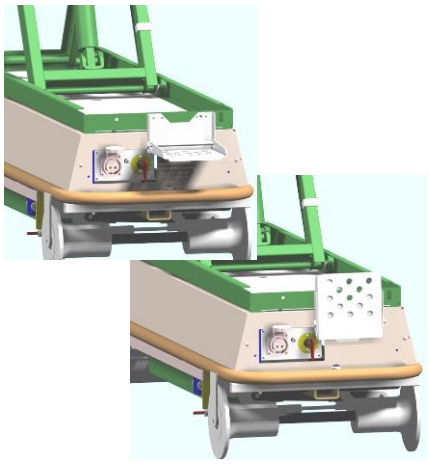
MANUAL

This manual applies to the following types of pipe rail trolleys

BRW 185
Type: 22400 single scissors, hydraulic lift wheels, double operation
Type: 22405 double scissors, hydraulic lift wheels, double operation
Type: 22406 double scissors, hydraulic lift wheels, operation pole
Type: 22407 single scissors, hydraulic lift wheels, operation pole



BRW 170
Type: 22410 double scissors, hydraulic lift wheels and operation pole
Type: 22420 double scissors, manual lift wheels and operation pole
Type: 22421 single scissors, manual lift wheels and operation pole
Type: 22422 single scissors, hydraulic lift wheels and operation pole


Manufacturer	: Berg Hortimotive
Address	: Burg Crezeelaan 42a 2678 KZ DE LIER, THE NETHERLANDS
Type	: 224……..
Serial number	: …….
Year of construction	: …….
Own weight	: 270-304kg
Max. load	: 250kg
Motor	: 24V=, 0.18/0.37kW
Hydraulics	: 24V=/0.5kW 200 Bar

CE

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1. INTRODUCTION

1.1 GENERAL

Congratulations on making the right decision to purchase your pipe rail trolley from Berg Hortimotive. You can now benefit from an excellent machine designed and manufactured with the utmost care. You will gain most from your investment by strictly observing the instructions for safety, use and maintenance outlined in this manual.

Read this manual carefully before putting the pipe rail trolley into operation. The safety regulations, instructions and directions should be observed at all times.

Berg Hortimotive cannot be held responsible for direct or indirect damage should the user fail to observe the instructions and safety directions outlined in this manual. Berg Hortimotive liability is also nullified should you or a third party make any modifications to this machine or accessories without our written consent.

The conditions in relation to the supply of the pipe rail trolley are in accordance with the trade conditions filed at the Office of the District Court in The Hague on 15 August 1983, no. 83/106. A complimentary copy outlining these conditions will be sent to you upon request.

1.2 SUPPLIER INFORMATION

Please contact your Berg Hortimotive dealer should your pipe rail trolley appear to malfunction or have defects.

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. SAFETY

2.1 EXPLANATION OF SAFETY TERMS USED

Safety terminology

Danger:	Indicates the possibility of severe injury that may lead to death should the instructions in the manual be ignored.
Warning:	Indicates the possibility of injury should the instructions in the manual be ignored.
Be careful:	Indicates possible damage to the machine should the instructions in the manual be ignored.
Caution:	Indicates possible problems that may occur should the instructions in the manual be ignored.

2.2 SAFETY REGULATIONS

Please pay careful attention to the following safety regulations and observe them closely at all times. Non-observance may endanger users working with the pipe rail trolley.

DANGER

- ***Read the manual carefully. Observe instructions, safety regulations, etc., at all times.***
- ***The pipe rail trolley is suitable for driving over a pipe rail system that complies with the pipe rail system directives for the horticulture industry, outlined in paragraph 5.2***
- ***Only use the Pipe Rail Trolley on a suitable pipe rail system. Check if the centre to centre dimension (ctc) of the trolley matches the ctc of the pipe rail system.***
- ***Never exceed the maximum loading capacity of 250kg.***
  - *1 person incl. load (+ harvest container only type 22400/22405)*
- ***Never exceed the manual sideways effort of 8kg (force of 80N).***
- ***Only use the pipe rail trolley for harvesting and crop maintenance.***
- ***The pipe rail trolley should not be used if the skewness is greater than 2°.***
  - *Skewness indicator on the trolley (acoustic signal).*
- ***All loads should be placed in the centre of the operating platform as low as possible.***
- ***Do not allow more than 1 person on the platform at a time.***
- ***Do not use the undercarriage to ride on/along.***
- ***Do not remove the safety rail.***
- ***Do not increase the lift height by any means.***
  - *Stay on the operating platform at all times.*
- ***Keep at a safe distance from power cables and parts of the greenhouse construction.***
- ***The pipe rail trolley should not be used, for the drawing of steel cables and screens.***
  - *Use the pipe rail trolley only for the purpose for which it has been designed.*

- ***Never use the pipe rail trolley as a crane.***
- ***Do not allow people and/or pets to walk on the path if a pipe rail trolley is present.***
- ***Do not use multiple pipe rail trolleys/machines in the same path.***
- ***All protective screens and coverings should be in place and closed during use of the pipe rail trolley.***
- ***Only use harvest containers (types 22400/22405) manufactured by Berg Hortimotive.***
- ***The harvest container with push-rack should be mounted on the designated place on the operating platform (BRW185). The container and push-rack should overhang the front or back of the pipe rail trolley by a maximum of 500mm.***
- ***Harvest containers should only be filled with lightweight harvest products such as peppers/capsicums. A maximum total weight of 100kg applies.***

WARNING

- ***The pipe rail trolley should only be operated if no other people are in the vicinity of the trolley.***
- ***The pipe rail trolley should only be operated by persons aged 16 or over who have received adequate training with regard to the trolley and who have studied the contents of this manual.***
- ***The pipe rail trolley should only be operated if positioned correctly on the pipe rail system.***
- ***All personnel working in the vicinity of the pipe rail trolley should be fully familiarised with the safety provisions and regulations***
  - *Employer's instruction.*
- ***The batteries should be charged at least twice a week!***
- ***The pipe rail trolley should only be repaired by specially trained personnel by Berg Hortimotive.***
- ***During scissor maintenance, the scissors should be supported by the scissor-wedge at all times.***
- ***Never carry out maintenance activities to the pipe rail trolley when it is being operated.***
- ***Check the pipe rail trolley for faults on a daily basis.***
- ***Keep operating equipment and safety pictographs clean.***
  - *Operating functions and safety pictographs need to be clearly visible at all times.*
- ***The key should be removed from the contact when leaving the Trolley unattended.***
- ***Never leave the pipe rail trolley unattended.***
  - *Unless the key has been removed from the socket.*
- ***Always turn the pipe rail trolley off during maintenance.***
  - *Take the key out off the main switch and disconnect the charger.*

