Operating instructions

e2+ Drum screening machine

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Content Drawing

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Foreword

These operating instructions are intended to make it easier to get to know the machine and to use it as intended.

The operating instructions contain important information on how to operate the machine safely, properly and economically. Observance of these instructions helps to avoid dangers, to reduce repair costs and downtimes and to increase the reliability and service life of the machine.

In addition to the operating instructions, the applicable national regulations for accident prevention and environmental protection must be observed.

The operating instructions must always be available at the place of use of the machine/plant.

The operating instructions must be read and used by every person involved in working with/on the machine/plant, e.g.

- Operation, including set-up, troubleshooting in the work flow, removal of production waste/disruptive materials, maintenance, disposal of operating and auxiliary materials.
- Maintenance (servicing, inspection, cleaning) and/or
- Transport
- Dismantling / disposal

is commissioned.

The operator of the installation must draw up operating instructions for the installation in a comprehensible language and form.

In addition to the operating instructions and the binding regulations for accident prevention applicable in the country of use and at the place of use, the recognised technical rules for safe and professional work must also be observed.

Product description

The e2+ drum screening machine is used for the mechanical screening of various materials.

The machine is available in the following variants:

- Wheeled mobile with road approval
- Chain mobile
- Stationary

The basic design of all machine types in the e2+ series is identical. They essentially differ only in terms of different equipment features.

An e2+ basically consists of these components:

- A machine frame made of steel profiles and sheet steel, on which all other components are mounted.
- A sieve drum with bearing and drive with different hole diameters, or additionally with adjustable sieve linings.
- A movable material hopper with belt discharge.
- A conveyor belt under the drum to pick up the fine material.
- A folding conveyor belt for discharging the fine material
- A folding conveyor belt for discharging the overflow material
- A chassis with braking system and lighting for mobile version
- A track drive as an alternative to the undercarriage.
- A power generator if no stationary power connection is available.
- Various doors and trim parts
- Axles and drawbar (wheelmobile)
- Chain run and drive hydraulics (chain mobile)

Functional description

Machine

The input material is separated by a sieve drum. The fine material falls through the holes (different sizes or screen linings available). The material is moved from the inlet to the outlet by a screw through the rotation of the drum.
The fine material is transported on the conveyor belt under the drum to the discharge belt for fine material and discharged to the side.
The overflow material is discharged from the end of the drum to the rear by a discharge belt.

Influencing factors

These factors influence the sorting:

- Drum speed: The motor is equipped with a speed control. By increasing the speed, the conveying of the machine accelerates. This has the effect of increasing the

throughput and possibly decreasing the quality of the sorting due to the shorter time the material remains in the machine.

- The feeding of the machine has a strong influence on the screening process. Feeding in surges or too much in terms of quantity leads to a reduction in screening performance and quality. Make sure that the hopper is filled as evenly as possible with a layer height that is as uniform as possible.

Intended use

The trommel screen may only be used as intended.
The drum screening machine in various designs is intended for the classification and screening of screenable, pre-loosened and dry screenings.

The following materials may be used as screening material:

- Excavated soil
- Bark mulch
- Gravel
- Sand
- Wood chips
- Green waste
- Organic waste
- Other dry, sieveable materials

The machine must be level and unobstructed during operation outdoors (no directly adjacent screening mounds).
Inside industrial buildings, the machine may only be operated directly from the mains (no genset operation). The building must have sufficient height for safe loading. Only the attached supports and not the support wheel may be used to ensure safe standing.
The screenings are loaded into the bunker by means of an earth-moving machine or other means. Manual loading is not as intended.
It is necessary to follow the steps described in the operating instructions.
In the event of deviations, it is necessary that a renewed risk assessment in the sense of the Machinery Directive is carried out and the changes are documented in the relevant documents.
Use of the machine for purposes other than those specified is prohibited.
Other intended uses include setting up the machine (bringing it into operating position), carrying out cleaning and maintenance work, as well as troubleshooting, fault elimination and repair in accordance with the operating instructions.

Observe the following instructions to ensure trouble-free operation:

To prevent damage to the machine, please observe the following points: (Non-observance leads to the exclusion of the warranty)

- The fed material may only be fed to the machine in a loose, pressed-on state.
- Heavy, large foreign matter must be removed before it is fed to the machine.
- The dust load in the working area of the machine must not exceed the legally applicable limit values of the user country (in Germany, the Federal Immission Control Act must be observed).
- Long bulky parts must be removed or dissolved / shredded.
- The discharge speed of the conveyor belts must be adapted to the performance of the machine and the material to be screened.

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Requirements for maintaining the functionality of the machine:

- The keeping and observance of maintenance, servicing and inspection plans/logs is mandatory for the granting of warranty claims. Access to maintenance records must be possible at all times by the manufacturer.
- Faults, failures, damage or defects to parts or assemblies must be reported in writing to the manufacturer within 24 hours if warranty claims are made.

In the event of malfunctions, damage or faults in one or more of the following components, the machine must be shut down immediately to avoid consequential damage:

- Electrical damage / fault on electrical drive components.
- Mechanical damage / fault on safety equipment.
- Mechanical damage / fault on drive elements / assemblies.
- Mechanical damage/fault on bearings and couplings.
- In the event of malfunctions, damage or faults in other elements or groups, the machine can continue to be operated until the time of repair after confirmation by the manufacturer.
- Elements or assemblies of other manufacturers listed in these operating instructions which have been installed in the machine are subject to the operating, maintenance, servicing and inspection instructions of the respective manufacturers, unless otherwise described. Any promises to the contrary regarding deviations from these documents provided require confirmation by the respective manufacturer.
- Any promises to the contrary regarding deviations from the properties/conditions described in this operating manual and the maintenance, servicing and inspection plans/protocols provided by the manufacturer must be confirmed in writing by the manufacturer.
- The current operating, maintenance, servicing and inspection instructions at the time of delivery of the machine are valid.

The validity remains for the user as long as the manufacturer has not provided the customer with more up-to-date operating, maintenance, servicing and inspection instructions and indicated compliance.

The manufacturer reserves the right to make changes to operating, maintenance, servicing and inspection instructions as well as technical changes in the interest of progress.

Impermissible Use / foreseeable misuse

Reasonably foreseeable misuse exists in particular through the introduction of screening material not approved for this machine (e.g. flammable or explosive substances, very moist or wetting screening material, stones or metal over a certain grain size).
Materials containing very coarse components (grain size > 300 mm), in particular coarse stones, concrete, metal parts (> 10 kg) or highly flammable substances must not be checked in.
It is forbidden to operate the trommel screen inside unsuitable buildings (e.g. insufficiently high industrial halls) or in the area of dangerous explosive atmospheres. Operation of the unit inside buildings is not permitted. Operation of the machine in a non-horizontal position is not as intended.
Furthermore, the machine must not be set up in the vicinity of overhead electrical lines.
Operation of the machine using only the support wheel is not as intended. Transporting the machine when loaded or moving it manually (by hand) or using an unsuitable tractor is not permitted.

Interference with the moving machine parts (e.g. screening drum) is prohibited.

Furthermore, it is possible that existing protective devices are dismantled or the existing sensors are manipulated or triggered by means other than the components intended for this purpose.

The above-mentioned **misuse** must be explicitly prohibited in the operating instructions as well as by written operating instructions. Furthermore, the use of the system must be explicitly limited to the above-mentioned intended use in the operating instructions.

This documentation refers exclusively to the operation of the machine in the configurations described. In the event of changes to the assemblies of the configuration, the risk assessment must be repeated for the affected system parts or, in the event of significant changes within the meaning of the Product Safety Act, for the respective machine.
In principle, it is possible and customary to replace individual components installed on the system with identical components. This does not constitute a significant change / substantial modification within the meaning of the EC Machinery Directive or the Product Safety Act.

The manufacturer is not liable for defects in machinery or equipment and personal injury, even to those parts of the equipment which were not supplied by the manufacturer, which have arisen from one or more of the following causes:

- When used for a purpose other than that described under "Intended use".
- In the event of modifications to the mechanics / electrics / control system by the customer or a third party without the manufacturer's authorisation.
- Failure to comply with the specifications for operating materials and non-original spare parts.

- Failure to observe the operating instructions and the operating, maintenance and inspection instructions contained therein or missing and/or incomplete maintenance records specified by the manufacturer.
- Influence of unpredictable physical quantities (e.g. vibrations, mass, etc.) on the machine/plant.
- Influence of natural forces and/or variables and/or operating conditions/conditions that cannot be influenced by the manufacturer, as well as inadequate maintenance/maintenance due to a lack of or inadequate maintenance strategy.
- Improper use and/or operation or removal of guards.
- Damage caused by feeding the wrong sieve material.
- Natural or increased wear and tear or wear on parts / assemblies of the system / machine, caused by operating conditions of the machine / system.
- Incorrect or incomplete documentation of other manufacturers' products that form part of the machine.
- Consequential damage caused by one or more of the causes described under "improper use".

Transport

Stationary version

Suitable industrial trucks or cranes can be used to lift the machine. These lifting devices may only be attached to the attachment points provided for this purpose. Note that if the ground is uneven, it is essential that the machine is lifted professionally.
must be secured against slipping/rolling sideways!
All relevant safety regulations must be observed during all transport, lifting or moving work.
This also includes that only tested and suitable
Lifting gear may be used!
As a general rule, never reach under a suspended load.
The machine can be slowed down with suitable fuses or drive vehicles.
be moved, provided that the intended transport route is appropriately secured.

Safety regulations

- Only use suitable, undamaged and fully functional means of transport with sufficient carrying capacity!
- Observe transport dimensions and transport weight (max. set-up weight).
- Fit the necessary transport locks and transport devices.
- Only attach transport / slinging equipment at the points provided for this purpose.
- Secure against slipping.
- Pay attention to the centre of gravity.
- Avoid jerky settling.
- Comply with accident prevention regulations and local regulations.
- Transport the machine carefully, do not lift, support or push on sensitive parts such as the control cabinet, conveyor belts, panelling, etc.

Transport preparations

- Remove screenings and other loose parts in the machine.
- Secure moving machine parts

Wheeled mobile version

Please ensure that only towing vehicles with the necessary towing capacity and the appropriate connections for lighting are used.
For road transport, a towing vehicle with at least 3.5 t towing capacity and 150 kg drawbar load is required.

Storage

For longer-term storage, please observe the following instructions.

- Storage should be in a closed room.
- Protect the machine from moisture.
- Condensation due to high humidity and fluctuating temperatures must be avoided.
- Before and after a longer storage period, all bearing points must be lubricated according to the maintenance and inspection schedules.
- After a longer storage period, all parts (cables, rubber) that are subject to a natural ageing process must be checked for suitability / usability.
- Observe the storage instructions of the respective manufacturer of the power generator.

Commissioning

Line-up

The following conditions must be met before commissioning:

- The ground on which the machine is placed must be level and have sufficient load-bearing capacity.
- Installation in the vicinity of overhead power lines is prohibited or a sufficient distance must be maintained.
- The machine must be aligned horizontally with the mechanical supports. The support wheel must be completely unloaded.
- Ambient temperatures of more than 35°C should be avoided. They may lead to the motor no longer being able to dissipate sufficient heat to the environment, which will cause the machine to shut down.

Accessibility

If the unit is to be installed in one place for a longer period of time, it must be ensured that all parts requiring maintenance are easily accessible. The safety zone of 5 m all around must also be observed.

Electrical Connection

The machines are designed according to VDE regulations. Before connecting to a power supply, check whether a suitable connection exists. If you have any questions about this, please contact the electrician responsible for the stationary power installation.

Connection values

Total power: 9.95 kW (e2+)
Fuse protection: 16 A
Plug: CEKON CEE 5x16 A / 6 h
Mains: 5-wire mains (L1, L2, L3, N, PE)

Attention! Danger due to electrical Energy

Connecting the machine to the mains

Before connecting the machine, check that the mains voltage and mains frequency are suitable for the machine (see type plate). If there are deviations, the machine must not be connected.

The colours of the individual cores of the supply line:
Yellow/green: protective earth conductor
Blue: Neutral conductor
Black-brown-black: are the 3 three-phase current phases (outer conductors), designation in the circuit diagram L1, L2, L3
Purple/white: Control lines 24V/0V

Control / System integration

- During electrical installation, ensure that the direction of rotation of the mains is correct.
- For emergency stop, all three phases (L1, L2, L3) must be disconnected from the mains. Stopping by switching off the control current is not permitted. Observe the applicable regulations.
- A protection test according to VDE must be carried out by a qualified electrician before commissioning. In the event of a fault or malfunction, all transport systems must also be stopped The principles of functional safety must be taken into account.
- The machine must be included in the emergency stop circuit. No additional hazards may result from this integration.
- The applicable national and international standards and laws must be observed for the design of safety-related systems.

For further technical details of the geared motors / frequency inverters or other electrotechnical components, the documentation of the respective manufacturers in the appendix, as well as relevant technical standards and regulations must be observed.

Safety instructions

Principle

- The machine/system has been built in accordance with the state of the art and recognised safety regulations. Nevertheless, danger to life and limb of the user or third parties or impairment of the machine and other material assets may occur during its use.
- Only use the machine/system when it is in perfect technical condition and for its intended purpose, in a safety-conscious and hazard-conscious manner and in compliance with the operating instructions! In particular, faults that may impair safety must be rectified by trained specialist personnel.
- Never operate the machine or system at a higher speed than specified.
- Intended use also includes observing the operating instructions and complying with the inspection and maintenance conditions.

Organisational measures

- Always keep the operating instructions within easy reach at the place of use of the machine / system!
- Complementary to the operating instructions, observe and instruct generally applicable legal and other binding regulations for accident prevention and environmental protection!
- Such duties may also concern, for example, the handling of hazardous substances or the provision/wearing of personal protective equipment.
- Supplement the operating instructions with instructions including supervisory and reporting obligations to take account of special operational features, e.g. with regard to work organisation, work processes, personnel deployed.

