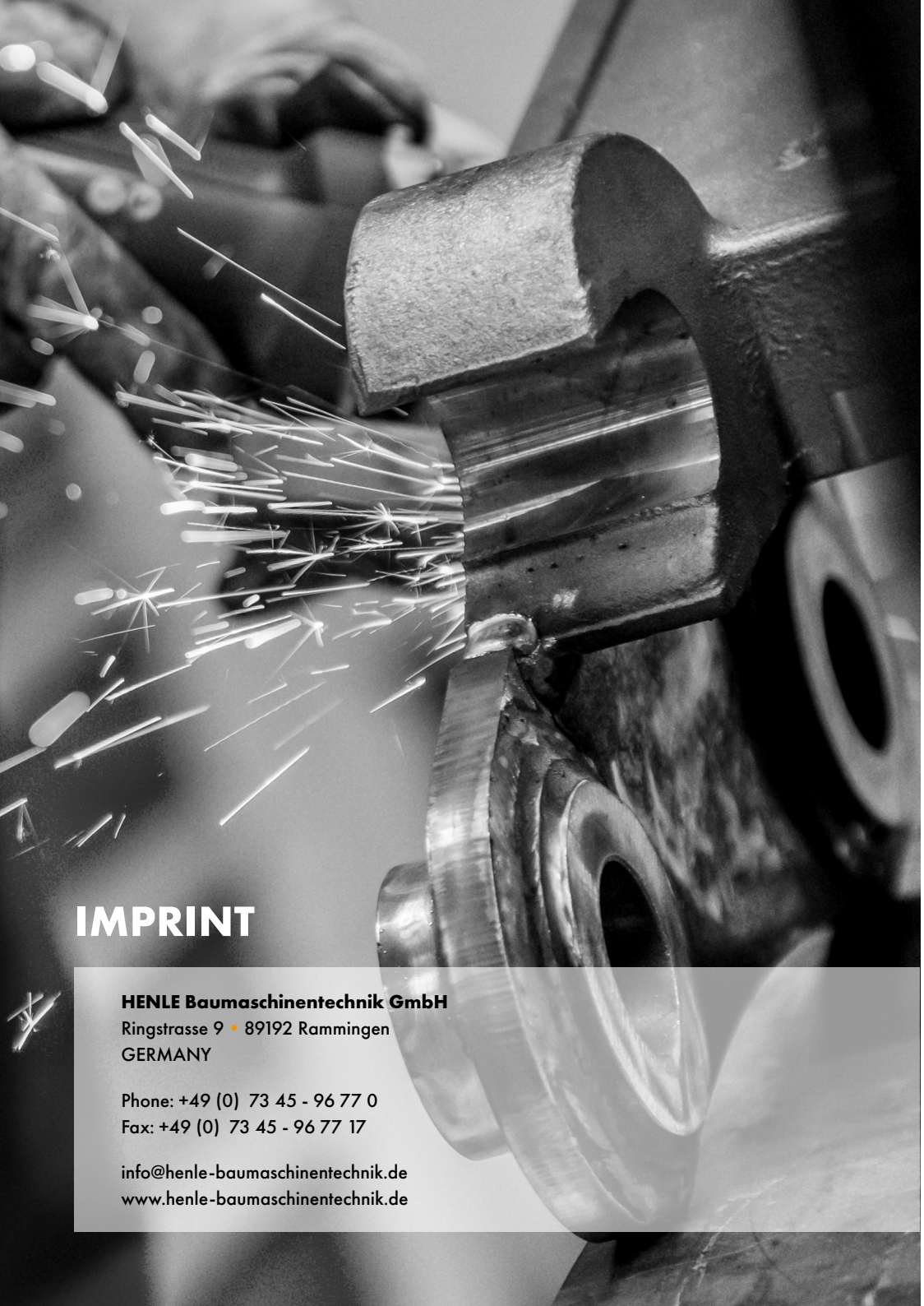
HENLE Baumaschinentechnik

OPERATING MANUAL

Hydraulic buckets

- Ditch-cleaning bucket
- Tilt backhoe bucket
- Slope bucket

GROWING STRONGER



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1.1 Preface

Ensure that the operator always has access to the operating manual. The current version is available in the download section of our homepage. Carefully read the manual before operating the bucket.

Observance of the operating manual:

- Helps to avoid dangers.
- Increases reliability during use.
- Increases the service life of the product.
- Reduces maintenance costs and downtime.

1.2 Information on the operating manual

This operating manual provides you with important information on handling the product. The prerequisite for safe working is compliance with all specified safety instructions and handling instructions. In addition, observe the local accident prevention regulations and general safety regulations applicable to the area of use of the product.

Therefore the following applies:

- Before you start working with the product, read this operating manual thoroughly!
- Make the operating manual accessible to staff at all times!
- Make the operating manual available when passing the product on to third parties!

In addition to this operating manual, the operating manuals for the installed components in the appendix also apply. Observe the instructions contained therein – especially the safety instructions!

To improve visualisation and explanation of the facts, the figures in this operating manual are not necessarily to scale and may differ slightly from the actual design of the product.

1.3 Explanation of symbols

Warnings are labelled with symbols in this operating manual. The instructions are introduced by signal-words which express the extent of the hazard.
Always follow the instructions and act with caution to avoid accidents, personal injury and damage to property.

Signal word	Meaning
DANGER! 	This combination of symbol and signal word indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
WARNING! 	This combination of symbol and signal word indicates a potentially hazardous situation which, if not avoided, may result in death or serious injury.
CAUTION! 	This combination of symbol and signal word indicates a potentially hazardous situation which, if not avoided, may result in minor or slight injuries.
NOTICE! 	This combination of symbol and signal word indicates a potentially hazardous situation which, if not avoided, may result in damage to property and the environment.
ENVIRONMENT! 	This combination of symbol and signal word indicates a potentially hazardous situation which, if not avoided, may result in damage to property and the environment.

1.4 Copyright protection

Treat this operating manual as confidential. It is intended exclusively for persons working with the product. It is not permitted to hand over the operating manual to third parties without the written authorisation of the manufacturer.

NOTICE!

The content, texts, drawings, images and other illustrations are protected by copyright and are subject to industrial property rights. Any misuse is a criminal offence.

Reproduction of any kind and in any form – even in extracts – as well as the utilisation and/or communication of the content is not permitted without a written declaration from the manufacturer. Infringements will be subject to compensation. We reserve the right to make further claims.

1.5 Scope of delivery

- Hydraulic bucket
- Operating manual

1.6 Limitations of liability

All information and instructions have been compiled taking into account the applicable standards and regulations, the state of the art and our many years of knowledge and experience.

HENLE Baumaschinentechnik GmbH excludes warranty and liability claims for personal injury and damage to property if they can be attributed to one or more of the following causes:

- Improper use.
- Improper assembly, commissioning.
- Operation with improperly installed or non-functional safety devices.
- Failure to observe the safety instructions and notes in the operating manual.
- Repairs or manipulations carried out by persons who are neither authorised nor trained to do so.

