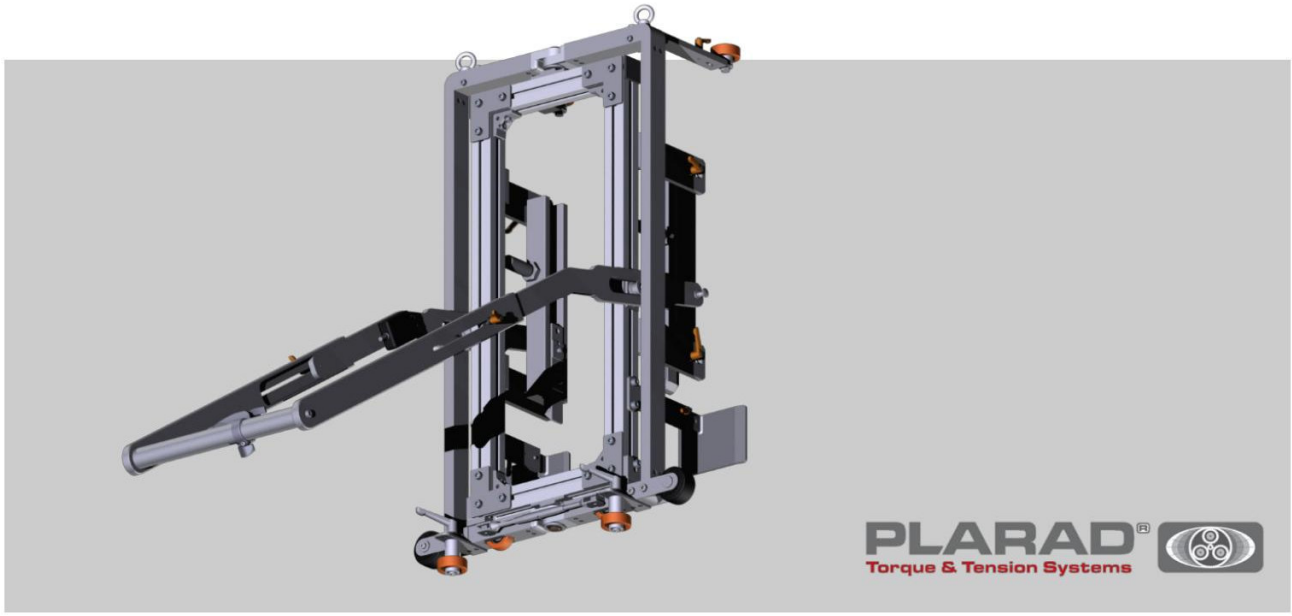
Operating instructions

Lifting device HV1eco 180, HV1eco 230



Read the instructions carefully before use!
Keep for future use!

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pA# 85295 GBR

Information about this manual

This manual enables safe and efficient handling of the lifting device.

The manual is a component of the lifting device and must be kept close to it and accessible to the user at all times.

The user must have carefully read and understood this manual before starting any work. The basic prerequisite for safe working is compliance with all the safety and handling instructions in this manual.
In addition, the local accident prevention regulations and general safety regulations for the area of use of the lifting device apply.

Illustrations in this manual are for basic understanding and may differ from the actual design.

Variants

The manual is valid for the following lifting devices:

- HV1eco 180
- HV1eco 230

Applicable documents

In addition to this manual, the following documents must be observed:

- Type plate
- Operating instructions for the connected hydraulic tool
- Operating instructions for the connected electric nutrunner
- Documentation of the hydraulic aggregate provided by the operator
- Technical data sheet

Copyright protection

Further development of the manual

This manual have been compiled with the utmost care. If you notice any errors, have any questions or notice any inconsistencies, please let us know in writing. Your suggestions for improvement will help us to create a user-friendly manual.

Reorder

Additional copies of this manual can be ordered for a fee.

"Contact *manufacturer" on page 4.*

Manufacturer

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PLARAD® service

Information on the PLARAD® service and authorized PLARAD® partners:

- *www.plarad.de*

Table of contents

1 Unpacking

Delivery

The lifting device is delivered together with the rest of the scope of delivery in packaging adapted to the transportation route and the place of delivery.

Checking the delivery

Check the delivery for transport damage and ensure it is complete immediately upon receipt. If it is incomplete or if there are defects, note the extent of the damage on the transportation documents and lodge a complaint immediately.

Scope of delivery HV1eco 180

The scope of delivery includes:

- Lifting device
- Adapter unit:
  - Socket pin
  - Tool holder
  - Adapter strips
- Document folder
  - Operating instructions
  - EU Declaration of

Conformity Optional:

- Replacement slide rails

The HV1eco 180 lifting device is supplied pre-assembled.

Scope of delivery HV1eco 230

The scope of delivery includes:

- Lifting device
- Adapter unit:
  - Socket pin
  - Tool holder
  - Adapter strips
- 8 M4 screws with Allen key
- Document folder
  - Operating instructions
  - EU Declaration of Conformity

Optional:

- Replacement slide rails

The HV1eco 230 lifting device must be assembled ("Pre-assembling the HV1eco 230" on page 30).

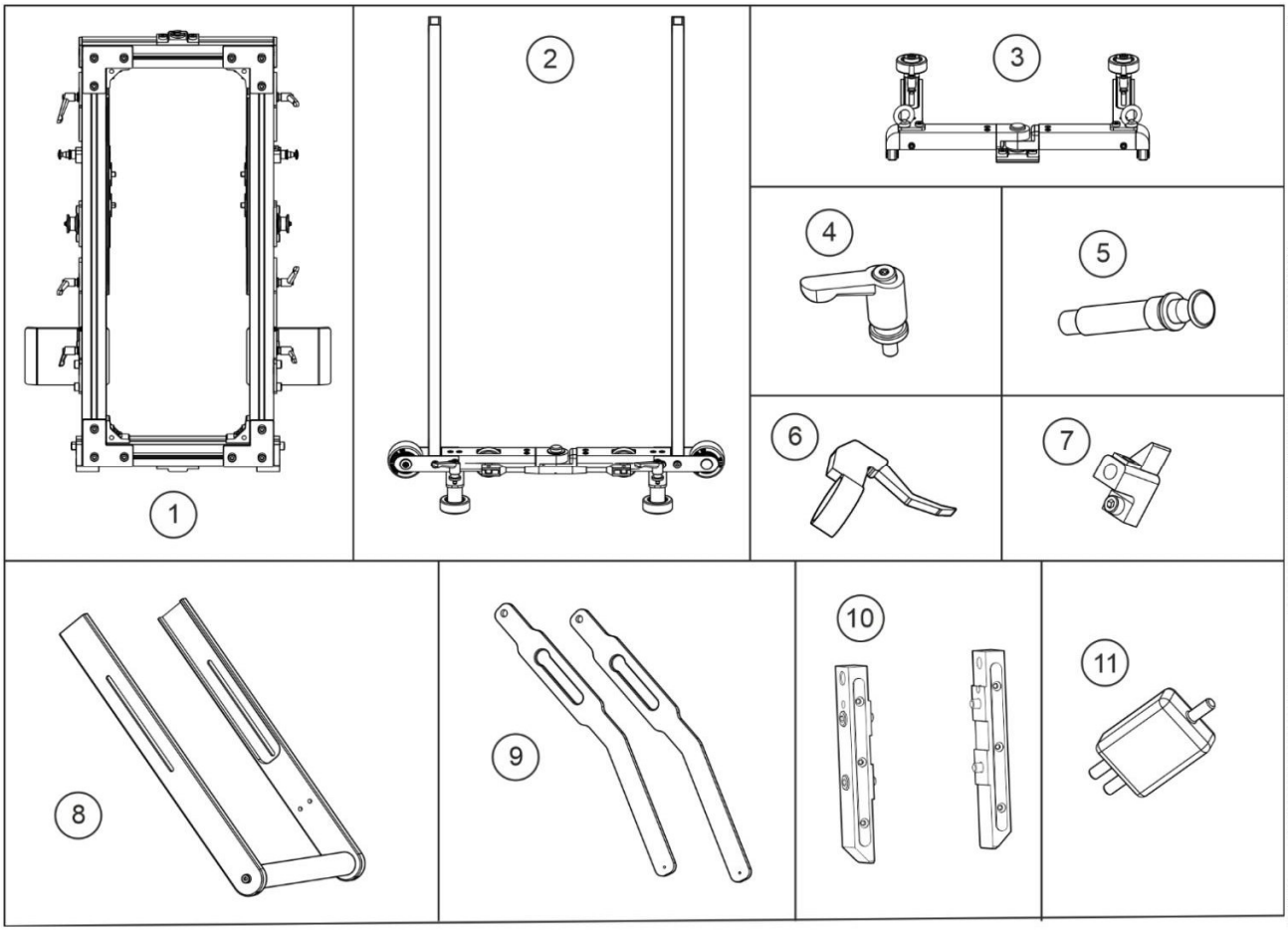

Fig. 1: Components of the HV1eco 230 lifting device

1 Inner frame
2 Lower outer frame
3 Upper outer frame
4 Clamping lever for handle unit (2x)
5 Socket pin (2x)
6 Lever handle
7 Tool holder (2x)
8 Handle unit
9 Bracket (2x)
10 Adapter strips
11 Bowden switch

Handling packaging material

The individual packages are packed according to the expected transport conditions. Only environmentally friendly materials were used for the packaging.

