Gremac eZero Instruction Manual

Gremac eZero

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Foreword

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

The operating instructions contain important information on how to operate the machine safely, properly and economically. Observing them helps to avoid hazards, reduce repair costs and downtime, and 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 applied by every person involved in work with/on the machine/plant, e.g. operation, including setup, troubleshooting in the work sequence, removal of production waste/disruptive materials, maintenance, disposal of operating and auxiliary materials.

1. Operation, including set-up, troubleshooting workflow, removal of production waste/disruptive materials, maintenance, disposal of operating and auxiliary materials.
2. Maintenance (servicing, inspection, cleaning) and/or
3. Transportation
4. Dismantling / disposal

is commissioned.

The operator of the plant must prepare operating instructions in understandable language and form for the plant. In addition to the operating instructions and the binding accident prevention regulations applicable in the country of use and at the place of use, the recognized technical rules for safe and professional work must also be observed.

Product description

The trommel screen is used for machine screening of various materials.

A machine basically consists of these components:

1. A machine frame made of steel profiles and sheet steel, on which all other components are mounted.
2. A sieve drum with bearing and drive with different hole diameters, or additionally with adjustable sieve linings.
3. A movable material hopper with belt discharge.
4. Telescopic support feet for positioning the machine.

Functional description

Machine

Separation of the input material is done by a screening drum. The fine material falls through the holes (different sizes or screen linings available). The material is moved by a screw from the inlet to the outlet by the rotation of the drum.

The fine material drops down out of the machine onto stockpiles. The overflow material is discharged at the end of the drum where it falls to the floor.

Influencing factors

These factors influence the sorting:

1. Drum speed: The motor is equipped with speed control. Increasing the speed of rotation accelerates the conveyance of the machine. As a result, the throughput rate increases and, under certain circumstances, the quality of the sorting decreases due to the shorter residence time of the material in the machine.

2. The feeding of the machine has a strong influence on the screening process. Sloshing or excessive feeding in terms of quantity lead to a reduction in screening performance and quality. Make sure the hopper is filled with as uniform a layer height as possible.

Intended use

The trommel screen may only be used as intended.

The trommel screen in various designs is intended for classifying and screening of screenable, pre-loosened and dry screening material.

The following materials may be used as screenings:

1. Soil excavation
2. Bark mulch
3. Gravel
4. Sand
5. Wood chips
6. Green waste
7. Biowaste
8. Other dry screenable materials

The machine must stand level and free during operation in the outdoor area (no directly adjacent sieve hills).

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 hopper by means of an earth-moving machine or other equipment. 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 to carry out a new risk assessment in accordance with the Machinery Directive and to document the changes 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 the operating position), performing cleaning and maintenance work, and 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: (Failure to do so will void the warranty).

1. The fed material may only be fed to the machine in a loose, pressed-on state.
2. Heavy, large foreign materials must be removed before feeding to the machine.
3. The dust load in the effective 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).
4. Long bulky parts must be removed or dissolved / crushed.
5. Discharge speed of the conveyor belts must be adapted to the performance of the machine and the screening material.

Requirements for maintaining the functionality of the machine:

1. Maintenance, servicing and inspection plans/logs must be kept and adhered to in order for warranty claims to be granted. Access to maintenance records must be possible at all times by the manufacturer.
2. Malfunctions, failures, damage or defects to parts or assemblies must be reported to the manufacturer in writing 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 prevent consequential damage:

1. Electrical damage / fault on electrical drive components.
2. Mechanical damage / fault on safety equipment.
3. Mechanical damage / fault on drive elements / assemblies.
4. Mechanical damage/fault on bearings and couplings.
5. In the event of malfunctions, damage or faults on other elements or groups, the machine can continue to be operated until the time of repair after confirmation by the manufacturer.
6. Elements or assemblies of other manufacturers listed in this operating manual 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.
7. Any promises to the contrary concerning 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.
8. The operating, maintenance, repair and inspection instructions valid at the time of delivery of the machine apply.

The validity remains for the user as long as the manufacturer has not provided the customer with more current operating, maintenance, servicing and inspection instructions and indicated compliance. The manufacturer reserves the right to make changes to the operating, maintenance, servicing and inspection instructions as well as technical changes in the interest of progress.

Inadmissible use / foreseeable misuse

Reasonably foreseeable misuse exists, in particular, due to 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 above 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 materials 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. Inside buildings, genset operation is not allowed. Operating the machine in a non-horizontal position is not as intended.

Furthermore, the machine must not be set up in the area of electrical overhead lines.

Operation of the machine using only the support wheel is not as intended. It is not permitted to transport the machine while it is loaded or to move it manually (by hand) or with an unsuitable tractor.

It is forbidden to interfere with the moving machine parts (e.g. screening drum).

Furthermore, there is always the possibility 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 **misuse** mentioned must be explicitly prohibited in the operating instructions as well as by written operating instructions. Furthermore, the use of the equipment must be explicitly limited to the above-mentioned intended use in the operating instructions.

This documentation refers exclusively to the operation of the system 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 components of identical design. 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 that were not supplied by the manufacturer, which are caused by one or more of the following causes:

1. When used for a purpose other than that described under “Intended use”.
2. In case of modifications to mechanics / electrics / control system by the customer or a third party without authorization by the manufacturer.

3. Failure to comply with specifications for operating materials and non-original spare parts.
4. 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.
5. Influence of unpredictable physical quantities (e.g. vibrations, mass, etc.) on the machine/plant.
6. 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.
7. Improper use and/or operation or removal of guards.
8. Damage caused by feeding the wrong sieve material.
9. Natural or increased wear or wear on parts / assemblies of the plant / machine, caused by operating conditions of the machine / plant.
10. Incorrect or incomplete documentation of other manufacturers' products that are a part of the machine.
11. Consequential damage caused by one or more of the causes described under "improper use".

Safety instructions

Principle

1. – The machine/plant is built in accordance with the state of the art and recognized safety regulations. Nevertheless, your use may cause danger to life and limb of the user or third parties or impairment of the machine and other material assets.
2. – Only use the machine/system when it is in perfect working order and for its intended purpose, in a safe and hazard-conscious manner and in compliance with the operating instructions! In particular, faults that may affect safety must be rectified by trained specialist personnel.
3. – Never operate the machine or system at a higher speed than specified.
4. – Intended use also includes observing the operating instructions and complying with the inspection and maintenance conditions.

Organizational measures

1. – Always keep the operating instructions within easy reach at the place of use of the machine / system!
2. – Complementary to the operating instructions, observe and instruct generally applicable legal and other binding regulations for accident prevention and environmental protection!
3. – Such obligations may also concern, for example, the handling of hazardous substances or the provision/wearing of personal protective equipment.
4. – Supplement the operating instructions with instructions including supervisory and reporting obligations to take account of special operational features, e.g. with regard to work organization, work processes, personnel deployed.
5. – The personnel assigned to work on the machine must have read the operating instructions, and in particular the safety instructions, before starting work. During the work operation it is too late. This applies in particular to personnel working on the machine only occasionally, e.g. during setup, maintenance.
6. – At regular intervals, the safety and danger-conscious work of the personnel must be checked in compliance with the operating instructions.
7. – 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)
8. – Observe all safety and danger instructions on the machine/plant!
9. – Familiarize yourself with the emergency stop functions of the machine or system.
10. – Keep all safety and danger notices on/at the machine complete and in legible condition!
11. – In the event of safety-relevant changes to the machine/plant or its operating behavior, shut down the machine/plant immediately and report the fault to the responsible office/person!
12. – Protective devices (protective grids, protective hoods or covers) must not be removed under any circumstances.
13. – Damaged switches and protective devices must be replaced immediately.
14. – Do not make any changes, additions or conversions to the machine/plant which 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.
15. – Carefully reassemble and fasten parts to be dismantled for transport purposes before recommissioning!
16. – For recommissioning, proceed only in accordance with the operating instructions!

17. – Never bypass limit switches or other safety switches.
18. – Spare parts must comply with the technical requirements specified by the manufacturer. This is always guaranteed with original spare parts.
19. – Replace hydraulic hoses at specified or appropriate intervals, even if no safety-relevant defects are apparent!
20. – Do not make any program changes (software) to programmable control systems!
21. – Prescribed intervals or intervals specified in the operating instructions for recurring tests/inspections must be observed.
22. – Make the location and operation of fire extinguishers known!
23. – Observe the fire alarm and fire fighting possibilities!
24. – By means of a risk assessment, the operator of the plant must determine and arrange for the type, scope and deadlines for required inspections.

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 operation, setup, maintenance and repair!
- – Ensure that only authorized personnel work on the machine!
- – Define the machine operator's responsibility and enable him to reject instructions from third parties that are contrary to safety requirements!
- – Personnel who are to be trained, instructed or who are undergoing general training may only work on the machine/plant 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

1. – Familiarize yourself with the work environment at the work site before starting work. The working environment includes, for example, the obstacles in the working and traffic areas.
2. – Take measures to ensure that the machine/plant is only operated in a safe and functional condition!
3. – Only operate the machine when all protective devices and safety-related equipment, e.g. detachable protective devices, emergency stop devices, sound insulation, suction devices, are present and functional!
4. – Remove all tools or other foreign objects from the operating area before starting the system.
5. – Check the machine/plant for externally visible damage and defects at least once per shift. Immediately report any changes that have occurred (including those in operating behavior) to the responsible office/person. If necessary, stop the machine immediately and secure it.
6. – 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).
7. – In the event of malfunctions, shut down the machine/system immediately and secure it! Eliminate faults immediately.
8. – Observe switch-on and switch-off procedures, control displays according to the operating instructions!
9. – Do not switch off or remove the suction and venting devices while the machine is running!
10. – Before switching on the machine/plant, make sure that nobody can be endangered by the starting machine/plant!
11. – Never switch on the machine/plant before all other persons in the area of the machine/plant have been warned and have moved away from the operating area.
12. – Keep the operating area free of obstacles that someone could trip over and fall onto a working machine or system.
13. – Never sit or stand on objects with which you could fall against the machine or system.
14. – Never leave the machine/plant unmonitored during operation.
15. – Make sure that you do not bring fingers, hands or other body parts into the machine or plant or close to moving parts when control circuits are active!
16. – Refrain from any mode of operation which impairs the stability of the machine!
17. – Air, hydraulic and electrical connections must be switched off when the machine or system is not in operation.
18. – 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 as well as troubleshooting in the work flow

1. – 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 performed by qualified personnel.
2. – All repair work must always be carried out when the machine is at a standstill.
3. – Inform operating personnel before starting to perform special and maintenance work! Name the supervisor!
4. – 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 notes for maintenance!
5. – Secure the maintenance area as far as necessary!
6. – 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 place warning label on 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 inadvertently turning on the power to the machine or equipment while it is being serviced.

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

Notes on special types of hazards

Electrical energy

1. Three-phase sockets must have a right-hand rotating field (VDE0100, part 600, ABS 14).
2. Only use original fuses with specified amperage! In case of malfunctions in the electrical power supply, switch off the machine/plant immediately!
3. Work on electrical systems or equipment may only be carried out by a qualified electrician or an electrically instructed person (EUP) under the direction and supervision of a qualified electrician and in accordance with electrical engineering regulations.
4. 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 the disconnected parts for voltage, then ground and short-circuit and insulate adjacent live parts!
5. The electrical equipment of a machine/plant must be inspected/tested regularly. Defects, such as loose connections or scorched cables, must be rectified immediately.
6. If it is necessary to work on live parts, 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!
7. When working on high-voltage assemblies, connect the supply cable to ground after disconnecting the voltage and short-circuit the components, e.g. capacitors, with a ground rod!

