Operating instructions

Lifting device
HV1*power*

PLARAD®
Torque & Tension Systems

Read the manual carefully before use!
Keep for future use.

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Translation of the original operating instructions
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Information about this manual

This manual enables safe and efficient handling of the HV1*power* lifting device.

The manual is a component of the lifting device and must be kept in its immediate vicinity so that the user can access it at any time.

The user must have read and understood this manual prior to commencing any tasks. A basic prerequisite for ensuring that work is performed safely is compliance with all safety instructions and guidelines in this manual. In addition, the local accident prevention regulations and general safety provisions for the lifting device's area of application apply.

Illustrations in this manual serve to provide a basic understanding and may differ from the actual design.

Other applicable documents

The following documents must be observed in addition to this manual:

- Rating plate
- Operating instructions for the hydraulic tool connected
- Operating instructions for the connected electric nutrunner
- Documentation for the hydraulic power pack provided by the operator
- Technical data sheet

Copyright

Further development of the manual

This manual was compiled with great care. If you notice any errors, have any questions or identify any inconsistencies, please notify us in writing. Your suggestions for improvement will help us design a user-friendly manual.

Follow-up order

Further copies of this manual can be ordered subject to an additional fee.

Contact *'PLARAD® service' on page 4*.

Manufacturer

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PLARAD® service

Information about PLARAD® service and authorised 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 transport route and delivery location.

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 transport documents and lodge a complaint immediately.

Scope of delivery

The scope of delivery includes:

- Lifting device
- Lower support rollers
- Adapter
- Document folder
  - Operating instructions
  - EU declaration of conformity

Optional:

- Replacement slide strips

Handling packaging material

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

The packaging should provide protection against transport damage, corrosion and other damage. For this reason, do not destroy the packaging and do not remove it until shortly before use.

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

ENVIRONMENT!

Danger to the environment due to incorrect disposal!

Packaging materials are valuable raw materials and, in many cases, can be further utilised or appropriately reconditioned and recycled. Incorrect disposal of packaging materials can be hazardous to the environment.

- Reuse pallets.
- Dispose of packaging materials in an environmentally sound manner.
- Observe the locally applicable disposal regulations. If necessary, engage the services of a specialist company with regard to disposal.

Transport

Personnel:
- User

Protective equipment:
- Protective work clothing
- Safety shoes
- Safety gloves
- Industrial safety helmet

When unpacked, the lifting device can be transported by means of sling ropes attached to the inner frame.

Only transport the lifting device without tools (hydraulic tensioners, bolting devices).

1. 

   WARNING!
   Danger of crushing due to the lifting device falling!

   Ensure that hoists and sling ropes are designed for the weight of the lifting device. For details of the weight, see *Chapter 2.4 'Rating plate' on page 10*.

2. Attach sling ropes to the inner frame properly.
3. Roll up the power cord and attach it to the lifting device.
4. Lift carefully. Ensure that the lifting device hangs straight. Observe an eccentric centre of gravity, if applicable.

   Do not loiter under suspended loads.

2 Getting to know the lifting device

2.1 Illustration

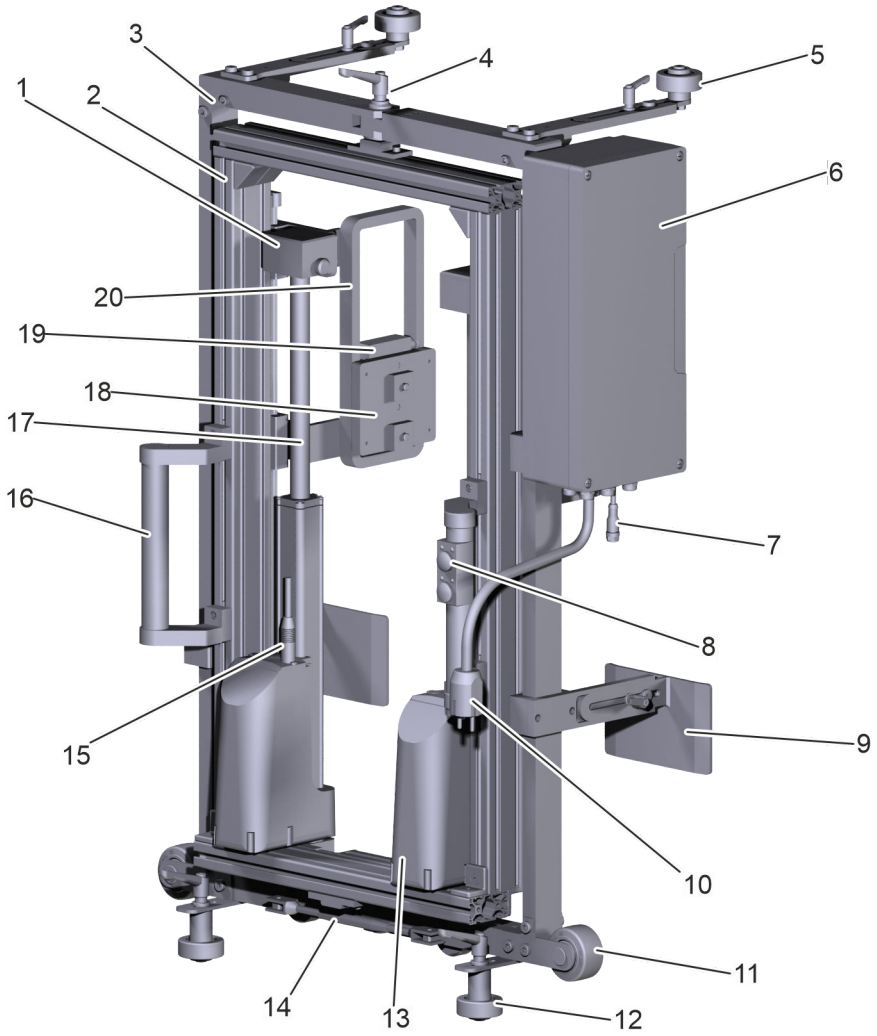


Fig. 1: Overview of lifting device

1 Mounting block
2 Inner frame
3 Outer frame
4 Clamping lever
5 Upper support roller
6 Junction box
7 Control unit connection cable
8 Control unit
LED
[Lift] button
[Lower] button
9 Support plate
10 Power plug, power cord
11 Guide roller
12 Lower support roller
13 Electric cylinder
14 Radius adjusting unit (turnbuckle)
15 Electric cylinder connection cable
16 Handle
17 Piston rod
18 Hydraulic tensioner adapter
19 Slide adapter
20 Slide guide

