



# Technical Handbook

## *Leaf picking cart*



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# 1. Declarations

## 1.1 Copyright

Berg Hortimotive  
De Lier, 2019

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Exceptions to this include parts of the documentation which are intended for reproduction, such as the abridged instructions and specifications on the machine itself.

## 1.2 Liability

Berg Hortimotive does not accept liability for dangerous situations, accidents and damage that occur as a result of ignoring warnings or instructions, such as those shown on the *Leaf picking cart*, or contained in this documentation - for example:

- inexperienced or incorrect usage or maintenance
- being used for applications other than those for which it was designed, or in circumstances other than those given in this documentation
- the use of components or spare parts which are not approved
- repairs carried out without the consent of Berg Hortimotive and/or a certified dealer
- alterations made to the *Leaf picking cart* which may include:
  - alterations to the controls
  - welding, mechanical works, etc
  - expansion of the *Leaf picking cart* or its controls

Berg Hortimotive does not accept liability:

- if the customer does not meet its obligations with respect to Berg Hortimotive (financial or otherwise)
- for consequential damage caused by defects to the *Leaf picking cart* - e.g. interruption of business, delays, etc.

## 1.3 Warranty

For a period of 6 months after delivery, Berg Hortimotive gives the client a warranty on material and manufacturing defects that occur during normal use. This warranty does not apply if the defects are caused by improper use or causes other than by material and manufacture, if Berg Hortimotive - following consultation with the client - delivers used material or used goods or if the cause of the defects cannot be demonstrated clearly.

The warranty provisions are set out in the METAALUNIE CONDITIONS as they read according to the most recent relevant text. The terms and conditions of delivery are available on request. The warranty given by Berg Hortimotive for all goods and materials not manufactured by Berg Hortimotive will never be more than that given by its supplier. The warranty is ex works. Faulty machines and/or parts must be sent postage paid.

When it is not possible to send out machines or systems, any travel and subsistence expenses will be payable by the client.

Sold and delivered goods with manufacturer's, importer's or wholesaler's warranties are subject only to the warranty provisions set by the suppliers.

Hydraulic pumps are subject only to the manufacturer's warranty, provided the pump comes with an undamaged safety seal from the supplier.

Berg Hortimotive accepts responsibility for the availability of replacement parts, provided they are available from its suppliers at reasonable conditions.

## 2. Foreword

This handbook describes the *Leaf picking cart*.

This handbook provides you with information regarding the safety aspects, a description of the *Leaf picking cart* together with the working principles, as well as the operating instructions and maintenance of the machine.

Potentially dangerous situations are given, as well as recommendations for avoiding them.

It is important that this handbook is carefully read in order to learn how the *Leaf picking cart* should be operated and maintained. By reading this handbook and then using the *Leaf picking cart*, you, or anyone else, will be assisted in using the *Leaf picking cart* in the correct manner thereby helping to avoid personal injury as well as damage to the machine.

Berg Hortimotive manufactures safe machines. The machines are designed to the latest standards and in accordance with the latest CE approval markings. The user remains responsible for the proper usage and carrying out maintenance on the machine.

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## 3. OVERVIEW OF SAFETY MEASURES

### 3.1 Notifications in the text



**IMPORTANT:** Indicates that this has a strong effect on the *Leaf picking cart* in terms of its maintenance and operation.



**WARNING:** Indicates a potentially hazardous situation which can result in serious injury or death, if not prevented.



**DANGER:** Indicates a potentially hazardous situation which will result in serious injury or death, if not prevented.

### 3.2 Repetition of the used safety pictograms

The *Leaf picking cart* has been fitted with safety pictograms to alert the user of potential hazards/dangerous situations. You must act in accordance with these alerts at all times.

The pictograms must be clearly visible and free from damage.

Should you have any questions regarding these pictograms, do not hesitate to contact Berg Hortimotive.



Danger of electric shock!



Dangerous chemical battery: explosive gas and corrosive battery acid!



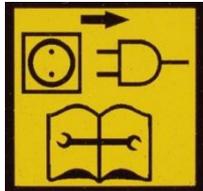
Attention!



Danger of becoming trapped, beware of rotating parts



Read the instructions before operation



Disconnect power supply before maintenance



When leaving unattended, switch the Leaf picker trolley off



Danger of becoming trapped, beware of clamping parts

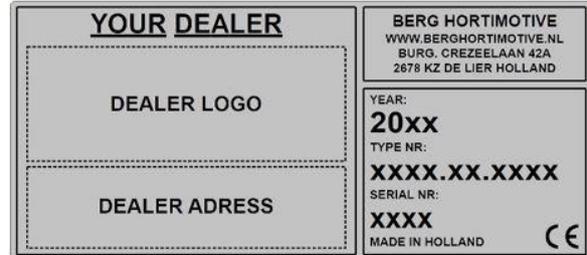

ART. NR. 3071.01.0001

Suitable for the pipe diameter stated with minimum thickness  
 Suitable for the centre-to-centre pipe rail system measurement  
 Maximum sideways manual force in Newtons (kg x10)  
 Maximum total load in kg (maximum 1x person + moveable load)  
 Maximum tilted position 2°  
 Maximum support distance 1250 mm  
 Only to be used indoors (in greenhouse)  
 Mass of the machine in kg  
**The values depend on the type of Leaf picking cart!**

### 3.3 Machine type plate

The *Leaf picking cart* is fitted with a machine type plate which contains the following information: address details of Berg Hortimotive, CE mark, serial and type reference, serial number, year of construction.

If you would like to contact the Berg Hortimotive dealer with respect to this *Leaf picking cart*, please ensure that this information is always readily available.



### 3.4 General safety measures

- Prior to starting the work, always carefully read the manual and strictly follow the directions and instructions stated therein. In the event of doubt or uncertainties, you must contact a Berg Hortimotive dealer.
- The *Leaf picking cart* is exclusively suitable for running on a pipe rail system that complies with the horticulture sector guidelines, the health and safety catalog in force in the Netherlands (see chapter 6.2).
- Use the *Leaf picking cart* exclusively on the correct type of pipe rail system. You must check whether the centre to centre pipe distance corresponds with the *Leaf picking cart*, see chapter 10: Specifications.
- The *Leaf picking cart* may only be operated once it has been correctly installed on the pipe rail system.
- Never exceed the maximum carrying capacity of the *Leaf picking cart*, as indicated in the specifications, see chapter 10. You must always stand on the work platform, it is not permitted to "raise" the work platform by placing objects under it.
- Do not switch on the *Leaf picking cart* if its protective covers have been taken off or opened up. Prior to switching on the *Leaf picking cart*, all protective covers must have been replaced.
- Always switch off the *Leaf picking cart* prior to carrying out maintenance or repairs. Always switch off the *Leaf picking cart* by means of the central lock.
- After use, the *Leaf picking cart* must always be switched off using the central lock, the direction switch must always be set at the neutral position and the potentiometer must indicate zero.
- If the central lock is situated in the *Leaf picking cart*, never leave it unattended.
- The *Leaf picking cart* must be operated by authorised personnel only, who have received the appropriate training and are at least 18 years of age. Personnel must be familiar with the directions and instructions stated in this manual. Always maintain the appropriate level of concentration when operating the *Leaf picking cart*. Do not operate the *Leaf picking cart* when unable to concentrate properly, when under the influence of alcohol or drugs or when using medication that can impair your reaction times when operating machinery or participating in traffic.
- All personnel working within the active radius of the *Leaf picking cart* must be familiar with the relevant safety rules and precautions that apply to the *Leaf picking cart*. The employer must ensure that all personnel are familiar with these safety precautions.
- Only use this *Leaf picking cart* for the purpose it was designed for. The *Leaf picking cart* may only be used for maintaining crops in greenhouses. Never use the trolley outside or on the public road.
- Using the *Leaf picking cart* when tilting more than 2 degrees (linearly and/or crosswise) is strictly forbidden.
- The maximum loading may consist of one person plus a secured load which together should not exceed 120 kg in weight.

