



Technical Handbook

BeMatic Meto Trans



Berg Hortimotive

**Burg. Crezeelaan 42a
2678 KZ De Lier
The Netherlands**

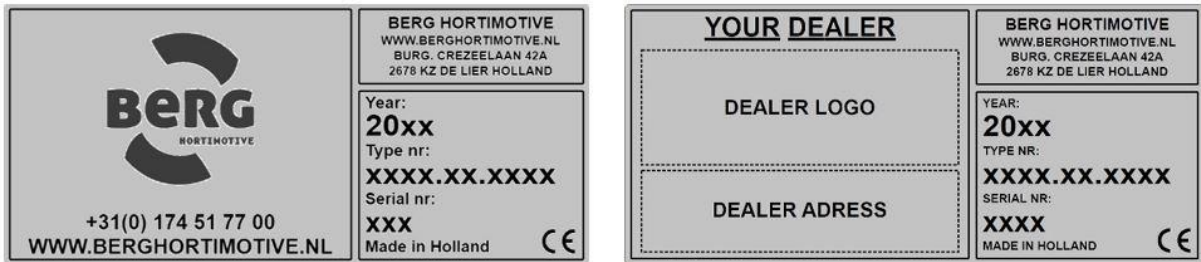
Tel: +31 (0) 174- 517 700

**E- mail: info@berghortimotive.com
Internet: www.berghortimotive.com**

Machine type plate

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

If you would like to contact Berg Hortimotive, or one of their dealers with respect to this *BeMatic Meto Trans*, please ensure that this information is always readily available.



Version 3, March 2019

The machine is manufactured by:



Berg Hortimotive

Burg. Crezeelaan 42a
2678 KZ De Lier
The Netherlands

Tel: +31 (0) 174- 517 700

Email: info@berghortimotive.com
Internet: www.berghortimotive.com



1. Declaration

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 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 *BeMatic Meto Trans*, 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 prescribed
- repairs carried without the consent of Berg Hortimotive and/or a certified dealer
- changes to the *BeMatic Meto Trans* include the following:
 - alterations to the controls
 - welding, mechanical works, etc
 - extensions to the *BeMatic Meto Trans* or its controls

Berg Hortimotive does not accept liability when:

- customers do not meet their obligations with respect to Berg Hortimotive (financial or otherwise)
- consequential damage is caused by defects on the *BeMatic Meto Trans* - e.g. interruption of business, delays, etc.

1.3 Guarantee

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.

1.4 Approval Spraying Installation

Your national or local authorities can oblige you to check and examine your spray installation to minimize the environmental impacts from pesticides or chemicals.

The *BeMatic Meto Trans* Automatic Spray Trolley will be approved but must be checked in combination with your liquid supply system such as; airlock, pump and liquid tank. The checks are (for example in England) part of the NSTS (National Sprayer Testing Scheme).

More information about this testing scheme can be found at the Agricultural Engineers Association (England) or the Plant Health and Seed Inspection Service (Poland)

Netherlands:

Stichting Kwaliteitseisen
Landbouwtechniek (SKL)
Agro Business Park 24
6709 PW Wageningen
Postbus 407
Tel: +31 (0) 317 47 97 05
Fax: +31 (0) 317 47 97 05
www.skлкеuring.nl
info@skлкеuring.nl

Belgium:

Secretariaat Keuring Sproeiapparaten Vlaanderen
Technologie & Voeding, Agrotechniek. Instituut
voor Landbouwkundig en Visserijonderzoek
(ILVO, T&V-Agrotechniek)
Burgemeester van Gansberghelaan 115
9820 Merelbeke
Tel: +32 (0) 9 272 27 57
Fax: +32 (0) 9 272 28 01
www.ilvo.vlaanderen.be
keuringsproei@ilvo.vlaanderen.be

England:

Agricultural Engineers Association
Samuelson House - Forder Way
Hampton
Peterborough
PE7 8JB
Tel: +44 (0) 845 64 48 7 48
Fax: +44 (0) 173 33 14 7 67
www.aea.uk.com
ab@aea.uk.com

Poland:

Plant Health and Seed Inspection Service
Ul. Wspólna 30
00-930 Warsaw
Tel: 022 623 24 04
Fax: 022 623 23 04
www.piorin.go.pl
gi@piorin.gov.pl
or: Research Institute of Pomology and
Floriculture in Skierniewice (www.insad.pl)

France:

Cemagref Antony
Parc de Tourvoie,
BP 44F
92163 Antony Cedex
T: +33 (0) 1 40 96 61 21
F: +33 (0) 1 40 96 62 25
www.cemagref.fr
info@cemagref.fr

Germany:

Julius Kühn-Institut, Bundesforschungs-institut
für Kulturpflanzen
Messeweg 11-12
38104 Braunschweig
T: +49 (0) 531 299 5000
F: +49 (0) 531 299 3000
www.jki.bund.de
pb@jki.bund.de

2. Foreword

This handbook describes the *BeMatic Meto Trans*.

This handbook provides you with information including the safety aspects, a description of the *BeMatic Meto Trans* together with the working principles, as well as the operating instructions and maintenance of the machine.

Potentially dangerous situations are indicated together with recommendations for avoiding them.

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

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

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3. Introduction

3.1 General

You have made a good choice by purchasing the Berg Hortimotive *BeMatic Meto Trans*. You are the owner of an first class piece of equipment that has been manufactured with great care. You will gain the most advantage from the equipment provided that you carefully follow the instructions given in this handbook with regard to safety, operating and maintenance.

Please study this user's handbook carefully before starting to use the *BeMatic Meto Trans*. Always follow the safety instructions and recommendations given in this handbook.

Berg Hortimotive does not accept liability for damage or indirect damage resulting from not following the operating and safety instructions contained in this handbook.

Neither does Berg Hortimotive accept liability whenever you or a third party make modifications to the pipe rail wagon or its accessories, without receiving prior written permission from the manufacturer.

The *BeMatic Meto Trans* is supplied in accordance with the conditions of sale of the Dutch METAALUNIE, as determined by the registrar of the law court of Rotterdam and in accordance with the most recent text contained therein. A copy of the terms and conditions of supply can be provided on request. You can also contact the Koninklijke Metaalunie, PO Box 2600, 3430 GA Nieuwegein, the Netherlands.





3.2 Supplier Information

In the event of breakdowns or defects occurring on the *BeMatic Meto Trans* please contact your Berg Hortimotive dealer.

4. Safety

4.1 Explanation of safety terms used

Safety terminology

Danger		: Indicates serious or even fatal injury may occur if the instructions in the handbook are ignored.
Warning		: Indicates injury if the instructions described in this handbook are ignored.
Caution		: Indicates damage may occur to the equipment if the instructions described in this handbook are ignored.
Warning		: Indicates possible problems if the instructions described in this handbook are ignored.

4.2 Safety regulations

Read the following safety instructions carefully.

After reading the safety instructions they should be strictly observed at all times.

If the *BeMatic Meto Trans* safety instructions are not observed while it is being operated, it will become substantially more dangerous and may lead to serious physical injury.

DANGER! 

