



User Manual Potting machine

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Martin Stolze b.v.
Leemidden 6
2678 ME De Lier
The Netherlands
T: +31(0)174 518 113
info@martinstolze.nl
www.martinstolze.nl


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Technical specifications and tolerances

This machine is only intended for automatically filling pots with substrate. The filled pots are subsequently provided with a drilled hole, in which a plant can be placed. This machine is intended to only process pots, substrate and other materials that are specified in this user manual. The 'Operation' section provides an extensive description of the operation of the machine.

 *This machine may only be used within the limits specified for specifications and tolerances in the order, on the composition drawing and in this user manual. If the machine is used outside of these specifications, Martin Stolze b.v. accepts no further responsibility for this machine.*

 *This machine is intended solely for products as agreed in the order confirmation. In order to guarantee the correct operation of this machine, only those products with the specifications and tolerances as specified in the order confirmation may be used.*

 *Do not use this machine for purposes other than that for which Martin Stolze b.v. made the machine. This can result in damage and danger for the operator and his/her surroundings.*

 *This machine has CE marking. When several machines are placed in one line, the entire line must have proper CE marking before this machine is put into operation. Until the line has CE marking, this machine may not be put into operation.*

Specifications	
Voltage	400 V 50 Hz 3~+N+ PE
Machine connection	16 A 5-pole
Power	~3 kW
Compressed air	6 bar, 400 litres/hour dry filtered air
Length x width x height	390 (short)/490 (long) x 140 x 209 cm
Weight	± 1,100 kg
Pot size	On request
Number of pot holders	Short version 20

	Long version 34
Number of pots	On request
Capacity	Single running 3,600 pots/hour Double running 7,200 pots/hour
Year of manufacture	See rating plate
Type of product	As agreed in the order confirmation

1.1 Rating plate

The rating plate is attached at the compressed air connection.

Safety



The machine has been constructed according to the latest technology and recognised safety technical rules. Nevertheless, its use can cause serious injury or death to the user or third parties. Its use can also cause damage to the machine or to other goods.



This machine has CE marking. When several machines are placed in one line, the entire line must have proper CE marking before this machine is put into operation. Until the line has CE marking, this machine may not be put into operation.

1.2 Regulations

1. The operation and maintenance of this machine must be performed by qualified personnel, taking the warnings on the machine into account and with due observance of the user manual. Keep children and other (unauthorised) persons out of the way when the machine is in use.
2. This machine is only suitable for process and environmental conditions as stated in the 'Specifications and tolerances' section of this user manual. All other use is not permitted by Martin Stolze b.v. and can result in danger for the operator and/or his/her surroundings.
3. It is forbidden to modify this machine without prior written permission of Martin Stolze b.v..
4. Thermal safety devices and torque limiters may not be changed from the settings they have when the new machine is delivered. The thermal safety switches may never be used to switch the machine on or off.
5. This machine must be installed in a way that allows sufficient service space for giving instructions and/or for performing maintenance and/or inspections safely.
6. Keep the work area clean and well-lit. An untidy or dark work area can lead to accidents.
7. This machine is not suitable for outdoor use. Electrical components are only splash-proof. Keep this machine away from rain and moisture. If use of the machine in a damp environment is unavoidable, you must use an earth-leakage circuit breaker.
8. Keep hands, hair, loose clothing and/or jewellery out of the way of moving parts of the machine. Wear suitable clothing with no loose parts.
9. While the machine is on, no connection or safety device may be removed. Only use the machine if all protective measures and safety-dependent facilities are present and ready for use.
10. Do not stand on the machine while it is operating.
11. Never shift the machine if the power cable is still connected.
12. Terms for regular inspections and maintenance prescribed or indicated in the user manual must be respected.
13. Have the machine maintained and repaired only by qualified and competent personnel and only with original replacement parts.
14. In addition to the user manual, generally applicable statutory and other binding regulations regarding accident prevention and environmental protection must be observed. This also means, for example, the regulations concerning the handling of personal protective equipment.
15. Inform operating personnel before maintenance work is started. Disconnect the (mains) power supply before you inspect or perform maintenance on the machine, by pulling the power cord plug out of the power point.
 - a. If work must take place on the machine with power (mains) voltage connected, use an extra person who can operate the emergency stop.
16. If a machine part is damaged or no longer works as prescribed, work must be stopped immediately. Work may only resume if the machine part has been repaired or replaced and checked. Consult your supplier if the machine does not work as it should.
17. The machine and/or parts must be disposed of in accordance with the local laws and regulations.










1.3 Safety devices on the machine



Covers and screens shield moving parts. Always put them back in position before starting the machine. While the machine is in use, the covers and screens must also remain closed.

