

LEVO compact-easy LCEV

INSTRUCTION- and SERVICEMANUAL



Please read the Instruction Manual carefully before attempting to use your wheelchair. The Service Manual is provided for the use of Agents and Authorized Technicians. Alterations in constructional and technical manner or to the electronic require the written authorisation of LEVO AG, otherwise no warranty or product liability will be accepted.

In case of difficulty contact:

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Agent:

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Dear Customer,

We would like to thank you for putting your trust in LEVO stand-up wheelchairs.

The LEVO stand-up wheelchair is a unique aid for use by those facing difficulties walking and standing up. As well as performing all the functions of an active wheelchair, the LEVO enables you to stand up on your own.

Please read these operating instructions carefully before using your LEVO. They contain important information necessary for successful operation of the wheelchair.

Whether you use your LEVO as a stand-up aid at work in everyday life, or to help with standing exercises, it guarantees you optimum independence, mobility and health.

As a LEVO customer, you have a valuable contribution to make to the on-going further development of our products. We put great store by your suggestions, which ensure that LEVO still offers the most comprehensive service available and provides for the widest possible range of needs.

Yours faithfully,

LEVO AG

Contents

Seating and Standing Assessment.....	4
Declaration of Conformity	5
INSTRUCTIONMANUAL	8
1. Important points to note before operating the LEVO <i>compact-easy LCEV</i>	9
2. General tips on handling a wheelchair	9
2.1. Pushing off - how to avoid tipping over	9
2.2. Gradients.....	10
2.3. Negotiating obstacles.....	11
2.4. Braking with the pressure brakes.....	12
2.5. Picking up objects from the wheelchair.....	12
2.6. Detachable components	13
2.7. Transport in a motor vehicle.....	13
3. Warranty.....	14
4. Sitting / Driving.....	14
4.1. The rear wheels.....	14
4.2. Seat inclination	14
4.3. Armrests.....	15
4.4. Position of the rear wheels.....	15
4.5. Position of the front castors	16
4.6. Backrest inclination	16
4.7. The footrest.....	16
4.8. The calf/heel strap.....	16
4.9. The seat cushion.....	17
4.10. The brakes (wheel locks).....	17
4.11. Adjusting the brakes	17
5. Standing.....	18
5.1. General tips.....	18
5.2. The knee support and chest strap.....	19
5.2.1. The knee support.....	19
5.2.2. The chest strap	19
5.3. Standing up	20
5.4. Sitting down.....	20
5.5. The gas springs	20
5.6. The batteries.....	21
5.6.1. Recharging the batteries.....	21
5.7. Points of safety:	21
6. Storage.....	22
6.1. Folding down the backrest.....	22
6.2. The quick-release axles.....	22
6.3. The castors	23

7.	Cleaning.....	23
8.	Maintenance	23
9.	Disposal	24
10.	Trouble shooting.....	24
10.1.	Trouble shooter - general operation.....	24
10.2.	Trouble shooter - the stand-up mechanism.....	25

SERVICEMANUAL	26	
1.	Introduction	27
2.	Accident prevention & safety	27
3.	Adjustments – general instructions	27
4.	Repairs – general instructions	27
5.	Tools & torques	28
6.	Important notes	28
7.	Recommended safety checks.....	28
8.	Adjustments	29
8.1.	Seat depth.....	29
8.2.	The backrest and seat upholstery	29
8.3.	Rear wheel position	30
8.4.	Seat inclination	30
8.5.	The castor axle	31
8.6.	The leg supports.....	32
8.7.	The footrest.....	32
8.8.	The armrests.....	33
9.	Repairs.....	33
9.1.	Replacing tire/inner tube of rear wheels.....	33
9.2.	Repairing the inner tube.....	34
9.3.	Replacing the axle adapter.....	34
9.4.	Replacing the gas springs	34
9.5.	Replacing the actuator (lifting motor)	35
9.6.	Replacing the control switch	35
9.7.	Replacing the battery-/ electronic box.....	36
9.8.	Replacing the batteries.....	36
10.	Testing the wheelchair.....	37
11.	Cleaning.....	37
12.	Technical Data.....	38

Seating and Standing Assessment

Seat depth: correct



Knee support attachment screw even with center of knee

Seat depth: too long



Knee support attachment screw beyond center of knee

Seat depth: too short



Knee support attachment screw short of center of knee



Ankle/Knee/Hip joint straight



Knee joint hyper extended



Incomplete knee extension

Correct position



Seat cushion too high

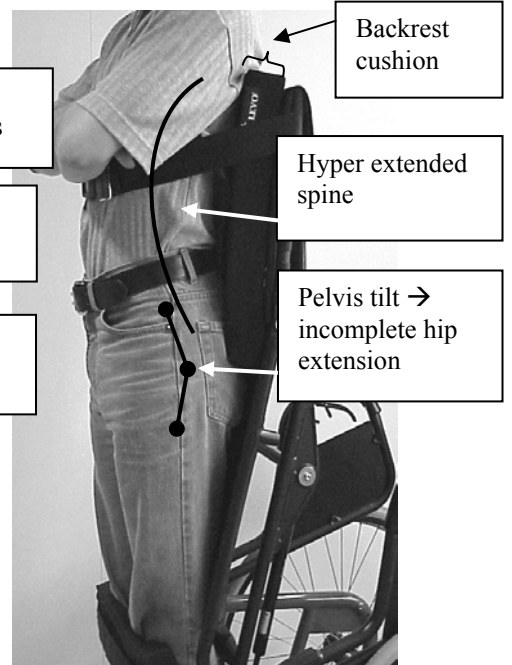
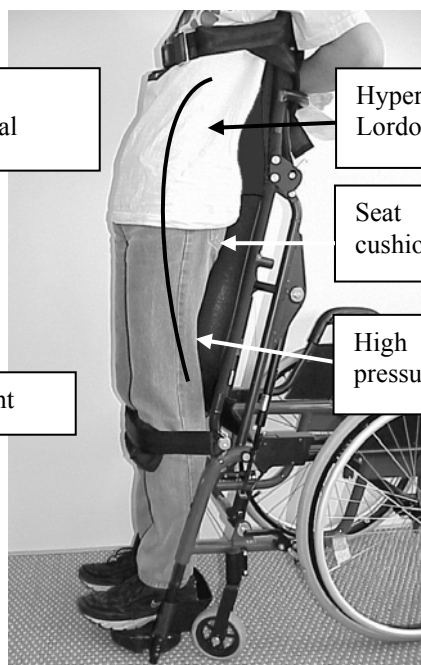
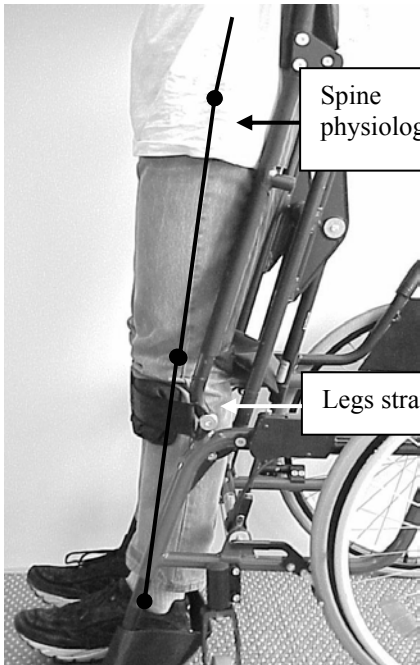


Cushion for pressure relief in seated position

Back too deep/thick



Backrest cushion or solid back for more comfort or stability



Declaration of Conformity

As manufacturer of the LEVO Stand-up wheelchair, the company

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declares in all responsibility that the product hereby mentioned (see following list) corresponds with the valid direction of the EC instructions for medical products determined 14th June, 1993 (93/42/EWG).

