



TECHNICAL MANUAL

Revision 7, November 2001

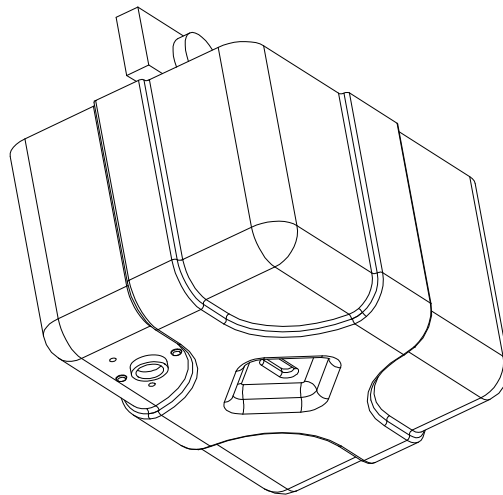
IMPORTANT: Read these instructions before installing, operating, or servicing this system

VOYAGER[®] 420

BATTERY AND ELECTRIC VERSION

2 AND 4 FUNCTION

CEILING LIFT SYSTEM



DO NOT DESTROY

BHM Medical Inc. designs and manufactures quality engineered patient lifting equipment for the care of the disabled in hospitals, nursing homes and home care.

Please take the time to read the entire manual, including the section on Safety Instructions and Warnings. It contains important information that will allow you to take advantage of all the characteristics of your BHM patient lift.

BHM Medical Inc. Credentials

- FDA Registration # 9681684
- CE mark (European Union Listing)
- Global Operations for in-warranty and out-of-warranty service support for Voyager Series lift.
- Each finished Voyager Series is individually tested in our laboratory.
- Lifting Capacity 200 kg/440 lbs. Engineering safety factor exceeds European Standards.
- Complete range of patient lift slings and supports designed and manufactured by BHM Medical Inc. using medical quality materials and fabrics.
- ISO 9001
- Quick release US PATENT #6085368 / Patent Pending in other countries.
- Voyager is a registered trademark of BHM Medical inc.

APPROVALS:

CSA 601.1
UL 2601.1
EN 60601.1
EN ISO 10535 (Lifting device) SGS
UK Test Report: DUR22107/AC/OO

Note: Because BHM Medical is constantly improving its products. You may encounter a modification of the product without revision of this guide.

Thank you for trusting your BHM Medical Partners.



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INTRODUCTION

How to use this Manual



DO NOT ATTEMPT TO USE THIS EQUIPMENT WITHOUT UNDERSTANDING THIS MANUAL.

To ensure safe operation, read the entire manual carefully, especially the section on “Safety Instructions and Warnings”, before installing, operating, or servicing this equipment.

If anything is not completely understood, please contact your supplier for more details. Failure to comply with warnings in this manual may result in injury.

Keep this manual with the lift and refer to it as required. Contents of this manual are subject to change without prior notice to users.

Throughout this manual, the following symbols may appear. Pay particular attention to the information provided under these headings. These special annotations are easily recognised as follows:



WARNING: this symbol is intended to alert the user to hazards or unsafe practices, which could result in serious bodily harm.



CAUTION: this symbol is intended to alert the user of the presence of important operating and maintenance instructions, which could prevent product damage or possible personal injury.



NOTE: this symbol offers helpful information concerning certain operating procedures.

Additional copies of this manual can be purchased by contacting your supplier. Include the User Manual product number and equipment identification numbers.

Equipment Identification

The unit's identification number (specification, model, serial number) appears on a silver nameplate attached to the back of base.

Receipt of Equipment

Upon receipt of the equipment, verify it against the packing list to ensure it is complete and inspect the equipment for possible damage due to shipping. If there is any damage, DO NOT USE the equipment and notify the carrier immediately to file a claim. Provide complete information concerning damage claims or shipping errors to your supplier. Include all equipment identification numbers and group part numbers (if any) as described above along with a full description of damaged parts.

Key to Symbols

The following symbols are used on lifter's attachment labels:



This symbol is required to be displayed on regulated products for sale in the European Market. It indicates that the product complies with applicable European Directives related to health, safety, environment and consumer protection.



Safe Working Load represents the maximum load the lifter is rated for safe operation.

The following symbols are used on sling labels and related to washing instructions:



Maximum washing temperature 60°C (140°F) permanent cycle.



Do not use bleach.



Do not dry clean.



Tumble dry low temperature.



Do not iron.

Please refer to individual sling labels for complete instructions regarding washing and drying.

SAFETY INSTRUCTIONS AND WARNINGS

A. GENERAL

- **IMPORTANT – READ THESE INSTRUCTIONS CAREFULLY OR SERIOUS INJURY MAY RESULT.**
- **KEEP THESE INSTRUCTIONS AND THE KEY PROVIDED WITH THE LIFT AT ALL TIMES.**
- **READ OPERATION AND MAINTENANCE INSTRUCTIONS IN THIS MANUAL BEFORE INSTALLING, OPERATING, OR SERVICING THIS EQUIPMENT.**
- **An authorized contractor or installer must install BHM Medical ceiling lifts.**
- **YOUR LIFT is for transferring patients only. Do not use the lift for any other purpose.**
- **ALWAYS carry out the daily checklist before using the lift.**
- **BHM Medical ceiling lifts are specifically designed for BHM Medical ceiling rail systems, slings and accessories. Slings and accessories designed by any other manufacturer are prohibited and will void BHM Medical’s warranty. Use only BHM Medical slings and accessories to maintain patient safety and product utility.**
- **BHM Medical ceiling lifts are intended to be used for patients within the specified weight limit indicated for the lift. Do not attempt to lift more than the weight limit indicated.**
- **Before attempting to transfer, the patient must be assessed by a qualified professional.**
- **BHM Medical ceiling lifts must be used by a caregiver with proper training to work with the patient to be transferred.**
- **ONLY trained and qualified caregivers should transfer a patient. DO NOT attempt to use the lift if you have not been properly trained to do so.**
- **ALWAYS be prepared before attempting to transfer a patient.**
- **DO NOT use a sling that is not recommended for the lift.**
- **NEVER use a damaged, torn or frayed sling.**
- **ALWAYS place the sling around the patient according to the instructions enclosed.**
- **FOLLOW lifting procedures outlined in this manual.**
- **USE all controls and safety features only according to the rules specified in this manual. Never attempt to force a control or button on the lift.**
- **DO NOT store the charger in a shower, bath or other areas with high humidity.**
- **DO NOT drop the patient lift or battery. Dropping the battery or lift may cause internal damage that is not easily seen. If lift is suspected to be damaged, take to an authorized technician for servicing.**
- **IMPORTANT: Keep all components of the lift clean and dry, and have electrical and mechanical safety checkpoints done as instructed in the Maintenance section of this manual.**
- **Replace any precautionary or instruction labels that cannot be easily read.**
- **Avoid violent shock during transportation.**

B. SHOCK PREVENTION

- **DO NOT touch or use a lift with bare conductors or a damaged power cord. Electrically live equipment can electrocute a patient. If the lift or charger has any exposed or damaged wires contact your local dealer immediately.**
- **DO NOT cut or remove the round grounding prong from any plug. All BHM lifts are equipped with three-prong plugs to protect from shock hazard or electrocution. Any two-prong electrical outlet must be replaced with a properly grounded three-prong outlet according to the National Electrical Code and local codes. It is the responsibility of the customer to have the work done**

SAFETY INSTRUCTIONS AND WARNINGS

by a qualified electrician.

- Do not splash or expose electric parts of the device to water or moisture.
- Check nameplate for voltage and cycle requirements. These requirements differ by country. Do not attempt to use the lift in an area that has a different voltage and cycle requirement.
- DO NOT attempt to expose, service or repair the lift, battery or charger. If any unit is malfunctioning, contact your local dealer.
- READ the battery and charger instructions thoroughly before using or storing them.

C. FIRE AND EXPLOSION PREVENTION

- Batteries may explode, leak and cause personal injury if not disposed of properly
 - Do not place or store the battery under direct sunlight or near a heat source
 - Do not dispose of in fire
 - Do not short the battery terminals
- Do not incinerate
 - Flush with water if electrolyte (Acid) comes in contact with skin or eyes.
- Batteries must be recycled, disposed of according to local law regulations. When returning batteries, insulate their terminals with adhesive tape, etc. Otherwise, the residual electricity in used batteries may cause fire or explosion.



D. EQUIPMENT WARNING LABELS

- Inspect all precautionary labels on the equipment. Order and replace all labels that cannot be easily read.