- ***Do not carry out any modifications to the pipe rail trolley without written consent from Berg Hortimotive.***
- ***Only use accessories and parts supplied by Berg Hortimotive.***
- ***Stop at the end of the path to check that no other people are in the vicinity.***
- ***On the operating platform the load's total height may not exceed 40 cm.***
- ***Remove obstacles, such as plant refuse, from the track before entering a path.***
- ***Never clean the pipe rail trolley with water and/or a steam cleaner.***
- ***Fully retract the scissors when moving the trolley sideways.***
- ***Never use the pipe rail trolley on a public road or outside.***
- ***The trolley should be in the lowest position if someone wants to leave the platform.***
- ***Observe the safety regulations for the batteries (see maintenance).***
- ***Always stand beside the lift bar if the trolley is raised by using the manual lift system for sideways movements. Hold the bar with one hand while moving the trolley.***
- ***Disconnect the charger before using the pipe rail trolley.***

<u>CAUTION!</u>

- ***Keep your work place tidy.***
  - *A cluttered work area can lead to dangerous situations*.
- ***Concentrate.***
  - *Ensure full concentration at all times when using the pipe rail trolley. Do not use the pipe rail trolley if not fully concentrating.*

2.3 Safety Symbols

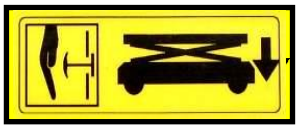
Read manual before use!

Before maintenance, disconnect and read instruction manual!

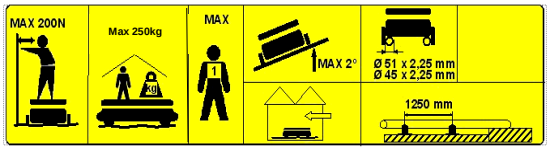
Be careful! Stay away with hands, possible cutting hazard!

Be careful, descending platform! Use safety bar!

Electricity!



Safety lowering valve, push to descend!



1. Maximum sideways force 200N
2. Maximum load 250kg
3. Maximal 1 person
4. Maximum skewness 2º
5. Only use indoors!
6. Pipe diameter and thickness in mm
7. Maximal suppot distance 1250mm

Figure 2.1;Safety pictograms on scissors and trolley

3. INTENDED USE

3.1 AREA OF APPLICATION

The pipe rail trolley is intended for professional use within the horticultural sector. The trolley should be operated by one person only, aged 16 or over, who has received adequate training with regard to the pipe rail trolley and who has studied the contents of this manual. The pipe rail trolley is intended to drive over a pre-installed pipe rail system in accordance with industry directives and its sole purpose is to aid the nurture, maintenance or harvest of crops/plants. Do not use the pipe rail trolley for applications other than those described. The trolley is designed to carry *one* person and loose goods with a maximum total weight of 250kg. The pipe rail trolley should only be manned if positioned correctly on the pipe rail system.