- Only one person is permitted to stand on the platform at any time (the machine may only be operated by just one person). Persons are also not permitted to ride with/on the chassis.
- Ensure the recommendations are implemented with regard to electric voltage (V) and frequency (Hz). Remove the charging plug before using the *Leaf picking cart*.
- Keep the *Leaf picking cart* in a proper operating condition by carrying out periodic safety inspections as described in this document. Any unsafe situations must be dealt with immediately.
- Assembly, installation, adjustment, maintenance and repair work must be carried out by professional, qualified personnel only.
- In order to operate the *Leaf picking cart* correctly, it must be free of any obstacles. The *Leaf picking cart* may only be operated when there are no other persons in the vicinity (apart from the operator) of the machine.
- In order to prevent the risk of becoming trapped or stuck, you must apply due care and attention to the moving parts of the *Leaf picking cart*.
- Before start-up and after maintenance and repair, check whether no tools or separate parts have been left behind in or on the *Leaf picking cart*.
- Keep a safe distance from fixed and/or moving parts within the greenhouse as well as cables and ropes.
- Pulling or pushing items (steel wire, protective canvas, etc.) using the *Leaf picking cart* is forbidden.
- Using the *Leaf picking cart* to pull or push other means of transport over the pipe rail is forbidden.
- It is forbidden for either people or animals to enter the path on which the *Leaf picking cart* is being operated. Never operate more than one pipe rail trolley on the same path.
- Additional options, accessories and spares must be ordered and supplied exclusively by the manufacturer, Berg Hortimotive.
- The safety pictograms which have been fitted on the *Leaf picking cart* (see chapter 3.2: Repetition of the safety pictograms used) must be visible at all times.
- When leaving a path, you must first stop and check whether anybody is standing in the direct vicinity before continuing on the concrete path.
- It is forbidden to transport loose cargo with the *Leaf picking cart*.
- When stacking loads ensure that they do not protrude more than 40 cm above the working platform. All loads should be properly secured.
- Before entering a path, ensure that there are no obstacles such as plant remains, etc. lying on it.
- Keep the *Leaf picking cart* clean. Regularly remove dirt accumulation. Never clean the *Leaf picking cart* with a water hose, high-pressure water gun or steam cleaner.

- In order to prevent potential risks with the batteries, you must adhere to the battery safety instructions. See appendix 4: Maintenance of the batteries.
- When working with the *Leaf picking cart*, wearing shoes with protective toe caps (S1) is mandatory.



Work that has not been detailed in this document must be carried out by trained personnel of your dealer or in consultation with Berg Hortimotive.



This documentation forms an integral part of the *Leaf picking cart*! Therefore, carefully store this documentation for future reference, or in the event of a repair or maintenance. It is recommended you keep one copy with the *Leaf picking cart* and to store another elsewhere (for example in the archive of the technical department). An additional copy is available from Berg Hortimotive on request.

## 4. General description of the *Leaf picking cart*

The *Leaf picking cart* is intended for professional use in the greenhouse horticulture sector. The controls may only be operated by one person with a minimum age of 18 years who has received thorough instruction in the operation of the *Leaf picking cart* and who is familiar with the safety instructions and this handbook, both of which they have fully understood.

The *Leaf picking cart* runs on pipe rails which have been installed according to the horticulture sector guidelines, the health and safety catalog in force in the Netherlands and is intended to be used as an aid for harvesting and/or maintaining the plants in a greenhouse. Use of the *Leaf picking cart* for any other purposes is strictly forbidden. The maximum loading may consist of one person plus a moveable load which together should not exceed 120 kg in weight.

The *Leaf picking cart* may only be operated once it has been correctly installed on the pipe rail system. The platform may not be entered while the machine is on the concrete path. Always walk alongside the machine, therefore not on the chassis when transporting it over the main path.

Customised systems can have various dimensions, as a result of which the machine supplied may slightly deviate from the illustrations in this manual.

### 4.1 Intended use

The *Leaf picking cart* runs on pipe rails and is intended to be used as an aid for harvesting and/or maintaining the plants in a greenhouse.



Using the *Leaf picking cart* in a manner other than described in this document is not permitted. Berg Hortimotive does not warrant the correct operation of the *Leaf picking cart* when used improperly.

If the *Leaf picking cart* nonetheless needs to be used for a different application, please contact Berg Hortimotive first. Berg Hortimotive will be able to tell you whether the *Leaf picking cart* needs adjusting in order to guarantee the proper operation of the machine.

## 4.2 Principal components of the *Leaf picking cart*

The principal components of the *Leaf picking cart* are illustrated in figure 1.



Figure 1: Principal components of the *Leaf picking cart*

*A. Support bracket*

*B. Push bracket*

*C. Control panel*

*D. Platform*

*E. Foot switch*

*F. Handle height adjustment*

*G. Trailing roller*

*H. Drive roller*

*I. Swivelling wheels*

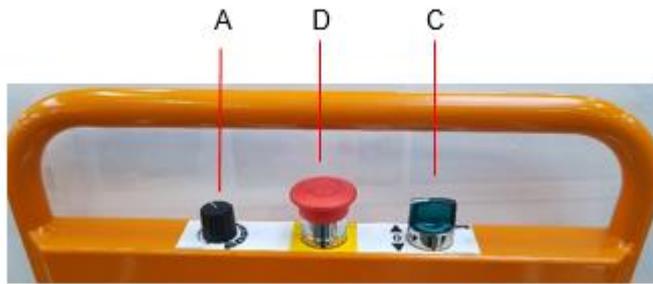


Figure 2: Leaf picking cart controls

A. Speed control knob

C. Direction of travel selection switch + (breakdown) indicator lamp

D. Emergency stop

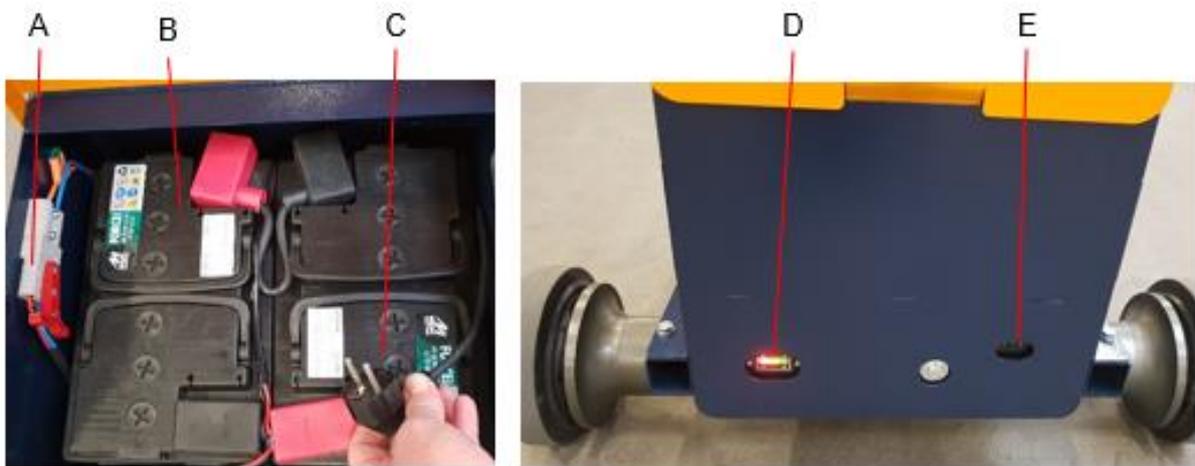


Figure 3: Leaf picking cart chassis

A. Central lock

B. Batteries

C. Power cord plug from Built-in charger

D. Battery Condition Meter

E. Internal battery charger status indication

## 5. Transport



The *Leaf picking cart* must be transported with the utmost care in order to prevent damage and accidents.

### 5.1 External transport

If the *Leaf picking cart* needs to be transported, please follow the procedure below:

1. Set the driving direction to neutral (0) and the speedometer to speed 0;
2. Switch the *Leaf picking cart* off using the central lock (disconnect the power plug from the socket);
3. Lower the platform;
4. Properly secure the *Leaf picking cart* to prevent it from sliding, rolling or toppling over.
5. Ensure that the *Leaf picking cart* remains dry and frost-free during transportation.
6. After having arrived at its destination, the *Leaf picking cart* must be set up in accordance with the points described at chapter 6 (Putting into operation).

**Due to the asymmetrical weight distribution, moving with a fork lift truck is forbidden!**

## 6. Putting into operation



The *Leaf picking cart* is exclusively suitable for running on a pipe rail system according to the horticulture sector guidelines, the health and safety catalog in force in the Netherlands.



Use the *Leaf picking cart* exclusively on the correct type of pipe rail system. You must check whether the centre to centre pipe distance corresponds with the *Leaf picking cart*, see chapter 10: Specifications.



The *Leaf picking cart* may only be operated once it has been correctly installed on the pipe rail system.



Do not switch on the *Leaf picking cart* if its protective covers have been taken off or opened up. Prior to switching on the *Leaf picking cart*, all protective covers must have been replaced.



Only use this *Leaf picking cart* for the purpose it was designed for. The *Leaf picking cart* may only be used for maintaining crops in greenhouses. Never use the trolley outside or on the public road.



Using the *Leaf picking cart* when tilting more than 2 degrees (linearly and/or crosswise) is strictly forbidden.



Ensure the recommendations are implemented with regard to electric voltage (V) and frequency (Hz). Remove the charging plug before using the *Leaf picking cart*.



Additional options, accessories and spares must be ordered and supplied exclusively by the manufacturer, Berg Hortimotive.



The safety pictograms which have been fitted on the *Leaf picking cart* (see chapter 3.2: Repetition of the safety pictograms used) must be visible at all times.



Be extra vigilant during the installation!

The risk of incorrect functioning whilst putting into operation is higher than normal. If the *Leaf picking cart* has not been set up correctly, it may pose a hazard. Be sure that the platform height has been secured correctly.