- The personnel assigned to work on the machine must have read the operating instructions, especially the safety instructions, before starting work. It is too late during work. This applies in particular to personnel only occasionally working on the machine, e.g. during set-up, maintenance.
- At regular intervals, the safety and danger-conscious work of the personnel must be checked in compliance with the operating instructions.
- Always wear the prescribed "personal protective equipment" (e.g. safety goggles, hard hat, hearing protection foot protection respiratory protection and any other necessary protective equipment).
- Observe all safety and danger instructions on the machine/plant!
- Familiarise yourself with the emergency stop functions of the machine or system.
- Keep all safety and danger notices on the machine in legible condition!
- In the event of safety-relevant changes to the machine/system or its operating behaviour, shut down the machine/system immediately and report the fault to the responsible office/person!
- Protective devices (protective grids, protective bonnets or covers) must not be removed under any circumstances.
- Damaged switches and protective devices must be replaced immediately.
- Do not make any changes, additions or conversions to the machine/plant that could affect safety without the manufacturer's approval! This also applies to the installation and adjustment of safety devices and to welding on load-bearing parts.
- Carefully reassemble and secure parts that are to be dismantled for transport purposes before putting them back into operation!
- For recommissioning, proceed only in accordance with the operating instructions!
- Never bypass limit switches or other safety switches.
- Spare parts must meet the technical requirements specified by the manufacturer. This is always guaranteed with original spare parts.
- Replace hydraulic hoses at specified or appropriate intervals, even if no safety-relevant defects are apparent!
- Do not make any programme changes (software) to programmable control systems!
- Prescribed intervals or intervals specified in the operating instructions for recurring tests/inspections must be observed.
- Make the location and operation of fire extinguishers known!
- Observe the fire alarm and fire fighting possibilities!
- The operator of the installation shall determine and arrange for the type, scope and time limits for required inspections by means of a risk assessment.

Personnel selection and qualification

- Work on/with the machine/plant may only be carried out by reliable personnel. Observe the legally permissible minimum age!
- Only use trained and instructed personnel, clearly define the responsibilities of the personnel for operating, setting up, maintaining, servicing!
- Ensure that only authorised personnel work on the machine!

- Define machine operator responsibility and allow him to reject instructions from third parties that are contrary to safety!
- Only allow personnel who are to be trained, instructed or are undergoing general training to work on the machine/system under the constant direction and supervision of an experienced person!
- Work on the electrical equipment of the machine/plant may only be carried out by a qualified electrician in accordance with the electrotechnical regulations.
- Only personnel with special knowledge and experience in hydraulics may work on hydraulic equipment!
- Work on the electrical components of the machine may only be carried out by trained and instructed electricians.

Safety instructions for specific operating phases

- Before starting work, familiarise yourself with the working environment at the site. The working environment includes e.g. obstacles in the working and traffic area.
- Take measures to ensure that the machine/system is only operated in a safe and functional condition!
- Only operate the machine if all protective devices and safety-related equipment, e.g. detachable protective devices, emergency stop devices, sound insulation, suction devices, are present and functional!
- Remove all tools or other foreign objects from the operating area before starting the machine.
- Check the machine/plant for externally visible damage and defects at least once per shift. Report any changes that have occurred (including those in operating behaviour) immediately to the responsible office/person. If necessary, stop the machine immediately and secure it.
- Before starting work, all rotating machine parts must be inspected daily for foreign bodies that have wound up and all moving elements must be inspected for trapped foreign bodies and removed if necessary (fire hazard).
- In the event of malfunctions, stop the machine/system immediately and secure it! Eliminate faults immediately.
- Observe switch-on and switch-off procedures, control displays according to the operating instructions!
- Do not switch off or remove the suction and venting devices while the machine is running!
- Before switching on the machine/plant, make sure that nobody can be endangered by the starting machine/plant!
- Never switch on the machine/plant until all other persons in the area of the machine/plant have been warned and have moved away from the operating area.
- Keep the operating area clear of obstacles that someone could trip over and fall onto a working machine or equipment.
- Never sit or stand on objects with which you could fall against the machine or system.
- Never leave the machine/plant unmonitored during operation.

- Make sure that you do not put your fingers, hands or other body parts into the machine or system or near moving parts when control circuits are active!
- Refrain from any working methods that impair the stability of the machine!
- Air, hydraulic and electrical connections must be switched off when the machine or system is not in operation.
- Protective devices may only be opened after the machine or system has come to a standstill.

Special work within the scope of use of the machine

Maintenance activities and troubleshooting in the workflow

- Observe the setting, maintenance and inspection activities and deadlines specified in the operating instructions, including information on the replacement of parts/parts equipment! This activity may only be carried out by qualified personnel.
- All repair work must always be carried out when the machine is at a standstill.
- Inform operating personnel before starting to carry out special and maintenance work! Appoint a supervisor!
- For all work concerning the operation, production adjustment, conversion or setting of the machine/plant and your safety-related equipment as well as inspection, maintenance and repair, observe switch-on and switch-off procedures according to the operating instructions and instructions for maintenance!
- Secure the maintenance area as far away as necessary!
- If the machine/plant is completely switched off during maintenance and repair work, it must be secured against being switched on again unexpectedly:

Lock main command devices and remove key and/or attach warning sign to main switch.

Note: For maximum protection, the power source should be locked with a lock for which only one person has the key. This prevents anyone from accidentally turning on the power to the machine or equipment while it is being serviced.

- Keep all handles, steps, railings, platforms, ladders free of dirt!
- Clean and purge the machine/plant according to the instructions in this manual.
- After cleaning, check all fuel, engine oil and hydraulic oil lines for leaks, loose connections, chafing points and damage! Immediately remedy any defects found!
- Always tighten screw connections that have been loosened during maintenance and servicing work!

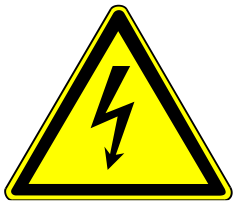
Attention Danger!

Reference to special types of hazards

Electrical energy

- Three-phase sockets must have a right-hand rotating field (VDE0100, part 600, ABS 14).

- Only use original fuses with the prescribed amperage! In the event of faults in the electrical power supply, switch off the machine/system immediately!
- Work on electrical systems or equipment may only be carried out by a qualified electrician or by an electrically instructed person (EUP) under the direction and supervision of a qualified electrician in accordance with the electrotechnical regulations.
- Machine and system parts on which inspection, maintenance and repair work is carried out must be disconnected from the power supply, if required. First check that the disconnected parts are voltage-free, then earth and short-circuit them and insulate adjacent live parts!
- The electrical equipment of a machine/plant must be inspected/checked regularly. Defects such as loose connections or scorched cables must be rectified immediately.
- If work on live parts is necessary, call in a second person to operate the emergency stop or main switch with voltage release in an emergency. Close off the work area with a red and white safety chain and a warning sign. Only use voltage-insulated tools!
- When working on high-voltage assemblies, connect the supply cable to earth after disconnecting the voltage and short-circuit the components, e.g. capacitors, with an earthing rod!



Attention! Danger due to electrical Energy

Gas, dust, steam, smoke

- Only carry out welding, burning and grinding work on the machine/system if this has been expressly approved. There may be a risk of fire or explosion!
- Before welding, burning and grinding, clean the machine/plant and its surroundings from dust and flammable substances and ensure sufficient ventilation (danger of explosion!).
- When working in confined spaces, observe existing national regulations if necessary!

Hydraulics, pneumatics

- Work on hydraulic equipment may only be carried out by persons with special knowledge and experience in hydraulics!
- Check all lines, hoses and screw connections regularly for leaks and externally visible damage! Remove any damage immediately! Oil spraying out can cause injuries and fires.
- Depressurise system sections to be opened and pressure lines (hydraulic, compressed air) before starting repair work according to the assembly descriptions!
- Lay and fit hydraulic and compressed air lines properly! Do not mix up connections! Fittings, length and quality of the hose lines must meet the requirements.

Noise

- Machine enclosures and sound insulation devices on the machine/plant must be in the operating position during operation.
- Wear prescribed personal hearing protection!

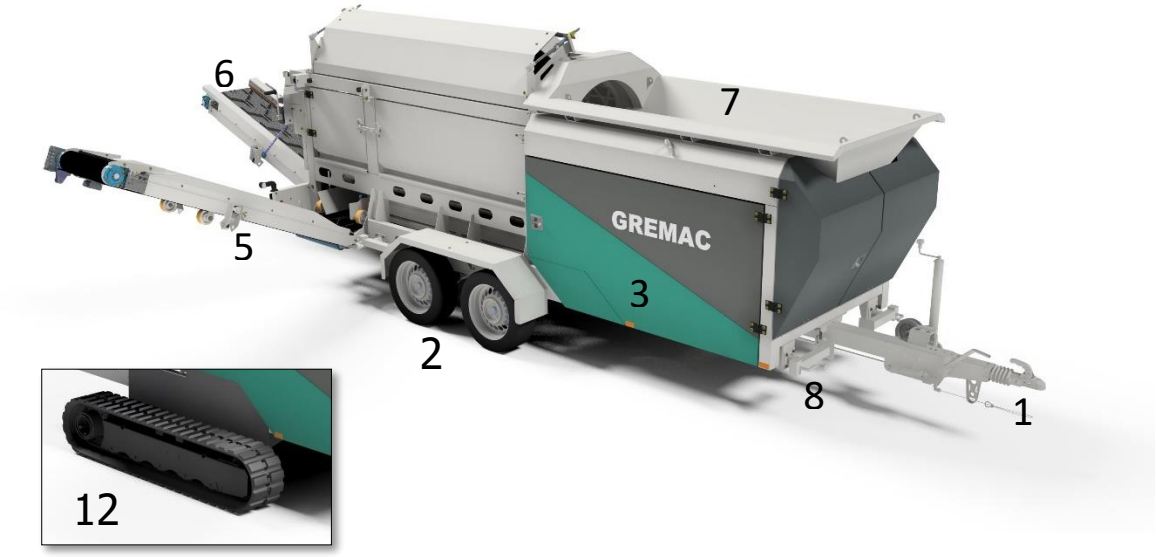
Oils, fats and other chemical substances

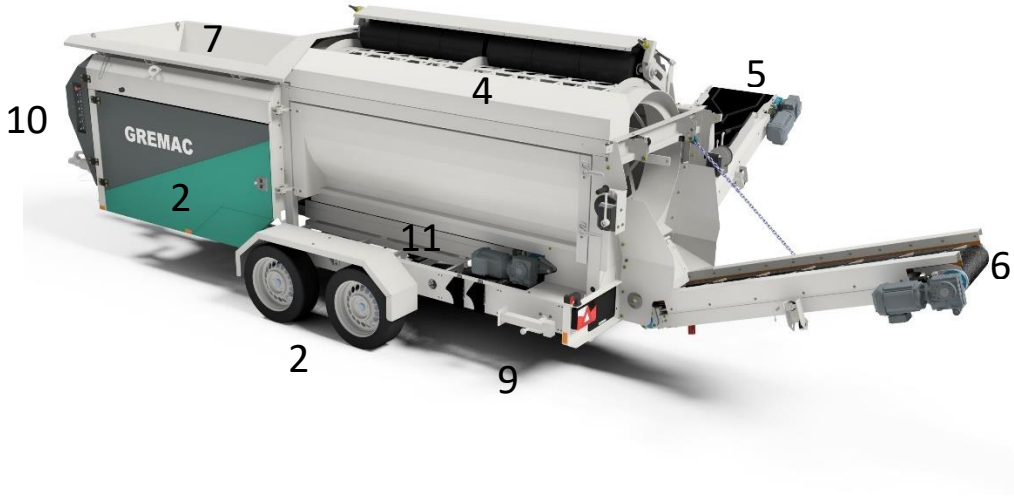
- When handling oils, greases and other chemical substances, observe the safety regulations applicable to the product!
- Take care when handling hot operating and auxiliary materials (risk of burns or scalding)!

Operating instructions

Please observe the instructions in the respective sections, which are marked with an additional warning symbol.

Machine overview





1 = Drawbar with hand brake and support wheel
2 = Left flap, switch cabinet, control unit
3 = Right flap; parking space for power generator, CEE 16 A socket, main switch
4 = Sieve drum with cleaning brush and collecting belt for sieved material
5 = Folding stockpile conveyor for screenings
6 = Folding stockpile conveyor for oversize grain
7 = Bunker (maximum load: 500 kg)
8 = Support foot machine front
9 = Machine rear support feet (option)
10 = Control unit
11 = Collecting belt below the sieve drum
12 = undercarriage (with road approval) or tracked undercarriage

Settings and operation

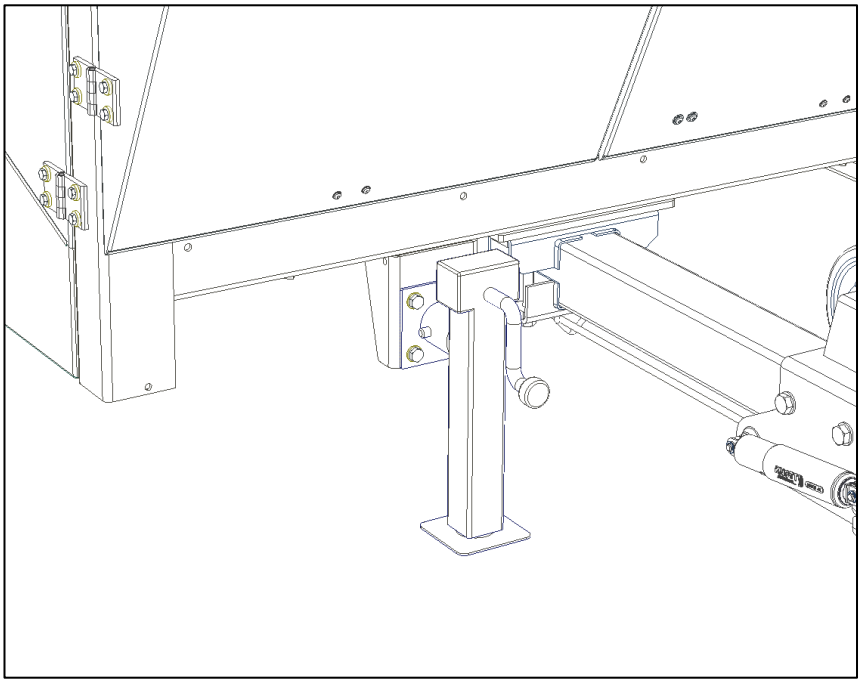
Setting up the machine

The machine must be set up on a level and load-bearing surface. In particular, the area under the support feet must have sufficient load-bearing capacity. The area under the support feet can be enlarged with suitable substructure material.

Attention Danger!

The machine must not be placed or operated on the support feet when it is attached to the vehicle. Otherwise, high forces would arise on the drawbar during loading, which could lead to damage. This also applies to the support wheel. When ready for operation, the support wheel on the drawbar must be unloaded. The maximum load of the support wheel of 250 kg must not be exceeded under any circumstances. Otherwise the machine will be damaged.

Use the four mechanical support feet to align the machine horizontally. Make sure that the axle is unloaded.
Beams or slabs must be used to prevent the support feet from sinking in.
Before unhitching the machine, the handbrake must be pulled (wheel-mobile machine only).

