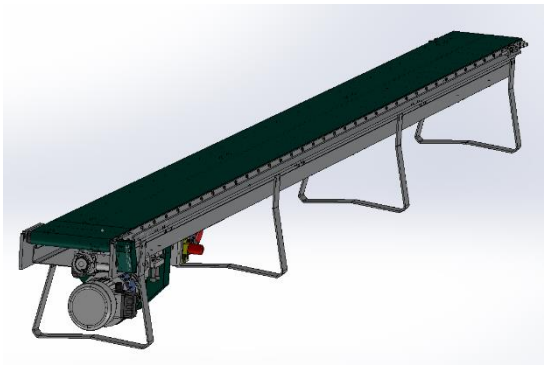
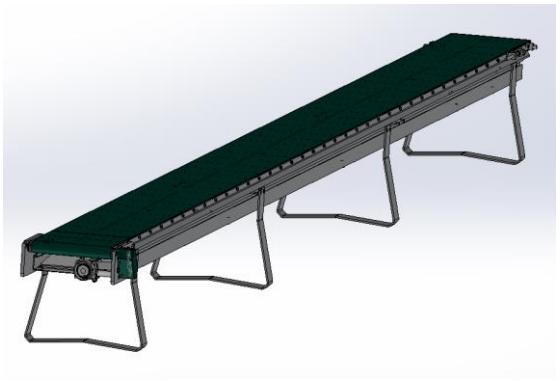
mayer

Conveyor with cardan shaft 1417,1421,1425,1430





Operation instructions

Issued: 20th February 2020

Please read these instructions before taking the conveyor into operation and keep them for future use at the conveyor

Contents

1 Technical data

1 Intended use
2 Structure
3 Functional description
4 Technical data
5 EC Declaration of conformity

2 General safety instructions

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

3 Transport, handling and storage of the conveyor

1 Transport
2 Handling
3 Storage

4 Installation

1 General notes
2 Installing the conveyor
3 Measures for the conveyor ‘s stability against overturning
4 Disassembly and disposal of the conveyor

5 Initial start-up

1 Check prior to first start
2 Starting the conveyor for the first time
3 Stopping the conveyor

6 Operating instructions

1 Settings
2 Normal operation
3 Shutting down the conveyor
4 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 Maintenance schedule
4 MAYER – Service stations

9 Part list

10 Circuit diagrams

11 Guarantee

1 Product description

1 Intended use

The MAYER conveyor may be used for transporting pots filled with soil from the last workstation of the potting machine.

Other means of use of the conveyor, besides the ones listed here, are not permitted – and they are not the usage for intended purpose.