Adjustment points

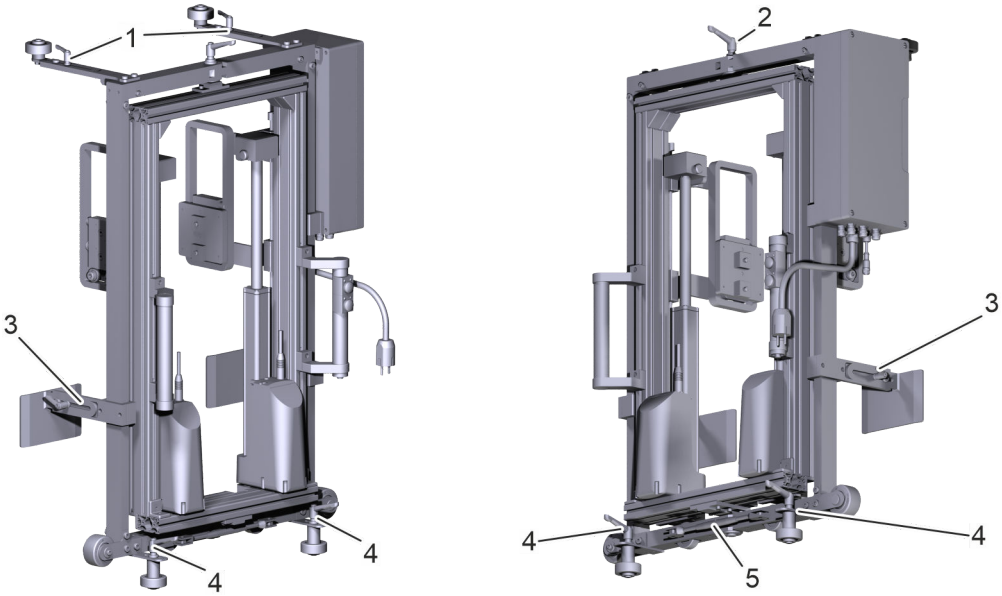


Fig. 2: Adjustment points

1 Clamping lever for adjusting the upper support rollers
↳ *Chapter 4.3.2 'Adjusting the support rollers' on page 30*

2 Clamping lever for adjusting the radius
↳ *Chapter 4.3.3 'Adjusting the radius of the lifting device' on page 31*

3 Clamping lever for adjusting the support plates
↳ *Chapter 4.3.1 'Adjusting the support plates' on page 30*

4 Clamping lever for adjusting the lower support rollers
↳ *Chapter 4.3.2 'Adjusting the support rollers' on page 30*

5 Turnbuckle for adjusting the radius
↳ *Chapter 4.3.3 'Adjusting the radius of the lifting device' on page 31*

2.2 Brief description

The lifting device is used to transport tools (hydraulic tensioners and bolting devices).

The tool is mounted to the lifting device using an adapter. The tool is lifted electrically in the lifting device, the lifting device is moved manually on guide rollers to the next bolting point and the tool is released.

When using a hydraulic tensioner or a hydraulic nutrunner, a hydraulic power pack is connected as well. In this combination, the lifting device is used for pretensioning, tightening and loosening bolted connections on wind turbines.

During operation, the lifting device must be secured using the attachment points on the hydraulic tensioner or bolting device.

The lifting device can be flexibly adapted to the radius of the tower wall using the turnbuckle (Fig. 1/14).

The lower support rollers are designed on a project-specific basis, are included in the delivery and must be mounted before the lifting device is used for the first time.

The tool is lifted by means of the electric cylinders. Guide rollers (Fig. 1/11), support rollers (Fig. 1/5 and 12) and handles (Fig. 1/16) facilitate horizontal transport of the tool along the tower wall.

2.3 Compatible hydraulic tensioners and bolting devices

HV1power

The HV1power lifting device is compatible with PLARAD® hydraulic tensioners or bolting devices that meet the following specifications:

Maximum diameter of the plug-in tool	230 mm
Maximum weight of the plug-in tool	200 kg
Maximum travel height of the lifting device	240 mm

2.4 Rating plate

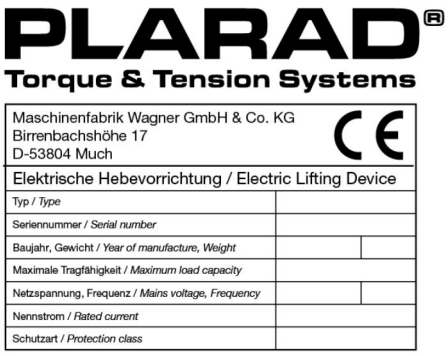

PLARAD®
Torque & Tension Systems
Maschinenfabrik Wagner GmbH & Co. KG
Birrenbachshöhe 17
D-53804 Much
CE
Elektrische Hebevorrichtung / Electric Lifting Device
Typ / *Type*
Seriennummer / *Serial number*
Baujahr, Gewicht / *Year of manufacture, Weight*
Maximale Tragfähigkeit / *Maximum load capacity*
Netzspannung, Frequenz / *Mains voltage, Frequency*
Nennstrom / *Rated current*
Schutzart / *Protection class*

Fig. 3: Rating plate

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

The following data is inscribed on the rating plate:

- Manufacturer's name and address
- Product name
- Type
- Article/serial number
- Year of construction
- Maximum load capacity
- Electrical connection:
  - Mains voltage
  - Mains frequency
  - Nominal current
  - Protection class
- CE mark

3 Before you begin – safety

This section provides an overview of all important safety aspects for protecting personnel and for ensuring safe and fault-free operation. Further task-specific safety instructions can be found in the sections of the individual chapters.

3.1 Symbols in this manual

Safety warnings

Safety warnings in this manual are indicated by symbols. Safety warnings are introduced by signal words that identify the severity of the hazard.

DANGER!
This combination of symbol and signal word indicates an immediate danger that will cause serious injury or death if not avoided.

WARNING!
This combination of symbol and signal word indicates a potential danger that may cause serious injury or death if not avoided.

CAUTION!
This combination of symbol and signal word indicates a potential danger that may cause minor or slight injury if not avoided.

NOTICE!
This combination of symbol and signal word indicates a potential danger that may cause damage if not avoided.

ENVIRONMENT!
This combination of symbol and signal word indicates potential pollution of the environment.

Safety warnings in step-by-step instructions

Safety warnings may apply to specific, individual instructions. Such safety warnings will be embedded in the list of instructions to maintain readability when executing the respective action. The signal words listed above are used.

Example:

1. Loosen the bolt.
2. **CAUTION!**
   Risk of getting trapped by lid!

   Close lid carefully.
3. Tighten the bolt.

Tips and recommendations

This symbol highlights useful tips and recommendations as well as information to help you use your equipment efficiently and without disruption.

Other markings

The following markings are used in this manual in order to highlight instructions, outcomes, lists, references and other elements:

Marking	Explanation
→	Step-by-step instructions
⇨	Outcomes of steps
↳	References to sections of this manual and to other applicable documents
■	Lists without a fixed order

3.2 Symbols on the lifting device

Illegible signage

WARNING!
Danger in the event of illegible signage!
Over time, signs and stickers can become dirty or be rendered unrecognisable by other means, such that hazards cannot be recognised and necessary operating instructions cannot be followed. This creates a danger of injury.

– Keep all safety notices, warnings and operating instructions in a clearly legible state at all times.
– Replace damaged signs and stickers immediately.

You will find the following symbols and information notices on the lifting device:

Attachment point

Attach the hoist only at the marked points for lifting.

Safety shoes

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

Follow the manual

Read the operating instructions before use.

Danger of crushing

Keep your hands away from areas bearing this warning.

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

There is a danger of crushing injury on work equipment (e.g. machinery) or building parts (e.g. hoods, panelling, walls, fences).

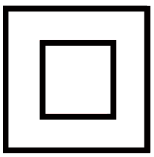
It is necessary to pay greater attention when performing work at the marked locations.

Voltage

The equipment marked in this way is supplied with electrical energy.

Ensure that all work is carried out by a qualified electrician.

Protection class II



This symbol indicates protection class II. Equipment of protection class II has reinforced insulation between active and touchable parts.

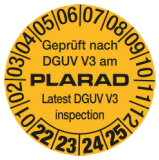
Separate collection

Do not dispose of waste electronic and electrical equipment marked with this symbol in household waste.

Test badges

The test badges state the dates of the respective tests.

Date of the next PLARAD® service



Date of the last DGUV-V3 test

3.3 Intended use

The lifting device is used to transport hydraulic tensioners and bolting devices and is used for pretensioning and loosening bolted connections within the defined specifications (↳ *Chapter 8 ‘Technical data’ on page 44*)

The lifting device is designed for use on wind turbines

The lifting device may only be used with PLARAD® hydraulic tensioners or bolting devices.

Hydraulic tensioners operated with the lifting device are powered hydraulically.

Hydraulic tensioners or bolting devices operated with the lifting device may only be used for commercial purposes and only in conjunction with PLARAD® hydraulic power packs.

If the lifting device and hydraulic tensioner are connected to a hydraulic power pack, they must never be used in a potentially explosive atmosphere.