- ***Read the manual carefully. Observe instructions, safety regulations, etc., at all times.***
- ***The BeMatic Meto Trans is suitable to drive on a lever hard surface floor on a slope max 2°***
- ***It is prohibited to drive on/along the BeMatic Meto Trans.***
- ***Only use the BeMatic Meto Trans to transport a Meto Automatic Spray Trolley from side path to side path over the main (concrete) path.***
- ***Keep at a safe distance from power cables and parts of the greenhouse construction.***
- ***All protective screens and covers should be in place and closed during use.***
- ***When working with the spraying Trolley, wear protective clothing and take the appropriate protective measures, as stipulated in the instructions of the additive (chemicals/pesticides) used.***
- ***It is mandatory to wear shoes with protective toe caps (S1).***
- ***After using the Spray Trolley the pipes and hoses should be cleared of chemicals and liquids. This is done to prevent the occurrence of Legionella bacteria in the still water. Always clean the hose and the supply-pipe with clear water and empty the hoses***
- ***Never exceed the maximum (valve)pressure of 40 bar!***
- ***The operator must be certified to use toxic chemicals when used as additive.***
- ***The Spray Trolley should only be operated by persons who have received adequate training with regard to the Spray Trolley and who have studied and understand the contents of this manual.***
- ***Never use the BeMatic Meto Trans outside!***

- ***It is prohibited to enter a path where spraying activities are carried out!***
- ***Only use legally allowed pesticide!***

WARNING! 

- ***Operating the BeMatic Meto Trans may only take place when there are no other persons in the vicinity (apart from the operator) of the machine.***
- ***The BeMatic Meto Trans may only be operated by persons of 18 years or older who have received thorough instruction about the BeMatic Meto Trans, who are fully familiar with this instruction handbook and are completely aware of the dangers associated with operating the machine.***
- ***All personnel working in the vicinity of the Spray Trolley should be fully familiarized with the safety provisions and regulations - Employer's instruction***
- ***The BeMatic Meto Trans should only be repaired by specially trained personnel by Berg Hortimotive***
- ***Never carry out maintenance activities to the BeMatic Meto Trans when it is being operated.***
- ***Check the BeMatic Meto Trans before use for faults, see chapter 9; maintenance.***
- ***Keep operating equipment and safety symbols visible and clean at all times.***
- ***Never leave the BeMatic Meto Trans unattended, without placing warning signs at all access doors of the greenhouse where the spraying work takes place.***
- ***Always turn the BeMatic Meto Trans off during maintenance***
Press the emergency button and disconnect the charger
- ***Do not carry out any modifications to the Spray Trolley without written consent from Berg Hortimotive***
- ***Only use accessories and parts supplied by Berg Hortimotive.***
- ***Remove obstacles, such as plant refuse, from the tracks and main path before entering it.***
- ***Never clean the BeMatic Meto Trans with a water hose or a steam cleaner.***
- ***Observe the safety regulations for the batteries, see Appendix 3***
- ***Always stand beside the lift bar if the BeMatic Meto Trans is raised by using the manual lift system for manual movements. Hold the lever with one hand while installing the castors.***
- ***Connect the BeMatic Meto Trans to the trickle charger after use!***
- ***Disconnect the charger before using the BeMatic Meto Trans.***

CAUTION! 

- ***Always keep the workplace tidy.***
- An untidy working area can lead to dangerous situations.
- ***Always concentrate on the task in hand.***
- Always keep your wits about you when operating the BeMatic Meto Trans. Never operate the BeMatic Meto Trans when you are unable to concentrate properly or when taking medicine whereby it is not advisable to operate machines or drive in traffic.

4.3 Safety symbols

On the *BeMatic Meto Trans* a number of safety pictograms have been applied. These pictograms warn the operator about possible dangers or dangerous situations. Always observe the warnings and contact your suppliers whenever the actual danger illustrated by the pictogram is not clear. Always make sure that the pictograms are visible and undamaged!

The *BeMatic Meto Trans* operator must have read and fully understood this handbook. When the operator does not understand the warnings given in either this handbook or on the machine (e.g. they speak another language), all the instructions, potential dangers, warnings and functions must be fully explained to them by a responsible person so that they can fully understand them.



1 2 3 4 5 6



7 8 9



10

No.	Explanation symbols:	Position symbols:
1	Be careful! Read manual before use!	Front side near operation
2	Be careful! Read instruction manual before maintenance!	Front side near operation
3	Be careful! Dangerous chemical battery; battery acid and explosive gases!	Front side near operation
4	Be careful! Risk of impact by movement.	On battery cover
5	Be careful! Danger for falling; do not ride along!	Front side near operation
6	Use indoors, and weight	Front side near operation
7	Be careful! Danger of crushing by lift lever, take care lifting <i>BeMatic Meto Trans</i> .	Front side battery cover
8	Be careful! In-running danger! Keep hands and fingers away from moving parts!	At the drive motor
9	Be careful! In-running danger! Keep hands and fingers away from moving parts!	On hose reel cover
10	Safety signals on batteries: Ventilate sufficient!, Read manual!, Fire and smoking prohibited!, Corrosive acid!, Wear safety glasses!, Explosive gas!, Recycle, do not throw away! Contains lead.	On batteries behind battery cover

4.4 Residual risks

Despite the best possible design and the use of risk-reducing devices and the warnings about the dangers given in the handbook and applied to the machine itself, it is still possible that dangerous situations can arise. Beware of the following:

- Danger of hands, fingers, arms becoming trapped in rotating parts of the hose reel!
- Danger of crushing under the *BeMatic Meto Trans* when putting down / lifting with the lift lever!
- Risk of impact by movement of the *BeMatic Meto Trans* while driving on the walkway!
- Risk of working with chemicals, take precautions as recommended by the manufacturer of the chemicals.

5. Intended application

5.1 Area of application

The *BeMatic Meto Trans* has been designed for use in the greenhouse horticulture sector.

The machine may only be operated by one person with a minimum age of 18 years who has received thorough instruction in the operation of the *BeMatic Meto Trans* and who is already familiar with the safety instructions and this handbook, both of which they have fully understood.

The *BeMatic Meto Trans* driving on the main path is used as an aid to transport the *Meto* from one path to the next. The *BeMatic Meto Trans* should be installed properly before use (hardware and software). A separate pump supplies the *BeMatic Meto Trans* hose reel (or direct the *Meto Spray Trolley*) with the liquid to be sprayed. Do not use the *BeMatic Meto Trans* for applications other than those described.

- ***The BeMatic Meto Trans is not designed to carry persons and other goods neither to tow things!***
- ***It is forbidden to use the BeMatic Meto Trans outside!***

Additional a failure system is available for the *BeMatic Meto Trans*. This system is a paging system and will send text messages by GSM or Sema-phone network to a mobile phone of your choice (maximum 5 numbers). Berg Hortimotive is not responsible for defaults or delays in the networks.

The separate pump must protect itself to dry-run or super heating as a result of no liquid demand over a long period of time. The failure system does **not** send a warning message if above mentioned situations occur!

