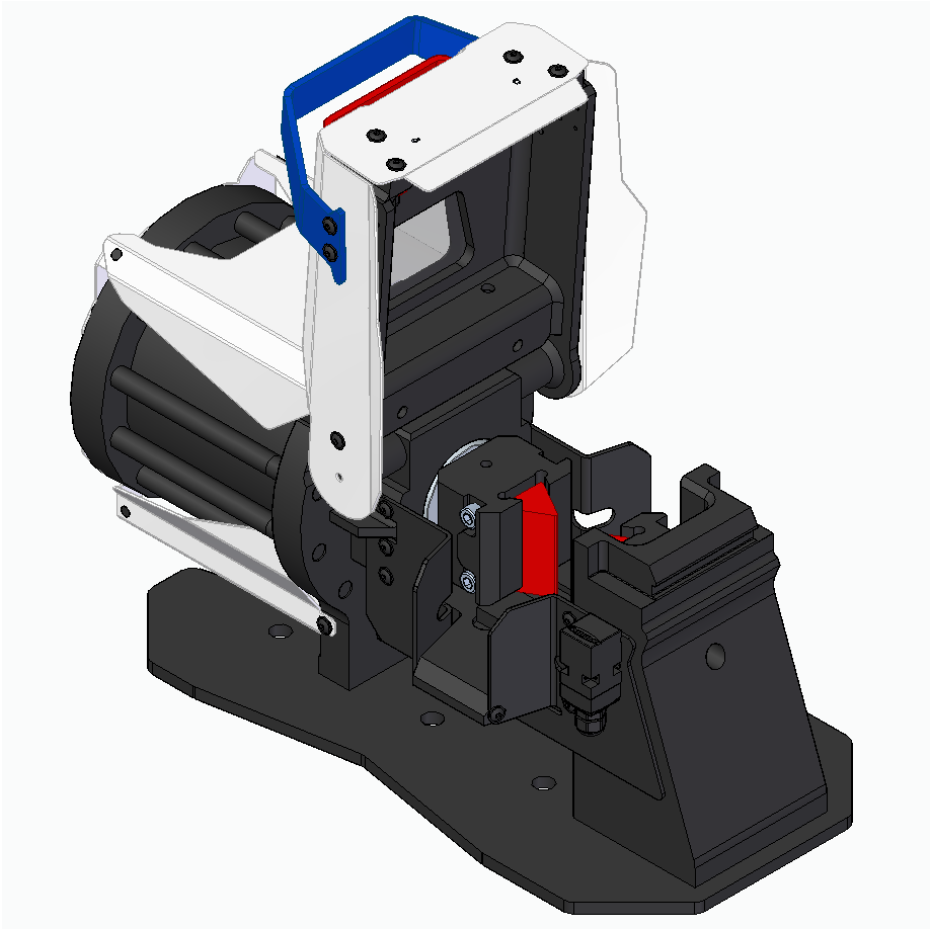
May 2023

Translation of the original operating manual

pewag chain cutter PKS300



Imprint

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Update:

These instructions are subject to change without notice and do not represent a contractual commitment on the part of pewag engineering GmbH.

Issue Date: **25.05.23**

CE

General

Identification data

Type of machine:	Hydraulic chain cutter
Model name:	PKS300
Maschinen-Type:	6059985 – mobile Version – EU 6059329 – stationary Version – EU
Serial number:	
Order number:	
Year of manufacture:	2023
Creation date / version	**25.05.23/ V3**

Customer entries

Inventory number:

Location:

Manufacturer address

Company name:	*pewag engineering GmbH*
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1 General

1.1 Purpose of the documentation

The documentation supplied is intended to enable you to use the machine

- to be able to operate it safely. Pay particular attention to the notes on hazards.
- to be able to use it in all permissible applications.
- to be able to perform routine maintenance.

Read the operating instructions completely before using this product. Be sure to observe the sections on safety and assembly. This product is intended for cutting chains in compliance with these operating instructions and the relevant national regulations. You may only use this product if you have read and understood all contents.

1.2 General information

The highlighted sections in this operating manual contain information on areas with a particularly high-risk potential. Disregarding this information may cause serious injuries or death. Please pay particular attention to these sections.

The descriptions, drawings, examples and photographs contained in the operating instructions are only examples of the chain cutters' system described here and may differ slightly from the actual final condition in some cases.

These operating instructions provide the prerequisites for correct operation and maintenance of the machine.

NOTICE

The operating instructions contain information, warnings and tips that enable correct and rational operation of the machine in order to achieve long-term reliability and best conditions for use.

For proper and safe operation of the machine, the operator must follow the operating instructions exactly and comply with them.

The operating instructions are an integral part of the machine. Therefore, you must keep it intact and safe during the entire operating time of the machine. The storage location must be known and freely accessible to all operators of the machine.

DANGER

Failure to comply with the instructions in this manual can cause damage to the personnel!

1.3 Storage of the documentation

Keep these instructions in a safe place that is easily accessible for the persons involved (machine operators, maintenance personnel, ...).

Keep these instructions until the machine is decommissioned. Pass them on to subsequent owners. This document is an essential part of the machine.

If the manual is lost, destroyed or in poor condition, request a copy from the manufacturer, quoting the document number and issue/revision.

1.4 Liability

pewag engineering GmbH assumes no liability if:

- the machine is used for tasks other than those for which it is intended.
- damage is caused by improper operation.
- damage is caused by insufficient or improper maintenance.
- original spare parts not approved by pewag engineering GmbH are used.
- non-approved or non-regulatory modifications and maintenance work (without prior consultation with pewag engineering GmbH) are carried out.

1.5 Warranty

pewag engineering GmbH grants one year warranty from the date of delivery.

pewag engineering GmbH does not assume any liability for damages in case of:

- the machine is used for tasks other than those for which it is intended
- damage is caused by improper operation
- damage is caused by insufficient or improper maintenance on the machine
- original spare parts not approved by pewag engineering GmbH are used
- non-approved or non-regulatory modifications and maintenance work (without prior consultation with pewag engineering GmbH) are carried out
- damage is caused by documents that are not kept up to date
- unsuitable equipment is used by the operator
- defective construction work
- unsuitable building ground
- damage caused by chemical, electrochemical, electrical influences

2 SAFETY

NOTICE

Obligation to inform all persons who may be in the effective range of the system.

As the operator of the machine, you are responsible for ensuring that all persons concerned have read and understood this chapter.

Your safety - as a machine operator or maintenance technician - is paramount!

Situations, problems or malfunctions occurring at the machine may pose a safety risk if you are not aware of measures to avoid and avert possible hazards.

This chapter

- specifies the intended use of the equipment.
- contains generally applicable safety instructions and safety regulations that must be observed.
- explains the meaning of symbols and pictograms used in this manual and in the labelling of the equipment.
- shows the arrangement of the safety and monitoring equipment on the machine.
- provides information on the required protective equipment and which requirements apply to the operating and maintenance personnel.
- provides information on dangers and residual risks that may occur even if the equipment is used as intended.

Special, action- or situation-related safety instructions are listed for the individual work steps in the following chapters of these instructions.

State of the art

The machine corresponds to the state of the art at the time of delivery and is built in accordance with recognized safety regulations.

The standards considered for the design are cited in the Declaration of Conformity (CE).

Nevertheless, dangers can arise from the system if the safety instructions in this manual are not followed and implemented.

2.1 Symbols

The following designations and symbols for hazards are used in the operating instructions:

DANGER This symbol indicates an imminent danger to the life and health of persons. Failure to observe these instructions will result in severe adverse health effects, including life-threatening injuries.

WARNING This symbol indicates a possible imminent danger to the life and health of persons. Failure to observe these instructions may result in severe adverse health effects, including life-threatening injuries.

CAUTION This symbol indicates a potentially dangerous situation. Failure to follow these instructions may result in minor injuries or damage to property.

NOTICE This symbol provides important information on the proper handling of the machine. Failure to observe these instructions can lead to malfunctions of the machine or its environment.

