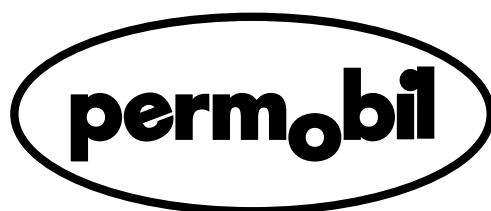


SERVICE MANUAL

Chairman Basic

Chassinr. 400 001-



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Introduction

The Service Manual is intended for technical personnel who maintain and repair electric 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.

Technical Support

In the event of Technical Problems, you should contact your dealer, or Permobil Inc at 800-736-0925

Spare parts

Spare parts must be ordered through your dealer.

The spare parts catalogue for the Chairman Basic chassis is PAB 1224 and is available from Permobil Inc.

Warranties

The Warranty Manual, PAB 9533, contains information on the current warranties available from Permobil AB. Warranties for the Swedish market are covered by a supply contract with SUB. Equivalent contracts for other markets are available from Permobil.

Maintenance

See the information in the Instructions for Use.

Reconditioning

Reconditioning instructions are available from Permobil.

Rating plates
Chairman Basic



Identity marking
Chassis no.

**Control unit/
panel**

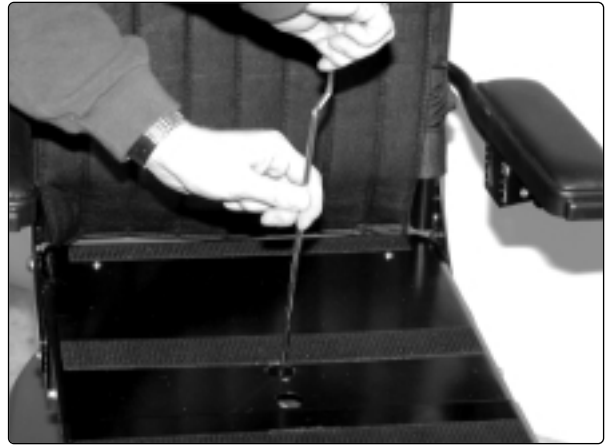


Identity marking
Art. no.
Serial no.
Modification no.

Raising the seat lift manually

If the seat lift cannot be raised in the normal manner because the batteries are discharged or the adjustment device is defective, the seat can be raised manually.

1. Remove the cushion and the seat plate.
2. Raise the seat using the seat lift crank provided.

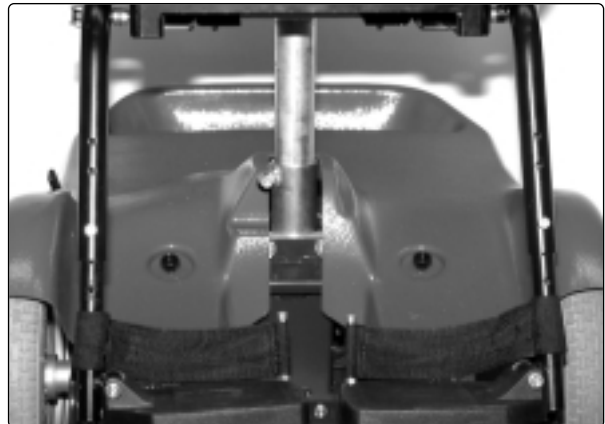


Raise the seat with the seat lift crank

Raising the seat

(Fixed seat tube)

1. Remove the cushion and the seat plate.
2. Loosen the screw for the seat tube brace.
3. Raise the seat using the seat lift crank or pull the seat up by hand.



Seat tube brace screw

Cover

Removal

1. Raise the seat to its highest position.
2. Loosen the three plastic knobs which hold the cover in place.
3. Remove the cover.

Fitting

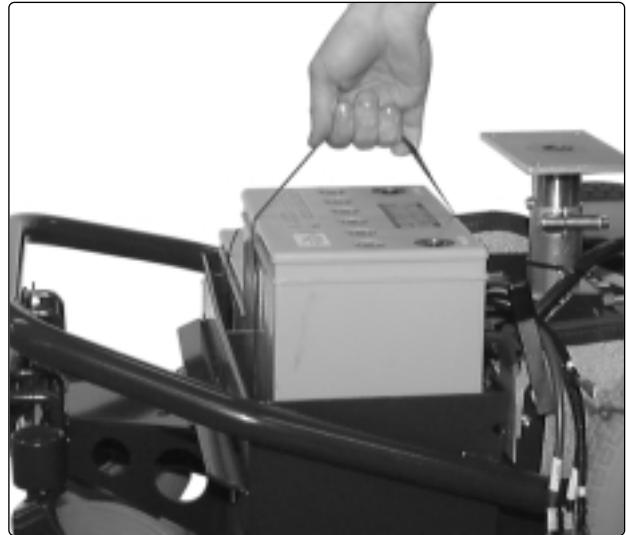
1. Place the cover on the chassis.
2. Tighten the three plastic knobs which hold the cover in place.

Changing the batteries

NB. Use protective goggles when working with batteries.

Removal

1. Raise the seat to its highest position. If the battery is defective, see Raising the seat lift on page 6.
2. Remove the chassis cover. It is held in place by three plastic knobs.
3. Disconnect all battery connections, the positive poles first and then the negative poles.
4. Lift out the batteries. Use lifting straps.

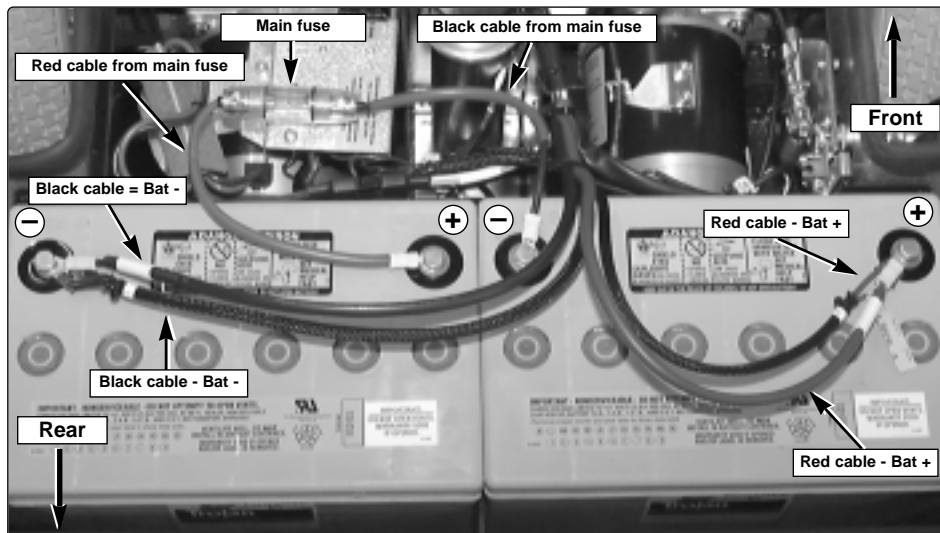


Fitting

1. If the wheelchair is fitted with acid batteries, check that the battery fluid is at the right level.
2. Insert two new batteries. The battery poles must be at the front.
3. Connect the battery connections, first the negative poles and then the positive poles.

4. Replace the chassis cover and set the seat to the correct height again. Tighten the seat tube brace.
5. Charge the batteries.