5.2 Position and names of the parts

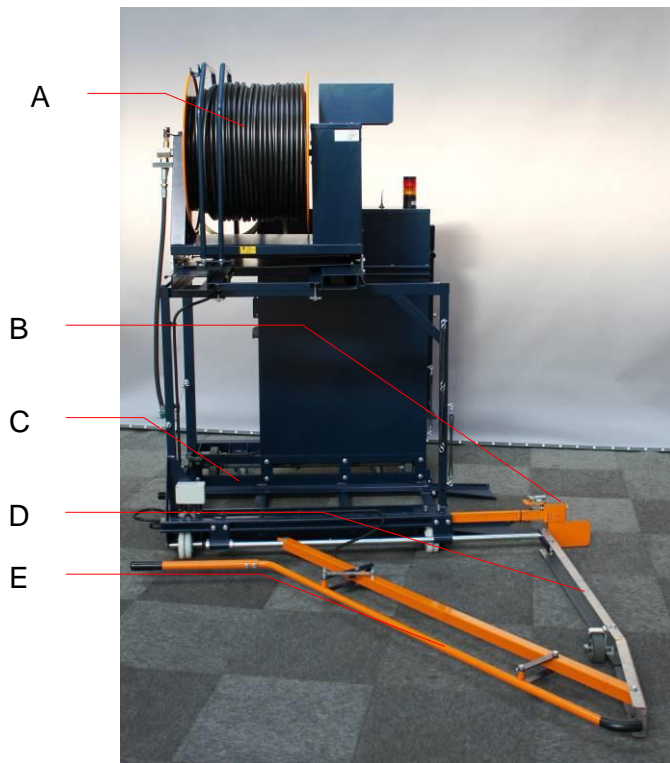


Figure 5.1; Backside MetoTrans with guidance arm



Figure 5.2; Front MetoTrans with guidance arm

A	Hose reel with hose guide	F	Warning (flash)light
B	Rail detection	G	Operation panel
C	Drive-in frame	H	Manual lift system
D	Pipe rail guidance arm	I	Drive-on ramp
E	Bumper	J	Swivel wheels

6. Transport

The *BeMatic Meto Trans* is delivered on a transport pallet in combination with a *METO*.



Please note!

- **Never lift higher than necessary!**
- **Ensure that the forklift truck can lift at least 1000kg weight!**
- **Disconnect the supply hose before lifting!**
- **Drive slowly and carefully!**



6.1 External transport

When transporting the *BeMatic Meto Trans* be sure the *BeMatic Meto Trans* is conditioned as followed:

- Save the special transport pallet
- Secure the *Meto* with a strap in the *BeMatic Meto Trans* and secure it with strap on the special transport pallet
- The drive-on ramps should be secured upright using the elastic bands and hooks
- The lift lever should be secured in the pipe clamp onto the *BeMatic Meto Trans*
- All hoses and couplings must be secured
- Emergency button is activated (pressed)
- The *Meto-Trans* must stand on its drive wheels, not on the swivel wheels
- The *BeMatic Meto Trans* must be kept dry and frost-free during transport
- Make sure the *BeMatic Meto Trans* cannot slide or roll within the transportation space. Secure properly with for example transport straps
- The *Meto* must be kept dry and frost-free at all times during transportation!
- Before use undo all described items above and check the machine as described in 7.1

6.2 Internal transport

It is also possible to transport the *BeMatic Meto Trans* internally (in the greenhouse). The preference is for riding on the castors.

7. Commissioning

The *BeMatic Meto Trans* Spray Trolley is specifically designed for driving over a pipe rail system. When leaving the Berg Hortimotive factory, the *BeMatic Meto Trans* is checked for proper functioning and safety. The *BeMatic Meto Trans* should be inspected on all points outlined in section 7.1 before being put into operation.

Your Berg Hortimotive dealer should give instructions how to use the *BeMatic Meto Trans* and the *METO* Spray Trolley. If your *BeMatic Meto Trans* is equipped with special functions, these functions will be explained explicit.

7.1 Inspection before starting operations

The *BeMatic Meto Trans* must be inspected on the following aspects before putting into operation:

- Correct adjustment of pin guide, groove guide, pipe detection or detection arm, so the Trolley is positioned correct in front of the paths and no pipes or plants are in the way of the *BeMatic Meto Trans*.
- No mechanical damage to *BeMatic Meto Trans* and optional hose reel
- Drive wheels, wheels and swivel wheels spin/swivel supple and not damaged
- Batteries charged (see operation and maintenance)
- No damage to and good visibility of operating controls and safety symbols
- No damage or leakage of hoses, pipes and couplings
- All protective covers are in place and secured
- Lifting system works properly
- Correct connection of *BeMatic Meto Trans* to reel, reel to supply and *BeMatic Meto Trans* to *Meto*
- Correct functioning safety bumper
- Correct operating failure message system (optional)
- Correct working pressure switch. (Turn ON *BeMatic Meto Trans* without supply pressure and check if failure; “pressure to low” appears in the display.

7.2 Adjusting and testing the options

The *BeMatic Meto Trans* will be put into operation for the first time accompanied by a dealers technician, the steps described below will be handled. Walk through the steps and carry out the test accompanied by the technician of the dealer. The way in which the mentioned options can be set is explained paragraph 8 *Operation*.

Adjusting the *BeMatic Meto Trans*

1. Choose a place (number of paths) where the *BeMatic Meto Trans* can be tested without disturbing the normal activities.
2. Check the settings of the *Meto Spray Trolley* (see manual *Meto Spray Trolley*).
3. Make sure the *Spray Trolley* is set to use with a *BeMatic Meto Trans*, right form of greenhouse, number of paths and right speed etc.
4. Position the *BeMatic Meto Trans* on the main path, be sure the *BeMatic Meto Trans*, the *Spray Trolley* and for example the spray boom stay clear of obstacles as plants and control cabinets.
5. *Adjust the pin/groove guide so the *BeMatic Meto Trans* is positioned correct in front of the tracks.
6. *Adjust the wheel of the guide arm so the *BeMatic Meto Trans* steers a bit toward the tracks.

7. *Adjust the fin or pipe detection so the detect plates or pipes are detect correctly. Beware! The fin or detection sensor should not hit plants or other obstacles when driving to the next path!

*Optional



Figure 7.1 MetoTrans with pin guide, safety bumper and detection fin

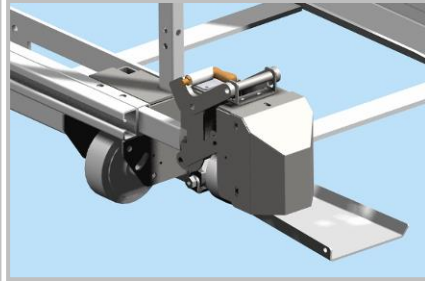


Figure 7.2; MetoTrans with path detection through detection plates near the tracks and plate detection sensor



Figure 7.3; MetoTrans with guide arm and detection fin

Carrying out the test:

8. Drive the Meto Spray Trolley manually out of the *BeMatic Meto Trans* "Start Meto" and make sure it stops after proximately 10 meters.
9. Drive the Meto back into the *BeMatic Meto Trans* and check if the speed is sufficient to drive up the ramps (if not; adjust by dealers technician).
10. Do not change the path distance (10m) and drive the *BeMatic Meto Trans* in front of the first path and activate the *BeMatic Meto Trans* in Automatic mode (see operation).
11. Check that the Meto drives correct into the *BeMatic Meto Trans* and the *BeMatic Meto Trans* drives correct to the next path and is positioned right in front of the path. Adjust if necessary. **Walk along with the *BeMatic Meto Trans* so the emergency button can be pushed when necessary!**
12. Set the pressure switch correct, see below:
 - The switch is adjustable between 1-10 Bar (maximum supply pressure 200Bar). The pressure switch has a NO valve which closes at the set pressure.
 - Turn the adjusting screw right to set a higher pressure.
 - Turn left to set a lower switch-pressure.
 - Normally the switch-point is set to ca. 3 bar. The pressure switch is now open when spraying with 10 Bar spray-pressure.



