Operating instructions

Battery-powered hydraulic power pack
XA1*power*

PowerPaX

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 battery-powered hydraulic power pack XA1*power* (referred to in the following as “hydraulic power pack”).

The manual is a component of the hydraulic power pack and must be kept in its immediate vicinity where 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 hydraulic power pack’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
- EU declaration of conformity
- Test report for testing electrical equipment as per DIN VDE 0701-0702
  Testing of equipment as per DGUV Regulation 3
- Certificates/test reports (option)
- Technical data sheet (dimension sheet)
  ↳ www.plarad.de

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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 ↳ *‘Manufacturer’ on page 4*.

Manufacturer

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PLARAD® service

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Table of contents

1 Unpacking and transporting

Delivery

Fig. 1: Example, shipping crate

The hydraulic power pack is delivered together with the rest of the scope of delivery in packaging adapted to the transport route and delivery location.

For example, this could be a wooden crate delivered on a pallet. The hydraulic power pack is wrapped in film to ensure that no hydraulic oil can escape.

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:

- Hydraulic power pack filled with hydraulic oil
- Radio remote control
- Document folder
  - Operating instructions
  - EU declaration of conformity

Options:

- Black 3-m hydraulic hoses
- Batteries
- Battery charger
- Any accessory ordered
- Test reports

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 by a forwarding agent

Observe the following points when the hydraulic power pack is transported in a vehicle by a forwarding agent or parcel service:

1. 

   WARNING!

   Danger of crushing from unsecured load!

   Ensure that the load is properly secured in the vehicle. Secure the hydraulic power pack in such a way that it cannot slide out of position during transport.

2. 

   ENVIRONMENT!

   Danger to the environment due to hydraulic oil leakage!

   Ensure that the hydraulic power pack is horizontal and protected from shocks and impacts for the entire duration of transport.

   Never put the hydraulic power pack on its side or position it upside down.

3. Put the hydraulic power pack in a foil bag to prevent oil spillage in the event of an accident.

Transport with an industrial truck

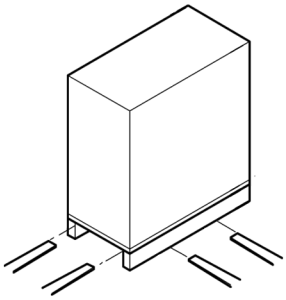


Fig. 2: Transport with an industrial truck

1. Ensure that the industrial truck is designed for the weight of the transport item. For details of the weight, see *Chapter 2.6 'Rating plate' on page 18*.
2. Drive the forks of the industrial truck between or under the bars of the pallet.
3. Drive in the forks until they protrude on the opposing side.
4. **WARNING!**
   Danger of crushing due to the package tipping over!

   If the centre of gravity is eccentric, ensure that the pallet cannot tip over.
5. Lift the pallet with the transport item and commence transport.

Transport by hand

Fig. 3: Carry handle

1 Carry handle
2 Batteries
3 Connection for remote control
4 Connection for hydraulic hoses

Do not transport if the batteries are connected.

1. Remove the batteries (Fig. 3/2) and transport separately.
2. Remove any hydraulic hoses that are connected.
3. Seal the remote control connection (Fig. 3/3), couplings and nipples (Fig. 3/4) with caps prior to transport.
4. Ensure that all openings are sealed.
5. Lift by the carry handle (Fig. 3/1). In doing so, keep the transport item horizontal at all times. Never turn it upside down.

Transport after operation

WARNING!
Danger of burns due to hot surfaces or hydraulic oil!
In the event of a high ambient temperature and prolonged operation, the hydraulic power pack can reach surface temperatures of up to 80 °C. The hydraulic oil gets hot when pressurised. Contact with hot surfaces and hot hydraulic oil could result in severe burns.

- Let the hydraulic power pack cool down prior to transport.
- Seal all openings.
- Wear personal protective equipment.

Transporting batteries

Fig. 4: Example, transporting batteries

Batteries contain hazardous substances are classified globally as dangerous goods. These products are therefore only approved for commercial transport under certain conditions.

With regard to road transport in Europe, the regulations of the ADR must be complied with; the regulations of IATA DGR must be complied with for air transport. These contain specifications for packaging and accompanying documentation, for example.

Before transporting hazardous substances, always familiarise yourself with current regulations pertaining to the transport of dangerous goods.

Storage

- Store the hydraulic power pack separately from the batteries.
- Put it in a horizontal position.
- Comply with ambient conditions *Chapter 11 'Technical data' on page 63*.
- Seal all openings (couplings, nipples, surge tank).
- Store out of reach of unauthorised persons.