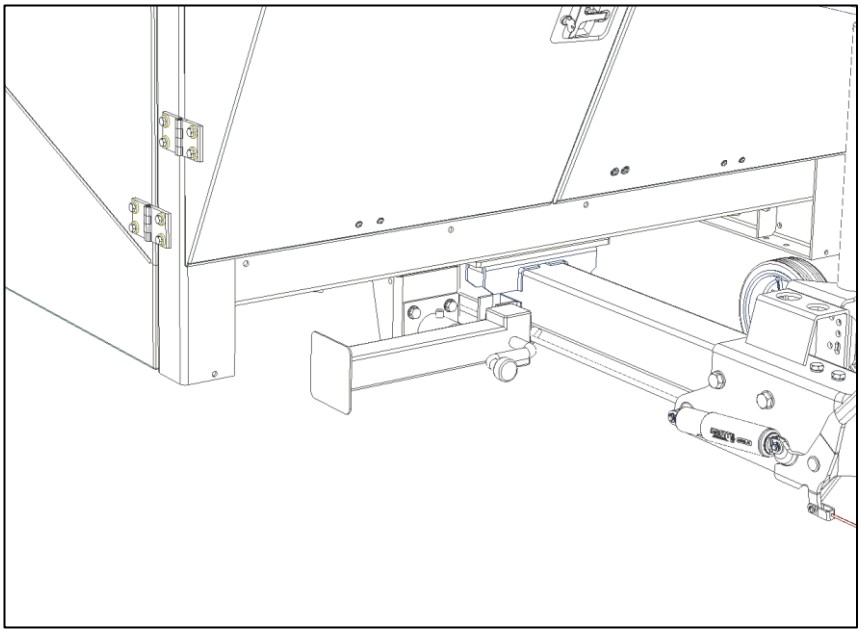


(Fig. Working position)

Hold the support by the support tube with one hand and pull out the bolt at the connection to the machine. Caution: the support can now be completely removed from the pivot. Make sure that the support does not fall down.

Turn the prop from the horizontal to the vertical position and insert the bolt into the hole provided until the locking ball is visible on the back of the hole. Now turn the crank clockwise to extend the prop. To retract it, turn it anticlockwise. Locking in transport position is done in reverse order.

Attention Danger!



(Fig. Transport position)

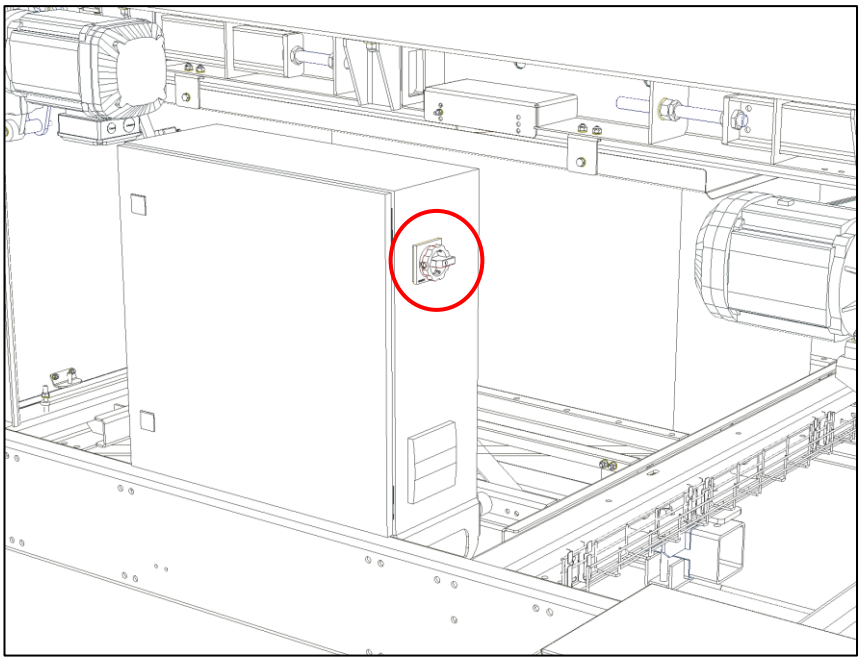
Attention: Before driving off, all supports must be brought into transport position and the correct position of the pin must be checked. The prop must always be completely retracted in the transport position.

Attention Danger!

Energy supply

The machine can be supplied with power by a power generator or also stationary with a CEE - 16 A - three-phase cable.

Switching between the supply forms is done by reconnecting the CEE - 16 A three-phase plug. The machine must be switched off before disconnecting the plug. To do this, the main switch must be in the "OFF" position.

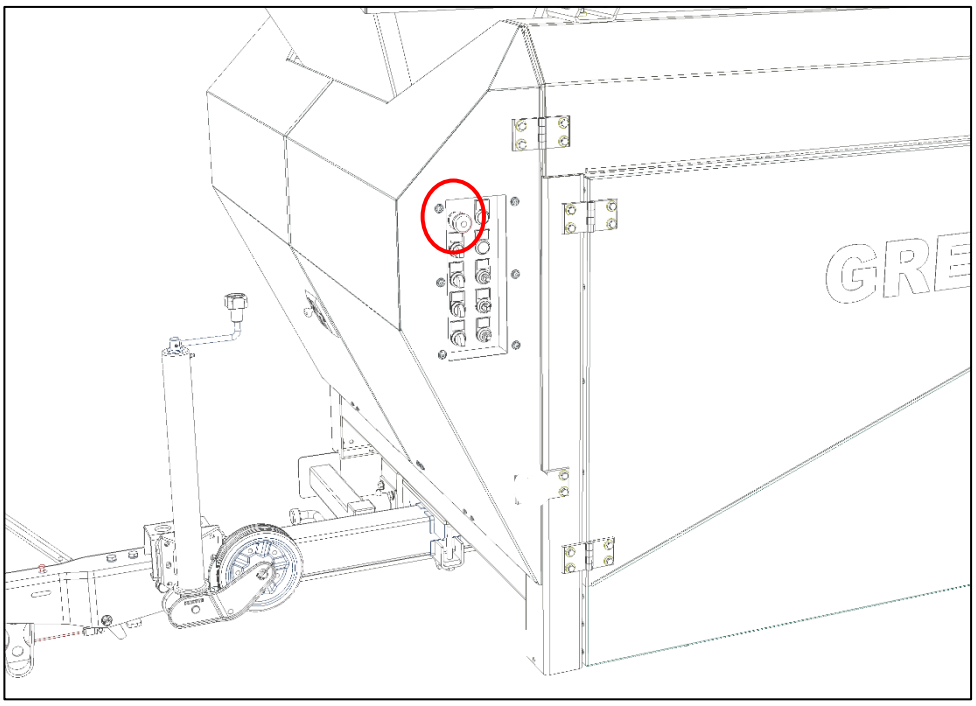


(Fig. Main switch)

The plug is located on the right-hand side of the machine at the generator position. The main switch is located on the right side of the control cabinet.
After establishing the connection and, if necessary, starting the power generator, the main switch must be switched to the "ON" position. The control unit is now supplied with power and starts. The control unit is then ready for operation.
After power is applied, the control unit is in emergency stop mode to prevent components from starting up automatically.

Emergency stop

The machine has three emergency stop switches (on the control panel, on the right rear of the machine, on the cable remote control). Pressing the red buttons activates the emergency stop. The machine stops immediately. All drives are switched off. If a power generator is used, it continues to run despite the emergency stop being activated. The power generator must be stopped on the machine itself.



(Fig. Emergency stop on the control unit)

As soon as the emergency stop has been activated, the "Stop/Reset" button flashes red. To deactivate the emergency stop, it must be pulled out to unlock it. To reset, the "Stop/Reset" button must be held down for at least 3 seconds. After this, the red display goes out and the "Start" key flashes green. The machine is now ready to start.

Folding the conveyor belts on and off

The two folding conveyor belts are each operated by a manual cable winch. An electric cable winch is available as an option.

Attention: It is forbidden to stay under the conveyor belts during the folding process!

Before operating the manual cable winch/electric cable winch, remove the transport lock. This is located on the left side of the conveyor belts.

Attention Danger!

Caution: Before removing the transport lock, make sure that the cable of the cable winch is taut. If the cable is not tensioned, there is a risk that the conveyor belt will fall down after releasing the transport lock and cause serious injuries.

Attention Danger!

(Fig. Winch)

(Fig. sagging chain/rope with active transport safety device. Under no circumstances should the transport lock be removed here).

If the chain/rope is sagging, the transport lock must not be removed under any circumstances! For manual folding, turn the crank handle until the rope is taut. Make sure that the rope winds up correctly on the rope drum.

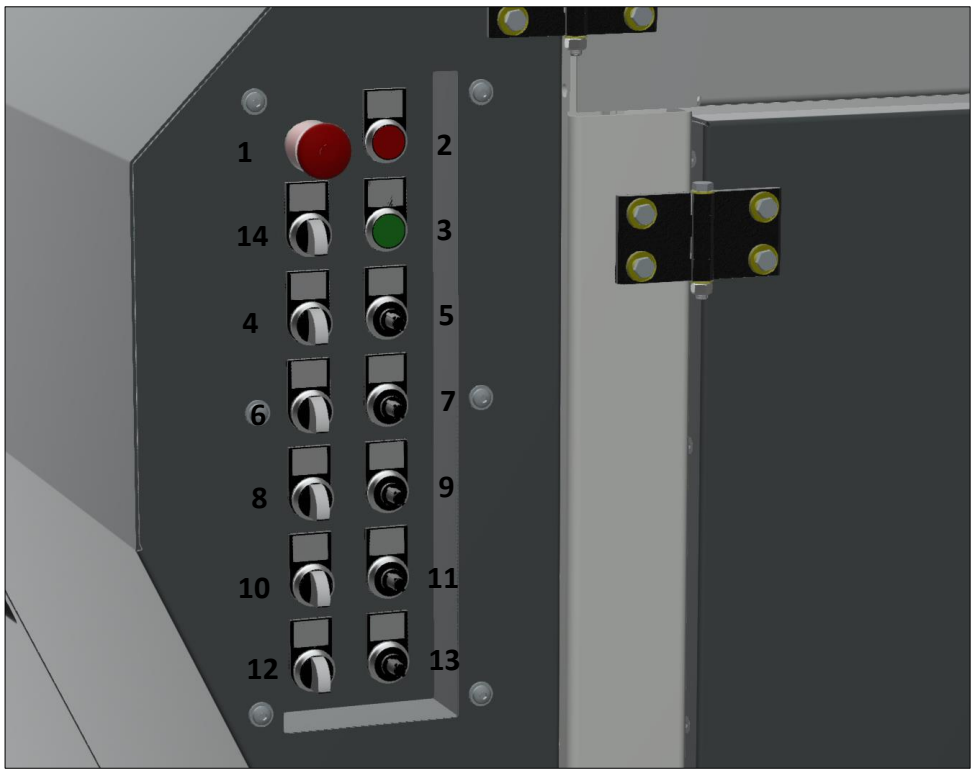
Attention Danger!

Caution: Never touch the rope during operation. There is a risk of injury from being pulled into the sprocket.

The manual folding is to be brought into the desired position by turning the hand crank. Lower the fine material stockpile belt until the securing chains bear the load of the conveyor belt and the rope is unloaded.
The incline of the over-grain stockpile belt in working position may be between 10 and 30°. If the material is not transported properly, reduce the angle.

Operating unit

The functions of the machine are operated via the control panel on the left front of the machine.



(Fig. Operating unit)

Buttons and displays on the control unit:
1 = Emergency stop (Pressed: emergency stop; Pulled: no emergency stop)
2 = Stop/reset button with red LED
3 = Start button with green LED
4 = Bunker band on/off with white LED
5 = Bunker belt speed adjustment
6 = Sieve drum on/off with white LED
7 = Screen drum speed adjustment
8 = Collective band on/off with white LED
9 = Collective belt speed adjustment
10 = Fine belt on/off with white LED
11 = Fine material belt Speed adjustment
12 = Overcorn band on/off with white LED (optional)
13 = Oversize belt Speed adjustment
14 = Reserve

Chain mobile only: There is a potentiometer on the control cabinet for adjusting the driving speed.

LED signals:
1 = Stop/reset button

- Flashing red: Emergency stop actuated
- Lights up permanently red: Malfunction

3 = Start button

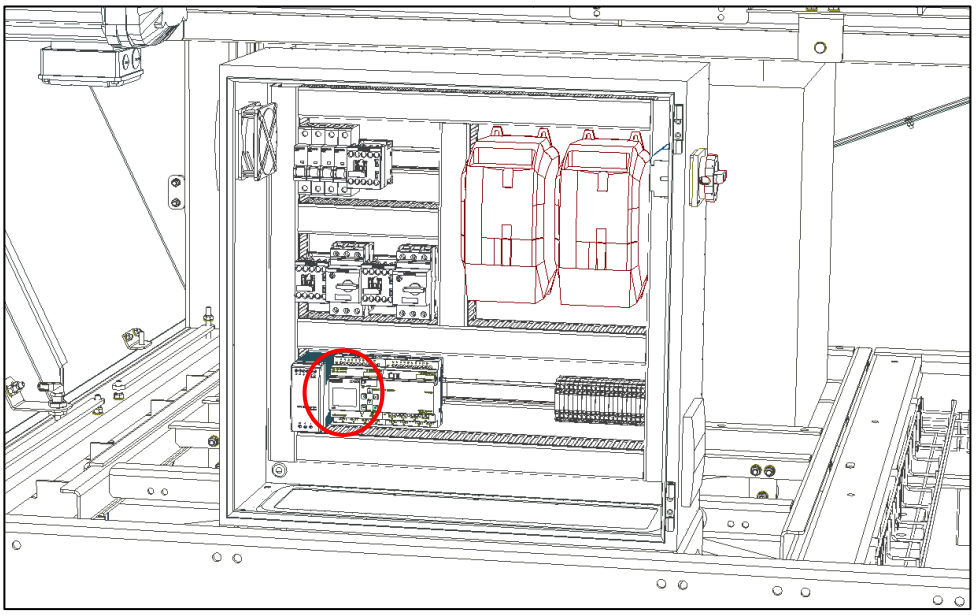
- Flashing green: Machine ready to start
- Lights up permanently green: Machine started

4, 6, 8, 10, 12 = Selector switch for components

- Flashing white: Fault
- Permanent light: Component started / running

Status display and operating hours counter

In the control cabinet of the machine, there is a machine control with an LCD display at the bottom left. This display shows both the operating hours and status messages in plain text.



(Fig. Opened control cabinet, position of the machine control)

Starting the machine

Manual operation

- The red LED of the "Stop/Reset" button (2) flashes: Unlock all emergency stop buttons and press the "Stop/Reset" button for 3 seconds. The red LED goes out and the "Start" button (3) starts flashing green.
- Manual operation of a single component: Select the respective component by turning the switch (4, 6, 8, 10, 12) to the right. By pressing the "Start" button (3), the control unit starts the respective selected components.

