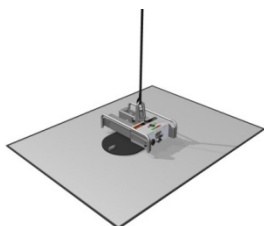


INSTRUCTION MANUAL

vacuum lifting device
VIAVAC-GB^{dc} (250 & 375)



Read this manual carefully before operating this lifter.

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A 1 Introduction

This manual is subdivided in the following sections:

A General section

This section is intended for anyone who uses this manual.

B Operators section

This section is intended for anyone who utilizes and operates this device.

C Technical section

This section is intended for the specialist staff who take care for maintenance and repair of this device.

Depending your function you need to read carefully the belonging section.

To operate this device safely it is important that you strictly follow the instructions.

If you are in doubt, or face problems when use, maintenance or repair, please contact your authorized VIAVAC dealer. They will do their utmost to serve you in an adequate and quick way.

In the text of this manual the following symbols are used.



TIP:

Gives suggestions and advice to perform certain tasks in an easier and more effective way.



TAKE CARE

a remark with additional information, draws your attention for possible problems.



WARNING

If these instructions are not carefully being executed, this can result in (serious) injuries or even death.

These symbols indicate important information.

You need to be convinced that anyone who utilises this device has understood this information well.

This manual should be made available to anyone who operates, checks or repairs this device.

To have the manual available it should be stored at the designated spot together with the device.

REMARK

In this manual there are 2 versions of the VIAVAC-GB being described, namely:

GBdc 250 : Suction pad dimensions 800x400mm with a safe working load of 250kg.

GBdc 375 : Suction pad dimensions 1000x500mm with a safe working load of 375kg.

These versions differ only concerning their suction pads with their belongings.

Where applicable, it will be indicated which version it concerns by marking (GBdc 250) or (GBdc 375).

What is your version is indicated on the identification plate which is attached to the device.

A 2 EC-declaration of conformity

Complies to enclosure II A from directive 2006/42/EG



The manufacturer:

VIAVAC vacuum lifting BV
Bedrijfsweg 6
3411 NV Lopik
The Netherlands

Hereby declares that:

Machine : Vacuüm lifter

Type : VIAVAC-GBdc . . .

Machine nr. :

Complies with the following directives:

- Machine directive 2006/42/EG with modifications
- Low voltage directive 2006/95/EG with modifications
- EMC directive 2004/108/EG with modifications

The following standards have been applied:

Safety of machinery	Basic concepts	EN-ISO 12100-1
Safety of machinery	Basic design principles	EN-ISO 12100-2
Safety of machinery	Principles of risk assessment	EN-ISO 14121
Safety of machinery	Audible and visual warning signals	EN 981+A1
Safety of machinery	Electrical equipment for machines	EN 60204-1:2001
Crane safety	Non-fixed load lifting attachments	EN 13155+A2

Date:

Signature

Arie de Groot
Managing director

A3 Definitions

Operator	Person or persons who operate and utilizes the vacuum lifter.
Lifting device	Lifting crane, overhead crane, forklift truck or any other, well or not into a machine integrated lifting arrangement, where the vacuum lifter is suspended on and lifting tasks are being executed.
Load	The object being transported and/or handled by the vacuum lifter.
Working load Limit	The maximum weight of the load which can be transported safely with the vacuum lifter
Suction	By actuating a valve, sucking the load fixed to the suction pad.
Aerating	By actuating a valve, releasing the load by enabling air flowing to the suction pad
Maintenance expert	Expert who is responsible for inspection, maintenance and repair of the vacuum lifting device.
Load ratio	Ratio between the maximum calculated load which can be lifted with the device and the safe working load which is indicated on the device.
Testing ratio	Ratio between the load, used for the static test of the vacuum lifter and the safe working load indicated on the device
Static test	Test where the vacuum lifter should withstand a static force equivalent to 2x working load limit without permanent deformation and after removal of the force, there shall be no visible defects
Holding time Test	With the suction pad in vertical position, a (non porous) load corresponding the working load limit is lifted. After this, the main switch is switched off so the vacuum pump will not run anymore. The vacuum lifter should be able to hold the load for a prescribed time.

B 1 Operators declaration

The undersigned hereby declares that before operating this vacuum lifter, he has read and understood the operators section of this instruction manual and will follow the instructions and guidelines.