Intended use includes compliance with all of the stipulations in this manual.

3.4 Misuse

Any use beyond the intended use as well as any other use is considered misuse.

WARNING!

Danger in the event of misuse!

Misuse of the lifting device can lead to dangerous situations.

- Only use the lifting device with the PLARAD® hydraulic tensioners, bolting devices or hydraulic power packs designed for this purpose.
- Use the lifting device exclusively for pretensioning and bolting of bolted connections on wind turbines.
- Never operate beyond the specifications described *Chapter 8 'Technical data' on page 44*.
- Never disregard protection ratings.
- Never operate outside the permissible environmental conditions.
- Never operate with a mains voltage and mains frequency other than those specified on the rating plate.
- Do not switch on in a damp environment.
- Never operate in a potentially explosive atmosphere.

3.5 Residual risks

The following section outlines the residual risks potentially posed by the lifting device in combination with a hydraulic tensioner or bolting device and hydraulic power pack, even when used as intended.

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

Observe the warnings in the operating instructions for the individual components as well.

3.5.1 Electrical dangers

Electrical current

DANGER!

Danger of death due to electric shock!

Touching live parts poses an immediate danger of death due to electric shock. Damage to the insulation or individual components can be life-threatening.

- Do not open the housing of electrical components.
- In the event of damage, disconnect from the power supply immediately and arrange for repair.
- Keep moisture away from live parts. Moisture can cause short circuits.
- Never operate with a mains voltage and mains frequency other than those specified on the rating plate.
- Ensure that the power supply complies with local regulations.
- Never modify the power plug or power cord.
- Only operate at suitable power sockets.
- Never operate after the inspection period has elapsed. See the test seal for the date of the next test.
- Never operate in a potentially explosive atmosphere.
- Keep away from moisture, liquids, steam, dust and coarse contamination.

  Do not switch on in a damp environment or in the rain.
- If possible, operate with a residual current-operated circuit breaker installed.
- Avoid making physical contact with earthed components.
- During operation with mobile power generators, ensure continuous and constant compliance with the specified values for voltage, frequency, sufficient power and earthing.

Faulty power cord

DANGER!

Danger of death due to faulty power cord!

Faulty power cords can lead to a direct danger of death from electric shock.

Rolled-up power cords can result in thermal overload and could catch fire.

- Never modify the power plug or power cord.
- Only operate at suitable power sockets.
- Prior to every use, check the power cord for visible damage to the insulation.
  Never replace the power cord yourself.
- Do not crush, shear or overload the power cord (pressure, strain).
- Do not pull on the power cord in order to disconnect the power plug from the power socket.
- Prior to switching it on, always unwind the power cord fully.
- Do not route the power cord over sharp edges, pinch points, through water, oil or other chemicals.
- Do not kink the power cord and do not twist it.
- Do not route the power cord close to moving parts or hot surfaces, such as motors or exhaust lines of mobile power generators.
- Wherever possible, do not expose the power cord to constant sunlight or other forms of UV radiation.
- Ensure that extension cables routed outdoors or through humid environments are approved for the ambient conditions.
- Ensure that supply lines have the minimum permissible cross-section.

3.5.2 Mechanical dangers

Tipping over

WARNING!

Danger of injury due to high weight if device tips over!

Tipping over of the lifting device, e.g. during the assembly of a hydraulic tensioner, can cause serious injuries or crushing due to the high weight.

- Mount the lifting device only on a flat surface.
- Have work performed only by persons who are physically capable of using the lifting device safely despite its high weight.
- After installation, secure the lifting device to the mounted hydraulic tensioner or bolting device using the attachment points.
- After installation, do not use the attachment points on the lifting device to transport the lifting device and hydraulic tensioner or bolting device.
- Wear safety shoes.

Crushing

WARNING!

Danger of crushing when bracing and due to high weight!

During operation, very strong forces act on the hydraulic tensioner or bolting device, support, bracing surface and bolts. There is a danger of crushing between the resting surface and bracing surface during tightening and loosening. The high weight of the hydraulic tensioner or bolting device in combination with a lifting device can cause crushing if it falls down.

- Handle the hydraulic tensioner or bolting device and lifting device with care and as intended.
- Give due consideration to the weight during transport and during all work.
- After installation, secure the lifting device to the mounted hydraulic tensioner or bolting device using the attachment points.
- After installation, do not use the attachment points on the lifting device to transport the lifting device and hydraulic tensioner or bolting device.
- Have work performed only by persons who are physically capable of using the hydraulic tensioner or the bolting device safely despite its high weight.
- Do not reach between the resting surface and bracing surface.
- Keep clear of the hydraulic tensioner's or bolting device's direction of draw.
- Secure the hydraulic tensioner or the bolting device against falling with a lifting device.
- Wear safety shoes.

Moving components and rotational movements

WARNING!

Danger of injury due to moving components!

Moving components can cause serious injuries. There is a danger of pinching when operating the lever and transporting the lifting device. There is a danger of being pulled in by the rotation of the hydraulic tensioner or bolting device.

- During operation, do not reach into moving components or handle moving components.
- Wear tight fitting work clothing.
- Wear a protective cap (hair net) to prevent long hair from being pulled in by rotating parts.

Dirt and scattered objects

CAUTION!

Danger of injury from falling over dirt and scattered objects!

People may slip on or stumble over dirt and scattered objects. Falling may cause injuries.

– Always keep the work area clean.
– If objects are no longer needed, remove them from the work area and especially if such objects are at ground level.
– Mark unavoidable stumbling points with hazard tape.
– Keep handles and gripping surfaces of the lifting device dry, clean and free of lubricants. Clean them immediately if they are dirty.

3.5.3 Danger due to hydraulics

Operation of the lifting device in combination with a hydraulic power pack poses the following residual risks:

- Pressurised hydraulic components could result in life-threatening injuries!
- Danger of bursting due to excessive hydraulic pressure!
- Damage to health and secondary illnesses due to contact with hydraulic oil!
- Property damage from non-compliance with the oil specifications!

For more information, see the operating instructions for the PLARAD® hydraulic power pack being used.

3.5.4 Noise and ergonomics

Inadequate ergonomics

WARNING!

Injuries to the musculoskeletal system due to the high weight of the of the lifting device in combination with a hydraulic tensioner or bolting device!

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

- Ensure stable footing and sufficient room for movement.
- Keep your back as straight as possible. Do not lift with your upper body hunched over, bent forward, or with your back arched.
- Avoid one-sided loading. Avoid twisting your spine. Do not carry one-handed.
- Never move the lifting device abruptly in combination with a hydraulic tensioner or bolting device.
- Use suitable auxiliary devices and lifting gear.

Inattention

WARNING!

Danger of injury due to distraction, inattention or irresponsible use!

Distraction, inattention or irresponsible use can result in losing control of the lifting device and thus cause serious injuries.

- Always keep the work area well-lit.
- Keep children and unauthorised persons away.
- Work purposefully and in a responsible manner. Do not allow yourself to be distracted.
- Do not work if you are tired or under the influence of drugs, alcohol or medicine.
- Do not be lulled into a false sense of security. Do not disregard the safety information and instructions in this manual, even if the lifting device in combination with a hydraulic tensioner or bolting device seems familiar to you after frequent use.
- Wear the prescribed personal protective equipment.

Tools and hydraulic power pack

Operation of the lifting device in combination with a hydraulic tensioner or bolting device – as well as a hydraulic power pack – also entails the following residual risks:

- Danger of injury from noise!
- Danger of injury from hot surfaces!

For this, observe the operating instructions for the PLARAD® hydraulic tensioner, bolting device or hydraulic power pack being used.

3.6 Safety devices

Faulty safety devices

WARNING!

Danger of death due to inoperative safety devices!

If safety devices or safety functions are inoperative or disabled, there is a danger of serious injuries.

- Prior to commencing work, check that all safety devices are operative and correctly installed.
- Never disable or bypass safety devices or safety functions.

