaches its lowest position. If needed, perform the adjustment according to description on page 35.



Adjustment of the rubber cushions.



Verify how the height of the seat supports four rubber cushions correspond with the height of the seat when the seat lift has reached its lowest position. At the correct height the rubber cushions should be compressed approx. 2 mm. as the seat lift reaches its lowest position.

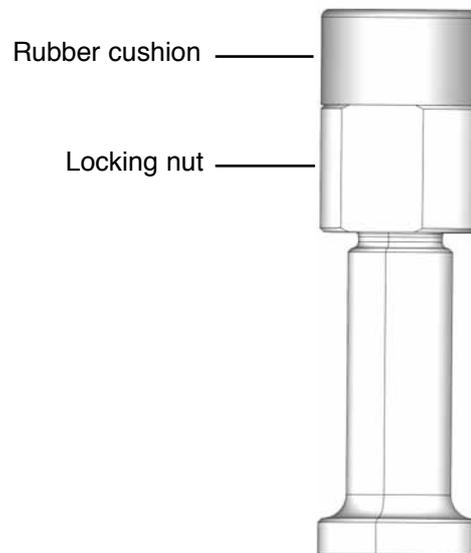
Seat support Adjustment

Verify how the height of the seat supports four rubber cushions correspond with the height of the seat when the seat lift has reached its lowest position. At the correct height the rubber cushions should be compressed approx. 2 mm. as the seat lift reaches its lowest position.

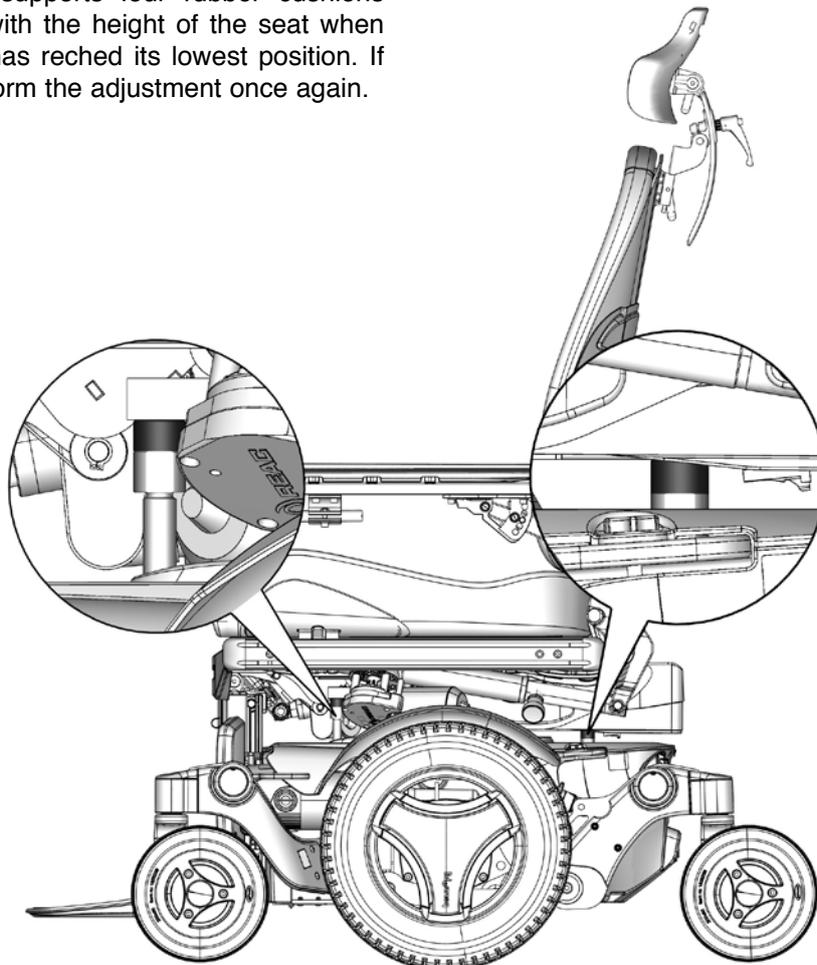
1. Raise the seat to the highest position. If the wheelchair is equipped with a fixed seat post or if the seat lift does not work normally because the batteries are discharged or the adjustment device is defective, the seat can be raised/lowered manually. See page 29.
2. Release the locking nut underneath the rubber cushion in question by turning it clockwise.
3. Adjust the rubber cushion to desired height by turning it clockwise/counter clockwise.
4. Lock the position of the rubber cushion by turning the locking nut counter clockwise and tightening it.
5. Lower the seat lift. Verify how the height of the seat supports four rubber cushions correspond with the height of the seat when the seat lift has reached its lowest position. If needed, perform the adjustment once again.

For this task the following tools are necessary:

- 1 Allen key 5 mm.



Adjustment of the rubber cushions.



Verify how the height of the seat supports four rubber cushions correspond with the height of the seat when the seat lift has reached its lowest position. At the correct height the rubber cushions should be compressed approx. 2 mm. as the seat lift reaches its lowest position.

Control Panel R-net

For this task the following tools are necessary:

1 Allen key 4 mm.



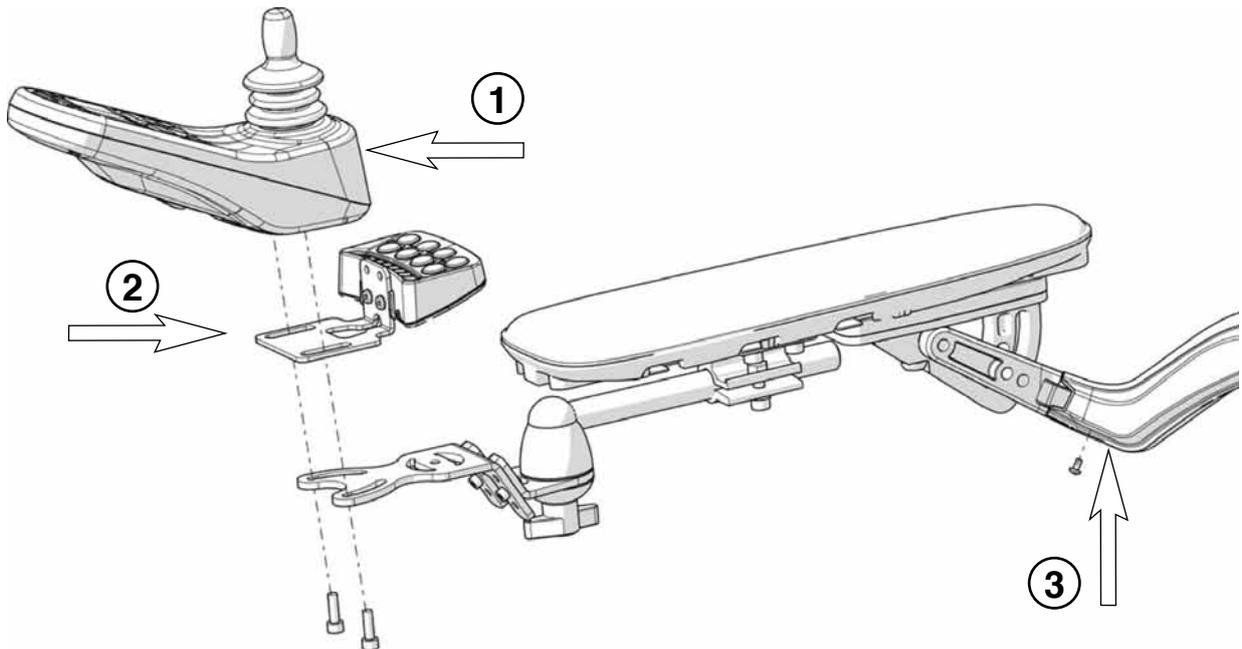
Removal

1. Switch off the main power switch on the control panel.
2. Loosen the control panel cabling from its fixing points. Remember how the cabling is positioned; this helps when you come to re-attach it. A cover (3) on the the arm rest has to be removed, it is fitted with two screws.
3. Separate the control panel cabling at the connector on the cabling.
4. Remove the control panel (1). It is held in place with two screws (see illustration). These two screws also hold the bracket for the ICS control panel (2), if there is one fitted (see illustration).

Assembly

Assemble in the reverse order.

1. Fit the control panel (1) with the two screws (see fig.). Also fit the bracket for the ICS control panel (2), if the wheelchair is equipped with one, with the same screws (see fig.).
2. Connect the control panel cabling at the connector on the cabling.
3. Re-attach the cabling to its fixing points. Remount the cover (3) on the the arm rest using the two screws.



The control panel is attached with two screws. Control Panel connector is positioned behind a cover (3) on the armrest.

ICS master module

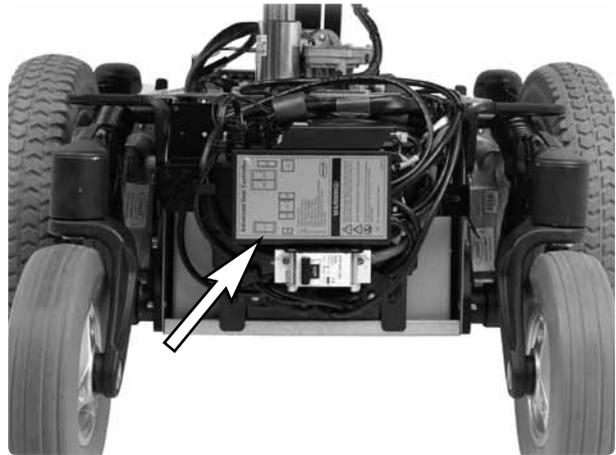
The wheelchair seat may be equipped with an ICS control system, and if so, the seat is controlled from the system's ICS master module. This is fitted in the wheelchair chassis.

Removal

1. Raise the seat to the highest position. If the wheelchair is equipped with a fixed seat post or if the seat lift does not work normally because the batteries are discharged or the adjustment device is defective, the seat can be raised/lowered manually. See page 29.
2. Switch off the main power switch on the control panel.
3. Remove the chassis covers. See page 7-8.
4. Pull the master module straight out of its holder (see fig.).
5. Pull the cover off.
6. Cut off the cable ties that hold the cables and detach the electrical connections. Note their positions for subsequent fitting.

Assembly

Assemble in the reverse order.



ICS master module loose in its holder.



ICS master module with cover removed.

Power Module R-net

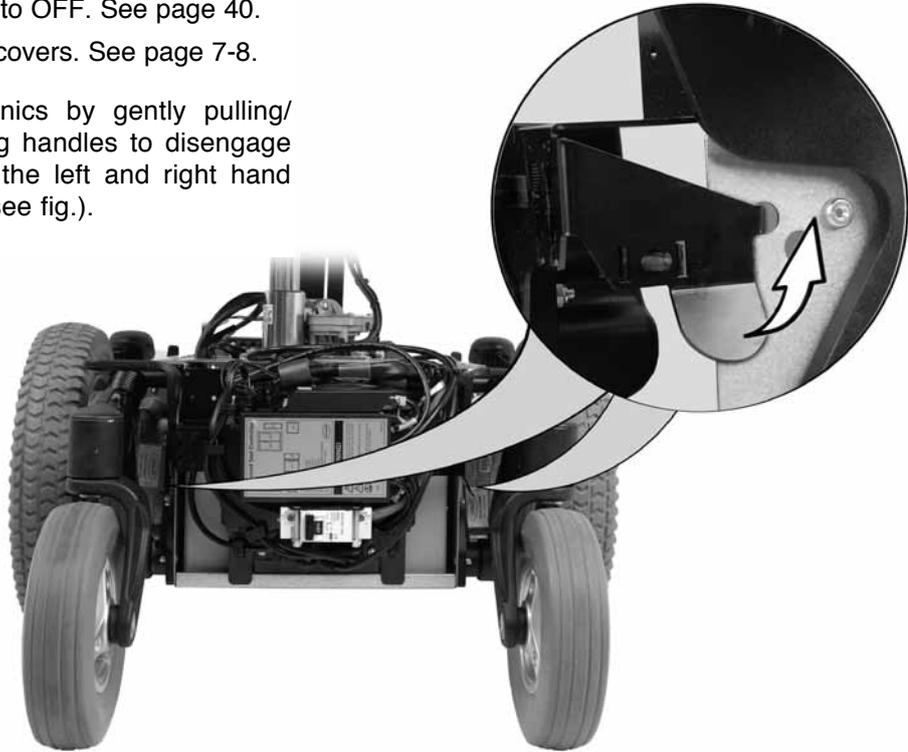
Removal

For this task the following tools are necessary:

- 1 Wrench 8 mm.

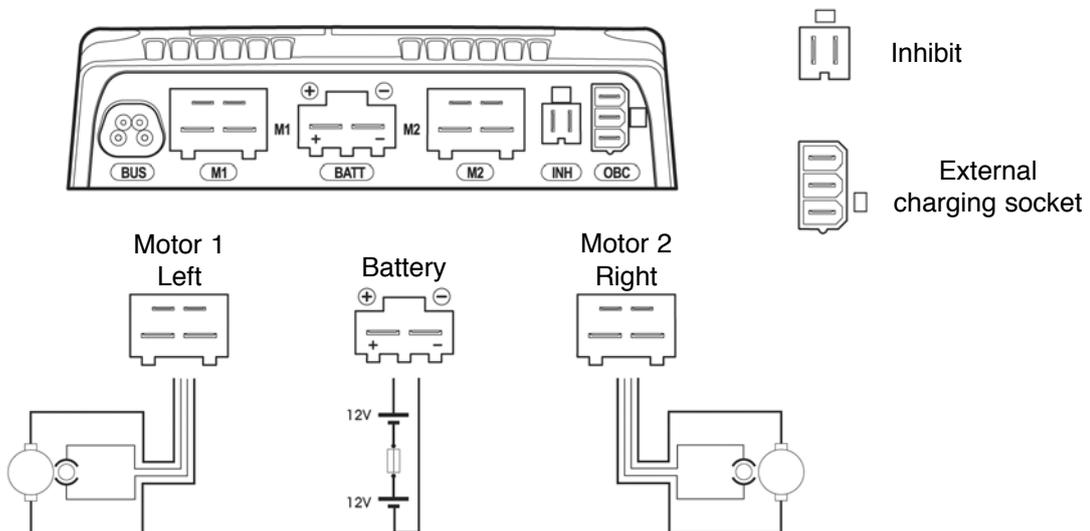


1. Switch off the main power switch on the control panel.
2. Switch the main fuse to OFF. See page 40.
3. Remove the chassis covers. See page 7-8.
4. Remove the electronics by gently pulling/spreading the locking handles to disengage the locking tabs on the left and right hand side of the chassis (see fig.).



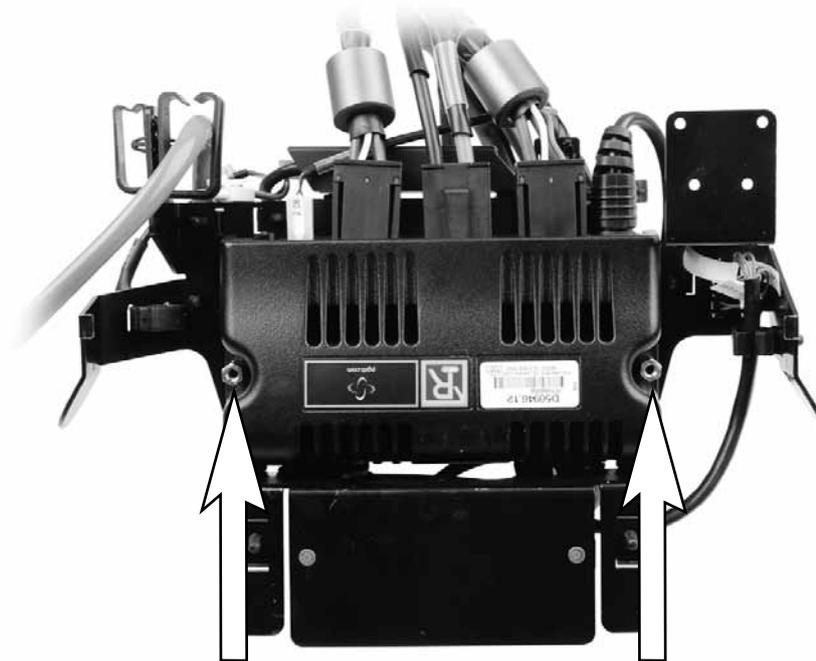
Remove the electronics by gently pulling the locking handles on the left and right side of the chassis outwards and disengaging the tabs.

5. Disconnect the electrical connections from the Power Module. Note their positions (see fig. below).



Power Module cable connections

6. Remove the Power Module, it is fitted with two nuts (see fig. below).



The Power Module is fitted with two nuts.

Assembly

Assemble in the reverse order.”

1. Fit the Power Module with the two nuts (see fig. above).
2. Connect the electrical connections to the Power Module. Note their positions (see fig. on previous page).
3. Fit the Power Module bracket with its lower section partly inside the rear edge of the chassis. Secure the electronics with the lock handles on the left and right hand side of the chassis making sure the tabs are reengaged (see fig. on previous page).
4. Fit the chassis covers. See page 8-9.
5. Switch the main fuse to ON. See page 40.

Fuses

Resetting the main fuse

The main fuse also functions as a battery isolator but it is usually called the main fuse.

It is not normally necessary to replace the main fuse as it is automatic and can be reset when it has been triggered. The main fuse can be accessed through a recess in the rear chassis cover. It is reset by switching the switch to ON (see fig.).

⚠ CAUTION!

If the main fuse is triggered, there is often a major electrical fault. The cause of the fault should be checked carefully before the fuse is reset.



Main fuse/battery isolator (On/Off).

Removal

1. Remove the chassis covers. See page 7-8.
2. Switch the main fuse to OFF (see fig. above).
3. Detach the negative cable from the rear battery.
4. Detach the positive cable from the front battery.
5. Remove the main fuse, which is held in place with two nuts (see fig. below).
6. Disconnect the cables from the main fuse by loosening the screws (see fig.).

For this task the following tools are necessary:

- 1 Wrench 6 mm.
- 1 Phillips head screwdriver



⚠ CAUTION!

Fold the battery connection cables under so they cannot come into contact with the battery terminals.

⚠ CAUTION!

Note the direction in which the fuse is installed for subsequent fitting. The ON/OFF position must match the appropriate sticker on the chassis.



On chassis with R-net Control System the Main Fuse is fitted with two nuts.



Main fuse cable connection.

Fuses

Assembly

Assemble in the reverse order.

1. Switch the new main fuse to OFF.
2. Connect the cables to the new main fuse.

CAUTION!

Note the direction in which the fuse is installed for subsequent fitting. The ON/OFF position must match the appropriate sticker on the chassis.

Check that the cables are firmly attached.

For this task the following tools are necessary:

- 1 Wrench 6 mm.
- 1 Phillips head screwdriver



Main fuse cable connection.

3. Fit the new main fuse on the bracket with the two nuts. See fig.
4. Reattach the battery connection cables to the batteries.
5. Fit the chassis covers. See page 8-9.
6. Switch the main fuse to ON (see fig.).



On chassis with R-net Control System the Main Fuse is fitted with two nuts.



Main fuse/battery isolator (On/Off).

Lights (accessories)

Removing the front lights & indicators

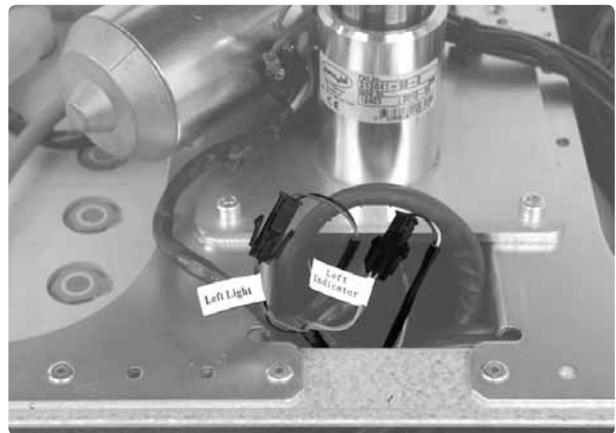
1. Switch off the main power switch on the control panel.
2. Remove the front and upper chassis covers. See page 8-9.

Removal of lights

3. Disconnect the lights at the connection on the cabling. This is positioned on the inside of the chassis, next to the seat lift (see fig.).

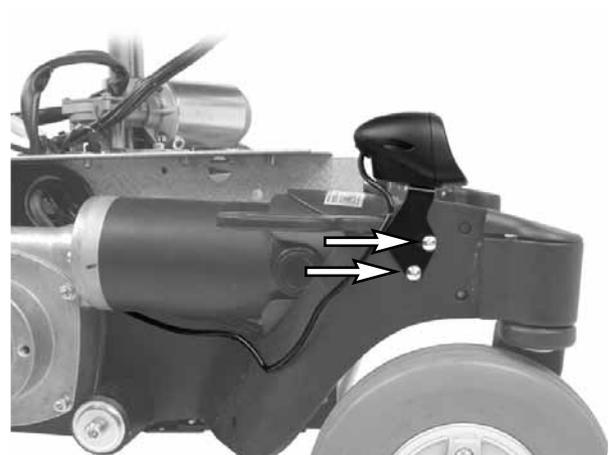
For this task the following tools are necessary:

- 1 Torx key TX20.
- 1 Allen key 3 mm.



The connectors on the front light and indicators cabling.

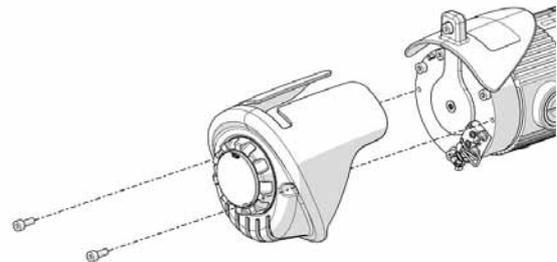
4. Remove the front link arm covers. See page 10. Take note of how the lights cabling is placed underneath the cover of the linkarm (see fig.).
5. Remove the light, it's mounted with two screws (see fig.).



The front lights are mounted with two screws.

Removal of indicators

6. Disconnect the indicator lights at the connector on the cabling. This is positioned on the inside of the chassis, next to the seat lift.
7. The indicators are delivered mounted on the drive motor cover. Remove the drive motor cover, it's fitted with two screws (see fig.).



The Drive Motor Cover is fitted with two screws.

Lights (accessories)

Assembly of front lights & indicators

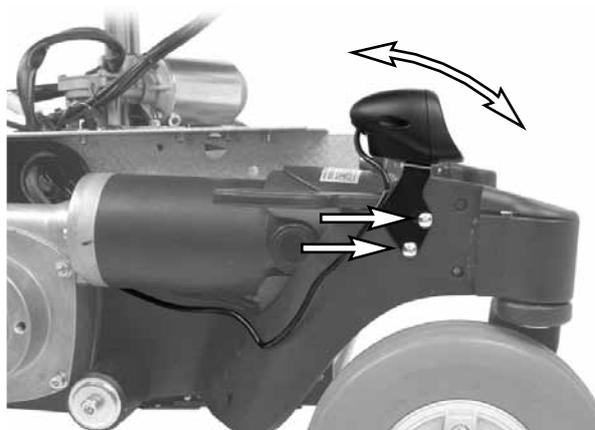
Assemble in the reverse order.

Assembly of lights

1. Fit the light with the two screws. Adjust the light to desired angle before tightening the upper screw (see fig.).
2. Fit the front link arm covers. See page 10. Take care of how the lights cabling is placed underneath the cover of the linkarm (see fig.).
3. Connect the indicators cabling at the connectors on the cabling. This is positioned on the inside of the chassis, next to the seat lift.