The *Leaf picking cart* has been specially designed for running on a pipe rail system. The *Leaf picking cart* was checked for proper functioning and safety, before leaving the Berg Hortimotive factory. Prior to starting up the *Leaf picking cart*, the items described in article 6.1 must be inspected.

The pipe rail system must comply with the requirements as laid down in the horticulture sector guidelines from the health and safety catalog in force in the Netherlands. The minimum specifications are given at Article 5.3 for the track width, pipe diameter and supports.

The pipe rail specifications have been taken from the health and safety catalog in force in the Netherlands for pipe rail systems. For the full contents of this policy regulation, we refer you to the Ministry of Social Affairs & Employment.

## 6.1 Inspection before starting operations



Only use this *Leaf picking cart* for the purpose it was designed for (see chapter 4.1: Intended use).



Visually check the *Leaf picking cart* for any damage. The *Leaf picking cart* may only be used after having been inspected and found to be in order in terms of damage, functioning and completeness.



You must check that the platform height securing mechanism works properly.

The following points must be checked before starting up the *Leaf picking cart*:

- No loose electrical connections (all the functions and buttons work properly);
- No damaged cables;
- The drive roller and trailing reel must not be damaged and must rotate smoothly;
- Batteries must be charged (see chapter 7.3);
- No 'general' mechanical damage;
- No damage to and impaired visibility of the control components, pictograms and symbols;
- All the screens and protective caps and covers are firmly in place and mounted correctly.
- The support bracket is correctly fixed to the platform;
- Proper working of the 'height adjustment'.

If you are in doubt about the proper functioning of the *Leaf picking cart*, you must contact the technical department of your dealer or the Berg Hortimotive service department, before starting to work with the *Leaf picking cart*.

## 6.2 Horticulture sector guidelines for pipe rail systems

The *Leaf picking cart* has been designed to run on a pipe rail system. This means that there are rails on the paths between the plants which consists of two pipes of the same diameter and having a fixed width between them (centre-to-centre measurement). The pipes are often used as heating pipes and are supported along fixed distances. The pipe rail system must satisfy the most recent requirements of the health and safety catalog in force in the Netherlands for pipe rail systems. In article 6.3 of this sector guideline, the minimum requirements are given for the pipe rail systems which are taken from the sector guidelines for pipe rail systems. The pipe rail system on which the *Leaf picking cart* is intended to be used, must also comply with these requirements. All the above-mentioned items should also be checked periodically in accordance with the Working Equipment Guidelines. It is absolutely prohibited to use a pipe rail system that does not comply with the health and safety catalog in force in the Netherlands or policy regulations. A number of tests are described in the policy regulations for determining whether it is possible to operate safely with the wagons on the pipe rail system. These tests should be implemented prior to working with the combination of the pipe rail wagon and the available pipe rail system.

## 6.3 Minimum requirements for the pipe rail system

The rails (normally heating pipes) must have an external diameter of either 51 mm or 45 mm and a wall thickness of at least 2 mm. The minimum material specifications for the pipes is as

follows: Steel 37 (S235JR). The distance between the pipe rail system supports may not exceed 1.25 metres (centre-to-centre). When combining pipes with a diameter of 45 mm to a track width of 420 mm, the distance between the rail supports should not exceed 1 metre. The pipe rail supports used should be in accordance with, or equivalent to the following specifications: 1.5 mm thick steel base plate with reinforcing profile - base plate width of at least 115 mm - the length should be such that the base plate protrudes at least 70 mm from the two vertical supports which carry the load of the pipes. The centre-to-centre distance between the pipes should be at least 42 cm. The pipes must be properly secured, precisely installed and with a maximum tilt of no more than 2° in both length or in width. The pipes must also be properly attached to the supports and the concrete track. Loose fitting pipes must not be used! A soil test bore should be carried out using probing equipment (see policy regulation). It should have a so-called cone value on the top layer of more than 0.4 Mpa (62 psi).

The use of rail systems not covered by the policy regulations is permitted on the condition that a stabilisation test is carried out in accordance with the policy regulations from which it appears that the pipe rail wagon / pipe rail system combination would be stable. Furthermore, the supports for these other pipe rail systems must be installed no more than 1 metre apart, and the tilt must not exceed 2 degrees in both length and width.

→ The tubes are similar or at least equal to the specifications given in the table below.

The conditions for the axle load stand in the table below.

Cat.	Track-width	Tube-diameter / thickness	Support-distance	Permissible axle load at center to center size			
				420mm [kg]	500mm [kg]	550mm [kg]	600mm [kg]
1	420 t/m 600	51 / 2,25	max. 1000	507	548	573	593
2	420 t/m 600	51 / 2,25	max. 1250	406	438	458	475
3	420 t/m 600	45 / 2	max. 1000	345	372	372	403
4	420 t/m 600	45 / 2	max. 1250	276	298	276	323

→ Quality steel 37 (St37)

→ Wheelbase between 62.5% and 125% of the support distance.

→ All values for other pipe and tube rail supports should be calculated separately.

Source: *The Dutch health and safety catalog in force in the Netherlands*  
<https://agroarbo.nl/catalogus/buisrailsysteem/>

## 7. Operating instructions

This chapter contains instructions for the operation of the *Leaf picking cart*.

The *Leaf picking cart* is designed for operation by one person. This person must be at least 18 years of age and be familiar and comply with the contents of this technical manual. A special training course is not required, although some experience in working with this type of equipment is required.



The *Leaf picking cart* may only be operated once it has been correctly installed on the pipe rail system.



Never exceed the maximum carrying capacity of the *Leaf picking cart*, as indicated in the specifications (see chapter 10: Specifications). You must always stand on the work platform, it is not permitted to "raise" the work platform by placing objects under it.



Do not switch on the *Leaf picking cart* if its protective covers have been taken off or opened up. Prior to switching on the *Leaf picking cart*, all protective covers must have been replaced.



After use, the *Leaf picking cart* must always be switched off using the central lock, the direction switch must always be set at the neutral position and the speed regulator knob must indicate zero.

The *Leaf picking cart* must be operated by authorised personnel only, who have received the appropriate training and are at least 18 years of age. Personnel must be familiar with the directions and instructions stated in this handbook. Always maintain the appropriate level of concentration when operating the *Leaf picking cart*. Do not operate the *Leaf picking cart* when unable to concentrate properly or when using medication that can impair your reaction times when operating machinery or participating in traffic. In addition, operating this machine whilst under the influence of alcohol or drugs is forbidden.



All personnel working within the active radius of the *Leaf picking cart* must be familiar with the relevant safety rules and precautions that apply to the *Leaf picking cart*. The employer must ensure that all personnel are familiar with these safety precautions.



Only use this *Leaf picking cart* for the purpose it was designed for. The *Leaf picking cart* may only be used for maintaining crops in greenhouses. Never use the trolley outside or on the public road.



Using the *Leaf picking cart* when tilting more than 2 degrees (linearly and/or crosswise) is strictly forbidden.



The maximum loading may consist of one person plus a secured load which together should not exceed 120 kg in weight.



Only one person is permitted to stand on the platform at any time (the machine may only be operated by just one person). Persons are also not permitted to ride with/on the chassis.



Ensure the recommendations are implemented with regard to electric voltage (V) and frequency (Hz). Remove the charging plug before using the *Leaf picking cart*.



In order to operate the *Leaf picking cart* correctly, it must be free of any obstacles. The *Leaf picking cart* may only be operated when there are no other persons in the vicinity (apart from the operator) of the machine.



In order to prevent the risk of becoming trapped or stuck, you must apply due care and attention to the moving parts of the *Leaf picking cart*.



Keep a safe distance from fixed and/or moving parts within the greenhouse as well as cables and ropes.



Pulling or pushing items (steel wire, protective canvas, etc.) using the *Leaf picking trolley* is forbidden.



It is forbidden for either people or animals to enter the path on which the *Leaf picking cart* is being operated. Never operate more than one pipe rail trolley on the same path!



When leaving a path, you must first stop and check whether anybody is standing in the direct vicinity before continuing on the concrete path.



When stacking loads ensure that they do not protrude more than 40 cm above the working platform. All loads should be secured properly.



Before entering a path, ensure that there are no obstacles such as plant remains, etc. lying on it.



When working with the *Leaf picking cart*, wearing shoes with protective toe caps (S1) is mandatory.

## 7.1 Switching on the *Leaf picking cart*



Whilst driving the *Leaf picking cart*, you can stop the machine by operating the emergency stop, if so required. The *Leaf picking cart* will immediately come to a complete standstill.