The packaging should protect against transportation damage, corrosion and other damage. Therefore, do not destroy the packaging and only remove it shortly before use.

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

ENVIRONMENTAL PROTECTION!

Danger to the environment due to incorrect disposal!

Packaging materials are valuable raw materials and in many cases can be reused or sensibly processed and recycled. Incorrect disposal of packaging materials can pose a risk to the environment.

- Reuse pallets.
- Dispose of packaging materials in an environmentally friendly manner.
- Observe the locally applicable disposal regulations. If necessary, commission a specialist company with the disposal.

2 Get to know the lifting device

2.1 Overview

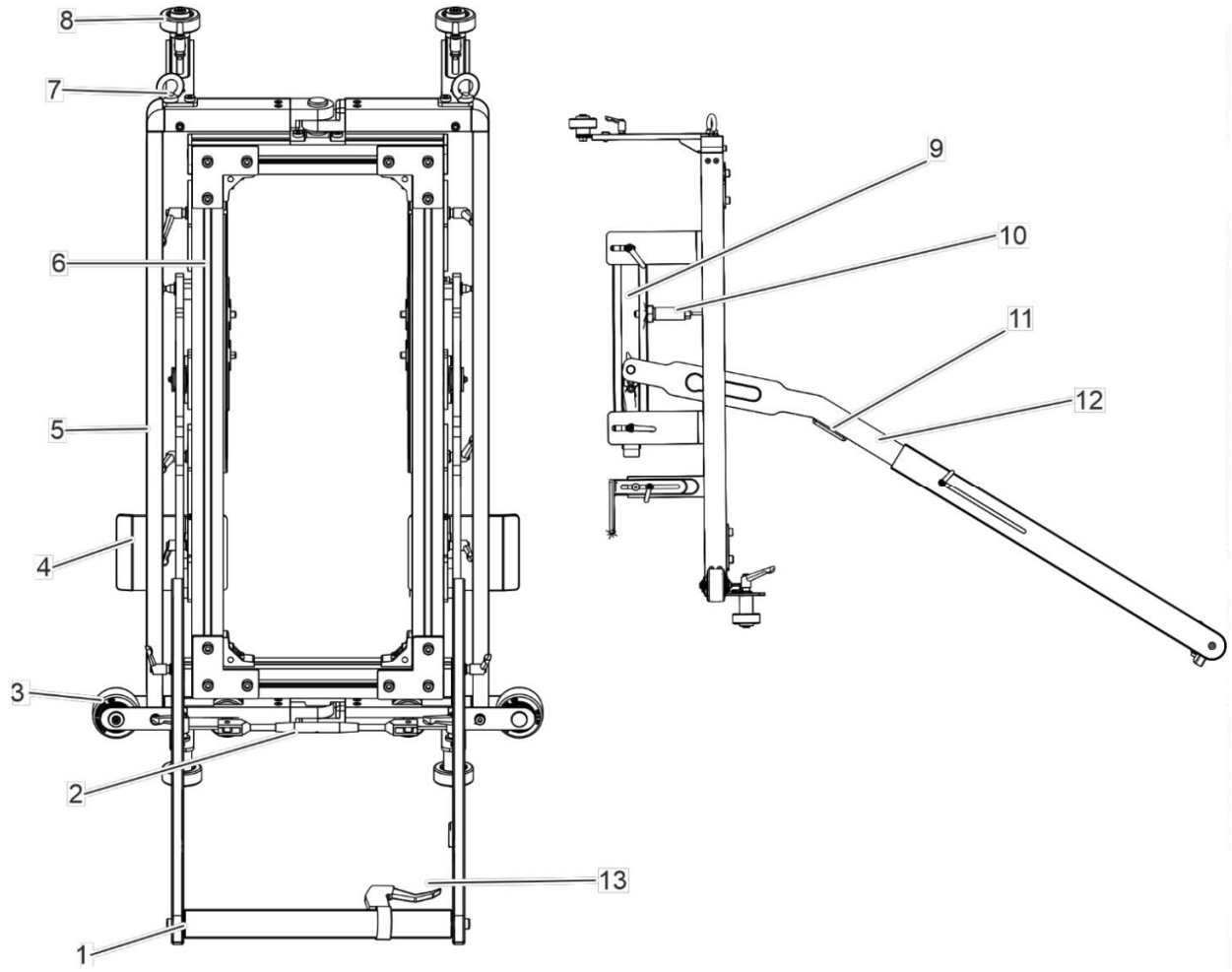

Fig. 2: Overview of lifting device

1 Handle unit
2 Shroud tensioner
3 Transport rollers
4 Crash plates
5 Outer frame
6 Inner frame
7 Attachment points
8 Support rollers
9 Slide rails and tool holder for tool assembly
10 Locking bolt
11 Bowden cable switch
12 Handle unit bracket
13 Lever handle

Adjustment points

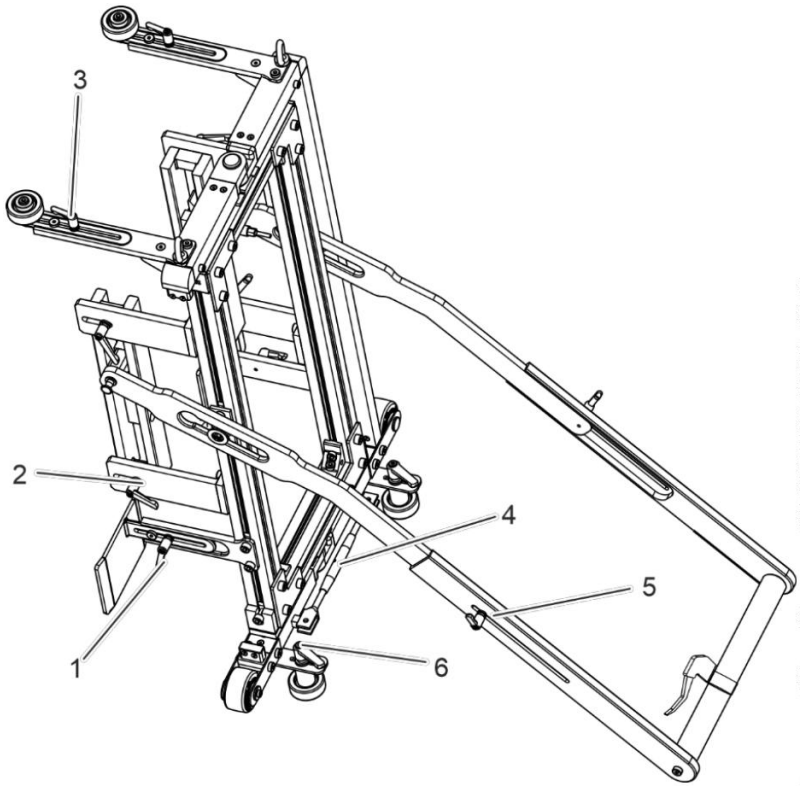

Fig. 3: Adjustment points

1 Clamping lever for adjusting the camber plates
2 Clamping lever for adjusting the tool height
3 Clamping lever for adjusting the upper support rollers
4 Turnbuckle for adjusting the radius of the lifting device
5 Clamping lever for adjusting the lever length
6 Clamping lever for adjusting the lower support rollers

2.2 Brief description

The lifting device is used to transport tensioners and screwing devices The corresponding device is mounted in the lifting device.
Chapter 5 'Using the lifting device' on page 33).
When using a hydraulic power pack is also connected to the tensioner. In this connection, the lifting device is used for pretensioning, tightening and loosening bolted connections on wind turbines.
Before mounting the tensioner or bolting device and after disassembly, the lifting device can be removed with the help of of the attachment points (Fig. 2/7). As long as a tensioner or bolting device is fitted, the attachment points (Fig. 2/7) must not be used for securing during transportation. During operation, the lifting device must be secured via the attachment points on the tensioner or bolting device.

