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**LIFTKAR**  
Powered Stair Climbing Hand Truck

## Operator's Manual



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## **1 Installation of Nose**

To install the nose, place the Liftkar on its back-side. Locate the three bolts included in packaging and secure the nose to the fixed nose plate mounting bracket with a T-40 Torx wrench. The longer bolt goes in the middle.

## **2 Introduction**

Weighing only 35 pounds, the Liftkar efficiently climbs at a rate of up to 48 steps per minute. With capacities up to 375 pounds, we promise the Liftkar will be faster than you are! The heavy duty battery handles 220 steps at full load and over 300 steps with a half load on a single charge. The Liftkar is able to go up and down stairs depending on your delivery demands. Many options are available to customize your Liftkar to meet your specific needs. Several noses, various handles, and puncture proof tires are a few of the options offered.

The Liftkar has a mechanical clutch that prevents damage if the unit is used to descend stairs with the controls in the ascend position. The Liftkar features electronic overload protection preventing operation with a load over the weight limit. The Liftkar has a slow and fast ascending speed and one descending speed.

### **2.1 General Safety Instructions**

- Always make sure no one is beneath the Liftkar on the stairs
- Always secure the load with the appropriate accessories
- Always wear skid-proof, steel-toed shoes
- Never reach anything into the lifting mechanism when the battery is inserted
- Always remove the battery when unit is not in use, during transit, and prior to any maintenance procedures to prevent accidental operation.
- Always use a Magliner Liftkar Battery Charger to charge your Liftkar battery

### **2.2 Before Using Your Liftkar**

- Read the entire Operator's Manual
- Fully charge battery
- Install nose following directions above
- Familiarize yourself with Liftkar controls and buttons
- Install fully charged battery
- Practice using your Liftkar on a stairway with no load at first, then with approximately 60 pounds

## 2.3 Specifications of Liftkar Models

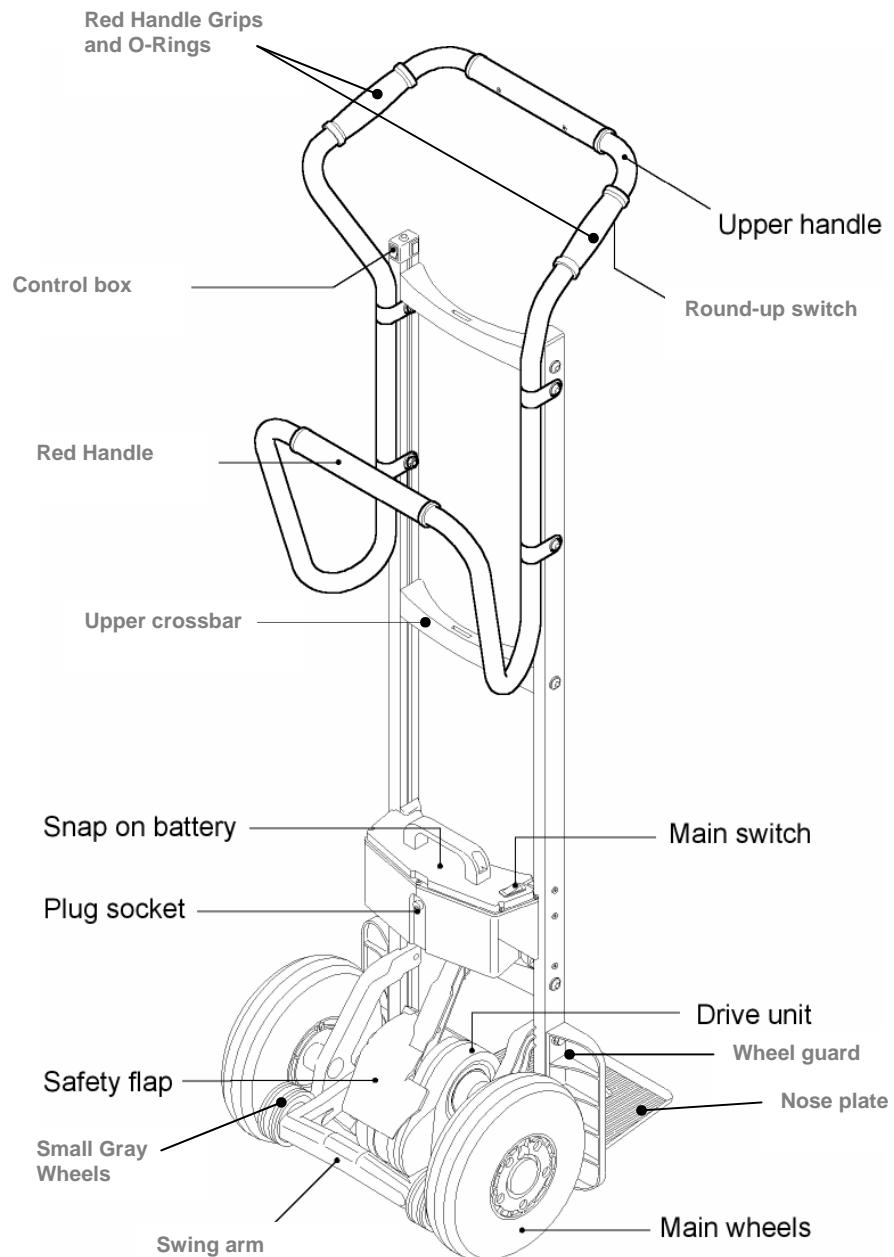
<b>Specifications</b>	<b>170 Ergo</b>	<b>140 Ergo</b>	<b>140 Uni</b>	<b>110 Fold</b>
	<b>140 Ergo BW</b>			
Capacity	375 lbs.	300 lbs.	300 lbs.	240 lbs.
Maximum speed (steps/minute)	29	35	35	48
Weight without battery	35 lbs.	35 lbs.	35 lbs.	35 lbs.
Maximum step height	8"	8"	8"	8"
Overall height	62"	62"	58"	38 1/2 " folded 60" unfolded
Width	19 "	19 "	19 "	19 "
Depth	18" to 24" Depends on nose	18" to 24" Depends on nose	18" to 24" Depends on nose	18" to 24" Folded