1. After having completed chapter 6 (Putting into operation), you can switch on the *Leaf picking cart*.
2. Switch on the *Leaf picking cart* central lock by plugging the power plug into the socket. The *Leaf picking cart* is now ON.
3. Pull the emergency stop out if it is activated. The indicator lamp and buzzer will sound, the lamp will light up continuously and the *Leaf picking cart* will be ready for use.
4. If the buzzer sounds twice and the lamp flashes, then the *Leaf picking cart* must be reset. This is done by turning the potentiometer to zero. The indicator lamp will then light up continuously. The required speed of the *Leaf picking cart* can be freely adjusted using the speed control knob, zero = idle and 10 = maximum speed.
5. After setting the required speed, you must set the direction of travel using the selector switch. The direction of travel selected is determined by setting the selector to the desired direction. The switch has a central neutral position (0). When leaving the *Leaf picking cart* unattended, always put the switch to the central position.
6. As soon as the pedal is pressed (with your foot!), the *Leaf picking cart* will immediately start moving in the selected direction of travel at the set speed.

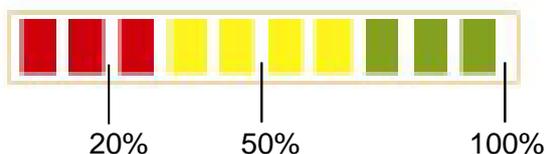
## 7.2 Switching off the *Leaf picking cart*

1. Releasing the pedal will stop the *Leaf picking cart*.
2. Turn the direction of travel selector switch to the central neutral position (0).
3. Turn the potentiometer to zero.
4. Press the emergency stop to interrupt the electric circuit.
5. When leaving the platform, switch off the central lock of the *Leaf picking cart* by disconnecting the power plug from the socket.

## 7.3 Charging the batteries of the *Leaf picking cart*



**Charge the batteries according to the status of the battery condition meter when they have between 50% and 20% remaining capacity, but try to do this as often as possible when the status is around 20% in accordance with the following recommendations.**



## BATTERY CONDITION METER

The battery condition meter gives information about the status of the battery. The battery is full when all the LEDs are lit - the fewer the LEDs lit up, the lower the battery charge. The LEDs are coloured green, orange and red. When the red, orange and green LEDs are all lit up the battery is 80% to 100% full - only the red and orange LEDs 40% to 70% - and only the red LEDs means that the batteries has only 20% to 30% of the charge remaining. When the status is red, you can continue working although the batteries should be charged as soon as you have finished working! When the acoustic signal repeatedly gives off 2 beeping noises, then the batteries on the *Leaf picking cart* should be charged immediately. Switch off the *Leaf picking cart* with the key switch and then charge the battery for at least 12 hours without interruption or until the battery charger indicates that the battery is full. (consult the battery charger handbook!)

Avoid charging the battery when the battery condition meter is still showing at least 50% charge remaining. Always try to go down to approximately 20% state of charge before charging. This has the following advantages:

- Fewer charging cycles, increased battery life
- Lower water consumption
- Less energy consumed

***Regardless of the level of usage, charge the batteries at least once a month using a suitable charger! Prevent the batteries becoming deeply discharged which can lead to serious damage and shorten the battery lifespan!***

***See also the instructions in Appendix 4 battery safety sheet!***

1. Place the *Leaf picking cart* in the vicinity of a wall socket (for the correct specifications, see chapter 10: Specifications).
2. Switch off the *Leaf picking cart* with the emergency stop switch.
3. Now insert the power plug into the power cord plug of the battery charger. Make sure that the cable is not damaged.
4. The batteries will now be charged. (consult the battery charger manual for the correct charging indication)
5. When the batteries are charged, remove the power cord from the wall outlet and roll the extension cord to prevent damage to the cord.
6. Switch on the *Leaf picking cart* by unlocking the emergency stop switch.
7. The *Leaf picking cart* is now ready for use.

## 7.4 Efficient use of the *Leaf picking cart* and batteries

The following recommendations are aimed at facilitating the efficient use of the *Leaf picking cart* and to improve the life-cycle of the batteries.

### Basic principles:

- The battery goes flat sooner when running at higher speeds.
- High levels of starting and stopping also increase electrical energy consumption.
- Through using the *Leaf picking cart*, the remaining capacity and battery voltage gradually reduces, while simultaneously the current consumption increases. This results in increasing heat generation from the motor and speed regulator as the batteries gradually lose their charge.
- Rollers with string and rusty chains (poor maintenance) all result in higher energy consumption. (for maintenance instructions, see website [service/bsa-film](http://service/bsa-film))
- Allowing batteries to go completely flat also reduces the life-span.
- Charging when required and good maintenance help to increase the life-cycle of the batteries
- Charging when required also lowers the generation of heat in the motor and speed regulator, as well as the battery charger.

### Efficient usage:

- Try to match the speed as closely as possible with the work tempo (potentiometer).
- If the speed is set optimally, fewer stops and starts are required which has a very positive effect on the wear of the *Leaf picking cart*.
- By following the above recommendations, the productivity of the workers will increase too.

**Regardless of the level of usage, charge the batteries at least once a week using a suitable charger! Prevent the batteries from being fully depleted before charging!**

### 7.5 Moving the *Leaf picking cart* on the concrete path

Always walk behind the *Leaf picking cart* when moving it. Thanks to the swivel wheels, the *Leaf picking cart* can be easily turned and moved using the push handles for this.

### 7.6 Use of the emergency stop

The *Leaf picking cart* is fitted with an emergency stop. In the event of an emergency, the *Leaf picking cart* can swiftly be brought to a standstill by engaging this emergency stop. The emergency stop is easy to recognise by its red colour and yellow background. If the emergency stop is engaged, the *Leaf picking cart* will stop immediately.

The emergency stop switch continues to be mechanically blocked and the *Leaf picking cart* cannot be restarted. This enables assistance to be provided straight away in the event of a personal accident.

The emergency stop can also be used in the event of sudden and imminent danger, for example a process that has gone out of control.

Once the danger has been removed, the emergency stop switch can be released (see chapter 7.7: Starting up after engaging the emergency stop).

### 7.7 Starting up after engaging the emergency stop



Never release an emergency stop (reset) if you do not know who engaged the emergency stop and why.

1. Check whether the situation is safe to switch on the *Leaf picking cart*.
2. Set the driving direction selection switch to zero.
3. Turn the speed regulator knob to zero.
4. Then pull the EMERGENCY STOP out;
5. The *Leaf picking cart* can be operated again, continue at step 5 chapter 7.1.

### 7.8 Use of platform height adjustment



Always use both hands in marked places so that there can never be crushed. When adjusting upwards, a click will be heard at each locking position. If the required height has been attained, carefully allow the platform to drop until it is secured.

To lower the platform, it must first be fully raised and then carefully lowered, never let go of the platform while doing this! When the bottom position has been reached, you can adjust the required height as described above.

Check and maintain the platform height securing mechanism regularly as described at 8.4

### 7.9 Taking the machine out of operation for a prolonged period of time

If the *Leaf picking cart* is taken out of service, switch it off at the central lock and store it in a dry and frost-free area, with fully-charged batteries. It is recommended to connect the batteries on the *Leaf picking cart* to a trickle charger. If no trickle charger is present, the batteries must be charged at least every month (also when the *Leaf picking cart* is stored for longer periods). Ensure that the ground underneath is level. If after a certain length of time (longer than 2 weeks) the *Leaf picking cart* is put back into operation, it must first be inspected as described in chapter 6.1 (Inspection before taking into service).

### 7.10 Machine sound

Unfamiliar sounds generated by the *Leaf picking cart* are often an indication of wear, loose or broken parts or a wrong adjustment of the *Leaf picking cart*. These defects must be repaired as soon as possible in order to prevent further wear or damage to the *Leaf picking cart* and/or peripheral equipment.

Provided the *Leaf picking cart* is used in accordance with the instructions, the noise level will remain below 70 dB.

### 7.11 Discarding the *Leaf picking cart*

If the *Leaf picking cart* is going to be scrapped, the regulations for waste processing, as applicable at the time and location of scrapping, must be taken into account.

The *Leaf picking cart* has been manufactured using commonly known materials. At the time of manufacturing, waste processing options were available for these types of materials without causing any particular risks to the persons charged with the scrapping.



The *Leaf picking cart* must be dismantled and any chemical parts removed. Batteries must be handed in at the appropriate waste collection point.

## 8. Maintenance regulations

Whilst working on the *Leaf picking cart*, the power supply must be switched off by means of the central lock.



Do not switch on the *Leaf picking cart* if its protective covers have been taken off or opened up. Prior to switching on the *Leaf picking cart*, all protective covers must have been replaced.



Always switch off the *Leaf picking cart* prior to carrying out maintenance or repairs. Switch the *Leaf picking cart* off using the central lock and disconnect the power plug from the socket;



If the power plug is situated in the *Leaf picking cart*, never leave it unattended.



Keep the *Leaf picking cart* in a proper operating condition by carrying out periodic safety inspections. Any unsafe situations must be dealt with immediately.



Assembly, installation, adjustment, maintenance and repair work must be carried out by professional, qualified personnel only.



Before start-up and after maintenance and repair, check whether no tools or separate parts have been left behind in or on the *Leaf picking cart*.



Keep the *Leaf picking cart* clean. Regularly remove dirt accumulation. Never clean the *Leaf picking cart* with a water hose, high-pressure water gun or steam cleaner.