- Unauthorised structural alterations or modifications.
- Maintenance and servicing work not carried out properly and on time.
- Accessories, spare parts and additives which are the cause of damage and which have not beenapproved by the manufacturer. The manufacturer accepts no liability for any consequential damage.
- The manufacturer is not liable for personal injury or damage to property resulting from unauthorisedand improper use of the product.

1.6.1 Spare parts

WARNING!

Risk of injury due to incorrect spare parts!

Incorrect or faulty spare parts may result in damage, malfunctions or total failure and impair safety.

Therefore:

→ Only use original spare parts from the manufacturer!

When ordering spare parts, please always provide the following information:

- Type of bucket (see rating plate)
- Serial number and year (see rating plate)
- Designation/type of the spare part

When ordering in writing, please state these details exactly or, if ordering by telephone, have the details ready before calling. This will make things easier for us and yourself and avoid errors and incorrect orders or deliveries. Further information on spare parts can also be found on our homepage: https://www.henle-baumaschinentechnik.de/

INFORMATION!

Obtain the spare parts directly from the manufacturer:
HENLE Baumaschinentechnik GmbH
info@henle-baumaschinentechnik.de
Telephone 07345 / 9677-0

1.7 Warranty conditions

The warranty conditions can be found in the manufacturer's general terms and conditions. The manufacturer is liable only for damage to the delivered product as described in Chapter 1.4 „Limitation of liability". Liability is excluded for damage and its consequences which occur during operation.

This includes e.g. damage as a result of
- Improper installation / assembly,
- Improper use,
- Lack of maintenance,
- Lack of visual inspection.

1.8 Customer service

Our customer service is available for technical information. Information can be obtained at any time from your contact by telephone, fax, email or via our website.
In addition, our employees are constantly interested in new information and experiences which result from the application and could be valuable for improving our products.

2. Safety

This section provides an overview of all the important safety aspects for optimum protection of personnel and for safe and trouble-free operation.
Failure to observe the handling instructions and safety instructions in this manual may result in serious hazards.

2.1 Responsibility of the owner

The product is designed exclusively for the commercial sector. The owner of the product is therefore subject to the statutory occupational safety obligations.
In addition to the safety instructions in this operating manual, observe the safety, accident prevention and environmental protection regulations applicable to the area of use of the product. The following applies in particular:

- The owner must inform himself about the applicable health and safety regulations and carry out a risk assessment to determine any additional dangers arising from the specific working conditions at the product's place of use. This risk assessment must be implemented in the form of operating instructions for the operation of the product.

- During the entire period of use of the product, the owner must check whether the operating instructions, which he/she has drawn up, correspond to the current status of the regulations and, if required, adjust them.

- The owner must clearly regulate and define the responsibilities for installation, operation, maintenance and cleaning.

- The owner must ensure that all employees who work with the product have read and understood this operating manual. In addition, the owner must train staff at regular intervals and inform them about the dangers.

- The owner must provide the personnel with the required protective equipment.

Furthermore, the owner is responsible for ensuring that the product is always in perfect technical condition. The following therefore applies:

- The owner must ensure that the maintenance intervals described in this operating manual are observed.
- The owner must have all safety devices checked regularly to ensure that they are functional and complete.

2.2 Personnel requirements

2.2.1 Qualifications

WARNING!
Risk of injury due to insufficient qualifications!
Improper handling may result in serious personal injury and damage to property.

Therefore:
→ Have all work carried out by qualified personnel only.

The operating manual specifies the following qualifications for various areas of activity.

Specialist personnel
Specialist personnel are those who, on account of their specialist training, knowledge and experience as well as knowledge of the relevant regulations, are able to carry out the work assigned to them and to recognise and avoid potential hazards independently.

Instructed person
The person has been instructed by the owner about the tasks assigned to them and the potential dangers of improper behaviour.

- Only persons, who can be expected to carry out their work reliably, are authorised as personnel. Persons whose ability to react is affected, e.g. by drugs, alcohol or medication, are not permitted.

- When selecting personnel, observe the age and job-specific regulations applicable at the place of work.

2.2.2 Unauthorized persons

WARNING!
Danger to unauthorised persons!
Unauthorised persons, who do not meet the requirements described here, are not aware of the dangers in the work area.

Therefore:
→ Keep unauthorised persons away from the work area.
→ If in doubt, speak to people and instruct them to leave the work area.
→ Stop work as long as there are unauthorised persons in the work area.

2.2.3 Instruction

Personnel must be regularly instructed by the owner. To improve follow-up, the instruction given must be logged.

Example of an instruction log:

Date	Name	Type of Instruction	Instruction is given by	Signature

Fig. 1: Instruction log

2.3 Designated use

Ditch-cleaning bucket

The ditch-cleaning bucket is intended for scooping, transporting, lifting, and dumping. It is suitable for loose soil and light terrains where light to medium work is required. As a product for such applications, the ditch-cleaning bucket is ideal for ditch and hollow construction, creating slopes and embankments, leveling and clearing ditches, and creating complex landforms.

Tilt backhoe bucket

The tilt backhoe bucket is used in traditional earthworks as well as in water and landscape construction. The tilt function allows for work in various applications, such as the creation of pits, slope work, and modeling terrain independent of the excavator's stand surface.

Slope bucket

The slope bucket combines the advantages of the ditch-cleaning bucket (compact design) and the tilt backhoe bucket (larger capacity). This special design and reinforced materials make the grading bucket particularly suitable for leveling and loading tasks. The rear cutting edge can be used for flattening surfaces.

Class	Ditch-cleaning bucket	Tilt backhoe bucket	Slope bucket
Class 1	1 to 2 t	–	–
Class 1S	2 to 2,5 t	–	–
Class 2	2.5 to 3.8 t	–	–
Class 2S	–	2.5 to 3.8 t	–
Class 3	3.8 to 6.5 t	3.8 to 5 t	–
Class 3S	6.5 to 12 t	5 to 6.5 t	–
Class 4	12 to 16 t	6.5 to 8.5 t	–
Class 4S	14 to 18 t	8.5 to 12 t	–
Class 5	16 to 21 t	12 to 16 t	12 to 16 t
Class 5S	–	16 to 21 t	16 to 21 t
Class 6	21 to 26 t	21 to 26 t	21 to 26 t
Class 6S	26 to 30 t	26 to 30 t	26 to 30 t
Class 7	30 to 36 t	30 to 36 t	30 to 36 t
Class 7S	–	36 to 45 t	–

WARNING!

Danger due to improper use!

Any use of the device which goes beyond the designated use and/or any other use may result in hazardous situations.

Therefore:

→ Use the device only as designated.

→ Strictly observe all information in this operating manual.

NOTICE!

Hydraulic buckets with load hooks:

The load hook must not be used unless the following safety devices have been installed on the carrier:

- Lifting load table on the driver's seat
- Overload warning device
- Pipe rupture protection on the bucket arm cylinder
- Pipe rupture protection on the boom cylinder
- Lift and transport loads using suitable and authorised load handling equipment only.

