



User Manual

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Toploader

Machine nr.:



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Preface

This user manual is written for anyone working on or with the machine. Before working on or with the machine, first read this manual.

This user manual contains important instructions / information on how to use the machine in a safe, professional and economical way and must always be available where the machine is used.

In addition to this user manual, the mandatory rules and regulations for accident prevention and environmental protection in the country and place of use of the machine must also be observed.

This user manual contains information on the operation of the machine with all the possible options. Use only the information that applies to your machine. Depending on the intensity of use and customer requirements, this machine can be equipped with various options. Contact your sales consultant.

Supplier details if not directly supplied by Javo International BV. Dealer stamp:



Javo International BV is not responsible for any errors in this manual or the consequences thereof.

Javo International BV is not liable for damage or consequential damage caused by operating errors, lack of expert maintenance and any use other than described in this manual.

The liability of Javo International BV also expires once modifications or additions are made without written permission of Javo International BV.

This machine is suitable for process and environmental conditions as stated in section "Specifications and Tolerances" of this manual. Any other use is not authorized by Javo International BV and this allows the operator and / or its environment at risk.

Table of contents

1	Technical specifications and tolerances	4
1.1	Type plate	4
2	Safety	5
2.1	Provisions	5
2.2	Safety devices on the machine	6
2.3	Explanation of icons and symbols	6
3	Description of the machine	7
3.1	Machine overview	7
3.2	Outline drawing with main dimensions	7
3.3	Options	7
3.4	Operation	8
3.5	Machine workstations	8
3.6	Controls	8
4	Transport	9
5	Monting, installation and commissioning	10
5.1	Placement	10
5.2	Facilities to take care of by the user	10
5.3	Mounting / Connecting	10
5.4	Check rotation direction	11
5.5	Check cross conveyor tension	11
5.6	Doors	11
5.7	Set level sensors at the cross conveyor	12
5.8	Set substrate slide of the cross conveyor	12
6	Operation	13
6.1	Start	13
6.2	Emergency stop	13
6.3	Manual operation	14
6.4	Driver button	14
7	Maintenance	15
7.1	Preventive Maintenance	15
7.2	Calbe gutter cleaning	16
7.3	Rack cleaning	16
7.4	Sensor gear cleaning	16
7.5	Checking the lifting strap	16
7.6	Test safety circuit	16
7.7	Fault list	17
7.8	Drawings and schemes	17
7.9	Spare parts	18

7.10	JavoNet.....	18
7.11	Customer support and advice.....	18
8	Disposal of machine or machine parts	18
9	EG-conformity statement.....	19

1 Technical specifications and tolerances

This machine is intended to be used for automatic transport of substrate to the next machine in line only. Substrate that was placed into the Toploader is transported to the cross conveyor, where the substrate is then passed on to a next machine. Detailed operation of the machine is described in section "Operation".



This machine may be used only within the limits for specifications and tolerances of the order, on the assembly drawing and indicated in this manual. If the machine is used outside these specifications, Javo International BV can not take responsibility for this machine.



This machine is intended for products as agreed in the order confirmation only. To ensure the proper operation of this machine, only products with specifications and tolerances as specified in the order may be used.



Do not use the machine for purposes other than the intended purpose of Javo International BV. This can lead to damage and danger to the operator and its environment.



This machine is CE marked. When placing multiple machines in one line, the entire line must be properly CE marked before using this machine. Until proper CE Marking of the line is carried out, commissioning of this machine is prohibited.

Specifications	
Voltage	400Volt 50Hz 3~+N+ PE
Machine connection	16A 5pole (separate group)
Power consumption	~3,5kW (different for every project)
Length	8, 10, 14, 16, 18 meter (different for every project)
Bunker width	3770mm (different for every project)
Height	Customer specific (minimum clearance height is 4,15 meter)
Weight	Depending on the total length of the toploader
Height cross conveyor	~ 650mm (different for every project)
Speed power stroke	~ 0,2 meter/second (different for every project)
Speed return stroke	~ 0,3 meter/second (different for every project)
Capacity per shovel	~ 0,75 m ³ (different for every project)
Capacity per hour at a width of the bunker of 4 meters	8 m = 40 m ³ (different for every project) 10 m = 30 m ³ (different for every project) 14 m = 23 m ³ (different for every project) 16 m = 20 m ³ (different for every project) 18 m = 18 m ³ (different for every project)
Bunker content	5 m ³ / meter storage effective area
Year of construction	See typeplate.
Type of product	As agreed in the order confirmation.

