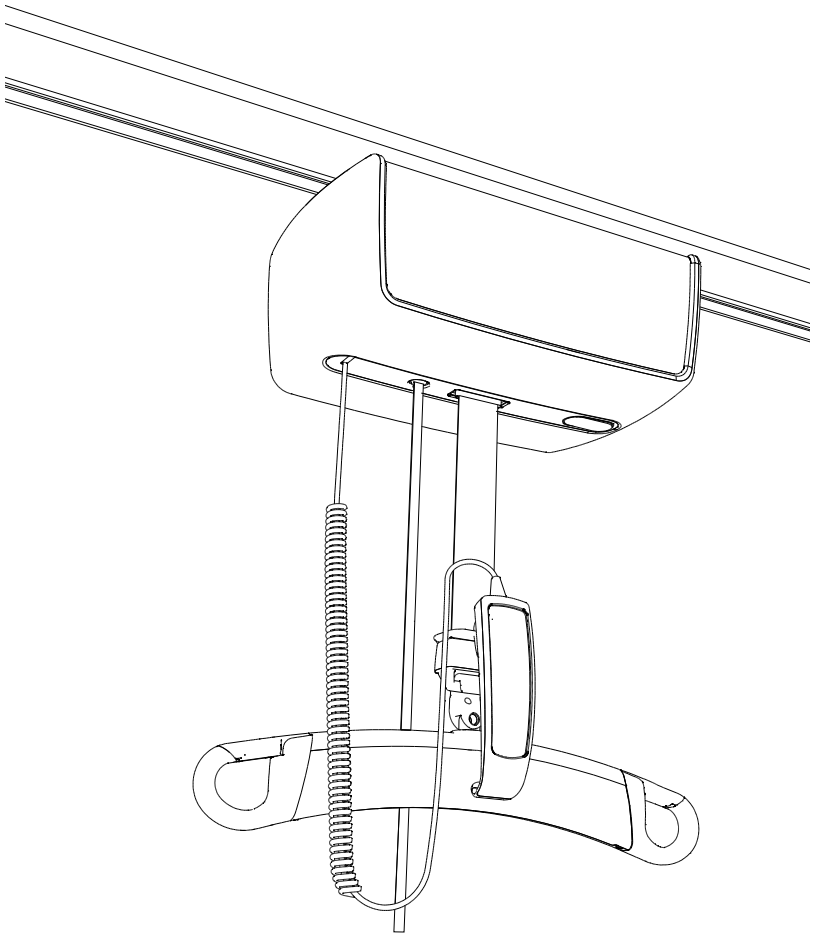
LikoGuard™
Overhead Lift
Service Manual

LikoGuard™ L Product No. 3301030

LikoGuard™ XL Product No. 3301040



3EN190401 Rev. 7
ENGLISH

Enhancing outcomes for patients and their caregivers.

In this document, this warning symbol indicates that special care should be taken.
If instructions are not followed there is a risk of serious injury to patient or caregiver.

Spare part statement

Liko AB will as a manufacturer of stationary & mobile lifts keep spare parts available
for 10 years after the last manufacturing date of the product.
Spare parts are available in the spare parts list or in the Service Manual for each model of lift.
Components (manufacturing parts) are not available after last manufacturing date.

Repairs and maintenance may only be performed by personnel authorized by Hill-Rom
and using original Liko™ spare parts.
For information regarding Service and Maintenance education, contact your Hill-Rom representative.
For contact information please visit our website: www.hill-rom.com

Table of Contents
LikoGuard™ overhead lift

1.1 Technical Data

Maximum load	L: 272 kg (600 lbs.) XL: 363 kg (800 lbs.)
Battery:	25.2V / 4.2 Ah
Main board memory backup battery:	Button cell battery Lithium 3 V 225 mAh, CR2032
Battery charger:	Built-in battery
Power source:	Wall charger, Art. No. 3305010 - 3305050* Input: 100-240 VAC, 50/60 Hz, 0.9 A Output: 33.5 VDC, 1.36 A IRC charger, Art. No. 3305510 -3305550** Input: 100-240 VAC, 50/60 Hz, 1.2 A Output: 27.6-29.5 VDC, 1.5 A
Lifting speed:	5-6 cm/sec with a load between 0 - 100 kg (2 - 2.3 inch./sec. with a load between 0 - 220 lbs.) 4-6 cm/sec with a load between 100 kg - SWL (1.6 - 2.3 inch./sec. with a load between 220 lbs. - SWL)
Lifting interval:	Min. 2300 mm
Electrical data:	25.2 V / 30 A
Fuse:	Type: 0287020 Voltage: 32VDC Breaking capacity: 1000A Operation Speed: 150ms-5s
Liftmotor Weight:	14 kg (31 lbs.)

Emergency lowering device:	Mechanical Electrical
Emergency raising:	Electrical
Duty cycle: (Intermittent power)	10/90 max. 2 min (0 - 272 kg) (0 - 600 lbs.) 5/95 max. 2 min (.>272 - 363 kg) (.> - 800 lbs.)
Sound level:	70 dB(A)
Lift motor Protection class:	IP X4 (humidity resistance)
Hand control Protection class:	IP X7 (humidity resistance)
Operating forces of controls:	4.9 N
Surrounding functional environment:	Temp. +5 ° C till +40 ° C, relative humidity 15% to 93% non-condensing. Barometric pressure range of 70 kPa to 106 kPa.

Intended for indoor use.

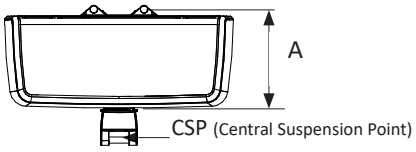
Protection class against electric shock Type BF, *(Wall Charger).*

Protection class against electric shock Type B, *(IRC Charger)*.

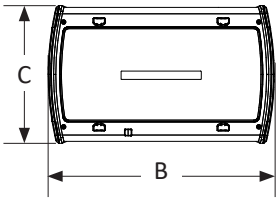
* *Wall charger; full charge is achieved after maximum 6 hours.*
** *IRC charger; full charge is achieved after maximum 16 hours.*

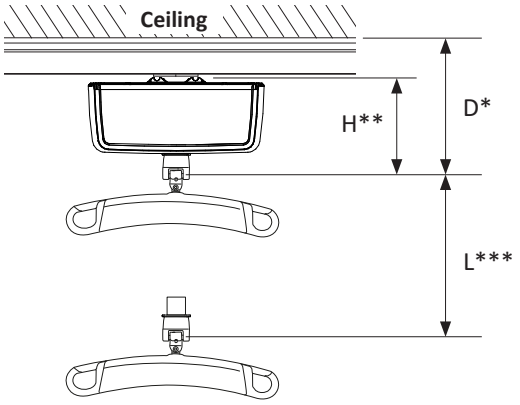
WARNING! This product shall only be used in the recommended environment.

Side view



Top view





Measurements in mm.

A	B	C	D*	H**	L***
178	410	250	323	232	2300

Measurements in Inch.

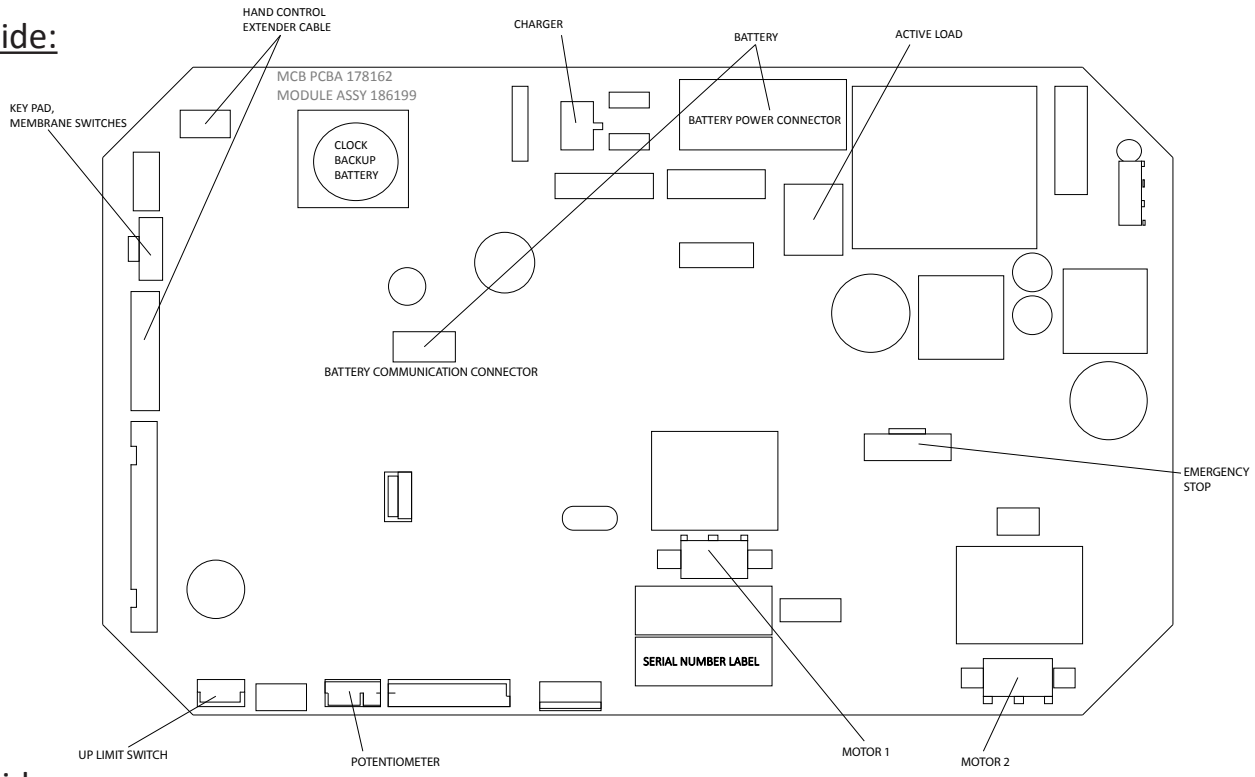
A	B	C	D*	H**	L***
7	16.1	9.8	12.7	9.1	90.6

* Min. distance from ceiling to CSP at max. lifting height.
** Installation dimensions: the distance between the attachment point for the lift unit on the carriage and the CSP at max. lifting height.
*** Lifting interval: the distance between max. lifting height and min. lifting height measured in CSP.