2.4 Improper use

The following uses of the device are especially to be avoided. They are considered improper use:

- Passenger transport
- A load hook must be fitted for use in load lifting operation
- Hammering, ramming and chiselling objects
- Supporting the excavator with its own weight under one-sided or point load

Claims of any kind due to damage resulting from improper use are excluded. The owner is solely liable for any damage resulting from improper use.

2.5 Reasonably foreseeable misuse

Reasonably foreseeable misuse includes all types of use which are not described under „Designated use". Any other use or use beyond this is considered to be improper. The manufacturer is not liable for any resulting damage.

In particular, the following is considered to be misuse:

- Use of untrained personnel
- Unauthorised conversion
- Use of unauthorised spare and wearing parts
- Passenger transport
- Failure to replace wearing parts
- Improper use
- Failure to carry out or incorrectly carried out maintenance or repair work

2.6 Personal protective equipment

Personal protective equipment must be worn at work in order to minimise health hazards.

- While working, always wear the protective equipment required for the work in question.
- Follow the instructions on personal protective equipment posted in the work area.

Basic protective equipment
Always wear PPE for all work:

- Protective clothing
- Safety boots

For particular work
Special protective equipment is required when carrying out particular work. This special protective equipment is referred to separately in the individual chapters of this manual.

- Hard hat
- Safety goggles
- Protective gloves

Protective clothing
For all activities on the carrier, wear close-fitting work clothing with low tear resistance, tight sleeves and no protruding parts.

Hard hat
Hard hats protect the head against falling objects, swinging loads and impact with stationary objects.

Safety goggles
Wear safety goggles tested in accordance with DIN EN 166.

Protective gloves
Wear protective gloves when carrying out all activities to protect your hands from friction, abrasions, punctures or deeper injuries, as well as from contact with hot surfaces.

Safety boots
Wear safety boots when carrying out all activities. Safety boots protect feet from crushing, falling parts and slipping on slippery surfaces.

2.7 Safety instructions

The system, in particular the hydraulic lines, must be checked for defects before each use. Please also note the storage times and the permissible period of use of the hydraulic lines. Hose lines must be replaced at appropriate intervals even if there are no recognisable defects.

In the event of defects such as chafing, cuts, embrittlement of the outer layer or blistering and leaks, the hydraulic hoses and screw connections must be replaced immediately.

It is mandatory to check that hydraulic quick couplers are properly locked. After locking the quick coupler with the implement/bucket, carry out a back pressure test to check that it is properly locked. Please note that released catch claws and locking bolts must be checked for deformation before they are next used and replaced if required.

Ensure that there are no persons in the danger area.

Personnel:

- Specialist personnel

Personal protective equipment:

- Protective clothing
- Safety boots
- Safety goggles
- Protective gloves

2.8 Work and danger areas

DANGER!
Danger of death!
Physical contact with operating or uncontrolled moving device components may result in serious injury or even death!

Therefore:

→ Before commissioning the entire device, ensure that there are no persons in the danger and work areas!
→ Switch off the entire device before assembly and disassembly work as well as maintenance and testing work and secure it against being switched on again!

WARNING!
Risk of injury due to improper operation!
Improper operation may result in serious personal injury or damage to property.

Therefore:

→ Carry out all operating steps as described in this operating manual.
→ Before starting work, ensure that all covers and safety devices have been installed and are functioning properly.
→ Never disable safety devices during operation.
→ Keep the work area tidy and clean! Loose components and tools lying on top of each other or lying around are sources of accidents.

2.9 Specific dangers

The following section identifies residual risks which have been determined with the help of a risk assessment.

- To reduce health hazards and avoid dangerous situations, follow the safety instructions listed here and observe the warnings in the other chapters of this manual.

Suspended loads

DANGER!
Danger of death due to suspended loads!
Falling loads may result in serious injury or even death.

Therefore:

→ Never stand under suspended loads.
→ Move loads only under supervision.
→ Set loads down when leaving the workstation.

WARNING!
Danger due to falling loads!

Therefore:
→ Check the locking mechanism of the quick coupler after each change process.

WARNING!
Danger due to falling loads!
The values specified in the lifting load tables for the carrier refer to the load without attachment. When using attachments, the weight of the attachment and quick coupler must be deducted from the lifting load values of the carrier. Also observe the maximum load torque of the quick coupler.
The maximum load torque can be found on the rating plate of the quick coupler.

Hydraulics

WARNING!
Danger of death due to hydraulic energy!
The hydraulic energy may cause serious or even fatal injuries.
Hydraulically driven parts can move unexpectedly. If individual components are damaged, hydraulic fluid may escape under high pressure.

Therefore:
→ Have work on the hydraulics carried out by trained specialist personnel only.
→ Before starting work on the hydraulic system, switch it off and depressurise it. Fully depressurise the pressure accumulator.
→ Check that there is no pressure.
→ Do not change the pressure settings beyond the maximum values.

Liquid jet

WARNING!
Danger of death due to liquid jet!
If lines or machine parts are defective, a jet of liquid may escape under high pressure. The liquid jet may sever body parts and cause serious injury or death.

Therefore:
→ Never touch the liquid jet..
→ Immediately press the Emergency STOP button. If required, initiate further measures to reduce the pressure and stop the liquid jet.
→ Collect and dispose of leaking liquids properly.
→ Have the defective parts repaired by trained and qualified specialist personnel.

Sharp edges and pointed corners

CAUTION!
Risk of injury from edges and corners!
Sharp edges and pointed corners may cause abrasions and cuts to the skin.

Therefore:
→ Be careful when working near sharp edges and pointed corners.
→ If in doubt, wear protective gloves.

The hydraulic bucket must be checked daily for defects and damage.

2.10 Securing the switch to prevent reactivation

DANGER!
Danger of death due to unauthorised reactivation!
When working in the danger area, there is a risk that the power supply may be switched on without authorisation. This means that there is a danger of death for people in the danger area.

Therefore:
→ Follow the instructions on securing the switch to prevent reactivation in the chapters in this operating manual.
→ Always observe the procedure described below for securing the switch to prevent reactivation.

Personnell:
- Specialist personnel

Personal protective equipment:
- Protective clothing
- Safety boots
- Safety goggles
- Protective gloves

Securing the switch to prevent reactivation:

Switch secured with lock
on: ..... at: ..... hours
DO NOT SWITCH ON
The lock may be removed only by: .....
after ensuring that there are no persons in the danger area.

Fig. 2: „Lock secured" sign

1. Switch off the power supply.
2. If possible, secure the switch with a lock and attach a clearly visible sign to the switch as shown in Fig. 2.
3. Have the employee named on the sign keep the key.

Switched off
on: ..... at: ..... hours
DO NOT SWITCH ON
The system may be switched on only by: .....
after ensuring that there are no persons in the danger area.