## 2.4 Specifications of Liftkar Battery

<b>Liftkar Battery</b>	
Fuse	Internal blowout fuse (30 amps)
Plug Socket for charger	DC Jack 2.1 x 9.5
Weight	9 Pounds
Capacity	5 Ah
Voltage	24 VDC (2 x 12 VDC – 5 Ah)
Battery Cells	Sealed lead-acid maintenance-free and approved for air travel by DOT and IATA

### 3 Controls

#### 3.1 Model



#### 3.2 Safety Flap

It may be necessary to use your foot to assist in tilting back your loaded Liftkar. To do this, use the swing arm, a main wheel, or the lower portion of the drive unit. The safety flap prevents your foot from getting jammed under the swing arm by automatically ceasing all Liftkar operation when depressed. To resume use if this occurs, release safety flap and press the round up switch.



## Caution !

Only turn main battery switch on after tilting the load.

### 3.3 Main Switch

The main switch is located on the battery cover and is used to turn the power supply on and off (see section 3.1 Model).

Power can be shut off by doing one of the following:

- Turning the main switch on the battery unit
- Removing the battery
- Pressing the ascend / descend button for 3 seconds or longer
- Automatically after 10 minutes of non-use

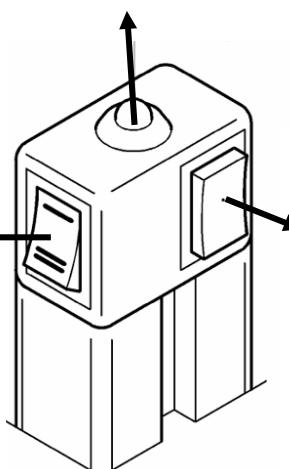
### 3.4 Control Box

#### Indicator Light

- Constant green means the Liftkar is in ascend mode and the round up switch in the handle bar is active. The lifting mechanism operates when the round up switch is depressed and stops when released.
- Flashing green means the Liftkar is in descend mode and the round up switch is inactive.
- Constant red means the Liftkar is in descend mode and the support wheels move quickly to the descend position.
- Flashing red means the Liftkar is overloaded and the indicator light will flash for 3 seconds and shut off.

#### Speed Switch

- When in ascend mode, use the speed switch to select high (2 lines) or low (1 line) speed.
- Low speed is advisable for training, heavy loads, and awkward locations.
- In descend mode the speed is permanently set (see section 4 Operation).



#### Ascend / Descend Button

- Briefly press the button to switch the Liftkar to ascend mode or descend mode.
- The Liftkar will switch off if the button is pressed for more than 3 seconds.