Gas, dust, steam, smoke

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

Hydraulics, pneumatics

1. Work on hydraulic equipment may only be carried out by persons with special knowledge and experience in hydraulics!

2. Check all lines, hoses and screw connections regularly for leaks and externally visible damage! Remove any damage immediately! Oil splashing out can cause injuries and fires.
3. Depressurize system sections to be opened and pressure lines (hydraulic, compressed air) according to the module descriptions before starting repair work!
4. Lay and install hydraulic and compressed air lines properly! Do not mix up the connections! Fittings, length and quality of hose assemblies must meet the requirements.

Noise

1. Machine enclosures and soundproofing devices on the machine/plant must be in the operating position during operation.
2. Wear the prescribed personal hearing protection!

Oils, fats and other chemical substances

1. Be careful when handling hot operating and auxiliary materials (risk of burns or scalding)!
2. When handling oils, greases and other chemical substances, observe the safety regulations applicable to the product!

Operating instructions

Please observe the notes in the respective sections, which are marked by an additional warning symbol.

Transportation

Suitable industrial trucks or cranes can be used to lift the machine. These hoists may only be attached to the attachment points provided for this purpose. Please note that if the floor is uneven, the machine must be properly secured to prevent it from slipping sideways!

All relevant safety regulations must be observed during all transport, lifting or shifting operations. This also includes that only tested and suitable lifting equipment may be used!

As a general rule, never reach under a suspended load. The machine can be moved very slowly with suitable securing devices or drive vehicles, provided that the intended transport route is appropriately secured.

Safety regulations

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

Transport preparations

1. Remove screenings and other loose parts in the machine
2. Secure moving machine parts
3. Move the support feet to the transport position and secure them.

Anchor points

1. Anchor point
2. Forklift receptacle

The machine has four attachment points at the corners. These are suitable both for lashing on a loading platform, and for transport by crane. When transporting with a crane, use lifting beams to prevent the slings from contacting the machine. Particular care must be taken at the cleaning brush to prevent damage to the cladding.

Lifting gear must be selected and used in such a way that persons are not endangered. Load suspension and slinging equipment must always be used as intended. The intended use is specified in the manufacturer's operating instructions. The contents of the operating instructions must be observed during use. Please also observe the applicable regulations in the country of use. Germany: Observe DGUV regulation 109-017. Staying under the suspended load is prohibited.

For transport with an industrial truck (e.g. forklift), the machine has a forklift mount.

Support feet

After the support feet have been unloaded, they can be moved to the transport position.

Fig. Support feet in transport position

To do this, pull out the safety plug (2) of the respective support foot (1). Pull the support foot out of its guide and push it back into the guide rotated by 90° and secure it in the desired position with the locking plug. It is also possible to remove the support legs completely and transport them separately.

The weight of a support foot is about 25 kg. If necessary, use an aid to prevent the support foot from falling down.

Storage

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

1. Storage should be in a closed room.
2. Protect the machine from moisture.
3. Condensation due to high humidity and fluctuating temperatures must be avoided.
4. Before and after an extended period of storage, all bearing points must be lubricated in accordance with the maintenance and inspection schedules.
5. After a longer storage period, all parts (cables, rubber) that are subject to a natural aging process must be checked for suitability / usability.
6. Observe the storage instructions of the respective generator manufacturer.

Machine overview


2
1
4
GREMAC
GREMAC
3
4
4

1. Bunker
2. Sieve drum with cleaning brush (optional)
3. Cover left
4. Telescopic support feet
5. Cover right (control cabinet)
6. Control panel
7. Maintenance door
8. Dropping oversize
9. Discharge screenings

Commissioning

Lineup

Before commissioning, the following conditions must be met:

1. – The surface on which the machine is installed must be level and have sufficient load-bearing capacity.
2. – Installation in the vicinity of overhead power lines is prohibited or a sufficient distance must be maintained.
3. – The machine must be aligned horizontally with the mechanical supports.
4. – Ambient temperatures of more than 35°C must be avoided. They may lead to the motor no longer being able to dissipate sufficient heat to the environment, causing the machine to shut down.

Accessibility

If the machine 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. Likewise, the safety area of 5 m all around must 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

The values for the respective machine type can be found in the technical data.

Connecting the machine to the mains

Before connecting the machine, check that the mains voltage and frequency are suitable for the machine (see nameplate). In case of deviations, do not connect the machine.

The colors of the individual wires of the supply line:

Yellow/green: protective conductor

Blue: Neutral

Black-brown-black: are the 3 three-phase phases (outer conductors), designation in the circuit diagram L1, L2, L3

Purple/white: Control lines 24V/0V

Operation of the machine with a power generator

When using the machine with a power generator, please observe the information sheet “Use of a power generator with trommel screen machines”.

Control / System integration

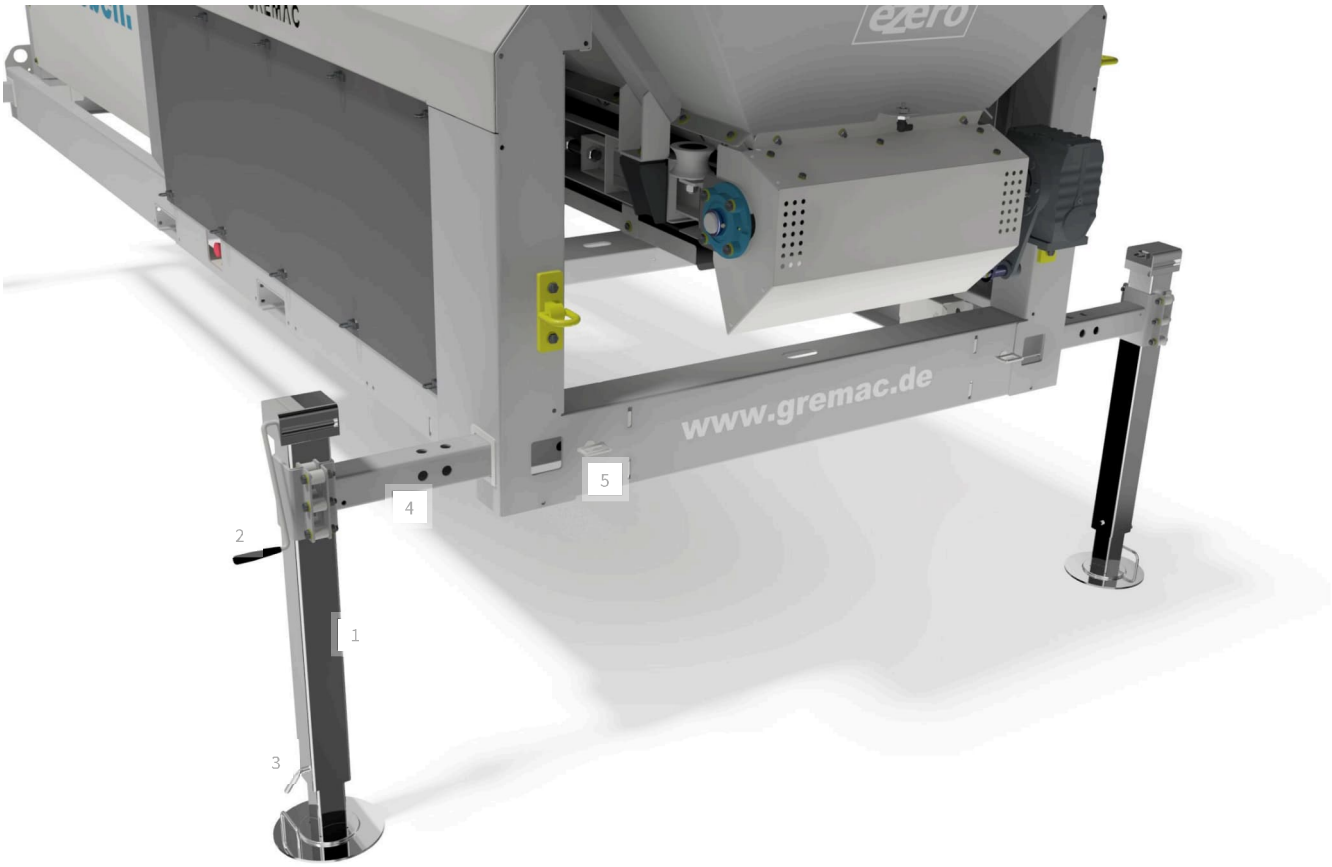
1. During electrical installation, make sure that the direction of rotation of the mains is correct.
2. In the event of an emergency stop, all three phases (L1, L2, L3) must be disconnected from the power supply. Stopping by switching off the control current is not permitted. Observe the applicable regulations.
3. 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.
4. The machine must be included in the emergency stop circuit. No additional hazards may result from this integration.
5. For the design of safety-related systems, the applicable national and international standards and laws must be observed.

For further technical details of the gearmotors / frequency inverters or other electrotechnical components, refer to the documentation of the respective manufacturers in the appendix, as well as relevant technical standards and regulations.

Height adjustment and alignment

Before installing the machine, the maximum possible installation height must be determined. First determine the maximum possible loading height of the wheel loader or excavator. The maximum possible loading height is 2560 mm. The clear height under the machine frame is 1450 mm. The installation height is determined according to the following formula.

Load height wheel loader – 1150 mm (machine height) = extension height of support feet



1. Telescopic support foot
2. Hand crank
3. Fuse plug for foot extension
4. Excerpt
5. Fuse plug for pullout

The procedure described here for height adjustment assumes that the machine has been unloaded as described in the chapter Transport and is in a “floating” position on the means of transport (crane, forklift). The lower edge of the machine must be at the level of the determined setting height. Fine adjustment or leveling can be done later using the support feet.

1. Move the respective support foot from transport to working position as described in the chapter Transport.
2. Position the pull-out (4) in the desired width and secure the pull-out with the safety plug.
3. Hold the foot extension by the handle and remove the safety plug (3).
4. Let the foot slide on the ground and secure it again by the safety plug (If the path (300 mm) is not enough, fix it in the last available hole by the safety plug).
5. Adjust the remaining height using the hand crank (2).
6. Repeat the procedure on all support feet.
7. Set the machine down on the ground and check the level. The machine can be leveled by readjusting the individual support feet.

The support legs have two gears. To activate the second gear, pull the hand crank away from the support foot. To shift to first gear, push the crank handle in the direction of the support foot. The first gear is power optimized with lower slope. The second gear is optimized away with greater pitch and thus faster stroke.

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. For this purpose, the main switch must be in the “OFF” position. The main switch is located on the right side of the control cabinet.

After establishing the connection and, if necessary, starting the generator, the main switch must be switched to the “ON” position. The controller is now supplied with power and starts. After this, the control unit is ready for operation. After power is applied, the controller is in emergency stop mode to prevent components from starting up automatically.

Emergency stop

The machine has four emergency stop switches (on the control panel, on both long sides, 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 will continue to run even though the emergency stop is activated. The generator must be stopped at the device itself.