3.2 LOCATION AND NOMENCLATURE OF PARTS AND CONTROL FUNCTIONS

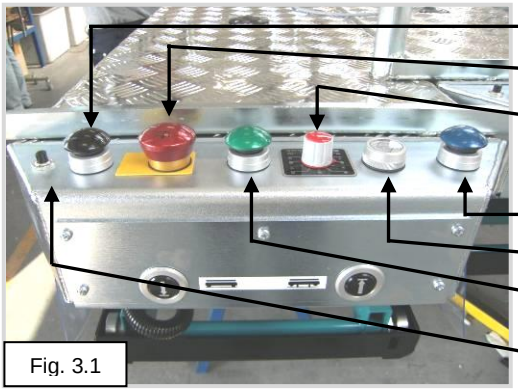


Fig. 3.1

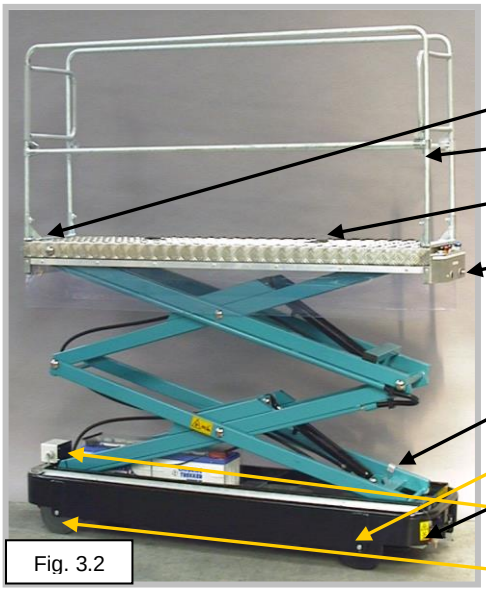


Fig. 3.2

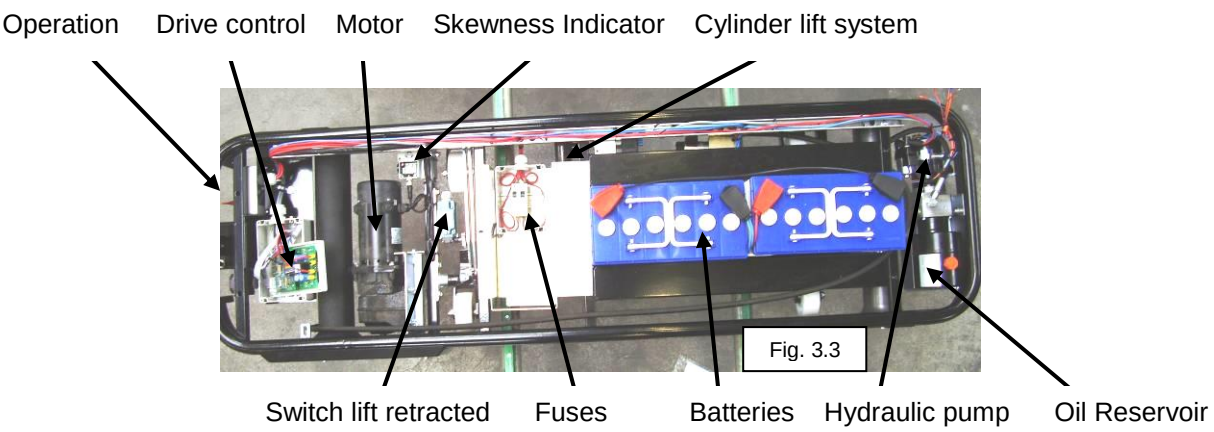


Fig. 3.3

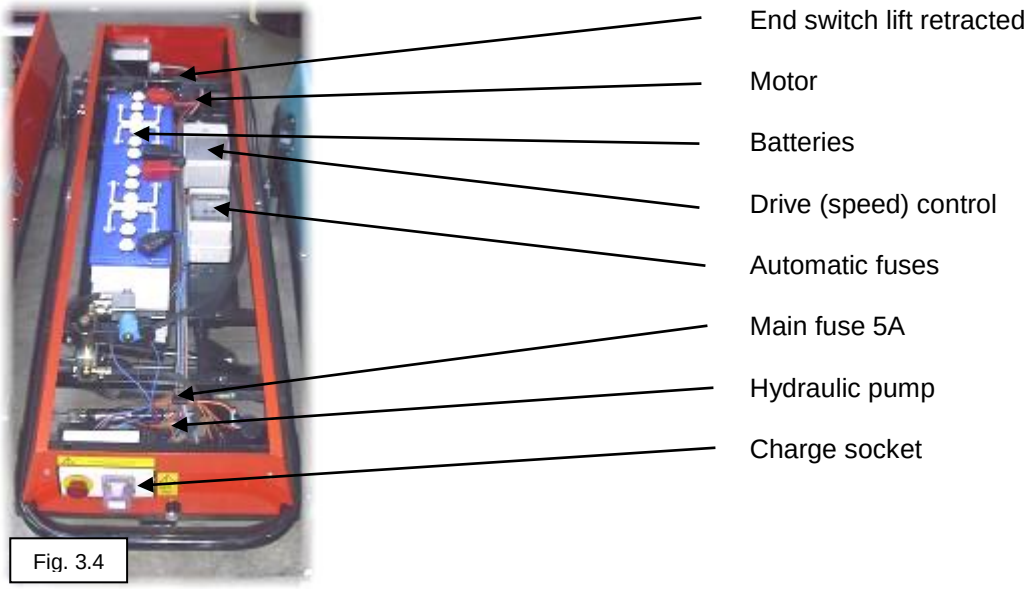


Fig. 3.4

4. TRANSPORT

- Secure the pipe rail trolley during transport at all times.
- Ensure the pipe rail trolley is kept dry during transport.
- Cover the pipe rail trolley with waterproof material during transportation in an open platform truck.
- Turn off the trolley before transport with the main switch and press the emergency button.

4.1 FORKLIFT TRANSPORTATION

- Place the fork of the forklift in the middle under the chassis of the pipe rail trolley.
- Before lifting with the forklift, verify that the fork is correctly positioned under the pipe rail trolley in order to prevent unnecessary damage to the trolley.
- Never lift higher than necessary and make sure the forklift can lift the total weight of the trolley.

5. PUTTING INTO OPERATION

The pipe rail trolley is specifically designed for driving over a pipe rail system. The trolley should be inspected on all points outlined in section 5.1 before being put into operation.

The pipe rail system must meet the pipe rail system directives for the horticulture industry. Section 5.2 outlines the minimum pipe rail specifications with regard to track width, pipe diameter and support distance. These specifications are taken from the pipe rail system directives for the horticulture industry.

5.1 INSPECTION BEFORE USE

The following points should be checked before using the Trolley for the first time.

- Cables, hoses and general mechanical parts for damage.
- Damage to the operating components including buttons and switches.
- Drive pulleys, flanged pulleys and swiveling wheels.
- Batteries fully charged.
- Safety pictograms are visible.
- Protective covers and caps are in place.
- Proper connection/ fastening additional parts such as double scissors or safety bar.
- All buttons are functioning correctly.

5.2 MINIMUM REQUIREMENTS FOR PIPE RAIL SYSTEM (horticultural industry directives)

The Pipe Rail Trolley has been specially designed to drive on a pipe rail system. The pipe rail system must satisfy the most recent requirements of the horticultural sector guidelines for pipe rail systems. Figure 5.1 provides the minimum requirements for the pipe rail system which have been taken from the horticultural sector guidelines for pipe rail systems. The pipe rail system on which the Trolley is intended to be used, must also comply with these requirements. All mentioned items should also be checked periodically. It is absolutely prohibited to use the Trolley on a pipe rail system that does not comply with the following requirements. Furthermore a couple of tests has to be carried out, to test the combination of pipe rail trolley and pipe rail system, according to the directives.

The pipes must be stable, accurately installed and level and with a slope of no more than 2° either in length or in width. The pipes must also be properly attached to the supports and the concrete track. Loose fitting pipes may 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 psa).

An incompatible pipe rail system may be used provided that a stability test has been carried out according to the policy regulation for pipe rail systems, and it appears that the combination of the pipe rail wagon and system are stable. Furthermore, the supports on a non-standard pipe rail system must be maximum 1.25 m apart.
(See article 1.1 for the (Dutch) policy regulation regarding pipe rail systems)

1.1 The pipe rail system should be erected in such a way that the stability of the pipe rail wagons, which are designed to run on the rails, should never present a dangerous situation. To that end the following should be taken into account:
a) pipe rail supports should all correspond, or at least be of the same specifications: steel base plates 1.5 mm thick with reinforcing sections; base plate width at least 115 mm; and long enough so that the base plates stick out a minimum of 70 mm from the two upright supports which carry the pipes.
b) pipes should correspond, or at least be of the same specifications given in the table below:

TABLE: Pipes

Category	Track width in mm [6]	Pipe diameter / wall thickness in mm	Support distance in mm	Permissible axle weigh in kg with St 33 [1, 2, 3, 7, 8]
1	420 to 600	Ø 51 / 2.25	max 1250	260 [4]
2	550 to 600	Ø 51 / 2.25	max 1670	220 [5]
3	420 to 600	Ø 45 / 2	max 1000	221 [4]
4	420 to 600	Ø 45 / 2	max 1250	177 [4]
5	420 to 600	Ø 38 / 2	max 1000	157 [4]
6	420 to 600	Ø 38 / 2	max 1250	126 [4]

[1] Using Steel 37 (St 37) the permissible axle weight can be raised by a factor of 1.2.
[2] The permissible axle weight depends on the length of the wheelbase of the wagon with regard to the support distances: the axle weight given in the table applies to pipe rail wagons with a wheelbase less than 62.5% or those greater than 125% of support distance.
[3] Using wagons with a wheelbase greater than 62.5% but less than 125% of the support distance, the permissible axle weigh may raised by a factor of 1.3.
[4] The permissible axle weight is given for a track width of 420. With wider track widths the permissible axle weight is raised by the following correction factors: 1.08 with track width 500 mm; 1.13 with track width 550 mm; and 1.17 with track width 600 mm.
[5] The permissible axle weight is given for a track width of 550 mm. The permissible axle weight for a track width of 600 mm may be raised by a 1.04 correction factor.
[6] The track width is the centre to centre distance between the pipes. For a track width greater than 600 mm, the same permissible axle weight can used as for 600 mm.
[7] If a smaller support distance is used than shown in the table above, then the permissible axle weight may be higher than given: the correction factor is changed in proportion to the reduction in the support distance.
[8] Using pipe rail wagons with an axle weight greater than shown in the table is only permitted if it is clear that the wheel pressure in unfavourable load conditions is no greater than 75% of the loading level where the rails begin to buckle, and for no more than 5 mm from the original; and the carrying capacity of the pipe rail support is not exceeded (according to item 1.1, a) with respect to the foundation; that being a load of 300 kg.

