

Golvo™ 9000

mobile lift



Service Manual

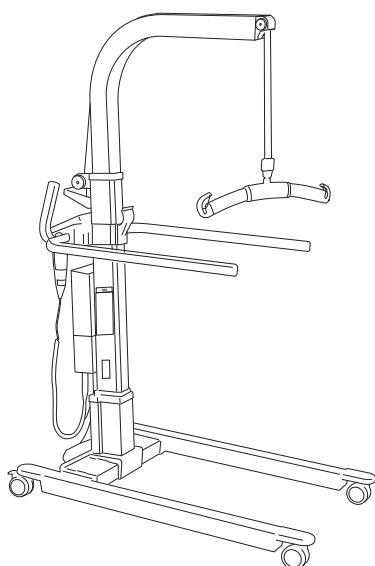
Product No.

2000045, 2000045CN

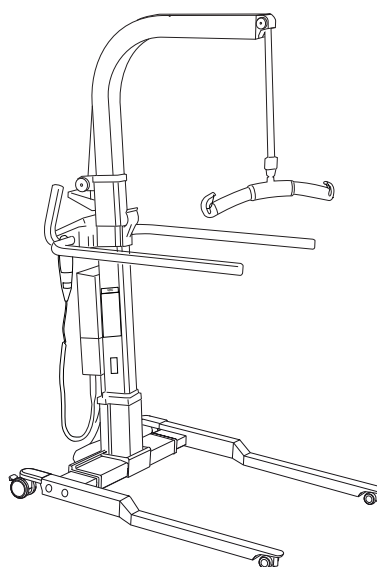
Golvo™ 9000

2000049, 2000049CN


Golvo™ 9000 LowBase



Golvo™ 9000 mobile lift



Golvo™ 9000 LowBase mobile lift

 *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 overhead & 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.

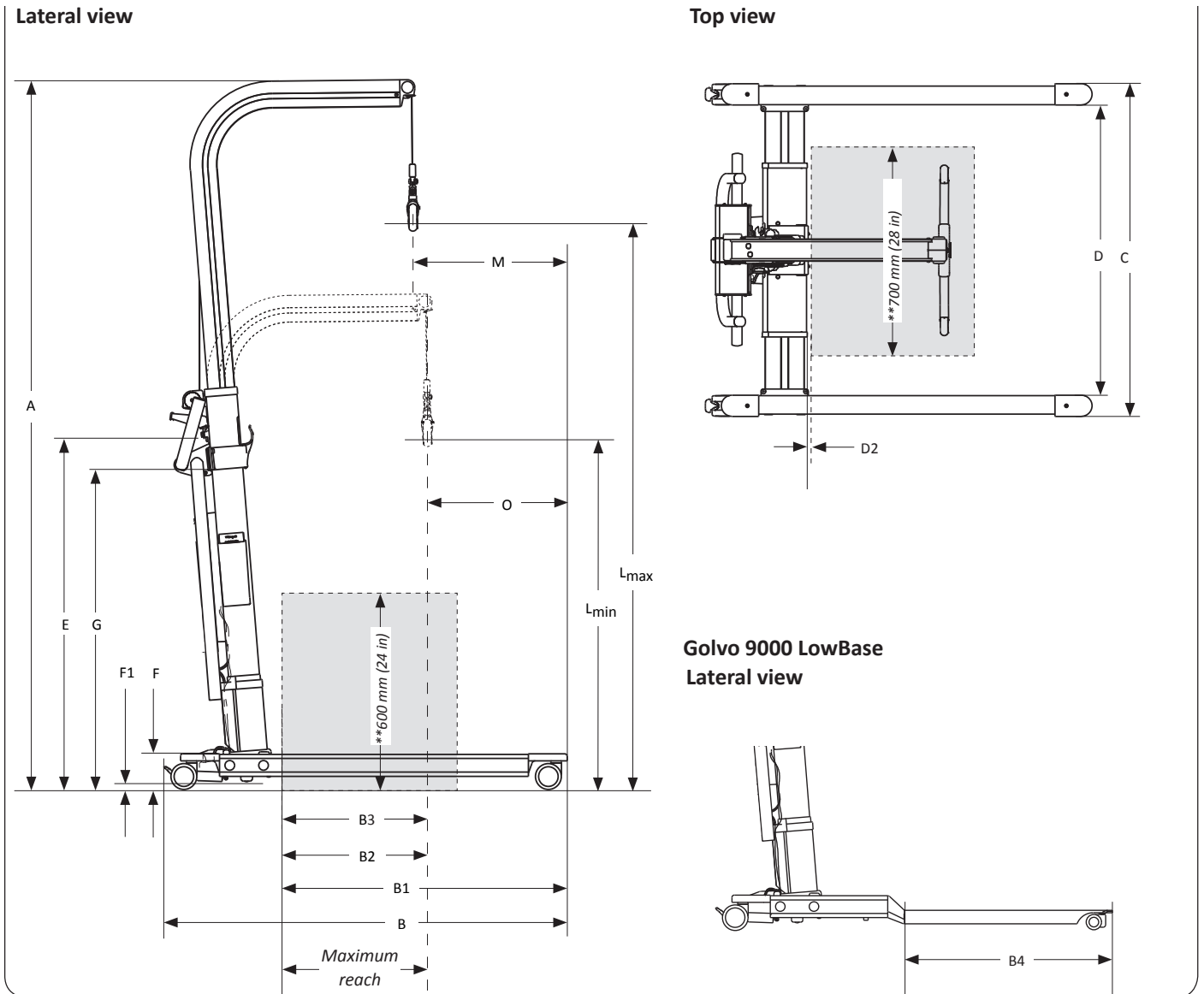
Repairs and maintenance may only be performed by personnel authorized by Hill-Rom and using original Liko™ spare parts.
For information regarding Service and Maintenance education, contact your Hill-Rom representative.
For contact information please visit our website: www.hill-rom.com | www.liko.com