In order to prevent potential risks with the batteries, you must adhere to the battery safety instructions.

## 8.1 Maintenance schedule

Thanks to its simple but robust design, the *Leaf picking cart* requires little regular maintenance. However, in order to guarantee an efficient operation, it is vital that the maintenance schedule given below is strictly adhered to. Repairs and maintenance work must be noted down in the maintenance logbook (see appendix 1). The employer is also responsible for periodically checking tools and equipment according to the current Working Equipment Guidelines that cover this (or arrange for this to be checked).

Maintenance - Checks	Tools	Daily	Weekly	Monthly	Yearly
Cleaning	Brush	X			
Sufficiently charged battery	Charging schedule	X	X		
Damage to control components	Visually	X			
Damage to/visibility of pictograms and stickers	Visually	X			
Foot pedals + cleaning the platform	Brush / Damp cloth	X			
Check height adjustment lock	Visually	X			
Cleaning the control panel	Brush / Damp cloth		X		
Check for battery leakage and cable damage	Visually		X		
Check for ingrained dirt or string wrapped around wheels and chain	Visually		X		
Charge batteries	Battery charger		X		
General mechanical damage	Visually		X		
Check and clean height adjustment lock	Visually/Brush/compressed air		X		
Grease the platform height securing mechanism (See 8.4)	Silicone spray			X	
Check battery fluid levels (plates submerged 1 cm below liquid level, see appendix 4)	BSA movie Distilled water, gloves, screwdriver(+), glasses			X	
Clean batteries and grease poles	Cloth / Vaseline			X	
Grease swivelling wheels, drive chain and ball bearings	Ball-bearing grease, chain lubricant or other universal lubricant			X	
Check chain tension (see 8.6)	BSA film Open-ended spanners			X	
Check wheels for wear	Visually			X	
Have the motor's carbon brushes smaller than 1 cm replaced (see 8.5)	Visually				X
Treat corrosion	Paint, grease, or similar				X

Figure 4: Maintenance schedule

If the above checks indicate that there is a fault with the *Leaf picking cart*, contact your Berg Hortimotive dealer immediately. Continuing to use the *Leaf picking cart* after identifying defects could lead to dangerous situations and is therefore forbidden!

## 8.2 Specialist maintenance

Maintenance and repairs to the items listed below may only be carried out by approved Berg Hortimotive dealers:

- Work concerning the electric components and wiring (excluding exchanging the foot pedal / batteries);
- All work concerning the drive unit (excluding cleaning, readjustment or lubricating the chain and swivelling wheels).
- Consult the website <http://www.berghortimotive.com/service> for BSA films for activities that you can do yourself.

### 8.3 Pipe rail system maintenance

The pipe rail system on which the *Leaf picking cart* runs should be checked on a regular basis. The pipe rail system must comply with the requirements of the health and safety catalog in force in the Netherlands for pipe rail systems. It is prohibited to use the *Leaf picking cart* on a pipe rail system that does not satisfy these guidelines.

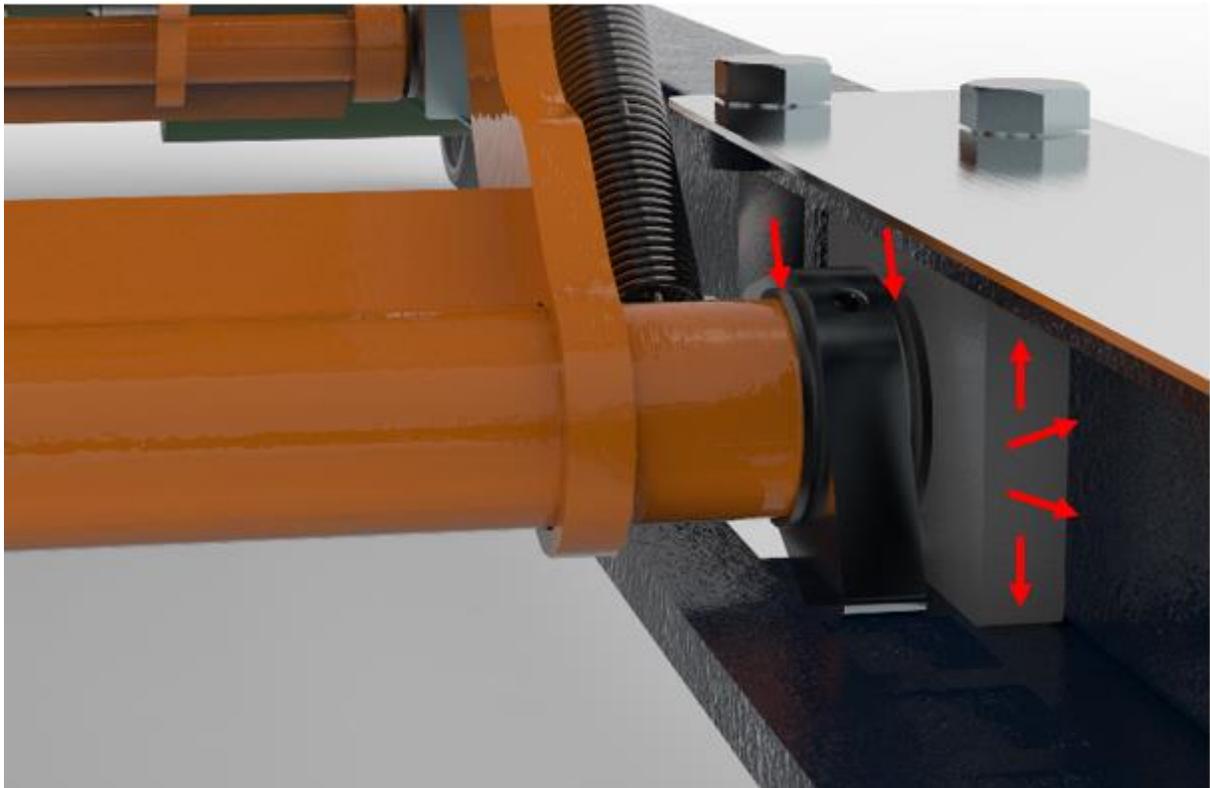
Ensure that all the pipes have sufficient support with a maximum separation distance of 1.25 m for pipe 51 and 1 m for pipe 45 and that the supports are not out of line with respect to the pipes (clamped). Moreover, the pipes on the concrete path should be secured and must not be loose. The end of the pipe must protrude at least 15 cm over the concrete path. At the pipe ends (in front of the wall) there should be an end-stop welded on that is at least 5 cm high - at the end of each season check whether the stops are still functioning properly. The ground under the pipe rail system should be dry, flat and hard. Soft or damp spots should be repaired and surface indentations permanently repaired.

### 8.4 Platform height securing mechanism maintenance

Lubricate the locking catches of the height lock every month with silicon spray and check that the lock reliably clicks into the holes.

Depending on the use of disinfectants, the maintenance frequency must be increased.

Put the platform in its highest position and spray the silicone spray as shown on the photo below on both sides of the height securing mechanism:



## 8.5 Inspecting the carbon brushes



Figure 5a: Cleaning the carbon brushes



Dismantle the black plastic cover and blow the motor clean using (dry) compressed air.

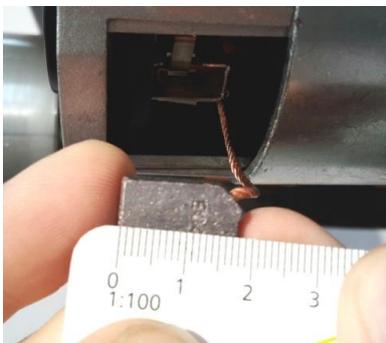


Figure 5: Inspecting the carbon brushes



Replace carbon brushes shorter than 1 cm, consult your dealer.

## 8.6 Chain maintenance (<http://www.berghortimotive.com/nl/bsa/bsa-film>)

**Before carrying out the activities for a safe working situation as described below, see the instruction film on our site!**

1. Disconnect the power plug.
2. Unscrew the motor bolts (figure 6)
3. Tension the chain by tightening the adjusting bolt (figure 7)
4. Secure the motor bolts (figure 6)  
Allow a chain slack of about 1 cm.