For this task the following tools are necessary:

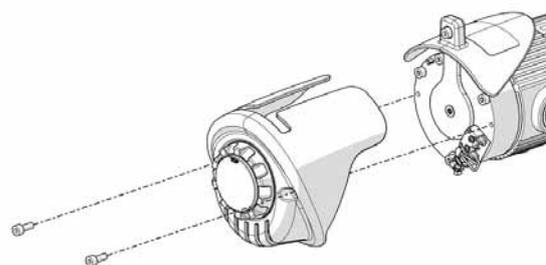
- 1 Torx key TX20.
- 1 Allen key 3 mm.



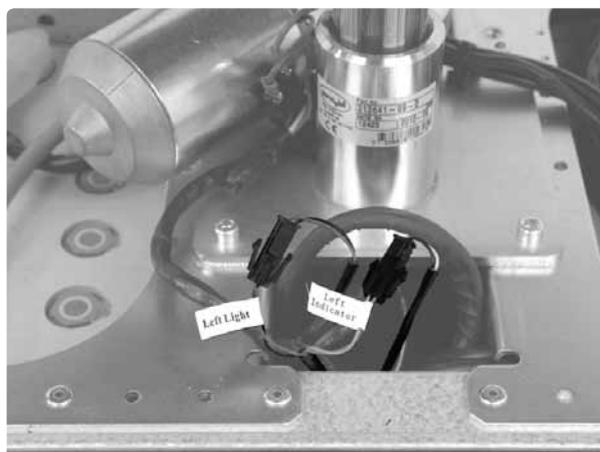
The front light is fitted with two screws.

Assembly of indicators

4. The indicators are delivered mounted on the drive motor cover. Fit the drive motor cover, it's fitted with two screws (see fig.). Fit the indicators cabling together with the drive motor cabling in to the wheelchairs chassis.
5. Connect the indicators cabling to the connectors on the cabling. This is positioned on the inside of the chassis, next to the seat lift (see fig. below).
6. Remount the front and upper chassis covers. See page 8-9.



The Drive Motor Cover is fitted with two screws.



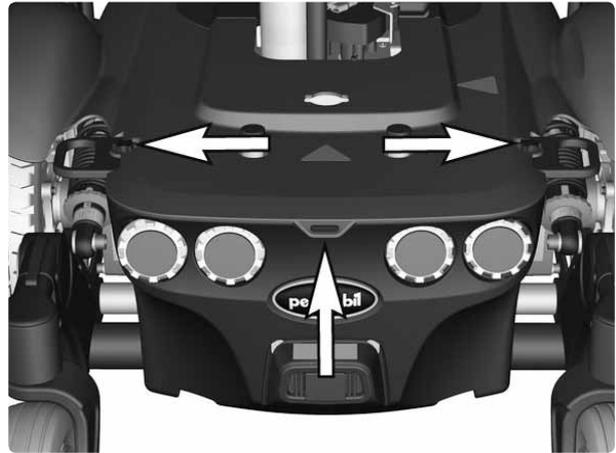
The connectors on the front light and indicators cabling.

Lights

Removing the rear lights & indicators

The rear lights and indicators are delivered complete with the chassis rear cover.

1. Switch off the main power switch on the control panel.
2. If the upper chassis cover isn't removed, remove its rear knobs and lift its rear end to release the rear chassis cover, raise the seat if needed. Remove the rear chassis cover by lifting it upwards/backwards, be sure to disengage the tab.



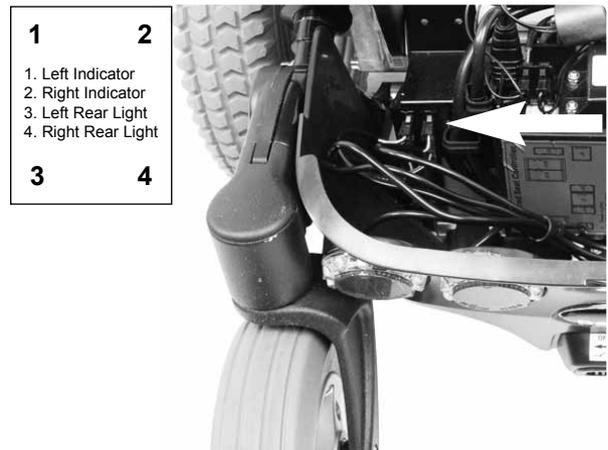
The rear cover is fitted with the upper chassis cover.

3. Disconnect the rear lights and indicators cabling (see fig.). These are connected to the connectors at the rear of the wheelchairs chassis (see fig.).

Assembly

Assemble in the reverse order.

1. Reconnect the rear lights cabling (see fig.).
2. Fit the cover partially inside the chassis at the lower edge (see fig. above).
3. Make sure the upper cover holds the rear cover and Remount the two knobs (see fig. above).



Rear lights cabling connections.

Control System

The wheelchair's control system can be programmed in order to optimize the performance of the wheelchair while also maintaining a high level of safety, regardless of other settings and options on the wheelchair. The control system can also be programmed in order to make adjustments needed for a specific user.

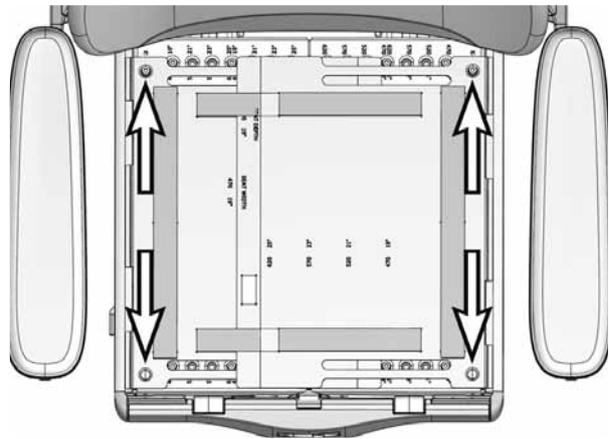
To get more information about standard parameter files, contact your dealer, or Permobil Inc. USA.

Seat Removal

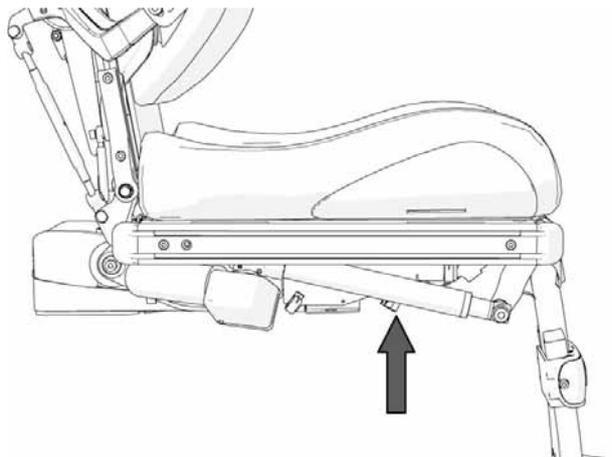
1. Raise the seat to the highest position. If the wheelchair is equipped with a fixed seat post or if the seat lift does not work normally because the batteries are discharged or the adjustment device is defective, the seat can be raised/lowered manually. See page 29.
2. Switch off the main power switch on the control panel.
3. Remove the cushion from the seat.
4. Remove the seat plates, which are held in place by two screws at the back edge and two quick-mount clamps at the front. See the illustration. First remove the screws, then use your hand to carefully push the seat plate from below to release the quick-mount clamps at the front.
5. Remove the control panel. Loosen the control panel cabling from its fixing points. Remember how the cabling is positioned; this helps when you come to re-attach it.
6. On wheelchair equipped with seat tilt, separate the cabling for the seat angle mechanism at the contact on the cabling. The contact is at the front right corner of the seat angle mechanism, next to the other cabling (see fig.).

For this task the following tools are necessary:

- 1 Allen key 5 mm.
- 1 Allen key 6 mm.



The seat plates are held in place by two screws at the back edge and two quick-mount clamps at the front.

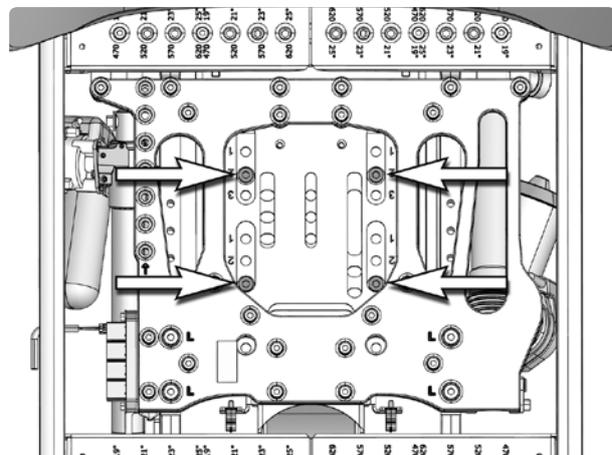


The connector is on the cabling at the front right corner of the seat angle mechanism, next to the rest of the cabling

7. Remove the four screws that hold the seat in place (see fig.). The seat can be mounted in three different positions, depending on the current seat depth. Note the position the seat is mounted in for future reference.
8. Lift the seat off the seat lift/seat column.

⚠ WARNING!

The seat is heavy. This work should therefore always be performed by two people. Be careful with the cabling.



The seat is held in place by four screws.

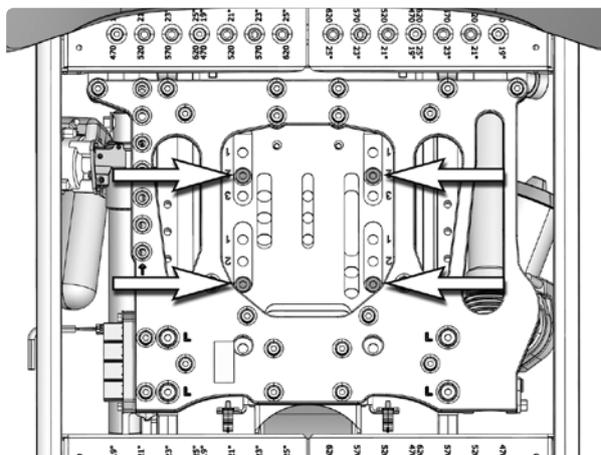
Seats Assembly

Assemble in the reverse order.

1. Mount the seat using the four screws. See the fig. It can be mounted in three different positions, depending. For more information, see the seats service manual.
2. Fit the control panel. See page 42-43. Re-attach the cabling to its fixing points.

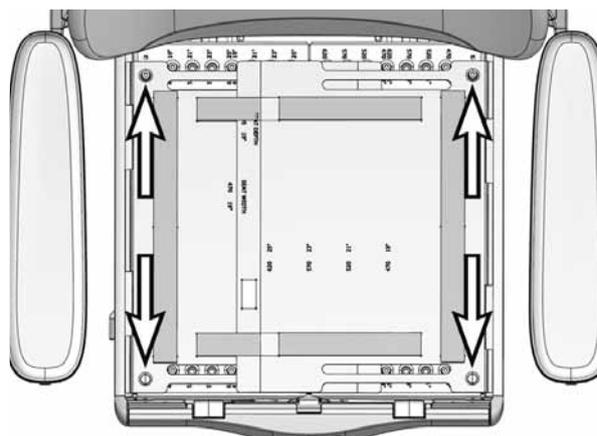
For this task the following tools are necessary:

- 1 Allen key 5 mm.
- 1 Allen key 6 mm.



The seat is held in place by four screws.

3. Mount the seat plates by first mounting them with the quick-mount clamps at the front and then the screws at the back. Fit the quick-mount clamps by pushing them straight into the holes.
4. Fit the cushion in desired position by pressing it against the seat plates.
5. Lower the seat to desired position. If the electric seat lift does not work normally because the batteries are discharged or the adjustment device is defective, the seat can be raised/lowered manually. See page 29.



The seat plates on Corpus 3G are held in place by two screws at the back edge and two quick-mount clamps at the front.

Adjustment

Adjusting the seat depth

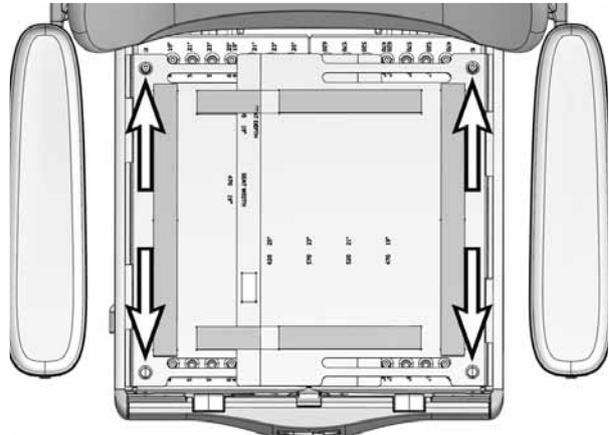
The seat depth can be adjusted to suit different users. There are seven fixed levels, each 1 inch apart.

Adjustment of the seat depth is performed by mounting the front section of the Seat frame incl. Leg rest into desired positions according to the table on page 49. When the seat depth is adjusted it may be necessary to replace cushions, seat plates and UniTrack rails for ones of the appropriate length. The mounting position for the seat on the seat lift/fixed seat column may also need adjusting. See page 70-81.

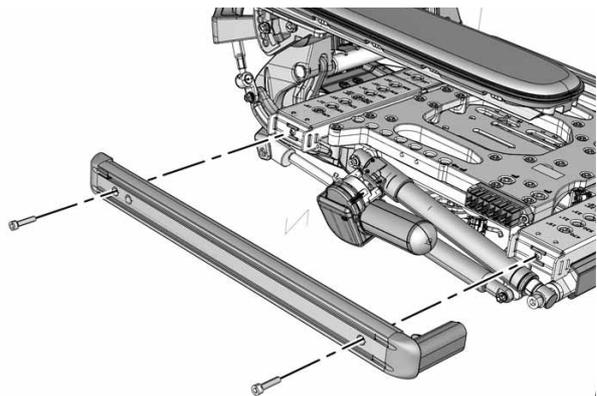
1. Remove the seat cushion by lifting it straight up. It is attached by means of Velcro on the rear of the cushion.
2. Remove the seat plates, which are held in place by two screws at the back edge and two quick-mount clamps at the front. See the illustration. First remove the screws, then use your hand to carefully push the seat plate from below to release the quick-mount clamps at the front.
3. Remove the UniTrack rails which are each held in place by two screws. See the illustration.

For this task the following tools are necessary:

1 Allen key 5 mm

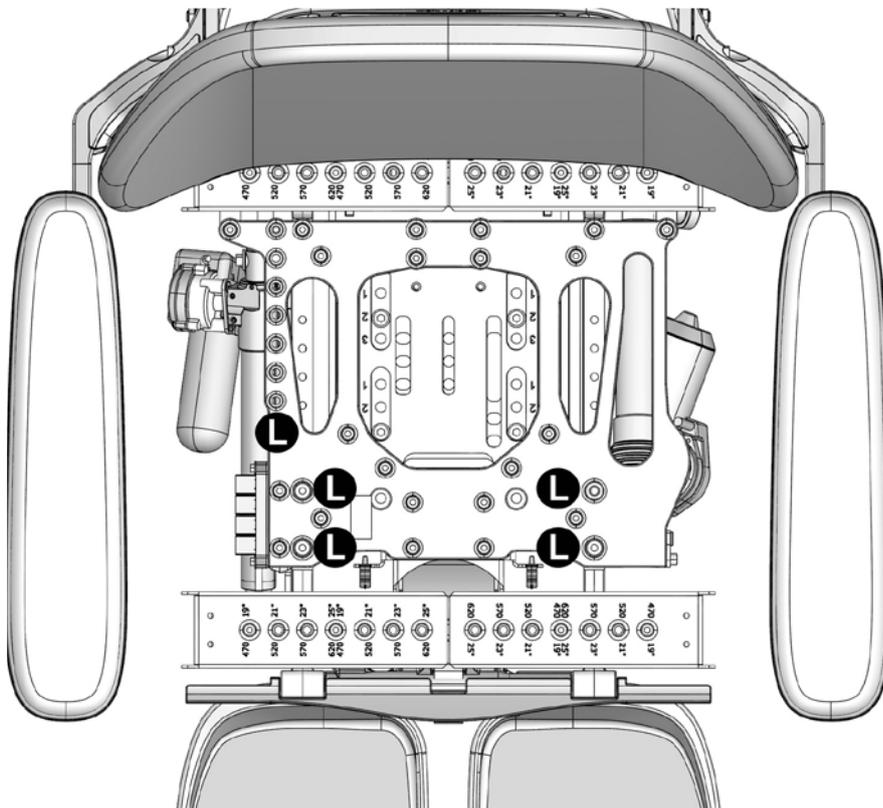


The seat plates are held in place by two screws at the back edge and two quick-mount clamps at the front.



The UniTrack rails are fixed in place with two screws each.

4. Remove the five screws marked (L) securing the Seat frames front section, see fig below.
5. Adjust the seat depth by moving the front section of the seat frame to the required position. The rails with which the seat depth is adjusted are marked with the settings for each potential position.
6. Secure it at the required setting by remounting the five screws.



Position	Seat Depth
1	19"
2	20"
3	21"
4	22"
5	23"
6	24"
7	25"

The position of the front part of the Seat frame (Leg rest position) is fixed by five screws marked with the letter L.

7. Mount UniTrack rails of a suitable length for the seat depth setting. The rails are each held in place by two screws. See the illustration on page 48. Use a torque wrench to tighten the screws.

Tightening torque 9.8 Nm.

8. Mount seat plates of a suitable length for the seat depth setting. The plates are held in place by two screws at the back edge and two quick-mount clamps at the front. See the illustration on page 48.
9. Fit a cushion of a suitable length/width for this setting. Secure the cushion in place using the Velcro on the back of the cushion.

⚠ WARNING!

The seat's mounting position on the seat lift/fixed seat column may need to be changed following adjustment of seat depth. Failure to do this correctly may impair the driving properties of the wheelchair, leading to an increased risk of personal injury and damage to property, including damage to the wheelchair.

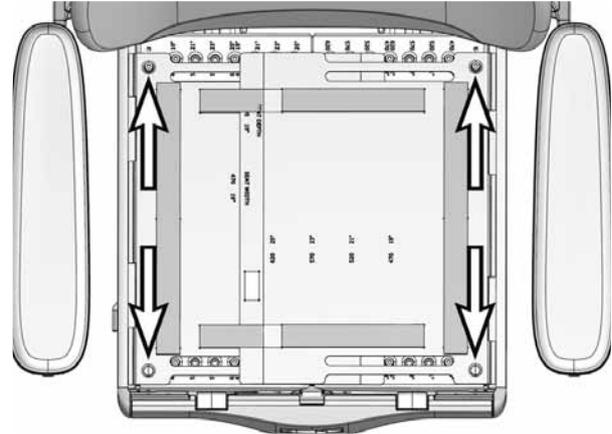
Adjusting the seat width

The seat width can be adjusted to give the user optimal comfort. There are four fixed levels, each 25 mm apart.

1. Remove the seat cushion by lifting it straight up. It is attached by means of Velcro on the rear of the cushion.
2. Remove the seat plates, which are held in place by two screws at the back edge and two quick-mount clamps at the front. See the illustration. First remove the screws, then use your hand to carefully push the seat plate from below to release the quick-mount clamps at the front.

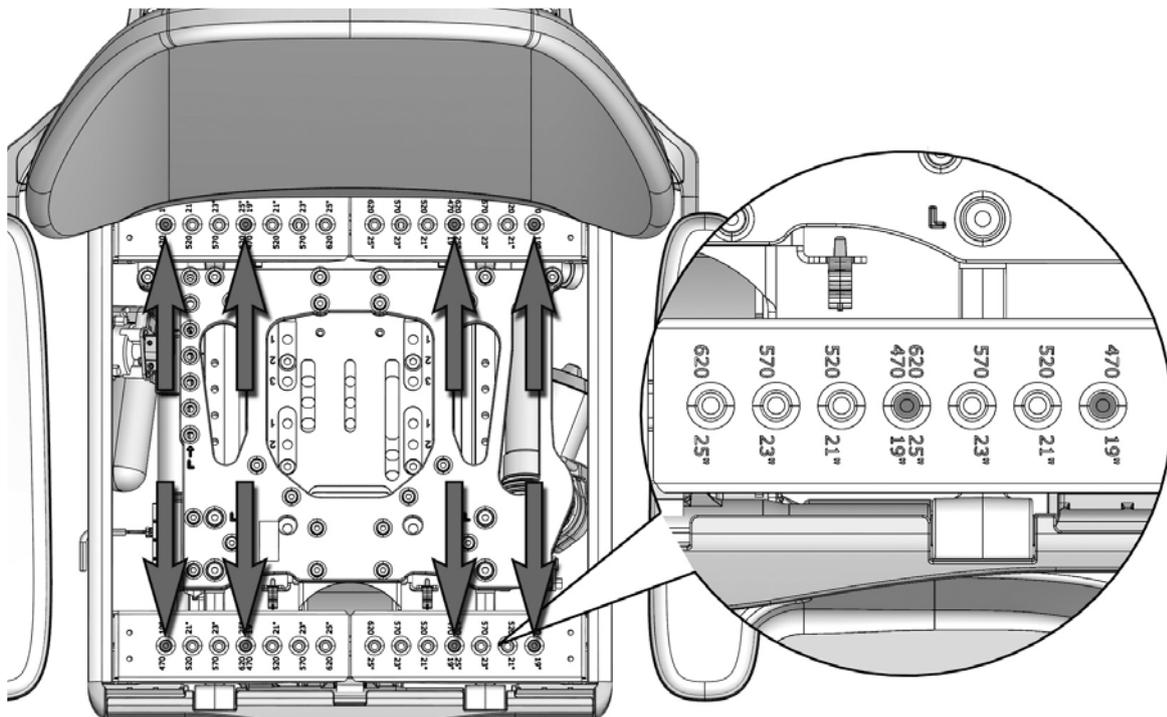
For this task the following tools are necessary:

- 1 Allen key 5 mm



The seat plates are held in place by two screws at the back edge and two quick-mount clamps at the front.

3. Remove the eight screws securing the seat width adjustment unit. See the illustration below.
4. Adjust the seat width by moving the right or left section of the seat frame to the required position. The rails with which the seat width is adjusted are marked with the settings for each potential position. The scale is marked with "millimeters" and "inches".
5. Secure it at the required setting by replacing the eight screws.
7. Remount the seat plates using two screws at the back edge and two quick-mount clamps at the front. See the illustration.
8. Fit a cushion of a suitable length/width for this setting. See the table on 89. Secure the cushion in place using the Velcro on the back of the cushion.



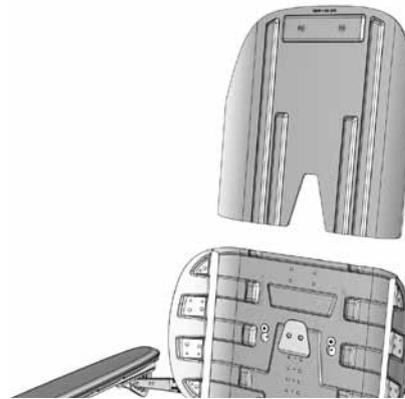
The seat width is fixed using eight screws.

Adjusting the backrest height

The backrest height can be adjusted to give the user optimal comfort. Adjustment is possible by moving the locking mechanism on the lower section of the backrest between six fixed stages 25 mm apart.