Control of the management on compliance is required.

DATE	NAME	SIGNATURE
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B 2 Operating limits



Lifting capacity max. 250kg

Own weight c.a. 60kg



Lifting capacity max. 375kg

Own weight c.a. 70kg

Load Non porous rigid material such as glass, aluminum, steel and stone.
The suction area may be flat as slightly structured.
The suction pad seal can compensate (when not too rough) unevenness's up to 2mm.

Capabilities - 90° tilting from horizontal to vertical with locking facility in vertical position.
-360° turning with locking facility every 90°.

Operation elevation Max. 1,200 meter above sea level.

Operating Temperatures 0°C to +40°C
-10°C to 0°C with special precautions.

Service life At least 20,000 cycles, when used as intended.

Outside use This lifter can also be used outside, however not in area with explosive danger.

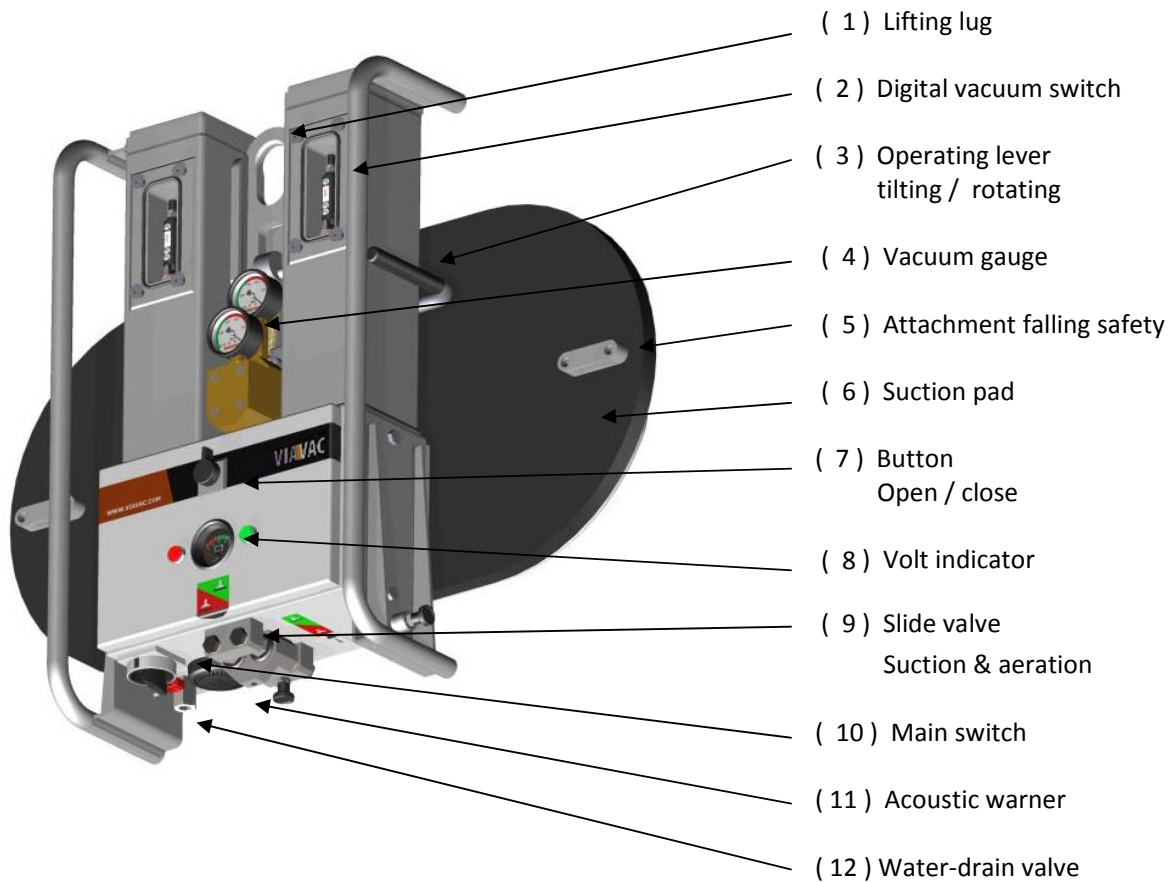
Rain and snow This lifter may also be used in rain and snow conditions, however there should be taken care for a dry suction area. The reason for this is that moisture or ice strongly reduces the necessary friction between suction pad and load. This friction is essential to lift the load in vertical position of the suction pad.