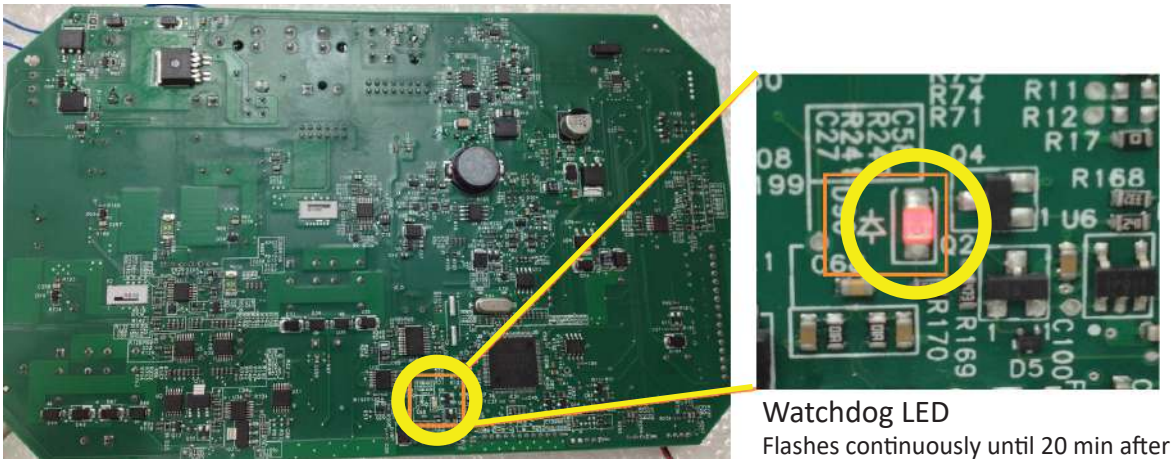
The product fulfils the requirements of:
ISO10535:2006, IEC60601-1, IEC60601-1-2, IEC60601-1-6 , IEC60601-1-11, ANSI/AAMI ES60601-1, CAN/CSA C22.2 No 60601-1

1.2 PCB Board Wiring Diagram

A Side:



B Side:



Watchdog LED

Flashes continuously until 20 min after lift was last used.

1.3 Rechargeable Li-Ion Battery

Safety advice:

Do not open the battery. Do not crush, disassemble, drop or solder. Lithium-ion batteries may present a risk of fire or explosion or chemical burn when mistreated. Do not short circuit, puncture, incinerate, crush, immerse, force discharge or expose to temperatures above the declared operating temperature range of the product.
Wrong handling can cause fire or explosion. In case of fire, use dry chemical extinguishers.

If chemicals leak attend these advices:

Skin contact; Contents of an opened battery can cause skin irritation. Wash skin with soap and water.
Eye contact; Contents of an opened battery can cause eye irritation. Immediately flush eyes thoroughly with water for 15 minutes and seek medical attention.

Charging Instructions:

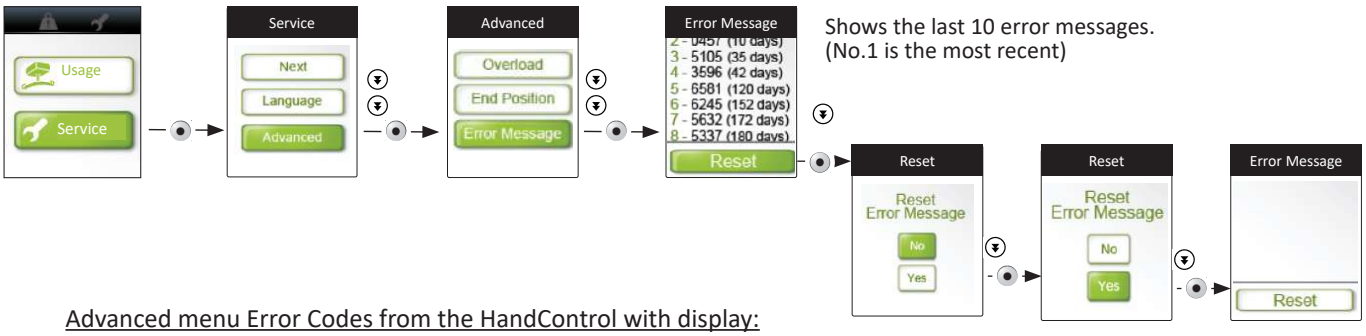
Do not exceed surrounding temperature range (+5 to +40° C). Charge only with specified charger designed for this battery.

2.1 General Troubleshooting

The lift doesn't work	*1. Check that the Emergency Stop button is not activated. (a signal will be heard if the emergency stop is activated and the hand control buttons are pressed)* *2. Charge the LikoGuard™ Overhead lift.* *3. If the lift still does not work satisfactorily, please contact Hill-Rom.*
A repeated signal can be heard from the lift	*1. Charge the LikoGuard™ Overhead lift immediately.* *2. If the lift still does not work satisfactorily, please contact Hill-Rom.*
The lift stops in the high position	*1. Check that the Emergency Stop button is not activated.* *2. Use the mechanical or the electrical emergency lowering device to lower the patient onto a firm surface.* *3. Charge the LikoGuard™ Overhead lift.* *4. If the lift still does not work satisfactorily, please contact Hill-Rom.*
The lift does not achieve maximum lifting capac	*1. Charge the LikoGuard™ Overhead lift.* *2. If the lift still does not work satisfactorily, please contact Hill-Rom.*
In the event of excessive noise from the lift!	*Please contact Hill-Rom.*

2.2 Error codes- General Information

HandControl LG with display



Advanced menu Error Codes from the HandControl with display:
The error code consists of 4 digits. The first two digits indicate the origin of the failure in the soft ware (the SW item e.g. the battery handler, motor controller) – table 1.
The second two digits are the type of failure e.g. RTC failure, SPI bus failure. – table 2.

Error Code Examples:

0319: 03 corresponds to – motor controller
19 corresponds to – over temperature error
=> High temperature in the system

0a0b: 0a is the – battery handler
0b is an – I2C bus error
=> Failure occurred on the battery communication line

TABLE 1

Software item	Description
00	Lift Motor driver
01	Transfer motor driver
02	Switch motor driver
03	Motor controller
04	Data storage
05	Pendant handler
06	Real time clock (RTC) handler
07	Sensor handler
08	Power handler
09	Service
0a	Battery handler
0b	System handler
0c	Keyboard handler
0d	Charger handler
0e	Input/Output (IO) expander

TABLE 2

ID	Description
01	Read failure on the SPI bus
02	Write failure on the SPI bus
03	Read failure on the UART bus
04	Write failure on the UART bus
05	Write failure on the I2C bus
06	Read failure on the I2C bus
07	Mutex failure
08	Q failure
09	Eeprom failure
0b	General I2C bus error
0c	Time out error on the I2c
0d	RTC is desyncronised
0e	Charging error
0f	Charging time out error
10	Inrush error
11	Current difference error
12	Potentiometer calibration error
13	Limit switch error
14	No change in the potentiometer error
15	Lower limit switch failure
16	Upper limit switch failure
17	Active load switch missing
18	Current change invalid
19	Overtemperature error
21	Indicator error for software over current
22	Indicator error for hardware over current
30	Checksum failure
31	Critical data read from eeprom failure
32	Pendant communication failure
33	Pendant power down
FF	Error code not defined

2.3 Error codes- Service Advice

HandControl LG with display

Error code	Meaning:	Recovery:	Service advice:
0310	Motor current inrush error	5 minute time out before the system is operational again	If error repeats; Contact Hill-Rom
0311	Current difference greater than 5Amps between the motors	5 minute time out before the system is operational again	If error repeats; Contact Hill-Rom
0314	Potentiometer has failed	5 minute time out before the system is operational again	Check : 1. Potentiometer connects to the gear wheel 2. Electrical connection to the potentiometer 3. Electrical connection to the board 4. Continuity of the cable from potentiometer to board
0318	Invalid current read when lift not moving	5 minute time out before the system is operational again	If error repeats; Contact Hill-Rom
0319	Overtemperature occurred	System does not allow operation if the temperature is too high. When the temperature cools down the system can operate again	If error repeats; Contact Hill-Rom
0320	Error occurred during motor calibration	System can function but using default motor calibration values	Contact Hill-Rom
0321	Overload occurred detected by the software, should only occur if lifting over the SWL, (Software trigger)	Lift should allow downward movement, upward movement available after 2 seconds	If this occurs at loads below the SWL; contact Hill Rom. If this occurs above the SWL, the lift is being used out of specification.
0322	Overload occurred detected by the software, should only occur if lifting over the SWL, (Hardware trigger)	Lift should allow downward movement, upward movement available after 2 seconds	If this occurs at loads below the SWL; contact Hill Rom. If this occurs above the SWL, the lift is being used out of specification.
0430	External memory failure - generates a service request*	Should recover automatically	Check parameters and reset service**
0431	External memory failure - generates a service request*	Should recover automatically	Check parameters and reset service**
0605	Bus communication error		If error repeats; Contact Hill-Rom
0606	Bus communication error		If error repeats; Contact Hill-Rom
0607	Bus communication error		If error repeats; Contact Hill-Rom
0609	Bus communication error		If error repeats; Contact Hill-Rom
0630	External memory failure - generates a service request*	Should recover automatically	Check parameters and reset service **
0631	External memory failure - generates a service request*	Should recover automatically	Check parameters and reset service**
060b	Bus communication error		If error repeats; Contact Hill-Rom
060c	Bus communication error		If error repeats; Contact Hill-Rom
090d	RTC (real time clock) is desynchronised, service flag should be set		Replace the Main Board battery (button), reset service **

* *For the HandControl without display service request is indicated by the wrench icon LED.*
For the Hand Control with display service request is indicated by the display icon (top right).

