



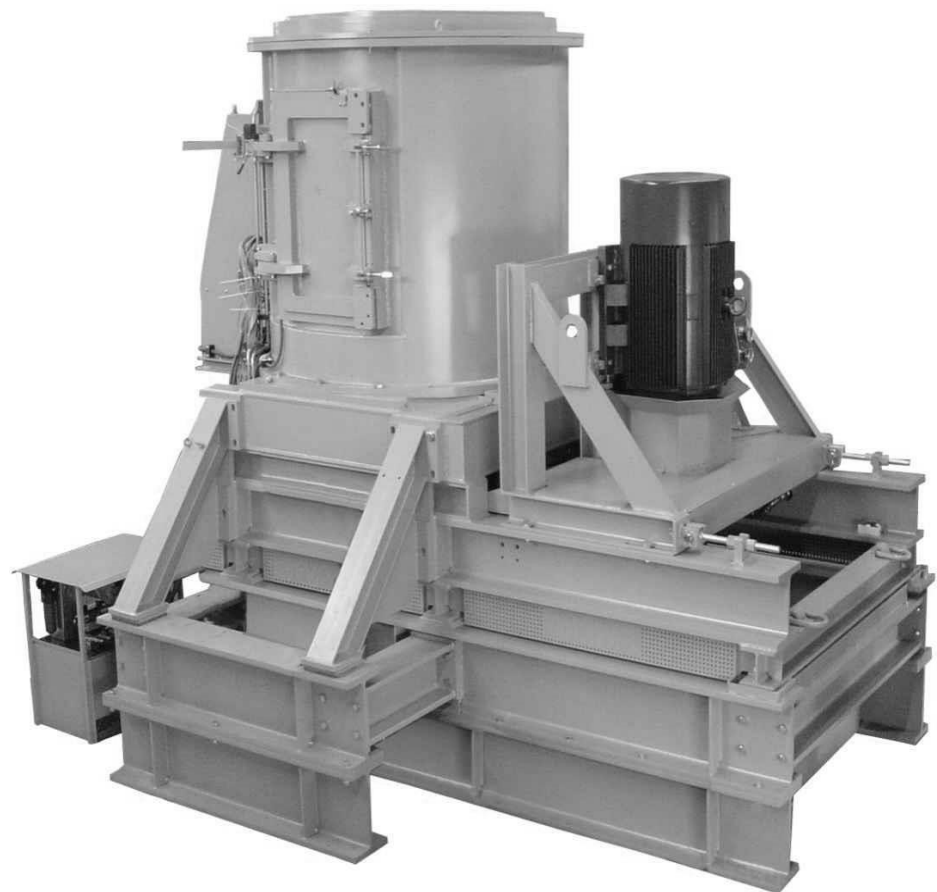
[Recycling Systems
The Pioneer]

Operating instructions

Shredding machine

Universal crossflow shredder

UNI-CUT® QZ 1200



Supplier:

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1 Notes and explanations

These operating instructions are part of the universal cross-flow shredder UNI-CUT® QZ and, where applicable, form a supplement to the documentation of an overall system of which it is an integral component.



These operating instructions will help you to operate the machine safely and as intended. Read these carefully **before** using the machine and pay particular attention to the safety instructions.

These operating instructions also describe optional equipment and selected optional accessories. Please understand that equipment variants that you may not have selected are also described. Deviations from the illustrations are also possible depending on the equipment and machine.

These operating instructions include:

- Overview, machine-related data
- Dimension sheets and drawings
- Spare parts lists
- Operating instructions of the respective manufacturers of individual components.

The operating instructions must be protected and kept accessible to users at all times. If the machine is passed on, the operating instructions must be handed over to the new owner or operator.

1.1 Machine-related data

1.1.1 Order data

Order no.:	516 300
Year of construction:	2009
Customer:	Duesmann & Hensel Recycling GmbH Mühlweg 10 DE-63743 Aschaffenburg GERMANY
Machine type:	UNI-CUT® QZ 1200
Machine no.:	M-918

1.1.2 Scope of supply

The scope of supply of the machine consists of the following components:

X	Base frame (standard)	-	Base frame (special version)
-	Substructure (1-layer)	-	Substructure (2-layer)
-	Stairs with landing (standard)	-	Staircase with landing (special design)
-	Control cabinet	-	On-site control panel
-	Soft starter	-	Frequency converter
X	Hydraulics (standard)	-	Hydraulics (special version)
-	Hydraulic feeding device: Slide	-	Hydraulic feeding device: Flap
-	Hydraulic ejection device: Slide	X	Hydraulic ejection device: Flap
-	Hydraulic cylinder: with internal position measuring system	X	Hydraulic cylinder: with external position measuring system
-	Manhole cover		
-	Compensator feed area	-	Compensator ejection area
X	Wear protection working area: Base plate	-	Wear protection working area: Ejection area
X	Wear protection working area: Standard wall	-	Wear protection working area: Wall addition
-	Liquid re-cooling system	-	Fire extinguishing system
-	Protective gas system	-	Foaming system
-	Explosion protection equipment	-	Air extraction system
-	Soundproof cabin		
-	Heating for control cabinet	X	Heating for hydraulics

X	Central lubrication system		
-	Maintenance crane	-	Suspension device pulley
-	Pulley		
-	Impact head turning device	-	Impact head puller
X	Impact head (2-piece) standard	-	Impact head (2-part) with lubrication
-	Impact head (3-part) insertion technique	-	Impact head (3-part) with lubrication
X	Operating instructions		

1.1.3 Technical data

Total weight:	6,500 kg
Dimensions:	See overall plan of the machine in the appendix.
Noise emission when idling:	80 to 84 dB(A), depending on the ambient conditions.
Sound emission measured under production conditions:	Measured at: _____ Measured by: _____ Value: _____ dB(A)
Working pressure on the hydraulic unit:	Factory setting 130 bar
Acceleration elements:	Diameter 22 mm, 5 segments
Ejection workspace	(Width x height) 340 mm x 290 mm

1.1.4 Electrical data

Nominal voltage:	480 V
Supply type:	3/PE, 60 Hz
Rated power of main drive:	160 hp
Rated current of main drive:	184 A

1.2 Statutory warranty and liability

1.2.1 Additional conditions to the statutory warranty

According to your contract concluded with **MeWa**, you are eligible to have warranty claims over the purchased product. To ensure that you do not lose them, you should observe the following instructions and conditions:

1. Deviations from the contractual warranty conditions and from our terms of delivery and payment must be expressly agreed upon in the contract and must be in writing. The provisions of this Section 1.2 are not to be understood in the sense of an independent guarantee; rather, they relate exclusively to the warranty claim existing under the law and the contract.
2. The warranty period depends on the contract concluded with your company. We generally exclude any extension of the warranty period with reference to downtimes during repair within the warranty period.

Our warranty takes the form of repair or replacement.

Our warranty applies to all verifiable material or manufacturing defects.

If faults or damage occur to parts not manufactured by us but purchased from third parties, the warranty conditions of the respective manufacturer shall apply. This applies in particular to the electrical equipment and measurement and control technology including switches, emergency stop devices or similar, incandescent or glow lamps, motors, fans, plastic parts, thermostats and other control devices, timers, gas, refrigeration and air conditioning fittings, solenoid and other valves or hydraulic and pneumatic components. It also applies to glass, paint and enamel damage, insofar as this work was carried out by third parties.

All faults and damage are excluded from the warranty if they are due to natural wear and tear or have been caused by improper operation or maintenance, excessive stress, in particular climatic, electrical or chemical influences, or improper use.

3. In the case of deliveries of machines or parts, the customer must check the packages immediately upon receipt for any damage or robbery. If such is determined, the customer may only accept the delivery with written acknowledgment of the damage by the carrier or forwarder. Obvious defects must be reported to us immediately after receipt or delivery of the goods with a precise description.
4. Irrespective of whether within or outside the warranty period, the following applies: Returns of goods must be agreed with us in writing in advance. We do not take back any goods unless we have agreed to this in advance.
5. At our request and after corresponding coordination of the details with us, a customer must return goods under warranty to us for the purpose of examining the warranty claim.
6. If goods under warranty cannot be repaired on the spot, they must be returned to us with a precise description of the fault or defect after appropriate consultation with us.

7. Services to be provided by the customer or its agents, in particular for foundation work and protection against noise and vibrations, must be specified separately in the respective purchase contract, unless described in these operating instructions.
8. Unless expressly agreed otherwise in the purchase contract, the address for correspondence and returns shall be our German address stated in these operating instructions.

A message or notification sent to our fax machine and signed by hand shall also be deemed to be in writing. Electronic mail (e-mail) is generally used to contact us quickly, but usually requires final confirmation by letter post or fax.

1.2.2 Expiry of the warranty

Any warranty claim expires:

1. In the event of improper operation of a machine supplied by us – in particular in the event of damage due to improper operation (e.g. incorrect or omitted maintenance) or improper use (e.g. processing of unintended feed material).
2. In the event of continued operation with a faulty control program or unauthorized changes to it. Caution! This can cause damage to the system – faults or irregularities in the control sequence must be reported to the manufacturer immediately.
3. If the instructions in this operating manual, including the safety instructions, as well as the locally applicable safety regulations, relevant accident prevention regulations, other generally recognized rules of safety engineering and occupational medicine or the corresponding local regulations, laws or ordinances are violated.
4. If a machine supplied by us is operated without the intended safety devices (e.g. covers, protective devices) – irrespective of whether they are not fitted, defective or not functional for other reasons, for example, or are even illegally manipulated or bypassed (e.g. bypassing safety switches).
5. In the event of violations of or deviations from the operating instructions presented here during transport, storage, assembly or disassembly.
6. In the event of improper installation, assembly or disassembly of a machine supplied by us by anyone other than **MeWa's** specially trained specialist personnel or the specialist companies we authorized.
7. In the event of changes to the pre-settings made by **MeWa's** specialist personnel or the specialist companies we authorized, in particular in the controller, hydraulic values or similar. Caution! This can lead to overloading of the machine.
8. In the event of improper commissioning, operation, charging, maintenance, servicing or cleaning – in particular in the event of violations of or deviations from the operating instructions provided here.
9. Unauthorized modifications, alterations, interventions, repairs, etc. without our prior express written consent – this also includes the performance of maintenance or repair work or similar, which are reserved for **MeWa's** specialist personnel by these operating instructions.

10. In the event of changes, modifications, interventions, repairs etc. permitted by us, if these are carried out improperly or by persons who are not commissioned, trained or qualified to do so.
11. When using accessories or spare parts that have not been approved by us or are not original **MeWa** parts. Caution! Inferior greases can lead to bearing damage! Cheap accessories and spare parts can cause damage to the machine.
12. In the event of inadequate maintenance (may lead to malfunctions or damage to the machine), especially to those machine parts that are subject to wear and tear, as well as failure to comply with the inspection and maintenance intervals.

Even after the warranty period has expired, we still recommend the use of our original parts. Only the original parts have the properties required for safe and fault-free continued operation of the machine supplied by us.

1.2.3 Exclusions of liability

MeWa excludes any liability for damage (personal injury, damage to property or other damage) and risks in the following cases:

1. Disasters, external influences or force majeure conditions.
2. Failure to comply with the above provisions upon receipt of a supply or when returning goods to us.
3. If, as described above, a warranty claim would also expire
 - regardless of whether the cause of an incident lies within or outside the warranty period – in particular
 - in the event of improper use or operation
 - if the locally applicable safety regulations, relevant accident prevention regulations, other generally recognized rules of safety equipment and occupational medicine or the relevant local regulations, laws or ordinances are disregarded
 - if these operating instructions are ignored
 - in the event of unauthorized changes or modifications, interventions, repairs, etc.
 - in the event of changes or modifications, interventions, repairs, etc. by insufficiently qualified personnel
 - when using spare parts, accessories, attachments etc. that have not been tested and approved by us.
 - in case of improper installation, assembly or disassembly by anyone other than **MeWa's** specially trained specialist personnel or the specialist companies authorized by us.
4. Due to a breach of the duty of care when commissioning, operating, charging, maintaining, servicing or cleaning or during repairs, even if these duties of care are not expressly referred to in these operating instructions.

If contractually agreed services are not provided by the customer or its agents, especially with respect to foundation work and protection against noise and vibrations, **MeWa** shall not be liable for compliance with the relevant specifications of a **MeWa** shredding machine/a **MeWa** system.

1.2.4 Copyright

These operating instructions should not be reproduced, distributed or used for competitive purposes or disclosed to third parties or competitors, either in whole or in part, without the written permission of **MeWa**. Violations may result in claims for damages and prosecution. **UNI-CUT®** is the legally protected designation for **MeWa** products.

1.2.5 Integration into an overall process

Unless expressly agreed otherwise in writing, the machine is generally supplied as a sub-assembly. Electrical and mechanical integration into an overall process, including the feed and discharge equipment for the material to be processed, is absolutely essential for their operation.

When integrating into an overall process, the safety instructions listed must be observed.

Since a UNI-CUT® QZ can be used for a wide range of applications, a risk analysis must be prepared for the overall system of which it is a part for the specific intended use before it is integrated into an overall process. The safety instructions must be evaluated once again for each application.

Proper integration into an overall process can only be achieved with the involvement of experts. A safety assessment must be carried out.

If the integration is not carried out by the supplier, the supplier shall not be liable. This also applies to consequential damage caused by faulty or improper integration.

1.3 Symbols and signal words used

1.3.1 Hazard symbols

The following symbols, signal words and forms of presentation are used in these operating instructions to indicate special dangers. Please follow these instructions!



A symbol of this type indicates an **imminent danger** to the life and health of human beings.

- Failure to observe these instructions may result in serious damage to health and even life-threatening injuries.



A symbol of this type indicates a **potential danger** to the life and health of human beings.

- Failure to observe these instructions may result in serious damage to health and even life-threatening injuries.



A symbol of this type indicates a **potentially dangerous situation**.

- Failure to observe these instructions may result in minor injuries.



A symbol of this type indicates a **potentially dangerous situation**.

- Failure to observe these instructions may lead to **damage to property**.



Example of a warning sign: Danger due to electrical voltage!

- These symbols indicate the types of danger.

1.3.2 Mandatory and prohibition signs



This symbol provides important information on the **proper use** of the machine.

- Failure to observe these instructions may lead to faults or disruptions in the machine or in the surrounding area.



Example of a prohibition sign used: No entry allowed!

- These symbols indicate prohibited actions.



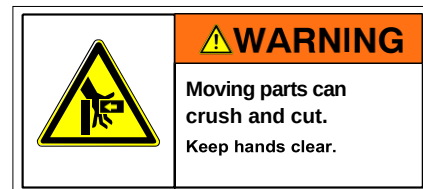
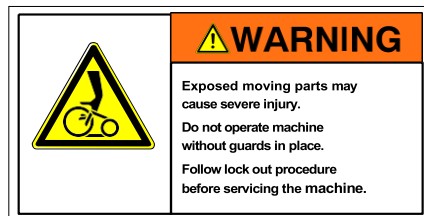
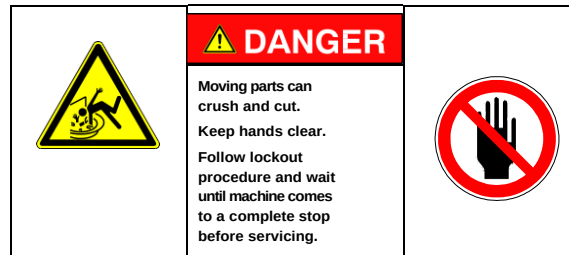
Example of a mandatory symbol used: Wear hearing protection!

- These symbols indicate necessary protective measures.

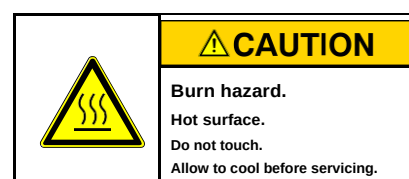
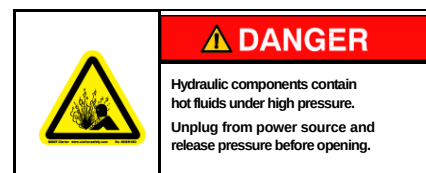
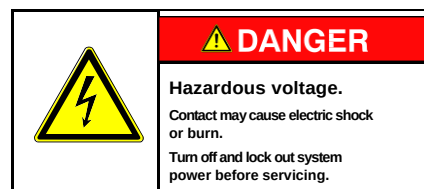
1.4 Warning signs on the machine

These warning signs are attached to the machine and warn of the relevant risks or dangers. Be particularly careful at these danger spots. Regardless of this, it is important that you work on the machine with the utmost caution and care. Read these operating instructions and observe the safety instructions.

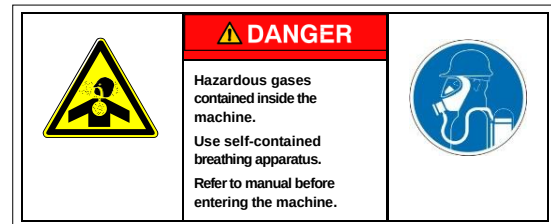
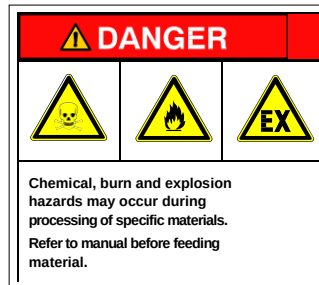
1.4.1 In the event of hazards due to moving parts



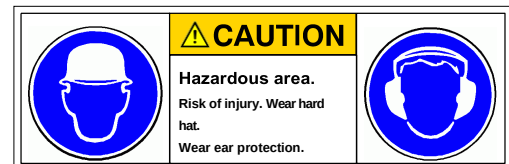
1.4.2 In the event of hazards due to electricity, hydraulics and hot components



1.4.3 In the event of hazards due to the material



1.4.4 For other hazards and information on the use of personal protective equipment



1.5 Definition of terms

Term	Definition
Discharge system	Conveyor belt, vibratory conveyor or other equipment for transporting the material after the machining process in the machine.
Shut down all poles	Shutdown in which the phase conductors (L1, L2, L3) and the neutral conductor (N) or PEN conductor are disconnected from the mains power supply.
System	Interlinking of several machines or components with a supervisory controller.
Drive motor	Motor that primarily supplies the machine with energy.
Workspace	Area within the machine where the material is shredded. It extends from below the hydraulic feeding device/shaft extension to the hydraulic ejection device.
Feed area	Area in which material is fed to the machine.
Feed material	The raw material defined for processing in the machine.
Ejection area	Area in which material leaves the machine.
Ejection hood	Attachment, protective device of the hydraulic ejection device, for guiding the product material.
On site	To be provided on site by the operator of the machine.
Users	Persons who are intended and trained by the operator to use the machine. These persons are able to use the essential functions of the machine and can carry out simple maintenance and servicing work.
Acceleration elements	Component consisting of individual, flexibly rotatable segments that sets the feed material in motion in the working area.
Intended use	Use for which the machine was designed, built and tested.
Filler shaft	Storage container from which material is fed to the machine.
Specialist personnel	Persons who, based on their training and aptitude, are able to identify risks and avoid potential hazards caused by operation or maintenance.
Hydraulic feeding device (HAGE)	Hydraulically driven assembly that blocks a feed opening in conjunction with a feed chute. Conveys a defined volume of feed material into the work area.
Hydraulic ejection device (HAW)	Hydraulically driven assembly that blocks an ejection opening in the working chamber. Discharges product material from the work area into the ejection area.

Term	Definition
Maintenance	Combination of all technical and administrative measures to maintain or restore the machine and system to a usable and safe condition. This includes monitoring, maintaining, restoring, repairing, adjusting and cleaning.
Component	Unit (single or multiple) comprising an assembly of the machine.
Supplier	The manufacturer is also referred to as the supplier in these operating instructions.
Machine	General designation in these operating instructions for the universal cross-flow shredder UNI-CUT® QZ.
Properly	Proceed in accordance with the safety instructions described in these operating instructions and the generally applicable regulations and laws.
Product material	The substance created after processing in the machine.
Progressive distributor	Device for metered lubricant delivery and distribution with hydraulic sequence control.
Checking	General term for controlling. These operating instructions also include the resulting measures such as adjustment, replacement, renewal, etc.
Manhole cover	Cover on the filler shaft. Prevents feed material from being ejected from the machine in an uncontrolled manner and endangering users.
Impact head	Holder for fastening the acceleration elements.
Protective device	Safety measure that reduces the risk (e.g. electronic protective device). In these operating instructions, the term can also be used for guards.
Vibratory conveyor	Device that transports material through vibratory movements.
Service door	Access to the work area secured by a protective device for carrying out maintenance work.
Shutdown	Switch off the machine so that all hazardous energy sources (electrical, hydraulic, mechanical) are switched off.
Isolating protective device	Mechanical barrier to protect against approach (e.g. protective grille, service cover, cladding plate).
Central storage unit	Coolable assembly that includes the bearing and main shaft for the impact head.
Feeding device	Conveyor belt, vibratory conveyor or other equipment for transporting the material before the machining process in the machine.

2 Safety instructions

2.1 Intended use

The machine is built to order. Operation of the machine is permitted only for the use specified in the order.

Any other use or use beyond this is considered improper use. The supplier shall not be liable for any resulting damage.

2.1.1 Permitted operating modes

The machine is designed, built and used for the processing of:

- Pre-cut catalytic converters.

INFORMATION

The machine can process individual **solid** parts up to a piece weight of 0.5 kg (piece size limited by ejection work area) and feed material with a maximum piece size of (length x width x height) 100 mm x 100 mm x 100 mm. However, this causes disproportionately high wear.