Automatic operation

- The red LED of the "Stop/Reset" button (2) flashes: Unlock all emergency stop buttons and press the "Stop/Reset" button for 3 seconds. The red LED goes out and the "Start" button (3) starts flashing green.
- Automatic mode: Select all components by turning the switches (4 +6 + 8 + 10 + 12) to the right. The control system now switches to automatic mode. By pressing the "Start" button (2), the control unit starts all components of the machine, beginning with the heap conveyors, then the screening drum and finally the hopper.

Attention Danger!

Start-up warning
The machine has a horn that signals start-up in automatic mode. Three warning signals sound before the components are started. There is no start-up warning in manual mode.
Before starting the machine, always make sure that there are no persons in the danger zone.

Stop machine

Pressing the "Stop/Reset" button (2) stops the machine. The machine is also stopped as soon as a selector switch (4, 6, 8, 10, 12) of the components is switched on or off. This serves as a safety measure to prevent unintentional

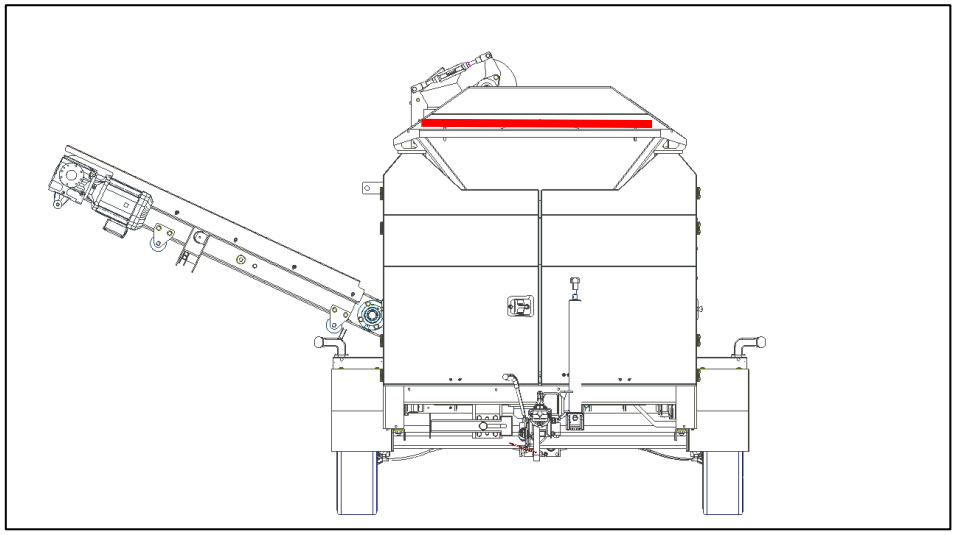
If a problem occurs with a component during start-up (e.g. blockage), the control system makes several attempts to start the component. If this is not successful, the machine is stopped and a fault indication is given.

- The LED of the selector switch of the affected component indicates a fault with a flashing signal.
- The LED of the "Stop/Reset" button lights up permanently red.

For more information on the malfunction, see the chapter Troubleshooting.

Bunker filling

The machine is filled by means of a wheel loader, excavator or upstream conveyor belt. Care must be taken that the bunker is not overfilled. This can lead to a malfunction.



(Fig. Filling may only be carried out up to the top edge of the bunker).

To prevent damage to the machine, the machine may only be filled with screenings containing parts that do not exceed the following data.

Weight: max. 10 kg (hard: e.g. stones, metal); max. 15 kg (soft: e.g. wood, clods of earth)
Size: max. edge length: 30 cm

If the machine is to be operated permanently with large-sized screenings, the use of a stone grid (order code W003.A055) on the hopper is recommended.
It is used to pre-separate large parts (>200 mm) and thus protect the machine and increase throughput.

Load-dependent hopper control

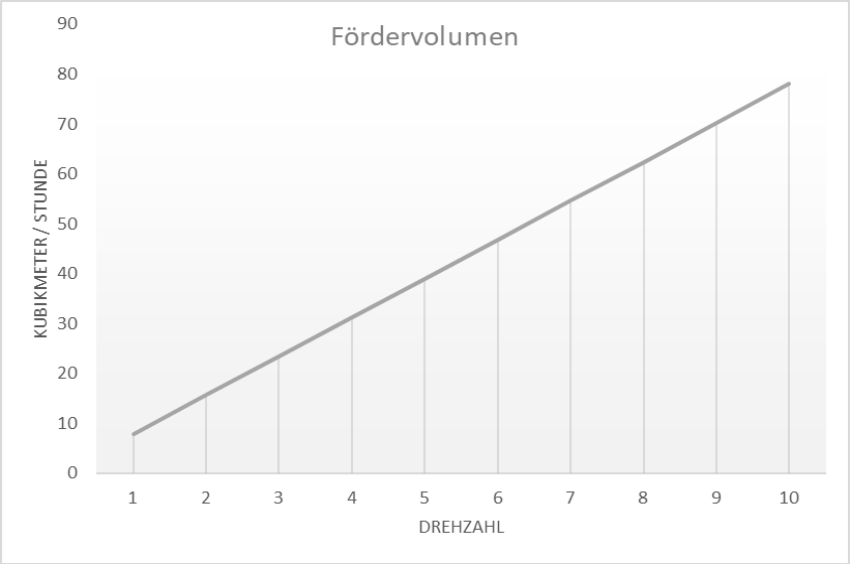
When the load limit of the drum drive is reached, the hopper and thus the material feed to the drum is stopped to prevent overfilling and thus standstill. The feed is automatically restarted when the load limit is undershot.

Bunker Autoreverse

When the load limit of the hopper drive is reached, the hopper is automatically reversed for a short time and restarted in the conveying direction. In the event of overfilling of the hopper or very large impurities in the screenings to be processed, this prevents bridging and ensures a better material flow.

Conveying speed

The conveying speed of the hopper belt can be adjusted on the control unit. The theoretical conveying volume (permanent 100% filling) can be found in the table below. The setting should always be selected when the hopper is full and is therefore the maximum throughput capacity.



Depending on the material to be screened, it is necessary to adjust the conveyor speed of the hopper belt in order to achieve optimum screening performance of the machine.

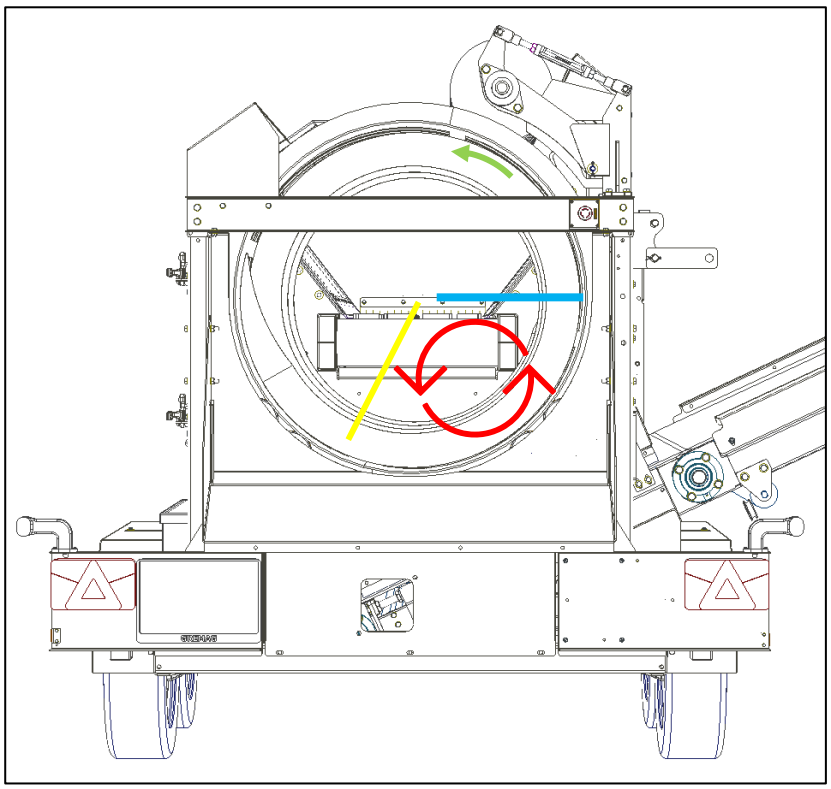
Bunker top

A hopper attachment (order code: W003.A054) is available for easier filling with large buckets and to prevent overfilling onto the rear of the machine. It does not serve to increase the volume of the hopper and thus the filling.

Sieving capacity

Achieve optimum sieving performance

The screening capacity of the machine depends on the material to be screened, the condition of the material to be screened (e.g. dry, wet, glued) and the desired screen cut. The hopper speed and drum speed must be selected so that the drum is not overfilled.



(Fig. green: direction of drum rotation; red: material circulation; blue/yellow: max. drum filling)

The rotational movement of the drum takes the screenings upwards on the right-hand side. The higher the drum speed, the more it is pulled upwards and falls back down at the apex of the acceleration, thus forming a circulating rotary motion. This achieves optimal mixing, cleaning through friction and ultimately optimal screening.

Screenings with a high proportion of parts > 40 mm

The drum must not be filled higher than the middle of the vertical line (blue mark) to avoid blockages caused by screenings and wear and damage caused by heavy parts falling down.

Screenings with a high proportion of parts < 40 mm

The drum may be filled above the vertical of the drum (blue marking). In this case, the degree of separation must be observed and, if necessary, the bunker speed must be reduced.

Screen cut

Depending on the desired sieve cut, the drum can be fitted with different sieve mats. Mesh sizes from 5 x 5 mm to 50 x 50 mm are available.
The procedure for replacing the sieve mat can be found in the chapter "Replacing sieve mats".

The shape of the material to be screened essentially influences the screening. So-called runaways in the screenings, i.e. larger pieces than the desired screen cut, are often due to an elongated shape or too high a speed of the screening drum.
If the desired sieving result is predominantly too large, the sieve mat with the next smaller mesh size must be used.
Deviations in the sieve section cannot be completely prevented in the case of drum sieves and therefore do not constitute a warranty case.

Possible faults	Removal
The oversize still contains a lot of sieve material smaller than the sieve cut.	- Too much material in the drum. Lower the hopper speed. - Drum speed too low, increase speed. - Material too sticky. Allow material to dry.
There are many larger parts in the screening fraction.	- Sieve mesh too large. Fit a sieve mat with a smaller sieve mesh on the drum. - Too high drum speed produces "piercing". Reduce speed. - Too little screenings in the drum, refill material.

Troubleshooting

Faults on conveyor belts

The machine has three conveyor belts

1 = Bunker conveyor
2 = anthology
3 = Fine material belt
4 = Overcorn band

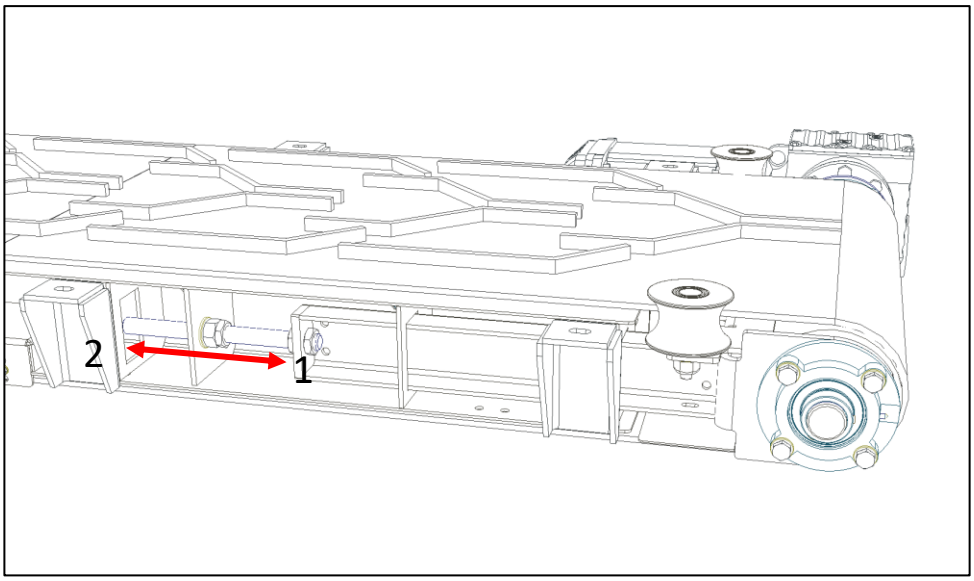
Preventive measures

- Regularly remove dirt and build-up from the conveyor belts.
- Check the tension and belt tracking of the conveyor belt before starting work.
- Regularly service the scrapers and bearings of the conveyor belts.
- Replace worn wipers and seals at an early stage.

Possible faults	Removal
Conveyor belt runs to one side.	- Check for dirt under the belt and remove it. -Correct the run of the conveyor belt.
Conveyor belt stops even though the drive drum is turning.	- Conveyor belt has too little pre-tension. - Retighten the belt.
Motor protection trips / frequency inverter shows "E-triP" error	- The conveyor has a heavy gait. - Remove any build-up on the conveyor belt and any blockages. - Check the run of the belt. - At low temperatures, there is a risk of heavy walking due to freezing of the conveyor belt. If necessary, thawing must take place before use.
Conveyor belt has been started, but it does not move.	- Check the speed setting of the conveyor belt. - Check the frequency inverter to see if it has been stopped manually. And press the "Start" button on the frequency inverter if necessary.

Adjusting the belt tension

The conveyor belts have four adjusting spindles for tensioning the belt and correcting belt tracking.

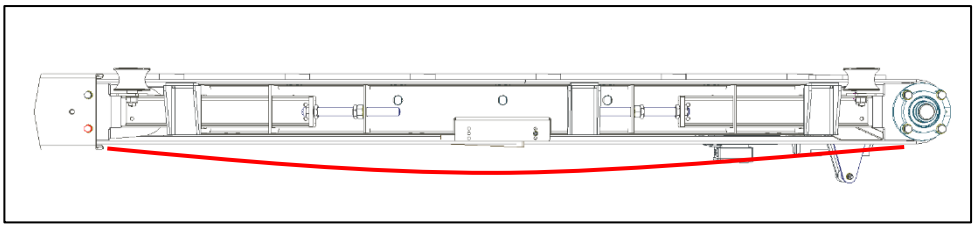


The belt is tensioned by adjusting the adjusting spindles in the direction of the drum (1). The belt is slackened by adjusting in direction (2).