NB! The cables must be connected correctly.

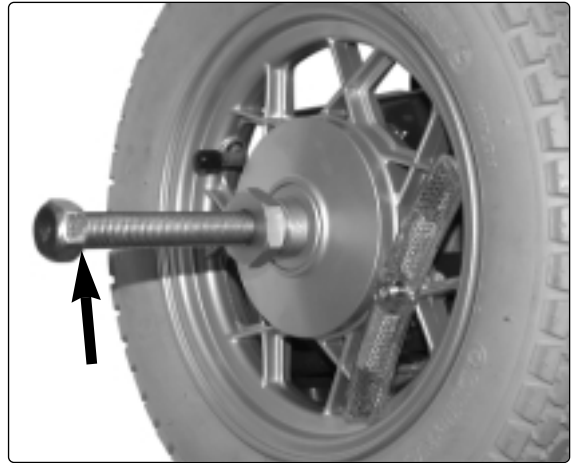


Battery connections

Changing the drive wheel

Removal

1. Raise and block up the wheelchair's chassis so that the wheel does not reach the ground.
2. Loosen and remove the centre screw C, the washer B and the rim locking washer A (see the figure at the bottom of the page).
3. Pull the wheel off the axle. Use the removal tool 304103-99-0 if the wheel cannot be removed by hand.

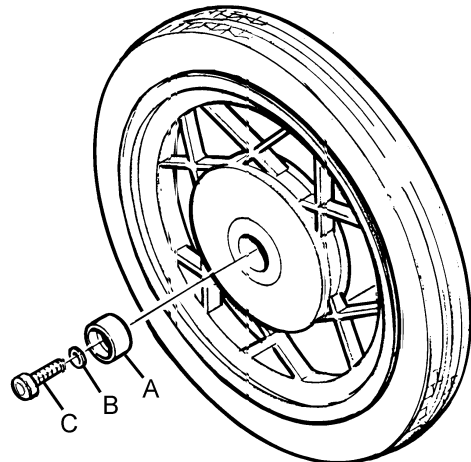


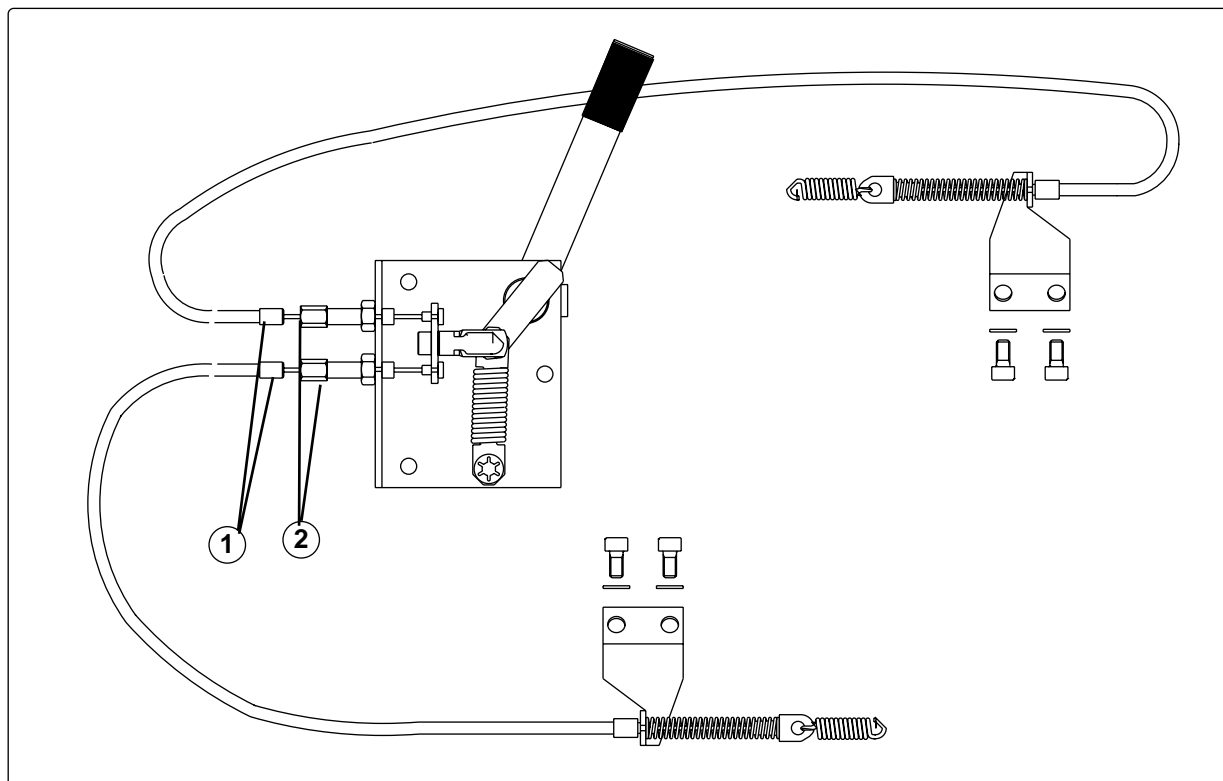
Removal tool 304103-99-0

Fitting

1. Fit the wheel onto the axle.
2. Fit the rim locking washer A, the washer B and the centre screw C and tighten to secure the wheel.

NB! The screw has a locking coating which is sufficient for refitting 3-4 times. Then the screw must be replaced with a new one.





Brake release mechanism

Changing the brake release wires

The upper wire controls the left brake unit and the lower wire controls the right brake unit.

Removal

1. Raise the seat lift to its highest position (use the crank provided for chairs without a seat lift).
2. Remove the cover. Move the brake release lever forwards to its front position to facilitate removal.
3. Loosen the locking nut (1).
4. Screw the adjusting screw (2) all the way in.
5. Loosen the wire at the magnetic brake and at the brake release mechanism.

Fitting

1. Fit the wire first at the magnetic brake and then at the release lever.
2. Adjust the length of the wire sleeve using the adjusting screw (2) so that the wire is tensioned but does not pull on the release clamp.
3. Check that the brake works. Release the brake with the release lever and check that the wheel can turn.
4. Refit the cover.

Changing the magnetic brake

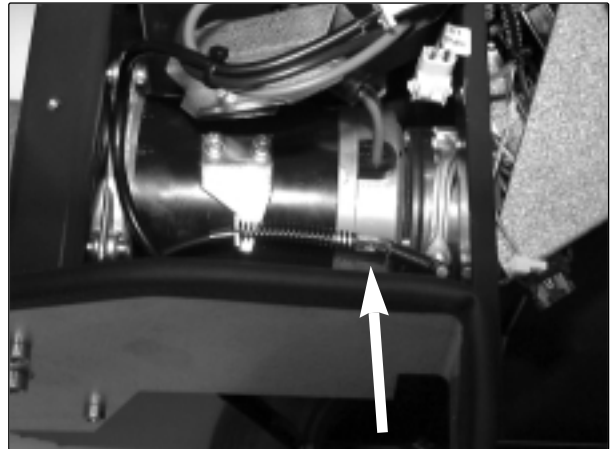
Removal

1. Raise the seat to its highest position.
2. Remove the chassis cover, which is held in place by three plastic knobs.
3. Loosen the electrical connection of the magnetic brake.