1.4 Explanation of pictograms and symbols

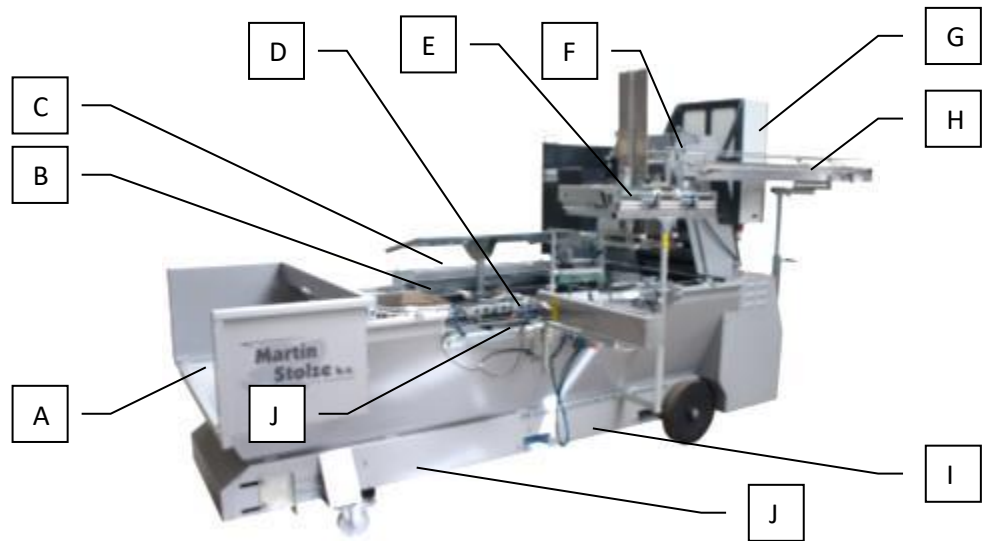
The following symbols may be present on this machine:

Pictogram	Meaning
	Read and understand this user manual before putting the machine into use and/or performing maintenance.
	Disconnect the (mains) power supply.
	Wear safety shoes and safety goggles during all activities with or on this machine.
	Warning. Important points to note and/or instructions concerning safety and/or damage prevention are marked with this warning sign.
	Dangerous electric voltage. There is electric voltage here.
	Danger of being jammed. Danger of moving parts.
	Forbidden to come close to moving parts of the machine with loose clothing, long hair and/or jewellery.
	No entry.
	Do not wash switchbox. Danger of moisture in the switchbox if it is washed with water.

Description of the machine

1.5 Machine overview

- A. Substrate hopper
- B. Pot belt
- C. Local control (2 x)
- D. Pot outfeed
- E. Potter
- F. Elevator
- G. Switch box with controls
- H. Pot supply belt
- I. Fork-lift truck pick-up point
- J. Soil belt



1.6 Options

Depending on the intensity of use and customer wishes, this machine can be equipped with various options. See your sales advisor for this.

Options	Code	Specifications
Pot holders in different sizes		

1.2 Operation

This potting machine is only intended for automatically filling pots with substrate. The filled pots are subsequently provided with a drilled hole, in which a plant can be placed on the pot belt or outfeed belt.

The machine process starts at the soil hopper that is filled with substrate. The soil supply belt moves the soil to the elevator.

Empty pots are placed in stacks on the pot supply conveyor. As soon as a pot holder arrives under the potter, it allows a pot to fall, while the chain with pot holders runs step-by-step along the elevator. As soon as the potter is empty, the pot supply conveyor is activated and it brings a new stack of pots to the destacker.

The elevator takes the soil and puts it into the pots that are placed from a pot dispenser in the pot holders of the pot conveyor. The pot conveyor moves the pots to the drill that makes holes in the soil as required. The drill holes are adjustable in depth and diameter. After making a drilled hole, the pots are moved further along the pot conveyor until they are placed on the conveyor belt by the outfeed system. The belt discharges the pots.

The machine is fitted with wheels so it is simple to move.

1.3 Work areas at the machine

This machine can be operated using the control panel at the pot belt and at the conveyor belt. Mechanical settings may only be made when the machine is switched off and the power has been disconnected from the machine.

1.4 Controls

The electrical connection is on top of the machine's electrical box.

Control cabinet:

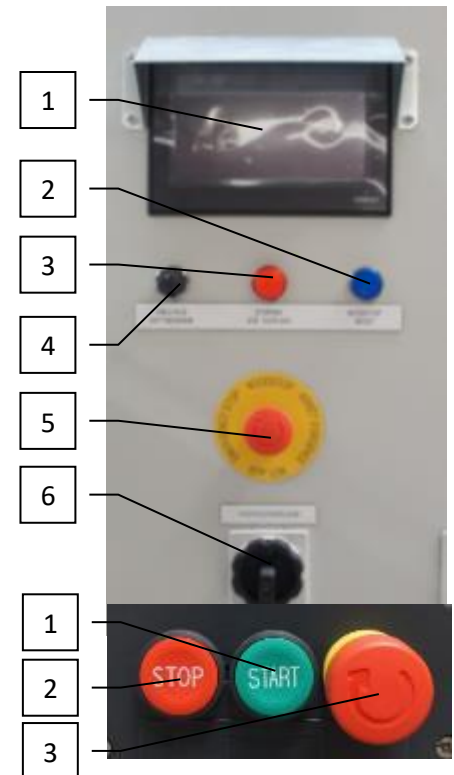
1. Operating screen (touch screen)
2. Reset button emergency stop
3. Failure light
4. Potentiometer speed setting chain conveyor
5. Emergency stop button
6. Main switch



There is a potentiometer on the side of the control cabinet for setting the speed of the soil belt.

Local control:

1. Start, continue cycle
2. Stop, interrupt cycle
3. Emergency stop, stop machine (to restart first press reset)



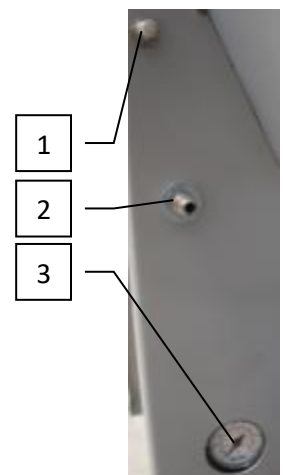
On the bottom side of the control cabinet there are 4 power points for the connection of:

- power supply 400 V, ingoing,
- power supply, 400 V, outgoing,
- power supply, 400 V, conveyor belts,
- power supply, 400 V, supply conveyor.