Fig. 3: „Switched off" sign

4. If it is not possible to secure a switch with a lock, affix a sign as shown in Fig. 3.
5. Ensure that no persons are in the danger area after all work has been completed.
6. Ensure that all protective devices have been installed and are functional.
7. Remove the sign only now.

2.11 Behaviour in the event of danger and accidents

Preventive measures

- Always be prepared for accidents or fire!
- Keep first aid equipment (first aid kit, blankets, etc.) within easy reach.
- Familiarise staff with accident reporting, first aid and rescue equipment.
- Keep access routes clear for emergency vehicles.

If the worst comes to the worst: Act correctly in the event of an accident

- Bring the attachment into a safe position.
- Stop the machine movements as quickly as possible if there is an immediate danger to people or property and turn off the power.
- Initiate first aid measures.
- Rescue people from the danger zone.
- Call emergency services.
- Inform the person responsible on-site.
- Keep access routes clear for emergency vehicles.

Emergency shutdown:

In hazardous situations, machine movements must be stopped as quickly as possible and the power supply switched off.

Personnel:
- Specialist personnel

Personal protective equipment:
- Protective clothing
- Safety boots
- Safety goggles
- Protective gloves

1. Stop the machine movements and switch off the power supply as soon as possible when disturbances occur that pose an immediate danger to people or property. Inform the person in charge on-site.
2. Call for medical and fire assistance.
3. Rescue people from the danger zone and initiate first aid measures.
4. Turn off the main power switch and secure it against re-activation.
5. Keep access routes clear for emergency vehicles.
6. If the seriousness of the emergency requires, inform the appropriate authorities.
7. Assign qualified personnel to fix the problem.

After the rescue operations:

WARNING!
Danger of death due to premature reactivation!
If the switch is reactivated, there is a danger of death for all persons in the danger area.

Therefore:
→ Before reactivating the switch, ensure that there are no more people in the danger area.

Personnel:
- Specialist personnel

Personal Protective Equipment:
- Protective clothing
- Safety boots

- Safety goggles
- Protective gloves

Check the system before restarting it and ensure that all safety devices have been installed and are functional.

2.12 Environmental protection

ENVIRONMENT!
Environmental hazard due to incorrect handling!
Incorrect handling of environmentally hazardous substances, in particular incorrect disposal, may result in considerable damage to the environment.

Therefore:
→ Always follow the instructions below.
→ If environmentally hazardous substances are accidentally released into the environment, take appropriate measures immediately. If in doubt, inform the responsible local authority about the damage.

The following environmentally hazardous substances are used:
- Lubricants

ENVIRONMENT!
Lubricants, such as greases and oils, contain toxic substances. They must not be released into the environment. Disposal must be carried out by a specialist disposal company.

ENVIRONMENT!
Avoid releasing oil into the soil or water.
Use suitable containers to collect any oil which escapes during maintenance work.
Observe the relevant safety regulations of the manufacturer.

3. Technical data

The general technical data, dimensions and weight as well as the hydraulic connection values can be found on the delivery note, see Appendix A „Delivery note". Furthermore, all required technical data can be found on the rating plate on the device, see Chapter 3.2 „Rating plate".

3.1 Operating materials

Operating Fluids	Type
Lubricating grease	Commercially available resin and acid-free machine lubricating grease
Hydraulic oil	HLP 46 according to DIN 51524 T2: ISO VG 46

3.2 Rating plate

1) Designation
2) Type
3) Operating weight [t]
4) Serial number
5) Width [mm]
6) Capacity [m³]
7) Weight [kg]
8) Max. load capacity load hook[t]
9) Load holding torque [kNm]
10) Year of construction

Fig. 4: Rating plate

3.3 Cylinder technical data

3.3.1 Cylinder specifications

Cylinder	Displa-cement Volume [l]	Max. Operating Pressure [bar]	Hydraulic Con-nection Thread	Built-in Valve
Cylinder K0 with HV left 40/20/135	0.7	250	G1/4"	Yes*
Cylinder K1/1S with HV/C left 50/25/150	0.29	250	G1/4"	Yes*
Cylinder K2 with HV/V left 63/32/150	0.47	250	G1/4"	Yes*
Cylinder K3 with HV left 63/40/200	0.62	250	G1/4"	Yes*
Cylinder K3S with HV/C left 63/40/230	0.72	250	G1/4"	Yes*
Cylinder K4 - 6 80/45/170	0.85	250	M18x1,5	No
Cylinder K7 100/56/200	1.57	250	M18x1,5	No
Cylinder K7S 100/56/270	2.12	250	M18x1,5	No

* Fixed locking valve built-in

3.3.1.1 Valves

Fixed locking valve

- Fixed locking valves are built-in for all cylinder sizes K0 to K3S.t

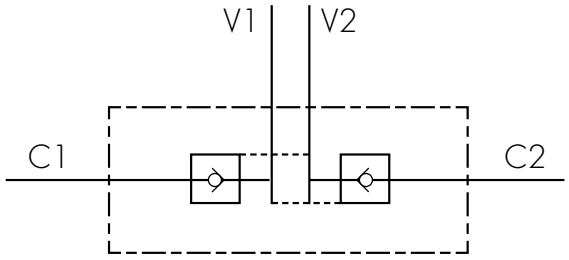


Fig. 5: Locking valve

Lowering brake valve SQ 09 HL 10-10

- Additionally installed in cylinder sizes K1 to K3S
- Regulates the flow rate to 10 l/min (assuming the pressure relief valve on the excavator can drain excess oil).

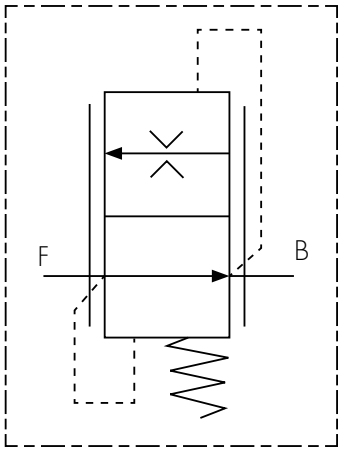


Fig. 5: Brake valve

Pressure relief locking valve HCDCV 10-D4BS-65/45

- This type of locking valve is installed in cylinders ranging from sizes K4 to K7S.