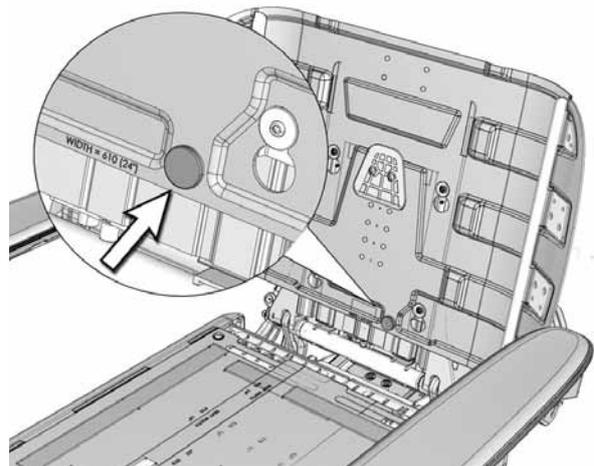
1. Remove the backrest cushion by pulling it straight forwards. It is attached by means of Velcro on the rear of the cushion.
2. Remove the upper section of the back rest by carefully pulling it straight up. See fig.

For this task the following tools are necessary:
1 Allen key 3 mm



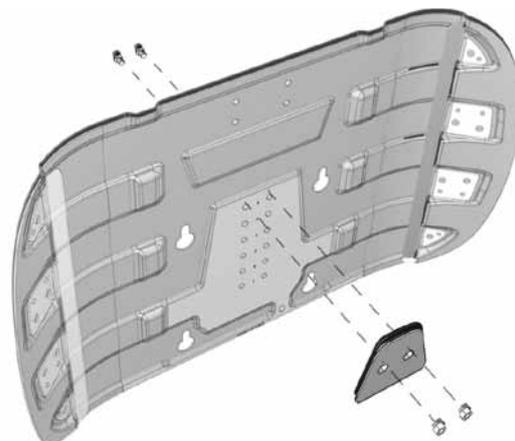
Removal/Fitting of the upper section of the back rest.

3. Remove the knob holding the lower part of the back rest. See fig.
4. Remove the lower section of the back rest by pulling the backrest plate straight up so it can be removed from the four locking devices. See the illustration.



The lower backrest plate is secured by means of a knob

5. Remove the two screws holding the backrest locking mechanism in place. See the illustration.
6. Adjust the height of the backrest by mounting the locking mechanism in desired position.
7. Remount the lower section of the back rest on the seat by carefully fitting the keyholes on the corresponding pegs and then securing it by tightening the knob. See fig.
8. Slide the upper section of the backrest down until secured in position by the locking mechanism. See the illustration above.
9. Fit a cushion of a suitable height/width for this setting. See the table on page 87. Secure the cushion in place using the Velcro on the back of the cushion.



The locking mechanism is held in place by two screws.

Adjusting the armrest height

The height of the armrest can be adjusted to provide the user with optimal comfort. The scale on the back of the backrest shows the current height setting for the arm rests.

For this task the following tools are necessary:

1 Allen key 5 mm

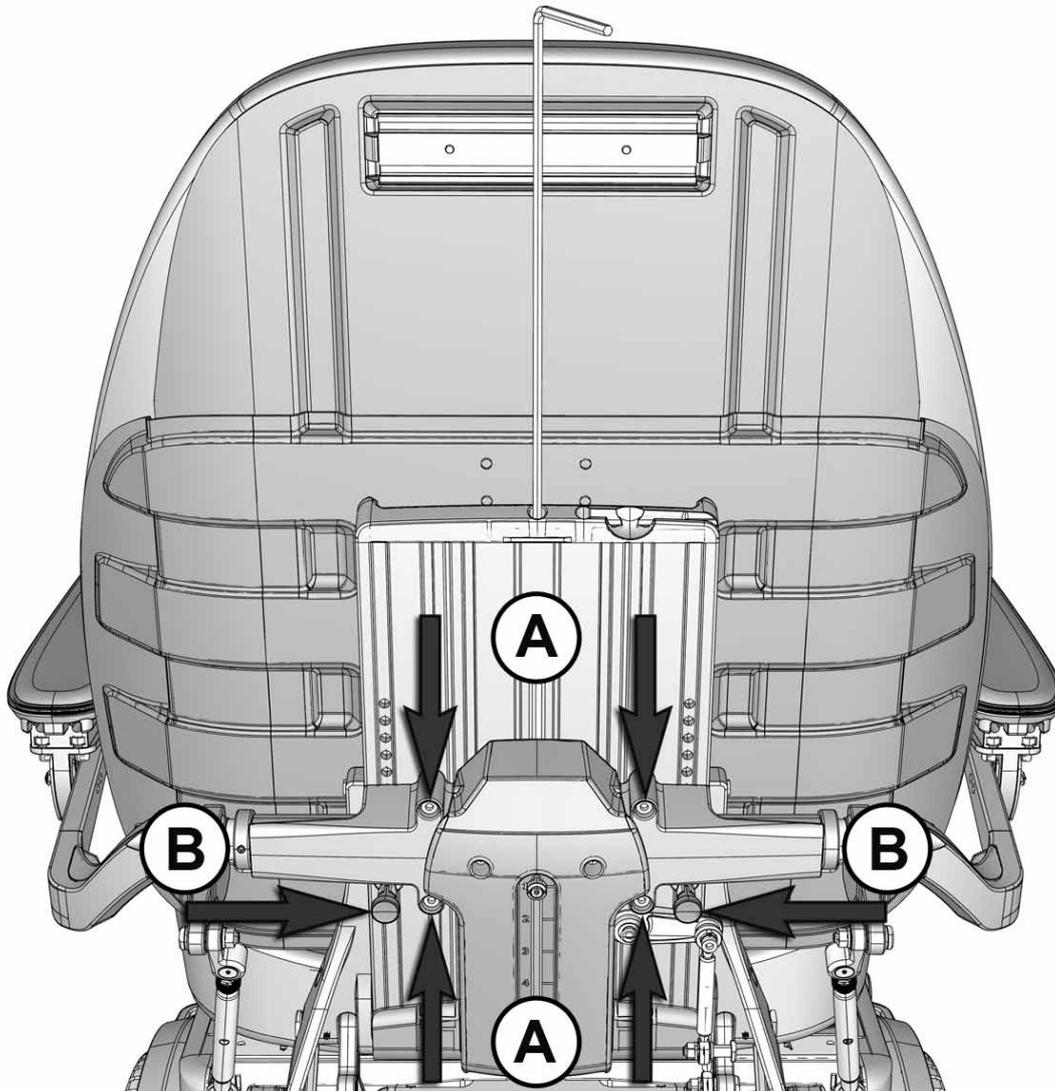


1. Undo the four screws (A) and release the two quick locks (B) on the rear of the back rest that secure the height of the arm rest. See figure.

⚠ WARNING!

Do not subject the armrests to load when adjusting them. Risk of crushing.

2. Adjust to the required position using the adjustment screw on the rear of the backrest. See the illustration below.
3. Secure the height of the arm rest by engaging the two quick locks and tightening the four screws on the rear of the back rest. See figure.



The armrest height is fixed using four screws. To perform this height adjustment, use the adjustment screw in the center of the backrest.

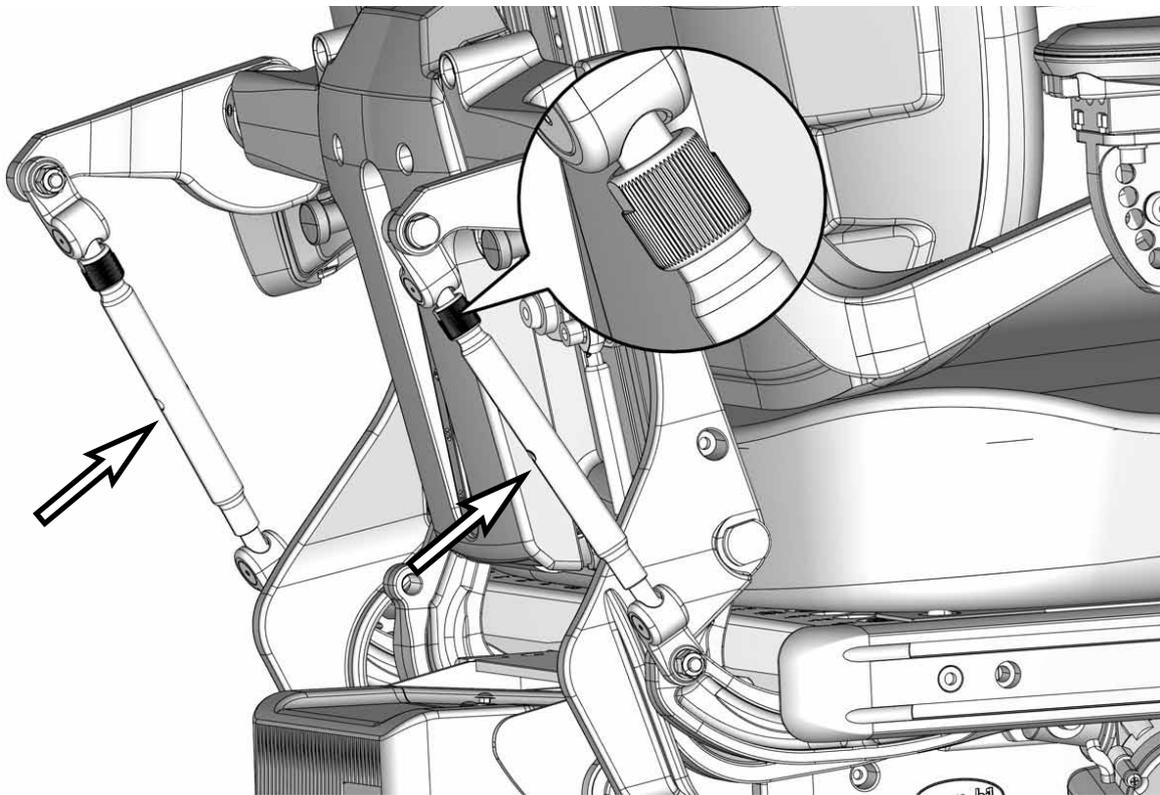
Adjusting the armrest angle

The angle of the armrest can be easily adjusted to provide the user with optimal comfort.

1. Loosen the check-nut on the adjustmentbar in question. See the illustration.
2. Adjust the armrest angle by turning the adjustment bars. See the illustration.
3. Fix into desired position by tightening the check-nut. See the illustration.

⚠ WARNING!

Do not subject the armrests to load when adjusting them. Risk of crushing.



Adjust the armrest angle by turning the adjustment bars. The position of the adjustment bars are fixed by a check-nut

Individual adjustment of armrest height/angle

For this task the following tools are necessary:

1 Allen key 5 mm

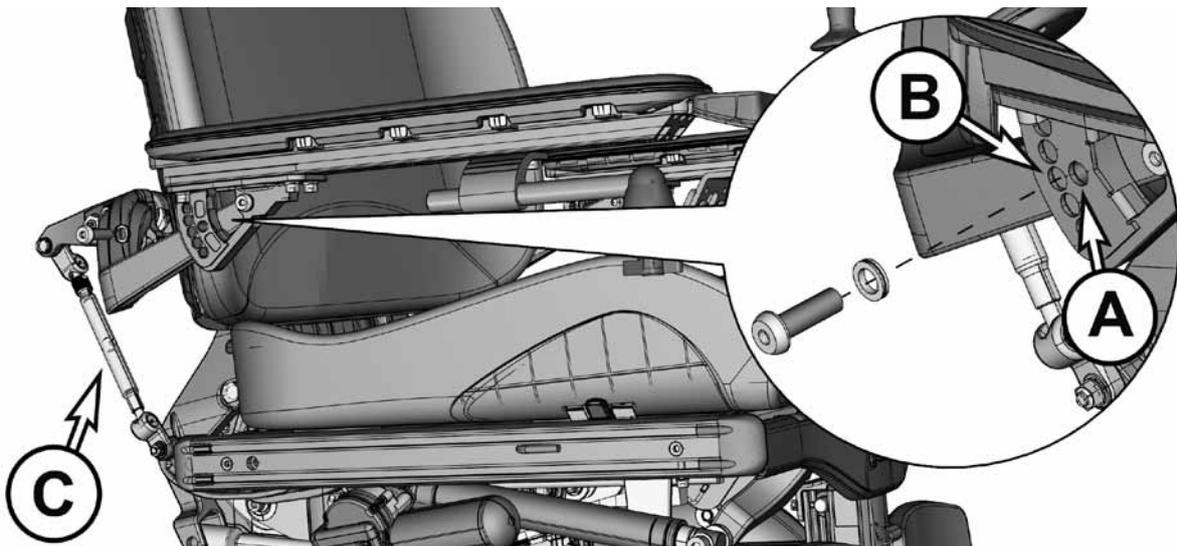


⚠ WARNING!

Do not subject the armrests to load when adjusting them. Risk of crushing. This type of adjustment is only performed in special cases. It may have negative effects on the movement of the armrest when raising/lowering the backrest.

The height/angle of the armrest is normally adjusted as described on s 32-33. If specifically required, the armrests can be adjusted individually for users who want the left and right armrest at different heights and/or angles. This adjustment is only performed in special cases. It may have negative effects on the movement of the armrest when raising/lowering the backrest.

1. Adjust the armrest height by turning the adjustment bars (C). See the illustration.
2. The angle of the armrest is secured using a screw. Move the screw from a fixed position (A) to a flexible position (B). See the illustration below.
3. Adjust the armrest to the required angle and secure by tightening the screw. See the illustration below.



Individual adjustment of the armrest height and angle

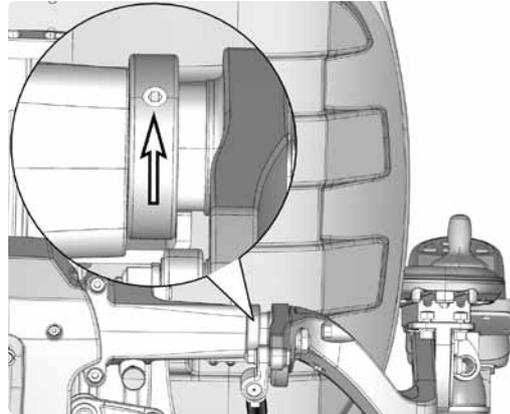
Adjusting the armrest width

The distance between the armrests can be adjusted to give the user optimal comfort.

1. Loosen the screw for armrest width adjustment approximately 3 turns. See the illustration.
2. Push in/pull out the armrest shaft to the desired position.
3. Secure it at the required setting by retightening the screw.

For this task the following tools are necessary:

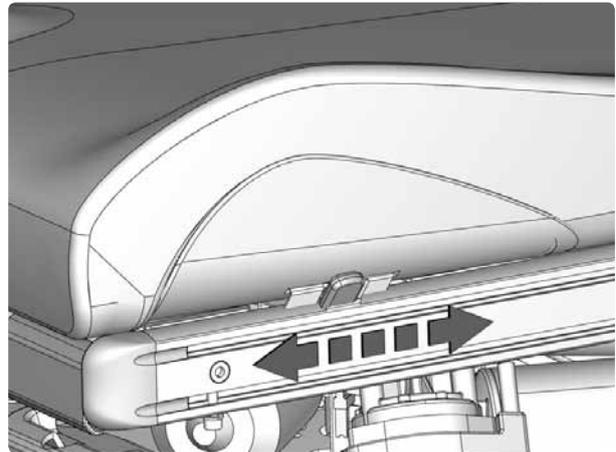
- 1 Allen key 5 mm



The armrest width is fixed using one screw.

Adjusting the thigh support

The position of the thigh support can be adjusted forwards or backwards to give the user optimal comfort. Slide the thigh support forwards or backwards to the desired position.



The position of the thigh support can be adjusted

Repairs

Replacing a UniTrack rail

UniTrack rails are available in five different lengths that are used depending on the seat depth selected.

Removal

1. Remove the two screws that hold the rail in place. See the illustration.

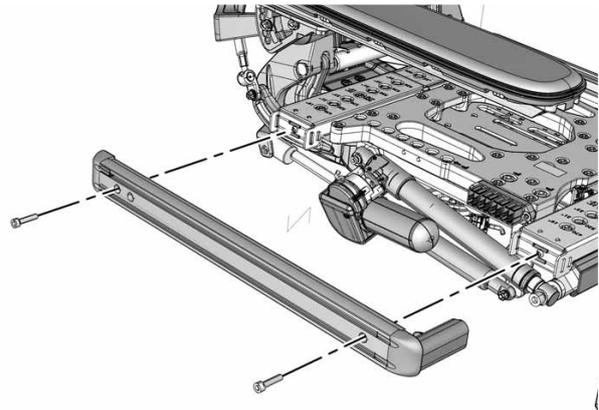
Mounting

1. Mount the UniTrack rail using two screws. See the illustration. Use a torque wrench to tighten the screws.

Tightening torque 9.8 Nm.

For this task the following tools are necessary:

- 1 Allen key 5 mm



The UniTrack rail is held in place by two screws.

Replacing seat plates

Seat plates are available in five different lengths that are used depending on the seat depth selected.

Removal

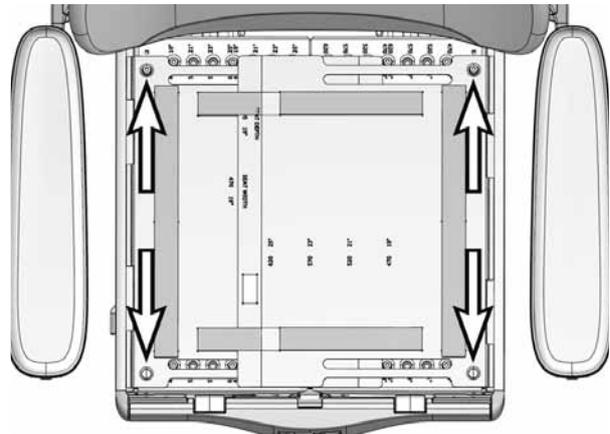
1. Remove the seat cushion by lifting it straight up. It is attached by means of Velcro on the rear of the cushion.
2. Remove the seat plates, which are held in place by two screws at the back edge and two quick-mount clamps at the front. See the illustration. First remove the screws, then use your hand to carefully push the seat plate from below to release the quick-mount clamps at the front.

Mounting

1. Mount the seat plates by first mounting them with the quick-mount clamps at the front and then the screws at the back. Fit the quick-mount clamps by pushing them straight into the holes.
2. Fit the seat cushion by pressing it against the seat plate in the desired position to ensure good contact for the Velcro on its underside.

For this task the following tools are necessary:

- 1 Allen key 3 mm



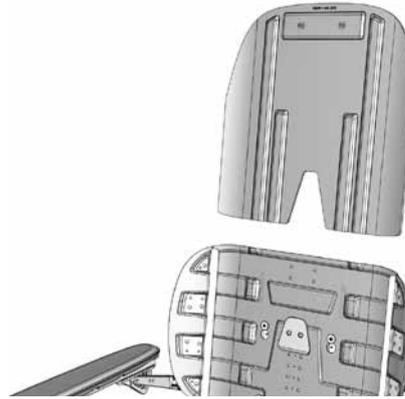
The seat plates are held in place by two screws at the back edge and two quick-mount clamps at the front.

Replacing backrest plates

Backrest plates are available in three different widths to fit most users. If you change the size of the backrest plates you will also have to change the cushion to one that is a suitable size. See the table on 87.

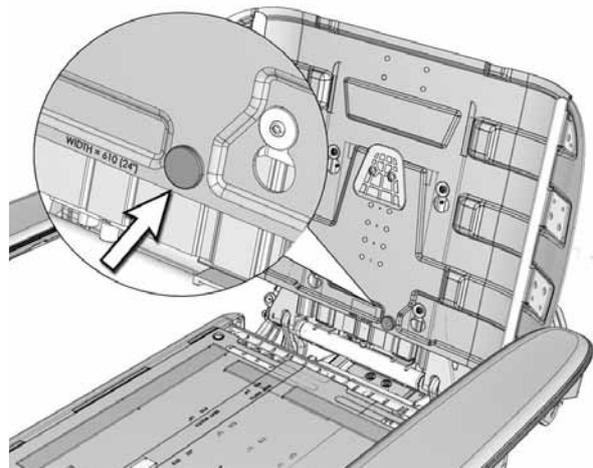
Removal

1. Remove the backrest cushion by pulling it straight forwards. It is attached by means of Velcro on the rear of the cushion.
2. Remove the upper section of the back rest by carefully pulling it straight up. See fig.



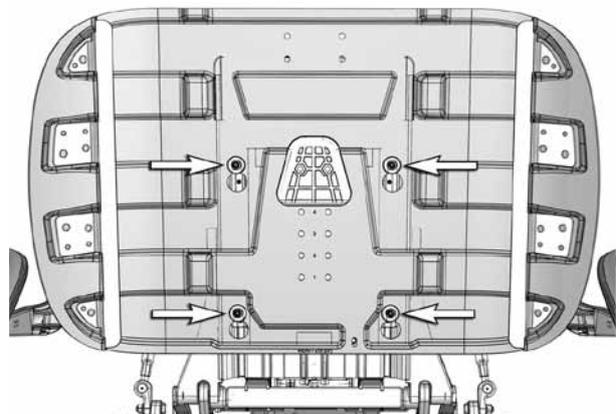
Removal/Fitting of the upper section of the back rest.

3. Remove the knob securing the position of the lower backrest plate. See the illustration.



The lower backrest plate is secured by means of a knob

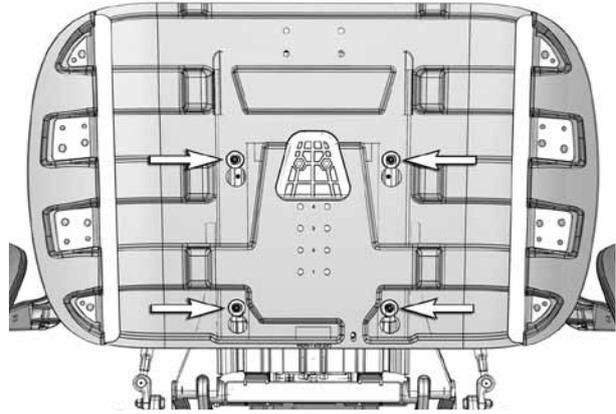
4. Remove the lower section of the back rest by pulling the backrest plate straight up so it can be removed from the four locking devices. See the illustration.



The lower backrest plate is secured by means of four locking devices

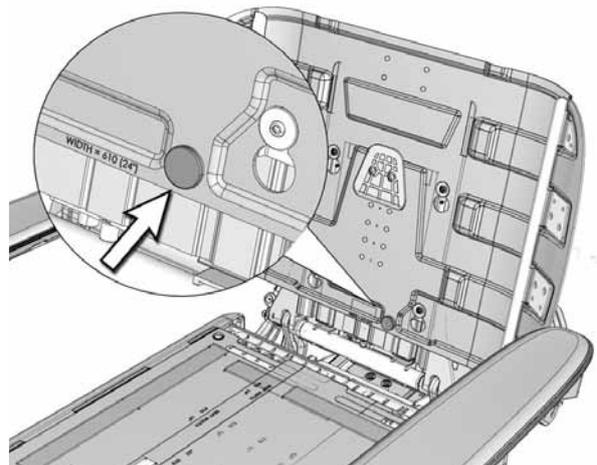
Mounting

1. Mount the lower backrest plate by lining up the four "keyholes" on the locking devices and then sliding the plate straight down.