DESCRIPTION OF EQUIPMENT – VOYAGER 420

Lift Unit

The lift unit is a steel frame based system driven by a gear reduced high torque motor.

OPERATING FEATURES

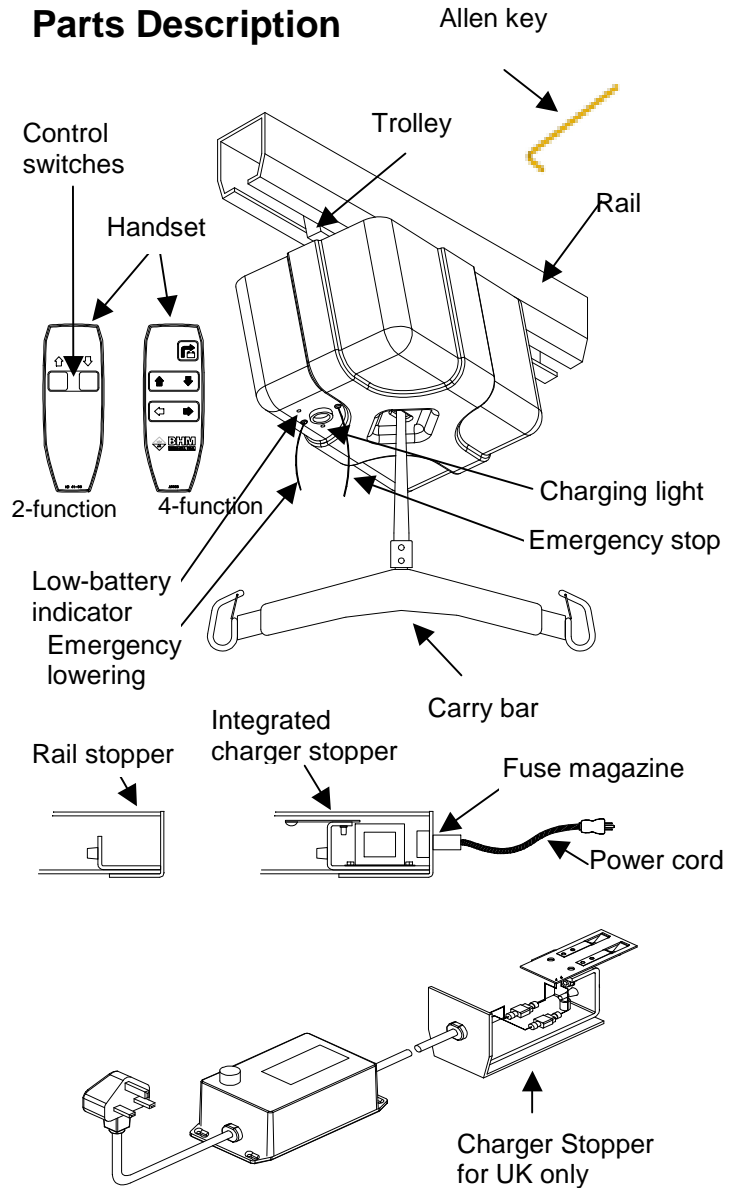
- Lifting capacity: 190 kg (420 lbs.)
- Average weight: 12.7 kg (28 lbs.) battery included.
- Electronic soft-start and soft-stop motor control.
- Manual and electric emergency lowering device.
- Emergency brake (in case of mechanical failure). Operates on the same principle as a car safety belt mechanism.
- Emergency stopping device.
- Current limiter for circuit protection in case of overload.
- Low battery disconnect system to protect batteries from being drained.
- Lifting speed: 4 cm/sec. (1.6 in./sec.).
- Horizontal displacement speed: 20 cm/sec. (7.9 in./sec.).
- Vertical and Horizontal axis motor: 24 VDC, 1/12 HP.
- Strap length up to 2.2 m. (88 inches) tested for 1363.6 kg (3000 lbs.)
- CSA No. 601.1, UL No. 2601-1 and CE certifications.
- Respects EMI standards.
- ISO 10535.

What's included

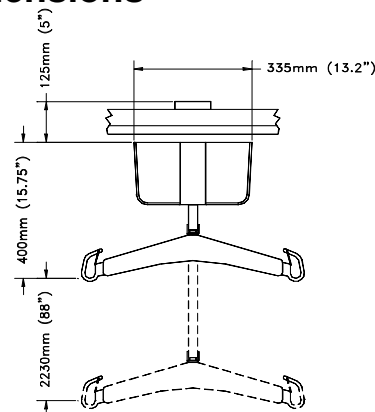
ITEM	QTY
Voyager 420 lift	1
Battery (inside unit)	1
Integrated Charger Stopper	1
Rail Stopper	1
Handset	1
Carry bar	1
Power cord	1

4 mm Allen key	1
Instruction manual	1

Parts Description




Dimensions



OPERATION


How to use the Voyager 420


 **READ "SAFETY INSTRUCTIONS AND WARNINGS" BEFORE ATTEMPTING TO USE THE VOYAGER 420.**


 **Unit will not lift or lower when in contact with the charger.**

1. Install the patient sling
Move the lift directly over the patient.
2. For two-function battery, pull the unit manually directly over the patient or for four-function battery, use the handset.



 **If the buttons do not operate on the handset, pull the red cord gently, once until you hear a "click".**

3. Using the handset  button, lower the carry bar below the patient's chin (to avoid the risk of facial contact caused by a sudden movement of the carry bar) before beginning to attach the sling straps. If the lift will not operate – pull red cord once gently, until you hear a "click".

 **Hold the carry bar with one hand at all times when near a patient.**

Note: In a lying down position, lower the carry bar near the thorax, then install the straps.

4. Attach the straps to the desired position.
5. Carefully observe the patient to ensure his/her safety as you press the control button

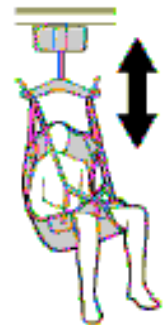



BEFORE LIFTING THE PATIENT :

1. Make sure that all straps are attached to the carry bar.
2. Make sure the patient is comfortable.
3. Make sure the sling is not caught on any obstruction (wheelchair brake or arm of chair).

If any of the above occur - lower the patient immediately and correct the problem.


6. Lift until the patient's buttock clears the arm supports or the top of the bath or bed before moving the patient. Guide the legs past any obstacle.



7. When the patient is located above the desired point of transfer, press the  button.
8. Use the handles on the back of the sling to position the patient when transferring into a chair. Hold the handles firmly as the sling lowers; the sling will tilt back to position the patient.
9. Once the patient is properly seated and the straps are loose, remove the sling from the lift.



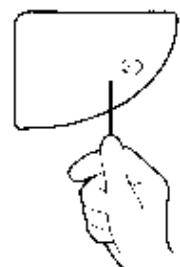
Hold the carry bar with one hand at all times when near a patient.

10. Slide the lift away from the patient.
11. When lift is no longer required:
 - 2-function- gently return the unit to charger manually.
 - 4-function - engage the automatic return to charger function by pressing .
12. Check the charging indicator light to ensure the charger is working.

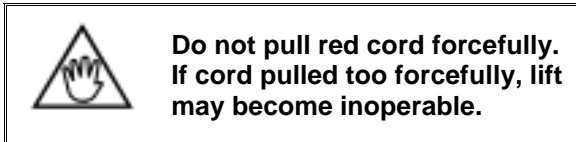
Emergency Stop

(Red cord)

1. This can be activated at any time to stop the functioning of the lift.
2. To stop the lift in an emergency, pull the red cord



once gently, you will hear a “click”.

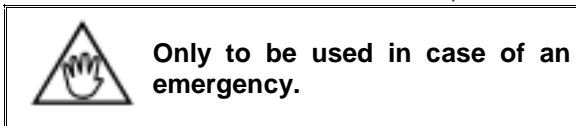
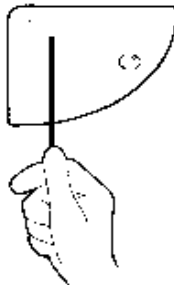


- When you initially receive your lift the emergency stop is in the “off” position. To activate the lift, pull the red cord once gently. To re-activate, pull the red cord once gently, you will hear a “click”.



Emergency Lowering Feature (White cord)

In the event of an electrical or functional failure, the Voyager 420 has an emergency electrical and manual lowering feature



If the lift malfunctions when a patient is being transferred, the emergency lowering device provides a safe way of lowering the patient onto a chair or bed.

To operate the emergency lowering features:

Electrical Version:

Move the patient over a bed or a chair and then, gently pull down on the white cord. **If this does not function then go to step 2.**

Manual Version:

Find the rubber stopper and label on the side of the lift.