Larger weights of individual, solid parts or larger dimensions of the feed material do not constitute intended use and may lead to damage to the acceleration elements and other machine components.

Intended use also includes observing the instructions in this operating manual and complying with the specifications for maintenance and servicing work.

If the machine is installed in a system, the operating instructions for the system must also be observed.

2.1.2 Impermissible operating modes

WARNING



Danger from moving and rotating machine components, high weights or the power supply.

Improper use can result in danger to persons, machines and equipment.

- Use the machine in accordance with these operating instructions and **only for the use specified in the order.**

The machine is built according to the state of the art and the recognized safety regulations, and is safe to operate. Nevertheless, improper use may result in danger to life and limb of the user or other human beings. Material damage to the machine or other equipment may also result.

Operation of the machine is not as intended and is not permitted:

- If the operator makes changes to the machine without the supplier's approval. This applies in particular to modifications or manipulations to protective devices or the controller software:
- If spare parts, accessories, attachments, etc. are used that have not been tested and approved by the supplier. **This may have a negative impact on the safety of the machine and is not permitted!**
- If the interfaces are not properly secured when the machine is integrated into a system.
- If the machine or system is operated despite known defects or irregularities in the control sequence.
- If protective devices or guards are tampered with, damaged or removed.
- If unauthorized persons are in the working area of the machine. The working area also includes a safety distance to the machine. The required safety distance depends on the installation conditions on site and must be analyzed and determined by the operator. This area must be inaccessible to unauthorized persons.
- If the machine is loaded with feed material that does not comply with the contractual specifications, in particular with substances that are subject to a hazardous substances ordinance or that exceed the maximum permissible specifications.

If the machine/system is not specially designed for this, the following material must not be processed:

- Material that is harmful to health or toxic or releases such substances.
- Material that ignites or explodes due to the temperatures during processing.
- Material that exceeds the permissible weights and dimensions.

The supplier is not liable for this. Unauthorized modifications to the machine will invalidate the operating permit.

2.2 Hazards when handling the machine

2.2.1 Hazards from the machine

! DANGER



The machine accelerates the feed material using rotating acceleration elements. This poses a risk at all openings of the machine due to accelerated masses, drawing in, impact or crushing.

Any contact with accelerated masses or moving machine components, especially the acceleration elements, can lead to serious or even fatal injuries.

- Never act recklessly, not even out of habit!
- Take particular care when carrying out any work and follow the safety instructions.
- Observe the prescribed breaks and wear hearing protection. This avoids the dangers of fatigue, noise and stress.

To protect the user, the machine is equipped with safety devices to eliminate or minimize hazards as far as functionally possible.

Protective measures taken on the machine:

- Fixed guards – to be provided by the operator in individual cases.
- Inaccessibility of the danger zone (e.g. openings above the user's reach).
- Protective or safety switch (where necessary with time-delayed locking or guard locking with integration into the control system).
- Sealing off the danger points or opening and appropriate marking.
- Emergency stop device.
- Protection of electrical cables by electrical conduits.

Recommendation for further on-site protective measures to minimize residual risks:

- Marking of danger zones; do not enter danger zones and do not reach into them.
- Constructive inaccessibility of the danger point or opening (e.g. above the reach height).
- Always use suitable feeding devices (e.g. conveyor belts) that are firmly attached to the floor to feed the material.
- Observe safety distances to prevent reaching a danger point in accordance with the relevant standards.
- Provide protruding parts of the machine and system at head height – especially near traffic routes – with black and yellow impact protection (color marking and padding).
- During operation, block off access to the feed and discharge area of the machine and the area of the feed and discharge devices, and do not enter them.

2.2.2 Residual risks

Risks posed by interlinking with other machines

The machine may be combined with other machines to form a complete system or integrated into a higher-level system. For example, it can be interlinked with feed and discharge devices and integrated into the supervisory controller of the overall system.

The operator must ensure that the supplier of the entire system confirms and documents the conformity of the entire system.

Until then, it is expressly prohibited to put the machine into operation.

Hazards due to moving machine components

There is a risk of crushing between stationary and moving machine components, particularly in the case of hydraulically moving components (e.g. hydraulic ejector) or feeding and discharge devices (e.g. vibratory conveyors).

Dangers from supply and discharge equipment

Danger from being drawn into lower belt or idler rollers, drive or tensioning drums of infeed and outfeed equipment.

Danger if feed and discharge devices start up suddenly due to impact or drawing in.

Risk of injury due to protruding parts

Machine and system components located at head height, in particular, may lead to impact injuries.

Danger due to damaged electrical components

Environmental influences (e.g. moisture, dust, impact or other mechanical effects) may cause damage to cables and wiring systems. This can result in electrical hazards due to contact as well as hazards due to failure of control circuits.

Danger due to lack of maintenance

If the prescribed maintenance measures and intervals are not observed correctly, the machine may pose a risk.

Especially if this impairs the function of safety equipment. Loose screws, for example, may also cause considerable damage!

Danger from hot machine components Risk of burns on machine components that have become very hot during processing (over 55°C).

Danger from noise

The noise emitted by the machine depends largely on the type of material to be shredded and the respective operating conditions. The harder the material, the higher the values to be expected.

Depending on the operating conditions, the machine may emit noise emissions that are harmful to hearing in the long term.

Both are beyond the control of the supplier. The operator must therefore carry out noise emission measurements under typical operating conditions on site and take appropriate noise protection measures.

- Measure the sound emission under operating conditions.
- Take suitable shielding measures (e.g. soundproof booth) and designate noise zones.

- Use suitable hearing protection.

Danger of falling

There is a risk of falling when climbing up or onto the base frame or other machine components, especially in connection with oil, dirt or when the machine is running. The base frame is not intended or suitable for climbing up and over. Other machine components only insofar as they are clearly fixed ladders, stairs or working platforms attached to the machine for this purpose.

2.2.3 Hazards from the feed material**Risks posed by feed material being drawn in or struck**

Long parts in the feed material are initially only caught at one end by the acceleration tools and can knock around or be thrown out of the feed chute.

The user can be caught by loop-forming feed material and pulled into the machine.

- Feed material only via the feed conveyor and close off the feed area.
- Mark danger zones.
- Only operate the machine with a shaft attachment.
- Wear a hard hat in the machine area.

Fire hazard due to the feed material

When processing flammable or explosive substances in the feed material or when mixing such substances, these can be ignited. Fires, deflagrations or explosions may occur in the work area, in the feed and discharge equipment or in a collection or product container.

- Pre-sort the feed material and sort out easily or highly flammable, explosive or correspondingly reactive substances.
- Only process such substances on specially designed and equipped machines (e.g. equipment with pressure relief, equipment with automatic fire extinguishing system).

Risk of poisoning from feed material

When processing hollow bodies (e.g. cans), corrosive or toxic residual contents may be released. When different materials are fed in, chemical reactions can produce corrosive or toxic gases, vapors and dusts.

To protect against damage to health:

- Connect the machine to an effective air extraction and air purification system and check its gas tightness and effectiveness regularly.
- Do not process any substances in the machine for which the machine, the air extraction and air purification system are not designed.
- Pre-sort the feed material and sort out corrosive, toxic or correspondingly reactive substances.
- If toxic or harmful substances may have entered the machine or system: Only go near the machine or system with personal protective equipment (breathing apparatus or self-contained breathing apparatus). The same applies to the required activities on the machine and system.



2.3 Obligations of the operator

2.3.1 Determining and instructing responsible persons

For safe operation of the machine:

- Only use trained and instructed personnel (users). Clearly define user responsibilities for operation, set-up, maintenance and servicing in writing, e.g. as operating instructions. Give users the explicit option of rejecting instructions that violate security.
- Have a briefing carried out by the supplier.
- Have the user instructions confirmed by signature.
- Personnel undergoing training or instruction may only work on the machine under the constant supervision of an experienced person.
- Never allow unauthorized persons to work with the machine.
- Check the safety-compliant behavior of users regularly and unannounced.
- Instruct users at least once a year about possible dangers and the measures to prevent them.

2.3.2 User requirements

As the operator, only allow persons to work on the machine who:

- Are at least 21 years old.
- Are physically and mentally suitable and professionally qualified.
- Are not under the influence of alcohol or drugs.
- Know the regulations on occupational safety and accident prevention.
- Can be expected to reliably fulfill the tasks assigned to them.
- Have read and understood these operating instructions and in particular the safety instructions and warnings and have confirmed this by signing them (this also applies if employees only work on the machine occasionally).
- Are familiar with the equipment and procedures and have been trained or instructed in the use and maintenance of the machine.

2.3.3 Organizational measures

The operator is responsible for safe operation and the protection of users, therefore:

- Provide users with the prescribed personal protective equipment.
- Only operate the machine when it is in a proper and safe operating condition.
- Only operate the machine when the central storage unit is cooled.
- Equip the workplace with appropriate lighting.
- Inform users about the locations of the fire protection and fire extinguishing equipment and familiarize them with its use.

For maintenance work, it is also essential to have workshop equipment appropriate to the work. The equipment must be in perfect and serviceable condition.

In addition to these operating instructions, the operator must observe the applicable regulations and laws at the place of use of the machine. These are, for example, regulations on:

- Occupational safety.
- Accident prevention.
- Environmental protection.
- Security technology.
- Occupational medicine.
- Accident prevention regulations.

The deadlines for legally prescribed inspections and maintenance in accordance with these operating instructions must also be observed.

An operating log must be kept for each machine, in which special incidents are noted (operating faults, maintenance work – in particular replacement of wearing parts such as acceleration elements, blades, etc.).

In addition to the operating instructions, operating instructions must be prepared for:

- The operational work organization and the personnel deployed.
- The work processes.
- The handling of hazardous substances.
- The use of personal protective equipment.
- Supervisory and reporting obligations.
- The implementation of protective measures in the event of basic hazards and residual hazards.

The operating instructions, applicable regulations and operating instructions must be stored in such a way that they are quickly accessible to users. Complete or replace incomplete or illegible operating instructions immediately.

2.4 Safety instructions for operation

2.4.1 Safety instructions for users



There is a risk of injury due to the machine movements, e.g. from getting caught or pulled in:

- Remove jewelry such as rings, watches, bracelets, etc. before working on the machine.
- Never wear long hair loose.
- Wear close-fitting clothing. Do not use loose items of clothing such as open jackets, ties or scarves.



Never operate or switch on the machine if:

- The service door is open.
- The feed device with shaft extension is not attached.
- The discharge hood is not fitted.
- The discharge device (conveyor belt, vibratory conveyor, etc.) is not attached.
- The impact head is blocked.

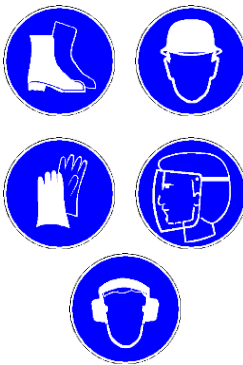
Furthermore:

- Refrain from working in any way that could compromise safety. Careful and cautious working is the best protection against accidents!
- Observe all safety, warning and information signs on the machine and keep them in legible condition.
- Always lock the electrical control cabinet. Only trained electricians may have access and control cabinet keys.
- Only operate the machine if all protective devices and guards (e.g. protective grille) are present, functional and installed as intended.
- Report any defects found, especially on protective equipment, to your supervisor immediately! Immediately replace or repair non-functioning protective devices and stop operation until then.
- Do not remove or disable protective devices.
- In the event of malfunctions or unusual operating behavior, stop the machine immediately and secure it against being switched on.
- Only operate the machine from the designated workstation.
- Do not enter the machine, the feed and discharge area, the area of the feed and discharge equipment and the pressure relief area (explosion protection equipment – optional).
- Do not climb over fences, etc.
- Do not bypass or manipulate protective or safety switches or other safety devices.
- Allow hot machine components (e.g. service door) or product material hot from the manufacturing process to cool down before touching and/or use protective gloves.
- Do not climb up the machine.

- If no ladders, stairs or working platforms are provided, use proper scaffolding or lifting platforms to reach higher machine components.
- Never switch on the machine while people, animals or objects are in the work area.
- Before switching on, ensure that the work area is empty; otherwise, the machine may be damaged.
- Ensure adequate workplace lighting.

2.4.2 Personal protective equipment

The following personal protective equipment is required in the working area of the machine, depending on the activity:



- Safety shoes with steel toe cap, non-slip and puncture-resistant sole.
- Safety helmet.
- Protective gloves to protect against mechanical injuries or burns. Exception: When working on rotating machine components; the risk of injury from being pulled in or wound up is greater than that of a cut, for example.
- Face or tight-fitting eye protection when approaching the ejection opening.
- Hearing protection in noisy areas.
- Special protective equipment when handling oils, greases or other chemicals (see relevant safety data sheet).

2.4.3 Fire protection measures

Processing the feed material may produce gases, dust or material compounds that can ignite and cause fires.



- There is always a risk of fire in the vicinity of the machine. Smoking and any contact with open flames or other sources of ignition is therefore prohibited!
- If ignition sources are required during maintenance work, the order for this must have been issued and it must be established beyond doubt that there is no risk of fire or explosion.
- All users must be familiar with the fire protection and fire extinguishing equipment and know their locations.
- Always keep access to fire protection, safety or emergency stop equipment clear.
- Always keep fire doors closed and access clear.
- Also observe the notes on "Fire protection and cleanliness" in Chapter 7, "Maintenance."

2.5 Safety instructions for installation and maintenance

DANGER



The machine accelerates the feed material using rotating acceleration elements. This poses a risk at all openings of the machine due to accelerated masses, drawing in, impact or crushing.

Pressing an emergency stop button, opening a safety switch or switching to manual mode does not protect against communication errors, re-enabling or restarting a machine.



Any contact with moving machine components can lead to serious or even fatal injuries.

- Before carrying out any work on the machine, shut down the machine properly (see Chapter 5.6, "Shutting down the machine").



WARNING



Risk of injury due to moving masses or stored energy! Even if all poles of the machine are electrically switched off, machine components can suddenly move due to stored energy (spring force, gravity, etc.).

To protect yourself from these dangers, in the relevant work area you must:

- Attach or support moving components
- Relax springs
- Engage hydraulically raised machine components in the locks provided
- Release the pressure from the hydraulic system
- Use suitable tools and any special tools supplied.

2.5.1 Personnel requirements

Certain activities – as described in these operating instructions – are expressly reserved for the supplier's specialist personnel. If you try to do this yourself, you endanger yourself, your colleagues and the machine. Such work must not be carried out without consulting the supplier!

The machine must not be assembled, set up, installed, test operated or maintained by unauthorized persons. The corresponding work may only be carried out by trained, specialist personnel.

2.5.2 Organizational requirements

Before starting maintenance work, switch off the machine and the feed and discharge devices and shut them down properly.



Staying in a danger zone is prohibited! Secure the maintenance area over a wide area.

Shut off all supply lines (e.g. water for extinguishing or spraying systems, etc.) and affix warning signs prohibiting opening.

Inform all users and persons in the work area of the start and end of maintenance work in good time.

Always carry out maintenance work in pairs and appoint a supervisor.

If, in exceptional cases, maintenance work is required while the machine is running:

- All persons involved must be in eye contact with each other.
- At least one person must be able to switch off the machine immediately at any time (e.g. safety guard at the nearest EMERGENCY STOP button).
- Sufficient distance must be kept from all rotating and moving components.
- No hasty, uncontrolled movements may be carried out.

2.5.3 Technical requirements

When working above body height, use the appropriate safety access aids or work platforms. Do not climb on machine components.



When working at heights, use fall protection and/or personal fall protection equipment.

Spare and wear parts must comply with the supplier's specified technical requirements. This is always guaranteed with original spare parts.

2.5.4 Lifting and securing

When lifting machine components or equipment, the following instructions must be observed in particular:

- Fix or support moving machine components before starting work so that they do not pose a hazard.
- Only work under a raised machine or components if they are securely and stably supported. Use stable beams, trestles or wedges that cannot give way. Hydraulic cylinders, jacks etc. alone are not enough. These could suddenly give way and put you in danger.
- Never step under suspended loads.
- Only use suitable, technically flawless and tested lifting gear and load handling attachments. Ensure sufficient load-bearing capacity.
- Carefully attach individual parts or larger assemblies to lifting gear before lifting. Ensure that the load is evenly distributed to prevent the suspension cables from breaking.
- Use lifting eyes to lift the machine. Observe the load capacity of the crane eyes.
- Always place all machine components only on frame parts.
- Only allow experienced persons to sling loads and instruct crane or forklift truck operators.
- Do not hit the retaining bolts, etc. excessively hard, as they could fly out or splinter and injure you!

2.5.5 Workspace

DANGER



Risk of asphyxiation when entering the machine area with the protective gas system connected (optional equipment).

If the oxygen content is too low, there is a risk of suffocation.

- Never enter a previously closed interior of a machine with a shielding gas system, even after a longer period of standstill.
- Before starting maintenance work, disconnect the shielding gas system electrically **and** mechanically and secure against being switched on.
- Ensure adequate ventilation (open service doors, service flaps). Secure all open doors and covers against slamming shut.
- Enter the work area only with a second person as a safety guard.
- Wear an oxygen detector with visual and audible alarm on your body.
- Keep self-contained breathing apparatus with a full face mask ready for use.

⚠ DANGER

Risk of suffocation when entering the machine area with a connected (CO₂) fire extinguishing system (optional equipment).

Liquid carbon dioxide displaces or mixes with normal air during evaporation. If the oxygen content is too low and/or the CO₂ content in the air is too high, there is a risk of suffocation and/or loss of consciousness (CO₂ narcosis).

- In the event of a fire alarm, use the escape routes provided to leave the building affected by the fire extinguishing system.
- Enter the endangered machine area (work area, soundproof cabin, plant hall) wearing self-contained breathing apparatus with a full face mask only after triggering the fire extinguishing system and extinguishing the fire.
- Never enter a previously closed interior, even after a machine with a fire extinguishing system has been out of operation for a longer period of time.
- Before starting maintenance work, disconnect the fire extinguishing system electrically **and** mechanically and secure against being switched on.
- Ensure adequate ventilation (open service doors, service flaps). Secure all open doors and covers against slamming shut.
- Enter the work area only with a second person as a safety guard.
- Wear a measuring device for oxygen detection and a measuring device for CO₂ warning with visual and acoustic alarm on your body.
- Keep self-contained breathing apparatus with a full face mask ready for use.

2.5.6 Hydraulic equipment

⚠ DANGER

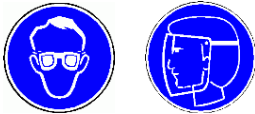


Danger to life! Hydraulic systems are under pressure.

If they are not dismantled properly, they may burst or hydraulic fluid may spray out under high pressure. This can lead to serious injury or death.

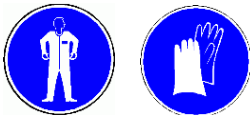
- Do not loosen or retighten any screw connections when the machine is switched on.
- Only carry out work on hydraulic systems when they are depressurized.

Work on hydraulic systems requires special knowledge, therefore the following instructions must be observed in particular:



- All work on the hydraulic equipment may only be carried out by trained specialist personnel. Use face protection or safety goggles!
- When working on the hydraulic system, ensure that there is no pressure on the hydraulic system.
- Check the hydraulic system and especially the hydraulic lines for proper condition and function at regular intervals (according to the maintenance schedule).

WARNING! Take particular care to ensure that there are no leaks or visible signs of damage such as cracks. Hydraulic oil could spray out under high pressure and cause injuries.



- **CAUTION!** Avoid skin contact and inhalation of spray mist when handling pressurized liquids, otherwise damage to health may occur. If this cannot be ruled out, suitable protective equipment must be used (protective clothing, protective gloves, respiratory protection, protective goggles, skin protection and skin care products).
- The penetration of pressurized fluids into the skin is particularly dangerous if they escape under high pressure through leaks. If such injuries occur, even if they initially appear to be minor, medical attention must be sought immediately.

2.5.7 Cleaning

A dirty machine or a dirty work area can endanger the user and lead to increased wear or damage to the machine.

- Always keep the machine clean – including the safety, warning and information signs attached to it (do not use solvents).
- Danger of slipping! Keep all handles, steps, railings, landings, platforms, ladders, etc. free of dirt, oil, snow or ice.
- Set up and adhere to a cleaning schedule.
- Empty the machine before each internal cleaning and shut it down properly.

2.5.8 Environmental protection

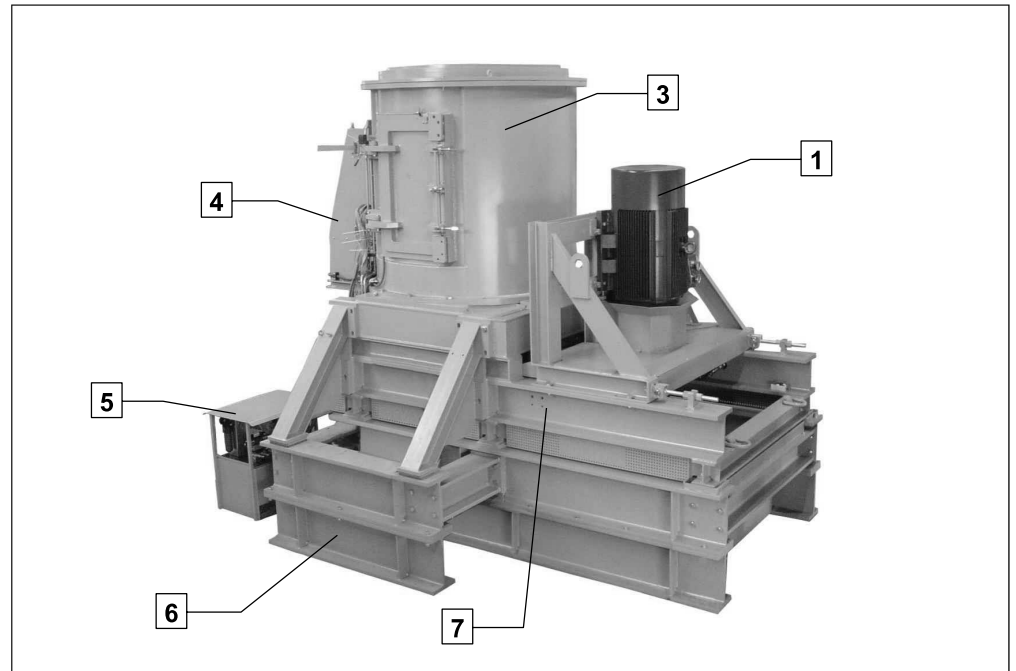
To protect your health and the environment, please observe the following instructions:

- Observe the relevant safety regulations when handling oils, greases, cleaning agents and other chemical substances.
- Observe the regulations for handling hazardous substances, including the information in the safety data sheets of the respective manufacturer.
- Dispose of oils, greases, chemical substances and other problematic materials properly, safely and in an environmentally friendly manner (e.g. recycling containers).