2.2 Intended use

NOTICE

Using the system the way it was intended is a basic requirement for safe operation.

Any use beyond the intended use or any other use is considered misuse.

These instructions refer to PKS300 chain cutter. These consist of the cutting unit, the hydraulic supply unit, the electrical supply unit and, in the mobile version, also the chassis. Optionally, the stationary version can be equipped with a slanted mounting, which places the machine at an angle. The PKS300 is designed for the safe cutting of chains. Any other use is prohibited. The insertion of the chain is done manually by the operator and only possible by manual operation. For information on the materials to be processed, see chapter 4.2.

NOTICE

Intended use also includes:

- the observance of all safety regulations and instructions in this operating manual.
- compliance with inspection and maintenance work by qualified and authorized personnel.
- the exclusive use of original parts.
- the use of operating materials and auxiliary materials which have been approved by the manufacturer.

2.2.1 Environmental conditions

Site: covered location

Air temperature operation: room temperature ~21°C

Air temperature storage: room temperature ~21°C

Operating relative humidity: 65%, non-condensing

NOTICE

Only operate or store the system under the ambient conditions and temperatures specified above. Operation or storage deviating from these conditions may cause damage to the system and result in unforeseeable hazards.

Only use the machine for its intended purpose and only if it is in perfect working order.

This is the only way to ensure the operational safety of the machine.

2.2.2 Application area

This machine is intended for industrial use. These operating instructions are intended for all users (operators) as well as for qualified personnel for maintenance and servicing.

2.2.3 Possible misapplications

Any use other than that specified under "Intended use" or which goes beyond that use is prohibited!

For damage resulting from improper use:

- the operator bears sole responsibility.
- the manufacturer assumes no liability whatsoever.

Any unintended use of the equipment

- may cause danger to life and limb of the operators or third parties.
- can cause damage to the equipment itself and other property.
- leads to the loss of warranty claims.

Possible misapplications for which the manufacturer accepts no liability:

- Non-compliance with the operating instructions.
- Operating the machine without the protective device provided.
- Performance of maintenance or repair work on the machine without it being disconnected from the power source.
- Restart after maintenance/repair without protective measures.
- Placing objects on the work surface.
- Non-compliance with the permissible parameters for the processing of the respective material.
- Installation of spare parts and use of accessories and equipment not approved by the manufacturer.
- Machine rebuilt or otherwise modified in any way without the manufacturer's approval.
- Non-compliance with the maintenance instructions.
- Non-observance of wear and damage marks.
- Service work by untrained or unauthorized personnel.
- Operating the machine although the instructions for use are incomplete or not available in the national language.
- Deliberate or careless handling of the machine during operation.
- Bypassing or modifying the protective device.
- All warning signs and notices must not be removed or covered. These must always be clearly visible and legible.

2.3 Safety-relevant ambient conditions

WARNING

- **You must prevent persons from entering the danger zone (**Figure 1**).**
- **You must observe accident prevention regulations.**
- **You must observe maintenance intervals.**
- **You must keep the floor clean, dry and free of oil to minimize slipping hazards.**
- **You are only allowed to operate the machine when all protective devices and safety-related equipment, e.g. EMERGENCY STOP device, are present and functional.**
- **You must check the machine for externally visible damage and defects at least once a week.**
- **You must observe the switch-on and switch-off procedures as well as control displays according to the operating instructions.**
- **In the event of malfunctions or unusual occurrences, you must shut down the machine immediately, and must inform the responsible supervisor and you must rectified malfunctions immediately.**
- **Avoid any method of operation which impairs the operational safety of the machine.**
- **Do not place objects in and on the machine**

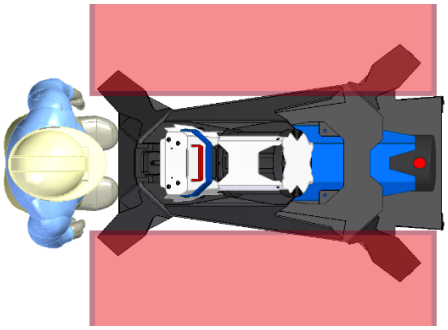

Figure 1 Danger area marked in red

2.4 Safety and protective devices

The machine is equipped with the following safety devices. The realization takes place in a separate safety control. The safety devices are shown in Figure 2:

- Main switch (1): When the main switch is actuated, the cutting process is interrupted and the cylinder responsible for bringing the knives together stops in the last position.
- Safety cover (2): Designed as a separating safety device with a locking mechanism. You only can start the cutting process when the safety cover is closed. This is ensured by sensors. If you open the cover during cutting, the cutting process is stopped. The inspection window (3) is made of safety glass, which does not shatter in case of breakage. Replace it immediately if it is broken.

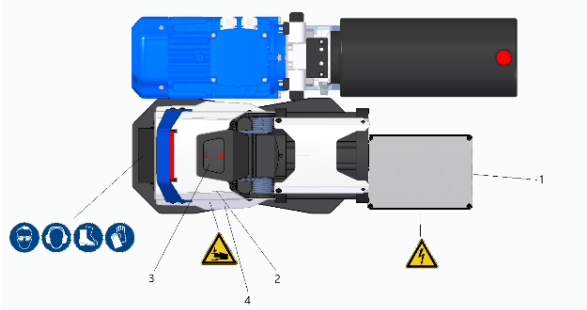

Figure 2 Safety layout

2.4.1 Machine labelling

Warning signs are mounted on the machine to warn of residual risks that cannot be eliminated by design. The positions of these safety labels are shown in Figure 2.

Label	Meaning
	Warning of dangerous electrical voltage!
	Warning against hand injuries!
	Wear hearing protection!
	Wear safety goggles!
	Wear safety shoes!
	Wear safety gloves!
	Read the manual and the operating instructions before start-up. Observe the safety instructions.

NOTICE

Observe all warnings and safety instructions shown on the machine! Check the proper installation of all warning, prohibition and instruction signs. Replace signs that are damaged or no longer recognizable.

The type plate (4) (Figure 3) for identifying the system is located on the chain cutter (Figure 2).

CE marking

Indicates conformity with applicable EU Directives concerning the product and requiring CE marking.

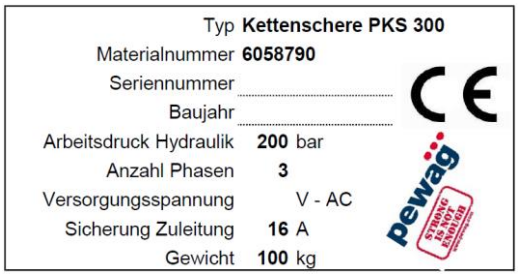

Figure 3 Type plate

2.5 Information on residual risks

DANGER

- **Risk of injury from sharp corners, edges and sharp-edged materials.** Wear protective gloves.
- **Sources of slipping and tripping in the vicinity of the system due to dirt and scattered objects.** Always keep the work area clean!
- **Reaching into the chain infeed and outfeed (**Figure 4**) is prohibited.** Do not hold the chain in the area of the chain infeed and outfeed during cutting.
- **The protective cover is mounted to rotate above the cutting knives. To prevent it from closing when open, a torsion spring has been installed to keep the cover open.** Take care during the opening process to avoid a bent-over position and maintain the working position as shown in Figure 15.

DANGER

- **Danger of crushing when closing the lid.** When closing the lid, make sure that no body parts are present within the closing area of the machine.
- **Danger of falling parts and crushing during transport.** When transporting and assembling the machine, make sure that the center of gravity of the machine is taken into account. Secure moving parts.

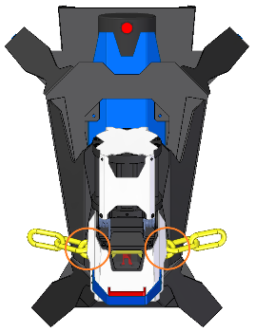

Figure 4: Marking of the chain infeed and outfeed

2.6 Area of responsibility

2.6.1 Area of responsibility of the operator

The operator shall only let persons work with the system who:

- are familiar with the basic regulations on occupational safety and accident prevention,
- are physically and mentally suitable,
- are not under the influence of alcohol, drugs or medication,
- have the appropriate competence and qualifications,
- have received training in how to use the system,
- have read and understood these operating instructions.

