GB

Installation,- Operating and Maintenance Instructions

HADEF Wirerope Winch

Type 220/15

HADEF

☞NOTICE!

The installation or mounting instructions for incomplete machines you'll find in chapter "Installation"

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Heinrich De Fries GmbH will be named HADEF in the following text.
Original operating- and maintenance instructions in German language.
Translation in other languages is made of the German original.
A copy may be requested in writing or is available for download on www.hadef.com
Subject to changes.

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1 Information

The products meet European Union requirements, in particular the valided EU Machine Directive.

The entire company works acc. to a certified quality assurance system as per ISO 9001.

The production of components at our work is subject to strict, intermediate checks.

After assembly, each product is subject to a final test with overload.

For the operation of hoists, the national accident prevention regulations apply in Germany, amongst others.

The stated performance of the devices and meeting any warranty claims require adherence to all instructions in this manual.

Before delivery, all products are packed properly. Check the goods after receipt for any damage caused during transport. Report any damage immediately to the forwarding agent.

This manual allows a safe and efficiently use of equipment. Images of this manual are for a principle understanding and can be different from the real design.

☞ NOTICE!

We refer to the prescribed equipment tests before initial start-up, before putting back into operation and the regular periodic inspections.

In other countries any additional national regulations must be observed.

2 Safety

2.1 Warning notice and symbols

Warnings and notice are shown as follows in these instructions:

DANGER!	This means that there is a high risk that leads, if it is not avoided, to death or severe injury.
WARNING!	This means that there is a risk that could lead, if it is not avoided, to death or severe injury.
CAUTION!	This means that there is little risk that could lead, if it is not avoided, to slight injury or damage to the device or its surrounding.
NOTICE!	Gives advice for use and other useful information.
	Danger from electricity.
EX	Danger from explosive area.

2.2 Duty of care of the owner

DANGER!

Failure to follow the instructions of this manual can lead to unpredictable hazards.

For any resulting damage or personal injury, HADEF assumes no liability.

The unit was designed and built following a risk analysis and careful selection of the harmonized standards that are to be complied with, as well as other technical specifications. It therefore represents state-of-the-art technology and provides the highest degree of safety.

Our delivery includes the hoist supplied beginning at its suspension and ending at the load hook and if supplied with control, the control line/hose that leads to the hoist. Further operating material, tools, load attaching devices as well as main energy supply lines must be assembled according to the valid rules and regulations. For explosion-proof equipment, all these parts must be approved for use in area prone to explosion, or they must be suitable for use in area prone to explosion. The owner is responsible for this.

However, in everyday operation this degree of safety can only be achieved if all measures required are taken. It falls within the duty of care of the owner/user of the devices to plan these measures and to check that they are being complied with.

Complete the operating and installation instructions by any instructions (regarding supervision or notifications)that are important for the special kind of use of the equipment, i.e. regarding organization of work, work flow and human resources.

In particular, the owner/user must ensure that:

- The unit is only used appropriately.
- The device is only operated in a fault-free, fully functional condition, and the safety components, in particular, are checked regularly to ensure that it is functioning properly.
- The required personal protective equipment for the operators, service and repair personnel is available and is used.
- The operating instructions are always available at the location where the equipment is used and that they are legible and complete.
- The unit is only operated, serviced and repaired by qualified and authorized personnel.
- This personnel is regularly trained in all applicable matters regarding safety at work and environmental protection, and that they are familiar with the operating manual and, in particular, the safety instructions it contains.
- Any safety and warning signs on the devices are not removed and remain legible.
- Devices for use in area prone to explosion must (from customer's side) be earthed with a shunting resistor of $< 10^6$ Ω against earth.

WARNING!

It is not allowed to make constructive changes of the equipment!

2.3 Requirements for the operating personnel

The units may only be operated by qualified persons that are appropriately trained and that are familiar with it. They must have their employer's authorization for operation of the units.

Before starting work, the operating personnel must have read the operating and installation instructions, especially the chapter "Safety Instructions".

This is especially important for operating personnel that rarely uses the equipment, i.e. for installation or maintenance work.

DANGER!

In order to avoid severe injury, please pay attention to the following when using the equipment:

- Use protective clothes/equipment.
- Do not wear long hair hanging down open.
- Do not wear rings or other jewelry.
- Do not wear clothes that are too big/wide.
- Do not reach into ropes, chains, drive parts or other moving parts with your hands

2.4 Appropriate use

The permitted safe working load of the devices must not be exceeded! An exception can be made during the load test before initial operation, carried out by a licensed qualified person.