Fig. 5.1; Chapter 1.1 of Article 1 of Policy Regulation 3.2; Pipe Rail Systems in Greenhouses Working Conditions Act (10-02-2004).

5.3 SKEWNESS INDICATOR

The pipe rail trolley is equipped with a skewness indicator. The indicator transmits an acoustic signal if the trolley exceeds a obliquity of 2°. In the latter event, all activities should be ceased immediately and the pipe rail system readjusted/levelled.

6 APPLICATION

Make sure you are familiar with your pipe rail trolley and control functions. Ensure that operators have received instructions regarding the pipe rail trolley and the safety regulations and have studied this manual.

The pipe rail trolley should only be operated if it has been verified that no other people are present in the near vicinity of the trolley.

Supplementary equipment is available to facilitate access onto the pipe rail trolley. Only use equipment manufactured by Berg Hortimotive. Do not use equipment from other manufacturers.

Remove crop refuse and other obstacles from the pipe rail system before use.

Keep the trolley clean by regularly removing dirt build-up. Prior to cleaning, switch the trolley off by removing the key (main switch) from its socket.

Only operate the pipe rail trolley after you have studied the previous pages and all your questions have been answered.

Remove the red key from the socket after use.

Maintain the pipe rail trolley on a regular basis and keep it in a dry storage area (not the greenhouse) if it is expected to be idle for an extended period of time.

Charge the batteries at least twice a week! Less frequent charging will reduce the capacity of the batteries and the lifetime of the batteries, the motor and the drive control!

CAUTION! DANGER! HANDLING BATTERIES CAN CAUSE INJURY!

Avoid skin contact with battery fluid. Wear safety glasses and gloves. Battery fluid is a strong corrosive acid. Upon contact, immediately wash skin with water and soap. In the event of eye contact rinse with running water for at least 10 minutes and seek medical assistance. When working with or near batteries, ensure that adequate supplies of water and soap are nearby and that assistance is available within earshot. Avoid short-circuiting (spark formation) and ensure that no (electric) connection is made between the battery poles.

Extremely explosive gas is released during battery recharge. Ensure that no fire or sparks are near the batteries during the recharge. **NO SMOKING!**

Make certain the area is well ventilated during battery recharge or battery storage (more about charging; see chapter maintenance).

Make sure that no metal objects can fall on the battery as this can cause short-circuiting or sparks and, consequently, an explosion. Remove personal items such as bracelets, rings, necklaces and watches when working near the battery. A short-circuit current is capable of melting a ring and causing severe burns.

6.1 OPERATION

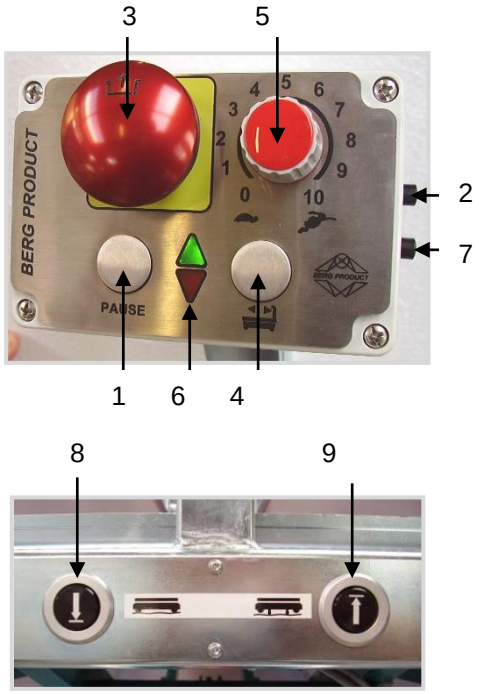


Figure 6.1a
above; operation pole standard
underneath; lifting buttons in platform
(both 170 and 185)

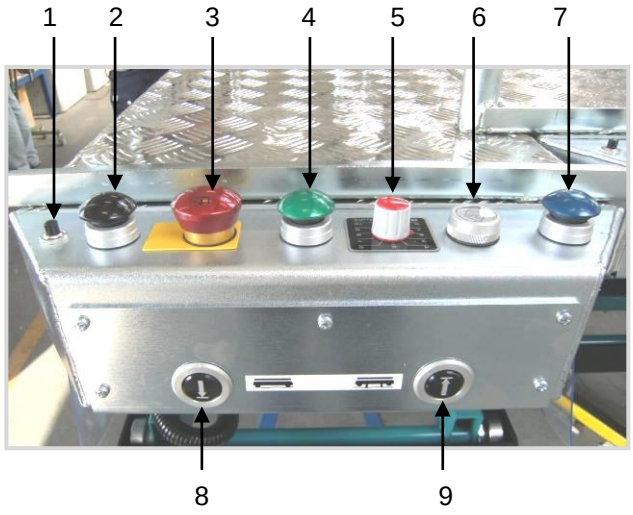


Figure 6.1b; operation console
(only brw185. Buttons 1-7 equal on both sides)

Figure 6.1c; operation pole with big buttons
(only brw185)

OPERATING PANELS
Depending on the type of trolley, the trolley is equipped with two operating panels enabling the user to operate the trolley from both sides, or with one operating pole.

PAUSE BUTTON (1)
From models supplied in 2016 this button has no function.

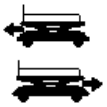
BUTTON TO RAISE THE OPERATING PLATFORM (2)
Use this pressure switch to raise the operating platform. On attaining the maximum height, release the push button to prevent unnecessary excess pressure in the lift cylinders. The platform raises as long as the button is pushed.

EMERGENCY STOP SWITCH (3)
- Push in to stop
- Turn right/pull to release

The emergency stop switch is used to turn the pipe rail trolley off in an emergency. In the event of the emergency stop switch being released, the key switch needs to

be reset by switching off and then on again. This reinstates the standard setting. In other words: the green arrow is continuously on (forward); the foot switch *in* means drive; and the foot switch is *released* to stand still. When turning off the Trolley, use the main switch (11).

DRIVE DIRECTION SELECTION BUTTON (4)
The drive direction changes when the button is pressed. The drive direction is shown by the drive direction indicator (6).



SPEED REGULATOR (5)
The speed function in linear between zero and ten.
0 = standstill 10 = maximum speed

DRIVE DIRECTION INDICATOR, "FORWARD" / "BACKWARD" (6)
The drive direction indicator flashes and transmits a pulsing sound signal, indicating that the batteries need to be recharged soon. When flashing one arrow, the Trolley is paused. When one arrow aluminates, the indicated direction is preset.

BUTTON TO LOWER THE OPERATING PLATFORM (7)
Use this pressure switch to lower the operating platform. The platform will lower as long as the button is pushed. **Beware of any persons or obstacles near the scissors!**

RETRACT LIFTING WHEELS (8) only when equipped with hydraulic lifting wheels
Pressing this button will result in retracting the lifting wheels for sideways transportation. Push the button until the wheels are fully retracted.