3 Description and function of the machine

3.1 Assemblies of the machine

The machine consists of the following main assemblies:



1. Drive (drive motor, motor console, V-belt, belt pulley, etc.)
2. Shaft extension (optional equipment, not shown)
3. Work area (service door, hydraulic ejection device, impact head, etc.)
4. Ejection hood
5. Hydraulic unit
6. Substructure (optional equipment)
7. Base frame with type plate
8. Stairs with landing (optional equipment, not shown)
9. Control panel (not shown)
10. Control cabinet (not shown)

Machine control

The machine is controlled by a programmable logic controller (PLC) installed in the control cabinet. Manual control is carried out via the machine's control panel. Depending on the design, decentralized control panels can be provided for machine control. The control system can also be integrated into a higher-level system control.

3.2 How the machine works

3.2.1 Possible applications

The machine is built to order. Operation of the machine is permitted only for the use specified in the order.

Any other use or use beyond this is considered improper use. The supplier shall not be liable for any resulting damage.

3.2.2 Feeding the feed material

While the machine is running, the feed material is conveyed into the work area from above using a feeding device.

Hydraulic feeding device (optional equipment)

The machine can be equipped with a hydraulic feeding device to feed the machine with a defined filling quantity for each processing step. The hydraulic feed device (HAGE) is controlled in automatic mode so that the feed material does not become jammed or the machine comes to a standstill.

The required oil pressure is provided by the hydraulic system and is set at a pressure relief valve on the hydraulic pump. If necessary, it is adapted to the feed material to be processed during trial operation.

The movement of the feeder and thus the stroke of the hydraulic cylinder is limited by two proximity switches.

These settings may only be changed in consultation with the supplier.

3.2.3 The shredding process



The material is broken down in the work area. The machine accelerates the feed material using flexibly rotating acceleration elements and sets it in rapid radial-vertical motion – cross flow.

The material is broken down by mutual impact, whereby the heat generated by the mechanical deformation is simultaneously used to dissolve bonds.

The acceleration elements suitable for the respective application are selected individually, depending on the feed material, drive power and machine size.

Depending on the version, the acceleration elements can be replaced in a very short time without tools or with the special tools supplied.

3.2.4 Hydraulic ejection device

The material flow in the ejection area is controlled by a hydraulically operated ejection device. It opens and closes the work area during operation and discharges the product material into the ejection area.

The required oil pressure is provided by the hydraulic system and is set at a pressure relief valve on the hydraulic pump. If necessary, it is adapted to the feed material to be processed during trial operation.

Cyclical machining process

If the machine is working in a cyclical machining process, the hydraulic ejection device (HAWE) opens and closes at specific intervals controlled by the machine control system. These time intervals in which the feed material is processed in the machine are referred to as dwell time. Depending on the feed material and the desired product material, it can range from a few seconds to several minutes.

A cycle consists of the phases:

Ejection, filling, processing.

Continuous machining process

If the machine is working in a continuous machining process, the hydraulic ejection device (HAWE) remains open in a fixed position during operation. Product material with the dimensions specified by the opening is conveyed into the ejection area in a continuous material flow.

The position of the hydraulic ejection device is determined by a position measuring system in or on the hydraulic cylinder. Depending on the feed material and the desired product material, it can range from a few millimeters up to the maximum ejection height.

3.2.5 Overload protection

The drive's overload protection protects the machine, motor and electrical switching elements from thermal overload. The control is carried out by a current measurement and a transformer or a bimetallic switch. If the power consumption of the drive is too high, the feeding device is switched off to reduce the load on the machine. If the current consumption remains above the rated current of the drive for a longer period of time, the motor protection switch switches the machine off.

If the speed falls below the minimum speed due to a defect in the drive train, blockage or stiffness of the acceleration elements, the speed monitoring system also switches off the feeding device/machine.

3.2.6 Conveying the product material

The product material conveyed by the HAWE falls out of the machine in the discharge area, protected by the discharge hood.

There it is piled up as a heap or falls into containers provided or is conveyed away by another mechanical conveyor system.

3.2.7 Cooling

When used in continuous operation, heat is generated in the work area and at the central bearing unit of the acceleration elements as a result of the process.

INFORMATION

The heat from the central bearing unit is dissipated via a double jacket. This is usually done via water cooling. This must be set up and guaranteed by the customer for the operation of the machine.

Depending on the equipment and machine, process heat in the work area can be dissipated via a double cooling jacket on the walls, floor and central storage unit. This is usually done via a liquid re-cooling system (optional equipment), the cooling capacity of which is designed depending on the order. It also ensures the essential cooling of the central storage unit.

4 Transport, installation, connection and commissioning

4.1 Transport

4.1.1 Transport units

Depending on the scope of supply, the machine is divided into the following transport units:

- Machine (base frame, drive, work area, ejection hood, possibly with control cabinet),
- Hydraulic unit.
- Optional equipment.

4.1.2 Transport options

⚠ DANGER



Moving loads can tip over, fall down or trap people. When lifting the machine, components or the machine itself may fall over, move or fall down, resulting in serious injuries.

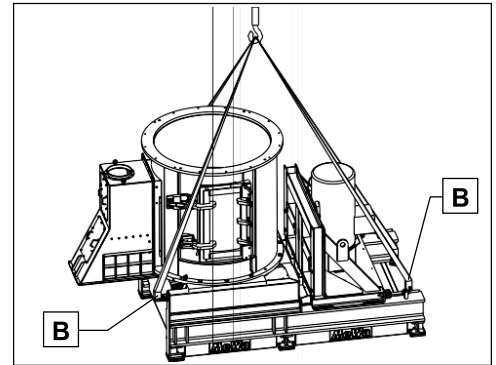
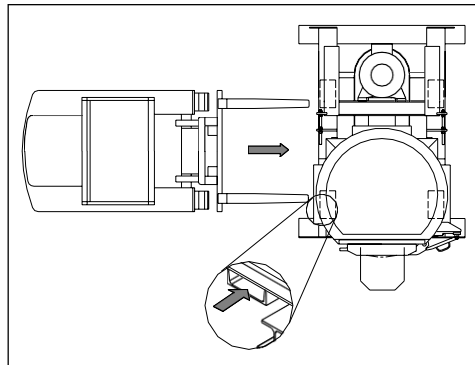
- Use suitable lifting gear.
- For transport, secure the machines or machine components against tipping and slipping using wedges and strong tension belts.
- Before lifting the machine, all persons must leave the danger zone of the lifting gear.
- Do not step under moving loads.
- Wear safety shoes and a hard hat!

ATTENTION

The eyelets on the work area/on the discharge hood/on the shaft extension of the machine are only suitable for lifting the individual assemblies themselves.

If the entire machine is lifted by these eyelets, the work area/discharge hood/shaft extension will be damaged during lifting. There is a risk of falling!

- Never lift the entire machine at the work area/discharge hood/shaft extension!
- Only lift the machine at the intended lifting points!

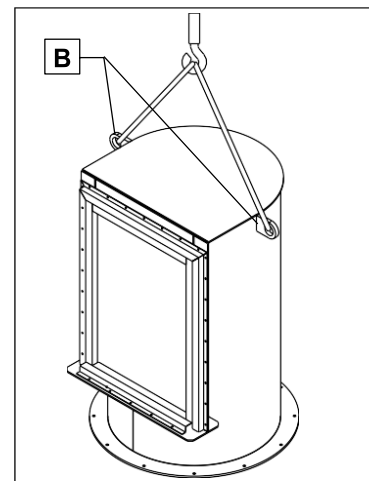
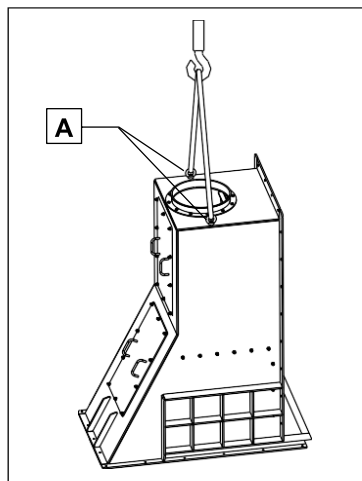


Transport of the machine

The base frame of the machine is constructed from structural steel profiles.

Using the forks of a forklift truck with sufficient load-bearing capacity, reach into the fork shoes provided and lift the machine.

Alternatively, the machine can be lifted using lifting gear.



Transport with lifting gear

If the machine or individual transport units have crane eyes (B), removable crane eyes (A), attachment points for cross beams, etc., lifting gear must be attached to them.

Crane eyes are only suitable for transporting individual transport units with the relevant partial load. Remove removable crane eyes after assembly.

4.1.3 Notes on liability

The machine must be checked immediately upon delivery. Missing or damaged machine components or other complaints must be reported immediately to the forwarding agent and the supplier.

Improper transport does not entitle to any replacement or warranty claim. If in doubt, consult the supplier prior to transport.

4.2 Installation

4.2.1 On-site preparations for installation

The machine may only be set up by the supplier's specialist personnel.

The operator must provide the contractually agreed on-site services before the machine is set up. If these installation conditions are not carried out completely and correctly, liability and warranty claims against the supplier are excluded.

The essential on-site services are (if not included in the contractually agreed scope of supply):

- Building and corresponding foundations for setting up the machine (special requirements for the foundation can be found in the foundation and installation plan)
- Any necessary changes to buildings and facilities
- All expenses for statutory noise protection regulations, both indoors and outdoors
- All expenses not explicitly described in the offer for any necessary explosion and fire protection measures as well as all expenses for any necessary dust and odor reduction. These must be carried out in accordance with the relevant regulations and with the assistance of experts (e.g. from TÜV, DEKRA or approved engineering firms).
- The power supply for all system components and the system control, including the necessary cables and cable routing systems as well as all cables and cable routing systems for signal processing
- Lifting equipment such as forklifts etc., transport equipment, platforms, scaffolding or similar for unloading and bringing the system components into their intended position, for assembly as well as for electrical connection and commissioning, including the operating personnel required for this. All equipment provided must be currently valid and safety-tested.
- Supply and disposal of all necessary operating media such as water, waste water, compressed air (de-oiled and drained), heating and cooling media, fuels, gases
- Provision of a lockable room for tools and small parts, provision of sanitary facilities and a recreation room for fitters
- In principle, all deliveries and services not expressly described in this offer/contract

4.2.2 On-site preparations for trial operation

The operator must provide the equipment for trial operation:

- Wheel loader, crane, forklift or other lifting gear for loading material, transporting various containers or the end material.
- All necessary containers (e.g. for the FE fraction).

4.3 Connection

4.3.1 Electrical connection

⚠ DANGER



Danger to life from contact with live cables or components!

Work on electrical equipment may only be carried out by trained electricians.

Before working on electrical equipment:

- Disconnect all poles of the entire machine from the mains and secure it against being switched on.
- Ensure that the cables and components are voltage-free.

The electrical supply to the machine must be established in accordance with the specifications in the electrical circuit diagram.

This must be taken into account when dimensioning the electrical supply lines and back-up fuses.

When laying out the connecting cable, the following must also be taken into account:

- The length of the supply line
- The ambient temperature
- The electrotechnical regulations applicable at the installation site

Also note:

- Lay cables inside cable ducts, protective conduits or profiles to prevent damage.
- Attach cable ducts properly and **permanently** to walls, scaffolding, etc. Cable ducts hanging from the cables themselves do not fulfill their protective function at all.

4.4 Commissioning

WARNING



Adjustments and checks must be carried out during commissioning. Hazards can arise from moving and rotating machine components, heavy weights or the power supply.

- Commissioning may only be carried out by trained, specialist personnel.
- Observe Chapter 2, "Safety instructions"!

4.4.1 Initial commissioning

The initial commissioning of the machine is reserved for the supplier's specialist personnel. The same applies to function checks, making settings and entering the necessary data.

For commissioning, the operator must provide trained personnel to operate the upstream and downstream machines.

Before initial commissioning:

- Check the machine or system in accordance with the safety regulations in the operating instructions, in particular that all safety and protective devices are fitted and in good working order.
- **WARNING!**
Check that all screw connections are tight.
Re-tighten after approx. 20 operating hours, then weekly.
Otherwise, vibrations can cause components to come loose and cause injuries or damage to the machine.

4.4.2 Commissioning after storage

WARNING! Commissioning after storage can result in hazards for specialist personnel and users. Before the machine is put into operation after storage or a longer standstill, the following points must be observed.

Before working on the machine for the first time, secure all raised machine components, support them or secure them with the locking device provided. If the machine is still connected, ensure that it is properly shut down.

Points for implementation after storage:

- If the machine is partially dismantled, follow the instructions for transport and assembly; request the supplier's specialist personnel to carry out adjustments.
- Ensure that all repair and maintenance work has been carried out and completed. To do this, view the last entries in the company log book.
- Shut down the machine properly (see Chapter 5.6, "Shutting down the machine").
- Check moving components (motors, bearings, etc.) for ease of movement.
- Check all V-belts for condition and tension and tighten or replace if necessary.
- Change the oil in the hydraulic system.

- Change the grease in the central lubrication system and supply all lubrication points with new grease.
- Check all connected devices (feeding device, discharge conveyor, hydraulics, etc.) according to the maintenance plan.
- Check acceleration tools for wear and replace if necessary.
- Check wear protection parts (floor, side walls, material discharge, etc.) for wear and replace if necessary.
- Check the electrical connection and the condition of the control cabinet (only qualified electricians!).
- Check all electrical equipment for function and damage.
- Check the programmable logic controller (PLC) and, in the event of data loss, have the supplier restore the data.
- Tighten all screws.

If the machine was transported:

- Used transport locks or removable attachment points must also be removed
- A proper electrical connection must be ensured
- The machine environment must be adapted to the possibly changed operating environment.

If the machine environment or the system in which the machine is to be recommissioned changes, this may involve significant changes that are important for machine safety. A new risk analysis is then required in consultation with the supplier (see section 1.2.5, "Integration into an overall process"). The documentation for the system and the operating instructions for the machine must then be adapted accordingly.

5 Control and operation

5.1 Requirements for safe operation

5.1.1 Who is allowed to operate the machine?

The machine may only be operated by users who:

- Are trained by the supplier and have the necessary qualifications to do so
- Are authorized to do so by the operator of the machine/system
- Have read and understood these operating instructions in full (these operating instructions also include the operating instructions for installed components)

5.1.2 What should I pay particular attention to?

WARNING



When operating the machine, hazards can arise due to moving and rotating machine components, heavy weights or the power supply.

Incorrect operation can result in serious or even fatal injuries.

- Refrain from working in any way that could compromise safety!
- Only operate the machine if all protective devices and guards are in place and functional.
- Before switching on, always ensure that there are no people, animals or objects in the machine.

For safe and functional operation, special attention must be paid to the following points:

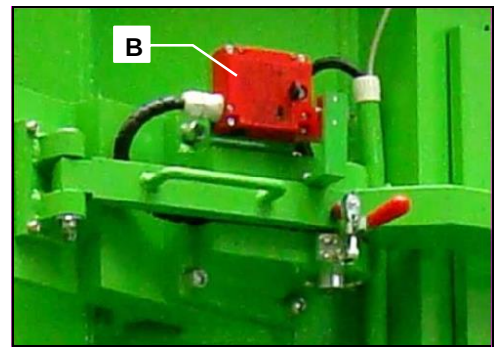
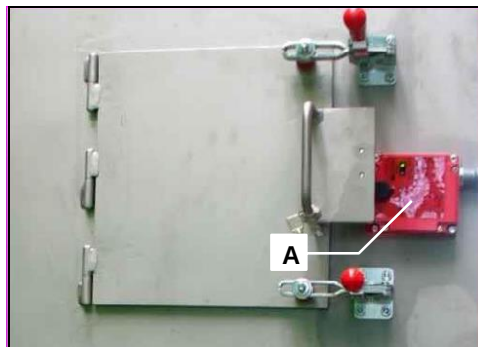
- Only operate the machine for its intended use.
- Always operate the machine with the feed and discharge device.
- Only operate the machine with the service door closed.
- Only operate the machine with the discharge hood attached and completely closed.
- Acceleration elements and wear protection parts must have sufficient wear reserves (visual inspection).
- Ensure that no persons can be endangered by switching on the machine. An acoustic warning signal alone is not enough!
- Only switch on the machine when it is empty.
- Observe the higher-level system documentation, especially the chapters "Safety," "Control" and "Operation."

⚠ CAUTION

If the safety switches are triggered, the machine is not properly shut down electrically at all poles.

Even after drives have been switched off by a safety switch, there are still dangers from electrical, kinetic or hydraulic energy.

- Never bypass, manipulate or dismantle the protective and safety switches on the machine.
- Before working in open machine areas, shut down the machine properly (see Chapter 5.6, "Shutting down the machine").



The service flaps in conjunction with quick-release clamps on the discharge hood (A), the service door to the work area (B), etc. are monitored by safety switches on the machine. If they are opened or not properly closed, the safety switches are triggered immediately and prevent the machine from being put into operation.

5.2 Operating the machine

For the electrical integration into an overall process and for the operation and control of the machine, see the operating instructions for the overall system and the machine control.

5.3 Notes on the material task

Various hazards can arise during material feeding due to the filling process and the material. Please also refer to the chapter on safety instructions.

⚠ DANGER



Corrosive or toxic residual contents may be released when processing hollow bodies (e.g. cans). When different materials are fed in, chemical reactions can produce corrosive or toxic gases, vapors and dusts.

This poses a risk of poisoning.

- Pre-sort the feed material so that as few toxic or harmful substances as possible enter the machine.



When processing flammable or explosive substances in the feed material or when mixing such substances, these can be ignited.

Fires, deflagrations or explosions may occur in the work area, in the feed and discharge equipment or in a collection or product container.



- Pre-sort the feed material and sort out easily or highly flammable, explosive or correspondingly reactive substances.
- Only process such substances on specially designed and equipped machines (e.g. equipment with pressure relief, equipment with automatic fire extinguishing system).

ATTENTION

Risk of damage to the drive motor and the electrical system.

If there is still material in the work area after the machine has been switched off, it can block the acceleration elements. This can cause damage to the electrical system and the drive.

- Only load the machine when the drive is fully raised and running at nominal speed.
- Clear the work area before restarting (see Chapter 7.7.2, "Clear out and clean the work area").
- Do not leave any hardening materials in the work area. Empty and clean the work area immediately.

In principle, the following applies:

- Only process material in accordance with the intended use (see Chapter 2, "Safety instructions").
- Always feed material into the machine via a feeding device, never by hand.
- Do not overfill the machine. Continuous operation = high throughput.
- Only operate the machine with a shaft extension to protect against ejected material.
- Sort out feed material that releases toxic gases when subjected to mechanical stress in the temperature range up to 150°C.
- Use the necessary protective equipment.

This also applies to:

Processing of refrigerators containing CFCs and pentane

- Only process compressors when empty.
- For cooling units with coolant containing ammonia, remove the complete cooling circuit!
- Sort out cooling units insulated with glass wool or fiber mats made of glass wool from the feed material – health hazard due to glass dust particles!
- Only process thermoplastics (e.g. polystyrene) and other materials with melting points below 100°C with less than 5% by weight of the total plastic content – risk of liquefaction and hardening!
- Completely remove organic waste (e.g. frozen goods, liquids, food of all kinds, etc.) from the feed material!
- Completely remove any inlay compartments (e.g. made of glass, plastic, wood, etc.) from the feed material!
- Always transport, store and process cooling appliances in a dry state.

Processing of FE/NE/plastic composites

- Sort out solid steel and concrete parts from the feed material!

Processing of electronic scrap

- Sort out picture tubes, glass, LCD monitors, large batteries/accumulators, etc. from the input material – recycle separately!
- Cut off power/appliance cables and sort out from the feed material!
- Sort out music and video cassettes from devices/the task material!
- Sort out toner cartridges, vacuum cleaner bags, gas cartridges, paper from the feed material – risk of explosion and fire!
- Sort out components containing hazardous substances/harmful to health (e.g. mercury switches) from the feed material!
- Sort out solid steel and concrete parts from the feed material!

Biomass processing

- Only process feed material with a piece weight of up to 10 kg!

5.4 Switching on the machine

DANGER



Danger to life from machine starting up automatically!

In the "Automatic" operating mode, units and system components start up automatically. This poses a risk of injury.

Make sure before switching on:

- That there are no animals, people or objects in the machine.
- That repair and maintenance work has been properly completed.
- That persons in the vicinity of the machine are warned and are outside the danger zones.

