



HD Powered Stair Climbing Hand Truck

Operator's Manual



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1 INTRODUCTION AND KEY FEATURES

Congratulations!

Thank you for purchasing the Magliner HD Powered Stair Climbing Hand Truck.

You have chosen a unit especially designed for carrying loads of up to 725 lbs. using the very latest stair climber technology for negotiating different types of steps and stairs safely and efficiently. The HD Powered Stair Climbing Hand Truck is safe and easy to use.

Key features:

- Two UP / DOWN switches - one on the left and one on the right of the handle unit - for perfect user comfort. Ideal for both left- and right-handed operators.
- Automatic braking system that ensures the main wheels stop reliably at the edge of each step from the moment the unit is switched on.
- Optimum protection against impact to the support wheels thanks to a lubricated mechanical clutch.
- Additional electronic protection prevents damage due to overloading.
- Climbing speeds and two operating modes (single-step mode and continuous mode) to perfectly match your operating style.
- Excellent performance on spiral staircases.

1.1. General safety guidelines

- Make sure nobody is located underneath the load.
- Always secure the load with the safety belt included.
- Always wear non-slip shoes. Some steps may be very smooth.
- Always wear shoes with steel toecaps.
- The HD Powered Stair Climbing Hand Truck may only be operated by trained personnel.
- Never reach into the unit's transport mechanism with your hands.
- Plan each journey on the stairs according to the current situation before you start.
- Always remove the battery pack before stowing the HD Powered Stair Climbing Hand Truck. Firstly so the unit cannot be switched on inadvertently during transport and secondly because the unit is 9 lbs lighter without the battery pack.

1.2 Built-in safety features (depending on model)

Fold model:

- Before each use, make sure that the quick release lever (Figure 2, page 7) on the handles is tightened properly.
It must be possible to tilt the load from the standing position without assistance. The position of the handle section in relation to the frame must not be altered.

Dolly model:

- Figure A shows the 4th wheel attachment when retracted.
- Figure B shows the 4th wheel attachment when extended. The sliding arm must be at right-angles to the brace.

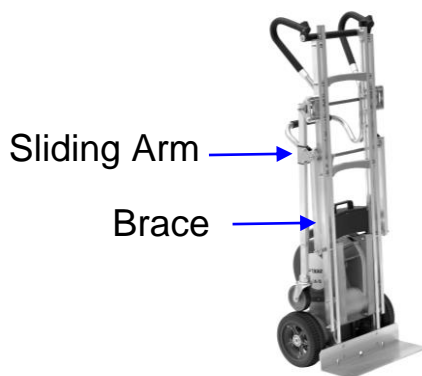


Figure A

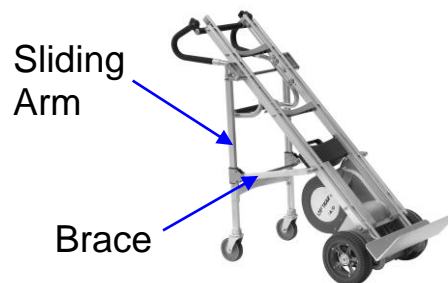


Figure B

- Each time before starting up the stair climber, make sure that the 4th wheel attachment is properly folded away (retracted, Figure D).



Figure C: Folding Away



Figure D: 4th Wheel Attachment Retracted



Important:

Do not use the 4th wheel attachment in the extended position while operating the stair climber on stairs.

1.3 Technical data

Uni - Fold - Dolly	
Load capacity	725 lbs.
Maximum climbing speed with full load	9-10 steps/min
Maximum step height	8.25 in

Model	Weight (incl. Battery pack)
HD UNI	84 lbs.
HD-Fold	86 lbs.
HD-Dolly	97 lbs.

