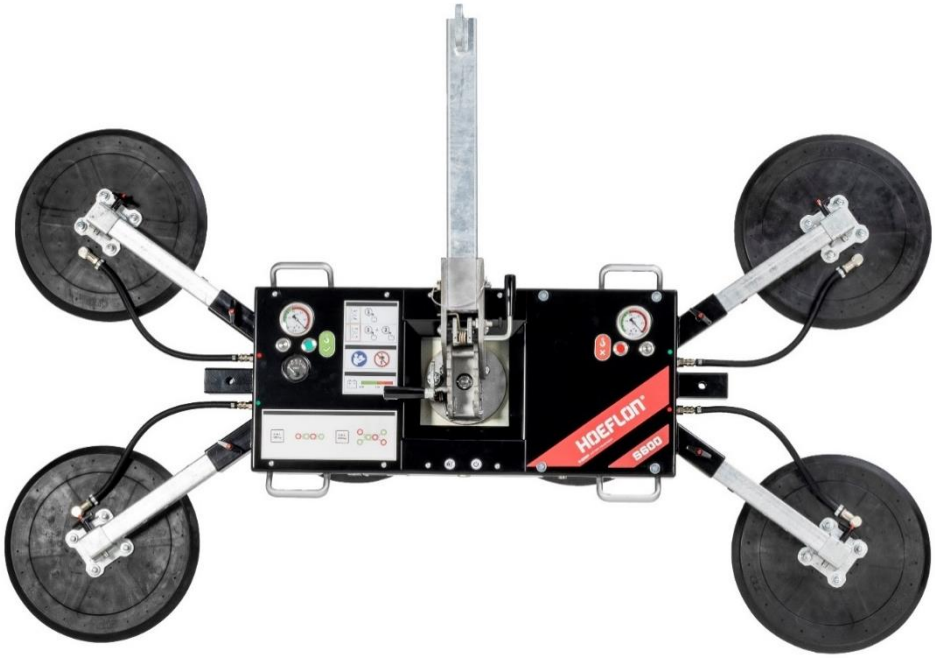
HOEFLON®

User manual

Glass suction lifter S600



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Translation of the original manual

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Manufacturer

Grip Lifting Equipment
Handelsweg 1 C
2861 GN Bergambacht, The Netherlands

T: +31(0)85 018 0321
I: www.grip-lifting.nl
E: info@grip-lifting.com

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INTRODUCTION

This user manual describes the Grip S600 from Grip Lifting Equipment, based in Bergambacht in the Netherlands. The information in this manual plays an important role in ensuring the safe and proper operation of the machine.

It concerns the original user manual which was created in the Dutch language by Grip Lifting Equipment (subsequently referred to as the manufacturer). The original Dutch text always takes priority in the event of any lack of clarity and/or disputes.

If you are unfamiliar with the preparation for use, operation and maintenance of the machine, read this user manual carefully from beginning to end.

If you are familiar with such matters, you can use this user manual for reference. The table of contents will directly you quickly to the information you require.

The words machine, vacuum lifter and S600 are used interchangeably in this user manual. These terms all refer to the Grip S600.

1.1 Use of the manual

This user manual is written for authorised persons and technical specialists. All people involved must familiarise themselves with the content of this manual. These people are distinguished as follows:

Authorised persons are people who:

Have developed a specific level of knowledge through education or training and have sufficient experience to work with the machine.

Technical specialists are people who:

Meet the requirements for the authorised category and have an intermediate level of knowledge based on education and/or work experience. These people also have a knowledge of machinery which makes them well aware of the possible dangers and risks (a Grip Lifting Equipment service technician for example).

We understand operation as follows:

The starting and stopping of the machine, cleaning and carrying out simple maintenance tasks.

The aim of this manual is to establish safe and efficient interaction between man and machine.

1.2 Marking conventions

Marking conventions are indications in the manual and they are not applied on the machine itself. The following marking conventions are applied to bring specific actions or hazardous situations to the attention of the user:

 REMARK	Suggestions and advice to make specific tasks easier.
 ATTENTION	Remark with supplementary information; alerts you to possible problems.
 CAUTION	The machine can be damaged if the procedures are not carried out carefully
 WARNING OF DANGER	You can be (seriously) injured if the procedures are not carried out carefully.