### 3.5 Round up Switch

The round up switch (see page 5) is active only in the ascend mode and turns the lifting mechanism on and off. The swing arm assembly will begin to rotate when the round up switch is depressed.

## 4 Battery



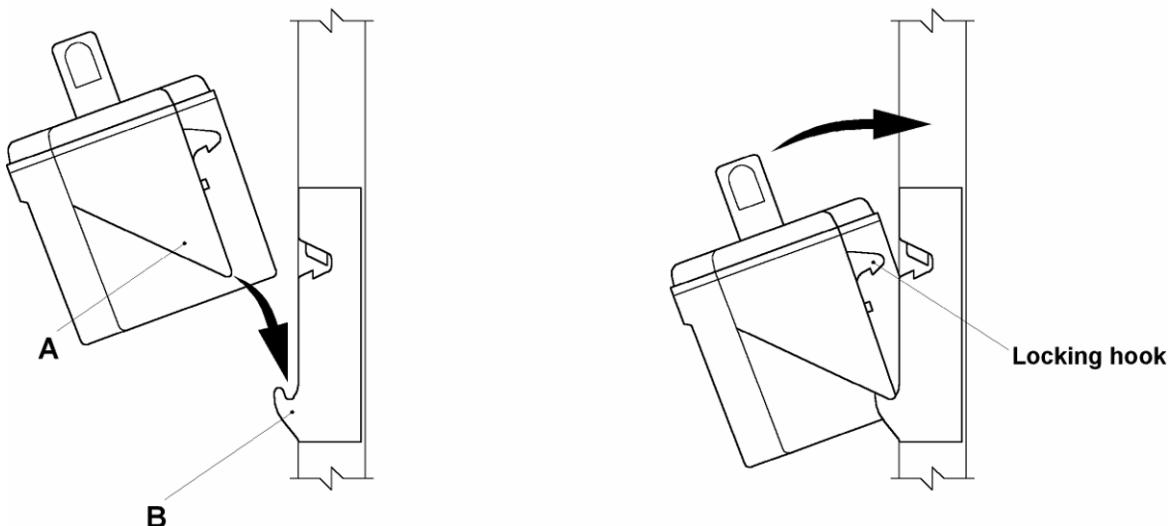
### Caution !

Always remove the battery when Liftkar is not in use and when performing any maintenance procedures.

Improper installation and removal of battery will cause premature wear of battery case and cause battery to fall out during use.

### 4.1 Installing the Battery

- (1) Locate corner "A" on both sides of battery and slide into hook "B" on the inner part of the frame
- (2) Snap battery forward to engage locking hooks



### 4.2 Removing the Battery

Pull battery upward to unlock. Battery must be lifted vertically to disengage locking hook. Failure to lift vertically will wear locking clips and will lead to battery falling out during operation. Do not hinge back. Lift straight up to clear the locking hooks.

## 5 Charging the Battery

The battery cells within the battery housing are maintenance-free, sealed, and rechargeable. Their durability largely depends on the charge and discharge cycles. It is possible to extract far more than 1,000 partial discharges from lead-acid batteries if total discharge is avoided.

- Always charge battery immediately after use
- Fully charge battery before first use
- Always keep battery as fully charged as possible and avoid total discharge

- Lead-acid batteries will self-discharge when not used
- The battery automatically has a 4.5 hour cut-out time, so overcharging is impossible
- The optimum temperature for charging the battery is 65°–75° Fahrenheit (18° to 24° Celsius). Temperatures outside this range may reduce battery 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 Liftkar and it may go into the overload mode as a result, even with light loads



### **Caution !**

Do not leave the battery completely discharged or half charged. Keep fully charged at all times

## **5.1 Battery Chargers**

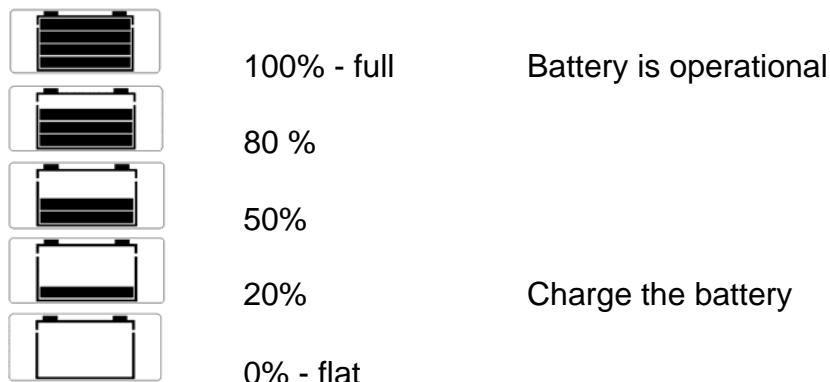
There are two optional DC chargers and one AC charger available from Magline for your Liftkar. The AC charger is included with each new Liftkar purchase. Prior to every use, check your battery charger for any damaged wires.