1.4. Technical data of quick-change battery unit

Fuse:	Internal blow-out fuse (30 Amp)
Charging contact:	DC jack Ø 2.1 x 9.5 mm
Weight of battery:	9 lbs.
Capacity:	5 Ah
Voltage:	24 VDC (2 x 12 VDC – 5 Ah)
Type of battery:	Sealed lead-acid maintenance-free and approved by DOT and IATA for air freight

2. Control features

2.1. HDL360U - UNI model



Figure 1

2.2. HDL360F - Fold model



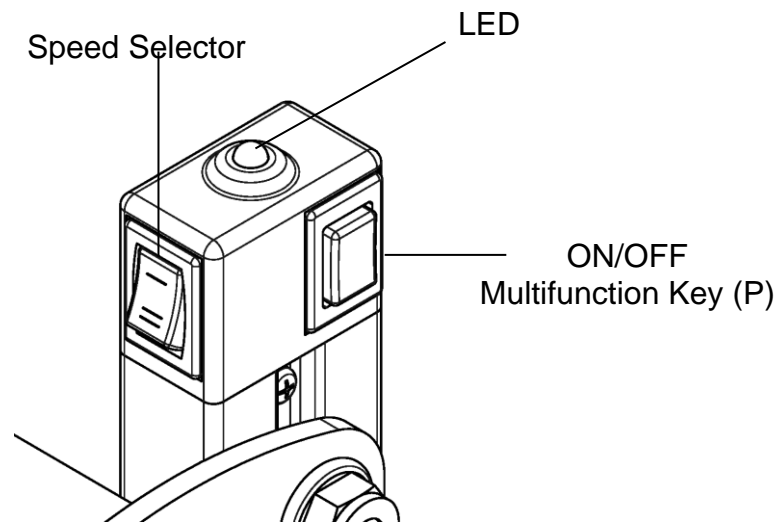
Figure 2

2.3. 4W - 4th Wheel Attachment (Option for Uni and Fold models)



Figure 3

2.4. Control unit



(Figure 4)

2.4.1. ON/OFF and Single-Step/Continuous mode multi-function switch (P)

- The HD Powered Stair Climbing Hand Truck is ready for operation after the battery pack has been switched on (ON/OFF switch on power pack) and you briefly press button P. This is confirmed by the green LED display on the control unit going on. The unit is in Single-Step mode.
- If you briefly press button "P" again the unit switches to Continuous mode. This is signalled by the LED flashing green.
- Pressing the button for longer than 3 seconds switches the unit off.

2.4.2. LED display

- Green light on: HD Powered Stair Climbing Hand Truck is in Single-Step mode. Pressing one of the UP/DOWN switches (see Figure 5, page 11) starts the unit moving. The unit switches off automatically after one climbing cycle has been completed (raising or lowering the HD Powered Stair Climbing Hand Truck one step).

IMPORTANT: Keep pressing the UP/DOWN switch in Single-Step mode until the HD Stair Climbing Hand Truck reaches the next step and stops automatically. Then release the switch. Pressing the switch again starts the unit on its next movement cycle. If the switch is released by mistake during a cycle, simply press the UP/DOWN button again to continue the movement. The unit continues operating until it reaches the end of the cycle and stops automatically. Releasing the button and pressing it again starts the next climbing cycle.

- **Flashing green:** The unit is in Continuous mode. For users with plenty of practice. The unit starts climbing when the UP/DOWN switch is pressed and doesn't stop until the UP/DOWN switch is released.
- **Flashing red:** The unit is overloaded. (The LED flashes for approx. 3 seconds and then goes out – see also Operation section (4.2.1))
- **Alternating red and green:** the battery pack is running low and urgently needs to be recharged. The stair climber could manage another flight of stairs, but it is recommended that you move down stairs and either change the battery pack or recharge it with the Magliner Powered Stair Climber Battery charger supplied. In addition, an integrated beeper provides an acoustic signal to indicate that the battery charge is low. The beep frequency increases as the battery level depletes.

2.4.3. Speed switch

Use the speed switch to select higher or lower climbing speeds.
(Figure 4, page 9)

The lower speed or single-step mode is recommended for beginners, heavy loads and difficult situations.

2.5. UP/DOWN switch on handlebar

With an UP/DOWN switch (Q) located both on the left and right of the handlebar (Figure 5), this unit is ideal for both left- and right-handed operators.