- The permissible ambient temperature during operation of manual driven devices is -20 ° C / + 50 ° C and at all power driven devices -20 ° C / + 40 ° C!
- Defective devices and load suspension devices must not be used until they have been repaired! Only original spare parts must be used. Non-compliance will result in any warranty claims becoming void.
- Liability and warranty will become void if unauthorized modifications of the units are made by the user!

Vertical lifting and lowering of unguided loads, horizontal movement of loads and inclined movement of loads, movement of flaps, covers etc.

2.4.1 Winches with disengaging clutch (as option)

- Only for pulling out the uncharged wire rope
- Only for horizontal load
- Only for special kinds of use (i.e. lowering of floaters in liquids) when there is no danger for persons or danger of damage of material.

NOTICE!

If the units are not used appropriately, it is not possible to ensure safe operation.

The owner and operator have sole liability for all personal injury and damage to property arising from inappropriate use.

DANGER!

It is not allowed:

- pulling loose of stuck loads, dragging of loads and inclined pulling is not allowed.
- in explosive atmosphere, except the unit is especially modified for it and marked by an indication label
- In reactor containment vessels.
- to transport people
- The device is not suitable for use on stages and in studios
- persons must not stand under a suspended load

2.5 Basic safety measures

- Observe installation-, operation and maintenance instruction.
- Take notice of caution notes at units and in the manual
- Observe safety distances.

- Take care for a free view on the load.
- Only use the hoists appropriately.
- The equipment is to be used exclusively for movement of goods. Under no circumstances my persons be moved.
- Never load the devices beyond their working load limit.
- Pay attention to the accident prevention regulations (UVV).
- Should the hoist be used outside of Germany, please pay attention to the national regulations that apply.
- Supporting structures and load-attached devices used in conjunction with this equipment must provide an adequate safety factor to handle the rated load plus the weight of the equipment. In case of doubt, consult a structural engineer.
- If the equipment has not been used for a period of time, carry out visual checks of all main components such as chains, load hooks etc. and replace any damaged parts with new, original spare parts before putting the equipment back into operation!
- Do not use a hoist that is defective, pay attention to any abnormal noise it makes during operation.
- Stop working immediately in case of disturbances and remedy failures.
- Any damage and faults must be reported to a responsible supervisor immediately.
- If the unit is put into motion, any persons in the immediate vicinity must be informed by calling to them!
- Please pay attention to the regulations for load carrying devices UVV for both positive and non-positive methods of attaching loads.
- The lifting tackle or the load must be securely attached to the hook and be seated at the bottom of the hook.
- The safety catch of hooks must be closed.
- When charged, the housing may not be in contact somewhere.
- Motor drive is prohibited.

⚠ WARNING!

The following is not allowed:

- to lift another load than the nominal safe working load
- to manipulate the sliding clutch if units are equipped with
- The use of elongated or damaged chains or wire ropes. Replace them immediately by new, original parts.
- Never loop the load chain around a load nor place or pull the chain over edges.
- Never repair damaged load hooks (e.g. by hammering), but replace them by original hooks.

3 Transport and Storage

⚠ CAUTION!

Transport may only be done by qualified personnel. No liability for any damage resulting from improper transport or improper storage.

3.1 Transport

The devices are checked and if so adequately packed before delivery.

- Do not throw or drop the equipment.
- Use adequate means of transport.

Transport and means of transport must be suitable for the local conditions.

3.2 Safety device for transport

☞ NOTICE!

Should a safety device for transport exist, please remove it before commissioning.

3.3 Storage

- Store the equipment at a clean and dry place.
- Protect the equipment against dirt, humidity and damage by an appropriate cover.
- Protect hooks, wire ropes, chains and brakes against corrosion.

4 Description

4.1 Areas of application

The devices must be as far as possible installed in a covered room.

If they are used in the open, protect the units against the effects of weather such as rain, hail, snow, direct sunshine, dust, etc. - we recommend to use a cover in parking position. If the device is set up in a continuously humid environment with strong temperature fluctuations, the correct functionings are endangered by the forming of condensation.

Ambient temperature -20°C up to +50°C. Power-operated units -20 up to +40°C. Humidity 100 % or less but not under water

DANGER!