LIFT THE TROLLEY WITH THE LIFTING WHEELS (9) only when equipped with hydraulic lifting wheels
Press the button to lift the Trolley for sideways transportation (between paths).

DO NOT use the lifting wheels when driving on pipe rail, only standing on a flat and hard surface. In addition, the scissors should be fully retracted.

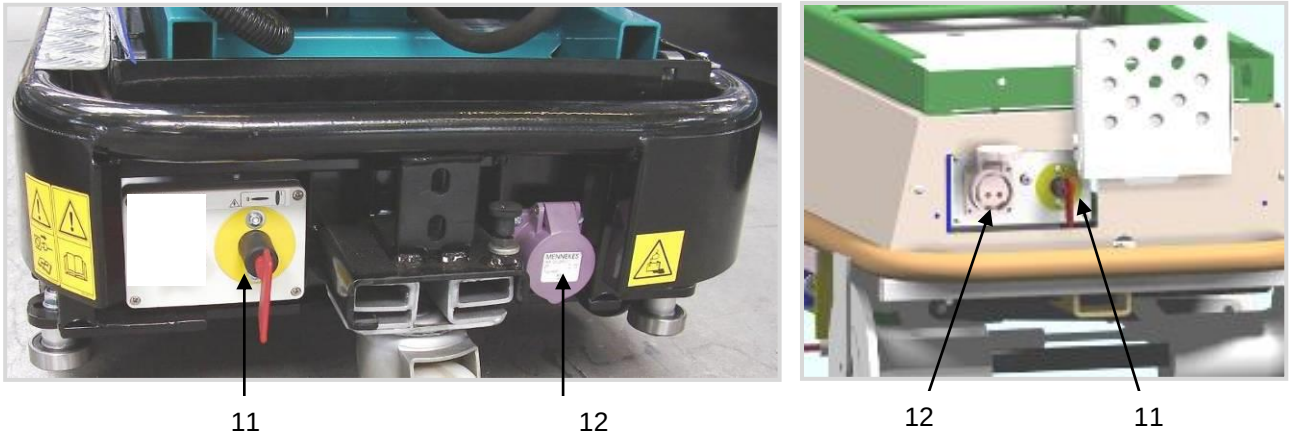


Figure 6.2; Operation on the trolley. Left: BRW185, Right: BRW170

MAIN SWITCH / EMERGENCY STOP (11)
The pipe rail trolley can be turned on (vertical) and off (horizontal) using the main switch. When the emergency stop has been used, the main switch should be turned off and on again to reset the trolley. The red key should be removed from its socket

when the trolley is left unattended. The Switch also functions as emergency stop; turn to stop all movement of the trolley and scissors.

CHARGER PLUG POWER POINT (12)
The Trolley is fitted with two batteries that should be recharged using only a specially suitable charger supplied by Berg Hortimotive. The batteries should be charged at least once every two weeks. Never deplete the batteries completely. Remove plug from socket before using the trolley!

EMERGENCY DESCENT VALVE
The emergency descent valve is positioned underneath the scissors at the end opposite of the main switch end. The emergency descent valve can be used in an emergency to lower the operating platform so the operator can step off safely. The platform descends as long as the button is pushed. **CAUTION: Beware not to get stuck underneath the platform or between the scissors! Only use this valve in case of an emergency!**

FOOT SWITCH
There are one or two foot switches on the operating platform which, when pressed, allows the pipe rail trolley to drive.

MOVING PIPE RAIL TROLLEY SIDEWAYS WITH LEVER (types 22420/22421)
By pulling the lever situated before the operating pole down, the wheel-set extends underneath the pipe rail wheels enabling the pipe rail trolley to be moved sideways. (When equipped with hydraulic lifting wheels, see explanation above nr.2 and 7) Always hold the lever with one hand during sideways transportation. Push the Trolley with the other hand. **Beware that the lever does not flicks backward!** The scissors should be retracted completely when transporting the trolley sideways!

6.2 NOT IN USE

The pipe rail trolley should be stored in a dry frost-proof room when not in use for an extended period. Charge the batteries at least once a week! The trolley should be placed on a level surface. If the pipe rail trolley is likely to be out of use for a long time, it should be covered with a protective sheet, the ignition key removed and the fuse box switched to the “0” position. When next required (after being out of use for a long time period), the trolley should be inspected again as outlined in section 5.1 (inspection before use).

6.3 CLEANING

Remove plant refuse and sharp materials such as sand and dust. Clean the pipe rail trolley with a dry/moist cloth. Never pour water over the pipe rail trolley or clean with a steam or high-pressure cleaner as this may cause severe damage to the electrical circuit.

6.4 HARVEST CONTAINER *(type: 22400 / 22405)*

The pipe rail trolley can be supplemented with a harvest container (see photograph). Only use harvest containers manufactured by Berg Hortimotive The harvest container is mounted on a push-rack and should overhang the front or back of the pipe rail trolley by a maximum of 500mm. Harvest containers should only be filled

with lightweight harvest products such as peppers. The maximum total weight of the container is 100kg. Never exceed the maximum loading capacity of the pipe rail trolley (250kg).

Pipe rail Trolley
type: 22400 with
harvest container

6.5 PROBLEMS / CAUSES / SOLUTIONS

Problem A : ***The pipe rail trolley fails to drive***

Cause **:** ***Empty batteries (drive direction indicator 4a/4b flashes).***
Solution *:* *Recharge batteries.*
Main switch OFF
Put key in and turn vertical
Battery clips make poor contact.
Clean battery poles and re-affix clips
Emergency stop is pushed in.
Release emergency stop and turnkey switch on.
Foot switch is defect
Replace foot switch.
The foot switch's cable is broken.
Replace cable.
Reversing switch is faulty.
Consult your dealer.
The carbon brushes are worn.
Consult your dealer.
Dirty sliding contacts.
Consult your dealer.
Other causes.
Consult your dealer.

>>>More problems and solutions on next page!

Problem B : **The operating platform cannot be raised or lowered**

Cause **:** ***Empty batteries (drive direction indicator 4a/4b flashes).***
Solution *:* *Recharge batteries.*
Battery clips make poor contact.
Clean battery poles and re-affix clips.
Emergency stop is pushed in.
Release emergency stop and reset key switch.
Overloaded.
Reduce the load.
Too little hydraulic oil.
Add hydraulic oil.

Problem C : Difficulties regulating speed.

Cause* : *Speed regulator is not properly secured.
Solution : *Secure button.*
Operation printed circuit board is faulty.
Consult your dealer.