1.1 Type plate

The type plate is placed onto the main cabinet door.

Website: www.javo.se

E-Mail: info@tradgardsteknik.se

Type	
Machine nr.	
Bouwjaar	
<input style="width: 30px;" type="text"/> V <input style="width: 30px;" type="text"/> kW	
<input style="width: 30px;" type="text"/> A <input style="width: 30px;" type="text"/> Hz	

2 Safety



This machine is built according to the state of the art technique and the accredited safety regulations. Despite this, the body and life from the user or third parties can be in danger when using it. There could also arise damage to the machine or other goods when using it.



This machine is CE marked. When placing multiple machines in one line, the entire line must be properly CE marked before using this machine. Until proper CE Marking of the line is carried out, commissioning of this machine is prohibited.

2.1 Provisions

1. Operation and maintenance of this machine must be performed by qualified personnel in compliance with warnings on the machine and in accordance with the user manual. Keep children and other (unauthorized) persons away while using machine.
2. This machine is suitable for process and environmental conditions as stated in section "Specifications and Tolerances" of this manual only. Any other use is not authorized by Javo International BV and this allows the operator and / or the environment at risk.
3. It is prohibited to modify this machine, without prior written approval of Javo International BV.
4. Thermal fuses and torque limiters may not be set different upon delivery of the new machine. The thermal circuit breakers should never be used to turn on / off the machine.
5. This machine should be installed so that there is sufficient space remaining for providing safe instructions and / or performing maintenance and / or inspections.
6. Keep the work area clean and well lit. Cluttered or dark areas invite accidents.
7. This machine is not suitable to be used outside. Electrical components are only splashproof. Keep the machine away from rain and moisture. When using the machine in a humid environment is unavoidable, you should use an RCD.
8. Keep hands, hair, loose clothing and / or jewelry away from moving parts of the machine. Wear appropriate clothing without loose parts. Wear non-slip work shoes.
9. As long as the machine is on, no connection or safety devices may be removed. The machine may only be used when all protective devices and safety-related facilities are available and ready for use.
10. Do not stand on the machine when it is operating.
11. It is strictly forbidden to enter the area of the Toploader if it is enabled.
12. Prescribed checks and maintenance in the user manual must be observed.
13. Allow the machine to be serviced and repaired by qualified personell only with original replacement parts.
14. In addition to the user manual, generally applicable statutory and other regulations regarding accident prevention and environmental protection have to be respected. This is also referred to handling of personal protective equipment.
15. Inform operating personnel before start maintenance. Interrupt if possible the power (mains), before start machine investigation or maintenance by turning off the main switch and locking the main switch. Pull the plug from the wall socket.
 - a. As work must be done with power supply (mains) voltage on the machine, then arrange an additional person who can operate the emergency stop.
16. When a machine part is damaged or not working in the prescribed manner, the work must be interrupted immediately. Resumption allowed only when the machine part is repaired or replaced and checked. Consult your dealer if the machine is not functioning properly.
17. Machine and / or parts must be disposed in accordance with local laws and regulations.












2.2 Safety devices on the machine



Caps and doors are screening moving parts. Always place back caps and close doors before the machine is turned on. Caps and doors should remain closed while operating the machine.

The motors of the machine are protected against overload by thermal switches. These switches are located in the control box.