2 Getting to know the hydraulic power pack

2.1 Overview of the hydraulic power pack

Battery-powered hydraulic power pack XA1*power*

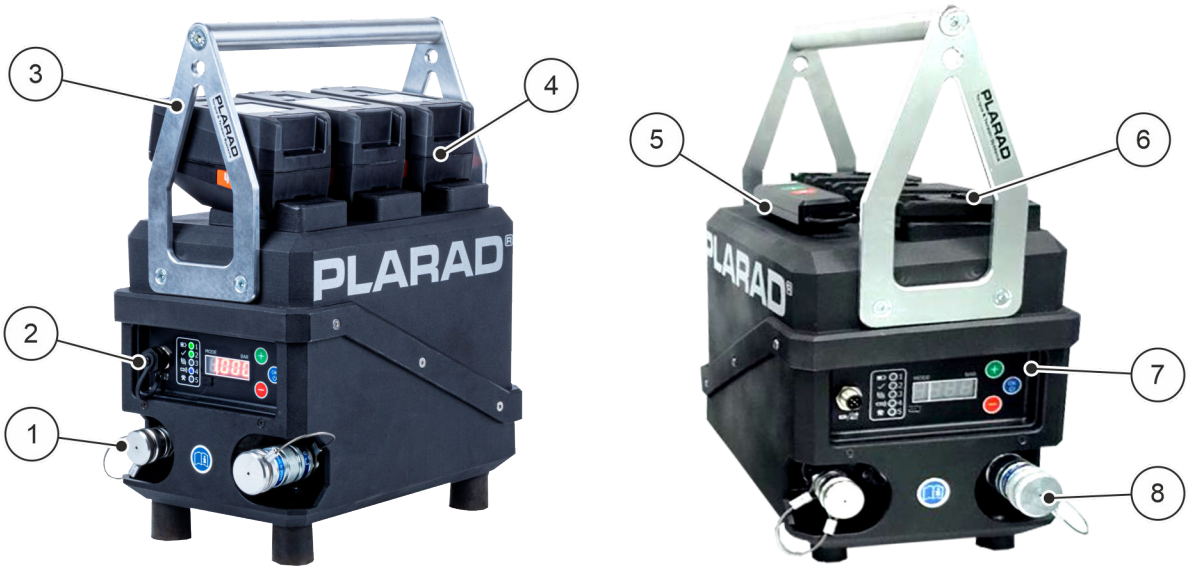


Fig. 5: Illustration of XA1power

1 Hydraulic connection, return
2 Connection, optional cable remote control
3 Carry handle
4 Batteries (↳ *'Battery' on page 16*)
5 Remote control (↳ *Chapter 2.4 'Remote control' on page 15*)
6 Battery connections
7 Control unit (↳ *Chapter 2.3 'Control unit' on page 12*)
8 Hydraulic connection, pressure connection

2.2 Brief description

The hydraulic power pack is a transportable, battery-powered, hydraulic pressure generator for operating PLARAD® hydraulic wrenches up to 800 bar to produce manual and automatic bolted connections.

Quick-release couplings connect the hydraulic power pack to the PLARAD® hydraulic wrench via a pair of hydraulic hoses without any oil loss.

If faults occur on the electronic control system, the system pressure in the electric pump is limited by a safety relief valve.

Applications and advantages include:

- Service applications
- Hard-to-reach points
- No external power source required
- Minimising the risk of tripping on the power cord of the hydraulic power pack
- Frequency-independent and voltage-independent during operation

The hydraulic power pack cannot be operated:

- Without batteries
- With faulty batteries
- With a power cable

For safety reasons, the hydraulic power pack should be switched off after use and during prolonged work breaks. After roughly 10 minutes in standby mode, the power pack switches off automatically to save energy.

2.3 Control unit

Illustration

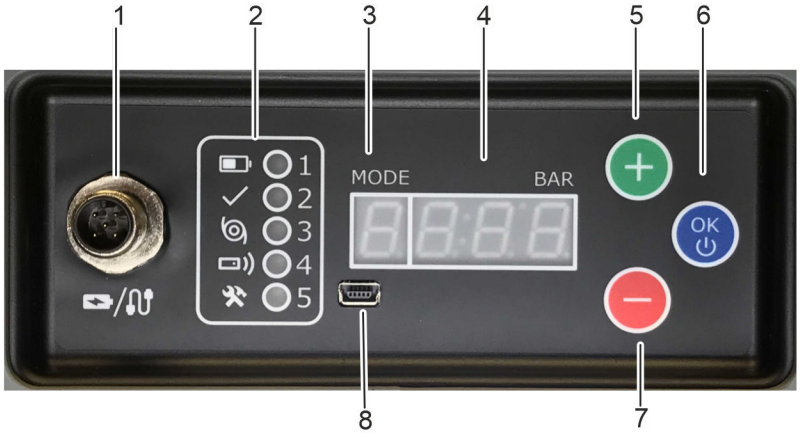


Fig. 6: Control unit

1 Connection, optional cable remote control
2 Status display
3 Operating mode/Mode
4 Pressure display
5 Green button *[+]*
6 Blue button ⏻, *[OK]*
7 Red button *[-]*
8 Service interface
(With sealing sticker applied)

Remote control connection (Fig. 6/1)

A cable remote control can be connected to this connection.

Status display (Fig. 6/2)

The following information can be displayed:

No.	Information	LED	Status
1	Battery - State of charge	Illuminated green	Battery full
		Illuminated yellow	Battery half full
		Illuminated red	Battery empty
		Flashes red	Battery not ready for operation
2	System readiness	Illuminated green	System ready for operation
		Illuminated red	Fault
		Off	System not ready for operation
3	Motor	Off	Motor stopped
		Illuminated green	Motor/pump running
		Illuminated blue	Pressure maintenance
4	Remote control (Colours in descending priority, higher priority overwrites lower display)	Flashes blue	BLUETOOTH pairing
		Illuminated green	Remote control connected
		Illuminated blue	BLUETOOTH remote control paired BLUETOOTH address stored, inactive connection status
5	Service	Off	No need for service
		Illuminated red	Send in for service

Operating mode (Fig. 6/3)

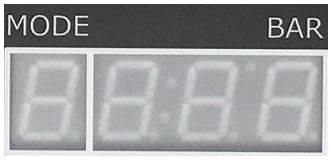


Fig. 7: Operating mode display, pressure

The selectable operating modes are dependent on the design.

No.	Drive	Head/drive	Adapter/head
1	Manual	Universal	-
2	Automatic	MX-EC 10 TS-2AS	3/4" square male
3	Automatic	MX-EC 20 TS	1" square male
4	Automatic	MX-EC 45 TS	1" square male
5	Automatic	MX-EC 75 TS	1 1/2" square male
6	Automatic	MX-EC 95 TS	1 1/2" square male
7	Automatic	SX-EC 2 TS	HSX 2** F/F-ST
8	Automatic	SX-EC 5 TS	HSX 5** F

Pressure display (Fig. 6/4)

The pressure display (Fig. 6/4) displays different information in the different operating statuses:

Operating status	Display
Upon starting the hydraulic power pack	Software version and battery's state of charge in [volt]
During operation	Preset or current operating pressure in [bar] After finishing a procedure, the switch-off pressure continues to be displayed for a few seconds.
Fault	Error messages

Buttons (Fig. 6/5 – 7)

Button	Function
	Green button: ■ Select operating mode ■ Increase set pressure

Button	Function
	Blue button: ■ Press and hold: Switch hydraulic power pack on and off ■ Press briefly: Switch between mode change and pressure adjustment. The red dot in the corner of the display window indicates the active selection.
	Red button: ■ Select operating mode ■ Reduce set pressure

Service interface (Fig. 6/8)

The service interface is only used by PLARAD® service agents.