The lifting device is equipped with the following safety devices and safety functions:

Support plates

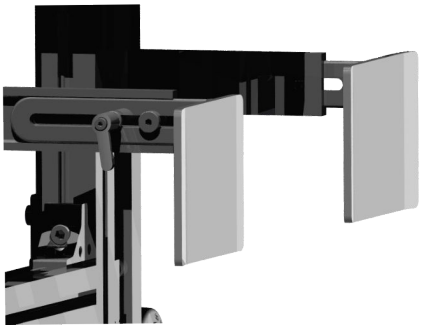


Fig. 4: Support plates

At the rear of the lifting device there are two support plates to prevent the lifting device from tipping over. The support plates must always be as close as possible to the bolt in order to prevent it from tipping over (*Chapter 4.3 'Adjusting' on page 29*).

Support rollers

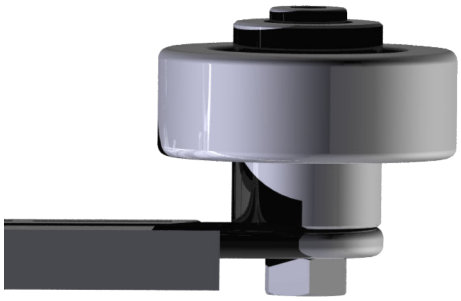


Fig. 5: Support roller

There are 4 support rollers and 4 guide rollers on the lifting device, which allow the lifting device to be guided safely.

The lower support rollers are included in the delivery and must be mounted before the lifting device is used for the first time.

Clamping lever

All adjustment points (Fig. 2) on the lifting device are secured by clamping levers, which prevent unintentional release of the adjustable components.

Fig. 6: Clamping lever

3.7 Operator's obligations

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

In addition to the safety instructions in this manual, the applicable safety, occupational safety and environmental protection regulations for the lifting device's area of application must be adhered to.

The following specifically applies in this regard:

- Operators must familiarise themselves with the applicable occupational safety regulations and, as part of a risk assessment, determine additional dangers that arise as a result of the specific operating conditions at the lifting device's operating site. The findings of this risk assessment must be used to draft safety instructions for operating the lifting device.
- During the entire time the lifting device is in use, the operator must check whether the safety instructions they have compiled reflect current regulations and, if necessary, the operator must change the instructions accordingly.
- The operator must clearly define and regulate responsibilities for all work on and with the lifting device. The authority and responsibilities of personnel regarding operation, set-up, maintenance and repair must be clearly defined.
- The operator must reliably check the use of the lifting device and ensure that only commissioned and instructed personnel work with it. Personnel being trained or instructed and personnel undertaking vocational training must always be supervised by an experienced person when working with the lifting device.

The operator is further responsible for ensuring that the lifting device is in technically flawless condition at all times. The following applies for this reason:

- The operator must ensure adherence to the maintenance intervals described in this manual.
- The operator must have the functionality and integrity of all safety devices checked on a regular basis.

3.8 Personnel requirements

WARNING!

Danger of injury if personnel are insufficiently qualified!

If unqualified personnel perform work on or with the lifting device in combination with a hydraulic tensioner or a bolting device or if such persons are present in the danger zone while work is being performed, dangers arise that could cause serious injuries and considerable property damage.

– Have all tasks performed by suitable qualified personnel without exception.
– Keep unqualified personnel away from the danger zones and work areas.

User

The user of the lifting device has the requisite knowledge and the requisite training for handling hydraulics as well as hydraulic tensioners or bolting devices. Furthermore, during training by the operator, users have been trained in relation to the tasks assigned to them and the potential dangers associated with improper conduct.

Users are trained in how to use the personal protective equipment, are familiar with the most important specifications, situations and information relating to working with hydraulic tensioners or bolting devices and hydraulic power packs and are capable of using the hydraulic tensioner or bolting device safely in combination with the lifting device and a hydraulic power pack. This includes connecting hydraulic hoses.

The user must satisfy the legal minimum age requirements and be physically capable of safely moving the lifting device despite its high weight.

Users may only perform tasks that exceed operation under normal operating conditions if this is specified in this manual and the operator has expressly entrusted the users with the performance of such tasks.

The user knows who their supervisor is, can contact their supervisor if they have questions or in an emergency, and is able to communicate with their supervisor.

The user is familiar with all residual risks and is trained in the practical handling of hydraulic tensioners, bolting devices and hydraulic power packs.

Operator

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

↳ *Chapter 3.7 ‘Operator's obligations’ on page 23*

PLARAD® service

Certain work may only be performed by PLARAD® service or by personnel authorised by Maschinenfabrik Wagner GmbH & Co. KG. Other personnel are not authorised to perform this work. Contact PLARAD® service or authorised PLARAD® partners regarding performance of the work that is due.

Contact: *www.plarad.de*

Unauthorised persons

WARNING!

Danger of death for unauthorised persons due to dangers in the danger zone and work area!

Unauthorised persons, who do not meet the requirements described in this manual, are not aware of the dangers in the danger zone. There is therefore a danger of serious injuries or even death for unauthorised persons.

- Keep unauthorised persons away from the danger zone and work area.
- If in doubt, address the respective persons and instruct them to leave the danger zone and work area.
- Suspend work while there are unauthorised persons loitering in the work and danger zone.

3.9 Personal protective equipment

Safety gloves

Safety gloves are used to protect the hands from friction, abrasions, punctures or deeper injuries and from contact with hot surfaces.

Safety shoes

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

Hearing protection

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

Safety goggles

Safety goggles are used to protect the eyes from airborne parts and liquid jets.

Protective work clothing

Protective work clothing is tight fitting work clothing with a low tearing resistance, with tight sleeves and without any protruding parts.

Protective cap

The protective cap (hairnet) is used to protect the hair from being pulled in by rotating and moving parts, such as bolts.

The wearing of a protective cap is mandatory if your hair is longer than the circumference of the moving shaft.

Industrial safety helmet

Industrial safety helmets are used to protect the head from falling objects, suspended and swinging objects and from bumping into stationary objects.

An industrial safety helmet must be worn for overhead work.

4 Using the lifting device

4.1 Assembling the lower support rollers

Personnel:
- User

Protective equipment:
- Protective work clothing
- Safety shoes

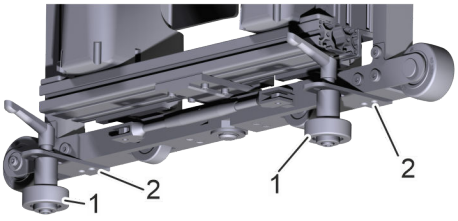


Fig. 7: Lower support rollers

1 Support rollers
2 Thread, countersunk bolts

The lower support rollers must be individually adapted to the local operating site conditions. The lower support rollers are supplied as loose parts when the lifting device is delivered and must be installed before the lifting device is used for the first time.

1. Ensure that the threads are clean, dry and free of oil or dirt.
2. Use medium-strength, soluble threadlocker as per the manufacturer's instructions.
3. Install lower support rollers on both sides. To do this, secure all the M4 countersunk bolts. Note the tightening torque of 4 Nm.

⇨ The lifting device is ready for use.

4.2 Assembling the hydraulic tensioner or bolting device

Danger of crushing

WARNING!

Danger of crushing during assembly!

When mounting the tool in the lifting device, there is a danger of body parts being crushed, trapped or otherwise injured.

– Ensure adequate lighting.
– Do not reach between moving mechanical parts.
– During transport, grasp the lifting device by the outer frame.
– Mount the lifting device and tool only on a flat surface.
– Carry out assembly in a clean work area.
– Wear personal protective equipment.