** *To reset service, see 4.7*

2.3 Error codes- Service Advice

HandControl LG with display

Error code	Meaning:	Recovery:	Service advice:
0a06	Bus communication error	System will stop articulation until error clears	If error repeats; Contact Hill-Rom
0a07	Bus communication error	System will stop articulation until error clears	If error repeats; Contact Hill-Rom
0a0b	Bus communication error	System will stop articulation until error clears	If error repeats; Contact Hill-Rom
0a0c	Bus communication error	System will stop articulation until error clears	If error repeats; Contact Hill-Rom
0a0e	Charge fault in Battery	Non-critical error , software tries to recover by re-writing / re-reading. Articulation not impacted	If error repeats; Contact Hill-Rom
0a0f	Charger timeout failure	System will start charging after 5 minutes once the lift is used again (by pressing up/down key)	If error repeats; Contact Hill-Rom
0b16	Upper limit switch failure		Check the upper limit switch connection on the board. Check the upper limit switch wiring is undamaged (no short circuit) Check the switches are functional
0b17	Active load connection failure		Check the active load connection on the board is correct
0b32	HandControl is not responding		Plug in the HandControl Disconnect the battery and reconnect. WARNING! When disconnecting the battery: Disconnect communication connector before power connector When connecting the battery: Connect power connector before communication connector If error repeats; Contact Hill-Rom
0c31	Communication failure with the HandControl		If error repeats; Contact Hill-Rom
0e05	Bus communication error		If error repeats; Contact Hill-Rom
0e06	Bus communication error		If error repeats; Contact Hill-Rom
0e07	Bus communication error		If error repeats; Contact Hill-Rom
0e0b	Bus communication error		If error repeats; Contact Hill-Rom
0e0c	Bus communication error		If error repeats; Contact Hill-Rom

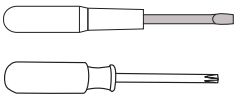
3.1 Assembly of HandControl with display, for service

HandControl LG 2-Button with display

Product No. 3306020

Before assembly:
- ESD protection is required.

Tools required:



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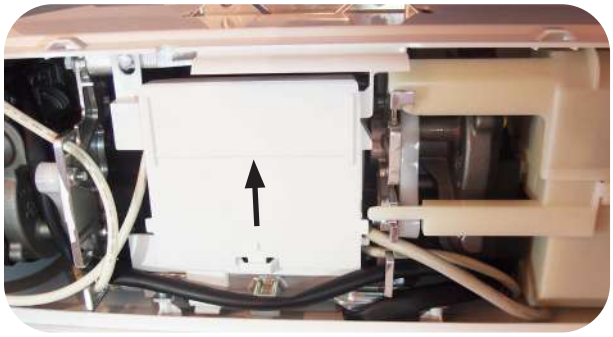
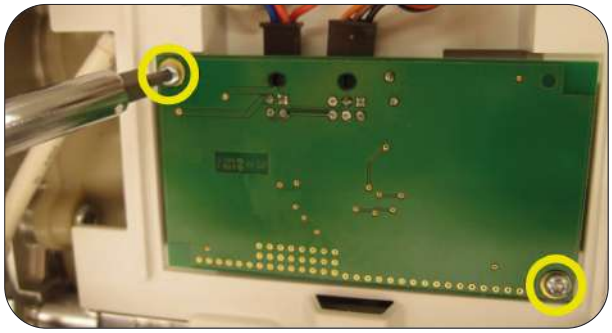
When the HandControl with display is required for service and the HandControl without display is attached to LikoGuard™ Overhead Lift, this assembly instruction can be used:

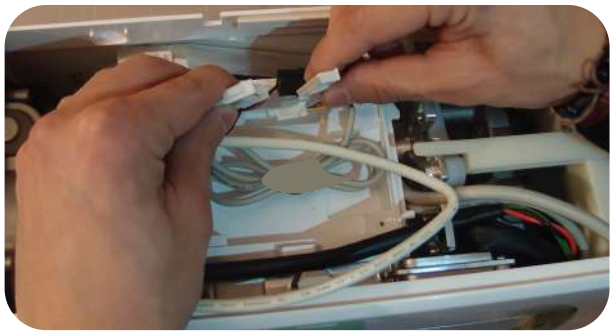
Step 1.
-Activate the emergency stop
-Remove side cover (Screwdriver)



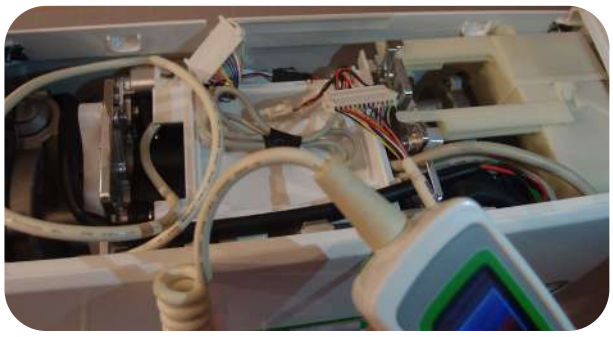
Step 2.
-Release the HandControl cables to access the cover. (White cable)
-Remove the cover by slideing it up.



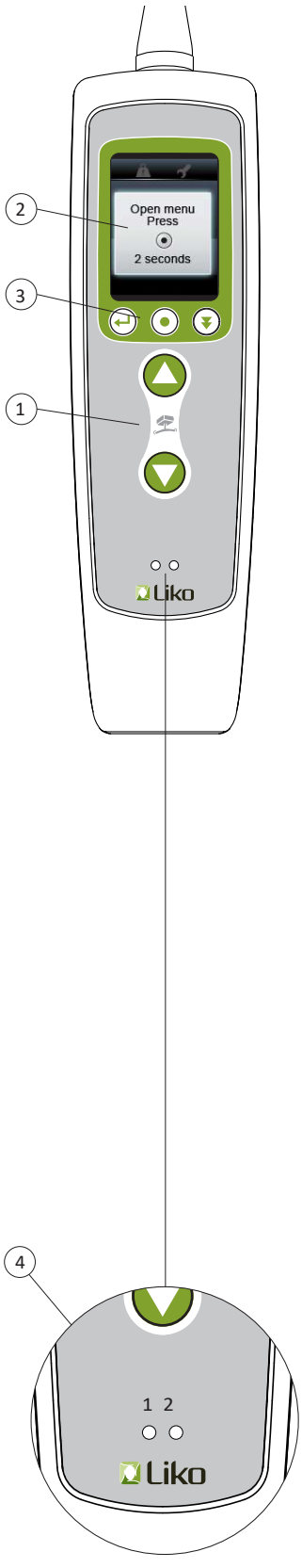
Step 3. (If Step-up card is installed)
-Remove the board, 2xT15 screws.



Step 4.
-Disconnect the HandControl without display.



Step 5.
-Connect the HandControl with display and start the service.



1. Operation

Up
Lift movement is based on the HandControl being held in the direction shown in the picture. The movement stops when the button is released.

Down
Lift movement is based on the HandControl being held in the direction shown in the picture. The movement stops when the button is released.

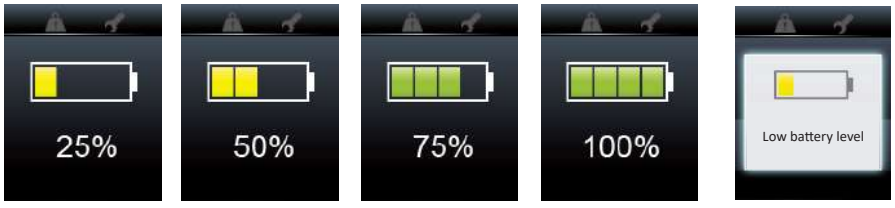
2. Display

Display window consists of two fields.

The small field shows Symbols (see 4.3)

The large field shows Information, Messages or Menus (see 4.3)

When the lift is in use the display window shows remaining battery power. The battery power is indicated by four fields.
Battery power is 100% when all fields (1-4) are lit.
If only one field is lit 25% of battery power remains, an alarm sounds and the lift should be charged at once.



3. Manage display information in menus

"Back" "Select" "Navigate"

4. Information when charging

When the HandControl is connected to the wall charger the lamps indicate:

1 2

(1) yellow LED illuminates to indicate that the charger is connected to the electrical grid.

(2) yellow LED indicates that charging has begun.

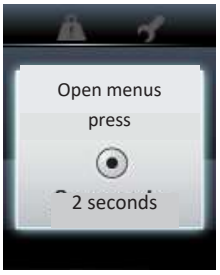
(2) green LED indicates that the battery is fully charged.

3.3 Pop-Up messages

Symbols and Information (pop-up message)

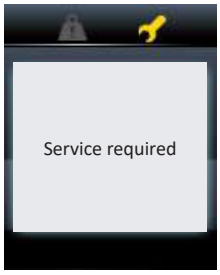
A pop-up message is displayed on screen for 5 seconds or until any button on the HandControl is pressed.

To Menus!



To display menus Usage or Service; Hold in the button ⦿ on the HandControl for 2 seconds.