It is not permitted to use the unit in an area at risk from explosion!

4.2 Design

HADEF wirerope winches for stationary use are fitted with holes for installation.

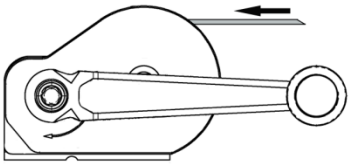
The winch can be installed in any position desired, make sure, however, the wire rope exit is correct.

Do not use the winch for load securing!

Winch 220/15 - 900A with automatic unwinding.

For outside use we recommend to use a protective roof.

Wirerope exit upper side



4.3 Functions

The load is lifted/ lowered, by turning the winch handle. The incorporated load-pressure-brake prevents automatic lowering of the load after release of the winch handle. Little after run of the load or turn of the winch handle is due to the system and not a mistake.

4.4 Important components

- Housing

The housing is made of plastic.

- Brake

Load pressure brake

- Gear

Spur gear

- Manual crank

Fixed

- Rolling up automatic

Rope winch 900A with rolling up automatich for houling off the unloaded rope

5 Technical data

Capacity		Type	Minimum load	FEM group	Rope Ø	nec. minimum breaking load	useable wirerope length		number of rope layers	wirerope path per crank turn	crank effort	weight without wirerope approx.
1st layer	top layer						1st layer	top layer		acc. to layer	1st layer	
kg	kg	--	kg		mm	kN	m	m		mm	N	kg
350	150	--	25	1 Em	4	11	1,3	14	6	53-100	200	2
500	170	--	25	1 Em	5	15	1,1	16	7	45-100	200	4
900	330	--	25	1 Em	7	27	1,3	16	6	25-55	190	7
900	330	A	25	1 Em	7	27	1,3	16	6	25-55	190	8

6 Installation

Please observe the following points in order to avoid any damage to equipment or injury of person:

- Wear safety gloves.
- Install the winch on a stable ground.
- Make sure attachment surface is flat and that installation is made stress-free, - use shim parts if necessary.
- The winch must be set up and attached in such a way that it cannot change position neither by the load nor by other influences.

6.1 Winch assembly

The winches can be installed in any position desired, make sure, however, that the prescribed rope exit is correct.

Make sure the attachment surface is flat/plain to make sure that installation is made stress-free to ensure safe functioning.

Use the screws mentioned in the table for installation. Tighten all screws evenly.

Distance of holes			
Capacity 1st layer	Fastening material		
	strength 8.8	Tightening moment	Disc DIN 125
kg		Nm	Form A
350	3 x M8	25	8
500	3 x M10	49	10
900	3 x M10	49	10

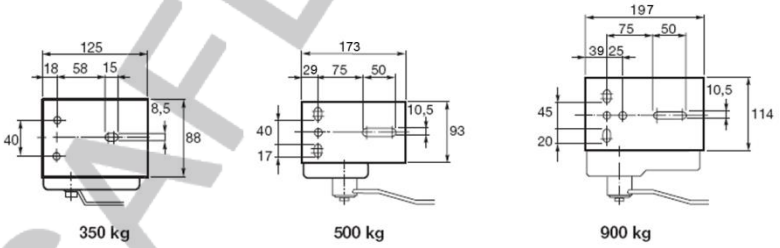


Illustration 1

6.2 Hand Crank

NOTICE!

The crank must at least be turned 1/4 turns to the left side without the driving shaft or rope drum moving.

Use a torque wrench for tightening! Tightening moment 20 Nm.

1 Remove the hexagon screw, the spring ring and disc from the driving shaft.
2 Hold the rope drum and turn the crank/crank nut totally open.
3 Plug on the spring ring and the disc,
4 screw in by hand the hexagon screw - anti-clockwise.
5 Hold the crank/crank nut and tighten the hexagon screw with the torque wrench.
6 Check wether the crank/crank nut can be moved.
7 Mount the covering cap.

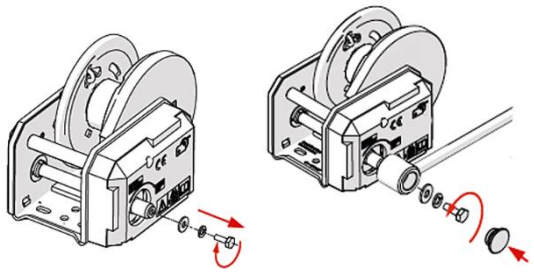


Illustration 2

Assembly of the crank 900A

1 Pull out the safety button
2 Plug the crank onto the driving shaft.

The safety button must lock into place automatically.

