**User Manual** 



## MaxiLift E 160 / E 160R 21AR200 – EAL, EAH / ESL, ESH MegaLift E 300 / E 300R 21AR300 – EAL, EAH / ESL, ESH



Serial Number: S-\_\_\_\_

## Approvals

The MiniLift is CE-marked and has been designed and manufactured in accordance with European standards. CE certificate enclosed.



# Declaration of conformity referring to: Directive for machines 2006/42/EC

Manufacturer:

H.C. Hovmand Rustkammervej 10 DK-4180 Sorø Denmark

Description of machine: Ängel

Angel Compact Minilift Emma/Easylift Apollo 80 and 130 E130 and E130R E160 and E160R E300 and E300R

Serial nr:\_\_\_\_\_.

**Regulations:** 2006/42EC; 2006/95EC;

Standards:

EN-12100-1; EN-12100-2; EN-14121-1; EN-60204-1; EN-61000-6-2; EN61000-6-4.

The machines above are hereby assured to be in conformity with the essential requirements of the Directive for machines 2006/42/EC.

Signature:

Sorø. 5/3-2010

HAAAAA Søren Hovmand

Managing Director

H.C. Hovmand A/S

Resp. for Doc. Jakob Hansen Head of Technical and Documentation Dept. H.C. Hovmand A/S

### **Table of Contents**

1.	Spe	ecifications	3
2.	Saf	fety	4
2	2.1.	General safety regulations in connection with use	4
2	2.2.	Safety systems	4
3.	Op	erating the MiniLift	5
3	5.1.	Remote control symbols on the Maxi- and MegaLift	5
3	5.2.	Charger/power supply	5
3	3.3.	Batteries	6
3	5.4.	Cambelt	6
3	5.5.	Wheels	6
3	6.6.	Construction	6
4.	Ma	iintenance	6
4	.1.	Troubleshooting	7
5.	Res	sidual risk	8
6.	Lif	ting equipment	8
6	5.1.	Turning unit	8
6	5.2.	Turning fork with click-lock	9
7.	Cir	cuit diagram	9
8.	Spa	are parts list, MaxiLift and MegaLift	10
9.	Loa	ad diagram	16
10.	Din	nension specifications	17
F	Final	checks for MaxiLift and MegaLift	19

# 1. Specifications

			Low	High
Weight [kg]	E300		100	110
Excl. lifting equipment	E300R		105	115
Weight [kg]	E160		75	80
Excl. lifting equipment	E160R		85	90
Height [mm]			1950	2300
Max. load MegaLift 200 kg ingredients in 140+200-litre p			200-litre pans	
Max. load MaxiLift		100 kg ingredients in 100-litre pans		
Lifting speed		Max. 125 mm/s (100mm/s at max. load)		
Overload protection	MegaLift	300 kg or unevenly distributed load		
Overload protection MaxiLift 160 kg or unevenly distributed load		ted load		
Batteries		4 x 12 V (24 V 18 Ah) maintenance-free		
Charger		230 V 3 A, IP65 Switchmode		de
Charging time		6 hours.		
Sound pressure level		≤ 70 Db(A)		
Vibration strength		≤ 2.5 m/s2		

Note that at Wodschow, a Low is the same as a Medium, as Wodschow only have two models.

For additional technical specifications and dimensions, see the enclosed dimension drawings and diagrams.

# 2. Safety

## 2.1. General safety regulations in connection with use

No fork-lift truck licence or other training is required to legally operate a MiniLift.

The following guidelines must be followed when using the MiniLift:

- Under no circumstances (either when the lift is lifting or when it is not lifting) must the MiniLift lift more than the following kg: 100 kg and 200 kg of ingredients respectively
- The MiniLift must not be used for lifting people or be operated by persons under 18 years of age.
- There must only be one person in contact with the MiniLift and there must be no body parts near the sledge on the tower or other lifting equipment when the lift is in use.
- There must never be any people or body parts beneath the load.
- The MiniLift must stand on a solid horizontal surface when lifting or transporting loads.
- When moving with a load, the load must be lowered to the low position and be secured so that it cannot slide off.
- When the lift is left or parked, the sledge must be fully lowered and the lift must be released from any load or weight.
- In accordance with the Danish Working Environment Authority's requirements, as other electro-mechanical handling equipment, the MiniLift must be inspected by an expert technician or the manufacturer at least once a year.

## 2.2. Safety systems

/!\

The MiniLift is equipped with the following safety systems:

- Free-running bearing, which reduces the risk of crushing injuries in connection with lowering.
- Electronic control which isolates the lifting function if the load exceeds the capacity of the lift (see section 1) or if the load is unevenly distributed (this will not prevent overloading when the lift is not lifting).
- On battery-powered models, the charger is waterproof (IP65) and doublefused to protect against leakage or impacts when the charger is connected to 230 V.