The service interface has a sealing sticker applied to it. Removing the sticker revokes the operating licence and voids the hydraulic power pack guarantee.

2.4 Remote control

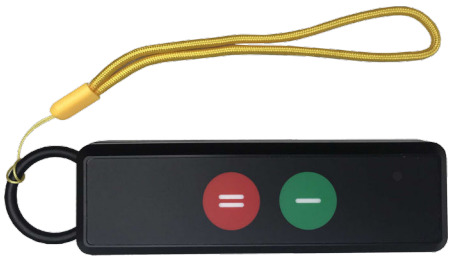


Fig. 8: Radio remote control

The hydraulic power pack can be equipped with two different remote controls.

- Cable remote control
- Radio remote control
  Range approx. 10 m

The radio remote control is equipped with an LED.

LED

LED	Status
Illuminated green	Button pressed on the remote control
Flashes red	Remote control battery empty

Buttons of the remote control

Button	Function
	Green button: ■ Start motor ■ Build up pressure

Button	Function
	Red button: ■ Depressurise system ■ Move tool to starting position

For information about the connection, see *'Connecting the remote control (option)' on page 44*.

2.5 Power supply

Battery

1 Battery ejector button
2 Electrical contacts and guide rail
3 Battery charge status indicator button
4 LED for battery charge status indicator

Fig. 9: Illustration of battery

Battery ejector button

The battery is released from the hydraulic power pack using the release button (Fig. 9/1) and can be removed.

Button and LEDs for charge status indicator

Fig. 10: LED display and charge status indicator button

The battery charge status can only be displayed correctly when the drive motor is switched off.

The battery charge status is displayed (as a percentage) by pressing the button.

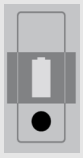
LED	Meaning
1 to 4 LEDs light up green	The charge status is displayed as a percentage: 25% – 50% – 75% – 100%
LED lights up red continuously	The battery is empty. Charge the battery.
LED flashes red	The battery is not operational. Bring the battery to within the operating temperature range and then charge it.

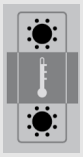
Battery charger

1 LED display
2 Battery connection
3 Power cable

Fig. 11: Illustration of battery charger

LED display for battery charger

LED display		Meaning
	Continuous yellow light	The battery charger is operational. Mains voltage is available.
	Flashing green light	Quick charging is active.
	Continuous green light	Quick charging has concluded.

LED display		Meaning
	Flashing red light	Charging is not possible. Potential causes: ■ The contacts are dirty. Measure: Clean the contacts by inserting and removing the battery multiple times. ■ The battery is faulty. Measure: Replace the battery.
	Flashing green light and flashing red light	The battery temperature is located outside the charging temperature range of +5 to +45°C. If the battery reaches the permissible charging temperature range, quick charging is initiated.

2.6 Rating plate

The following data is inscribed on the rating plate:

- Name of the manufacturer including their full address
- Machine designation
- Type designation
- Article/serial number
- Maximum pressure
- Year of construction
- Weight
- CE marking/UKCA marking

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
[Button]	Controls (e.g. buttons, switches), indicators (e.g. signal lamps)
'Display'	Display elements (e.g. on-screen buttons, assignment of function keys)
'Menu' → *'Submenu'* → *'Setting'*	Shortened description of navigation: Call up menu, call up submenu, change settings

3.2 Symbols on the hydraulic power pack

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 hydraulic power pack:

Hot surface

Hot surfaces, such as the housing of the drive motor, cannot always be identified as such. Do not touch surfaces marked in this way without protective gloves.

Follow the manual

Read the operating instructions prior to using the hydraulic power pack.

Hearing protection

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

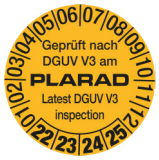
Separate collection

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

High-pressure cleaners prohibited

Do not use any high-pressure cleaners when cleaning. The pressure of the cleaning jet can result in property damage.

Attachment point

Attach the hoist only at the marked points for lifting.

3.3 Intended use

The electric hydraulic power pack is a transportable, hydraulic pressure generator and may only be used to operate PLARAD® tools in order to produce bolted joints in line with the given specifications (*Chapter 11 'Technical data' on page 63*).

The hydraulic power pack may only be used for commercial purposes and only in conjunction with PLARAD® tools.

The hydraulic power pack is electrically powered. Batteries are used to this end.

The hydraulic power pack may only be used in atmospheres that are not potentially explosive.

The hydraulic power pack may only be used in a dry environment.

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 hydraulic power pack can lead to dangerous situations.

- Do not operate the hydraulic power pack outside the defined specifications.
- Do not operate the hydraulic power pack in continuous operation.
- Never disregard protection ratings.
- Never operate outside the permissible environmental conditions.
- Do not switch on in a damp environment.
- Never operate in a potentially explosive atmosphere.
- Never insert non-original batteries.
- Never operate the hydraulic power pack together with a second person.

3.5 Residual risks

The following section outlines the residual risks potentially posed by the hydraulic power pack even when it is used as intended.

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

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 hydraulic power pack.
- If the housing is damaged, disconnect the battery from the hydraulic power pack immediately and arrange for repair.
- Keep moisture away from live parts. Moisture can cause short circuits.
- Never operate the battery charger with a mains voltage and mains frequency other than those specified on the rating plate.
- Only operate the hydraulic power pack with original batteries supplied by the manufacturer.
- Ensure that the power supply complies with local regulations.
- Never make modifications to the hydraulic power pack, batteries or battery charger.
- Never modify the power plug or power cord for the battery charger.
- Only operate the battery charger 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 place in water or spray with a water jet.
- If possible, operate the battery charger with a residual current-operated circuit breaker installed.
- When charging the battery charger with mobile power generators, ensure continuous and constant compliance with the specified values for voltage, frequency, sufficient power and earthing.

Batteries

WARNING!

Danger of death due to fire, explosion, smoke and toxic gases if batteries are handled incorrectly!