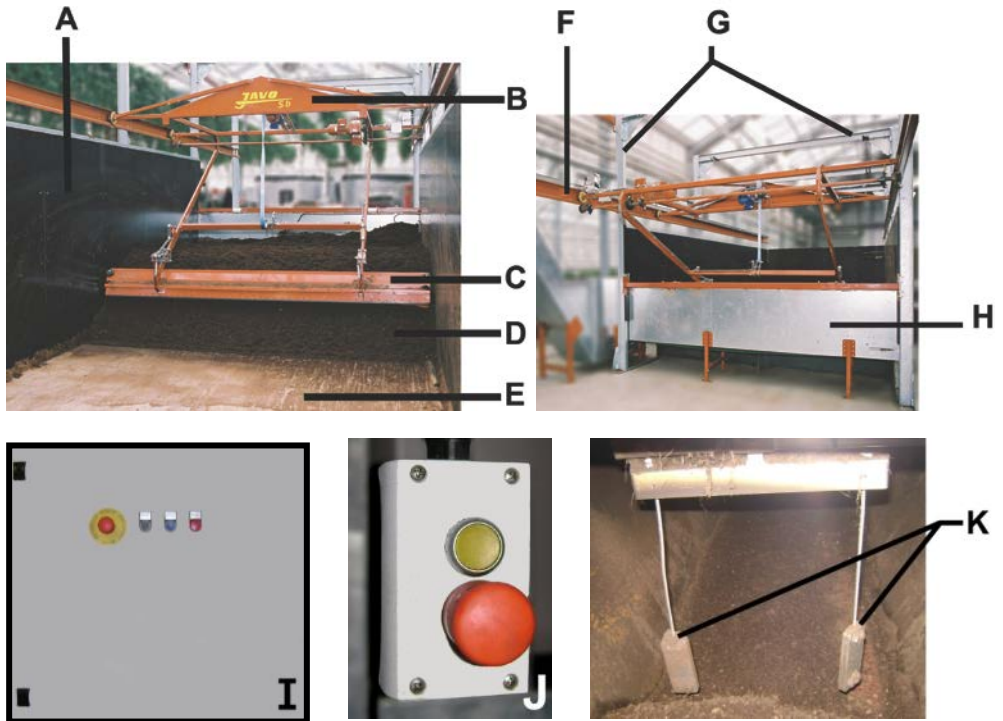
2.3 Explanation of icons and symbols

Pictogram	Meaning
	Read and understand this manual before using the machine and / or performing maintenance.
	Remove Power (mains).
	Wear during all work on or with the machine safety shoes and safety glasses.
	Wear during cleaning and maintenance work on this machine also safety gloves and protective clothing.
	Warning. Important points and / or instructions regarding safety and / or injury prevention are marked with this warning sign.
	Dangerous electrical voltage. Dangerous electrical voltage present.
	Risk of crushing. Danger of moving or rotating parts.
	Do not go into the work area when the machine is in operation.
	It is forbidden to wear Loose clothing, long hair and / or jewelry nearby moving parts of the machine.
	Trespassing.
	Do not rinse control cabinet Danger of moisture in the cabinet when it is rinsed with water.

3 Description of the machine

3.1 Machine overview

- A. Bunker Wall
- B. drag unit
- C. Fork / Scraper
- D. Substrate stock
- E. Floor
- F. Rack
- G. Frame
- H. Cross conveyor / level sensors
- I. Main cabinet
- J. Driver button / Emergency stop button
- K. Level sensors (to be found above the cross conveyor)



3.2 Outline drawing with main dimensions

Main dimensions of this machine vary by project. Refer to the drawings for sizes.

3.3 Options

Depending on the intensity of use and customer requirements, this machine can be equipped with various options. Contact your sales consultant.

Options	Code	Specifications
Conveyor(s)		
Access barrier chain or gate		

3.4 Operation

The process of the machine starts with the unloading of substrate; a truck unloads substrate at the substrate stock floor. The Toploader is composed of portals, so that the substrate can be unloaded by two kinds of tucks ("walking floor" or "hydraulic pressure plate"). When the truck is driven in the Toploader, the fork / scraper must be at the endposition of the Toploader system, confirmed by an endswitch. The Toploader is sent to the end position when the driver button is pressed (the button flashes until the fork / scraper is in end position).

Once the substrate has been unloaded and the truck has been driven out of the substrate stock floor, the Toploader can be started. The fork / scraper goes to the limit switch and let the fork / scraper drop to the ground. The fork / scraper drives towards the cross belt and moves the substrate to the cross conveyor.

The fork / scraper is driven three times to the end of the substrate stock floor before the program has detected exactly where the substrate is. If Toploader is only half filled, the fork / scraper will be send to the limit switch three times and lower the fork / scraper. At the fourth time the fork / scraper will stop at the substrate stock and lower the fork / scraper.

Two level sensors are placed above the cross conveyor. These sensors provide a signal when enough substrate is on the cross conveyor. The belt transports the substrate to a next machine through the conveyor.