As soon as the emergency stop has been activated, the “Stop/Reset” key flashes red. To deactivate the emergency stop, it must be pulled out to unlock it. To reset, the “Stop/Reset” key 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 for takeoff.

Operating unit

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

(Fig. Operating unit)

Keys and displays on the operating unit

1. Start button with LED
2. Stop/reset button with LED
3. Hopper band on/off with LED
4. Screen drum on/off with LED
5. Bunker belt speed adjustment
6. Sieve drum speed adjustment

LED signals

Stop/Reset button (1)

1. Flashing red: Emergency stop actuated
2. Lights up permanently red: Fault

Start button (3)

1. Flashing green: Machine ready to start
2. Lights up permanently green: Machine started

Component selector switch (4, 6)

1. Flashing white: Fault
2. Light permanent: Component started / running

Starting the machine

Manual operation

1. Red LED of the “Stop/Reset” key (2) flashes: Unlock all emergency stop buttons and press the “Stop/Reset” button for 3 sec. The red LED goes out and the “Start” key (3) starts flashing green.
2. Manual operation of a single component: Select the respective component by turning the switch (4, 6) to the right. By pressing the “Start” key (3), the control starts the respective selected components. The speed can be adjusted via the respective potentiometer.

Automatic operation

1. Red LED of the “Stop/Reset” key (2) flashes: Unlock all emergency stop buttons and press the “Stop/Reset” button for 3 sec. The red LED goes out and the “Start” key (3) starts flashing green.
2. Automatic mode: Select all components by turning the switches (4 +6) to the right. The controller now switches to automatic mode. By pressing the “Start” button (2), the control starts all components of the machine starting with the stockpile conveyors, then the screening drum and finally the hopper.

Start-up warning

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

Stop machine

The machine is stopped by pressing the "Stop/Reset" key (2). The machine is also stopped as soon as a selector switch (4, 6) of the components is switched on or off. This is for safety to exclude incorrect operation.

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

1. The LED of the selector switch of the affected component indicates a with fault by a flashing signal.
2. The LED of the "Stop/Reset" key lights up red continuously.

For more information on the fault, refer to the Troubleshooting chapter.

Bunker filling

The machine is filled by means of a wheel loader, excavator or upstream conveyor belt. Care must be taken to ensure that the bunker is not overfilled. This can lead to a malfunction. The optimum filling height should not exceed the upper edge of the drum surround.

(Fig. maximum filling height – red marking)

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, clod of earth)

Size: max. Edge length: 30 cm

If the machine is permanently operated with large screenings, it is recommended to use a stone grid (order code W003.A055) on the hopper. It serves for pre-separation of large pieces (>200 mm) and thus for protection of the machine and increase of 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.

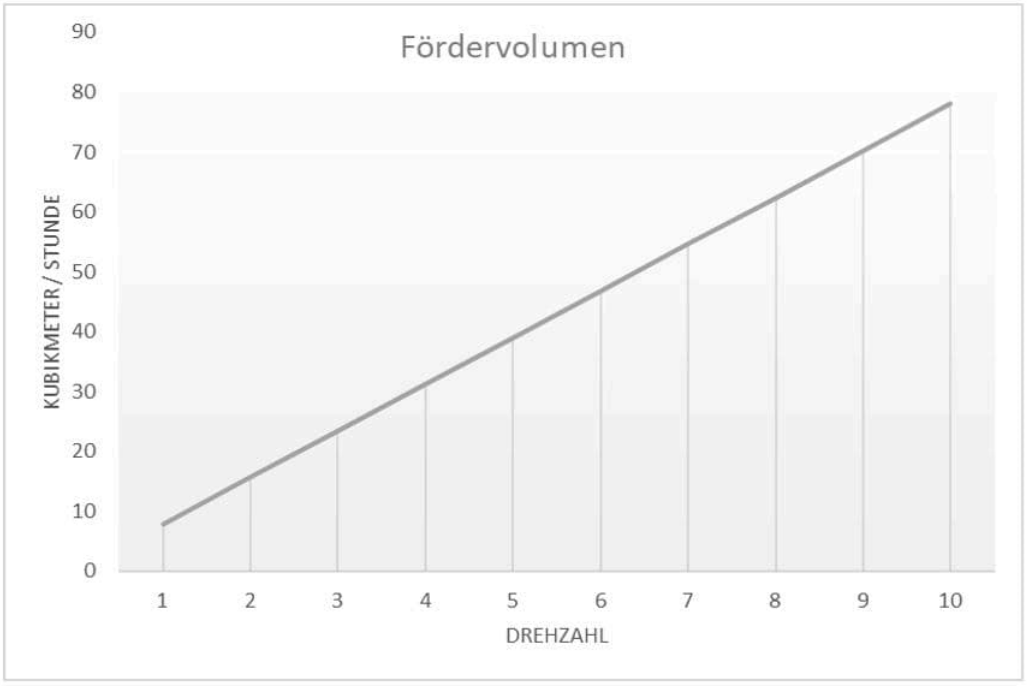
Bunker Autoreverse

When the load limit of the hopper drive is reached, the hopper is automatically reversed briefly and restarted in the conveying direction. In case of overfilling of the hopper or very large impurities in the screenings to be processed, this prevents bridging and ensures a better material flow. If, after three reversals, there is still an overload on the hopper drive, the machine is stopped and a fault message is issued (hopper belt selector switch flashes).

The function can also be executed manually by holding down the Start key. After three seconds, the hopper reverses as long as the key is held down. After releasing the key, the hopper conveys again in the direction of the screening drum.

Conveying speed

The conveyor speed of the hopper belt can be set on the control unit. The theoretical delivery 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.

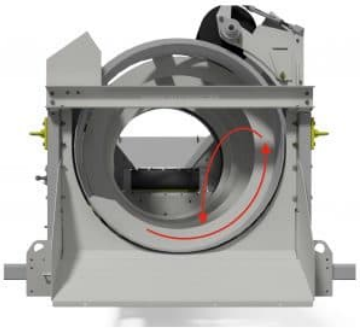
Bunker top

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

Sieving capacity

Achieve optimum screening 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. Material circulation)

The rotational movement of the drum takes the screenings upwards on the right side. The higher the drum speed is selected, the further it is transported upwards with it and falls back down at the peak of acceleration, thus forming a circulating rotary motion. This achieves optimum mixing, cleaning by friction and ultimately optimum sieving.

Screening material with a high proportion of parts > 40 mm

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

Screening material with a high proportion of parts < 40 mm

The drum may be filled above the vertical of the drum (Blue mark). Here, the degree of separation must be taken into account and, if necessary, the hopper speed must be reduced.

Sieve section

Depending on the desired sieve cut, the drum can be equipped 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 screenings 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 excessive 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 screen section cannot be completely prevented in the case of drum screens and therefore do not constitute a warranty case.

Possible causes	Elimination
The oversize still contains a lot of screenings smaller than the screen cut.	– Too much material in the drum. Lower bunker speed. – Drum speed too low, increase speed. – Material too sticky. Allow material to dry.
There are many larger pieces in the screen fraction.	– Screen mesh too large. Mount sieve mat with smaller sieve mesh on drum. – Too high drum speed creates “punctures”. Reduce speed. – Too little screenings in the drum, refill material.

Conveyor belts

The machine has a conveyor belt in the bunker.

1.

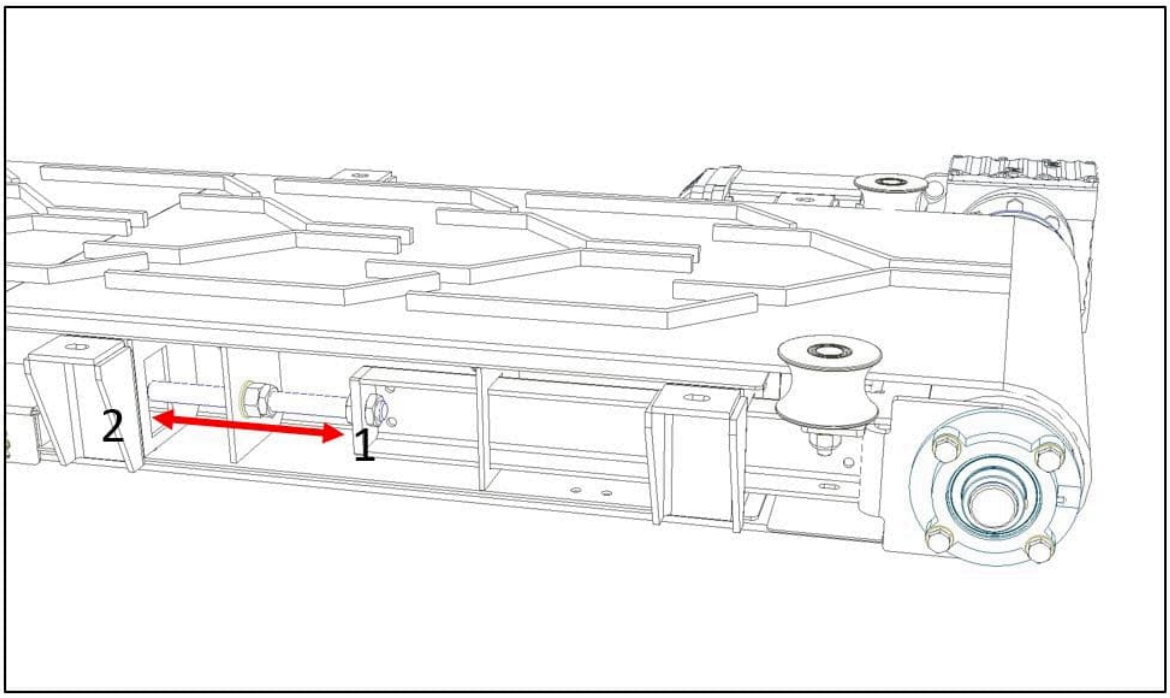
Preventive measures

1. Regularly remove dirt and buildup from the conveyor belts.
2. Before starting work, check the tension and belt tracking of the conveyor.
3. Regularly maintain the wipers and bearings of the conveyor belts.
4. Replace worn wipers and seals early.
5. Lubricate the adjusting spindles regularly.

Possible causes	Elimination
Conveyor belt runs to one side	– Check for contamination under the belt and remove it. -correct the run of the conveyor belt.
Motor protection trips / frequency inverter shows “E-triP” error	– The conveyor has a heavy duty gear. – Remove any buildup 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 setting of the conveyor belt speed. – Check the frequency inverter to see if it has been stopped manually. And press the “Start” key on the frequency inverter if necessary.

Belt tension adjustment

The conveyors have four adjusting spindles for tensioning the belt and correcting the belt run.



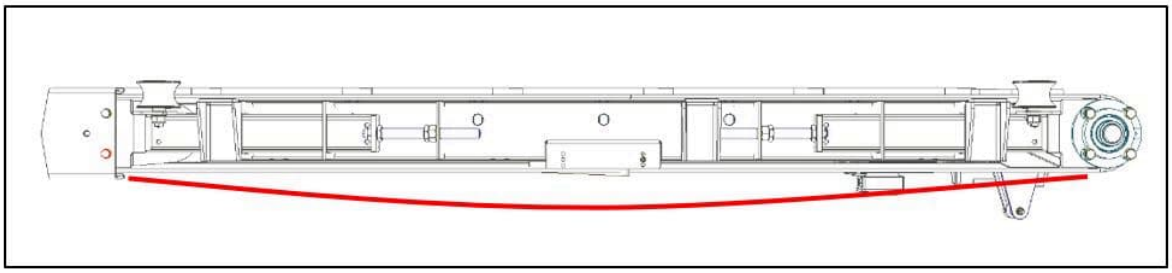
The belt is tensioned by adjusting the adjusting spindles in the direction of the drum (1). The belt is slackened by adjustment in direction (2).