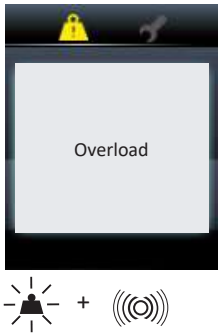
Service required



The symbol is continuously illuminated yellow.

-The lift may be used as normal until Service.

Overload (maximum load)!

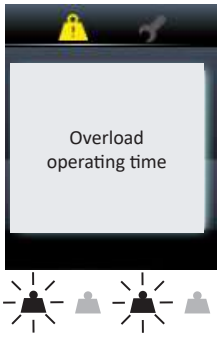


The symbol is illuminated yellow, an alarm sounds and the lift stops.

-Check load, and that the lift is not affected by surrounding objects.

When the symbol goes out and the alarm goes off the lift can be used again.

Overload (operating time)!



The symbol flashes yellow.
- The lift's operating time has been exceeded. The lift may be used to lower the patient to a secure surface. Allow the lift to rest for around 2 hours or until the message is no longer displayed when the button is pressed.

When the symbol goes out the lift can be used again.

Low battery!

The battery should be charged at once.

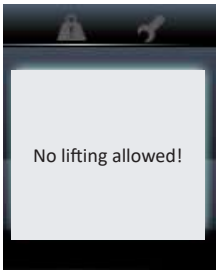
Broken contact!

HandControl has lost signal from the lift.

Emergency stop activated!

Press in the emergency stop button on the underside of the lift to reset.

No lifting allowed!



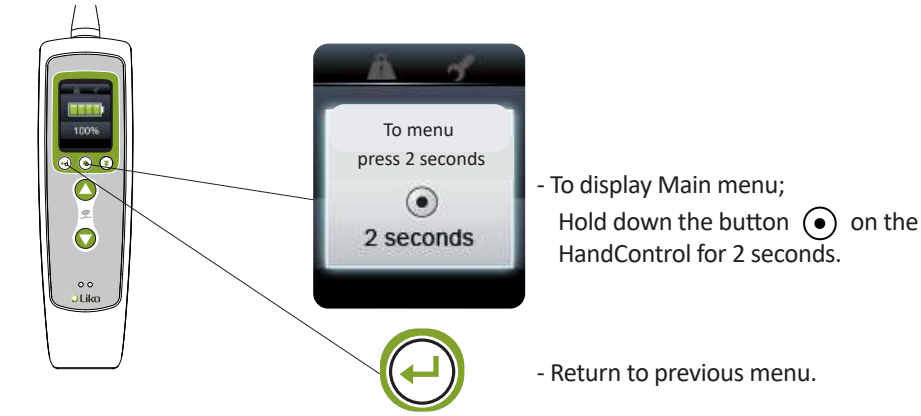
A serious operational fault has developed. Lifting is not permitted.

- After 1 minute of unuse (all buttons), back to password and continue the navigation through different screens.
- After 5 minutes of unuse (all buttons), back to screensaver.
- If up or down buttons are used during the screen navigation, nothing happens, the user stays on the same screen.

3.4 Next Service

Menus and information

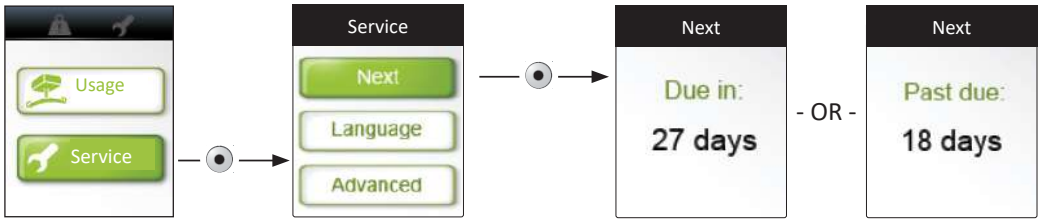
In the display window main menu there are two choices; Usage and Service.
The Usage menu is described in the Instruction Guide.
In the Service menu it is possible to choose between 14 different languages for the display menu.



- To display Main menu;
  Hold down the button ⊙ on the HandControl for 2 seconds.

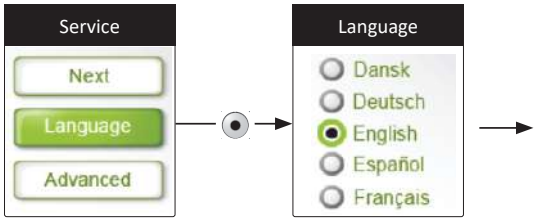
- Return to previous menu.

Main menu
⊙
Select
"Service"



Shows how many days to Service, or how many days it is since service should have been done.

3.5 Display Language



- Change language from English to desired language by pressing ⊙
- Confirm new language by pressing ⊙

- Chinese
- Danish
- Dutch
- English
- Finnish
- French
- German
- Italian
- Japanese
- Norwegian
- Portuguese
- Russian
- Spanish
- Swedish

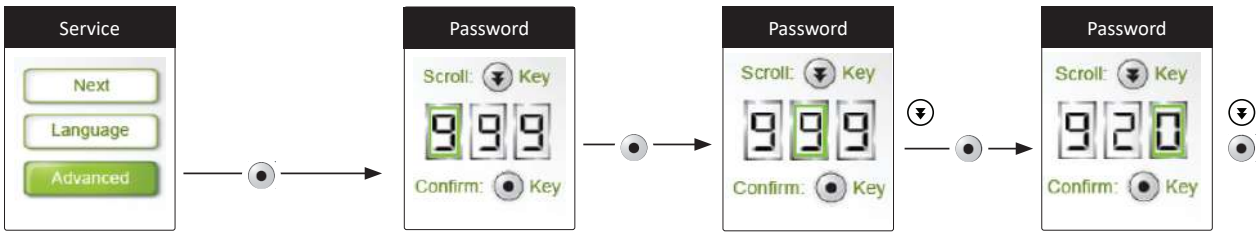
3.6 Password

Advance Service menu is password protected and intended for use by service technicians authorized by Hill-Rom.

Password: 920

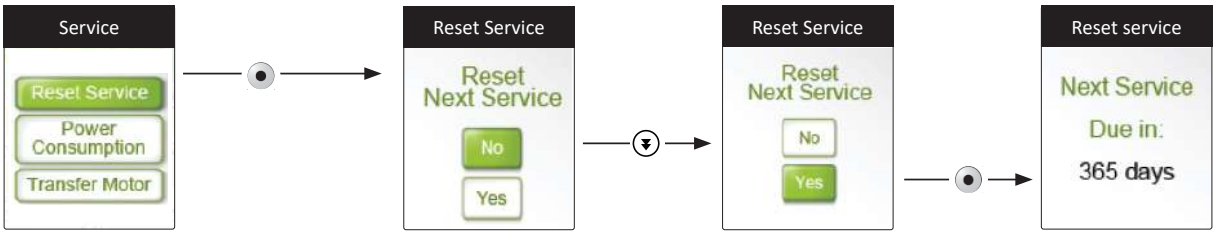
Enter each digit, using the arrow key.

Confirm by pressing



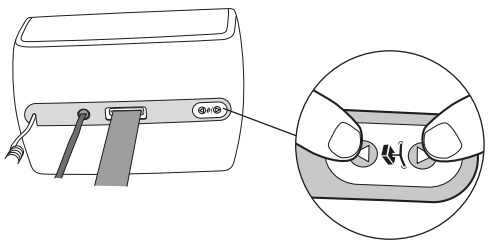
3.7 Reset Service

△ Reset Service only <u>after</u> performed approved Periodic Inspection, according to chapter 6.



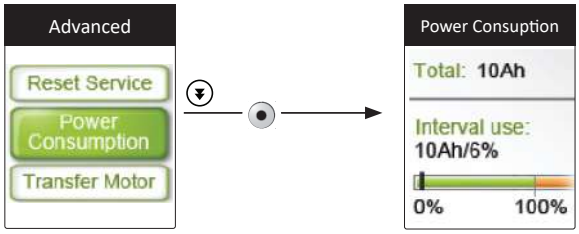
Manual Service reset interface

If HandControl with display is not avalible after performed approved Periodic Inspection, the service light can be switched off using the operation panel on the lift:



- Press ▲ and ▼ buttons on the lift, for 3 sec.
- The service ligt at the HandControl flashes.
- Press ▲ up-button within 5 sec.

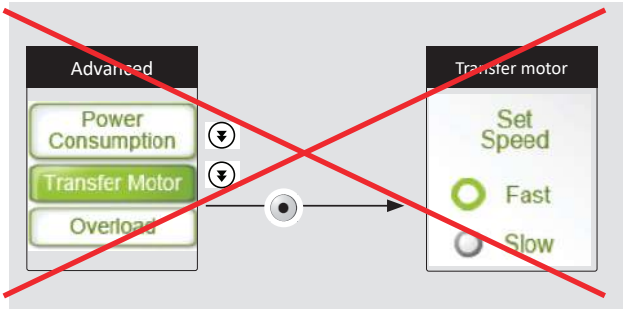
3.8 Power Consumption



Total Power consumption (Ah).
(Will never be reset.)