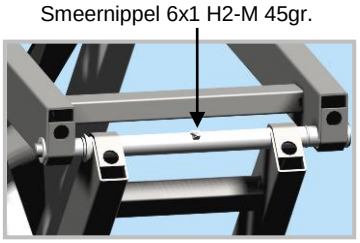
7 MAINTENANCE AND REPAIR

The pipe rail trolley is a product of extremely high quality. In order to safeguard this quality, the maintenance guidelines below should be strictly observed. Repairs and maintenance activities should be recorded in the maintenance logbook (see page 19). In addition, employers are obliged, at all times, that their means of labour should be in strict conformity with means of labour regulations. To ensure this, means of labour should be inspected periodically.

DAILY MAINTENANCE ACTIVITIES AND INSPECTIONS:
- Check batteries charge
- Check operating components & safety pictographs for visibility and damage

WEEKLY MAINTENANCE ACTIVITIES:
- Clean and grease foot switch(es).
- Clean operating panel.
- Check for oil leakages. Inspect cables and hydraulic pipes for damage.
- Check for loose electrical connections.
- Inspect drive roll, wheels and other components for mechanical damage
- Charge batteries and check level of distilled water in batteries.
- Clean wheels and chain. Remove wind up rope and leaves.
- Check whether lifting/lowering movements runs smoothly (low hydraulic oil).

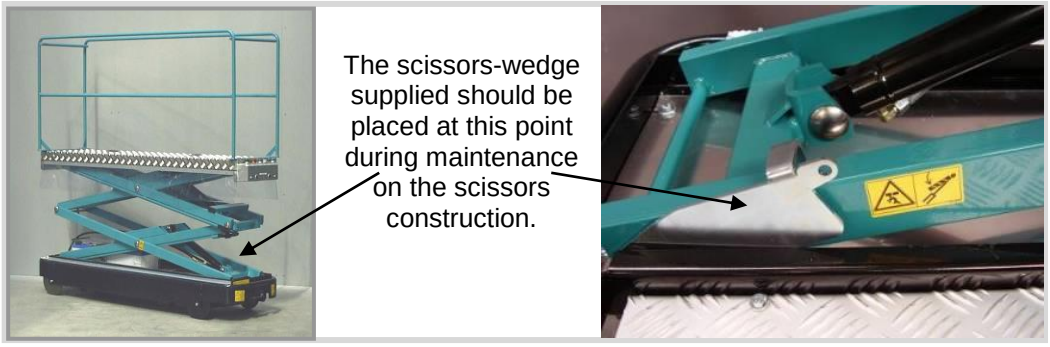
MONTHLY MAINTENANCE ACTIVITIES:
- Clean and grease battery poles.
- Grease pivot points (scissors). Clean and oil drive chain.
- Oil lifting wheels and ball bearings.



ANNUALLY MAINTENANCE ACTIVITIES:
- Replace any carbon brushes shorter than 1cm.
- Check welds of the scissors construction for cracks, hairline cracks and rust.

Contact your pipe rail trolley dealer immediately should a fault become apparent during one of the inspections mentioned above. Do not use the trolley under these circumstances.

During maintenance on, below, or in between the scissors construction, place the scissors-wedge supplied at the bottom side of the scissors between the scissors connecting link and the scissors. Raise scissors, place wedge on frame. Lower scissors and make sure the wedge is placed in the cutout. Lower the scissors as far as possible, turn OFF and disconnect charger.



7.1 PIPE RAIL SYSTEM MAINTENANCE

The pipe rail system used for the Berg Hortimotive's pipe rail trolley should be inspected periodically. The system must conform to the directives for pipe rail systems in the horticulture industry. Do not use a pipe rail system that fails to meet the specified directives. Employers are also obliged to periodically check their means of labour and ensure these conform to the means of labour regulations.

7.2 TECHNICAL MAINTENANCE

Repairs and maintenance on the parts mentioned below must be carried out by a qualified professional recognised by the manufacturer:
All work relating to electrical components and wiring.
All work relating to the hydraulic system.
All work relating to the motor drive and reduction gear unit except for cleaning, readjustment or replacement of the chain and chain wheels.
All maintenance should be noted in the maintenance logbook (appendix).

7.3 BATTERY MAINTENANCE

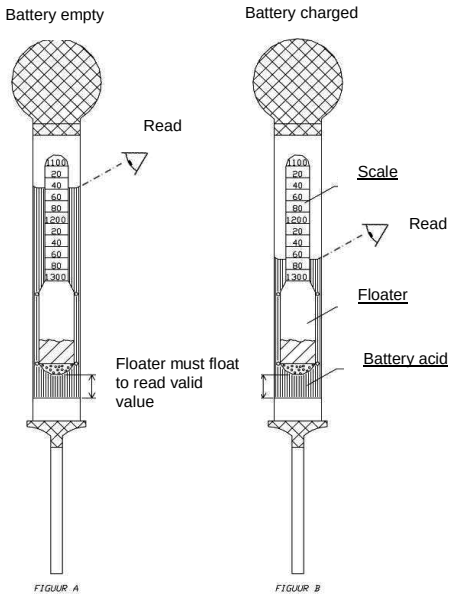
Charge the batteries at least twice a week with a suitable charger!! Prevent the batteries from becoming depleted completely!

Please contact your dealer for a comprehensive product information pack on batteries. Please find below directions for use and maintenance.

CAUTION!
- Explosive gas is released during battery recharge. Avoid smoking, fire and naked flames.
- Only recharge the batteries in well-ventilated areas.
- Check fluid levels on a weekly basis. The battery fluid must be at least 1cm above the plates.
- Only fill up with distilled water.

The battery's lifespan is reduced considerably if recharged unnecessarily. Immediate recharge of empty batteries substantially increases the lifespan. The lifespan of the batteries and charger are adversely affected if the batteries are discharged to under the 20% level Consequently, the specific gravity of the acid should preferably be checked on a weekly basis using an acidimeter. The density of fully charged batteries is 1.28kg/l.

Percentage	Density (in kg/l)	= Voltage (Volts)
100%	1.28	12.7
80%	1.24	12.5
60%	1.21	12.3
40%	1.17	12.1
20%	1.14	11.9



Before charging turn off the Trolley with the main switch, second connect the charger to the batteries before turning the charger on. When recharged, turn the charger off before disconnecting. Recharging “too far” can damage the batteries as the battery fluid boils for longer than necessary. It is advisable to use a modern battery charger with automatic cut-out.

Only use a charger suitable for a 24V-110Ah *Wet* battery (see instructions on charger).

- Never interrupt the recharging process until fully finished
- During battery recharge do not repair, clean or carry out any other activities to the pipe rail trolley
- When dismantling the batteries, disconnect all power consumers in order to avoid spark formation.
- At dismantling, the negative cable (-) needs to be disconnected first. Conversely, when installing, connect the negative cable last.

CAUTION!
Always connect the positive (+ = red) to the positive pole and negative (- = blue) to the negative pole.

Battery fluid is a corrosive acid – prevent contact with clothes, skin and eyes. In the case of splashes on skin or clothes, immediately wash with water and soap. Then rinse with plenty of water. Acid splashes in the eyes should be rinsed with clean water for at least 5 minutes. Medical advice should then be sought immediately.

