

The 6030 Bale Breaker



Operating Instructions

Issue date: 1 February 2015 / V1.1

Before the initial start-up, read and keep at the machine for future use.

Table of Contents

1 Product description

1. Intended use
2. Structure
3. Functional description
4. Technical specifications
5. EU declaration of conformity

2 General safety instructions

1. Due diligence of the operating company
2. Explanation of the safety symbols used
3. Basic safety precautions
4. Machine-related safety precautions
5. Demands on operating personnel

3 Transport, handling and storage of the machine

1. Transport
2. Handling
3. Storage

4 Installation

1. General notes
2. Installing the machine
3. Measures for the machine's stability against overturning
4. Disassembly and disposal of the machine

5 Initial start-up

1. Check before the first start-up
2. Starting the machine for the first time
3. Stopping the machine

6 Operation

1. Normal operation
2. Shutting down the machine
3. Measures prior to and after a longer shutdown

7 Malfunctions

1. Behaviour in case of malfunctions
2. Possible malfunctions and trouble shooting

8 Maintenance

1. General notes
2. Inspection and preventive maintenance
3. Cleaning
4. Maintenance schedule

9 Circuit diagrams for electric and pneumatic system

10 Guarantee

1 Product description

1. Intended use

The **MAYER 6030 bale breaker** is only intended to gently break up commercially available, compacted substrate bales up to 300 l, and supplying such to a subsequent machine (such as the potting machines, tray fillers, soil mixers, etc.).

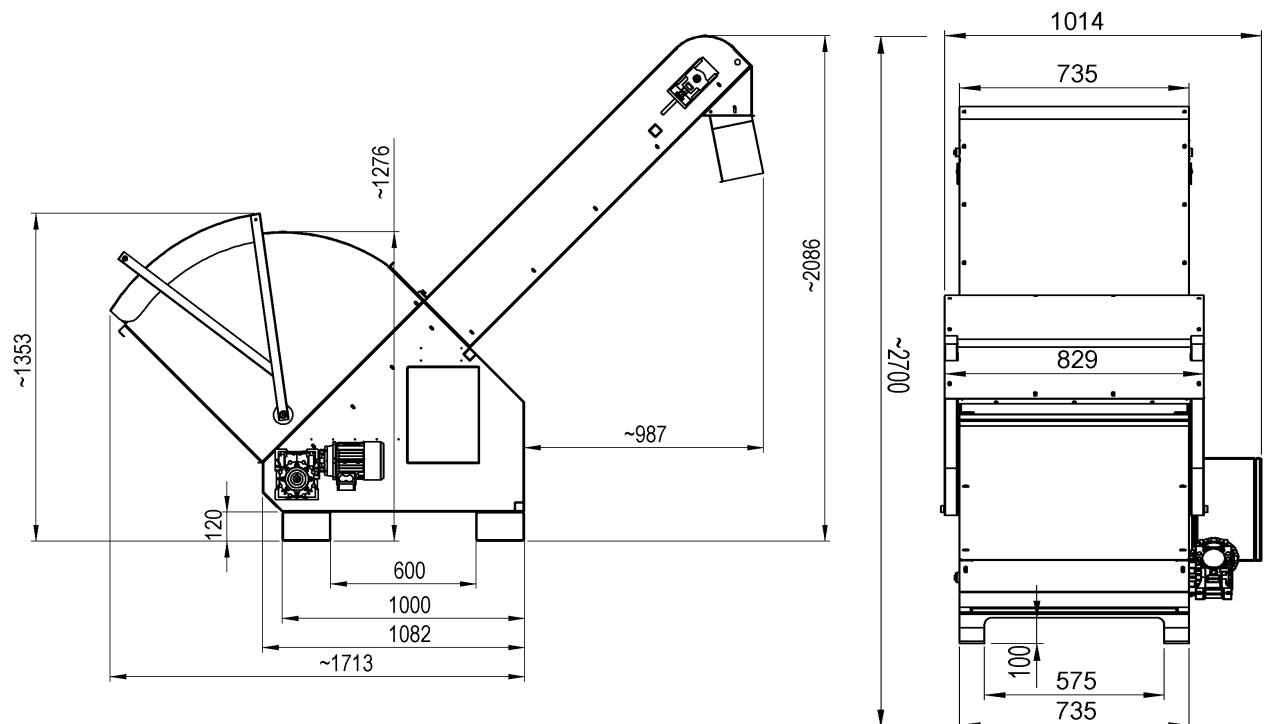
This machine is not intended for any other (as such would be considered as inappropriate use) than the types of use listed here.