Before the start of the shift, check the company log book and consult with the previous shift supervisor.

INFORMATION

If the machine is integrated into a system, the switch-on instructions in the higher-level system documentation must be observed.

All switch-on conditions for proper system operation must also be checked and established. The safety instructions must be observed.

5.5 Switching off the machine

Before switching off, the supply of feed material must be stopped and the machine must be completely empty, otherwise faults and damage to the machine may occur.

WARNING



The unloaded drive continues to run for some time after the machine is switched off. If the work area is opened during this run-on time, there is a considerable risk of injury!

- Wait until the drive stops.

ATTENTION

If there is still material in the work area when the machine is switched off, it blocks the acceleration tools.

This can cause considerable damage to the electrical system and the drive the next time it is switched on.

- Always run the machine empty before switching off or shutting down!
- If the machine was switched off while there was still material in the work area, it is essential to clear out the work area before switching it back on (see Chapter 7.7.2, "Clearing and cleaning the work area").

INFORMATION

If the machine is integrated into a system, the switch-off instructions in the higher-level system documentation must be observed.

All switch-off conditions for proper system operation must also be checked and established. The safety instructions must be observed.

5.6 Shutting down the machine

5.6.1 Basic information



Danger to life due to starting machine.

Simply pressing an EMERGENCY STOP button or opening a safety switch does not protect against communication errors, re-enabling and restarting a machine.

- Shut down the machine as described below when carrying out work on the machine.

Reliable protection against faulty switching due to faults in the system, careless or unintentional switching actions by the user is achieved by interrupting the power supply.

The machine and its hydraulics are electrically driven. The machine's main switch acts on the electric drives and the hydraulic pump. It disconnects all poles from the mains (the phase conductors (L1, L2, L3) and, if applicable, the neutral conductor (N) are disconnected from the mains).

Depending on the design of the machine, the electric drives may be equipped with their own lockable repair switch, which disconnects all poles of the corresponding drive motor from the mains.

5.6.2 Shutting down the machine

1. Run the machine empty (not in the event of faults or shutdown by EMERGENCY STOP) and switch off.
2. Switch off the main switch and secure it with a padlock to prevent it from being switched on. Keep the key in a safe place until the end of the activities. This prevents unintentional switch on.
3. Hang a warning sign on the main switch prohibiting it from being switched on. Do not take the sign down again until you have finished your work.
4. If the machine is integrated into a system, switch off the upstream and downstream machines and secure them against unintentional start-up.
5. If such a single machine does not have its own main switch, remove the fuses (always all-pole!) or switch over the corresponding fuse contactor. If a padlock cannot be attached, always attach a warning sign. Put the screw fuses in your pocket until you have finished the work.
6. Depending on the design of the machine, shut off other supply lines, e.g. for water, compressed air and de-pressurize them.
Protective gas system, fire extinguishing system, etc. (optional equipment) must be electrically **and** mechanically switched off, blocked, disarmed and secured against switching on (see manufacturer's operating instructions and user manual).

5.6.3 Shutting down a drive via a repair switch

An individual drive can be shut down for maintenance purposes using a repair switch (optional equipment).

WARNING! All other drives remain switched on. Observe the safety instructions for maintenance.

1. Switch off the repair switch and secure it with a padlock to prevent it from being switched on. Keep the key in a safe place until the end of the activities. This prevents unintentional switch on.
2. Hang a warning sign on the repair switch prohibiting it from being switched on. Do not take the sign down again until you have finished your work.

5.6.4 Switching off the machine in an emergency (EMERGENCY STOP)

The EMERGENCY STOP buttons act on the drives of the machine and its connected devices. They are used to switch off the machine quickly in an emergency.

INFORMATION

If the machine is integrated into a system, the emergency stop circuit of the machine must be integrated into the central emergency stop system of the system.

WARNING! An EMERGENCY STOP does not properly shut down the machine electrically at all poles! There may still be stored energy (electrical voltage in the control cabinet, spring force, gravity, etc.). This can cause machine components to move suddenly and cause injuries. Observe the safety instructions (see Chapter 2, Safety instructions)

If an EMERGENCY STOP button has been pressed, the following must be done:

1. Determine why an EMERGENCY STOP button was pressed.
2. Eliminate existing causes or potential hazards. To do this, shut down the machine if necessary (see Chapter 5.6, "Shutting down the machine").
3. Ensure that there are no persons in the danger zone.
4. Unlock the EMERGENCY STOP button: Pull out the button.
5. Switch on the machine (see section 5.4, "Switching on the machine").

6 Process messages, process faults and troubleshooting

6.1 Process faults

6.1.1 Who is allowed to rectify faults?

Troubleshooting requires special knowledge and may only be carried out by persons who:

- Are trained by the supplier and have the necessary qualifications to do so
- Are authorized to do so by the operator of the machine/system
- Have read and understood these operating instructions in full (these operating instructions also include the operating instructions for installed components)

! WARNING



Some troubleshooting work requires special training. This includes, for example, work on electrical equipment, the control system or the hydraulic system.

- Do not carry out any troubleshooting work for which you do not have the necessary training and instruction from the supplier or operator.

6.1.2 Behavior in the event of process faults

If an error is reported to the machine control system in automatic mode, in most cases it switches off the machine and, in order to avoid consequential damage, also the upstream process stages.

If a unit in operation is affected and has not already been automatically disconnected from the mains by the electrical control system, it must be switched off immediately as soon as the fault is detected.

ATTENTION

Risk of damage to the drive motor and the electrical system. If there is still material in the work area, it blocks the acceleration tools. This means that the next time it is switched on, there can be considerable damage to the electrical system and the drive.

- Clear the work area before restarting (see Chapter 7.7.2, "Clear out and clean the work area").
- Do not leave any hardening materials in the work area. Empty and clean the work area immediately.

6.1.3 Faults without messages, fault rectification

Not all faults that occur during machine operation can be monitored and displayed. The following describes known faults (without fault message), their cause and how to rectify them.

! WARNING

When rectifying faults, there is a risk of danger to persons, machines and equipment.



Shut down the machine (see Chapter 5.6, "Shutting down the machine") if:

- Activities require the disassembling or overriding of safety devices
- Activities are required in or near the work area
- Activities on drives or the electrical equipment are required

Before switching on, ensure that no persons are endangered!

No.	Malfunctions	Cause	Removal
1	Drive motor power indicator does not respond to feed material.	Acceleration elements torn. In rare cases, the impact head is loose. Piece size of feed material too large. Acceleration elements do not detect jammed feed material.	Replace the acceleration elements and check the fit of the chain head. Switch off the machine and position the jammed feed material manually. Do not exceed the maximum piece size of the feed material.
2	Drive motor switches off abruptly.	Safety switch on the machine (e.g. maintenance door) has tripped or EMERGENCY STOP has been activated.	Close the safety switch and check if necessary. Eliminate the reason for the EMERGENCY STOP and unlock the EMERGENCY STOP.
3	Drive motor switches off after material discharge and no longer starts in automatic mode. No display for slider closed appears on the operating display.	HAVE could not be completely closed. Either material has been jammed or there is a fault in the hydraulic unit.	In manual mode, open and clean the ejection device. Check the hydraulic unit.
4	Machine vibrates disproportionately during operation.	One of the acceleration elements is broken.	Shut down the machine properly and replace the acceleration elements.
5	Oxygen value rises unexpectedly quickly (when equipped with protective gas system).	Leakage in the gas-tight enclosure. Insufficient nitrogen inerting (tank pressure dropped?).	Check for leaks and check nitrogen supply, refill tank if necessary.
6	Machine becomes excessively hot during operation.	Liquid re-cooling system is not working properly.	Check cooling water level and pressure. Check the function of the liquid re-cooling system (see manufacturer's documentation).

No.	Malfunctions	Cause	Removal
7	Feeding device stops suddenly.	The current of the drive motor has exceeded the set limit value.	No mistake! Feeding device restarts automatically when the feed material has been processed in the work area.
8	Motor hydraulic pump is running, but not generating pressure.	The direction of rotation of the motor is incorrect. There is too little oil in the container. Shaft-hub connection of motor and coupling has sheared off. Claws of the clutch have sheared off. Clutch has shifted. There is a crack in the pump.	Re-connect the connecting cables. Fill up the container. Replace or repair parts. Replace the clutch. Readjust the clutch. Replace the pump.
9	Hydraulic pump causes unusually loud, high-pitched noises during operation.	Too little oil. Foaming oil.	Fill up with oil. Leave the oil to rest.
10	Hydraulic pump causes unusually loud, high-pitched noises when switching.	Nozzle is broken, causing oil to flow out via the nozzle.	Replace screw connection and nozzle (see hydraulic circuit diagram in the appendix).
11	The hydraulic unit regularly fails after several hours of operation.	The thermal switch responds.	Check the oil level and top up if necessary. Clean the cooling fins and protective cover of the motor.
12	The machine control cannot be switched on.	The EMERGENCY STOP loop of the machine is open (EMERGENCY STOP button of the machine or connected components are pressed). The EMERGENCY STOP loop of the higher-level control unit is open.	Check and unlock all EMERGENCY STOP buttons. Check cable installation. Attention! Watch out for endangered persons when switching on again. Check release by higher-level control system. Attention! Watch out for endangered persons when switching on again.
13	Fault in the safety circuit.	Defective or loose switch (e.g. on service door). Cable damaged.	Check the switch function. Fasten or replace the switch. Check cable connection, replace if damaged.

7 Maintenance

7.1 Basic information on maintenance

WARNING



Performing even the simplest maintenance work can pose a risk to people, machinery and equipment

- Therefore, never act recklessly, not even out of habit.

In principle, the following applies:

- **Improper** handling of the machine is life-threatening!
- Always remember what the machine does with the feed material – and should do as intended. **If you give it the opportunity to do so through ignorance, improper handling, carelessness or failure to observe these operating instructions, it will easily do the same to you!**

INFORMATION

When carrying out maintenance work, always proceed in accordance with the operating instructions and observe the safety instructions.

7.1.1 Who is authorized to maintain the machine?

Maintenance work requires special knowledge and may only be carried out by persons who:

- Are trained by the supplier and have the necessary qualifications to do so
- Are authorized to do so by the operator of the machine/system
- Have read and understood these operating instructions in full (these operating instructions also include the operating instructions for installed components)

DANGER



When maintaining the machine, hazards can arise from moving and rotating machine components, heavy weights or the power supply.

Improper maintenance can result in danger to persons, machines and equipment.

- Proceed with particular caution and refrain from any work that could endanger safety!
- Before carrying out maintenance work, shut down the machine/system properly (see Chapter 5.6, "Shutting down the machine") and secure the work area over a wide area.

Some maintenance work requires special training. This includes, for example, work on electrical equipment, the control system or the hydraulic system. Do not carry out any maintenance work for which you do not have the necessary training and instruction from the supplier or operator.

7.1.2 Organizational notes

In these operating instructions, the term "maintenance" refers to all measures for inspection (testing), servicing and repair. This also includes cleaning.

All maintenance intervals are based on single-shift operation on five working days per week (40 hours per week). In multi-shift operation, the maintenance intervals are shortened accordingly!

The throughput of material that promotes wear or other factors that increase wear also shorten the maintenance intervals.

Critical substances in this sense are those that:

- Dissolve or wash out grease
- Are particularly prone to dust formation
- Are particularly capable of creep
- Are particularly conducive to wear
- Attack bearings and seals in another way not described here

Shorten maintenance intervals (never extend them) according to your production conditions. Always adhere to the maintenance schedule in order to minimize the wear and tear of the machine caused by use.

Reattach or reactivate removed or deactivated safety devices immediately after completing the work. Then check the functionality and proper attachment. Do not leave any removed components, tools or other objects inside the machine. This could severely impair the service life and operational safety of the machine



All maintenance measures must be documented in a **maintenance book** or **company log book**. Insufficient records, neglected maintenance work, etc. lead to costly repairs. Maintenance work that is not documented is deemed not to have been carried out in the event of damage (loss of warranty).

Protect the environment!

Hazardous substances that can no longer be used, such as lubricants, cleaning agents or batteries, do not belong in the waste or waste water.

These hazardous substances must be disposed of properly and in accordance with environmental regulations.

7.1.3 Explosion protection, fire protection and cleanliness

DANGER



Explosion hazard due to dust and flammable substances!

Flammable or explosive substances or gases can ignite during welding, burning and grinding work and can lead to explosions. This can lead to serious injury or death.

- Only carry out welding, burning and grinding work on the machine if this has been expressly authorized.
- Before welding, cutting and grinding, clean the machine and its surroundings of dust and flammable materials.
- Ensure adequate ventilation.

CAUTION



Risk of accident and fire due to a dirty and poorly maintained machine or a dirty work area.

A dirty and poorly maintained machine poses a risk to users (risk of slipping, risk of tripping) and shortens the service life of the machine.

- Always keep the machine/system and the work area clean.
- Do not place any objects in the work area – risk of tripping!
- Carry out all maintenance and servicing measures on time.

Experience shows:

- Dust whirled up into the air can form an ignitable mixture. If flames, electrical or other sparks, heat or other ignition sources are added, dust explosions of sufficient explosive force may occur to endanger employees or the machine.
- Dust that has settled forms an ideal breeding ground for smoldering fires. An electrical short circuit or other ignition source that is relatively harmless and easy to rectify can initially trigger a smoldering fire unnoticed in dust lying around. This can spread to a larger fire at any time.
- A fire that seems to have been extinguished long ago can smolder unnoticed in the dust for days. A smoldering fire can spread under a layer of dust (e.g. along a dust-covered cable duct) and destroy entire parts of the system.
- Employees are endangered by fire or fumes. The machine will be damaged by fire, fumes or extinguishing agents.
- A fire (especially a smoldering fire) leads to a long standstill of the machine. Time-consuming firefighting and subsequent repairs may be necessary.
- Dust inhaled over a longer period of time is harmful to health.

For cooling, dust reduction, fire and explosion protection, the work area can be equipped with cooling, foaming, extinguishing or protective gas systems (optional equipment).

7.2 Maintenance plan

	Activity	Maintenance interval	Specialist personnel	Chap.
Basic work	Checking operational readiness	Daily and after maintenance work has been carried out		7.4.2
	Cleaning the machine	Daily and according to a cleaning plan (to be drawn up by the operator)		7.4.3
	Cleaning motors	Weekly		7.4.4
	Tightening screws	After 20 operating hours, then weekly		7.4.5
Control cabinet	Cleaning	Every six months and according to cleaning plan (to be drawn up by the operator)	Trained electricians	7.5.1
	Checking/replacing filter mats of fans and air conditioning units	Every six months, more often if the environment is dusty	Trained electricians	7.5.1
	Tightening control cabinet terminals	After four weeks, then terminals over 1.5 mm ² every six months, others annually	Trained electricians	7.5.2
	Checking/replacing the motor contactor switching elements	Every six months	Trained electricians	7.5.2
	Changing the backup battery of the PLC	Every two years	Trained electricians	7.5.2
Electrical equipment	Checking/tightening terminals on devices and terminal boxes	Every six months	Trained electricians	7.5.3
	Checking all operating equipment (valves, switches, sensors, etc.) for proper function	Every six months	Trained electricians	7.5.3
	Checking electrical equipment for damage (loose connections, scorched cables). Eliminating defects.	Every six months	Trained electricians	7.5.3
	Setting the overload protection of the drive	As required	By supplier!	7.5.4
	Legally prescribed tests	According to legal requirements	Trained electricians	7.5.5
Universal cross-flow shredder UNI-CUT® QZ	Clearing out and cleaning the work area	During inspection or as required		7.7.2
	Checking acceleration elements	Daily and after maintenance work has been carried out		7.7.3
	Changing acceleration elements	As required		7.7.4
	Checking wear protection parts	Every 120 operating hours		7.7.6
	Checking/tightening the V-belt	Check every two weeks, tighten as required		7.8.1
	Changing the V-belt	As required		7.8.2

	Activity	Maintenance interval	Specialist personnel	Chap.
Hydraulic system	Depressurizing the hydraulic system	As required	Hydraulics experts	7.10.1
	Checking/replacing hydraulic lines	Check weekly, change according to legal requirements	Hydraulics experts	7.10.2
	Checking oil pressure	Weekly	Hydraulics experts	7.10.3
	Checking the fill level and oil temperature	Weekly		7.10.4
Hydraulic assemblies	Cleaning slide guides (for ejection device)	Weekly		7.11.2
	Checking/adjusting the hydraulic cylinder with external position measuring system	As required		7.11.3
Lubrication	Checking/maintaining the central lubrication system	Weekly		7.12.1
	Filling the central lubrication system	As required		7.12.2
	Venting the central lubrication system	As required		7.12.3
	Cleaning clogged pipes	As required		7.12.4
	Lubrication of the machine	Summary, see "Lubrication plan"		7.2.1

7.2.1 Lubrication plan

The machine must be lubricated according to the lubrication schedule, depending on its equipment. The specified maintenance intervals, lubrication cycles and lubricant quantities are reference values. If particularly aggressive materials are shredded, the maintenance intervals must be shortened accordingly. Critical substances in this sense are those that:

- Dissolve or wash out grease
- Are particularly prone to dust formation
- Are particularly capable of creep
- Are particularly conducive to wear
- Attack bearings and seals in another way not described here

DANGER



Danger to life! Hydraulic systems are under pressure.

If they are not dismantled properly, they may burst or hydraulic fluid may spray out under high pressure. This can lead to serious injury or death.

- Do not loosen or retighten any screw connections when the machine is switched on.
- Before working on hydraulic systems, shut down the machine properly and release the pressure via the valve (see Chapter 7.10, "Hydraulic system").

CAUTION



Contact with lubricants poses a health hazard.

- Do not inhale lubricant vapors.
- In the event of skin contact with lubricants, wash the affected areas immediately with soap and water.
- Wear safety goggles when handling lubricants to avoid eye contact.
- Protect the environment! Dispose of used lubricants properly or return them to the point of sale.

Lubrication plan					
Pos.	Lubrication point	Lubricant	Lubrication quantity	Maintenance interval	Notes
1a	Central bearing unit, acceleration elements, central lubrication system	Exclusively: Mobilux EP2	every 2 cm ³ per hour	Setting: Number of cycles: 1 P-time: 20 min	(see Chapter 7.12) Observe the operating instructions for the centralized lubrication system in the appendix.
1b	Bearing units drive, central lubrication system		every 2 cm ³ per hour		
2	Impact head: All grease nipples, bolts and plain bearing bushes	Exclusively: Mobilux EP2	Until grease escapes	Generally once per shift, twice per shift in the event of increased wear and when changing the acceleration elements	(see Chapter 7.7.5)
3	Drive motor	Observe the operating instructions for the drive motor in the appendix			
4	Hydraulic system: Change oil	ESSO UNIVIS HVI 26	Filling capacity: approx. 100 L up to the 80% mark.	First change after 200 h, then every 2,000 h (at least once a year)	(see Chapter 7.10.6) Always clean the container when changing; check the oil temperature regularly (max. 60°C).
5	Hydraulic system: Changing the oil filter			Every six months and with every oil change	(see Chapter 7.10.5) Observe the operating instructions for the hydraulics in the appendix.
6	Hydraulic system: Motor	Observe the operating instructions for the motor in the appendix.			
7	HAWE in general: All grease nipples and joint eyes of the hydraulic cylinders	Exclusively: Mobilux EP2	2 strokes each 2 cm ³	Every two weeks and as required	(see Chapter 7.11.1)
8	HAWE slider: Running rails	Teflon spray	As required	Weekly	(see Chapter 7.11.2)
9	HAWE flap: Warehouse	Universal grease	2 strokes each 2 cm ³	Every two weeks	(see Chapter 7.13.2)
10	HAGE in general: All grease nipples and joint eyes of the hydraulic cylinders	Universal grease	2 strokes each 2 cm ³	Every two weeks	(see Chapter 7.13.2)
11	HAGE flap: Warehouse	Universal grease	2 strokes each 2 cm ³	Every two weeks	(see Chapter 7.13.2)

7.3 Cleaning

Consistently keeping the machine, system and working environment clean is essential for the safety of the user and the safe operation of the machine.

This prevents users from slipping on dirty areas or tripping over things lying around. This also prevents faults occurring on the machine due to contamination.

Therefore:

- Set up and adhere to a cleaning schedule,
- Do not leave sticky materials that harden in the machine.

Check the legibility of the signs on the machine, especially the danger and prohibition signs, every time you clean. Immediately replace illegible or damaged signs.

7.3.1 Cleaning agent

Cleaning work is usually carried out with a hand brush, broom or vacuum cleaner. In exceptional cases, water and a mild detergent additive can be used.

- **DANGER!** Ensure that water does not penetrate the bearings and that electrical cables and other electrical equipment do not become damp or wet. Otherwise there is a risk of a short circuit or electric shock!
- Do not use high-pressure cleaning equipment! The high pressure can cause water to penetrate machine components and cause damage.
- Do not blow dust away with compressed air. Existing dust will otherwise be stirred up and will spread. In addition, bearings and seals are destroyed prematurely if dust and dirt penetrate them under pressure.
- All machine components that have come into direct contact with water or have become damp, and especially bare iron or steel parts, should then be oiled to protect against rust.
- Follow the manufacturer's instructions when using cleaning agents or cold cleaners. Pay particular attention to the instructions on occupational safety and environmental protection.
- Do not use solvents for cleaning. These could destroy the machine's paintwork, plastic parts, seals, electrical cable insulation, etc.

7.4 Basic maintenance work on the machine

7.4.1 Wear parts

Wear parts must be replaced regularly. Worn wear parts increase the power requirement and power consumption of the machine.
 Extreme wear can lead to damage to the machine.