VOYAGER 420



- Pull the rubber stopper out of the Voyager casing – DO NOT DISCARD.


Use the Allen key provided with this manual, turn the key clockwise to lower the patient into a chair or bed. As the key turns the motor directly, each key turn will move the patient slightly.



To lower the patient more quickly, use a power drill with a 4mm Allen key bit.

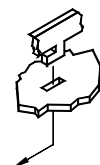
- Once the patient is lowered safely into a chair or bed, call a certified technician to have lift serviced.

Emergency Brake

- The emergency brake is made of a metal bar fixed to the drum. 
- In case of a chain, gear or motor breakage, the centrifugal force created would block the bar against the frame.

Frame with Mechanical Clips

- Supporting structure is welded and reinforced with metal clips.

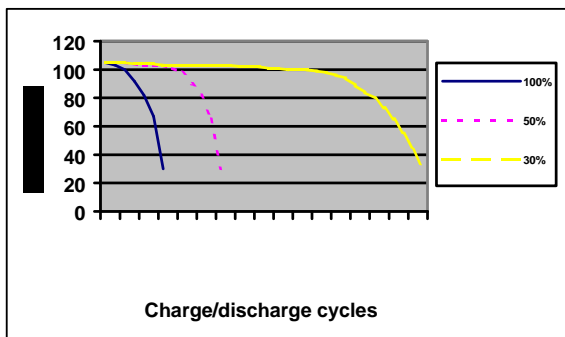


Battery Information

- 24 Vdc, 7 Ah rechargeable battery.
- Provides up to 150 transfers with load of 75 kg (165 pounds).


Life cycle (number of charging cycles) of the battery is largely dependent on the depth of discharge in each cycle. The more the battery is drained, the shorter its life span. The life of the battery is also related to such factors as varying temperatures and rest periods between charge and discharge.

Graph 1 - Number of recharges vs. Depth of discharge



Graph 1 illustrates the relationship between discharging depth and expected battery life.

If you drain the battery until it beeps every time, you can expect the battery to fully charge only 600 times.

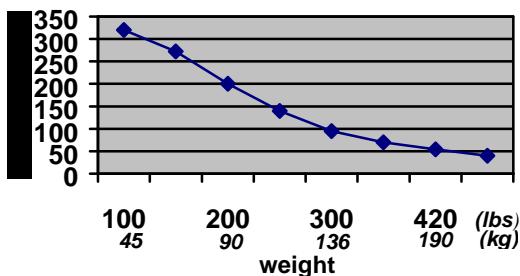


To prolong battery life – Return the lift to the charger WHENEVER THE LIFT IS NOT IN USE.


The battery will not overcharge.

BHM uses sealed lead-acid batteries. Contrary to nickel-cadmium, BHM batteries do not have any memory effect. Therefore, batteries should not be completely drained before recharge.

Graph 2 - Number of lifts vs. Lift load




Graph 2 illustrates the relationship between the load lifted and the number of lifts that can be done with one recharged battery.



Do not drain the battery excessively. This will dramatically reduce the battery life span.

If the low battery buzzer sounds and red light flashes, be sure to recharge the battery as soon as possible.


Charging the battery



DO NOT operate the charger unit with a damaged cord or if the unit has been dropped or damaged.

DO NOT forcibly bend the power cord or place a heavy object on it. This will damage the cord and may cause fire or electrical shock.


DO NOT pour liquid on or near the charger.




Do not place the unit in locations that are:

- **Extremely hot**
- **Dusty or dirty**
- **Very humid**
- **Moving or vibrating**

The recharging steps should be as follows:

For the 4 function, return to charge and press the  button on the handset. The lift cannot return to charger with a 50-pound load.

For the 2 function, pull the lift gently over to the charger and ensure it is properly connected.



DO NOT SLIDE LIFT TO CHARGER FORCEFULLY OR QUICKLY. CHARGER MAY BECOME DAMAGED.

- The indicator light will illuminate red to green depending on the battery drain. If the light does not go on, check “Troubleshooting” section in this manual for assistance.
- If the battery is low, the light will show red or orange when you return the lift to the charger. The light will gradually turn to green when fully charged.



Whenever possible, leave the lift on the charger when the lift is not in use. At minimum, charge the battery until the light is green before using it again. This will extend the life of the battery.

Charger Specification:

- Hospital grade charger cord and plug.
- Charger input: 120 Vac, 60 Hz, 0.5 A. (North America) / 240 Vac, 50 Hz, 0.25 A (European).

MAINTENANCE



ALWAYS CARRY OUT THE DAILY CHECKLIST BEFORE EACH LIFT USE.

Alterations made to the VOYAGER 420 by someone other than a certified technician may cause serious injury and will void warranty.

The VOYAGER 420 and accessories must be inspected ANNUALLY by a certified technician in addition to the daily and other periodic visual checks done by the user specified in this section.

Preventive maintenance specified in this manual can prevent accidents and reduce repair costs.

Daily Check List

THE FOLLOWING PROCEDURES MUST BE FOLLOWED BEFORE EACH USE.

- Has the battery been charged? Park the lift on the charger whenever the lift is not in use.
- Inspect the lift for any damage. If the lift casing does not look properly aligned, or there are any cracks or other damage on the lift, or any parts are missing - **DO NOT USE IT**. Contact your local representative to have the lift serviced.
- Inspect the visible strap for any signs of wear, frays, loose threads or other damage. If there is any evidence of damage- **DO NOT USE IT**. Contact your local representative to have the lift serviced.
- Inspect the sling for tears, frayed straps or loose stitching. If the sling has any of the

above damage, **DO NOT USE IT**. Contact your local representative to have the sling replaced or repaired.

- Inspect the carry bar for any signs of cracking or damage.
- Ensure the ring and cotter pins that attach the carry bar to the strap are secure.

Inspection and Cleaning

Clean the Voyager 420 with a soft dry cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent that may damage the finish.



Do not immerse lift in water.

To ensure a better rolling surface for the trolley wheels, clean the inside of the track every 4 months. To do so, insert a damp cloth in the opening and slide it from one end of the track to the other.



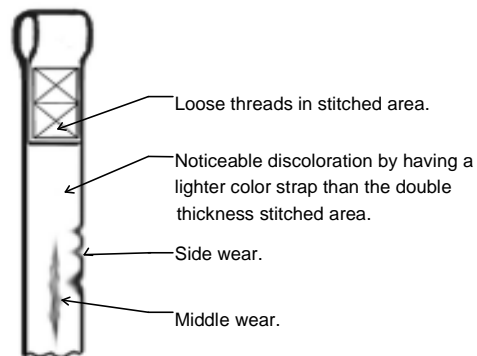
Always reinstall rail end stoppers (if they have been removed) after servicing.

Strap Inspection

This equipment is built with a strap that can withstand a load of 1364 kg. (3000 lbs) Nonetheless, if this strap is damaged or shows signs of wear, the acceptable load on the strap before rupture can drop rapidly and present a danger for the patient and/or caregiver.

BHM Medical recommends thoroughly inspecting the strap every 2 months as follows:

1. Completely unwind the strap.
2. Look for any signs of wear:





If there is any sign of wear as indicated above or any other visual defects, the strap should be changed immediately. By continuing to use the lift without changing the strap, caregiver and patient safety is greatly compromised.

In any case, the manufacturer recommends changing the strap at least every two years. By continuing to use the lift without changing the strap, caregiver and patient safety is greatly compromised.

Lubrication

Even if lubrication is not mandatory, we recommend putting white grease machinery grade and NLGI 2 type on drum teeth to reduce friction once a year.

Handling and Storage

Avoid violent shock during transportation.

The lift should not remain stored for long periods of time without recharging the batteries.



BHM Medical recommends charging of batteries at least every two weeks even if the lift is not used. This will prevent premature aging of batteries.

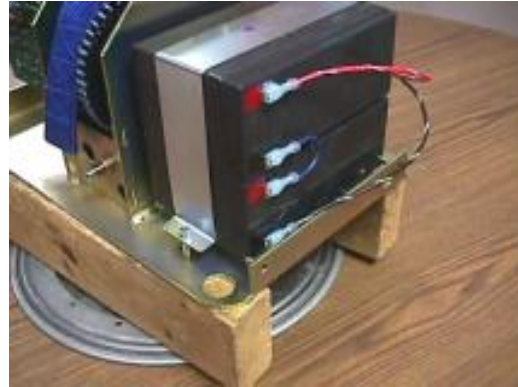
Battery Replacement

BHM uses sealed lead-acid batteries. Contrary to nickel-cadmium, BHM batteries do not have any memory effect. Therefore, batteries should not be completely discharged before recharge.