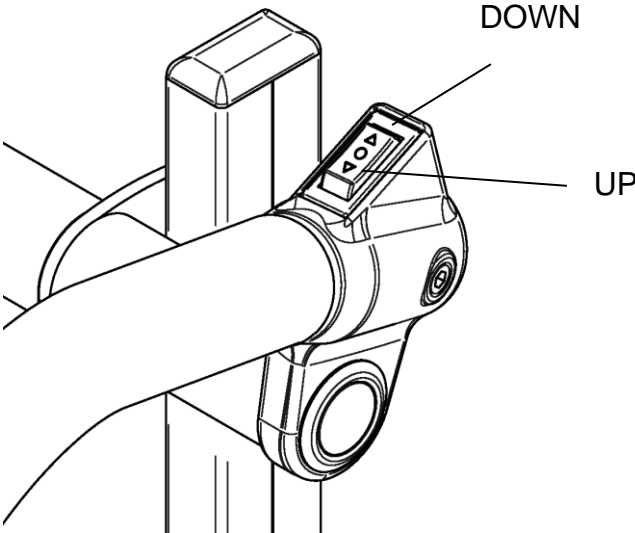
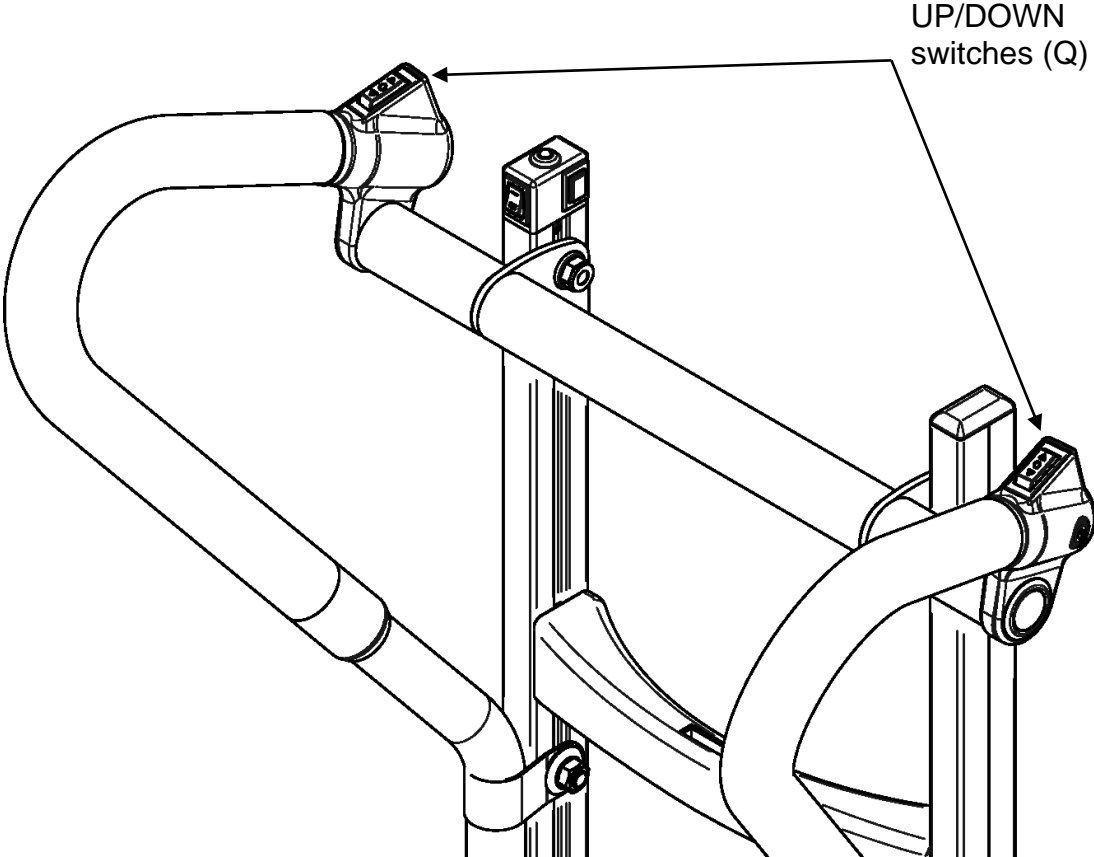


Figure 5 (UP/DOWN switch)

2.6. Main switch

The main switch is located on the quick-change battery pack. The power supply to the unit can be switched off safely using the main switch (Figure E).