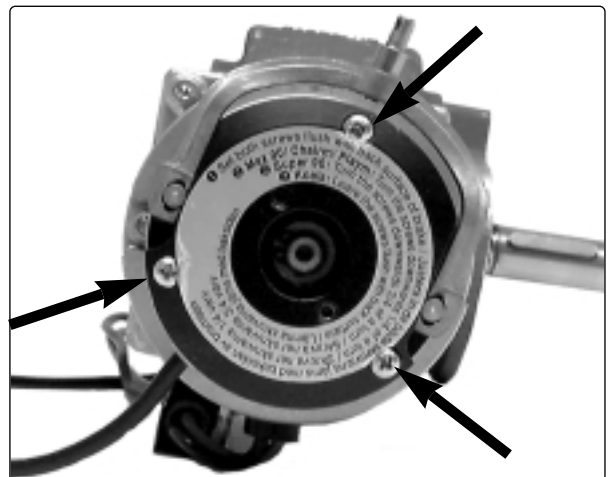


Electrical connection of the magnetic brake

4. Detach the brake release wire from the brake.

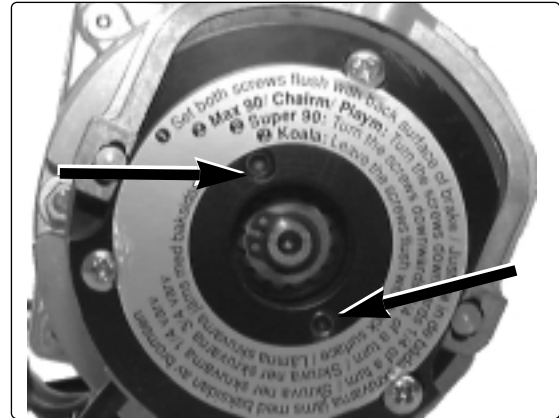


5. Unscrew the three screws which hold the brake and remove the brake with the extensible cover, brake disc and cover.
6. Note the position of the brake release arm.



Fitting

1. Check the setting of the brake. Follow the instructions on the decal on how the two Allen screws are adjusted.



2. Place the magnetic brake's brake disc in the brake assembly.

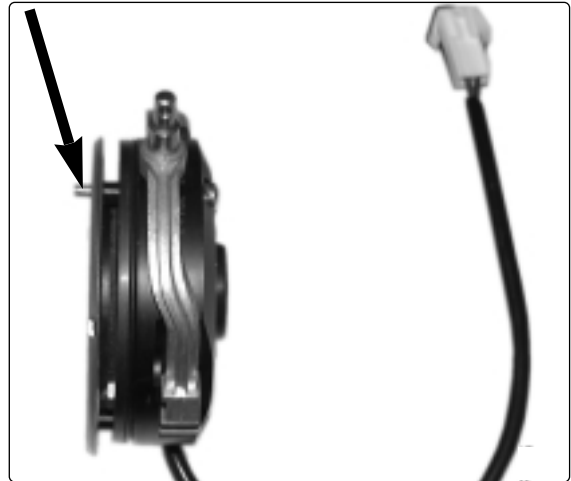


3. Put on the cover.



Changing the magnetic brake

4. Insert a screw to align the parts and screw the magnetic brake in place using all three screws.



5. Attach the magnetic brake's electrical connection.
6. Fit the chassis cover, see Covers, page 7.

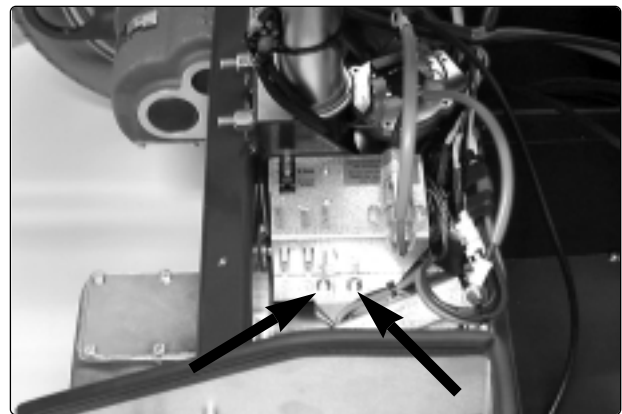
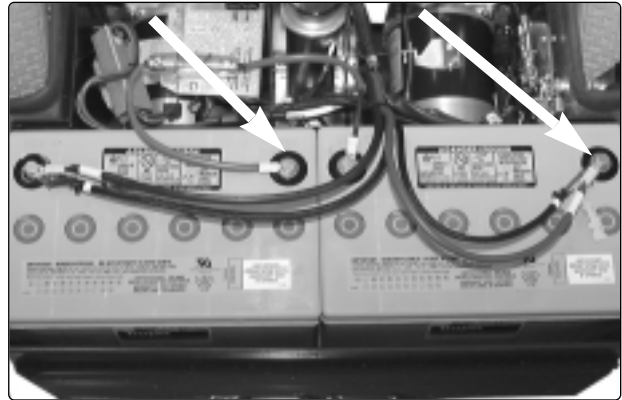


The magnetic brake's electrical connection

Changing the drive motor

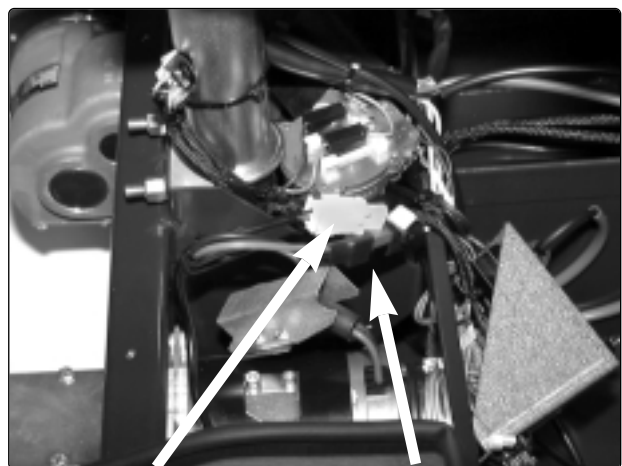
Removal

1. Raise the seat to its highest position.
2. Remove the chassis cover.
3. Remove the positive pole from one battery.
4. Block up the appropriate side of the wheelchair.
5. Remove the wheel. See Changing the drive wheel, page 10.
6. Remove the two screws for the fuse holder (left motor).



Fuse holder

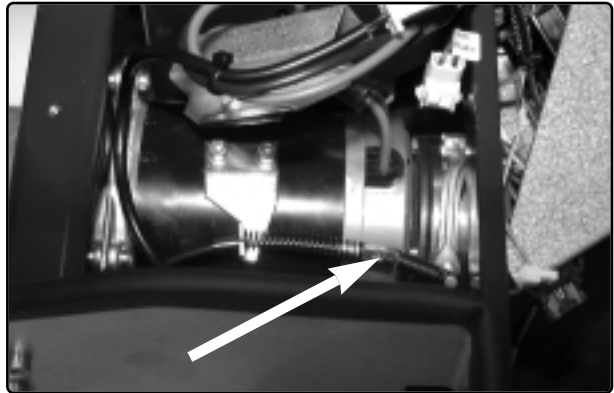
7. Detach the electrical connections for the motor and magnetic brake.