The radius of the tower wall can be flexibly defined using the shroud tensioner (Fig. 2/2).

Support rollers (Fig. 2/3) and levers (Fig. 2/1) allow the tensioner or bolting device to be transported along the tower wall.

Depending on the size of the lifting device, different clamping cylinders or bolting devices can be used.

2.3 Compatible tensioners and bolting devices

HV1eco 180

The HV1eco 180 lifting device is compatible with PLARAD® tensioners or bolting devices that meet the following specifications:

Maximum diameter of the insert tool	180 mm
Maximum weight of the insertion tool	100 kg
Maximum support height	140 mm

HV1eco 230

The HV1eco 230 lifting device is compatible with PLARAD® tensioners or bolting devices that meet the following specifications:

Maximum diameter of the insert tool	230 mm
Maximum weight of the insertion tool	180 kg
Maximum support height	210 mm

2.4 Type plate

Fig. 4: Type plate Hv1eco

The type plate is located on the outer frame of the lifting device.

The following data is entered on the rating plate:

Type plate

- Manufacturer name with country, postal code and city
- Product name
- Article/serial number
- Year of construction
- CE marking

3 Before you start - safety

This section provides an overview of all important safety aspects for the protection of persons and for safe and trouble-free operation. Further task-related safety manual is contained in the sections on the individual manual chapters.

3.1 Symbols in this manual

Safety instructions

Safety instructions in this manual are identified by symbols. The safety manual is introduced by signal words that express the extent of the hazard.

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 dangerous situation that can lead to death or serious injury if not avoided.

CAUTION!
This combination of symbol and signal word indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTE!
This combination of symbol and signal word indicates a potentially dangerous situation which can lead to material damage if it is not avoided.

ENVIRONMENTAL PROTECTION!
This combination of symbol and signal word indicates possible hazards for the environment.

Safety instructions in handling instructions

Safety instructions can refer to specific, individual handling instructions. Such safety manual is embedded in the instructions so that they do not interrupt the flow of reading when carrying out the action. The signal words described above are used.

Example:

1. Loosen the screw.
2. 

   CAUTION!
   Risk of jamming on the lid!

   Carefully close the lid.
3. Tighten the screw.

Tips and recommendations

This symbol highlights useful tips and recommendations as well as information for efficient and trouble-free operation.

Further markings

The following markings are used in this manual to emphasize instructions, results, lists, references and other elements:

Labeling	Explanation
▸	Step-by-step instructions
⇨	Results of action steps
↯	References to sections of this manual and to other applicable documents
■	Listings without a fixed order

3.2 Symbols on the lifting device

Illegible signage

WARNING!

Danger if signs are illegible!

Over time, signs and stickers can become dirty or otherwise unrecognizable, so that hazards cannot be identified and necessary operating instructions cannot be followed. This poses a risk of injury.

– Always keep all safety, warning and operating instructions in a legible condition.
– Replace damaged signs or stickers immediately.

The following symbols and signs are located on the lifting device:

Attachment point

Only attach the hoist to the marked lifting points.

Wear safety shoes

Wear safety shoes in the area where the lifting device is used.

Follow instructions

Read the operating instructions before using the lifting device.

Crushing hazard

Keep your hands away from places with this warning sign.

There is a risk of body parts being crushed, pulled in or otherwise injured.

When working at the marked points, increased attention is required.

3.3 Intended use

The lifting device is used to transport tensioners and bolting devices and is used for pretensioning and loosening bolted connections within the defined specifications (*Chapter 9 "Technical data" on page 53*).

The lifting device may only be used with PLARAD® clamping cylinders or bolting devices.

Tensioners operated with the lifting device are driven hydraulically.

Tensioners operated with the lifting device or the bolting device may only be used commercially and only in conjunction with PLARAD® hydraulic power packs.

If the lifting device and tensioner are connected to a hydraulic power pack, they may only be used in a non-explosive atmosphere.

Intended use includes compliance with all information in this manual.

3.4 Misuse

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

WARNING!

Danger of misuse!

Incorrect use of the lifting device can lead to dangerous situations.

- Only use the lifting device with the clamping cylinders, bolting devices or hydraulic power packs from PLARAD® intended for this purpose.
  - HV1eco 180: *Chapter 2.3 "Compatible tensioners and bolting devices" on page 13*
  - HV1eco 230: *Chapter 2.3 "Compatible tensioners and bolting devices" on page 13*
- Only use the lifting device for pretensioning and screwing bolted connections on wind turbine wheels.
- Never operate outside the described specifications *Chapter 9 "Technical data" on page 53*.

3.5 Residual risks

The following section lists residual risks that may arise from the lifting device in combination with a tensioner or bolting device and hydraulic power pack, even when used as intended.

To reduce the risk of personal injury and damage to property and to avoid dangerous situations, observe the safety instructions listed here and the safety instructions in the other sections of this manual.

In addition, observe the warnings in the operating instructions for the individual components.

3.5.1 Mechanical hazards

Tipping over

WARNING!

Risk of injury if tipped over due to heavy weight!

If the lifting device tips over, e.g. during the assembly of a tensioner, this can lead to serious injuries or crushing due to the heavy weight.

- Only mount the lifting device on a flat surface.
- Only allow work to be carried out by persons who are physically able to use the lifting device safely despite its heavy weight.
- After assembly, secure the lifting device using the attachment points on the mounted tensioner or bolting device.
- Do not use the attachment points on the lifting device for transporting the lifting device and tensioner or bolting device after assembly.
- Wear safety shoes.

Squeeze

WARNING!

Risk of crushing when supporting and due to heavy weight!

During operation, very high forces act on the tensioner or bolting device, support, support surface and bolts. There is a risk of crushing between the contact surface and the support surface when screwing and unscrewing. The heavy weight of the tensioner or bolting device in combination with a lifting device can lead to crushing injuries if it falls.

- Handle the tensioner or bolting device and lifting device carefully and as intended.
- Take the weight into account during transportation and all work.
- After assembly, secure the lifting device using the attachment points on the mounted tensioner or bolting device.
- Do not use the attachment points on the lifting device for transporting the lifting device and tensioner or bolting device after assembly.
- Only allow work to be carried out by persons who are physically able to use the tensioner or bolting device safely despite its heavy weight.
- Do not grasp between the contact surface and the support surface.
- Do not stand in the pulling direction of the tensioner or bolting device.
- Secure the tensioner or bolting device with a lifting device to prevent it from falling.
- Wear safety shoes.

Moving components and rotary movements

WARNING!

Risk of injury from moving components!

Moving components can cause serious injuries. There is a risk of entrapment during the lever movement and transportation of the lifting device. There is a risk of entrapment due to the rotation of the tensioners or the bolting device.

- Do not grasp into moving parts or handle moving components during operation.
- Wear close-fitting protective work clothing with low tear resistance.
- Wear safety goggles.
- Protect long hair from being pulled in by rotating parts with a protective cover (hair net).

Dirt and objects lying around

CAUTION!

Risk of injury from falling over dirt and objects lying around!

Dirt and objects lying around are sources of slipping and tripping. Injuries can be caused in the event of a fall.

- Always keep the work area clean.
- Remove objects that are no longer required from the work area and especially from near the floor.
- Mark unavoidable tripping hazards with yellow and black marking tape.
- Keep the handles and gripping surfaces of the lifting device dry, clean and free of lubricants. Clean immediately if soiled.

3.5.2 Dangers due to hydraulics

The operation of lifting equipment in combination with a hydraulic power pack leads to the following residual risks:

- Pressurized hydraulic components can cause life-threatening injuries!
- Risk of bursting due to excessive hydraulic pressure!

- Damage to health and secondary diseases due to contact with hydraulic oil!
- Material damage due to non-compliance with the oil specifications!

Observe the operating instructions for the PLARAD® power pack used.

3.5.3 Noise and ergonomics

Lack of ergonomics

WARNING!

Damage to the musculoskeletal system due to the heavy weight of the lifting device in combination with a tensioner or bolting device!

Lifting and carrying heavy loads can lead to permanent damage to the musculoskeletal system.