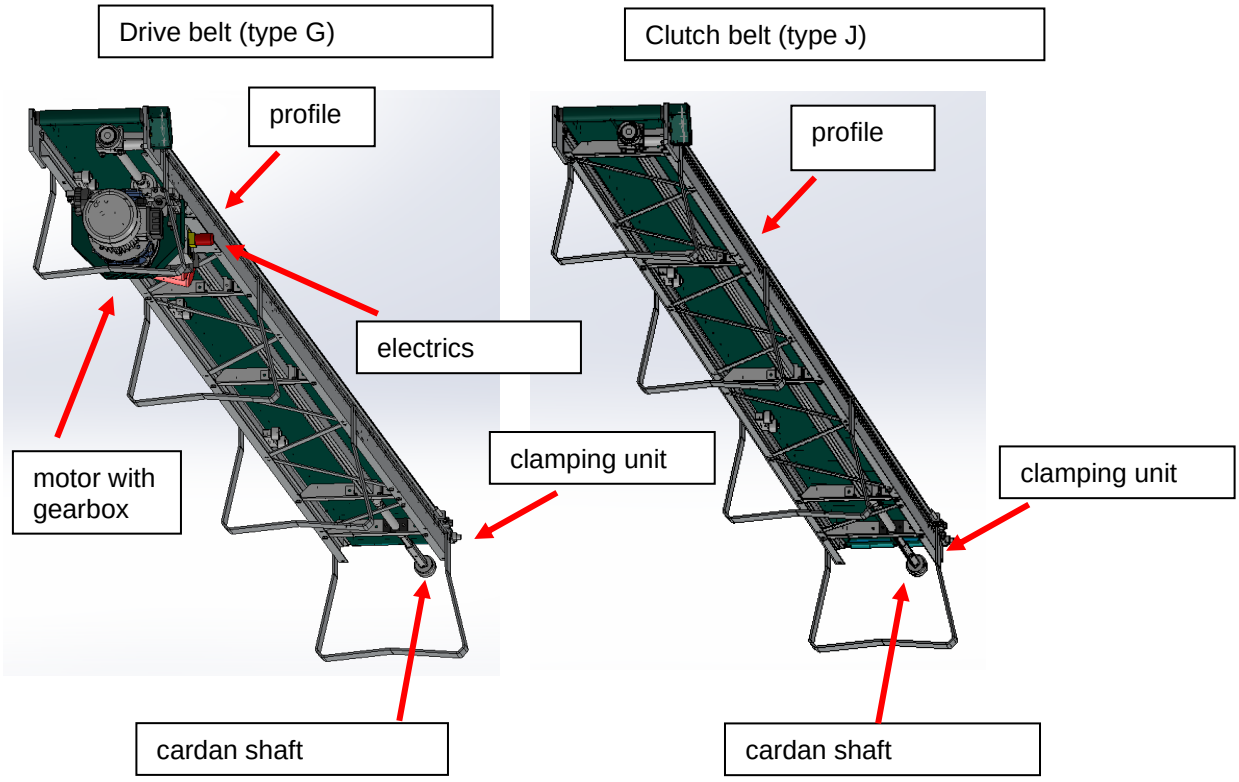
If the MAYER conveyor is not used in accordance with the regulations, safe operation of the conveyor is not guaranteed.

The usage for intended purpose involves reading of operating instructions, and compliance with the regulations, especially safety regulations stated in them. Furthermore, every inspection and maintenance should be performed in specified time.

The manufacturer accepts no liability for damages resulting from improper use. The operator of the MAYER Conveyor is solely responsible for personal injuries or property damages.

2 Structure

Structure of the conveyor:



3 Functional description

The conveyor is powered by an adjustable gear motor (type G).
The motor drives the cardan shaft with a chain underneath the conveyor.
This cardan shaft drives the drive rollers of the belt with an angle gear and gear wheels. The clutch belt (type J) does not have a motor, it needs to be clutched on Type G, it is driven by that.
The clamping unit enables precise setting of belt tension and belt running.
Special coupling devices at each end of the conveyor belt allow several conveyor belts to be assembled into long lines.
The cardan shaft has gear wheels at each end, with the help of which the drive belt can drive the clutch belt.

4 Technical data

Manufacturer	**Mayer**
Type of machine	**Conveyor**
Standard length	**1 m – 2 m – 3 m – 4 m – 5 m – 6 m**
Special length	…… m
Width of belt	Type 1417: 170 mm Type 1421: 210 mm Type 1425: 250 mm Type 1430: 300 mm
Weight (with drive)	25 cm wide, 6 m long „G"= 82 kg 25 cm wide, 6 m long „J"= 49 kg
Weight of drive	18 kg
Drive	adjustable geared motor
Conveying speed	adjustable: 2,5 – 13 m/min
Electrical power connection (type G)	400V/50Hz, 5 pole
Energy consumption	0,55 kW
Pot size	pot diameter between 5 - 32 cm
Noise level	70 dB (A)

5 EC – Declaration of Conformity

In accordance with Annex II / A of the EC Machinery Directive (2006/42/EC)

The manufacturer:

Mayer Ipari és Kereskedelmi BT.
Kossuth str. 106. 9341 Kisfalud / Hungary

Mayer GmbH & Co. KG
Maschinenbau und Verwaltung
Poststr. 30 89522 Heidenheim / Germany

hereby attests that the machine described in the following:

Manufacturer: **Mayer**
Type: **Conveyor**
Series: **1417,1421,1425,1430,1435**
Year of construction: **since 2019**

fully meets the health and safety regulations specified in the following EC Machinery Directives:

2006/42/EK

Applicable harmonized standards:

EN ISO 12100:2011	Safety of machinery. General principles for design. Risk assessment and risk reduction (ISO 12100:2010)
EN 60204-1:2010	Safety of machinery. Electrical equipment of machines. Part 1: General requirements (IEC 60204-1:2005, modified)
EN ISO 13849-1:2016	Safety of machinery. Safety-related parts of control systems. Part 1: General principles for design (ISO 13849-1:2015)
EN ISO 13850:2008	Safety of machinery. Emergency stop. Principles for design (ISO 13850:2006)
EN ISO 13855:2010	Safety of machinery. Positioning of safeguards with respect to the approach speeds of parts of the human body (ISO 13855:2010)
EN ISO 13857:2008	Safety of machinery. Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2008)
EN ISO 14119:2014	Safety of machinery. Interlocking devices associated with guards. Principles for design and selection (ISO 14119:2013)
EN 349:1993+A1:2008	Safety of machinery. Minimum gaps to avoid crushing of parts of human body.
EN ISO 14120:2016	Safety of machinery. Guards. General requirements for the design and construction of fixed and movable guards. (ISO 14120:2015)
EN 1037:1995+A1:2008	Safety of machinery. Prevention of unexpected start-up
EN 618:2002+A1:2011	Continuous handling equipment and systems. Safety and EMC requirements for equipment for mechanical handling of bulk materials except fixed belt conveyors

EN 619:2002+A1:2011	Continuous handling equipment and systems. Safety and EMC requirements for equipment for mechanical handling of unit loads.
EN ISO 14738:2009	Safety of machinery. Anthropometric requirements for the design of workstations at machinery. (ISO 14738:2002, + Cor 1:2003 + Cor 2:2005)
EN 1005-2:2003+A1:2009	Safety of machinery. Human physical performance. Part 2: Manual handling of machinery and component parts of machinery
EN 1005-5:2007	Safety of machinery. Human physical performance. Part 5: Risk assessment for repetitive handling at high frequency.

Any constructional changes that affect the technical parameters and intended purpose set forth in this Instruction Manual are bound to result in considerable changes in the conveyor and will, therefore, render this EC Declaration of Conformity void.

Heidenheim, 20th February 2020

.....
Geschäftsführer | Managing Director
Ügyvezető igazgató

2 General safety instructions

1 Due diligence of the operating company

Mayer conveyor belts – 1417,1421,1425,1430,1435 – are 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 of technics and guarantees a maximum degree of safety.

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

The operation organisation must guarantee in particular that

- The conveyor is only used in accordance with its intended use (cf. the Product description section).
- The conveyor 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 conveyor is used.
- Only sufficiently qualified and authorised personnel operate, service and repair the conveyor.
- 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 conveyor are removed and that all remain legible.
- None of the safety and warning signs attached to the conveyor are removed and that all remain legible.
- Users must obligate themselves only to operate the conveyor when it is in flawless condition. No unauthorised conversions or alterations are allowed that influence the conveyor 's safety.
- Users must obligate themselves only to operate the conveyor when it is in flawless condition. No unauthorised conversions or alterations are allowed that influence the conveyor 's safety.
- Protective devices may only be removed when the conveyor has been stopped.

- The conveyor may not be started if any safety devices have been removed.
- Local safety and accident-prevention regulations always apply to any operation of the conveyor.
- 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.**

1. Explanation of safety symbols

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 conveyor. These residual hazards relate to:

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

The following safety symbols are used in these Operating Instructions:

This symbol indicates there are dangers to the conveyor, 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 conveyor. Property damage and environmental damage might also come about.

This symbol identifies instructions contributing to better understanding of the conveyor information that helps you to achieve optimum performance. This symbol does not identify safety instructions.

This symbol warns about danger of electric shock.

Please 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:

- The conveyor belt may only be used when it is plugged into the jack of the potting machine.
- It is not allowed to reach into rotating or running components. It is only allowed to take pots down.
- The conveyor must be fixed with supporting feet to avoid tilting or tumbling.
- The maximum load of the conveyor is 90 kg.
- Cables must be placed without causing barriers.
- Screws must be tightened properly.
- Always make sure that personnel at all workplaces wear close-fitting working clothes.
- Wearing chains, rings or bracelets during work is forbidden.

4 Machine-related safety precautions

Responsibilities for the various activities must be clearly defined and complied with.
Unclear competencies represent a safety risk.