Incorrect handling of rechargeable batteries can result in fire, explosions and electric shock. Escaping gases and smoke can lead to poisoning and suffocation.

- Never charge batteries.
- Only use and charge batteries supplied by the manufacturer.
- Only use the charger included in the delivery to charge the battery.
- Only insert a battery with the correct polarity (+/-) in the charger. If the battery cannot be inserted properly, never use force to insert it.
- Never short-circuit the contacts (positive and negative terminal) of the battery.
- Never modify, drill, open, disassemble or subject the battery to mechanical loads.
- Never charge batteries that are clearly damaged. Do not put inflated, dropped or damaged batteries into service. Dispose of them in the proper manner.
- Never expose the battery to moisture or humidity (rain, saltwater, liquids). A humid or moist battery must not be used or charged under any circumstances.
- Avoid permanent damage due to deep discharge of the lithium-ion battery.
- Never use, charge or store the battery in places where there is a potentially explosive atmosphere or where high temperatures could occur.
- Charge lithium-ion batteries in a dry state, at room temperature and in a fireproof location.
- Do not expose to extreme heat. Do not store in the sun or in an overheated car.
- Do not throw the battery into a fire.
- Only use approved chargers.
- Only operate in the designated equipment.
- Do not inhale escaping gases or smoke.
- Dispose of in an environmentally sound manner.
- Transport lithium-ion batteries in accordance with the currently applicable legal regulations pertaining to dangerous goods.

EMC

WARNING!

Danger of injury due to very strong electromagnetic radiation!

Very strong electromagnetic radiation can cause the hydraulic power pack to malfunction, resulting in serious injuries and major damage.

– Do not operate in the immediate vicinity of strong transmitting antennas.
– Suspend use immediately and remove the battery as soon as there are signs of malfunctions.

3.5.2 Danger due to hydraulics

Pressurised hydraulic fluid

WARNING!

Pressurised hydraulic components could result in life-threatening injuries!

Inadvertent opening or defects could result in the discharge of hydraulic fluid under high pressure.

Hydraulically powered drives could move unexpectedly.

Contact with hot hydraulic oil could result in severe burns.

– Prior to commencing all work, check the hydraulic power pack, connections, hoses and tools for visible damage and leaks.
  Have all identified defects remedied immediately.
– Prior to commencing work on the hydraulic system, first switch it off, then depressurise it and let it cool down. Fully relieve all accumulators of pressure. Check to ensure a depressurised state.
– Do not change pressure settings such that they exceed the maximum values.
– Comply with the maintenance intervals.
– Always ensure that hydraulic hoses are properly connected and locked. Quick-release couplings must be engaged. Bolted connections must be fully secured.

Exceeding the maximum pressure

WARNING!

Danger of bursting due to excessive hydraulic pressure!

If the hydraulic pressure exceeds the maximum permissible 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.

- Use only the black 3-m hydraulic hoses included in the delivery. At the end of the maximum permissible service life, order and use new original PLARAD® hydraulic hoses.
- 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.

Hydraulic oil

WARNING!

Damage to health and secondary illnesses due to contact with hydraulic oil!

Contact with hydraulic oil could cause allergic reactions, skin and eye irritation, nausea and other secondary illnesses.

- Wear personal protective equipment for all work with hydraulic oil.
- Do not eat, drink or smoke in areas in which work involving hydraulic oil is performed.
- Upon completion of the work, clean or dispose of clothing and personal protective equipment contaminated with hydraulic oil in the proper manner.
- Note the safety data sheet for the hydraulic oil in use.

Oil specifications

NOTICE!

Property damage due to non-compliance with the oil specifications!

Incorrect hydraulic oils, an incorrect oil level and the use of contaminated hydraulic oils could result in property damage. If hydraulic oil overflows due to the oil level being too high, this could result in environmental damage.

- Check and correct the oil level as follows as a minimum requirement:
  - In the course of commissioning
  - After connecting/disconnecting the hydraulic hoses
  - After flushing
  - After transport, maintenance, repair, troubleshooting
- Top up using only new and clean hydraulic oil ↬ *'Oil specifications' on page 64*.
- Fill hydraulic oil via a funnel with an oil filter.
- Always pay attention to the maximum oil level marking (see sticker).
- Comply with the maintenance intervals.

3.5.3 Mechanical dangers

Moving components and rotational movements

WARNING!

Danger of injury due to moving components!

Moving components and tools could cause serious injuries. There is a danger of being pulled in during rotational movements.

- During operation, do not reach into moving components or handle moving components.
- Prior to commissioning, secure the reaction arm, impact wrench socket and other such tool components in the proper manner.
- Do not switch on the nutrunner while carrying it.
- Wear tight fitting work clothing with a low tearing resistance.
- Wear safety goggles.
- Wear a protective cap (hair net) to prevent long hair from being pulled in by rotating parts.

High piston speed

WARNING!

Danger of crushing due to piston speed!

The hydraulic power pack has a high oil output. Operation with small tools (small working piston diameters) will, in particular, result in high working piston travel speeds. The tool poses a danger of crushing.

- Be especially careful when working.
- Only operate the hydraulic power pack alone.
- Wear PPE.

Crushing

WARNING!

Danger of crushing due to high weight!

The high weight can cause crushing if it falls down.

- Handle the hydraulic power pack with care and as intended.
- Give due consideration to the weight during transport and during all work.
- Carry with the aid of a second person or use suitable hoists.
- Secure the hydraulic power pack against falling when working at height.
- Wear safety shoes.
- Always set up the hydraulic power pack securely.
- Put the hydraulic power pack with all its four feet on firm and level ground.

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.

3.5.4 Noise and ergonomics

Noise

WARNING!

Danger of injury from noise!

The noise level of below 70 dB(A) (3 dB(A) measurement uncertainty) occurring in the work area can cause hearing damage.

– Supply hearing protection.

Inattention

WARNING!

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

Distraction, inattention or irresponsible use can result in losing control of the hydraulic power pack and thus cause serious injuries.