### **Battery Holder with AC Charger (part number 930602)**

This charger comes standard with every Liftkar purchase.

High performance is achieved by 2-step automatic and digital control engineering. This allows for quick charging in the first step and compensation / trickle charging in the second step.

To test the battery, connect the battery charger to the battery (without plugging into the wall outlet). After approximately 9 seconds the test result will display by progress bars:



To charge the battery with this type of charger:

1. Connect the charging unit to the battery
2. Turn battery on by the main switch on the battery
3. Plug the charging unit into the AC type wall outlet
4. The charging operation begins

## Compensation / Trickle Charging

Once the battery is fully charged, the charging unit switches over to compensation/trickle charge. On the display, the battery symbol is shown with 4 bars and remains solid.

If charging does not begin, there are two possible reasons:



Display:  and  symbols blink alternately indicating **polarity reversal**. Correct polarity by ensuring the battery wire (part number 004126) is plugged into a positive and a negative socket on each battery cell. This wire should not be plugged into two negative sockets. Also, ensure the other wire (part number 004129) is plugged into a negative and positive socket. For additional help, see Battery schematic in the back of your Maintenance Manual.



Display:  and  symbols blink alternately indicating a **break in connection** to battery. Check charging clips, cables, contacts, battery pole terminals etc.

## Optional DC Battery Charger less mounting plate (part number 930600)

This type of charger is optional and enables charging the battery in your vehicle while leaving the battery conveniently inserted in your Liftkar. The green light by itself indicates the power is on. The other three lights indicate the level of charge:

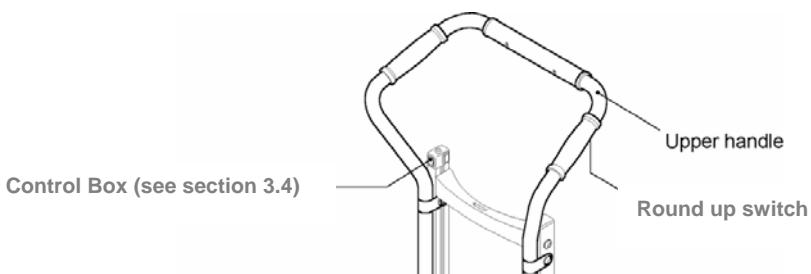
- Green- battery is fully charged, but is still being trickle charged to compensate for the internal loss of capacity when battery is not in use.
- Yellow- battery is 70-80% charged and is trickle charging.
- Red- battery is discharged and is charging fast.

## Optional DC Battery Charger with mounting plate (part number 930114)

This type of charger is optional. To charge, the battery must be removed from the Liftkar and properly positioned on the mounting plate. The green light by itself indicates the power is on. The other three lights indicate the level of charge:

- Green- battery is fully charged, but is still being trickle charged to compensate for the internal loss of capacity when battery is not in use.
- Yellow- battery is 70-80% charged and is trickle charging
- Red- battery is discharged and is charging fast

## 6 Operation



## 6.1 Descending Stairs

Press ascend / descend button briefly until the indicator light shines green continuously (see section 3.4 Control Box). The Liftkar is now in the ascend mode. Select high or low speed.

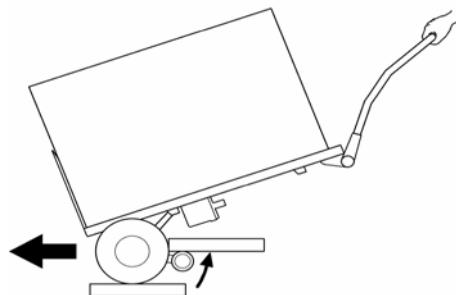
Pressing the round up switch in the upper handle operates the support wheels and will lift the Liftkar over the step continuing until the button is released.

As the main wheels rest on the stair, immediately pull the Liftkar back to touch the rise of the next step up.