If the **MAYER 6030 bale breaker** is not used in accordance with this intention, then no safe operation of the machine will be guaranteed.

Use as intended also includes reading these Operating Instructions and complying with all the instructions contained in them, especially the safety instructions. It also includes all the inspection and maintenance work being carried out at the prescribed time intervals.

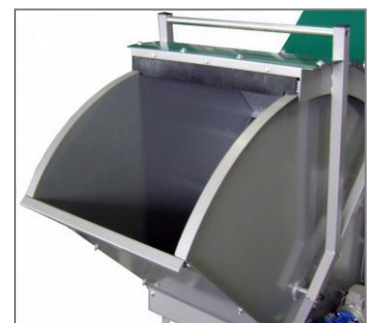
Not the manufacturer, but rather the operating organisation of the **MAYER 6030 bale breaker** shall be responsible for any injuries or damage arising from use not complying with its intended use.

2. Structure



3. Functional description

- Simple and fast feeding: one bale can directly be put into the machine.
- Manual operation through push button.
- The machine loosens the substrate from the pressed bales. This way the soil can be further processed optimally. The system is driven with particularly little wear and tear and high efficiency via hollow pin roller chains.
- The substrate is ejected downwards.
- As an option three bales can be stocked by means of a roller conveyor of 3 m length mounted on two support legs. Then the bales are pushed into the machine and processed one after the other.



4. Technical specifications

Make:	Mayer
Machinery model:	Bale breaker
Series:	6030
Length / Width / Height	270 / 105 / 210 cm
Weight:	370 kg
Working height	approx. 110 cm
Power connector	400V/50Hz, 5-pole
Power consumption	1,5 kW
Bale size	up to 300 litres
Emission figure relating to the workplace	70 dB (A)

Available accessories (for an additional charge)

- manual moisturizing system
- automatic moisturizing system
- automatic filling height control in the soil hopper of the connected machine via optical level adjustment

Important note!

When placing repeat orders for accessories and spare parts, make sure to have information about the machine type and number at your hand!

5. EU declaration of conformity

According to Appendix IIA of the EU Machinery Directive (2006/42/EC)

The manufacturer: **Mayer GmbH & Co. KG
Maschinenbau u. Verwaltung
Poststrasse 30
89522 Heidenheim | Germany**

hereby attests that the machine described in the following: **Make: Mayer
Model: Bale breaker
Series: 6030
Year constructed: From 2010**

fulfils the safety and health requirements of the following EU Machinery Directive: **2006/42/EC**

Harmonised standards applied:

Part 1 EN ISO 12100-1	Safety of machinery, basic terminology, general guiding principles for organisation
Part 2 EN ISO 12100-2	Part 1: Basic terminology, methodology Part 2: Guiding technical principles and specifications
EN ISO 13857	Safety distances to keep the upper limbs from reaching danger points
ISO 13854	Safety of machines, minimum distances to avoid any crushing of body parts
EN ISO 13849-1	Safety-related parts of control systems Part 1: General principles for design
EN ISO 14121	Principles for risk assessment
ISO 14119	Interlocking devices associated with guards
ISO 13850	EMERGENCY SHUT-OFF systems
IEC 60204-1	Electrical equipping of industrial machines Part 1: General requirements

Any design alterations that effect the technical specifications given in the Operating Instructions or the intended use, i.e. change the machine substantially, will invalidate this EU Declaration of Conformity.

Heidenheim, 01 February 2015



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Dipl.-Ing. (TU)¹ Arpad G. Meszaros
Head of Development and Design

¹ Graduate engineer (from a technical university)

2 General safety instructions

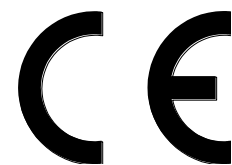
1. Due diligence of the operating company

The **MAYER 6030 bale breaker** was designed and built taking a danger analysis into consideration and after careful selection of the harmonised standards to be complied with as well as other specifications. It therefore meets the state of the art and guarantees a maximum degree of safety.

However, only if all the measures required for such are taken can this safety be achieved in actual operational practice. Planning these measures and checking their implementation is subject to the operating organisation's duty to take due care.