1 = Bunker conveyor
2 = Fine material belt

Correct belt tension

The correct belt tension is set when there is no slip between the belt and the drum. The belt may have a small amount of slack on the underside. This has no negative effect on the function of the conveyor.
Excessive pre-tensioning of the belt, on the other hand, leads to unnecessarily high loads on the bearings and mechanical components and results in increased wear.
The belt tends to change length due to temperature fluctuations, which affects the belt tension. Therefore, check the tension of the belts regularly in case of large temperature changes.



Adjustment of the belt run

The straight run of the belt can be corrected by adjusting the adjusting spindles. Only make corrections while the conveyor belt is running. The adjustment must be made in small steps. Do not adjust more than half a turn of the adjusting nuts on the spindles and observe for some time how the correction has worked out before making another correction.

The adjustment must always be as even as possible to avoid misalignments of the drive and deflection drums.

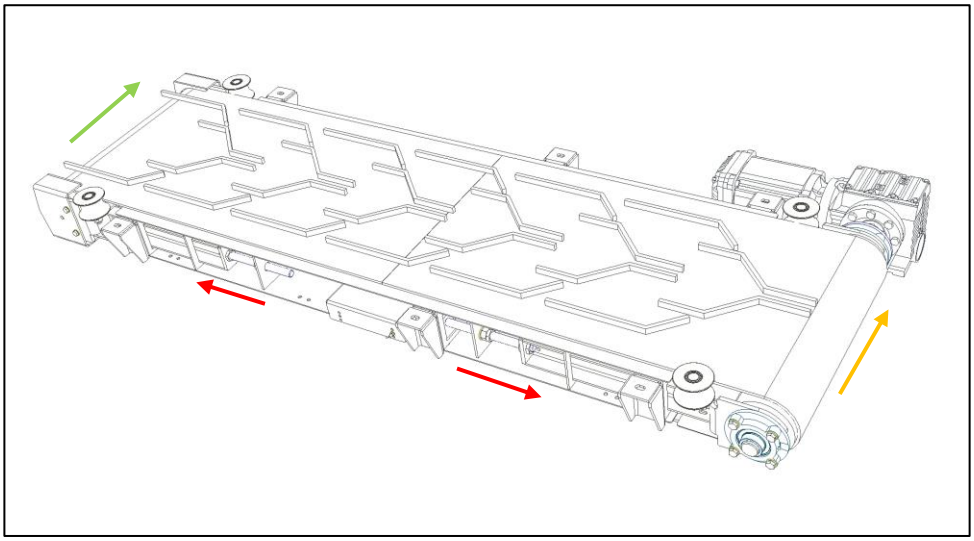


Fig. Correcting the belt run to the right by tensioning the belt on the left side.

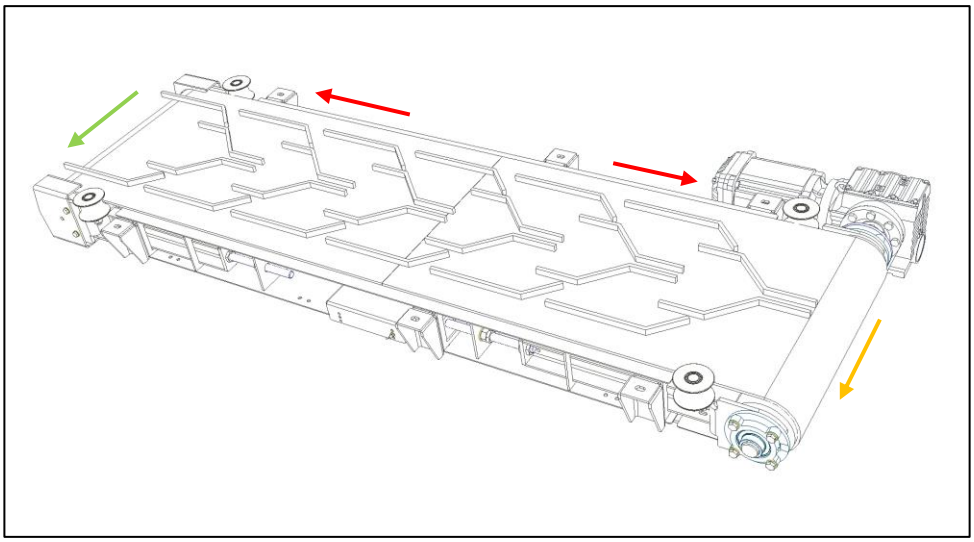
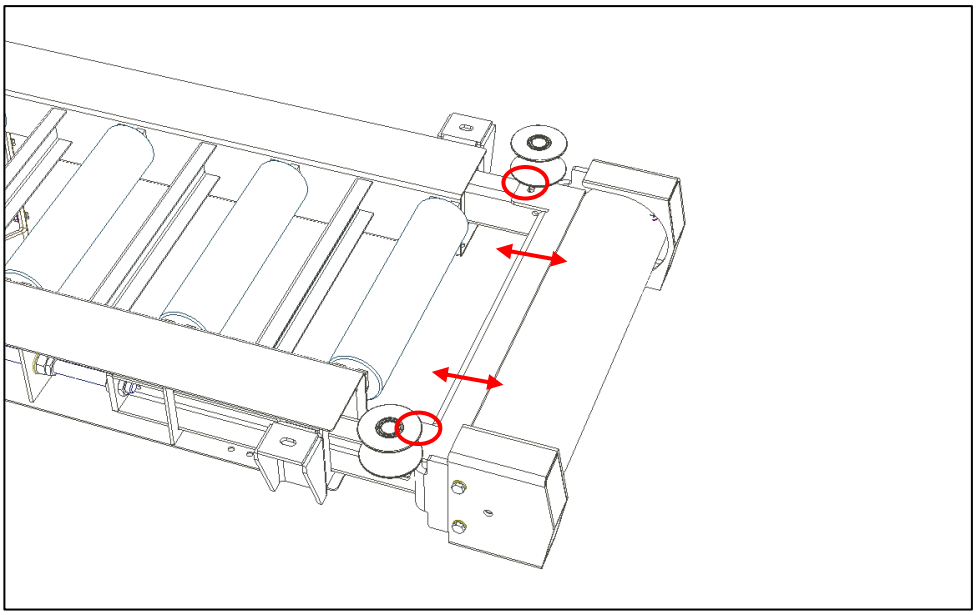


Fig. Correcting the belt run to the left by tensioning the belt on the right side.

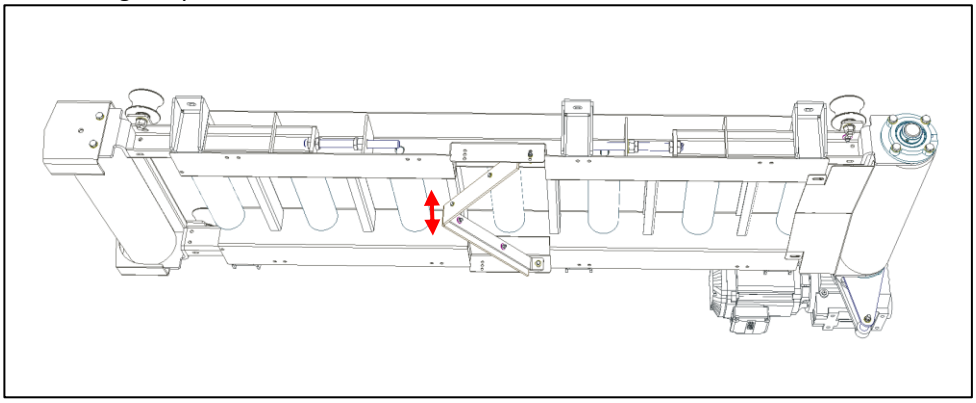
Adjustment of the drum scraper

The deflection drum has a drum scraper. To ensure correct functioning, the distance to the drum should be between 1 and 3 mm. The wiper can be moved by loosening the fastening screws on both sides.



Adjustment of the belt wiper (inside)

The inner scraper is floating and rests on the belt by its own weight. The scraper must be checked regularly for wear and contact with the belt.



Malfunctions on the screening drum

The machine has a screening drum.

1 = Drum body
2 = Screen mat (two-part)
3 = Cleaning brush

Preventive measures

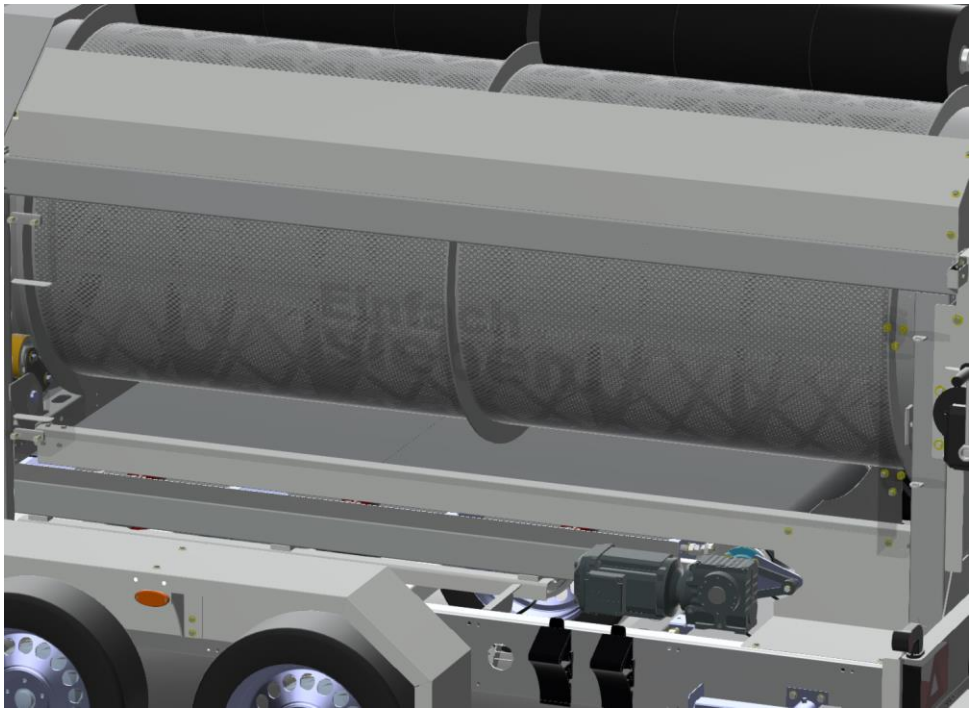
- Regularly remove dirt and build-up from the drum and cleaning brush.
- Before starting work, check the correct setting of the drum drive and the drum impellers.
- Regularly service the components of the drum.
- Replace a worn chain, drive wheel, rollers and other components at an early stage.

Possible faults	Removal
Drum rotates too slowly	- Increase the speed on the control panel.
The drum makes loud scraping noises	- Check the correct setting of the drive to the drum. - Check the impellers for complete contact with the treads of the drum. - Check the distance between the baffle plates and the drum.
Frequency inverter shows error "E-triP	- The sieve drum has a heavy gear. - Remove attachments and blockages if necessary. - Check the running of the drum.
Drum does not rotate evenly.	- Slippage between drum chain and drum. - Check the wear of the drive chain.
Screen perforation blocked.	- Adjustment of the cleaning brush not correct. - Screen material too wet. - Cleaning brush is stuck and must be cleaned.
Significantly larger parts are in the sieve fractioon	- The sieve mat is damaged, large parts get through. - The fastening of the sieve mat has come loose, so it has slipped and the closure no longer rests on the filler plate.

Replace sieve mat

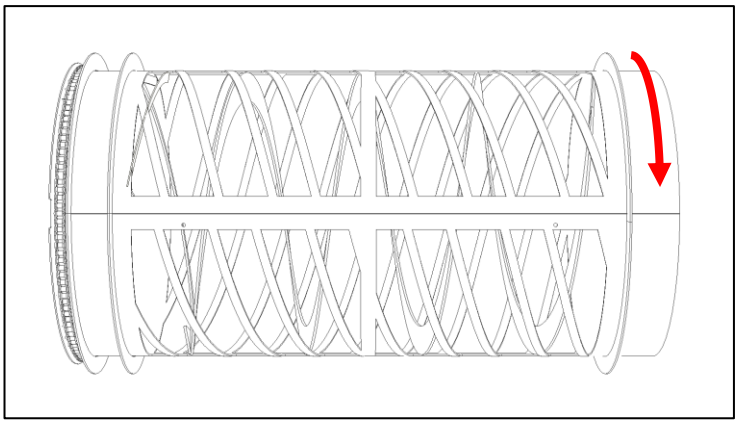
Before starting work, remove the cable remote control from the control cabinet. Guide the remote control downwards out of the machine. Lean the control cabinet door only and close the side panel. Open the side door on the drum.

The machine must be under power to use the remote control, but the machine must not be started. Unlock the emergency stop by pressing the "Stop/Reset" button for 3 seconds.
Let the drum rotate with the help of the remote control until the connection point of the screen mat is at working height. Press the emergency stop on the remote control to be able to work safely on the machine.

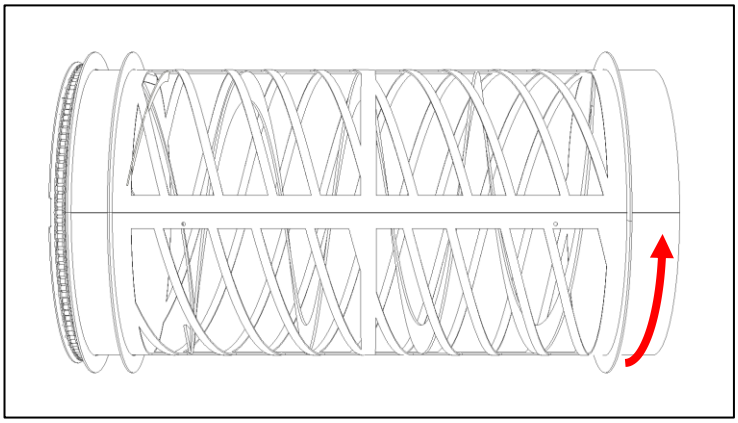


Secure the connection point of the screen mat with screw clamps, chain hoist or other suitable means to prevent uncontrolled springing open after removing the clamping screws.
Remove the clamping screws and carefully loosen the tools described above.
The screen mat is still attached to the drum by two fastening screws.
Unlock the emergency stop and rotate the drum using the remote control. Pull the sieve mat out of the machine parallel to the rotation of the drum.

When the screen mat is fixed at working height, stop the rotation of the drum and press the emergency stop button. Loosen the screws fixing the sieve mat to the drum and remove the sieve mat.
Attach the new screen mat to the drum. Unlock the emergency stop and turn the drum in the opposite direction using the remote control. Insert the screen mat into the machine parallel to the drum rotation. After reaching the working position, stop the drum and press the emergency stop. Fasten the sieve mat using the clamping screws and check that the sieve mat is correctly seated.
After replacement, the machine can be put back into working position.