– Ensure a secure footing and sufficient room to move.
– Keep your back as straight as possible. Do not carry with your upper body bent forward or with a hollow back.
– Avoid one-sided strain. Avoid twisting the spine. Do not carry with one hand.
– Never jerk the lifting device in combination with a tensioner or bolting device.
– Use suitable auxiliary equipment and lifting gear.

Carelessness

WARNING!

Risk of injury due to distraction, carelessness or irresponsible use!

Distraction, carelessness or irresponsible use can lead to loss of control of the hoist and thus to serious injury.

- Always illuminate the work area well.
- Keep children and unauthorized persons away.
- Work in a focused and responsible manner. Do not be distracted.
- Do not work tired or under the influence of drugs, alcohol or medication.
- Do not be lulled into a false sense of security. Do not disregard the safety and handling instructions in this manual, even if the lifting device in combination with a tensioner or scraper appears familiar after frequent use.
- Wear the prescribed personal protective equipment.

The operation of lifting equipment in combination with a tensioner or a bolting device - as well as a hydraulic power pack - also leads to the following residual risks:

- Risk of injury due to noise!
- Risk of injury from hot surfaces!

Observe the operating instructions for the PLARAD® tensioner, bolting device or hydraulic power pack used.

3.6 Safety devices

Faulty safety equipment

WARNING!

Danger to life due to non-functioning safety equipment!

There is a risk of serious injury if safety devices or safety functions are not working or are disabled.

– Before starting work, check that all safety devices are functional and correctly installed.
– Never override or bypass safety devices or safety functions.

The lifting device has the following safety devices and safety functions:

Camber plates

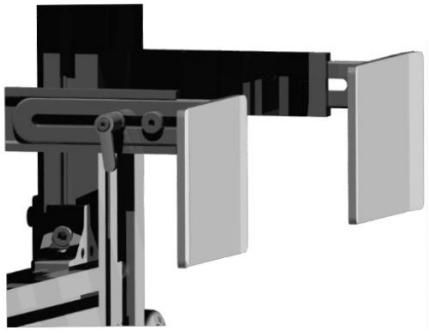

Fig. 5: Camber plates

There are two crash plates on the rear of the lifting device to prevent the lifting device from tipping over. The crash plates must always be as close as possible to the screw to prevent tipping (*Chapter 5.2 “Adjusting" on page 38*).

Support rollers

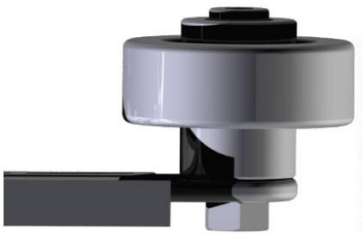

Fig. 6: Support roller

There are 4 support rollers and 2 transport rollers on the lifting device (*Chapter 2 "Getting to know the lifting device" on page 11*), which ensure safe guidance of the lifting device. allow.

Clamping lever

Fig. 7: Clamping lever

All adjustment points (*Chapter 2 "Getting to know the lifting device" on page 11*) of the lifting device are secured by clamping levers.
The adjustable components are protected against unintentional loosening.

3.7 Operator obligations

The lifting device is used in the commercial sector. The operator of the lifting device is therefore subject to statutory occupational safety obligations.

In addition to the safety instructions in this manual, the safety, occupational health and safety and environmental protection regulations applicable to the area of use of the lifting device must be observed.

The following applies in particular:

- The operator must inform himself of the applicable occupational health and safety regulations and prepare a risk assessment.
  In addition, the operator must determine the dangers arising from the specific working conditions at the place of use of the lifting device. He must implement these in the form of operating instructions for the operation of the lifting device.
- The operator must check during the entire period of use of the lifting device whether the operating instructions drawn up by him are complied with.
  instructions correspond to the current status of the regulations and adapt them if necessary.
- The operator must clearly regulate and define the responsibilities for all work on and with the lifting device.
  The responsibilities and competencies of personnel for operation, set-up, maintenance and repair must be clearly defined.
- The operator must reliably control the use of the lifting device and ensure that only the lifting device used is used. trained and instructed personnel are working with the lifting device. Personnel to be trained, instructed or undergoing training may only work with the lifting device under the supervision of an experienced person.

Furthermore, the operator is responsible for ensuring that the lifting device is always in perfect technical condition. The following therefore applies:

- The operator must ensure that the maintenance intervals described in this manual are observed.
- The operator must have all safety equipment checked regularly for functionality and completeness.

3.8 Requirements for personnel

WARNING!

Risk of injury if personnel are insufficiently qualified!

If unqualified personnel carry out work on or with the lifting device in combination with a clamping cylinder or a bolting device or are in the danger zone of the work, hazards arise that can cause serious injuries and considerable material damage.

– All work should only be carried out by qualified personnel.
– Keep unqualified personnel away from danger zones and work areas.

Users

The user of the lifting device has the necessary knowledge and training in handling hydraulic and tensioners or bolting devices. Furthermore, the user has been instructed by the operator on the
tasks assigned to him and the possible dangers of improper behavior.

The user has been instructed in the use of personal protective equipment, knows the most important specifics, circumstances and information for working with tensioners or bolting devices and hydraulic power packs and is able to use the tensioner or bolting device safely in combination with the lifting device and a hydraulic power pack. This includes the connection of hydraulic hoses.

The user must be over the minimum legal age and physically fit to move the lifting device safely despite the heavy weight.

The user may only carry out tasks that go beyond normal operation if this is specified in this manual and the operator has expressly authorized him to do so.

The user knows their supervisor, who they can contact with questions or in the event of danger, and can communicate with them.

The user is informed of all residual risks and is trained in the practical handling of the tensioner or bolting devices and hydraulic power packs.

Operator

The operator is the person who operates the lifting device for commercial or economic purposes or leaves it to a third party for use and bears legal product responsibility for the protection of personnel or third parties during operation.

Chapter 3.7 "Operator obligations" on page 25

PLARAD® service

Certain work may only be carried out by PLARAD® Service or by personnel authorized by Maschinenfabrik Wagner GmbH & Co. KG. Other personnel are not authorized to carry out this work. Contact PLARAD® service or authorized PLARAD® partners to carry out the necessary work.

Contact: *www.plarad.de*

Unauthorized persons

WARNING!

Danger to life for unauthorized persons due to hazards in the danger zone and work area!

Unauthorized persons who do not meet the requirements described here are not aware of the dangers in the work area. Unauthorized persons therefore run the risk of serious injury or even death.

- Keep unauthorized persons away from the danger zone and work area.
- If in doubt, speak to people and direct them away from the danger zone and work area.
- Interrupt work as long as unauthorized persons are in the danger and work area.

3.9 Personal protective equipment

Protective gloves

Protective gloves are used to protect hands from friction, abrasions, punctures or deeper injuries as well as from contact with hot surfaces.

Safety shoes

Safety shoes protect feet from crushing, falling parts and slipping on slippery surfaces.

Hearing protection

Hearing protection is used to protect against hearing damage caused by noise.

Safety goggles

The safety goggles protect the eyes from flying parts and liquid splashes.

Protective work clothing

Protective workwear is close-fitting work clothing with low tear resistance, tight sleeves and no protruding parts.

Protective cover

The protective cover (hair net) is used to protect the hair from being pulled in by rotating and moving parts, e.g. when screwing.

Wearing is compulsory for hair lengths that are longer than the circumference of the movable shaft.

Industrial safety helmet

Industrial safety helmets protect the head against falling objects, swinging loads and impact with stationary objects.

An industrial safety helmet must be worn when working overhead.

4 Pre-assemble the lifting device

Crushing hazard

WARNING!

When assembling the lifting device, there is a risk of injury due to moving parts and the high dead weight. the risk of body parts being crushed, pulled in or otherwise injured.

- Ensure adequate lighting.
- Do not grasp between moving mechanical parts.
- Grip the lifting device on the outer frame during transportation.
- Carry out assembly in a clean working area.
- Wear safety shoes.

Pre-assemble HV1eco 180

The HV1eco 180 lifting device is supplied pre-assembled. The lever of the lifting device must be dismantled for the installation of the tensioner or bolting device (*Chapter 5.1 „Installing the tensioner or bolting device" page 33*).

Pre-assemble HV1eco 230

Personnel: ■ User Protective

equipment: ■ Safety shoes

Requirements:

- The lifting device is unpacked and checked for completeness (*"Scope of delivery HV1eco 230" on page 7*).