The operating organisation must in particular guarantee that:

- ... the machine is only used in accordance with its intended use (cf. the Product description section).
- ... the machine is only operated when in flawless working order and, especially, that the working order of the safety equipment is regularly checked.
- ... the Operating Instructions are always available in legible condition and complete at the location where the machine is used.
- ... only sufficiently qualified and authorised personnel operate, service and repair the machine.



- ... these personnel are regularly instructed about all relevant matters concerning industrial safety and environmental protection and that they know the Operating Instructions and especially the safety instructions they contain.
- ... none of the safety and warning signs attached to the machine are removed and that all remain legible.
- Users must obligate themselves only to ever operate the machine when it is flawless condition. No unauthorised conversions or alterations are allowed that influence the machine's safety.

- Only when it has stopped, must any work ever be carried out on the machine.
- Before beginning with any work on the machine, secure its drives and accessory parts against being switched on unintentionally.
- The protective devices may only be removed when the machine has been stopped.
- Local safety and accident-prevention regulations always apply to any operation of the machine.
- The machine may not be started if any safety devices are removed.
- In the working area the operator is responsible for other people.
- **In case of non-compliance with any one of the points cited above, the manufacturer shall be released from all liability.**

2. Explanation of the safety symbols used

The safety symbols along with the text of the safety instructions are meant to point out unavoidable residual dangers that exist when dealing with this machine. These residual hazards relate to:

- People
- The machine
- Other things and objects
- The environment

The following safety symbols are used in these Operating Instructions:

This symbol indicates that there are dangers to the lives and health of people. In addition, there might also be dangers for machines, things or the environment.

If these instructions are not followed, then severe and even fatal injuries may result.



This symbol indicates that there are dangers to the machine, things and the environment, but that no dangers to people are to be expected.

If these instructions are not followed, it might result in malfunctions and damage to the machine. Property damage and environmental damage might also come about.



This symbol identifies instructions contributing to better understanding of the machine information that helps you to use the machine in optimum fashion. This symbol does not identify safety instructions.



This symbol warns against the danger of electric shock.



Be sure to also note that a safety symbol can never replace the text of safety instructions—the text of safety instructions must therefore always be read completely.

3. Basic safety precautions

Always be sure that:

- ... tight-fitting working clothes are worn at all the workplaces.
- ... it is not allowed to wear chains, rings, bracelets or wristbands.
- ... it is not allowed to reach into the soil hopper (to push in more soil, for example), because when doing so there would be a danger of getting caught by the scraping chain.
- ... it is not allowed to get into the soil hopper while the machine is running.



4. Machine-related safety precautions

The workplaces are spread over various areas of the bale breaker.

- a) Filling the soil hopper with substrate bales.
- b) Pressing the start button.



Responsibilities for the various activities must be clearly defined and complied with.

Unclear competencies represent a safety risk.

Persons who are engaged in filling the soil hopper must have been given separate training, during which it was pointed out to them that there is a potential danger of being drawn into the machine if they got stuck in the scraping chain.

In case of malfunctions during the work flow it is forbidden to touch the running machine in order to resolve the malfunction.

It must always be possible to access the emergency cut-off switch.

It is forbidden to climb onto the running machine.

The machine must be set up on even and solid surface so that it stands securely in place.

There is danger of life in case of a machine falling over.

The floor (workplaces at the machine and traffic routes) must be regularly cleaned from dirt and water in order to avoid danger of slipping.

Stumbling blocks in the form of cables connected to the energy supply systems must be avoided.

All feed lines to the machine must be protected against damage.

Only a skilled electrician is allowed to carry out works on the electrical equipment.

Protection devices

- are fitted for the safety of operating personnel
- must in no case be changed, removed or evaded by modifications to the machine

5. Demands on operating personnel

The machine may only be operated by personnel who have been trained for such, shown what is involved and are authorised to do so. These individuals have to know and act in accordance with the Operating Instructions. The respective authorisations for the operation personnel must be clearly prescribed.

In addition to this, special qualifications are required for the following activities:

Operation personnel being trained may at first only work with the machine under the supervision of an experienced individual. It should be confirmed in writing that the training has been successfully completed.

Only trained personnel may ever operate any of the control and safety equipment.

All individuals that carry out any activities with the machine have to read the Operating Instructions and confirm by their signature that they have understood the Operating Instructions.

