MILLENNIUM MEDICAL PRODUCTS, INC.

PATIENT LIFT AND TRANSFER SYSTEM

LIFTEM®

MAINTENANCE MANUAL

MODEL MARK IV

SEPTEMBER, 2006

MAINTENANCE PROCEDURES

Perform the following service and maintenance procedures on a regularly scheduled basis to keep LIFTEM® functioning at optimum performance for as long as possible.

Remove unit power plug from socket-outlet before performing any maintenance operations except charging the BATTERY.

Weekly Service and Maintenance

On a weekly basis, or at more appropriate intervals considering usage and storage environments, clean any dust and dirt off LIFTEM® by wiping metal surfaces with a damp cloth moistened with lukewarm water.

Monthly Service and Maintenance

On a monthly basis, or at more appropriate intervals considering usage, perform the following LIFTEM® Monthly Operation Verification Procedure.

A. OBJECTIVE:

The objective of this procedure is to verify the integrity of LIFTEM® on a monthly basis.

B. GENERAL:

The Verification Procedure consists of:

- RECORDS REVIEW
- PHYSICAL CHECKS AND MEASUREMENTS
- OPERATIONAL TEST
- SAFETY SOFTWARE VERIFICATION

Data Sheets are provided on pages 39 and 40 to record the results of this procedure. These sheets should be completed and filed for reference during subsequent checks.

C. RECORDS REVIEW:

Review the Lift Maintenance Records and verify that the periodic maintenance procedures specified in Chapter 7 of the Operations Manual have been satisfactorily performed. Perform and/or complete any overdue procedures.

D. PHYSICAL CHECKS AND MEASUREMENTS:

The purpose of these Checks and Measurements is to insure that LIFTEM® has not been damaged or that the position or location of any key parts has not shifted or been damaged. Record all results on the Data Sheet.

1. Wipe down LIFTEM® metal surfaces using a damp cloth and lukewarm water and insure that all hardware (nuts, bolts, etc.) is complete and tight. Inspect for damage.
2. Measure distance from FLOOR to TOP of CHEEK PLATES.
3. Measure distance from FRONT of LEGS to the LIP on the back of the BASE, with LEGS retracted.
4. Measure distance from CENTER to CENTER WIDTH between REAR CASTER

mounting BOLTS.

5. Verify presence of required decals and tags.

E. OPERATIONAL TEST:

The purpose of the Operational Test is to verify that LIFTEM® continues to meet its basic functional requirements. Record all results on the Data Sheet.

1. Setup LIFTEM® to operate.
2. Lock REAR CASTERS. Using HANDSET; Extend LEGS fully.
3. Measure distance from FRONT END of LEGS to BACK of BASE Lip with LEGS fully extended and not spread.
4. Using HANDSET; Spread LEGS fully.
5. Measure CENTER to CENTER WIDTH between FRONT CASTER Mounting BOLTS.
6. Position the BOOM at its CENTER and Lower the BOOM until it stops.
7. Measure distance between FLOOR and 600-Pound LIFT POINT HOLE CENTER.
8. Raise the BOOM until it STOPS. LIFT ACTUATOR should have traveled to its full extension.
9. Measure distance between FLOOR and 600-Pound LIFT POINT HOLE CENTER.
10. Measure extension of the LIFT ACTUATOR from the GROOVE near END of the PISTON SHAFT to FRONT of CAP on LIFT ACTUATOR HOUSING.
11. Inspect the LIFT ACTUATOR Piston Rod Eye, Bushing and Case Back Fixture for wear. (See LIFTEM® Figure 8, Page 49.)
12. Inspect the inner and outer tubes of the LIFT ACTUATOR for deep scratches or dents. (See LIFTEM® Figure 8, Page 49.)
13. Rotate the BOOM FULLY LEFT & FULLY RIGHT, approximately 30° each way.
14. Return the BOOM to its CENTER POSITION and LOWER.
15. RETRACT and CLOSE LEGS.

F. SAFETY SOFTWARE VERIFICATION:

The purpose of the Safety Software Verification Test is to verify that the Safety Software features built into the Controller are fully functional. Record all results on the Data Sheet.

1. Insure that LEGS are RETRACTED and CLOSED.
2. Using HANDSET; ROTATE BOOM to left and right. BOOM should move slightly and stop.
3. Spread LEGS fully.
4. ROTATE BOOM to left and right. Should move slightly and stop.
5. Close LEGS completely.