Note

Check the permitted number of battery chargers on one group. You can check this by multiplying amps of the fuse with the voltage. For example: 16A*230V = 3620W

Check the power consumption of the battery charger. Share the this capacity by the power consumption of the battery charger. For example: 3620/700=5,17. 5 battery chargers can be connected.

Check also if the tension on the charge location corresponds to the required tension which on the battery charger indicate is. It can

Occur that tension loss appears in long cables.

When replacing batteries, hand your old ones in to your supplier or local authority.

8 TECHNICAL SPECIFICATIONS

BRW 185
Type: 22400 single scissors, hydraulic lift wheels, double operation
Type: 22405 double scissors, hydraulic lift wheels, double operation
Type: 22406 double scissors, hydraulic lift wheels, operation pole
Type: 22407 single scissors, hydraulic lift wheels, operation pole

BRW 170
Type: 22410 double scissors, hydraulic lift wheels and operation pole
Type: 22420 double scissors, manual lift wheels and operation pole
Type: 22421 single scissors, manual lift wheels and operation pole
Type: 22422 single scissors, hydraulic lift wheels and operation pole

Type: **Dimensions [mm]:**	**22400**	**22405**	**22406**	**22407**	**22410**	**22420**	**22421**	**22422**
Length	1850	1850	1850	1850	1700	1700	1700	1700
Wide = **ctc distance*[1] + … [mm]**	115	115	115	115	115	115	115	115
Step height	400	530	530	400	700	700	590	590
Height operation pole	-	-	1250	1250	1250	1250	1250	1250
Platform length	1800	1800	1800	1800	1500	1500	1500	1500
Platform wide	400	400	400	400	400	400	400	400
Platform max. height	1700	2950	2950	1700	2700	2700	1600	1600
Max. lifting weight [kg]	250	250	250	250	150	150	150	150
Own weight [kg]	275	304	304	275	290	290	270	270
Drive power [kW] *Optional:*	0.18 *0.37*	0.18 *0.37*	0.18 *0.37*	0.18 *0.37*	0.18 *0.37*	0.18 *0.37*	0.18 *0.37*	0.18 *0.37*
Drive power hydr. [kW]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Hydr.oil Q8 Handle [L]	1.35	1.4	1.4	1.35	1.35	1.35	1.3	1.3
Max. drive speed [m/min] *with 0.37kW:*	40 *70*	40 *70*	40 *70*	40 *70*	40 *70*	40 *70*	40 *70*	40 *70*
Raise/lifting speed [mm/s]	110	110	110	110	110	110	110	110
Voltage [Volt DC]	24	24	24	24	24	24	24	24
Battery capacity [Ah]	2x110	2x110	2x110	2x110	2x110	2x110	2x110	2x110
Wheelbase	1362	1362	1362	1362	1208	1208	1208	1208

[1];ctc distance = distance from pipe center to pipe center

APPENDIX I MAINTENANCE LOGBOOK

Please outline repairs and/or maintenance carried out on the form below.

Date	Description of repair/maintenance pipe rail trolley 185	Name company / technician

APPENDIX II 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 loose 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

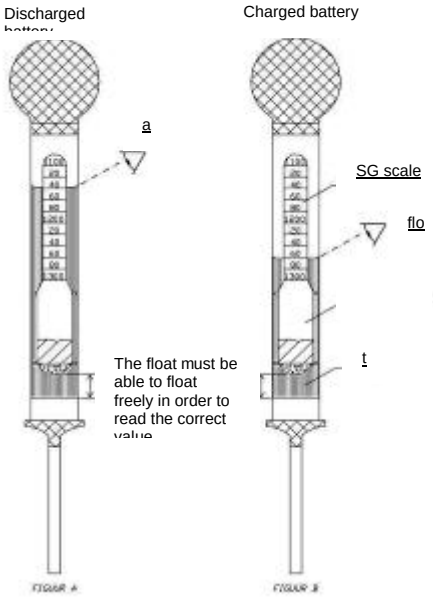
Below are recommendations for usage and maintenance.

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 (fig. A+B page 23 and table below).

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

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



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

ELECTRICAL ACCUMULATORS FILLED WITH SULFURIC ACID - ELECTROLYTE
ELEKTRISCHE AKKUMULATOREN BEFÜLLT MIT SCHWEFELSÄURE - ELEKTROLYT
ELEKTRISCHE ACCUMULATOREN GEVULD MET ZWAVELZUUR - ELEKTROLYT

NUMBER
NUMMER
NUMMER
KEMLER

80

2794

NUMBER
NUMMER
NUMMER
ONU

TECHNICAL FEATURES

ELECTROLYTE FOR ACCUMULATORS
For the filling operation of our starter and traction batteries, on has to use sulfuric acid in solution of 35 %, (electrolyte) with following features :

Density : 1,27 ± 0,1 kg/l at 25° C equal to 31 degrees Baumé.

CHEMICAL - PHYSICAL FEATURES
- colourless
- penetrating smell
- liquid state
- completely soluble in water
- pH less than 1
- fume tension : 1 Torr at 146 °C
- fume density : 2,8
- absolute viscosity at 20 °C
- specific weight : 1270 - 1300 g/l
- boiling point : 110 °C
- inflammability : 0 (not inflammable)
- corrosive - provokes burns

TECHNISCHE DATEN

ELEKTROLYT FÜR AKKUMULATOREN
Das Befüllen unserer Starter- bzw. Antriebsbatterien erfolgt mit Schwefelsäure zu 35 % verdünnt (Elektrolyt) und weist folgende Eigenschaften auf :

Dichte : 1,27 ± 0,1 kg/l bei 25° C entspricht 31 Grad Baumé.

CHEMISCH - PHYSIKALISCHE EIGENSCHAFTEN
- farblos
- stechender Geruch
- flüssiger Zustand
- voll wasserlöslich
- pH Wert geringer als 1
- Dampfspannkraft : 1 Torr bei 146 °C
- Dampfdichte : 2,8
- absolute Viskosität bei 20 °C
- spezifisches Gewicht : 1270 - 1300 g/l
- Siedepunkt : 110 °C
- Entflammbarkeit : 0 (nicht entflammbar)
- ätzend - verursacht Verbrennungen

TECHNISCHE GEGEVENS

ELECTROLYT VOOR BATTERIJEN
Accu's en batterijen worden gevuld met zwavelzuur verdund tot 35 % (electrolyt) en heeft de volgende eigenschappen :

Dichtheid : 1,27 ± 0,1 kg/l bij 25° C gelijk aan 31 graden Baumé.