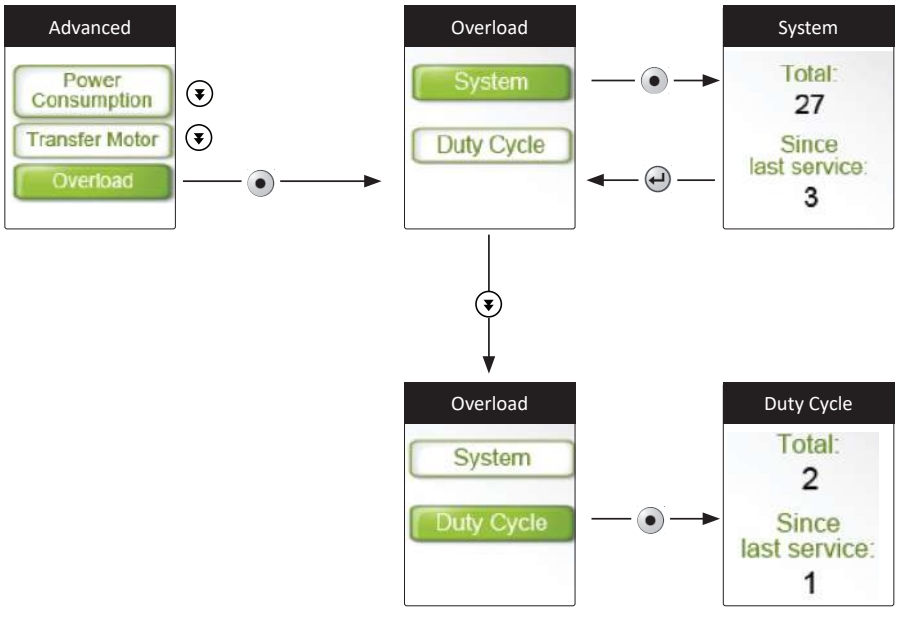
Power Consumption (Ah) since last Service Reset.

3.9 Transfer Motor



Not in use!

3.10 Overload



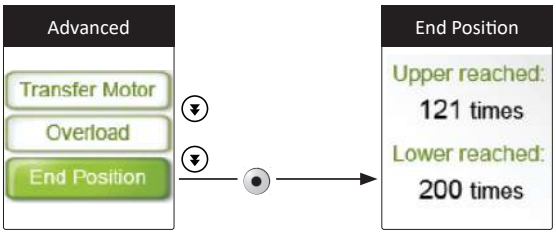
Shows total number of stops due to overload. (Will never be reset.)

Shows total number of stops due to overload from last Service Reset

Shows the total number of stops due to Duty Cycle (exceeded max time running the lift). Will never be reset.

Shows the total number of stops due to Duty Cycle, from last Service Reset.

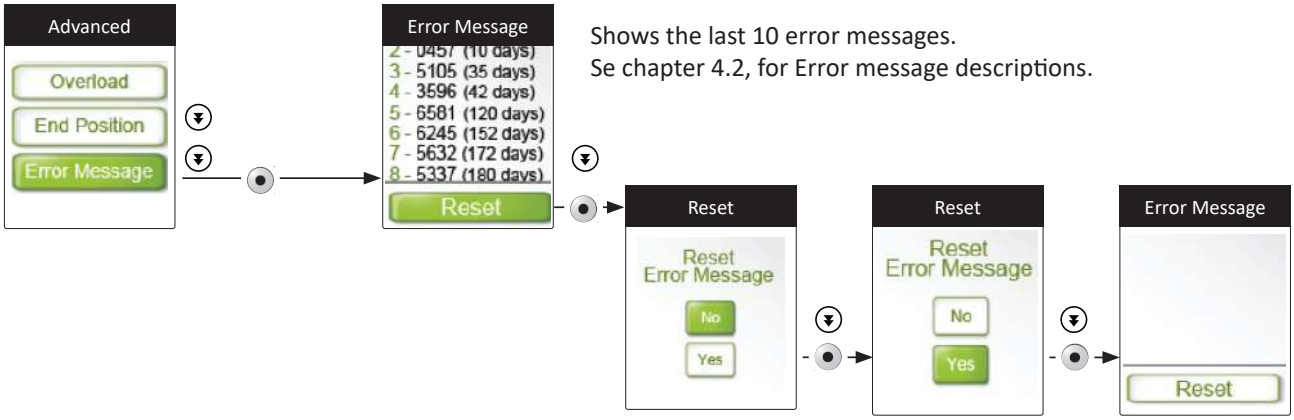
3.11 End position



Shows the total number of stops due to activation of upper limit switch. (Will never be reset.)

Shows the total number of stops due to lower end position reached. (Will never be reset.)

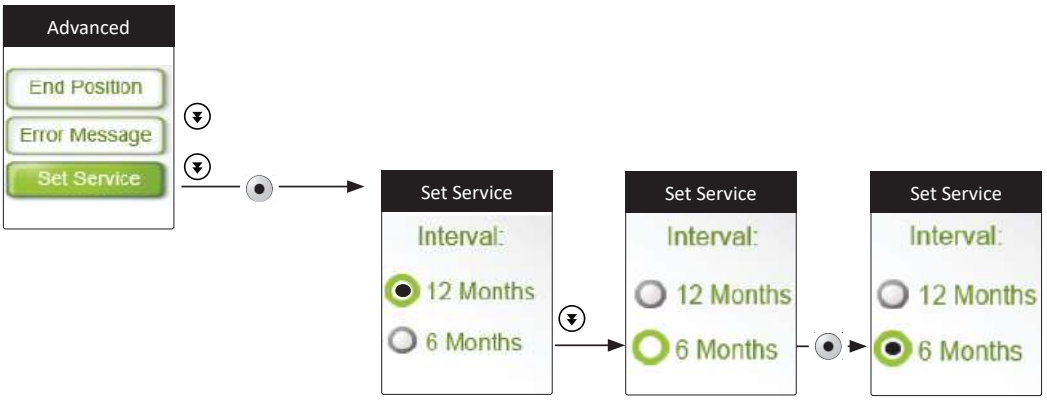
3.12 Error Message



Shows the last 10 error messages.
Se chapter 4.2, for Error message descriptions.

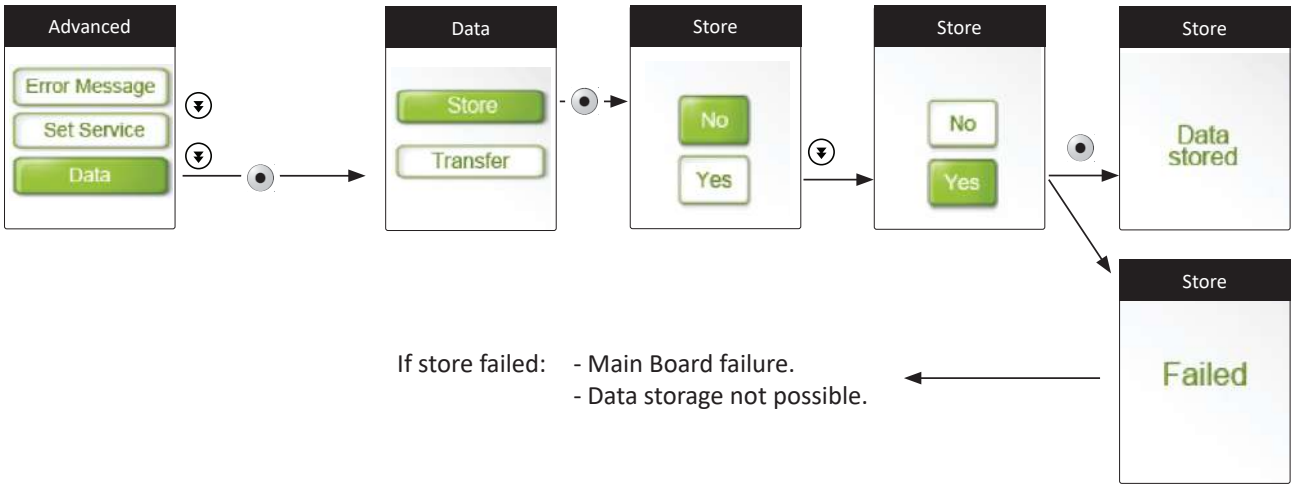
3.13 Set Service Interval

Set interval of Service Period. Shows how many months until the service symbol lights up. (Pre-Set at 12 month)



3.14 Data Storage

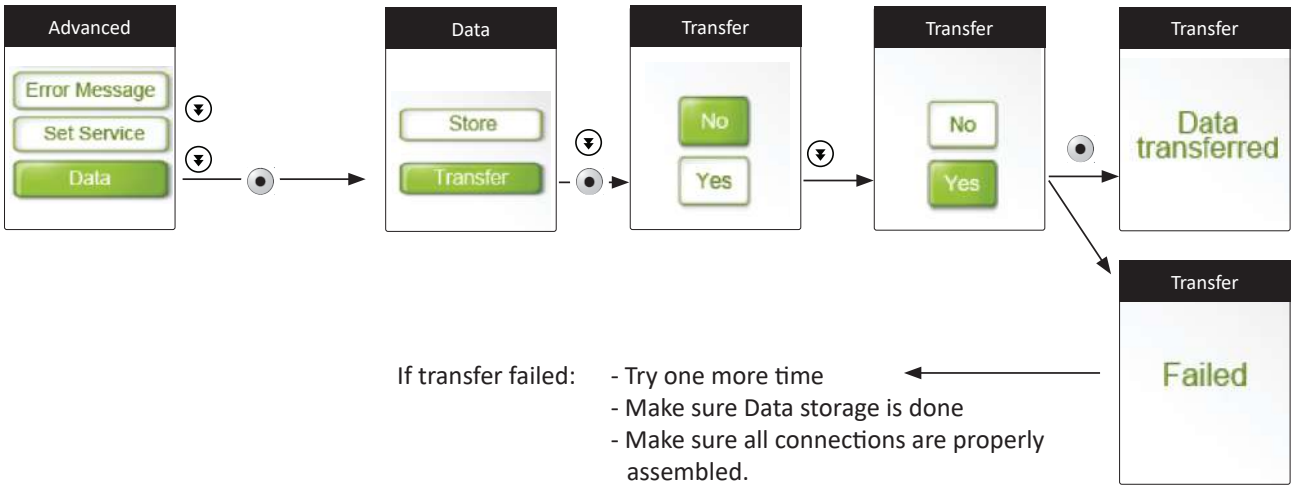
Store data from Main Board to HandControl. (Use when Main Board needs to be replaced).