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Golvo™ 9000 mobile lift

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1.1 Dimensions, Golvo™ 9000 mobile lift



Measurements

Measurements in mm / in

Model	A		B	B1	B2	B3*	B4	C		D		D2*	E	F	F1	G	L _{max}	L _{min}	M	O
	max.	min.						max.	min.	max.	min.									
Golvo 9000	2090	1455	1185	870	480	480	-	1020	735	907	623	0	1100	105	25	940	1816	571	436	391
Golvo 9000 LowBase	2090	1455	1185	870	480	480	600	1028	745	907	623	0	1100	60 / 105	22	940	1816	571	436	391

Model	A		B	B1	B2	B3*	B4	C		D		D2*	E	F	F1	G	L _{max}	L _{min}	M	O
	max.	min.						max.	min.	max.	min.									
Golvo 9000	82.3	57.3	46.6	34.2	18.9	18.9	-	40.2	28.9	35.7	623	0	43.3	4.1	1.0	37	71.5	22.5	17.2	15.4
Golvo 9000 Low-Base	82.3	57.3	46.6	34.2	18.9	18.9	23.6	40.5	29.3	35.7	623	0	43.3	2.4 / 4.1	0.9	37	71.5	22.5	17.2	15.4

The lifting interval 1245 mm (49 in) is height-adjustable, see "Lift strap adjustment", Operation chapter.

Note: When changing to other lifting accessories check that the lift still achieves desired lifting height.

* Reference measurement according to Standard EN ISO 10535:2006

1.2 Technical Data, Golvo™ 9000 mobile lift

Maximum load:	200 kg (440 lbs) Please note: The base width may be adjusted with weight up to 140 kg (308 lbs).
Material:	Anodized aluminium
Weight:	9000: 38,8 kg (83,3 lbs) 9000 LowBase: 42,2 kg (93,0 lbs) Heaviest removable part: 9000: 23,4 kg (51,6 lbs) 9000 LowBase: 23,4 kg (51,6 lbs)
Wheels:	Front: 75 mm* (3 in) twin wheels. *LowBase: 46 mm (1.8 in) twin wheels. Rear: 75 mm (3 in) twin wheels with brakes.
Turning diameter	Golvo 9000: 1330 mm (52 in) Golvo 9000 LowBase: 1330 mm (52 in)
Emergency lowering device:	Mechanical and electrical
Lifting Speed (no load)	37 mm/s (1.5 in/s) or 27 mm/s (1.1 In/s)
Lifting interval:	1245 mm (49 in) (height-adjustable)
Sound level:	52.8 dB(A)
Protection class:	IP X4
Operating forces, controls:	Hand control: 5 N
Electrical data:	24 V