Wind Do not use this lifter at wind speeds above 10 meter/sec.
or when there is a chance for wind bursts.

Non rigid plates This lifter is not suitable to lift non rigid plates.
(plate can peel of from the suction pad causing to release the load).

B 3 Operation



1. Suspend device at the crane hook by the lifting eye (1).
2. Before every lift, check the condition of the rubber sealing profile of the suction pad, there may be no tears or damage to it.
3. Before every lift, check the black rubber backplate at the backside of the suction cup; this must be clean and dry.
4. Ensure that the control lever (9) "suction & aerating" is set to the left (read area)
Start up the device by setting the main switch (10) on 1.
-Now you will hear the vacuum pump running, it will stop 10 seconds after a vacuum level of -0.65 bar has been built up in the vacuum buffer tank.
- The alarm is audible and the red lamp will light up as long as the vacuum level is still below -0.6-bar, above that the alarm will stop and the green lamp will light up instead of the red one.
5. Check on the volt indicator (8) whether the battery has been sufficiently charged; the pointer must remain between the 11 and 13 volt while the vacuum pump is running.
6. Use the control lever (3) to set the suction pad in the right position.
- Lever up: rotate suction pad with automatic stop every 90°
- Lever down; suction pad will tilt from vertical to horizontal.
7. Put the device with the suction pad on the load, ensure that the suction surface is dry and clean.
8. move the slide valve (9) at suction (green area).
9. Check on the vacuum gauge (4) whether the required vacuum level of >-0.60 bar has been built up (pointer in the green area).
10. When the load has been put on its place and is secured, set the slide valve (9) at aerating (red area).

11. The suction pad will release and then a new load can be taken up by putting the suction pad on it and putting the slide valve (9) at "suction".
12. After the last element has been placed, disconnect the device by setting the main switch (10) on 0.

Before any lift, the user must check the following:

- I. Check the rubber sealing profile of the suction pad for damage and cracks and replace if necessary.
- II Check rubber backplate of the suction pad to verify whether it is clean and oil-free and, if necessary, to clean it up.
- III Whether the battery is sufficiently charged; The volt indicator (8) must point between 11 and 13 Volt.
- IV Functioning of the acoustic alarm (11) at a vacuum level below -0.60m bar.
This can be checked by briefly putting the control lever (9) in the position "suction" (green area) before the suction pad is placed on the load.



If the load has a protective film, it must first be removed before the suction pad is placed on the load.

During every lift the operator must constantly monitor the following:

- a. Vacuum meter, during lifting the pointer must constantly remain in the green area.
- b. Acoustic alarm signal; during the lift it may not be audible.

If the vacuum meter is in the red area and/or the acoustic alarm signal sounds, it is not allowed to lift.



If the vacuum meter is in the red area and/or the acoustic alarm signal sounds, a lifted load must be put down as quickly as possible.

If the vacuum pump for some reason fails, from the moment the vacuum level decreases below the required level of > -0.60 , the load will be held for a minimum of 5 minutes.

To work safely with the device, it is therefore necessary that:

- The operator must have good hearing and is not using hearing protection.
- During the lifting the operator must be within hearing and visibility distance of the device.
- The ambient sound does not amount to more than 70db.
- The operator of the device is constantly in contact with the operator of the lifting machine and agreements have been made about a clear communication.

Protective precautions at operation temperatures between the -10°C and 0°C .

- To prevent clogging of the filters, it has to be ensured that all the humidity has been removed from the device. This is achieved by letting the vacuum pump run approx. 15 minutes with the slide valve (9) in the position "suction" in a dry and heated compartment.
- To be assured of sufficient battery capacity, store the device at a temperature of 15°C or higher at night.
- For sufficient friction between suction pad and the load, it must be ensured for every lift that both the suction pad and the suction surface of the load are dry and clean. All humidity, snow and ice must therefore be removed.



The vacuum pump can run approx. 120 minutes constantly with a fully charged battery.