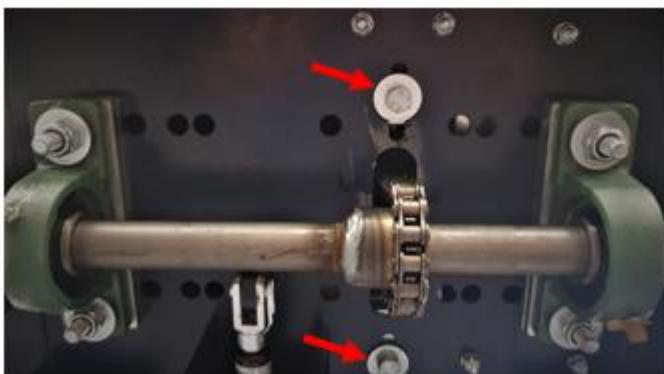


Figure 6: Unscrewing/tightening the motor bolt



Figure 7: Tensioning the chain

### **8.7 Maintenance of the batteries (<http://www.berghortimotive.com/nl/bsa/bsa-film>)**

Avoid the battery fluid (electrolyte) coming into contact with skin, wear safety goggles and gloves as battery acid is highly corrosive. Wash with soap and water if contact is made. If it comes into contact with the eyes, immediately rinse in running water for a period of at least five minutes and call for medical assistance. Always ensure there is sufficient soap and water in the vicinity and that assistance is within calling distance when people have to work near batteries. Avoid short circuits (sparks), and ensure that there is no electrical connection between the battery poles. The battery cover must be free of damage. Bare patches or dents can cause short circuits!

Explosive gas is released when the batteries are being charged. Keep sparks, naked flames or cigarettes away from batteries. Ensure that the place where batteries are charged and/or stored is well ventilated. Ensure that no metal objects can fall on top of the batteries as this could cause short circuits or sparks which in their turn could lead to an explosion.

Remove all personal objects including rings, bracelets, neck chains and wrist watches when working in the vicinity of batteries. For example, a short circuit could melt a ring resulting in serious burn injuries.

*Follow any further advice as described in the battery safety sheet (see appendix 4).*

### **8.8 Opening the battery cover**

The *Leaf picking cart* is fitted with a battery cover which can be opened by means of one turning knob to enable cleaning and maintenance of the battery.



## 8.9 Cleaning procedure



Always switch the *Leaf picking cart* off before cleaning. Switch the *Leaf picking cart* off using the central lock (disconnect the power plug from the socket).



If cleaning work is carried out by persons other than the operating personnel of the machine (e.g. cleaning department or an external cleaning company), these persons must be properly instructed first to ensure they can clean safely.



When cleaning, observe the requirements stated on the battery safety sheet (see appendix 4).

Regularly remove any remains of plants, leaves, etc. and brush off any sand and dust. Clean the *Leaf picking cart* with a dry/damp cloth and soft brush. Cleaning the *Leaf picking cart* with dry, compressed air is also permitted. Never pour water over the *Leaf picking cart* and/or clean the machine using a steam or high-pressure water cleaner, as this can cause serious damage to the electrical circuits



Prior to using a cleaning agent, you must check whether it is suitable for use in combination with the materials of the *Leaf picking cart*. In the event of doubt, contact Berg Hortimotive.

## 8.10 Repairs

During the warranty period, repairs may only be carried out under the supervision of Berg Hortimotive.

Repairs and maintenance work must be noted down in the maintenance logbook (see appendix 1).

All parts that need to be replaced must at least meet the specifications of the original parts.



Deviating from the above regulations can compromise the safety of the machine. Berg Hortimotive does not accept responsibility for this.

## 9. Problems, causes and solutions

no.	problem	Cause	solution	
1	The <i>Leaf picking cart</i> does not drive.	No power	Plug the power plug into the central lock	
			Charge the battery	
			Release the emergency stop	
			Replace the fuse	
		No drive	Repair loose connections	
			Broken chain	
			Loose motor cog-wheel	
			Drive roller jammed	
			Controls do not react	Faulty direction switch
				Reset potentiometer "zero setting"
		Status LED flashes	Faulty foot pedal	
			Faulty potentiometer	
		2	Faulty height adjustment	Reset potentiometer "zero setting"
				Consult your dealer
2	Faulty height adjustment	Lock doesn't lock	Lubricate the locking catches	
		Broken spring	Replace spring	

Figure 8: List of faults

## 10. Specifications

	Type:	standard
<b>Dimensions [mm]:</b>		
<b>C to C dimension</b>		420-800
<b>Length</b>		1508
<b>Width</b>		c.t.c. + 316
<b>Step-up height from concrete path</b>		201
<b>Step-up height to platform in lowest position</b>		164
<b>Length of work platform</b>		1011
<b>Width of work platform</b>		450
<b>Maximum work platform height</b>		700
<b>Max. Load capacity [kg]</b>		120
<b>Maximum lateral pressure [N]</b>		110
<b>Weight [kg] (c-to-c 550)</b>		175
<b>Motor power Moving [kW]</b>		0.15
<b>Maximum speed on rails [m/min]</b>		40
<b>Voltage [Volt DC]</b>		24
<b>Battery capacity [Ah]</b>		2x60
<b>Noise level [dB]</b>		<70
<b>Wheelbase [mm]</b>		1148

### *Physical operating conditions*

Ambient temperature,	
Transport & Storage	: 5 to +40 degrees Celsius
Working	: 5 to +40 degrees Celsius
Rel. Humidity (RH)	: 0% to 90%, <u>not condensing</u>
Lighting	: Normal ambient lighting.

The machine is not designed to be used outdoors.  
The machine is not suitable for operating in explosive atmospheres.

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## 11. DECLARATION OF CONFORMITY

Berg Hortimotive, Burg. Crezeelaan 42a, 2678 KZ De Lier, the Netherlands, +31 (0) 174-517 700

Client:.....  
Order number:.....  
Order date:.....  
Delivery date:.....

We, Berg Hortimotive,  
while taking full responsibility, hereby declare that the product:

WO no.:.....  
Product description: *Leaf picking cart*

which this declaration relates to, conforms to the standard(s) or to other normative document(s):

**EN- ISO 12100**

(Machine safety - Basic design definitions - Risk assessment and risk reduction)

**EN- ISO 13850**

(Machine safety - Emergency stop - Design principles)

**EN- ISO 14122- 2**

(Machine safety - Permanent means of access to machinery - Part 3: Working platforms and walkways)

**EN- ISO 14122- 3**

(Machine safety - Permanent means of access to machinery - Part 3: Stairs, stepladders and guard-rails)

**EN- ISO 14738**

(Machine safety - Anthropometric requirements for the design of workstations at machinery)

**EN- ISO 14120**

(Machine safety - Protective covers - General requirements for the design and construction of fixed and moveable protective covers)

**EN 60204- 1**

(Machine safety - Electric equipment of machines - Part 1: General requirements)

**EN 61310- 1**

(Machine safety - Signalling, marking and operation - Part 1: Requirements of visible, audible and tangible signals)

**EN 61310- 2**

(Machine safety - Signalling, marking and operation - Part 2: Requirements to markings)

**EN 61310- 3**

(Machine safety - Signalling, marking and operation - Part 3: Requirements to the position and operation of operating elements)

**NEN 5509**

(User manuals - Contents, structure, formulation and presentation)

in accordance with the provisions of the following Directives:

2006/ 42/ EC            (Machine Directive)

2004/ 108/ EC        (EMC Directive)

***Conforms to the Dutch health and safety catalog in force in the Netherlands.***

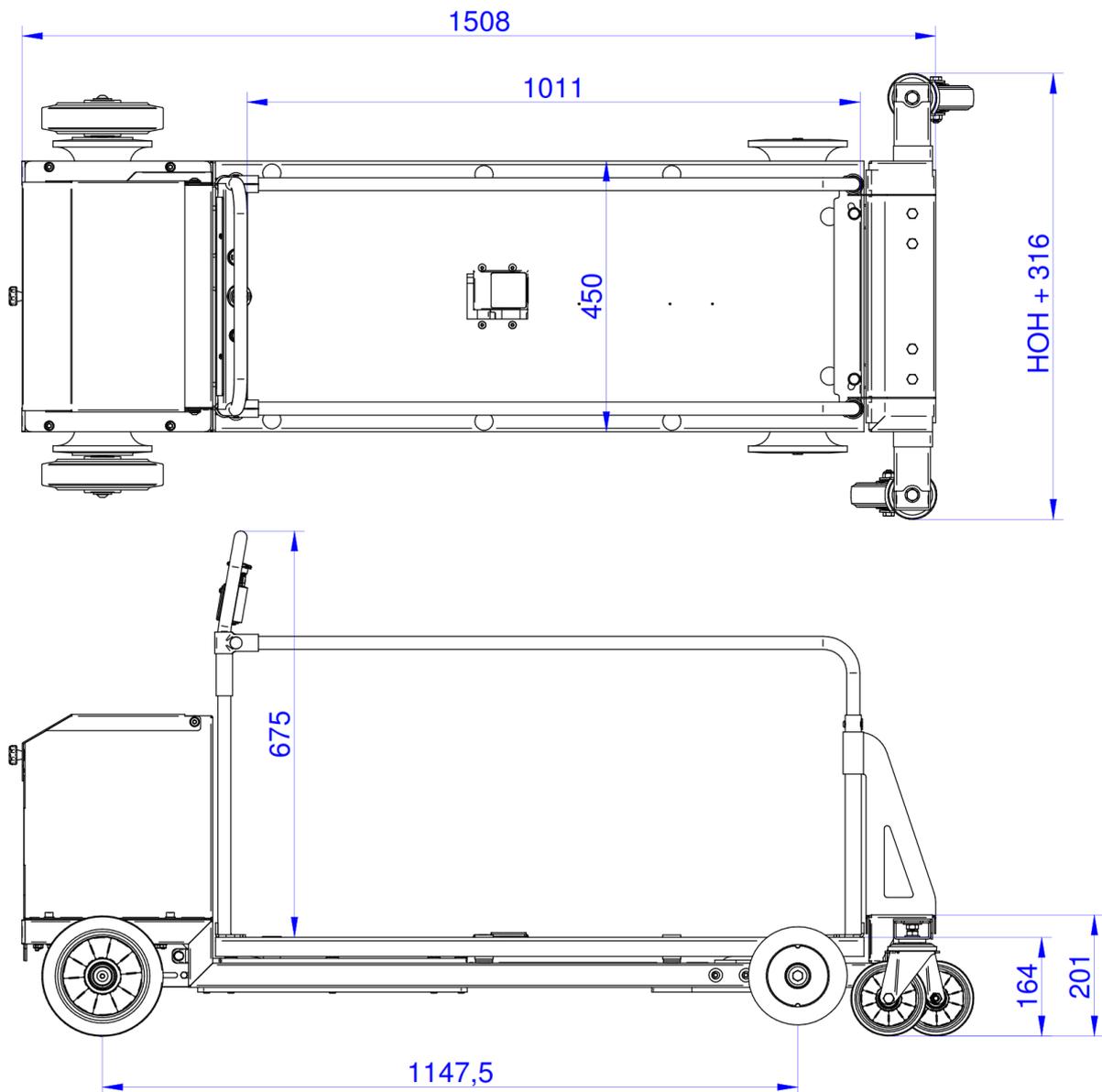
*the Netherlands, De Lier, date .....-.....-.....*