Air supply:

1. Throttle valve
2. Compressed air input
3. Pressure gauge compressed air pressure



2 Transport



Follow all instructions as described in this user manual, in particular the 'Safety' section.

The electrical power and pneumatic power must be disconnected before moving the machine. Make sure the cables have been stored neatly.

The machine must be transported upright. The relative humidity may not be excessive, to avoid water from condensing in the machine.

Report damage during or immediately after delivery to the carrier and to Martin Stolze b.v.. Take all necessary measures to prevent further damage.

3 Assembly, installation and commissioning



Follow all instructions as described in this user manual, in particular the 'Safety' section.



This machine has CE marking. When several machines are placed in one line, the entire line must have proper CE marking before this machine is put into operation. Until the line has CE marking, this machine may not be put into operation

3.1 Placement

The machine must be placed on a flat surface with sufficient load bearing capacity. This machine must be installed in a way that allows sufficient service space for giving instructions and/or for performing cleaning, maintenance and/or inspections safely. Put the brake on the castors before switching the machine on.



This machine is not suitable for outdoor use. Electrical components are only splash-proof. Keep this machine away from rain and moisture. If use of the machine in a damp environment is unavoidable, you must use an earth-leakage circuit breaker.

3.2 To be provided by the user

Before the delivery of the machine, the necessary materials and provisions (electrical power, pneumatic power, pots, substrate, etc) must be in place within 3 metres of the machines.

Required power supply: 400 V, 3 phase + Neutral + Earth.

3.3 Assembly/connection

If applicable, the parts supplied with the machine must be assembled on the machine. Make sure that the moving parts are free. When the machine is complete, it can be connected (by a qualified person), by inserting the plug in the socket.



Keep hands, hair, loose clothing and/or jewellery out of the way of moving parts of the machine. Wear suitable clothing with no loose parts. Wear non-slip work shoes.



While the machine is on, no connection or safety device may be removed at all. Only use the machine if all protective measures and safety-dependent facilities are present and ready for use.

3.4 Check direction of rotation



Before operating the machine for the first time, check the direction of rotation of all motors.

Procedure:

1. Connect the power cable.
2. Start the machine.
 - a. Connect the plug.
 - b. Start the machine.
3. Check the direction of rotation of all motors.
4. Stop the machine by pressing the red stop button.
5. Take the plug out of the power point.
6. With incorrect direction of rotation:
 - a. Take the plug out of the power point.
 - b. Open the plug and swap 2 of the 3 phases in the plug. This may only be done by sufficiently qualified personnel.

3.5 Setting speed of motors



Before you start working with the machine, set the speed of the different motors.

Procedure:

1. Check the speed of the different motors.
2. The speed of the elevator chain, pot supply conveyor and pot discharge conveyor can be set on the operating screen (see software section).
3. Set the speeds of the motors so that sufficient substrate arrives in the pot. Make sure that excess substrate is restricted to a minimum.



Only adjust the speed when the motor is running.

3.6 Setting the pot holders



Before you start working with the machine, set the correct pot holders.

Depending on the sizes of the pots, 2 different pot holders can be placed on the chain. Twenty pot holders can be placed on the chain.

- For pots up to 14 cm, pot holder A is available. Two pots can then be placed in each holder.
- For pots up to 24 cm pot, holder B is available. One pot can then be placed in each holder.
- For pots up to 32 cm, pot holder B is available. One pot holder must each time be skipped for these pots.
- Various settings must be changed for each pot size; see software section.

3.7 Setting the drilling unit



Before you start working with the machine, set the drilling unit.

The drilling unit consists of a moveable main frame with drill motor, drill holder, and mechanical crankshaft drive for the vertical movement and adjustment options with clamps for horizontal and vertical positioning. To drill the hole in the middle of the pot, when changing the pot size the drilling unit must be adjusted horizontally and in height.

After adjustment, the clamps must be tightened again.

Use



Follow all instructions as described in this user manual, in particular the 'Safety' section.



Keep hands, hair, loose clothing and/or jewellery out of the way of moving parts of the machine. Wear suitable clothing with no loose parts. Wear non-slip work shoes.



While the machine is on, no connection or safety device may be removed at all. Only use the machine if all protective measures and safety-dependent facilities are present and ready for use.



If a machine part is damaged or no longer works as prescribed, work must be stopped immediately. Work may only resume if the machine part has been repaired or replaced and checked. Consult your supplier if the machine does not work as it should.

3.8 Starting

Start procedure:

1. Connect the power cable.
2. Connect compressed air line.
3. Switch the main switch on.
4. Start the machine.
 - a. Pull out any pressed-in emergency stop buttons.
 - b. Press the reset button.
 - c. Start the machine by pressing the green start button.
 - d. Put the speed controller in the required position.
 - e. Adapt the speed if necessary.