– Always keep the work area well-lit when working on the hydraulic power pack.
– 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 hydraulic power pack seems familiar to you after frequent use.
– When the hydraulic power pack is not in use, always store it safely out of reach of unauthorised persons.
– Wear the prescribed personal protective equipment.

Hot surfaces

WARNING!

Danger of injury due to hot surfaces!

The surfaces of components, such as the drive motor or gearbox, could heat up significantly during operation. Surface temperatures of up to 80 °C could develop. Contact between the skin and hot surfaces will result in severe burns to the skin.

– Always wear heat-resistant protective work clothing and safety gloves when working in the vicinity of hot surfaces.

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 hydraulic power pack is equipped with the following safety devices and safety functions:

Safety relief valve

If faults occur on the electronic control system, the system pressure in the electric pump is limited by a safety relief valve.

Monitoring of the motor current

The motor current is monitored. The motor is switched off if values are incorrect.

Monitoring of the motor oil temperature

The temperature of the motor oil is monitored. The motor is switched off if the motor oil temperature is too high. The power pack cannot be switched on again until the motor oil temperature has dropped below a set threshold.

3.6 Operator's obligations

The hydraulic power pack is used in the commercial sector. The operator of the hydraulic power pack 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 hydraulic power pack'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 operating site of the hydraulic power pack. This risk assessment must be implemented in the form of safety instructions for operation of the hydraulic power pack.
- During the entire time the hydraulic power pack 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 hydraulic power pack. 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 hydraulic power pack and ensure that only commissioned and instructed personnel work with the hydraulic power pack. Personnel being trained or instructed and personnel undertaking vocational training must always be supervised by an experienced person when working on the hydraulic power pack.
- The operator must ensure that no unauthorised persons open the hydraulic power pack or perform work on the electrical or hydraulic equipment.

  Work on electrical equipment may only be performed by an electrician or by trained persons under the guidance and supervision of an electrician. Adhere to electrotechnical regulations for safety reasons.

The operator is also responsible for ensuring that the hydraulic power pack 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.
- Some parameters are set by the manufacturer prior to initial commissioning, e.g. some valve settings. The operator must ensure that these parameters are not changed.

3.7 Who may use the hydraulic power pack?

WARNING!

Danger of injury if personnel are insufficiently qualified!

If unqualified personnel perform work on or with the hydraulic power pack 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

Users of the hydraulic power pack have the requisite knowledge and the requisite training for handling electric power generators. Furthermore, as part of training provided 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 electric and hydraulic systems and are capable of using the hydraulic power pack safely. This includes connecting and flushing hydraulic hoses.

Users must satisfy the legal minimum age requirements.

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.

Users know who their supervisor is, can contact their supervisor if they have questions or in an emergency, and are able to communicate with their supervisor.

The user is familiar with all residual risks and is trained in the practical handling of the hydraulic power pack.

Qualified hydraulic power pack personnel

Qualified hydraulic power pack personnel are trained for the specific task area in which they work and are familiar with the relevant standards and regulations.

Due to their professional training and experience, qualified hydraulic power pack personnel are able to perform work with the hydraulic power pack, recognise and avoid potential dangers independently and convey this to users.

Specific capabilities of qualified hydraulic power pack personnel include:

- Use all functions of the hydraulic power pack.
- Uphold safety, occupational safety and health protection when using the hydraulic power pack and convey this to users.

- Identify damage on the hydraulic power pack and arrange for repairs or get in touch with the manufacturer.
- Instruct users in the proper manner.

Operator

Operators are persons who operate the hydraulic power pack for commercial or economic purposes themselves, or make it available for a third party to use, and who bear legal responsibility for the product vis-à-vis protection of personnel and third parties during operation.

Chapter 3.6 'Operator's obligations' on page 32

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*

Chapter 8.3 'Having service tasks performed by the manufacturer' on page 55

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.

3.8 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.

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.

3.9 Environmental protection

ENVIRONMENT!

Danger of pollution from incorrect handling of environmentally hazardous substances!

If environmentally hazardous substances are handled incorrectly, especially if such substances are disposed of incorrectly, this could cause significant damage to the environment.

– Always adhere to the instructions given below in relation to the handling of environmentally hazardous substances and the disposal thereof.
– If environmentally hazardous substances accidentally enter the environment, adopt suitable measures immediately. If in doubt, notify the competent local authority of the damage and inquire about suitable measures to be taken.

	The following environmentally hazardous substances are used:
Batteries and rechargeable batteries	Batteries and rechargeable batteries contain toxic heavy metals. They are subject to special waste treatment and must be deposited at municipal collection points or be disposed of by a specialist company.
Lubricants	Lubricants, such as greases and oils, contain toxic substances. Such substances must not enter the environment.
Electrical and electronic components	Electrical and electronic components contain toxic materials. These components must be collected separately and deposited at municipal collection points or be disposed of by a specialist company.
Hydraulic oil	Hydraulic oil can contain harmful and environmentally hazardous substances. It must not enter the environment (soil, water), sewage system or household waste. Dispose of hydraulic oil and waste containing hydraulic oil separately via an approved disposal company. Observe the manufacturer’s safety data sheet.

4 Choosing the installation site

Incorrect installation site

WARNING!

Danger of injury due to careless choice of installation site!

Risks could arise from the choice of installation site. If the hydraulic power pack falls, this could result in serious crushing. The noise emissions could cause hearing damage.

– Adhere to the following principles when choosing the installation site.

Personnel and PPE

Personnel:
- User

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

Ambient conditions

1. Ensure that the ambient conditions are adhered to:
   - *Chapter 11 'Technical data' on page 63*
   - Not a potentially explosive atmosphere
   - Dry

Put it in a horizontal position.

2. **ENVIRONMENT!**

   Environmental damage due to oil leakage!

   Ensure that the hydraulic power pack is horizontal.

Fall from heights

3. **WARNING!**

   Danger of crushing due to falling or moving hydraulic power pack!

   Ensure that the hydraulic power pack cannot fall from elevated installation sites or slide out of position. If there is any doubt, secure the hydraulic power pack against falling.

   Observe the tensile forces of the hydraulic hoses on the hydraulic power pack.

Remote control

4. **WARNING!**

   Hearing damage due to noise!