# 3. Operating the MiniLift

The MiniLift is operated via a remote control with a coil cord.

Buttons 1+2 are used to operate the lifting and lowering function

Buttons 3+4 are used to operate the turning unit

With a standard MiniLift, the remote control has two arrow buttons (buttons 1+2), which function as follows:

 <sup>1</sup> The MiniLift lifts for as long as the button is pressed.



The MiniLift lowers for as long as the button is pressed.

## 3.1. Remote control symbols on the Maxi- and MegaLift

Function	Symbol	Note
Lift	<b>企</b>	
Lower	¢	
Rotate Right (clockwise)	С С	
Rotate Left (anti-clockwise)	C C	

## 3.2. Charger/power supply

On battery-powered models, the MiniLift has a built-in charger. The charger must be connected to a 230 V power supply and charges with a power output of 3 A. The charger is equipped with two indicator lights:

- Yellow light: illuminates when the charger is connected to a power supply (230 V).
- Green light: illuminates when the batteries are fully charged.

The charger should be regularly connected to a power supply, as fully discharging the batteries will shorten their lifetime. Fully discharged batteries are recharged in about 6 hours.

The charger will automatically charge the batteries and switch off when the batteries are fully charged. The charger is waterproof (IP65) and double-fused, so that no earth socket is needed to comply with European safety provisions.

### 3.3. Batteries

The standard battery module consists of four 12 volt batteries (24 V, 18 Ah). The batteries are gas-tight and maintenance-free.

When the lift's lifting function is used, the battery light indicates the charging state of the batteries:

- Red light: the batteries are discharged and **MUST** be recharged as soon as possible.
- Green light: the power output of the batteries is sufficient to enable the lift to be used.

The full power output of the batteries decreases after around 600 charges.

### 3.4. Cambelt

The cambelt, which lifts the sledge, is reinforced with steel wire (breaking load 800 kg). If the cambelt jumps onto the gearwheel or is misaligned, see section 4.1 for troubleshooting.

### 3.5. Wheels

The MiniLift is normally supplied with two Ø80 fixed front wheels fitted with ball bearings and two Ø150 wheels mounted on a turning fork. The rear wheels are fitted with brakes.

Operating the central brake:

- Stepping forwards onto the brake rod will lock the wheels in the direction of travel and turn.
- Lifting the brake rod will cause the wheels to lock in the direction of travel.

Brake operation will be deactivated when the brake rod is in the mid-position.

### 3.6. Construction

E 300: The mast and wheel legs are made from stainless steel. The handle and guide are made from steel.

E 300R: The mast, wheel legs and push handle are made from stainless steel (AISI 304) which has undergone glass bead blasting.

The lifting sledge and turning fork are made from stainless steel.

#### 4. Maintenance

The MiniLift requires no daily maintenance. The motor, gear, lifting sledge and Maxi – MegaLift English

cambelt and wheels are maintenance-free.

The cambelt should be inspected regularly (monthly) for wear. The steel reinforcement of the cambelt reduces the chance of failure, but wear on the synthetic part can cause uneven lifting and lowering.

NB: In accordance with the Danish Working Environment Authority's requirements, as other electro-mechanical handling equipment, the MiniLift must be inspected by an expert technician or the manufacturer at least once a year.

Cleaning must be carried out using a damp cloth and ordinary detergents only. Cleaning with salt- or acid-based detergents can damage the cambelt and other vital components.

## 4.1. Troubleshooting

Fault type	What to check	Action
The cambelt jumps onto the gearwheel (the belt makes a flapping noise).	Is the belt loose?	Tighten the belt using the two screws at the top of the mast.
	Is the belt worn?	Replace the belt.
misaligned (the belt creaks).	the groove on the top gearwheel?	top of the mast, on the side that the belt is moving towards.
	Is the belt worn?	Replace the belt.
I he sledge moves jerkily.	Is the mast sticky where the sledge is running?	Clean the tower with spirit and apply a thin layer of silicon spray or acid-free oil.
	Are the runners and wheels between the mast and sledge worn?	Replace the runners and wheels.
<b>T</b> I 114 1		
The lift does not respond.	Check the main fuse.	Replace the main fuse.
The lift only operates a few time before the lamp illuminates red or only operates very slowly.	Check that the yellow light illuminates during charging.	Is the mains plug connected to a 230 V power supply?
	Check the battery voltage.	Charge the battery.
	If the yellow light	The battery or charging fuse is

illuminates and the green light illuminates after a few seconds.	defective, replace the battery or charging fuse.
--	--

#### 5. Residual risk

There is a residual risk as a result of extraordinary wear, material or product defects and the sudden occurrence of defects on the lift, e.g. a defective wheel bearing as a result of a collision.