If store failed:
- Main Board failure.
- Data storage not possible.

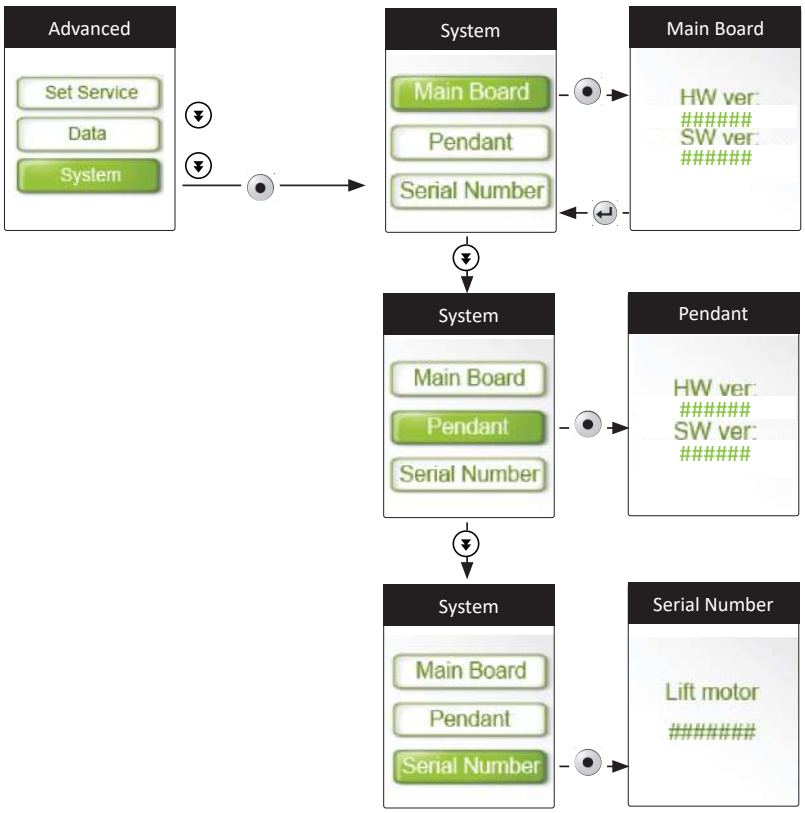
3.15 Data Transfer

Transfer data from HandControl to Main Board. Use only on Main Board replacement. Require successfully completed Data Storage 4.14.



If transfer failed:
- Try one more time
- Make sure Data storage is done
- Make sure all connections are properly assembled.
- Contact Liko/Hill-Rom

3.16 System



HW ver: Current hardware version of the Main Board.

SW ver: Current software version of the Main Board.

HW ver: Current hardware version of the HandControl (Pendant).

SW ver: Current software version of the HandControl (Pendant).

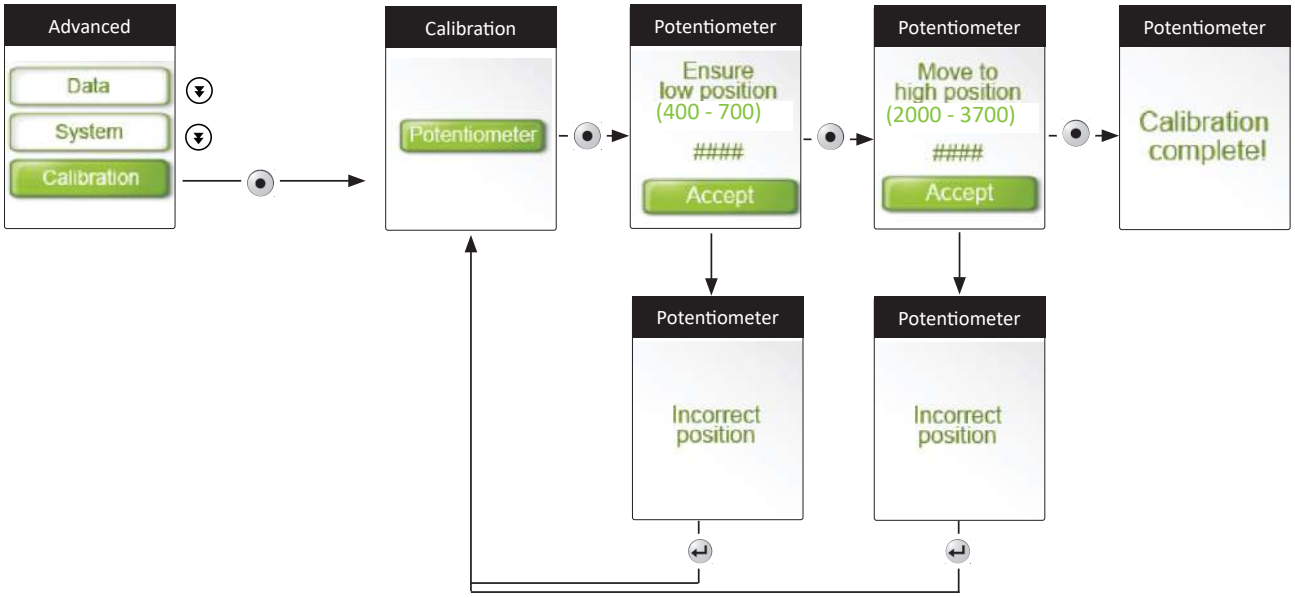
S/N of the LikoGuard

3.17 Calibration overview

Calibration of the potentiometer must to be performed when changing specified spare parts, according to the Assembly Instructions:

- Potentiometer with holder, Prod No. 33090011
- Lift strap with strap guide, Prod No. 33090016
- Main Board, Prod. No. 33090005 and 33090006

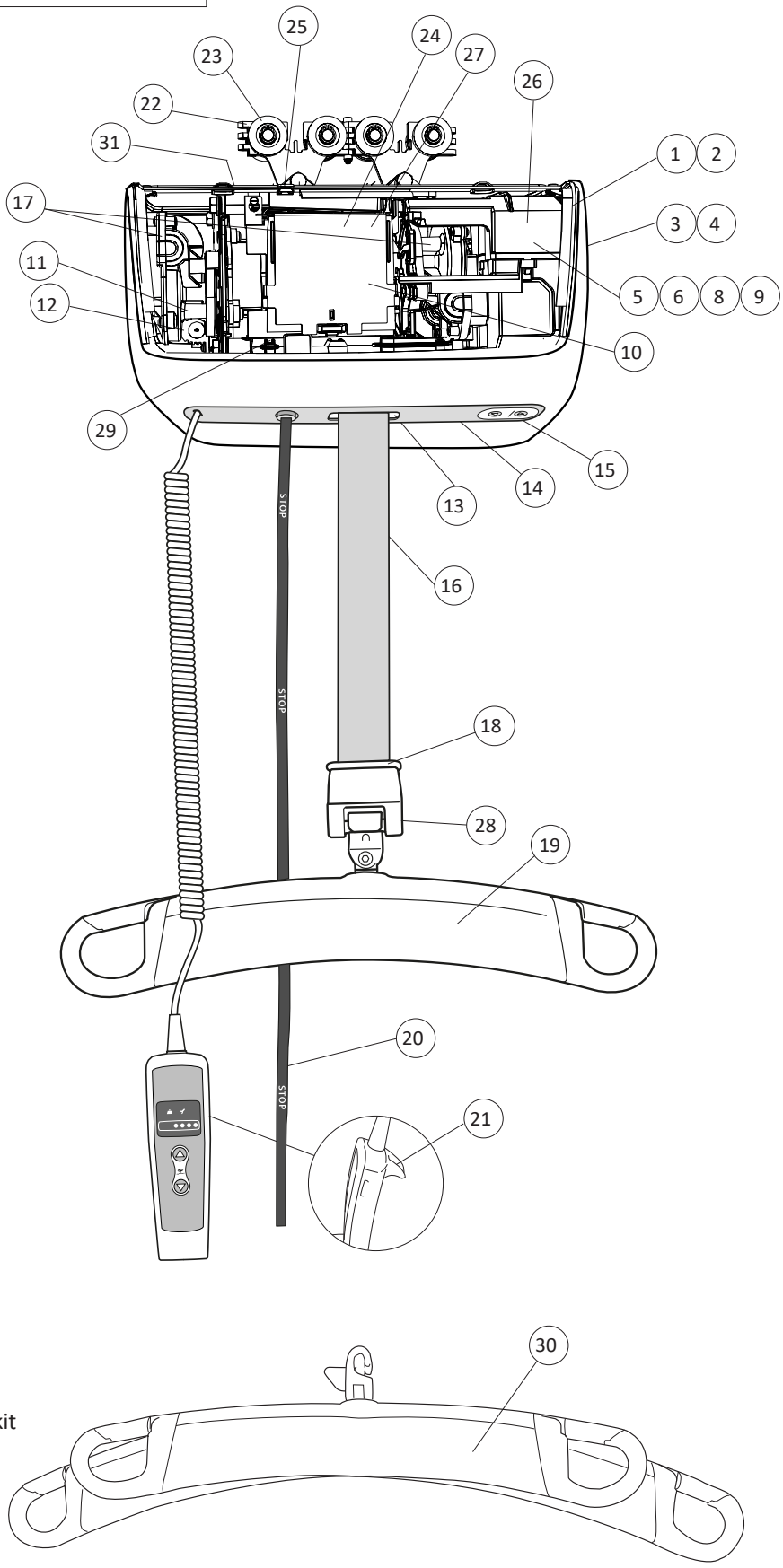
Ensure low and high position of the lift strap by moving the strap all the way down and up.
Make sure the values displayed are within specified range.