Persons who are engaged in operating the conveyor must have been given special training, during which it was pointed out to them that there is a potential danger of being drawn into the conveyor if they got stuck at the conveyor belt.

For procedural reasons it is not possible for the conveyor to be covered.

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

Access to the emergency cut-off switch must always be guaranteed.

The emergency cut-off switch should always be located on the relevant workplace (during normal operation preferably on the panel, next to the right of the worker).

It is forbidden to sit on or to transport persons on the conveyor!

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

The floor (workplaces at the conveyor 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 conveyor 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 and must in no case be changed, removed or evaded by modifications to the conveyor.

Frequency converters can cause fault currents that are not detected by means of a standard soil leakage circuit breaker. Therefore, the conveyor may be operated with an AC/DC sensitive RCCB (residual-current circuit-breaker) only.

Frequency converters have built-in capacitors that discharge after switching off the conveyor. The conveyor's connecting plug may be pulled out of the outlet not before approx. 1 to 2 minutes after switching off the main circuit breaker.

5 Demands on operating personnel

The conveyor may only be operated by personnel who have been trained for such, shown what is involved and are authorised to do so. These individuals must know and act in accordance with the Operating Instructions. The respective authorisations for the operation personnel must be clearly prescribed.
In addition, special qualifications are required for the following activities:
Operation personnel being trained may at first only work with the conveyor under the supervision of an experienced person. 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 on the conveyor must read the Operating Instructions and confirm by their signature that they have understood the Operating Instructions.

3 Transport, handling, storage

To prevent damage to the conveyor as well as injuries while transporting the conveyor, it is essential to comply with the following points:

- Transport work may only be carried out by individuals qualified to do so, complying with the safety instructions.
- The conveyor may only be lifted by the supporting points provided for such (see section 3.2 Handling).
- Only the load-lifting devices and tackle specified here may be used to transport the conveyor.
- Be sure to also read the "General Safety Instructions" section.

When transporting the conveyor, 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 conveyor may result.
- Before transporting electrical cables must be rolled up in order to avoid the risk of tripping over.

1 Transport

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

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

Shocks during transport shall be avoided.

The conveyor shall be operated with usual care.

2 Handling

The conveyor may only be moved when it is switched off and without load. Moving the conveyor may be done by hands easily. Three people are required for handling to avoid accidents.
Ideal lifting points are at the ends of the belt.
The drive belt (type G) must be lifted by at least three people, the clutch belt (type J) must be lifted by two people.

Important!
Lack of ideal lifting points or fixation may cause injuries or property damage.

If the conveyor is to be moved over an inclined plane, it is necessary:

- To make sufficient safety-related precautions in order to prevent the conveyor from falling.

Such precautions may include:

- Enough personnel

3 Storage

When the conveyor is not reassembled right after transport, then it shall be carefully stored in a protected area. It shall properly be covered and protected against dust and moisture.

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

4 Installation

1 General notes

a)

To protect the conveyor against damages caused by weather 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 the conveyor. Same care shall be taken in case of conveyors connected in front of or behind it.

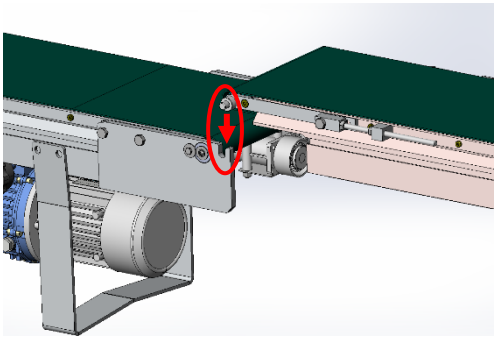
2 Installing the conveyor

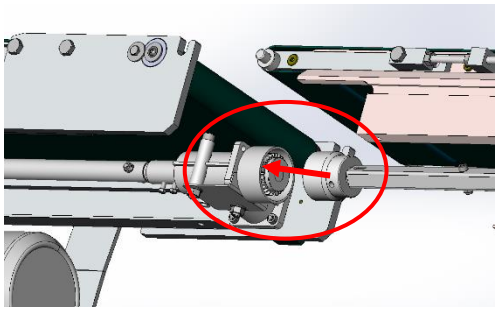
The conveyor (type G, J) with cardan shaft can be operated in the following way:

- The tensioning end of the conveyor belt is hooked into the pivot bearing of the potting machine, the other end is fixed by a supporting leg.