3.9 Stopping

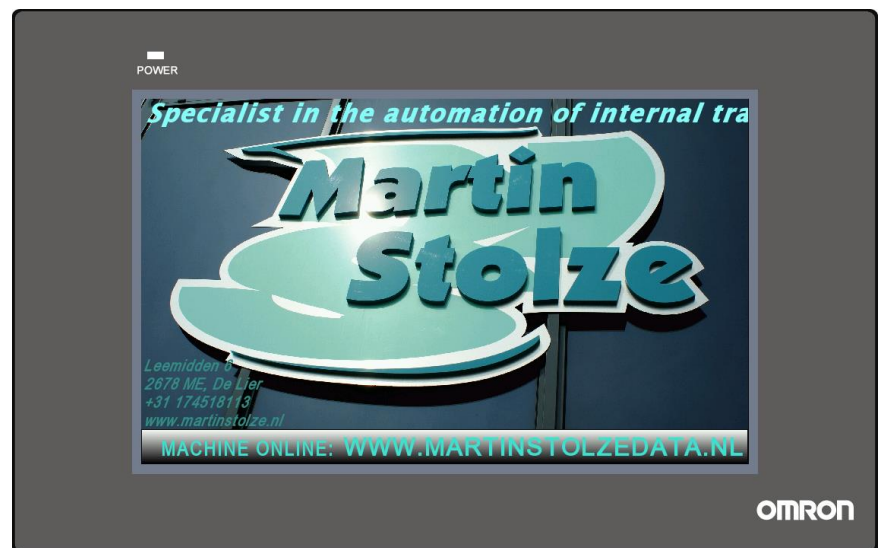
Stop procedure:

1. Stop the machine by pressing the red stop button.
2. Switch the main switch off.
3. Disconnect the compressed air line.
4. Take the plug out of the power point.

3.10 Software

3.10.1 Start-up screen

This screen is visible when starting the machine.

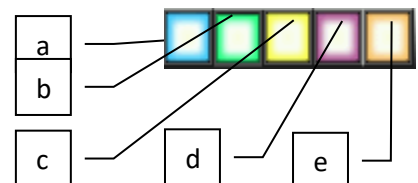
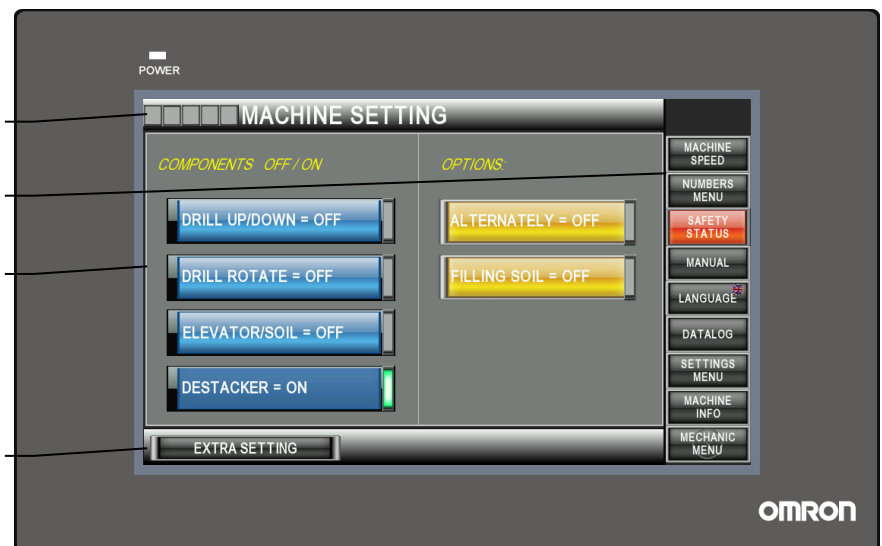
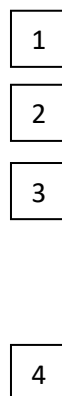


3.10.2 Main screen

This screen appears after starting the machine.

This screen is made up of the following parts:

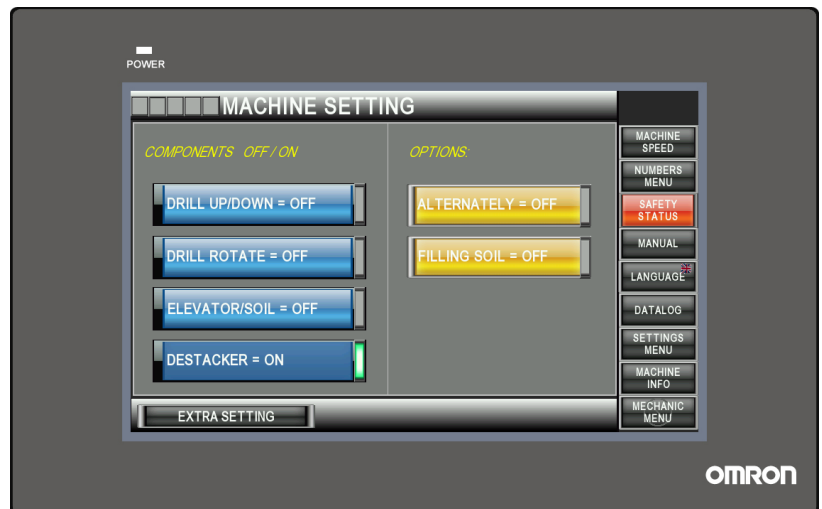
1. Machine status indication.
 - a. Emergency stop OK.
 - b. Machine operating.
 - c. Manual operation = on.
 - d. External (1) operation = on.
 - e. External (2) stop = on.



3.10.3 Settings machine screen

This screen appears after pressing the 'Settings machine' button on the navigation bar.