1.3 Marking & signalling

 ATTENTION	Respect the signalling; this is attached for YOUR SAFETY..
 WARNING OF DANGER	Check whether all signalling is still present and easily legible on a regular basis; replace if necessary.

A number of pictograms are attached to the machine. Their aim is to warn the user of residual risks which could be present in spite of the safety measures taken. The table below provides an overview of the symbols used.

Pictogram	Description	Location
	Prohibition: Standing below a raised load is prohibited	To the lower left of the machine
	Warning: Risk of trapping/crushing the hands	Hanging on the machine
	Mandatory: Take heed of the user manual	To the lower left of the machine
CE	CE marking: Indicates conformity with the European directives.	Type plate

1.4 Guarantee

The warranty stipulations and the stipulations connected with liability can be found in the terms and conditions of delivery.

1.5 Conformity

The machine meets the applicable European Directives. A number of standards were applied during the design process to ensure that the fundamental requirements of the directives are met.

The CE marking is attached to the type plate on the basis of this information (see figure 1).

The directives and standards are stated on the Declaration of Conformity (see Annex 1).

1.6 Type marking

The machine is provided with the type plate shown below (see figure 1).

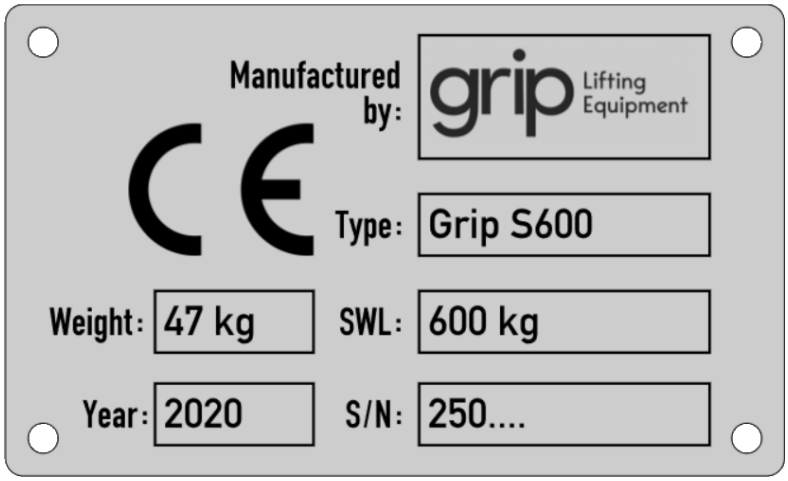


Figure 1: Type plate

2

GENERAL SAFETY INSTRUCTIONS

2.1 Intended purpose

- Safety is important! A safe workplace is everyone's responsibility. Report dangers and / or dangerous situations to your superior immediately.
- The area surrounding the machine must meet health and safety legislation.
- The user / owner is responsible for maintaining a clean and well lit area in which the machine can be used safely.
- Read this user manual through carefully first of all. The manufacturer is not liable for injuries, damage and/or excess wear due to improper use or maintenance of the machine or modifications to it.
- The user of the machine is always responsible for the interpretation and application of this manual. Contact the manufacturer if there is any doubt.
- This manual must be readily accessible to all users.
- The manufacturer advises that the operating and maintenance personnel are trained in the operation and maintenance of the machine.
- The machine may not be modified unless the manufacturer has provided prior written permission.
- The manufacturer is absolved of all responsibility if settings are changed or unauthorised / non-original spare parts or unauthorised repair methods are used.
- Do not overload the machine. Always take the safe working load stated by the manufacturer into account.
- Check whether the machine has been inspected periodically prior to using it. A lifting device which has not been inspected at the appropriate time may not legally be used.
- Follow the local work instructions and safety regulations.
- The user / owner of the machine is responsible for adherence to the instructions stated in this manual.
- The machine must not be used in an environment which is dusty or is exposed to gas.

3

INTENTED USE

The intended use of the machine is the use for which the machine was specifically designed and built. The intended use can be described as follows:

The Grip S600 is a vacuum lifter for placement and movement of flat and non-porous glass panels which are of a medium to large size. The load must be sufficiently stiff to avoid excess bending or warping.

Any use other than that stated above can cause damage to the machine and endanger people in the vicinity. Any responsibility or liability on the part of the manufacturer would lapse in this case.