- Generally, several conveyors are used as a conveyor system: after setting up the first belt, the tensioning station of the additional conveyor belt is hooked into the drive station of the existing belt from above. In the meantime, the gear wheel at the end of the drive axle must be clutched with the gear sleeve at the end of the drive axle of the next conveyor.

- The assembly must always be done by two people, one of them clutches the upper parts together, the other one connects the gear wheel and the gear sleeve.





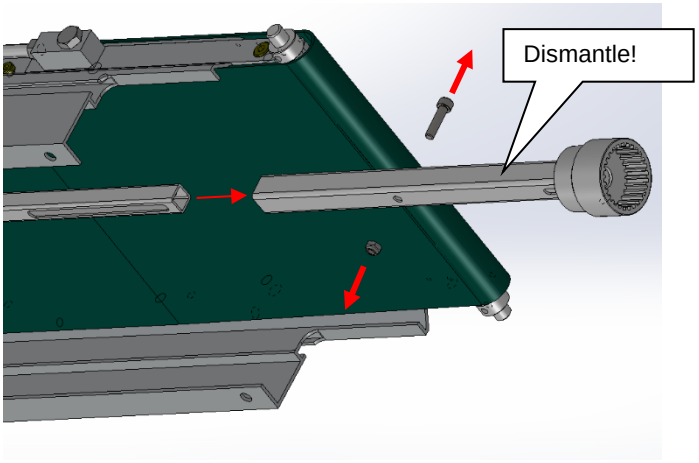
In case of conveyors with a width of 21 cm, one unit of type G can drive 5 units of type J.

In case of conveyors with a width of 25 cm or 30 cm, one unit of type G can drive max. 4 units of type J.

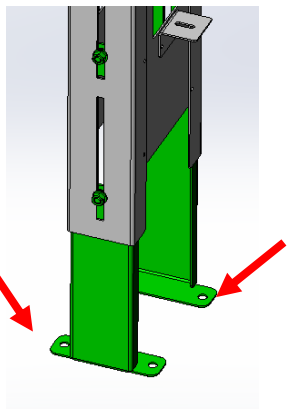
It is recommended to set up the drive unit (type G) in the middle, so that (almost) the same number of units J can be driven (symmetrical assembly).

Attention! If a longer assembly line is needed, two drive units (type G) can be set up in the line, but in this case the drive axle between the drive units must not be connected mechanically.

In this case, the sleeve with the gear coupling must be dismantled.
For that one piece of screw M 6X25 and one self-locking nut M6 must be removed and the end of the axle can be pulled off.



3 Measures for the conveyor's stability against shifting



To avoid shifting – in case the stands can be screwed – every stand must be fixed with two dowels to the floor.

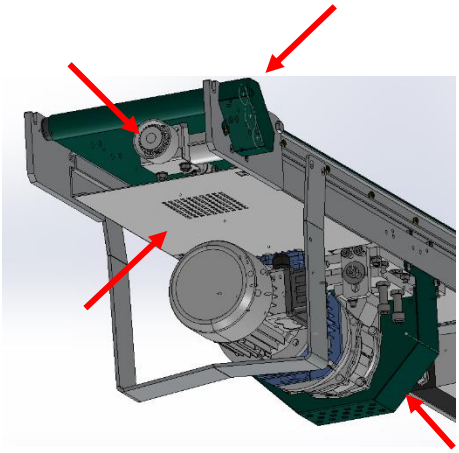
4 Disassembly and disposal of the conveyor

After completion of its full time of operation, the conveyor must be duly disconnected from the power supply and disposed of in a manner according to valid legal regulations.

5 Initial start-up

It is essential to comply with the following safety instructions for the initial start-up of the conveyor. This will prevent injuries to individuals, damages to machinery and other property damages.

- 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 to it have been removed from the conveyor.
- Before the first start-up, check the electrical connections.
- Be sure that the cover of the roller, chains and axle is placed correctly.