Intermittent power:	Int. Op 10/90, active operation max 2 min. Only 10% of a given length of time may be active, but no more than 2 min.
Battery options:	Lead-acid gel, valve-regulated battery 24 V 2.9 Ah Prod. No. 2006106. 2,8 kg (6.2 lbs.) Li-ION battery 25.6 V, 3.3 Ah Prod. No. 2006110. 1,4 kg (3.1 lbs.) <i>New batteries provided by supplier!</i>
Battery charger:	Internal charger, 100-240 V AC, 50-60 Hz, max 400 mA.
Lift motor:	24 V, 7.5 A
Base motor	24 V, 5.5 A
Surrounding functional environment:	Temperature: +10°C to +40°C, (50° F to 104° F) Humidity: 20% to 80% at 30°C non-condensing, Atmospheric pressure: 700hPa to 1060hPa.



The device is intended for use indoors



Type B, in accordance with the electrical shock protection class.



Class II equipment.

Protected by Patent

2.0 Troubleshooting, Golvo™ 9000 mobile lift

The lift cannot be operated with the hand control.



1. Check that the emergency stop button has not been pressed.
2. Check the battery capacity.
Check if the Li-ION battery has been set in to sleep mode, see chapter "Operation".
3. Check that the charger cable is not connected to an electric outlet.
4. Check that the hand control cable is correctly connected.
5. If the lift works via the operation panel, change the Hand Control.
6. If the problem persists, please contact Hill-Rom.

The lift does not work up/down with the operation panel.
The base-width adjustment doesn't work (in/out) with the operation panel.



1. Check that the emergency stop button has not been pressed.
2. Check that the cables to the control box are connected correctly.
3. Check that the charger cable is not connected to an electric outlet.
4. Check the battery capacity.
Check if the Li-ION battery has been set in to sleep mode, see chapter "Operation".
5. If the problem persists, please contact Hill-Rom.

The charger doesn't work.



1. Check that the charger cables are connected correctly.
2. Make sure that the battery is properly attached.
3. If the problem persists, please contact Hill-Rom.

The lift is stuck in the high position.



1. Check that the emergency stop button has not been pressed.
2. Check the battery capacity.
Check if the Li-ION battery has been set in to sleep mode, see chapter "Operation".
3. Check that the hand control cable is connected correctly.
4. Electrical emergency lowering, use the operation panel to lower the patient onto a firm surface.
5. Use the mechanical emergency lowering device to lower the patient onto a firm surface.
6. If the problem persists, please contact Hill-Rom.

The lift does not reach maximum lifting height.



1. Check that the lifting interval level is correctly set.
2. If the problem persists, please contact Hill-Rom.

If any noises are heard.



Contact Hill-Rom.

Li-ion battery - sleep mode

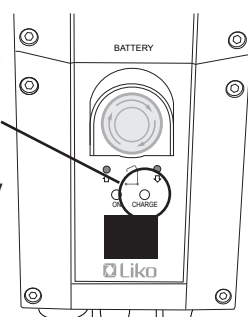
A sleep mode will be activated in a Li-ion battery if the battery has not been in use or charged for more than one week. The sleep mode switches of the battery and the electronics to save power. The battery will stay in sleep mode until the battery is set back in operation mode.

To set the battery back in operation mode;

Charge the battery until the "CHARGE" yellow diode on the control box lights up, it takes about 15 seconds.

If the yellow led do not light up, the battery has entered deep discharge.

Follow information to the right.