4

TECHNICAL SPECIFICATIONS

General	
Machine dimensions (l x w x h)	See § 6.2 Configurations
Weight of machine [kg]	47 to 70
Net lifting capacity double circuit [kg]	600
Rotation range [º]	360 (4 positions)
Tilting range [º]	90 (6 positions)
Technical service life	10 years

Electrical system	
Power type	Battery
Control voltage [VDC]	12
Electric current [Ah]	10

Vacuum-system	
Minimum negative pressure [bar]	0.60

Work-environment	
Min. ambient temperature [ºC]	0
Max. ambient temperature [ºC]	45
Max. wind speed [m/s]	10
Max. working height [m]	1000 (above sea level)
*) Contact your supplier for applications outside the specifications indicated.	

4.1 Sound pressure level

The sound pressure level is measured in accordance with the requirements of the Machinery Directive. The A-weighted sound pressure level is measured at the workplace during normal working conditions. The measurement is carried out at a distance of 1 metre from the machine at a height of 1.60 metres above the shop floor. The level of the A-weighted equivalent continuous sound level (LAeq) is < 65 dB(A) in an operational state.

4.2 Transport & storage

CAUTION

The transport and handling of the machine must be carried out with care to prevent damage and malfunctions.

Effective moving and lifting of the machine were taken into account during the design process. Make sure that only approved hoisting and lifting devices are used and ensure that they are used in line with the manufacturer's instructions.

The machine must be stored under the following conditions:

- Put the machine away in the transport dolly or transport box provided after each use.
- The sealing edge of the suction cups must be kept away from the bottom surface in order to prevent distortion.
- Keep the transport dolly or box in a dry environment.
- The minimum ambient temperature is 0ºC
- The maximum ambient temperature is 40ºC
- Do not keep the machine exposed to rain or direct sunlight for long periods.
- Charge the battery up following each use or on a monthly basis if the machine is not used for a long period.

5

SAFETY DEVICES

5.1 General

Following establishment of the hazards present and assessment of the risks, the following safety measures are taken to remove the hazards or at least minimise them.

5.2 Shielding of electrical parts

	WARNING OF DANGER	Safety devices must never be removed, bypassed or put out of operation in any other way.

The internal components of the machine are shielded with two protective covers. The machine must not be used when the protective covers have been removed or when they have not been fitted correctly. This removes the risk of damage to the machine.

5.3 Switching the machine on and off

The power supply can be switched off via the On / Off switch on the machine. Once the machine has been switched off, the battery must also be disconnected before any maintenance work can be carried out.

Elke medewerker dient onderstaande waarschuwingen en voorschriften in acht te nemen. Deze maatregelen zijn aanvullend op de maatregelen die in de gebruikershandleiding van de compactkraan staan.

Figure 2: On / Off switch

5.4 Acoustic alarm

	WARNING OF DANGER	An acoustic alarm warns of an inadequate vacuum pressure level while the machine is in use.

An acoustic alarm warns the user if at least one of the two systems has an inadequate vacuum pressure. If the alarm goes off during work with the machine, work with the machine must cease and the load must be put down immediately in a safe manner.

5.5 Personal protective equipment

The manufacturer advises that the following PPE at the very least is worn while working with the machine: safety helmet, safety shoes and gloves.

The local safety regulations concerning the wearing of personal protective equipment must also be followed.

5.6 Residual risks

	WARNING OF DANGER	Riding on a connected machine while it is being hoisted is prohibited.
	WARNING OF DANGER	The machine must not be used if it is connected to the charger.
	WARNING OF DANGER	There is a possible risk of trapping/crushing the hands or fingers when the attachment is positioned horizontally with reference to the hold-down. A warning pictogram notifies the user of the risk of trapping/crushing.

5.7 Ergonomics

There was a strong focus on ergonomic aspects during the design phase. The machine is designed and built in such a way that human ergonomic aspects are taken into account as much as possible.