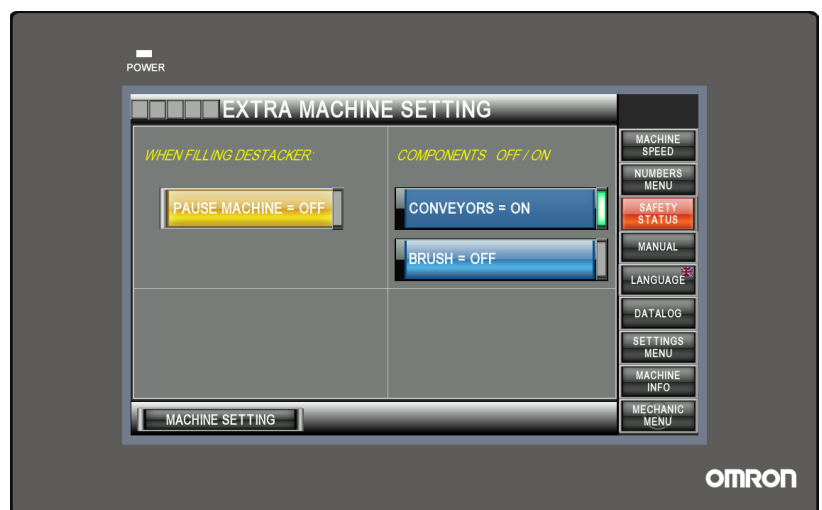
In this screen, you can switch the different machine parts on and off. You can also switch and reverse the option.



3.10.4 Extra machine setting screen

This screen appears after pressing the 'Extra settings' button on the button bar of the Settings machine screen.

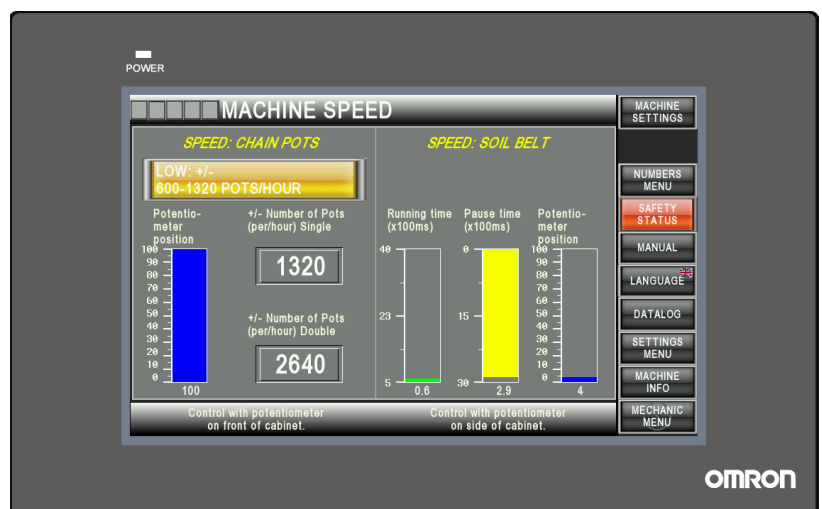
In this screen, you can switch the different machine parts on and off. You can also switch the destacker off to top it up.



3.10.5 Speed machine screen

This screen appears after pressing the 'Speed machine' button on the navigation bar.

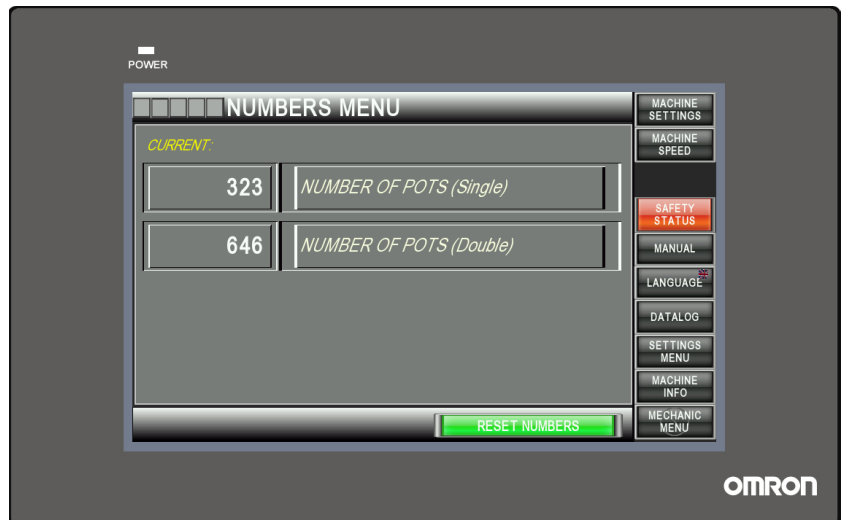
In this screen, you can see the result of the settings made with the potentiometers on the control cabinet.



3.10.6 Totals screen

This screen appears after pressing the 'Menu totals' button on the navigation bar.

In this screen, you can see the actually produced totals and reset the counters.



3.10.7 Manual operation screen

This screen appears after pressing the 'Manual operation' button on the navigation bar.

In this screen, you can manually operate actuators. This is only intended for troubleshooting and rectifying failures and may only be used by maintenance personnel with sufficient knowledge and experience.



3.10.8 Language selection screen

This screen appears after pressing the 'Language' button on the navigation bar.