Correct belt tension

The correct belt tension is set when there is no slip between the belt and the drum. In this case, the belt may have a small sag on the underside. This has no negative effect on the function of the conveyor.

Excessive belt pretension, on the other hand, results in unnecessarily high loads on the bearings and mechanical components and leads to increased wear.

The belt tends to change length due to temperature fluctuations, which affects the belt tension. Therefore, regularly check the tension of the belts in case of large temperature changes.



Adjustment of the belt run

The straight running of the belt can be corrected by adjusting the adjusting spindles. Make corrections only while the conveyor 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 uniform as possible in order to avoid incorrect positions of the drive and deflection pulleys.

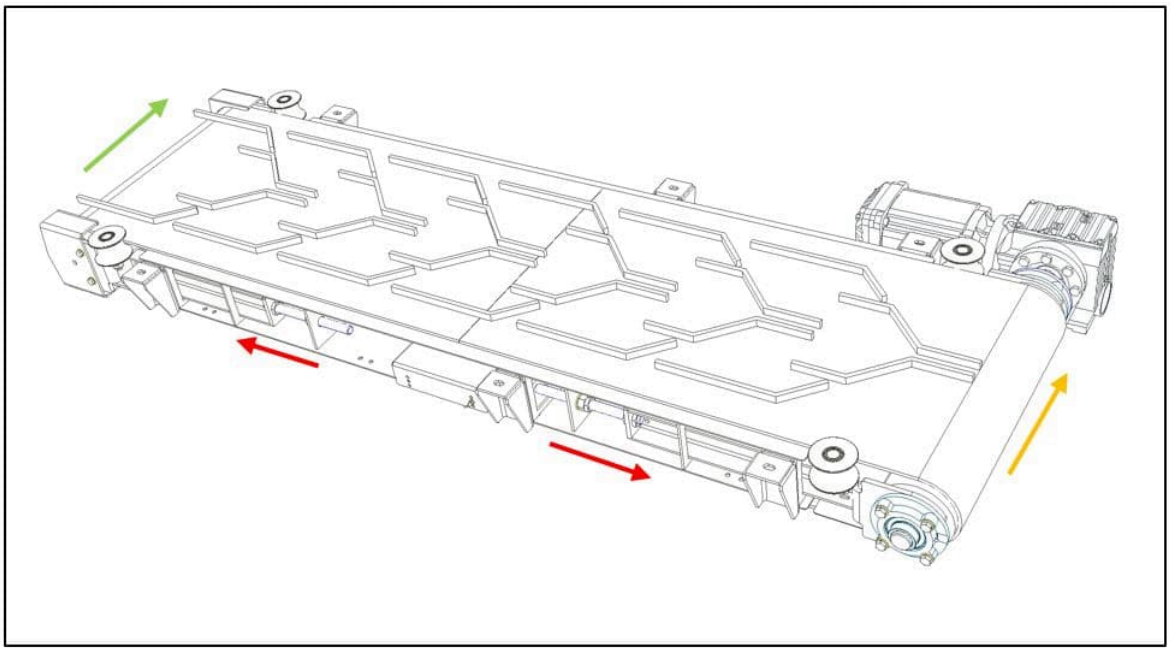


Fig. Correction of the belt run to the right by tensioning the belt on the left side.

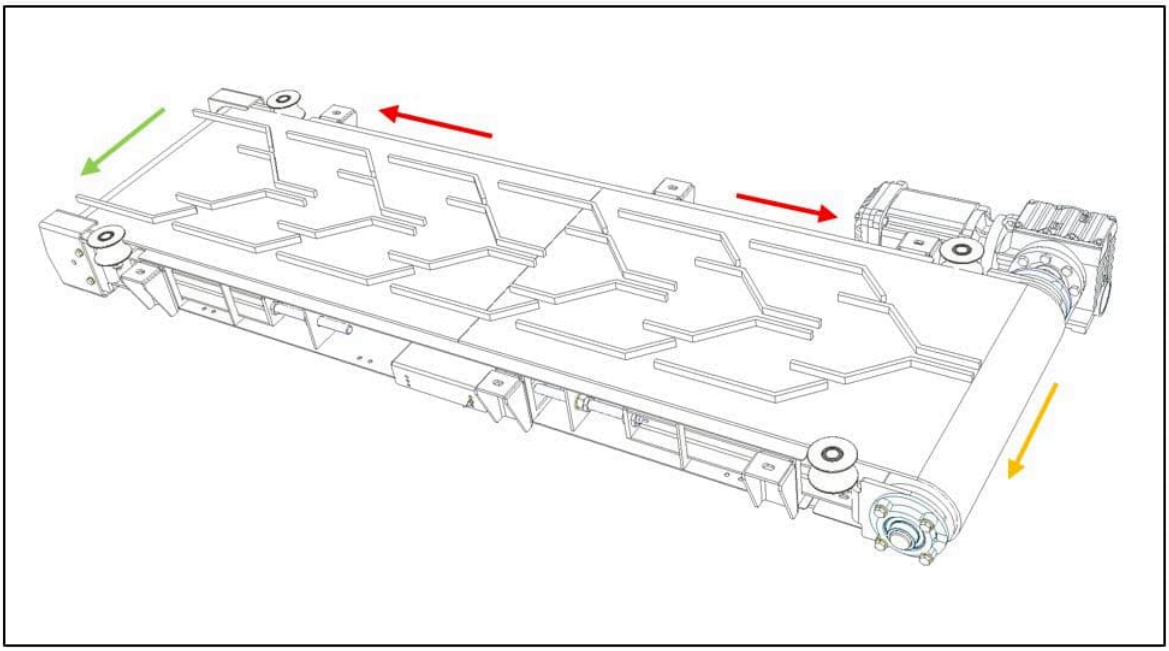
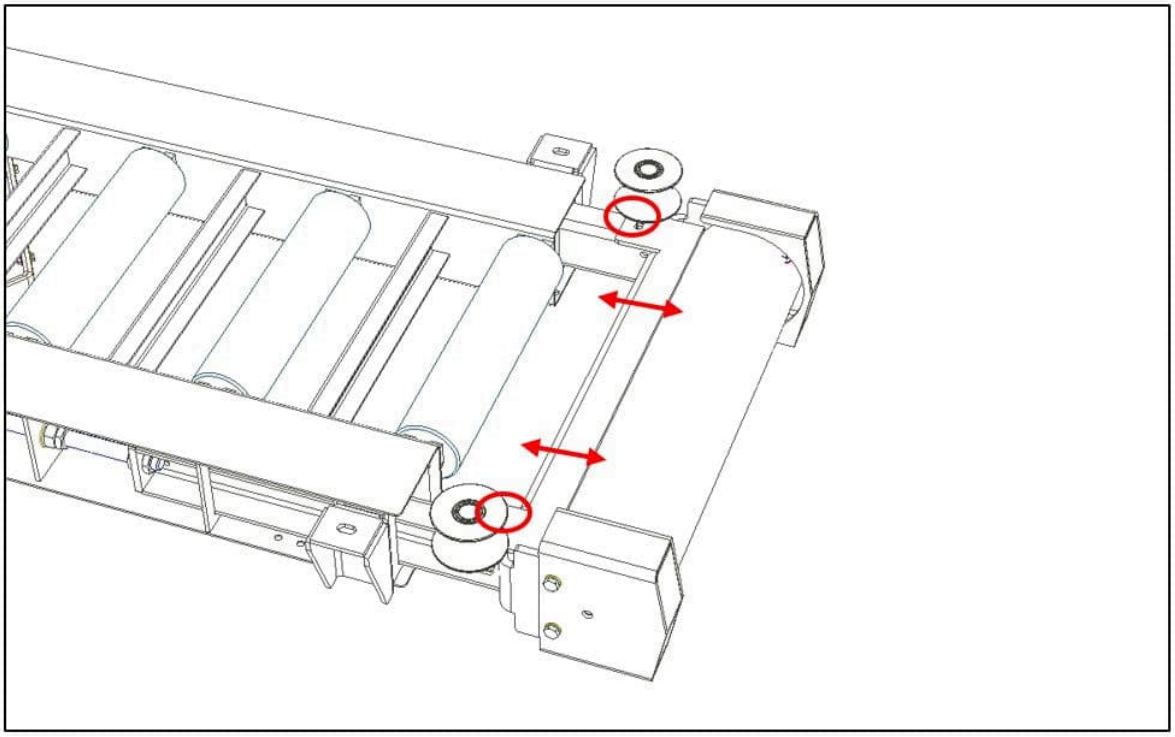


Fig. Correction of the belt run to the left by tensioning the belt on the right side.

Adjustment of the drum wiper

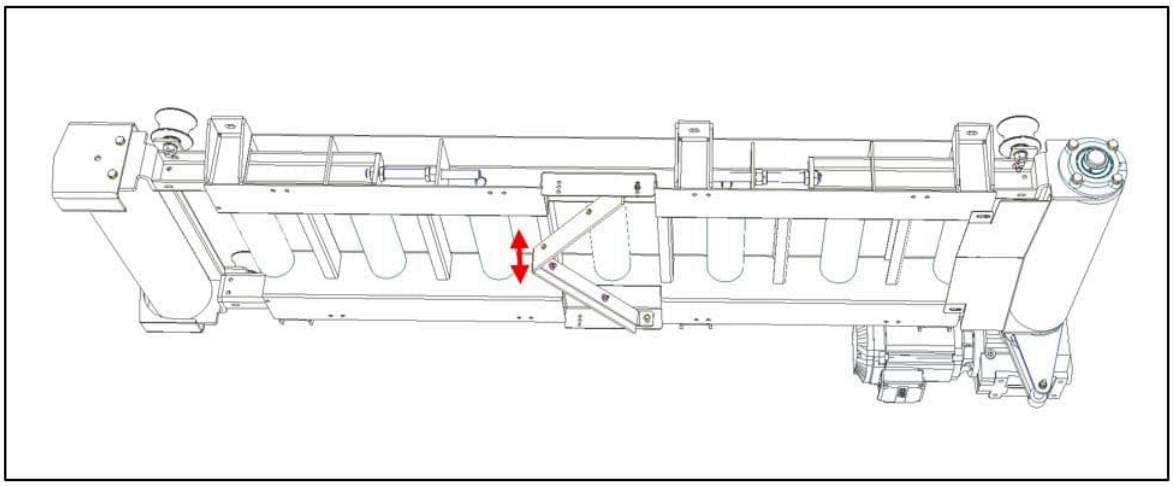
The deflection drum has a drum scraper. To ensure correct function, the strip edge to the drum should be between 1 and 3 mm. The wiper can be moved by loosening the fastening screws on both sides.



(Fig. Drum scraper)

Adjustment of the belt wipers

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



(Fig. Belt scraper)

Screen drum

The machine has a screening drum with core perforation. A sieve mat with the desired sieve perforation is clamped onto the base body. Alternatively, sieve drums with fixed perforation are available.