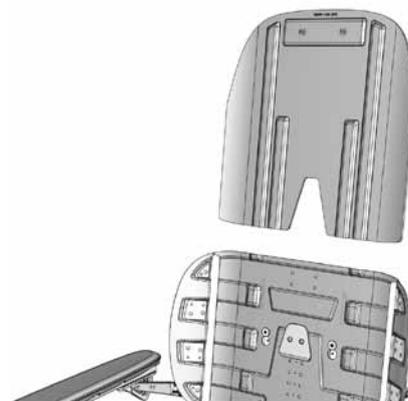
The lower backrest plate is secured by means of four locking devices

2. Secure the position of the plate by fitting the knob. See the illustration.



The lower backrest plate is secured by means of a knob

3. Mount the upper backrest plate by sliding it down into the lower plate's grooves. The height of the backrest may need to be adjusted. This is described on page 51.
4. Fit the backrest cushion by pressing it against the plate in the desired position to ensure good contact for the Velcro on its underside. The lower section of the cushion is fastened to the seat plate by means of Velcro.



Removal/Fitting of the upper section of the back rest.

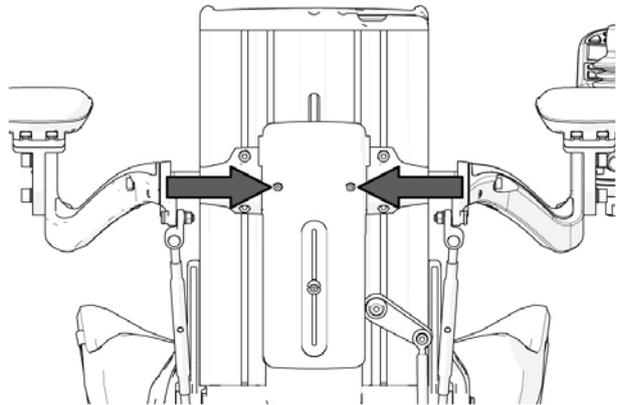
Replacing the armrest height adjustment mechanism

Removal

1. Remove the backrest plates. For a detailed description, see 18.
2. Loosen the two screws holding the plastic cover to the back of the backrest. Twist the plastic cover downwards. See the illustration.

For this task the following tools are necessary:

- 1 Allen key 3 mm
- 1 Allen key 5 mm



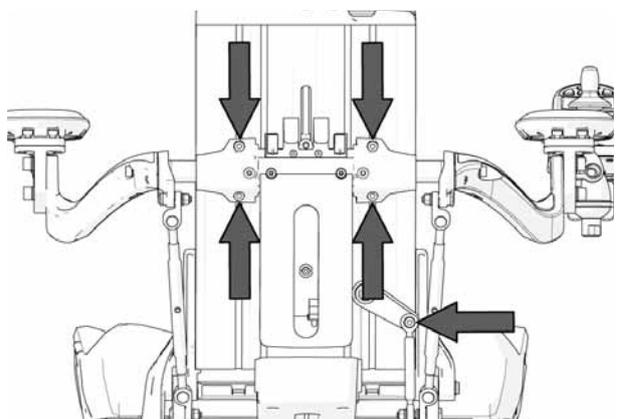
The plastic cover is fixed using two screws.

3. Remove the BUS contacts from the contact block and divide the cabling for the ICS switchbox at the contacts on the cabling.



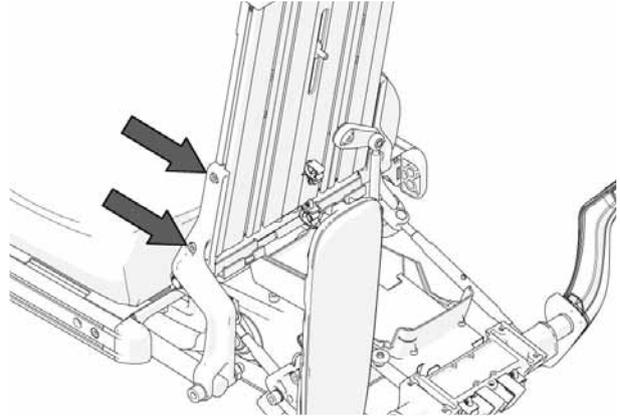
1. The contact on the ICS switchbox cabling is above the contact block. 2. The BUS contacts are mounted on the contact block.

4. Remove the four screws that hold the armrests in place. See the illustration. Then carefully move the armrests downwards or backwards.
5. Remove the joint for the backrest slide function, which is held in place by one screw. See the illustration.



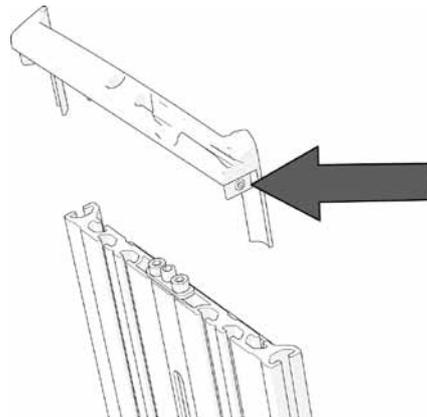
The armrests are held in place by four screws. The joint for the backrest slide function is held in place by one screw

6. Remove the backrest profile, which is secured using two screws on the left and right. See the illustration. Remove by undoing the screws and pulling the backrest profile straight up.

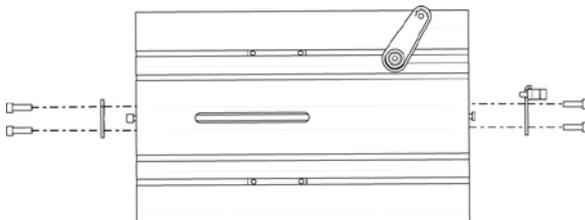


The backrest profile is secured using two screws on the left and right

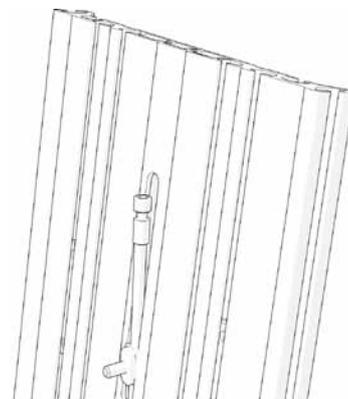
7. Loosen the screws on the left and right side of the backrest profile and then remove its end cover by sliding it straight out.
8. Remove the adjustment bar brackets, which are each held in place by two screws. See the illustration at bottom left.
9. Screw the adjustment bar down far enough to be able to prise it up out of the groove on the backrest profile. See the illustration at bottom right.



The end cover of the backrest profile is secured using one screw on the left side and one on the right



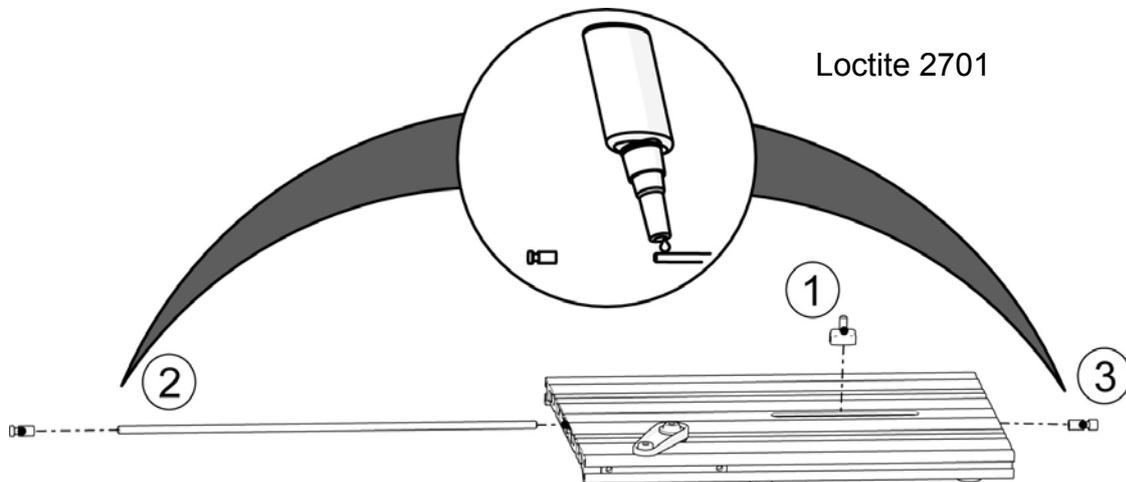
The adjustment bar brackets are each held in place by two screws



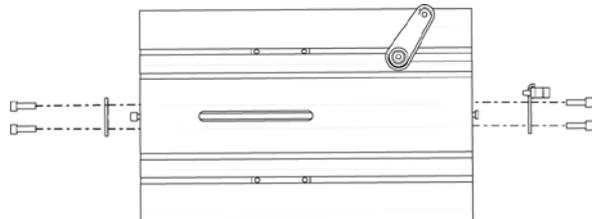
Screw the adjustment bar down far enough to be able to prise it up out of the groove on the backrest profile

Mounting

1. Push the threaded rod into the backrest profile and at the same time screw on the driver (1). See the illustration below.
2. Apply threadlocker (Loctite 2701) to the ends of the threaded rod and fit the two end pieces (2 & 3) onto the threaded rod. See the illustration below.

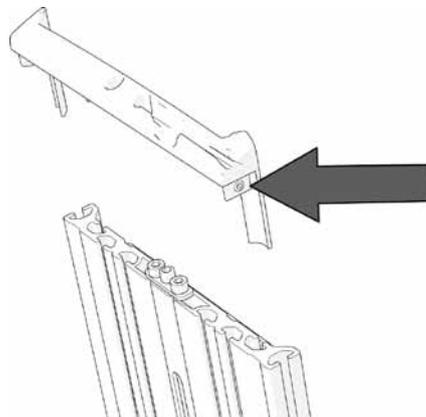


3. Mount the adjustment bar brackets, which are each held in place by two screws. See the illustration.



The adjustment bar brackets are each held in place by two screws

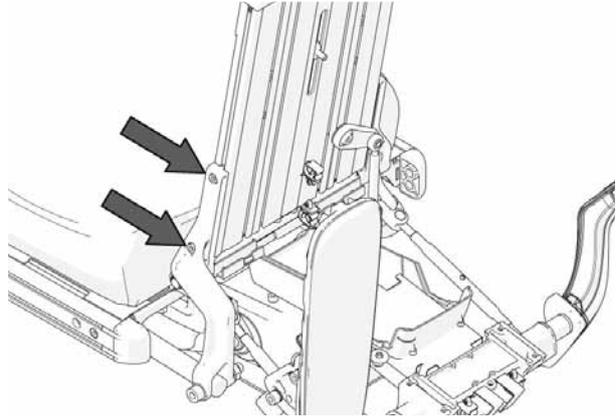
4. Remount the end cover of the backrest profile by pushing it straight into the end of the profile. Secure the cover by tightening the screws on the left and right. See the illustration.



The end cover of the backrest profile is secured using one screw on the left side and one on the right

5. Remount the backrest profile by fitting the bracket into the profile groove on the left and right sides. Slide the profile downwards until the stop on the bracket is touching the end of the backrest profile on both the left side and the right. Secure the backrest profile by tightening the two screws on the left and right. See the illustration. Tighten the screws using a torque wrench.

Tightening torque 9.8 Nm.



The backrest profile is secured using two screws on the left and right

6. Mount the armrests using the four screws. See the illustration. Tighten the screws using a torque wrench.

Tightening torque 9.8 Nm.

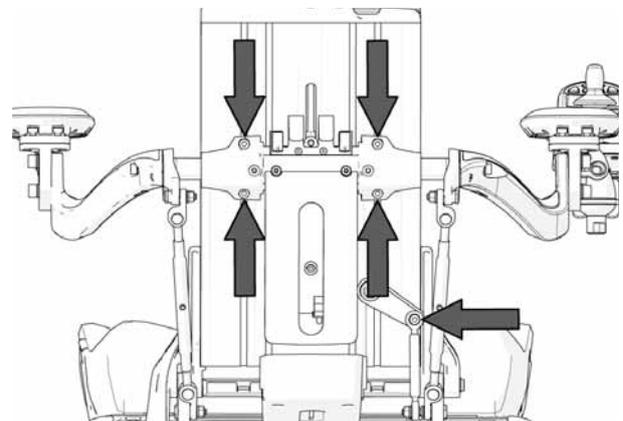
7. Mount the joint for the backrest slide function using the screw supplied. See the illustration. Tighten the screw using a torque wrench.

Tightening torque 9.8 Nm.

8. Mount the BUS contacts on the contact block and mount the cabling for the ICS switchbox at the contact on the cabling. See the illustration at bottom left.

9. Remount the plastic cover on the back of the backrest using the two screws supplied. See the illustration at bottom right.

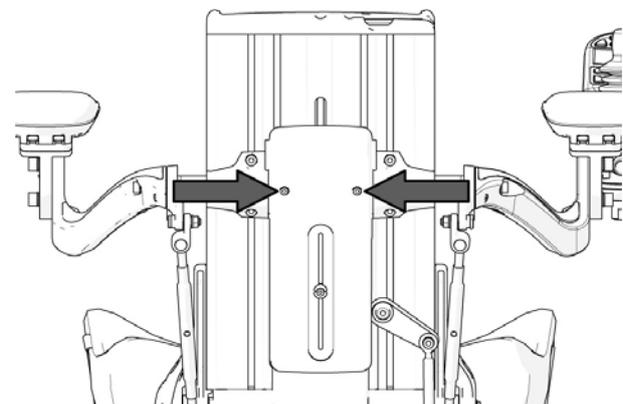
10. Remount the backrest plates. For a detailed description, see 19.



The armrests are held in place by four screws. The joint for the backrest slide function is held in place by one screw



1. The contact on the ICS switchbox cabling is above the contact block. 2. The BUS contacts are mounted on the contact block.



The plastic cover is attached using two screws

Replacing the manual legrest adjustment unit

For this task the following tools are necessary:

- 1 Allen key 5 mm
- 1 Allen key 8 mm



⚠ WARNING!

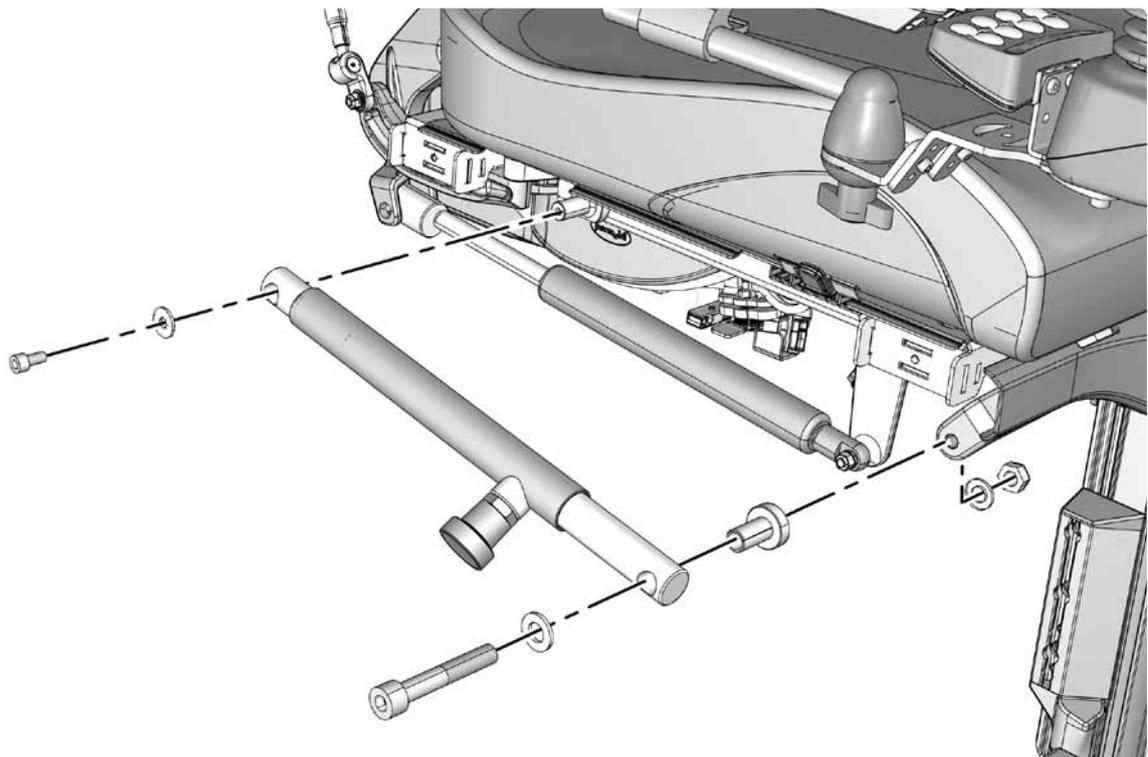
Do not subject the legrest to load during mounting or removal. Risk of crushing.

Removal

1. Switch off the main power switch on the control panel.
2. Remove the UniTrack rail from the right side of the seat. See page 56 for further information.
3. Remove the lock nut from the front bracket of the adjustment unit. See the illustration below.
5. Remove the adjustment unit, which is held in place by two screws. See the illustration below.

Mounting

1. Fit the rear fixing screw (M6x12) and washer for the adjustment unit. See the illustration. Tighten the screw using a torque wrench. **Tightening torque 9.8 Nm.**
2. Fit the front fixing screw (M10x60), spacer and washer for the adjustment unit. See the illustration. Tighten the screw using a torque wrench. **Tightening torque 35 Nm.**
3. Fit the lock nut and washer on the front bracket of the adjustment unit. See the illustration.
4. Mount the UniTrack rail on the right side of the seat. See page 56 for further information.



The manual legrest adjustment unit is held in place by two screws

Replacing the manual backrest adjustment unit

For this task the following tools are necessary:

- 1 Allen key 5 mm
- 1 Allen key 8 mm



⚠ WARNING!

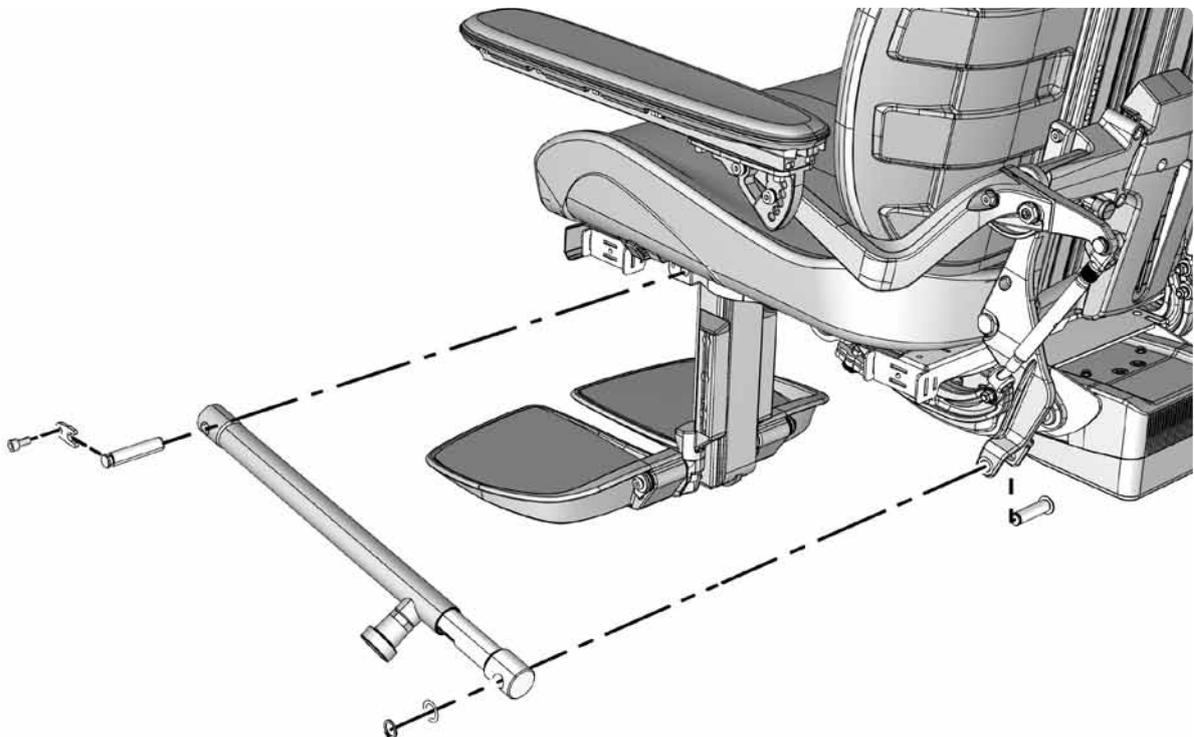
Do not subject the backrest to load during mounting or removal. Risk of crushing.

Removal

1. Switch off the main power switch on the control panel.
2. Remove the UniTrack rail from the left side of the seat. See 58 for further information.
3. Hold the backrest in a steady grip as you remove the manual adjustment unit. Remove the circlip from the rear bracket of the adjustment unit. See the illustration below. Once the rear bracket has been removed the backrest can be angled forward to rest on the seat cushion.
4. Remove the locking mechanism from the front bracket of the adjustment unit, it is attached with a screw. See the illustration below.

Mounting

1. Mount the front end of the adjustment unit with the locking mechanism. See the illustration below.
2. Mount the rear end of the adjustment unit, fix into position using the circlip. See the illustration below.
3. Mount the UniTrack rail on the left side of the seat. See page 56 for further information.



The manual backrest adjustment unit is held in place by two screws

Replacing the legrest actuator

For this task the following tools are necessary:

- 1 Allen key 5 mm
- 1 Allen key 8 mm



⚠ WARNING!

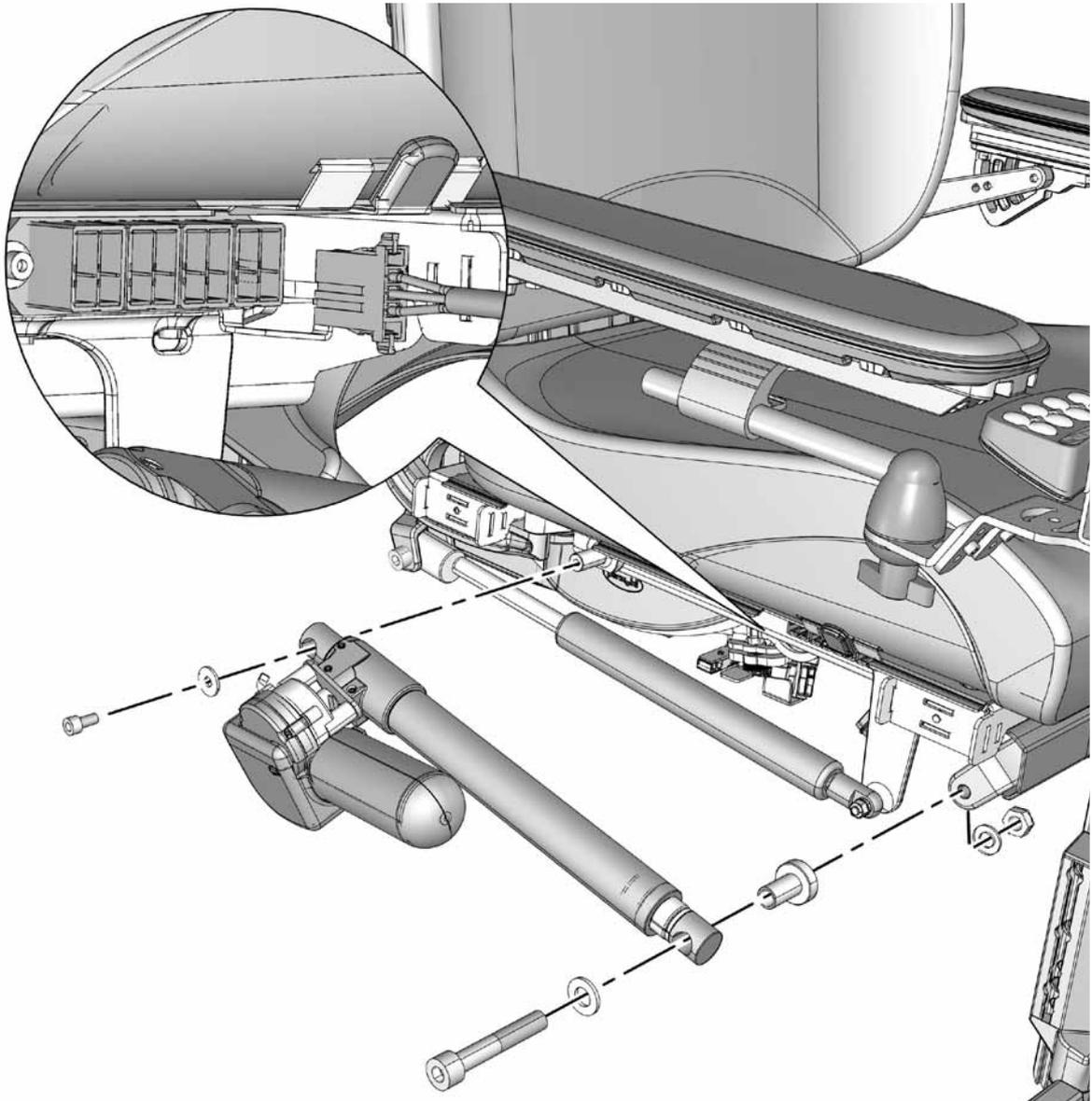
Do not subject the legrest to load during mounting or removal. Risk of crushing.