1 Check prior to first start

Prior to starting up the conveyor, the following must be checked:

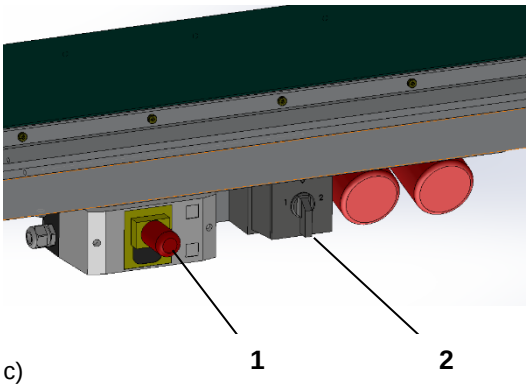
- If all safety devices are available.
- If the conveyor was damaged during transport.
- All visible screws must be checked for tight seat.
- Prior to putting the conveyor into operation, the conveyor's connecting cable and the cable of the emergency cut-off switch must be checked.

2 Starting the conveyor for the first time

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

a)
Be sure no foreign materials, or tools are left on the belt.

b)
Put main switch of the conveyor to OFF („Zero") position before the plug of the connection cable would be connected to the socket.

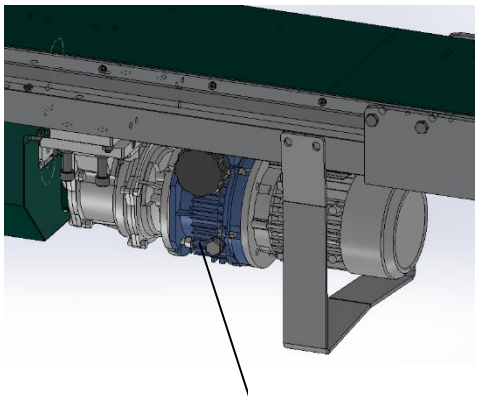


c)
When the conveyor is connected, put the switch (1) to „ON" position.

d)
After starting a potting machine, the rotation direction switch (2) must be rotated in a direction that the conveyor belt must move from the potting machine towards the roller of the conveyor.

e)
In case there were no problems found or any unusual noises heard during test operation, the conveyor may be put into operation as it is described in section „Operating instructions".

f)
On conveyors with an adjustable geared motor there is a wheel (3). The speed of the belt can be adjusted with this wheel.
Adjust the speed of the conveyor only if the conveyor belt is running.



g)
Should the belt start to move to the side or mistrack, adjust it according to section 8.2.

3 Stopping the conveyor

There are two ways to switch off the conveyor:

a)
In normal case switching „Stop” stops the conveyor.

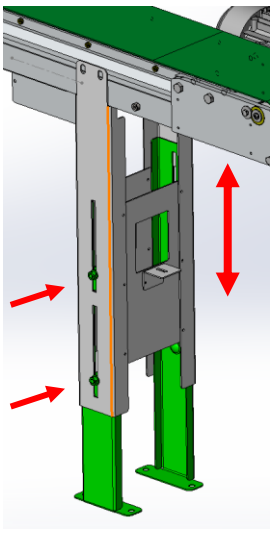
b)
In emergency case „Emergency Stop” on the potting machine or on the conveyor switches the conveyor off.

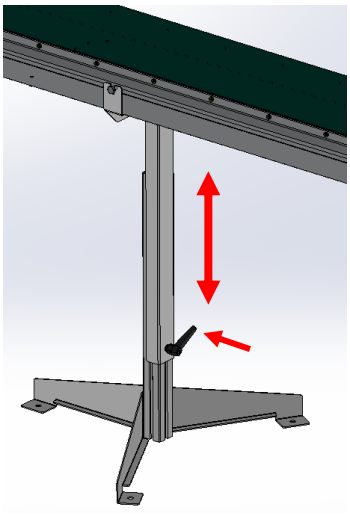
6 Operating instructions

1 Settings

Adjusting height

- Setting the proper height must always be done with empty belt. Avoid any extra load on the conveyor as it can cause difficulties with setting height.
-
- Adjusting height must be performed by at least two persons. One person should hold the belt, the other one should loosen screws needed for setting height. After adjusting height, the conveyor must be fixed with height screws.