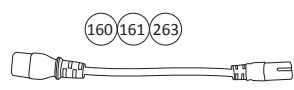
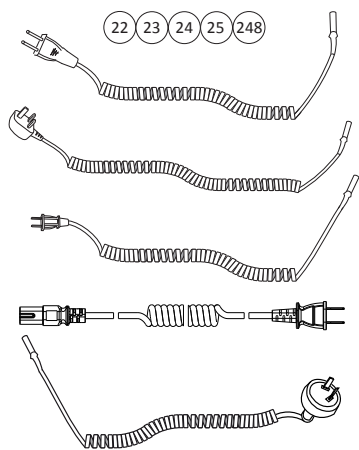
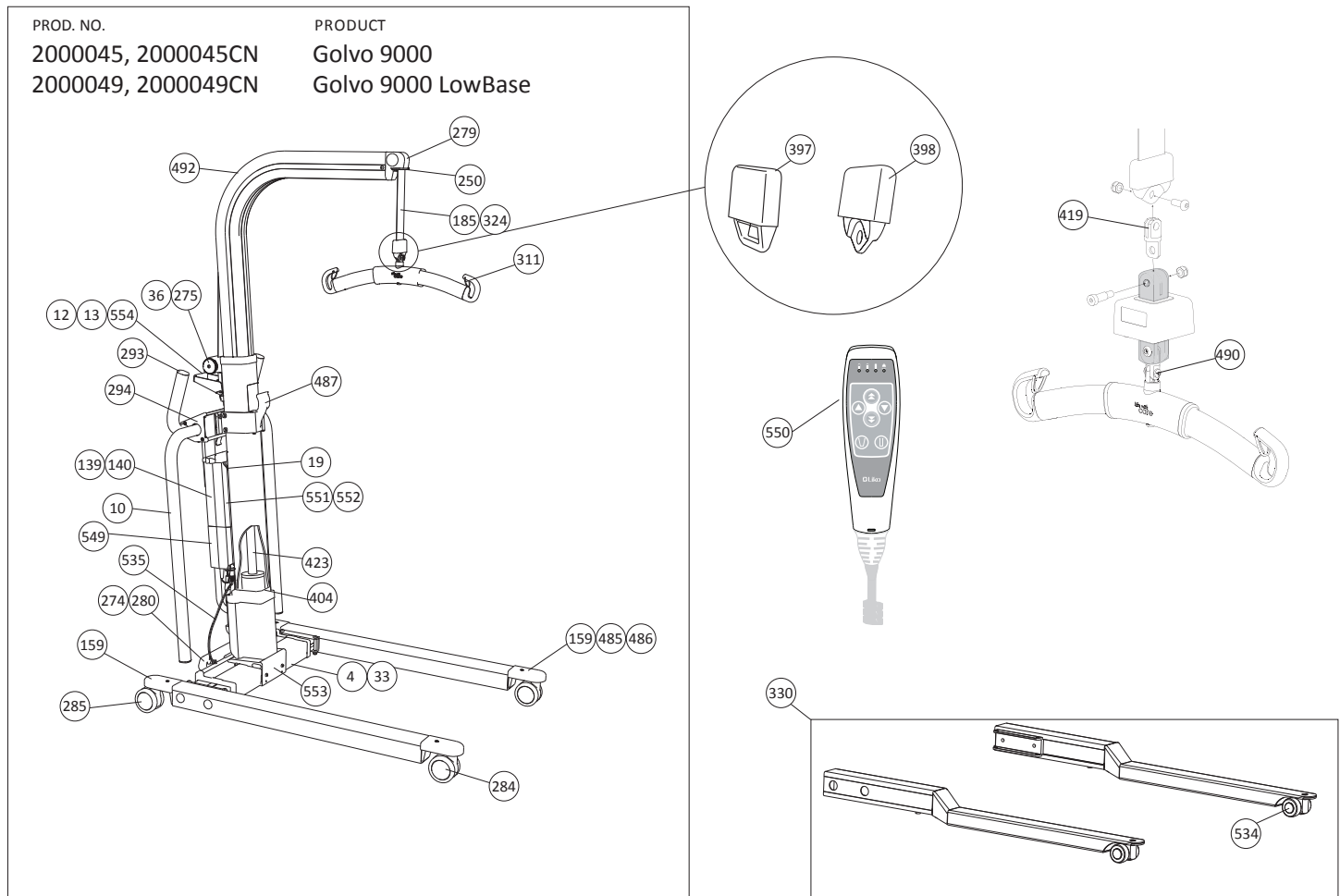
Charging a deep discharged Li-ion battery

When charging a deep discharged Li-ion battery the charger will start charging at a low charging rate to protect the battery. During the low rate charging no indicator will light up.

When the low rate charging is completed the charger will automatically switch to normal charge rate and the "CHARGE" diode will light up yellow and then turn off when charging is completed. The battery is fully charged after about 4-6 hours.

Delay! A delay to indicators for current battery power at the control box and hand control occurs if the emergency stop function is activated and restored

3.0 Spare Parts positions, Golvo™ 9000 mobile lift




4.0 Spare Parts Assembly Information

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

INFORMATION

Document Number

Cable for handcontrol LR 242S, ES 

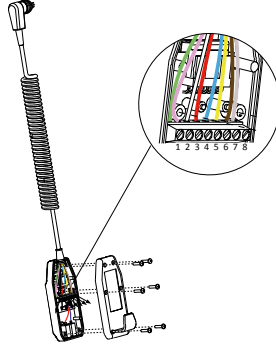
Assembly Instruction

Product No. 31290070

Contains:	Qty:
Hand control cable	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

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.