To ensure that it is possible to work a whole day with a battery load, the user must also keep an eye on the vacuum condition of the system during the operation:

This is done by checking that the vacuum pump stops 10 seconds after a vacuum level of 0.65 bar has been reached. Then it must take at least 30 seconds before it starts pumping again.

If the pump starts up more frequently, this indicates a leak and this causes the battery to discharge faster than expected and one cannot operate for a whole day.

Therefore it is advisable to first rectify this, before the work is continued.

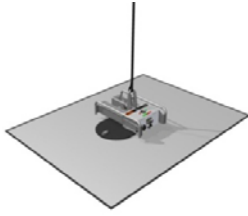
B 4 Storage

The device should preferably be stored as follows:

- In a dry place at temperatures between 15 and 25°C.
- Switched off, water drained, charged battery and suction pad shielded.

B 5 Transport- and manipulation possibilities

Horizontal

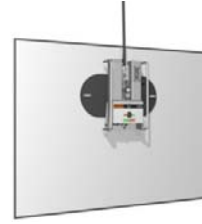


- Place suction pad centralized on the load



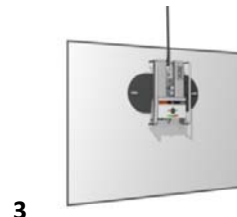
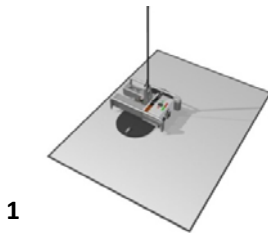
the load should be guided by hand, this because the horizontal position is not locked and therefore it can tilt uncontrolled to the vertical position.

Vertical



- Place suction pad horizontally centered, in or above the middle of the load

Tilting from horizontal to vertical

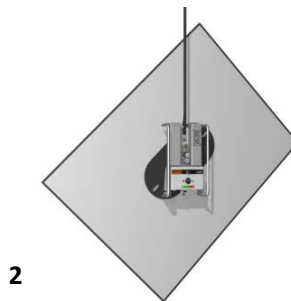
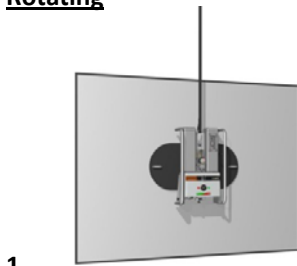


1. Place suction pad horizontally centered, in or above the middle of the load.
2. During lifting the load will tilt.
3. When after lifting the load still hangs in a tilted position, move it manually to the vertical position so the suction pad will fall in the locked position.



When tilting the lifting bar should be in the free pivoting position.

Rotating



1. Place suction pad centralized on the load.
2. Move operating lever (3) upwards, the position becomes unlocked and the load can be manually rotated.
3. When the load has 90° rotated, the suction pad will automatically fall into the next locked position.



The suction pad must be placed centralized on the load, otherwise the load will rotate uncontrolled when unlocking the suction pad.

The operator should have sufficient information and knowledge to examine the weight and properties of the load to be lifted and handled.



Allowable overhang

At larger dimensions of the load, there is a risk of breaking or buckling of the load as a result of the weight hanging outside from the suction pad.

The allowable overhang depends on the material properties and thickness, this effect is even stronger at the horizontal position of the load.

The allowable overhang is determined by experience with the product, when doubt this has to be examined before lifting

Hereby a guideline for the maximal dimensions of the following materials.