6

OPERATION

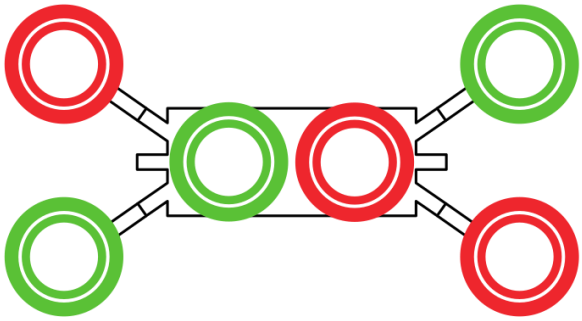
6.1 General

 WARNING OF DANGER	The machine may only be operated by persons who meet the authorised category at the very least (see § 1.1 Gebruik van de handleiding).
 WARNING OF DANGER	Do not use the machine if damage or defects are observed or assumed.
 WARNING OF DANGER	Do not use the machine in an environment with a sound level greater than 70 dB. The alarm signal would not be readily audible above this level.
 WARNING OF DANGER	Wear personal protective equipment in the way which is customary within the organisation / environment in which the machine is used.
 WARNING OF DANGER	Always check whether there are any persons present in the danger zone prior to starting work.
 WARNING OF DANGER	Pay attention to your body position during operation. Make sure that you are standing steadily and that you do not try to reach too far.
 WARNING OF DANGER	Never lift a load up above yourself or any other people. This is strictly prohibited!

	CAUTION	Operators must be above the age of 18 and they must not be under the influence of alcohol, narcotics or medication.
	ATTENTION	The operator is only allowed to carry out tasks for which training has been received. This applies for maintenance and operational tasks.

6.2 Configurations

Machine weight	58 kg
Lifting capacity	400 kg
Dimensions	1900 x 400 mm 2500+400 mm (with extension set)



Machine weight	70 kg
Lifting capacity	600 kg
Dimensions	1800 x 1000 mm

6.3 Conditions for starting

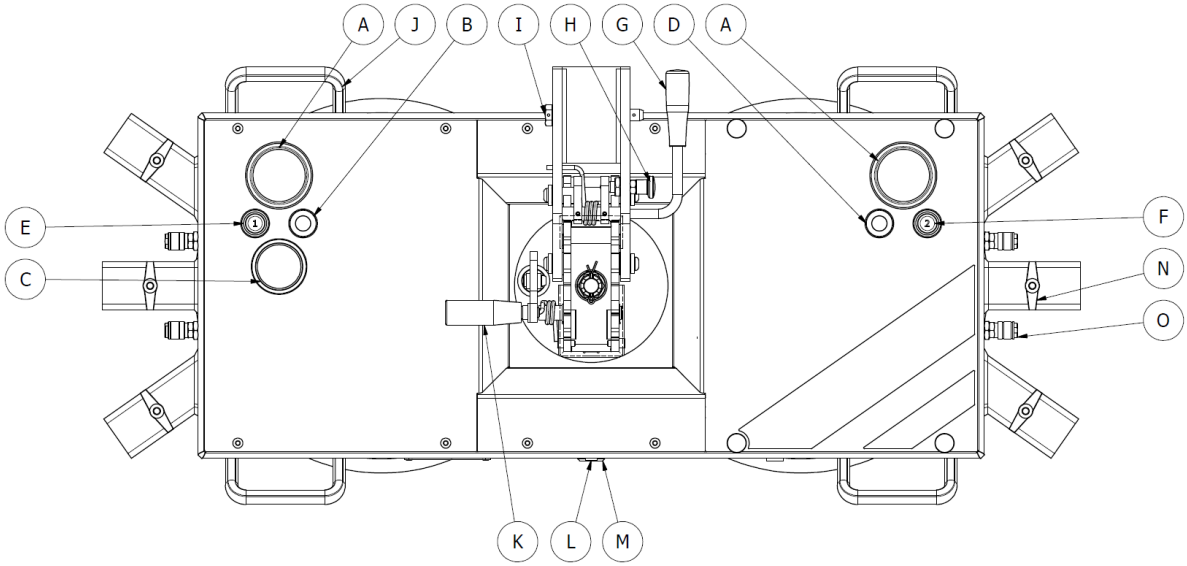
Carry out the following actions prior to using the machine to provide suction:

1. Check the surface of the suction cups. They must be clean, dry and free of grease.
- Clean the surface with vinegar if necessary and dry it thoroughly afterwards.
2. Check the surface of the load. It must be clean and free of grease.
- Clean the surface of the load with water if necessary and dry it thoroughly afterwards.
3. Check the voltage at the voltmeter
- Do not use the machine if the voltage is less than 12 V when at a standstill, or less than 10V when the pump is active. Charge the battery or replace it prior to resuming work.