1. Drum body
2. Cleaning brush

Preventive measures

1. Regularly remove dirt and buildup from the drum and cleaning brush.
2. Before starting work, check the correct setting of the drum drive and drum impellers.
3. Regularly maintain the components of the drum.
4. Replace a worn chain, drive sprocket, idlers and other components early.

Causes of malfunctions

Possible causes	Elimination
Drum rotates too slowly	– Increase the speed on the control unit.
The drum makes loud scraping sounds	– Check the correct setting of the drive to the drum. – Check the impellers for complete contact with the treads of the drum. – Check baffles for distance from the drum.
Frequency inverter shows error “E-triP	– The sieve drum has a heavy duty gear. – Eliminate adhesions and blockages, if any. – Check the running of the drum.
Drum does not rotate smoothly.	– Slippage between drum chain and drum. – Check the wear of the drive chain.
Screen perforation clogged, clogs very quickly.	– Adjustment of the cleaning brush not correct. – Screening material too wet. – Cleaning brush stuck and must be cleaned.
Significantly larger parts are found in the sieve fraction	– The sieve mat is damaged, large parts get through. – The fastening of the sieve mat has come loose, as a result of which it has slipped and the closure no longer rests on the filler plate.

Replace sieve mat

Remove the cable remote control from the control cabinet before starting work. 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.

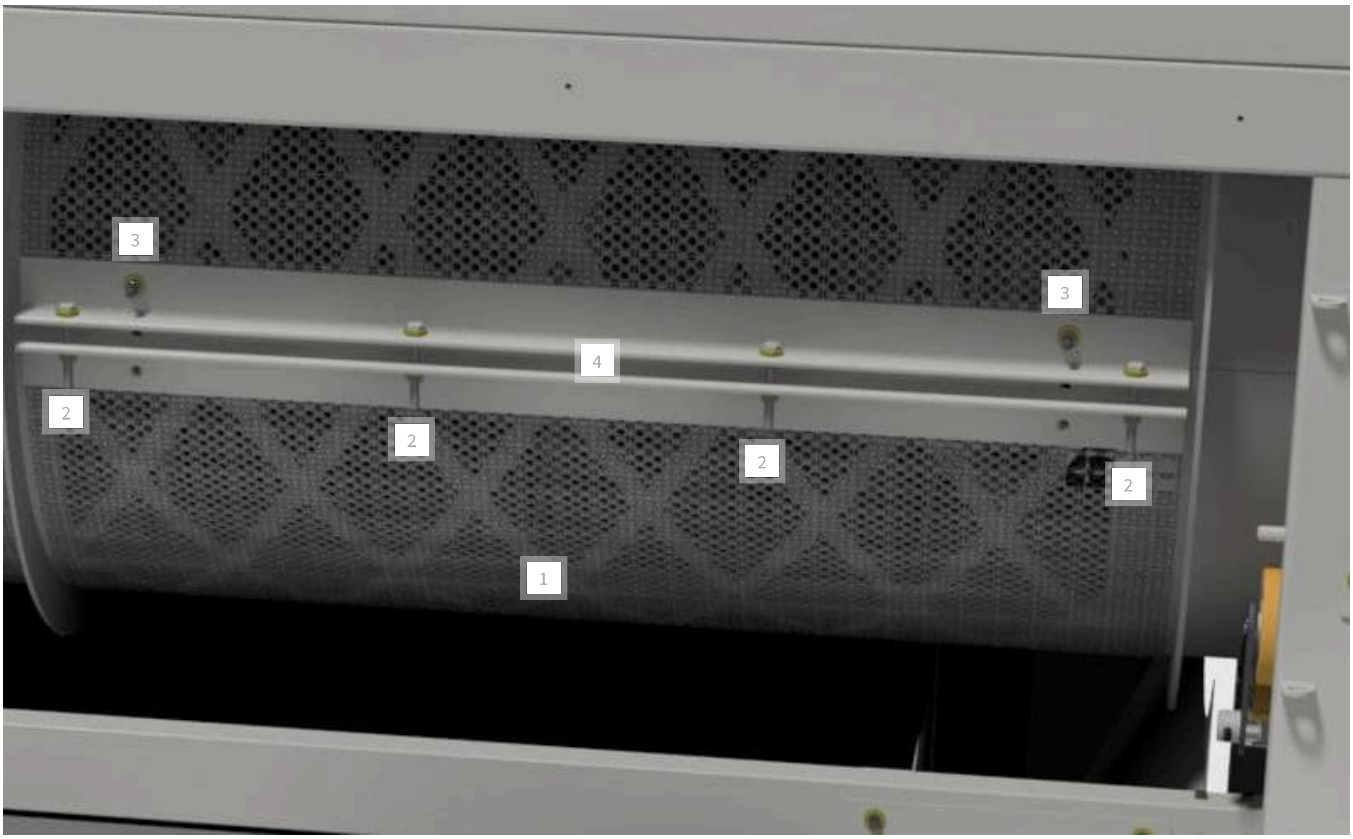
Always secure the maintenance door to the hopper with the safety rope provided. If the machine is tilted or there is a gust of wind, there is a risk that the maintenance door will close in an uncontrolled manner, resulting in injury.

The machine must be energized to use the remote control, but the machine must not be started. Unlock the emergency stop by pressing the “Stop/Reset” button for 3 sec.

Let the drum rotate with the help of the remote control until the connection point of the sieve mat is at working height. Operate the emergency stop on the remote control to be able to work safely on the machine.

While the drum is rotating and as long as the machine is energized and switched on, do not reach into rotating parts under any circumstances. There is a risk of injury!

Only operate the cable remote control if the danger area can be seen and no person is present in the danger area. Secure the work area against unauthorized access.



1. Screen mat
2. Connecting screws (4x)
3. Mounting screws
4. Terminal strips

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 sieve 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.

If the attachment of the sieve mat is at working height, stop the rotation of the drum and press the emergency stop. Loosen the fastening screws of the sieve mat on 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. Parallel to the drum rotation, insert the sieve mat into the machine. After reaching the working position, stop the drum and press the emergency stop. Fasten the sieve mat using the clamping screws and check the correct fit of the sieve mat.

After replacement, the machine can be put back into working position.

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.

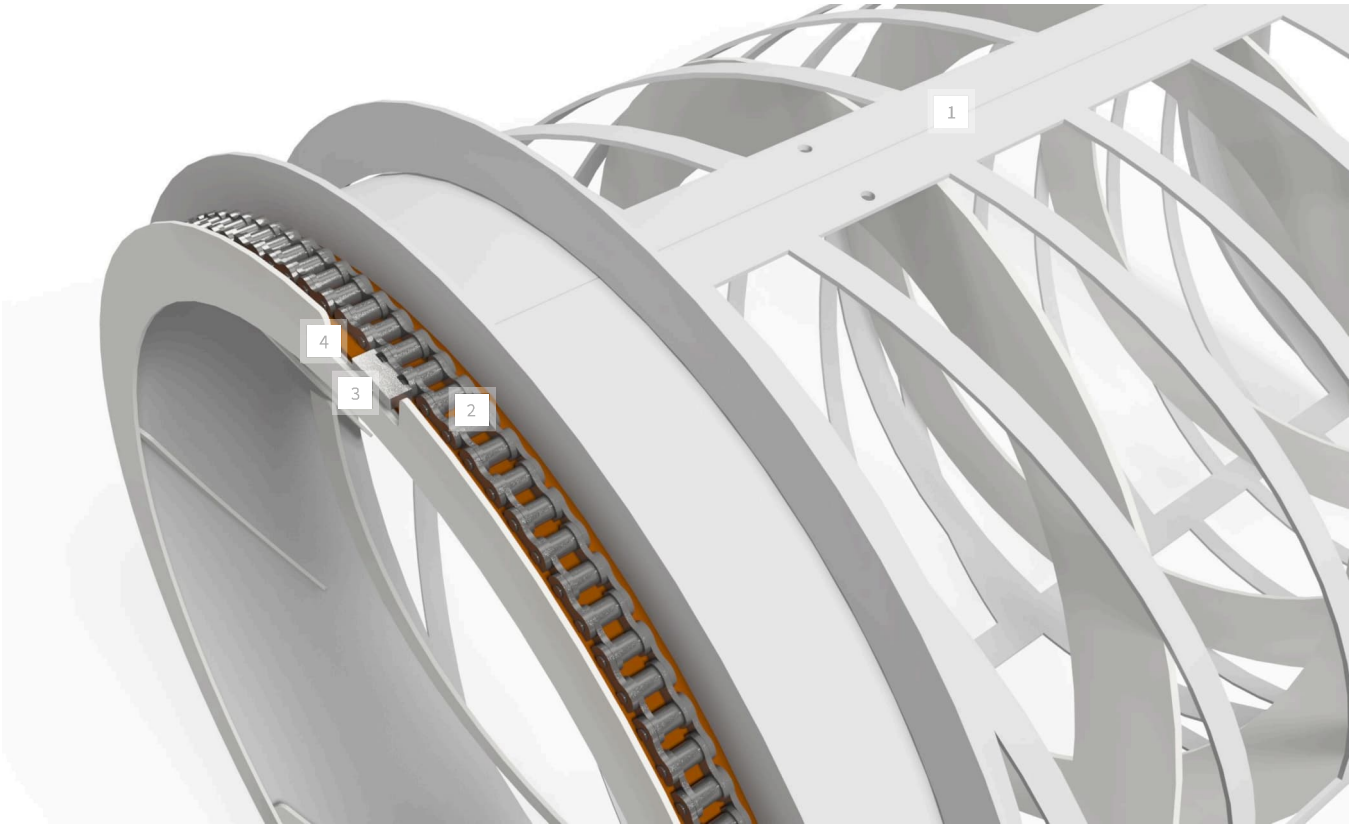
The sieve mats are made of spring steel wire, which has a resistance when placed on the drum. Always make sure that the ends of the screen mat are secured.

There is a risk of injury due to uncontrolled bouncing of the sieve mat!

Drum chain

Power is transmitted to the drum via a roller chain tensioned 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 prevent slippage of the chain and to compensate for concentricity tolerances.