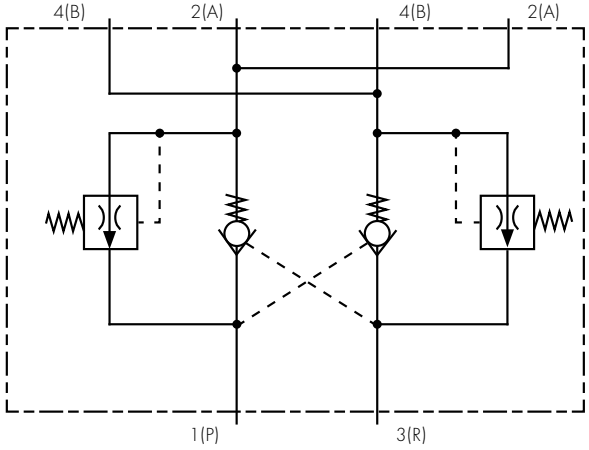


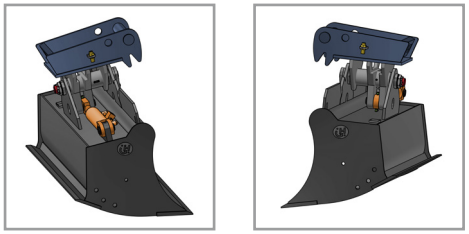
Fig. 6: Pressure relief locking valve

3.4 Motor technical data

Refer to the motor manufacturer's documentation

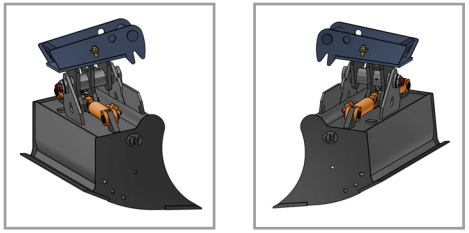
For further technical details (weight, volume, cutting widths, swivel range, etc.), as these specifications are supplied with the motor.

4.1 Overview



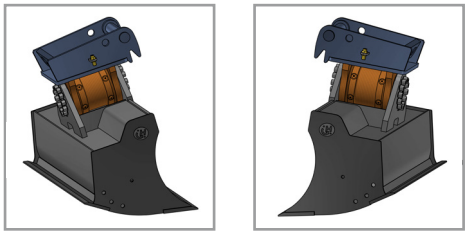
1. Bucket body
2. Connection to the excavator
3. Hydraulic adjustment unit
4. Main bearing
5. Lubrication points
6. Hydraulic connections*

Fig. 7 : Ditch-cleaning bucket with one cylinder



1. Bucket body
2. Connection to the excavator
3. Hydraulic adjustment unit
4. Main bearing
5. Lubrication points
6. Hydraulic connections*

Fig. 8 : Ditch-cleaning bucket with two cylinders (example)



1. Bucket body
2. Connection to the excavator
3. Hydraulic adjustment unit
4. Main bearing
5. Lubrication points
6. Hydraulic connections*

Fig. 9 : Ditch-cleaning bucket with motor (example)

***Hydraulic hoses are not shown in the illustrations.**

4.2 Brief description

Buckets should only be used for light earthworks. These are securely attached to the earthmoving machine via direct attachment or quick-change systems. The compatibility of an earthmoving machine for attachments depends on the size, weight, and interface. These factors are considered by the attachment manufacturer when ordering, and must be observed by the operator. Various attachments may be limited in their usability.

Ditch-cleaning bucket

The ditch-cleaning bucket is used for scooping, transporting, lifting, and dumping. It is suitable for loose soil and light terrains where light to medium workloads occur. As a product for such applications, the ditch-cleaning bucket is ideal for trench and hollow construction, creating slopes and embankments, leveling and clearing ditches, and shaping complex landforms.

Tilt backhoe bucket

The tilt backhoe bucket is used in traditional earthworks as well as in water and landscape construction. The tilt function allows for versatile operation, including tasks such as pit excavation, slope work, and modeling terrain independently from the excavator's position.

Slope bucket

The slope bucket combines the advantages of a ditch-cleaning bucket (compact design) and a tilt backhoe bucket (larger capacity). Due to this special design and reinforced materials, the grading bucket is particularly suitable for leveling and loading tasks. The rear cutting edge allows for flat grading of surfaces.

4.3 Work and danger areas

DANGER!

Danger of death!

Physical contact with operating or uncontrolled moving appliance components can lead to serious injury or even death!

Therefore:

→ Before commissioning the entire appliance, check that there are no persons in the danger in the danger zone and work area.

→ Switch off the entire appliance before carrying out assembly and disassembly work as well as maintenance and testing work and secure it against being switched on again.

5.1 Safety

Personnel
Installation and initial commissioning may only be carried out by specially trained personnel.

Personal protective equipment:
- Protective clothing
- Safety boots
- Safety goggles
- Protective gloves

WARNING!
Risk of injury due to improper installation and initial commissioning!
Improper installation and initial commissioning may result in serious personal injury or damage to property.

Therefore:
→ Before starting work, ensure that there is sufficient space for installation.
→ Handle open sharp-edged components with care.
→ Keep the assembly area tidy and clean! Loose components and tools lying on top of each other or lying around are sources of accidents.
→ Install components correctly. Observe the specified screw tightening torques.
→ Secure components to prevent them from falling or overturning.

NOTICE!
Further protective equipment, which must be worn for certain work, is referred to separately in the warnings in this chapter.

Securing the switch to prevent reactivation

DANGER!
Danger of death due to unauthorised reactivation!
During installation, there is a risk that the power supply may be switched on without authorisation. This means that there is a danger of death for people in the danger area.

Therefore:
→ Before starting work, switch off all power supplies and secure them against being switched on again.

5.2 Installation

DANGER!
Danger of death!
Hydraulic lines bursting under pressure will result in damage to property and serious injuries or even death!

Therefore:
→ Replace damaged hydraulic lines immediately.
→ During installation, ensure that the hydraulic lines are not kinked, crushed or subjected to tensile stress during use.

NOTICE!
Before fitting the hydraulic lines to the earth-moving machine, the dust caps must be removed shortly beforehand. Secure the dust caps against loss. When dismantling the machine, immediately fit the dust caps to the hydraulic lines.

Hydraulic lines

1. Connect the hydraulic lines of the device to the corresponding hydraulic connections of the earthmoving machine.*

*Only for non-fully hydraulic quick-change systems.

Fig. 10: Hydraulic line connections (example)

DANGER!
Risk of injury!
Hydraulic lines bursting under pressure can cause damage to property and serious injury or even death!

Therefore:
→ During installation, make absolutely sure that the hydraulic lines are not kinked, crushed or subjected to tension during use.

NOTICE!
When dismantling the tool, the sealing plugs must be fitted immediately to the connections of the hydraulic lines to protect them from contamination!

Quick-change system
For installation of attachments with a quick-change system, refer to the supplied documentation for the quick-change system.

5.3 Inspections

Quick-change system
For inspections of attachments with a quick-change system, refer to the supplied documentation for the quick-change system.

After installing the bucket, check for potential collisions and ensure that the hydraulic hoses are correctly routed. Also, check the connections for tightness.

6.1 Safety

WARNING!
Risk of injury due to improper operation!
Improper operation can lead to serious personal injury or damage to property.

Therefore:
→ Carry out all operating steps in accordance with the information in these operating instructions.
→ Before starting work, ensure that all covers and safety devices are installed and functioning properly.
→ Never deactivate the safety equipment during operation.
→ Ensure that the work area is tidy and clean. Loose components and tools lying on top of each other or lying around are sources of accidents.