Moreover we declare valid the correspondence of this products with following norms / nominal documents:

ISO 7176-1	EN 12182
ISO 7176-3	EN 12183
ISO 7176-8	EN 12184
ISO 7176-15	EN 60601-1
ISO 7176-16	EN 60601-1-2
UNI 14971	

Type of stand-up wheelchairs
LEVO compact-easy LCEV S/M/L/XL

Wohlen, July 1, 2004D

Dr. Kurt H. Fischer Thomas Räber

LEVO *compact-easy LCEV*

INSTRUCTIONMANUAL

**Please read this Instruction Manual carefully
before you start to use your wheelchair.**

1. Important points to note before operating the LEVO *compact-easy* LCEV

Before using the LEVO compact-easy, either study the instruction manual yourself or have your LEVO dealer explain the instructions to you.

Standing up stresses your body in ways you may not be used to. Therefore we recommend you consult your doctor or physical therapist before using the LEVO compact-easy.

The LEVO compact-easy should only be brought into the stand-up position on firm, level ground (risk of tipping over).

The LEVO compact-easy should only be brought into the stand-up position with the brakes on.

The stand-up mechanism should only be operated when the LEVO compact-easy is occupied (risk of accident).

Before standing up it is absolutely vital that the knee support and chest strap are fitted correctly (see section 4.4.). You should under no circumstances attempt to stand up without these safety restraints securely in place (risk of accident).

In the case of strong or sudden spasms, cramps or similar the user should only stand up under supervision of a carer.

In any situation demanding particular care and attention, e.g. when in transit (in motor vehicles, aircraft, etc.) or when the wheelchair is to be left unattended in the presence of children, be sure to disconnect the control panel and/or motor leads from the battery and electronic unit (see 4.7.) (risk of accident).

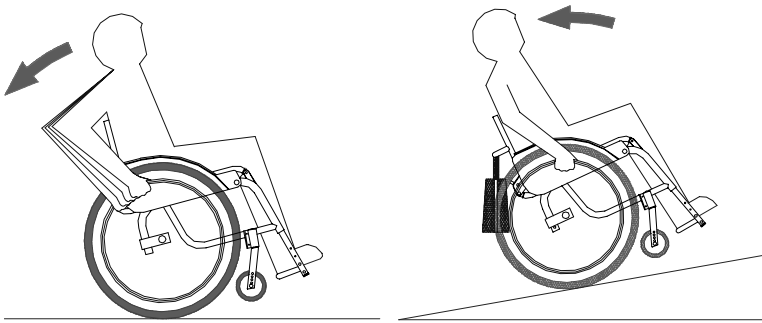
Adjustments to the stand-up mechanism and its connected parts are to be carried out by qualified technicians (risk of accident).

Should you require adjustments and alterations to the mechanics of the wheelchair, or any maintenance work, please contact your LEVO dealer.

2. General tips on handling a wheelchair

2.1. Pushing off - how to avoid tipping over

Bear in mind that when pushing on the handring to start the wheelchair moving, the front castors will lose traction due to acceleration. Depending on weight distribution, this may cause the castors to lift off the ground and the wheelchair to tip over backwards (see diagram, left).

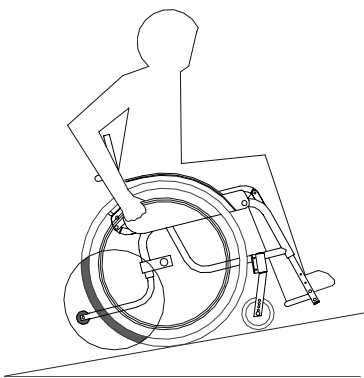


This above situation may be made more critical by using different rear wheel positions to achieve greater seat inclination, by fixing the rear wheel further forward, or by using a cushion to sit higher up.

Similarly, when braking to halt backward movement the castors will again lose downforce, giving rise to backward tilting and the risk of tipping over.

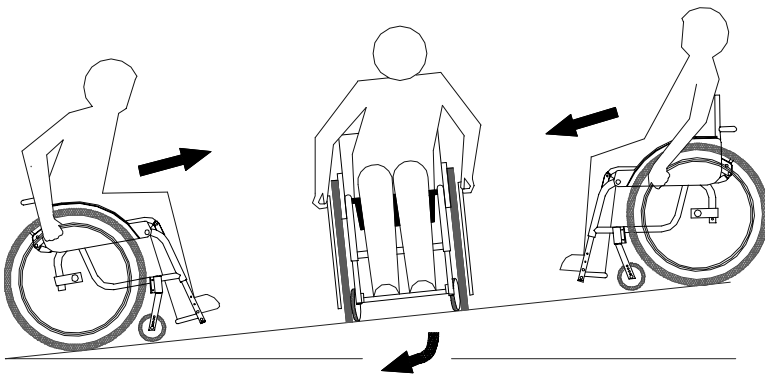
It should also be noted that any luggage taken along (see diagram, above right) will alter the centre of gravity of your wheelchair and may have an adverse effect on its stability.

As an additional safety measure, it may be advisable to fit anti-tip rollers (see diagram).



2.2. Gradients

When turning on a gradient, bear in mind you will have to sit square on to the slope before finally swivelling around to face straight downhill. In this side-on position there is a risk of slipping sideways down the slope. Either you or your accompanying person should take this risk into account and steer accordingly to compensate. Always make it a rule to sit leaning into the hill, however steep the gradient and whichever the intended direction of travel (see diagram).



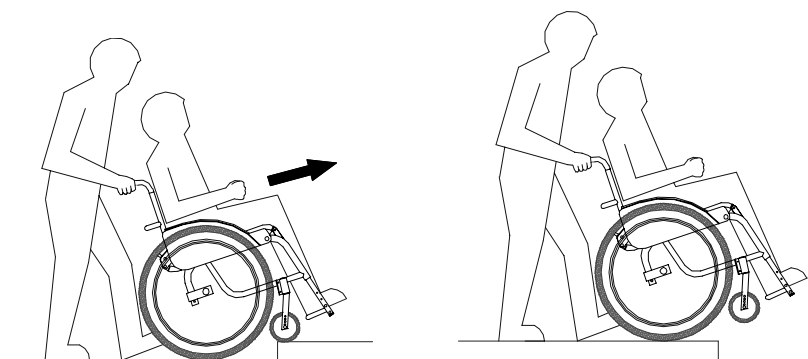
As a safety precaution, always ask an able-bodied person to accompany you when manoeuvring down a slope. Bear in mind that slowing the wheelchair with the handrings generates a great deal of heat between hands and handring and can lead to burns on the hands. Therefore proceed cautiously when braking by hand and, most importantly, when travelling downhill, never go faster than walking pace. Leaning back into the hill improves stability and increases rear wheel downforce, thus also improving braking efficiency.

2.3. Negotiating obstacles

Any obstacle, such as a kerb or threshold, should be viewed as a potential source of danger. This is due, in part, to the very short wheelbase of the wheelchair. To negotiate an obstacle, ask an able-bodied person for assistance.

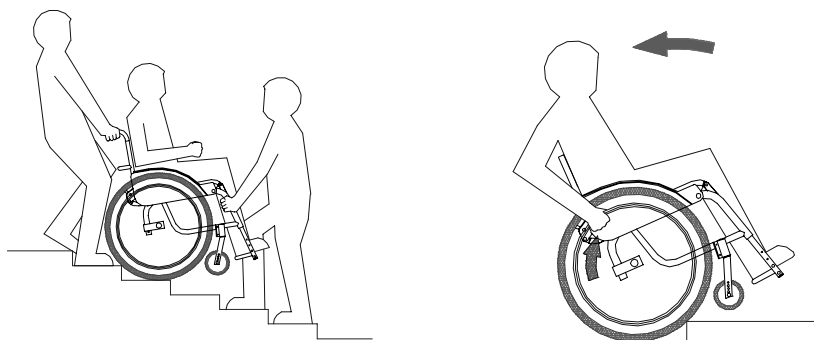
Should you wish to negotiate such an obstacle with the help of an able-bodied person, the latter should not, as a rule, attempt to lift the LEVO compact-easy completely clear of the steps. Rather he should ensure that the rear wheels stay in contact with the steps at all times.

To surmount an obstacle (e.g. driving up over the kerb from the street), first tilt the wheelchair just enough to lift the front castors up onto the edge of the obstacle. Push on until the large wheels are resting against the lip of the obstacle, then lift them up and onto it by taking hold of either the backrest or the rear axle (see diagram, left).