Carry out the following actions prior to lifting the load:

4. Check the vacuum pressure on the pressure gauges
- Do not use the machine while the pointer of one or both pressure gauges is in the red zone.
5. Check whether the machine is switched on and whether the green LED is illuminated.
- The safety devices and alarms will not work when the machine is connected to the load while switched off.
6. Check the position of the machine on the load.
- See § 6.4 Operating instructions for this.
7. Check whether all locking pins are present and correctly locked in place.

6.4 Operating and control components



- A: Vacuum pressure meter
- B: Green LED
- C: Voltage meter
- D: Red LED
- E: Push button 1
- F: Push button 2
- G: Control lever for tilting mechanism
- H: Locking bolt for tilting mechanism
- I: Locking pin for exchangeable lifting arm
- J: Handle
- K: Control lever for rotation mechanism
- L: On/Off switch
- M: Charging port
- N: Locking pin for extension tube
- O: Vacuum quick coupling

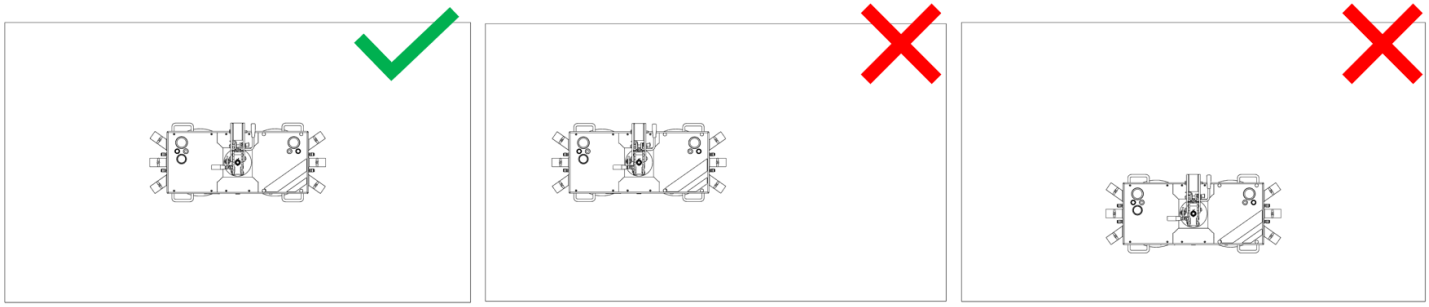
6.5 Operating instructions

6.5.1 Switching on

1. Press the On / Off switch to start up the machine.

6.5.2 Positioning on the load

1. Position the machine at the centre point of the load's width.
2. Position the machine at or above the centre point of the load's height.



6.5.3 Suction of the load (machine operations)

1. Press the machine against the load.
2. Press the machine push button 1 [E].
3. Wait until the green LED [B] is illuminated.

6.5.4 Suction of the load (remote control)

1. Press the machine against the load.
2. Press the central button on the remote control.
3. Wait until the green LED is illuminated.

6.5.5 Tilting of the load

WARNING OF DANGER

The load can move uncontrollably when released. In order to prevent this happening, hold the load firmly in position or ask for help from a colleague if necessary.

1. Release the locking bolt.
2. Pull the control lever towards you.
3. Tilt the pane of glass to the desired position
4. Push the control lever to the start position > Check whether the lever is pushed right back.
5. Lock the locking bolt in position.

6.5.6 Rotation of the load

WARNING OF DANGER

The load can move uncontrollably when released. In order to prevent this happening, hold the load firmly in position or ask for help from a colleague if necessary.

1. Pull the control lever towards you.
2. Rotate the pane of glass to the desired position.
3. Push the control lever to the start position > Check whether the lever is pushed right back.

6.5.7 Discharging of the load (machine operation)

WARNING OF DANGER

Make sure that the machine is free of tension in the lifting cable and is suspended right underneath the lifting point so that uncontrolled movement of the machine is prevented.