Battery life expectancy is 5000 cycles (average of 175 pounds and 24 inches travel). The 5000 lift cycles represent the "half-capacity" of the battery, meaning that the battery is half of a new one. After this half-capacity, the battery will degrade rapidly. Therefore, we recommend changing for a new one.

1. Stand the VOYAGER 420 up on a solid table. You can use two pieces of wood to secure the unit to avoid breaking the trolley. Remove the cab from the chassis by unclipping the 4 screw caps with a small blade and use an 8 mm socket to unscrew the 4 screws.
2. Unplug red/white and black/white wires from batteries. Unplug the blue jumper. Unscrew

nuts (8 mm socket) which are retaining batteries support. Do not completely unscrew. Unscrew until batteries are loose.

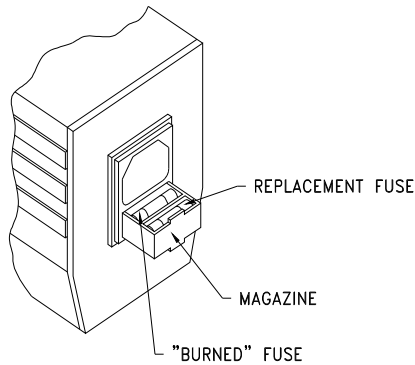


3. Remove batteries and replace them by new batteries. Tighten nuts (8mm socket) and plug in the blue jumper. Plug black/white and red/white wires. Be careful of the colour code (black = negative, red = positive). You can use a hot glue gun to affix the wire to the battery terminal.
4. Replace the cab. Pass the cords and the handset through their respective hole. Screw back in and place the screw caps on.

Charger Fuse Replacement

If the light does not illuminate when there is a battery in it, do the following steps:

1. Check to make sure the power cord is correctly plugged into the charger in the wall.
2. Pull the power cord out of the charger. Under the socket for the power cord, there is a drawer or magazine where there are fuses. Using a pen or screwdriver, pull the drawer out gently. Pull the burned fuse out of the drawer that is next to the charger (see diagram below) and discard. Take the replacement fuse and place it in the same slot where the burned fuse was. Slide the drawer back into the charger. Plug the power cord into the charger. Place the lift onto the charger and check for the light.
3. Check the outlet to make sure it has power to it.
4. If the light does not illuminate, contact your local dealer or representative for assistance.



Replace the fuse with the following:

Fuse: GMC 0.5 A 250 V North America (when input is 120 Vac) Product # C8FGMC0.5

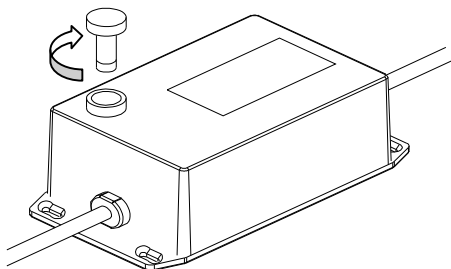
GMC 0.25 A 250 V European (when input is 240 Vac) Product # C8FGMC0.250

The fuse may also be ordered through your local dealer or representative.

Charger Fuse Replacement (for UK only)

If the light does not illuminate when there is a battery in it, do the following steps:

1. Check to make sure the power cord is correctly plugged into the charger in the wall.
2. Disconnect the power cord from the wall.
3. Unscrew the fuse holder cap.



4. Replace the fuse with the following:
 Fuse: GMC 0.5 A 250 V North America (when input is 120 Vac) Product # C8FGMC0.5
 GMC 0.25 A 250 V European (when input is 240 Vac) Product # C8FGMC0.250

The fuse may also be ordered through your local dealer or representative.

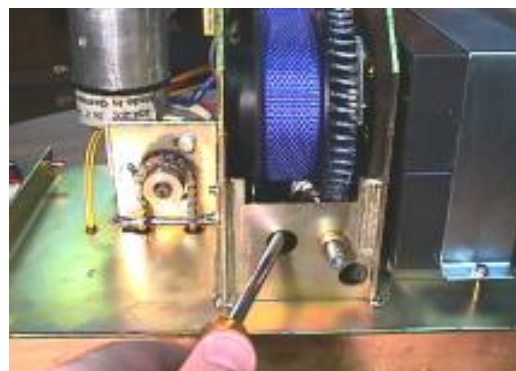
5. Screw back the fuse holder cap

Strap Replacement

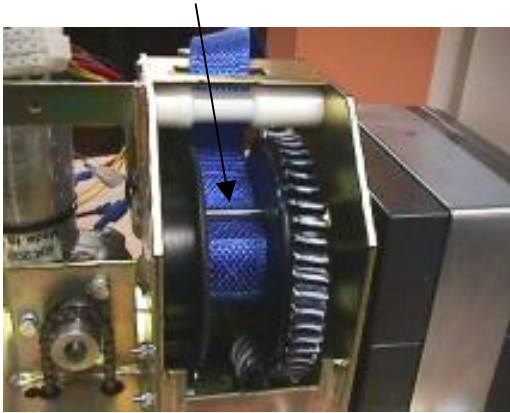
1. Place the VOYAGER 420 up on a solid table. You can use two piece of wood to secure the unit to avoid breaking the trolley. Activate the white cord and pull the entire strap out of the drum.
2. Remove the cab from the chassis by unclipping the 4 screw caps with a small blade and use an 8 mm socket to unscrew the 4 screws.
3. Unplug the 15-pin power connector from the circuit board. Remove the circuit board by unscrewing the two 8 mm screws.



4. Look at the two holes on the frame (circuit side) and align the two bolts of the drum by turning the drum. Push back the worm gear with a screwdriver to free the drum if you need more play.



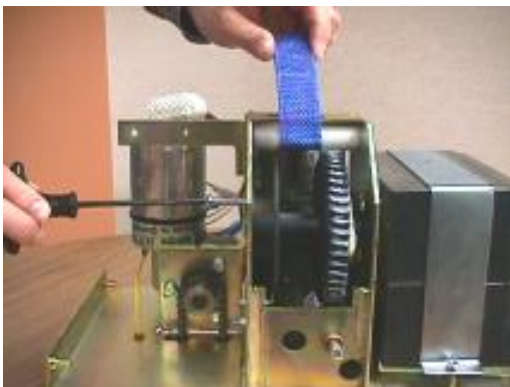
5. Unscrew the long bolt from the drum.



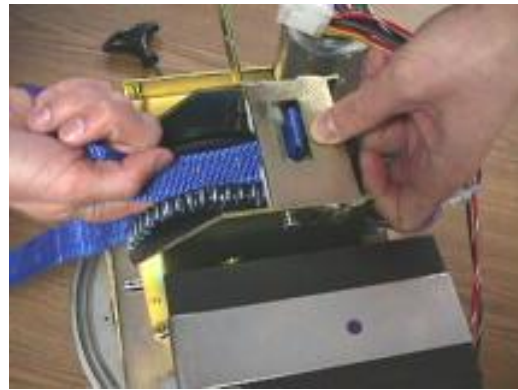
6. Make a half turn to the drum and align the other screw with the first hole of the frame. Unscrew the drum bolt and remove the strap.



7. Install the strap in the drum (loop outside, installing wrong side can disable the limit switch function) and screw the first bolt through the strap to the drum. Make half turn to the drum and screw the other bolt to the drum.



8. Insert the other end of strap through the limit switch hole. With one hand, insert the end of strap and with the other hand with one finger, push the limit switch and with another finger, guide the strap through the hole.



9. Push back the worm gear with a screwdriver to free the drum, turn the drum until the entire strap rolls on the drum.
10. Install the circuit board by screwing in the two 8 mm screws. Plug the 15-pin power connector to the circuit board.
11. Replace the cab. Pass the cords and the handset through their respective holes. Screw the screws back in and put on the screw caps.

NOTE for the first use of the new strap rewind the entire strap with light load (50 lbs.) to proper tension.