6.2 Working with hydraulic tilt buckets

By applying pressure to the hydraulic lines, the bucket can be tilted into the desired position.
Before connecting the hydraulic lines, ensure that the hydraulic connections are clean. When picking up the bucket with the excavator, make sure the contact surfaces are clean.
Protect the cylinder from overload. The cylinder can be damaged, even to the point of total failure, if excessive external forces are applied to the cylinder (e.g., by pulling or pushing with the bucket's corners).

6.3 Emergency shutdown

In dangerous situations, machine movements must be stopped as quickly as possible, and the power supply must be switched off.

In case of danger, proceed as follows:

1. Move the attachment to a safe position.
2. Depressurize the attachment.
3. Shut down the machine according to the manufacturer's instructions.

4. Inform the responsible person on-site.
5. Call for medical and fire assistance.
6. Rescue individuals from the danger zone and initiate first aid measures.
7. Turn off the main power switch and secure it against reactivation.
8. Keep access routes clear for emergency vehicles..
9. Notify the relevant authorities if the severity of the situation warrants it.
10. Have qualified personnel handle the malfunction..
11. Before restarting the system, ensure that all safety devices are installed and functioning properly.

WARNING!
Danger to life due to premature restart!
There is a danger to life for all persons in the danger zone if the device is switched on again.

Therefore:
→ Before restarting, make sure that there are no more people in the danger zone.

6.4 Post-operation tasks

- Clean the attachment of large dirt deposits after use.
- When storing the attachment, ensure it is placed in a stable, secure position.

6.5 Theft protection plates

The theft protection plates on the bucket attachments are designed to secure the attachments and are not intended to serve as transport or carrying aids.

Fig. 11: Theft protection plates (example)

7.1 Transport safety instructions

Improper transport

CAUTION!
Damage due to improper transport!
Improper transport may result in considerable material damage.

Therefore:
→ During delivery and internal transport, proceed carefully when unloading the packages and observe the symbols and instructions on the packaging.
→ Use only the designated attachment points.
→ Do not remove packaging until shortly before assembly.

Suspended loads

WARNING!
Danger of death due to suspended loads!
When lifting loads, there is a danger of death from falling or uncontrolled swivelling parts.

Therefore:
→ Never stand under suspended loads.
→ Observe the specifications for the designated attachment points.
→ Do not strike protruding machine parts or eyelets on attached components and ensure that the slings are securely attached.
→ Use only approved lifting gear and slings which have sufficient load capacity.
→ Do not use torn or chafed ropes and belts.
→ Do not place ropes and straps on sharp edges and corners. Do not knot or twist them.

7. TRANSPORT, PACKAGING AND STORAGE

Eccentric centre of gravity

WARNING!
Danger of falling due to eccentric centre of gravity!
Packages may have an eccentric centre of gravity. If the package is not attached correctly, it may overturn and cause life-threatening injuries.

Therefore:
→ Observe the markings on the packages.
→ Position the crane hook so that it is above the centre of gravity.
→ Lift carefully and observe whether the load tilts. If required, change the attachment.

7.2 Transport inspection

On receipt, check that the delivery is complete and that there is no transport damage.
In the event of externally recognisable transport damage, proceed as follows:

- Do not accept the delivery or accept it only with reservations.
- Note the extent of the damage on the transport documents or on the delivery note of the carrier.
- Initiate a complaint.

NOTE!
Complain about a defect as soon as it is identified. Claims for damages can be asserted only within the applicable complaint periods.

7.3 Packaging

Handling packaging materials

Dispose of packaging materials in accordance with the applicable statutory provisions and local regulations.

CAUTION!

Environmental damage due to incorrect disposal!

Packaging materials are valuable raw materials and in many cases can be reused or usefully processed and recycled.

Therefore:

→ Dispose of packaging materials in an environmentally friendly manner.

→ Observe the locally applicable disposal regulations. If required, commission a specialist company to dispose of the packaging materials.

7.4 Transport

Transporting pallets by crane

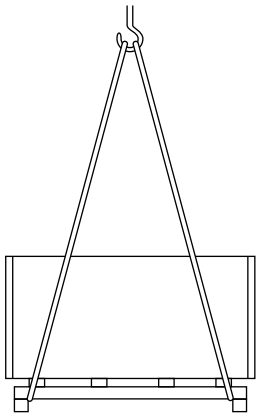


Fig. 12: Transporting pallets by crane

Packages secured on pallets can be transported by crane under the following conditions:

→ The crane and lifting gear must be designed for the weight of the packages.

→ The operator must be authorised to operate the crane.

Attaching pallets:

1. Attach ropes, straps or multi-point hangers to the pallet as shown in Fig. 12.
2. Check that the packages are not damaged by the slings.
3. If required, use different slings.
4. Start the transport.

Transporting pallets using a forklift truck

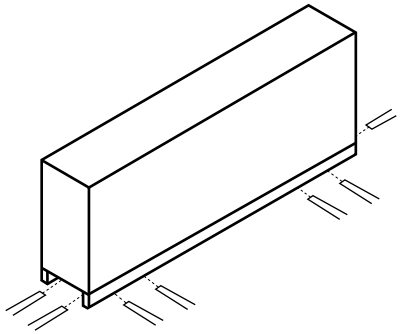


Fig. 13: Transporting pallets using a forklift truck

Packages secured on pallets can be transported by forklift truck under the following conditions:

- The forklift truck must be designed according to the weight of the transport units.
- The driver must be authorised to drive the forklift truck.

Attaching pallets:

1. Drive the forklift truck with the forks between or under the pallet boards.
2. Insert the forks until they protrude on the opposite side.
3. Ensure that the pallet cannot overturn if the centre of gravity is off-centre.
4. Lift the package.
5. Start the transport.

DANGER!

Danger of death!

If the earth-moving machine tips over, it will cause damage to property and serious injury or even death!

Therefore:

→ Before starting to transport mounted equipment on earth-moving machinery, always observe all warnings on the respective earth-moving machinery regarding transportation, e.g. cab in the direction of travel, fold in boom, see “Earth-moving machinery” supplier documentation.

CAUTION!
Material damage!
Insufficient ground clearance of the appliance during transportation leads to material damage!

Therefore:
→ Ensure sufficient ground clearance before starting transportation.

8.1 Maintenance schedule

The following sections describe the maintenance work required for optimum and trouble-free operation. If regular inspections reveal increased wear, shorten the required maintenance intervals according to the actual signs of wear. If you have any questions about maintenance work and intervals, please contact the manufacturer; see address in the imprint.
Please also observe the maintenance instructions from the motor manufacturer for tilt buckets with motors.

Item	Work to be carried out	Carried out by	Daily	Weekly	Monthly	Latest Every 6 Years	Page
1	Perform visual inspection	Operatorr	X				47
2	Clean the contact surfaces of the mount	Operator	X				47
3	Check all screws and bolts for tight fit using suitable tools.	Qualified staff		X			47
4	Check all hydraulic lines and cylinders for tightness and damage	Qualified staff		X			48
5	Lubricate all bearing bolts n	Operator		X			48
6	Inspect all weld seams	Qualified staff			X		48
7	Check the surface and attachment points for severe deformation, destruction, and wear	Qualified staff			X		48
8	Replace all hydraulic lines (see production date on hydraulic hoses)	Qualified staff				X	49

8.2 Maintenance work

Safety

Personnel:

- The maintenance work described here can be carried out by the operator, unless otherwise indicated
- Some maintenance work may be carried out only by specially trained personnel or exclusively by the manufacturer. This is indicated separately in the description of the individual maintenance tasks.