To descend down over an obstacle (e.g. driving down from the kerb into the street), first tilt the wheelchair up onto the rear wheels, then push on and let the wheelchair down over the edge of the obstacle on two wheels (see diagram, above right).

Should you have to be carried over three steps or more, request the assistance of at least two able-bodied persons. Those assisting should only take hold of solid parts of the frame. They should under no circumstances take hold of any moving parts, such as the rear wheels or front castors (see diagram, left).



Proceed with great caution should you wish to overcome an obstacle alone. You should be aware of the tendency of the wheelchair to tip over backwards if, as the rear wheels contact the edge of the obstacle, you attempt to surmount it by pushing down harder on the handring (see diagram, above right).

Never drive your wheelchair onto an escalator.

2.4. Braking with the pressure brakes

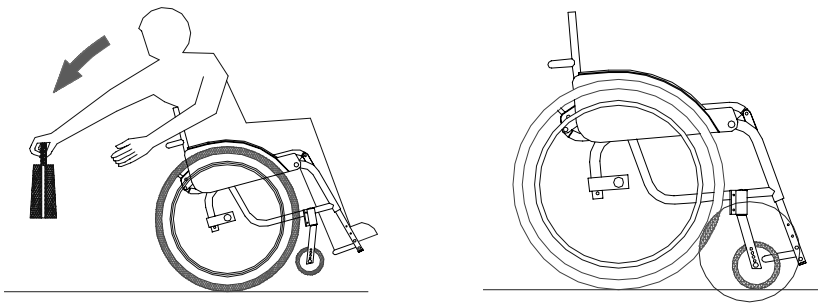
When using the wheelchair in situations where increased stability is particularly important, always remember to apply the brakes (see diagram). This applies, for example, when standing up, sliding over into your wheelchair or when you want to transfer from the wheelchair into another seat. For safety reasons, it is particularly important to note that, when transferring, even if the rear wheels are locked by the brakes, the wheelchair can easily slip sideways if it is not carrying a load.

Keep in mind that insufficient tyre pressure or heavily worn tyre tread has a detrimental effect on braking efficiency.

After driving through a puddle, keep in mind that wet tyres reduce braking efficiency as water on the surface of the tyres acts as a lubricant.

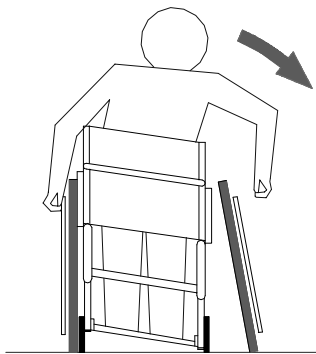
2.5. Picking up objects from the wheelchair

Always remember that picking up objects from the wheelchair will alter your centre of gravity and effect stability. This can cause the wheelchair to tip over, either backwards (see diagram, left), sideways or forwards. In the latter case, to decrease the likelihood of tipping forwards, enlarge the wheelbase by pointing the castors as if the wheelchair were moving backwards (see diagram, right). It is also advisable to draw as near as possible to the object before attempting to pick it up.



2.6. Detachable components

You will be pleased to know that your wheelchair is designed to be fully collapsible and is built with several detachable components to guarantee the lowest possible packing volume and weight. Certain movements involved in folding down the backrest are, by their very nature, potentially harmful. Please take care not to trap any clothing or parts of the body in the joints of the wheelchair as you are folding down the backrest. You should only resume your seat in the wheelchair once it has been fully unfolded and reassembled with all detachable components (e.g. rear wheels and castors) once again securely fixed in place. Always make sure beyond any doubt that the rear wheels have been securely reattached, and cannot work loose while the wheelchair is moving (see diagram).



2.7. Transport in a motor vehicle

When transporting the wheelchair in a motor vehicle make sure that the wheelchair is so secured as to prevent it sliding about or tipping over. Use should be made of licensed fastening systems which secure the wheelchair's rear axle and at the front the lower frame tubes from below.

Caution: when transporting the LEVO compact-easy in a motor vehicle, be sure to disconnect the motor lead from the battery and electronic unit.

It is not permitted to transport the wheelchair in a motor vehicle when somebody is still sitting in the wheelchair.

3. Warranty

Your LEVO product is guaranteed from the date of purchase for:

Two years covering all material and manufacturing defects of mechanical parts.

One year covering all electronic components including the motors.

Batteries are excluded from the warranty.

LEVO AG will not repair or replace free of charge any part or parts found to be defective due to abuse, misuse or lack of maintenance.

Warranty claims should be directed to:

In Switzerland: LEVO AG

Other Countries: To your local agent

Addresses and telephone numbers are given on the front page.

4. Sitting / Driving

In the LEVO compact-easy you will enjoy all the handling qualities and comfort of an active wheelchair. This section will tell you how to adapt the LEVO compact-easy to suit your particular needs. Before attempting adjustments yourself, please consult your LEVO dealer.

4.1. The rear wheels

High pressure tyres are fitted as standard on the LEVO compact-easy. The diameter of the wheels depends on the height of the seat. Thanks to the quick-release axles, the rear wheels can be easily removed and set back in place (see photo left).



4.2. Seat inclination

The standard pre-set angle of inclination is approx. 5° to the rear. By altering the height of the axle adapter it is possible to re-set this angle to anything between 2° (horizontal) and 8° to the rear (see photo above right). To ensure these alterations do not compromise safety in the standing position, the front wheel forks must be adjusted appropriately. **These adjustments should only be carried**

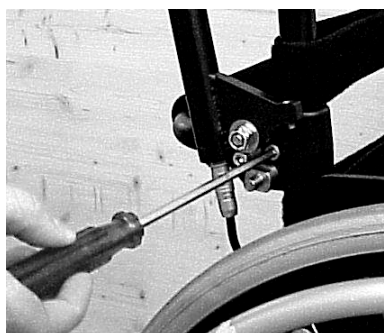
out in consultation with your LEVO dealer! For your own safety, we recommend to fit anti-tip rolls always.

4.3. Armrests

The height of the armrests is fully adjustable.

Take off the backrest upholstery. Take off the velcro straps above the armrest joints to adjust the armrests higher, or the ones below the armrest joints to adjust the armrests lower.

Loosen the cylindrical screw on either side of the armrest joints (see photo left).



Adjust the height of the armrest moving the backrest connector together with the armrest joints along the backrest tubes up or down (see picture right).

Re-tighten both cylindrical screws again.

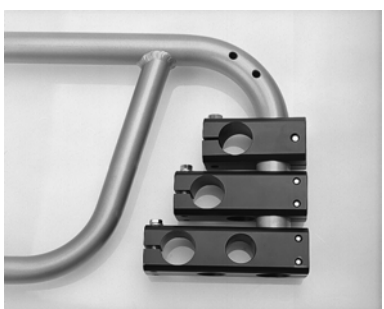
The armrest angle is also adjustable.



To raise the front end of the armrest screw the threaded pin clockwise further into the armrest joint (see photo).

To lower the front end of the armrest screw the threaded pin anti-clockwise out of the armrest joint (see photo).

4.4 Position of the rear wheels



By re-setting the axle adapter either further forward or further back, you are able to increase or decrease respectively your LEVO compact-easy's tendency to tip over (see photo). To avoid accidents (tipping over) we recommend the fitting of anti-tip rollers (see accessories). Please consult your LEVO dealer!

4.5. Position of the front castors

The correct positioning of the front castors depends on the height of the rear wheels and is crucial in ensuring a safe standing position. Please consult your LEVO dealer!

4.6. Backrest inclination

The standard pre-set angle between backrest and seat is 90°. It cannot be adjusted.

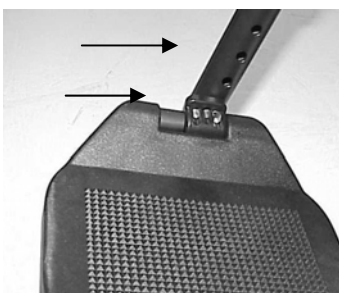
4.7. The footrest

Standard feature on the LEVO compact-easy is a two-piece footrest (see photo left). For transfers it can be opened and flipped up (see photo right).