Assembling

Personnel:
- User

Protective equipment:
- Protective work clothing
- Safety shoes

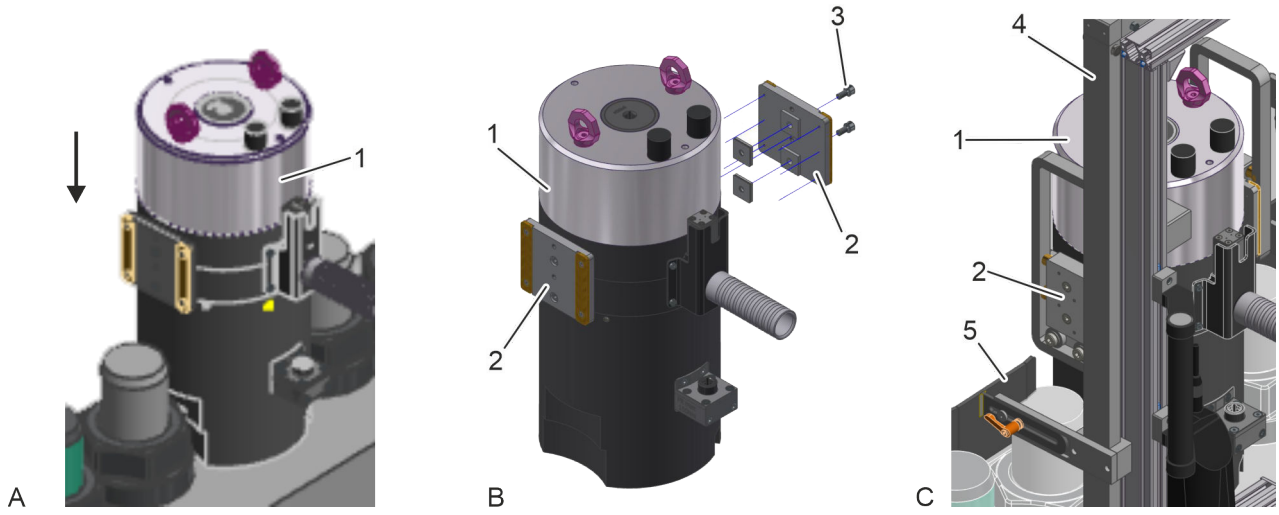


Fig. 8: Assembling the tool

A Positioning the tool
B Attaching the adapter
C Positioning the lifting device
1 Tool
2 Hydraulic tensioner adapter
3 Adapter bolts
4 Lifting device
5 Support plate

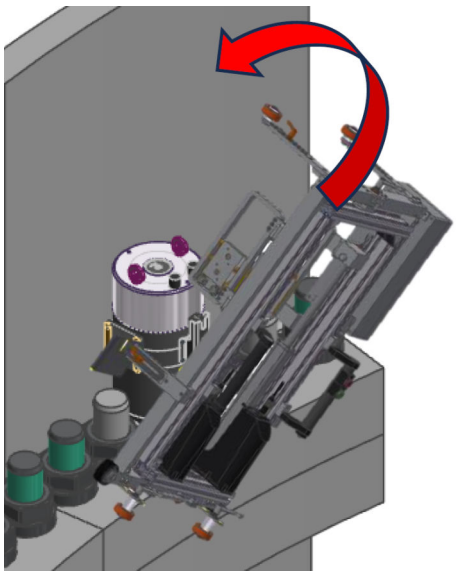


Fig. 9: Lifting the lifting device

1. Place the tool (hydraulic tensioner or bolting tool) on the flange of the bolted connection (Fig. 8/A).
2. Attach the hydraulic tensioner adapters on both sides to the tool (Fig. 8/B). Fasten the adapter bolts (Fig. 8/3).
3. Pull out the support plates (Fig. 8/5) completely and lock them in position with the clamping levers.
4. Lift the lifting device at an angle (Fig. 9). When the guard plates are above the bolts, set the lifting device down vertically.
5. **CAUTION!**
   Danger of crushing due to high weight!

   Place the lifting device on the tool from above (Fig. 8/C) so that the hydraulic tensioner adapter (Fig. 10/2) sits on the slide guide (Fig. 10/8) of the lifting device.

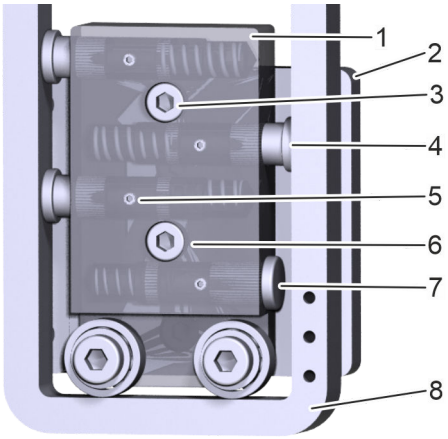


Fig. 10: Clamping device and adapter

1 Slide adapter
2 Hydraulic tensioner adapter on the tool
3 Adapter fastening screw
4 Extended spring retainer
5 Grub screw
6 Adapter fastening screw
7 Retracted spring retainer
8 Slide guide

6. Screw the slide adapter (Fig. 10/1) to the hydraulic tensioner adapter on both sides of the tool. To do so, secure the adapter fastening screws (Fig. 10/3 and 6).

7. Extend all four spring retainers (Fig. 10/4) on both sides. To do so, turn the grub screws (Fig. 10/5) slightly.

⇨ The pistons are set at the lowest position upon delivery. The pistons are locked in position by grub screws. Turning gently releases the pistons. The springs push the pistons to the slide guide.

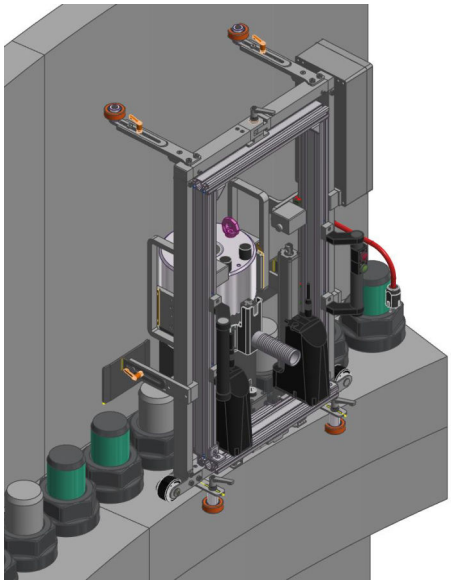


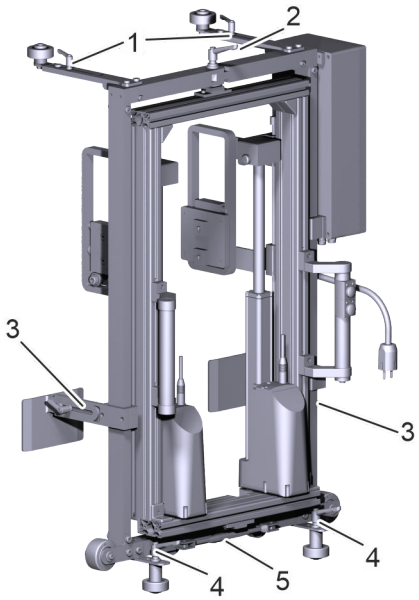
Fig. 11: Tool in raised position

⇨ The tool is connected to the lifting device.