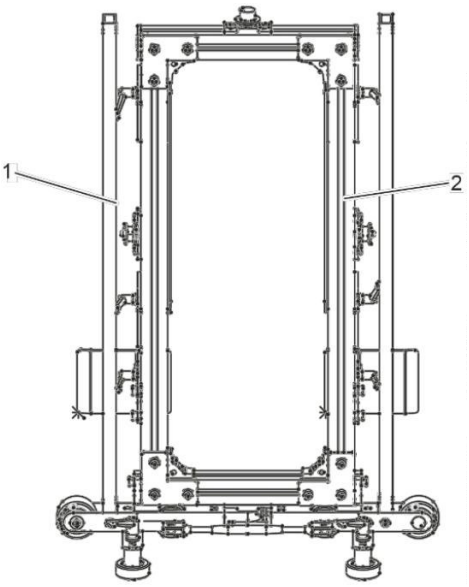

Fig. 8: Place lower inner frame on outer frame

1. Place the inner frame (Fig. 8/2) on the lower half of the outer frame (Fig. 8/1).

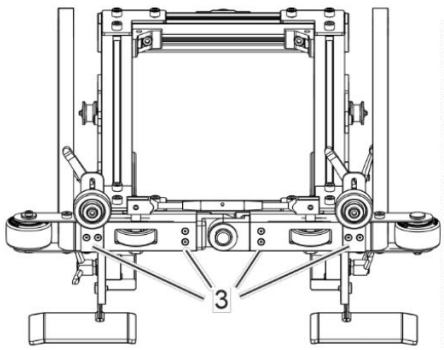

Fig. 9: Fixing the outer frame at the bottom

2. Fix with M4 screws *on page 8*) to the underside of the outer frame (Fig. 9/3) and tighten the screws with the Allen key hand-tight.
3. Fit the upper half of the outer frame. Secure with M4 screws and tighten the screws hand-tight with an Allen key.

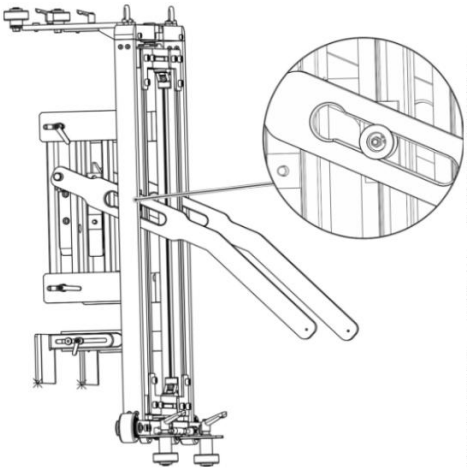

Fig. 10: Attaching the bracket

4. Hook the bracket into the lifting device on both sides.

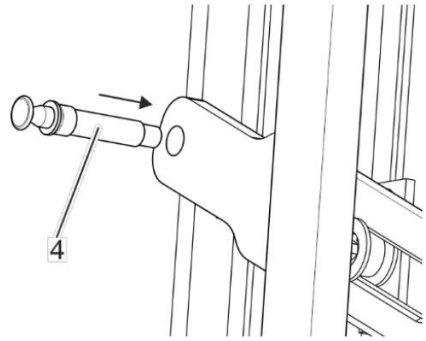

Fig. 11: Socket pin in bracket

5. Attach the bracket to the side of the inner frame with socket pins (Fig. 11/4).

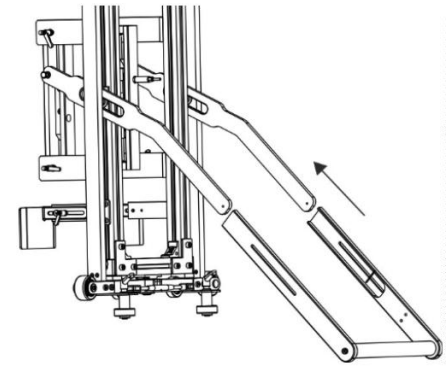

Fig. 12: Sliding the handle unit onto the bracket

6. Slide the handle unit onto the brackets.

The bracket and handle unit must be removed in order to fit the tensioner or the screwing device.

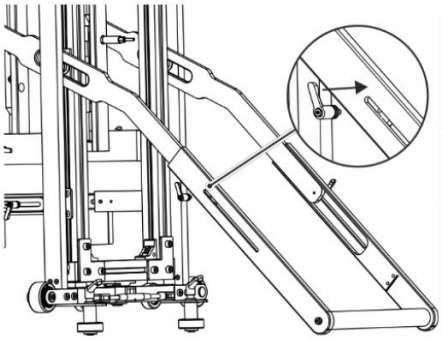

Fig. 13: Fixing with clamping levers

7. Fix the handle unit with clamping levers.
8. Fasten the lever handle.

⇨ The HV1eco 230 lifting device is pre-assembled.

5 Using the lifting device

5.1 Mounting the tensioner or bolting device

Crushing hazard

WARNING!
When mounting a tensioner or bolting device in the lifting device, there is a risk of body parts being crushed, trapped or otherwise injured due to moving parts and the high dead weight.

- Ensure adequate lighting.
- Do not grasp between moving mechanical parts.
- Grip the lifting device on the outer frame during transportation.
- Only mount the lifting device and clamping cylinder or bolting device on a flat surface.
- Carry out assembly in a clean working area.
- Wear safety shoes.

Dismantling the lever

Personnel:
- User protective

equipment:
- Protective work clothing
- Safety shoes

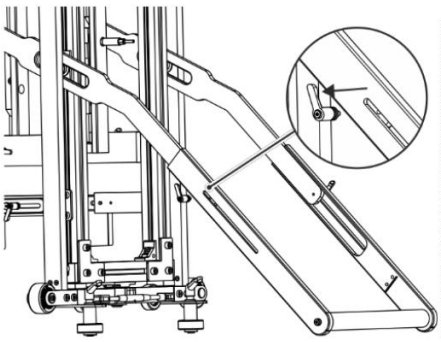

Fig. 14: Release clamping lever

1. Remove the lever handle.
2. Release the clamping lever.

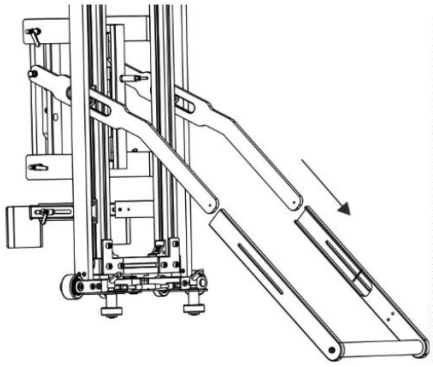

Fig. 15: Sliding the handle unit off the bracket

3. Slide the handle unit off the brackets.

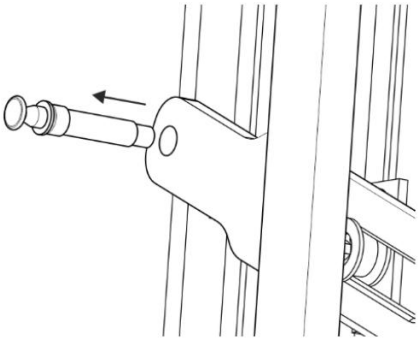

Fig. 16: Loosening the socket bolt

4. Loosen the socket bolt.

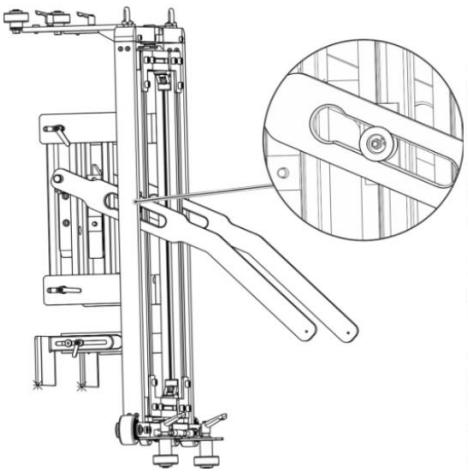

Fig. 17: Lifting out the bracket

5. Lift the bracket out of the inner frame.

Installing the tensioner or screwing device

Personnel:
equipment:

- User protective
- Protective work clothing
- Safety shoes

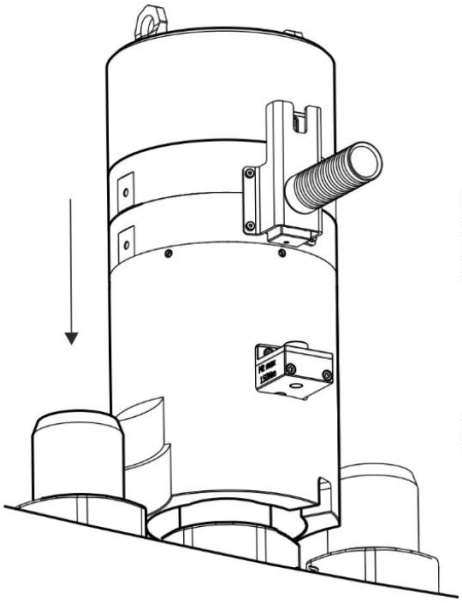

Fig. 18: Place the tensioner on the screw connection

1. Place the tensioner or bolting tool on the flange of the bolted connection.

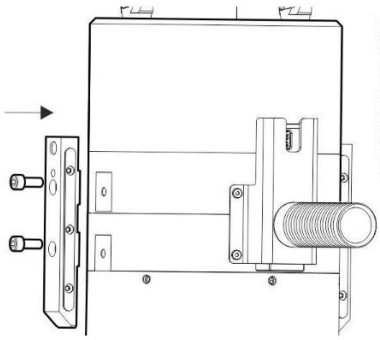

Fig. 19: Attach the adapter strips

2. Attach adapter strips to the tensioner or bolting device.
3. Unscrew the pressure connection on the tensioner or screwing device.

   Unscrew and remove the toothed drive with square on the tensioner.
4. Place the lifting device on the floor with the lintel plates pointing upwards.
5. Release the clamping lever on both crash plates.
6. Pull out the crash plates completely and secure them with the clamping levers.
7. Place the lifting device upright.

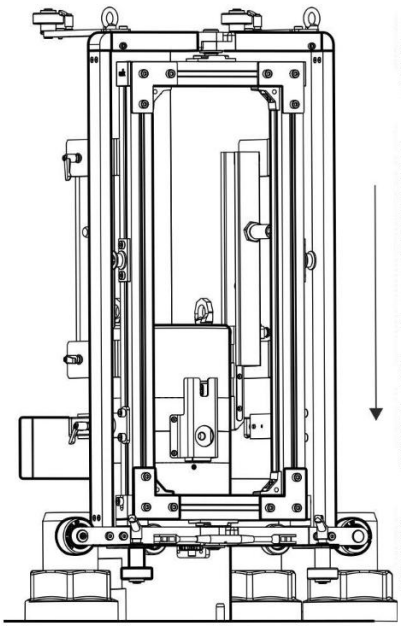

Fig. 20: Attach the lifting device

8. **CAUTION!**
Risk of crushing due to moving mechanical parts!

   Place the lifting device on the tensioner or the bolting device from above so that the adapter strips are seated in the guide rails of the lifting device.

9. Tighten the pressure connection on the tensioner or screwing device.

10. Screw the toothed drive by using a square drive to the tensioner or screwing device.

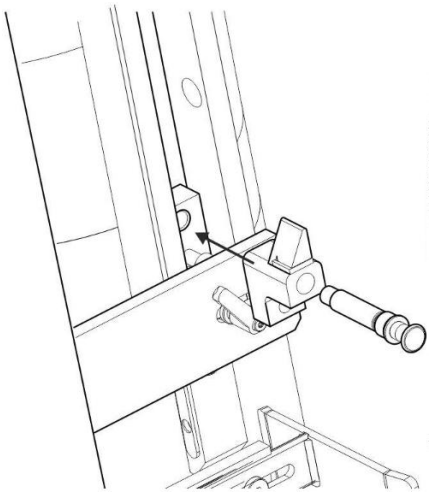

Fig. 21: Fixing the tool holder with socket pins

11. Fix the tool holder to both sides of the adapter strips using the socket pin.

12. Tighten the tool holder with a hexagon wrench.

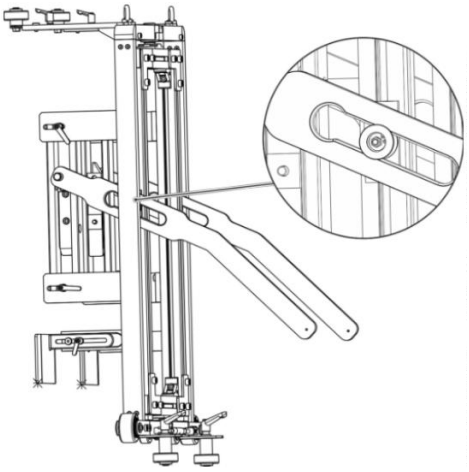

Fig. 22: Attaching the bracket

13. Hook the bracket into the lifting device.
14. Loosen the socket bolts on the tool holders.

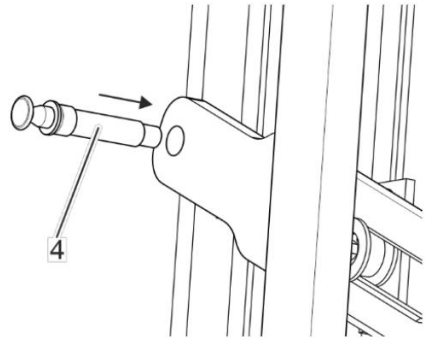

Fig. 23: Fixing the bracket with socket pins

15. Secure the bracket to the tool holders using the socket pins (Fig. 23/4).
16. Slide the handle unit onto the brackets and secure with clamping levers.
17. Screw on the Bowden cable and connect it to the locking bolts.
18. Attach the lever handle to the handle unit.

    ⇨ The tensioner or the bolting device is mounted in the lifting device.

5.2 Adjust

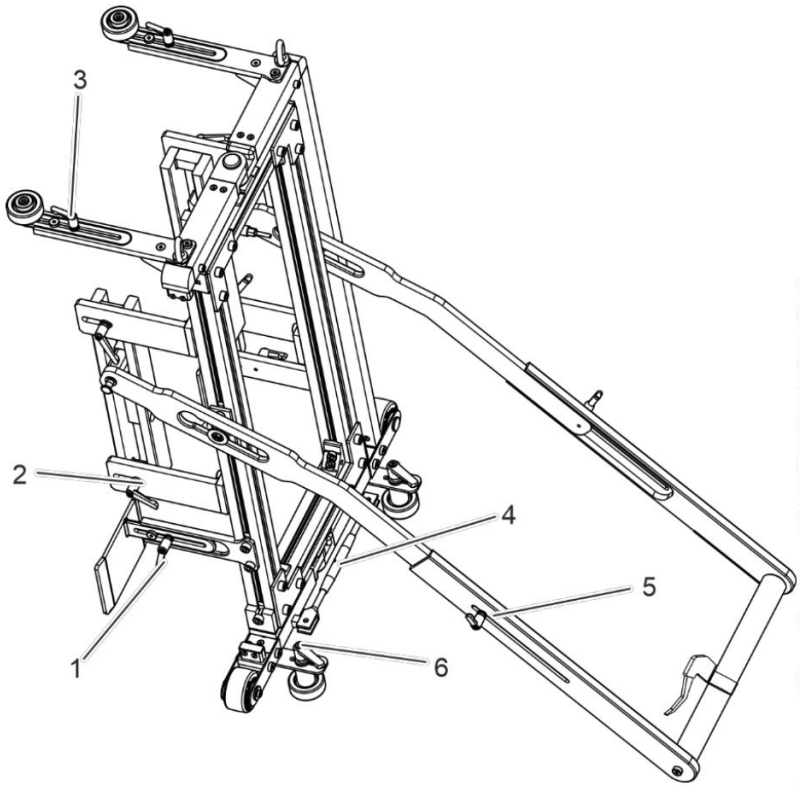

Fig. 24: Adjustment points

1 Clamping lever for adjusting the camber plates
2 Clamping lever for adjusting the tool height
3 Clamping lever for adjusting the upper support rollers
4 Turnbuckle for adjusting the radius of the lifting device
5 Clamping lever for adjusting the lever length
6 Clamping lever for adjusting the lower support rollers

Personnel:

equipment:

- User protective
- Protective work clothing
- Safety shoes

5.2.1 Adjusting the crash plates

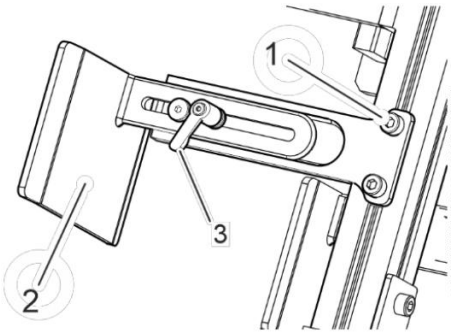

Fig. 25: Camber plates

1. Loosen the screws on the frame (Fig. 25/1).
2. Adjust the crash plates (Fig. 25/2) to the height of the flange of the bolted connection.
3. Tighten the screws on the frame (Fig. 25/1) to 25 Nm.
4. Release the clamping lever (Fig. 25/3).
5. Position the crash plate (Fig. 25/2) as close as possible to the screw.
6. Close the clamping lever (Fig. 25/3).