3 Transport, handling and storage

To prevent damage to the machine as well as injuries while transporting the machine, it is absolutely necessary to comply with the following points:

- The transport work may only be carried out by individuals qualified to do so, complying with the safety instructions.
- The machine may only be lifted by the supporting points provided for such.
- Only the load-lifting devices and tackle specified here may be used to transport the machine.
- Be sure to also read the "General Safety Instructions" section.

When transporting the machine, the following special dangers must be expected:

- Suspended loads can drop, which would be a lethal danger – never go under suspended loads!
- If load-lifting equipment other than that specified here, severe damage to the machine may result.



1. Transport

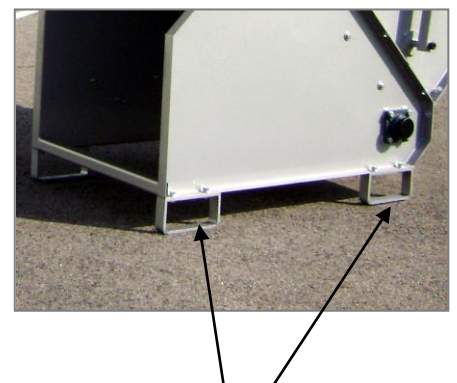
When the machine is transported special care shall be taken to avoid damage of the machine during loading or unloading.

During transport fixings according to type of transport shall be implemented.

Moisture condensation caused by temperature difference during transport as well as shocks during transport shall be avoided.

The machine shall be operated with usual care.

It is recommended to use a relevant attachment when loading or unloading the machine by means of a hand lift truck.



2. Handling

When moving the machine with a hand lift truck, pay special attention to the supply lines to the machine so as to avoid damaging or pulling out the line by running over them.



Before moving the machine, protect the machine against overturning.



3. Storage

When the machine or its parts are not reassembled right after transport, then they shall be carefully stored on a protected area. It shall regularly be covered and protected against dust and moisture.

Tasks for putting out of operation are detailed in section 6.3.

4 Installation

To prevent damage to the machine as well as injuries when setting up the machine, be absolutely sure to comply with the following points:

- The set-up work (assembly and installation of the machine) may only be carried out by personnel qualified to do so, complying with the safety instructions.
- Before beginning with the set-up work, check the machine for any transport damage.
- Also read the section "General Safety Instructions".

When setting up the machine, the following special dangers have to be expected.

- Any parts of the machine incorrectly placed or improperly attached can drop or fall over.
- There is a danger of getting injured by sharp-edged parts of the machine still open and accessible.
- Voltage-carrying cable ends and components can result in injuries from electric current.
- Parts lying loosely on top of one another can slip and fall off.
- Improperly installed lines (such as with a bending radius that is too small) can cause smoulder fires and cable fires.
- Lubricants or fertilisers that have escaped can result in caustic burns on direct contact with the skin.

1. General notes

a)

To protect the machine against weather caused damages it is suggested to use and store it inside.

b)

Electrical connection: 400V/50Hz.

Connection is permitted only to socket-outlets which are protected by an AC/DC sensitive RCCB (residual-current circuit-breaker).

c)

Be sure that enough space is assured for filling the machine. Same care shall be taken in case of machines connected in front of or behind it.

2. Installing the machine

A hard soil surface shall be provided under the machine to prevent it from sinking into the soil.



3. Measures for the machine's stability against overturning

There is no need to carry out other activity for erecting the machine than it is described in section 4.2.

4. Disassembly and disposal of the machine

After completion of its full time of operation, the machine must be duly separated from energy supply systems and disposed of according to valid legal regulations.

5 Initial start-up

It is absolutely necessary to comply with the following safety instructions for the initial start-up of the machine. This will prevent injury to individuals, damage to machinery and other property damage.

- The initial start-up may only be carried out by qualified individuals, complying with the safety instructions.
- Before the first start-up, check whether all the tools and parts not belonging in it have been removed from the machine.
- Before the first start-up, check the electrical connections.
- Activate all the safety equipment and EMERGENCY SHUT-OFF switches before the initial start-up.
- Also read the section "General Safety Instructions".

1. Check before the first start-up

- Are all the protective devices present?
- Was the machine damaged during transport?
- Before the initial start-up of the machine, check the machine's connecting lead for any damage.
- Make sure that no parts that do not belong there (such as toolboxes or the like) are in the soil hopper.
- Before connecting your machine's connecting lead to the mains supply, set the switch on the electrical-system cabinet to "Zero".