3EN650203 Rev. 5
ENGLISH

Enhancing outcomes for patients and their caregivers: 

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△ 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:

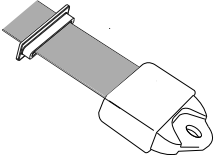
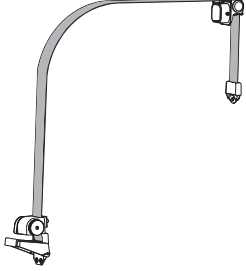
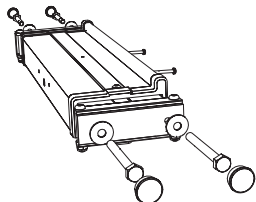
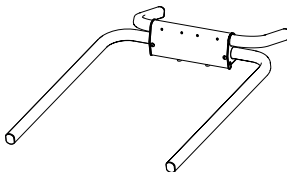
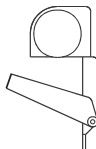
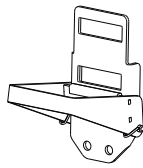

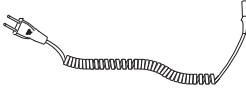

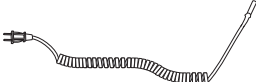

<https://partner.liko.com> - "My information" - "Documents"

If you don't have access, send a mail for registration to: se.customer.service@hill-rom.com

5.0 Spare Parts List

Golvo™ 9000 mobile lift

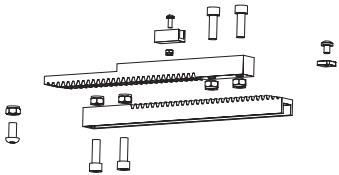

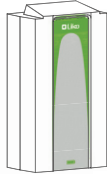
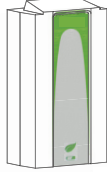
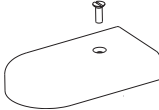


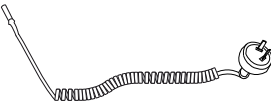

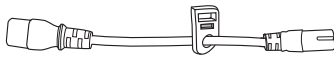
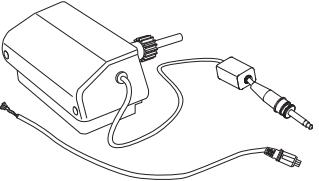
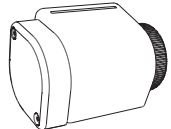
(G7=Golvo 7000, G77=Golvo 7007, G8=Golvo 8000, G88=Golvo 8008, G9=Golvo 9000)

PROD. NO.	POS. NO.	NAME	UNIT		ASSEMBLY INSTR.
Golvo LiftStrap					
20090048	185	Lift Strap G77 / G88 / G9	pce		3EN650272
20090106	324	Easy Strapper G77 / G88 / G9	set		3EN640248
Golvo Spare Parts					
20090095	4	Middle Beam 7007 / 8008 / 9000 <i>(motor <u>not</u> included)</i>	pce		3EN690272
20090103	10	Golvo Armrest	set		3SE630280
20090104	12	Emergency Lowering Golvo <i>Grey plate</i>	pce		3EN640253
20090105	13	Body/Handle set for Emergency Lowering Device <i>Grey plate</i>	pce		3EN630285
20090023	19	Attachment for Control Box	pce		3EN630238
20090026	22	Cable for charging EU	pce		3EN630237
20090027	23	Cable for charging UK	pce		
20090028	24	Cable for charging US	pce		
20090029	25	Cable for charging JP	pce		

5.0 Spare Parts List

Golvo™ 9000 mobile lift

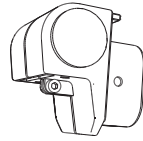
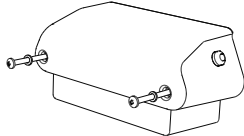



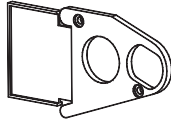

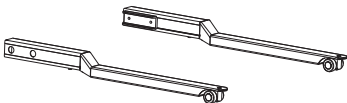

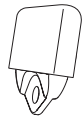

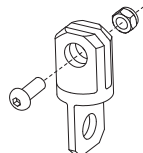
(G7=Golvo 7000, G77=Golvo 7007, G8=Golvo 8000, G88=Golvo 8008, G9=Golvo 9000)