GLASS

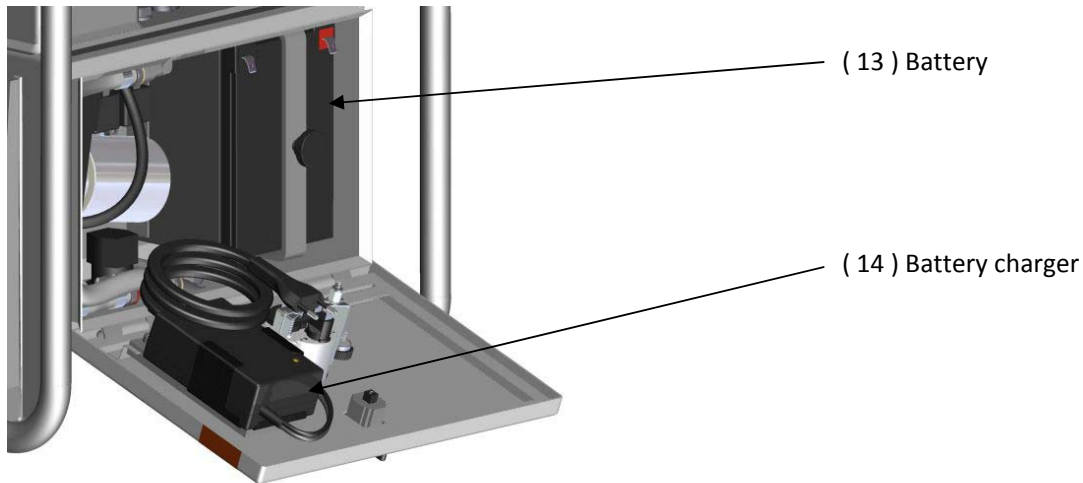
thickness	Horizontal transport (l x b)	Vertical transport (l x b)
6 mm	2.0 x 2.0 mtr.	3.0 x 3.0 mtr.
8 mm	2.4 x 2.4 mtr.	3.3 x 3.3 mtr.
10 mm	2.8 x 2.8 mtr.	3.6 x 3.6 mtr.
15+ mm	3.0 x 3.0 mtr.	4.0 x 4.0 mtr.

SANDWICH PANELS

thickness	Horizontal transport (length)	Vertical transport (length)
40 mm	6 mtr.	10 mtr.
60 mm	7 mtr.	11 mtr.
80 mm	8 mtr.	12 mtr.
100+mm	10 mtr.	14 mtr.

B 6 Battery

The battery can be charged by the battery charger, which is placed in the switchbox.



- Turn the main switch (10) off.
- Insert the plug of the charger (14) in the socket, the voltage of the mains should be between 110 ... 240V.
- The LED lamp on the battery charger changes during the load cycle from red (empty battery) to yellow (almost fully charged battery) to green (fully charged battery).

In approx. 6 hours loading time an empty battery (13) is again fully charged (green LED lamp is lighted). A full battery load is sufficient for placing a minimum of 60 elements (approx. 1 full day of operation).

When the green LED lamp is lighted, the battery charger will automatically switch to maintenance loading. The connector can therefore remain in the electric socket without any danger of overloading the battery.

In case of a charged battery the volt indicator on the cabinet indicates between 12 ... 14 Volt, when the vacuum pump runs, it will fall back with approx. 1V.

If the indicator falls back significantly to back with 2 or more Volt during additional pumping, this means that the battery is discharged.

In case of a discharged battery the vacuum pump will also run slower, due to which it will not achieve the set switch off vacuum level and the vacuum pump will run constantly.

If the voltage of the battery decreases below the 11V, the electronic vacuum switch will also turn off, because of this, the vacuum pump will run constantly, the red lamp will light up and the acoustic alarm signal will sound.

The battery will last approx. 3 to 5 years, because the capacity will decrease after time, we advise to renew the battery every 3 years as a precaution.



It improves the life time of the battery when it is stored in a charged state.

We recommend that, even if you don't need the device the next day, to charge immediately after use again.

Interim charging the battery has no negative impact on it's capacity (no memory effect).

B 7 Options

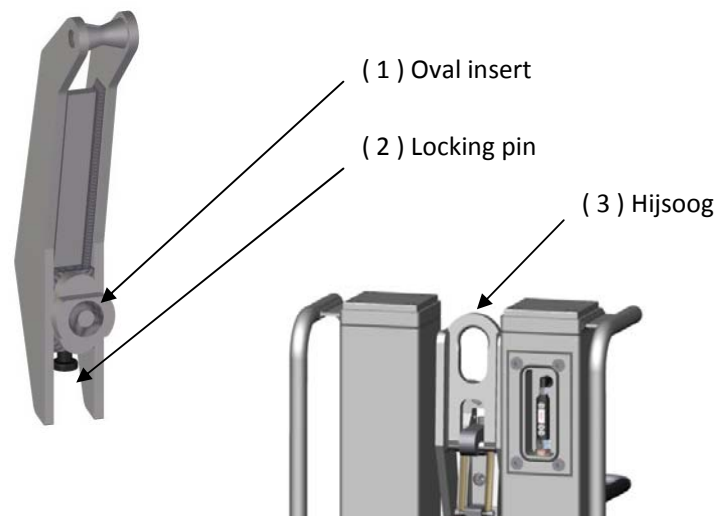
B 7.1 Transport carriage

The transport carriage is a very useful to move the device easily and also to protect the suction pad from damage and sunlight.