CHEMISCHE EN FYSISCHE EIGENSCHAPPEN :
- Kleurloos
- Penetrerende geur
- Vloeibaar
- Volledig in water oplosbaar
- pH waarde minder dan 1
- Verdampingskracht : 1 Torr bij 146 ° C
- Verdampingsdichtheid : 2,8
- Absolute viscositeit bij : 20 °C
- Specifiek gewicht : 1 270 - 1 300 g/l
- Kookpunt : 110 ° C
- Ontvlambaarheid : 0 (niet ontvlambaar)
- Bijtende stof - veroorzaakt brandwonden

CLASSIFICATION - KLASSIFIZIERUNG - CLASSIFICATIE

RINA	:	**8.54 (CORROSIVE)**
IMCO/IMDG	:	**8 UN O.N.U. 2794 page 8120**
ADR	:	**8.81/C (sulphuric acid / corrosive)**

INSTRUCTIONS IN CASE OF DISCHARGE
- it is forbidden to use open flames
- do not spray water on the product
- use liquid caustic soda
- use preferably earth or sand
- do not use sawdust, rags, straw or similar
- keep out of children's reach
- avoid the contact with eyes or skin
- handle with rubber gloves
- in case of accidental contact with eyes or skin, wash immediately with abundant water and consult a doctor.

VORSCHRIFTEN BEI ELEKTROLYTAUSTRITT
- keine offene Flammen verwenden
- kein Wasser auf das Produkt sprühen
- flüssigen Ätznatron verwenden
- es ist ratsam Erde oder Sand zu verwenden
- kein Sägemehl, Stoff, Stroh o. ä. verwenden
- außer Reichweite von Kindern halten
- Kontakt mit Augen oder Haut vermeiden
- Umgang nur mit Gummihandschuhen
- bei eventuellem Kontakt mit Augen oder Haut sofort mit reichlichem Wasser spülen und den Arzt beraten.

VOORSCHRIFTEN BIJ LEKKAGE
- Het is verboden open vuur te gebruiken
- Spuit geen water op het product
- Gebruik vloeibare caustic soda
- Gebruik eventueel aarde of zand
- Geen zaagsel, stro , doeken e.d. gebruiken
- Buiten bereik van kinderen houden
- Vermijd contact met ogen en huid
- Gebruik rubber handschoenen
- Bij eventueel contact met huid of ogen met veel water spoelen en een arts raadplegen

R & W traktiebatterijen
Telefoon 0316 - 690088
Telefax 0316 - 690236

Return the old batteries to your supplier or municipal waste disposal department when replacing them with new.

Instruction R&W motive power batteries

Daily maintenance

- Do not discharge battery more than 80%.
- Disconnect the battery from the truck before charging and open the battery cover.
- Then connect the battery to the charger and start the charger (most chargers are self-starting).
- When the charger indicates that the charging has finished, turn off the charger and disconnect the battery from the charger.
- Connect the battery to the truck.

Weekly maintenance

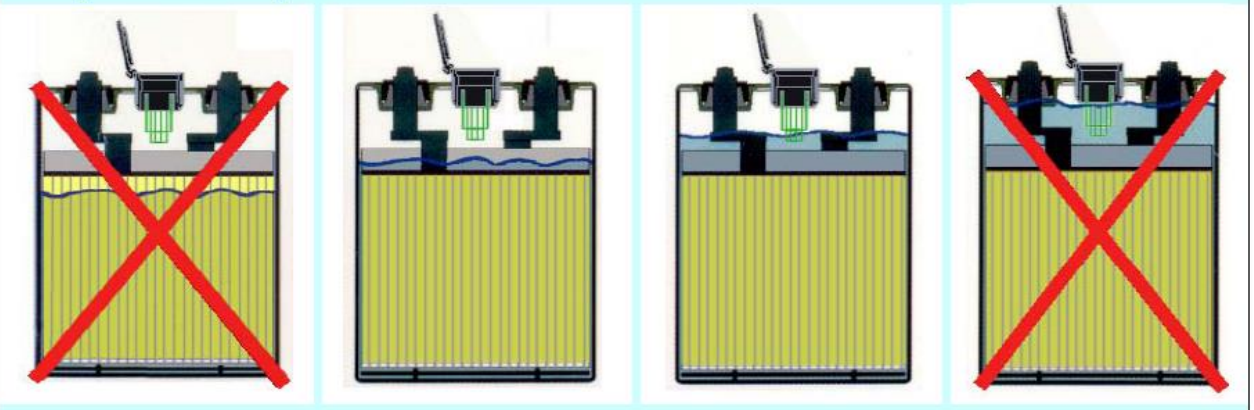
- Check the electrolyte level of the battery. Fill the battery cells with demineralized water if the level of water is below the basket in the cell.
- Fill up to the wide section of the basket. Do not overfill!
- **Always fill after charging, when the battery is still on temperature! This also applies when you have an automatic filling system!**
- Keep the battery clean and dry.
- Corrosion of the coated steel container or one of the battery poles needs to be removed.

BMWT KEUR

Let the battery have the obligatory safety check every year!

VEBIT

Filling of the battery => ALWAYS AFTER CHARGING!



Cell was filled too late | Fill cell now | Cell was filled correctly | Cell was over filled

Safety precautions

- Follow the instructions for use and safety
- Smoking and open fire forbidden
- Connectors are under high voltage, avoid contact
- Explosive hazard, avoid short-circuit
- Wear safety goggles and protective cloathing
- Electrolyte is an highly corrosive acid
- Areas were batteries stand or are charged, should be well ventilated
- Defect batteries should be recycled

Pb

R&W Traktiebatterijen Import BV - Tel: 0318-690088 - E-mail: service@r-w.nl

Bellstraat 12 - 6716 BA EDE
Service-fax: 0318 - 69 49 78

APPENDIX III Cleaning the 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 <u>not</u> 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.

APPENDIX IV **EC-Declaration of Conformity**
(in accordance with Appendix IIA of the Equipment Directive)

Berg Hortimotive
Burg. Crezeelaan 42a
2678 KZ De Lier – the Netherlands
+31 (0)174 – 51 77 00

Hereby declares to take full responsibility that the following products:

Pipe rails Trolley types 170 and 185 with hydraulic lift and lifting wheels
Article numbers: 22400, 22405, 22406, 22407, 22410, 22420, 22421 and 22422

Type nr.:……
Serial nr.:……

- meets the stipulations of the most recent 98/37/EC Equipment Directive (subsequently modified to 98/79/EG),

and additionally satisfies the latest versions of the following EC directives:

- Electromagnetic compatibility directive (EMC), 89/336/EEG, subsequently modified to 92/31/EEC, 93/68/EC and 98/13/EC

- Low Voltage directive 73/23/EEC, subsequently modified to 93/68/EEC

As well as fully conforming with the below mentioned harmonized standards

NEN-EN60204-1:2006	Safety and electrical equipment of machines – Part1: General principles

*Fabricated conform the Dutch **horticultural industry directives***

De Lier, the Netherlands.

Date ……-……..-……

Signature of management or other authorized representative.

……