(Fig. Direction of rotation for unwinding the screen mat)



(Fig. Direction of rotation for winding the sieve mat)

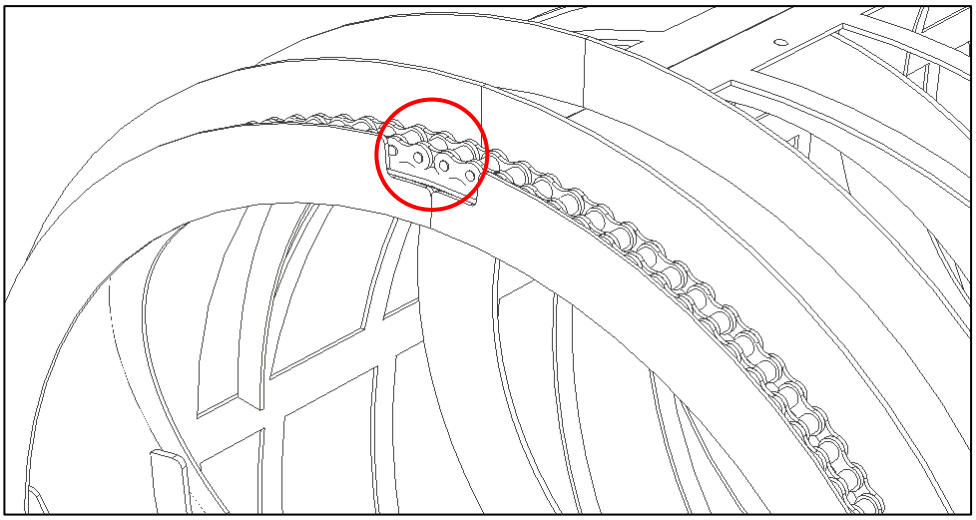
The edges of the sieve mats may have sharp edges. There is a risk of injury here! Always use suitable gloves when handling the sieve mats.

Attention Danger!

The sieve mats are made of spring steel wire, which has a resistance when placed on the drum. Always make sure that the ends of the screen mat are secured. There is a risk of injury due to uncontrolled bouncing of the sieve mat!

Drum chain

Power is transmitted to the drum by means of a roller chain mounted on the drum, in which the drive wheel engages. Between the chain and the drum body, an inserted rubber mat creates the necessary friction to avoid slippage of the chain and to compensate for run-out tolerances.
The two chain ends are connected by a chain lock at the cut-out in the drum. If the chain lock is no longer at the cut-out, the chain has become long and must be replaced. A special tensioning tool is required to replace the chain.

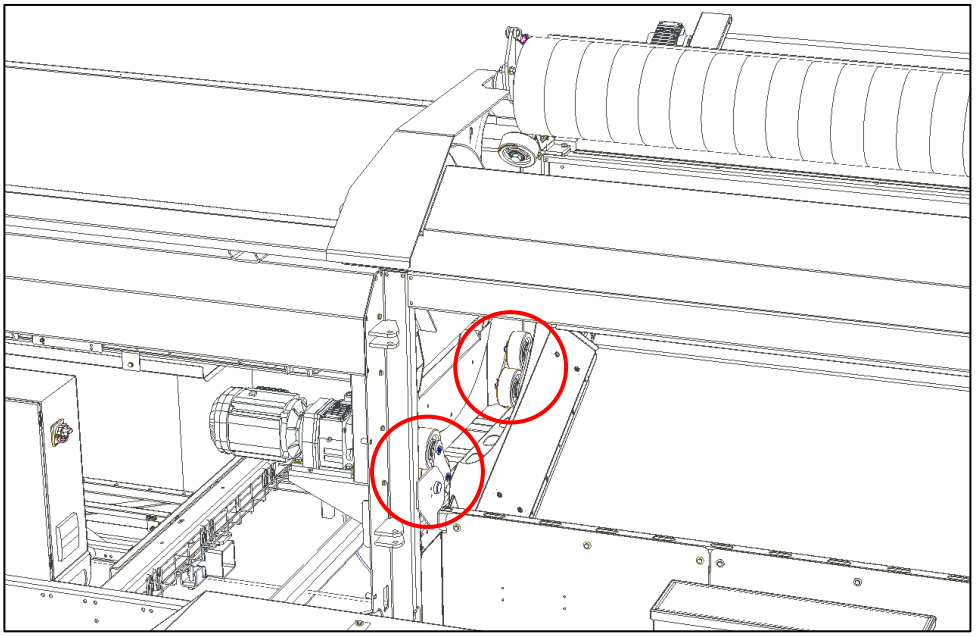


(Fig. Chain lock)

Drum bearing / impellers

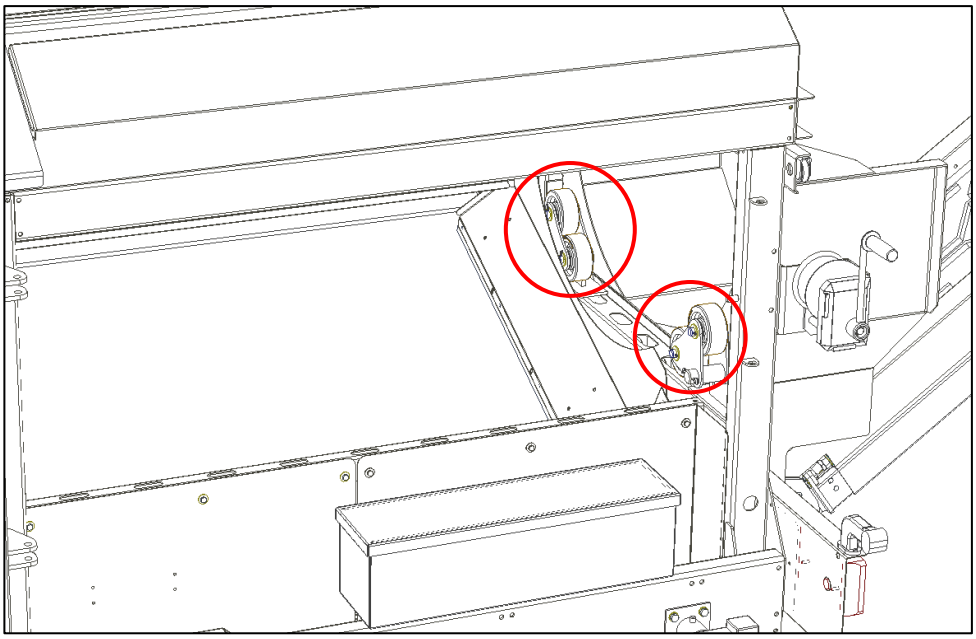
The functionality of the rollers and wear must be checked regularly. The diameter of the rollers is 125 mm. Replacement must be carried out when the diameter is 115 mm.

Between the hopper and the screening drum there is a rocker arm with two running wheels on each side.



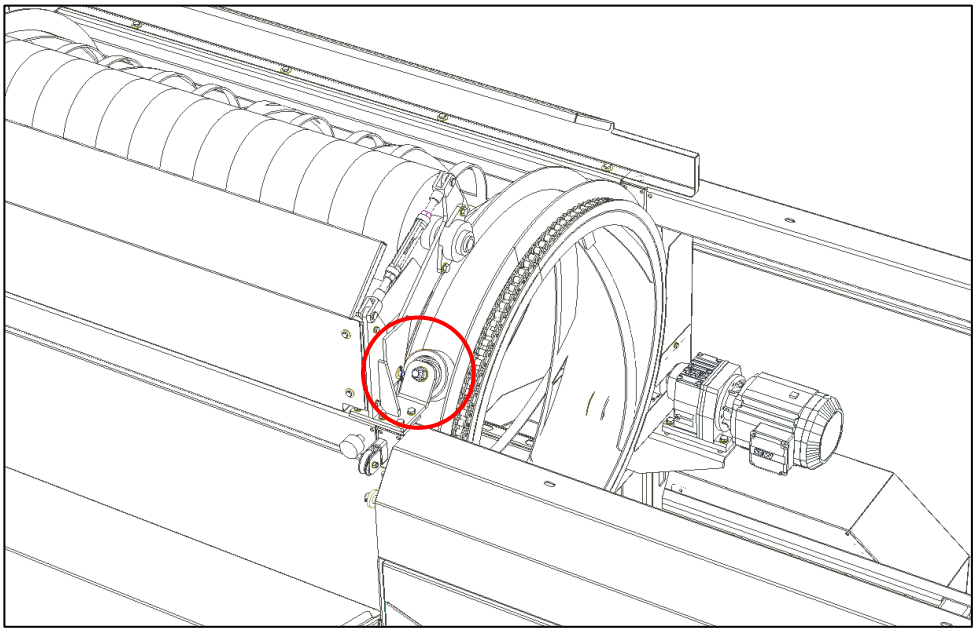
(Fig. Swing arms with impellers at the beginning of the screening drum)

At the end of the screening drum, there is also a rocker arm with two impellers on each side.



(Fig. Swing arms with impellers at the end of the screening drum)

The drum is guided in axial direction by a roller next to the cleaning brush.

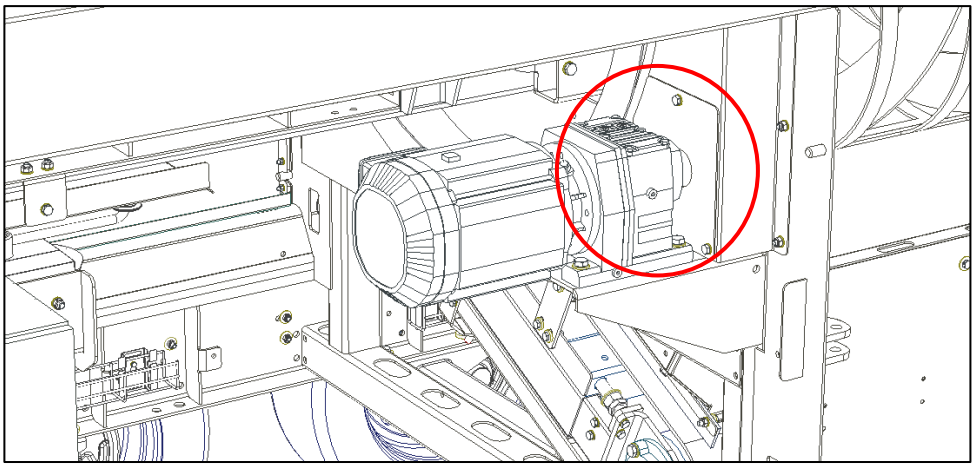


(Fig. Leadership role)

Adjust drum drive

Power is transmitted from the gear motor to the drum by a chain drive. Correct engagement of the chain wheel is necessary to minimise wear. In case of loud running noises and stagnant movement, the alignment of the drive wheel must be adjusted.

Remove the protection on the drive

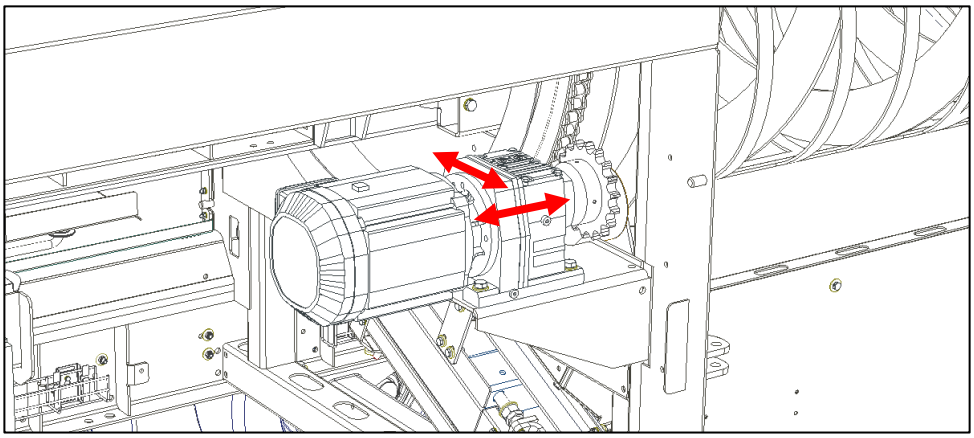


(Fig. Protective cover)

Loosen the fixing screws of the motor so that it can be moved on the base plate. The screws should be hand-tight so that a clear resistance is felt when moving it.

The fastening screws may only be loosened, but not completely removed. Otherwise there is a risk of the motor falling off and causing injuries.

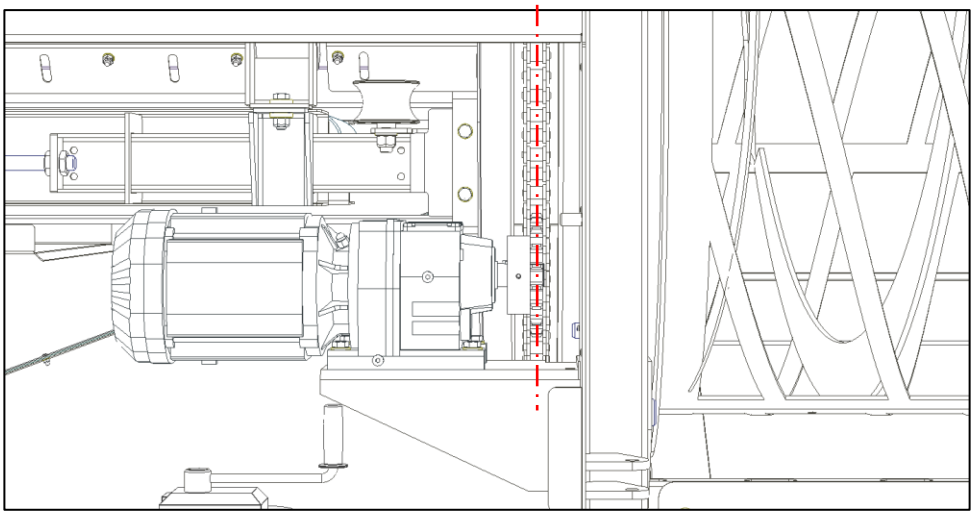
Attention Danger!



(Fig. Motor setting)

Align the drive sprocket centrally to the chain on the drum. The gear wheel is axially floating. The motor must be aligned so that the shaft protrudes >10 mm on both sides of the gear wheel. Turn the drum by hand until the highest point (due to tolerances) of the drum is in contact with the drive wheel. Push the motor towards the drum until the drive sprocket engages completely with the chain. Slightly tighten the screws of the motor attachment.
To check the correct setting, run the drum slowly using the cable remote control. Readjust if necessary. After adjustment, tighten the motor mounting screws and refit the protective cover.