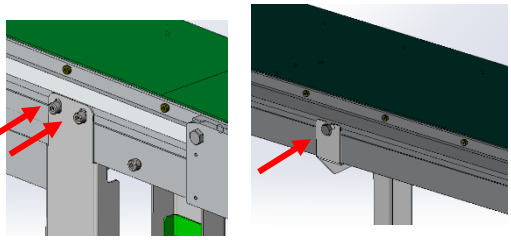


2 Normal operation

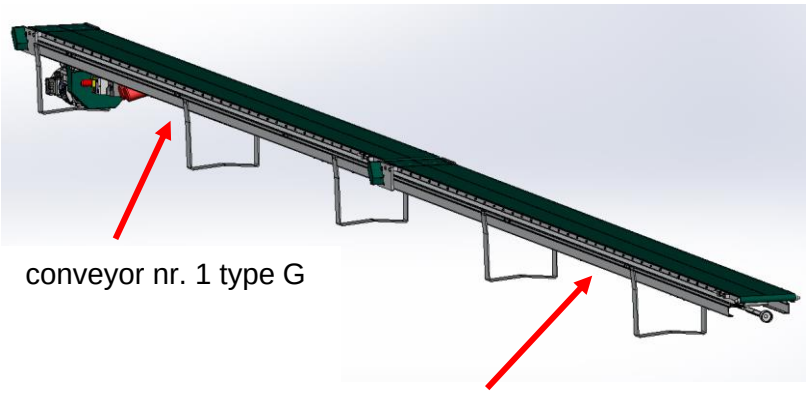
The conveyor can be operated as follows:

- connected directly to the potting machine. The tensioning end of the conveyor belt is hooked into the pivot bearing of the potting machine. The conveyor sits on a support leg, in this

case the support leg must be fixed to the side of conveyor by M10x10 screws and M10 sliding nuts.



- Together with several belts in a line: after installing the first belt, the tensioning station of the additional conveyor belt is hooked into the drive station of the first belt.
- Speed can be adjusted by the hand wheel on the motor.



- **Attention! Adjust the speed of the conveyor only if the conveyor belt is running!**

3 Shutting down the conveyor

The conveyor belt can be stopped in two ways:

a)
The rotation direction switch turned into position 0 stops the conveyor. When it is switched in position 1 or 2 the conveyor starts again.

b)
In case of emergency the conveyor can be switched off by the 'Emergency cut-off' switch.
If 'Emergency cut-off' switch is pressed, the conveyor stops immediately.
After 'Emergency Stop' is eliminated the conveyor may be started by pressing push button 'Start'.

4 Measures prior to and after a longer shutdown

a) Before a long shutdown

- Clean the conveyor carefully.
- Protect the conveyor against dust and moisture (it should be covered).
- Unplug the conveyor from power lines (electricity).

b) After a long shutdown

- Visually check the conveyor.
- Check if screws are tightened properly.
- Plug the conveyor to required energy sources.
- Start the conveyor as described in section „Initial start-up".

7 Malfunctions

To prevent damage to the conveyor as well as injuries while eliminating malfunctions at the conveyor, it is essential to comply with the following points:

- Eliminate a malfunction only if you have the qualification specified to do so.
- Also read the section ‘General Safety Instructions’.
- When eliminating malfunctions with the conveyor, the following special danger has to be expected:
- Accidentally switching on the power sources can result in injuries to people as well as damage to the conveyor.

1 In case of malfunction

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

1. Stop the conveyor with ‘Stop’ button on the potting machine or with ‘Emergency cut-off’ switch on the conveyor.
2. For personnel or conveyor security, unplug the conveyor from the energy supply immediately.
3. Troubleshooting > If necessary, then by qualified personnel.
4. Error correction > If necessary, then by qualified personnel.
5. Start up the conveyor again.

2 Possible malfunctions and trouble-shooting

a) Mechanical malfunctions

Problem/Malfunction	Possible cause	Action to be taken
Belt mistracking	Faulty settings	Adjust as in section 8.2
Belt tension not steady	Unsuitable belt tension	Adjust as in section 8.2
Belt slipping	Unsuitable belt tension	Adjust as in section 8.2

b) Electric malfunctions

Problem/Malfunction	Possible cause	Action to be taken
Motor protection releases	Malfunction in electric device	Have an inspection by an electrician
	Mechanic overload	Reduce belt load (e.g. increase distance between pots)

8 Maintenance

When performing conveyor maintenance, it is essential to comply with the following safety instructions. Doing so will prevent injuries to people, damage to the conveyor and other damage to property as well as the environment.