Limit Switch Replacement

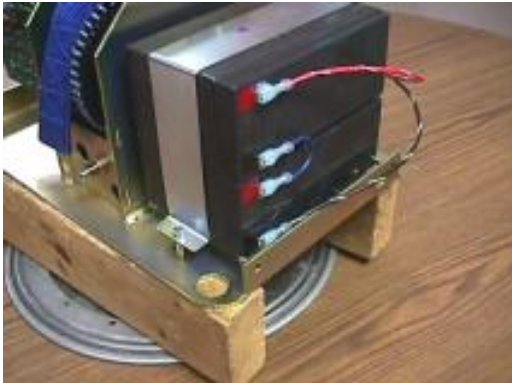
(for serial numbers before ALB2-*F*-1644)

1. Do step 1 and 2 from the **strap replacement** instruction.
2. Unplug the 15-pin power connector from the circuit board. Remove the circlip on the center shaft of strap guide roll and pull out the shaft through the frame. Pull out the strap guide roll from the frame.
3. Remove the limit switch by unscrewing the ½ in. nut.
4. Unpin the limit switch from the 15pin connector and replace by the new one.
5. Put, in place, the strap guide roll with the center shaft and circlip.
6. Plug the 15-pin power connector to the circuit board. Replace the cab. Pass the cords and the handset to their respective holes. Screw back in and put the screw caps back on.

Drum and Strap Replacement

1. Do step 1 to 3 from the **strap replacement** instructions.

2. Unplug red/white and black/white wires from batteries. Unscrew nuts (8 mm socket) which are retaining batteries support. Remove the battery rack and the batteries.



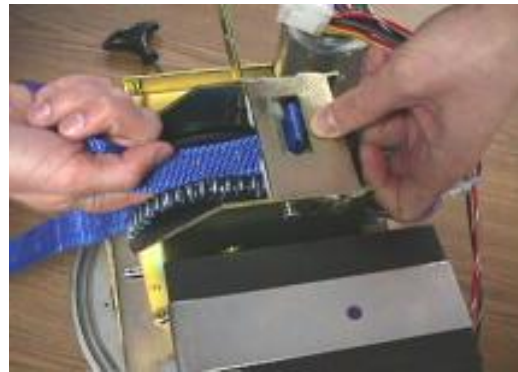
3. Remove the circlip on the center shaft of drum and pull out the shaft through the frame. Pull out the drum from the frame.



4. Install the new drum to the frame and insert the shaft through the drum and frame hole. Put the circlip back in place.



5. Insert the end of strap through the limit switch hole. With one hand, insert the end of strap and with the other hand with one finger, push the limit switch and another finger guide the strap through the hole.



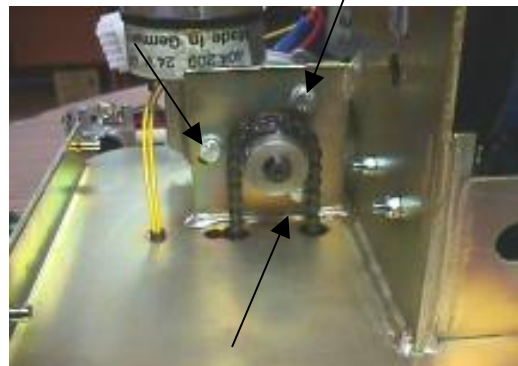
6. Install the circuit board by screwing in the two 8 mm screws. Plug in the 15-pin power connector to the circuit board.
7. Replace the batteries. Tighten nuts (8 mm socket). Plug black/white and red/white wires. Be careful of the colour code (black = negative, red = positive). You can use a hot glue gun to affix the wire to the battery terminals.
8. Replace the cab. Pass the cords and the handset to their respective hole. Screw back in and place the screw caps back on.

Horizontal Motor Replacement

1. Repeat steps 1 to 3 from the **strap replacement** instructions.
2. Remove the chain link connector.



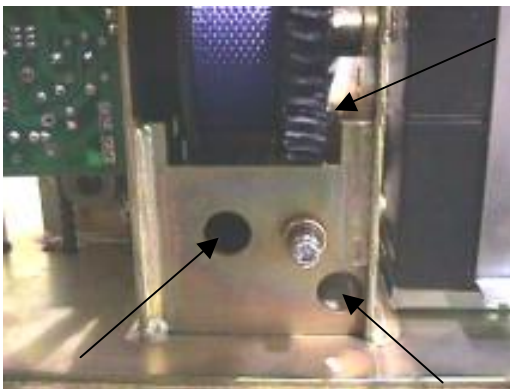
3. Remove the motor by unscrewing the three (3) 6 mm bolts. Unplug the motor.



4. Remove the sprocket from the old motor and put it in place on the new motor. Screw the motor to the frame with the three (3) 6 mm bolts and lock washers.
5. Put the chain link connector in place. Visually check the chain alignment.
6. Install the circuit board by screwing in the two 8 mm screws. Plug the 15-pin power connector to the circuit board.
7. Replace the cab. Pass the cords and handset through their respective holes. Screw back in and place screw caps back on.

Vertical Motor Replacement

1. Repeat steps 1 to 3 from the **strap replacement** instructions.
2. Unplug the 15-pin power connector from the circuit board. Unplug the motor. Remove the motor by unscrewing the three (3) 6 mm bolts. Access those screws by the front of the unit (two holes and other screw by passing between the frame and the drum). You may have to turn the drum to put the emergency break at upper position



3. Pull out the motor with the drive shaft assembly. Do not separate the drive shaft assembly from the motor. In case of the drive shaft replacement, gently pull out the drive from the motor shaft by sliding it out.
4. Insert the new motor and screw it in with the two (2) screws at the bottom. Align the upper screw and screw it in place. Tighten the 2 other screws.
5. Replace the cab. Pass the cords and the handset through their respective hole. Screw back in and place screw caps back on.

MAINTENANCE INSPECTION CHECKLIST

MAINTENANCE INSPECTION CHECKLIST

THINGS TO BE INSPECTED BY USER

ITEM	INITIALLY	BEFORE EVERY USE	EVERY 2 MONTH	EVERY 6 MONTH	EVERY YEAR	EVERY 2 YEARS	EVERY 5 YEARS
LIFT DEVICE							
Inspect for missing hardware or broken panel.	X	X			X		
Inspect strap for wear.		X	X				
Recharging battery.		X					
Inspect round hook on the strap of the lift for damage or cracks.					X		
Inspect trolley in rail for damage, rust or cracks. Replace if damaged.					X		
Overall inspection by authorised personnel.					X		
SLINGS AND HARDWARE							
Check all sling attachments for sign of wear.		X					
Inspect sling material for wear or deterioration.		X					
Inspect sling straps for wear.		X					
Inspect for any defect or loose threads in the "stitched areas".		X					
Cleaning sling as indicated on the tag.	<i>When Necessary</i>						
ACCESSORIES							
Verify the strap extension for wear. Check the stitching for degradation due to chemical attack				X			
Verify the emergency stop cord for wear.				X			
Verify the emergency lowering cord for wear.				X			
MAINTENANCE TO BE DONE BY A CERTIFIED TECHNICIAN							
Replace the strap.						X	
Completely unwind the strap and check stitching and fraying and check for degradation due to chemical attack.				X			
Check the carry bar for freedom of rotation.				X			
Check for wear on the central pivot of the carry bar and lubricate it with any light, mineral based grease.				X			
Inspect the carry bar connecting joint for proper attachment.				X			
Check for presence and correct fitting of the split rings on the carry bar.				X			
Inspect for excessive wear on the sling hooks and any side suspenders used in conjunction with the spreader bar.				X			
Check for adequate padding of the carry bar.				X			
Inspect worm, chains, worm gear and gears for wear.				X			
Lubricate worm gear, gear, chain and other moving parts.				X			
Inspect trolley wheel for damage, carrying or				X			

MAINTENANCE INSPECTION CHECKLIST

ITEM	INITIALLY	BEFORE EVERY USE	EVERY 2 MONTH	EVERY 6 MONTH	EVERY YEAR	EVERY 2 YEARS	EVERY 5 YEARS
rust. Check also the wear on the axles and check for firm attachment.							
Inspect the welding aspect on the frame to detect cracks.				X			
Inspect connecting joints for proper attachment.				X			
Confirm the correct operation of the emergency brake by making sure it is moving freely on the drum.				X			
Confirm correct function of the mechanical emergency lower.				X			
Check for firm fixing of the charger to the track.				X			
Confirm correct mating of the lift to the charger.				X			
Confirm correct functioning of the charger.				X			
Check the correct fuse rating.				X			
Check main lead plug and socket for proper mating, look for damage, evidence of burning or arcing.				X			
Inspect the "quick releaser" system for wear.				X			
Load test with the SWL (maximum capacity).				X			



Maintenance inspection points are suggested by the manufacturer. However, in certain case, some inspections should be done on a more frequent basis. By continuing to use the lift without replace the listed parts in this maintenance, caregiver and patient safety is greatly compromised.

TROUBLESHOOTING



ELECTRICAL SHOCK HAZARD – Before checking electrical components, remove fuses, unplug the device or disconnect battery.