The requirements of the EC Directive on the use of work equipment 2007/30/EC must be complied with.

The operator or a person authorized by him shall:

- secure the hazardous area of the machine against unauthorized entry,
- instruct the operators,
- clearly define the competencies and responsibilities of the operating and maintenance personnel for the system,
- provide the necessary personal protective equipment to the operating and maintenance personnel,
- monitor the safety awareness of the personnel at regular intervals,
- be responsible for the proper safety condition of the equipment,
- immediately take the machine out of operation if defects occur which could impair safety,
- perform the nationally required inspections in addition to the machine inspections prescribed by pewag engineering GmbH on schedule,
- verify proper performance of required and prescribed inspections and periodic tests,
- ensure that the machine is maintained on schedule,
- ensure that information and warning signs attached to the installation are legible and recognizable and replace missing or damaged signs if necessary,
- report to the manufacturer any accident involving the equipment that results in serious injury or major property damage,
- carefully and conscientiously carry out operational planning for the system,
- take fire safety precautions,
- provide suitable and easily accessible fire extinguishers,
- create an emergency plan,
- ensure that the foundation of the machine is designed according to the requirements for size, load capacity and stability. In addition, the foundation must comply with national and regional requirements, such as water pollution control, etc.

2.6.2 Area of responsibility of the staff

All persons assigned to work on the system shall commit to the following prior to starting work:

- to observe the basic regulations on occupational safety and accident prevention,
- to read and observe the safety chapter and the safety instructions in these operating instructions,
- to equip themselves with the personal protective equipment necessary for the operation and to wear it during the operation,
- to check the machine for obvious defects before each start-up,
- to operate the machine only in accordance with its intended use and in a safe manner,
- to operate the machines only in normal operating conditions with the specified technical values,
- to report any change to the machine that affects safety to the responsible supervisor or operator,
- to stop operation of the machine immediately if safe operation is no longer possible.

2.6.3 Information on personal protective equipment

The operator is responsible for ensuring that the protective equipment specified here is worn by the operating personnel:

- Hearing protection
- Safety shoes
- Protective gloves (cut-resistant)
- Safety goggles

Wear close-fitting protective work clothing and personal protective equipment adapted to the respective activity when operating or repairing the system.

You are responsible for

- wearing the required personal protective equipment,
- their regular cleaning and maintenance,
- the timely replacement of damaged and unusable components of the protective equipment.

2.7 SAFETY INSTRUCTIONS

Knowledge of the basic safety instructions and occupational health and safety regulations is a prerequisite for safe handling and trouble-free operation of the machine.

2.7.1 General safety instructions

NOTICE **Observe the following safety instructions:**

- Do not stand under suspended or lifted loads (unloading or loading the equipment. Etc.)!
- Make sure that there are no persons present in the vicinity of the system and/or its danger area.
- Do not insert any body parts or objects into the chain inlet.

DANGER **Risk of injury due to inadequate protective clothing during installation, maintenance and operation of the system!** Wear appropriate protective equipment!

Countermeasures:

Wear hearing protection against work noise and loud machine noises.

Wear protective goggles against eye injuries.

Wear safety shoes with steel insoles and treaded soles to prevent crushing and slipping.

Wear protective gloves to protect against injuries caused by sharp-edged parts.

DANGER **Danger to life and severe damage to the system due to unintentional starting and switching on of the system by unauthorized persons!**

- Switch off the control voltage and remove the key.
- Turn off the main switch.
- Secure the machine against unauthorized access.

DANGER **Danger to life due to residual energies.**

After shutting down the system in an emergency or after switching off the machine, there may still be residual electrical, mechanical and hydraulic energy in the system as well as pressure in cylinders, valves, pipes and lines.

In addition to the countermeasures described in these operating instructions, take appropriate countermeasures on the upstream systems.

All personnel must be informed about these risks and the countermeasures to be taken by the operator.

GEFAHR **Danger to life due to flammable hydraulic oil and lubricant!**

Hydraulic oil can be ignited in the area of the system as a result of processes and activities and cause a fire.

Take fire protection precautions and place fire extinguishers within easy reach in the machine area!

WARNING **Danger of burns and scalding due to hot hydraulic oil and hot surfaces!** Avoid any contact with hot surfaces**!**

WARNING **All hydraulic fluids and emulsions can pose hazards to people and the environment.**

Ensure that the safety and health and environmental protection measures required in the oil manufacturer's safety data sheet are implemented.

GEFAHR **Danger to life due to lightning!**

If the system is installed outdoors, there is a danger to life for persons in the vicinity of the system due to flashovers or dangerous step voltages during a lightning strike!

Do not stay near the system or larger metallic objects during a thunderstorm.

Do not operate the system under any circumstances after a lightning strike. Have the system checked by qualified personnel.

NOTICE **Lifting and transport work may only be carried out by trained and authorized specialist personnel.**

Check the load handling attachments (chains, ropes, etc.) for damage before use. Replace damaged load handling attachments**.**

DANGER **The carbide knives must not be reworked. Components may become contaminated with air when grinding hard metal. Grinding dust can cause irritation if it comes into contact with the skin or eyes. Repeated or long-term contact with dust containing cobalt may affect the skin, respiratory system and heart. Cutting tools and mounts may possibly break during use.** Always wear safety equipment and leave the protective devices on/at the machines**.** Disposal only by specialized companies.

2.7.2 Machine operation

NOTICE **The system may only be operated by appropriately trained personnel and requires precise knowledge of these operating instructions.**

WARNING **Make sure that no persons are in the danger zone of the system before switching it on.**

GEFAHR **Danger to life due to improperly installed protective devices!**

Only operate the system with fully assembled and functioning safety devices.

WARNING **After completing the maintenance work, close all protective devices or install them properly.**

NOTICE **For safety reasons, take the following measures in the event of a machine shutdown:**

- Switch off the main switch.
- Secure against unauthorized restarting.

GEFAHR **Danger to life due to defective system components and malfunctions.**

Do not continue to operate the system under any circumstances if defects or malfunctions occur.

Seek to rectify any defects and malfunctions that occur immediately or report them to pewag engineering GmbH**.**

NOTICE **Machine damage**!

If air has entered the hydraulic system during maintenance work on the system, it must not be operated.

The high compression of the air in the hydraulic oil causes burns in the oil, thus destroying the cylinder seals and the hydraulic oil.

DANGER **Risk of injury in the area of the chain inlet!**

Switch off the machine when working on the chain inlet**!**

WARNUNG **Risk of injury from cut chains!**

Cut chains may have sharp edges. Always wear safety gloves when working with the machine.

DANGER **Risk of injury from splinters in the cutting area!**

When cutting the chain, metal splinters occur in the cutting area and around the machine. Always wear safety gloves when working with the equipment.

WARNUNG **Risk of tripping due to inserted chain!**

At the side of the chain cutter, the inserted chain may cause a tripping hazard.

DANGER **Danger of crushing by holding the chain on the chain strand!**

Do not hold the chain strands directly next to the machine. The cutting process can cause a change in the position of the chain and thus your hands can be jammed between the chain and the chain cutter.

DANGER **Risk of death or injury in the hazardous areas of the machine!**

Entering the hazardous areas during machine operation is prohibited.

Unprotected hazardous areas are shown in Figure 1.

Stop the system immediately or switch off the system if a person enters or is present in the danger zone.

WARNUNG **Risk of crushing when closing the lid if parts of the body are present in the closing area.**

WARNUNG **In the mobile version, the chassis is mounted on casters with parking brakes.** Tighten them, provided that you do not move the cutter further. This prevents the machine from rolling away during use**.**

2.7.3 Maintenance and troubleshooting

WARNING **In case of simultaneous maintenance work on the equipment by several persons:**

- Designate a staff member responsible for safety.
- Ensure coordinated and secured communication between the persons involved.
- Before switching the system back on, check that all persons are outside the danger zone of the system.