2. Starting the machine for the first time

After reassembly the machine shall be checked as per the following:

a)

Be sure not foreign materials, such as tools or similar, are left in the soil hopper.

b)

Put main switch of the machine to OFF („Null”) position before plug of the connection cable would be connected to the socket.

c)

When the machine is connected, put the switch to „1 ON” position.

When starting up the machine, be sure to check that the **"EMERGENCY SHUT-OFF"** switches (there are two of them) are not depressed and locked into place.

d)

When you then press the "START" button, all the electric functions on the bale breaker will be ready to operate.
The scraping chain will begin to run.

e)

In case of there were no problems found or unusual noises heard during test operation, the machine may be put into operation as it is described in section „Operation”.

3. Stopping the machine

There are two ways provided to switch off the machine.

a)

In normal case by switch „Stop” mounted on the swinging cable.

b)

In emergency case by „Emergency Stop” switch.

Note:

See also section "6.2 – Shutting down the machine"

6 Operation

To prevent damage to the machine as well as injuries while operating the machine, it is absolutely necessary to comply with the following points:

- The machine may only be used/utilised in accordance with its intended use.
- Before switching on the machine, inform yourself about the correct behaviour for malfunctions.
- Before switching on the machine, carry out operational checks of the EMERGENCY SHUT-OFF switches.
- The machine may only be operated from the prescribed workplaces.
- Only the operating personnel may be present at the machine during operation.
- Also read the section "General Safety Instructions".

When operating the machine and when it is in normal operation, the following special dangers have to be expected:

- Any types of use not in accordance with the intended use can cause injuries to people as well as damage to machinery to come about.
- Incorrect behaviour in cases of malfunctions can cause severe injuries to people as well as damage to machinery. So, familiarise yourself with the regulations for malfunctions.

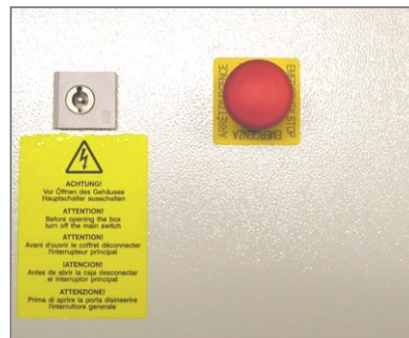
1. Normal operation

Before starting operation: be sure that there are enough substrate bales available near the bale breaker.

a) Description of the control elements

EMERGENCY SHUT-OFF elements

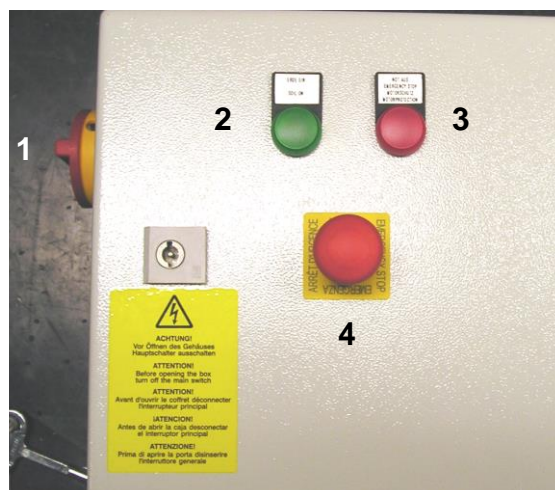
There are two EMERGENCY SHUT-OFF switches on the machine.



Control cabinet

1
Main switch

2
Lamp
Control system on



3
Lamp malfunction
Motor protection
system

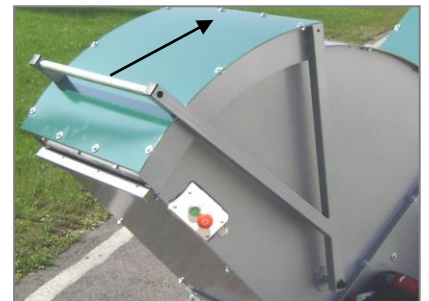
4
Emergency-Stop
Stop machine

b) Positioning

Move the bale breaker with a hand lift truck into the precise position to fill the following machine.

c) Filling

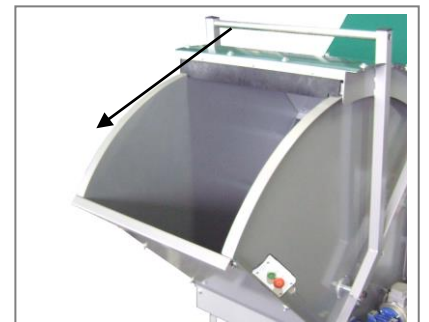
Open the cover of the soil hopper.