Figure 7.4; Adjusting the pressure switch

If pressure falls out, the *BeMatic Meto Trans* will display the fault: "pressure failure".

8. Operation

Make sure you are familiar with your *BeMatic Meto Trans* Spray Trolley and control functions. Ensure that operators have received instructions regarding the Spray Trolley and the safety regulations and have studied and understand this manual.

- The *BeMatic Meto Trans* should only be operated if it has been verified that no other people are present in the near vicinity of the *BeMatic Meto Trans*.
- Remove crop refuse and other obstacles from the pipe rail system and main path before use.
- Check the settings before each use.
- Clean the *BeMatic Meto Trans* on a regular basis. Prior to cleaning, switch the *BeMatic Meto Trans* off and press the emergency button. Never clean using excessive water or a pressure cleaner.
- The *BeMatic Meto Trans* should only be operated if the previous pages have been extensively studied and there are no questions for you.
- Provide an approved spray system according to national legislation, performed by a certified inspection agency for inspection of sprayers (see 1.4).
- After use switch-off the *BeMatic Meto Trans* and connect to the supplied trickle charger.
- Keep the *BeMatic Meto Trans* in a dry, frost-free storage area if it is expected to be idle for an extended period of time.

Charge the batteries at least every 4 weeks! 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).

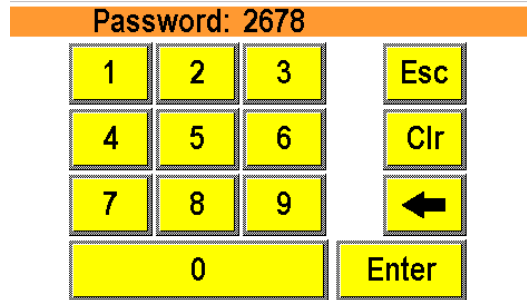
Make sure that no metal objects can fall on the battery as this can cause short-circuiting or sparks and, consequently, a fire or explosion. Remove personal items such as bracelets, rings, necklaces and watches when working near the battery. A short-circuit current is capable of melting a ring and causing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

8.1 Display

The display provides information about the *BeMatic Meto Trans* settings. When switching on, the display always requests the password, enter **2678**, followed by **Enter**, the main menu now appears.

Please note, control the screen only with the fingers and NOT with hard sharp objects!

Attention, the screen has a screen protection function and after a certain period it darkens, THE *BeMatic Meto Trans* HAS NOT BEEN TURNED OFF!



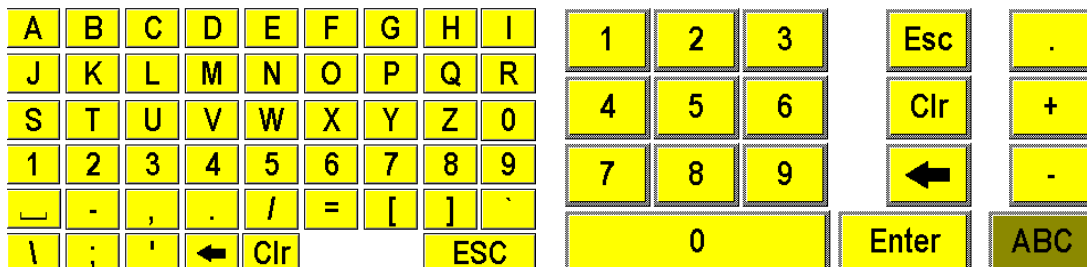
The main menu offers the following functions:



Touch screen

Various program adjustments and function activations can be carried out via the touch screen. The language selection is made by pressing the flag.

The touch screen can also generate alphanumeric input screens in order to enter variables which apply to your specific greenhouse or plants.



- Alpha keys [a, b, c etc]
- Numeric keys [0-9]
- [Clr] key for cancelling entry
- [←] key to cancel last entry
- [Ent] key to confirm entry (put into the memory)
- [ESC] key to leave the input screen or go back to previous screen
- [ABC] key for changing from Numeric to Alfa input screen



step screen up or down



back the main screen



selector key, function now **active**



selector key, function now **inactive**



this function is currently **not possible**



touch sensitive input field, opens **numeric input screen**



shows **last alarm**



restart **counting period**



start button or **start photocell** active



automatic **cycle** is ready



program for green house with Sections is active.

8.2 Controls

Before using the *BeMatic Meto Trans* you must enter a number of settings so that the desired spraying pattern can be set. Please consult also the handbook *METO* spray trolley!

Switch ON the *BeMatic Meto Trans*, the screen now asks for the password enter **2678**, the main menu will now appear on the screen.

8.2.1 Adjusting

ADJUST	
Number of paths	0
Number of paths to skip	0
Number of times the same path	0
Hose reel on	<input type="checkbox"/>

↑ Esc ↓

[NUMBER OF PATHS]

Enter the number of paths. The number of paths that is set may partly depend on:

- the length of the supply hose
- an estimate of where (at which path) the storage tank will be empty
- the connection point of the high-pressure hose (this is where the reel is switched on/off)

[NUMBER OF PATHS TO SKIP]

Enter the number of paths that must be skipped after the sprayed path.

[NUMBER OF TIMES THE SAME PATH]

Enter the number of times the same path must be sprayed.

[HOSE REEL ON]

This depends on whether you drive towards or away from the high-pressure hose.

The following settings only apply if these options are available on your BeMatic Meto Trans. Your dealer will provide more details about these options upon commissioning.

ADJUST	
SMS on	<input checked="" type="checkbox"/>
Name 1 active	<input checked="" type="checkbox"/>
Name	NAME-1
N° Tel	

↑ Esc ↓

ADJUST	
Name 2 active	<input type="checkbox"/>
Name	
N° Tel	
Name 3 active	<input type="checkbox"/>
Name	
N° Tel	

↑ Esc ↓

[SMS ON]

Option to receive a text message in the event of a breakdown.

[NAME 1-5 ACTIVE]

Option to select who should receive a notification.

[NAME]

Enter the names of persons 1 to 5.

[TEL NO.]

Enter the telephone numbers of persons 1 to 5.



[SPRAY MAIN PATH]

Option to have the façade sprayed. (In the case of a spray boom on the *BeMatic Meto Trans*, for plants along the façade path)

['READY' MESSAGE?]

Option to send a text message when the *BeMatic Meto Trans* has completed the spraying job.

[SPRAY SECTIONS]

Option to have the "spray sections" feature to be activated. (a maximum of 25)

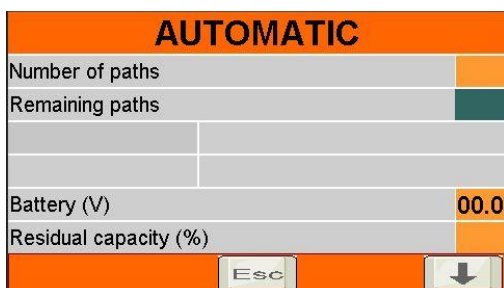
[SPRAY SECTIONS 1-25]

Option to have the sections in question sprayed.