4.3 Adjusting

Personnel: ■ User

Protective equipment: ■ Protective work clothing
■ Safety shoes



1 Clamping lever for adjusting the upper support rollers
↳ *Chapter 4.3.2 'Adjusting the support rollers' on page 30*
2 Clamping lever for adjusting the radius
↳ *Chapter 4.3.3 'Adjusting the radius of the lifting device' on page 31*
3 Clamping lever for adjusting the support plates
↳ *Chapter 4.3.1 'Adjusting the support plates' on page 30*
4 Clamping lever for adjusting the lower support rollers
↳ *Chapter 4.3.2 'Adjusting the support rollers' on page 30*
5 Turnbuckle for adjusting the radius
↳ *Chapter 4.3.3 'Adjusting the radius of the lifting device' on page 31*

Fig. 12: Adjustment points

4.3.1 Adjusting the support plates

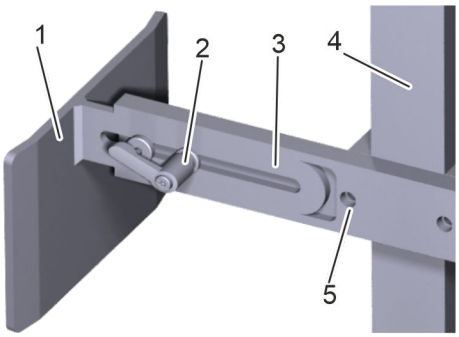


Fig. 13: Adjusting the support plate

1. To set the height, loosen the bolts (Fig. 13/5) on the frame (Fig. 13/4).
2. Set the support plates (Fig. 13/1) to the height of the flange of the bolted connection.
3. Tighten the bolts on the frame (Fig. 13/5) to 25 Nm.
4. Release the clamping lever (Fig. 13/2).
5. Slide the support plate (Fig. 13/1) along the rail (Fig. 13/3) and place it as close as possible to the bolted connection.
6. Close the clamping lever (Fig. 13/2).

4.3.2 Adjusting the support rollers

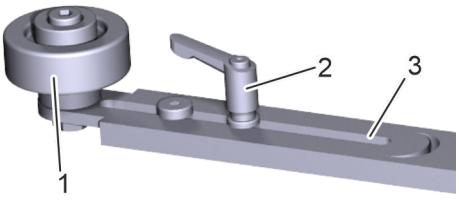


Fig. 14: Adjusting the support rollers

1. Release the clamping lever (Fig. 14/2).
2. Slide the support roller (Fig. 14/1) along the rail (Fig. 14/3) and place it against the flange wall.
3. Secure the clamping lever (Fig. 14/2).
4. Adjust all support rollers.

4.3.3 Adjusting the radius of the lifting device

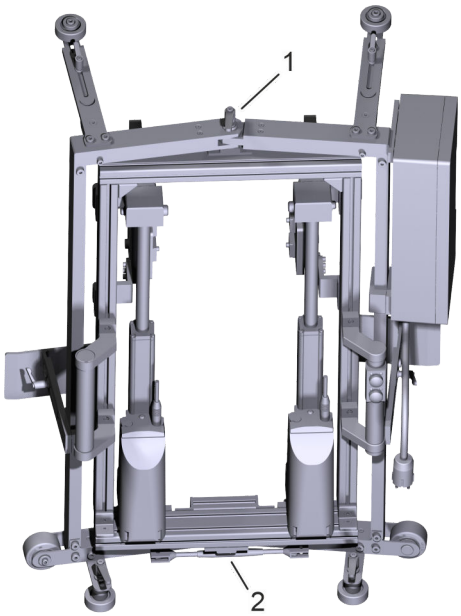


Fig. 15: Adjusting the radius

The radius of the lifting device can be adjusted to the radius of the wind turbine.

1. Release the clamping lever (Fig. 15/1).
   ⇨ The radius can be set.
2. Turn the turnbuckle (Fig. 15/2) to adjust the rolling radius of the flange.

   If the lifting device with tool is already seated on the flange of the bolted connection, adjust the radius with a spanner using the hole in the turnbuckle.
3. Secure the clamping lever (Fig. 15/2).
   ⇨ The outer frame of the lifting device is bent in such a way that the lifting device follows the radius of the wind turbine when the tool is transported.

4.4 Supplying with energy

Electrical current

DANGER!

Danger of death due to electric shock!

Touching live parts poses an immediate danger of death due to electric shock. Damage to the insulation or individual components can be life-threatening.

- Do not open the housing of electrical components.
- In the event of damage, disconnect from the power supply immediately and arrange for repair.
- Keep moisture away from live parts. Moisture can cause short circuits.
- Never operate with a mains voltage and mains frequency other than those specified on the rating plate.
- Ensure that the power supply complies with local regulations.
- Never modify the power plug or power cord.
- Only operate at suitable power sockets.
- Never operate after the inspection period has elapsed. See the test seal for the date of the next test.
- Never operate in a potentially explosive atmosphere.
- Keep away from moisture, liquids, steam, dust and coarse contamination.

  Do not switch on in a damp environment or in the rain.
- If possible, operate with a residual current-operated circuit breaker installed.
- Avoid making physical contact with earthed components.
- During operation with mobile power generators, ensure continuous and constant compliance with the specified values for voltage, frequency, sufficient power and earthing.

Faulty power cord

DANGER!

Danger of death due to faulty power cord!

Faulty power cords can lead to a direct danger of death from electric shock.

Rolled-up power cords can result in thermal overload and could catch fire.

- Never modify the power plug or power cord.
- Only operate at suitable power sockets.
- Prior to every use, check the power cord for visible damage to the insulation.
  Never replace the power cord yourself.
- Do not crush, shear or overload the power cord (pressure, strain).
- Do not pull on the power cord in order to disconnect the power plug from the power socket.
- Prior to switching it on, always unwind the power cord fully.
- Do not route the power cord over sharp edges, pinch points, through water, oil or other chemicals.
- Do not kink the power cord and do not twist it.
- Do not route the power cord close to moving parts or hot surfaces, such as motors or exhaust lines of mobile power generators.
- Wherever possible, do not expose the power cord to constant sunlight or other forms of UV radiation.
- Ensure that extension cables routed outdoors or through humid environments are approved for the ambient conditions.
- Ensure that supply lines have the minimum permissible cross-section.

Personnel: ■ User

Protective equipment: ■ Protective work clothing
■ Safety gloves
■ Safety shoes

The lifting device needs to be supplied with electrical power prior to use.

Power supply

1. Ensure that the available electrical power supply complies with the device's electrical connected loads ↬ *Chapter 8 'Technical data' on page 44*.

Consult an electrician if you have any questions. Never make changes or perform repair work on the electrical system yourself.

Power lead

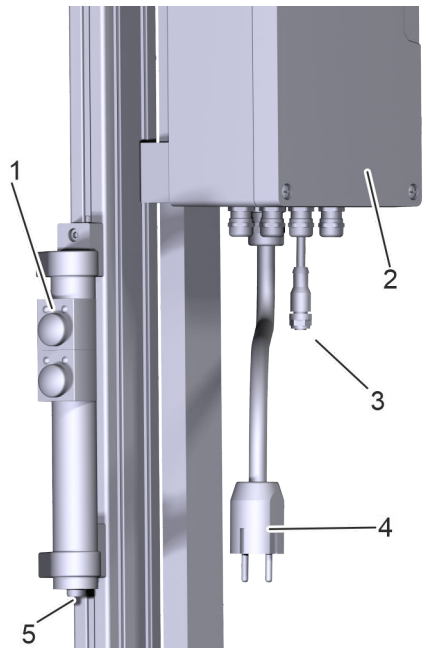


Fig. 16: Electrical connection

1 Control unit
2 Junction box
3 Control unit connection cable
4 Power cord
5 Control unit connection

2. Have a power lead suitable for the operating site ready.
3. Ensure that the lifting device, power cord, power lead, power plug and power socket are undamaged.
4. Lay power leads in such a way that no tripping hazards arise, no mechanical load occurs, no sharp corners or edges can damage the insulation and that the ambient conditions correspond to the operating conditions for the power leads. Completely unwind the power leads if they are on a reel.
5. Have the lifting device ready at the operating site. When doing so, ensure that ambient conditions correspond to the specifications *Chapter 8 'Technical data' on page 44*.
6. Plug the power lead's plug into the power socket and connect the power cord (Fig. 16/4) of the lifting device to the power lead.

   ⇨ The lifting device is electrically connected.

   The LED above the buttons on the control unit (Fig. 16/1) lights up green.
7. The lifting device is usually supplied with the control unit connected.