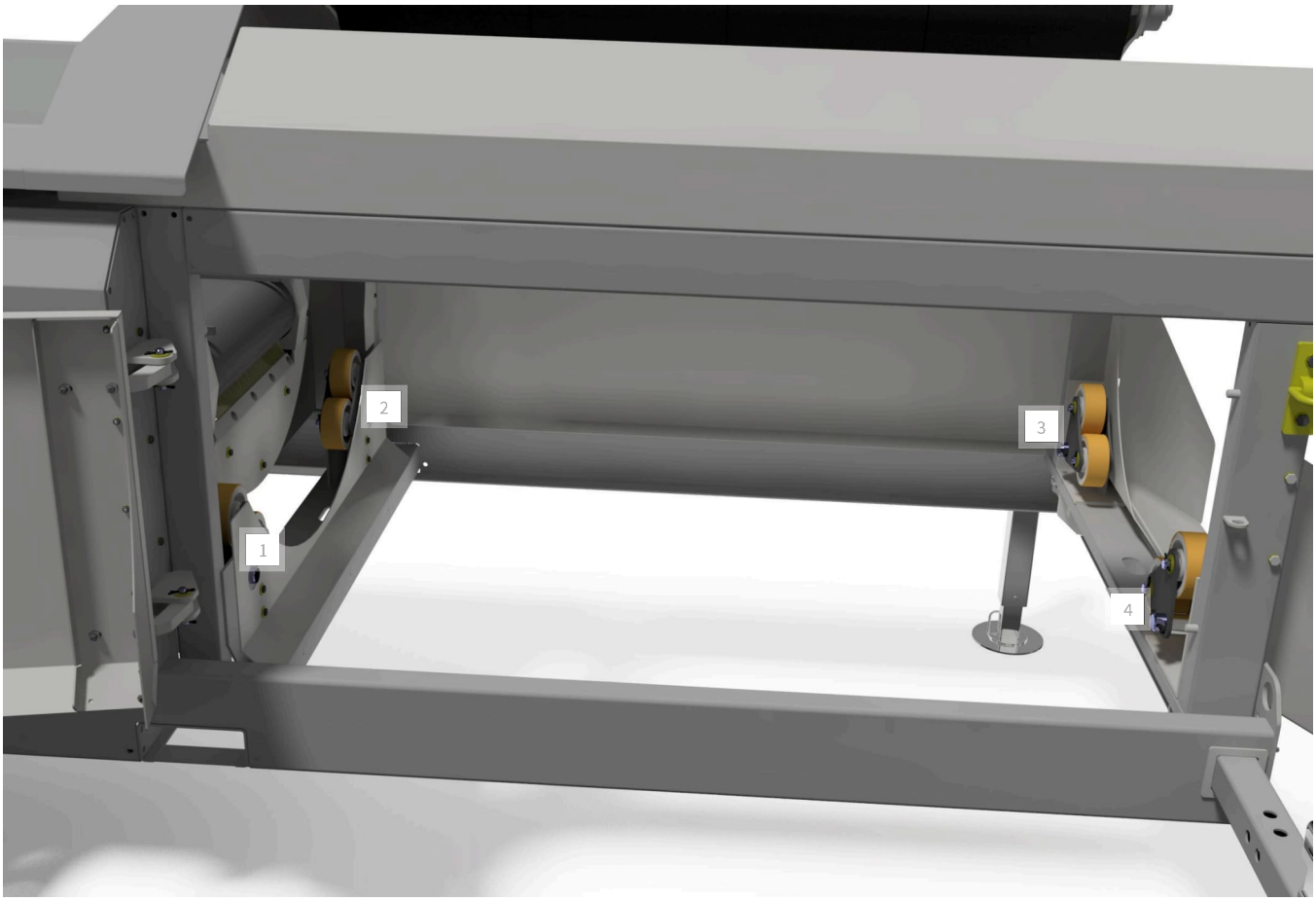
The two ends of the chain are connected by a chain lock at the cutout of the drum. To replace the chain requires a special tool for tensioning.



1. Drum body
2. Chain
3. Chain lock with stop block
4. Rubber mat

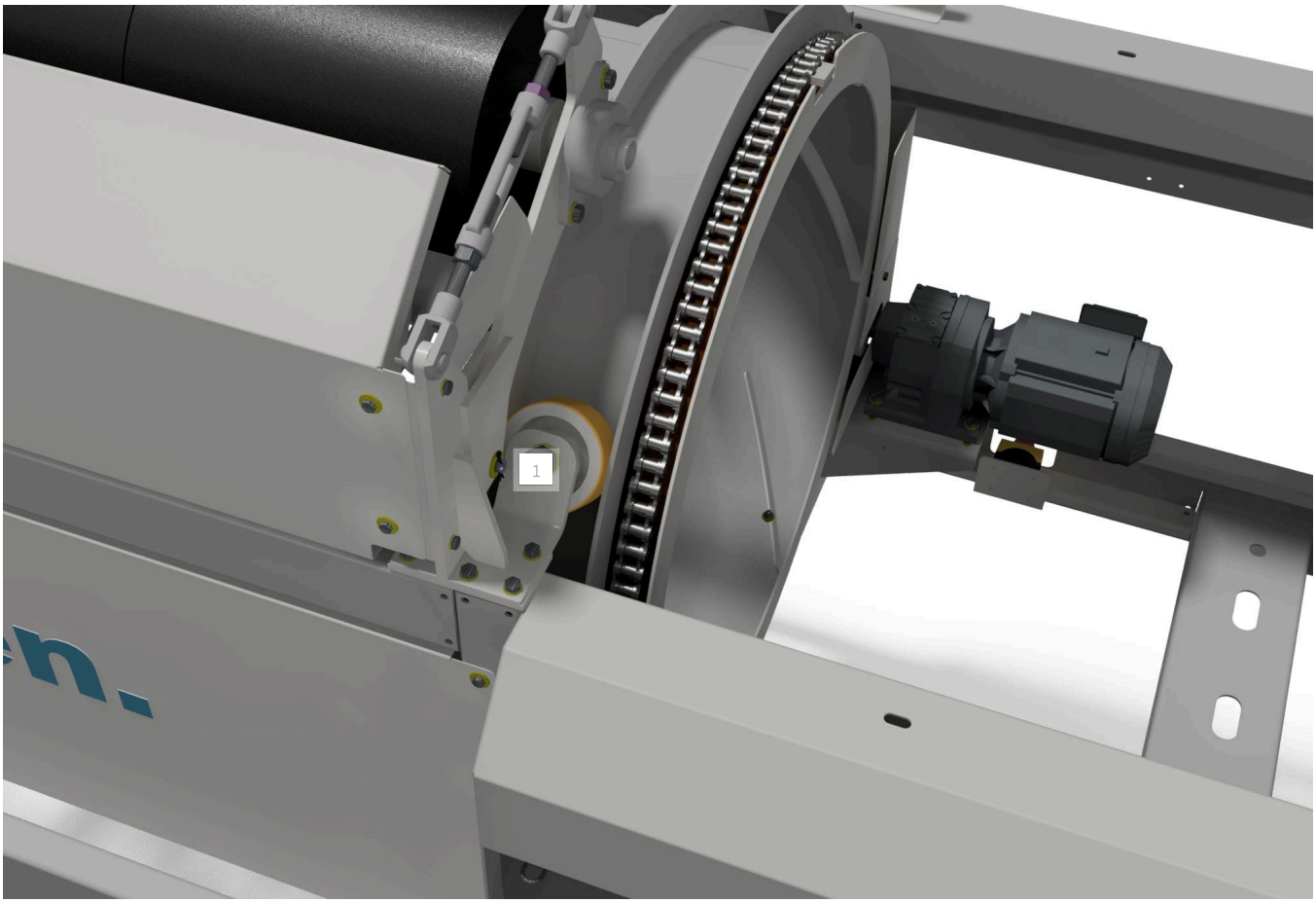
Drum bearing / impellers

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



Swing arm with rollers (1-4)

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

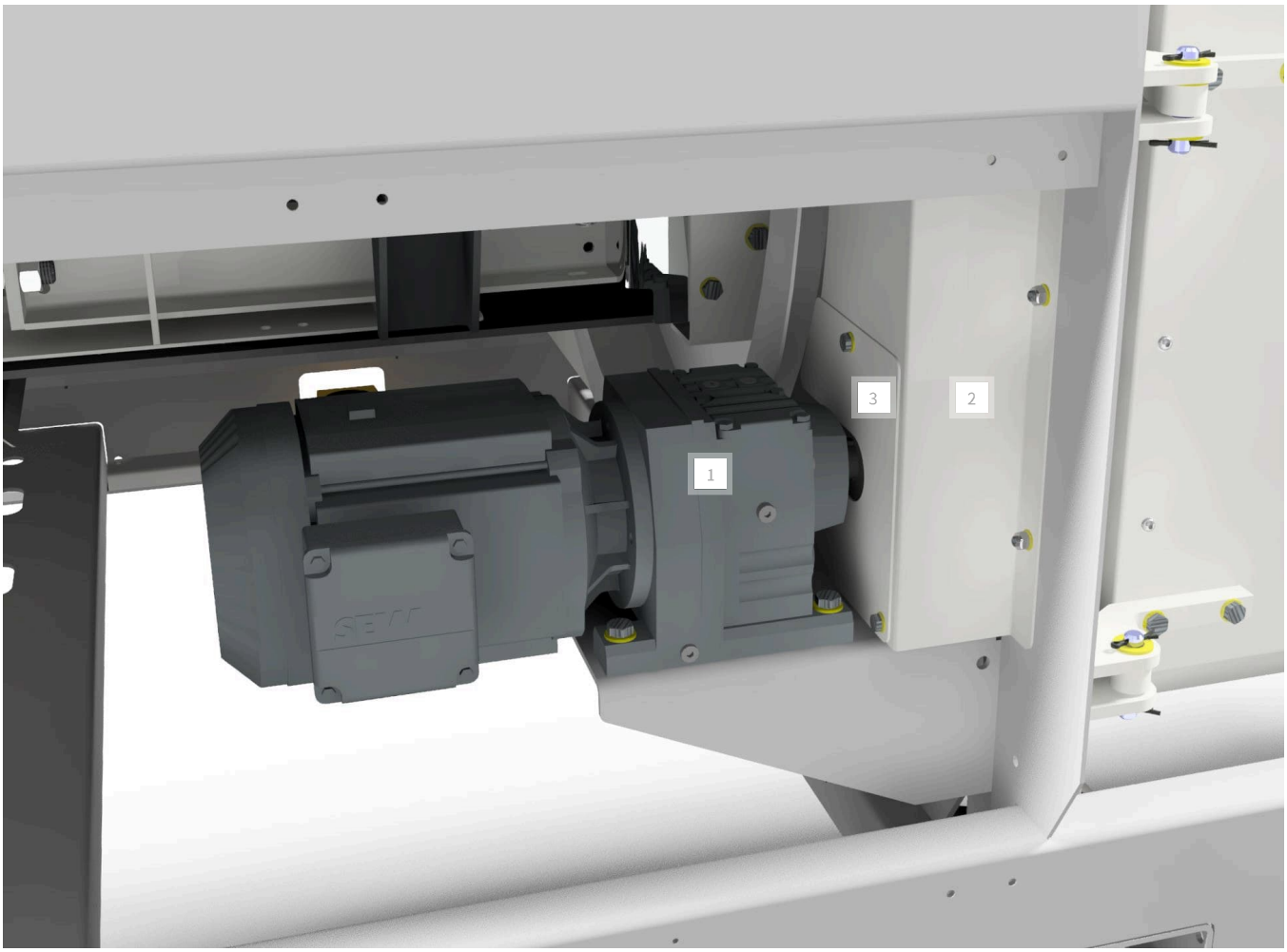


1. Leadership Role

Adjust drum drive

The power transmission from the gear motor to the drum is provided by a chain drive. Correct engagement of the sprocket is necessary to minimize wear. In case of loud running noises and stagnant movement, the alignment of the drive wheel must be adjusted.

1. Remove the protection on the drive
2. Loosen the fastening 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 during displacement.