- **Cleaning, lubricating and maintenance work may only be performed by authorised operating personnel. The Operating Instructions must be observed precisely.**
- Only trained electricians may ever carry out any work on the conveyor 's electrical equipment.
- Switch off all power supplies and secure power supplies against being accidentally switched back on.
- All non-recyclable operational materials, lubricants and supplies must be disposed of in an environmentally friendly manner.
- Also read section ‘General Safety Instructions’

When performing conveyor maintenance, please note the following special dangers:

- Installing incorrect spare parts or wearing parts can cause severe damage to the conveyor.
- Accidentally switching on the power source can result in severe bodily injuries and damage to the conveyor.
- There is a danger of getting injured on sharp-edged conveyor parts/tools.

1 General notes

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

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

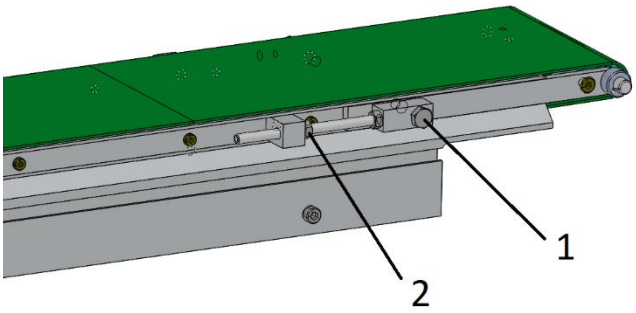
Spare parts have to meet the technical requirements of the conveyor 's manufacturer. This is guaranteed with original spare parts from MAYER.

2 Inspection and preventative maintenance

Setting belt tension und running

To ensure proper operation, permanent monitoring of the belt is required. If the belt tension is not enough, the belt speed reduces and the belt slips.

For tensioning the belt there are spindles located at the two sides. With equal tension, side-run or damages to the belt can be avoided.
For tensioning, please proceed as follows: Loosen the side plate screw (1) on both sides, then with turning the nut (2) tension of the belt can be adjusted. This should be carried out on both sides simultaneously.
This must be done only when the belt is running empty.
After tensioning, tighten the screw (1) on both sides. Please note that the length of the belt will change after tensioning.



3 Maintenance schedule

Action	Intervals
Check belt tension and running accuracy	daily
Clean belt	daily
Check oil level of drive	weekly

4 MAYER-service stations

In Hungary

Mayer Ipari és Kereskedelmi BT
Kossuth u. 106
H-9341 Kisfalud
Tel. +36 96 599 011
Fax +36 96 599 206

Beppler Kft.
0298/104 hrsz.
Gyártelep
H-2310 Szigetszentmiklós
Tel. +36 24 443 108
Fax +36 24 443 109

MAYER-service stations in Germany

Mayer GmbH & Co. KG **Maschinenbau u. Verwaltung** Service Poststr. 30 89522 Heidenheim Tel. 07321/9594-238 (Service) Tel. 07321/9594-233 (Spare parts) Fax 07321/9594-297 service@mayer.de	**Mayer Kundencenter Ost** **Vertriebsgesellschaft für** **Gartenbautechnik Auerbach Ltd.** Mendelssohnstrasse 3 04442 Zwenkau Tel. 034203/62302 Fax 034203/62303 auerbach-gbt@t-online.de
Mayer Kundencenter West **Mayer Service** Zeppelinstr. 19 47638 Straelen Tel. 0151/12149804 Fax 02834/708075 kundencenterwest.mayer@gmail.com	**Mayer Kundencenter Nord** **Klarmann** **Bewässerungstechnik GmbH** Westersteder Straße 89 26655 Westerstede Hotline: 04409/908425 Tel. 04409/97170 Fax 04409/971717 info@klarmann-lindern.de
	Seippel Landmaschinen GmbH Warthweg 8-10 64823 Groß-Umstadt Tel. 06078/93250 Fax 06078/932521 info@seippel-landmaschinen.de

9 Part list

10 Circuit diagrams

11 Warranty

Horticultural machinery and other 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 change 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