4.0 Spare Parts Positions LikoGuard ™ overhead lift

-

PROD. NO.	PRODUCT
3301030 3301040	LikoGuard L LikoGuard XL

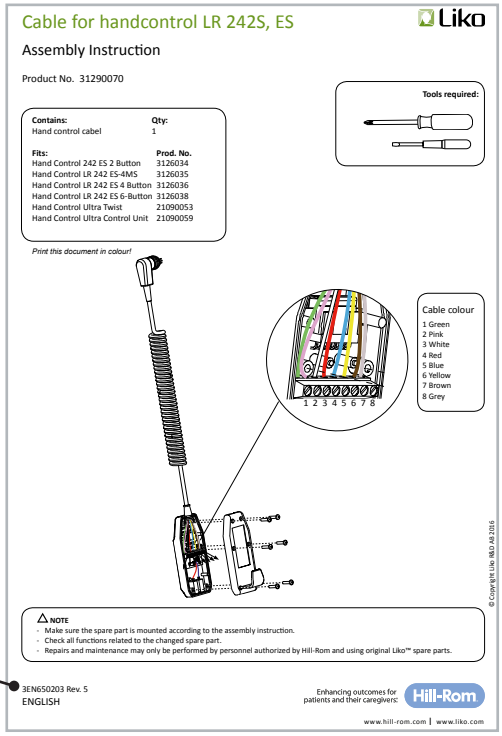


1 Plastic Covers L
2 Plastic Covers XL
3 Plastic Covers (top and bottom) L
4 Plastic Covers (top and bottom)XL
5 Main Board, L
6 Main Board, XL
8 Fuse 20 A, 10 pce
9 Battery Li-ion
10 Electronic StepUp Card to IRC
11 Potentiometer with holder
12 El Brake / active load
13 Limit switch, upper
14 Panel board, green
15 Key Pad, emergency lowering
16 Lift strap with strap guide
17 Electrial Motors
18 Hang-Up HandControl hanger
19 Slingbar side cover
20 Emergency Stop/Lowering Strap
21 HandControl Hanger
22 Damper, carriage
23 Carriage Plastic Wheels
24 HandControl Main Board Cable
25 Cable grommet IRC
26 Main Board housing
27 Step-up box
28 SlingGuard attachment
29 Emergency Stop Switch
30 Cover 670 Twin
31 Mechanical lowering restoration kit

5.0 Spare Parts Assembly Information

INFORMATION

Assembly Instructions to Liko™ spare parts are attached with the spare parts.
The assembly instructions are also available on the Partner Web and in Agile (internally).
Document number to spare parts assembly instructions can be found in the spare parts list.


Cable for handcontrol LR 242S, ES

Liko

Assembly Instruction

Product No. 31290070

Tools required:

Contains: Qty:
Hand control cabel 1

Fits: Prod. No.
Hand Control 242 ES 2 Button 3126034
Hand Control LR 242 ES-4MS 3126035
Hand Control LR 242 ES 4 Button 3126036
Hand Control LR 242 ES 6-Button 3126038
Hand Control Ultra Twist 21090053
Hand Control Ultra Control Unit 21090059

Print this document in colour!

Cable colour
1 Green
2 Pink
3 White
4 Red
5 Blue
6 Yellow
7 Brown
8 Grey

1 2 3 4 5 6 7 8

NOTE
- Make sure the spare part is mounted according to the assembly instruction.
- Check all functions related to the changed spare part.
- Repairs and maintenance may only be performed by personnel authorized by Hill-Rom and using original Liko™ spare parts.

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3EN650203 Rev. 5
ENGLISH

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Document Number

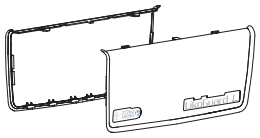
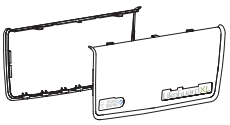
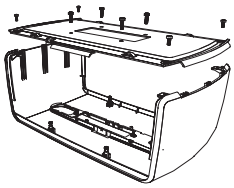
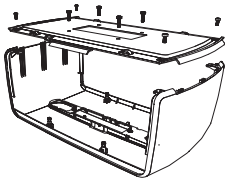
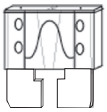
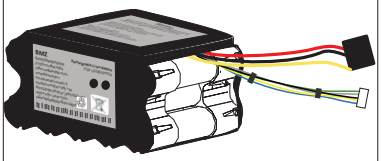
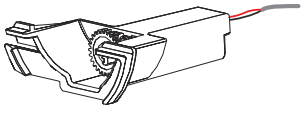
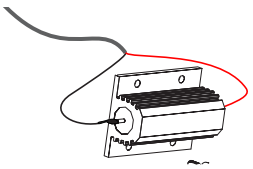
⚠ NOTE

- Always make sure the spare part is mounted according to the assembly instruction.
- Check all functions related to the changed spare part.
- Repairs and maintenance may only be performed by personnel authorized by Hill-Rom and using original Liko™ spare parts.

Liko technical documentation can be found on the Partnerweb:
https://partner.liko.com - “My information” - “Documents”
If you don’t have access, send a mail for registration to: se.customer.service@hill-rom.com

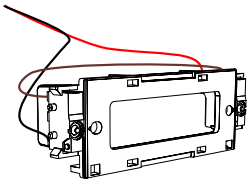
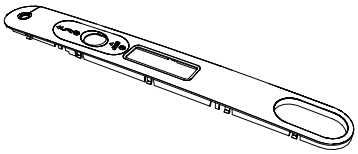
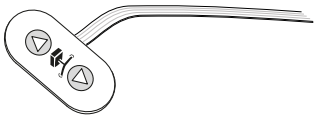
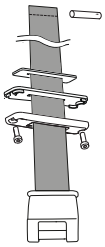
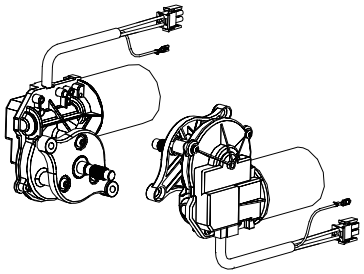
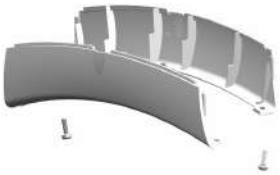
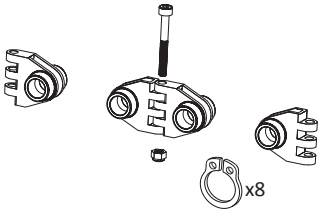
6.0 Spare Parts List

LikoGuard™ overhead lift

PROD. NO.	POS. NO.	NAME	UNIT		ASSEMBLY INSTR.
33090001	1	Plastic Covers L, 2 pices	pair		3EN690246
33090002	2	Plastic Covers XL, 2 pices	set		3EN690246
33090003	3	Plastic Covers (top and bottom) L	set		3EN690247
33090004	4	Plastic Covers (top and bottom)XL	set		3EN690247
33090005	5	Main Board L *battery included* *NOT READY TO ORDER!*	pce		3EN690248
33090006	6	Main Board XL *battery included* *NOT READY TO ORDER!*	pce		3EN690248
33090008	8	Fuse 20 A, 10 pce	set		3EN690250
33090009	9	Battery Li-ion	pce		3EN690251
33090010	10	Electronic StepUp Card for IRC	pce		3EN690252
33090011	11	Potentiometer with holder	pce		3EN690253
33090012	12	Active load, resistor	set		3EN690254

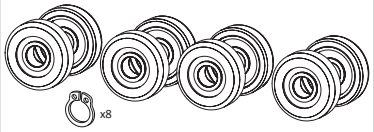
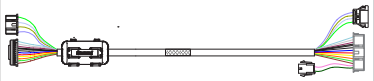
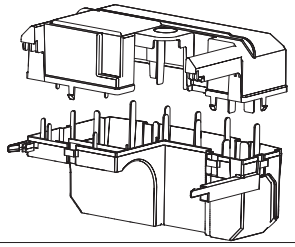
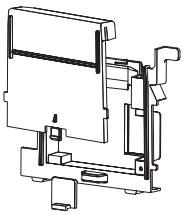
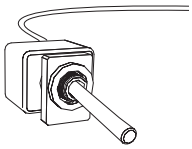
6.0 Spare Parts List

LikoGuard™ overhead lift

PROD. NO.	POS. NO.	NAME	UNIT		ASSEMBLY INSTR.
33090013	13	Upper Limit Switch	pair		3EN690255
33090014	14	Panel board, green	pce		3EN690256
33090015	15	Key Pad, emergency lowering (incl cables)	pce		3EN690257
33090016	16	Lift strap with strap guide	set		3EN690258
33090017	17	Electrial Motors *NOT READY TO ORDER!*	pair		3EN690259
33090018	18	Hang-Up HandControl Hanger LG, 2 pcs	set		3EN690260
33090019	19	Slingbar side cover *product label included*			3EN690261
33090020	20	Emergency Stop/Lowering Strap	pce		3EN690262
33090021	21	HandControl Hanger	pce		3EN690263
33090022	22	Damper carriage, 4 pieces (incl. screw and nut)	set		3EN690264

6.0 Spare Parts List

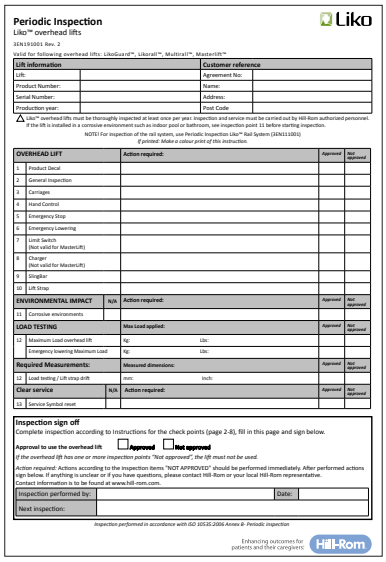
LikoGuard™ overhead lift

PROD. NO.	POS. NO.	NAME	UNIT		ASSEMBLY INSTR.
33090023	23	Carriage Plastic Wheels, 4 pairs (with bearings)	set		3EN690265
33090024	24	HandControl Main Board Cable	pce		3EN690266
33090025	25	Plastic grommet, 10 pce	set		3EN690267
33090026	26	Main Board Housing	set		3EN690268
33090027	27	Step-Up Box	set		3EN690269
33090028	28	SlingGuard attachment			3EN690270
33090029	29	Emergency Stop Switch	pce		3EN690274
33090030	30	Cover 670 Twin *product label included*	pce		3EN690281
33090033	31	Mechanical Lowering Restoration Kit	set		3EN690287

7.0 Periodic Inspection Information, LikoGuard™ overhead lift

INFORMATION

According to ISO 10535:2006 Annex B, Periodic Inspection of medical device Liko™ overhead lift should be performed at least once a year. For LikoGuard™ overhead lift Periodic Inspection overhead lift (3EN191001) is available on the Partner Web and in Agile (internally).