PROD. NO.	POS. NO.	NAME	UNIT		ASSEMBLY INSTR.
20090096	33	Gear Rack set	set		3EN690273
20090041	36	Spring Magazine	pce		3EN630214
2006106	139	Battery Lead Acid	pce		3EN630224
2006110	140	Battery Lithium Ion	pce		7EN140108 Instruction Guide
20390006	159	Fork Cover	pair		183916
21090001	160	Extension Cable	pce		3EN630225
21090000	161	Extension Cable JP	pce		3EN630225
20090050	248	Cable for Charging AU/NZ	pce		3EN630237
20090051	250	Reinforcement Plate Golvo	pce		3EN630215
21090011	263	Extension Cable US	pce		3EN630218
20090059	274	Motor Base Width Adjustment Golvo, grey			3SE630216
20090060	275	Plastic Housing grey	pce		3EN630267

5.0 Spare Parts List

Golvo™ 9000 mobile lift

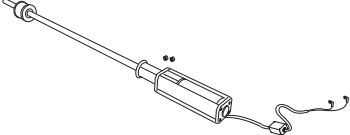
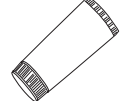
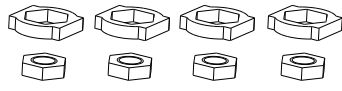
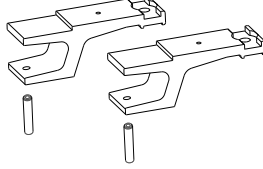
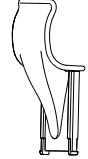
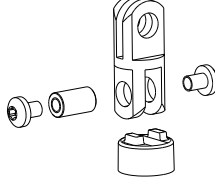
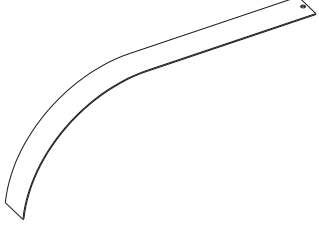
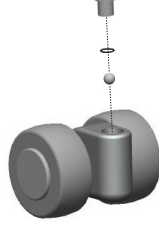
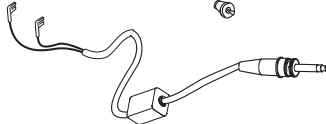
(G7=Golvo 7000, G77=Golvo 7007, G8=Golvo 8000, G88=Golvo 8008, G9=Golvo 9000)

PROD. NO.	POS. NO.	NAME	UNIT		ASSEMBLY INSTR.
20090064	279	Roll Frame Attachment Golvo, grey	pce		3EN630269
20090065	280	Base Motor Cover, grey	set		3EN630270
20490014	284	Front Wheel 75 mm Standard	pce		182904
20490015	285	Rear Wheel 75 mm Standard	pce		182903
20090066	293	End Cover Handle/Arm Support grey, 4 pce	set		3SE630271
20090067	294	End Cover Armrest, grey	set		3SE630272
31590014	311	Latch, composite <i>Fits Universal SlingBar from S/N 1299511</i>	pair		3SE640242
20090071	330	Low base kit Golvo 7007 / 8008 / 9000	set		3EN640262
31590005	397	Q-link	pce		3EN640236
31590025	398	Lift strap joint	pce		3EN640237
20090072	404	Friction plates 2.8-3.4 mm <i>20 pce of each model (2.8, 3.0, 3.2, 3.4 mm)</i>	set		3EN650254
2006010	419	Adapter Golvo (for Scale)	set		3SE650244

5.0 Spare Parts List

Golvo™ 9000 mobile lift

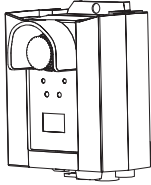

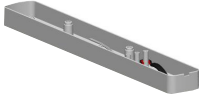

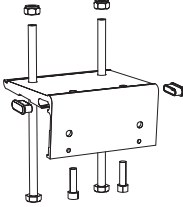
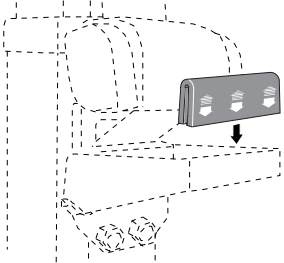
(G7=Golvo 7000, G77=Golvo 7007, G8=Golvo 8000, G88=Golvo 8008, G9=Golvo 9000)