Magnetic brake

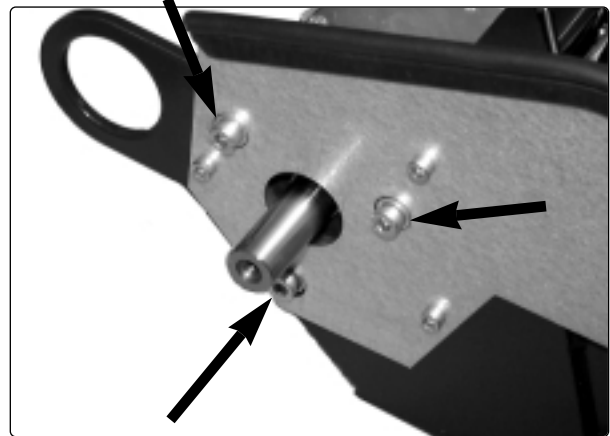
Motor

8. Detach the brake release wire from the magnetic brake.

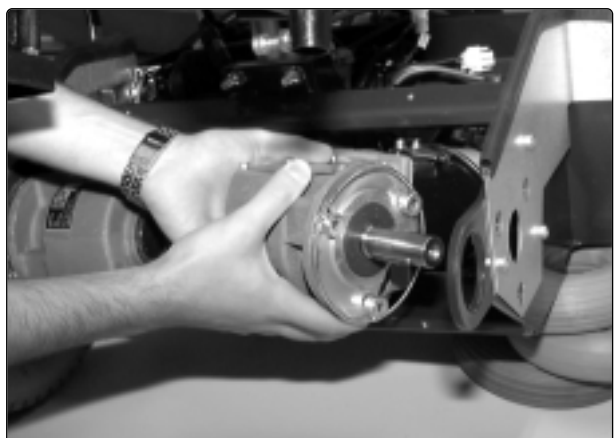


Brake release wire

9. Remove the three screws which hold the motor.

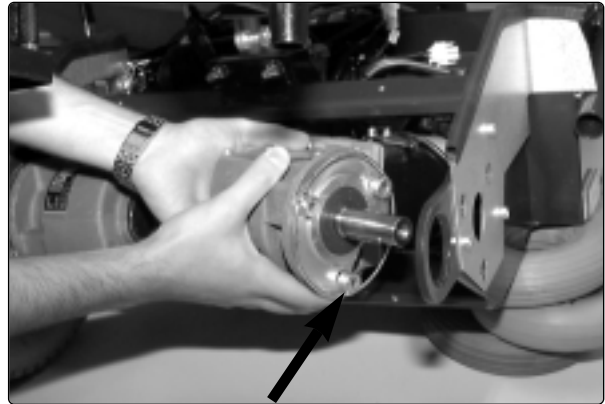


10. Turn the motor sideways so that the wheel axle turns freely. Pull the motor straight forwards.
11. Remove the spacer, which is located between the motor and the chassis.



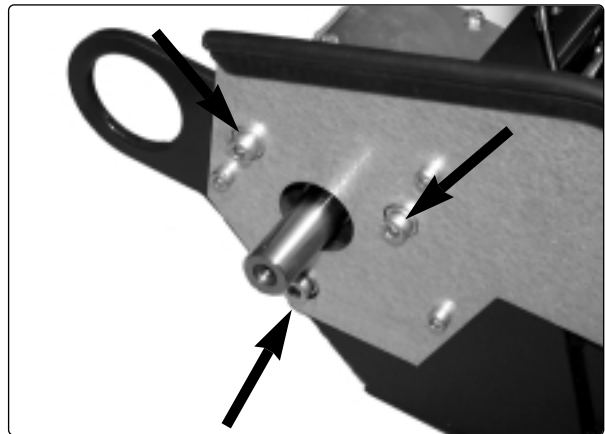
Fitting

1. If a new motor is to be fitted, the magnetic brake must be moved from the old motor. See Fitting a magnetic brake, page 13.
2. Fit the spacer and lift the motor into place. Turn it a little so that the wheel axle can turn freely without being obstructed by the chassis.

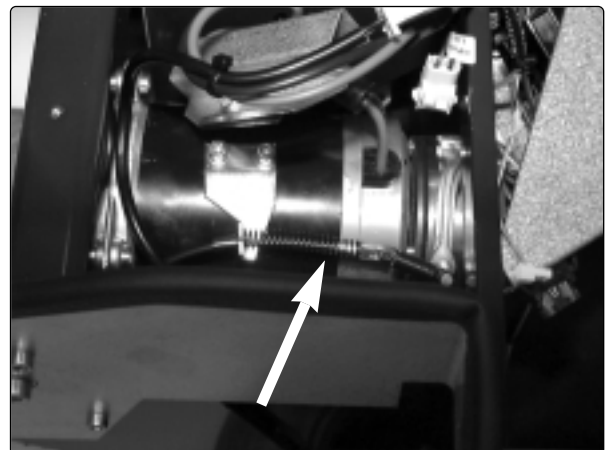


Spacer

3. Screw the motor in place with the three bolts.



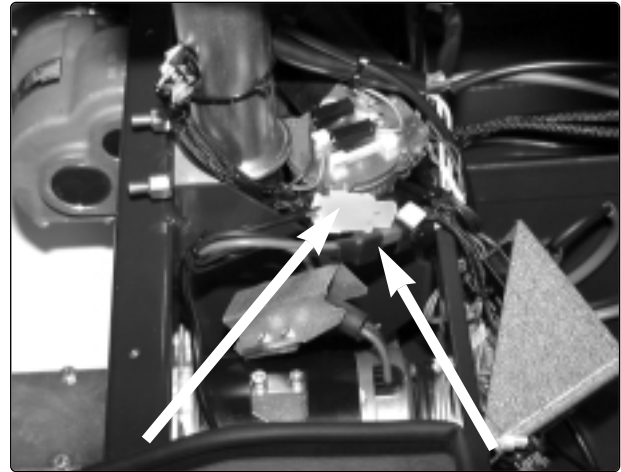
4. Attach the brake release wire.



Brake release wire

5. Attach the electrical connections for the motor and magnetic brake.

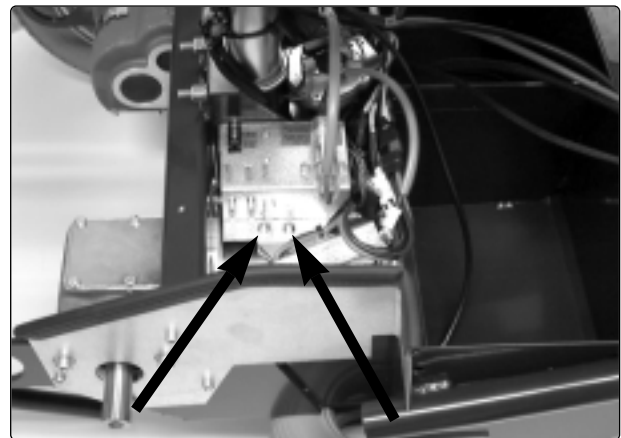
NB. Ensure that the contacts are fully interlocking.