7.4.2 Checking operational readiness

Maintenance interval:	Daily and after maintenance work has been carried out
Personnel:	Users

To ensure safe operation, check that the machine is ready for operation before starting production and several times a day during operation.

The main thing to check is that:

- The emergency stop buttons are functional
- Acceleration elements and wear protection parts have sufficient wear reserves (visual inspection)
- The grease nipples of the machine impact head (only on machines with impact head lubrication) are lubricated
- The work area is empty and closed before switching on
- The safety devices are in place and functional
- The supply and discharge devices are ready for operation
- The control displays show the correct set values – especially when the machine is installed in a higher-level system
- The pipes and hoses do not show any leaks or damage (visual inspection)

7.4.3 Cleaning the machine

Maintenance interval:	Daily and according to the cleaning plan
Personnel:	Users

Regular cleaning of the machine is essential for safe and trouble-free operation. Observe the instructions under "Explosion protection, fire protection and cleanliness" (see Chapter 7.1.3) and "Cleaning" (see Chapter 7.3).

Procedure:

1. Shut down the machine properly (see Chapter 5.6, "Shutting down the machine").
2. Clean the workplace and machine areas.

Inaccessible machine areas that cannot be cleaned daily should be cleaned at intervals appropriate to the degree of soiling.

7.4.4 Cleaning motors

Maintenance interval:	Weekly according to cleaning schedule
Personnel:	Users

Motors are no longer sufficiently cooled by dust deposits and can be damaged as a result. Therefore, clean all motors regularly:

Procedure:

1. Shut down the machine properly (see Chapter 5.6, "Shutting down the machine").
2. Remove dirt and dust from the cooling fins and ventilation grilles with a vacuum cleaner. Sufficient cooling of all drives must be ensured.
3. Check the motors for tight fit and damage.

7.4.5 Tightening screws

Maintenance interval:	After 20 operating hours, then weekly
Personnel:	Users

The vibrations generated during the manufacturing process can cause screw connections to loosen and lead to malfunctions.



WARNING! Work on the fastening screws of the drive motor and adjusting the alignment of V-belt pulleys is always reserved for the supplier's specialist personnel. This means for you: Always tighten these screws, never loosen them!

All other screw connections must be checked as follows and re-tightened if necessary:

1. Shut down the machine properly (see Chapter 5.6, "Shutting down the machine").
2. Check that all screw connections on the machine or load-bearing elements that absorb drive, vibration or other forces are tight and re-tighten them.
3. Mark loose screw connections and record them in writing. If screw connections repeatedly become loose, take suitable measures to secure them in consultation with the supplier.

Tighten screws every week!

If the regular checks do not reveal any loose screw connections, the maintenance interval can be extended to a maximum of one month.

7.5 Maintenance of the control cabinet and electrical equipment

⚠ DANGER



Danger to life from contact with live cables or components!

Work on electrical equipment may only be carried out by trained electricians.

Before working on electrical equipment:

- Shut down the machine properly (see Chapter 5.6, "Shutting down the machine").
- Check that the cables and components are de-energized.
- If circuits are live after the main switch has been switched off: Pull out the upstream fuse contactor or similar in the higher-level low-voltage distribution board and disconnect all poles of the entire machine from the power supply.

7.5.1 Cleaning the control cabinet

Maintenance interval:	Semiannually and according to the cleaning schedule Filter mats quarterly, more often in dusty environments
Personnel:	Electrical specialists

- Remove dirt and dust with a vacuum cleaner.
- Clean or change filter mats for fans and air conditioners.

7.5.2 Checking/changing the equipment in the control cabinet

Maintenance interval:	After four weeks, then terminals over 1.5 mm ² every six months, others annually Motor contactor switching elements semiannually Buffer battery every two years
Personnel:	Electrical specialists

- Tighten the terminals in the control cabinet.
- Check the contactors of the motor contactors and replace if necessary.
- Change the backup battery of the PLC every two years.

7.5.3 Checking electrical equipment on the machine

Maintenance interval:	Every six months
Personnel:	Electrical specialists

- Checking/tightening terminals on devices and terminal boxes.
- Checking all operating equipment (valves, switches, sensors, etc.) for proper function.
- **WARNING!** Check all electrical equipment for externally visible damage. Defects such as loose connections or scorched cables must be rectified immediately. Otherwise there will be a risk of a short circuit or electric shock.

7.5.4 Setting the overload protection of the drive

Maintenance interval:	As required
Personnel:	Only through supplier

The overload protection is not a protection against damage such as tool breakage. Constant overloading will lead to damage to the machine.

The switching threshold of the overload protection is set to the maximum permissible value at the factory.

- Smaller values may be set during trial operation to protect the machine. Higher values must not be set under any circumstances.

7.5.5 Legally prescribed tests

Maintenance interval:	According to legal requirements
Personnel:	Electrical specialists

Testing according to applicable legal requirements.

7.6 Preparation of the machine for work in the work area

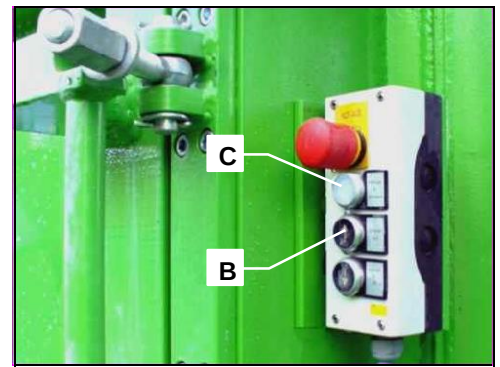
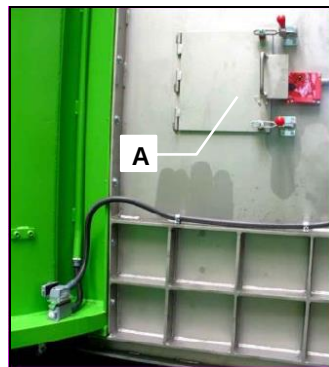
For some maintenance work, it is necessary to open the machine service door or to use special tools and optional equipment on the machine. These activities are described below.

7.6.1 Opening the machine service door

To reach the work area, the inside of the machine, the machine service door must be opened.

Preparatory activities:

1. Only for machines that are part of a higher-level system:
Call up/activate the Inspection menu on the operator panel. For procedure and operating functions, see higher-level system documentation.
2. Only for machines with shielding gas system, fire extinguishing system, etc.: Switch off, block, disarm and secure optional equipment electrically **and** mechanically against being switched on (see manufacturer's operating instructions).
3. Only for machine with soundproof cabin (optional equipment):
Open the door on the landing side and secure it against slamming shut.
4. Only for machine with shielding gas system (optional equipment):
Open the service flap with quick-release fasteners on the ejection hood (A) and secure against slamming shut.



Opening the service door:

Starting from a switched-on machine with a stationary drive and operational control, proceed as follows:

1. Switch the machine to maintenance mode.
2. On site, next to the service door, press the Ejector Open button (B) ↑ until the ejector is fully open.
3. On site, next to the service door, press the Open Service Door button (C).



4. Mechanical fuse (D) of the service door.
5. Shut down the machine and feed system properly (see Chapter 5.6, Shutting down the machine).
6. Loosen the nuts (E) of the door latch and fold out of the way with the eyebolts.
7. Open the service door and secure it against slamming shut. Open service doors that are stuck by turning in the push-off device (F).

7.6.2 Closing the machine service door

1. Clean the contact surfaces on the door and work area so that the service door can be fully closed.
2. Make sure that the eyebolts of the door latch are folded out of the way and that nothing or nobody else is obstructing or will be crushed when closing the door.
3. Ensure that there are no persons, tools or objects remaining in the work area.
4. Close the service door, fold back the eyebolts of the door latch and tighten with the nuts.
5. Close the mechanical safety catch on the service door.
6. Only for machines that are part of a higher-level system:
Exit/deactivate the Inspection menu on the operator panel. For procedure and operating functions, see higher-level system documentation.
7. Only for machine with shielding gas system (optional equipment):
Close the service flap with quick-release fasteners on the ejection hood.
8. Only for machine with soundproof cabin (optional equipment):
Close all open entrances to the soundproof booth.
9. Only for machines with shielding gas system, fire extinguishing system, etc.:
Switch on, unlock **and** arm optional equipment electrically and mechanically (see manufacturer's operating instructions).

7.6.3 Using the impact head extractor

Only for machine with impact head extractor:

CAUTION



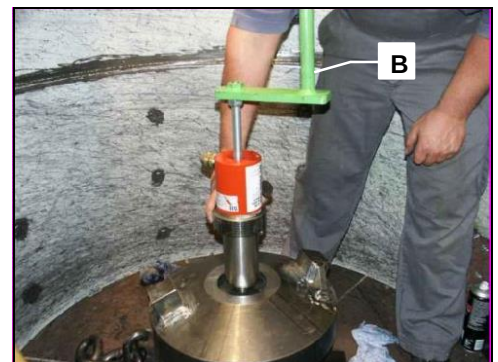
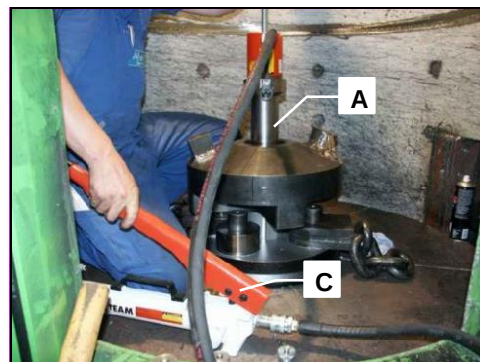
Heavy
weight!

The upper part of the impact head weighs over 50 kg, depending on the design. If handled improperly, the upper part of the impact head can fall down and cause serious injuries.

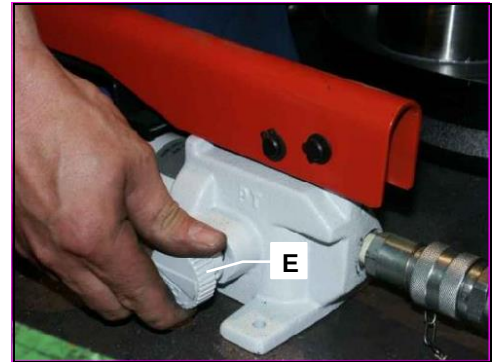
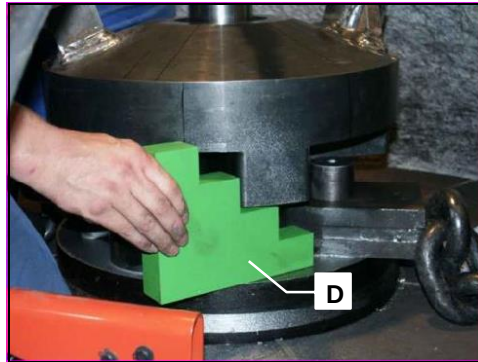
- Lift the upper part impact head with the appropriate special tools.
- Do not step or reach under raised loads.
- Follow the operating instructions for the hydraulic hand pump (see appendix).

The impact head extractor with its accessories allows the upper part of the impact head to be lifted easily and safely. Please also follow the safety instructions in Chapter 7.7.1, Measures for your safety.

Procedure:



1. Screw the adapter of the extractor (**A**) into the upper part of the impact head instead of the central screw.
2. Turn the crank (**B**) at the upper end of the extractor in a clockwise direction as far as it will go.
3. Use the hand pump (**C**) to extend the cylinder of the extractor as far as it will go – this will raise the upper part.



4. **CAUTION!** Crushing hazard: By sliding the stairway trestles underneath on both sides (D), secure the upper part of the impact head against lowering again.
5. Release the pressure at the hand pump (E) and retract the cylinder.
6. Repeat steps 2 to 4 until the upper part of the impact head has reached its end position (main shaft and bolts of the acceleration elements are completely exposed).
7. Unscrew the extractor adapter from the upper part of the impact head and remove the extractor.

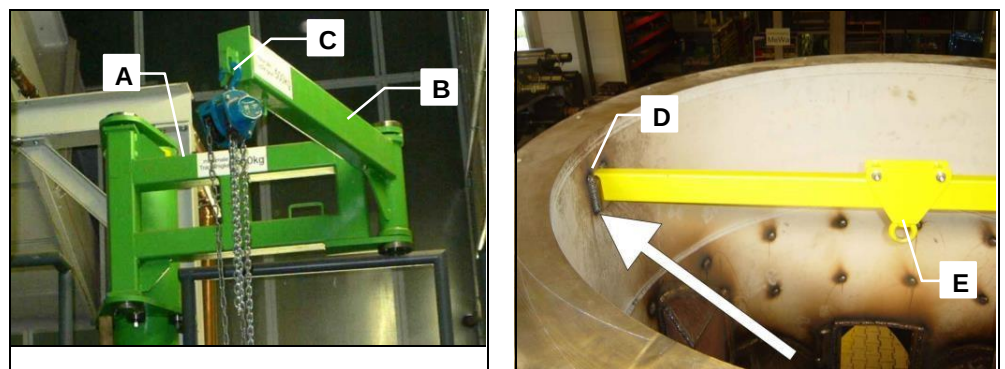
7.6.4 Using the maintenance crane/pulley suspension device

Only for machine with maintenance crane/pulley suspension device:

A maintenance crane or pulley suspension device coupled with a pulley enables the upper part of the impact head to be handled comfortably and safely. Please also follow the safety instructions in Chapter 7.7.1, Measures for your safety. Please also follow the operating instructions for the pulley (see appendix).

Preparing a maintenance crane:

1. Turn the maintenance crane towards the open service door.



2. Swing out boom section 1 (A) and boom section 2 (B) and position them above the impact head.
3. Attach the pulley to the maintenance crane (C).

Preparing the pulley suspension device:

1. Hook the pulley into the supports (D) in the work area (longitudinal direction, center of service door).
2. Position the mobile attachment device (E) above the impact head.
3. Attach the pulley to the attachment device.

7.6.5 Using the impact head turning device

Only for machine with beater head turning device:

CAUTION



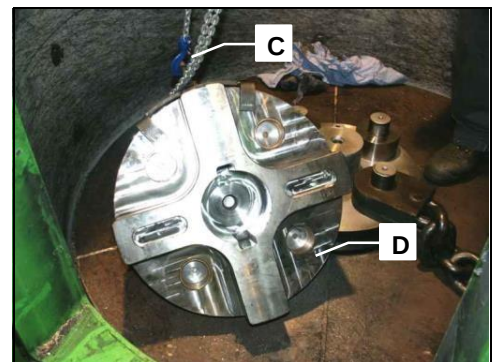
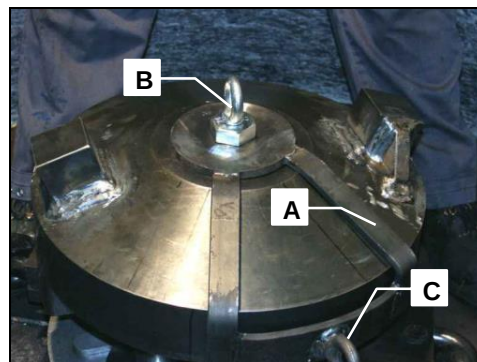
Heavy
weight!

The upper part of the impact head weighs over 50 kg, depending on the design. If handled improperly, the upper part of the impact head can fall down and cause serious injuries.

- Lift the upper part impact head with the appropriate special tools.
- Do not step or reach under raised loads.

The impact head turning device with its accessories enables the upper part of the impact head to be removed and turned easily and safely. Please also follow the safety instructions in Chapter 7.7.1, Measures for your safety.

Procedure:



1. Mount the impact head turning device (A) on the raised upper part of the impact head with eyebolt (B).
2. Hook the pulley into the eyebolt (B), lift and lower the upper section onto the open floor.
3. Hook the pulley from the eye bolt (B) into the side ring holder (C).
4. Lift again with the pulley and turn it over when setting it down so that the top of the impact head (D) comes to rest on the floor.

7.6.6 Using the pulley

Only for machine with a pulley:

⚠ CAUTION



Heavy
weight!

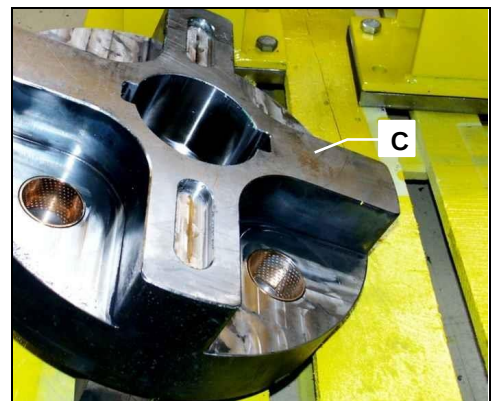
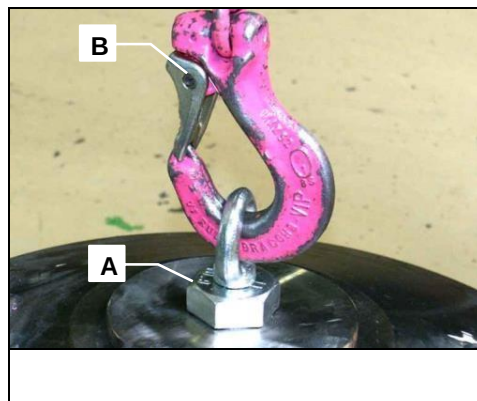
The upper part of the impact head weighs over 50 kg, depending on the design. If handled improperly, the upper part of the impact head can fall down and cause serious injuries.

- Lift the upper part impact head with the appropriate special tools.
- Do not step or reach under raised loads.

The pulley with its accessories enables the top part of the impact head to be removed and turned easily and safely.

Please also follow the safety instructions in Chapter 7.7.1, Measures for your safety.

Procedure:



1. Screw the eye bolt (A) into the upper part of the impact head instead of the central screw.
2. **WARNING!** Do not step under the suspended load: Hook the pulley (B) into the eyebolt (A), lift and push to the side.
3. Lower the pulley and rotate it with a suitable tool (e.g., wooden plank) so that the upper part of the impact head (C) comes to rest with its upper side on the ground.

7.7 Working in the work area of the machine

DANGER



The machine accelerates the feed material using rotating acceleration elements. This poses a risk at all openings of the machine due to accelerated masses, drawing in, impact or crushing.

Any contact with moving machine components can lead to serious or even fatal injuries.

- Never inspect the machine while it is running.
- Do not reach into openings in the machine until the machine has been properly shut down.

DANGER



Suffocation hazard when entering the machine area with a connected (CO₂) fire extinguishing system or shielding gas system (optional equipment).

If the oxygen content is too low and/or the CO₂ content in the air is too high, there is a risk of suffocation and/or loss of consciousness (CO₂ narcosis).

- Before starting maintenance work, shut down the fire extinguishing system/shielding gas system electrically **and** mechanically and secure it against being switched on.
- Walk through the machine area in compliance with the higher-level system documentation.

CAUTION



The service door to the work area and machine parts inside the work area are not kept cool and can become very hot during continuous operation.

There is a risk of burns if you touch them.

- Wait until the machine has cooled down.
- Wear protective gloves.

7.7.1 Measures for your safety

Exercise extreme caution during all activities in and around the work area. Follow these instructions and in particular Chapter 2, Safety instructions.

Before working in the work area or on the machine:

1. For machines with a (CO₂) fire extinguishing system or shielding gas system, special safety measures for access must be observed. **Entry is only permitted for specially trained personnel using/providing special equipment (see higher-level system documentation).**
2. Open the machine service door and secure it against slamming shut. Leave the service door open the entire time that persons are inside the machine.
3. Shut down the machine and feed system properly (see Chapter 5.6, Shutting down the machine).
4. Ventilate the work area sufficiently before entering it, even after long periods of machine downtime (create a draft to the outside). Secure all open doors and windows against slamming shut. This ensures that breathable air is maintained in the work area.
5. Allow the machine to cool down.
6. Provide lamps for illumination.
7. Carry out a visual inspection of the feed area.
Remove any feed material from the area (always from the feed conveyor). **Danger due to falling parts!**

After completion of the work in the work area:

1. Do not close the machine service door until you have ensured that no animals, people or objects are present in the work area.

7.7.2 Clearing out and cleaning the work area

Maintenance interval:	During inspection or as required
Personnel:	Users

ATTENTION

Contamination in the work area may damage the machine.

- **No adhesive and hardening material may be left in the work area.**

Normally, the work area must be cleaned with a broom every time it is entered. The work area must be cleared out and cleaned manually immediately after:

- Adhesive or hardening material has been processed.
- Dirt has accumulated.
- The impact head has come to a standstill while the machine is still full.

Procedure:

1. Open the service door (see Chapter 7.6.1, Opening the machine service door).
2. Shut down the machine and feed system properly (see Chapter 5.6, Shutting down the machine).
3. Take the greatest precautions when clearing and cleaning the work area.
4. Disposing of materials and aids used for cleaning in an environmentally friendly manner.

7.7.3 Checking acceleration elements

Maintenance interval:	Daily and after maintenance work has been carried out
Personnel:	Users

Acceleration elements, especially the outer segments, are subject to high loads and operational wear. With prolonged use, the strength of the acceleration elements will decrease due to friction and deformation. This process can lead to detachment/breakage of the acceleration elements.

This will result in imbalance and unusually strong vibrations in the machine. The quality and throughput of the product material will decline while the motor current will increase.

Immediately change any acceleration elements that are cracked, chipped, deformed, or have segments missing with original spare parts (see Chapter 7.7.4, Changing acceleration elements).

Change acceleration elements in good time for:

- Economical operation
- Optimum throughput
- Minimal machine stress
- Short downtimes

INFORMATION

Check the condition and wear reserves of the segments and the play (on the suspension segment) daily before starting production.