3.5 Machine workstations

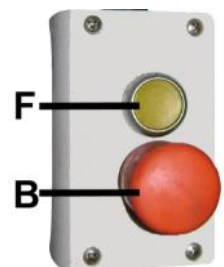
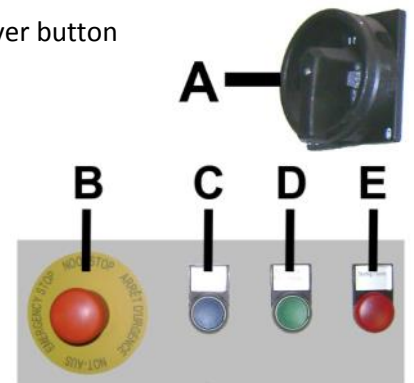
In the Javo International Toploader are no workplaces, the machine operates fully automatically. The Toploader is intended to transport substrate to one or more machine(s).

3.6 Controls

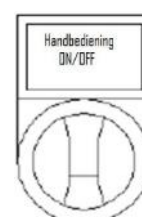
The Toploader is controlled through the HMI on the main cabinet and with the driver button on the back of the machine.

Main switch (situated at the left side of the main cabinet)

- A. Emergency stop
- B. Reset button
- C. Automatic (continuously lit) / manual (blinking)
- D. Fault Lamp
- E. Driver button



There are also three two-position switches placed in the main cabinet of Toploader meant for manual operation only:



Make sure there is no one in the machine during manual operation.

4 Transport



Follow all instructions described in this manual, in particular chapter safety.

On delivery of the machine, a Javo International mechanical engineer must be present to unload the machine from the (freight) wagon.

Prior to moving the machine, the power should be disconnected. Make sure the cables are stowed sufficiently.

The relative humidity should not be too high so that water condenses in the machine.

Report damage during or immediately after delivery to the transport company and to Javo International BV. Take all necessary steps to prevent further damage.

5 Monting, installation and commissioning



Follow all instructions described in this manual, in particular chapter safety.



This machine is CE marked. When placing multiple machines in one line, the entire line must be properly CE marked before using this machine. Up to CE Marking of the line, commissioning of this machine is prohibited.



It is strictly forbidden to enter the area of the Toploader if it is enabled.

5.1 Placement

The machine must be placed on a flat surface, with sufficient weight capacity. Install the machine so that there is enough space left for service providing, safe instructions and / or cleaning, maintenance and / or inspections.



This machine is not suitable to be used in the open air. Electrical components are only splashproof. Keep the machine away from rain and moisture. When using the machine in a humid location is unavoidable, you should use an RCD.

5.2 Facilities to take care of by the user

Prior to delivery of the machine, the required materials and facilities (air, power, substrate, etc.) needs to be present within 3 meters of machine.

Required power supply: 400 Volt, 3 Phase + Neutral + Earth. (N. America: 208/220V 60Hz.).

5.3 Mounting / Connecting

If applicable, the components supplied are to be mounted on the machine. Make sure that the moving parts are free. If the machine is complete, it can be connected (by a competent person) to the power supply.



Keep hands, hair, loose clothing and / or jewellery away from moving parts of the machine. Wear appropriate clothing without loose parts. Wear non-slip work shoes.



As long as the machine is on, no connection or safety devices may be removed. The machine may only be used when all protective devices and safety-related facilities are available and ready for use.



It is strictly forbidden to enter the area of the Toploader if it is enabled.

5.4 Check rotation direction



Check the rotation direction before you start working with the machine.

Procedure:

1. Connect the power cable (if no fixed connection is provided).
2. Start the toploader.
 - a. Turn off the main switch.
 - b. Press the reset button emergency stop circuit.
 - i. Any connected conveyor starts moving.
 - c. Start the toploader with the automatic use control button.
3. Check the direction of rotation of the motors.
4. Stop the toploader by turning the main switch off.
5. When rotation direction is incorrect:
 - a. Remove the plug from the socket.
 - b. Open the plug and switch 2 of the 3 phases in the plug. This should only be carried out by suitably qualified personnel.

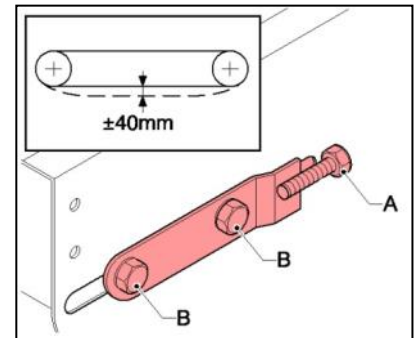
5.5 Check cross conveyor tension



Check the cross conveyor belt tension before you start working with the machine.