[NO. OF PATHS SECTIONS 1-25]

Enter the number of paths per section.

8.2.2 Automatic feature standard



Indicates the number of paths set

Indicates the number of remaining paths

Indicates the battery voltage in Volt

Indicates the remaining capacity in %

Drive the *BeMatic Meto Trans* up to the first path to be sprayed and make sure that the *Meto Spray* trolley is properly aligned with the pipes.

Before starting the *Meto Transport* vehicle make sure the *Meto Spray* trolley is set in accordance with the relevant user manual.

Press the START button (black) on the operating panel. The *BeMatic Meto Trans* will now complete the set programme automatically.

In the "Remaining Paths" field, one path is deducted for each sprayed path, until the indicator says 0. This means the spraying job is completed.

REST CAP. 100% is a built-in battery capacity indication that shows the remaining capacity of the batteries by approximation. At approx. 0%, the Meto Transport vehicle will automatically stop spraying, and "Low battery voltage. Charge battery!" will appear in the display.

This notification can be deleted by means of the  button.

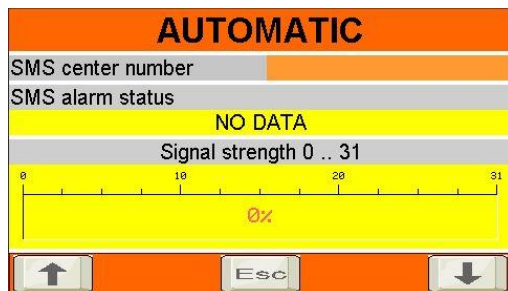
In the main menu, go to MANUAL and drive to the charger to charge the *BeMatic Meto Trans*.

8.2.3 Automatic feature with sections



- Indicates the "total" number of paths that must be sprayed.
- Indicates the remaining number of paths that must be sprayed.
- Indicates the current section and path and if this path will be sprayed.
- Indicates the total number of paths of the section.

8.2.4 Automatic text message signal



When pressing the down arrow key in an AUTOMATIC screen, the above indication screen for the modem appears. Signal strength must be over "20" in order to be able to send messages reliably.

8.2.5 Manual



[DRIVE FORWARD]

Select the direction to be driven manually when the START button is operated.

[DRIVE REVERSE]

Select the direction to be driven manually when the START button is operated.

[SPEED POSITIONING /SLOW /QUICK]

Set the speed for manual driving.

[START METO]

Option to start the Meto when the START button is operated.

The Meto Spray trolley will allow the *BeMatic Meto Trans* to freewheel after operating the start button.

Make sure to make the correct settings for the Meto Spray trolley. To that end, refer to the relevant user manual.

[PATHSPRAY]

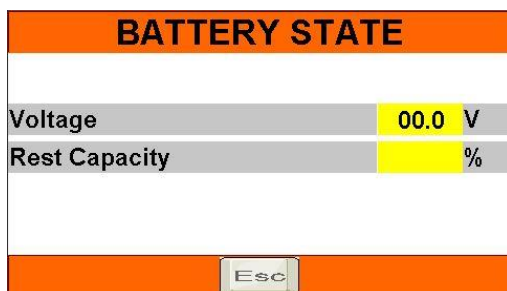
Option to open the electric valve when the START button is operated.

As long as the start button is operated, the Meto Transport vehicle will open the electric valve. This allows you to check if the spray caps are blocked before you start spraying.

[HOSE REEL]

Option to start roll up the reel when the START button is operated.

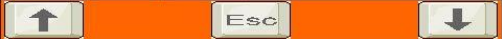

8.2.6 Battery status



The screen shows the battery voltage in Volts and gives an indication of the remaining capacity in %.

Attention! The remaining capacity is not shown as a linear decline and therefore only provides the user with an indication.

8.2.7 I/O screen (input and output)


INPUT				OUTPUT			
Emergency	0	Pressure sensor	0	Emergency relay	0	Sirene	0
Counting sensor	0	Motor Drive OK	0	Forward	0	Pager	0
Rail detection	0			Backward	0	Photocell Meto	0
Bumper	0			Hose reel	0	Spray Path	0
Meto on Trans	0			Autom. light	0		
Start	0			Error light	0		
							

On the **inputs screen** it is possible to see if inputs are active, or will be, when you operate a switch. This is useful when there is an alarm.

On the **outputs screen** it is possible to see if outputs are active.

8.2.8 Malfunctions, failures and errors

ALARM	
A...	
A...	
A...	
A...	
A...	
	

A failure can interrupt the automatic program and the cause of the failure will be showed on the screen. For resetting the failures press the  button.

An additional failure SMS paging system can be installed on your *BeMatic Meto Trans*. This system will send messages containing the failure text to a mobile telephone number activated in the menu (maximum of 5 numbers). The system uses a mobile telephone network. Berg Hortimotive cannot be held responsible for malfunctions or delays in the network. The system may need additional transmitters to cover the hole greenhouse area; consult your dealer.

Error counting

Counting has fault in the AUTOMATIC mode. Check that the measuring wheel sensor is working properly (above wheel axis). Check connection drive motor and encoder.

ERROR PIPE-DETECTION – NO PIPE SEEN

The pipe detection has not 'seen' any pipes within expected period. Check if fin/flag touches pipes correct or detection sensor is defect (no indication light on the sensor).

ERROR PIPE-DETECTION AT START


The detection conditions at start are fault. Check if the detection flag/fin is in its lock or stuck.

BUMPER OPERATED

The safety bumper is operated. Remove objects in path of *BeMatic Meto Trans*.

ERROR PRESSURE TOO LOW

Insufficient supply pressure. Check the (high pressure) connection and supply pump. If OK check adjustment of the pressure switch (see 6.2).

If the error occurs in automatic mode, the error must be reset by pressing the  button. Readjust the pressure, press automatic and [Start/Reset] again. Check row counting. Note: The Meto-Trans will send the Spray Trolley into the same path again so the path is sprayed once with sufficient pressure.

ERROR METO TOO LONG IN THE PATH

The waiting time for the Meto Spray Trolley has expired. Check if the Spray Trolley has an error or malfunction (consult Spray Trolley manual).

ERROR METO DOES NOT COME OFF THE TRANS

Check if the Spray Trolley is activated and set correctly and no error has occurred on the Meto.

LOW BATTERYVOLTAGE – CHARGE BATTERY !

The batteries of the Meto-Trans must be charged. Automatic operation is no longer possible.

ERROR METO NOT TO ENDSWITCH ON TRANS

Put the Meto Spray Trolley far enough in the *BeMatic Meto Trans*.

ERROR THERE ARE NO PATHS ADJUSTED

Go to the adjust menu [F1] and set the number of paths.

ERROR PIPE DETECTION FLAG TOO LONG UP

Check if detection fin/flag is stuck or still locked.

ERROR; FLAG DOES NOT STAYS UP

This error is shown if the flag/fin is not in its locked position during backward driving.

ERROR; DRIVE MOTORCONTROLLER

The motor drive has an alarm, switch the Meto Trans off, wait 5sec. and turn on again. Mostly the failure is caused by pushing the Meto Trans by manual force. Use always the manual driving functions and drive by motor power!