Change acceleration elements with a material thickness less than $\frac{1}{4}$ of the original thickness (indicative value, depending on feed material and production conditions).

7.7.4 Changing acceleration elements

Maintenance interval:	As required
Personnel:	Users

INFORMATION

To avoid imbalance and thus high machine stress, the acceleration elements are supplied as a pair with the same ID number. Even if only one segment fails, the acceleration elements must always be changed as a pair. They must always be inserted in opposite sockets on the impact head.

If an accelerator element loses a segment, **never** shorten the counter element and continue to use the pair.

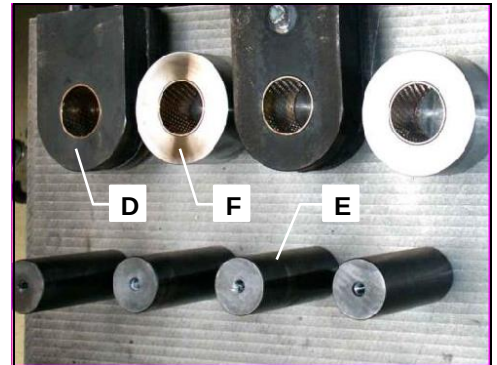
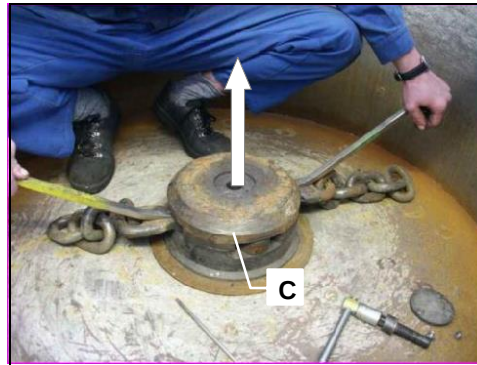
After each replacement of acceleration elements, complete the Acceleration element service life form (see appendix) and send the recorded data to the supplier on a monthly basis.

Removing acceleration elements:

1. Open the service door (see Chapter 7.6.1, Opening the machine service door).
2. Shut down the machine and feed system properly (see Chapter 5.6, Shutting down the machine).
3. Clean the work area, including the impact head, with a broom or similar.



4. Cover plate (A) from the impact head and remove.
5. Unscrew the central screw (B).
6. Only for machine with impact head extractor (special tool): Lift the upper part of the impact head with the extractor (see Chapter 7.6.3, Using the impact head extractor).
7. Only for machine with maintenance crane/pulley suspension device: Prepare the maintenance crane/pulley suspension device to be ready for use (see Chapter 7.6.4, Using the maintenance crane/pulley suspension device).
8. Only for machine with impact head turning device (special tool): Remove and rotate the upper part of the impact head (see Chapter 7.6.5, Using the impact head turning device).
9. Only for machine with pulley (without impact head turning device): Remove and rotate the upper part of the impact head (see Chapter 7.6.6, Using the pulley).



10. Loosen the upper part of the impact head (C) (e.g., with a plastic or copper hammer) and lift with a suitable tool (e.g. with two tire irons).
Caution! Heavy impact head weight – risk of injury! Have two people remove the upper part of the impact head, turn it over and place the upper side on the floor.
11. Remove the acceleration elements (D), bolts (E) and protective rings (F) from the impact head.

Checking/changing bolts:

1. Clean the bolts and check for wear (visual inspection).
2. Bolts must be replaced if:
 - They no longer have an exact cylindrical shape.
 - They are chipped or scored.

Checking the impact head:

The upper or lower part of the impact head must be replaced if:

- It is chipped or cracked
- Deformations, the effects of heat or significant bolt play can be detected in the plain bearing bush mounting
- The keyways are deformed or damaged.

! WARNING



Changing the lower part of the impact head involves risk of injury and may cause damage to the machine.

- The changing of the lower part of the impact head is reserved for the supplier's specialist personnel and should not be carried out without consultation.

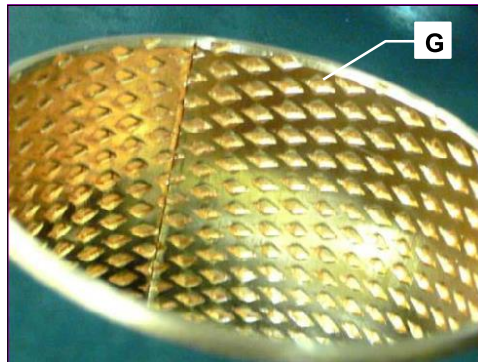
Checking/changing plain bearing bushes:

INFORMATION

Plain bearing bushes are located in the mounts in the upper and lower part of the impact head, in the protective rings and on the suspension segment of the acceleration elements. They must be checked regularly for wear.

Check the plain bearing bushes:

1. Clean the plain bearing bushes and check for wear (visual inspection).

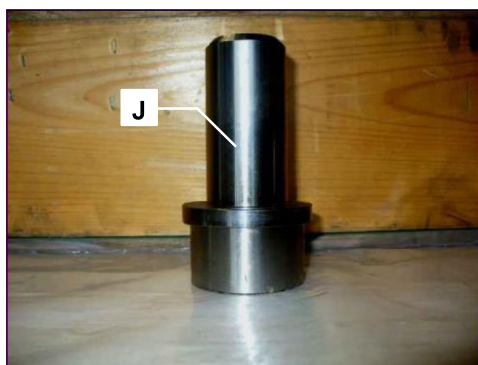


2. Plain bearing bushes must be replaced if:
- The grease pockets (**G**) are no longer recognizable
 - Deformation, the effect of heat or significant bolt play is recognizable

Changing plain bearing bushes:

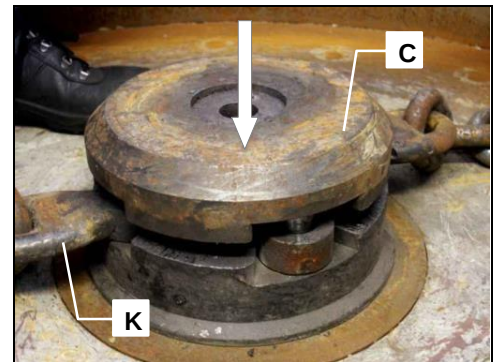
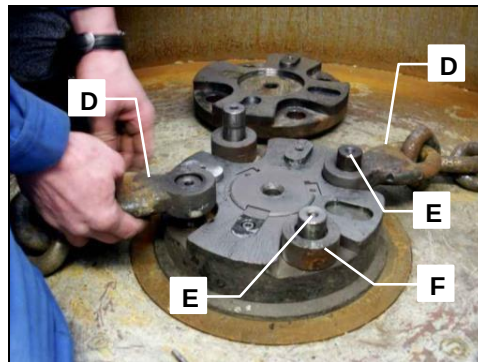


1. **CAUTION!** Risk of injury, strike carefully: Tap one side of the bushing gap inwards with a hammer and chisel (**H**).
2. Remove the plain bearing bush (**I**).
3. Thoroughly clean the seat of the plain bearing bush.
4. Position the new plain bearing bushing and the bushing gap in the direction of the main shaft.



5. Use the drive-in bolt (J) and rubber mallet to knock the plain bearing bush into its seat.
6. Check the plain bearing bush for tight fit and damage (e.g., scoring). Change plain bearing bushes that have a damaged bearing surface.
7. Change all other plain bearing bushes in the same way.

Installing acceleration elements:



1. Thoroughly clean all contact surfaces, mounts, grooves, feather keys, etc. on the upper and lower part of the impact head.
2. Spray all flange surfaces on the upper and lower part of the impact head generously with spray grease (e.g., Never Seez-Regular Grade).
3. Grease all plain bearing bushes and bolts generously by hand (see Chapter 7.2.1, Lubrication schedule).

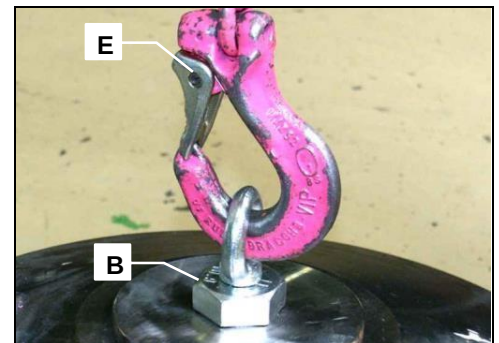
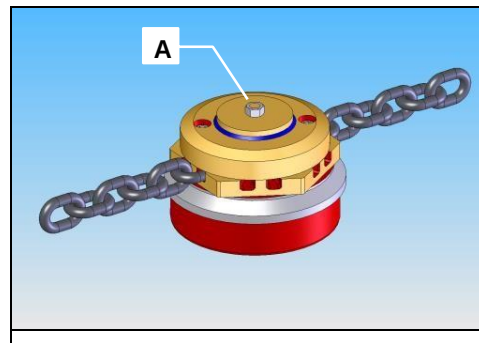
Factory-prescribed grease:	Mobilux EP2
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4. Fit new acceleration elements (D) (same ID no.) and protective rings (F) in place with bolts (E) and insert into the lower part of the impact head.
5. Only for machines with a pulley:
Place the upper part of the impact head (C) on the lower part impact head. Align the upper part with the bolts and feather keys.
6. **Caution:** Heavy impact head weight – risk of injury!
Have two people place the upper part of the impact head (C) on the lower part of the impact head. Align the upper part with the bolts and feather keys.
7. If necessary, drive the upper part of the impact head (C) downwards by carefully tapping it (e.g., with a plastic or copper hammer).
8. Check that the impact head is seated correctly – the upper and lower part of the impact head must lie smoothly on top of each other without any visible gap.
9. Check that the acceleration elements are seated correctly – the suspension segments (K) must rotate without resistance.
10. Remove all auxiliary tools, etc. from the work area.
11. Insert and tighten the central screw.
12. Fit the cover plate of the impact head and screw tight.
13. Once maintenance work has been completed, remove all tools and consumables from the work area.

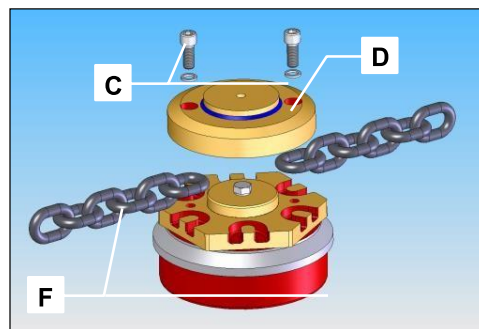
14. Close the service door (see Chapter 7.6.2, Closing the machine service door).

Removing acceleration elements:

1. Open the service door (see Chapter 7.6.1, Opening the machine service door).
2. Shut down the machine and feed system properly (see Chapter 5.6, Shutting down the machine).
3. Clean the work area, including the impact head, with a broom or similar.



4. Screw the eyebolt (B) into the upper part of the impact head, instead of the screw plug (A).
5. Unscrew the screw fastening (C) for the cover plate (D).
6. Prepare the maintenance crane/pulley suspension device to be ready for use (see Chapter 7.6.4, Using the maintenance crane/pulley suspension device).
7. **WARNING!** Do not step under the suspended load: Hook the pulley (E) into the eyebolt, lift and push to the side.
8. Lower the pulley rotate it with a suitable tool (e.g., wooden plank) so that the top of the cover plate (D) comes to rest on the floor.



9. Remove the acceleration elements (F) from the impact head.

Checking the impact head:

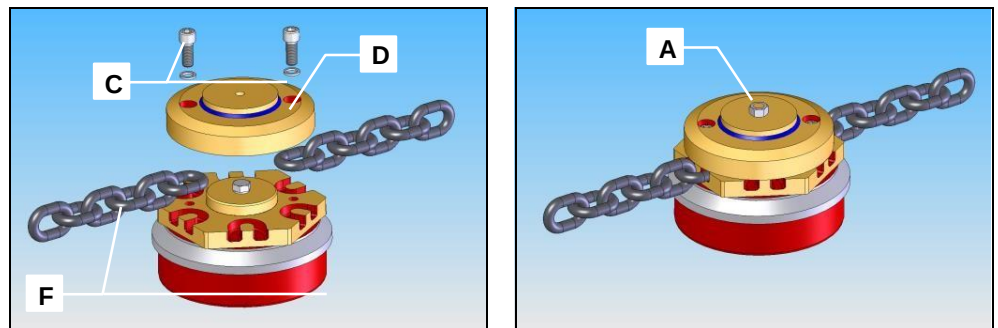
The lower part of the impact head, cover plate or mounting plate acceleration elements must be replaced if:

- It is chipped or cracked
- Deformations, the effects of heat or significant play in the suspension segments can be detected in all the mounting tracks of the acceleration elements

INFORMATION

The changing of the lower part of the impact head is reserved for the supplier's specialist personnel and should not be carried out without consultation.

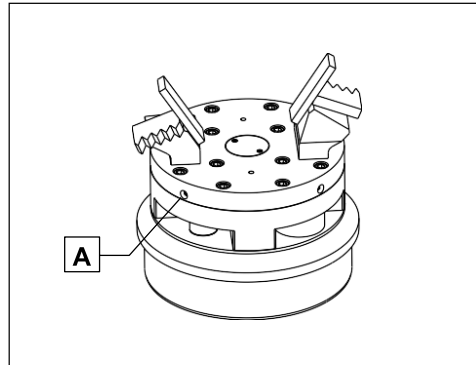
Installing acceleration elements:



1. Thoroughly clean all contact surfaces, mounting tracks, etc. of the cover plate and mounting plate acceleration elements.
2. Spray all flange surfaces of the cover plate and mounting plate acceleration elements generously with spray grease (e.g., Never Seez-Regular Grade).
3. Insert new acceleration elements (**F**) into opposite, tested mounting tracks.
4. Use the pulley to place the cover plate (**D**) on the mounting plate acceleration elements. Align the cover plate with the screw fastening holes.
5. Check that the impact head is properly seated – the cover plate and mounting plate acceleration elements must lie smoothly on top of each other without any visible gap.
6. Remove all auxiliary tools, etc. from the work area.
7. Insert and tighten the screw fastening (**C**) for the cover plate (**D**).
8. Insert the screw plug (**A**) in place of the eyebolt and screw tight.
9. Once maintenance work has been completed, remove all tools and consumables from the work area.
10. Close the service door (see Chapter 7.6.2, Closing the machine service door).

7.7.5 Lubricating the impact head

Maintenance interval:	Generally once per shift, twice per shift in the event of increased wear
Personnel:	Users



Only for machines with external impact head lubrication:

The impact head with external lubrication enables the plain bearing bushes and bolts to be lubricated quickly and easily without having to lift off the upper part of the impact head.

Procedure:

1. Open the service door (see Chapter 7.6.1, Opening the machine service door).
2. Shut down the machine and feed system properly (see Chapter 5.6 Shutting down the machine).
3. Clean the work area, including the impact head, with a broom or similar.
4. Press grease into the grease nipples (A) by hand using a grease gun as specified in the lubrication schedule (see Chapter 7.2.1, Lubrication schedule).

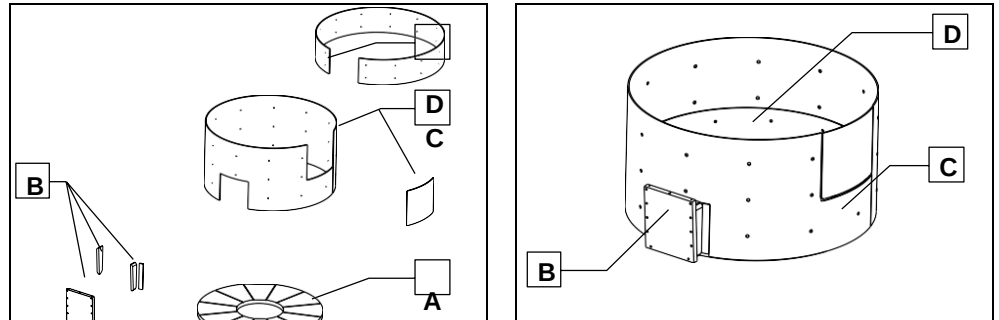
Factory-prescribed grease:

Mobilux EP2

5. Once maintenance work has been completed, remove all tools and consumables from the work area.
6. Close the service door (see Chapter 7.6.2, Closing the machine service door).

7.7.6 Checking wear protection parts

Maintenance interval:	Every 120 operating hours
Personnel:	Users



Only for machines equipped with wear protection parts:

Wear protection plates provide protection for areas of the machine that are particularly prone to wear when processing materials. Wear protection parts can be fitted to the floor (A), the ejection area (B) and the walls (standard C) (addition D).

To ensure protection, these wear protection parts must be checked every 120 operating hours and replaced immediately in the event of heavy wear or damage.

Proceed as follows to check:

1. Open the service door (see Chapter 7.6.1, Opening the machine service door).
2. Shut down the machine and feed system properly (see Chapter 5.6, Shutting down the machine).
3. Check wear protection parts for damage and wear. If they are badly worn, damaged or chipped, they must be replaced immediately.

⚠ WARNING



Changing wear protection parts involves risk of injury and may cause damage to the machine.

- The changing of wear protection parts is reserved for the supplier's specialist personnel and must not be carried out without consultation.

7.8 Machine drive

7.8.1 Checking/tightening the V-belt

Maintenance interval:	Check every two weeks, tighten as required
Personnel:	Users

CAUTION! Too little pre-tightening of the V-belts will result in excessive slippage. This will lead to premature wear and inadequate power transmission. V-belts that are too tight will be stretched excessively and cause unnecessary flexing work combined with high temperatures. This will not only reduce service life but also often lead to damage to the motor bearings or shaft bearings.

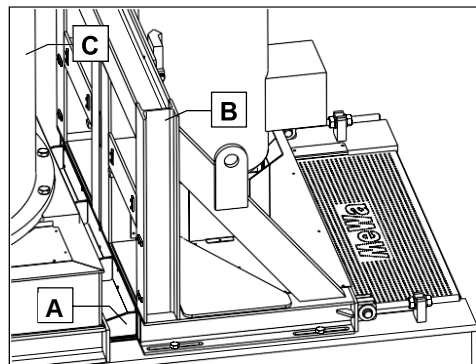
INFORMATION

V-belts must be protected from dirt, oil mist, dripping oil and other chemicals. Constant exposure to these media will lead to swelling or other premature destruction. Clean any dirty V-belts with a mixture of glycerin and spirits (1:10). **Solvents such as petrol or benzene and sharp-edged objects must not be used for cleaning.**

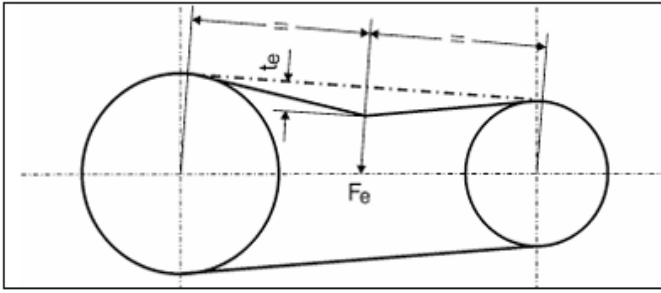
For checking/tightening, proceed as follows:

Checking the V-belts:

1. Prerequisites: Machine is properly shut down and in cold condition.

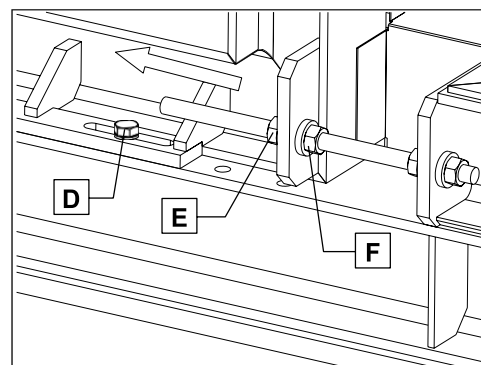
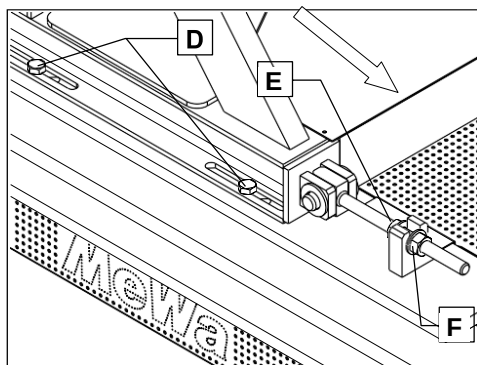


2. Unscrew and remove the cover plate (A) or service cover on the V-belt guard between the motor console (B) and work area (C).
3. Check the V-belts for wear or damage. If the V-belts are damaged, worn or overstretched, replace them immediately in sets (see Chapter 7.8.2, Replacing V-belts).
4. Check the tension with the aid of the following figure and table.

Machine type	Number of V-belts per set	Belt profile	Effective length
QZ 1200	5	SPC	4000 mm
Drive motor 160 hp Speed 1785/min. V-belt pulleys dia. 500/dia. 250			
Test force for determining tension:			$F_e = 125 \text{ N}$
Press-in depth of individual belts during initial fitting (immediately after fitting the V-belts)			$t_e = 36.5 \text{ mm}$
Press-in depth of individual belts at operating tension (after 30 minutes under full load operation)			$t_e = 44.0 \text{ mm}$

5. If the press-in depth corresponds to the specifications, screw the cover plate or service cover back on. Otherwise tighten the V-belts.

Tightening the V-belts



1. Unscrew the fastening screws (**D**) on both sides of the motor console.
2. Loosen the lock nuts (**E**) on both sides of the motor console.
3. Adjust the V-belt tension evenly using the nuts (**F**) on the tensioning spindles until the tests correspond to the specified value.
4. Tighten the lock nuts and screw the fastening screws back into place.
5. Screwing the cover plate or service cover back into place.