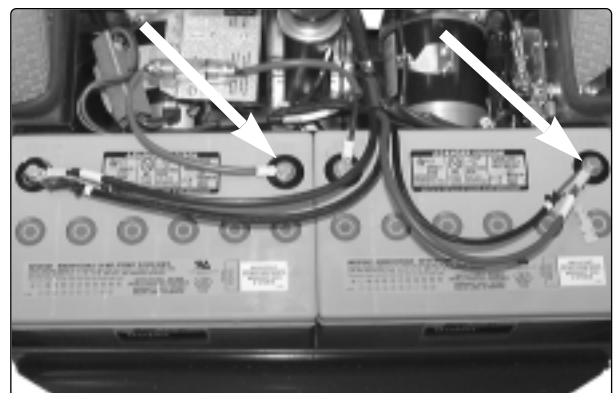
Magnetic brake contact

Motor contact

6. Fit the fuse holder with the two screws.



7. Fit the wheel. See page 10.
8. Remove the blocks.
9. Connect the battery poles.
10. Fit the chassis cover.



Changing the carbon-brush in the drive motor

Removal

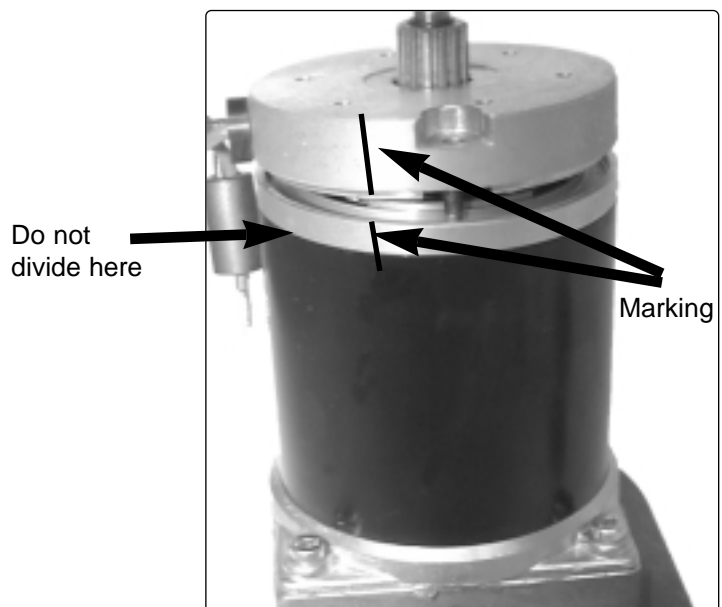
1. Remove the drive motor. See page 15.
2. Remove the motor's cables from the coupling box.



3. Remove the magnetic brake and the mounting plate.
4. Mark the stator's position against both ends with a small mark before loosening the nuts. It is important for the function of the motor that the parts are assembled precisely without being moved away from the original position.
5. Loosen two nuts and pull off the motor end. Press the cable gland off the motor end.



6. Remove the brush holder completely.

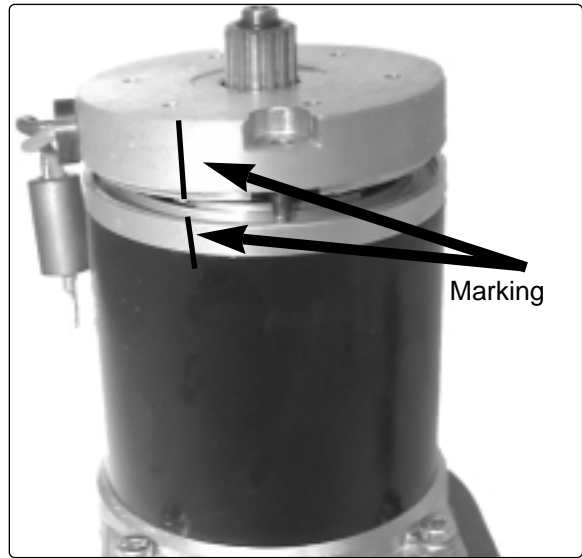


Fitting

1. Fit a new carbon-brush using the fitting ring provided with the new brush holder. Ensure that you turn the cables in the same direction as the outgoing shaft of the gear.

2. Fit the end with two nuts.
Remember the wave washer between the bearing and the end. Ensure that you assemble the parts according to the marking made earlier.

It is important for the function of the motor that the parts are assembled precisely without being moved away from the original position.



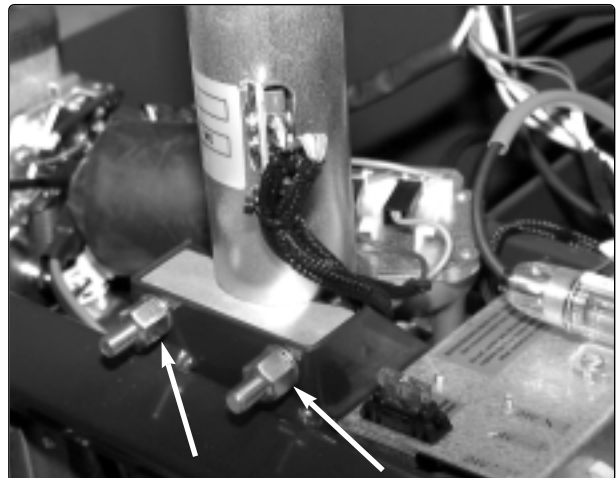
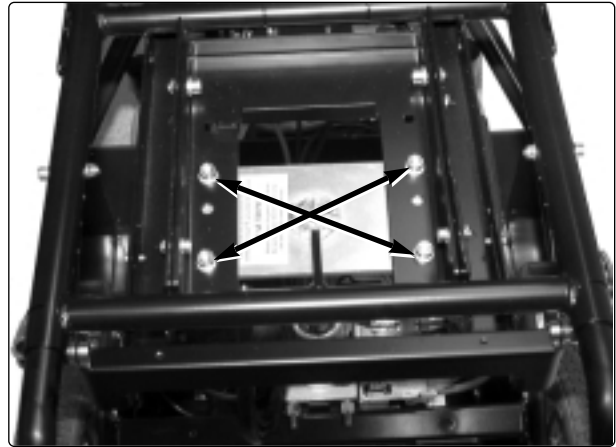
3. Insert the mounting plate, cover and brake disc. Ensure that you position the holes correctly for fitting the brake.
Turn the brake so that the brake arm is in the correct position. Turn the holes in the extensible cover downwards so that any condensation water can run out.
4. Screw the motor cables to the coupling box.
5. Fit the drive motor. See page 17.



Changing the seat lift

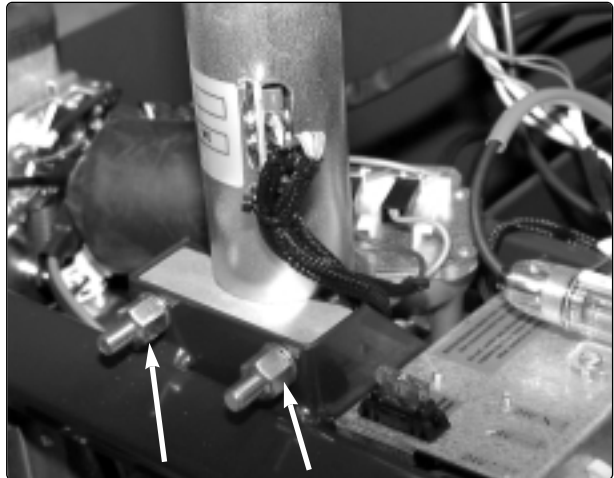
Removal

1. Raise the seat lift to its highest position (use the crank provided for chairs without a seat lift).
2. Remove the cover.
3. Cut off the cable ties located on the seat lift and under the seat.
4. Remove the arm rest on which the control panel is located.
5. Disconnect the seat lift cable.
6. Unscrew the four screws which hold the seat and lift out the seat.
7. Unscrew the nuts and remove the brace which holds the seat lift.
8. Lift out the seat lift.