Removal

1. Switch off the main power switch on the control panel.
2. Remove the UniTrack rail from the right side of the seat. See page 56 for further information.
3. Remove the actuator contact from the contact block above the actuator. See the illustration. Remove the contact by pulling it straight out. Loosen the actuator cabling from its fixing points. Remember how the cabling is positioned; this helps when you come to re-attach it.
4. Remove the lock nut from the front bracket of the actuator. See the illustration below.
5. Remove the actuator, which is held in place by two screws. See the illustration below.

Mounting

1. Fit the rear fixing screw (M6x12) and washer for the actuator. See the illustration. Tighten the screw using a torque wrench.
Tightening torque 9.8 Nm.
2. Fit the front fixing screw (M10x60), spacer and washer for the actuator. See the illustration. Tighten the screw using a torque wrench. **Tightening torque 35 Nm.**
3. Fit the lock nut and washer on the front bracket of the actuator. See the illustration.
4. Secure the cabling for the actuator in its fixing points. Consider the arrangement of the cables carefully and make sure there is no risk of them getting trapped or otherwise damaged.
Connect the actuator contact to the contact block on the right side of the seat. See the illustration. Fit the contact by pushing it straight in at any point.
5. Mount the UniTrack rail on the right side of the seat. See page 56 for further information.



*The legrest actuator is held in place by two screws.
The actuator cabling is connected to the contact block above the actuator.*

Replacing the backrest actuator

For this task the following tools are necessary:

- 1 Allen key 5 mm
- 1 Allen key 8 mm



⚠ WARNING!

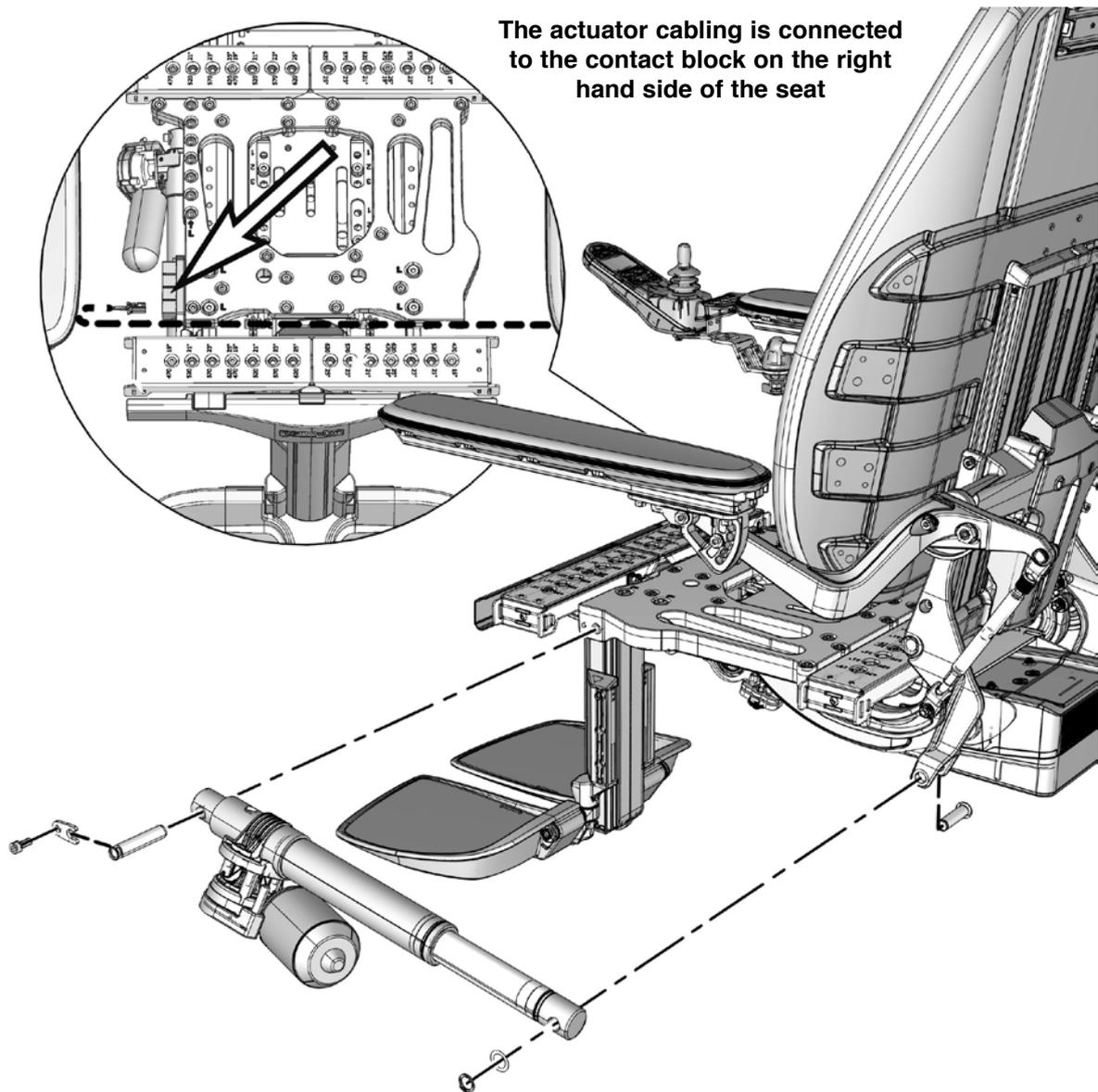
Do not subject the legrest to load during mounting or removal. Risk of crushing.

Removal

1. Switch off the main power switch on the control panel.
2. Remove the UniTrack rail from the left hand side of the seat. See page 56 for further information.
3. Remove the seat plates. See page 57 for further information.
4. Remove the actuator contact from the contact block on the right side of the seat. See the illustration. Remove the contact by pulling it straight out. Loosen the actuator cabling from its fixing points. Remember how the cabling is positioned; this helps when you come to re-attach it.
3. Hold the backrest in a steady grip as you remove the actuator unit. Remove the circlip from the rear bracket of the actuator. See the illustration. Once the rear bracket has been removed the backrest can be angled forward to rest on the seat cushion.
4. Remove the locking mechanism from the front bracket of the actuator, it is attached with a screw. See the illustration.

Mounting

1. Mount the front end of the actuator with the locking mechanism. See the illustration.
2. Mount the rear end of the adjustment unit, fix into position using the circlip. See the illustration.
3. Secure the cabling for the actuator in its fixing points. Consider the arrangement of the cables carefully and make sure there is no risk of them getting trapped or otherwise damaged.
Connect the actuator contact to the contact block on the right side of the seat. See the illustration above. Fit the contact by pushing it straight in at any point.
4. Mount the UniTrack rail on the left side of the seat. See page 56 for further information.
5. Mount the seat plates. See page 57 for further information.



The actuator cabling is connected to the contact block on the right hand side of the seat

The backrest actuator.

Replacing the seat angle mechanism

Removal

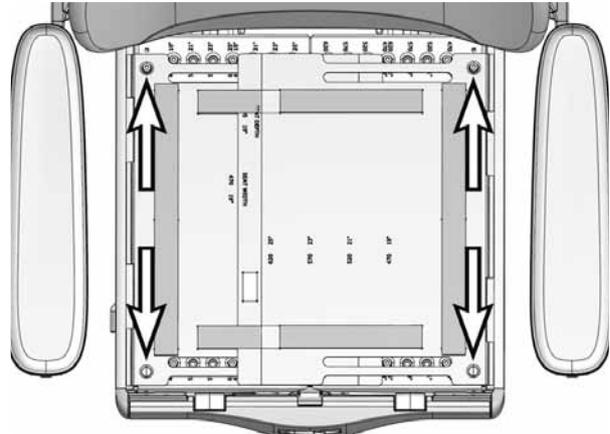
1. Switch off the main power switch on the control panel.
2. Remove the seat cushion by lifting it straight up. It is attached by means of Velcro on the rear of the cushion.
3. Remove the seat plates, which are held in place by two screws at the back edge and two quick-mount clamps at the front. See the illustration. First remove the screws, then use your hand to carefully push the seat plate from below to release the quick-mount clamps at the front.
4. Divide the cabling for the seat angle mechanism at the contact on the cabling. The contact is at the front right corner of the seat angle mechanism, next to the other cabling. See the illustration.
5. Remove the six screws that hold the seat in place. Have someone help you by holding the seat while you remove the screws, and then helping you lift the seat and lay it next to the chassis. Be careful with the seat cabling.

⚠ WARNING!

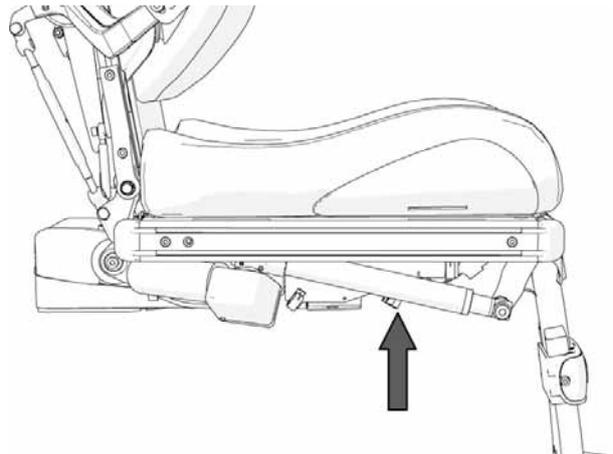
The seat is heavy. This work should therefore always be performed by two people. Be careful with the cabling.

For this task the following tools are necessary:

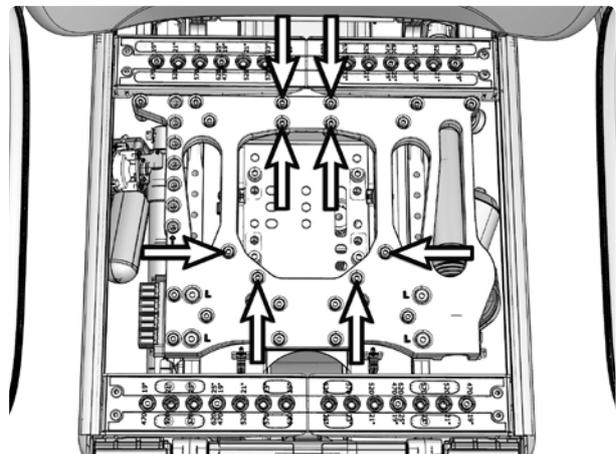
- 1 Allen key 5 mm
- 1 Allen key 8 mm



The seat plates are held in place by two screws at the back edge and two quick-mount clamps at the front.



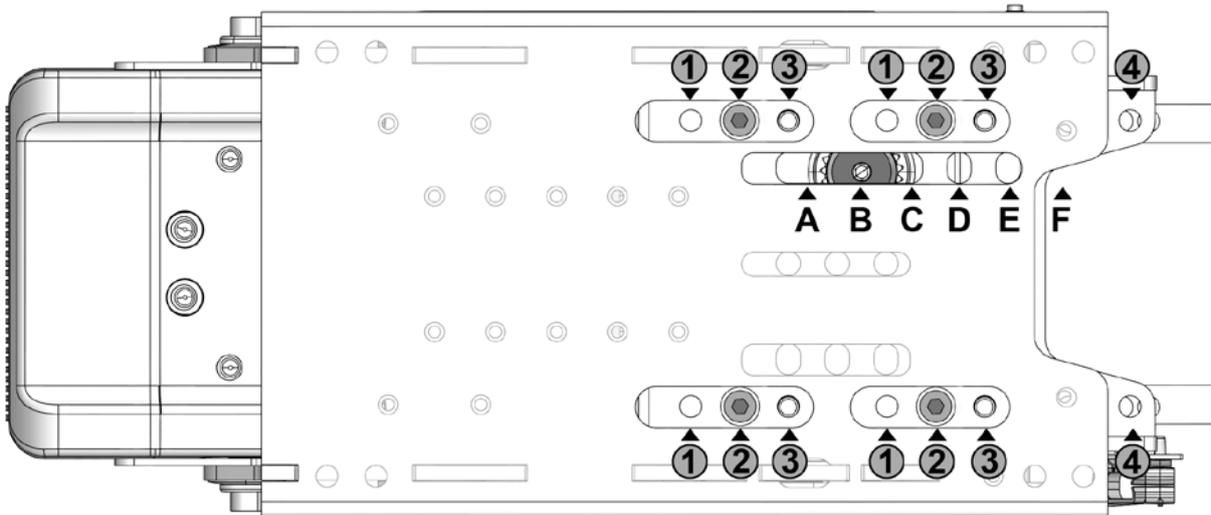
The connector is on the cabling at the front right corner of the seat angle mechanism, next to the rest of the cabling



The seat is held in place by six screws.

6. Remove the four screws that hold the seat angle mechanism in place. See the illustration below. The seat angle mechanism can be mounted in six different positions, depending on the depth of the seat. Note the position the seat angle mechanism is mounted in for future reference.

Lift the seat angle mechanism off the seat lift/seat column.



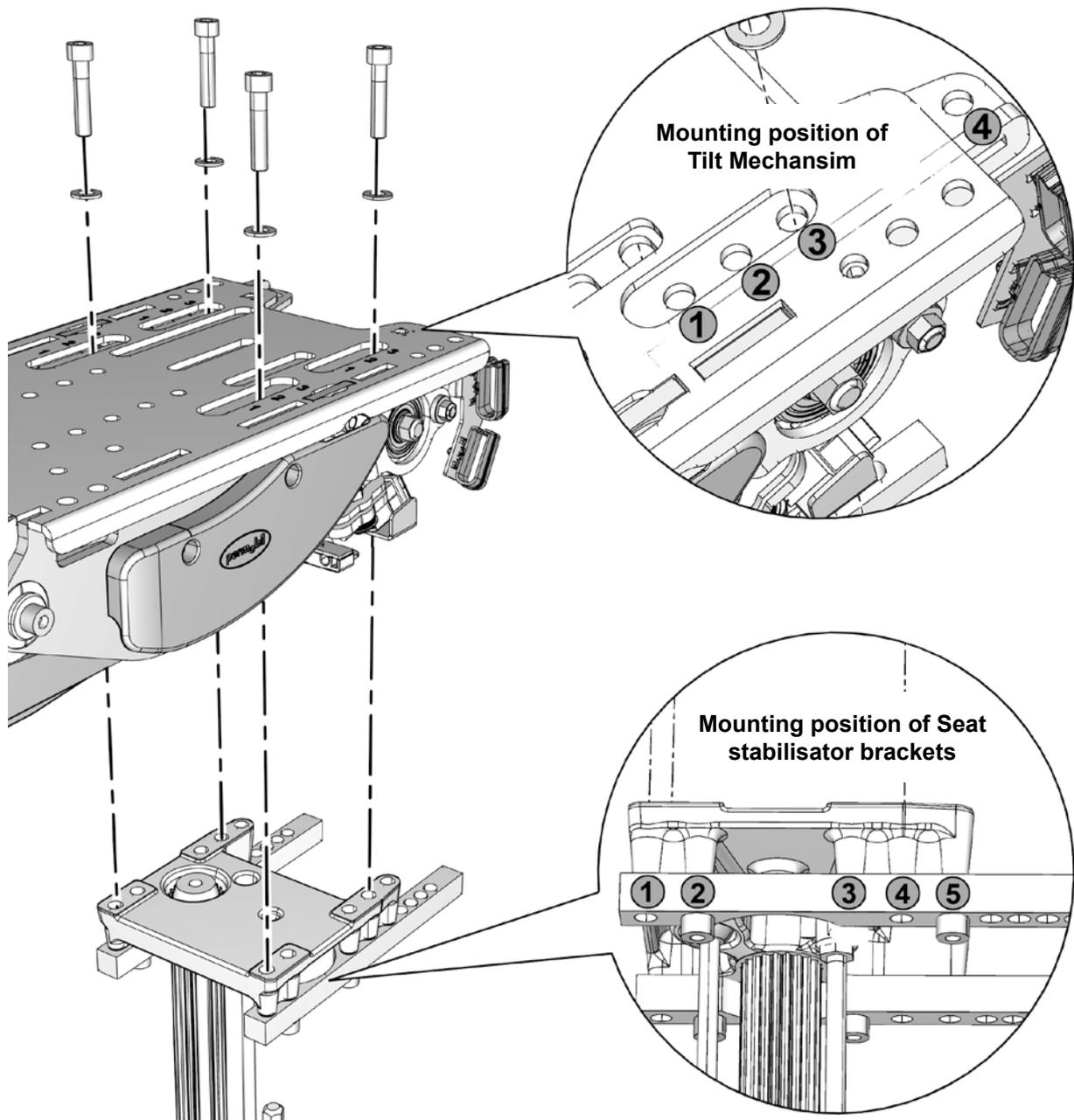
The seat angle mechanism mounted in position (B).

The four screws are mounted in position (2) according to table below.

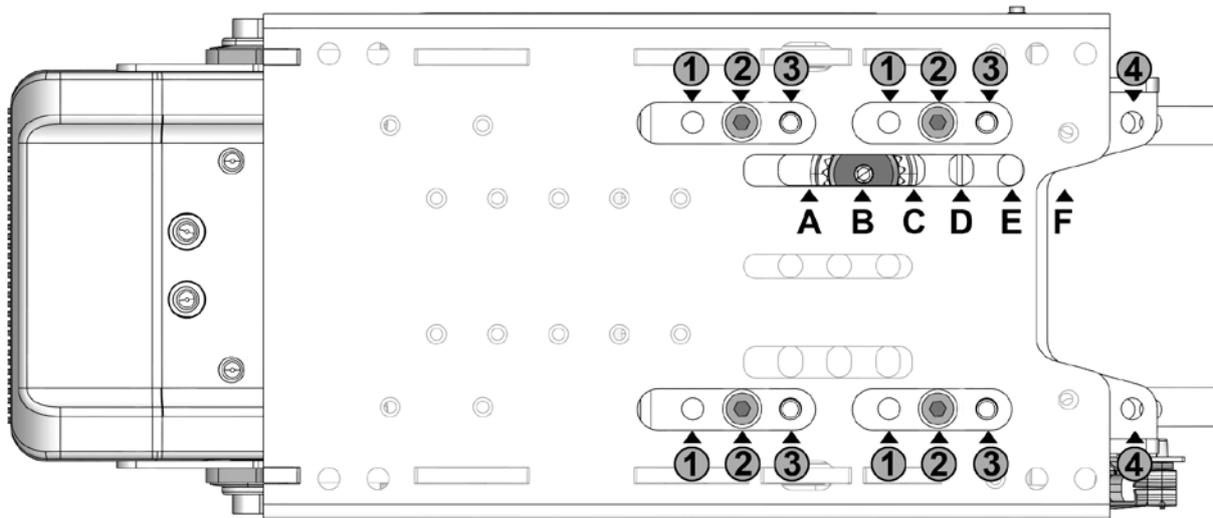
Seat Depth Position	Seat stabilisator bracket	Position Tilt to center hole in seatpost	Tilt mechanism Mounting holes no:
1,2 (19"-20")	2 + 5	A	1 + 1
2,3 (20"-21")	2 + 5	B	2 + 2
3,4 (21"-22")	2 + 5	C	3 + 3
4,5 (22"-23")	1 + 4	D	4 + 1
5,6 (23"-24")	2 + 5	E	4 + 1
6,7 (24"-25")	2 + 5	F	4 + 2

Mounting

1. Mount the Seat stabilisator brackets in the correct position, they should be mounted in different positions depending on the seat depth setting. See the fig. below and the table on next page. Use a torque wrench to tighten the screws. **Tightening torque 24 Nm.**
2. Mount the seat angle mechanism in the correct position using the four screws. See the illustration. It should be mounted in different positions, depending on the seat depth setting. The mounting position is defined by the position of the seat post. See the table. Use a torque wrench to tighten the screws. **Tightening torque 24 Nm.**



The mounting position for the Seat Angle Mechanism and the Seat Stabilisator Bracket depends on the seat depth setting.



The seat angle mechanism mounted in position (B).

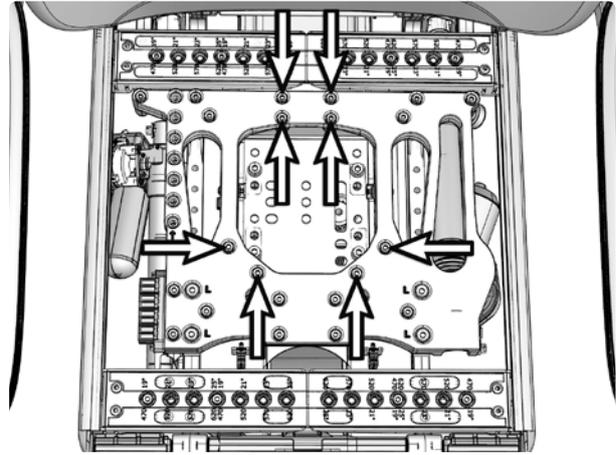
The four screws are mounted in position (2) according to table below.

Seat Depth Position	Seat stabilisator bracket	Position Tilt to center hole in seatpost	Tilt mechanism Mounting holes no:
1,2 (19"-20")	2 + 5	A	1 + 1
2,3 (20"-21")	2 + 5	B	2 + 2
3,4 (21"-22")	2 + 5	C	3 + 3
4,5 (22"-23")	1 + 4	D	4 + 1
5,6 (23"-24")	2 + 5	E	4 + 1
6,7 (24"-25")	2 + 5	F	4 + 2

3. Mount the seat using the six screws. Have someone help you lift the seat and then hold it in place while the screws are inserted. Use a torque wrench to tighten the screws. **Tightening torque 9.8 Nm.**

⚠ WARNING!