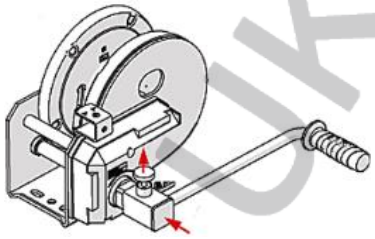


Illustration 3

6.3 Selection of wire ropes

- Wire ropes acc. to EN 12385-4 - Lifting ropes
- Stainless wire ropes and special wire ropes are available on request.
- Diameter and nec. minimum breaking load must be acc. to the data mentioned in the table in chapter "Technical Data" resp. acc. to the details mentioned on the type plate.

Recommendation of wire ropes

- Steel-reinforced wire ropes
- For larger pulling rope forces, fibre-core wire ropes can also be used.
- For unguided loads, - non-twisting or at least twist-resistant wire ropes.
- For several rope layers winded through the drum, - steel-reinforced wire ropes.

WARNING!

It is not allowed to use plastic wire ropes or plastic-coated wire ropes.

6.4 Wire rope fastening

Only use ropes with grouted hooks!

1 Insert the rope from the inner side to the outer side through the long hole in the drum.
2 Insert the rope end with a big loop into the gripper clamp and tighten the hexagon nut slightly.
3 Pull the loop until it reaches the gripper clamp and tighten the hexagon nuts (tightening torque max. 10 Nm).
4 Wind two layers of rope onto the drum (direction LIFTING)

350 kg

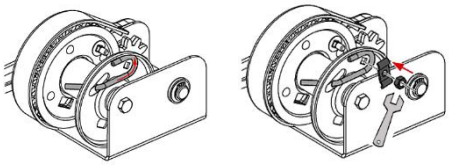


Illustration 4

1 Insert the rope from the inner side to the outer side through the long hole in the drum.
2 Insert the end of the rope through the rope gripper stamp (overlap of wirerope min. 10 mm)
3 Tighten the hexagon nuts of the rope clamp stable (tightening torque M5 = 6Nm; M6 = 10 Nm)
4 Wind two layers of rope onto the drum (direction LIFTING)

500 - 900 kg

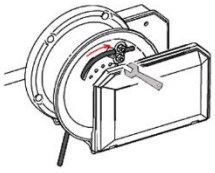


Illustration 5

5 Mark the rope exits with color.

350 - 900 kg

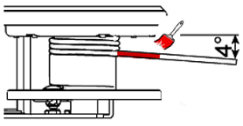


Illustration 6

DANGER!

In case of incorrect winding direction, the load pressure brake is not working.

6.5 Winding up of wire rope

The wire rope must always be winded up tensioned. When the last wire rope layer is winded onto the drum, the flanged wheel must exceed the top layer by at least 1 1/2 times of the wire rope diameter.

NOTICE!

According to validated regulations and accident prevention regulations, the wire rope length must be chosen so that at least 2 rope layers remain on the drum when the wire rope is unwinded.

6.6 Wire rope deflection

- Wire rope pulleys must be installed in a position centrically to the rope drum.
- In order to ensure correct winding up of the wire rope on the drum, the max. wire rope deflection angle must not be exceeded.
- maximum wire rope deflection angle
  - 4° for standard wire ropes
  - 2° for non-twisting resp. twist-resistant wire ropes
- The minimum dimension (M) from the drum until the middle of the pulley must be adhered to.

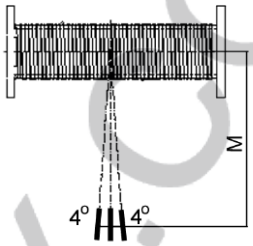


Illustration 7

7 Operation

Only people that are familiar with the operation of the lifting devices and cranes may be entrusted with their operation. They must be authorized by the employer for the operation of the equipment. The employer must ensure that the operating instructions are available near the equipment and that they are accessible for the operating personnel.

Lifting and lowering by turning the hand crank.

Lifting load – turn clockwise.

Hold load – release hand crank. The load holds automatically. Acc. The different types, the crank can removed in each position or the crank grip can fold back.

Lowering load – turn anti clockwise.

WARNING!

No continuous operation!

In case of long way of lowering the loads, the brake system may run hot.