CAUTION: HIGH VOLTAGE FROM TEST EQUIPMENT can damage electronic circuits and other parts.

What might seem to be a power failure is not always the case. First check the following:



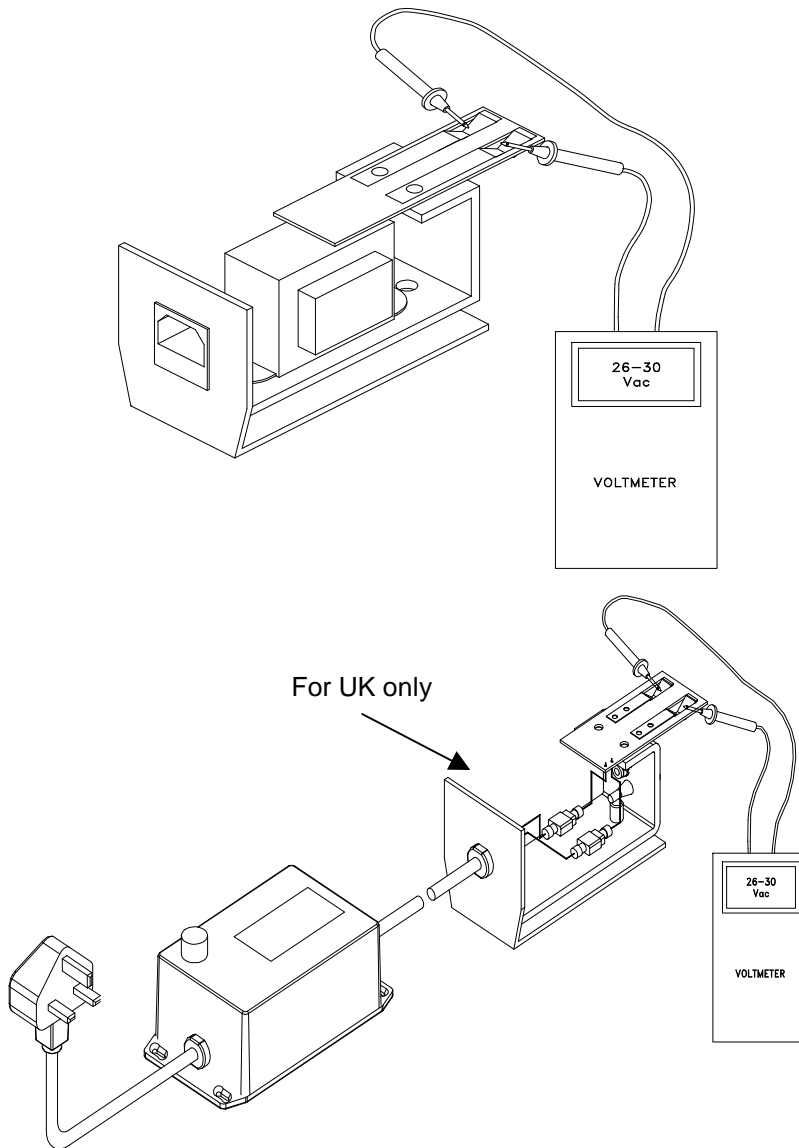
DO NOT attempt to open the VOYAGER SERIES LIFT. Only a certified technician is authorised to open the VOYAGER SERIES LIFT.

Alterations made to the VOYAGER 420 by someone other than a certified technician may cause serious injury.

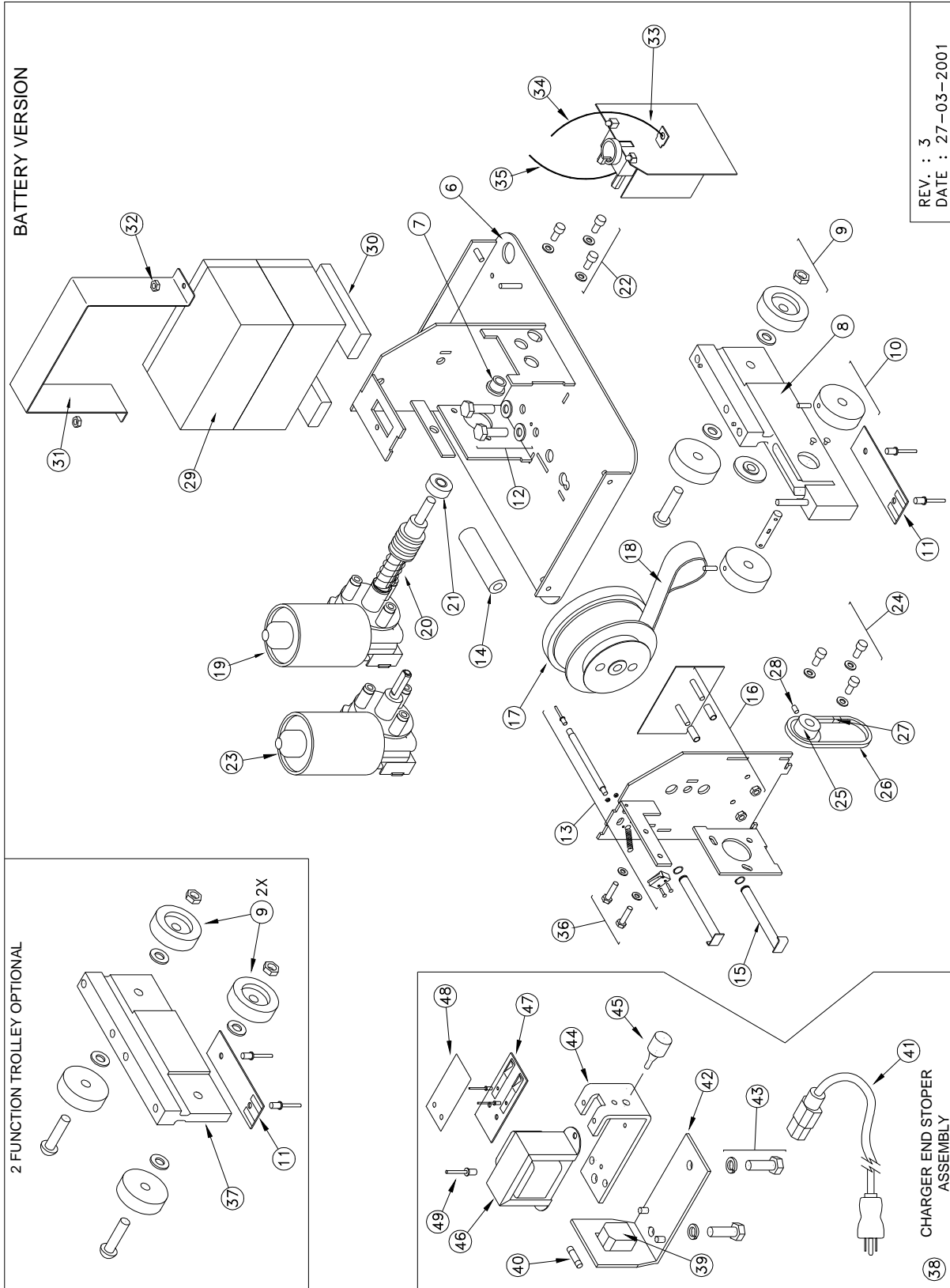
PROBLEMS	TO CHECK
The unit starts and stops repetitively	<ul style="list-style-type: none"> • If the load is over the safe working load, the unit will not work due to an overload protection on the motor. • Has the lift been making a “beeping” sound? The battery is low and needs to be charged.
The lift emits a "beep" and a red light flashes during utilisation. The unit may stop lifting but you can still lower it.	<ul style="list-style-type: none"> • Batteries are low, return to charger.
Charge indicator on the lift (green-red) does not light up when the lift is on the charger	<ul style="list-style-type: none"> • Is the charger stopper plugged into a standard outlet? If so, does the outlet have power? • Check the condition of the fuse. If needed, change it with a spare one. (see “Maintenance” section of this manual)
Battery is always dead after a few transfers (3 to 5).	<ul style="list-style-type: none"> • Replace battery with a new one, the life of the current one is probably nearly over. (Contact your local dealer or representative to have battery replaced)
The light on the charger shows green yet the lift will only do one or two transfers.	<ul style="list-style-type: none"> • Contact your local dealer or representative to have battery replaced.
The light on the charger shows green yet the lift will only work when there is no one in the lift. When you attempt to transfer someone, the lift stops.	<ul style="list-style-type: none"> • Contact your local dealer or representative to have battery replaced.
The lift does not work when you press the buttons on the handset.	<ul style="list-style-type: none"> • Is the charger light on? The lift must be moved away from the charger in order to operate. • Is the emergency stop activated? Gently pull the red cord once until you hear a "click". Try the buttons again. • Is the handset properly plugged into the lift? The handset may be slightly pulled out of its socket yet appear as though it is plugged in. The lip of the handset must be flush with the cab of the lift. The socket and handset connector is a tight fit – press firmly to ensure the handset is plugged in properly. • If the handset was not properly plugged into the lift, it may be necessary to gently pull the red cord once again. • Slide the lift over to the charger. Is the light red or not on at all? The battery likely needs to be charged. See troubleshooting situations above for more information. • If, after testing all of the above, the lift will not operate,