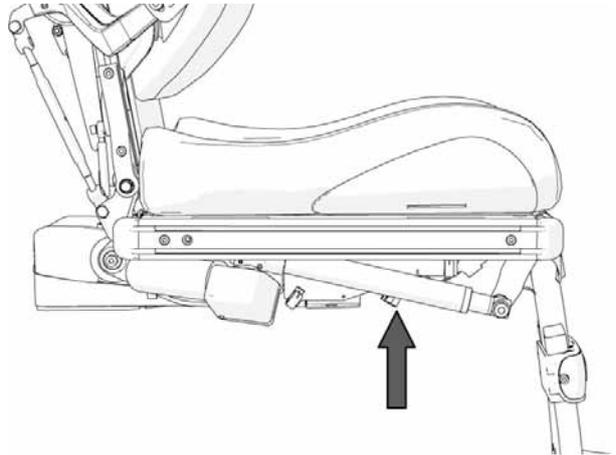
The seat is heavy. This work should therefore always be performed by two people. Be careful with the cabling.



The seat is held in place by six screws.

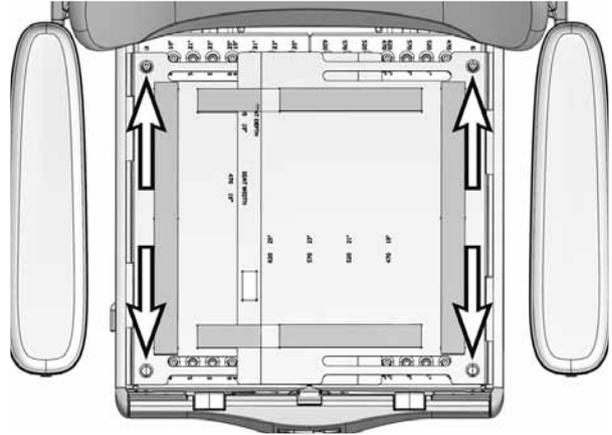
3. Connect the cabling for the seat angle mechanism to the wheelchair's ICS Master Module. If the cabling for the ICS Master Module is already there, connect it to the contact that is at the front right corner of the seat angle mechanism, next to the other cabling. See the illustration.

When mounting new cabling for the ICS Master Module, mount it together with the rest of the cabling running down to the wheelchair chassis and there connect it to the ICS Master Module. For further information on the ICS Master Module, see the chassis service manual.



The connector is on the cabling at the front right corner of the seat angle mechanism, next to the rest of the cabling

4. Mount the seat plates by first mounting them with the quick-mount clamps at the front and then the screws at the back. Fit the quick-mount clamps by pushing them straight into the holes.



The seat plates are held in place by two screws at the back edge and two quick-mount clamps at the front.

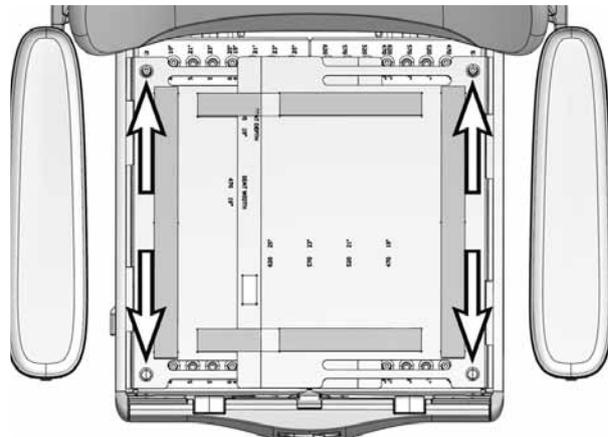
Replacing the fixed seat mounting plate

Removal

1. Switch off the main power switch on the control panel.
2. Remove the seat cushion by lifting it straight up. It is attached by means of Velcro on the rear of the cushion.
3. Remove the seat plates, which are held in place by two screws at the back edge and two quick-mount clamps at the front. See the illustration. First remove the screws, then use your hand to carefully push the seat plate from below to release the quick-mount clamps at the front.

For this task the following tools are necessary:

- 1 Allen key 5 mm
- 1 Allen key 8 mm

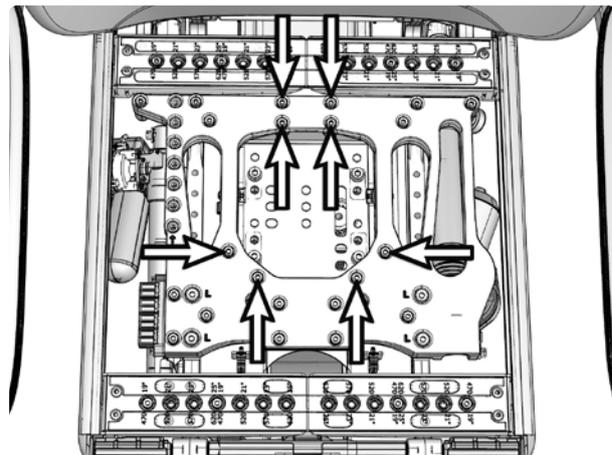


The seat plates are held in place by two screws at the back edge and two quick-mount clamps at the front.

4. Remove the six screws that hold the seat in place. Have someone help you by holding the seat while you remove the screws, and then helping you lift the seat and lay it next to the chassis. Be careful with the seat cabling.

⚠ WARNING!

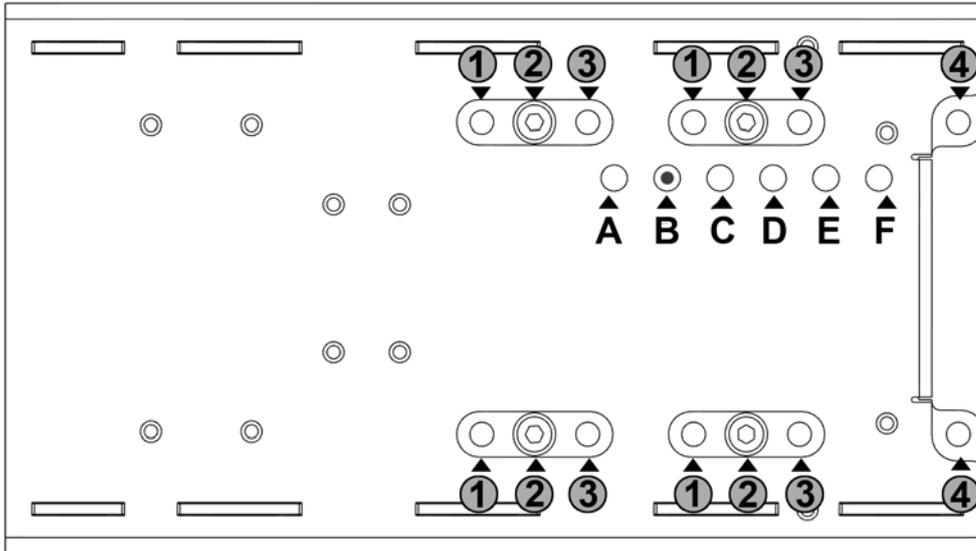
The seat is heavy. This work should therefore always be performed by two people. Be careful with the cabling.



The seat is held in place by six screws.

5. Remove the four screws that hold the seat mounting plate in place. See the illustration below. The seat mounting plate can be mounted in three different positions, depending on the depth of the seat. Note the position the seat mounting plate is mounted in for future reference.

Lift the seat mounting plate off the seat lift/seat column.



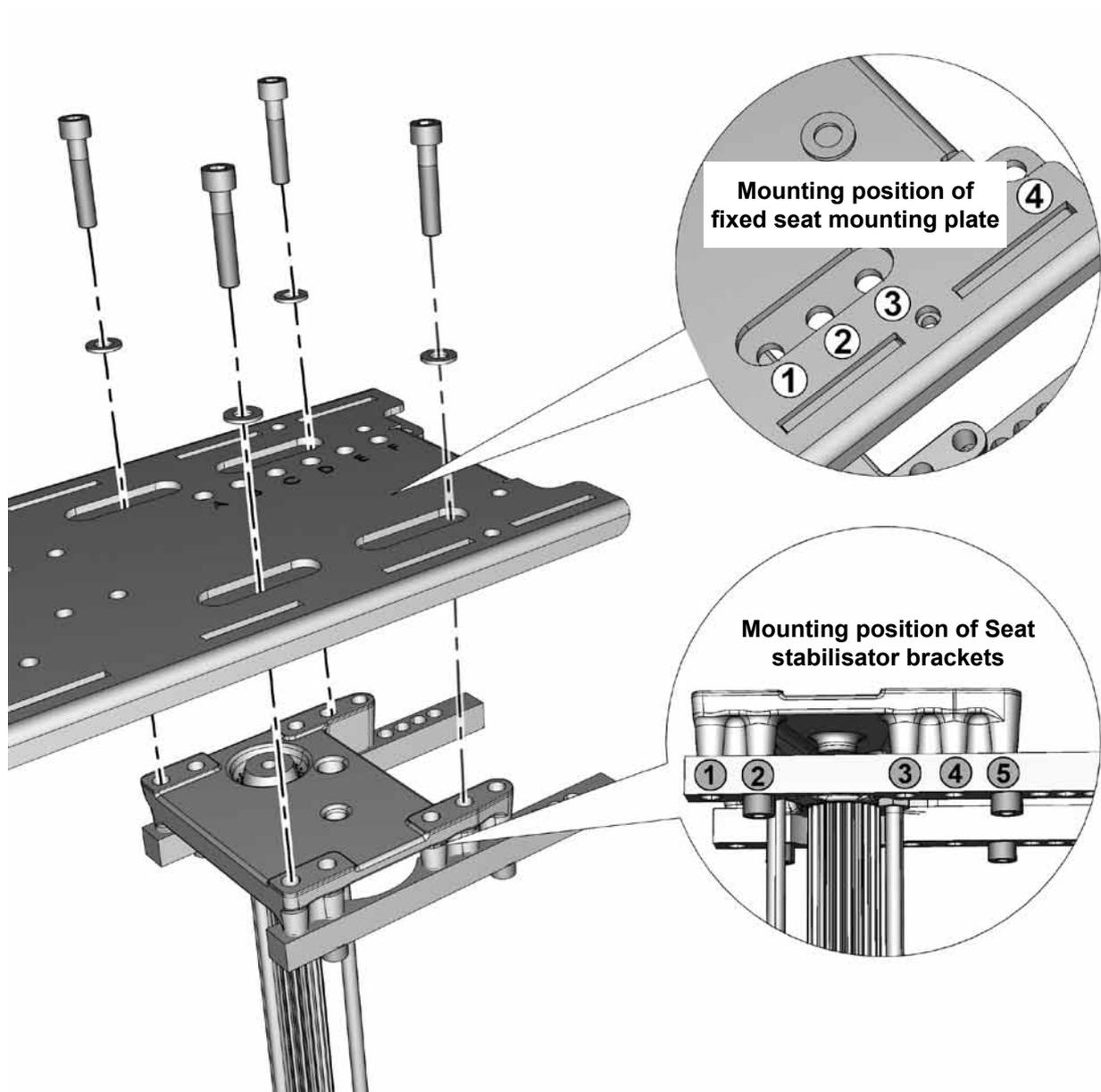
The seat mounting plate is mounted in position (B).

The four screws are mounted in position (2) according to table below.

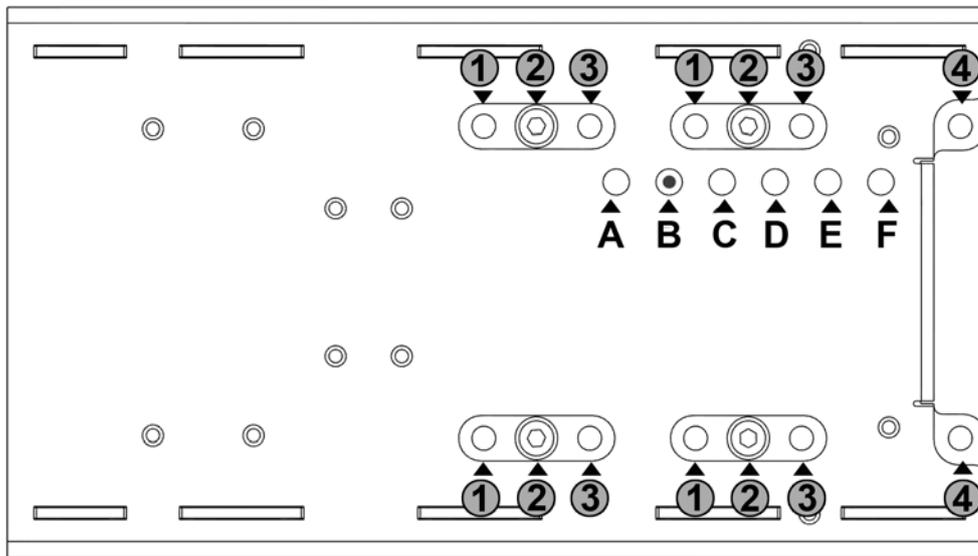
Seat Depth Position	Seat stabilisator bracket	Position Tilt to center hole in seatpost	Tilt mechanism Mounting holes no:
1,2 (19"-20")	2 + 5	A	1 + 1
2,3 (20"-21")	2 + 5	B	2 + 2
3,4 (21"-22")	2 + 5	C	3 + 3
4,5 (22"-23")	1 + 4	D	4 + 1
5,6 (23"-24")	2 + 5	E	4 + 1
6,7 (24"-25")	2 + 5	F	4 + 2

Mounting

1. Mount the Seat stabilisator brackets in the correct position, they should be mounted in different positions depending on the seat depth setting. See the fig. below and the table on next page. Use a torque wrench to tighten the screws. **Tightening torque 24 Nm.**
2. Mount the fixed seat mounting plate in the correct position using the four screws. See the illustration. It should be mounted in different positions, depending on the seat depth setting. The mounting position is defined by the position of the seat post. See the table. Use a torque wrench to tighten the screws. **Tightening torque 24 Nm.**



The mounting position for the Fixed Seat Mounting Plate and the Seat Stabilisator Bracket depends on the seat depth setting.



The seat mounting plate is mounted in position (B).

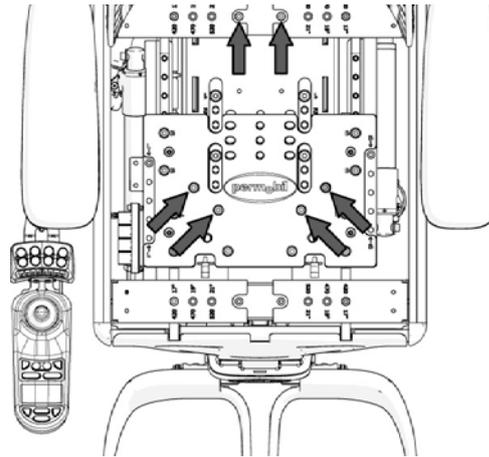
The four screws are mounted in position (2) according to table below.

Seat Depth Position	Seat stabilisator bracket	Position Tilt to center hole in seatpost	Tilt mechanism Mounting holes no:
1,2 (19"-20")	2 + 5	A	1 + 1
2,3 (20"-21")	2 + 5	B	2 + 2
3,4 (21"-22")	2 + 5	C	3 + 3
4,5 (22"-23")	1 + 4	D	4 + 1
5,6 (23"-24")	2 + 5	E	4 + 1
6,7 (24"-25")	2 + 5	F	4 + 2

3. Mount the seat using the six screws. Have someone help you lift the seat and then hold it in place while the screws are inserted. Use a torque wrench to tighten the screws. **Tightening torque 9.8 Nm.**

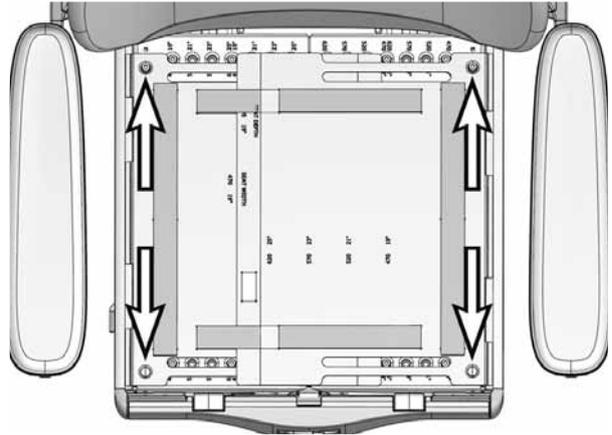
⚠ WARNING!

The seat is heavy. This work should therefore always be performed by two people. Be careful with the cabling.



The seat is held in place by six screws.

4. Mount the seat plates by first mounting them with the quick-mount clamps at the front and then the screws at the back. Fit the quick-mount clamps by pushing them straight into the holes.



The seat plates are held in place by two screws at the back edge and two quick-mount clamps at the front.

Replacing the legrest

For this task the following tools are necessary:

- 1 Allen key 5 mm
- 1 Allen key 8 mm

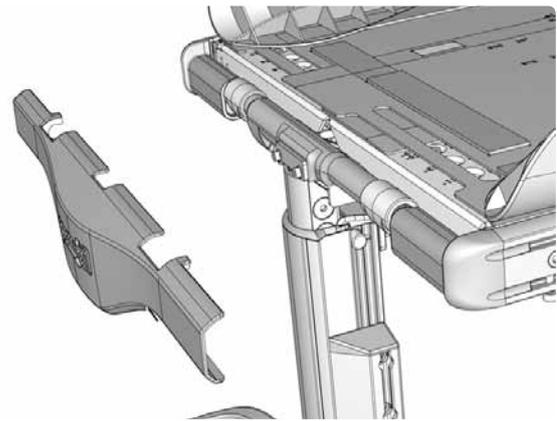


⚠ WARNING!

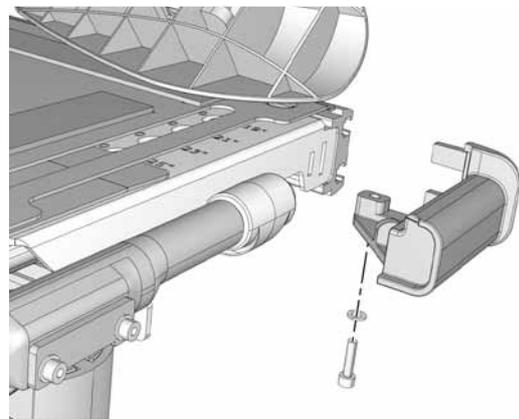
Do not subject the legrest to load during mounting or removal. Risk of crushing.

Removal

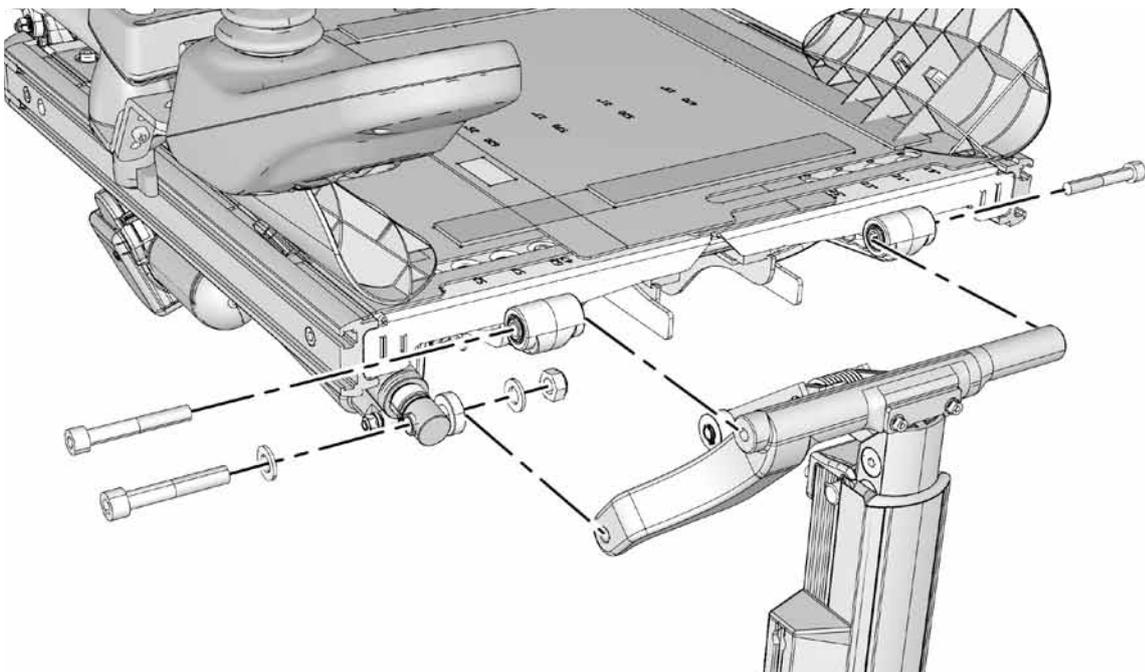
1. Switch off the main power switch on the control panel.
2. Remove the legrest's top cover by carefully pulling it straight out. See the illustration.
3. Remove the front ends of the UniTrack rails, they are attached with a screw from underneath. See the illustration.
4. Remove the front bracket of the manual adjustment unit/actuator. See the illustration below. Start with the lock nut and the washer on the inside of the bracket, then remove the screw and washer.
5. Remove the legrest, which is held in place by two screws and spacers. See the illustration below.



Remove the legrest's top cover by carefully pulling it straight out



Remove the front ends of the UniTrack rails



*The legrest is held in place by two screws and spacers.
The front bracket of the actuator is held in place by a screw and lock nut.*

Mounting

1. Mount the legrest using the two screws and spacers. See the illustration on the previous . Use a torque wrench to tighten the screws.

Tightening torque 24 Nm.

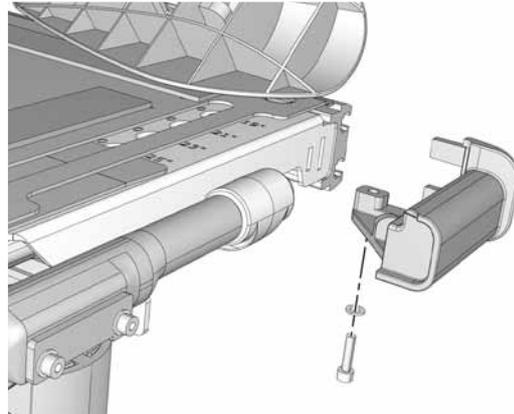
2. Mount the front bracket of the manual adjustment unit/actuator. See the illustration on the previous . Start with the screw and washer. Tighten the screw using a torque wrench.

Tightening torque 47 Nm.

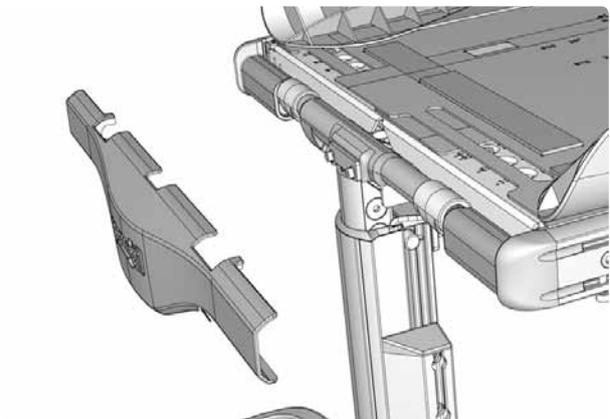
Then fit the lock nut and washer on the inside of the bracket.

3. Mount the front ends of the UniTrack rails, they are attached with a screw from underneath. See the illustration.

4. Mount the legrest's top cover by carefully pressing its bracket into place on the legrest's fixing screws/spacers. See the illustration.