   As far as possible, install the hydraulic power pack in such a way that the noise emissions do not affect the workplace. Observe the maximum length for the remote control cable or ensure a working radio connection.

Stability

5. Check the stability.

5 Supplying with energy

The batteries cannot be charged in the hydraulic power pack.

Only use an original battery charger.

5.1 Battery care

Battery care instructions

In order to obtain the full performance, lithium-ion batteries (Li-Ion) require care.

Battery care rules

- The first charging process is crucial. Charge the battery fully prior to first use.
- Each battery has a limited number of charge cycles. For this reason, do not recharge the battery at every opportunity. Instead, wait until a charge status of between 10% and 20% capacity before recharging.
- If the battery is discharged below its nominal voltage, the battery could be damaged or destroyed. The batteries included in the delivery therefore have electronics that warn of deep discharge and switch off the torque wrench.
- Frequent overcharging can cause permanent damage to the battery. The charger automatically concludes the charging process if the battery is fully charged. Do not connect the battery again.
- The battery can only be charged at temperatures between 5°C and 45°C. To avoid damaging the battery cells, do not charge the battery when it is cold. Let it warm up to room temperature beforehand. Charge the battery at room temperature (18°C to 21°C).
- High temperatures damage the battery. Never leave the battery in the car or in the sunshine on hot days. The lithium-ion battery loses capacity and performance capability at temperatures above +60°C.
- If a lithium-ion battery is not used for a prolonger period of time, recharge the battery after 12 months at the latest.
- Always dispose of old and used batteries in an environmentally sound manner.

Storing the battery

Optimum storage temperature: 5°C to 10°C.

- Do not store lithium-ion batteries empty or fully charged for a prolonger period of time. Optimum storage at a capacity of 40% to 50% and at temperatures of 5°C to 10°C.
- Store unused batteries in a cool but not cold location. Batteries also lose energy in an unused state. The energy loss for lithium-ion batteries is approx. 3% to 5% per month.

Battery not in use for a prolonged period of time

Always disconnect the battery from the hydraulic power pack if the hydraulic power pack is no longer being used.

Self-discharge

A charge loss of 3% to 5% per month is possible for lithium-ion batteries. The self-discharge is temperature-dependent and greater at high temperatures.

Deep discharge

The capacity of the battery is fully exhausted in the event of deep discharge. In such cases, the voltage drops to as low as 0 volt.

In the battery, chemical reactions take place on the electrodes. Such reactions can render them unusable. The battery loses considerable capacity and can potentially no longer be charged. For this reason, the battery must not be discharged below a type-dependent end-of-discharge voltage and must be recharged as quickly as possible.

Do not fully discharge lithium-ion batteries.

Lithium-ion batteries have extensive protection and monitoring circuits in the battery pack that prevent deep discharging/overcharging and explosion.

Temperature range for battery operation

Temperature range for use: -10°C to +55°C

Temperature range for charging: +5°C to +45°C

The ideal temperature range for batteries is at room temperature.

A sensor in the battery ensures that no quick charging takes place outside this range.

Service life of batteries

Lithium-ion batteries can be charged up to 1,000 times (capacity-dependent). This value is only achieved under optimum conditions.

The number of cycles could decrease depending on battery treatment and care. The capacity decreases over the course of the service life.

Batteries should generally be replaced below 70% nominal capacity.

Memory effect, lazy battery effect

Lithium-ion batteries can and may be recharged at any time. These batteries do not have any memory effect. It is only necessary to avoid frequent brief charging. Even full charging in several stages, with or without partial discharge in between stages, does no harm.

Lithium-ion batteries must not be fully discharged.

5.2 Charging the battery

The first time

Charge the battery fully prior to first-time use.

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.

- If the housing is damaged, disconnect it 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.
- Keep away from moisture, liquids, steam, dust and coarse contamination.

  Do not switch on outdoors, in a damp environment or in the rain.
- During operation with mobile power generators, ensure continuous and constant compliance with the specified values for voltage, frequency, sufficient power and earthing.

Battery charger

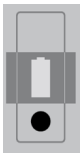
Fig. 12: Charging the battery

The batteries (Fig. 12/2) can be charged using the battery charger (Fig. 12/1) included in the scope of delivery.

Setting up the charger

1. Set up the battery charger in a cool, dry place and connect it to a power socket.
   ⇨ If the yellow continuous light is illuminated, mains voltage is present and the battery charger is operational.

Inserting the battery



2. Carefully slide the battery onto the battery charger.
   ⇨ The charging process begins.

   If the green continuous light is illuminated, the battery is fully charged.

Using the battery

3. Pull the battery off the battery charger.

5.3 Connecting the hydraulic power pack to the battery

Three charged batteries must be inserted prior to using the hydraulic power pack.

Always operate the hydraulic power pack with three batteries.

State of charge

1.

All three batteries must have the same state of charge.

Make sure that the batteries are charged. Press the battery charge indicator button in order to check the state of charge.

Inserting the battery

2. Carefully slide the batteries into the hydraulic power pack until the locking mechanism clicks into place.
   ⇨ The hydraulic power pack is operational.

Replacing the battery

Fig. 13: Unlocking the battery

3. To remove a battery, press the battery ejector button (Fig. 13/1) and pull out the battery.

Insert a charged battery.

6 Preparing for operation

6.1 Prior to switching on

Personnel and PPE

Personnel:
- User

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

Installation

1. Install the hydraulic power pack securely *Chapter 4 'Choosing the installation site' on page 37*.

Leaks

2. Check for leaks. If the hydraulic power pack is damaged, do not put it into service.

> *The hydraulic power pack has a closed oil circuit system. There is no need to correct the oil level if it is used as intended.*

Oil level

3. Check the oil level *Chapter 9.4 'Checking the oil level' on page 59*.

Batteries

4. Insert the batteries *Chapter 5.3 'Connecting the hydraulic power pack to the battery' on page 42*.

Connecting the remote control (option)

Fig. 14: Connection for remote control

5. Connect the optional cable remote control (Fig. 14).

> *The radio remote control is ready for use immediately.*

⇨ The hydraulic power pack can be started.