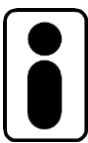


Figure E

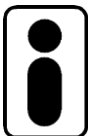
2.7. Switching off

The unit can be switched off in the following ways:

- Removing the quick-change battery pack (see Section 3).
- Using the main switch on the quick-change battery pack (see Figure E, 2.6).
- Pressing multi-function switch P for longer than 3 seconds.
- Leaving the unit for a period of time: The HD Powered Stair Climbing Hand Truck switches off automatically after 10 minutes.



Using the main switch or removing the battery pack provides a higher level of safety than switching off using switch P or leaving the unit to switch off automatically because switch P could easily be actuated inadvertently, causing the machine to switch on.

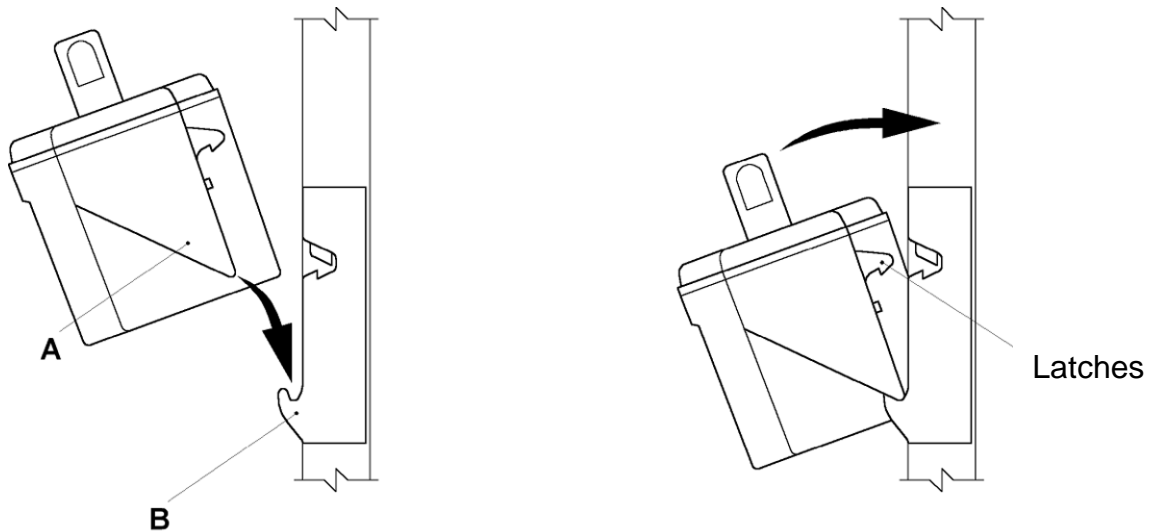


Always switch off the main switch on the battery pack before stowing the unit away.

3. Fitting and removing quick-change battery pack

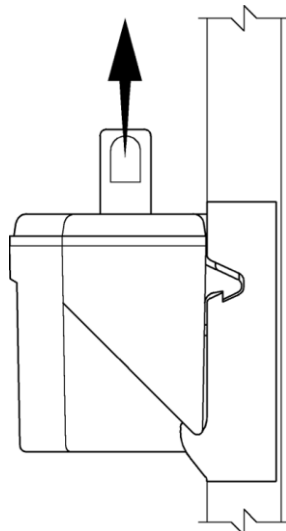
3.1. Fitting battery pack

- First position Corner A in Hook B.
- Gently press battery pack forwards swiftly. The battery pack clicks into place.
- Set switch on battery pack to ON and your HD Powered Stair Climbing Hand Truck is ready for operation.



3.2. Removing battery pack

Lift the battery pack sharply upwards. It then disengages automatically.