The height of the footrest is adjustable and should be altered in line with your body proportions to guarantee the best standing position possible(see photo, arrow above). Footrest adjustment should also take account of your choice of seat cushion. Please consult your LEVO dealer!

The angle of the footrest can similarly be adjusted by plus/minus 5° (see photo, arrow below).





4.8. The calf/heel strap

The purpose of the calf/heel strap is to prevent the legs and/or feet slipping backwards. It is fitted behind the heels or higher (see photo). By making use of the velcro fastening it is possible to alter the length of the strap and thus to ensure the ideal position for the feet on the footrest. Ideal positioning of the feet is vital in ensuring a good standing position. Please consult your LEVO dealer!

4.9. The seat cushion

There is a choice of various different seat cushions, governed by your individual needs. The velcro fasteners fitted to the surface of your seat should allow you to attach the majority of seat cushions securely. The velcro fasteners prevent the cushion from slipping out of place even when you are standing up. The height of the footrest should be adjusted to take into account the height of a given seat cushion. Please consult your LEVO dealer!

4.10. The brakes (wheel locks)

The brakes lock the rear wheels fast and your LEVO compact-easy is secure against unintended movement.

By pushing both brake levers forwards as far as they will go, you should be able to lock the brakes.

The efficiency of the brakes is dependent on tyre pressure and profile, which should be checked regularly .

Caution: wet tyres or surfaces also have a detrimental effect on brake efficiency.

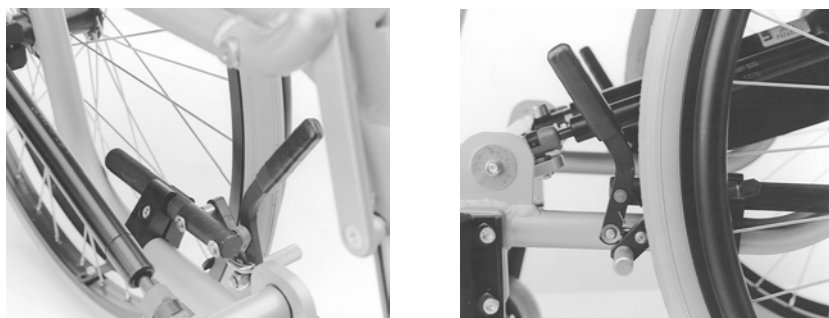
When altering the position of the wheel axle, be sure to re-adjust the brakes too.

4.11. Adjusting the brakes

The wheelchair should be unoccupied when dismantling the brakes. Secure the wheelchair in such a way as to prevent it moving when the brakes are removed.

Relax the brake as far as it will go.

Loosen the cylindrical screw on the brake mounting (see photo, left).



Adjust the position of the brake and the mounting to leave a gap of approximately 10 mm between brake shoe and tyre, then screw the cylindrical screw tight again (see photo, above right).

Test the strength of the brake.

Should you need to tighten up the brakes, set the brake shoe closer to the tyre. To relax brake tension, leave a larger gap between shoe and tyre.

5. Standing

Your LEVO compact-easy isn't just an active wheelchair. It is also a standing aid which enables you to stand up simply and quickly, right there, when and where you need to.

5.1. General tips

Standing up stresses your body in ways you may not be used to. For this reason, please consult your doctor or physical therapist before using the LEVO compact-easy to make sure you do not suffer from any conditions (e.g. strong contractures or osteoporosis) which make standing potentially harmful.

The LEVO compact-easy may only be brought into the standing position on firm, level ground (risk of tipping over).

Before standing up, apply both brakes on the LEVO compact-easy.

Please beware of parts of the wheelchair where one might conceivably trap or catch parts of the body when standing up, in the space between the side panel and the seat as well as in the pivot of the side panel. Be sure to protect yourself and accompanying persons from possible injury.

In the case of strong or sudden spasms, cramps or similar the user should only stand up under supervision of a carer.

5.2. The knee support and chest strap

The most important safety features of the LEVO compact-easy are the knee support and the chest strap. It is absolutely essential that these be correctly in place before you attempt to stand up (risk of accident).

5.2.1. The knee support

The knee support holds the knees in an extended posture and prevents you slipping out of the wheelchair while standing up.

Attach the two eyes of the knee support to the double-head screws on either side of the wheelchair (see photo left).

Centre the knee support in front of each knee using the velcro fasteners, then pull it until it is sitting firmly in place, just below (not right on) the knee cap and not too tight (see photo right).



5.2.2. The chest strap

The chest strap holds the upper body in place.

Check that the chest strap is secure on the backrest (velcro fastening).

Close the catch on the chest strap and pull it to (not too tight, see photo).



To release the chest strap, simply press the red button in the centre of the catch.

To slacken, hold the catch at a right angle to the strap and pull.

Once the knee support and chest strap are fitted correctly you are ready to stand up.

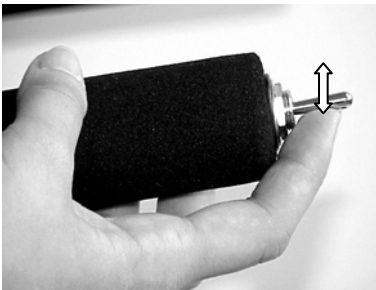
5.3. Standing up

The stand-up mechanism is powered by an electrical actuator system with further back up provided by two gas springs. The actuator motor is fed by two rechargeable batteries (see section 5.6.).

Using the control switch on the armrest you can move the stand-up mechanism either up or down.

To stand up, press the control switch upwards (see photo left). The motor engages and will drive the seat upwards so long as you keep your finger on the switch.

Option control panel: To stand up, press the left-hand button (see photo right). The motor engages and will drive the seat upwards so long as you keep your finger on the button.



The motor cuts out automatically as soon as you reach the uppermost standing position. The leg supports sit firmly on the ground and thus guarantee your stability.

5.4. Sitting down

To sit back down, press the control switch downwards. The motor engages and drives the seat downwards so long as you keep the switch depressed.

Depress the control switch until you have reached the lowest possible seated position and the motor cuts out of its own accord.

Option: control panel: To sit back down, press the right-hand button (see photo right). The motor engages and drives the seat downwards so long as you keep your finger on the button.

Press the right-hand button until you have reached the lowest possible seated position and the motor cuts out of its own accord.

5.5. The gas springs

The gas springs are specially adjusted to hold your weight in the balance. They relieve the motor of some strain involved in the lifting process.

There is a range of spring strengths to suit the body weight of different wheelchair users.

The gas springs may be adjusted by no other than a qualified technician! Please consult your LEVO dealer!

5.6. The batteries

The motor is fed by two rechargeable, maintenance-free lead batteries.

With fully loaded batteries you can stand up approx. 100 times.

A buzzer sounds to indicate when the batteries are down to 25% of their full charge capacity. On hearing the buzzer, be sure to recharge the batteries immediately.

Important: Make sure that the batteries are never completely unloaded over a longer time! This could lead to a durable damage of the batteries!

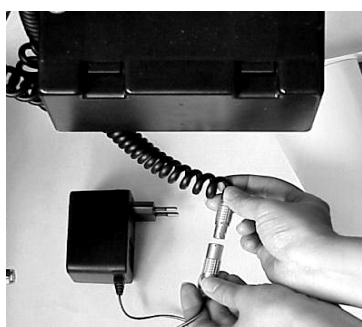
The stand-up mechanism may not be operated when the LEVO compact-easy is plugged into the mains via the charger.

However, in case of an emergency (e.g. empty batteries) it is still possible to return the LEVO compact-easy to the seated position by plugging it into the mains via the charger.

5.6.1. Recharging the batteries

To recharge the batteries, unplug the control cable from the armrest and plug the charger plug from the charger into the control cable and the charger itself into the mains (see photo).

Option control panel: To recharge the batteries, plug the charger plug from the charger into the side of the control panel and the charger itself into the mains (see photo right).



Recharging lasts approx. 6-8 hours.