PROD. NO.	POS. NO.	NAME	UNIT	ASSEMBLY INSTR.
20090078	423	Actuator G8 / G88 / G9	pce	 3EN630263
21090028	425	Grease SHC460, 30g	pce	 -
20090080	485	Fork locking attachment, 4 pair	set	 3SE690208
20090081	486	Wheel Fork	pair	 3SE690209
20090082	487	Parking bracket	pce	 3SE690204
20490052	490	SlingBar Assembly set	set	 3SE690210
20090085	492	Lift strap Cover Strip, 7007 / 8008 / 9000	pce	 3EN690212
20090092	534	Front Wheel LowBase <i>Fits: Golvo LowBase</i>	pce	 3SE690241
20090091	535	Cable for Base Motor	set	 3SE690240

5.0 Spare Parts List

Golvo™ 9000 mobile lift

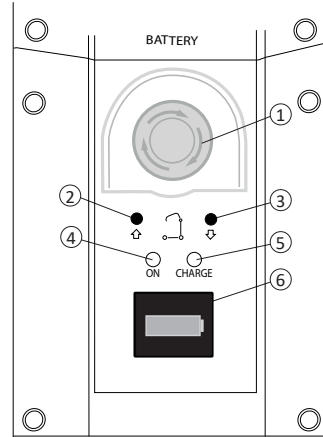
(G7=Golvo 7000, G77=Golvo 7007, G8=Golvo 8000, G88=Golvo 8008, G9=Golvo 9000)

PROD. NO.	POS. NO.	NAME	UNIT		ASSEMBLY INSTR.
20090097	549	Control Box Jumbo Care	pce		3EN690282
20090098	550	Hand Control 6 button, LED	pce		3EN690283
20090099	551	Limit Switch Box, Jumbo Care	pce		3EN690284
20090100	552	Limit Switch PCBA, Jumbo Care	pce		3EN690285
20090101	553	Mast attachment	set		3EN690286
20090102	554	Snap On Handle, 10 pce	set		-

6.0 Service: Control Box Jumbo Care, Golvo™ 9000 mobile lift

Control Box operation and information

1. Emergency Stop button
2. Electrical emergency lifting.
3. Electrical emergency lowering.
4. "ON" - lights up green when the charger is connected to mains.
5. "CHARGE" - lights up yellow constantly during charging and will turn off when charging is completed.
6. Display Pop-up information:



- Battery power (100- 50 %)
- Battery power (50- 25 %) Battery needs charging.
- Battery power (Less than 25 %) battery needs charging. A buzzer will sound when pressing a push button.
- Charge the lift immediately! A buzzer will sound when pressing a push button. The remaining battery power can only make the lift arm go down.

- The lift is connected to the mains.
- Short circuit warning! Check cables and connections. Warning is shown until repaired!
- Overload! Too much load is applied to the lift.
- Service indicator. The Jumbo Care control box will be pre-set with a service interval of 12 months / 8000 cycles, whichever comes first. When it is time for service the display will show the service symbol and one single beep will tell that it is time for Periodic Inspection. To get the service data on the display, press "lifting arm up" button (short press ½ sec.) on the hand control or on the control box.

Service data

- Total lifting actuator cycles
One cycle is defined as: Driving with load up for a minimum of 5 seconds, following by driving down for a minimum of 2 seconds.
- Total lifting actuator work (As)
Total work made by the lifting actuator. Recommended max use of As/year: 252 000 As
- Total number of overloads
Counts the number of time the actuator (up/down) has been overloaded.
- Days since last service/ days between services
Service Counter shows days since last service/days between services (360).

RESET SERVICE COUNTER

After the Periodic Inspection has been performed the Service Counter (days and cycles until next service) has to be reset.

Before resetting the counter:

It is important to write down the values from the control units in the Periodic Inspection Protocol (3EN371001).

Press the "fast speed" up and down buttons on the hand control or up and down buttons on the control box for 5 seconds.

An audio signal will confirm the resetting.