1. Press the machine push button 1 [E] and push button 2 [F] simultaneously.

6.5.8 Discharging of the load (remote controle)

WARNING OF DANGER

Make sure that the machine is free of tension in the lifting cable and suspended right underneath the lifting point so that uncontrolled movement of the machine is prevented.

1. Press the central button on the remote control.
2. Release the central button.
3. Press the left and right buttons on the remote control and hold them in position until the machine disconnects.

6.5.9 Securing load safely in the event of an alarm

	WARNING OF DANGER	Make sure that the machine is free of tension in the lifting cable and is suspended right underneath the lifting point so that uncontrolled movement of the machine is prevented.
	REMARK	The machine will hold the load firmly in position for at least 5 minutes after the alarm goes off.

1. Check the surrounding area and determine a safe location to set down the load.
2. Lower the load to as close to the ground as possible.
3. Move the load to the location where it can be set down.
4. Uncouple the load as described in points 6.5.8 and 6.5.9.
5. Inspect the machine and rectify any malfunction. Contact the manufacturer or supplier if the malfunction or problem cannot be rectified.

Attention: the machine must not be used until the problem / malfunction has been rectified!

6.6 Conditions during use

1. If the low vacuum alarm goes off, the load must be set down immediately in a safe manner.
- Continuing work when the alarm goes off is prohibited!
2. Remain within viewing and hearing distance of the machine while it is in operation
- The alarm must be visible and audible at all times.
3. Only discharge the machine if the lifting chain / strap is suspended above the lifting point and free of any tension
- The machine may otherwise swing out.
4. Always communicate with the persons present prior to moving the load or releasing the machine from the load
- This is particularly important if the machine is being operated with the remote control.

6.7 Conditions during use

1. Put the machine back on the transport dolly or support after use.
- Make sure that the machine is not resting on the sealing edge of the suction cups. This can cause permanent distortion of the sealing edge.

7

MAINTENANCE INSPECTION

7.1 General

The machine is maintenance free for the user. The state of all parts is checked during the legally obligatory periodic inspection and they are replaced if necessary.

It is however extremely important that the user keeps the machine clean and that the checks stated below are carried out at the appropriate intervals (see maintenance & inspection schedule).

All daily and monthly inspection tasks must be performed following a repair or replacement carried out by the user.

7.2 Maintenance and inspection tasks

Normal operating conditions and ambient temperatures were assumed when the maintenance instructions below were drawn up.

Maintenance must be carried out more frequently or other components must receive extra attention if the machine is used intensively or under extreme conditions.
Change the frequency of the maintenance tasks in consultation with the manufacturer in this case.

The table below provides an overview of the necessary maintenance and inspection tasks.

Action	Frequency			
	Daily	Monthly	Annually	Every three years
Suction cup				
Visual check	●			
Clean		●		
Full inspection			●	
Signalling & indicators				
Visual check	●			
Full inspection			●	
Vacuum pump				
Visual check		●		
Full inspection			●	
Preventive replacement				●
Vacuum system				
Visual check		●		
Full inspection			●	
Machine frame				
Visual check	●			
Clean		●		
Full inspection			●	

7.2.1 Explanatory note for inspection of suction cup

1. Check the sealing edge of the suction cup for wear or damage.
2. Check the hose of the suction cup for wear or damage.

7.2.2 Explanatory note for inspection of signalling indicators

1. Turn on the machine. Check whether the red LED is illuminated and the buzzer goes off immediately after switching on. If the pump is switched on but the LED or buzzer is not, one or both of these items is / are defective.
2. Check that the green LED switches on before the pump stops. If the pump switches off but the LED does not switch on, this is defective.

7.2.3 Explanatory note for inspection of voltage meter

1. Switch the machine on following charging. Check whether the pointer of the voltage meter moves. If the pump switches on but the pointer doesn't move, the voltage meter is defective.

7.2.4 Explanatory note for inspection of pressure gauge

1. Switch the machine on and connect to a load with suction. Check whether the pointer of the pressure gauge moves. If the pump stops and the green LED is illuminated while the pointer of the pressure gauge remains stationary, the pressure gauge is defective.

7.2.5 Explanatory note for inspection of vacuum system

1. Switch the machine on and connect to a load with suction. Switch the machine off when the pump stops and note the pressure of both systems as indicated on the pressure gauge. Check whether the vacuum pressure in both systems drops by no more than 0.2 bar within five minutes.