Modem not found

Switch the *BeMatic Meto Trans* off and on. Consult your dealer

Modem error sending SMS

Try again later or consult your provider

Other errors and faults or no result at above problems?

Consult your dealer

8.2.9 Alarmen

Date	Time	HISTORY	Count	HISTORY
			0	Error counting
			0	Error; no pipe detected
			0	Error; pipe-detected at start
			0	Emergency; Trans is switched off
			0	Error; pressure too low
			0	Error; Meto too long in path
			0	Error; Meto doesn't leave Trans
			0	Low batteryvoltage; Charge battery!

The historical faults are displayed on the **alarm screen**.

Press the down arrow to display the **Counts alarm screen**, the number of similar alarms is displayed.

8.2.10 EMERGENCY STOP

Via the Emergency Stop button the *BeMatic Meto Trans* will be switched off. The button should be pulled out to release this function.

Attention, the screen has a **screen protection function** and after certain period it **darkens, THE *BeMatic Meto Trans* HAS NOT BEEN TURNED OFF!**

Important! When you finish using the *BeMatic Meto Trans* always switch off by pressing the Emergency Stop button which avoids unnecessary consumption of energy. **Also, the batteries must be recharged immediately after use.**

8.2.11 START

Both the automatic and the manual functions can be started with the START button.

8.3 Out of use

When the *BeMatic Meto Trans* is not being used it should be stored with fully charged batteries in a dry and frost-free environment. The batteries should be recharged at least once every 4 weeks. Ensure that the ground underneath is level. When the *BeMatic Meto Trans* is not used for longer periods, cover it with a protective tarpaulin. When bringing the *BeMatic Meto Trans* back into use after a lengthy period of storage, it is advisable to inspect it as described at 7.1 (inspection before starting up).

8.4 Cleaning

Regularly remove any remains of plants, leaves etc, and brush off any sand and dust. Clean the *BeMatic Meto Trans* with a dry or slightly damp cloth, and never pour water over the *BeMatic Meto Trans* or clean it using a steam or high-pressure water cleaner which can lead to serious damage being caused to the electrical circuits in the equipment! After usage, particularly after using chemicals, thoroughly clean the hoses, couplings and other spraying equipment with plain water (no additives).

Wash after using the filters and nozzles of the spray boom by means of flushing with clean water or after disassembly in clean water.

Some additives will quickly calcify which can lead to blockages when inadequate attention is for maintenance after spraying!

For other maintenance see section 9 *Maintenance & Repairs*.

8.5 Dismantling

When you have to dispose of your *BeMatic Meto Trans* you should return it to your dealer or a company that specialises in dismantling vehicles. Never take your *BeMatic Meto Trans* to a scrap metal dealer or a waste dump. The *BeMatic Meto Trans* should be dismantled and the chemical components removed (chemicals and batteries).



Faulty batteries should be handed into the local authority or your supplier. Oil should be handed in as chemical waste.



9. Maintenance and Repair

The *BeMatic Meto Trans* 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 appendix III). In addition, employers are obliged, at all times, that their means of labor should be in strict conformity with means of labor regulations. To ensure this, means of labor should be inspected periodically. Before doing maintenance switch OFF the *BeMatic Meto Trans* with the emergency stop and for models with exchangeable batteries disconnect them by unplugging.

Maintenance - Checks	Tools	Daily	Week	Month	Year
Cleaning directly after using	See 8.4, 9.8 and Appendix 54	X			
Sufficiently charged battery directly after using	Battery condition meter on display	X			
Damage to control components	Visual	X			
Damage to/visibility of pictograms & stickers	Visual	X			
Cleaning control panel	Damp cloth		X		
Check for leaks and damaged cables, hoses and valves	Visual		X		
Check for ingrained dirt or string wrapped around wheels and chain (see 9.4)	Visual		X		
General mechanical damage	Visual		X		
Charge batteries after use or at least 1x monthly (see 9.9)	Battery charger			X	
Check battery fluid levels (1 cm fluid covering plates (see Appendix 3)	Distilled water, gloves & safety goggles			X	
Lubricate castor wheels, drive chain and bearings (see 9.4)	Bearing grease, chain grease or other universal lubricants			X	
Check chain tension (see 9.4)	Open-ended spanners			X	
Pivoting points (see 9.6)	Bearing grease, chain grease or other universal lubricants			6 months	
Lubricate wheels (see 9.6)	Bearing grease, chain grease or other universal lubricants			6 months	
Replace carbon brushes on the motor if less than 1 cm long (see 9.7)	Visual				X
Check the welds on the construction for (hair)cracks and rust. (see 9.8)	Visual				X

If the above checks indicate that there is a fault with the *BeMatic Meto Trans*, immediate contact should be made with the *BeMatic Meto Trans* dealer. Continuing to use the machine after identifying defects could lead to dangerous situations and is therefore forbidden!

9.1 *Specialist maintenance*

Maintenance and repairs to the items listed below may only be carried out by qualified specialists appointed by Berg Hortimotive:

- Work on electrical components and wiring.
- All work concerning to the high pressure pipes and hoses.
- All activities to the drive motor excluding: cleaning, readjusting or replacing the chain or cleaning and inspecting the carbon brushes.

9.2 *Maintenance and inspection by the operator*

All the work given in the above table that is not excluded at item, 9.1 Specialist Maintenance, must be carried out periodically. Some of the actions are described below. You will find instruction film clips on our website that show how certain maintenance activities should be carried out.



www.berghortimotive.com



9.3 **Berg Service Alert**

Berg Hortimotive takes customer satisfaction very seriously. A satisfied customer is the best ambassador for our products and company!

No matter how well we manufacture our products, after a period of time they are going to need servicing and maintenance carried out. Like most people, you also know that a good maintenance schedule considerably increases the lifespan of the product. So that we can provide you and our dealers with even better support, Berg Hortimotive has started sending out the "Berg Service Alerts" (BSA).

BSA means that you can expect an email from us periodically that contains a link that takes you to a page with lots of tips and recommendations for maintaining the same Berg Hortimotive products that you own and operate. We include pictures and images as much as possible so that the information is easy to understand and apply.

Our tip: Visit our website and subscribe to BSA!