6. Extend LEGS fully.
7. ROTATE BOOM to left and right. Should move slightly and stop.
8. SPREAD LEGS fully.
9. ROTATE BOOM fully to right (30°).
10. ROTATE BOOM fully to left (30°).
11. RETRACT LEGS. Should move slightly and stop.
12. CLOSE LEGS. Should move slightly and stop.
13. Return BOOM to its CENTER position.
14. Retract and close LEGS.

NOTES: (1) Failure of any item in Section F indicates that CONTROLLER SAFETY SOFTWARE must be RE-INITIALIZED, using instructions provided by MILLENNIUM MEDICAL PRODUCTS on request.

(2) Record any noises or abnormalities observed during the performance of this procedure.

LIFTEM® MKIV PERIODIC RETEST DATA SHEET

Serial Number: _____ Test Date: _____ Test Performed By: _____

	(Indicates expected response)
A. RECORDS REVIEW	
1. Periodic recommended Maintenance Records reviewed and any missed items completed.	(Yes)
B. PHYSICAL CHECKS AND MEASUREMENTS	
1. Wipe down LIFTEM®, insure that all hardware (nuts, bolts, etc.) is complete and tight. Inspect for damage.	(Yes)
2. Measure distance from FLOOR to TOP of CHEEK PLATES.	(64"+/-1")
3. Measure distance from FRONT of LEGS to the LIP on the back of the BASE, LEGS retracted.	(49"+/-1/2")
4. Measure distance from CENTER to CENTER WIDTH between REAR CASTER mounting BOLTS.	(21"+/-1/2")
5. Required DECALS and TAGS are in place and LEGIBLE.	(Yes)
• Laminated "LIFTEM®" Key Operation Points" TAG on HANDLE BAR	(Yes)
• Hanging STOP SIGN on CHEEK PLATE	(Yes)
• DECAL / LABEL Installation:	(Yes)
• Product/Company Name & Serial No.	(Yes)
• HAND CONTROLLER – Push Button Functions	(Yes)
• CHEEK PLATE & LEGS – Yes and No Operating Points	(Yes)
• LIFT POINTS - □ 600 Pound / □ 700 Pound	(Yes)
• Maximum Capacity - □ 700 Pound	(Yes)
• Product Name - LIFTEM®	(Yes)
• DO NOT Push or Pull Lift with Patient Suspended (4 PLACES)	(Yes)
• POWER CORD – Use only to:	(Yes)
• When Relocating Lifting Bar	(Yes)
• PINCH POINT Warning	(Yes)
• Operate on LEVEL SURFACE	(Yes)
• "Manufactured" (Date followed by E or M)	(Yes)
C. OPERATIONAL TEST	
1. Setup LIFTEM® to operate	(Yes)
2. Lock REAR CASTERS. Using HANDSET; Extend LEGS fully	(Yes)
3. Measure distance from FRONT END of LEGS to BACK of BASE Lip with LEGS fully extended and not spread.	(69 ½"+/-1/2")
4. Using HANDSET; Spread LEGS fully.	(Yes)
5. Measure CENTER to CENTER WIDTH between FRONT CASTER Mounting BOLTS.	(80"+/-1")
6. Position the BOOM at its CENTER and Lower the BOOM until it stops.	(Yes)
7. Measure distance between FLOOR and 600 Pound LIFT POINT HOLE CENTER.	(36" Maximum) [or 38.5" Maximum if Boom Height Adjustment has been made]
8. Raise the BOOM until it STOPS. LIFT ACTUATOR should have traveled to its full extension.	(Yes)

9. Measure distance between FLOOR and 600 Pound LIFT POINT HOLE CENTER.	(80" Minimum) [88.5" Minimum if Boom Height Adjustment has been made]
10. Measure extension of the LIFT ACTUATOR from the GROOVE near END of the PISTON SHAFT to FRONT of CAP on LIFT ACTUATOR HOUSING.	(15.69"+/-1/16")
11. Inspect the LIFT ACTUATOR Piston Rod Eye, Bushing and Case Back Fixture for wear. (See LIFTEM® Figure 8)	(None observed)
12. Inspect the inner and outer tubes of the LIFT ACTUATOR for deep scratches or dents. (See LIFTEM® Figure 8)	(None observed)
13. Rotate the BOOM FULLY LEFT 30°.	(30° ± 1° left)
14. Rotate the BOOM FULLY RIGHT 30°.	(30 ± 1° right)
15. Return the BOOM to its CENTER POSITION and LOWER.	(Yes)
16. RETRACT and CLOSE LEGS.	(Yes)
D. SAFETY SOFTWARE VERIFICATION	
1. Insure that LEGS are RETRACTED and CLOSED.	(Yes)
2. Using HANDSET; ROTATE BOOM to left and right. Should move slightly and stop.	(Yes)
3. Spread LEGS fully.	(Yes)
4. ROTATE BOOM to left and right. Should move slightly and stop.	(Yes)
5. Close LEGS completely.	(Yes)
6. Extend LEGS fully.	(Yes)
7. ROTATE BOOM to left and right. Should move slightly and stop.	(Yes)
8. SPREAD LEGS fully.	(Yes)
9. ROTATE BOOM fully to right (30°).	(Yes)
10. ROTATE BOOM fully to left (30°).	(Yes)
11. RETRACT LEGS. Should move slightly and stop.	(Yes)
12. CLOSE LEGS. Should move slightly and stop.	(Yes)
13. Return BOOM to its CENTER position.	(Yes)
14. Retract and close LEGS.	(Yes)