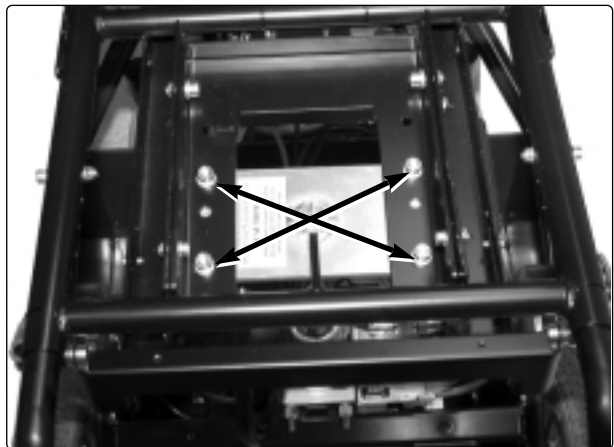


Fitting

1. Lift and replace the seat lift.
2. Replace the yoke and secure the seat lift by tightening the four nuts. The screws must be tightened with 24 Nm.
3. Attach the contacts to the seat lift.

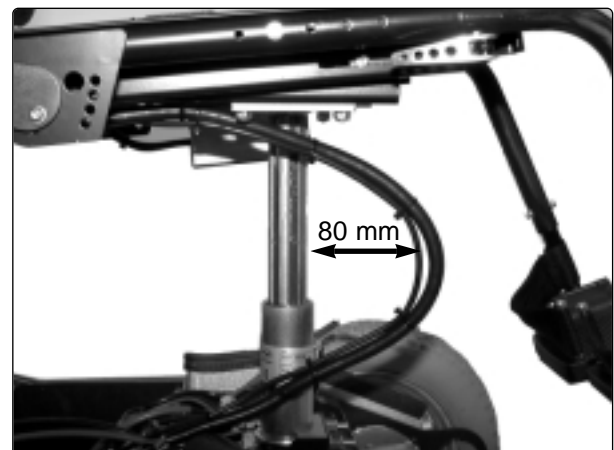


4. Lift and replace the seat and secure it by tightening the four screws.
5. Replace the arm rest with the control panel.



6. Fasten the cables with new cable ties. Check that no cables are caught or folded in sharp folds.

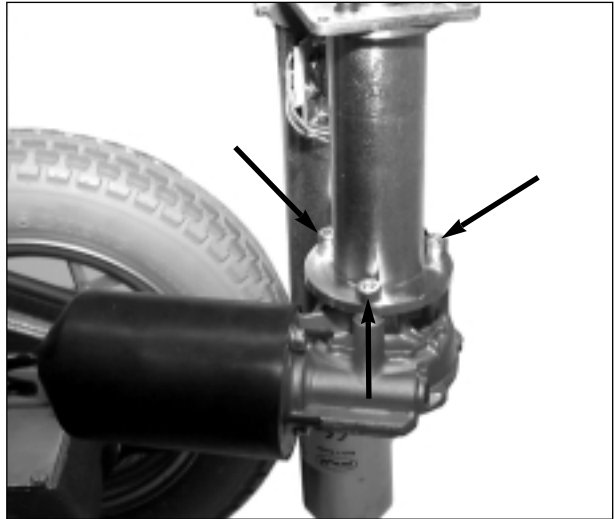
NB! The radius of the curve of the cable must be at least 80 mm when the seat lift is in its highest position.



Changing the seat lift motor

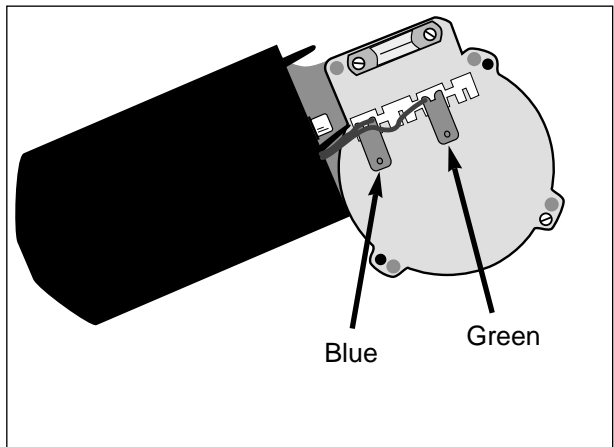
Removal

1. Remove the seat lift as shown on page 21.
2. Disconnect the seat lift cables from the motor.
3. Unscrew the three screws which hold the motor and remove the motor.