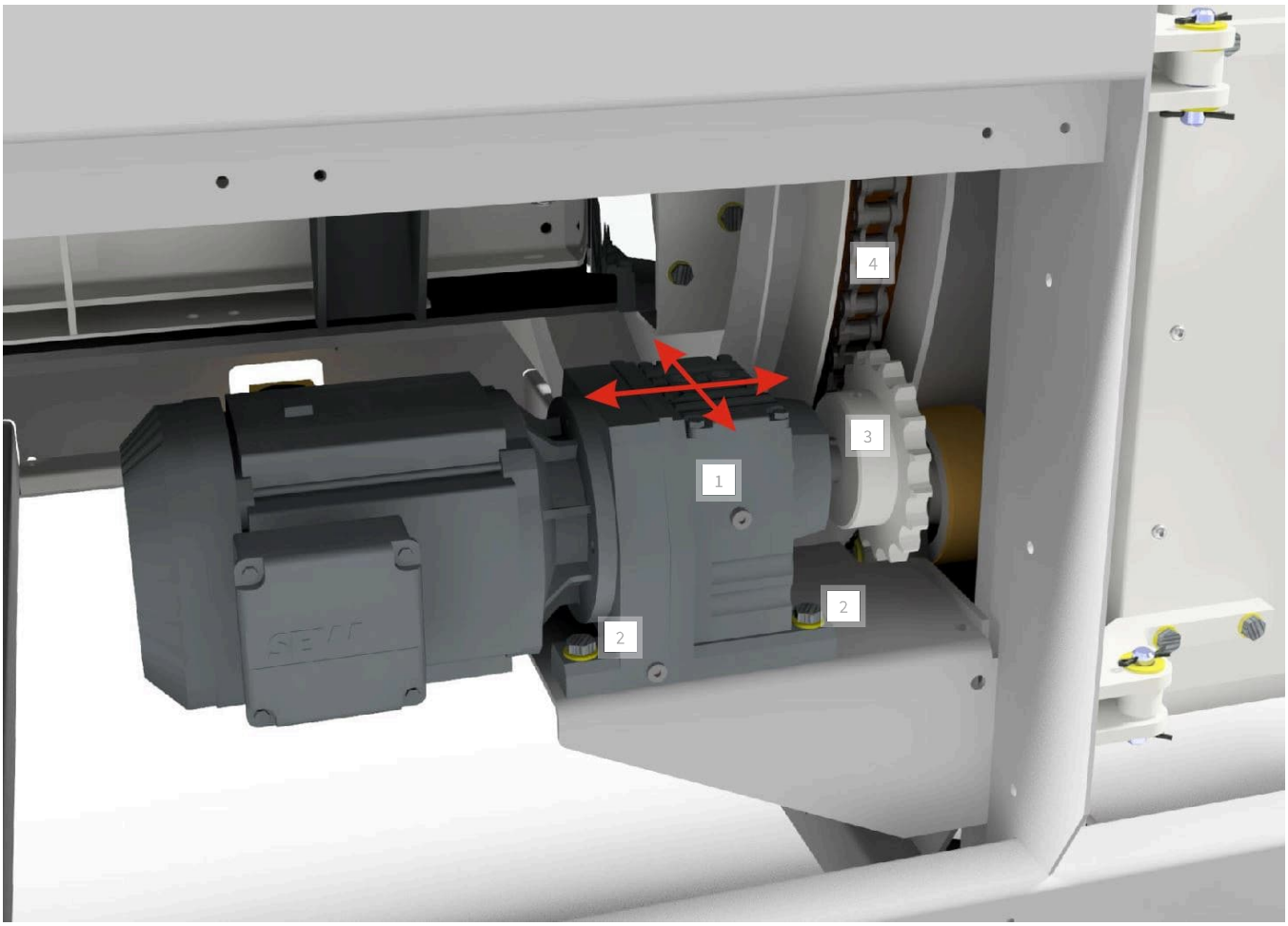


1. Gear motor – screen drum drive
2. Protective cover
3. Control cover

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

Align the drive wheel 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 gearwheel. 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 wheel engages completely with the chain. Lightly tighten the screws of the motor mounting.

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 replace the protective cover.



1. Gear motor – screen drum drive
2. Mounting screws
3. Gear
4. Drum chain

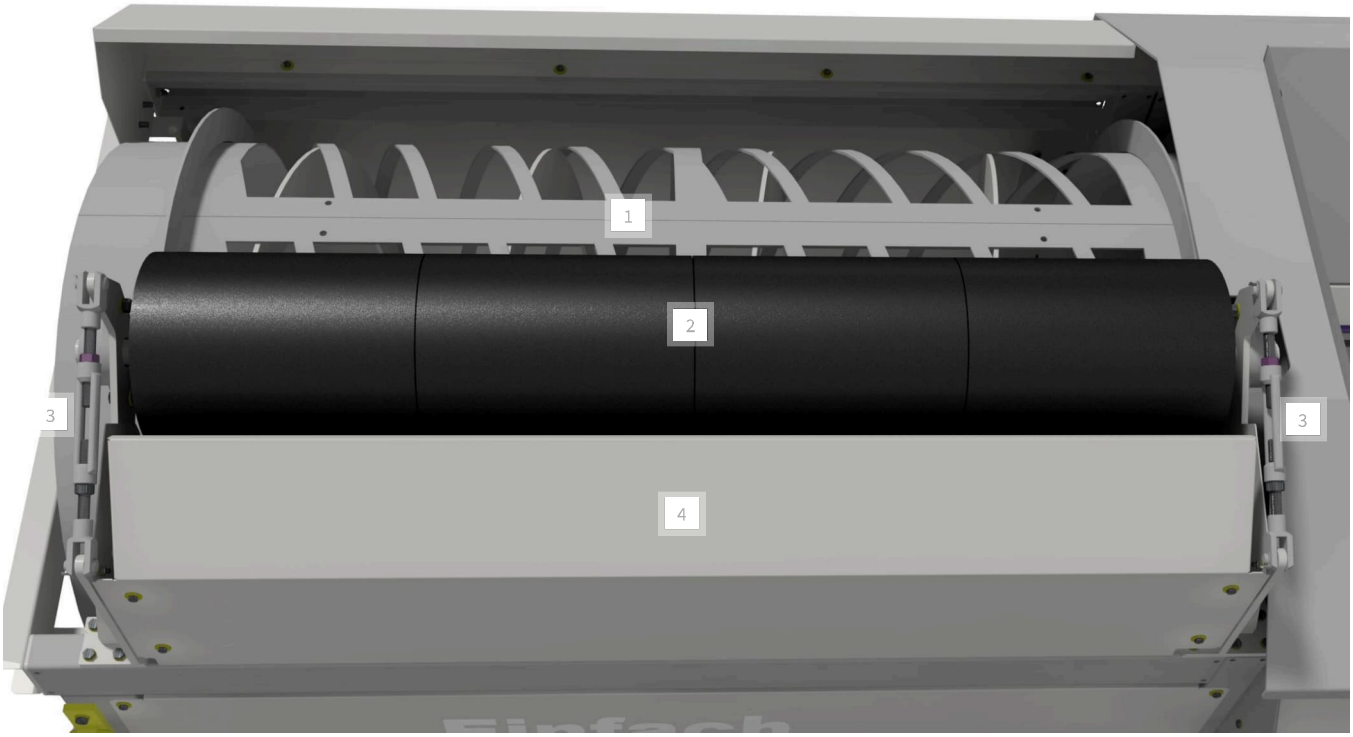
(Fig. Center alignment of the sprocket on the drum chain).

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

Adjust cleaning brush

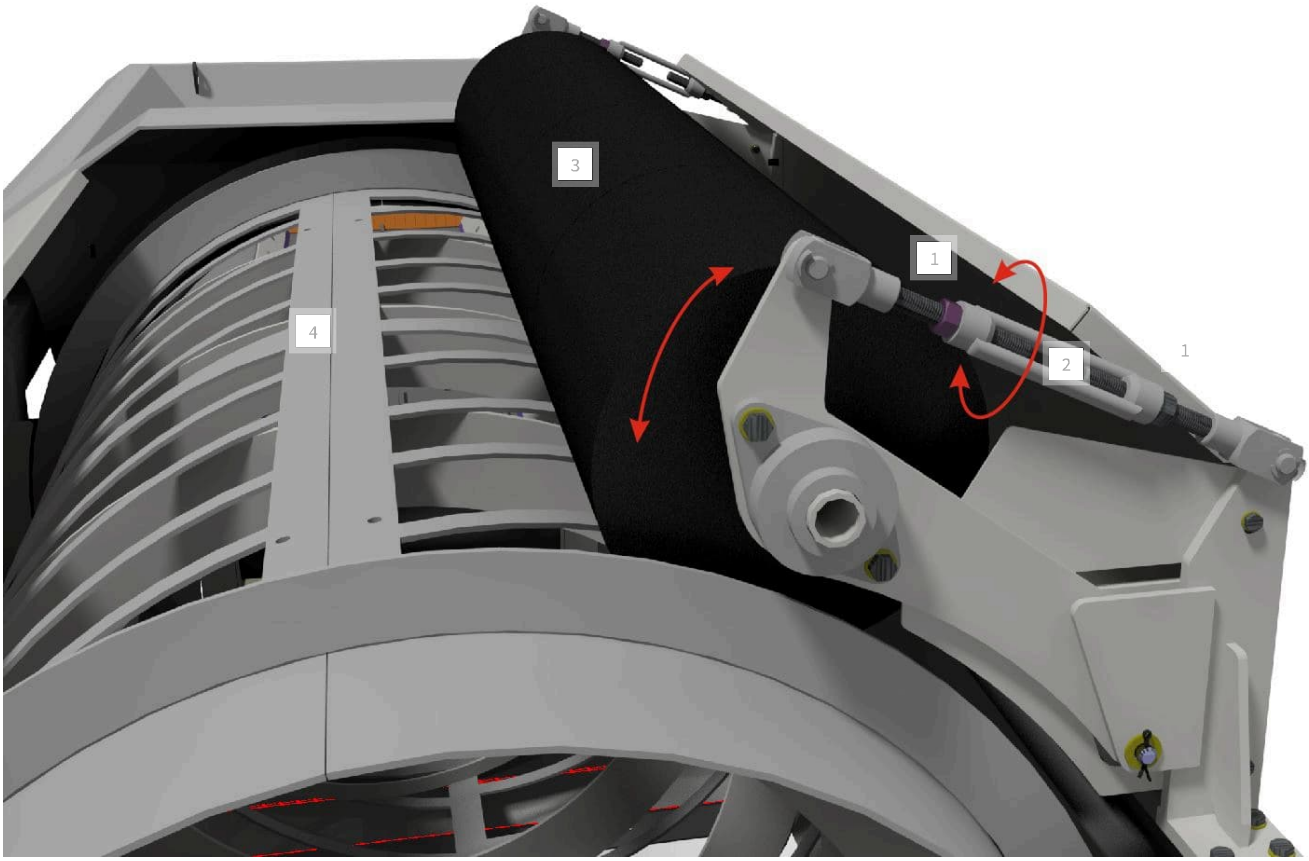
For proper operation of the cleaning brush is possible to adjust the depth of penetration into the drum. Depending on the sieve mat and the material to be sieved, the bristles of the brush must protrude between 5 and 10 mm through the sieve mat into the drum.

There is an adjustment mechanism on both sides of the cleaning brushes.



1. Screen drum
2. Cleaning brush
3. Adjustment mechanism
4. Protective cover

The depth of brush engagement with the drum can be adjusted by turning the set screw. Before adjustment, the locking nut must be loosened and tightened again after adjustment. The bristles should be immersed at least 5mm into the sieve mat for good function.



1. Lock nuts
2. Adjustable fork
3. Cleaning brush
4. Screen drum

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

Maintenance

Definitions

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

The maintenance intervals refer to normal use and thus normal load. Operational 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 schedules.