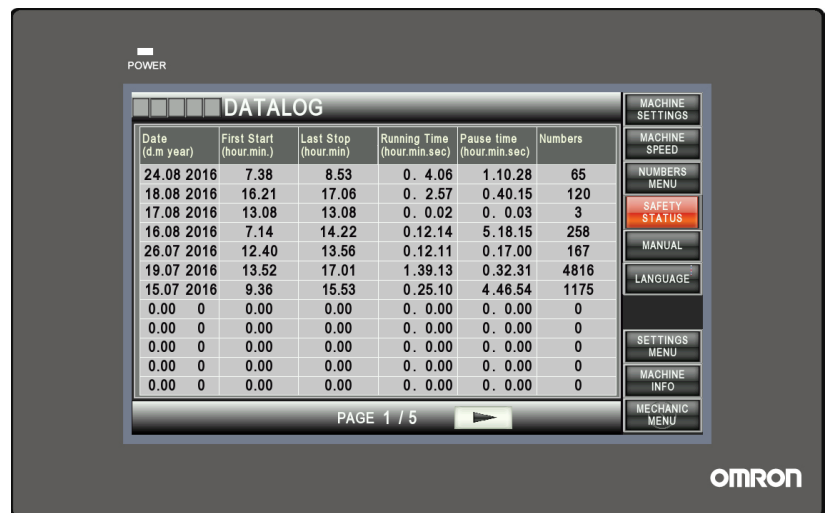
In this screen, you can set the required software language.



3.10.9 Datalog screen

This screen appears after pressing the 'Datalog' button on the navigation bar.

In this screen, you can see the production totals per production run and view the working hours.

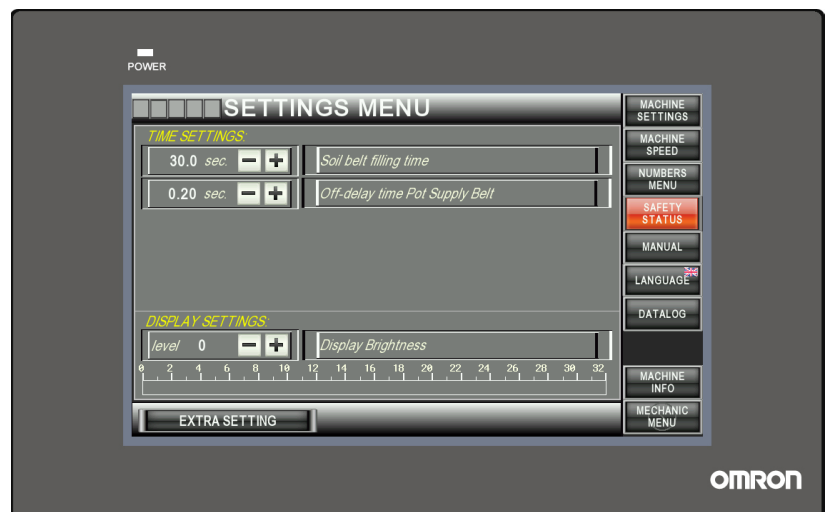


3.10.10 Menu settings screen

This screen appears after pressing the 'Menu settings' button on the navigation bar.

In this screen, you can set timers for filling the soil hopper and set a post-running time for the pot supply conveyor. This setting allows the machine to be adjusted smoothly.

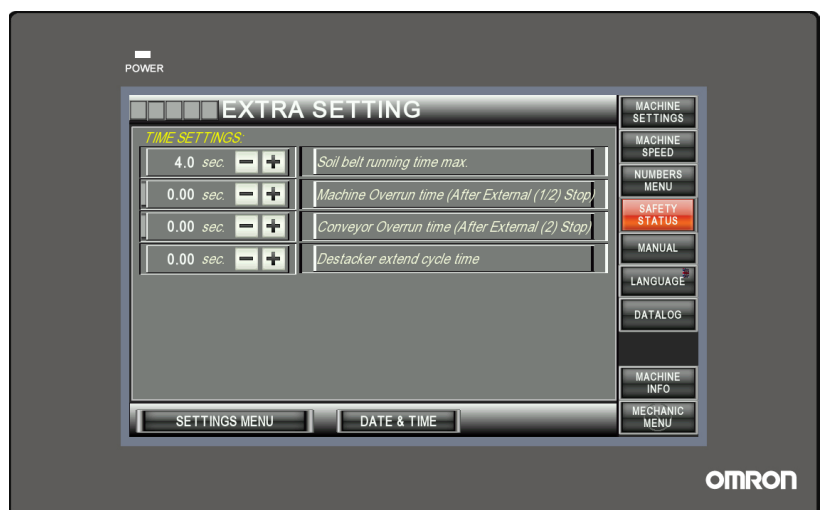
The brightness of the display can also be set.



3.10.11 Extra settings screen

This screen appears after pressing the 'extra settings' button on the button bar of the menu settings screen.

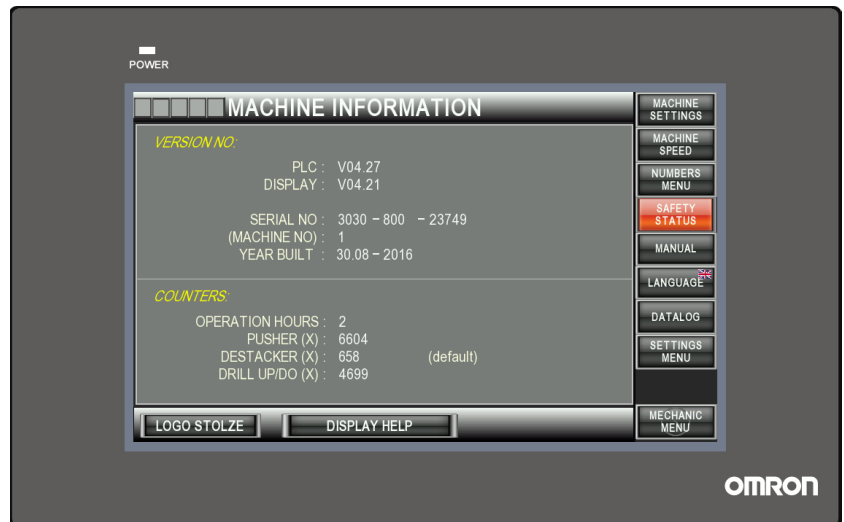
In this screen, you can set timers. This setting allows the machine to be adjusted smoothly.