4. Operation

4.1. Climbing UP stairs

Fit battery pack, switch main switch to ON, press briefly on multi-function switch P until the LED display goes permanently green (Single-Step mode, refer to Section 2.4.1.), or flashes green (Continuous mode).

The HD Powered Stair Climbing Hand Truck is now ready for operation.

Pressing one of the UP/DOWN switches Q (Figure 5, page 11, left and right of handlebar, arrow upwards points towards operator) starts moving the lift arm with the support wheels and lifts the unit onto the next step. The cycle is repeated until the switch is released (Continuous mode, LED flashes green). In Single-Step mode the unit stops when the main wheels reach the next step.



Important:

As soon as the main wheels have "landed" on the next step, always draw the unit away from the edge of the step and contacts the step above.

4.2. Climbing DOWN stairs

Fit battery pack, switch main switch to ON, press briefly on multi-function switch P until the LED display goes permanently green (Single-Step mode, refer to section 2.4.1.), or flashes green (Continuous mode).

The HD Powered Stair Climbing Hand Truck is now ready for operation.

Pressing one of the UP/DOWN switches Q (Figure 5, page 11, left and right of handlebar, arrow downwards points away from operator) starts moving the lift arm with the support wheels and lowers the unit onto the next step. The cycle is repeated until the switch is released (Continuous mode, LED flashes green). In Single-Step mode the unit stops when the main wheels reach the next step.

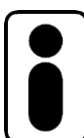


Important:

As soon as the main wheels have landed on the step, always push the HD Powered Stair Climbing Hand Truck to the edge of the next step. The brake wheels stop the unit reliably on the edge of the step.

4.2.1. Overload

If the unit is overloaded the drive motor stops and the LED flashes red for 3 seconds before going out. The unit has to be switched on again.



If the power of the battery pack is running out then the overload signal will be displayed even on loads below the specified capacity.

4.2.2. The HD Powered Stair Climbing Hand Truck is not a rubber mat!

Never throw a load onto the HD Powered Stair Climbing Hand Truck. We recommend that this kind of loading method is avoided because it causes higher wear and may damage the unit's control unit as a result of vibrations.

4.2.3. Do not ride over curbs at an angle

Always ride over curbs or similar edges with both wheels contacting the edge at the same time. This will prevent damage to the drive unit.

4.2.4. Operation on spiral staircases

Please observe the following points when operating the stair climbing hand truck on spiral staircases:

The HD Powered Stair Climbing Hand Truck moves inwards when climbing up, so:
For climbing UP start on the outside of the staircase.

The HD Powered Stair Climbing Hand Truck moves outwards when going down, so:
For climbing DOWN start on the inside.

If you start moving too close to the banisters/wall then shift the unit to the side by reversing (on a landing or wider step if possible) and start again at a tighter angle.

5. How the HD Powered Stair Climbing Hand Truck edge braking system works:

5.1. Enabling the system:

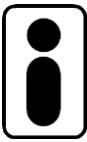
The edge braking system is enabled automatically as soon as the HD Powered Stair Climbing Hand Truck is switched on using the "ON/OFF" switch (Figure 4, page 9). This ensures that the brake blocks inside the rims of the main wheels block the main wheels as soon as the unit approaches the edge of a step. The brakes are released mechanically as soon as the main wheels contact the next step. The brake system remains active and engages automatically when the main wheels approach the edge of the next step.



2. Deactivating and blocking the edge braking system:

The edge braking system is blocked if the HD Powered Stair Climbing Hand Truck is switched off using the "ON/OFF" switch (Figure 4, page 9 - LED is no longer green or flashing) and the unit is parked on its toe plate.

The HD Powered Stair Climbing Hand truck then no longer stops automatically at the edge of a step.



NOTE:

It is a good idea to deactivate the brake system on uneven ground because bumps or dips in the ground would otherwise cause the main wheels to be stopped if one of both of the edge brakes were activated.



IMPORTANT:

Make sure that the system is switched on again before starting each movement downwards to the next step. This is indicated by the LED changing to green or flashing green (see section 2.4.1. for operating modes). Only then is the edge braking system enabled.