NOTICE **Switch off the system before maintenance work and secure it against unintentional start-up.**

Any maintenance work on the system may only be carried out with the machine completely deactivated.

- Switch off the main switch and secure it with a lock.
- Keep the key with you until the work is completed.
- Secure the entire machine area against unauthorized access.

WARNING **Fire hazard due to welding, cutting and open flame activities!**

Report welding, cutting, and open flame activities on the system to your safety representative and do not begin work until all fire prevention measures have been taken.

Welding work may only be carried out by trained welding specialists!

2.7.4 Maintenance work on the hydraulic system

WARNING **Danger to life due to pressurized hydraulic oil!**

Jets of pressurized hydraulic oil can penetrate the skin. System parts can make unintentional movements, jump or bounce off.

Maintenance work on the hydraulic system may only be carried out by trained specialists with special knowledge of hydraulics.

- Wear the appropriate protective equipment for maintenance work - see chapter 2.6.3.
- Before starting work, relieve the pressure in the entire hydraulic system - see chapter 8.1.1.
- Before starting work, carry out important safety precautions - see chapter 8.1.
- Check the system pressure at the corresponding measuring connections before opening. The check is carried out by means of a pressure gauge. The system must be depressurized (0 bar).
- Take protective measures against pressurized, suddenly escaping hydraulic oil.

DANGER **Danger of burns and scalding due to hot hydraulic oil and hot surfaces!**

Before starting work, the components and the hydraulic oil must have cooled down to below +35°C.

Always wear protective clothing and gloves when working on hot parts**!**

DANGER **Danger to life due to faulty hydraulic hoses and piping.**

Jets of pressurized hydraulic oil can penetrate the skin. System parts can make unintentional movements, and can jump or bounce off.

Only check the system for leaks when it is switched off.

Correct any leaks detected by taking immediate professional action.

Immediately replace defective hydraulic hoses and pipelines with original parts. Hydraulic hoses must never be repaired. When replacing hydraulic hoses, only use tear-proof press fittings**.**

NOTICE **Have all hydraulic hoses inspected annually by a qualified specialist. The inspection intervals to be observed are governed by regional laws and regulations, if applicable**.

NOTICE **Before carrying out maintenance work on the entire hydraulic system, take precautions to prevent large quantities of oil or the entire contents of the hydraulic oil tank from leaking. Alternatively, the oil must be extracted - see chapter 8.1.**

Avoid hydraulic oil leakage as it is a hazard to persons and the environment.

Immediately bind leaked hydraulic oil and remove it properly from the machine area and from walkways!

NOTICE **Always use hydraulic oil of the same grade and specification.**

Never feed leaked hydraulic oil back into the hydraulic system.

Exception: After appropriate cleaning and inspection for impurities and oil quality by a laboratory.

Impurities in the hydraulic oil lead to malfunctions and damage to the system.

Dispose of used hydraulic oil properly.

2.7.5 Maintenance work on the electrical system

WARNING **The switch cabinet is screwed and may only be opened by pewag engineering GmbH.**
Maintenance work on the electrical system must not be carried out by the operator and must be reported directly to the manufacturer pewag engineering GmbH.

2.7.6 Environment

NOTICE **Severe environmental damage!**
When handling hydraulic oil and other substances hazardous to water, make sure that liquids hazardous to water do not get into the wastewater or soil.

Eliminate leaks in the system immediately.

Neutralize spilled oil immediately with a binder.

Observe the nationally applicable environmental protection regulations when disposing of the operating materials. In case of doubt, clarify the suitable disposal methods for the various operating materials with the responsible collection point.

When draining operating fluids, only use sufficiently large containers that are leak-proof and resistant to oil, fuel and chemicals.

Separate and dispose of all parts as well as auxiliary and operating materials of the system according to type and in accordance with local regulations and guidelines.

Electrical and hydraulic parts, especially filter elements are hazardous waste.

The carbide blades contain cobalt and must be disposed of separately. If you have any questions, please contact pewag engineering GmbH.

3 Transport, assembly and commissioning

Observe the safety regulations - see chapter 2.

3.1 Transportation

The chain cutter can be lifted by means of the supplied anchor point. Turn the anchor point down from the cutter, after the machine has been placed on the desired location. Otherwise it will interfere with the opening of the cover.

DANGER **Danger to life due to falling parts!**
Transport the chain cutter only with the supplied lifting points. Pay attention to the center of gravity of the load during transport!

Stationary version: approx. 180 kg

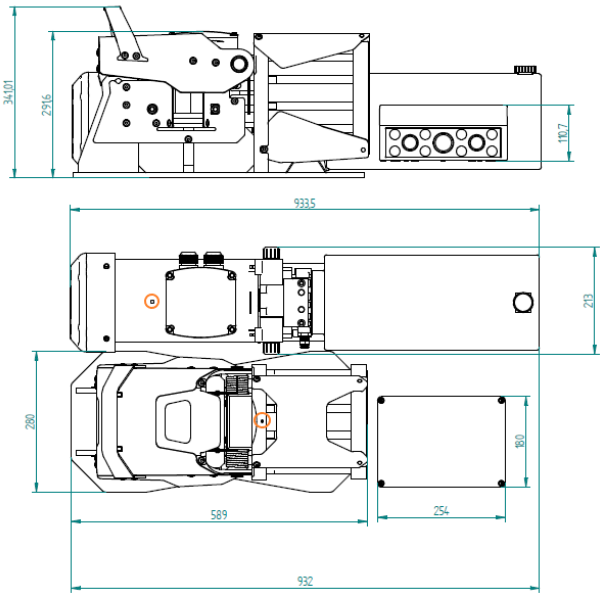

Figure 5 Dimensions of the stationary chain cutter, incl. attachment points marked in orange

The chain cutter is delivered with a hydraulic power unit and control cabinet connected in a wooden crate. The weight of the unit is approx. 180 kg without pallet and crate. The dimensions are shown in Figure 5. You can disconnect the hydraulic hoses connecting the chain cutter and hydraulic unit for easy transport. During transport, make sure that the components are not lifted by the hydraulic hoses. You must transport the control cabinet by hand. Make sure that the cables are not tensed and do not carry the load. The hoses and cables must not kink and rub.

WARNING **Do not transport the chain cutter by means of the hydraulic hoses or the cables. These can be broken in the process. Also make sure that they are not under tension and kinked!**

Mobile version: approx. 260 kg:

The mobile version is shown in Figure 7 and consists of a stationary unit including a chassis. The weight is approximately 260 kg. The chain cutter is delivered together with the supply units and the chassis. Lift the chassis by crane at the lifting point.

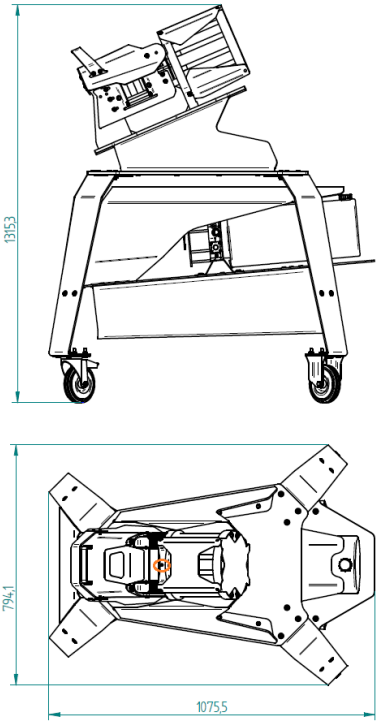

Figure 7: Dimensions of the mobile chain cutter, including attachment points marked in orange

3.2 Set-up, assembly and installation

Do not install the machine outdoors and protect it from moisture. Provide accessibility and ease of operation of the equipment.

The machine is delivered ready assembled.

Stationary chain cutter:

Mount the chain cutter on a non-tilting, solid and stable surface (e.g. workbench). This must be able to support at least the weight of the chain cutter as well as the chains to be cut. The hole pattern for fastening the chain cutter to the solid slanted mounting is shown in Figure 6. Tighten the screws (6x M16) to be used for this purpose. These screws are not supplied.