The batteries should be recharged as often as possible, ideally on a daily basis.

5.7. Points of safety:

In any situation demanding particular care and attention, e.g. when in transit (in motor vehicles, aircraft, etc.) or when the wheelchair is to be left unattended in the presence of children, be sure to disconnect the control cable and/or motor leads from the battery and electronic unit. (risk of accident).

Disconnecting the control cable prevents children or other unauthorized persons tampering with the stand-up mechanism.

Disconnecting the motor leads cuts the electricity supply to the motor and prevents the stand-up mechanism being activated unintentionally.

6. Storage

6.1. Folding down the backrest

Your LEVO compact-easy is equipped with a collapsable backrest which allows you to cut down significantly on the space required to store the wheelchair away.

To fold down the backrest, first remove the two skirt guards. Slightly slide back the two skirt guards and pull them up and off.

Two quick release bolts secure the backrest, on either side on the inside of the backrest joint (see photo left).

To remove the bolts press the button in the center of the handle and pull out of the backrest joint on either side (see photo left). Collaps the backrest forward (see photo right).



6.2. The quick-release axles

The quick-release axles enable you speedily to remove and re-mount the rear wheels of your LEVO compact-easy, thus reducing significantly the volume and weight of the wheelchair.

When removing a wheel, the wheelchair must be unoccupied. The wheelchair should be supported in such a way that it neither falls over nor rolls away after removing the wheel.

Depress the release button in the centre of the wheel, then pull off or re-mount the wheel (see section 4.1., The rear wheels).

Having mounted the wheel, push and pull it several times to ensure the quick-release axle has definitely locked in.

6.3. The castors

To remove the front castor together with the front forks, depress the quick-release axle from underneath, then pull off the forks (see photo).



7. Cleaning

- In the case of normal soiling clean the wheelchair with a moist cloth and thoroughly wipe dry.
- In the case of stubborn soils use a mild detergent and warm water for cleaning.
- Never apply furniture polish, spirit or solvents to clean the frame.

8. Maintenance

Your wheelchair is maintenance-free dispensing with the need for further maintenance except for the following guidelines detailed below. Please note that the wheelchair should be serviced by your local LEVO dealer at least on an annual basis to warranty safe and reliable function.

The user or their family can easily carry out the following tasks:

- Keep the wheelchair clean, never store it when damp.
- Keep the batteries charged.
- Check that all fittings, harness, etc; are working properly.
- Check that the push handles (optional) are securely fastened.
- Check tire pressure once a week. If necessary, pump up the tires in line with manufacturer's recommendations (see Technical Data, section I).
- Check the state of the tread on the tires of rear wheels and front castors every month. If a tire is heavily or unevenly worn, it should be replaced immediately.
- Every month check that the brakes still work cleanly. Having applied the brakes, the wheels should stop turning completely. If the brakes are ineffective, they should be tightened up by your dealer.
- If any faults are found, immediately report them to your agent. He will advise you whether to continue using the wheelchair or not, and what action you should take to repair the wheelchair.

9. Disposal

- At the end of its service life the wheelchair should be returned to your LEVO dealer for proper disposal.
- Used batteries should also be returned to your LEVO dealer or to the place where you buy the new battery for proper disposal.

10. Trouble shooting

10.1. Trouble shooter - general operation

	Fault	Solution
10.1.1.	<ul style="list-style-type: none"> • Wheelchair will not travel in a straight line or doesn't sit square on the ground 	<ul style="list-style-type: none"> • Pump up or repair the tyres. See Technical Data, section F.2. and Tyre repair, section C.1.. • Have a technician check and if need be adjust the rear wheel axle mounting, front fork mounting, etc.
10.1.2.	<ul style="list-style-type: none"> • Discomfort in seated or standing position 	<ul style="list-style-type: none"> • Have a technician check and if need be adjust the rear wheel axle mounting, front fork mounting, etc.
10.1.3.	<ul style="list-style-type: none"> • Leg supports don't rest on the ground in the uppermost standing position 	<ul style="list-style-type: none"> • Caution: no guarantee of stability when standing! Imperative! Have a technician check and if need be adjust the rear wheel axle mounting, front fork mounting, etc.
10.1.4.	<ul style="list-style-type: none"> • Wheelchair tips over backwards too easily 	<ul style="list-style-type: none"> • Have a technician check and if need be adjust the rear wheel axle mounting, front fork mounting, etc. • Attach anti-tip rollers (see accessories)
10.1.5.	<ul style="list-style-type: none"> • Brakes don't brake effectively 	<ul style="list-style-type: none"> • Have a technician check and if need be adjust the brakes

10.2. Trouble shooter - the stand-up mechanism

	Fault	Solution
10.2.1.	<ul style="list-style-type: none"> • Mechanism works only very slowly 	<ul style="list-style-type: none"> • Recharge batteries • Have batteries replaced
10.2.2.	<ul style="list-style-type: none"> • Mechanism doesn't always function at the same speed, i.e. quicker going up or coming down 	<ul style="list-style-type: none"> • Check gas spring strength corresponds to user body weight. If need be, have springs replaced
10.2.3.	<ul style="list-style-type: none"> • Mechanism inoperable (neither up nor down, no perceivable motor noise) 	<ul style="list-style-type: none"> • Connect motor lead with battery and electronic unit • Connect control panel with battery and electronic unit • Recharge batteries • Have batteries replaced • Have control panel replaced • Have motor replaced • Have battery and electronic unit replaced • Have charger replaced

LEVO *compact-easy LCEV*

SERVICEMANUAL

This service manual is designed for use by your LEVO dealer and authorized service technicians.

Please carefully read these instructions before carrying out maintenance work on your wheelchair.

This service manual must be read in connection with the instruction manual.

Alterations in constructional and technical manner or to the electronic require the written authorisation of LEVO AG, otherwise no warranty or product liability will be accepted.

1. Introduction

Your LEVO *compact-easy* is maintenance-free dispensing the user with the need for further maintenance work except for charging the battery and cleaning the wheelchair on a regular basis.

Due to its complex design, the wheelchair should be checked for safety at least once a year by your LEVO dealer or authorized technician.

This service manual has been designed for use by your LEVO dealer or authorized technician. It contains all information required to carry out safety checks and repair works on your LEVO *compact-easy*. It will ensure that your wheelchair is a reliable, safe and helpful means of transport.

Always read and apply this service manual in connection with the instruction manual.

2. Accident prevention & safety

Accidents can happen. Be aware of possible dangers when carrying out tests or works on your wheelchair. You should take suitable preventive measures to ensure your own safety and that of other persons.

3. Adjustments – general instructions

Depending on the ability of the user's friends and relatives, they may carry out some of the adjustment works themselves. This manual will tell you how to proceed. However, when delivered, your wheelchair should be adjusted to your personal needs by your LEVO dealer or authorized technician.

4. Repairs – general instructions

Service and repair works on the LEVO *compact-easy* should only be carried out by a LEVO dealer or authorized technician.

- Repairs: For advice in all repairs in Switzerland contact LEVO AG if in Switzerland. For all other countries contact your local LEVO agent. Addresses are given at the front of this instruction and service manual.
- Major repairs: For all major repairs e.g. bent or damaged frame always replace complete components. Never try to repair damaged steelwork or components.
- Replacement parts: Factory replacement components should be used in all repairs, these are available from LEVO AG. To order parts see the parts list drawings at the end of this manual.

Caution: check that the LEVO *compact-easy* is not in the sitting position before carrying out any maintenance or repair work on the wheelchair's stand-up mechanism! Risk of accident! Follow the instructions given in the relevant sections of the service manual!

5. Tools & torques

The following tools are required to carry out maintenance work:

Screw size	Torque in Nm	Allen key	Cross blade crewdriver	Spanner
M4	3	2.5mm	Flat blade screwdriver	10 mm
M5	6	3 mm	Soft headed hammer	13 mm
M6	10	4 mm	Torque wrench:	17 mm
M8	25	5 mm	0 bis 50 Nm	27 mm
M10	50	6 mm		
		8 mm		

6. Important notes

- Do not reuse Nyloc nuts. Always replace with a new Nyloc nut.
- Always use thread locking compound.
- Always use recommended components and parts available from LEVO AG.
- Do not modify or repair the frame.
- LEVO AG is responsible for any repairs on gas springs, actuators and electronic parts.