*Signature of director or authorised signatory.*

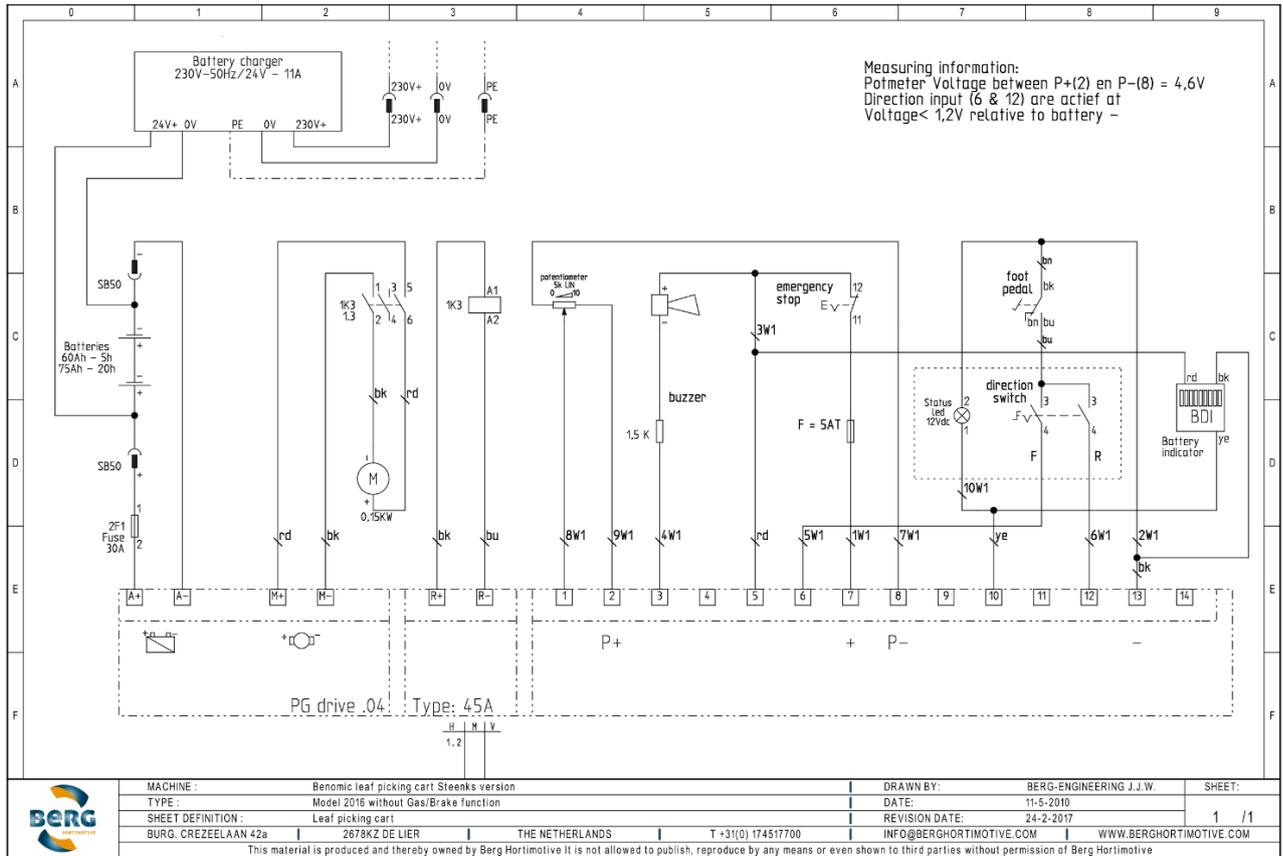
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## Appendix 2: Technical drawings



# Appendix 3: Electric Diagram



## Appendix 4: Battery safety sheet

### Battery recommendations

The following chapter provides recommendations for efficient usage, safety and maintenance.

### *Efficient use of the pipe rail wagon and the batteries*

The following recommendations are aimed at facilitating the efficient use of the pipe rail wagon and to improve the life-cycle of the batteries.

#### Basic principles:

- The battery goes flat sooner when running at higher speeds.
- High levels of starting and stopping also increase electrical energy consumption.
- Through using the pipe rail wagon, the remaining capacity and battery voltage gradually reduce, while simultaneously the current consumption increases. This results in increasing heat generation from the motor and speed regulator as the batteries gradually lose their charge.
- Rolls of string and rusty chains (poor maintenance) result in higher energy consumption. (for instructions, see website: <http://www.berghortimotive.com/service/bsa-film>)
- Allowing batteries to go completely flat also reduces the life-span.
- Charging when required and good maintenance help to increase the life-cycle of the batteries.
- Charging when required also lowers the generation of heat in the motor and speed regulator, as well as the battery charger.

#### Efficient usage:

- Endeavour to set the level of speed as closely as possible to the work tempo (potentiometer).
- If the speed is set optimally, fewer stops and starts are required which has a very positive effect on the wear of the pipe rail wagon.
- By following the above recommendations, the productivity of the workers will increase.

***Regardless of the level of usage, charge the batteries at least once weekly using a suitable charger! This will ensure that the batteries are not totally flat when you recharge them!***

#### Safe use of batteries

Below are recommendations for usage and maintenance.

#### **WARNING!**

- **Explosive gas is created while the batteries are being charged, therefore no fires, naked flames or smoking are permitted!**
- **Charging should only take place in well ventilated spaces!**
- **The battery fluid levels must be checked at least once a month! The battery fluid must be at least 1 cm above the level of the plates**
- **Top up batteries with distilled water (demineralised) only - always wear gloves!**



Discharging the battery to less than 20% of its capacity has a negative effect on both the battery and the charger. Charge the batteries at least once every week which helps increase the life-cycle of the batteries, the motor and the speed regulator! Always recharge a flat battery immediately, as this increases the life-cycle substantially. It is important to check the specific gravity of the battery acid at least once a week, though it should certainly be done each month using a hydrometer (table below).

**The specific gravity of a fully charged battery should be 1280 g/l:**

100%	sg 1280	g/l = 12.7 volts
80%	1240	12.5
60%	1210	12.3
40%	1170	12.1
20%	1140	11.9

Before charging, disconnect the *pipe rail wagon* at the main switch. When charging batteries, always connect them to the charger before switching it on. After the batteries have been charged, switch off the charger first, then disconnect the batteries.

Overcharging can cause damage to the batteries through boiling the battery acid dry. It is advisable to use a modern battery charger with an automatic cut-off - these are available from Berg Hortimotive. **Use only a charger that is suitable for the appropriate batteries! (see charger instructions)**

The charging process should never be interrupted - charging should be completed - see the charge indicator.

When charging batteries, do not make repairs to the *pipe rail wagon* nor carry out cleaning or any other activities.

Turn off everything that consumes electricity before removing the batteries - this reduces the possibility of creating sparks.

Always disconnect the earth cable (-) first when removing the batteries. When reinstalling the batteries, connect the earth cable (black) last.