Procedure:

1. Check the cross conveyor belt tension. The correct tension is obtained when the belt in the middle deflects ± 40 mm.
2. Adjust the belt tension if necessary .
 - a. Loosen the four screws (B) to the block bearings.
 - b. The tension can be adjusted by simultaneously turning both sides of the ground belt (A).
 - c. Tighten the four screws (B) to the block bearings.



5.6 Doors

If there is a door at the back of the Toploader, it should be closed before the machine is started.

If there is a chain at the backside of the Toploader, it should be closed before the machine is started.

5.7 Set level sensors at the cross conveyor



Check the level sensors before you start working with the machine.

Two level sensors are placed above the cross conveyor. These sensors are adjustable in height, so that the amount of substrate on the cross conveyor is determined.



Procedure:

1. Check the height of the level sensors.
 - a. The height can be adjusted by loosening the M8 bolts (A).



5.8 Set substrate slide of the cross conveyor



Check the position of the substrate slide before you start working with the machine.

The slide controls the amount of substrate on the conveyors past this machine. The slide height is adjustable loosening two M12 bolts.



6 Operation



Follow all instructions described in this manual, in particular chapter safety.



Keep hands, hair, loose clothing and / or jewelry away from moving parts of the machine. Wear appropriate clothing without loose parts. Wear non-slip work shoes.



As long as the machine is on, no connection or safety devices may be removed. The machine may only be used when all protective devices and safety-related facilities are available and ready for use.



If a machine part is damaged or not working in the prescribed manner, work must be interrupted immediately. Resumption allowed only when the machine part is repaired or replaced and checked. Consult your dealer if the machine is not functioning properly.

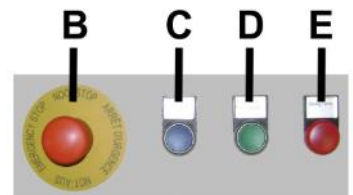


It is strictly forbidden to enter the area of the Toploader if it is enabled.

6.1 Start

Start procedure:

1. Turn on the main power at the electrical cabinet.
2. Press button (C) labeled "Reset / Paraat" on the electrical cabinet.
 - a. All possibly connected conveyors start moving.
3. Now press button (D) labeled "Auto / Manual" on the electrical cabinet to start the machine.
 - a. The machine will start working.
 - i. If manual mode is active, the green button is flashing.
 - ii. If automatic mode is active, the green button is lit continuously.



6.2 Emergency stop

Emergency stop procedure:

1. Press the red emergency stop button on the machine to activate the emergency stop.

Restart after emergency stop procedure:

1. Ensure that the cause of the emergency is resolved.
2. Close all doors and covers.
3. Pull the red emergency stop button to reset.
4. Press the reset button.
 - a. All possibly connected conveyors start moving.
5. Press the green button on the control panel to start the machine.

6.3 Manual operation



Make sure there is no one present in the machine during manual operation.

Procedure:

1. Open the main cabinet.
2. Switch the two-position switch labeled "Manual OFF / ON" ON (green knob flashes).
3. With the other 2 two-position switches, the Fork / Scraper forward / backward and the Fork / Scraper up / down is regulated.
4. To disable manual operation, the two-position switch should be put under the label "Manual OFF / ON" OFF. Close the box and press the green button with the "Auto / Manual" label.

6.4 Driver button

Procedure:

1. Press the yellow button on the control box (meant for drivers).
 - a. This button flashes until the Fork / Scraper is in final position.
 - b. If the button stays lit, the Fork / Scraper is in endposition and the truck may unload its substrate into the bunker.
2. Unload the substrate in the ground stock position.
3. Close the door (if any).
4. Press the reset button on the control box.
 - a. All possibly connected conveyors start moving.
5. Start the toploader by pressing the green button.

7 Maintenance



Follow all instructions described in this manual, in particular chapter safety.



Maintenance of this machine must be performed in compliance with warnings on the machine and in accordance with the user manual by qualified personnel.



Keep hands, hair, loose clothing and / or jewelry away from moving parts of the machine. Wear appropriate clothing without loose parts. Wear non-slip work shoes.