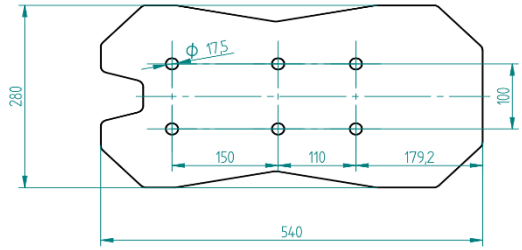

Figure 6: Borehole pattern of the slanted mounting plate

The supply unit must be placed near the cutting unit. Make sure that cables and hoses are not twisted, bent or under tension, as well as any friction is to be avoided. Furthermore, the supply unit must be positioned in such a way that the cutting operation is not impaired, the unit is protected from water and dirt and no safety risk can occur. It is recommended to install the unit directly under the cutting unit. The supply unit must be freely accessible for maintenance.

It is possible to mount the chain cutter on a slanted mounting that places the unit at an angle. This mounting may be ordered together with the cutter. If it is ordered with the cutter, it will already be mounted on the slanted mounting.

Mobile chain cutter:

Mount this version on a straight, solid and non-slip surface. Block the wheels.

3.3 Commissioning

3.3.1 Initial commissioning

You have to perform the following measures for initial commissioning:

- check proper installation,
- check fastening and connecting screws,
- perform inspection work according to the maintenance instructions,
- check hydraulic hoses,
- check proper power supply,
- check all electrical connections and contacts of the devices,
- fill in or check auxiliary and operating materials,
- check safety devices,
- switch on machine,
- perform test run.

NOTICE **Shortened maintenance and inspection intervals apply in the first month after startup. Perform these in addition to the normal maintenance work**.

The hydraulic oil is already in the system.

Switch on the chain cutter via the main switch after checking the machine for completeness and correctness. Before you cut the first chain, you need to run 2-3 cutting empty, so that the hydraulic oil is pumped into all hoses.

3.4 Recommissioning

Perform after a long-term storage the same work as for initial commissioning.

3.5 Decommissioning and disassembly

3.5.1 Decommissioning

Take shutdown measures if the equipment is not used for more than one day.

Short-term 1-7 days:	Switch off the machine, clean the cutting area, secure the machine against unintentional restart and close the protective cover.
Up to 3 months:	Measures as under "Short-term 1 - 7 days", in addition carry out the measures as before recommissioning.
Up to 12 months:	Measures as under "Up to 3 months", additionally flush the machine with fresh oil and fill it with new hydraulic oil before putting it back into operation.
Over 12 months:	Measures as under "Up to 12 months", additionally drain the hydraulic oil and operating fluids.

NOTICE

After a temporary shutdown, perform recommissioning measures - see chapter 3.3.

3.5.2 Disassembly

NOTICE

The machine may only be dismantled by technicians of pewag engineering GmbH or by trained and authorized technical personnel under the supervision of technicians of pewag engineering GmbH!

The hydraulic system contains substances hazardous to water and may only be dismantled by technicians of pewag engineering GmbH or an approved hydraulics specialist.

Perform the following steps before or during disassembly of the equipment:

- Move the system components to the corresponding disassembly position or to a safe position.
- Switch off the main switch and secure it against being switched on again.
- Depressurize the hydraulic system.
- Unplug the power supply cable to the control cabinet, roll it up and securely fasten it to the machine parts.
- Drain pipelines.
- Empty operating and auxiliary materials.
- Stationary version: detach chain cutter from the subsurface.
- Divide system into appropriate units for removal - see chapter 3.1.
- The transport of the equipment must be carried out by qualified personnel or specialized companies.

3.5.3 Recycling the machine

Dismantle system before removal - see chapter 3.5.2.

For transport - see chapter 3.1.

NOTICE

Eliminate leaks in the system immediately.

Neutralize spilled oil immediately with a binder.

Observe the nationally applicable environmental protection regulations when disposing of the operating materials. In case of doubt, clarify the suitable disposal methods for the various operating materials with the responsible collection point.

When draining operating fluids, only use sufficiently large (min. 11l) containers that are leak-proof and resistant to oil, fuel and chemicals.

Separate and dispose of all parts as well as auxiliary and operating materials of the system according to type and in accordance with local regulations and guidelines.

Electrical and hydraulic parts, especially filter elements, constitute hazardous waste.

4 General description of the machine

4.1 Machine structure

1 Chain cutter

2 Supply unit

3 Chassis

4 Substructure

In the following figures, the machine is shown in several views and the main components are described.

Figure 8: Mobile chain cutter

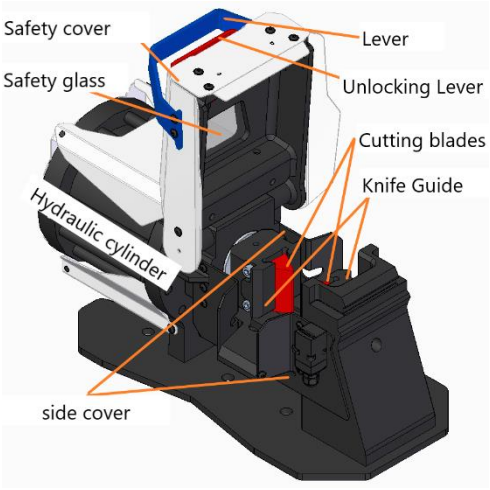

Figure 9: Main components of the chain cutter

Figure 10: Display of the mobile version incl. chassis

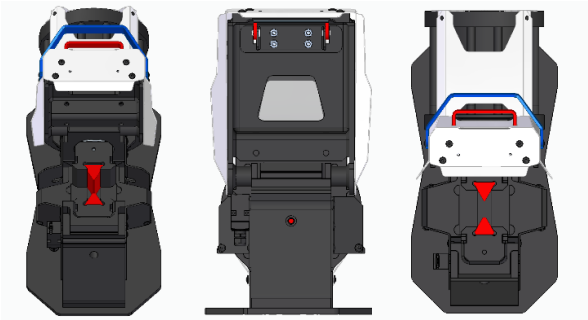

Figure 11: Representation of the interior view

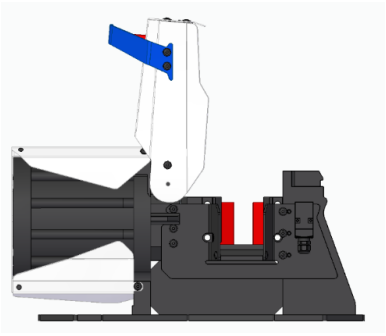

Figure 12: View from the side

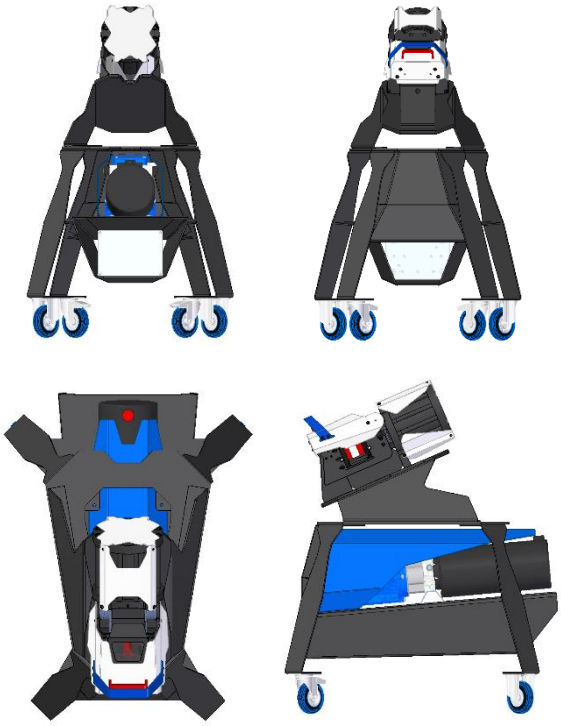

Figure 13: Display of the mobile version incl. chassis from several perspectives

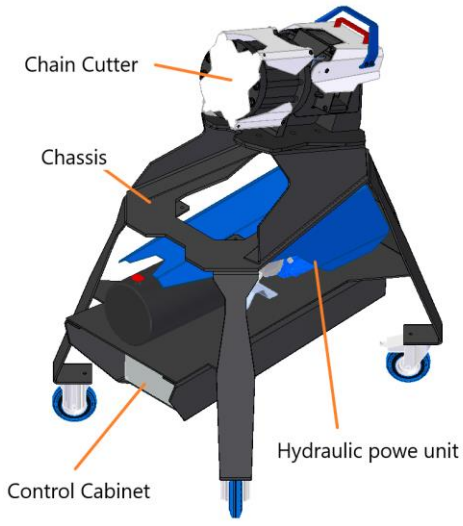

Figure 14: Main units

4.2 Functional description

The chain cutter is designed for the mechanical cutting of round steel chains.