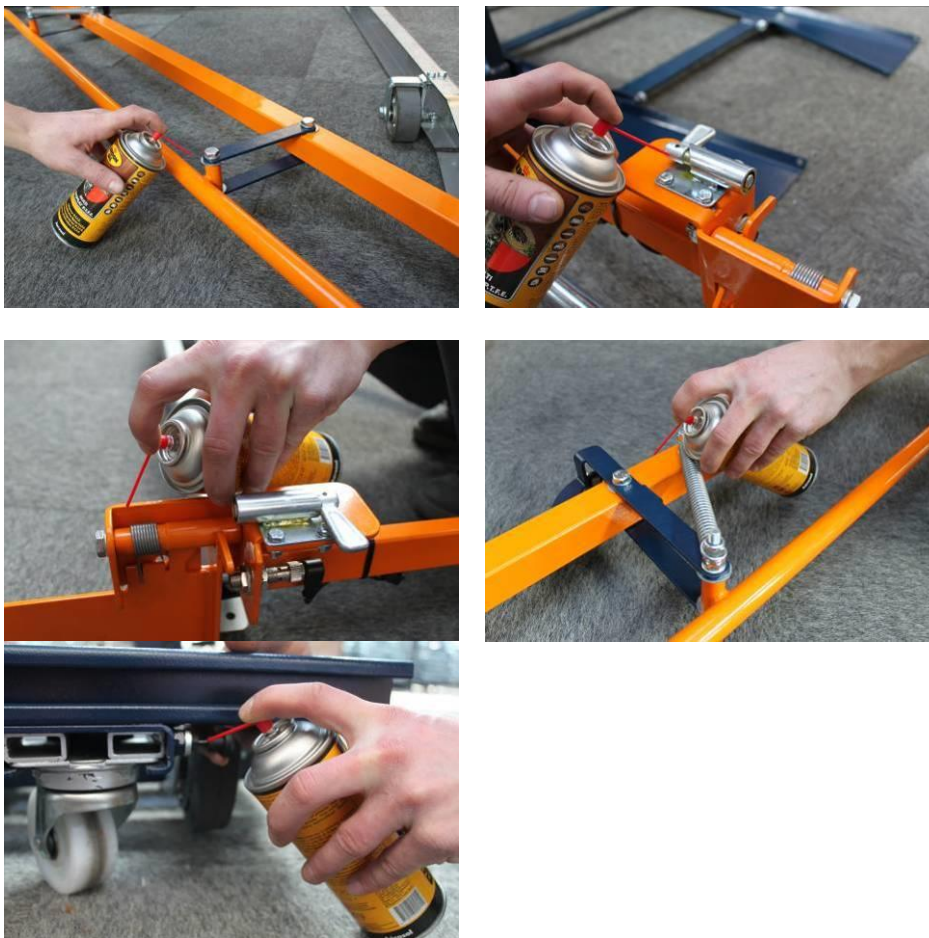
If as a result of these tips and recommendations you come across maintenance work that you are either unable, or do not want to carry out, please consult our extensive dealer network to find assistance. The dealers are trained by us on a regular basis and therefore have the necessary knowledge, experience and access to the original spare parts for providing you with assistance quickly and efficiently.

9.4 Maintenance of the drive



Clean chains, gears and rolls and remove run-in ropes and leaves (when necessary). If necessary, tighten the chain by turning the mounting-nut from the engine (located behind cover underneath control panel). Do not over-tighten the chain, the minimal sideways tolerance should be approx. 1 cm. Once the correct chain tension has been achieved, retighten the mounting-nut with the contra nut. The chain has been coated by Berg Hortimotive and should be oiled after the first time used (first spraying cycle) when the factory coating is worn out (chain feels dry). Check that the carbon brush nozzles are fixed to the engine.

9.5 Pivoting points



The pivot points of the next items must be oiled when necessary but at least twice a year: Safety bumper, flag/fin, lock pins, Wheel bearings, and reel chain.

9.6 *Maintenance the wheels*

- Clean the wheels regularly
- Bearing blocks with grease.
- Oil the wheels and rotation points monthly.
- Replace any damaged wheel.

9.7 *Inspecting the carbon brushes*



- Remove the front panel from the *BeMatic Meto Trans*.
- Unscrew the 4 carbon brush caps with a large suitable screwdriver.
- Blow the engine clean with dry compressed air.
- Have carbon brushes shorter than 1 cm replaced by your dealer.

9.8 *The cleaning*

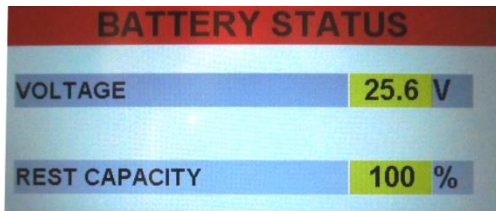
- Clean the *BeMatic Meto Trans* using a soft brush, dampen cloth and/or compressed air
- Rinse off aggressive pesticides with clean water immediately after use!
- Never clean the *BeMatic Meto Trans* using a high pressure or steam cleaner (this can damage the electrical circuit)
- Remove still water to prevent the formation of Legionella bacteria
- See also Appendix 4

Rust

Initiation of rust must be prevented when possible or repaired as soon as possible. Rust will spread easily due to the humid environment and the additives used!

9.9 Charging the batteries

Charge the batteries according to the status indication of the BATTERY STATUS screen between the 50 and 10% remaining capacity and try to approach the 10% as closely as possible according to the following advice.



On the BATTERY STATUS screen you can check the status of the batteries. At 100%, the batteries are full, the lower the residual capacity the batteries are more discharged. If during automatic driving the alarm message "low battery voltage, Charge battery!" appears on the screen the batteries should directly be charged. Turn off the *BeMatic Meto Trans* with the Emergency Off switch and charge the battery continuously for minimal 12 hours or until the charger indicates full. (refer to the user manual of the charger!) Recharge "during operation!" before the BATTERY STATUS screen indicates 50% discharge should be avoided. Always try to match the approximately 10% discharge status. This has the following advantages:

- Less charging cycle, is favorable for the life span
- Reduces water consumption

Charge the batteries every time after using and then at least once a month regardless of use with a suitable charger!! Prevent deep discharge batteries, this gives severe damage and a shorter lifetime!!

See also the instructions in Appendix 3 battery safety sheet!

10. Technical specifications

Type: group 20185-6TS	
Dimensions [mm]:	
Centre-to-centre	420-800
Length	1870
Breadth	1400
Height	2255
Weight [kg] (c-to-c 550)	450
Motor power (Drive) [kW]	0.37
Motor power (Hose reel smal) [kW]	0.15
Motor power (Hose reel big) [kW]	0.37
Maximum speed on concrete path [m/min]	25
Maximum fluid pressure [bar]	40
Voltage [Volt DC]	24
Battery capacity [Ah]	2x110
Noise level [dB]	<70

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.

11. 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 product

**Article number: 20185TS
Meto Transport Trolley for full automatic transportation of the Meto Automatic
Spray Trolley over the main path incl. batteries 24V-100Ah, leading through groove
by U-groove/pin in concrete path and optional reel.**

**Article number: 20186TS
Meto Transport Trolley for full automatic transportation of the Meto Automatic
Spray Trolley over the main path incl. batteries 24V-100Ah. As disired: conductor
on head for guidance through the end of the pipe rail or rail guidance with optional
reel.**

Type no.:

Serial no.:

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

- Meets the stipulations of the most recent 98/37/EC Equipment Directive (subsequently modified to 98/79/EG),
- 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-EN 60204-1:2006, Safety and electrical equipment of machines

De Lier, the Netherlands.

Date-.....-.....

Signature of management or other authorized representative.

.....