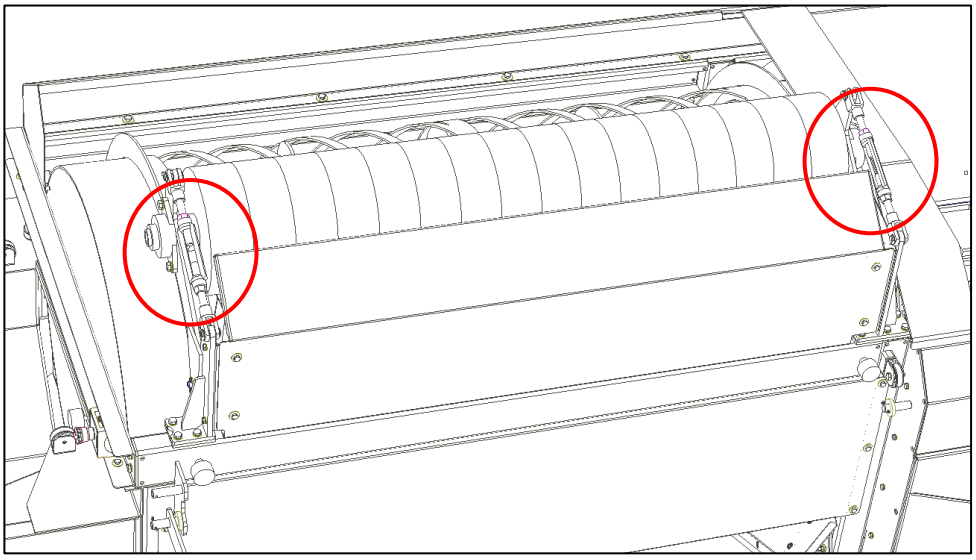
The chain drive is subject to natural wear. When the 'wear limit' of the chain and the drive wheel is reached, the components must be replaced.



(Fig. Centre alignment of the sprocket on the drum chain).

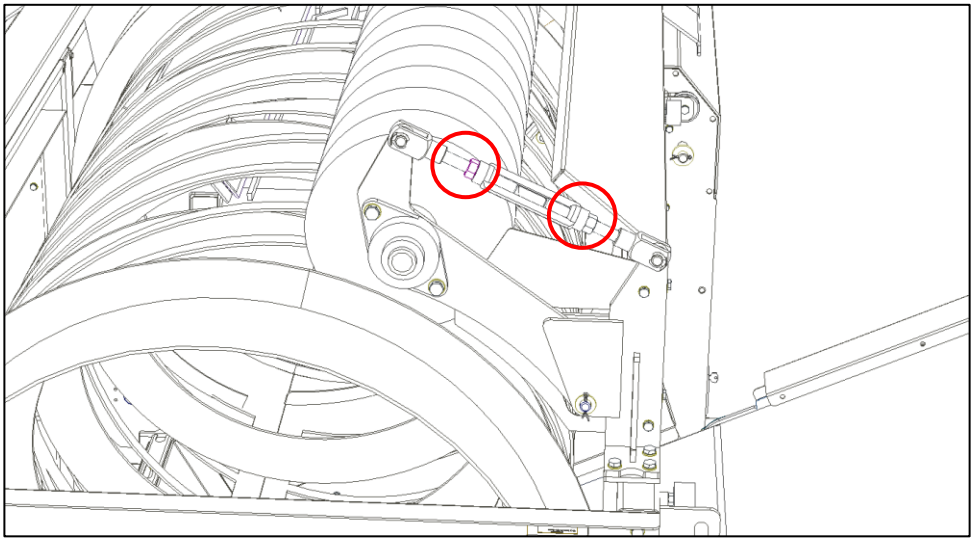
Adjust cleaning brush

For correct functioning of the cleaning brush, it is possible to adjust the depth of penetration into the drum. Depending on the screen mat and the material to be screened, the bristles of the brush must protrude between 5 and 10 mm through the screen mat into the drum.



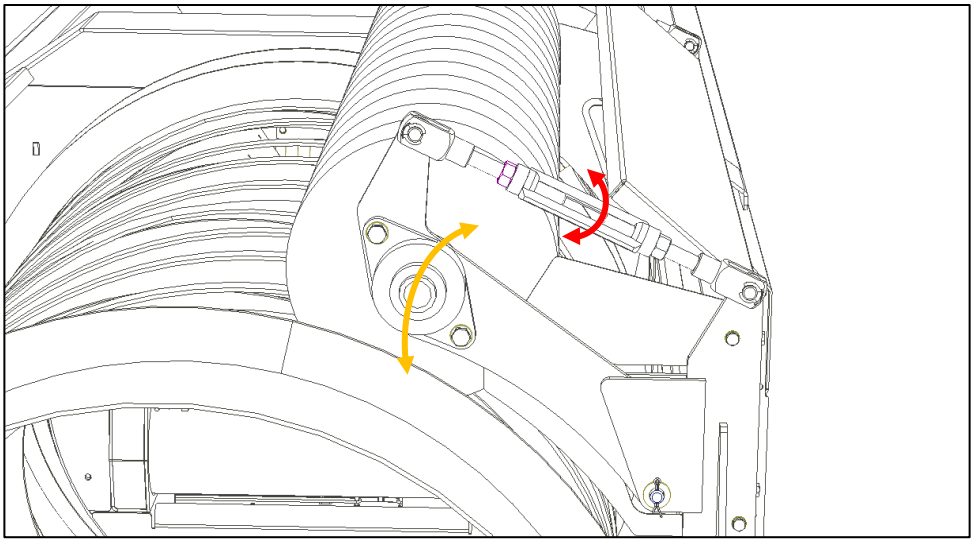
(Fig. Adjustment mechanisms of the cleaning brush)

To adjust the cleaning brush, the locking screws must be opened.



(Fig. Adjustment mechanism)

The depth of engagement of the brush in the drum can be adjusted by turning the set screw. After adjustment, the locking screws must be tightened again.

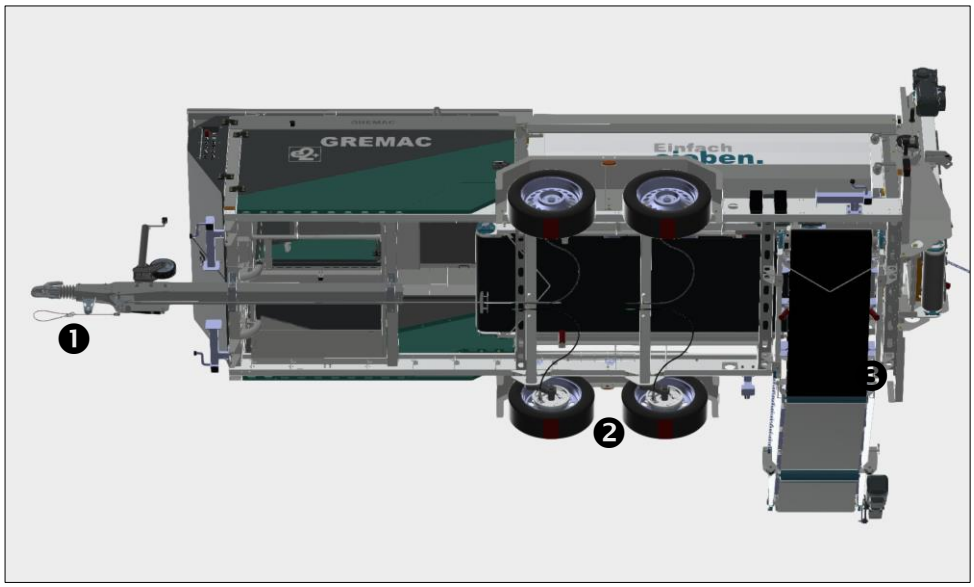


(Fig. Setting)

The cleaning brush is subject to natural wear. If a diameter of <200 mm is reached, the cleaning brush must be replaced.

Chassis + lighting (wheel-mobile version only)

The wheel-mounted machine is built on a chassis from Alko/Knott.



❶ = Drawbar with overrun device
❷ = Tandem axles
❸ = Lighting

Preventive measures

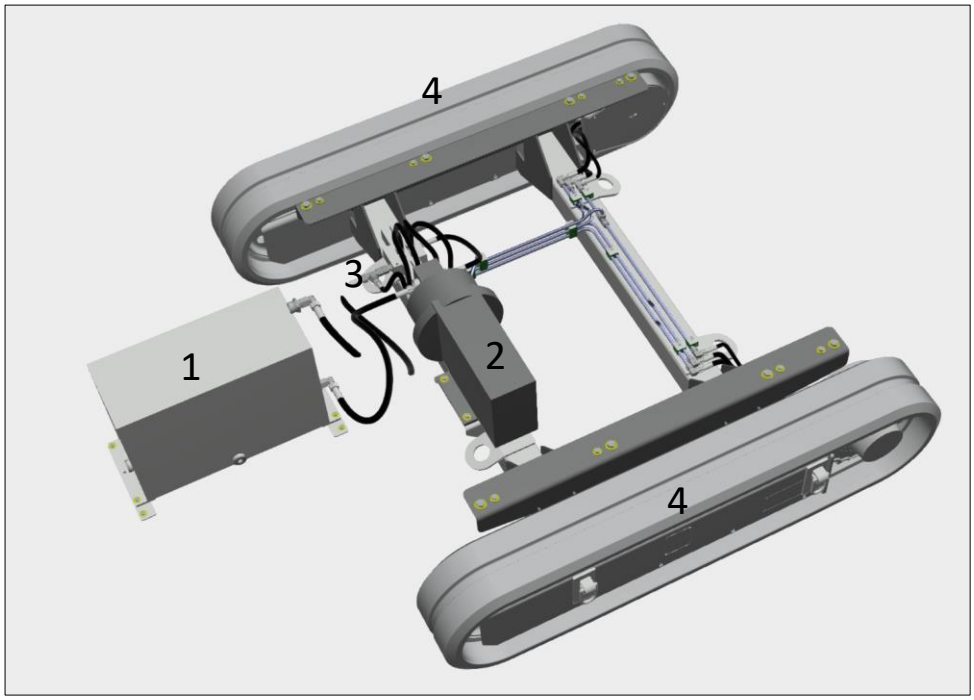
- Follow the manufacturer's maintenance instructions
- Participation in road traffic is only permitted with fully functional chassis and lighting.
- Participation in road traffic is only permissible with a cleaned machine in order to prevent soiling of the road and endangering other road users by screenings falling from the machine.

Possible faults	Removal
Machine hits the vehicle hard when braking, braking power insufficient.	- Brake pads are worn and need to be replaced. - The overrun travel of the overrun device is too large and must be readjusted.
Machine tends to lurch while driving.	- Tyre pressure too low and must be corrected. - Drawbar load too low. At least 4% of the trailer load is necessary, more than 25 kg is not necessary. - Trailer hitch height too low. Standard height of the trailer coupling: 430 mm - Machine very dirty Centre of gravity has changed a lot. Machine must be cleaned.
When flashing, the complete lighting flickers	- The earth connection to the vehicle is interrupted or poor. The earth connection must be repaired.
No functioning lighting	- Plug connection to the vehicle not plugged in. - Defective plug, must be replaced. - Water in the plug, must be dried.
Support wheel bearing is melted/defective	- The jockey wheel has moved along during travel. Always turn the jockey wheel completely upwards into the driving position.

	- The support wheel has been overloaded. Do not use the support wheel as a support during operation. Use support feet of the machine.

Chain drive (only chain mobile version)

The track-mobile machine is mounted on a Trackone crawler.



1 = Hydraulic tank (40 l)
2 = Hydraulic drive
3 = Valve terminal
4 = Chain drive

Preventive measures

- Follow the manufacturer's maintenance instructions.
- Clean the drive regularly.

Possible faults	Removal
Hydraulics running, no movement of the machine.	- Not enough hydraulic oil, top up oil. - Wrong direction of rotation of the drive. Check and have the direction of rotation changed. - Defective valve. Check valves.
Hydraulic drive does not start	- Check status display on frequency inverter, reset error. - Check potentiometer setting. - Check power supply. - Check emergency stop, check remote control.
One direction of travel is not possible.	- Check valve.

Maintenance

Definitions

To ensure long, trouble-free operation, it is necessary to comply with all the maintenance and inspections described. All contents described here are based on the standards DIN31051, DIN31052 and VDI guideline VDI2890.

The maintenance intervals refer to normal use and therefore normal load. Operating influences or marginal phenomena and the type of operation may make it necessary to shorten the maintenance intervals. If necessary, consult the manufacturer.

The general definitions and terms described here are explained in more detail for understanding the maintenance and inspection plans.

Terms

Maintenance
Maintenance is understood to mean all measures to restore the target condition (functionality) of the machines. These measures include: Maintenance, inspection and repair.

Maintenance
Maintenance is understood to mean all measures to maintain the nominal condition of the machines. It includes activities such as cleaning, preservation, lubrication, supplementation, replacement (replacement of auxiliary materials and small parts) and adjustment.

Inspection
Inspection refers to all measures taken to assess the
The inspection summarises the actual condition of the machines. The purpose of the inspection is to identify any necessary maintenance measures at an early stage so that they can be prepared and carried out. The detection and assessment of damage that has already occurred is not an inspection.

Repair
Repair covers all measures that are necessary to restore the machines (e.g. after damage/failure) to a functional condition.

Wear
Maintenance is understood to mean the reduction of the wear stock as a result of physical and/or chemical effects.
Wear and tear is the price that must be paid for the use of the facilities. Without wear and tear, facilities cannot be operated. The task of maintenance is to recognise and influence wear and tear and to create new wear reserves through repair.
Due to external influences or boundary conditions, such as maintenance condition, corrosive ambient air, dust and, thirdly, the type of operation, whether with partial load

or occasionally with overload, shock-loaded or evenly driven, the wear can vary from case to case. Also included is a sudden change in the wear rate, for example due to a breakage, which does not have to be directly dependent on time. It follows that inspections cannot be based exclusively on time periods.

Wear reserve
In terms of maintenance, the stock of resources necessary to fulfil the function of the machine.

Use
In the sense of maintenance, use of the machines as intended and in accordance with the generally recognised rules of technology, whereby material and/or services are created with the reduction of the wear stock.

Malfunction
In terms of maintenance, unintentional interruption (or already impairment) of the functional performance of the machines.

Failure
In terms of repair, unintentional interruption of the functionality of machines.

Damage
In the sense of maintenance, the condition of resources after falling below a certain limit value of the wear reserve, which causes an inadmissible impairment of the functional capability with regard to use.

Error
Non-fulfilment of specified requirements/function fulfilment by a characteristic value (e.g. temporary stoppage of the drive due to a loose contact in the plug connection). For further explanations see DIN31051.

Time limited part
Parts and/or assemblies whose service life is shortened in relation to the service life of the higher-level parts and/or assemblies and cannot be extended by technically possible and economically justifiable means.