The purpose of the machine is to cut chain links. Two knives are brought together with the help of a cylinder and cut the chain link. Chain links with a link diameter of 6 - 16 mm and a hardness grade of G100 can be separated. Chain links up to a link diameter of 16 mm and a hardness of less than G80 can be cut with two blades. With a link diameter of 16 mm and a hardness of G80 and above, the chain can be cut in one leg. The cutting force is 30 tons.

Figure 8 shows the mobile chain cutter. The components are equivalent to the stationary version, with the exception of the chassis (3) and the slanted mounting (4). However, the slanted mounting (4) can be ordered separately.

The mobile chain cutter can be moved manually and the front wheels are equipped with parking brakes. These brakes must be applied as soon as the chain cutter stops in order to prevent the unit from moving unintentionally. The chain cutter (1) is located on the chassis (3). A safety cover has been fitted for operational safety. The cutting process can only take place when the lid is closed.

The supply unit (2) is located below the cutter and contains the hydraulic power unit and the control cabinet.

The cutting process is performed by pressing the foot switch that may be stowed on the frame.

4.3 Tools

The tools used in this process are knives for separating the legs of the chain link. These are wear parts and must be replaced depending on individual use. The knife shape is a triangular prism, which is why the blade can be used 3 times by turning the tool (see chapter 6.1.1).

The correct use of the tool is described in more detail in chapter 5.4.

4.4 Main operator stations on the machine

The main operator station on the machine is shown in Figure 15. Due to the high noise level, hearing protection must be worn. The safety lid of the machine prevents metal chips from flying off, but the wearing of safety goggles is still recommended by the manufacturer. Furthermore, the wearing of safety gloves and shoes is also recommended (chapter 2.6.3).

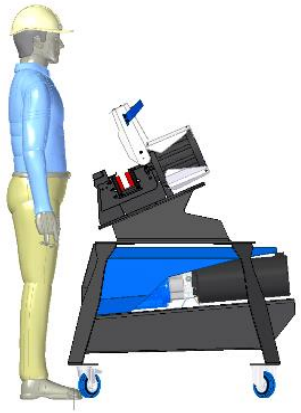

Figure 15: Main operating station on the machine

4.5 Technical data

General data	Value	Unit
Mobile version		
Space requirement chain cutter complete L x W x H	1080 x 795 x 1320	mm
Hydraulic power pack L x B x H	integrated	
Control cabinet L x B x H	integrated	
Weight of the unit (with operating equipment)	260	kg
Stationary version		
Space requirement chain cutter L x B x H	849 x 280 x 343	mm
Hydraulic power pack L x B x H	935 x 290 x 290	mm
Control cabinet L x B x H	254 x 180 x 111	mm
Weight of the unit (with operating equipment)	180	kg
Energy supply electric		
Voltage	400 (EU)	VAC
Rated current	5	A
Cross section of the supply line	2,5	mm²
Backup fuse in the supply line	16	A
Use of the neutral conductor: (yes / no)	yes	
Supply hydraulic		
Print	200	bar
Temperature range of the oil	15 - 75	°C
Oil used	HLP 46	
Environmental conditions		
Temperature range	Room temperature ~21	°C
Humidity	65%	Relative humidity
Other information		
Installation site	Production hall, easy operation must be given	
Installation height	Floor level (mobile version) On a solid surface at an ergonomic height (stationary version)	
Sound level	100	dB
Performance data		
Cutting force	30	t
Maximum chain diameter	16	mm

5 Operation of the machine

NOTICE

Observe all safety regulations - see chapter 2.

The system may only be operated by appropriately trained personnel and requires precise knowledge of these operating instructions.

DANGER

Make sure that no persons are in the danger zone of the system before switching it on.

Entering the hazardous area during operation is prohibited.

Stop the system immediately or switch off the system if a person enters or is present in the danger zone.

5.1 Actions in case of emergency

The following rules and regulations serve as a basis:

DIRECTIVE 2006/42/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 May 2006 on machinery, and amending Directive 95/16/EC (recast)

OVE EN 60204-1:2018 Safety of machinery - Electrical equipment of machines Part 1: General requirements (IEC 60204-1:2016, modified)

ÖNORM EN ISO 13850:2015 Safety of machinery - Emergency stop function - Principles for design

The emergency stop design complies with the instructions of all required guidelines.

To protect personnel, the entire system is designed and tested in accordance with national standards.

The persons working with this equipment must be familiar with the operation and handling of the entire equipment in accordance with the relevant documents, i.e.

- Operating instructions
- Safety instructions

5.1.1 Emergency shutdown

In an emergency or in the event of dangerous movements, actuate the EMERGENCY STOP, the main switch or open the safety cover. In all 3 cases, the system stops immediately.

The emergency stop function corresponds to the stop category according to OVE EN 60204-1, stop by immediate interruption of the energy supply to the machine drive units (i.e. an uncontrolled stop according to OVE EN 60204-1:2018 point 3.1.64). This concerns the electrical and hydraulic machine parts.

Mode of operation of the emergency stop devices:

- All drives are switched off without delay (separate from the energy supply).

  All hydraulic drives and pumps are switched off without delay.

NOTICE

This emergency stop function is triggered by:

All installed safety components of the system according to chapter 2.4.

Determine and eliminate the cause of the shutdown before restarting the system.

5.1.2 Switch on after emergency

- Make sure that all risks have been eliminated.
- Check the working area of the equipment.
- Turn the main switch on again.
- If the foot switch is not pressed, the cylinder will return to its initial position.

5.2 Controls

5.2.1 Mainswitch

- Switches the machine supply on and off.
- Disconnects all moving aggregates from the power supply.

Figure 16: Main switch

WARNING

Danger to life due to live parts!

Work on the electrical system must only be carried out by trained electricians.

Despite the main switch being switched off, voltages of 400 VAC (EU) and above are present in parts of the control cabinet.

Secure all parts of the electrical system against access by unauthorized persons.

- Maintenance work may only be carried out by pewag engineering GmbH.

5.2.2 Foot switch

- Moves the cylinder

Figure 18: Foot switch

5.2.3 Unlocking lever

- When the lever is pressed, the lid can be opened

Figure 19: Unlocking lever

5.3 Switch on the machine

WARNING **The machine is started by means of the main switch.** Visually check the completeness and cleanliness of the machine before each start-up. Observe the direction of rotation of the motor. Switch off the motor immediately if the direction of rotation is incorrect. This can be recognized by the fact that the hydraulic cylinder and thus the movable knife does not extend when you press the foot switch. The direction of rotation of the motor does not match if the phase of the 16 A plug does not match your connection. In this case, inform pewag engineering GmbH or a trained electrician.