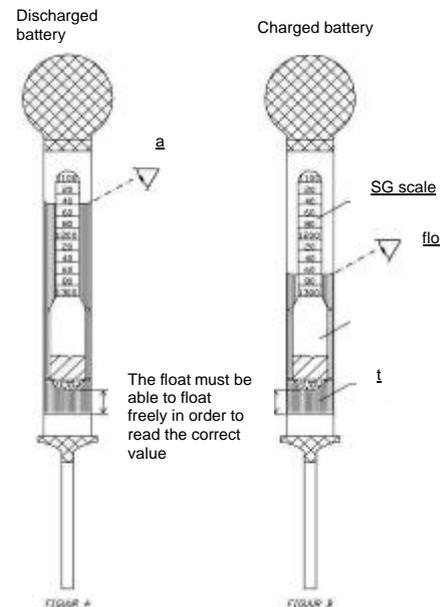
**WARNING!**

**Always connect the positive terminal (+ = red) to the positive pole and the negative terminal (- = black) to the negative pole on the battery.**

Battery fluid is corrosive - avoid contact with clothing, skin and eyes.

Wash battery acid splashes on clothing or skin immediately with soap and water - thereafter thoroughly rinse in running water.

If acid splashes into the eyes, rinse them for at least 5 minutes in clean, running water and call for medical assistance immediately!



**Note**

Check the number of batteries you can connect up into a single group. This can be calculated by multiplying the amperage by the voltage. e.g.:  $16A * 230V = 3620W$

Now check the output of the battery charger. Divide this total amount by the output of the battery charger. e.g.:  $3620/700 = 5.17$ . In this case 5 batteries can be connected.

Also check whether the voltage at the charging location corresponds with the required voltage stated on the battery charger. Long cables can lead to voltage drop. If this is the case please consult your dealer.

Check whether it is a suitable charger for your machine. The battery specifications suitable for the charger are stated on the charger itself!

**Only use chargers suitable for charging 24V-110Ah/5h lead/acid batteries! (see charger instructions) for Pipe rail wagons 150 / 170 / 185 Benomic B-air 1400 / B-air 2000**

**Only use chargers suitable for charging 24V-60Ah/5h lead/acid batteries! (see charger instructions) EasyKit / Mobile slave battery**

	TREM-CARD	<b>UN 2794</b>
---	-----------	----------------

Substance      Batteries wet, filled with acid, electric storage  
UN Number     27  
HIN            80  
ADR Label      8  
ADR Class      8  
Packing group -

#### Emergency Response Information

#### CORROSIVE SUBSTANCE

##### 1. Characteristics

- Corrosive, causing damage to skin, eyes and air passages
- Not flammable

##### 2. Hazards

- Heating of container(s) will cause pressure rise with risk of bursting and subsequent explosion (BLEVE).
- Gives off corrosive and irritant fumes, also when burning
- May attack metals and produce hydrogen gas which may form explosive mixture with air
- The vapour may be invisible and is heavier than air. It spreads along the ground and may enter sewers and basements

##### 3. Personal protection

- Chemical protection suit.
- Respiratory mask equipped with ABEKP1 filter

##### 4. Intervention actions

###### 4.1 General

- Keep upwind. Put on protective equipment before entering danger area.

###### 4.2 Spillage

- Stop leaks if possible.
- Dilute spillage with water spray as far as necessary to reduce hazard. Contain run off by any means available.
- If substance has entered a water course or sewer, inform the responsible authority.
- Ventilate sewers and basements where there is no risk to personnel or public

###### 4.3 Fire (involving the substance)

- Keep container(s) cool with water
- Extinguish with water fog (spray)
- Do not use water jet to extinguish
- Use water spray to knock down fire fumes if possible
- Avoid unnecessary run-off of extinguishing media which may cause pollution.



### **5. First aid**

- If substance has got into eyes, wash out with water for at least 15 minutes and seek immediate medical attention.
- Remove contaminated clothing immediately and drench affected skin with plenty of water.
- Persons who have been in contact with the substance or have inhaled fumes should get immediate medical attention. Pass on all available product information.
- Mouth to mouth resuscitation should be avoided. Use alternative methods, preferably with oxygen or compressed air driven apparatus

### **6. Essential precautions for product recovery**

- Use acid resistant equipment
- Recover spilled product in vented container fitted with absorption filter

### **7. Precautions after intervention**

#### **7.1 Undressing**

- Drench contaminated suit and breathing apparatus with water before removing facemask and suit.
- Use chemical protection suit and self contained breathing apparatus while undressing contaminated co-workers or handling contaminated equipment.

#### **7.2 Equipment clean up**

- Drench with water before transporting from incident.



# INSTRUCTIONS TRACTIONBLOCKS



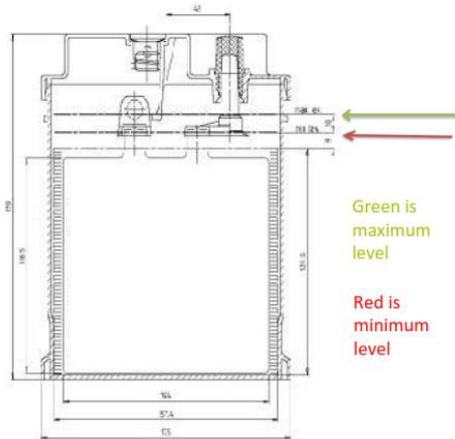
## Daily maintenance EW75:

- Only discharge the battery to 80% maximum (Electrolyte level 1130 SG)
- Connect the battery to the charger, switch on charger and charging should start automatically
- Do not disconnect the battery until charge cycle has finished
- When charge cycle has completed make sure charger is switched off before disconnecting the DC plug

## Weekly maintenance EW75:

- Check the level of the Electrolyte on the battery  
Only top up battery with demineralised water
- Only top up after charge cycle has completed
- The battery should only need topping up every 2 weeks
- If required more frequently please contact the manufacturer
- Check for signs of corrosion on cables or bolts clean as required
- The battery tops should be kept clean and dry  
No smoking or naked flames to be in the area of charging

Only top up the battery after the charging cycle has been completed to avoid electrolyte spilling from the battery!  
No smoking or naked flames to be in the area of charging.



Always follow the manufactures instructions



No smoking or naked flames



Electrical Hazard



Danger risk of explosion



Always wear the correct PPE



Avoid contact of skin and eyes



Room must be well ventilated



Pb  
All disused batteries must be recycled

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## Appendix 5: Cleaning varnish powder coating

### The importance of cleaning and maintenance:

- It retains the appearance and image of the product over a longer period.
- It extends the life-span.
- It prevents corrosion.
- It helps prevent the spread of plant diseases.
- It stimulates employees to operate the machines with care.

Removing contamination periodically prevents any chemical substances that may be present from affecting the powder coating. The protective layers are vulnerable to acids, salts and corrosive substances which cause premature aging. Moreover, thick layers of dirt and contamination absorb more moisture which increases the effects of corrosion on the protective layers.

### The cleaning frequency depends on the following factors:

- The level of contamination depends on what is being grown.
- Type of product, or usage between the crops or, e.g. usage only on concrete tracks.
- Exposure to chemical fluids (spraying equipment).
- Exposure to chemical vapours or mists (treating the air space in the greenhouses).
- Exposure to sunlight and UV rays.
- Humidity in the air and condensation.

The above results in a load factor that depends on the type of usage, and where applicable, the following cleaning schedule should be followed.

### When to clean:

- |  |                              |
|--|------------------------------|
| • Plant and product residues.                              | daily                        |
| • Earth and sand   | 2x weekly                    |
| • Glass, string, plastic, elastic, clips, wire hooks, etc. | 2x weekly                    |
| • Exposure to chemicals                                    | immediately after use        |
| • Dullness or contamination on the top layer               | periodically after detection |

### How to clean:

- Remove dirt or contamination on the top layer using a soft brush or cloth, or a compressed air line (<6 bar).
- Chemical contamination should be removed using a coarse sponge or soft cloth drenched in tap water.
- Clean a dull or contaminated top layer using a neutral cleaning agent with a pH value between 5 and 8 (check the label on the packaging) and a sponge or soft cloth.
- **Tip**, when a cleaning agent is used for the first time it is recommended to initially test the agent on a small section of the top layer before continuing.

### What you must **not** do:



- Never clean the powder coating using an abrasive or burnishing cleaning agent.
- Never use cleaning equipment with an abrasive surface (steel wool, pot scourer, etc).
- Pressing down, polishing or scrubbing, etc, is not permitted.
- Never use organic cleaning solutions for cleaning or maintaining the powder coating.
- Pouring over water, using a water hose or high pressure cleaner can cause damage.

### After cleaning:

- Ensure that the cleaned surfaces are properly dry and temporarily remove overlapping protective covers and screens.
- All pivots and hinges, etc, that have been in contact with cleaning agents should be lubricated according to the recommendations given in the maintenance schedule in the user manual.
- Treat any damaged areas on the powder coating layer with lacquer or paint.

### Please note:

The above are only **recommendations** and therefore responsibility for the proper cleaning remains with the person carrying it out. Please contact the manufacturer if you have any queries regarding the appropriate cleaning products to be used.