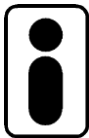
5.3. Automatic switch-off after extended period of no operation

Please note that the HD Powered Stair Climbing Hand Truck switches off automatically to save the battery pack after approx. 10 min without the UP/DOWN switch being pressed). The edge braking system is also deactivated (providing the unit is parked on the toe plate).



IMPORTANT:

Always check the status of the LED when starting moving again after a pause (LED **must** be green or flashing green). Only then is the edge braking system engaged.



NOTE:

Do I have to make sure the edge braking system is activated on every step?
No, you only have to approach the edge of the step.

Hand width rule: It is enough to position the HD Powered Stair Climbing Hand Truck roughly one hand width away from the edge of the step (distance between point main wheels contact step and edge of step, i.e. approx. 2.75" – 3.15"). Now you can start the next lifting cycle and the unit will land safely on the next step.

5.4 How to test the step edge braking system

Correct functioning of the step edge braking system is essential for safe operation of the stair climbing system.

It is therefore essential that you check the function of the step edge braking system each time before you use the stair climbing system.

1) Test the step edge braking system (without load):



- a) Tilt the HD Powered Stair Climbing Hand Truck back until it is at an angle of approx. 45°. (Photo 1)
- b) Switch on the stair climbing system by pressing the main switch.
- c) When you push the unit forward, the step edge braking system should engage to brake/stop the main wheels of the stair climbing system.
- d) If the brakes do not engage uniformly (uneven braking on left and right wheel), do not use the HD Powered Stair Climbing Hand Truck for climbing stairs until it has been checked by an authorised Sano technician.

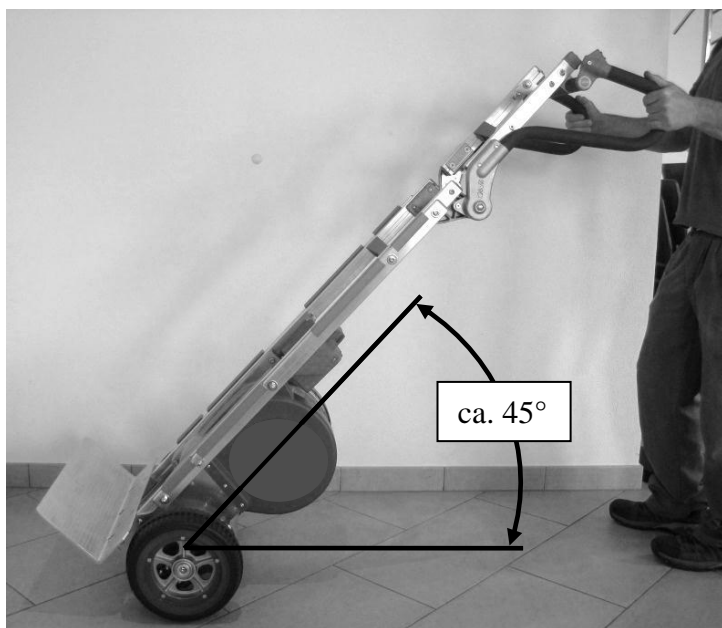


Photo 1

6. Charging the quick-change battery pack

The lead gel cells inside the battery pack are maintenance-free, gas-tight and rechargeable. Their service life depends largely on the charging/discharging cycles. For example, it is possible to partially discharge lead batteries 1000 times, drawing more than 200 times the full capacity of the battery, providing the battery is never fully discharged.

- For this reason, avoid total discharge. Recharge as often as possible.
- Lead-acid batteries are subjected to 'self-discharge'. For this reason, the snap-on battery should be recharged after a maximum of three weeks of disuse.
- The charger automatically switches to trickle charging so overcharging is not possible.
- Do not leave the battery discharged or half discharged. Always charge immediately after use.
- If the batteries should become damaged it is possible to have them replaced in any reputable mechanical workshop. The old lead batteries are fully recyclable and are not to be disposed of.
- The optimum temperature for charging is 68 – 77 °F (20 – 25 °C). Too cold or too warm has a negative effect on the capacity. If the battery has not been fully charged or tends to lose charge too rapidly, this will reduce the speed and capacity of the Powered Stair Climber and it may go into the overload mode as a result, even with light loads