7. Recommended safety checks

Please note that the following safety checks should be carried out at least on an annual basis. Have them carried out only by your LEVO dealer or an authorized technician. If a defect occurs, immediately discontinue using the wheelchair until the defect is remedied.

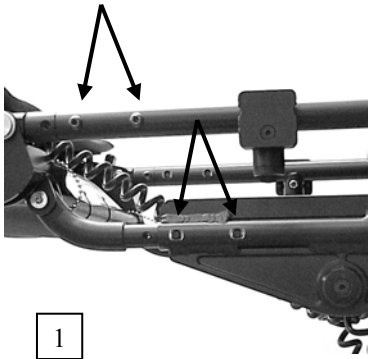
1. Fold down the backrest and reset. Having put the backrest back in place, check that the quick release bolts lock correctly. Rectify possible defects.
2. Check the frame for possible defects. Replace defective parts if in need of repair.
3. Check seat and backrest covers for possible wear and replace, if necessary.
4. Check the condition of straps, belts and catches and replace, if necessary.
5. Check that nuts, screws, joints and plastic parts are securely tightened as well as for proper condition. Rectify possible defects.
6. Check that push handles and handle covers fit tightly. Rectify possible defects.
7. Check brakes for adequate braking efficiency. Rectify possible defects.
8. Check that front castors and rear wheels run smoothly and are securely fastened. Check tire pressure and the tread of the tire of rear wheels.
9. Check all electrical cables for abrasion marks and safe operation. Rectify possible defects.
10. Check all electrical connections for signs of corrosion and safe operation. Rectify possible defects.
11. Clean batteries and connections. Check battery capacity and inform the customer of its condition. Recharge the battery before returning the wheelchair to the customer.
12. Check the stand-up mechanism and its proper operation. Rectify possible defects.

8. Adjustments

8.1. Seat depth

The seat depth is adjustable and can be adjusted exactly to the users upper leg length. This is important for a straight, comfortable and correct standing position.

Attention: the seat depth incorrectly adjusted can cause pain, pressure sores or malpositions. This adjustment may only be carried out by a LEVO dealer or a qualified specialist!



- Drive the seat up into a comfortable working position.
- Remove the seat upholstery.
- Unscrew all four hexagonal screws using a 4 mm Allen key at both inner edges of the adjusting levers as well as those at the outer edges of the seat supports and remove them (see photo 1).
- Adjust the seat to the desired depth by pulling all four rear seat support and adjusting lever tubes simultaneously out of the front tubes or pushing them inside.
- Retighten all eight hexagonal screws again.

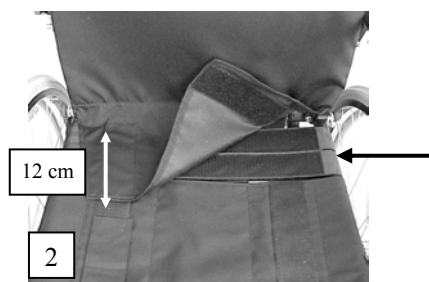
Attention: the hexagonal screws for the seat depth adjustment are safety coated with Tuflok. They can be used approx. three times until the coating has worn off. For safety reasons use new screws after a couple of adjustments!

8.2. The backrest and seat upholstery

The surface flexibility of the backrest upholstery can be adjusted using the velcro fasteners. The backrest can be tightened (for a more upright seated posture) or relaxed (for more back support).

The seat upholstery can be similarly tightened or relaxed by use of velcro fasteners. As a rule it should be as taut as possible. Depending on the height of the cushioning in question, it may be necessary to loosen upholstery surface tension to be able to sink the cushioning down between the two seat supports.

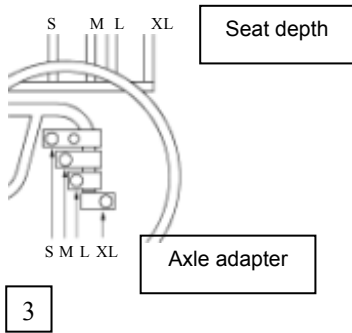
If the seat depth must be adjusted the seat upholstery depth can also be adjusted by adding or removing one or two velcro straps (see photo 2). When adjusting the seat depth make sure that the flap of the backrest upholstery covers the seat by a minimum of 12 cm (see photo 2).



The chest strap is fixed to the backrest upholstery by use of velcro fasteners. It can therefore be adjusted in height.

8.3. Rear wheel position

The axle adapter mounted as standard on your LEVO *compact-easy* depends on the seat depth.



- Seat depth S: axle adapter S mounted.
- Seat depth M: axle adapter M mounted.
- Seat depth L: axle adapter L mounted in forward direction.
- Seat depth XL: axle adapter L mounted in rearward direction. See also illustration 3.
- In order to render the chair more or less tippy it is possible to mount a different axle adapter (see chapter 9.3.). Example: Mounting the axle adapter M on a chair with seat depth L makes the chair tippier. Mounting the axle adapter L in rearward direction makes it more stable.
- For your own safety we recommend to fit anti-tip rolls always!

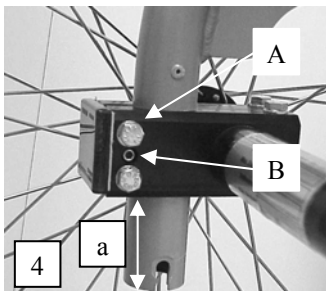
8.4. Seat inclination

The standard pre-set inclination is to the rear. By altering the height of the axle adapter it is possible to set this inclination to anything between 2° (horizontal) and 10° to the rear (see chart below). To ensure these alterations do not compromise safety in the standing position, the castor forks must be adjusted appropriately!

Standard					Maximum		Minimum	
Seat depth	Seat height	Dimension rear wheel	Distance a	Angle	Distance a	Angle	Distance a	Angle
M	48	22"	45 mm	7°	20 mm	4°	60 mm	10°
L	51	24"	45 mm	6°	20 mm	2°	60 mm	8°
L	54	24"	20 mm	3°	20 mm	3°	60 mm	9°
XL	57	26"	30 mm	5°	20 mm	3°	60 mm	10°

To adjust the seat inclination the axle adapter is adjusted in height:

Unscrew both inside hexagonal screws (A) using a 10 mm spanner and tighten the threaded pin (B) using a 3 mm Allen key (see photo 4). The latter opens up the clamps on the axle adapter.



- Adjust the axle adapter to the desired height, unscrew the threaded pin and tighten the two inner hexagonal screws again.

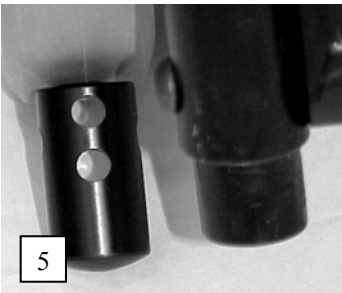
Caution: When adjusting the height of the axle adapter, be sure to adjust the castor angle and the length of the leg plug accordingly (see section 8.5.). In case of large scale adjustments it may even be necessary to replace the leg supports.

Having made the adjustments, it is absolutely vital to ensure that, when standing up, the leg supports still rest on the ground as this is crucial to standing stability (risk of accident)!

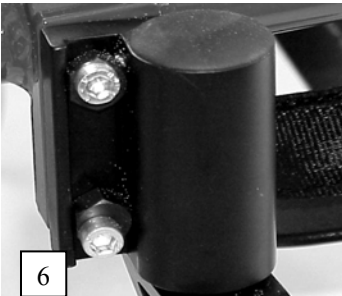
8.5. The castor axle

Having made adjustments to the rear axle, be sure to adjust the castor height and angle accordingly. When carrying out these adjustments, it is important to bear the following points in mind:

- The castor axle should stand at a right angle to the ground.
- The castor should always remain in contact with the ground.
- In the uppermost standing position, the leg supports must be resting on the ground.
- Bring the LEVO *compact-easy* into the standing position.