Periodic Inspection
Liko™ overhead lifts

3EN191001 Rev. 2

Valid for following overhead lifts: LikoGuard™, Likorail™, Multirail™, MasterLift™

Lift information		Customer reference	
Lift:		Agreement No:	
Product Number:		Name:	
Serial Number:		Address:	
Production year:		Post Code	

△ Liko™ overhead lifts must be thoroughly inspected at least once per year. Inspection and service must be carried out by Hill-Rom authorized personnel. If the lift is installed in a corrosive environment such as indoor pool or bathroom, see inspection point 11 before starting inspection.

NOTE! For inspection of the rail system, use Periodic Inspection Liko™ Rail System (3EN111001)

If printed: Make a colour print of this instruction.

	OVERHEAD LIFT	Action required:	Approved	Not approved
1	Product Decal			
2	General Inspection			
3	Carriages			
4	Hand Control			
5	Emergency Stop			
6	Emergency Lowering			
7	Limit Switch (Not valid for MasterLift)			
8	Charger (Not valid for MasterLift)			
9	Slinglkar			
10	Lift Strap			
	ENVIRONMENTAL IMPACT N/A	**Action required:**	Approved	Not approved
11	Corrosive environments			
	LOAD TESTING	**Max Load applied:**	Approved	Not approved
12	Maximum Load overhead lift	Kg: Lbs:		
	Emergency lowering Maximum Load	Kg: Lbs:		
	Required Measurements:	**Measured dimensions:**	Approved	Not approved
13	Load testing / Lift strap drift	mm: Inch:		
	Clear service N/A	**Action required:**	Approved	Not approved
14	Service Symbol reset			

Inspection sign off

Complete inspection according to instructions for the check points (page 2-8), fill in this page and sign below.

Approval to use the overhead lift: ☐ Approved ☐ Not approved

If the overhead lift has one or more inspection points "Not approved", the lift must not be used.

Action required: Actions according to the inspection items "NOT APPROVED" should be performed immediately. After performed actions sign below. If anything is unclear or if you have questions, please contact Hill-Rom or your local Hill-Rom representative. Contact information is to be found at www.hill-rom.com.

Inspection performed by:	Date:
Next inspection:	

Inspection performed in accordance with ISO 10535:2006 Annex B- Periodic inspection

Enhancing outcomes for patients and their caregivers

NOTE!
△ Periodic Inspection shall be performed at least once per year.

Liko technical documentation can be found on the Partnerweb:
https://partner.liko.com - “My information” - “Documents”
If you don’t have access, send a mail for registration to: se.customer.service@hill-rom.com

Periodic Inspection may only be performed by personnel authorized by Hill-Rom and using original Liko™ spare parts.

Available Liko Periodic Inspections:

- 3EN371001 Periodic Inspection Liko™ Mobile lifts
- 3EN111001 Periodic Inspection Liko™ OH Rail system
- 3EN191001 Periodic Inspection Overhead Lifts
- 3EN301001 PI Freespan Freestand
- 3EN601001 Periodic Inspection Liko™ accessories

Also available is Periodic Inspection Slings. This inspection should be performed by a person who is suitable, has good experience and sufficient knowledge about design, use and maintenance of the sling.

- 7EN160834 General Periodic Inspection Protocol Liko Slings and Sabina SupportVests

8.0 Preventive Maintenance

Expected Life Time

The expected life time of a LikoGuard™ Overhead Lift is 10 years of normal use (see table below) provided that recommended Periodic Inspection and Preventive Maintenance is performed by personnel authorized by Hill-Rom and using original Liko spare parts.

However certain parts have a shorter life cycle and will need to be replaced in order for the overhead lift to meet its expected life time. They are listed below.

Parts that needs to be replaced:

Part	Part No.	Year of life expectancy:	Replacement:
Lift Strap	33090016	5 years	△ Must be replaced before 5 years of use, or if wear and tear is detected.
Battery Li-ion	33090009	3 years	Can be used more than 3 years if no malfunction is detected.
HandControl LG	3306010 3306020	5 years	Can be used more than 5 years if no malfunction is detected.

Expected Life Time measured in lift cycles:

Expected Life Time		Load Case 1	Load Case 2	Load Case 3	Load Case 4
		363 kg (800 lbs.)	**272 kg (600 lbs.)**	**200 kg (440 lbs.)**	**100 kg (220 lbs.)**
Total normal lifts*		14500	19000	26000	52000
5 years	lifting frequency	8 lifts/day	10 lifts/day	14 lifts/day	29 lifts/day
7 years	lifting frequency	5 lifts/day	7 lifts/day	10 lifts/day	20 lifts/day
10 years	lifting frequency	4 lifts/day	5 lifts/day	7 lifts/day	14 lifts/day

*A normal lift = 70 cm (27.6 inch) up of witch 40 cm (15.7 inch) with load followed by 70 cm (27.6 inch) down of witch 40 cm (15.7 inch) with load.

9.0 Installation Instructions

Prod No.	Prod Name	Max Load
3301030	LikoGuard™ L, Overhead Lift	272 kg (600 lbs)
3301040	LikoGuard™ XL, Overhead Lift	363 kg (800 lbs)
3307010	Carriage	363 kg (800 lbs)

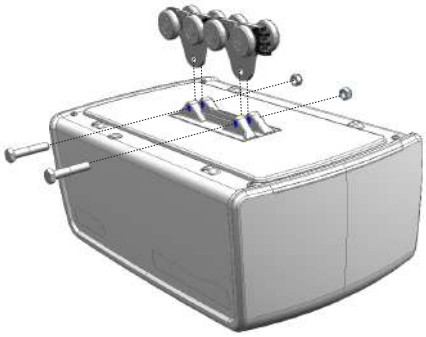
△ Before installation:
Read and understand the contents of the Overhead System Installation Hand Book.
Make sure the maximum load of the installed railsystem is equal to or larger than the maximum load of the LikoGuard overhead lift.

Basic condition for installation:
It is recommended to assemble the carriage to the lift motor before installation in the rail system.

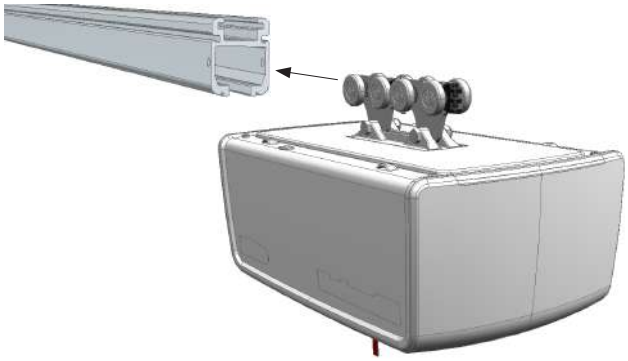
Tools Required:

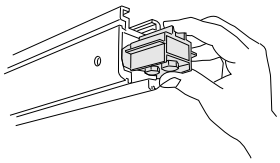
2 x 13 mm

1. Secure the M8 screws. Make sure they go all the way through the locking nuts.

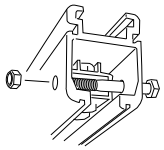


2.

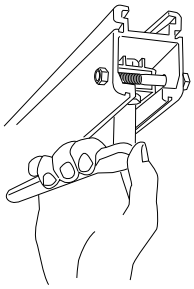




3. Insert and locate the end stop in all rail sections.



4. Secure the through bolts.



5. Secure the end stops, and apply choice of cover hats (white or grey)

Check all functions related to the installed parts.

2020

Improved design of emergency stop. LikoGuard L from S/N 2203750 LikoGuard XL from S/N 2301900	SUS003443
Improved mechanical lowering. LikoGuard L from S/N 2203500 LikoGuard XL from S/N 2301700 New spare part is released: 33090033 Mechanical Lowering Restoration Kit LG	SUS003644
Sling bar models SlingGuard 350 and SlingGuard 600 was never released so the spare parts 33090031 and 33090032 have been removed from the Spare part list.	MOD011191

2018

New slingbar models are released: 3308010 SlingGuard™ 350 slingbar 3308510 SlingGuard™ 350 with quick-hook multi, slingbar 3308030 SlingGuard™ 600 slingbar 3308530 SlingGuard™ 600 with quick-hook multi, slingbar New spareparts are created: 33090031 SlingBar plastic cover 350 33090032 SlingBar plastic cover 600	PRJ00909

2016

New slingbar models are released: 3308040 SlingGuard™ 670 Twin, slingbar 3308540 SlingGuard™ 670 Twin with quick-hook multi, slingbar	PDP001221
New sparepart is released: 33090030 Cover 670 Twin	PDP001284

Liko

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