B 7.2 Extended suspension

The VIAVAC-GB is provided with a short suspension, this is favourable in those cases where a job is performed under ceilings or balcony's. As a result is that in vertical position the load hangs in a slightly inclined position from vertical. By coupling the extended suspension to the lifting eye, the position of the pivoting point compared to the load is replaced and the load will hang almost vertical.



Coupling of the extended suspension to the lifting eye should be performed as follows.

- 1 Pull at the locking pin (2) and put the swivelling oval insert (1) in vertical position.
- 2 Put the oval insert piece (1) at the front side through the oval hole of the hoisting eye (3).
- 3 Twist the swivelling oval insert piece 90° so that the extended suspension is set at the buckle. The swivelling oval insert piece is automatically secured in this position by the securing pin.
- 4 After use the extended suspension can be taken off by pulling at the locking pin and simultaneously turning the swivelling into the vertical position.

B 7.3 Falling safety device



According CE regulation EN 13155 it is in all countries of the European union when a vacuum lifter is used at building site, a secondary safety system is obliged.

This can be realized in the following way's:

- One (single) vacuum circuit and the use of an falling safety device
- Two (dual) independent vacuum circuits.

This device is executed with 2 independent vacuum circuits and the use of an extra falling safety device is therefore not obliged.

However in situations where this is desired by the operator, this lifter has the possibility to apply an extra falling safety device.

Falling safety devices can be applied for the different forms and dimensions of the elements in accordance with the figure below.

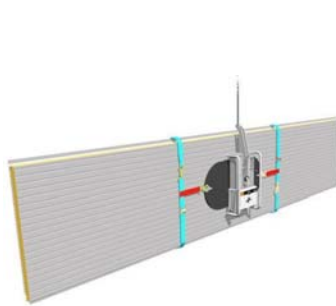
Vertical panel

1x art. 17004



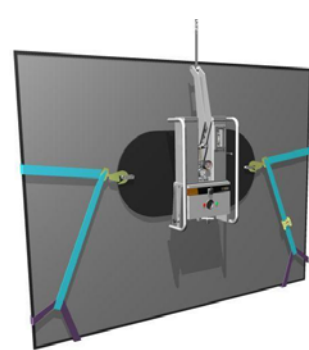
Horizontal panel

2x art. 17004



Rectangular elements

1x art. 17007



The falling safety devices are executed by means of lifting straps with hooks, which must be hooked to the suction pad. During use the following must take place.

- 1 The correct falling safety device is hooked to the therefore intended fixing points on the suction pad.
- 2 Lift the element with the vacuum lifter approx. 0.5 meter free from the ground.
- 3 Consequently the strap is put around the element as indicated above.
- 4 Through the clamp buckle the strip is pulled tight around the element. (no clearance).
- 5 With the lifting device the whole unit is lifted to the designated place.
- 6 Just before the element is put in its place, the falling safety device is removed after which the element is placed on its spot.



1. Protect from sharp edges of the elements to be lifted at location of the straps.
2. If there are cracks or tears in the lifting straps, do not use them and replace them immediately.