Remount the front ends of the UniTrack rails



Mount the legrest's top cover by carefully pressing its bracket into place on the legrest's fixing screws/spacers

Replacing a legrest strap

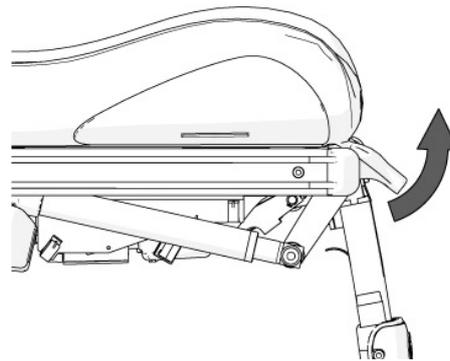
For this task the following tools are necessary:

- 1 Allen key 3 mm
- 1 Steel ruler



⚠ WARNING!

Do not subject the legrest to load during mounting or removal. Risk of crushing.



Lift up the legrest's top cover

Removal

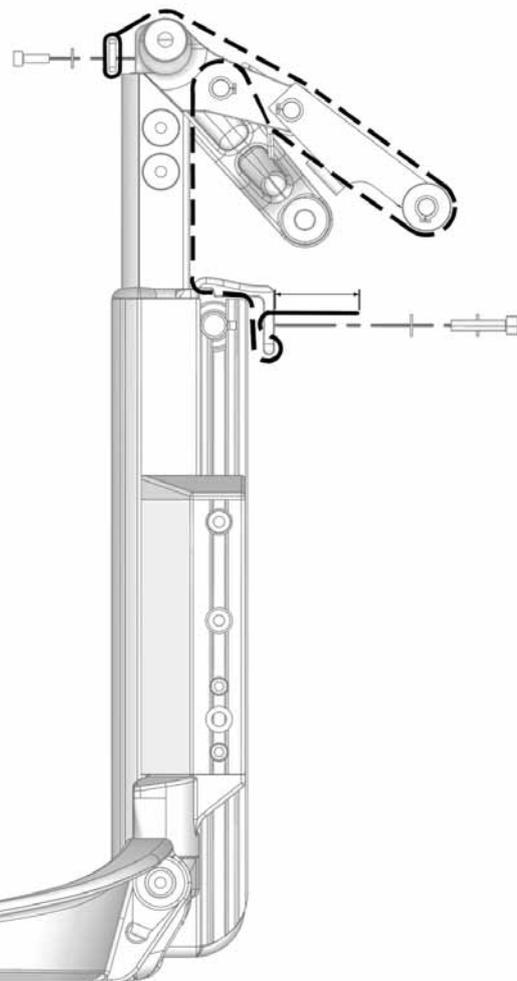
1. Switch off the main power switch on the control panel.
2. Lift up the legrest's top cover. See the illustration.
3. Remove one end of the legrest strap by carefully raising the lower section of the legrest slightly and at the same time removing the two screws on the front of the legrest. Then pull the mounting plate out of the loop of the strap.

Once the strap is loosened the lower section of the legrest will become loose and can be carefully placed on the floor.

4. Remove the two screws holding the strap bracket on the back of the legrest in place. See the illustration.
5. Pull the strap out of the legrest mechanism.

Mounting

1. Pull the strap through the bracket on the back of the legrest. **Measure to make sure that the strap extends 85 mm from the bracket.** Secure the strap by tightening the two screws on the bracket. See the illustration.
2. Slide the lower section of the legrest up and pull the strap through the legrest mechanism. See the illustration.
3. Place the mounting plate in the loop of the strap and then mount this on the front of the legrest using the two screws. See the illustration.



Strap mounting on the legrest

Replacing the legrest slide bushings

For this task the following tools are necessary:

- 1 Allen key 3 mm



⚠ WARNING!

Do not subject the legrest to load during mounting or removal. Risk of crushing.

Removal

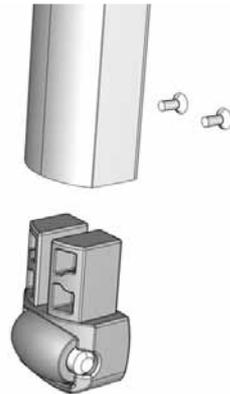
1. Set the angle of the legrest to its outermost position.
2. Switch off the main power switch on the control panel.
3. Remove one end of the legrest strap by carefully raising the lower section of the legrest slightly and at the same time removing the two screws on the front of the legrest. Pull the mounting plate out of the loop of the strap. See the illustration below.

Once the strap is loosened the lower section of the legrest will become loose and can be carefully pulled downwards/forwards until the lower section of the legrest is completely loose.

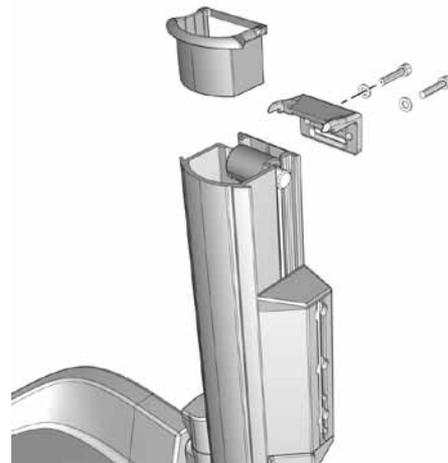
4. Remove the slide bushing in the upper section of the legrest, which is attached using two screws. See the illustration above.
5. Remove the slide bushing in the lower section of the legrest, and at the same time use a suitable tool to press in the locking tabs on the bushing, located in the hole immediately below the top edge of the legrest. See the illustration.

Mounting

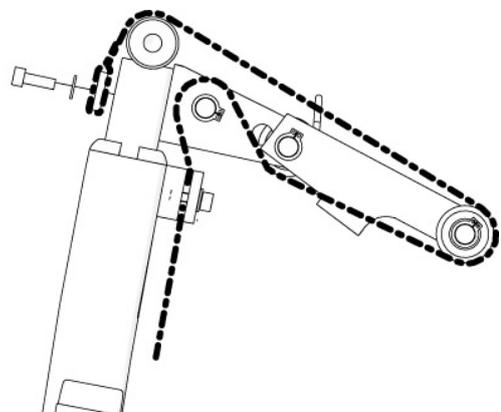
1. Fit the slide bushing in the lower section of the legrest, making sure the locking tabs on the bushing are securely fixed in the hole in the legrest. See the illustration.
2. Fit the slide bushing in the upper section of the legrest using the two screws. See the illustration above.
3. Slide the upper and lower sections of the legrest together, and pull the legrest strap through the legrest mechanism. See the illustration.
4. Place the mounting plate in the loop of the strap and then mount this on the front of the legrest using the two screws. See the illustration.



The slide bushing in the upper section of the legrest is attached using two screws.



Slide bushing in the lower section of the legrest



Strap mounting on the legrest

Replacing the footplates

Removal

1. Switch off the main power switch on the control panel.
2. Remove the screw holding the footplate in place. See the illustration below.
3. Remove the footplate friction brake by taking the parts off the shaft. See the illustration below.
4. Remove the footplate by taking it off the shaft. See the illustration below.

Mounting

1. Mount the footplate by sliding it onto the shaft. See the illustration below.
2. Mount the footplate friction brake by sliding the parts onto the shaft. Make sure that the metal butt is positioned in the intended hole in the footplate. See the illustration to the right.
3. Fit the screw that holds the footplate in place. See the illustration below. Tighten the screw using a torque wrench. **Tightening torque 33 Nm.**

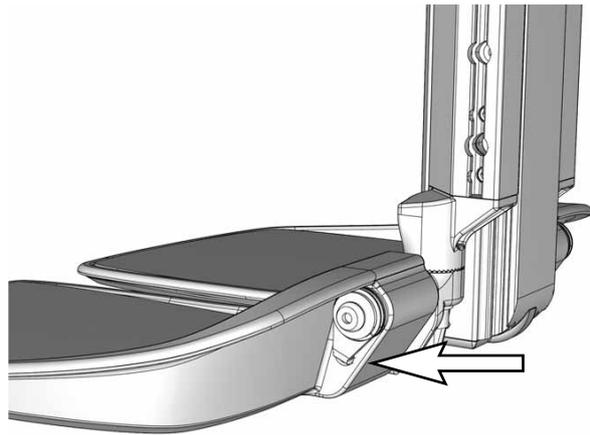
For this task the following tools are necessary:

- 1 Allen key 5 mm

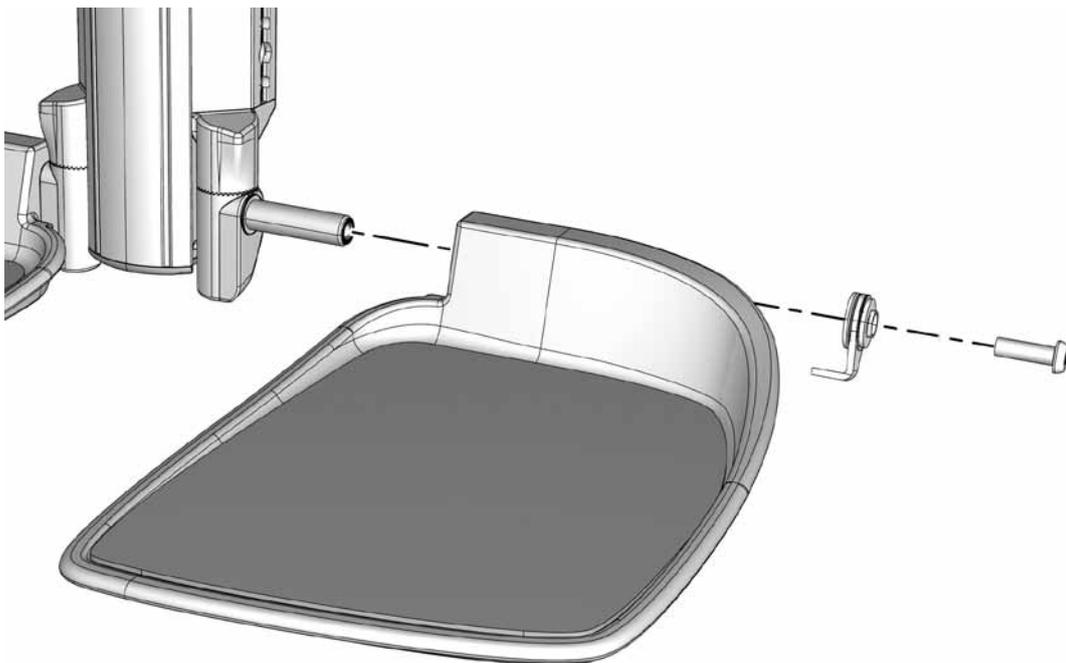


⚠ WARNING!

Do not subject the footplate to load during mounting or removal. Risk of crushing.



The friction brake's metal butt is in place in the intended hole in the footplate



The footplate and its friction brake

Recommended seat cushions, seat plates and UniTrack rails

Seat depth (mm.)	Seat width (mm.)	Cushion (Length)	Cushion (Width)	Seat plate (Length)	UniTrack rail (Length)
470	470/520/570/620	470 mm.	= Seat width	495 mm.	470 mm.
495		520 mm.	= Seat width		
520			= Seat width	545 mm.	520 mm.
545		570 mm.	= Seat width		
570			= Seat width	595 mm.	570 mm.
595		620 mm.	= Seat width		
620			= Seat width	645 mm.	620 mm.

Recommended backrest cushions

Backrest width	Backrest height	Cushion (Width)	Cushion (Height)
510 mm.	Low, height not adjustable	510 mm.	420 mm.
	635 mm.		635-690 mm.
	660 mm.		
	685 mm.		710-760 mm.
	710 mm.		
	735 mm.		
	760 mm.		
560 mm.	Low, height not adjustable	550 mm.	420 mm.
	635 mm.		635-690 mm.
	660 mm.		
	685 mm.		710-760 mm.
	710 mm.		
	735 mm.		
	760 mm.		
610 mm.	Low, height not adjustable	610 mm.	420 mm.
	635 mm.		635-690 mm.
	660 mm.		
	685 mm.		710-760 mm.
	710 mm.		
	735 mm.		
	760 mm.		

Troubleshooting R-net

The following troubleshooting guide describes a number of faults and events which may occur when you use your wheelchair, together with suggested remedies. Note that this guide cannot describe all the problems and events which may occur and you should always contact your service contact or Permobil in case of doubt.

EVENT	POSSIBLE CAUSE	REMEDY
The wheelchair will not start.	Batteries discharged.	Charge the batteries.
	The cable connection to the control panel has come loose.	Insert the cable in the control panel.
	Main fuse blown.	Check possible causes carefully before resetting/replacing the main fuse. See page 50.
The wheelchair cannot be driven.	Battery charger connected.	Stop charging and disconnect the charging cable from the wheelchair's charging socket.
	Brake release activated.	Reset the brake release.
	The wheelchair is locked.	Unlock the wheelchair. See user manual
	The magnetic brakes are released.	Engage the magnetic brakes.
An exclamation mark on the control panel display is flashing rapidly and the wheelchair will not run.	Electronics fault.	See pages 57–70.
The wheelchair can only be driven at reduced speed.	Seat lift raised too high.	Lower seat lift.
The wheelchair cannot be charged.	Main fuse blown.	Check possible causes carefully before resetting/replacing the main fuse. See page 50.
The wheelchair “switches itself off” after a certain period of inactivity.	The electronics' energy-saving mode has been activated.	Switch the wheelchair on again using the start key on the control panel.

Troubleshooting R-net

R-net diagnostics

When an error or a fault occurs in the wheelchair's electronics, information on it is displayed in the control panel's display. This information can then be used to diagnose where the error/fault occurred and its cause.

Troubleshooting and repairs must always be performed by competent personnel with good knowledge of the wheelchair's electronics. More information on troubleshooting and remedies can be found in the service manual for this wheelchair model.

Diagnostic screens

Current diagnostic screen

When the control system's integrated protection circuits have been triggered so that the control system can no longer operate the wheelchair, a diagnostic screen is displayed in the control panel's display.

This indicates a system fault, i.e. R-net has detected a problem somewhere in the wheelchair's electrical system.

CAUTION! *If the fault is in a module that is not currently being used, it will still be possible to drive the wheelchair, but the diagnostic screen is displayed occasionally.*

Switch off the wheelchair and leave it off for a few minutes. Then restart the wheelchair. If the fault persists, you must switch off the wheelchair and get in touch with your service contact. Write down the information displayed in plain text in the control panel's display and pass it on to your service contact.

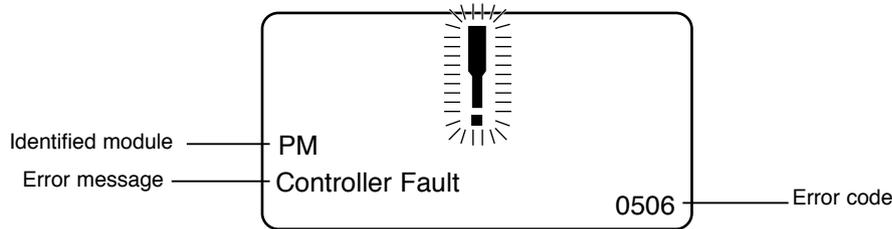
Do not use the wheelchair until the problem has been remedied or you have received other instructions from your service contact.

WARNING!

Diagnostics should only be performed by persons with sound knowledge of the wheelchair's electronic control system. Incorrect or poorly performed repair works may make it dangerous to use the wheelchair. Permobil accepts no liability for any personal injury or damage to the wheelchair and its surroundings that occurs on account of incorrect or poorly performed repair work.

Troubleshooting R-net

Example of a screen showing a system fault



Identified module

This indicates the control system module that detected the problem.

PM= Power module

JSM= Joystick module

Error message

The error message provides a brief description of the error type.

Error code

The four-digit code indicates which protection circuit has been triggered.

2.1.4 Example

The screen example shown below displays the following information:

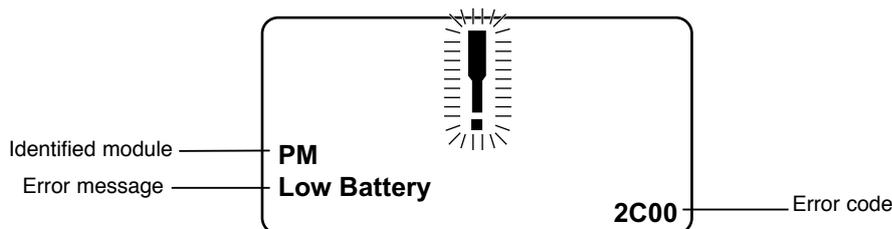
Identified module: Power module error

Error message: Low Battery

Error code: 2C00

This means that the battery needs charging or that the battery has not been connected properly.

- *Check the battery connections. Attempt to charge the battery if it is properly connected.*



Troubleshooting R-net

2.2 System log

All errors are saved in the system log regardless of whether they have been remedied or are still active. The system log saves the error messages and the number of times they arise. The errors are saved in their respective modules within the system.

The system log is accessed by means of programming directly in the system (On Board Programming, OBP).

Contact Permobil or your repair engineer for more information on OBP.

Go to OBP mode

- *Select System from the menu.*
- *Select Diagnostics from the menu.*
- *The diagnostics screen will now appear, showing the connected modules and version history. See the illustration below.*
- *If a module has experienced no errors, the message No Entries will be displayed, otherwise something similar to the screenshot below will be displayed.*

Diagnostics	
JSM	1.9
PM	1.9
ISM	1.9

PM 1.9	
M1 Brake Error	6
System Error	1

Troubleshooting R-net

3. Definitions of diagnostics messages

When an error message has been displayed and the defective module has been identified, you can use the following definitions to determine the possible cause of the error and what remedial action is required to correct it.

Error message	Description
Joystick Error	Go to section 3.1.
Low Battery	Go to section 3.2.
High Battery	Go to section 3.3.
M1 Brake Error	Go to section 3.4.
M2 Brake Error	Go to section 3.4.
M1 Motor Error	Go to section 3.5.
M2 Motor Error	Go to section 3.5.
Inhibit Active	Go to section 3.6.
Jstick Cal Error	Go to section 3.7.
Latched Timeout	Go to section 3.8.
Brake Lamp Short	Go to section 3.9.
Left Lamp Short	Go to section 3.10.
Right Lamp Short	Go to section 3.10.
L Ind Lamp Short	Go to section 3.11.
R Ind Lamp Short	Go to section 3.11.
L Ind Lamp Failed	Go to section 3.12.
R Ind Lamp Failed	Go to section 3.12.
DIME Error	Go to section 3.16.
Memory Error	Go to section 3.17.
PM Memory Error	Go to section 3.18.
Bad Cable	Go to section 3.19.
Bad Settings	Go to section 3.20.
Module Error	Go to section 3.21.
System Error	Go to section 3.22.
Gone to Sleep	Go to section 3.23.
Charging	Go to section 3.24.

Troubleshooting R-net

3.1 Joystick Error

The commonest cause for this error is that the joystick was moved away from its central position before and during the time at which the control system was switched on. The screen for a shifted joystick is displayed for 5 seconds. If the joystick is not released during this time, a joystick error is registered. Even if an error screen is not displayed, the error and the number times it arises is registered in the system log.

- *Ensure that the joystick is in the central position and start up the control system.*

If the error persists, the joystick or joystick module may be defective. Read more in section 5.

3.2 Low Battery

This occurs when the control system detects that the battery voltage is lower than 16 V.

- *Check the batteries and their connection to the control system.*

If the error persists after the batteries and connections have been checked, the power module may be defective. Read more in section 5.

3.3 High Battery

This occurs when the control system detects that the battery voltage is higher than 35 V. The commonest causes for this error are that the battery has been overcharged or a poor connection between the control system and the batteries.

- *Check the batteries and their connection to the control system.*

If the error persists after the batteries and connections have been checked, the power module may be defective. Read more in section 5.

3.4 Brake Error

This occurs when the control system detects a problem in the solenoid brakes or the connections to them.

1505 - M1 Brake Error
1506 - M2 Brake Error

- *Check the solenoid brakes, their cables and the connections to the control system.*

If the error persists after the checks listed above, the power module may be defective. Read more in section 5.

3.5 Motor Error

This occurs when the control system detects that a motor has been disconnected.

3B00 - M1 Motor Error
3C00 - M2 Motor Error

- *Check the motors, their cables and the connections to the control system.*

If the error persists after the checks listed above, the power module may be defective. Read more in section 5.

3.6 Inhibit Active

This occurs when one of the inhibit signals is active and is in blocked mode.

The last two digits of the error code indicate the active inhibit signal. The code is hexadecimal.

1E01 - For inhibit signal 1.
1E09 - For inhibit signal 9.
1E0A - For inhibit signal 10.

- *Cycle the voltage. This will deactivate the block mode, which may remedy the error.*
- *Check all connections and switches for the indicated inhibit signals.*

Troubleshooting R-net

3.7 Joystick Calibration Error

This occurs when joystick calibration has been unsuccessful.

- *Go to OBP mode and recalibrate.*

If the error persists, the joystick module may be defective. Read more in section 5.

3.8 Latched Timeout

This occurs when the control system detects that the programmed block time has been exceeded. This can, for example, be due to the signal units (joystick, main steering device, suction and blowing device, etc.) not having been used frequently enough.

The error reference provides information on why the control system has left block mode.

- *Cycle the voltage.*
- *Activate block mode.*

If the error persists after the checks listed above, the signal unit may be defective. Read more in section 5.

3.9 Brake Lamp Short

This occurs when the control system detects a short circuit in the brake lamp electrical circuit. Read more about connectors in section 2.3.

- *Check the brake lamps, their cables and the connections to the control system.*

3.10 Lamp Short

This occurs when the control system detects a short circuit in the electrical circuit of one of the lamps.

- 7205 - Short circuit left-hand lamp.
- 7209 - Short circuit right-hand lamp

- *Check the lamps, their cables and the connections to the control system.*

3.11 Indicator Lamp Short

This occurs when the control system detects a short circuit in the electrical circuit of one of the indicators.

- 7206 - Short circuit left indicator.
- 720A - Short circuit right indicator.

- *Check the indicators, their cables and the connections to the control system.*

3.12 Indicator Lamp Failed

This occurs when the control system detects an error in the electrical circuit of one of the indicators. This usually means the indicator needs replacing.

- 7207 - Error in left indicator.
- 7208 - Error in right indicator.

- *Check the indicators, their cables and the connections to the control system.*

Troubleshooting R-net

3.13 DIME Error

This occurs when the control system detects an ID conflict between two modules in the system.

If a new module has been added:

- *Disconnect the new module and cycle the voltage.*
- *If no error occurs, connect the new module to the system and cycle the voltage.*
- *If the error recurs, the new module must be the cause of the problem.*

If no new modules have been added:

- *Disconnect one module at a time and cycle the voltage.*

If the error persists after the checks listed above have been performed, consult your service contact or Permobil.

3.14 Memory Error

This is a non-specific memory error that may be caused by any of the system modules.

- *Check all cables and connections.*
- *Cycle the voltage.*

If the error persists and the system includes third-party modules:

- *Disconnect all modules that do not come from PGDT and cycle the voltage.*

If this has dealt with the error:

- *Connect one third-party module at a time and cycle the voltage each time.*
- *If the error recurs after one of the voltage cycles, the last module to be connected must be defective.*

If the error persists after the checks listed above, the power module may be defective. Read more in section 5.

3.15 PM Memory Error

This is a specific error in the power module.

- *Check all cables and connections.*
- *Reprogram the control system with the help of R-net's PC programmers.*

This should be done with either the latest specific program file for the wheelchair or Permobil's original program file.