   Make sure that the control unit (Fig. 16/1) is connected to the junction box (Fig. 16/2) via the connection cable (Fig. 16/3). The connection for this is located on the base of the handle (Fig. 16/5).

   ⇨ The lifting device is ready for use.

4.5 Using the lifting device

High hydraulic pressure

WARNING!

Danger of bursting due to excessive hydraulic pressure!

If the hydraulic pressure exceeds the permissible maximum pressure for connections, hoses, tools or components of the hydraulic power pack, these could burst. Airborne parts and hydraulic fluid discharged under high pressure could cause serious injuries.

– Ensure that all components are designed for the maximum applied hydraulic pressure and that none of the components are damaged.
– Check for defects, damage and leaks.
  Have all identified defects remedied immediately.
– Comply with the maintenance intervals.

Breakage of components

WARNING!

Danger of injury from component fracture!

Components or bolted connections may tear while working. The hydraulic tensioner may eject at force from the bolting point.

– Stay clear of the hydraulic tensioner's longitudinal axis.
– Load hydraulic tensioner, attached parts and bolts only up to the permitted maximum torque and with the permitted maximum tensile force.

Falling of the lifting device

WARNING!

Danger of injury due to falling of the lifting device!

In the event of incorrect installation or incorrect adjustment of the protective device, the lifting device may fall during transport.

– Check the adjustment of the protective devices prior to the fastening operation (*Chapter 4.3 'Adjusting' on page 29*).
– After assembly, only secure and transport the lifting device using the attachment points on the hydraulic tensioner or bolting device.
– Do not lift the lifting device using the attachment points on the lifting device after assembling the hydraulic tensioner or bolting device.

Transporting the tool

Personnel:
- User

Protective equipment:
- Protective work clothing
- Safety goggles
- Safety gloves
- Safety shoes

Prerequisites:

- The lifting device and the tool are firmly connected.
- **When used with a hydraulic tensioner:** The hydraulic power pack is connected to the hydraulic tensioner.

- The lifting device with tool is securely mounted on the bolted connection (↳ *'Assembling' on page 28*).
- The lifting device is fully adjusted (↳ *Chapter 4.3 'Adjusting' on page 29*).

1. Make sure that the lifting device cannot fall down. Secure properly at all times.

2.

WARNING!

Danger of injury from pressurised components!

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

3.

NOTICE!

Property damage to the lifting device!

If the tool is not released, the lifting device may be destroyed.

Release the tool from the bolted connection. Note the operating instructions for the tool.

4. Make sure that the lifting device is connected to the mains.

⇨ The LED above the buttons lights up green (Fig. 17/1).

5. Press and hold the *[Lift]* button.

⇨ The lifting frame with tool is raised electrically.

The LED above the control unit lights up red (Fig. 17/1).

6. When the required height has been reached and the tool can be moved freely above the bolted connection, release the *[Lift]* button.

7. Move the tool in the raised position to the next bolted connection in the lifting device. To do this, use the handles (Fig. 17/4) on both sides.

8. Lower the tool onto the bolted connection. To do so, press the *[Lower]* button until the tool is completely on the bolted connection.

Make sure that the electric cylinders have reached the lowest point.

If the tool cannot be lowered onto the bolted connection, the position of the lifting device must be corrected ↳ Chapter 6 'Troubleshooting' on page 42.

9. Bolt. Note the operating instructions for the tool and the hydraulic power pack.

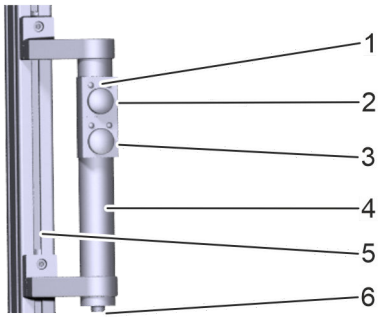


Fig. 17: Operation

1 LED
Green: Lifting device ready for use (electrically connected)
Red: Button pressed; lifting device moves
2 *[Lift]* button
3 *[Lower]* button
4 Handle
5 Inner frame
6 Connection to junction box

4.6 Dismantling the hydraulic tensioner or bolting device

Personnel:
- User

Protective equipment:
- Protective work clothing
- Safety goggles
- Safety gloves
- Safety shoes

Prerequisites:

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

1. Disconnect the lifting device from the power supply.
2. Unscrew the slide adapter from the hydraulic tensioner adapter.
3. 

   CAUTION!
   Danger of crushing due to high weight!

   Lift the lifting device off the tool from above.
4. Unscrew the hydraulic tensioner adapter from the tool.

5 Maintaining the lifting device

Improperly performed maintenance tasks

WARNING!

Danger of injury from improperly performed maintenance tasks!

Improper maintenance can cause serious injuries and significant damage.

– Ensure sufficient assembly space prior to commencing the tasks.
– Ensure that the assembly site is clean and tidy. Loosely stacked or randomly scattered components and tools may cause accidents.
– Have all repairs performed by the manufacturer.
– Use only PLARAD® original parts.

Faultless operation

The following sections describe the maintenance tasks that are required in order to ensure optimum and faultless operation.

If routine checks reveal increased wear, shorten the requisite maintenance intervals according to the actual signs of wear. If you have questions about maintenance tasks and intervals, contact PLARAD® service.

Accessories, spare parts and wear parts

Spare parts must meet the technical requirements specified by PLARAD®. This is always ensured by 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, adversely alter the specified design properties and, consequently, impair active or passive safety.

Any liability and warranty for damage resulting from the use of parts other than the original spare parts and accessory parts is excluded.

Have at least the following information about the lifting device to hand to enable quick and easy processing:

- Client
- Serial number
- Desired spare part
- Desired quantity
- Desired mode of shipping

‘PLARAD® service’ on page 4

5.1 Maintenance table

Interval	Maintenance task	Personnel
Before and after every use	■ Clean. ■ Perform a visual inspection. ■ Check surfaces, warning symbols and pictograms for damage. ■ Check the bolts and clamping levers. ■ Check the support and guide rollers for correct operation. ■ Check all safety devices of the lifting device for completeness and correct operation. ■ If possible, replace or repair defective safety devices.	User
Every 3 months ■ In the event of extreme operating conditions (e.g. dust, dirt) ■ In the event of high frequency of use	■ Replace plastic on the slide strips ↳ *Chapter 5.3 'Replacing plastic on the slide strips' on page 40*. ■ Replace support and guide rollers ↳ *Chapter 5.4 'Replacing the support and guide rollers' on page 40*. ■ After 10,000 cycles, have electric cylinders and electrical components serviced by an electrician. ■ Have tested as per DGUV Regulation 3.	User
Every 6 months ■ In the event of standard operating conditions ■ In the event of average frequency of use		User
Every 12 months ■ In the event of low frequency of use		User

5.2 Cleaning the lifting device

Prerequisites:

- Dismantle the tool and hydraulic power packs before each cleaning and clean them separately.

Cleaning

1. **NOTICE!**
   Damage from improper cleaning!

   Clean the lifting device with a soft cloth. Never use strong 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 ignition sources. Do not smoke. Let it evaporate.

Surfaces and markings

2. Check surfaces and markings for damage. Arrange for repairs if there is damage or illegible markings.

5.3 Replacing plastic on the slide strips

Prerequisites:

- The lifting device has been cleaned (↯ *Chapter 5.2 'Cleaning the lifting device' on page 40*).

The slide strips are located on the hydraulic tensioner adapter.

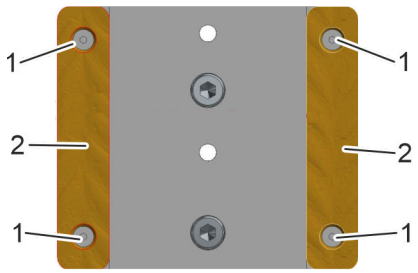


Fig. 18: Slide strip

1. Unscrew the plastic (Fig. 18/2) on the slide strips. To do so, unfasten the two countersunk bolts (Fig. 18/1) on each slide strip.
2. Dispose of used plastic in accordance with the disposal instructions (↯ *Chapter 7 'Disposal' on page 43*).
3. Bolt the new plastic to the slide strips.