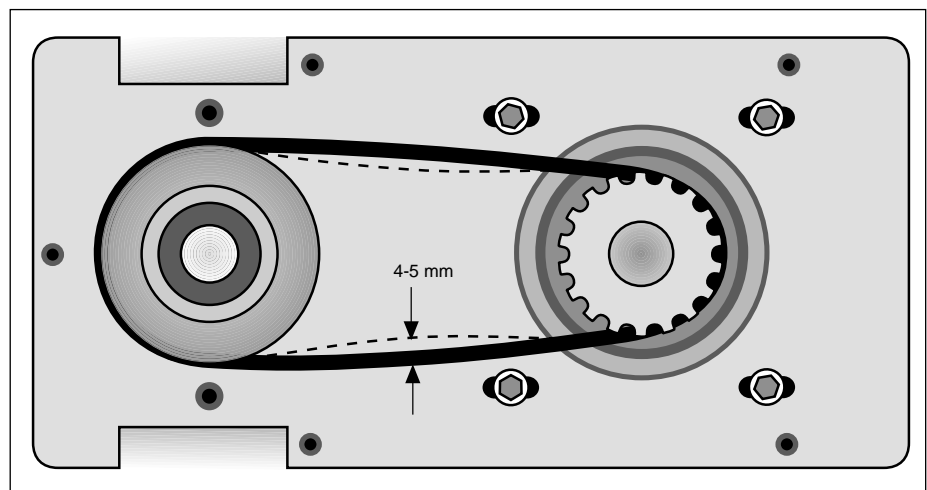


Fitting

1. Fit the new motor and secure it by tightening the three screws.
2. Reconnect the seat lift motor's cables.

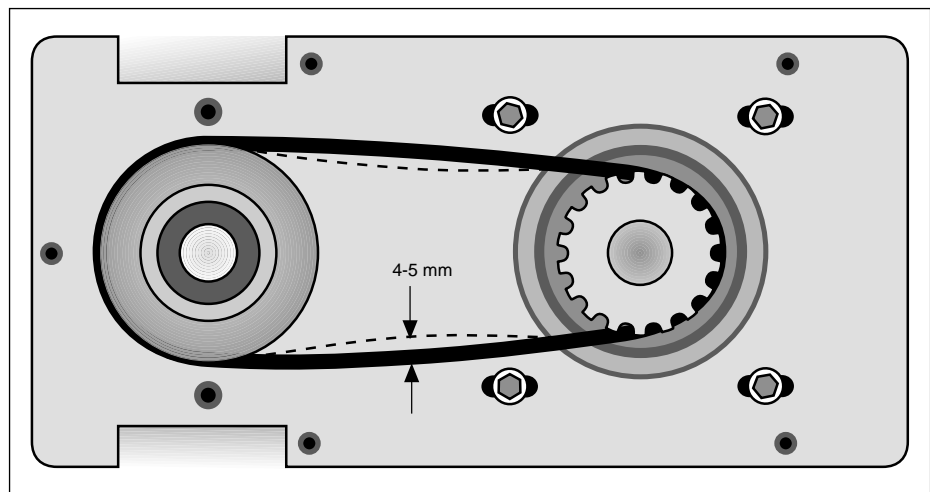
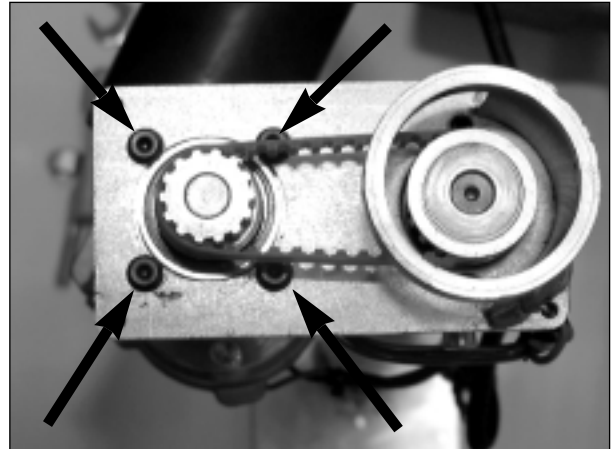


3. Adjust the belt tension by moving the motor sideways before tightening the motor screws. The belt is sufficiently taut when it can be pressed in 4-5 mm.



Changing the seat lift belt

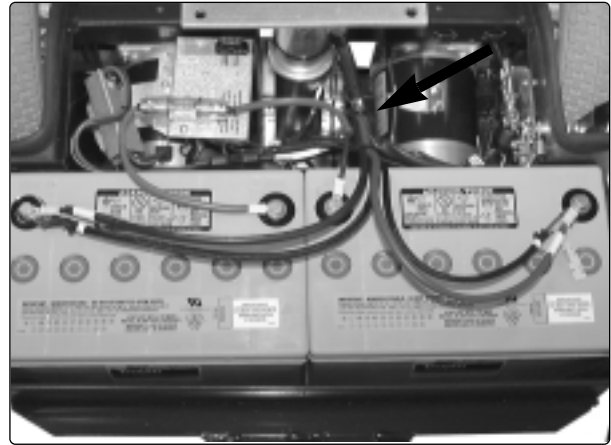
1. Remove the seat lift. See page 21.
2. Loosen the four screws which hold the seat lift motor. Move the motor sideways so that the belt becomes slack.
3. Remove the belt first from the motor and then from the cog wheel on the seat lift screw.
4. Change the belt and reassemble in the reverse order.
5. Adjust the belt tension by moving the motor sideways. The belt is sufficiently taut when it can be pressed in 4-5 mm.
6. Tighten the four screws again.
7. Fit the seat lift. See page 22.



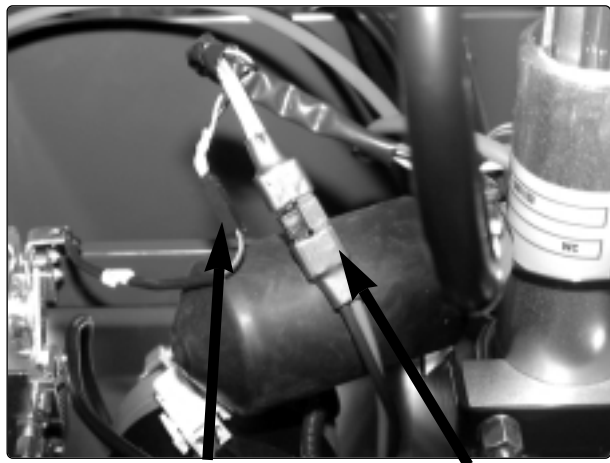
Changing the control unit

Removal

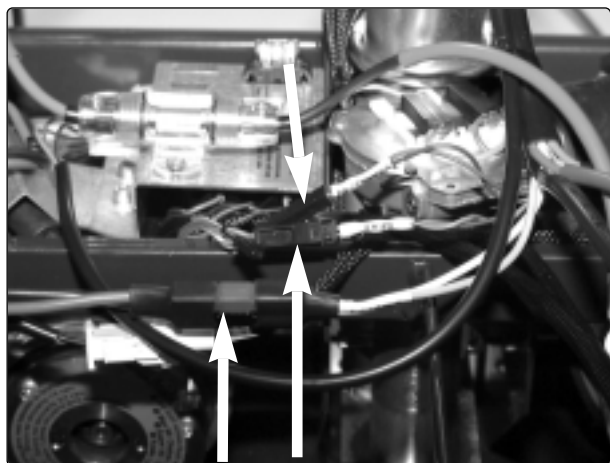
1. Raise the seat to its highest position.
2. Remove the chassis cover.
3. Remove the poles from the battery. Start with the positive poles.



4. Detach the two cable connections on the right side.



5. Detach the three cable connections on the left side.



Changing the control unit

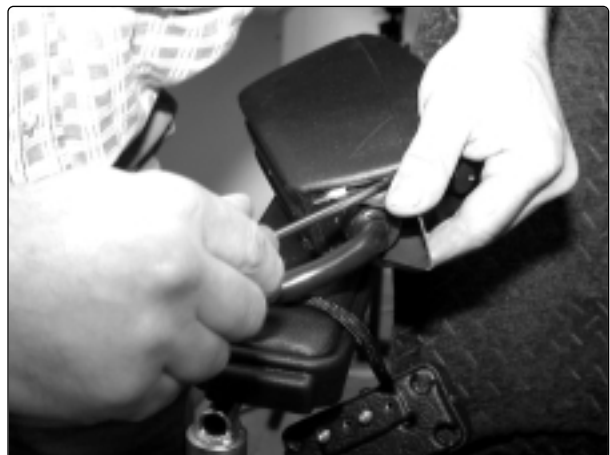
6. Cut off the cable ties which hold the cables in the chassis and seat.
7. If the seat has a seat lift or seat inclination, the cable ties which hold the cables for the button box and the control unit must be cut off.
8. Unscrew the three screws in the panel holder which hold the control unit.



9. Unscrew the screws which hold the button box.

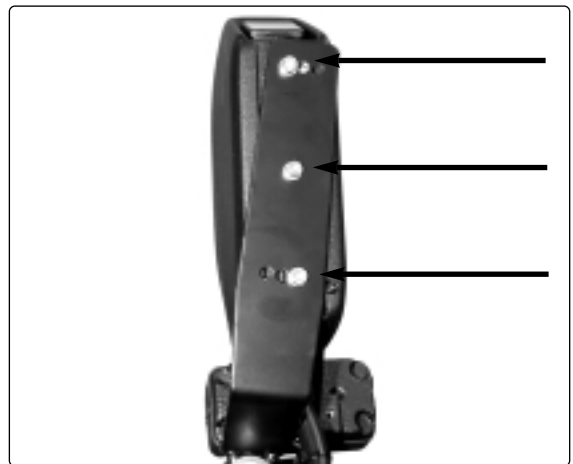
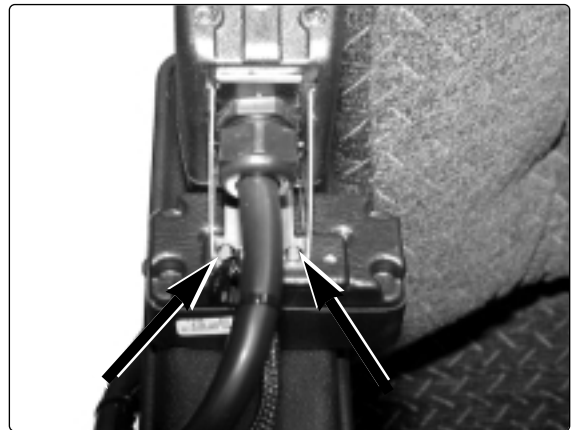


10. Remove the button box holder by squeezing it together so that the hooks on each side disengage. You may need to use a screwdriver to disengage the hooks.