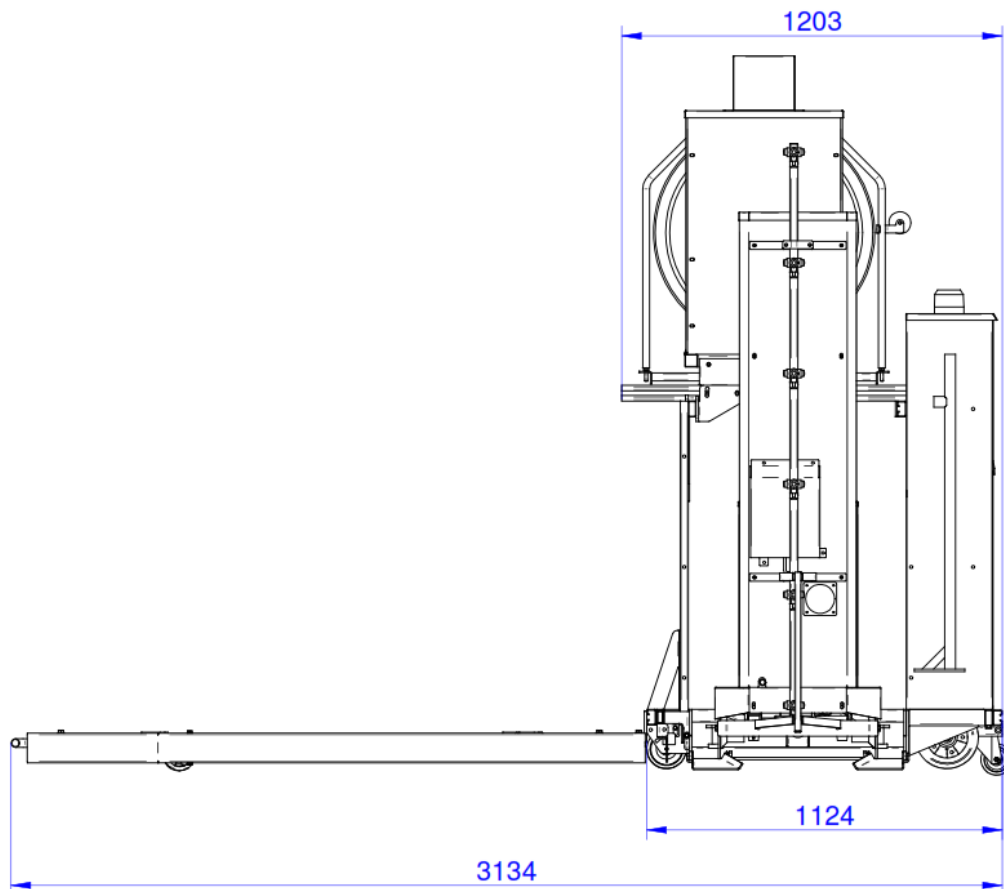
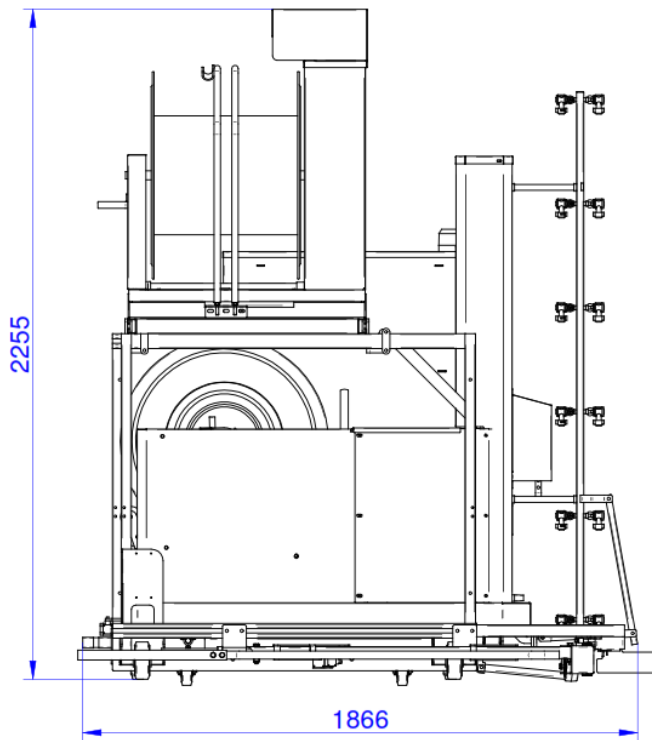
Appendix 1: Maintenance Logbook

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

Type: 20185-6TS	<i>BeMatic Meto Trans with touch screen</i>	Serial no.:
Date:	Description of repairs/maintenance	Name company/ technician

Appendix 2: Technical drawings

Dimensions in mm.



Appendix 3: Battery safety sheet

Battery recommendations

The following chapter provides recommendations for, safety and maintenance.

Safe use of batteries

Below are recommendations for usage and maintenance.

BEWARE!

- 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!
- Always top up the batteries AFTER charging and never fill higher than the level marker in the cell opening. (see also the instruction sheet for traction batteries)



Recharge "during operation!" before the BATTERY STATUS screen indicates 50% discharge should be avoided. Always try to match the approximately 10% discharge status. Charge a discharge battery always straight on, this will increase the life span considerably. Therefore, check the acid gravity at least every month with a hydrometer (Fig. A + B and table below).

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

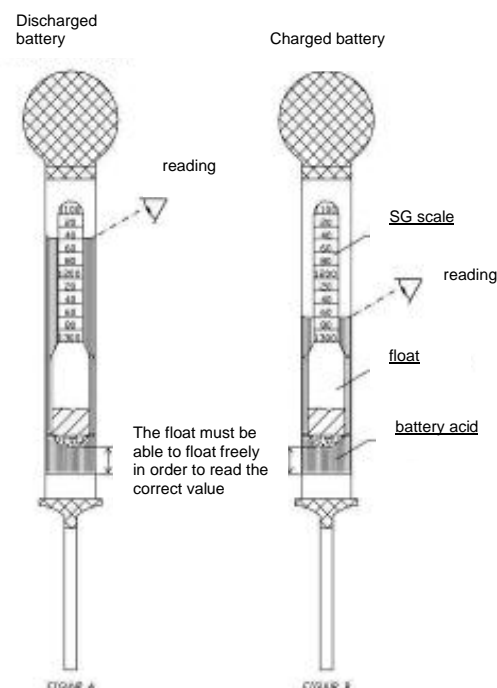
100%	sg 1280	g/l	=	12.7	volts
80%	1240			12.5	
60%	1210			12.3	
40%	1170			12.1	
20%	1140			11.9	

Before charging, switch off the *BeMatic Meto Trans* with the emergency 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. **Only use a charger type that is suitable for the batteries being charged! (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 *BeMatic Meto Trans*, 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.

Any acid splashes to the eyes must be rinsed for at least 5 minutes in clean water and a doctor consulted immediately!



INSTRUCTIONS TRACTIONBLOCKS



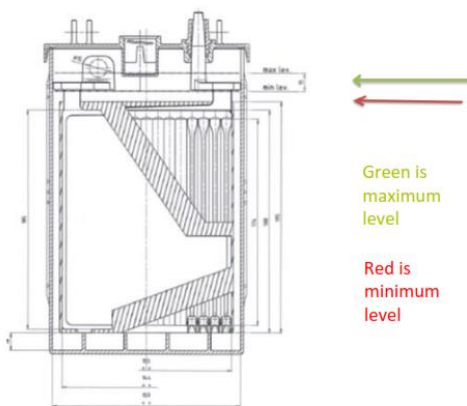
Daily maintenance EW130T:

- 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 EW130T:

- 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




All disused batteries must be recycled

Berg Hortimotive BV
Burg. Crezeelaan 42a 2678 KZ DE LIER

T : 0174- 517700
F : 0174- 516958

E : info@berghortimotive.nl
I : www.berghortimotive.nl

	TREM-CARD	UN 2794
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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.

Appendix 4: 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 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.