NOTES: (1) Failure of any item in Section D indicates that CONTROLLER SAFETY SOFTWARE must be RE-INITIALIZED.
(2) Record any noises or abnormalities observed during the performance of this procedure.

15. Record Comments:

_____
_____
_____
_____
_____
_____

Serial Number: _____

When LIFTEM® is Disassembled for Transport or ACTUATOR Change

Apply Food-Grade Teflon Anti-Seize Lubricant (McMaster-Carr Part Number 1404 K11) to the Teflon thrust bearing using the following procedure (see photo):

- Remove the two acorn nuts that hold down the "L" SHAPED BRACKETS to the MAST RETAINER.
- Loosen the two screws that hold the "L" SHAPED BRACKETS to the MAST using a 3/16 Allen Hex Key and slide them out of the way. Temporarily tighten.
- Remove the four hex head screws that hold down the MAST BUSHING CLAMP PLATE and remove the two CLAMP PLATES.
- Push back on the MAST in the direction away from the legs and pull out the FRONT MAST BUSHING.
- Lubricate the vertical bearing surface of the FRONT MAST BUSHING using the lubricant specified above.
- Push the MAST in the direction away from the legs and replace the FRONT MAST BUSHING.
- Replace the two MAST BUSHING CLAMP PLATES and screws.
- Loosen the screws and slide down the "L" SHAPED BRACKET down the MAST over the screws left protruding out of the REAR MAST BUSHING. Retighten the screws holding them to the MAST.
- Replace and tighten the two acorn nuts.

Quarterly Service and Maintenance

On a quarterly basis, connect LIFTEM® to 115 Volt AC MAINS for complete BATTERY charging.

Triennial Service and Maintenance

Every three years replace "O" Rings on all connections to the CB14 CONTROLLER using LINAK "O" Rings. Lubricate "O" Rings with white Vaseline to facilitate installation. Insure that the socket is clean and undamaged.

Quadrennial Service and Maintenance

Every four years replace the BATTERY with a new unit. Return the BATTERY to MILLENNIUM MEDICAL PRODUCTS for proper disposal.

1. Piston rod eye, back fixture and bushings:

Check for damaged or deformed material on the hoist, the bolts and actuator fixing points. This could include worn bolts, rear clevis, or piston rod eye.

Check to make sure the bushings are placed correctly and that they are not worn or damaged. The picture to the right shows a bushing that is starting to come out of the piston rod eye. This should be corrected.

If worn out, damaged or deformed parts are found on the hoist or actuator, then replace those parts before operating the lift again.

Worn Bushing

Worn Piston rod eye

2. Scratches and damaged tubes:

Check the inner and outer tube for deep scratches and dents. These deep scratches or dents can cause a stress concentration, which can weaken the tubes under load.

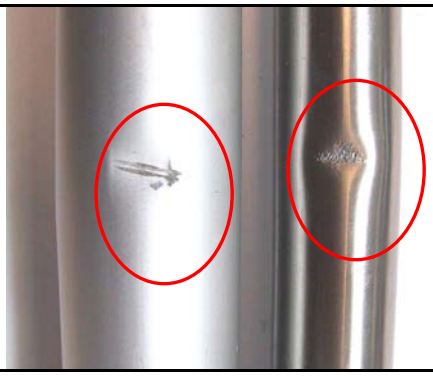

FIGURE 8

* If deep inner or outer tube scratches, dents or elongated/worn bushings/holes are observed, the parts are to be removed and replaced.

** If any unusual or abnormal sounds such as ticking, grinding or screeching occur when operating in the loaded or unloaded mode the LIFT ACTUATOR is to be removed and replaced.