Lowering period max. 2 - 5 minutes, depending on the load.

Only for winches 900 A

Illustration 8

1 Turn the crank anti-clockwise (drum must stand still)
2 Pull out the safety button.
3 Take down the crank and place it onto the foreseen bracket.
4 Detract the rope quickly by hand.

WARNING!

Under load the crank must be placed on the driving shaft!

8 Commissioning

8.1 General

Should the unit be used in Germany:

Please observe the validated, national accident prevention regulations.

For other countries:

Inspections as above. Please observe the national rules and regulations and the instructions in this manual!

NOTICE!

Hoists up to 1000 kg capacity and without motor-driven trolleys of hoisting unit must be tested by a “qualified person” before putting into operation for the first time.

Hoists of 1000 kg capacity and up or with more than one motor-driven hoist movement; i.e. lifting and trolley movement, must be tested by a “licensed qualified person” before putting in operation.

An exception is “hoists ready for operation” acc. validated national regulations with EU-declaration of conformity.

Definition “qualified person” (former expert)

A “qualified person” has learned, due to occupational training and experience and the job that the person has done, the skills needed to tests the material for one’s work.

Definition “licensed qualified person” (former approved expert)

A “licensed qualified person” has, due through special occupational training, knowledge about testing of the material for one’s work and knows the national accident prevention regulations and other prescriptions and technical regulations. This person must test the material for one’s work regularly with regard to design and kind of use. The license will be given to qualified person be the approved supervision authorities (ZÜS).

8.2 Wire rope

Wire ropes must be free from corrosion, dirt or damage.

They must be lubricated before commissioning.

No lubrication shortens the lifetime of the wire rope and the maintenance intervals.

WARNING!

It is not allowed to use plastic wire ropes or plastic-coated wire ropes.

9 Safety check

Before putting into service initially or when putting back into service, it must be checked whether:

- All fastening screws (if existent), socket pins, flap socket and safety devices are tightened and secured.
- The wire ropes are winded up correctly, are lubricated and are in good condition.

10 Functional test

The functional test must be effected with the load capacity mentioned on the type plate.

Check the brake when lifting/lowering - it must hold the load safely.

Check the condition of the wire rope and the supporting structures.

Check screw connections.

11 Maintenance

11.1 General

All monitoring, servicing and maintenance operations are to ensure correct functioning of the equipment; they must be effected with utmost care.

- Only “qualified persons” may do this work.
- Servicing and maintenance work must only be done when the hoist is not loaded.
- Records must be kept of all test results and measures taken.

11.2 Monitoring

The monitoring and servicing intervals stated are valid for operation under normal conditions and single-shift operation. In case of severe operating conditions (e.g. frequent operation with full load) or special environmental conditions (e.g., heat, dust, etc.), the intervals must be shortened correspondingly

12 Inspection

12.1 Periodic checks

Independently from the regulations of the individual countries, lifting devices must be checked at least yearly by a qualified person or licensed qualified person regarding its functional safety.

12.2 Wire rope

Adequate performance of the servicing and monitoring work acc. to the validated, national regulations “Basics for cable drives – monitoring during use”.

A visual check must be effected before every new work shift.

- Wear
- Deformation
- Fissures
- Corrosion

Report any damage immediately to the responsible person and exchange damaged or worn wire ropes and load tackles.

12.3 Inspection intervals

	on commissioning	daily checks	1st service after 3 months	inspection, service every 3 months	inspection, service every 12 months	
Inspection of the equipment by a qualified person (periodic inspection)					X	
Check screw connections	X				X	
Check brake function	X	X				
check brake air gap (only for electric devices) *)					X	
check overload protection if existent					X	
clean and lubricate the wire rope	X		X	X		
check wire rope and wire rope end fastenings for damage and wear		X				
check the load tackle and load hook for cracks and deformation					X	

*) not for EX design

NOTICE!

Permanent operation with up to 100 % of the nominal load: Maintenance after 100 m lifting and lowering.

Permanent operation with up to 50% of the nominal load: Maintenance after 200 m lifting and lowering

Please effect the following work:

- Check easy movement of the crank.
- Check "click into place"-function of the ratchet pawls.
- Check wear of the brake discs, resp. brake lining.

13 Service

13.1 Wire rope

Wire ropes have to be exchanged by new, original wire ropes if they show corrosion, fracture or if they are worn.