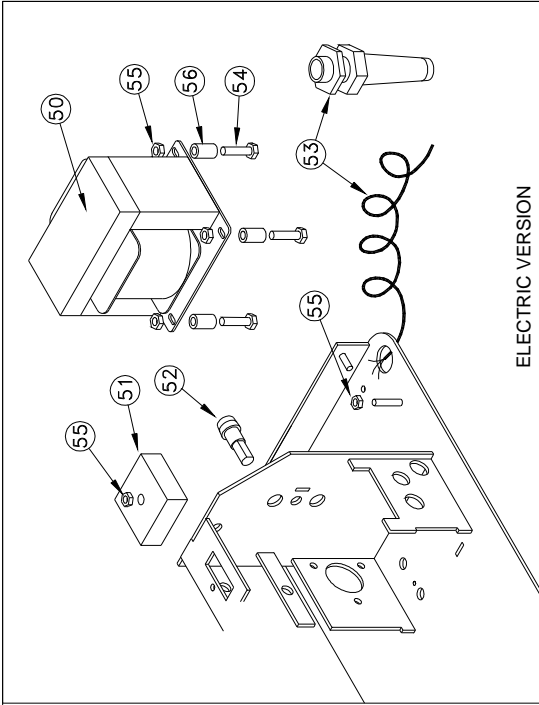
PROBLEMS	TO CHECK
	<p>contact your local dealer or representative.</p> <ul style="list-style-type: none"> • If available, try another integrated charger stopper from another lift or a spare one, plug it into the rail and charge for 3 hours. If the light does not change to white or green, contact your local dealer or representative. • Using a voltage meter, test the two contact points on the charger (see diagram T-1). The voltage meter should read between 26-30 volts AC. • Contact your local dealer or representative.
<p>When you press the button to return the lift to its charger (4 way motors only), the lift goes to the charger but does not lower the carry bar and you can hear a "humming" sound.</p>	<ul style="list-style-type: none"> • Charger either does not have power or is not working properly, see troubleshooting question above:

DIAGRAM T-1

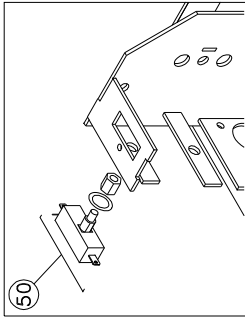


PARTS LIST





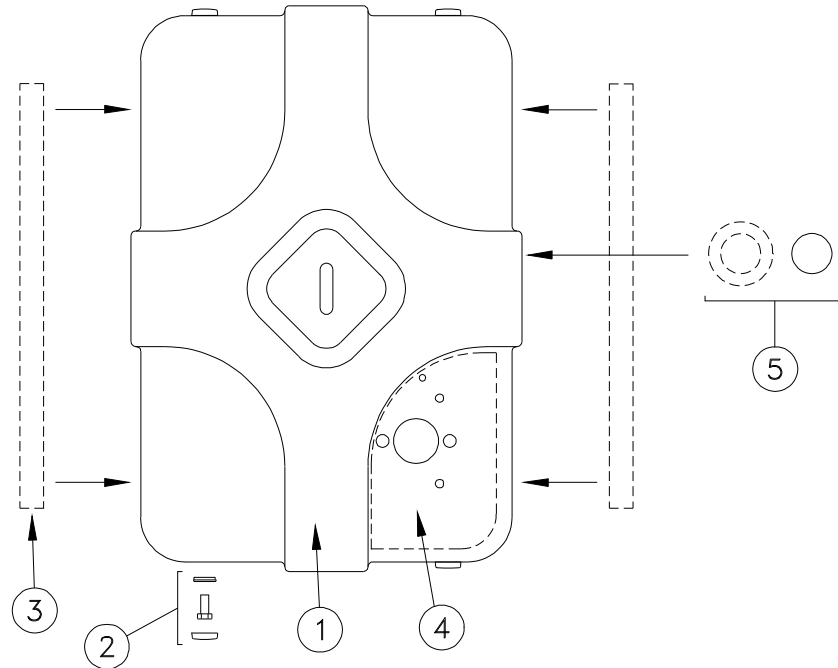
ELECTRIC VERSION



LIMIT SWITCH SYSTEM
REVISION 2

-STRAP GUIDE ROLL
#M8520
(BEFORE SERIAL NUMBER
ALB2-XFX-1644)

BATTERY VERSION



<u>ITEM NO.</u>	<u>QTY.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	A8800	V420 BATTERY CAB ASSEMBLY
2-1	4	Q2950	PLASTIC CAP FOR M5
2-2	4	Q2550	SCREW M5 X 12 HEX
2-3	4	Q2955	PLASTIC CAP WASHER M5
3	2	P8820	VOYAGER 420 LABEL
4	1	P8800	V420 DISPLAY LABEL
5-1	1	P5030	EMERGENCY LOWERING LABEL
5-2	1	Q1038	PLASTIC CAP
6	1	M8500	V420 FRAME
7	1	Q1048	BRASS FLANGE BUSHING
8	1	A5220-A3	4-FUNCTION TROLLEY ASSEMBLY
8-1	1	M5220	4-FUNCTION TROLLEY ALUMINIUM PART ONLY
9-1	1	Q4260	M10 X 40 mm SCREW
9-2	2	A5245	50 mm WHEEL ASSEMBLY (BEARING INCLUDE)
9-3	2	Q4430	FLAT WASHER 10 mm
9-4	1	Q4418	JAM NUT M10
10-1	2	M5240	50 mm TRACTION WHEEL
10-2	2	Q2600	SET-SCREW M5 X 25
10-3	1	M8510	TRACTION SHAFT
10-4	1	M8530	SPROCKET ALB-3
11	1	A5160	CIRCUIT CONTACT ASSEMBLY
11-1	2	Q0887	POP RIVET 1/8 X 3/8
12-1	3	Q3635	M8 X 20 HEX SCREW
12-2	3	Q3960	LOCKWASHER M8

PART LIST

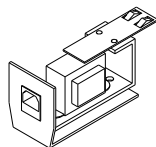
<u>ITEM NO.</u>	<u>QTY.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
13-1	1	Q0887	POP RIVET 1/8 X 3/8
13-2	1	200.08120	LIMIT ROD
13-3	2	Q0022	2-56 LOCKNUT
13-4	1	460.00005	SWITCH DB2
13-5	1	460.00015	SWITCH BLADE
13-6	2	Q0010	2-56 BOLT
13-7	1	Q0873	6.5 X 25 mm SPRING
14	1	M8520	STRAP GUIDE ROLL
14*	1	M8520	STRAP GUIDE ROLL
15-1	2	M8065	9 X 85 mm STEEL SHAFT
15-2	2	Q0846	SNAP RING 9 mm
16-1	1	M8505	SIDE DRUM PLATE
16-2	2	Q2542	SPACER #10 X 1/2
16-3	2	Q2800	LOCKNUT M5
17	1	A8051	DRUM ASSEMBLY (WITH STRAP)
18	1	A1360	V420 STRAP
19	1	E0006	TURBO MOTOR
20	1	A8020-A3	DRIVE SHAFT ASSEMBLY (COMPLETE)
21	1	Q1083	3/8 THRUST BEARING
22-1	3	Q3095	M6 X 16 HEX SCREW
22-2	3	Q3420	LOCKWASHER M6
23	1	E0006	TURBO MOTOR
24-1	3	Q3095	M6 X 16 HEX SCREW
24-2	3	Q3420	LOCKWASHER M6
25	1	Q1142U	25B16 SPROCKET
26	1	Q1166	#25 X 44 LINK CHAIN
27	1	Q1180	#25 CONNECTING LINK
28	1	Q0175	SET-SCREW ¼-20 X 5/16
29	2	E0150	12 V 7 Ah BATTERY
30	2	M8560	BATTERY BLOC
31	1	M5020	BATTERY RACK
32	2	Q2800	LOCKNUT M5
33	1	E8500-4FB	BHM-03 CIRCUIT BOARD (BATTERY VERSION)
**	1	C6SPC6A	PULL CHAIN EMERGENCY STOP
**	1	C5CUMNL/P15	15-PIN CONNECTOR PLUG AMP
34	1	Q1344	WHITE ELASTIC CORD
35	1	Q1343	RED ELASTIC CORD
36-1	2	Q2550	SCREW M5 X 12 HEX.
36-2	2	Q2900	LOCKWASHER M5
37*	**1	A5235	2-FUNCTION TROLLEY ASSEMBLY
37*	**1	M5235	2-FONCTION TROLLEY ALUMINIUM PART