5.4 Operation

Switch on the chain cutter by means of the main switch and open the cover with the lever. In doing so, you must tighten the release in the direction of the lever. The components are described and shown in Figure 14. In the next step, insert the chain into the clean cutting area. Make sure that you position the chain as shown in Figure 17. Improper positioning will significantly reduce the life of the blades. When you have inserted the chain correctly, you can close the safety cover. As soon as this is completely closed, you can carry out the cutting process by pressing the foot switch. You must keep the foot switch pressed for the duration of the cutting process. When the chain is cut, lift the foot from the foot switch and the cylinder moves back with the knife. Once the knife has retracted, you can open the cover and remove the cut chain. It is important that you clean the cutting area from the metal residues after each cut. If you open the lid during the cutting process, the machine stops.

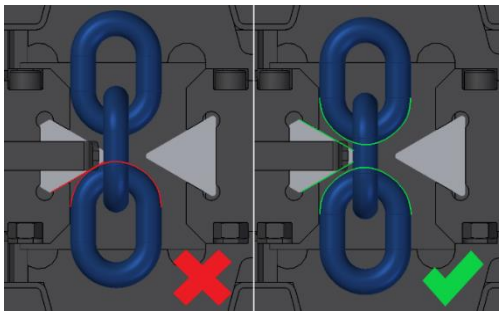

Figure 17: Correct positioning of the chain

For single-leg cutting, you must hang the link on the holder (see Figure 20) in the first cutting operation. After the first limb has been separated, insert the limb as for double-leg cutting.

Figure 20: Single-leg cutting

5.5 Immediate termination of the operating process

If you operate the main switch or open the lid, all processes are stopped immediately. The cylinder remains in its last position. The process starts again when you actuate the main switch again or close the lid again and briefly press the foot switch. If you remain on the foot switch for longer, the cylinder moves forward and remains in position until you release the switch again.

5.6 Parking the machine

Use the main switch to switch off the machine. Make sure that the safety cover remains closed when the machine is not in use. In this way, reaching into the knives can be avoided. Secure the machine against unauthorized switching on.

5.7 Changing the blade spacing

WARNING **If the knife gap is undershot, the knives can be destroyed when they are moved together!** Make sure that a small gap is maintained when the knives are moved together. Check this before the machine is used for cutting chains, otherwise the knives can be destroyed. Therefore, the distance between the knives in the initial state must be at least 3.2 mm (Figure 22) and must not be less than this. You can check the distance with the chain holder 6059587.

HINWEIS **The distance between the cutting knives can be changed using the spacer plates supplied. Changing the knife spacing can be particularly advantageous for soft chains. In this case, a smaller gap is usually required.**

To do this, remove the screw that fixes the knife guide of the fixed knife to the stand. Then you can back or remove the spacer plates between the stand and the knife holder. After that, you need to tighten the screw again.

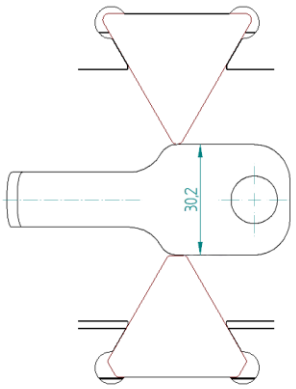

Figure 22: Smallest possible blade spacing

6 Malfunctioning

NOTICE **Observe the safety regulations - see chapter 2.**

To maintain operational safety and to protect warranty claims, comply with the maintenance and service intervals and carry out the maintenance work properly.

It is recommended to conclude a service contract with pewag engineering GmbH.

Immediately rectify any faults that occur or report them to pewag engineering GmbH.

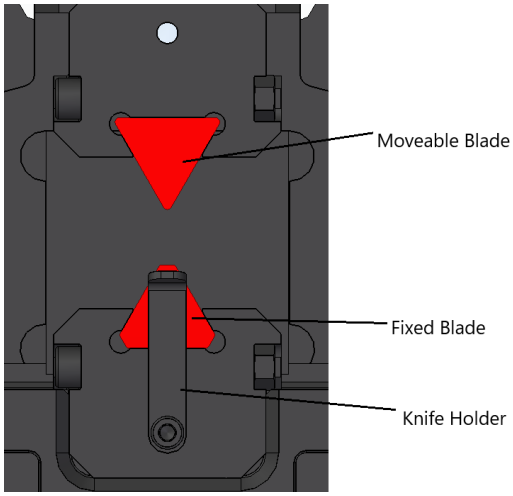

Figure 21: Exchanging the knife

6.1 Elimination of mechanical malfunctions

Troubleshooting is described here only to the extent that the operator is authorized or competent to perform it. In case of category "To be rectified by the operator - no", the manufacturer must be contacted.

Malfunction definition	To be rectified by operator yes/no	Actions of the user?
Cylinder	no	Contact pewag engineering GmbH
Hydraulic power unit	no	Contact pewag engineering GmbH
Hose	no	Contact pewag engineering GmbH
Knife wear	yes	Replace knives as described in chapter 6.1.1.
Mechanical blockages	yes	Remove as described in chapter 6.1.2.

6.1.1 Replacing the cutting blades

The same knife can be reused 3 times by turning the blade. The knife geometry corresponds to an equilateral triangle. This results in 3 cutting edges. The knives must be replaced when they are worn out.

Before you replace the knives, you must disconnect the machine from the power supply and secure it against being switched on again. Then you can push the knife out of the guide and replace it. It is important that you insert the movable knife into the upper knife guide and the fixed knife into the lower knife guide (Figure 21). When replacing the fixed knife, remove the chain holder. This is fixed by means of a screw. After the exchange, you can screw it back on.

6.1.2 Safely removing blockages

- Disconnect the machine from the power supply. De-energize and depressurize the machine.

- Remove the blockage, taking into account all safety instructions.
- Perform a visual inspection on the machine and make sure that the machine has not been damaged.

6.1.3 Safe recommissioning

- Restart the machine only after all safety conditions have been met.
- Make sure that any existing faults or damage to the machine has been repaired.
- Now proceed as for commissioning after a scheduled shutdown (chapter 5.3).

6.2 Electrical and electronic troubleshooting

Troubleshooting is described here only to the extent that the operator is authorized or competent to perform it. In the case of the category "To be rectified by the operator - no", the manufacturer must be contacted.

Malfunction definition	To be rectified by the operator Yes/No	Actions of the user?
Motor	no	Contact pewag engineering GmbH
Solenoid valve	no	Contact pewag engineering GmbH

6.2.1 Unscheduled shutdown

If an unscheduled shutdown occurs, e.g. interruption of the power supply or opening of the safety cover during operation, the cylinder will remain in its current position.

6.2.2 Safe recommissioning

- Restart the machine only after all safety conditions have been met.
- Make sure that any existing faults or damage to the machine has been repaired.
- Now proceed as for commissioning after a scheduled shutdown (chapter 5.3).

7 Spare parts

The spare parts list will be sent separately.

8 Machine maintenance

NOTICE

Observe the safety regulations - see chapter 2.

To maintain operational safety and to protect warranty claims, comply with the maintenance and service intervals and carry out the maintenance work properly.

NOTICE

Maintenance work may only be carried out by technicians from pewag engineering GmbH or by trained and authorized specialist personnel. We recommend concluding a service contract with us.

Take all important safety precautions before starting work – see chapter 8.1.

Only remove protective equipment or enter the hazardous areas after these precautions have been taken.

To maintain operational safety and to protect warranty claims, comply with the maintenance and service intervals and carry out the maintenance work properly.

Immediately rectify any faults that occur or report them to pewag engineering GmbH.

WARNING

Danger to life during maintenance work when the system is switched on and due to unintentional start-up!

- Any maintenance work on the system may only be carried out with the unmanned machine completely deactivated.
- Disconnect the machine from the mains by pulling the plug.
- Switch off the main switch and secure it with a lock.
- Keep the key with you until the work is completed.
- Secure the entire machine area from unauthorized access.

Change the wearing parts in time to increase the service life of the machine.

NOTICE

If you do not change the wearing parts in time, this can lead to increased pressure peaks and shocks in the system, resulting in premature destruction of the machine components.

8.1 Important precautions before and during maintenance work

WARNING

Danger to life due to pressurized hydraulic oil!

Jets of pressurized hydraulic oil can penetrate the skin. System parts can make unintentional movements, jump or bounce off.