Remove the packaging foil from the substrate bale and push the bale into the soil hopper.

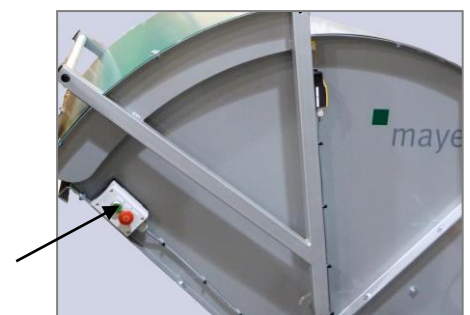


Close the cover of the soil hopper.



d) Starting the machine

Push the "START" button.



2. Shutting down the machine

There are two ways provided to switch off the machine.

a)

In normal case by pressing switch „**Stop**” mounted on the swinging cable.

If the cover of the soil hopper is opened, the machine will stop automatically.

In this case the machine may be restarted by pressing switch „Start”.

b)

In emergency case by pressing the „**Emergency Stop**” switch.

When push button „Emergency Stop” is pressed the machine stops immediately and remains stopped. After „Emergency Stop” is eliminated the machine may be started by pressing push button „Start”.

3. Measures prior to and after a longer shutdown

a) Before a long shutdown

- Clean carefully the machine.
- Grease and oil certain parts of the machine according to maintenance plan.
- Protect against dirt and moisture (to be covered)
- Disconnect the machine from power lines (electricity, compressed air)

b) After a long shutdown

- Grease and oil certain parts of the machine according to maintenance plan.
- Visually check the machine.
- Connect the machine to required energy sources.
- Start the machine as it is described in section „Initial start-up”.

7 Malfunctions

To prevent damage to the machine as well as injuries while remedying malfunctions at the machine, it is absolutely necessary to comply with the following points:

- Only eliminate a malfunction if you have the qualification specified to do so.
- Also read the section "General Safety Instructions".
- When eliminating malfunctions with the machine, the following special dangers have to be expected:
- Accidentally switching on the power sources can result in injuries to people as well as damage to the machine.

1. Behaviour in case of malfunctions

If any malfunctions should occur while the machine is in operation, proceed as follows:

1. Stop the machine either using the STOP button or EMERGENCY SHUT-OFF, depending on the situation.
2. When necessary for the safety of people or of the machine, immediately cut off the machine from the power system it has.
3. Troubleshooting → If necessary, then by qualified personnel
5. Error correction → If necessary, then by qualified personnel
6. Starting up the machine

2. Possible malfunctions and trouble shooting

Error / Malfunction	Cause	Measure
	The EMERGENCY SHUT-OFF has been pressed.	Release.
	The thermal protection system has responded.	"See next point"
The motor protection system switches off	Blocking of the "scraping chain"	
	Some foreign substance has gotten jammed.	Remove.
	The filling weight is too great.	Reduce.
The bale breaker stops during operation.	Some foreign substance has gotten jammed.	Remove.
	The scraping chain has been blocked by soiling.	Clean.
	Electric power supply interrupted.	Check and restore if necessary.
	EMERGENCY SHUT-OFF pressed	Release.
	The filling weight is too great and so the motor protection system disconnects.	Reduce.

8 Maintenance

When carrying out maintenance for the machine, it is absolutely necessary to comply with the following safety instructions. Doing so will prevent injuries to people, damage to the machine and other damage to property as well as the environment.

- Cleaning, lubricating and maintenance work may only be carried out by authorised operating personnel. The Operating Instructions must be complied with exactly.
- Only trained electricians may ever carry out any of the work on the machine's electrical equipment.
- Switch off all sources of voltage and secure the sources of voltage against them being accidentally switched back on.
- Only Mayer GmbH & Co. KG may ever manipulate the machine's control programme.
- All un-recycled operational materials, lubricants and supplies must be disposed of in an environmentally friendly manner.
- Also read the section "General Safety Instructions"

When carrying out maintenance on the machine, the following special dangers have to be expected.