7.8.2 Changing V-belts

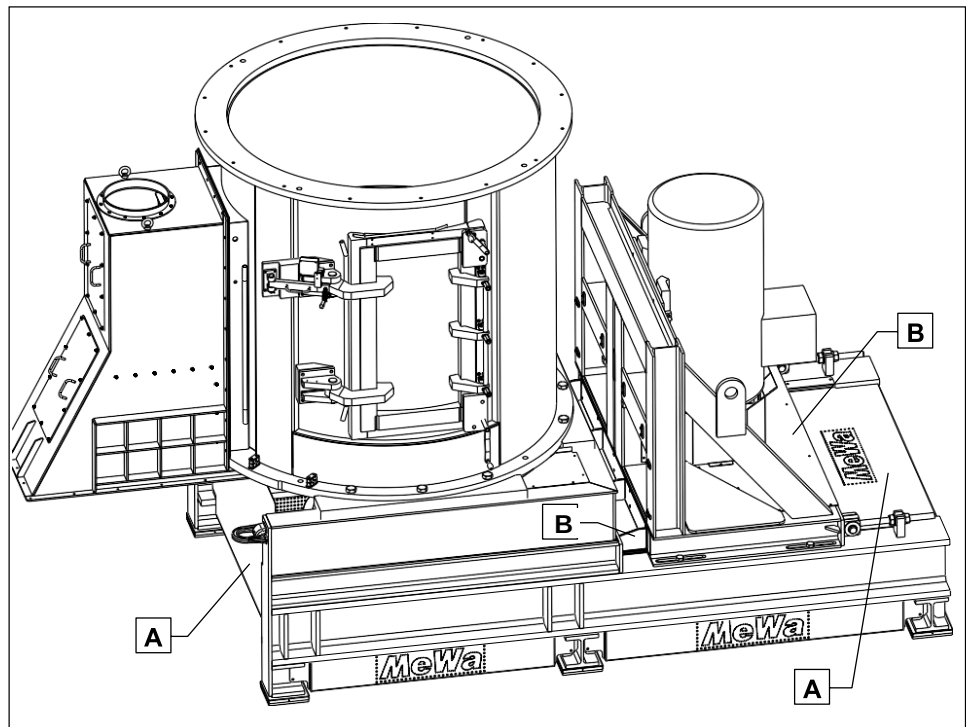
Maintenance interval:	As required
Personnel:	Users

CAUTION! The V-belts must be fitted easily by hand. Forcible mounting over the pulley edges or the use of mounting irons will damage the tension cord and the fabric cover and thus considerably reduce the service life of the V-belts.

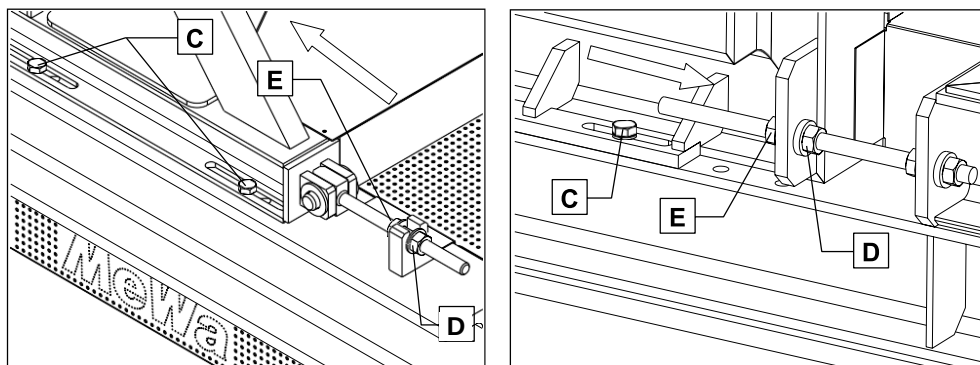
The drives must always be fitted with V-belts of the same length (set constant). V-belts that have already been used or fitted and new V-belts must not be used in the same set due to their different elongation. Even if a single belt fails, a complete new set must always be fitted.

Procedure:

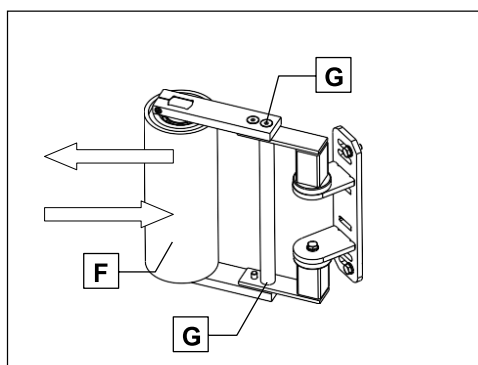
1. Shut down the machine properly (see Chapter 5.6, "Shutting down the machine").



2. Unscrew and remove the V-belt guard cover plates on the base frame (A), on the motor console (B), or unscrew and remove the complete V-belt guard.



3. Unscrew the fastening screws (C) on both sides of the motor console.
4. Loosen the lock nuts (D) on both sides of the motor console.
5. Use the nuts (E) on the tensioning spindles to slacken the V-belt tension evenly until the old V-belts are completely loose.



6. Only for machines with V-belt tensioning pulley:
Unscrew the tensioning pulley (F) from the bracket (G) and remove.
7. Remove the old V-belts from the V-belt pulleys and fit new ones.
8. Only for machines with V-belt tensioning pulley:
Screw the tensioning pulley (F) back onto the bracket (G).
9. Tighten the V-belt set (see Chapter 7.8.1, Checking/tightening the V-belt).
10. Screw the V-belt guard cover plates or the complete V-belt guard back in place.

INFORMATION

After replacement, the V-belt set must first be pre-tightened. The V-belts will elongate during the initial period of operation. Therefore, after replacement the machine must be operated under full load for approx. 30 minutes to allow the new V-belt set to run in.

Then re-tighten the V-belts to the specified operating tension.

7.9 Conveyor systems

Please refer to the operating instructions supplied with the conveyor system for information on the supplied conveyor system.

7.10 Hydraulic system

! DANGER



Danger to life! Hydraulic systems are under pressure.

Hydraulic fluid can squirt out under high pressure if not dismantled properly. This can lead to serious injury or death.

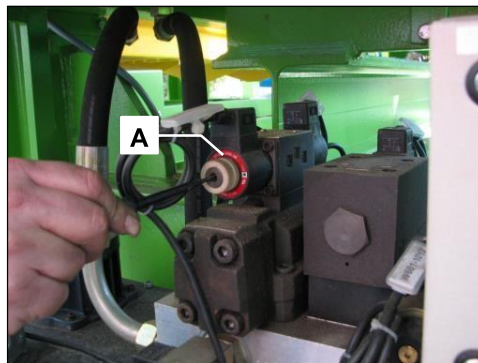
- Work on hydraulic equipment may only be carried out by trained specialist personnel.
- Do not loosen or retighten any screw connections when the machine is switched on.
- Only carry out work on hydraulic systems when they are depressurized.

7.10.1 Depressurizing the hydraulic system

Maintenance interval:	As required
Personnel:	Hydraulics specialists

To relieve the pressure in the hydraulic system, proceed as follows:

1. Switch the machine to maintenance mode
2. Retract all hydraulic cylinders from the control unit so that the hydraulic oil is in the oil reservoir, except for small quantities in the lines.
3. Shut down the machine properly (see Chapter 5.6, "Shutting down the machine").



4. Use a screwdriver to mechanically actuate all hydraulic valves (**A**) of the system from both sides and thus relieve the pressure.

7.10.2 Checking/replacing hydraulic lines

Maintenance interval:	Weekly and in accordance with legal requirements
Personnel:	Hydraulics specialists

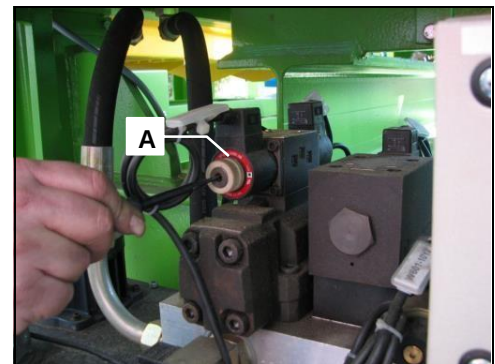
The hydraulic lines must be regularly checked for leaks by qualified persons with knowledge of hydraulic systems. This must be documented.

WARNING! Even with proper storage and permissible stress, hydraulic lines are subject to an aging process. This limits their storage time and period of use. The period of use should not exceed six years, including a maximum storage period of two years.

Hydraulic lines must be replaced regularly in accordance with the applicable legal requirements. Replace damaged hydraulic lines **immediately**.

7.10.3 Checking oil pressure

Maintenance interval:	Weekly
Personnel:	Hydraulics specialists



Check the pressure on the pressure gage regularly. Abnormal readings must be reported to the supervisor in order to initiate appropriate measures. Excessive pressure can cause damage to the machine. This can also lead to risk of injury.

Procedure:

1. Switch the machine on with the feeder switched off.
2. With the hydraulics switched on, use a screwdriver to open the control valve (A) of the ejector (see hydraulic circuit diagram in the appendix) mechanically from one side until it moves to the stop.
3. Read off the maximum working pressure from the pressure gage with the ejector set to the stop.

Factory-set working pressure:

130 bar

7.10.4 Checking the fill level and oil temperature

Maintenance interval:	Weekly
Personnel:	Users



1. Check the fill level of the hydraulic oil in the reservoir in the sight glass. Only carry out a fill level check with the hydraulic cylinders extended when there is the least amount of oil in the tank.
2. Check the oil temperature on the thermometer in the sight glass (max. 60°C). Follow the operating instructions for the hydraulic unit.

7.10.5 Changing the oil filter

Maintenance interval:	Every six months and with every oil change
Personnel:	Hydraulics specialists

Check the oil filter cartridge for contamination and replace if necessary (see operating instructions for the hydraulics in the appendix).

7.10.6 Oil change

Maintenance interval:	First change after 200 hours, then every 2,000 hours, but at least once a year
Personnel:	Hydraulics specialists

CAUTION



Risk of scalding!

In normal operation, the oil temperature reaches approx. 40°C to max. 60°C. Contact with hot oil can cause scalding.

- Allow the oil to cool down before changing it. To ensure this, allow approximately one hour after the machine has been switched off.

Pay attention to the documentation for the hydraulic unit and the safety data sheets for the oil. Use the personal protective equipment prescribed in these documents.

Do not spill any oil. It is slick and creates a risk of slipping.

Immediately absorb spilled oil with a suitable binding agent and dispose of it in an environmentally friendly manner.

To protect the environment, also remember to properly recycle or dispose of the used hydraulic oil and the tools used when changing the oil.

The first hydraulic oil change is carried out after 200 operating hours, while subsequent changes are generally carried out every 2,000 operating hours or once a year, whichever is less.

It is recommended that the hydraulic oil filled in at the factory be used when adding oil. Never mix oils from different manufacturers or of different quality classes. Likewise, do not mix zinc-free oils with oils containing zinc.

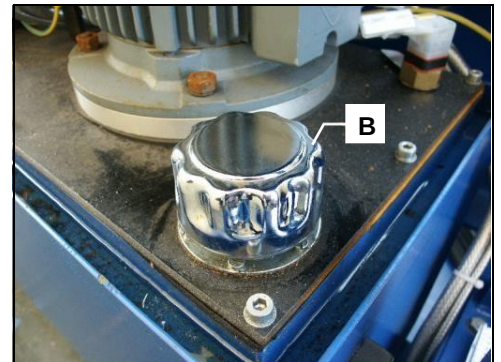
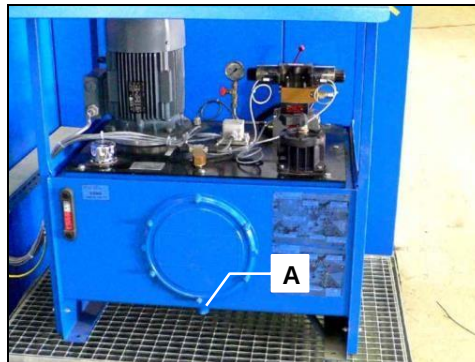
Factory-filled hydraulic oil:	ESSO UNIVIS HVI 26
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Change the oil filter every time you change the oil.

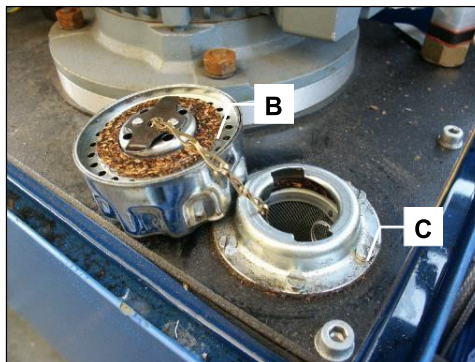
Preparatory activities:

1. Switch the machine to maintenance mode.
2. Retract all hydraulic cylinders from the control unit so that the hydraulic oil is in the oil reservoir, except for small quantities in the lines.
3. Depressurize the hydraulic system (see Chapter 7.10.1, Depressurizing the hydraulic system).
4. Shut down the machine properly (see Chapter 5.6, "Shutting down the machine").

To remove the oil, the following options are available:

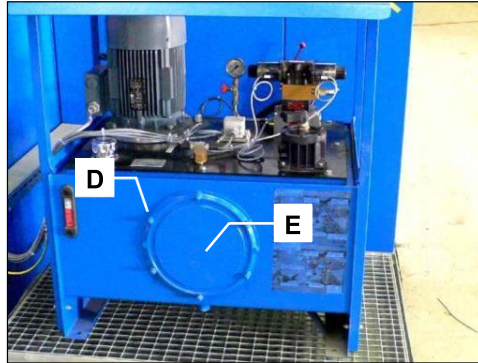
Draining the hydraulic oil:

1. Place a sufficiently large drip tray under the drain plug (A) of the oil reservoir.
2. Unscrew and remove the cap (B) with dust filter on the oil filler neck.
3. Unscrew the drain plug and allow the oil to run completely into the pan.
4. Screw the drain plug back in place and tighten.
5. Replace the cover with dust filter and screw tight. Alternatively:

Siphoning off the hydraulic oil:

1. Unscrew and remove the cap (B) with dust filter on the oil filler neck.
2. Unscrew the screws (C) of the coarse filter insert and remove the insert.
Caution: Do not allow anything to fall into the filler opening.
3. Insert the suction nozzle of a suction pump into the hydraulic oil reservoir and pump the oil into a waiting sump or drum.
4. Clean the coarse filter insert, reinsert and screw it tight into place.
5. Replace the cover with dust filter and screw it tight.

Cleaning the hydraulic oil reservoir:



Prerequisite: The old oil has been drained and the machine has been properly shut down.

1. Undo the screw fastening (**D**) and remove the service cover (**E**).
2. Use paper towels to soak up the oil residue from the inside bottom of the reservoir and wipe off the remaining inside surfaces.
3. Clean all interior surfaces thoroughly with a grease-dissolving cleaning agent and paper towels (follow the cleaning agent manufacturer's instructions) and wipe dry with paper towels. Water from cleaning agents containing water must not be allowed to remain in the oil reservoir.
4. Replace the service cover and screw tight.

Fill with new hydraulic oil:

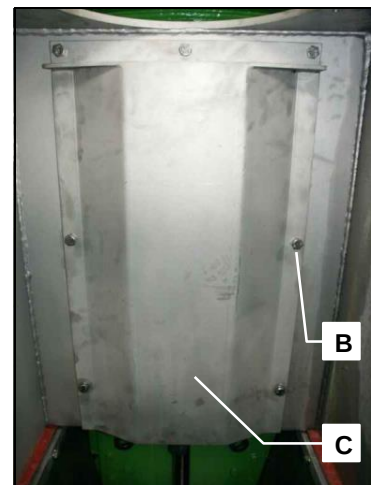
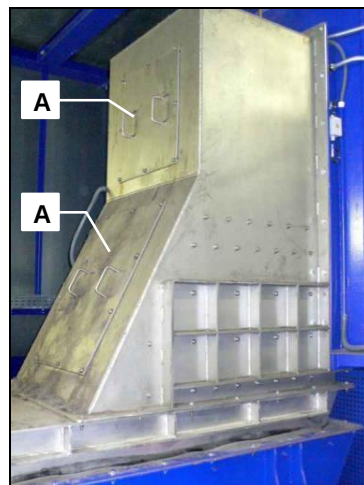
1. Unscrew and remove the cap with dust filter on the oil filler neck.
2. Use a pump to pump new oil from an available container through a filter unit into the hydraulic oil reservoir (use a can only for adding small quantities of oil).
Attention! Do not overfill. Only fill up to the 80% mark in the sight glass of the oil reservoir.
3. Replace the cover with dust filter and screw it tight.

7.11 Hydraulic assemblies

7.11.1 Lubricating the hydraulic cylinder joint eyes (for slide ejection device)

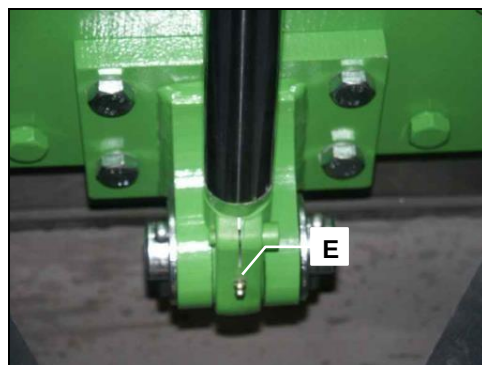
Maintenance interval:	Every two weeks and as required
Personnel:	Users

Please also follow the safety instructions in Chapter 7.7.1, Measures for your safety.



Procedure:

1. Shut down the machine and conveyors properly (see Chapter 5.6, Shutting down the machine).
2. Unscrew and remove the service covers (A) of the ejection hood.
3. Only for machines with cladding plate:
Undo the screw fastening (B) and remove the cover plate (C).



4. Grease on the grease nipples (**D** and **E**) by hand using a grease gun as specified in the lubrication schedule (see Chapter 7.2.1 Lubrication schedule).

Factory-prescribed grease:

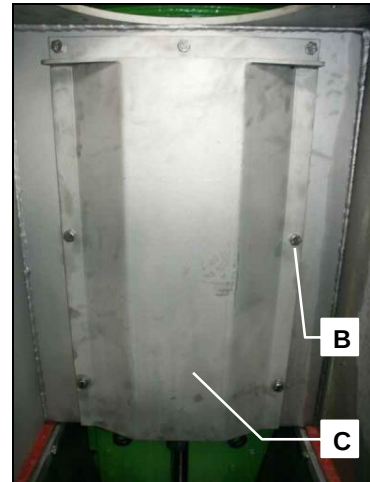
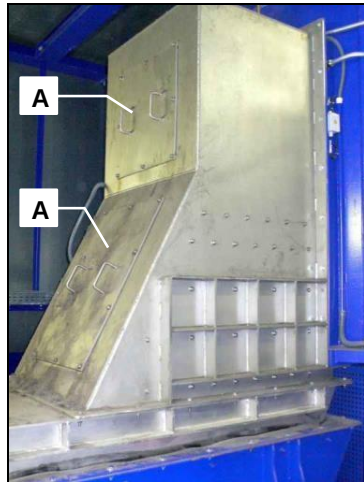
Mobilux EP 2

5. Only for machines with cladding plate: Replace the cover plate and screw tight.
6. Fit the service covers of the ejector hood and screw tight.

7.11.2 Cleaning/lubricating slide guides (for ejector slide)

Maintenance interval:	Weekly
Personnel:	Users

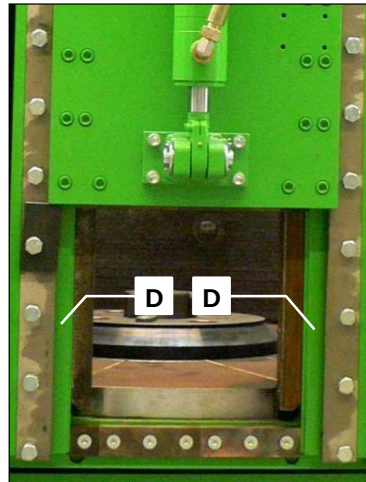
Please also follow the safety instructions in Chapter 7.7.1, Measures for your safety.



Procedure:



1. Open the service door (see Chapter 7.6.1 Opening the machine service door).
2. Shut down the machine and conveyors properly (see Chapter 5.6, "Shutting down the machine").
3. **WARNING!** Risk of injury from falling slider: Fix the fully open slider with a suitable support (e.g., wooden plank).
4. Unscrew and remove the service covers (A) of the ejection hood.
5. Only for machines with cladding plate:
Undo the screw fastening (B) and remove the cover plate (C).
6. Clean the work area, including the ejector hood, with a broom or similar.



7. Remove any adhering material from the slide guides (**D**) on both sides and clean thoroughly with paper towels.
8. Check the sliding surfaces for damage (e.g., scoring).
9. Grind out and smooth any damage with material discharge.
10. Spray both sides of the slide guides (**D**) generously with Teflon spray.
11. Remove the slider support.
12. Only for machines with cladding plate: Replace the cover plate and screw tight.
13. Fit the service covers of the ejector hood and screw tight.
14. Once maintenance work has been completed, remove all tools and consumables from the work area.
15. Close the service door (see Chapter 7.6.2, Closing the machine service door).