DANGER!
Danger of death!
Falling components and uncontrolled movements may result in serious injuries or even death!

Therefore:

→ Before starting maintenance work, place all the work equipment on firm ground and secure it against overturning and uncontrolled movements!
→ Switch off the entire device and secure it to prevent reactivation!

Personal protective equipment:

- Protective clothing
- Hard hat
- Safety boots
- Safety goggles
- Protective gloves

NOTICE!
Further protective equipment, which must be worn for certain work, is referred to separately in the warnings in this chapter.

WARNING!
Risk of injury due to improperly performed maintenance work!
Improper maintenance may result in serious personal injury or damage to property.

Therefore:

→ Before starting work, ensure that there is sufficient space for installation.
→ Keep the assembly area tidy and clean! Loose components and tools lying on top of each other or lying around are sources of accidents.
→ If components have been removed, ensure that they are assembled correctly, reinstall all fastening elements and observe the screw tightening torques.

Securing the switch to prevent reactivation

DANGER!
Danger of death due to unauthorised reactivation!
During maintenance work, there is a risk that the power supply may be switched on without authorisation. This means that there is a danger of death for people in the danger area.

Therefore:

→ Before starting work, switch off all power supplies and secure them against being switched on again.

Environmental protection

Observe the following environmental protection measures during maintenance work:

- For all lubrication points that require manual greasing, remove any discharged, used, or excess grease and dispose of it in accordance with local regulations.
- Collect any replaced hydraulic fluid in suitable containers and dispose of it in accordance with local regulations.

Hydraulic components

DANGER!
Danger of death!
Opening hydraulic lines under high pressure can lead to serious injury or even death!

Therefore:
→ Switch off the entire appliance and secure it against being switched on again.
→ Depressurize the hydraulic lines by actuating the valve levers with the hydraulic unit in the earth-moving machine switched off.
→ Work on the hydraulic system may only be carried out by trained specialist personnel.

DANGER!
Danger of death!
Hydraulic lines bursting under high pressure can cause serious injury or even death!

Therefore:
→ Repairing hydraulic lines is prohibited!

CAUTION!
Risk of injury!
Skin contact with hot equipment can cause severe burns!

Therefore:
→ Before starting work on the hydraulic system, allow all oil-carrying components and the hydraulic oil to cool down to ambient temperature.

1. Perform visual inspection

Maintenance interval(s): Daily

1. Visually inspect the attachment points and the bearings of the cylinders for any damage or deformation.
2. Check that all bolts and pins are in place and correctly tightened.
3. Fully cycle the bucket through its range of motion to identify any malfunctions.
4. Check the hydraulic components for proper mounting, tightness, and any damage.
5. Ensure that no debris accumulates under the cylinders. Remove any foreign objects.

2. Clean contact surfaces

Maintenance interval(s): Daily

1. Clean the contact surfaces of the mount (shafts, locking plate) of dirt and material residues.

3. Check all screws and bolts for tight fit using suitable tools.

Maintenance interval(s): Weekly

1. Use appropriate tools to check the tightness of all bolts (see torque values in the appendix).
2. Check the proper securing of the main pin and cylinder bolts (for buckets with tilt cylinders).

4. Check all hydraulic hoses and cylinders for secure fit, leaks, and damage

Maintenance interval(s): Weekly

1. Before working on the hydraulics, turn off the carrier machine and depressurize the hydraulic lines.
2. Ensure that the lines are not pinched, kinked, or under tension.
3. Only trained personnel should work on the hydraulic system.
4. Tighten any connections as needed.

5. Lubricate all bearing pins with suitable grease.

Maintenance interval(s): Weekly

1. Grease all grease fittings on the bucket until grease emerges from the connection points.
2. Remove old or excess grease (refer to Chapter 3.1 for recommended lubricants).

6. Inspect all weld seams

Maintenance interval(s): Monthly

1. Check all weld seams for cracks, especially the seams of the tilt head and tilt lugs.

7. Check the surface and attachment points for deformation, destruction, or wear

Maintenance interval(s): Monthly

1. Inspect the entire attachment for deformation, damage, or wear, particularly the bearing seats of the cylinders and the tilt head, as well as the connection to the excavator. Replace typical wear parts like blades and bucket floors in a timely manner to avoid secondary damage.

8. Replace all hydraulic lines
(see production date on the hydraulic lines)

Maintenance interval(s): Every 6 years at the latest

1. Under normal use, hydraulic hoses must be replaced at least every 6 years (refer to DGUV-R 113-020).
2. Ensure that new hydraulic hoses meet at least the same specifications as the hoses being replaced.

8.3 Measures to be taken after maintenance

After completing maintenance work, follow these steps before reactivating the system:

1. Check that all loosened bolts, screws, and pins are properly tightened.
2. Ensure that all removed safety guards and covers have been reinstalled properly.
3. Verify that all tools, materials, and other equipment have been removed from the work area.
4. Clean the work area and remove any spilled fluids or materials.
5. Ensure that all safety devices are functioning properly.

9.1 Eliminating malfunctions

Safety

The following chapter describes possible causes of malfunctions and the work required to eliminate them. If malfunctions occur more frequently, shorten the maintenance intervals according to the actual load. In the event of malfunctions which cannot be eliminated by the following instructions, please contact the manufacturer; see address in the imprint.

- The troubleshooting work described here can be carried out by the operator, unless otherwise indicated.
- Some work may be carried out only by specially trained personnel or exclusively by the manufacturer. This is indicated separately in the description of the individual malfunctions.
- Work on the electrical system may be carried out only by qualified electricians.

Wear the following protective equipment for all work:

- Protective clothing
- Hard hat
- Safety boots
- Safety goggles
- Protective gloves

INFORMATION!
Further protective equipment, which must be worn for certain work, is referred to separately in the warnings in this chapter.

Fundamentals

DANGER!
Danger of death due to unauthorised reactivation!
During troubleshooting work, there is a risk that the power supply may be switched on without authorisation. This means that there is a danger of death for people in the danger area.

Therefore:
→ Before starting work, switch off all power supplies and secure them against being switched on again.

WARNING!
Risk of injury due to improper troubleshooting!
Improper troubleshooting may result in serious personal injury or damage to property.

Therefore:
→ Before starting work, ensure that there is sufficient space for installation.
→ Keep the assembly area tidy and clean! Loose components and tools lying on top of each other or lying around are sources of accidents.
→ If components have been removed, ensure that they are assembled correctly, reinstall all fastening elements and observe the screw tightening torques.