5.4 Replacing the support and guide rollers

Prerequisites:

- The lifting device has been cleaned (↯ *Chapter 5.2 'Cleaning the lifting device' on page 40*).

1. Unscrew defective support and guide rollers.
2. Dispose of old support and guide rollers in accordance with the disposal instructions (↯ *Chapter 7 'Disposal' on page 43*).

3. Screw on new support and guide rollers and check their function.

6 Troubleshooting

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

Fault description	Cause	Remedy	Per-sonnel
Lifting is not possible.	Hydraulic tensioner is not on the flange of the bolted connection.	Lift the hydraulic tensioner. Reposition the lifting device. Place the hydraulic tensioner correctly on the flange of the bolted connection.	User
	Lifting device is not connected.	Make sure that there is an electrical connection. Replace defective power cord.	User
Lifting device cannot be moved.	Support or guide rollers of the lifting device are dirty or damaged.	Check the support rollers for dirt, and clean them. Replace damaged support rollers.	User
	The tool is still connected to the bolted connection.	Shut down the electric cylinder and check the lifting device for damage. If no damage is visible, release the tool from the bolted connection and continue work.	User
Guard plates are in continuous contact with the bolted connection. Moving becomes more difficult.	The high weight of the tool generates a torque and the guide rollers leave the track.	If the tool is on the screw connection, gently push the lifting device slightly forward using the handles. The upper and lower support rollers help the lifting device to find its way back to the track.	User
Crushing between outer and inner frame.	The assemblies have rotary bearings and are connected to each other.	Attach rubber stoppers to keep the rotation distance to a minimum.	User

7 Disposal

Disassembly

The lifting device must be disposed of in an environmentally sound manner at the end of its service life.

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

Disposal

Insofar as no take-back or disposal agreement has been put in place, dispose of the lifting device in accordance with local regulations.

ENVIRONMENT!

Danger to the environment due to incorrect disposal!

Incorrect disposal can be hazardous to the environment.

- Dispose of electrical components separately.
- Dispose of plastic parts separately.

Do not allow electronic components to enter bodies of water, the sewage system, the soil or household waste collection. Contact *'PLARAD® service' on page 4* for disposal.

Have lubricants and other auxiliary materials disposed of by approved specialist companies.

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

8 Technical data

Dimensions and weights

Data	Value	Unit
Weight	39.7	kg
Width	685	mm
Height	1019.4	mm
Depth, maximum	406	mm

Condition

Data	Value
Material	2.1030, EN 12164, PA 12
Maximum load capacity	200 kg

Ambient conditions

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

Noise

Emission sound pressure level < 70 dB(A)

Electrical connected loads

Specific details on the rating plate:

- Mains voltage
- Mains frequency
- Nominal current
- Protection class

9 Index

R

S

T

U

W

Appendix

The following documents are supplied with the lifting device in a document folder in addition to this manual.

- EU declaration of conformity

WEICONLOCK®
Anaerobic Adhesives and Sealants

WEICONLOCK® AN 302-43 Threadlocking

NSF Nonfood Compounds Program Listed S4 Registration 169864

Threadlocking |DVGW and drinking water approval

· higher viscosity

· medium strength

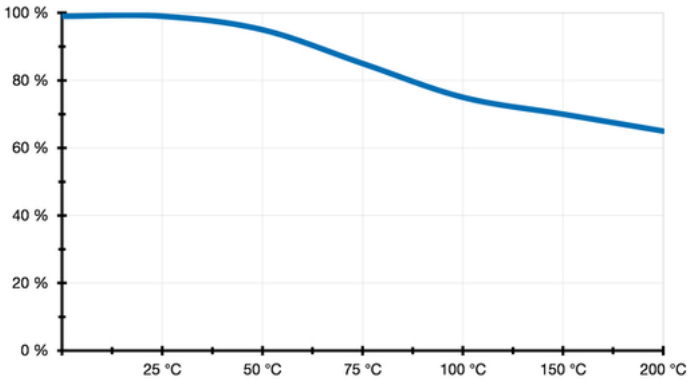
· disassembly with normal tools

Technical Data

Colour		blue
Fluorescent		yes
For thread connections up to		M 36
Viscosity		2.000 - 7.000 mt mPa·s
Gap bridging up to max.		0,25 mm
Breakaway torque		17 - 22 Nm
Prevail torque		8 - 12 Nm
Shear strength Nmm² (DIN 54452)		9 - 13 N/mm²
Handling strength		10 - 20 min.
Final strength	(100 % strength)	1-3 h
Temperature resistance		-60°C to +200°C
Compressive strength (free cutting steel / grub screw = 8.8)		
M 3x6	max.	1.500 bar
M 4x6	max.	1.500 bar
M 5x8	max.	1.500 bar
M 6x10	max.	1.500 bar
M 8x12	max.	900 bar
M 10x16	max.	100 bar

Approvals / Guidelines

Hygiene Institute	UBA KTW-BWGL
ISSA Code	75.628.06/04/05
IMPA Code	812912/13/14



Surface Pre-Treatment

To achieve optimum results, the mounting parts should be degreased and cleaned, e.g. with WEICON Surface (roughen the surfaces, if required). WEICONLOCK can also be used on uncleaned surfaces, e.g. screws as delivered. However, the cleaner the surface, the better the results achieved.

Processing

WEICONLOCK is applied evenly straight from the Pen with the help of the dosing tip; avoid direct contact between dosing tip /metal. For sealing applications, apply WEICONLOCK to the thread in circles. Assemble parts and screw tight. Do not pour any WEICONLOCK back into the bottle that has already come into contact with metal. Even extremely small metal particles cause the adhesive to cure inside the bottle. Therefore, in serial production, the use of dosing devices is recommended.

Mixing

not necessary

Curing

In the absence of oxygen and in contact with metal ions in a few seconds to minutes.

Storage

WEICONLOCK has a shelf life of at least 24 months, when stored at room temperature in closed original container. Protect from heat sources and direct sunlight. The air contained in the Pen keeps WEICONLOCK liquid.

Instructions for use

When using WEICON products, the physical, safety-related, toxicological and ecological data and regulations in our EC safety data sheets (www.weicon.com) must be observed.

Accessories

10021433 Activator F, 200 ml, green
10001256 Dosing Tip, 1 PCE

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WEICONLOCK® AN 302-43 Threadlocking

Available sizes

10000611	WEICONLOCK® AN 302-43 Threadlocking, 3 ml, blue
10016419	WEICONLOCK® AN 302-43 Threadlocking, 20 ml, blue
10017876	WEICONLOCK® AN 302-43 Threadlocking, 50 ml, blue
10019968	WEICONLOCK® AN 302-43 Threadlocking, 200 ml, blue
10030474	WEICONLOCK® AN 302-43 Threadlocking, 10 ml, blue

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ISO 14001:2015
Management System
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PLARAD®
Torque & Tension Systems

EC Declaration of Conformity

Translation of original

Manufacturer	Maschinenfabrik Wagner GmbH & Co. KG
	Birrenbachshöhe 17 53804 Much Germany
Authorised representative	Claudia Beyert-Wagner
Product name	HV1power 230
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
2014/35/EU	Low Voltage Directive
2014/30/EU	EMC Directive

The following harmonised standards have been applied:

EN ISO 12100:2010	Safety of machinery – General principles for design – Risk assessment and risk reduction
DIN EN IEC 61000-6-2:2019-11	Electromagnetic compatibility (EMC) – Part 6-2

Much, 24/03/2025	Claudia Beyert-Wagner (Managing Director)

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