7.2.6 Explanatory note for inspection of machine frame

1. Check the machine as a whole for damage or distorted parts. Specifically check the holes of the connecting pins and the connecting pins themselves. If one of the parts is damaged in some way, it must be replaced before work with the machine can continue.

8

TROUBLESHOOTING

	WARNING OF DANGER	Check whether the machine has been shut down safely prior to troubleshooting.
	WARNING OF DANGER	Repairs may only be carried out by the manufacturer or approved dealers.

Repairs may only be carried out by the manufacturer or an approved dealer with the exception of the actions below. Contact the manufacturer or your dealer immediately in the event of any malfunctions which are not stated here. Do not continue to work with the machine until the malfunction has been rectified.

Malfunction	Possible cause	Solution
Machine does not switch on	- Battery is discharged or defective - Fuse is blown	- Charge or replace battery - Replace fuse

8.1 Instructions for replacing the battery

- Loosen the four bolts of the cover (see figure 3); remove the cover from the battery compartment.
- Carefully remove the battery from the compartment (see figure 4).
- Transfer the quick-change cable to the new battery.
- Place the new battery in the compartment > check carefully that you are using the correct battery type.
- Replace the cover on the machine and tighten the four bolts securely.
- Perform the daily and monthly inspection tasks according to the inspection schedule in Table 3.

Figure 3

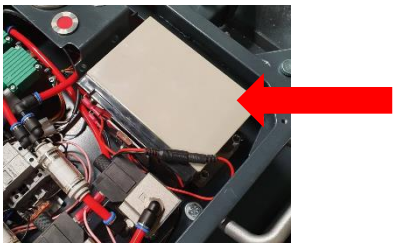


Figure 4

9

DISASSEMBLY & REMOVAL

When replacing parts of the machine, the user must ensure that all parts and materials (including liquids) are removed, destroyed or reused in line with the valid environmental regulations. The same applies when the machine reaches the end of its service life.

Only generally known materials are processed in the machine. There were accepted possibilities for waste processing for these materials during production and no specific risks were known of in relation to the disassembly and the removal of these materials. Most parts of the machine can be recycled.

10

ANNEX: DECLARATION OF CONFORMITY

EC Declaration of Conformity regarding machines

(In accordance with Annex II 1.A of the Machinery Directive 2006/42/EC)

We, Grip Lifting Equipment Handelsweg 1c 2861 GN Bergambacht, The Netherlands Tel: + 31(0)6 2727 1018	Authorised compiler of the technical dossier: Grip Lifting Equipment Handelsweg 1c 2861 GN Bergambacht, The Netherlands Tel: + 31(0)6 2727 1018

Declare completely under their own responsibility that the machine supplied:

Type Grip S600	Serial number:

to which this declaration refers is in compliance with all applicable stipulations of this directive and those of the following directive(s):

EMC Directive 2014/30/EC

and that there is compliance with the following harmonised standard(s) and parts of these standards where applicable:

NEN-EN-ISO 14121-2 (2012)	Safety of machinery - Risk assessment, Part 2: Practical guide and examples of methods
NEN-EN-ISO 12100 (2010)	Safety of machinery - Basic terms general design principles Risk assessment and risk reduction
NEN-IEC 60204-1 (2018)	Safety of machinery - Electrical equipment of machines. Part 1: General requirements.
NEN-EN 614-2:A1 (2008)	Safety of machinery - Ergonomic design principles. Part 2: Interaction between the design of the machine and work tasks.
NEN-EN-ISO 14120 (2015)	Safety of machinery - Shielding - General requirements for the design and construction of fixed and moving shielding parts.
NEN-EN 13849-1 (2016)	Safety of machinery - Parts of the control system with a safety function. Part 1: General basic principles.
NEN-EN 61000-6-2 (2019)	Electromagnetic compatibility (EMC) – Part 6-2: General standards – Immunity for industrial environments.
NEN-EN 61000-6-4 (2019)	Electromagnetic compatibility (EMC) – Part 6-4: General standards – Emission standard for industrial environments.

Signature:

Name: Martijn van Wijngaarden Function: Owner

Place / country: Bergambacht, The Netherlands Date: 01-05-2020