Maintenance work on the hydraulic system may only be carried out by trained specialists with special knowledge of hydraulics.

- Wear the appropriate protective equipment for maintenance work - see chapter 2.6.3.
- Before starting work, relieve the pressure in the entire hydraulic system - see chapter 8.1.1.
- Before starting work, carry out important safety precautions - see chapter 2.7.
- Check the system pressure at the corresponding measuring connections before opening. The check is carried out by means of a pressure gauge and the system must be depressurized (0 bar).
- Take protective measures against pressurized, suddenly escaping hydraulic oil.

8.1.1 Relieving, venting and draining the hydraulic system

NOTICE

The hydraulic system is under high pressure during operation, therefore special care must be taken when opening the system components.

Always switch off the system and the main switch before starting work.

Secure the main switch against accidental reactivation.

Take appropriate measures to reduce the system pressure to zero and check it at the corresponding measuring points. Take protective measures against pressurized, suddenly escaping hydraulic oil.

Depending on the design and operation of the hydraulic system, the following precautions must be taken:

8.1.2 Pressure relief of the hydraulic system

When the hydraulics are at a standstill, the system is depressurized.

Check the system pressure at the corresponding measuring connections before opening. The system must be depressurized (0 bar).

If the system is not depressurized, push in the pin on the two outer sides of the solenoid valve (Figure 23). The solenoid valve is located on the power unit. The data sheet of the valve can be found in the documentation sent with the valve.

Figure 23: Solenoid valve for pressure relief

8.1.3 Ventilating and draining the hydraulic system

- Open the drain plug and drain or pump off the hydraulic oil into the prepared container until the hydraulic oil tank is empty.
- Unscrew the tank and check the inside of the hydraulic oil tank for dirt; if necessary, clean the inside of the hydraulic oil tank.
- Check the seal on the cleaning cover for damage and tighten the hydraulic tank.

NOTICE

Always use hydraulic oil of the same grade and specification.

Never feed leaked hydraulic oil back into the hydraulic system.

Exception: After appropriate cleaning and inspection for impurities and oil quality by a laboratory.

Impurities in the hydraulic oil can lead to malfunctions and damage to the system. Dispose of used hydraulic oil properly.

8.1.4 Bleeding the hydraulic system

NOTICE

Machine damage!

If air has entered the hydraulic system in the course of maintenance work on the machine, you must not use the machine for cutting chains.

The high compression of the air in the hydraulic oil causes burns in the oil, which destroys the cylinder seals and the hydraulic oil.

If air has entered the hydraulic system, the machine will run jerkily. Bleed the air from the system.

8.1.5 Important activities during maintenance and servicing work

- Clean sealing elements and sealing surfaces thoroughly before installation. Check them for damage. If necessary, replace the sealing elements or repair the sealing surfaces.
- Always lubricate sealing elements with a suitable lubricant before installation.
- Clean all components thoroughly before installation and oil or lubricate them accordingly. Carefully oil or lubricate components with precise fits before installation.
- Clean bolts and mating surfaces before mounting and lubricate with release agent or lubricant for high temperatures and pressures.
- Tighten all fastening screws with a torque wrench or a torque-monitored power wrench. Observe the torque values specified in the operating instructions or the drawings.

8.2 Maintenance

8.2.1 Inspection and maintenance plan

Activity	Addition interval	Frequency
Tighten screws		monthly
Tighten screws and clamps (electrical)		yearly
Change hydraulic oil and clean tank	depending on the result of the oil analysis performed	every 2000h; at least yearly
Check oil temperature		weekly
Take oil sample and analyze	50h after initial commissioning	every 2000h latest yearly
Replace hydraulic hoses		every 6 years
Check hydraulic hoses for damage		weekly
Check hydraulic oil level and temperature		weekly
Replace filter	50h after initial commissioning	yearly
Check contamination indicator		weekly
Replace breather filter		every 2000h; at least yearly
Cleaning the cutting area		with each cut

Tighten the 12 screws of the hydraulic cylinder with a torque of 365 Nm.

8.2.2 Checking the oil level

The oil level is checked via the oil level plug, marked in orange in figure 24.

When changing the oil, the oil level plug must be opened and the oil drained and refilled via the opening

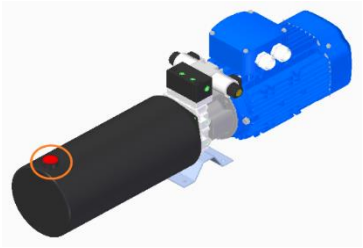

Figure 24: Hydraulic unit with marking of the oil level plug

Maintenance interval - maintenance activity to be performed

Daily: Check the level of the hydraulic oil.

8.2.3 Checking for leaks

DANGER **Danger to life due to faulty hydraulic hoses and piping.**

Jets of pressurized hydraulic oil can penetrate the skin. System parts can make unintentional movements, jump or bounce off.

Only check the system for leaks when it is switched off.

Correct any leaks detected by taking immediate professional action.

Immediately replace defective hydraulic hoses and pipelines with original parts. Hydraulic hoses must never be repaired. When replacing hydraulic hoses, only use tear-proof press fitting.

NOTICE **Have all hydraulic hoses inspected annually by a qualified specialist. The inspection intervals to be observed are governed by regional laws and regulations, if applicable.**

Maintenance interval - maintenance activity to be performed

Weekly
- Check all hydraulic hoses for leaks and damage.
- Inspect all piping and piping welds for leaks and damage.
- Check hoses, fittings, pipe screw connections and flanges and retighten if necessary.

Every 3 months:
- Retighten hoses, fittings, pipe fittings and flanges.

Annual:
- For safety reasons, all hydraulic hoses in the system must be checked annually by a qualified specialist.

8.2.4 Hydraulic oil maintenance

NOTICE

Always use hydraulic oil of the same grade and specification.

Never feed leaked hydraulic oil back into the hydraulic system.

Exception: After appropriate cleaning and inspection for impurities and oil quality by a laboratory.

Impurities in the hydraulic oil can lead to malfunctions and damage to the system.

Dispose of used hydraulic oil properly.

Fill hydraulic oil:

- Open the filling and ventilating filters - do not remove the filter under any circumstances.
- If possible, fill hydraulic oil through the opening of the filler and breather filter with a filling unit (filter unit < 10 µm) up to the maximum oil level indicator.
- Tighten the filler and breather filters.
- Clean any hydraulic oil that may have leaked out of the hydraulic unit.

Oil specification:

HLP according to DIN 51524-2

Viscosity: ISO VG 46

Maintenance interval - maintenance activity to be performed

2000 operating hours:
- Laboratory testing of oil samples for impurities and oil quality.
- Clean or replace hydraulic oil if necessary.

8.2.5 Changing the filter

- Unscrew the screws on the cover of the filters and remove the filter inserts.
- Insert the new filter inserts, check the seal for damage and tighten the cover of the filters.

Maintenance interval - maintenance activity to be performed

Annual:
- Change filter.

NOTICE

Dispose of the filter element in an environmentally friendly manner in accordance with local regulations.

8.2.6 Hydraulic cylinder maintenance

Maintenance interval - maintenance activity to be performed

Weekly:
- Check cylinder seals for leaks.
- Check wiper and piston rods for damage.
- Check cylinder bearings for contamination, cracks and play.
- Check piston rod attachments for dirt, cracks and play.

Recommended replacement intervals for cylinder gaskets

3-shift operation	Every 2 years
2-shift operation	Every 3 years
1-shift operation	Every 4 years

8.2.7 Checking the connection and fastening screws

Maintenance interval - maintenance activity to be performed

Monthly:
- Check connection and fastening screws for tight fit.
- Check tightening torques and retighten if necessary.

8.2.8 Maintenance of the wear parts and/or lining

Change the wearing parts in time to increase the service life of the equipment.

If you do not change the wearing parts in time, this can lead to increased pressure peaks and shocks in the system. This can result in premature destruction of the machine components.

Maintenance interval - maintenance activity to be performed

Operation dependent:
- Replace wear parts or lining if the machine no longer operates properly.