Terms

Maintenance

Maintenance is understood to mean all measures for restoring the target condition (functional capability) of the machines. These measures include: Maintenance, inspection and repair.

Maintenance

Maintenance refers to all measures taken to maintain the target condition of the machines. It includes activities such as cleaning, preservation, lubrication, supplementation, replacement (replacement of auxiliary materials and small parts) and readjustment.

Inspection

Inspection refers to all measures taken to assess the

Actual condition of the machines summarized. The purpose of the inspection is to identify any necessary repair 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 to a functional condition (e.g. after damage/failure).

Wear

In terms of maintenance, the degradation of the wear stock is understood 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. Equipment cannot be operated without wear and tear. The task of maintenance is to identify 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 from 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 stock due to a breakage, for example, which need not be directly dependent on time. It follows that inspections cannot be based solely on time periods.

Wear reserve

In terms of maintenance, the stock of resources necessary to perform the function of the machine.

Use

In the sense of maintenance, use of the machines as intended and in accordance with the generally recognized rules of technology, whereby material and/or services are created with the reduction of the wear and tear 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, condition of resources after falling below a certain threshold value of the wear reserve, which causes an unacceptable impairment of functionality with regard to use.

Error

Failure to meet specified requirements/function fulfillment 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 at points where wear inevitably occurs 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 scheduled 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 generally not economical.

Small part

Spare part that is generally usable, predominantly standardized 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 perform maintenance on a technical product, as well as information on the product and 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 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 technical 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 prepare a maintenance strategy. This strategy includes the following items and may require supplementation or expansion of existing regulations by individual manufacturers.

1. Alignment of maintenance goals with corporate goals
2. Determination of appropriate maintenance strategies/times

If maintenance measures, such as the execution of maintenance measures or the execution 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 basically only be based on the machine/plant itself and on the operating and environmental conditions to be assumed as usual.

The consideration of company-specific special conditions and maintenance measures resulting from the maintenance objectives and the maintenance strategy of the company, the need for reduction of the inspection scope prescribed by maintenance / inspection plans, to preserve warranty claims, the manufacturer's commitment.

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 sufficient time for maintenance measures. Keep in mind that due to lack of care during maintenance / inspection, unforeseeable malfunctions or failures may occur during the production period, which significantly exceed the cost of maintenance / inspection.

To optimize their production times, consult VDI guidelines 3423.

It contains the basis for optimizing and recording the availability of machines and systems.

– Keeping spare parts on hand significantly shortens downtime or repair time. Please consult the manufacturer for advice on which parts should be kept in stock in order to minimize delivery times.

Repair

Repair measures shall be carried out in the following order:

1. Damage search
2. Take security measures
3. Removal of the defective assembly/parts
4. Possibly disassemble the assemblies
5. Checking and documenting the deviation from the target state
6. Replace or repair damaged part
7. Assemble / Install / Adjust
8. Test run, acceptance, release
9. Documentation of the repair

Machine cleaning

The cleaning of the machine should preferably be done dry. To remove strongly adhering dirt, the machine can be cleaned with a high-pressure cleaner or steam jet. Attention must be paid 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:

1. **Control cabinet**
2. **Operating unit**
3. **Bearing positions**
4. **Cable remote control**
5. **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).

– In order to ensure optimum sorting results, the screen grid must be cleaned as required.

Observe the safety instructions when cleaning. Observe the accident prevention regulations!

Lubrication

– All manual lubrications are to be carried out only when the machine is at a standstill.

– Use only the types of grease 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.

– Emerging fat edges do not need 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.

State images

The following table contains condition diagrams/damage/defects that are detected or can occur as a result of a maintenance/inspection measure on components or assemblies.

All components or assemblies described here must be inspected for the specified conditions/damage.

Lines

In the lines all parts/assemblies included in the machine are mentioned. The specification is generally valid. The respective parts/assemblies must be assigned to the generic terms.

Columns

In the columns, the respective possible states of the parts or assemblies named in the rows are indicated.

The respective states are marked by an "X". Examination of a part/assembly for a condition not marked with an "X" is not required.

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.

Service plan

A service plan is available in addition to the maintenance plan printed in the operating manual.

To make work easier, all dates and associated maintenance schedules are printed. During or after inspection, maintenance or repair, only the corresponding data must be entered. In the case of warranty claims, the service plan serves exclusively as proof of the inspections performed.

No.	Assembly – state	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
1	Rack/Frame	X	X		X										X		X		X			X							X			X			
3	Flaps		X								X				X		X												X			X	X		

4	Interlocks	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	Signaling 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			

(Fig. Table of state images)

1. Breakouts/Damage
2. Mounting
3. Braking effect
4. Break
5. Elongation
6. Tightness/leakage
7. Torque transmission
8. Print
9. Flow
10. Setting
11. Conveyor flow
12. Fretting/scoring/scratches
13. Filling quantity and condition
14. Function
15. Noise (smooth running)
16. Corrosion

17. Internal clearance
18. Cracks
19. Switchability
20. Slip
21. Vibrations
22. Seat
23. Voltage
24. Game
25. Temperature
26. Unbalance
27. Uneven run
28. Deformation
29. Offset
30. Wear
31. Pollution
32. Completeness
33. Cooling
34. Voltage

Maintenance plan / Inspection plan			Machine:		Operation: Cost center:			
			Manufacturer: H2PRO GmbH & Co KG		Device number: Serial number: Location:			
Lfd. No.	Tab. A-No.	**Component** or work to be performed	Measuring and testing equipment Operating and auxiliary materials	Frequency / Interval	Work performed / Performer		Date / Operating hours /	Comments

1. 1.1 1.1.1 1.1.2 1.1.3 1.1.4 1.2 1.2.1 1.2.2 1.2.3 1.3 1.3.1 1.3.2 1.4 1.4.1 1.4.2 1.4.3 1.4.4 1.5 1.5.1 1.5.2 1.5.3 1.5.4 1.5.5 1.5.6 1.5.7 1.6 1.6.1 1.6.2 1.6.3 1.6.4 1.6.5		**Gearbox** housing Check for leaks Check oil level and top up if necessary. Check smooth running Check temperature Check shaft/axle Check smooth running Check deformation Check wear Check seal Check tightness Remove dirt Check mounting Check screws Check damage Check adjustment Check coupling (mechan.) Check damage Check mounting Check adjustment Check function Check smooth running Check clearance Check wear Check connection (clamping set) Check damage Check function Check tension Check deformation Check completeness	Observe the instructions of the respective manufacturer. Correct the position for adjusting the coupling (1.5) if necessary. Check for correct setting according to manufacturer's instructions and readjust if necessary. Retighten/check clamping set connection (torque: 35Nm). Check displacement.	every 50 hrs. every 200 hrs.	_____ _____ _____ _____ _____ _____	__.__.__ ___.___ h	Reserve part Reserve part Time-limited part
2. 2.1 2.1.1 2.1.2 2.1.3 2.1.4 2.1.5 2.2 2.2.1 2.2.2 2.2.3 2.3 2.3.1 2.3.2		**Motor** Housing Check fastening Check damage Smooth running Check temperature Remove dirt Fan wheel Check damage Smooth running Check dirt Remove terminal box Check tightness Check corrosion	Observe the instructions of the respective manufacturer.	every 50 hrs. 1x daily every 200 hrs.	_____ _____ _____ _____	__.__.__ ___.___ h	Spare part
3. 3.1 3.1.1 3.1.2 3.2 3.2.1 3.2.2 3.2.3 3.2.4 3.2.5 3.2.6 3.2.7 3.2.8 3.2.9 3.2.10 3.3		**Conveyor belt** Shaft Check concentricity Check deformation Rolling bearing Check fastening Check running smoothness Check bearing clearance Check fit Check clearance Check temperature Check dirt Remove lubrication	max. ±0.5mm Observe the instructions of the respective manufacturer, replace bearings if necessary. max. 75°C Refill with lubricant, replace if necessary.	every 50 h 1x daily 1x daily	_____ _____ _____ _____ _____	__.__.__ ___.___ h	Spare part Time-limited part / Consumable

3.3.1 3.3.2 3.3.3 3.3.4 3.3.5 3.4 3.4.1 3.4.2 3.5 3.5.1 3.5.2 3.5.3 3.5.4 3.5.5 3.6 3.6.1 3.6.2 3.6.3 3.6.4		Check grease nipple Check seal Check connection Check damage Check function Check tension Check deformation Check completeness Check screws Check damage Check connections Check cover Check damage Check function Check deformation Remove dirt Completeness Check metal-rubber element Check damage Check function Check fit Check deformation	retighten/check (torque: 27Nm). Check displacement. Observe tightening torques.	every 200 hrs. every 200 hrs.	_____ _____ _____ _____		part Small part Small part
4. 4.1 4.1.1 4.1.2 4.2 4.2.1 4.2.2 4.2.3 4.2.4 4.3 4.3.1 4.3.2 4.3.3 4.3.4 4.4 4.4.1 4.4.2 4.4.3		**Conveying element (drum)** Screws Check damage Check connections Cover Check damage Check function Check deformation Remove dirt Rubber element Check attachment Check damage Check wear Remove dirt Conveying element (screw) Check attachment Check function Remove dirt Check deformation	Observe tightening torques.	1x daily	_____ _____ _____ _____ _____	__.__.___ ___.___ h	Spare part Small part Spare part Consumable part Consumable part
5. 5.1 5.1.1 5.1.2 5.1.3 5.1.4 5.1.5 5.2 5.2.1 5.2.2 5.2.3 5.3 5.3.1 5.3.2 5.3.3 5.3.4 5.4 5.4.1 5.4.2 5.4.3 5.4.4 5.5 5.5.1 5.5.2 5.5.3 5.5.4 5.5.5 5.5.6		**Rack/Frame** Connection cannot be disconnected Check damage Check function Check corrosion Check deformation Remove dirt Housing Check retainers Check locks Check stop Cover Check damage Check corrosion Check deformation Remove dirt Protective device Check damage Check function Check dirt Remove completeness Check flap Check fastening Check adjustment Check corrosion Check deformation Remove dirt Check completeness		every 250 hrs.	_____ _____ _____ _____ _____ _____ _____ _____ _____	__.__.___ ___.___ h	Small part Small part Small part Reserve part Reserve part Reserve part
6. 6.1 6.2 6.3		**Power unit** Remove dirt Check oil level Check completeness	Observe the instructions of the respective manufacturer.				Spare part
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 target values/operating conditions that occur and are detected must be corrected immediately. Reproduction of this plan for proof of maintenance/inspection is expressly permitted.							

(Fig. Maintenance plan)

Fault log			Machine: e1		Operation: Cost center:		
			Manufacturer: H2PRO GmbH & Co KG		Device number: Serial number: Location:		
Lfd. No.	Tab. A-No.	Components / Assemblies	Malfunction / error / damage according to operating instructions Table A	Date of determination	Work performed / Performer	Date / hours of operation / duration of repair	Comments

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

(Fig. Fault log)

Final decommissioning and disposal

Final decommissioning and disposal require disassembly of the machine 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.

When the machine is finally decommissioned, hazards due to leaking lubricants, solvents, preservatives, etc., must be expected. These can lead to burns if they come into direct contact with the skin. There is a risk of injury at open, sharp-edged machine parts.

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

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