If the error persists after the checks listed above, the power unit may be defective. Read more in section 5.

CAUTION!

Programming should only be performed by persons with sound knowledge of control systems from PGDT. Incorrect programming can mean that the wheelchair is not safe to use. Permobil cannot be held responsible for losses of any kind if the control system factory settings are altered by programming.

Troubleshooting R-net

3.16 Bad Cable

This occurs when the control system detects a connection error in the communication cables between the modules.

- *Check all cables and connections to ensure there is no stoppage.*
- *Replace any cables with visible damage. Then cycle the voltage.*
- *Disconnect one cable at a time from the system and cycle the voltage after each disconnection.*

If the error persists after the checks listed above, the power unit may be defective. Read more in section 5.

3.17 Bad Settings

This occurs when the control system detects incorrect or invalid program settings.

- *Check all parameter settings and then reprogram the control system with the help of R-net's PC programmers.*
- *Make a note of the current parameter settings and then reset the control system to the standard settings.*
- *Reprogram the required settings in small groups and cycle the voltage after each group to see if the error recurs.*

If the error persists after the checks listed above, the power unit may be defective. Read more in section 5.

3.28 Module Error

This occurs when the control system detects an error in a specific module. The module is displayed on the diagnostics screen according to the description in section 2.

- *Check all cables and connections.*
- *Cycle the voltage.*

If the error persists after the checks listed above, the module specified may be defective. Read more in section 5.

Troubleshooting R-net

3.19 System Error

This occurs when the control system detects an error that cannot be ascribed to a specific module.

- *Check all cables and connections.*
- *Cycle the voltage.*

If the error persists and the system includes third-party modules:

- *Disconnect all modules that do not come from PGDT and cycle the voltage.*

If this has dealt with the error:

- *Connect one third-party module at a time and cycle the voltage each time.*
- *If the error recurs after one of the voltage cycles, the last module to be connected must be defective.*

If the error persists after the checks listed above, the system from PGDT may be defective. Read more in section 5.

3.20 Gone to Sleep (energy saving mode)

This occurs when the system has not been used for a period that exceeds the Sleep Timer parameter used for setting the energy saving mode. Each time this occurs it is registered in the system log.

3.21 Charging

This occurs when the control system detects that a charger has been connected to either inhibit contact 1 or inhibit contact 3. Read more about connectors in section 2.3.

The screen for battery charging is displayed when a charger is connected.

Each time this occurs it is registered in the system log.

When using an integral charger:

- *Disconnect the charger from the mains.*

When using an external charger:

- *Disconnect the charger from the power wheelchair.*

If the error persists after the charger has been disconnected, the joystick module may be defective. Read more in section 5.

Troubleshooting R-net

4. Basic test

After a repair has been completed, the following test should be performed. These are minimum recommendations. Depending on what the original error source was, further tests may be necessary.

WARNING!

The tests described are minimum recommendations. It is the responsibility of the repair engineer(s) to perform other tests on the basis of the original error source and the wheelchair model. The necessary information on other tests is available in the wheelchair service manual. Permobil cannot be held responsible for losses of any kind that may arise when these tests are conducted, or that arise as a consequence of further relevant tests not being conducted.

WARNING!

These tests should be conducted in an open space, and some kind of clamping device, such as a safety belt, should always be used. Permobil cannot be held responsible for losses of any kind arising due to these recommendations not being observed.

4.1 Basic inspection

Check that all contacts are properly connected.

- *Check all cables and contacts to ensure there is no visible damage.*
- *Check that the rubber gaiter around the base of the joystick is not damaged. Inspect the gaiter visually. It should not be subjected to manual handling.*
- *Ensure that all components of the control system are securely installed.*
- *Do not over-tighten the mounting screws.*

Troubleshooting R-net

4.2 Brake test

These tests should be carried out on an even surface with at least one meter of free space around the wheelchair.

- *Switch on the control system.*
- *Check that the screen remains on after start-up.*
- *Bring the joystick slowly forwards until you hear the parking brakes functioning. In some cases the wheelchair may begin to move.*
- *Release the joystick immediately. You must hear both parking brakes functioning within 2 seconds.*
- *Repeat the test three times, bringing the joystick slowly backwards, to the left and to the right.*

4.3 Test run

Set the highest permitted speed to the lowest value and run the wheelchair in all directions while checking that it runs smoothly and is easy to maneuver.

Repeat the test with the speed control set to the highest possible value.

4.4 Gradient test

WARNING!

When this test is conducted, an additional person must be present in order to prevent the wheelchair tipping over backwards.

Run the wheelchair forwards up its steepest permitted gradient. Release the joystick when the wheelchair is on the upward slope and check that the wheelchair stops and that the brakes function as they should without the front wheels lifting from the ground.

Bring the joystick forwards and continue to run up the slope. Check that the wheelchair moves gently forwards.

Stop the wheelchair and reverse down the slope. Release the joystick when the wheelchair is on the upward slope and check that the wheelchair stops and that the brakes function as they should without the front wheels lifting from the ground.

Troubleshooting R-net

4.5 Test of lights, indicators and warning lights

If the wheelchair is equipped with lights:

- *Check that all bulbs light up as they should.*
- *Check that all bulbs light up as they should and that the flashing frequency is $1.5 \text{ Hz} \pm 0.5 \text{ Hz}$.*
- *Remove the bulbs in turn and check that the remaining bulb on the same side flashes at a frequency of $3 \text{ Hz} \pm 0.5 \text{ Hz}$.*

If the wheelchair is equipped with warning lights:

- *Check that all bulbs light up as they should and that the flashing frequency is $1.5 \text{ Hz} \pm 0.5 \text{ Hz}$.*

4.6 Test of adjustment device

If the wheelchair is equipped with an adjustment device:

- *Check that all motors move in the right direction.*
- *Make sure that the mechanical end stops are secured and that they stop the adjustment device motors, and thus use the automatic end stop tracking that is in the seat and light module (ISM).*

4.7 Test of inhibit signal

Connect a suitable battery charger or equivalent inhibit connecting device in the charging contact on the joystick module and check that the wheelchair is prevented from running.

If inhibit contacts 2, 3, 4 and 5 are used for inhibiting or speed restriction, an appropriate test should be performed in order to check that they are functioning as they should.

5. Repairing defective units

Apart from specific OEM-approved spare parts (contact Permobil for further information on these), there are no replaceable parts in the R-net control system. Consequently, defective units must be sent to Permobil or a Permobil-approved repairer for repair.

CAUTION!

If any part is replaced without Permobil's approval, the control system's warranty lapses.

CAUTION!

Permobil cannot be held responsible for losses of any kind arising as a result of a component of the R-net control system being opened, adjusted or modified without permission.

Troubleshooting R-net

R-net diagnostics

When an error or a fault occurs in the wheelchair's electronics, information on it is displayed in the control panel's display. This information can then be used to diagnose where the error/fault occurred and its cause.

Troubleshooting and repairs must always be performed by competent personnel with good knowledge of the wheelchair's electronics. More information on troubleshooting and remedies can be found in the service manual for this wheelchair model.

Diagnostic screens

Current diagnostic screen

When the control system's integrated protection circuits have been triggered so that the control system can no longer operate the wheelchair, a diagnostic screen is displayed in the control panel's display.

This indicates a system fault, i.e. R-net has detected a problem somewhere in the wheelchair's electrical system.

CAUTION! *If the fault is in a module that is not currently being used, it may still be possible to drive the wheelchair, but the diagnostic screen is displayed occasionally.*

Switch off the wheelchair and leave it off for a few minutes. Then restart the wheelchair. If the fault persists, you must switch off the wheelchair and get in touch with your service contact. Write down the information displayed in plain text in the control panel's display and pass it on to your service contact.

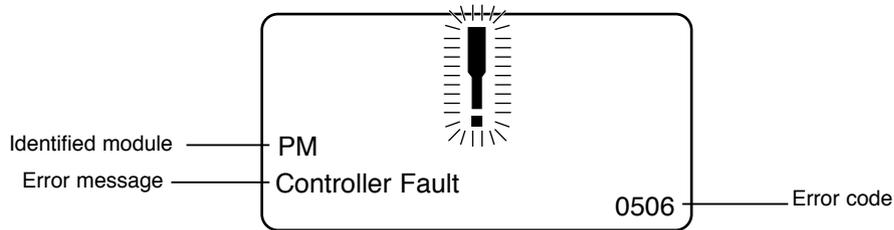
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Troubleshooting R-net

Example of a screen showing a system fault



Identified module

This indicates the control system module that detected the problem.

PM= Power module

JSM= Joystick module

Error message

The error message provides a brief description of the error type.

Error code

The four-digit code indicates which protection circuit has been triggered.

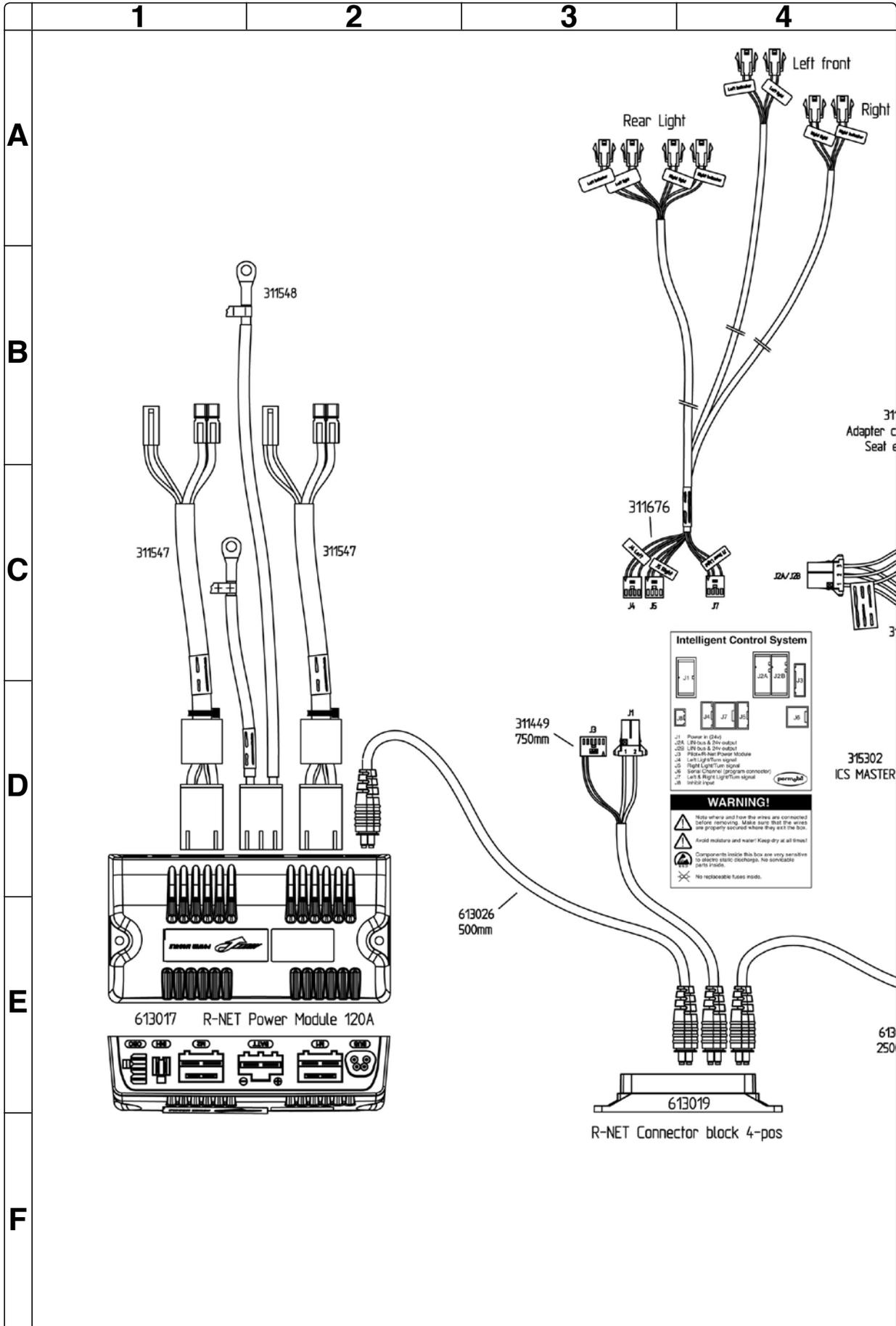
Repair of defective units

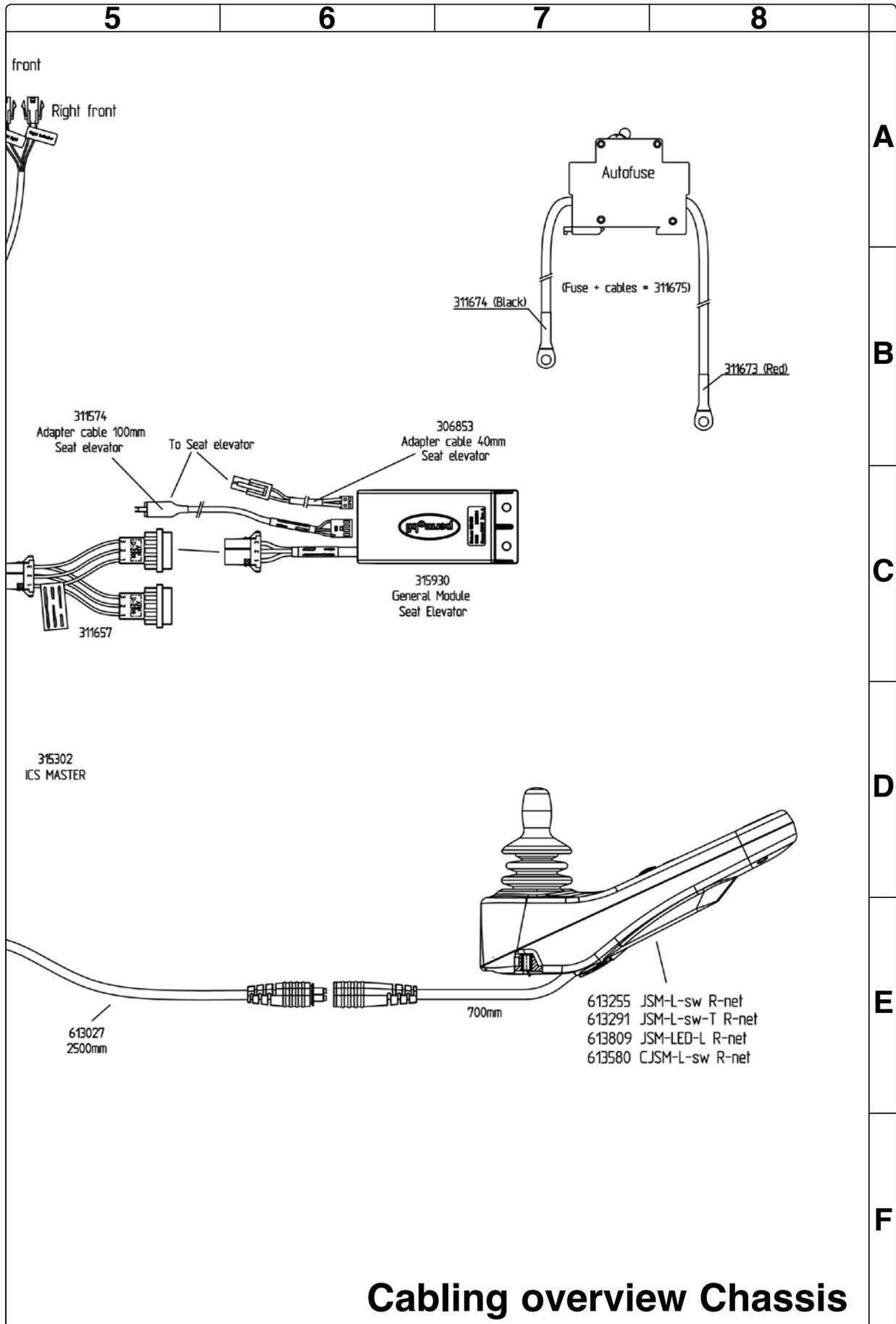
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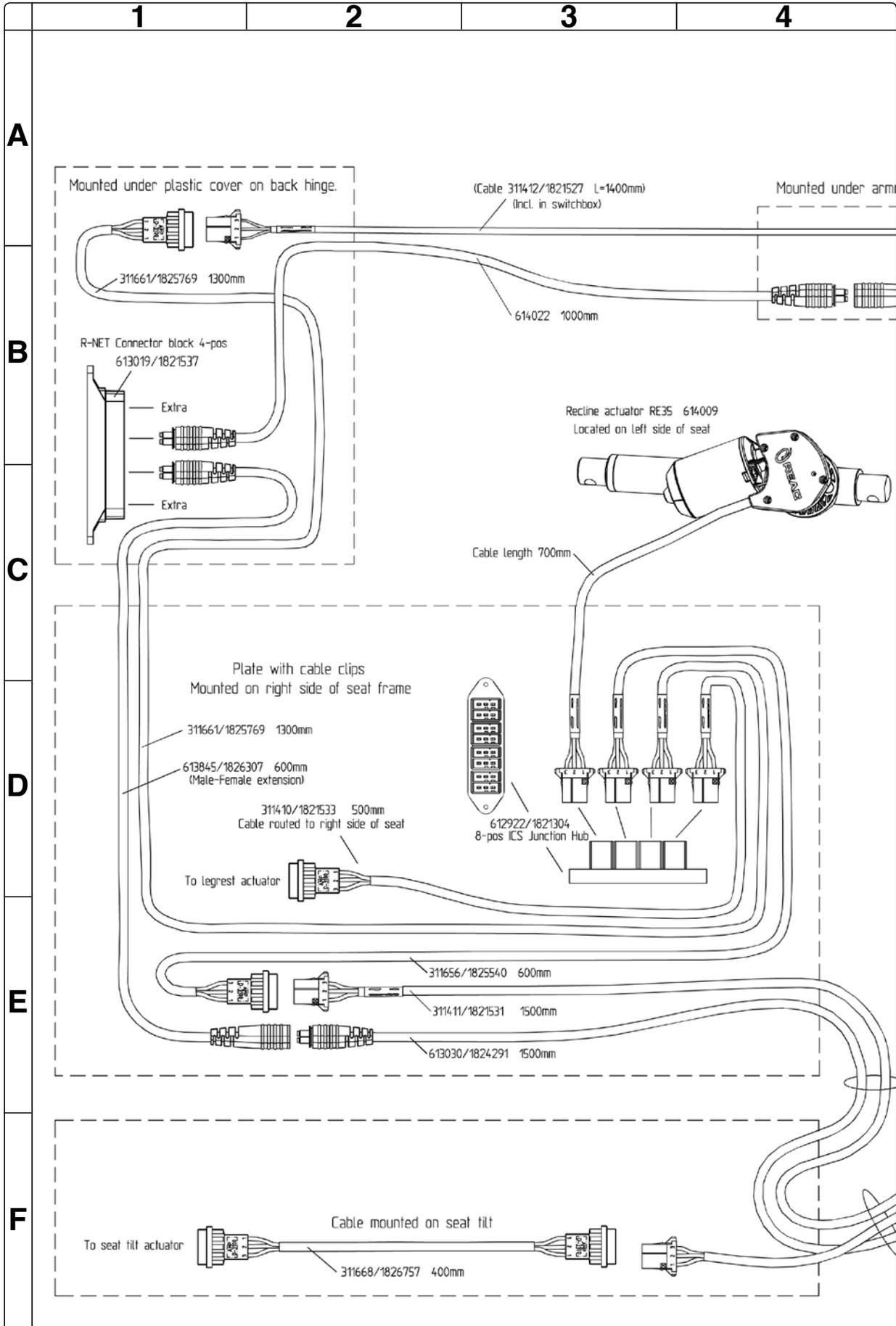
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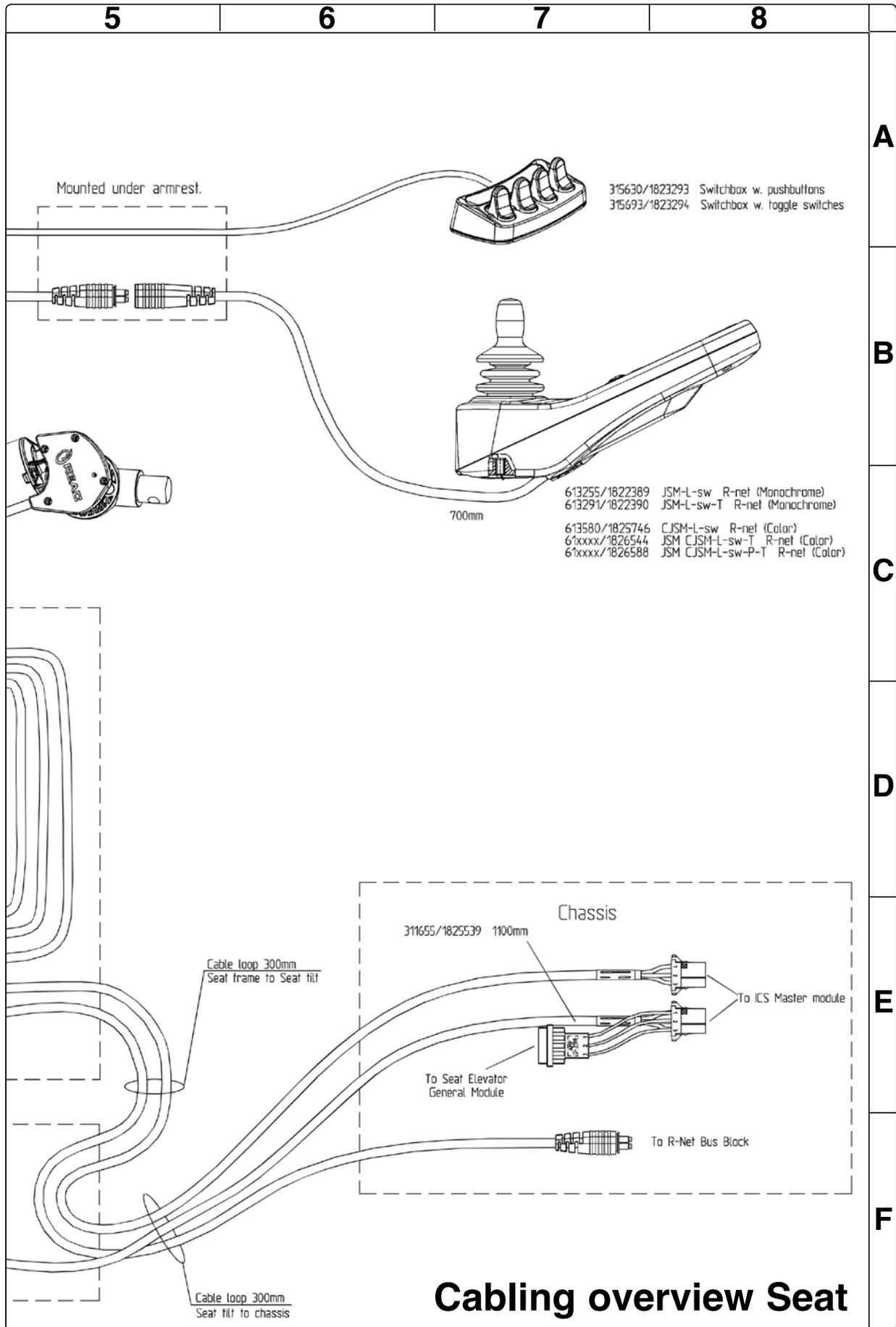
Cabling overview





Cabling overview





Cabling overview Seat

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