7.0 Periodic Inspection Information, Golvo™ 9000 mobile lift

INFORMATION

According to ISO 10535:2006 Annex B, Periodic Inspection of medical device Liko™ Mobile Lift should be performed at least once a year. For Liko™ mobile lifts Periodic Inspection Liko Mobile lifts (3EN371001) is available in Agile and on the Partner Web.

Periodic Inspection
Liko™ mobile lifts
Liko™ OH-stand lifts
H4N31601 Rev. 2

Lift information

Lift	Agreement No.
Product Number	Name
Serial Number	Address
Production year	Post Code

Customer reference

Liko™ lifts must be thoroughly inspected when the Service Light at the Control Unit illuminates (if applicable) or at least once per year. Inspection and service must be carried out by HIR from authorized personnel.

To track how the lift has been used, write down the values from the control unit (if applicable)

Control unit data

For all series except 3EN371001 the Integrated Control Unit (ICU) are available. Also can be used from lifts equipped with Control unit CU. CU: show data and CU: show data, write down the values in the table below.

As	As
Control Unit Actuator Cycles	Control Unit Actuator Cycles

Expected life

Control Unit CU	Control Unit Actuator Cycles
Viking™ M1 mobile lift 700 As	Viking™ OH mobile lift 200 000 As
Viking™ M1 mobile lift 1000 As	Viking™ M1 mobile lift 2 700 000 Cycles
Viking™ M1 mobile lift 1000 As	Viking™ M1 mobile lift 1 672 000 Cycles
Solus™ 9000 mobile lift 700 As	Solus™ 9000 mobile lift 2 100 000 Cycles

If the control unit is replaced the total As or As will show correct value for the control unit but not for the mobile lift. The mobile lift has an expected service life of 20 years when correctly handled.

Inspection sign off

Completed inspection according to instructions for the check points (page 5-9), fill in page 2 and sign below.

Approved to use the mobile lift **Approved** **Not approved**

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

To be activated Actions according to the "INSPECTION IT IS NOT APPROVED" should be performed immediately. After performed actions sign below. If nothing is written 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: _____ Date: _____

Next inspection: _____

Hill-Rom performed in accordance with ISO 20025:2006 Annex B Periodic Inspection

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.

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NOTE!
 ▲ Periodic Inspection shall be performed at least once per year. The accumulated use of the lift (As) and the total lifting actuator cycles should be logged at each Periodic Inspection!

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, Golvo™ 9000 mobile lift

Expected Life Time

The expected life time of a Golvo™ mobile lift is 10 years of normal use or 2 520 000 As (which comes first) provided that required 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 mobile lift to meet its expected life time. They are listed below:

Parts that needs to be replaced:

Part	Part No.	Replacement interval:	Replacement:
Hand Control	20090098	2 years	Can be used more than 2 years if no malfunction is detected.
Battery Battery Li- Ion	2006106 2006110	3 years 3 years	Can be used more than 3 years if no malfunction is detected.
Lift Strap	20090048 or 20090070	4 years	⚠ Must be replaced after 4 and 8 years of use, or if wear and tear are detected.
Gear Rack Set	20090096	4 years	Can be used more than 4 years if no malfunction is detected.

Expected Life Time	As	Year
Golvo™ 9000 mobile lift	2 520 000	10

9.0 Product Changes, Golvo™ 9000 mobile lift

Prod. No. 2000045, 2000045CN Golvo 9000
 2000049, 2000049CN Golvo 9000 LowBase

Changes	Model	Prod. No.	Rev.	From S/N	Project
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2020

Revision number (Rev.) is implemented. It is visible on the product label at the lift and on the packaging label.	Golvo 9000 Golvo 9000 LB	2000045 2000049	1 1	5722652 5761428	SUS003527
Changed material of the parking bracket Bracket with new material will not have the Liko logo on the front side. The new revision have been phased in from April 2020	Golvo 9000 Golvo 9000 Golvo 9000 LB Golvo 9000 LB Parking bracket	2000045 2000045CN 2000049 2000049CN 20090082			SUS003219

Changes	Model 2000045 From S/N	Model 2000045CN From S/N	Model 2000049 From S/N	Model 2000049CN From S/N	Project
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2019

Start of production Golvo™ 9000 with product label in Chinese	-	5 800 001	-	5 840 001	SUS003136
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2017

Start of production Golvo™ 9000 equipped with Jumbo Care Control Box (CBJ-C) and Hand Control HB30. They are replacing Golvo™ 8008.	5 720 001	-	5 760 001	-	SUS001741
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