Behaviour in the event of malfunctions

Personnel:
- Specialist personnel

Personal protective equipment:
- Protective clothing
- Hard hat
- Safety boots
- Safety goggles
- Protective gloves

General rules:

1. Move the attachment into a safe position.
2. If the malfunction could cause immediate danger to people or property, stop all machine movements and switch off the power supply as quickly as possible.
3. Find out the cause of the malfunction.
4. If fixing the malfunction requires work inside the danger area:
   Switch off the system.
   Secure it against being switched on again.
5. Inform the person in charge on site immediately.
6. Depending on the type of malfunction:
   Let it be fixed by authorized qualified personnel, or fix it yourself only if you are qualified.
7. If needed, contact the manufacturer for technical support.

INFORMATION!
The table of malfunctions listed below provides information on who is authorised to eliminate the malfunction.

9.2 Table of malfunctions

Please refer to the motor manufacturer's operating manual for problems related to the rotary motor.

Fault Description	Possible Cause	Troubleshooting	To be fixed by
Swings too fast	Excessive flow rate	Reduce the flow rate at the carrier, or alternatively, reduce it via an additional valve	Qualified personnel
Does not swing at all	Mechanical blockage	Remove the blockage	Qualified personnel
	Cylinder or motor defect	Contact the manufacturer	Manufacturer
	No pressure at the attachment	Check the carrier's hydraulic system	Qualified personnel
Jerks when swinging	Negative load on the holding valve	Tighten the crown nut of the main pin to increase friction	Operator
Noise in the cylinder	Air in the cylinder	Bleed the cylinder	Operator
Delayed or spongy swing	Air in the hydraulic system	Bleed the hydraulic system and cylinder	Qualified personnel
Bucket loses position during work	Defective cylinder or holding valve	Check the valve and cylinder for proper function	Qualified personnel
Leakage in hydraulic components	Mechanical damage	Replace damaged components	Qualified personnel
	Loose connections	Tighten connections	Operator
Mechanical unit deformed or worn, attachment points worn, cracks forming	Excessive stress or increased wear	Send the device for repair to the manufacturer	Manufacturer

Appendix A – Delivery Note (Example)

Lieferschein
(Kopie 1)

Nummer	00155349
Tour	7
Auftrag	00202233 / 04.09.2024
Ihre Kundennummer	11557
Ihre Nummer / Ihr Datum	
Liefertermin	41/2024
Besteller	
Lieferbedingung	
Versandart	Spedition

Datum/Seite : 08.10.2024 / 001

Pos	Artikel	Menge	ME	Bezeichnung	Lagerplat	Best.mg.	Restmg.
1	10927	1	Stck	GRABENRÄUMLÖFFEL Klasse 3S Einsatzgewicht 6,5t bis 12t Schnittbreite: 1800mm Inhalt/SAE: 0,408m³ schwenkbar 1 Zylinder 2*45° mit Rückenschneide mit Transporthaken passend QC08HT Hydraulikanschlüsse am Schwenkkopf links/rechts Ihre Artikelnummer: 6100032841 S/N: 2411225 Gewicht: 440,0kg		1	0

Appendix B – Tightening torques

Tightening torques for straight threaded fittings

Thread size (inch)	Metric thread (mm)	Tightening torque (Nm) -10%
G 1/8	M 10x1,0	25
G 1/4	M 12x1,5	35
G 3/8	M 14x1,5	55
G 1/2	M 16x1,5	80
G 3/4	M 18x1,5	100

Tightening torques for seal cone fittings

Series	Tube OD [mm]	Tighten nut by hand + "X" turns		Torque Nm (±5%)
		First installation (turns)	Repeated installation (turns)	
L	6	ca. 2/3	ca. 1/3	20
L	8	ca. 2/3	ca. 1/3	30
L	10	ca. 2/3	ca. 1/3	40
L	12	ca. 2/3	ca. 1/3	50
S	12	ca. 2/3	ca. 1/3	60

Appendix C – Bolt tightening torques

Metric standard threads

The table provides the tightening torques for reaching the maximum allowable preload for metric coarse threads in Nm.

Diameter (mm)	 [mm]	 [mm]	Screw quality		
			8G / 8.8	10K / 10.9	12K / 12.9
M 8	13	6	25	34	43
M 10	17	8	47	65	83
M 12	19	10	78	100	120
M 14	22	12	120	175	215
M 16	24	14	180	260	310
M 18	27	14	250	360	430
M 20	30	17	340	470	560
M 22	32	17	430	600	700
M 24	36	19	560	790	950

Appendix D – Fine thread bolt tightening torques

Metric fine threads

The table provides the tightening torques for fine metric threads in Nm.

Diameter (mm)	 [mm]	 [mm]	Screw quality		
			8G / 8.8	10K / 10.9	12K / 12.9
M 8 x 1	13	6	30	41	50
M 10 x 1	17	8	55	78	95
M 12 x 1,5	19	10	95	107	128
M 14 x 1,5	22	12	140	200	240
M 16 x 1,5	24	14	200	290	350
M 18 x 1,5	27	14	270	390	470
M 20 x 1,5	30	17	350	500	600
M 22 x 1,5	32	17	450	630	740
M 24 x 1,5	36	19	590	830	1000

Appendix E – Declaration of conformity

EG-Konformitätserklärung nach Maschinenrichtlinie 2006/42/EG Anhang IIA

Hersteller: **Henle Baumaschinentechnik GmbH**
Ringstraße 9, 89192 Rammingen

Dokumentationsbevollmächtigter: Henle Baumaschinentechnik GmbH
Abt. Konstruktion
Tobias Gnann

Der Hersteller bescheinigt, dass die auswechselbare Ausrüstung gemäß MRL 2006/42/EG,

Art:	Hydraulischer Grabenräumlöffel	Typen: GV0 bis GV8
Art:	Hydraulischer Schwenktieflöffel	Typen: K1 bis K8
Art:	Hydraulischer Böschungslöffel	Typen: K4 bis K8

mit Adaptern für Schnellwechsler oder mit Aufnahmen für den jeweiligen Baggertyp zum Anbau an Bagger bestimmt ist und folgende Bestimmungen, Normen und Sicherheitsvorschriften entspricht:

1. EG Richtlinien:
   MRL 2006/42/EG
   89 / 392 / EWG zur Angleichung der Rechtsvorschriften der Mitgliedstaaten für Maschinen
   91 / 368 / EWG zur Änderung der Richtlinie 89 / 392 / EWG zur Angleichung der Rechtsvorschriften der Mitgliedstaaten für Maschinen

2. Angewendete europäische Normen:
   DIN EN ISO 12100:2013-08
   EN474-1:2022 Erdbaumaschinen Sicherheit
   EN474-5:2022 + AC:2022 Anforderungen für Hydraulikbagger

3. Angewandte nationale technische Sicherheitsvorschriften:
   BGR500 Kap. 2.12 – Betreiben von Erdbaumaschinen

Rammingen, 31. Oktober 2024

Gerhard Henle
Geschäftsführer

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