## 6. Lifting equipment

### 6.1. Turning unit

#### Use

The turning unit is used to perform the sideways rotation of an item.

6210100534 for the MaxiLift and 6210100537 for the MegaLift

#### Operation

To operate the electric rotation function, use buttons 3 and 4 on the remote control for left- and right-hand rotation respectively.

#### Safety in connection with use of the turning unit

Before activating the rotation function, it is recommended that you check that the item is correctly secured between the arms of the turning unit, so that the item does not fall out during subsequent rotation. It is also important to ensure that the item has been lifted high enough so that it will not collide with the legs or base of the lift during rotation.



#### Adjusting the unit

Adjustment of PLC parameters should only be carried out by an expert.

The following parameters can be adjusted on the MiniLift's control unit:

- 1. Amps: used to adjust the power output of the motor and therefore the pressure on the item. If the rotation speed is also adjusted at the same time, it is important that this is adjusted before the amps.
- 2. Speed: used to adjust the speed of the motor and therefore the speed of the equipment's movements.



## 6.2. Turning fork with click-lock

MaxiLift bowl fork with Click-on: 30001513

MegaLift bowl fork with Click-on 30001559

To use the Click-on system, the bowl must be fitted with two brackets on the bowl ring. The



tips of the bowl fork must be fed all the way through these brackets until the locking latches click down behind the bracket.

## 7. Circuit diagram



8. Spare parts list, MaxiLift and MegaLift



ID	Part no.	Description	Pieces	Unit
	6210100534	Turning unit MaxiLift	1	Pc
	30001565	Click-on fork 100 L	1	Pc
	6210100537	Turning unit MegaLift	1	Pc
	30001559	Click-on fork 140-200 L	1	Pc
	20000299	Complete feetframe	1	Pc
1	RK-PL3VIVAK3	Vivakplate 3mm. Please indicate	0,67	$M^2$
		Serial no.		
2	20000194	Mast E300/E300R M	1	Pc
2	20000195	Mast E300/E300R H	1	Pc
2	20000042	Mast E160 – H	1	Pc
2	20000040	Mast E160 – M	1	Pc
2	20000042R	Mast E160R – H	1	Pc
2	20000040R	Mast E160R – M	1	Pc
3	81220036	Cambelt AT10/32 3,68 M-Mega.	2	Pc
3	81220037	Cambelt AT10/32 4,38 H-Mega	2	Pc
3	81220033	Cambelt AT10/25 3,73 M-Maxi	2	Pc
3	81220034	Cambelt AT10/25 4,42 H-Maxi	2	Pc
4	40000240	Fixture for remote control	1	Pc

5	30000825	Handle SS	2	Pc
5	30000059	Handle Alu	2	Pc
6	84251735	Controlunit	1	Pc
7	20000242	gearmotor MaxiLift	1	Pc
7	20000359	Motor / Gear complete MegaLift	1	Pc
8	30001503	Legs. Se complete list below	1	Pc
9	81160160	Sledge for E160	1	Pc
9	81160161	Sledge for E160R	1	Pc
9	20000226	Sledge for E300/E300R	1	Pc
10	81201016	Wheel Ø150	2	Pc
11	81200047	Wheel Ø80	2	Pc







Maxi – MegaLift English



Maxi - MegaLift English







# 9. Load diagram



# 10. Dimension specifications



Maxi – MegaLift English



## Final checks for MaxiLift and MegaLift

Type: \_\_\_\_\_ Serial no.:\_\_\_\_\_

Checks have been carried out to ensure:

- □ That the lift corresponds with the specifications given on the order sheet.
- □ That the lift has been adjusted so that the mast and equipment meet the tolerances for straightness with and without a weight.
- □ That all relevant labels and plates have been applied.
- □ That the lift has undergone a visual check for surface finish and correct assembly.
- □ That the lift's battery, charger and LED indicators are functioning correctly.
- □ That the lift's capacity and speeds comply with the given specifications.
- □ That the overload protection function has been tested and approved.
- □ That a function test and adjustment have been carried out on:
  - □ Cambelt
  - $\Box$  Sledge
  - $\Box$  Top and bottom stops
  - □ Straight travel and braking
- □ That the PLCs used have undergone function-testing and documentation has been archived.
- □ That the following equipment has been checked and been shown to function correctly.

Equipment:

□ Turning unit with fork with locking function (Click-on system)

Date: \_\_\_\_\_

Inspector:		