Always unplug the plug from the socket before starting maintenance. Wear personal protective equipment (see section 2.3).



Inform operating personnel before start maintenance. Interrupt if possible the power (mains), before the machine is investigated or maintained by turning off the main switch and locking it and pull the plug from the socket. If work must be done with power supply (mains) voltage on the machine, work with an additional person who can operate the emergency stop.



It is strictly forbidden to enter the area of the Toploader if it is enabled.

7.1 Preventive Maintenance

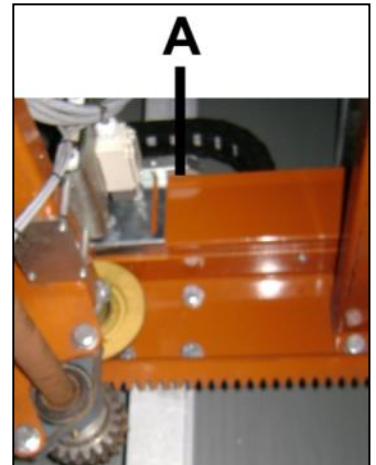
For the following maintenance instructions normal use is considered. With heavy use, or use under extreme conditions, maintenance should be performed at shorter intervals.

Item	1x per...	Comments
Machine	Dy	Check if moving parts are functioning correctly and not clamping and / or parts are broken or damaged in such a way that the operation is adversely affected. Have damaged parts repaired before use.
Cable gutter	After loading	Cleaning. See section "Calbe gutter cleaning".
Rack	After loading	Cleaning. See section "Rack cleaning".
Rack	3 months	Spray with Superlube or Hexaflon. DO NOT use oil or grease.
Sensor gear	3 months	Cleaning. See section "Sensor gear cleaning".
Niveau relais	3 months	
Lifting strap	3 months	Check for damage and replace if necessary. See section "Checking the lifting strap".
Safety components	Week	Test the safety circuit. See section "Test safety circuit".
Pictograms	Week	Check readability and replace if necessary.
Electrical installation	Year	Check for damage.
Electric motors	Year	Remove dust.

7.2 Calbe gutter cleaning

Procedure:

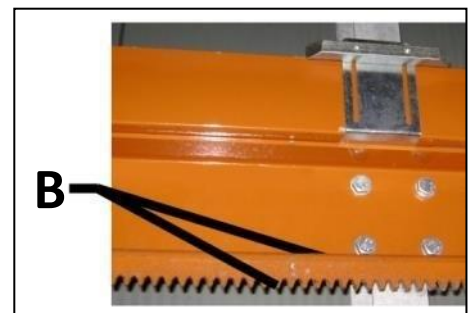
1. Turn the machine off by switching the mainswitch OFF.
2. Remove the substrate from the cable guttters (A).
3. Clean the entire cable gutter.
 - a. Substrate and dust cumulates especially at the point where the crawler remains in the gutter.



7.3 Rack cleaning

Procedure:

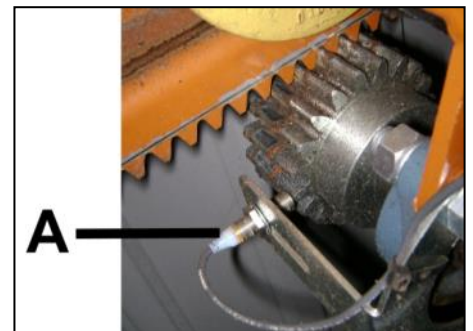
1. Turn the machine off by switching the mainswitch OFF.
2. Remove the substrate from the rack.
3. Clean the entire rack (B) and remove substrate and dust.



7.4 Sensor gear cleaning

Procedure:

1. Turn the machine off by switching the mainswitch OFF.
2. Remove the substrate and abrasion particles of metal of the gear wheel and the sensor (A).
3. Remove dust, substrate and grease of the sensor.



7.5 Checking the lifting strap

Procedure:

1. Put the machine in manual mode and lower the Fork / Scraper to the ground.
2. Turn the machine off by switching the mainswitch OFF.
3. Check the strap and make sure there are no cracks and / or severe fraying.
4. Verify that the strap is properly rolled onto the roller. The strap must have rolled up through the bottom side (see photo).