If the battery pack is not fully charged, or it loses its charge suddenly, not only will the speed of the HD Powered Stair Climbing Hand Truck be slower, but its capacity is reduced as well. This means that overload may be displayed even with a relatively light load. See Operation [4.2.1]



IMPORTANT BATTERY CHARGING NOTE: The battery must be charged within 3 months of storage to prevent self-discharge. If the battery is not charged within 3 months of storage, permanent loss of capacity may occur. If the powered product will be used regularly, it is recommended that the unit be kept on a charger whenever it is not in use; the batteries will not overcharge. If the powered product is going to be stored and/or not in regular use, the batteries must go through a full charge cycle every 2 weeks to ensure battery life and duty cycle.

6.1 Charging

The AC charger is included with each new Powered Stair Climber purchase. Prior to every use, check your battery charger for any damaged wires.

AC Charger with U.S. Blade (part number 045141K)

The charger unit supplied is extremely powerful. An LED display clearly indicates the charge status. The charge display shows whether the battery is fully charged or not. It is advised to make sure that the battery is fully charged before using the Powered Stair Climber.

The charge status is displayed as follows by an LED:

- If the LED is constantly red, the battery is charging.
- If the LED is constantly green, the battery is fully charged. The charger unit can remain connected after the battery is fully charged (green light) without causing any damage to the battery. The charger consumes minimal power in this standby mode (when the battery is fully charged), keeping the battery fully charged and extending its service life. All of these factors are achieved by an electronic circuit that controls and regulates the charging current sent from the charger unit to the battery being charged.

6.2 Technical Data

Powered Stair Climber Battery Charger	
Main voltage (50/60 Hz, 0.7A)	100-240 V AC
Nominal rating (input)	24 W
Charging voltage	24 V DC
Theoretical charging current	1.0 A
Protection class	IPX4
Conformity marks	UL, cUL, CE

6.3 Safety regulations

Please take care of the following points:

- Protect against moisture.
- Only charge in a well-ventilated space.
- Do not pull the plug out of the socket by its cord.
- Never use the charger unit if it has a damaged cable or plug; replace damaged chargers immediately.

Use the charger only for the intended purpose.

- The charger unit is designed exclusively for charging **lead acid batteries containing liquid, gel-type and fabric-type electrolyte**.
- It is not permissible to charge NiCd or NiMH batteries or primary cells.

CE key-mark

The charger fulfils the criteria laid down in the low-voltage and electromagnetic compatibility directive and is therefore CE-marked.

7. Accessories and options

A full range of accessories and options is available. The list includes various sizes of toe plate, add-on toe plates with castors, safety belts, vehicle chargers for charging in transit, and much more. Please ask your dealer.

8. Warranty and product liability

8.1. Warranty

The warranty period for the HD Powered Stair Climbing Hand Truck is 12 months (6 months for battery packs) from the date of purchase and covers material flaws and manufacturing errors.

The warranty does not include:

- Wear parts
- Damage that occurs from using the unit for a purpose it was not intended
- Forcible damage
- Unauthorized modifications to the unit or accessories

8.2. Liability

SANO Transportgeräte GmbH as manufacturer and Magline, Inc. as distributor are not responsible for the safety of the HD Powered Stair Climbing Hand Truck if:

- The unit is used for a purpose for which it is not intended
- The unit is not maintained regularly (once a year) by an authorized workshop
- The instructions in this manual are not complied with
- Non-Sano components are fitted or linked to the HD Powered Stair Climbing Hand Truck
- Original components are removed

9. CE declaration of conformity

SANO Transportgeraete GmbH declares that the LIFTKAR HD stairclimber fully complies with the relevant health and safety specifications laid down in the EU directive for machines 2006/42/EG, appendix IIA. Any changes made to the product without our prior consent render this declaration void.



Jochum Bierma (Ing.), Managing Director

A handwritten signature in black ink, reading 'J Bierma', written over a horizontal dashed line.