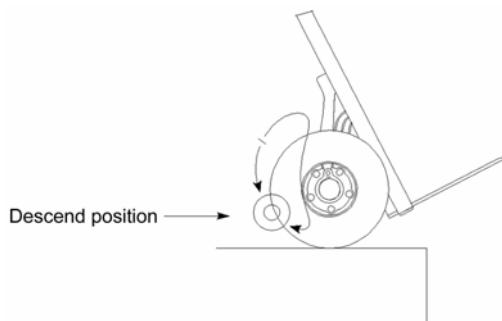


### Caution !

Holding the Liftkar too flat on stairs with open risers can result in partially trapping the support wheels under the stair. This may cause excessive pressure on the drive unit and cause unit to go into overload mode and shut down. To resume use, press the ascend / descend button to reset.



Press ascend / descend button briefly again until the indicator light flashes green. The Liftkar is now in the descend mode and the support wheels will move to the descend position automatically. The round up switch is now non-functional.



With the support wheels in the descend position, the Liftkar can be rolled over the step and the support wheels will lower the Liftkar onto the next step down. When the main wheels land on the lower step, the support wheels automatically rotate to the descend position for the descent onto the next step, all within approximately half a second.

During the descent, the indicator light changes to constant red. After reaching the descend position, the indicator light changes back to flashing green.



### Caution !

As soon as the Liftkar rolls off the step, be sure the main wheels are kept against the rise until the support wheels reach the descend position.

Just before the swing arm reaches the descending position, the support wheels reach the upper edge of the stair and lift the Liftkar approximately half an inch.

In the case of closed risers with low steps the support wheels may touch the stair riser and the Liftkar could move approximately 3 to 4 inches forward. This is normal as the Liftkar prepares to advance to the next step.

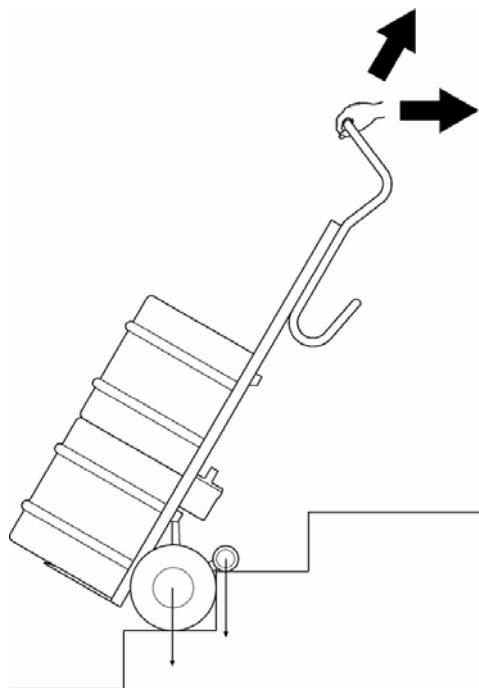
It is unnecessary to press the round up switch to descend the stairs. The support wheels operate automatically at a set speed.

## 6.2 Important Operator Information

When ascending, the balance of the load changes as soon as the support wheels start lifting the load.

Care should be taken at the point where the support wheels take the load during ascent. There is a forward movement of the Liftkar. This is easily compensated by tilting the handle backwards.

To eliminate any major forward movements, lower the Liftkar backwards about 15° before the support wheels begin to lift.



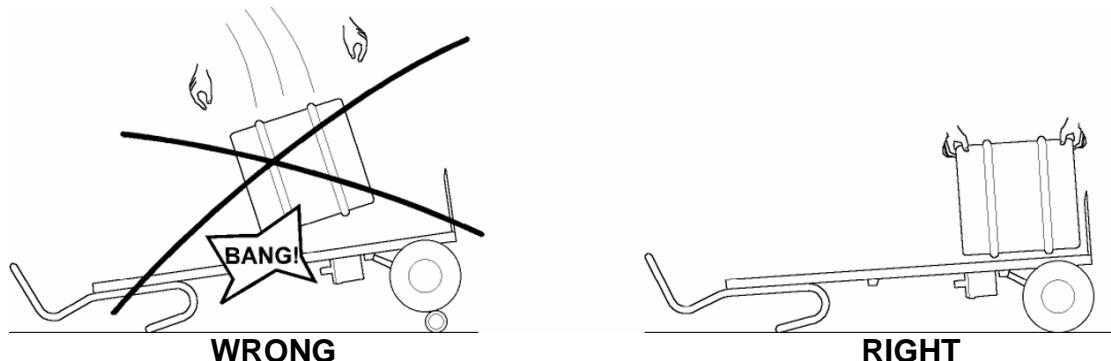
Do not overload the Liftkar. Exceeding the load capacity activates the overload mode causing the Liftkar to stop and lower the main wheels slowly to the lower step. The indicator light flashes red for about 3 seconds after which the ascend / descend button will need to be reset.