Checks:

- Fastening screws must be checked before commissioning and at least every 3 months, - tighten them if necessary.
- Kind and number of broken threads.
- Position of the broken threads
- Timing sequence of occurrence of breaks.
- Reduction of the wire rope diameter.
- Corrosion
- Abrasion
- Deformation
- Heat influence
- Operation time
- Wire rope fastening

⚠ CAUTION!

The wire rope must be replaced immediately should even one strand be broken.

13.2 Lubrication points

☞ NOTICE!

Permanent operation with up to 100 % of the nominal load: Maintenance after 100 m lifting and lowering.

Permanent operation with up to 50% of the nominal load: Maintenance after 200 m lifting and lowering

Please lubricate the following parts:

- Drum hub
- Geared ring
- Bearing bushes of the driving shaft

Recommended lubricant: FUCHS Renolit EP 2 or similar product.

- Crank thread

Recommended lubricant: KLÜBER Wolfracoat 99113

13.3 Gear spring pressure brake

During the check, brake lining wear is verified. The brake linings must be replaced when the wear limit is already reached at one position of the lining, - as this can be the case when wear of the linings is irregular.

⚠ CAUTION!

The brake linings must be free from fracture. Avoid oil, grease, dirt and humidity on the brake linings as this increases wear.

Minimum thickness of brake lining 1,5 mm

⚠ CAUTION!

Brake mechanism is prepared with special graphite paste "Wolfracoat 99113".

Other lubricants (Oil and grease) are not permitted!

13.4 Lubricant - Selection

FUCHS	SHELL	ESSO	MOBIL	TOTAL	CASTROL	KLÜBER
Renolit FEP 2	Alvania EP 2	Unirex EP 2	Mobilux EP 2	MULTIS EP2	--	--
Stabylan 5006	--	--	--	--	Optimol Viscoleb 1500	Klüberoil 4UH 1-1500
--	--	--	--	--	--	Wolfracoat 99113
Chain lubricant OKS 451						

13.5 Lubricant for food industry – Selection (as option*)

	SHELL	MOBIL	CASTROL	KLÜBER
Gearing	FM Grease HD2	Mobilgrease FM 222	--	Klüberoil 4UH 1-1500 N
Load chain	--	Lubricant FM 100	Optimol Viscoleb 1500	--
Load hook; Pulleys Gear rim; Drive pinion	FM Grease HD2	Mobilgrease FM 222	--	--

* must be mentioned by order

14 Trouble

Please pay attention to the following in case of problems:

- Troubles with the equipment must only be repaired by qualified personnel.
- Secure the unit against unintended operation start.
- Put up a warning note indicating that the unit is not to be used.
- Secure the working area of moving parts of the unit.
- Please read the chapter "Safety instructions".

Notes on the repair of faults are found in the following table.

For the repair of failures please contact our service department.

CAUTION!

Trouble caused by wear or damage to parts such as wire ropes, chains, chain wheels, axes, bearings, brake parts, etc., must be remedied by replacing the parts with original spare parts.

15 Remedy

Trouble	Cause	Remedy
Load is not held	Incorrect winded rope (turn direction lifting wrong)	Install rope correctly
	Brake worn or damaged	Check brake parts, change worn parts
	Brake disc wet or oily	Clean brake discs or change it
Load pressure brake does not open, Lowering with or without load is stiffing	Brake mechanism or brake disc inhibited, crank is tight	Set the brake free by slightly hitting with thenar against the crank in direction "lowering"– without load! (possibly locking of gear wheel, till the crank is loosen) grease treat of crank
Load pressure brake does not close	Crank is incorrect installed; by hexagon screw inhibited	See crank installation

16 Decommissioning

WARNING!

It is essential that the following points are observed in order to prevent damage to the equipment or critical injury when the device is being decommissioned:

It is mandatory that all steps for decommissioning the machine are carried out in the indicated sequence:

- First secure the working area for decommissioning, leaving plenty of space.
- Read the chapter "Safety instructions".
- Disassembly is carried out in reverse order to the assembly.
- Please make sure that all operating material is disposed of in accordance with environmental regulations.

16.1 Temporary decommissioning

- Measures are as above.
- Also read the chapter “Transport and storage”.

16.2 Final decommissioning/disposal

- Measures are as above.
- After disassembly, ensure that the disposal of the equipment and any materials it contains is carried out in accordance with environmental regulations.