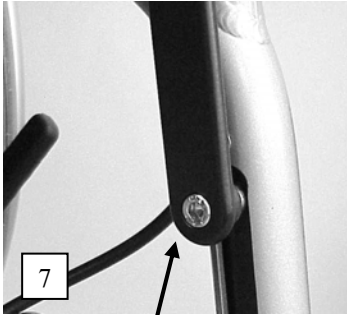
- Unscrew and remove the cylindrical screws using a 4 mm Allen key, then set the plastic leg plug either higher or lower so that the leg supports are standing on the ground. You may have to turn the leg plug by 90°. (see photo 5).



- Unscrew the two cylindrical screws using a 5 mm Allen key and turn the eccentric disc until the axle is sitting vertically (see photo 6). You may have to turn only one of the two eccentric discs. Screw the cylindrical screws tight.

8.6. The leg supports

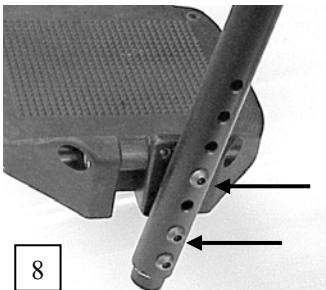
The leg supports should be replaced when the seat height of the wheelchair has been so greatly adjusted that they no longer reach the ground or reach the ground too soon in the uppermost standing position.



- Remove the rear wheels.
- Remove the footrest (see section 8.7.).
- Loosen the cylindrical screws at both inner edges of the leg supports using a 5 mm Allen key and remove them together with the spacer bushing (see photo 7). Then pull the leg supports out of the frame.
- Replace the leg supports and reassemble in reverse order.

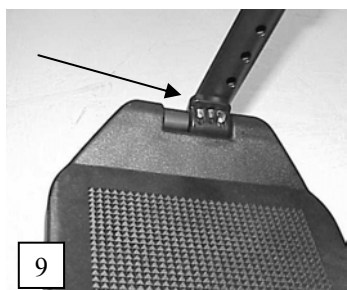
8.7. The footrest

The height of the footrest is not only important for a good sitting position but even more so for the standing position. On delivery you will find the footrest at the second lowest position, if not ordered specifically.



- There is a choice of 5 different heights for mounting the footrest.
- Unscrew the four oval head screws on both outer edges of the footrest using a 4 mm Allen key and set the footrest either higher up or lower down (see photo 8).

There are three possible footrest angle variations:



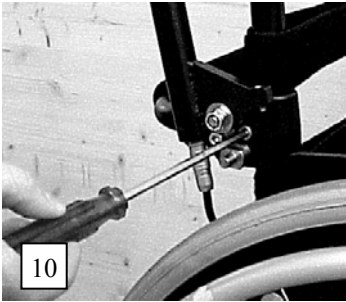
- 4° to the horizontal
- 14° to the horizontal (standard)
- 24° to the horizontal
- Unscrew the four oval head screws on both outer edges of the footrest using a 4 mm Allen key and remove the upper ones. Set the footrest at the desired angle and retighten the screws (see photo 9).

The footrest angle is set as standard at 14° to the horizontal. With the footrest in the lowest possible setting, an angle of 4° is the only practicable variation as the footrest otherwise touches the ground before the leg supports (hence no standing stability!).

With the second lowest setting the only potential variations are 4° and 14°, for the same reasons.

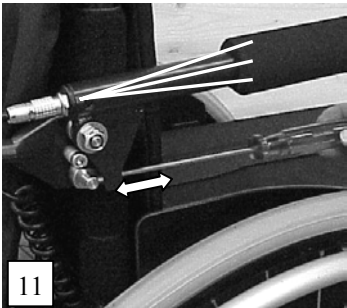
For all higher footrest settings there is a choice of all three angle variations.

8.8. The armrests



- Remove the backrest upholstery and the velcro straps thereunder.
- Unscrew the hexagonal screw on either side of the armrest holder using a 5 mm Allen key and adjust the armrest holder on both sides simultaneously to the desired height (see photo 10).
- Fix the velcro straps above and below the armrest. The height of the armrest may have to be adjusted to the velcro straps.

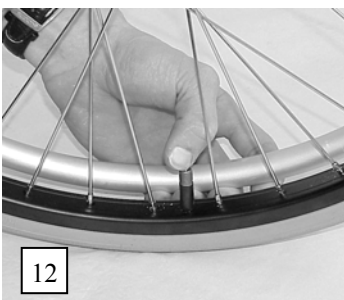
The armrest angle can also be adjusted if the armrests don't have the same angle or if they hang downwards after some time of use.



- Screw the threaded pin more towards the rear or the front using a 2 ½ mm Allen key until you reach the desired armrest angle (see photo 11).
- See also Instruction Manual chapter B.3..

9. Repairs

9.1. Replacing tire/inner tube of rear wheels

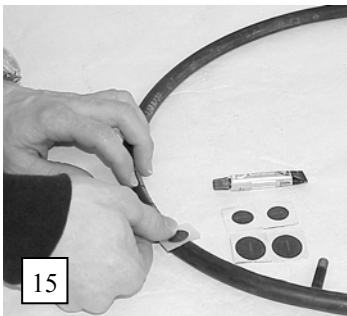
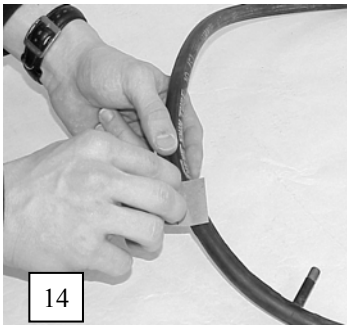


- Remove the wheel and open the valve before pressing down on it to let out the air (see photo 12).



- Using a bicycle tire wedge, ease both sides of the tire over the wheel rim and pull the inner tube out of the tire (see photo 13).
- Replace the inner tube by forcing one side of the tire back over the wheel rim, pump up the tire a little, ease the valve through into the hole and lay the inner tube along inside of the tire. Once the whole tube is snug inside the tire, force the other side of the tire back over the wheel rim (starting on the side opposite the valve).
- Check lest the inner tube be caught between tire and rim before pumping it up in line with the manufacturer's recommended tire pressure (see Technical Data, section 12).

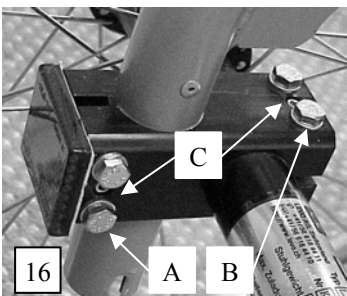
9.2. Repairing the inner tube



- Remove inner tube and tire following the steps described under 9.1.
- Repair the hole using a bicycle puncture repair kit and follow the manufacturer's instructions (clean the area around the hole and roughen the tube surface (see photo 14) before applying the vulcanized solution).
- Allow to dry, then firmly attach the rubber patch (see photo 15). Again, first allow to dry, then pump up the tube to check that the patch is airtight).
- Replace the inner tube. Once the whole tube is snug inside the tire, force the tire back over the wheel rim (starting on the side opposite the valve).
- Check lest the inner tube be caught between tire and rim before pumping it up in line with the manufacturer's recommended tire pressure (see Technical Data, section 12).

9.3. Replacing the axle adapter

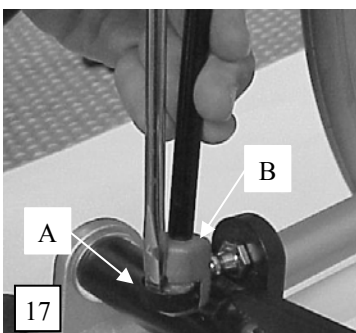
There are a variety of axle adapters available by use of which the wheel axle can be set further forward or further back to increase or decrease respectively the tendency of the wheelchair to tip over, see section 8.3..



- Loosen the inside (A) and top (B, on the right hand side, but bottom on the left) hexagonal screws using a 10 mm spanner, then tighten both threaded pins (C) using a 3 mm Allen key (see photo 16).
- Slide the axle adapter off the tubular frame and the axle itself and replace it.
- Set the new axle adapter to the desired height, loosen the two threaded pins and screw the two hexagonal screws tight.