6.2 Starting the hydraulic power pack

Personnel and PPE

Personnel:
- User

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

Prerequisites:

- The hydraulic power pack has been set up securely and, if working at heights over 0.5 m, has been secured to prevent it falling.
- Batteries with the same state of charge have been inserted.
- A remote control has been connected.
- There are no people in the danger zone.

Starting

1. Press and hold the blue button for 3 seconds.
   ⇨ The hydraulic power pack starts with a self-test.

   The batteries' state of charge can be read on the pressure display (↳ *"Pressure display" on page 14*) during start-up

Operating mode

2. Set the operating mode ↳ *Chapter 6.4 'Setting the operating mode' on page 46*.
   ⇨ The number of the current operating mode is displayed.

Hydraulic hose

3. Connect the hose ↳ *Chapter 6.5 'Connecting the hose' on page 47*.

Operating pressure

4. Set the operating pressure ↳ *Chapter 6.6 'Setting the operating pressure' on page 48*.
   ⇨ The pressure is displayed.

6.3 Using the hydraulic power pack at low temperatures

Personnel and PPE

Personnel:
- User

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

Proceed as follows in relation to operation below -5 °C:

Starting multiple times

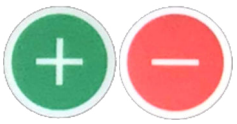
1. If need be, start the hydraulic power pack multiple times until the drive motor is running.
2. Set the pressure to 400 bar ↳ *Chapter 6.6 'Setting the operating pressure' on page 48*.
3. Connect hydraulic hose.

Bring the hydraulic power pack to operating temperature

4. *Do not connect any tools.*

   Press and hold the green button for 5 minutes to let the hydraulic power pack run.
   ⇨ The hydraulic oil is brought to operating temperature.

6.4 Setting the operating mode



1. Press ⊕ and ⊖ to select the operating modes.
   ⇨ The number of the current operating mode is displayed.
2. Use ⊕ and ⊖ to browse the operating mode selection.

3. Confirm with OK.
   ⇨ The selected operating mode is set and the pressure can be set.

No.	Drive	Head/drive	Adapter/head
1	Manual	Commercially available hydraulic wrench	-
2	Automatic	MX-EC 10 TS-2AS	3/4" square male
3	Automatic	MX-EC 20 TS	1" square male
4	Automatic	MX-EC 45 TS	1" square male
5	Automatic	MX-EC 75 TS	1 1/2" square male
6	Automatic	MX-EC 95 TS	1 1/2" square male
7	Automatic	SX-EC 2 TS	HSX 2** F/F-ST
8	Automatic	SX-EC 5 TS	HSX 5** F

6.5 Connecting the hose

Personnel and PPE

Personnel:
- User

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

Use only the black 3-m hydraulic hoses for the automatic version.

Period of use

1. Ensure that the hydraulic hoses have not exceeded the maximum period of use.

Hose check:
- *The maximum period of use must not be exceeded.*
  Comply with the replacement interval. Use for a maximum of 5 years.
- *The maximum pressure must not be reached.*
- *Use filled hydraulic hoses only.*
- *Oil specifications must match.*
- *Couplings and nipples must be undamaged.*
- *There is no visible damage.*

Coupling

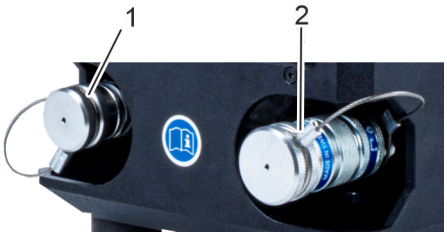


Fig. 15: Nipple (1) – Coupling (2)

2. The pressure connection is the connection on the hydraulic power pack that is fitted with a coupling.

   Ensure that the coupling/nipple combination is suitable and free of damage.

   Ensure that the maximum permissible pressures of all components are sufficient.

   Ensure that the hydraulic hose is fully filled with suitable hydraulic oil *'Oil specifications' on page 64*.

3. Remove the loss-proof caps.

   Connect the hydraulic hoses to the hydraulic power pack. To do so, push the sliding sleeve all the way back onto the quick-release coupling.

Lock

4. Check the lock.

New couplings have a bayonet closure. Let it fully engage.

⇨ The connection is correct if the red ring of the coupling is no longer visible.

5. Do not kink hydraulic hoses when laying them, do not route them over sharp edges or subject them to other mechanical stresses.

6. Do not connect the tool yet.

Sequence

Connect hydraulic hoses only in a depressurised state!

Adhere to the following sequence when connecting the tools:

1. - Hydraulic power pack pressure connection
2. - Tool pressure connection
3. - Hydraulic power pack return line
4. - Tool return

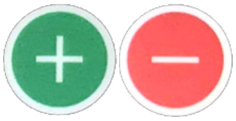
6.6 Setting the operating pressure

Personnel and PPE

Personnel:
- User

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

1. Read the pressure to be set from the torque chart/tensile force chart for the tool.



2.

WARNING!
Danger of injury from exceeding the maximum permissible tool pressure!

Use ⊕ and ⊖ to set the operating pressure.

⇨ The set pressure can be read on the pressure display.

7 Working with hydraulic wrenches

Exceeding the maximum pressure

WARNING!

Danger of bursting due to excessive hydraulic pressure!

If the hydraulic pressure exceeds the maximum permissible 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.

Personnel and PPE

Personnel:
- User

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

Installation

1. Install the hydraulic power pack securely ↳ *Chapter 4 'Choosing the installation site' on page 37*.

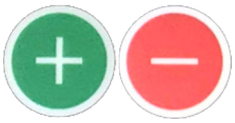
Power supply

2. Insert the batteries ↳ *Chapter 5.3 'Connecting the hydraulic power pack to the battery' on page 42*.

Starting

3. Press and hold the blue button for 3 seconds.
   ⇨ The hydraulic power pack starts.

Operating mode



4. Set the operating mode ↳ *Chapter 6.4 'Setting the operating mode' on page 46*.

Connecting the hoses

5. Check the hydraulic hose and couplings for leaks. Note the maximum period of use. Do not use the hydraulic hose if there are leaks or if the maximum period of use is exceeded ↳ *Chapter 6.5 'Connecting the hose' on page 47*.
6. Ensure that the hydraulic hose is fully filled with the specified hydraulic oil ↳ *'Oil specifications' on page 64*.