7.6 Test safety circuit

Procedure:

1. Start the machine.
2. Press the emergency stop button. The machine is now disabled.
3. Pull the Emergency Stop button. The machine remains off.
4. Press the reset button emergency stop circuit. All possibly connected conveyors start moving.
5. Start the machine



The machine must not be used when going through the above process, the machine responds differently than described above. Warn directly Javo International BV.

7.7 Fault list

Problem	Possible cause	Action / Solution
Motor fault	mains voltage deviates more than 10% of the rated motor voltage	Provide the correct voltage
	Too high cooling air temperature	Provide cool air
	Poor cable connection	check the cable connection and repair if necessary
	Blown fuse	Replace fuse
	Too little cooling air caused by a clogged cooling air passage	Ensure proper inlet and outlet of the cooling air
The motor hums and takes too much power	Defect winding	Repair or replace the motor winding
	Loose wire	Lock wire
No substrate available	Level sensors polluted	Clean the level sensor and suspension
	Insulation of the wire broken	Replace steel earth wires
Conveyors are moving but no substrate inside the machine	Level relay polluted in the bunker	Clean the level sensor and suspension
	Insulation of the wire broken	Replace steel earth wires
Fault (red) light on the main cabinet lit	Overloaded, too much substrate on a belt, broken bearings	Lower the substrate slide omlaag, check bearings and reset controls and PKZ. Check 3 phases.
Fork scraper goes continuously to its end position	Contamination of the sensor on the sprocket	Clean sensor
Machine doesn't work normal	Too often switched between manual and automatic mode	Press the driver button to go to home position. Then automatic mode can be turned on again.
	Wire breakage	High-flex cables replacement. This may not be torqued down in the gutter.
Machine does not start	Door safety switch is open	Close door and reset the safety circuit by pressing the reset button
	Emergency stop button is not pulled	Pull Emergency Stop button and reset the safety circuit by pressing the reset button
	Emergency stop button not reset	Reset the safety circuit by pressing the reset button
	Breaker tripped in main cabinet	See why circuit breaker has tripped. Remove obstacles to conveyors. Switch on the machine after solving the problem.

7.8 Drawings and schemes

The drawings accompanying this machine are supplied in a separate file. The wiring diagrams are included in the electrical cabinet of the machine.

7.9 Spare parts

Only original spare parts and accessories of Javo International BV may be used on the machine.

Javo International BV advises you to take certain parts in stock because of wear sensitivity and / or any expected downtime for re-ordering of the parts.

The spare parts list can be found on the assembly drawings. These can be found on JavoNet.

When ordering (spare) parts at Javo International BV, the following information must be included: drawing number, item number, desired length (if applicable) and the desired number of pieces.

7.10 JavoNet

We recommend you to register your machine on JavoNet. This way you get online access to all technical drawings and documents pertaining to your machine.

Visit our website (www.javo.se) for more information and to request an account.



7.11 Customer support and advice

Our technical department will answer your other questions about repair and maintenance of your machine and spare parts. We can help you with any questions regarding the purchase, use and settings of products and accessories.

8 Disposal of machine or machine parts



Follow all instructions described in this manual, in particular chapter safety.

Perform the following steps when disposing the machine:

1. Decommission the machine and remove electric and pneumatic power.
2. Drain and remove all consumables.
3. Scrap the machine according to the local legislation.

9 EG-conformity statement

EG-conformity statement for machines (directive 2006/42/EG, annex II, under A.)

TRÄDGÅRDSTEKNIK AB
Helsingborgsv., Varalöv
262 96 ÄNGELHOLM

Declares that:

Machine: **Toploader**
Type: **Ground bunker**
Serial number: **...**

is in accordance with the **Machine directive 2006/42/EG** and complies with the provisions of the **EMC-directive 2004/108/EEG**

Complies with the harmonized European Standards:

Harmonized European standard	definition	Harmonized European standard	definition
NEN-EN-ISO 12100:2010	Safety of machinery - Basic concepts, 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-ISO 13857	Safety of machinery - Safety distances to prevent hazard zones being reached by the upper and lower limbs	NEN-EN 349	Safety of machinery - Minimum gaps to avoid crushing of human body parts
NEN-EN-IEC 60204-1	Safety of machinery - Electrical equipment of machines - Part 1: General requirements	NEN-EN 13850	Safety of machinery - Emergency stop - Principles for design