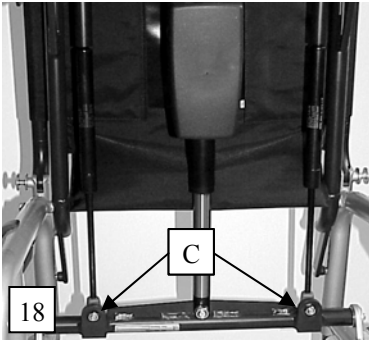
9.4. Replacing the gas springs

There are a variety of gas springs of different strength available (e.g. L-spring = 600 N).



Warning: The gas springs are pressurized and are potentially dangerous. Always fit or remove them when they are extended. NEVER try to fit or remove when they are compressed.

Lift up the spring clip (A) along the plastic ball joint (B) and lift the joint off (see photo 17). It is not necessary to remove the spring clip (A).

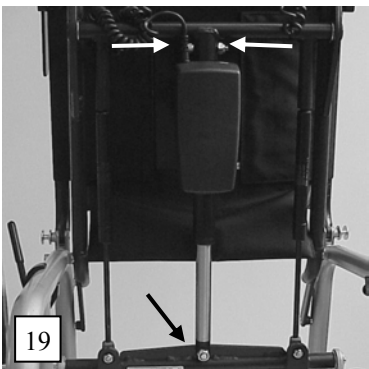


- Drive the seat approx. 4 cm down, so that the plastic ball joints (B) lay in front of the drive shaft.
- Unscrew the gas springs turning to the right out of the rear connecting rod (see photo 18).
- Mount in reverse order making sure the gas spring is fully screwed home and that the lock-nuts (C) are tight.

9.5. Replacing the actuator (lifting motor)

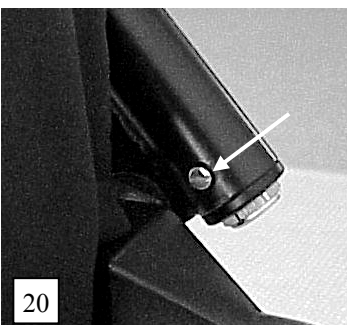
Warning: The gas springs are pressurized and are potentially dangerous. Always fit or remove the actuator when the gas springs are extended. NEVER try to fit or remove the actuator when the gas springs are compressed.

Disconnect the actuator plug from the battery-/ electronic box.

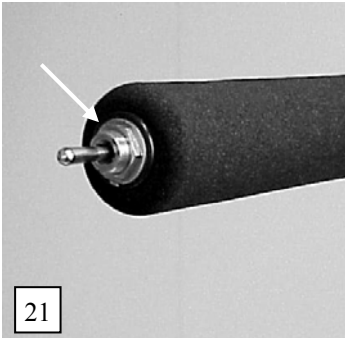


- Unscrew the lock nut at the drive shaft using a 17 mm spanner and a 8 mm Allen key - (see photo 19).
- Have a strong person pull the seat down so that the gas springs are slightly pressurized and the tension on the cylindrical screw is removed. Remove now the cylindrical screw from the drive shaft. Let the seat slowly be carried back into the fully upright position.
- Loosen the lock nuts at the rear connecting rod using a 17 mm spanner and remove the cylindrical screws using a 8 mm Allen key (see photo 19). Remove the actuator.
- Mount the rear end of the new actuator first, then drive the seat down so that the shaft of the new motor connects with the drive shaft. Reassemble in reverse order.

9.6. Replacing the control switch

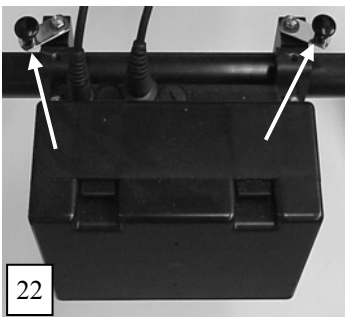


- Disconnect the battery plug from the rear end of the armrest.
- Unscrew the little flat head screw on the inner rear edge of the armrest using a flat blade screwdriver (see photo 20).



- Loosen the hexagon thin nut at the front of the control switch using a 14 mm spanner (see photo 21). Remove the thin nut and washer.
- Pull out the control switch to the rear.
- Cut-off the defective control switch by use of a cable cutter and solder on the new control switch. Be sure to take into account the different cable colors.
- Mount in reverse order.

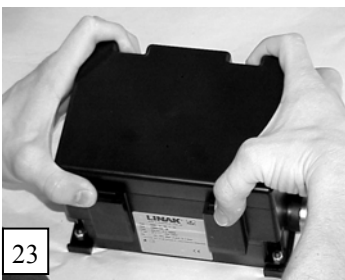
9.7. Replacing the battery-/ electronic box



- Disconnect the actuator plug and the battery plug from the battery-/electronic box.
- Push the two mushroom shaped buttons to the outside (see photo 22).
- Remove the battery-/ electronic box.
- Mount the new battery-/ electronic box in reverse order.

Attention: Of the battery-/ electronic box only the batteries and the cover can be replaced! It is not admissible to open the electronics or to remove parts thereof (no warranty)! In case of an electronic defect the complete battery-/ electronic box must be replaced!

9.8. Replacing the batteries



- Depress the four plastic tabs on the battery cover and remove the cover from the battery and electronic unit (see photo 23).
- **Caution:** depress all four tabs simultaneously, not only the two upper ones. The two lower ones may break off!
- Take out the batteries. In so doing, disconnect the pin contacts.
- Install the batteries in reverse order.

Attention: Always replace both batteries together, never just one!

Caution: When working on the batteries take care not to short-circuit them with metal tools etc.. Always take off wrist watches and jewelry. When reconnecting the batteries check that the cables are connected to the correct terminals.

Caution: Getting into contact with acid is dangerous. After contact with acid immediately rinse off spilled acid from your body with water and consult your doctor. Immediately take off all clothes covered with acid. Always clean your hands after having carried out works on batteries.

10. Testing the wheelchair

After having carried out repairs on a wheelchair, you should always check all functions for correct operation before returning the wheelchair to your customer. The wheelchair should only be returned after all defects have been rectified.

11. Cleaning

Before you return the wheelchair to your customer, make sure that the wheelchair is clean and dry:

- Remove dirt with a damp cloth and wipe dry.
- In the case of stubborn dirt use a mild detergent and warm water for cleaning.
- Never apply furniture polish, spirit or solvents to clean the wheelchair.

12. Technical Data

Measurements

Model	S-M					L-XL				
Seat width	38	40	42	45	48	38	40	42	45	48
Total width	56	58	60	63	66	56	58	60	63	66
Total length	84-86					93-104				
Total height (with backrest)	78					80				
Back upholst. height	31					31				
Seat upholst. height front	48/51					51/54				
Seat upholst. height rear	45/47					47/49				
Seat upholst. depth	29-40					43-54				
Footrest - seat	35-42 / 38-45					38-45 / 41-48				
Weight without wheels	19					20				
Total weight	25					26				

All measurements in cm and kg. Variations due to model-specific adjustments possible.

Tires:

Rear wheels: High pressure tires, 22"/24"/26"

Tire pressure (rear): 7.5 bar

Front castor: airless tires, 5"/6"

Actuator (Lifting motor): Linear drive, 24 VDC, Power ca 3000 N,
Speed max. 9 mm/sec.
Power consumption max. 5.0 A, Protection: IP 51
With low voltage acoustic alarm

Batteries: 2 maintenance-free, rechargeable batteries
24 V, 2.7 Ah

Charger: Transformer 220V - 24V

Gas springs: LCEV/S: 400 N
LCEV/M: 500 N
LCEV/L: 600 N
LCEV/XL: 700 N

Operating temperature range: +5° - +40°

Storage temperature range: -40° - +60°

Clearance: max. 6 cm

Max. height of obstacle: max. 2 cm

Max. permissible gradient/

Cross-fall: max. 3°

Max. weight

incl. body & load: max. 120 kg