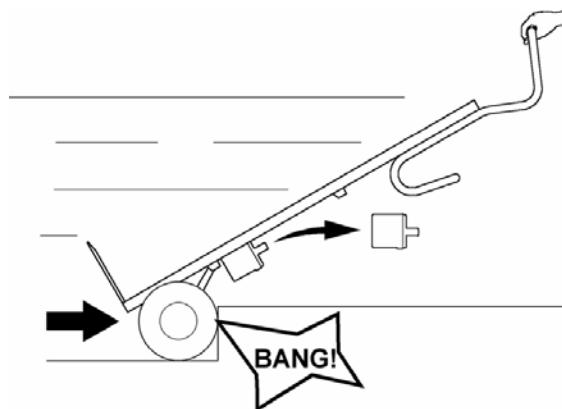
### Caution !

Once the battery is discharged, the unit goes into overload even with loads below the specified capacity.

Never throw loads onto the Liftkar. The impact of throwing loads onto the Liftkar could result in fracturing the drive unit. If necessary to load the Liftkar in a horizontal position be sure the support wheels are raised between the main wheels and carefully place the item on the Liftkar.



During normal operations, the battery is held securely in place by locking hooks. A strong, vertical pull is required to remove it. Moving backwards very quickly and striking a high step or similar equipment abuse could result in the battery ejecting from its location. If this happens, the Liftkar will cease operation. Failure to negotiate steps "square-on" will damage the underside of the drive unit.



## Protective Features



An electronic protection circuit prevents damage if charging clips are short circuited. The first bar on the display blinks if this occurs.



An electronic protection circuit prevents damage if the charging cables are connected with reversed polarity. The and symbols blink alternately on the display if this occurs.

If the room temperature increases, the charger will reduce the charging current and interrupt the charging operation if necessary. As soon as the unit cools, charging resumes.



If the battery fails to reach a certain voltage value within a pre-determined time, the charger will automatically cut out.

### After automatic cut out

1. Unplug the charger from the AC wall outlet
2. Disconnect the charger from the battery
3. Investigate the reason for the safety cut out

### Technical Data

• Main voltage (50/60 Hz, +/- 15%)	100-230 V AC
• Charging voltage	24 V DC
• Time until safety cut-out	4.5 hours

The charger has been function tested in a temperature range from -4° to 122° Fahrenheit (-20° to 50° Celsius) and in atmospheric humidity ranging from 5% to 85%.

### Safety Rules

Use Liftkar battery chargers for intended purpose only. These battery chargers are designed to charge lead storage batteries filled with liquid gel and AGM (absorbed glass mat) electrolytes only. Liftkar battery charger should never be used to charge NiCd and NiMH batteries and primary cells. Only use the charging unit if protected from direct sunlight and moisture.

### CE Marking

All Liftkar battery chargers meet the fundamental requirements of the Low-Voltage and Electromagnetic Compatibility Directive and is thus CE-marked.



## 7 Warranty and Liability

### 7.1 Warranty

The warranty period for the Liftkar is 12 months (6 months for batteries) from the date of purchase and covers defective material and production faults. Exclusions in the warranty are:

- Normal wear and tear on parts
- Damage resulting from abnormal load
- Damage due to the excessive exertion of force
- Modifications to the Liftkar, accessories, or parts

## 7.2 Liability

SANO Transportgeräete GmbH as manufacturer and Magline, Inc. as distributor are not responsible for the safety of the Liftkar if:

- The Liftkar is used for purposes other than those for which it is intended
- The Liftkar is not regularly maintained properly by a mechanical workshop
- The instructions in this Operator's Manual are not observed
- Non-Liftkar parts are installed or connected to the Liftkar
- Original parts are removed

### Design Protection by Patents

The lifting system of the SAL series is protected by international patent applications for Europe, USA and Japan. The modular structure of the basic frame is also protected by a patent application. A patent is pending for the FOLD model rotary joint.

LIFTKAR® is a registered trademark of SANO Transportgeräete GmbH.