- Installing incorrect spare parts or wearing parts can cause severe damage to the machine.
- Accidentally switching on the power source can result in severe bodily injuries and damage to the machine.
- There is a danger of getting injured on sharp-edged machine parts/tools that are exposed.
- Lubricants or fertilisers that have escaped can result in caustic burns on direct contact with the skin.
- When unsecured manual operation is carried out, there is an increased risk of injury through crushing.

1. General notes

We recommend an annual inspection of the entire machine by our customer service.

For service or repair work, order our customer service at one of our service workshops.

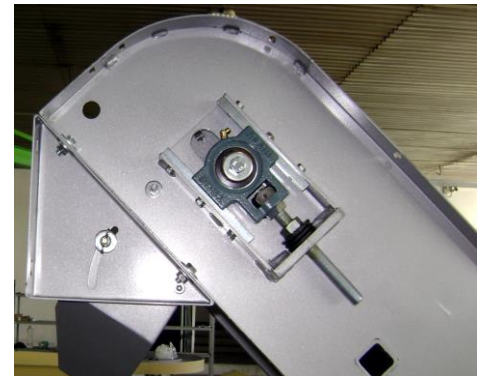
Spare parts have to meet the technical requirements of the machine's manufacturer. This is guaranteed with original spare parts from MAYER.



2. Inspection and preventive maintenance

Scraping chain

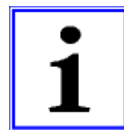
It has to be possible for the chain to be lifted at the centre of the ground by a minimum of 3 cm and maximum of 5 cm. If there is greater play, set the chain tighter by tightening the adjustment bolts on the bottom (24-er wrench). Adjust the bolts evenly on both sides.



Grease the "scraping chain" before long standstills.



Follow the maintenance schedule.



2. Cleaning

No high-pressure cleaner or hose must be used when cleaning the machine. The electrical system or mechanical bearings could get damaged.



4. Maintenance schedule

Description	Time	
Check the functioning of the safety equipment.	Daily	
Clean the machine.	Daily	
Visual check of the electric power supply and the plug	Daily	
Check the "scraping chain" tension.	Weekly	
It may be possible for the chain to be lifted at the centre of the ground by a minimum of 3 cm and a maximum of 5 cm. If there is greater play, set the chain tighter by tightening the adjustment bolts on the bottom (24-er wrench).		
Check to be sure the safety instructions are undamaged.	Weekly	
Check the chain and chain wheels for wear. Replace both if the chain can no longer be retightened.	Weekly	
Grease all the bearings with lubricating nipples.	Annually	
Complete cleaning of the bale breaker after ending the season and lubrication of the "scraping chain"	As required	

9 Circuit diagrams for electric and pneumatic system

10 Guarantee

Horticultural machinery and special machinery

We will accept liability for faults in the supplied goods and for any failure to provide features for the existence of which an express assurance had been given. In such a case we undertake – to the exclusion of all further claims – to improve or re-supply (at our discretion) free of charge any parts which have revealed themselves to be unserviceable or subject to a not inconsiderable impairment in serviceability due to faults in their material, manufacturing process or design within twelve months (or within six months for multi-shift operation) of their arrival on the customer's premises. For parts which we do not manufacture ourselves (e.g. motors), we can only accept liability for the same scope and length of time which the subcontractor has accorded to us.

Any replaced parts shall become our own property. No warranty claims can be accepted if the fault occurs as a result of the customer having mistreated or neglected the products delivered by us, made modifications or undertaken repairs incorrectly or without our prior approval, or had third parties undertake such work.

The customer's entitlement to assert claims due to faults shall in all cases lapse six months following a complaint made within the required time period, however no sooner than the end of the compulsory warranty period. We are not responsible for correcting faults unless the customer has fulfilled its obligations due to us up to the point when the fault became apparent.

Changes in the design and shape of horticultural machinery and equipment

We reserve the right to make changes in design and shape, in particular with regard to deviations from the drawings and descriptions etc. during the delivery period, provided that the purchased object is not thereby significantly altered, rendered less effective or reduced in value and the customer can reasonably be expected to accept the modifications.

You have chosen to purchase a product of true quality.

We wish you every success with your product.

We would be most grateful if you would recommend our products to others.

Thank you

Your MAYER-TEAM