3.10.12 Info machine screen

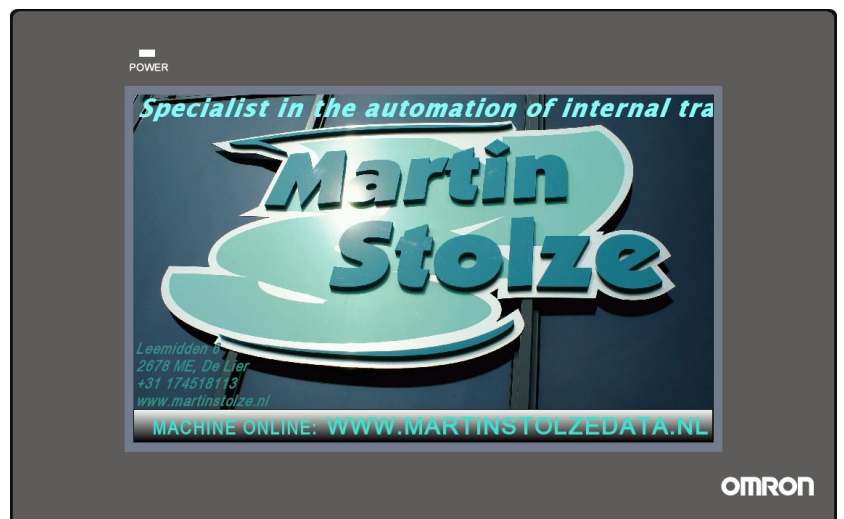
This screen appears after pressing the 'Info machine' button on the navigation bar.

In this screen, you can view production counters and see version numbers.



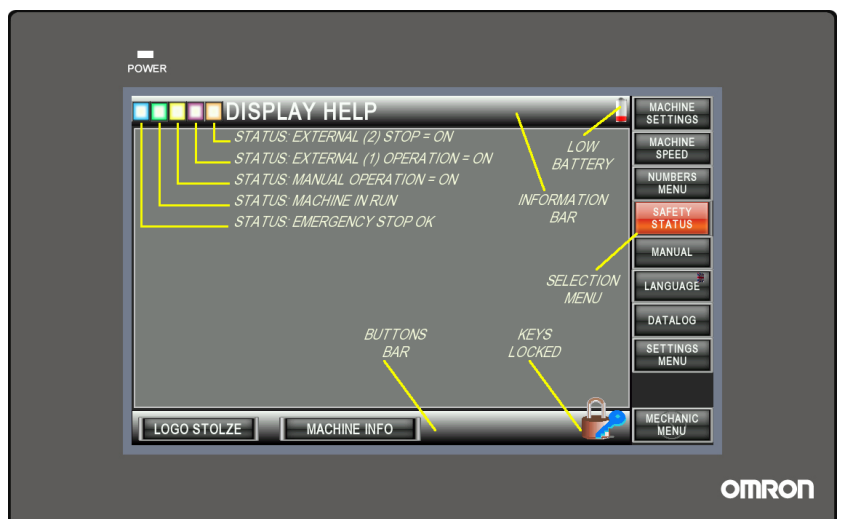
3.10.13 Logo Stolze screen

This screen appears after pressing the 'Logo Stolze' button on the button bar of the Information machine screen.



3.10.14 Help Display screen

This screen appears after pressing the 'Help Display' button on the button bar of the Information machine screen.



3.10.15 Menu mechanic screen

This screen is only accessible for mechanics of Martin Stolze b.v..

3.10.16 Status safety devices screens

This screen appears after pressing the 'Status safety devices' button on the navigation bar.

In these screens, you can see the status of the different safety devices and read what you must do to activate safety devices.

You can temporarily switch the buzzer off with the stop buzzer button.



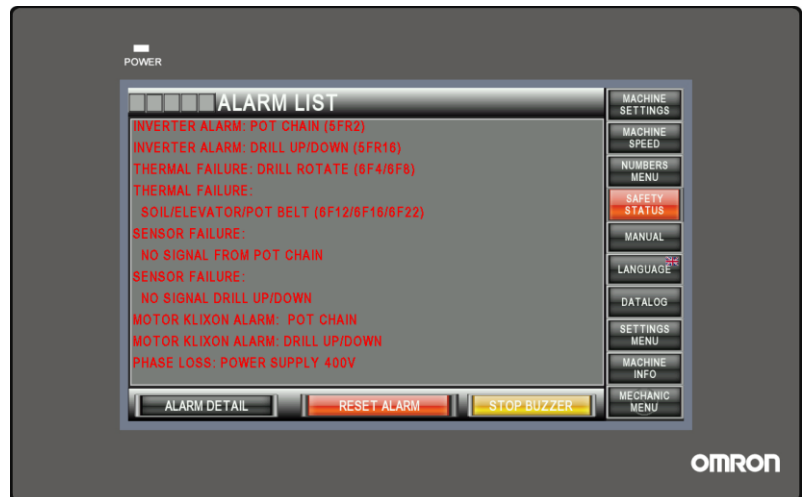
3.10.17 Alarms screens

These screens appear after the activation of an alarm.

In these screen, you can see which alarms have been activated and reset alarms. An alarm can only be reset if the alarm is no longer active.

You can temporarily switch the buzzer off with the stop buzzer button.

With the 'Detail Alarm' button you can see which alarm is active and read what you must do to rectify the alarm concerned.