B 8 Safety precautions

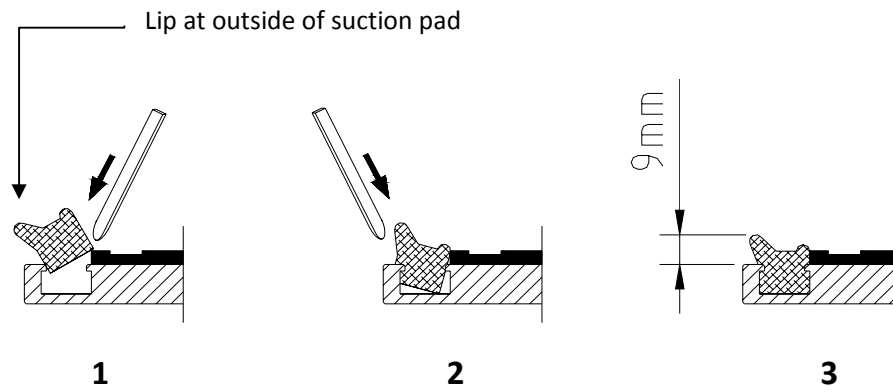
Recommendations

- 8.1 **Only** use this lifter when you have read and understood the operators section of this manual.
- 8.2 **Only** use this lifter when the main switch (10) for the power supply is turned “on” before lifting. (danger of lifting with the vacuum which is still in the vacuum tank).
- 8.3 **Always** check this lifter before use for its conditioning and correct functioning.
- 8.4 **Always** charge the battery before and after use.
- 8.5 **Always** take care that the contact area of the load is clean and dry before placing the suction pad on the surface.
- 8.6 **Always** position the suction pad correctly on the load.
- 8.7 **Always** put down the load immediately when the alarm sounds.
- 8.8 **Always** the operator should be within sight- and hearing distance of the lifter and the operator of the lifting machine.
- 8.9 **Always** there should be an agreement about the communication between the operator of the vacuum lifter and the lifting machine.
- 8.10 **Always** wear protective equipment that is appropriate for the material being handled. Follow trade association guidelines.
- 8.11 **Always** keep the device periodically checked and maintained by an expert
- 8.12 **Always** has the the vacuum lifter to be examined within the period as prescribed by the safety regulations which are valid for the country where the vacuum lifter is in use.

Prohibitions

- 8.15 **Never** operate a lifter when it is damaged, malfunctioning, or parts are missing.
- 8.16 **Never** operate a lifter as the seal of the suction pad is damaged or cracked.
- 8.17 **Never** operate a lifter if the Load capacity or any warning appears to be missing or obscured.
- 8.18 **Never** exceed the Load Capacity which is indicated on the lifter.
- 8.19 **Never** attempt to lift a cracked or broken load with this lifter.
- 8.20 **Never** lift a load which is buckled.
- 8.21 **Never** lift a load when any vacuum indicator shows inadequate vacuum.
- 8.22 **Never** lift a load when the alarm sounds.
- 8.23 **Never** lift a load higher than necessary.
- 8.24 **Never** leave suspended loads unattended.
- 8.25 **Never** lift a load over people
- 8.26 **Never** store the lifter standing on the suction pad.
- 8.27 **Never** lift a load at wind speeds exceeding 10 m/s.
- 8.28 **Never** lift a load when there is a chance for wind bursts.
- 8.29 **Never** release the load when the lifting sling or chain is not vertically above the vacuum lifter.
(danger of swinging of the lifter).
- 8.30 **Never** use the lifter when it's examined period has been exceeded.
- 8.31 **Never** use the lifter when the operator has a hearing loss or wears ear muffs.
- 8.32 **Never** use the device where the ambient noise exceeds the 70dB.
- 8.33 **Never** use solvents, petrol or other chemicals to clean the rubber parts of the suction pad.

Changing the suction pad seal



Fault finding and repair

MAL FUNCTION ANALYSE

Fault	CAUSE	ACTION
1. No action and volt indicator shows 0	Battery very low	Charge battery or replace
	Fuse of the control current defect	Replace glassfuse
2. Insufficient vacuum level Acoustic alarm sounds	Sealing profile of suction pad is damaged	Replace sealing profile
	Load is from porous material	Move load in another way
	Surface is too rough	Move load in another way
	Battery is low	Charge battery or replace
3. Sufficient vacuum level Acoustic warning signal sounds	Relais K1 or K3 is defect	Replace relay K1 or K3
	Vacuum switch is deprogrammed	Re program or replace
	Leakage of non return valve	Clean non return valve or replace
	Capacity of vacuum pump has decreased	Replace vacuum pump or valveplate in de vacuum pump
4. Sufficient vacuum level No acoustic warning signal but vacuum pump keeps running	Relais K2 or K4 is defect	Replace relay K2 or K4
	Vacuum switch is deprogrammed	Reprogram or replace.
	Battery low	Charge or replace battery
	Vacuum leakage	Check and replace if necessary seal of suction pad
	Leakage of non return valve	Clean or replace non return valve
	Capacity of vacuum pump has decreased	Replace vacuum.
	Surface too rough or porous	Move load in another way
5. Vacuum pump does not run	Fuse of the electric motor is defect	Replace fuse.
	Vacuum pump defect	Repair or replace vacuum pump.