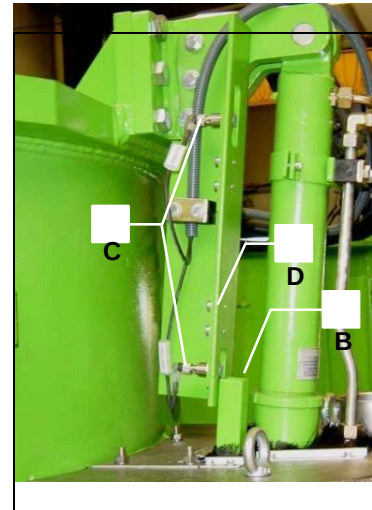
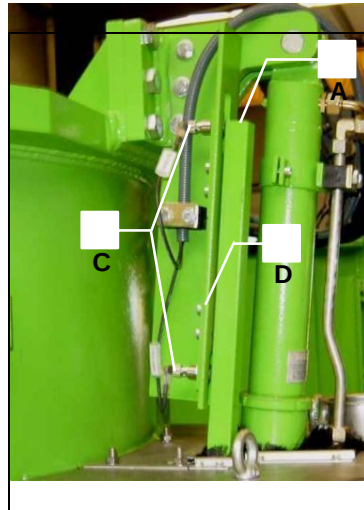
! WARNING

Changing the slider guides involves risk of injury and may cause damage to the machine.

- The changing of the valve guides is reserved for the supplier's specialist personnel and should not be carried out without consultation.

7.11.3 Checking/adjusting the hydraulic cylinder with external position measuring system

Maintenance interval:	As required
Personnel:	Users



Only for hydraulic cylinders with external position measuring system:

The cylinder stroke and the position when the cylinder is retracted (**A**) and extended (**B**) are monitored and set by sensors (**C**) (e.g., with hydraulic ejector slide valves).

Proceed as follows to check the switching distance:

1. Switch the machine to maintenance mode.
2. Measure the distance between the sensors (**C**) and the switching lug with the hydraulic cylinder retracted (**A**) and extended (**B**). If the switching distance is > 8 mm, use the nut and lock nut to set the sensors to approx. 8 mm.

To adjust the position, proceed as follows:

1. Shut down the machine and conveyors properly (see Chapter 5.6, Shutting down the machine).
2. Adjust the position of the sensors (**C**) using the nut and lock nut in the slotted hole holder.
or
 Adjust the position of the sensor holder using the fastening screws (**D**) in the slotted hole holder.
3. Collision control: Check the switching distance of the sensors – **Attention!**
 Risk of damage!

7.12 Central lubrication system (optional equipment)

7.12.1 Checking/maintaining the central lubrication system

Maintenance interval:	Weekly
Personnel:	Users

The central bearing unit of the acceleration elements and the bearing units of the drive are lubricated automatically by the central lubrication system. All other lubrication points must be lubricated by hand.

Check the central lubrication system:

- That there is enough grease in the reservoir.
- That the supply lines to the lubrication points are not damaged or blocked.
- That the lubrication is working properly.



The lubricant pump (A) delivers grease in specific ratios from the reservoir (B) via the progressive distributor (C) to the individual lubrication points.

The dosing of the lubricant quantity is set via the number of cycles and the pause times of the lubricant pump. Consumption and setting values can be found in the lubrication schedule. The settings are always made by the supplier's specialist personnel and should not be changed without consultation.

Even with automatic central lubrication, make sure that sufficient grease reaches the machine bearings.

If the grease consumption does not correspond to the quantities specified in the lubrication schedule, the function and setting of the central lubrication system must be checked.

If a lubrication line is damaged and grease escapes to the outside, the electronic monitoring system cannot detect this. It is then not ensured that all lubrication points are supplied with sufficient grease. Bearing damage may occur. Replace defective lubrication lines immediately.

7.12.2 Filling the central lubrication system

Maintenance interval:	As required
Personnel:	Users

WARNING!

–

WARNING



Danger from electric shock and moving parts.

Contact with live parts can lead to serious injury or even death.

- Before carrying out maintenance work, shut down the machine properly (see Chapter 5.6, Shutting down the machine)

INFORMATION

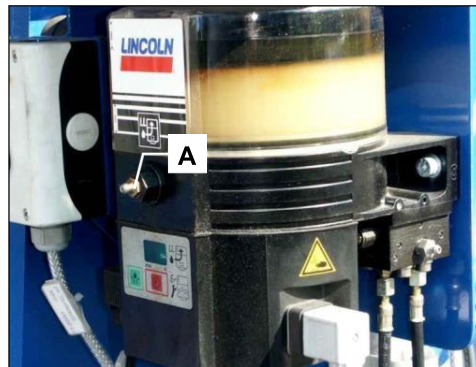
Fill the lubricant reservoir in good time.

Otherwise the lubricant pump will suck in air and must then be bled.

Only use clean, factory-prescribed grease. Dirt particles can destroy the pump elements.

Factory-prescribed grease:

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Only fill the system through the grease nipple (A) on the filler neck.

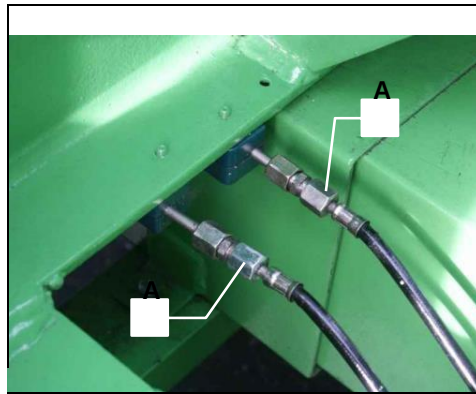
7.12.3 Venting the central lubrication system

Maintenance interval:	As required
Personnel:	Users

If the lubricant reservoir has run empty or has not been refilled in good time, the lubricant pump will draw in air.

The cause of the fault must be rectified immediately. Otherwise there is a risk of **bearing damage**.

After filling the reservoir, the supply lines to the bearings must be vented as follows:



1. Switch the machine to maintenance mode.
2. Unscrew all supply lines (A) before accessing the bearings.
3. With the lubricant pump running (agitator in the lubricant container must be rotating), actuate the pump operating switch (B) until bubble-free grease emerges from the supply lines.
4. Reconnect all supply lines to the bearings.
5. Manually trigger and run through the lubrication cycle ten times.

7.12.4 Cleaning clogged pipes

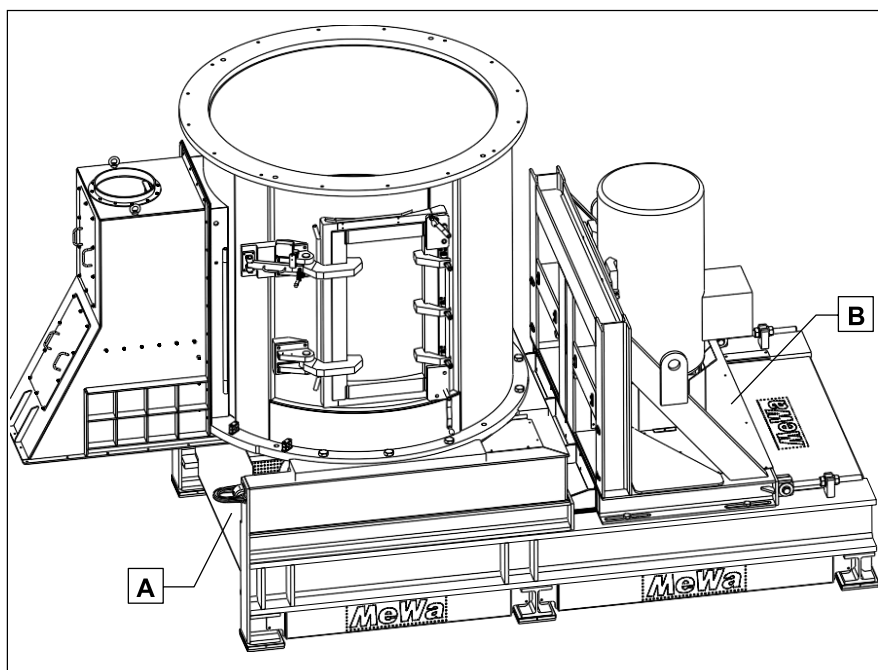
Maintenance interval:	As required
Personnel:	Users

If a lubrication line is clogged, the lubricant pump will switch off. The entire delivery of grease will then be interrupted. The limit switch on the progressive distributor will inform the control unit of the failure.

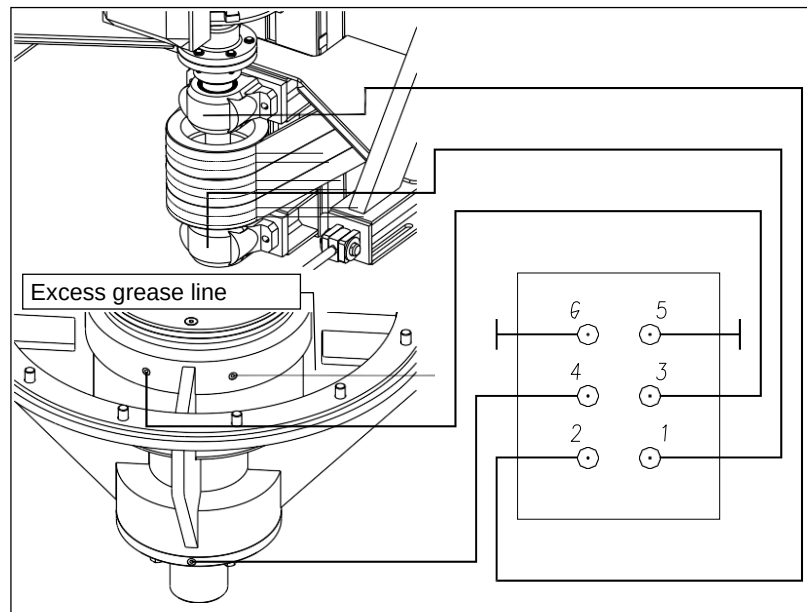
ATTENTION! The cause of the fault must be rectified immediately. Otherwise there is a risk of bearing damage.

Procedure:

1. Shut down the machine and conveyors properly (see Chapter 5.6, Shutting down the machine).



2. Unscrew and remove the V-belt guard cover plates on the base frame (A), on the motor console (B), or unscrew and remove the complete V-belt guard.



3. Unscrew all supply lines (**1 to 6** – if present) both directly at the bearings and at the progressive distributor.
4. Blow through the supply lines with compressed air.
5. Reconnect the supply lines to the progressive distributor.
6. Switch the machine to maintenance mode.



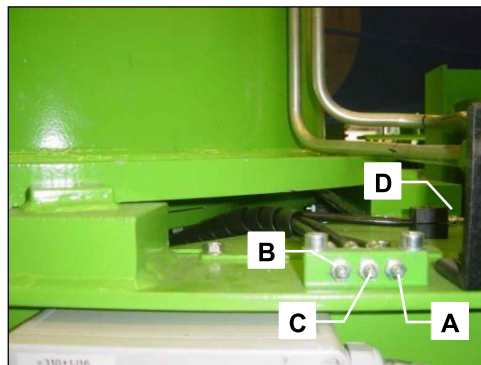
7. With the lubricant pump running (agitator in the lubricant tank must be rotating), actuate the pump operating switch (**C**) until bubble-free grease emerges from the supply lines.
8. Shut down the machine properly (see Chapter 5.6, "Shutting down the machine").
9. Reconnect all supply lines to the bearings.
10. Screw the V-belt guard cover plates or the complete V-belt guard back in place.

7.13 Lubrication of the machine

7.13.1 Lubrication of machine bearings

Maintenance interval:	Daily
Personnel:	Users

The machine bearings must always be well lubricated to ensure safe and reliable operation. The grease filling in the bearings protects against the ingress of dirt and thus against premature wear or damage. The bearings are always lubricated while the machine is running.



Press the grease into the grease nipples by hand using a grease gun as specified in the lubrication schedule (see Chapter 7.2.1, Lubrication schedule):

- For the upper bearing (A) (red grease nipple),
- Lower bearing (B) (yellow grease nipple),
- Seal (C) (blue grease nipple).

The specified lubricant quantities must be adhered to in all cases. Excess or used grease can escape via the excess grease line (D).

INFORMATION

Only use clean, factory-prescribed grease. Dirt particles can cause damage to the bearings.

Factory-prescribed grease:

Mobilux EP 2

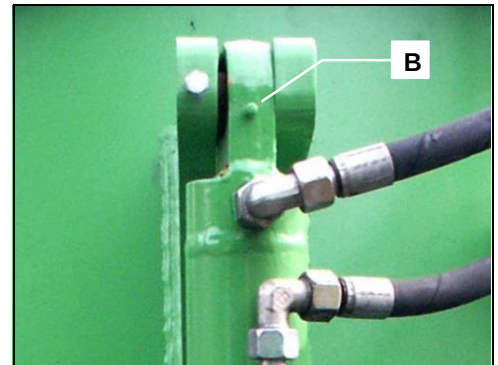
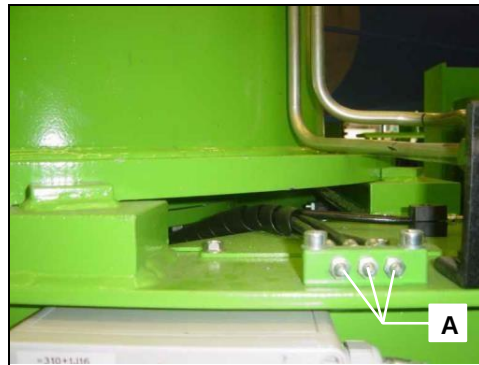
For automatic lubrication of the central bearing unit and the bearing units on the drive, the machine can be equipped with a central lubrication system (optional equipment).

7.13.2 Other lubrication points

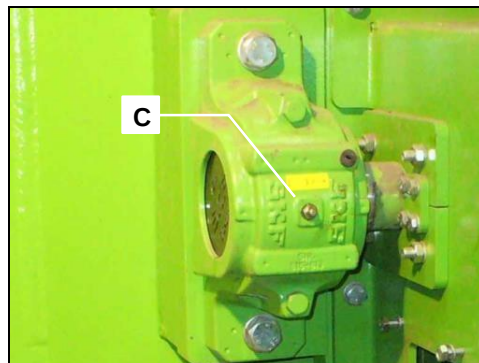
Maintenance interval:	Every two weeks and as required
Personnel:	Users

Lubrication points should generally be lubricated regularly by hand using a grease gun. The details can be found in the lubrication schedule (see Chapter 7.2.1, Lubrication schedule).

WARNING! If grease nipples can be reached without opening flaps or removing safety covers (e.g. **A**), it is not necessary to shut down the machine. Otherwise, shut down the machine properly (see Chapter 5.6, Shutting down the machine).



Greasing must be performed via the grease nipples of the hydraulic cylinders (**B**) and bearings (**C**) of the hydraulic feed and ejector as well as on the hinges, bearings and hinge eyes of the service flaps and service door.



When lubricating motors (**D**), the relevant manufacturer's operating instructions (see appendix) must also be followed.

8 Decommissioning, storage and disposal

8.1 Storing the machine

WARNING



There is an increased risk of injury when performing work for storing the machine because the work is carried out with the machine open.

The machine may only be decommissioned by trained specialist personnel in compliance with the safety regulations.

- Be sure to follow the procedures in the chapters referred to below.

8.1.1 Necessary measures

The following points must be observed for longer storage periods:

- If possible, store the machine in a dry room.
- Do not expose the machine to extreme cold or heat.
- Secure the machine and/or individual components against tipping over, falling over and starting to move automatically.
- Cover the machine and all components with suitable tarpaulins of adequate size.

If storage is only possible outdoors, ensure that the machine and most importantly the electrical fittings are especially well protected against the weather and external conditions.

To prevent drives and bearings from seizing, the machine should be put into operation briefly at quarterly intervals. If this is not possible, move the drive motor a few revolutions by hand **with the machine switched off and disconnected from the mains at all poles**. This is done by loosening the cover cap of the drive motor and carefully turning the motor shaft on the fan wheel. Alternatively, the impact head can also be moved a few revolutions using the acceleration elements.

Before storing the machine, clean it thoroughly, protect it against corrosion and apply plenty of grease to all bearing points.

In addition, the work area (service door, hydraulic ejector, impact head, etc.) must be sprayed with a preservative oil (e.g. Tectyl oil).

⚠ DANGER

Risk of death from electrical current and other energy sources.

The machine may only be dismantled by qualified personnel in compliance with the safety regulations.

- Shut down the machine properly before storing.
- Please also follow the safety instructions in Chapter 7.7.1, Measures for your safety.

Procedure:

1. Open the service door (see Chapter 7.6.1, Opening the machine service door).
2. Shut down the machine and conveyors properly (see Chapter 5.6, "Shutting down the machine").
3. Fix the fully opened hydraulic ejector in place with a suitable support (e.g., wooden plank).
4. Open the service covers of the assemblies (e.g., ejector hood, shaft extension). Alternatively, the assemblies can also be dismantled and lifted off using sufficiently strong lifting gear or a forklift truck.
5. Clean the machine completely. To do this, remove the cladding panels if necessary.
6. Spray all areas of the work area (service door, hydraulic ejector, impact head, etc.) generously from top to bottom with preservative oil – especially all bare areas, flange and sliding surfaces that can oxidize during a longer storage period.
7. If necessary, close the machine again in reverse order. Refit the cladding panels.
8. Then disconnect the machine from any external power supply. Depressurize pressurized systems (hydraulics, pneumatics, etc.).
9. Disconnect all supply lines for necessary operating media. If the machine has water pipes for recooling systems, spraying systems, etc., these must be drained completely. If this is not possible, a frost-free storage room is required.
10. Depending on the design of the machine, shielding gas system, fire extinguishing system, etc. (optional equipment), shut down and store (see manufacturer's operating instructions).

8.1.2 Notes on liability

Warranty claims expire in the event of improper storage or uninterrupted machine downtime of longer than 3 months.

8.2 Decommissioning, disassembly and disposal

If the machine actually reaches the point of final decommissioning one day, the points listed below for decommissioning the machine must be followed in particular. These can be divided into:

- The organizational support of the decommissioning.
- Disassembly of the machine.
- The disposal of the waste groups.

8.2.1 Organizational support for decommissioning

The decommissioning of the machine must be carried out by qualified and experienced specialist personnel (e.g. by specially trained employees of the operator, by qualified engineering offices, by specialist companies for demolition work or by the supplier).

When decommissioning, the country-specific environmental and waste disposal laws applicable at the time of decommissioning must be observed. Transport permits, proof of disposal, etc. must be coordinated with the responsible authorities and submitted.

8.2.2 Disassembling the machine

The following points must be observed when disassembling the machine:

- **DANGER!** The work may only be carried out by qualified specialist personnel (e.g. trained electricians, instructed fitters).
- When carrying out the work, the same safety and warning instructions apply as for the installation and maintenance of the machine.
- The entire machine, including the interior of the machine, must be carefully cleaned before starting disassembly (see Chapter 7.7, Working in the work area of the machine).
- The machine is disassembled in the reverse order of assembly. Adjacent feed and discharge equipment must be dismantled first.
- The machine must then be returned to its basic condition by dismantling special equipment, such as the soundproof cabin, shielding gas equipment, extinguishing system, cooling system, etc. In particular, the relevant chapters and the hazard and safety instructions in the operating instructions of the relevant supplier must be followed.
- All components of the machine intended for dismantling/disassembly, in particular the interior, must be inspected before disassembly begins and classified into applicable waste categories.
- The electrical components (sensors, switches, central lubrication, motors, etc.) and their cabling obtained by dismantling/disassembling the machine must be collected separately.

8.2.3 Disposal of the waste groups

Protect the environment!

In disposing of waste, the waste groups must be adhered to:

- All substances and auxiliary media produced during operation, maintenance, cleaning and disassembling, such as coolants, waste water, gases, greases, oils, etc., must be disposed of properly and in accordance with the applicable environmental regulations (see safety data sheets or equivalent data sheets).
- All electrical components (sensors, switches, motors, etc.) and their cabling must be recycled separately in accordance with the applicable national environmental and waste disposal laws.
- The components of the machine that have been divided into waste categories and dismantled must be transported, recycled or disposed of in accordance with the country-specific environmental and waste disposal laws applicable at the time of decommissioning.

9 Spare parts ordering and service address

We recommend that you use original spare and wear parts for the entire service life of your **MeWa** universal cross-flow shredder UNI-CUT® QZ – even after the warranty period has expired.

Only the original spare and wear parts approved by us have been tested for long service life and high performance. They always satisfy the necessary prerequisites for the safe, efficient operation of our machines.

Warranty claims can only be made for original spare parts.

For information on spare parts, please refer to the spare parts lists in the appendix and the operating instructions of the manufacturers of individual components.

Rapid identification of spare parts will ensure that your order is processed quickly and smoothly. Therefore, please always include the following information with your order:

1. **Machine type** (see type plate)
2. **Serial number of the machine** (see type plate)
3. **Article no. of the spare part** (see spare parts lists in the appendix)
4. **Designation of the spare part** (see spare parts lists in the appendix)
5. **Desired quantity**

Please state these details exactly when ordering in writing or have them ready before calling if ordering by telephone.

Order address:

MeWa Recycling

Maschinen und Anlagenbau GmbH
Gültlinger Str. 3
D-75391 Gechingen

Tel.: +49 7056 925-170/192
Fax: +49 7056 925-179
E-Mail: info@MeWa-recycling.de

Please note the different fax number.

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Dimension sheet of the machine

Spare parts lists

Spare parts lists with the corresponding spare parts drawings can be found on the following pages.

Drive motor operating instructions

Operating instructions for centralized lubrication system

Hydraulics operating instructions/parts list

Operating instructions for the impact head/extractor

Pulley operating instructions

Service life of acceleration elements

Denios drip tray