Maintenance



Follow all instructions as described in this user manual, in particular the 'Safety' section.



The maintenance of this machine must be performed by qualified personnel, taking the warnings on the machine into account and with due observance of the user manual.



Keep hands, hair, loose clothing and/or jewellery out of the way of moving parts of the machine. Wear suitable clothing with no loose parts.



While the machine is on, no connection or safety device may be removed at all. Only use the machine if all protective measures and safety-dependent facilities are present and ready for use.



For these activities, always take the plug out of the power point. Before maintenance activities are started, personal protective equipment must be put on (see section 2.3).



Inform operating personnel before maintenance work is started. If possible, disconnect the (mains) power supply before you inspect or perform maintenance on the machine, by switching the main switch off and locking it, and pulling the power cord plug out of the power point.

3.11 Preventive maintenance

Normal usage is assumed for the following maintenance instructions. For intensive use or use in extreme conditions, the maintenance must be performed at shorter intervals.

Item	Interval	Remarks
Machine	Daily	Check whether moving parts work properly and do not jam and/or whether parts are broken or damaged to such an extent that this affects the functioning adversely. Have damaged parts repaired before use.
Machine	Daily	Check the elevator and bunker belt for tracking, tension, wear, damage, etc
Machine	Daily	After starting, check for unusual noises
Emergency stop	Weekly	Check the operation of the emergency stop switches
Chain and pot holders	Weekly	Check and grease the guides for the chain and check pot holders for wear
Conveyor belt	Weekly	Check tension and running out of square (see section 7.3).
Photocells and reflection plates	Weekly	Clean photocells and reflection plates
Pictograms	Weekly	Check their legibility and if necessary, replace
Bearings	Monthly	Lubricate with bearing grease
Electrical installation	Yearly	Check for damage
Electrical motors	Yearly	Remove dust

3.12 Failures

Problem	Possible cause	Action/solution
Failure in electric motor	The mains voltage varies more than 10% from the rated motor voltage	Ensure the correct mains voltage
	Cooling air temperature too high	Ensure cool air
	Poor cable connection	Check the cable connection and repair it if necessary
	Blown fuse	Replace the fuse
	Too little cooling air because of blocked cooling air passage	Ensure the good supply and removal of the cooling air
The motor hums and consumes too much current	Defective winding	Repair or replace the motor
Thermal switches repeatedly fail	Motor failure	Call a mechanic
	Mechanical blockage	Remove blockages
	The motor is incorrectly connected	Connect the motor correctly
Machine does not start	Emergency stop button not pulled out or emergency stop not reset	Pull emergency stop buttons out and press the reset button
	Circuit breaker tripped in switch box	Check why the circuit breaker has tripped. Remove obstacles. Switch on the circuit breaker after resolving the problem.
	Cable length too long so voltage loss occurs	Reduce cable length
	Voltage changes because other appliances in the same group demand power	Ensure the correct mains voltage. Switch other appliances off

3.13 Check conveyor belt tension and running out of square

The tension of the soil belt, pot belt chain and elevator chain can be adjusted using set screws. The tension must be set such that the:

- soil belt in the middle moves no more than 4 cm when lifted.

After adjusting, it must always be checked that the belt does not run out of square.

If it is observed that the potting machine is running out of square, it must be adjusted with the tightening nuts or else excessive wear may occur.

- pot belt chain in the middle can be pulled ~2.5 cm outwards.



- elevator sags ~2.5 cm with empty soil container.



3.14 Drawings and diagrams

The drawings that belong to this machine are combined in a separate file. The electrical diagrams are supplied in the machine's electrical box.

3.15 Spare parts

Only original Martin Stolze b.v. parts and accessories may be used on the machine.

Martin Stolze b.v. advises you to have certain parts in stock in connection with vulnerability for wear and tear and/or possible downtime of the machine in the event of repeat orders for the relevant parts.

Parts that can be ordered are on the parts list on the assembly drawings.

When you order (spare) parts from Martin Stolze b.v., please provide the following information: drawing number, position number, desired length (if applicable) and the required quantity.

3.16 Customer service and advice

Our technical department will answer any other questions you may have about repair and maintenance of your machine and about spare parts. We are happy to advise you on matters concerning the purchase, use and setting of products and accessories.

4 Disposing of the machine or machine parts



Follow all instructions as described in this user manual, in particular the 'Safety' section.

Perform the following steps when disposing of the machine:

1. Switch the machine off and disconnect the electricity.
2. Remove all consumables.
3. Scrap the machine in accordance with locally applicable regulations.

EC declaration of conformity

EC declaration of conformity for machines (Directive 2006/42/EC, Appendix II, under A.)



Martin Stolze b.v.

Leemidden 6
2678 ME De Lier
The Netherlands

Declares that:

Machine: *Potting machine*

is in conformity with the **Machinery Directive 2006/42/EC** and satisfies the provisions of the **EMC Directive 2004/108/EEC**

Satisfies the harmonised European Standards:

Harmonised European Standard	Description	Harmonised European Standard	Description
NEN-EN-ISO 12100:2010	Safety of machinery – General principles for design – Part 1: Basic terminology, methodology	NPR-ISO/TR 14121-2:2010	Safety of machinery – Risk assessment – Part 2: Practical guidance and examples of methods
NEN-EN-IEC 60204-1	Safety of machinery – Electrical equipment of machines – Part 1: General requirements		



Martin Stolze b.v.
Leemidden 6
2678 ME De Lier
The Netherlands
T: +31(0)174 518 113
info@martinstolze.nl
www.martinstolze.nl

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