5.2.2 Adjusting the support rollers

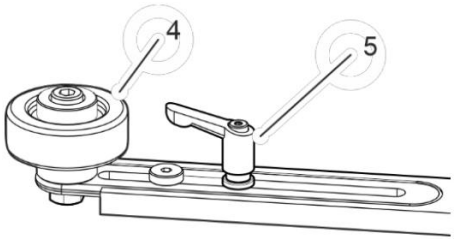

Fig. 26: Support rollers

1. Release the clamping lever (Fig. 26/5).
2. Place the drop-down rollers (Fig. 26/4) on the flange wall.
3. Close the clamping lever (Fig. 26/5).
4. Repeat steps 1 to 3 for all support rollers.

5.2.3 Adjusting the lever arm

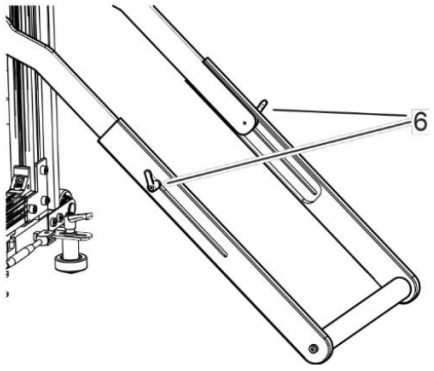

Fig. 27: Clamping lever on the lever arm

1. Release both clamping levers (Fig. 27/6) on the lever arm.
2. Set the desired length of the lever arm.
3. Close both clamping levers (Fig. 27/6).

5.2.4 Setting the radius of the lifting device

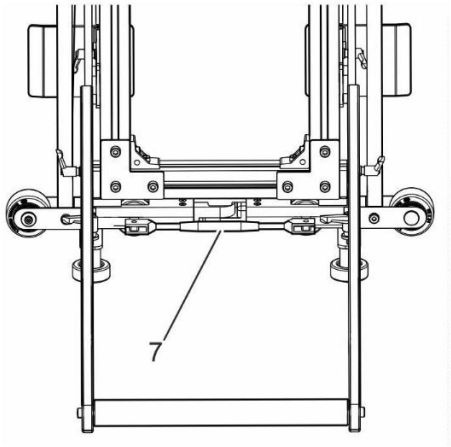

Fig. 28: Turnbuckle

→ Adjust the turnbuckle (Fig. 28/7) by the rolling radius of the flange.

If the lifting device with tensioning cylinder or bolting device is already seated on the flange of the bolted connection, adjust the radius with a hexagon wrench via the hole in the turnbuckle.

5.3 Insert lifting device

High hydraulic pressure

WARNING!

Risk of bursting due to excessive hydraulic pressure!

If the hydraulic pressure exceeds the permitted maximum pressure of connections, hoses, tools or components of the hydraulic power pack, these may burst. Flying parts and hydraulic fluid escaping under high pressure can cause serious injuries.

- Ensure that all components are designed for the maximum hydraulic pressure applied and are not damaged.
- Check for defects, damages and leaks.
  Have identified defects rectified immediately.
- Observe maintenance intervals.

Breakage of components

WARNING!

Risk of injury due to broken components!

Components or the screw connections may tear during work. The tensioner can be ejected from the screw joint.

– Do not stand in the longitudinal axis of the tensioner.
– Only load the tensioner, attachments and screws up to the maximum permissible torque and with the maximum permissible tensile force.

Falling of the lifting device

WARNING!

Risk of injury due to the lifting device falling down!

If the safety guard is incorrectly installed or adjusted, the lifting device may fall during transportation.

– Check the adjustment of the protective devices before the tightening process (*Chapter 5.2 "Adjusting" on page 38*).
– After assembly, secure and transport the lifting device using only the attachment points on the tensioner or bolting device.
– Do not lift the lifting device above the attachment points on the lifting device after mounting the tensioner or bolting device.

Personnel:

equipment:

- User protective
- Protective work clothing
- Safety goggles
- Protective gloves
- Safety shoes

Prerequisites:

- The lifting device is secured via the attachment points of the tensioner or bolting device.
- **When used with a tensioner:** The hydraulic power pack is connected to the tensioner.

- The lifting device with tensioner or screwing device is securely mounted on the screw connection (*"Mounting the tensioner or screwing device" on page 35*).
- The lifting device is fully adjusted (*Chapter 5.2 "Adjusting" on page 38*).

1. **WARNING!**
   Risk of injury from pressurized components!

   Tighten the bolted connection according to the specifications of the tensioner or the bolting device.

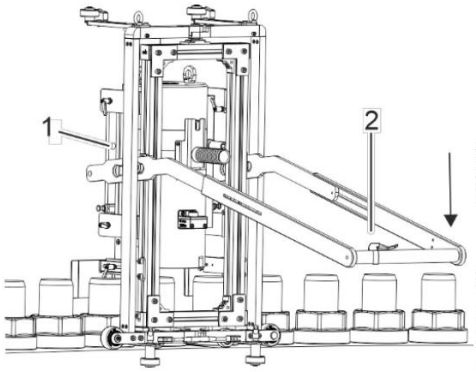

Fig. 29: Lifting the tensioner

2. Press the lever down to lift the tensioner or the screwing device.
   ⇨ The locking bolts (Fig. 29/1) on the sides of the lifting device engage as soon as the specified height for transportation is reached.
3. Transport the tensioner or bolting device with the lifting device in the raised position to the next bolting connection.
4. Operate the lever handle (Fig. 29/2) to release the locking bolts. To do this, push the lever upwards and lower the tensioner or the bolting device onto the bolted joint.

   If the tensioner cannot be lowered onto the screw connection, the position of the lifting device must be corrected on page 49.

5. Repeat steps 1 to 4 for further bolted joints.

5.4 Dismantling the tensioner or screwing device

Personnel:

equipment:

- User protective
- Protective work clothing
- Safety goggles
- Protective gloves
- Safety shoes

Prerequisites:

- **When used with a tensioner:** The connection to the hydraulic power pack is disconnected.

The tensioner or the bolting device has cooled down.

1. Dismantle the handle lever.
2. Unscrew the Bowden cable.
3. Release the clamping lever of the handle unit.

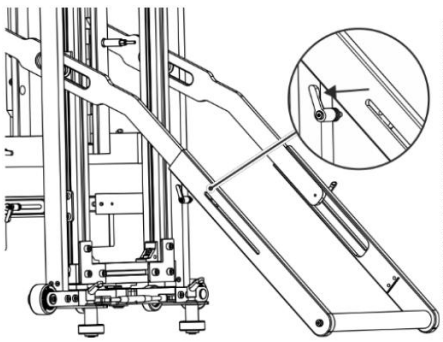

Fig. 30: Release clamping lever

4. Pull the handle unit off the brackets.

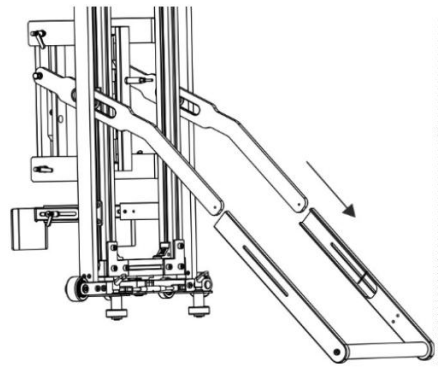

Fig. 31: Sliding the handle unit off the bracket

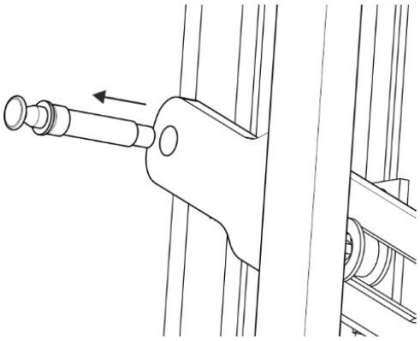

Fig. 32: Loosening the socket bolt

5. Loosen the socket bolts on the brackets.
6. Slide the bracket out of the lifting device.
7. Unscrew the tool holders on the adapter strips.
8. Unscrew the toothed drive with the square on the tensioner or scraper.
9. Unscrew the pressure connection on the tensioner or screwing device.
10.