PART LIST

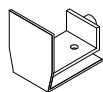
<u>ITEM NO.</u>	<u>QTY.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	
38	1	A5300	CHARGER END STOPPER ASSY	
39*	***1	C5CBUL/MF-C3	BULGIN 3mm 100-120V	
39*	***1	C5CBUL3MM220	BULGIN 3mm 220-240V	
40*	***2	C8FGMC0.5	FUSES GMC 0.5A	
40*	***2	C8FGMC0.250	FUSES GMC 0.250A	
41*	***1	E7525	1.5 m. POWER CORD NORTH AMERICA	
41*	***1	E7528	2.5 m. POWER CORD AUSTRALIA	
41*	***1	E7521	2.5 m POWER CORD EUROPE	
41*	***1	E7529	2 m POWER CORD JAPAN	
41*	***1	E7527	2.5 m. POWER CORD U.K.	
42	1	M5310	CHARGER ATTACHMENT	
43-1	2	Q3675	M8 x 25 HEX SCREW	
43-2	2	Q3960	M8 LOCKWASHER	
44	1	M5300	CHARGER END STOPPER FRAME	
45	1	Q1028	RUBBER BUMPER	
46*	***1	E7510	100-120/24 V 50 VA TRANSFORMER	
46*	***1	E7517	220-240/24 V 50 VA TRANSFORMER	
47	1	A5125	CHARGER CONTACT ASSY	
47-1	1	C9BHM34	CONTACT BOARD	
47-2	2	200.05340	CONTACT BLADE	
47-3	2	Q0888	RIVET 1/8 x 1/8	
48	1	200.05345	MICA PROTECTOR	
49	5	Q0895	RIVET 3/16 x 1/8-1/4	
50*	***1	E7250	350 VA 120/24 TRANSFORMER	
50*	***1	E7251	350 VA 220/24 TRANSFORMER	
51	1	C1PMB256	BRIDGE RECTIFIER	
52	1	C8FPANELGMA	FUSE HOLDER	
53*	***1	A7190	CABLE CONNECTOR 12-110 V	
53*	***1	A7195	CABLE CONNECTOR 12-220 V	
54	4	Q2575	SCREW M5 X 20 HEX	
55	6	Q2800	M5 LOCKNUT	
56	4	Q2542	SPACER #10 X 1/2 (5 mm)	
OTHER PARTS				
6-BUTTON HANDSET		A0086	2-BUTTON HANDSET	A0093
FUSE .5 AMPS		C8FGMC0.5	FUSE 0.25 AMPS	C8FGMC0.25
FUSE 4 AMPS		C8FGMA4	FUSE 15 AMPS	C8FGMA15
AMP PIN EXTRACTING TOOL		318851-1		

ACCESSORIES

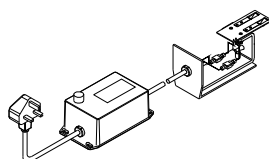
**INTEGRATED
CHARGER STOPPER**
Product No. A5300



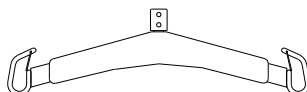
RAIL STOPPER
Product No. A5320



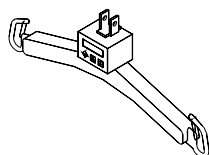
CHARGER STOPPER FOR UK ONLY
Product No. 700.05235.04



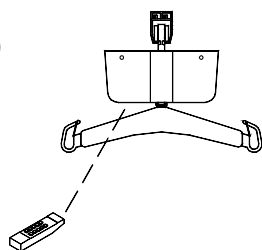
CARRY BAR
Product No. A5465



ERGOSCALE WEIGHING DEVICE
Product No. ERGOSCALE-T2



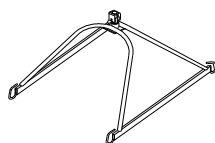
INFRARED REMOTE CONTROL
Product No. A5400
(must be ordered with lift)



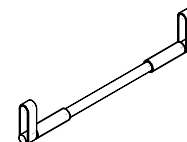
TIMER FOR RETURN TO CHARGE
Product No. A5200



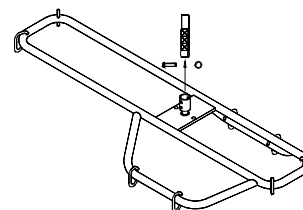
SUPPORT FOR ERGOFIT PLUS SLING
Product No. 700.05550



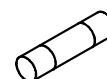
TRAPEZIUM
Product No. A5700



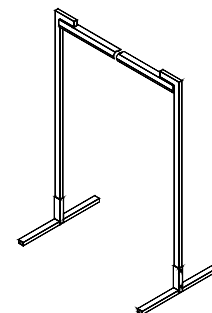
SUPPORT FOR SOFT STRECHER SLING
Product No. A5515



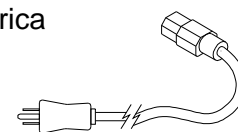
FUSE
Product No.
C8FGMC0.5 (120/24 volt) North America
C8FGMC0.25 (240/24 volt) European



SEMI PERMANENT RACK
Product No. A9200



**HOSPITAL GRADE
POWER CORD**
Product No. E7525 North America
E7521 Europe
E7527 UK
E7528 Australia



HANDSET
2-button Product No. E0093
For VOYAGER 420 and 550
2 functions

6-button Product No. A0086
For VOYAGER 420 and 800
4 functions
8-button Product No. A5600
For VOYAGER 550
4 functions



WARRANTY

This warranty is extended only to the original purchaser/user of BHM products.

BHM Medical Inc. warrants its products to be free from defects in material under normal use and service, within the periods stated below from the date of purchase. If within such warranty period any such product shall be proven to be defective, such product shall be repaired or replaced at BHM Medical's option. This warranty does not include any labor or shipping charges incurred in replacement part installation or repair of any such product. BHM Medical's sole obligation and your exclusive remedy under this warranty shall be limited to such repair and/or replacement.

Patient Lifter	1 year
Tracks and installation	Life time warranty*
Weighing Devices	1 year
Accessories on Lifter	1 year
Slings	1 year
Batteries - Voyager Portable	3 months
Batteries - All other lifts	1 year
Easytrack System	1 year

For warranty service, please contact the dealer from whom you purchased the BHM Medical product. [In the event that you do not receive satisfactory warranty service, please contact BHM Medical (see contact information in Table of Contents).]

Do not return products to our factory without prior authorization. BHM Medical will issue a Return Merchandise Authorization (RMA) Number. C.O.D. shipments will be refused; all shipments to BHM Medical must be prepaid. For this warranty to be valid, the purchaser must present its original proof of purchase at the moment of the claim. The defective unit, assembly or part must be returned to BHM Medical for inspection. The part or components repaired or replaced are guaranteed for the remaining period of the initial warranty.

Limitations and Exclusions:

The warranty above does not apply to serial numbered products if the serial number has been removed or defaced.

No warranty claim shall apply where the product or any other part thereof has been altered, varied, modified, or damaged; either accidentally or through improper or negligent use and storage. Warranty does not apply to products modified without BHM Medical's express written consent, (including but not limited to products modified with unauthorized parts or attachments); products damaged by reason of repairs made to any component without the specific consent of BHM Medical, or to products damaged by circumstances beyond BHM Medical's control. BHM Medical will solely determine evaluation of warranty claim. The warranty does not apply to problems arising from normal wear or failure to adhere to the instructions in this manual. BHM Medical Inc. slings are void of warranty if not laundered as per instructions on the Sling Label.

BHM Medical Inc. shall not be liable for damages losses or inconveniences caused by a carrier.

This warranty replaces any other warranty expressed or implicit and constitutes BHM Medical Inc. only obligation towards the purchaser. BHM Medical shall not be liable for any consequential or incidental damages whatsoever.

* Valid only if BHM Medical did the original installation. Warranty void if tracks/installation have been modified.