Wear part
Parts and/or assemblies which are used in places where wear is unavoidable due to operation, thereby protecting other parts and/or assemblies from wear, and which are designed to be replaced.

Spare part
Spare part that is clearly assigned to one or more machines, is not used independently in this sense, is planned and kept ready for the purpose of maintenance and can usually be economically repaired.

Consumption part
Spare part that is clearly assigned to one or more machines, is not used independently in this sense, is scheduled and kept ready for the purpose of maintenance and whose repair is usually not economical.

Small part
Spare part that is generally usable, predominantly standardised and of low value.

Maintenance instructions / plan
Contains information on the performance of maintenance (servicing, inspection, repair) of a technical product as well as information on the product and the technical customer service.

Maintenance instructions / plan
Contains information on how to carry out maintenance on a technical product, as well as information on the product and the technical service.

Inspection instructions / plan
Contains information on how to carry out the inspection of a technical product, as well as information on the product and the technical service.

Repair instructions / plan
Contains information on how to carry out the repair of a technical product as well as information on the product and the technical customer service.

Maintenance principles

Carrying out maintenance / inspection and servicing work

In order to carry out maintenance work, it is necessary for the operator of a machine/plant to draw up a maintenance strategy. This strategy includes the following points and may require a supplement or extension of existing regulations of the individual manufacturers.

- Alignment of maintenance goals with corporate goals
- Determination of appropriate maintenance strategies/times

If maintenance measures, such as the performance of maintenance measures or the performance of defined maintenance measures are carried out outside the company, i.e. by the manufacturer himself or by third parties under his own direction and responsibility, these can in principle only be oriented to the machine/plant itself and to the operating and environmental conditions to be assumed as usual.
The consideration of company-specific special conditions and maintenance measures resulting from the company's maintenance objectives and maintenance strategy, the

manufacturer's commitment in the event of a reduction in the scope of inspections prescribed by maintenance/inspection plans, in order to maintain warranty claims.

Preparatory measures for maintenance measures

We recommend the elaboration of the inspection strategy according to the standards DIN31051, DIN31052, as well as the VDI guideline VDI2890 and the standards contained therein.

- Always plan enough time for maintenance measures. Bear in mind that a lack of care during maintenance / inspections can result in unforeseeable malfunctions or failures during the production period, which significantly exceed the costs of a maintenance / inspection.
To optimise their production times, consult VDI Guidelines 3423.
It contains the basis for optimising and recording the availability of machines and plants.
- Keeping spare parts in stock shortens the downtime or repair time considerably. Please consult the manufacturer for advice on which parts should be kept in stock in order to minimise delivery times.

Repair

Repair measures must be carried out in the following order:
1. damage search
2. take safety measures
3. removal of the defective assembly/parts
4. disassembly of the assemblies, if necessary
5. checking and documenting the deviation from the target state
Replace or repair damaged part.
7. assembling/installing/adjusting
8. test run, acceptance, release
9. documentation of the repair

Machine cleaning

The machine should preferably be cleaned dry. To remove strongly adhering dirt, the machine can be cleaned with a high-pressure cleaner or steam jet. When doing so, pay attention to the protection class of the electrical and mechanical components.

To prevent damage, do not expose the following components directly to the jet of the high-pressure cleaner:

- **Control cabinet**
- **Operating unit**
- **Bearing points**
- **Wired remote control**
- **Other electrical components and connections**

The components described above can be cleaned with a wet cloth.

Maintenance information

General cleaning
- Clean the machine/plant regularly.
- Rotating parts must be checked daily for wrapping and removed if necessary (fire hazard).
- Moving parts must be checked daily for trapped foreign objects and removed if necessary (fire hazard).
- To ensure optimum sorting results, the screen grid must be cleaned as required.

Attention:
Observe the safety instructions when cleaning. Observe the regulations on accident prevention!

Lubrication
- All manual lubrication must only be carried out when the machine is at a standstill.
- Only use the grease types described. Other grease types are only permitted after consultation with the manufacturer.
- Observe the lubrication intervals specified in each case.
- When lubricating, ensure that the lubricant is applied evenly.
- Any grease edges that form do not have to be removed. In addition to the seal, they ensure effective protection against contamination.

Protective equipment/work safety
Acceptance at intervals prescribed by the employers' liability insurance associations or other competent authorities, for occupational safety/accident prevention regulations.

Status pictures

The following Table A contains condition patterns/damage/failures that are detected or can occur due to a maintenance/inspection measure on components or assemblies.
All components or assemblies described here must be inspected for the specified conditions/damage.

Lines
All parts/assemblies contained in the machine are named in the lines. The information is generally valid. The respective parts/assemblies must be assigned to the generic terms.

Columns
The columns show the possible states of the parts or assemblies mentioned in the rows.

The respective states are marked with an "X". It is not necessary to examine a part/assembly for a state that is not marked with an "X".

Maintenance/inspection plan

In the maintenance/inspection plan, all assemblies are assigned the respective conditions to be checked and the measures to be initiated.

The drawings show which assemblies are assigned to the respective parts on the machine.

Serviceplan

In addition to the maintenance plan printed in the operating instructions, a service plan is available.

To make work easier, all dates and associated maintenance schedules are printed. During or after an inspection, maintenance or repair, only the corresponding data needs to be entered.

In the case of warranty claims, the service plan serves exclusively as proof of the inspections carried out.

No.	Status assembly	Breakouts/damage	Fastening	Braking effect	Break	Elongation	Tightness/leakage	Torque transmission	Print	Flow	Setting	Flow rate	Fretting/scoring/scratches	Filling quantity and condition	Function	Noise (quiet running)	Corrosion	Internal clearance	Cracks	Switchability	Slip	Vibrations	Seat	Voltage	Game	Temperature	Unbalance	Uneven running	Deformation	Offset	Wear	Pollution	Completeness	Cooling	Voltage
1	Frame/frame	X	X		X										X		X		X			X							X			X			
3	Flaps		X								X				X		X												X			X	X		
4	Locks	X	X								X				X					X											X	X			
6	Fan wheel	X	X													X																X			
7	Bolt				X	X																	X		X				X						
8	Emergency stop devices		X								X				X					X												X			
9	Conveyor belts	X	X		X	X					X				X	X	X		X		X			X				X			X				X
10	Shaft/axle					X							X				X											X	X		X				
11	Shaft cover	X	X				X								X														X		X	X			
12	Rolling bearing		X										X	X		X	X	X				X	X		X	X		X				X			
13	Seal	X				X	X								X														X	X		X			
14	Grease nipple	X	X							X					X		X		X										X			X			
15	Motor		X													X						X				X	X					X		X	X
16	Gearbox	X	X				X	X			X			X	X	X	X		X	X	X	X				X	X	X			X	X			
17	Housing				X		X							X			X		X			X				X						X			
19	Parallel key		X					X															X							X					
20	Covers	X					X								X		X		X										X		X	X	X		
21	Storage						X							X	X	X	X	X				X			X	X		X			X	X			
22	Connection, detachable	X	X			X									X		X		X					X					X				X		
23	Connection, not detachable	X			X	X									X		X		X										X						
24	Impellers	X	X																X										X		X	X			
25	Stop				X						X																		X	X					
26	Cover		X																X														X		
27	Screw				X	X																	X						X						
28	Terminal box (electr.)						X										X																		
29	Signalling device	X														X																X			
30	Lubrication device	X	X				X		X	X	X	X		X	X	X									X						X	X			
32	Protective device	X	X		X						X				X		X		X										X			X	X		
33	Bracket	X	X			X					X				X		X		X			X							X	X	X	X			

Table A -Status Pictures-

Maintenance plan

Maintenance plan / Inspection plan	Machine: e2+	Operation: Cost centre:
	Manufacturer: H2PRO GmbH & Co KG	Unit number: Serial number: Location:

Lfd. No.	Tab. A-No.	**Component** resp. work to be carried out	Measuring and testing equipment Operating and auxiliary materials	Frequency / Interval	Work carried out / Executor	Date / Operating hours /	Comments
1.		**Gearbox**	Observe the instructions of	every 250 hrs.	_____	__.__.___	Spare part
1.1		Housing	the respective		_____	___.___ h	
1.1.1		Search for leakage	manufacturer.				
1.1.2		Check oil level and top up if necessary.					
1.1.3		Check running smoothness					
1.1.4		Check temperature					
1.2		Shaft/axle			_____		
1.2.1		Check running smoothness					
1.2.2		Check deformation					
1.2.3		Check wear					
1.3		Seal			_____		
1.3.1		Check tightness					
1.3.2		Remove soiling					
		Bracket					
1.4		Check attachment	If necessary, correct the		_____		Spare part
1.4.1		Check screws	position for adjusting the				
1.4.2		Check damage	clutch (1.5).				
1.4.3		Check setting					
1.4.4		Clutch (mechan.)					
1.5		Check damage	Check for correct setting		_____		Time limited
1.5.1		Check attachment	according to				part
1.5.2		Check setting	manufacturer's				
1.5.3		Check function	instructions and readjust if				
1.5.4		Check running smoothness	necessary.				
1.5.5		Check game					
1.5.6		Check wear					
1.5.7		Connection (clamping set)					
1.6		Check damage		every 1000 hrs.			
1.6.1		Check function	Clamping set connection				
1.6.2		Check voltage	retighten/check (torque:				
1.6.3		Check deformation	35Nm).				
1.6.4		Check completeness	Check postponement.				
1.6.5							
2.		**Motor**	Observe the instructions of	every 250 hrs.	_____	__.__.___	Spare part
2.1		Housing	the respective		_____	___.___ h	
2.1.1		Check attachment	manufacturer.				
2.1.2		Check damage					

2.1.3		Check running smoothness					
2.1.4		Check temperature					
2.1.5		Remove dirt		1x Daily			
2.2		Fan wheel		every 250 hrs.	_____		
2.2.1		Check damage					
2.2.2		Check running smoothness					
2.2.3		Remove dirt					
2.3		Terminal box			_____		
2.3.1		Check tightness					
2.3.2		Check corrosion					
3.		**Conveyor belt**		every 250 hrs.	_____	__.__.___	Spare part
3.1		Wave			_____	___.___ h	
3.1.1		Check concentricity	max. ±0.5mm				
3.1.2		Check deformation					
3.2		Rolling bearing	Observe the instructions of	1x daily	_____		Time limited
3.2.1		Check attachment	the respective				part /
3.2.2		Check running smoothness	manufacturer, replace				Consumption
3.2.3		Check bearing clearance	bearings if necessary.				part
3.2.4		Check seat					
3.2.5		Check game					
3.2.6		Check temperature	max. 75°C				
3.2.7		Remove dirt					
3.2.8		Check lubrication	Refill lubricant	1x daily			
3.2.9		Check grease nipple			_____		
3.2.10		Check gasket	Replace if necessary.		_____		
3.3		Connection		every 1000 hrs.	_____		
3.3.1		Check damage	retighten/check (torque:				
3.3.2		Check function	27Nm).				
3.3.3		Check voltage	Check postponement.				
3.3.4		Check deformation					
3.3.5		Check completeness					
3.4		Screws	Observe the tightening	every 250 hrs.	_____		
3.4.1		Check damage	torques.				Small part
3.4.2		Check connections					
3.5		Cover			_____		
3.5.1		Check damage					
3.5.2		Check function					
3.5.3		Check deformation					
3.5.4		Remove dirt					
3.5.5		Check completeness					
3.6		Metal-rubber element			_____		
3.6.1		Check damage					Small part
3.6.2		Check function					
3.6.3		Check seat					
3.6.4		Check deformation					
4.		**Conveying element (drum)**		1x daily	_____	__.__.___ ___.___ h	Spare part
4.1		Screws	Observe the tightening		_____		Small part
4.1.1		Check damage	torques.				
4.1.2		Check connections					

4.2		Cover			_____		Spare part
4.2.1		Check damage					
4.2.2		Check function					
4.2.3		Check deformation					
4.2.4		Remove dirt					
4.3		Rubber element			_____		Consumption
4.3.1		Check attachment					part
4.3.2		Check damage					
4.3.3		Check wear					
4.3.4		Remove dirt					
4.4		Conveying element (screw)			_____		
		Check damage					Consumption
4.4.1		Check attachment					part
4.4.2		Check function					
4.4.3		Remove dirt					
		Check deformation					
5.		**Rack/Frame**		every 250 hrs.	_____	__.__.___	
5.1		Connection not detachable			_____	___.___ h	
5.1.1		Check damage					
5.1.2		Check function					
5.1.3		Check corrosion					
5.1.4		Check deformation					
5.1.5		Remove dirt					
5.2		Housing			_____		
5.2.1		Check brackets			_____		Small part
5.2.2		Check interlocks			_____		Small part
5.2.3		Check stop			_____		Small part
5.3		Cover			_____		Spare part
5.3.1		Check damage					
5.3.2		Check corrosion					
5.3.3		Check deformation					
5.3.4		Remove dirt					
5.4		Protective device			_____		Spare part
5.4.1		Check damage					
5.4.2		Check function					
5.4.3		Remove dirt					
5.4.4		Check completeness					
5.5		Flap			_____		Spare part
5.5.1		Check attachment					
5.5.2		Check setting					
5.5.3		Check corrosion					
5.5.4		Check deformation					
5.5.5		Remove dirt					
5.5.6		Check completeness					
6.		**Power generator**	Observe the instructions of				Spare part
6.1		Remove dirt	the respective				
6.2		Check oil level	manufacturer.				
6.3		Check completeness					
All conditions not listed here according to table A of the operating instructions or work to be carried out must be checked visually or corrected. Any deviations from the set values/operating conditions that occur and are detected must be corrected immediately.							

Fault log

Fault log	Machine: e2+	Operation: Cost centre:
	Manufacturer: H2PRO GmbH & Co KG	Unit number: Serial number: Location:

Lfd. No.	Tab. A-No.	Components / Assemblies	Malfunction / error / damage according to operating instructions Table A	Date of the Determination	Work carried out / Executor	Date / operating hours / duration of the repair	Comments

Any deviations from the target values/operating conditions that occur and are detected must be corrected immediately. Duplication of this protocol is expressly permitted.

Final decommissioning and disposal

Final decommissioning and disposal require the machine to be dismantled into its individual components. Dispose of all parts of the machine in such a way that damage to health and the environment is excluded.

Commission a qualified specialist company with the final disposal of the machine.

Attention Danger!

When the machine is finally taken out of service, dangers from leaking lubricants, solvents, preservatives, etc., must be expected. These can cause burns if they come into direct contact with the skin. There is a risk of injury from open, sharp-edged machine parts.

Uninstallation work on electrical machines may only be carried out by trained electricians.

Appendix: Manufacturer documentation