CAUTION!

Risk of crushing due to moving mechanical parts!

Lift the lifting device off the tensioner or screwing device from above.

11. Tighten the pressure connection on the tensioner or screwing device.
12. Screw the toothed drive to the tensioner or screwing device using a square drive.

⇨ The tensioner or the bolting device is removed from the lifting device.

6 Lifting device maintenance

Improperly performed maintenance work

WARNING!

Risk of injury due to improperly performed maintenance work!

Improper maintenance can lead to serious injuries and considerable material damage.

- Before starting work, ensure that there is sufficient freedom for assembly.
- Ensure that the assembly area is tidy and clean! Loose components and tools lying on top of each other or lying around are sources of accidents.
- Have all repairs carried out by the manufacturer.
- Only use original PLARAD® parts.

Trouble-free operation

The following sections describe the maintenance work required for optimum and trouble-free operation.

If increased wear is detected during regular checks, shorten the required maintenance intervals according to the actual signs of wear. If you have any questions about maintenance work and intervals, contact PLARAD® service.

Accessories, spare and wear parts

Spare parts must comply with the technical requirements specified by PLARAD®. This is always guaranteed for original spare parts. A warranty can only be provided for original spare parts supplied by PLARAD®.

The installation or use of other spare parts can, under certain circumstances, negatively change design properties and thus impair active or passive safety.

Any liability or warranty is excluded for damage caused by the use of spare parts and accessories other than the original ones.

Have at least the following information on the lifting device ready for quick and easy processing:

- Client
- Serial number
- Desired spare part
- Requested quantity
- Desired shipping method

↳ *"PLARAD® service" on page 4*

6.1 Maintenance table

Interval	Maintenance work	Personnel
before and after each use	■ Cleaning. ■ Carry out a visual inspection. ■ Check damage on surfaces, warning symbols and pictograms. ■ Check screws and clamping lever. ■ Check the function of the rollers. ■ Check all safety devices of the lifting device to full stability and function. ■ Defective safety devices, if possible, must be replaced or repaired.	Users
every 3 months ■ For extreme operating conditions (e.g. dust,dirt) ■ With high frequency of use	■ Replace the plastic on the slide rails ↳ *Chapter 6.3 "Replacing the plastic on the slide rails" on page 47.* ■ Replace the support and transport rollers ↳ *Chapter 6.4 "Support and transport rollers swap" on page 47.*	Users
every 6 months ■ Under normal operating conditions ■ With medium frequency of use		Users
every 12 months ■ With low frequency of use		Users

6.2 Cleaning the lifting device

Prerequisites:

- Dismantle the tensioner or screwing device and hydraulic power packs before each cleaning and clean separately.

Cleaning

1. **NOTE!**
   Material damage due to improper cleaning!

   Clean the lifting device with a soft cloth. Never use harsh cleaning agents, water, brushes, sharp-edged tools or high-pressure cleaners.

   WARNING!
   Fire hazard!

   When using isopropyl alcohol, do not clean the lifting device near sources of ignition. Do not smoke. Allow to evaporate.

Surfaces and labeling

2. Check surfaces and labeling for damage. In the event of damage or illegible labeling, arrange for repair.

6.3 Replace the plastic on the sliding strips

Prerequisites:

- The lifting device has been cleaned (*Chapter 6.2 'Cleaning the lifting device' on page 47*).

1. Unscrew the plastic on the slide rails.
2. Dispose of old plastic in accordance with the disposal instructions (*Chapter 8 'Disposal' on page 51*).
3. Screw the new plastic to the slide rails.

6.4 Replacing support and transport rollers

Prerequisites:

- The lifting device has been cleaned *Chapter 6.2 'Cleaning the lifting device' on page 47*).

1. Unscrew defective support and transport rollers.
2. Dispose of old support and transport castors in accordance with the disposal instructions (*Chapter 8 "Disposal" on page 51*).
3. Screw on new support and transport rollers and check their function.

7 Eliminate faults

Faults can occur on the lifting device in conjunction with the tensioner or the bolting device.

Error description	Cause	Remedy	Pers onnel
Lever does not move back to the starting position.	Tensioner does not sit on the flange of the bolted connection.	Lift the tensioner with the lever. Reposition the lifting device. Place the tensioner with the lever on the flange of the bolted connection.	Users
Lifting device cannot be moved.	Lifting device is not correctly adjusted.	Readjust the lifting device so that it is parallel to the tensioner (*Chapter 5 "Using the lifting device" on page 33*).	Users
	Support rollers of the lifting device are dirty or damaged.	Check the support rollers for dirt and clean them. Replace damaged support rollers.	Users

8 Disposal

At the end of its service life, the lifting device must be disposed of in an environmentally friendly manner.

To do this, completely dismantle the lifting device and dispose of all components separately or reuse them.

Waste disposal

If no take-back or disposal agreement has been made, dispose of the lifting device in accordance with local regulations. Use authorized collection points for reprocessing.

ENVIRONMENTAL PROTECTION!

Danger to the environment due to incorrect disposal!

Incorrect disposal can pose a risk to the environment.

-Dispose of plastic parts separately.

If in doubt, obtain information on environmentally sound disposal from the local municipal authority or specialized disposal companies.

9 Technical data

Dimensions and weights HV1eco 180

Information on the exact dimensions is still missing here; please comment the missing values in the appropriate place

Specification	Value	Unit
Weight	20	kg
Width	552	mm
Height	590	mm
Depth without lever	265	mm
Depth with lever, maximum	570	mm

Dimensions and weights HV1 eco 230

Specification	Value	Unit
Weight	30	kg
Width	572	mm
Height	944	mm
Depth without lever	340	mm
Depth with lever, maximum	1150	mm

Nature

Specification	Value
Material	3.1325, 1.4301, 1.7225
Load capacity HV1eco 180	10 kg
Load capacity HV1eco 230	180 kg

Surroundings

Specification	Value	Unit
Temperature range, operation	0 - 80	°C
Temperature range, storage	-20 - 80	°C
Relative humidity, maximum	0 - 100 %, non-condensing	

10 Index

P

R

S

T

U

V

W

Appendix

Together with this manual, the following documents are supplied in a document folder with the lifting device:

- EU Declaration of Conformity

EC Declaration of Conformity

Translation of original

Manufacturer	Maschinenfabrik Wagner GmbH & Co. KG
	Birrenbachshöhe 17 53804 Much Germany
Authorised representative	Dr. Marcus Stuhlert
Product name	HV1eco
Type	See rating plate
Serial number Year of manufacture	See rating plate

The manufacturer declares that the machine conforms to all applicable requirements of Directive:

2006/42/EC	EC Machinery Directive

The following harmonised standards have been applied:

EN ISO 12100:2010	Safety of machinery – General principles for design – Risk assessment and risk reduction

Much, 20/03/2024	Dr. Marcus Stuhlert (Managing Director)

Maschinenfabrik Wagner GmbH & Co. KG
Birrenbachshöhe 17 · 53804 Much · Germany
Managing Director: Dr Marcus Stuhlert
pA# 85084

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Internet: www.plarad.com

TÜVRheinland® CERT ISO 9001 ISO 14001

PLARAD®
Torque & Tension Systems

EG – Konformitätserklärung

Original

Hersteller	Maschinenfabrik Wagner GmbH & Co. KG
	Birrenbachshöhe 17 53804 Much Deutschland
Dokumentations- Verantwortlicher	Dr. Marcus Stuhlert
Produktbezeichnung	HV1eco
Typ	Siehe Typenschild
Seriennummer Baujahr	Siehe Typenschild

Der Hersteller erklärt, dass die Maschine allen einschlägigen Bestimmungen der Richtlinie entspricht:

2006/42/EG	EG-Maschinenrichtlinie

Folgende harmonisierte Normen wurden angewandt:

EN ISO 12100:2010	Sicherheit von Maschinen- Allgemeine Gestaltungsleitsätze- Risikobeurteilung und Risikominderung

Much, den 20.03.2024

Dr. Marcus Stuhlert
(Geschäftsführung)

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