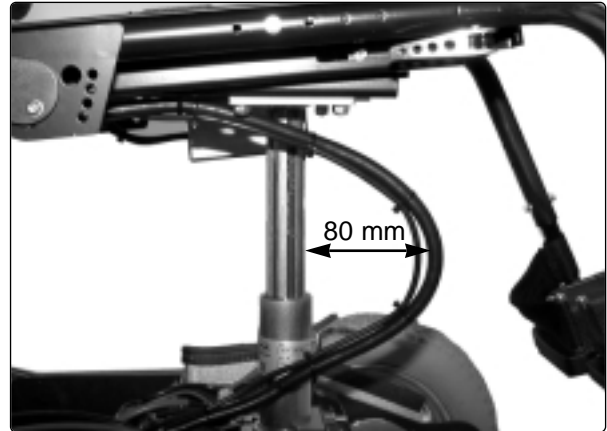
Fitting

1. Place the button box holder on the new control unit.
2. Screw the button box in place with the two screws.
3. Fit the control unit on the panel holder with the three screws. Fit the centre screw first and then adjust the control unit to the angle required.
4. Fasten the cables with four cable ties on the arm rest. Ensure that the cables are not caught and that they are folded in soft folds.



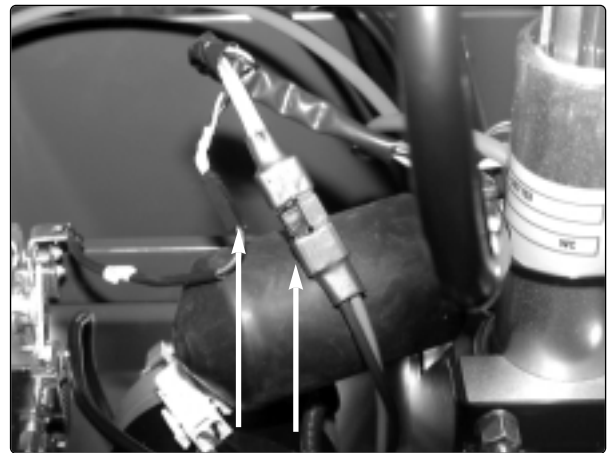
5. Fasten the cables under the chair and around the base of the seat lift using cable ties.

NB! The radius of the curve of the cable must be at least 80 mm when the seat lift is in its highest position.



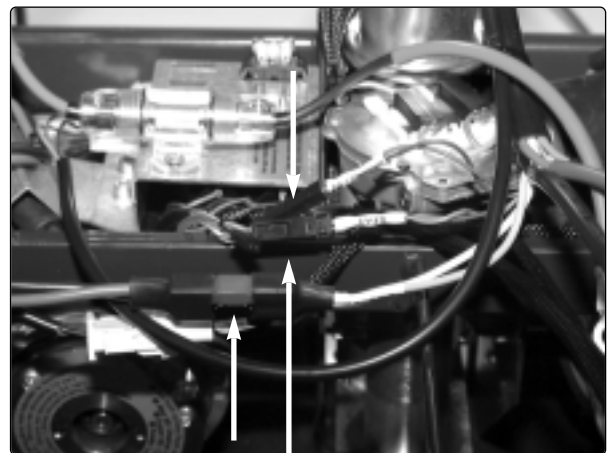
6. Connect the connections on the right side (2 contacts). See the marking on the cables.

NB! Ensure that the contacts go all the way in.



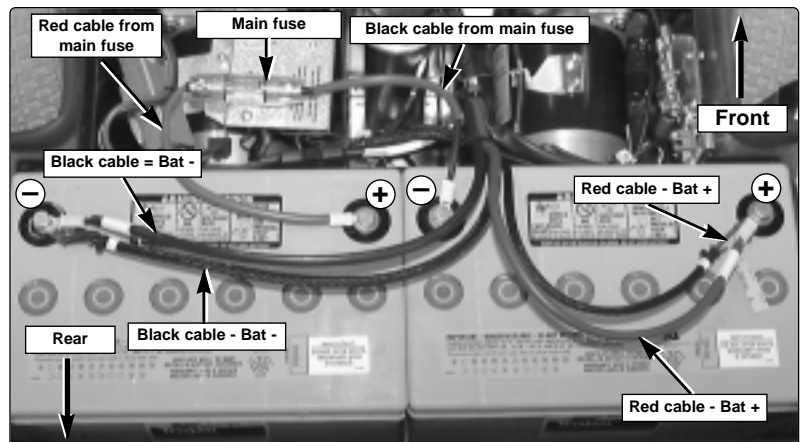
7. Connect the connections on the left side (3 contacts). See the marking on the cables..

NB! Ensure that the contacts go all the way in.



8. Reconnect the contacts to the battery.

9. Replace the chassis cover.



Battery indicator

The battery indicator indicates the status of the wheelchair.

- Battery indicator lights permanently
This indicates that everything is OK.
- Battery indicator flashes slowly.
This indicates that the battery should be charged as soon as possible.

- Battery indicator flashes fast.
A fault has occurred and the wheelchair will not work. The number of flashing lights indicates the nature of the fault.
- Note the number of flashing lights.
- Switch off the wheelchair.
- Switch the wheelchair back on.
- Check whether the fault is still present.

Troubleshooting

If a fault occurs in the wheelchair, a number of lights flash on the battery voltage indicator. Count the number of lights, starting from the joystick, and check in the list what the fault is and what you can do.

Number of lights	Cause	Remedy
1	The charge level of the battery is much too low. It requires immediate charging	Check the condition of the battery to see whether it needs replacing. Check the contact between the battery and the control unit.
2	There is an interruption to the left motor.	Check the connection to the left drive motor. Check whether the drive motor's carbon-brush is worn.
3	Short-circuit between the battery and the drive motor.	Check the contacts and cables of the motor.
4	There is an interruption to the right motor.	Check the connection to the right drive motor. Check whether the drive motor's carbon-brush is worn.
5	Short-circuit between the battery and the drive motor.	Check the contacts and cables of the motor.
6	Charger connected to charging socket.	Remove the charging contact from the chair.
7	Joystick fault.	Ensure that the joystick is not affected by operation. If the fault is still present, replace the control unit.
8	Control unit fault.	Check the contacts of the control unit. If the fault is still present, replace the control unit.
9	Interruption in brake circuit.	Check the contacts of the magnetic brake.
10	Too high voltage in the battery	Check the battery and the contacts between the battery and the control unit.



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