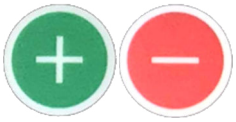
7. First connect the pressure side. Connect the couplings in the proper manner. Let the circlip lock in place or secure the bolted connection.

> *The hydraulic connections of the hydraulic power pack and the hydraulic hose must be compatible.*

8. Connect the hydraulic hose for the return.
9. Check the connections for leaks and reconnect them if there are leaks.
10. Ensure that the fastening operation is known.

Setting the operating pressure

11. Read the required pressure from the torque chart for the tool (↳ Operating instructions for the tool) and set it ↳ *Chapter 6.6 'Setting the operating pressure' on page 48*.



12.

> **WARNING!**
> **Danger of injury from exceeding the maximum permissible tool pressure!**

Use ⊕ and ⊖ to set the operating pressure.

⇨ The set pressure can be read on the pressure display.

Connecting the hydraulic wrench

13. Connect the hydraulic wrench to the hydraulic hose ↳ Operating instructions for the tool.

⇨ The hydraulic power pack is prepared for hydraulic wrench operation.

14. Attach the hydraulic wrench to the bolted connection and brace it properly.

Tightening

15. Press and hold the green button on the remote control.

⇨ If the operating mode has been selected correctly, the bolting and pressure relief take place automatically.

A beep indicates the end of the bolting operation.

Pressure relief

16.

> *If the operating mode has been selected correctly, the pressure is relieved automatically.*

If necessary, press the red button on the remote control.

⇨ The system is relieved of pressure.

17. Remove the hydraulic wrench from the bolted connection.

Starting position

18. Make sure that the hydraulic wrench has been moved to the starting position.

    If necessary, press the red button until the hydraulic wrench is in the end position.

    ⇨ The oil from the working cylinder of the hydraulic wrench flows back into the hydraulic power pack. There is no loss of oil in the hydraulic power pack.

Switching off the hydraulic power pack

19. Press and hold the blue button for 3 seconds.

After use

20. Disconnect the hydraulic wrench.
21. Disconnect the hydraulic hoses.
22. Clean the connections.
23. Attach the caps.

Standby

After roughly 10 minutes, the hydraulic power pack switches off automatically to save energy.

Switch off the hydraulic power pack after use and during prolonged work breaks.

8 Performing maintenance

8.1 Maintenance schedule

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.
- Only permit users to perform the following maintenance activities: “ensure correct oil level”, “clean”, “ensure compliance with maximum period of use for hydraulic hoses”, “change oil” and “have checked for damage”.
- Have all repairs performed by the manufacturer.
- Never open components of the hydraulic power pack.
- 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.

Interval	Maintenance task	Personnel
Before and after every use	■ Clean. ■ Check surfaces, warning symbols and pictograms for damage. ■ Check the batteries for damage. ■ Battery charger: Check the power cord, power plug and fasteners for damage. ■ Check for leaks and visible damage. ■ Ensure that the maximum period of use for the hydraulic hoses has not been reached. Note the exchange intervals for the hydraulic hoses. See the hose manufacturer's specifications. *Chapter 8.2 'Having the hydraulic power pack maintained by the user' on page 54*	User
Every 3 months ■ In the event of extreme operating conditions (e.g. dust, dirt) ■ In the event of high frequency of use, multi-shift operation Every 6 months ■ In the event of standard operating conditions ■ In the event of average frequency of use Every 12 months ■ In the event of low frequency of use	■ Oil-immersed motor Perform service as stipulated by the motor manufacturer. ■ Perform the software update. ■ Gearbox Perform service as stipulated by the manufacturer. ■ Change the oil filter. ■ Change the hydraulic oil. ■ Replace wear parts such as seals. ■ Exchange damaged markings. ■ Test as per DGUV Regulation 3. ■ Accessories Check for damage; exchange. *Chapter 8.3 'Having service tasks performed by the manufacturer' on page 55*	PLARAD® service
Every 2 years	■ Have the oil changed.	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 hydraulic power pack 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

8.2 Having the hydraulic power pack maintained by the user

Personnel and PPE

Personnel:
- User

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

Cleaning

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

   Clean the hydraulic power pack 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 hydraulic power pack 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.

Power cord of the battery charger

3. **DANGER!**
   Electric shock!

   Check the power cord and power plug of the battery charger for damage and insufficient fastening. Replace the battery charger if damaged.

Battery

4. Check the battery for damage. Replace the battery if damaged.

Remote control

5. Check the remote control and the remote control cable for damage and insufficient fastening. Replace the remote control if damaged.

Hydraulic hoses

6. Check the hydraulic hoses and connections for damage and leaks. Check the period of use. Have the hoses replaced if they are damaged or if the maximum permissible service life has been exceeded.

7. **WARNING!**
Danger of injury due to faulty hydraulic power pack!

Do not use the hydraulic power pack if it is faulty. Have it repaired immediately or have the faulty parts exchanged. Contact PLARAD® service.

8.3 Having service tasks performed by the manufacturer

Service intervals

The service intervals are dependent on the conditions of use and the operating site.

Service interval	Conditions
Every 3 months	■ In the event of extreme operating conditions (e.g. dust, dirt) ■ In the event of high frequency of use, multi-shift operation
Every 6 months	■ In the event of standard operating conditions ■ In the event of average frequency of use
Every 12 months	■ In the event of low frequency of use

Contacting service

WARNING!
Danger of injury from improperly performed service tasks!

Contact PLARAD® service in good time regarding the following service tasks.

Do not perform service tasks yourself.

Service tasks

Personnel: ■ PLARAD® service

Perform service tasks as per the manufacturer's specifications.

Component	Service task
Hydraulic power pack	Check for damage. Rectify any damage.
	Change the oil and oil filter.
	Replace wear parts.

Component	Service task
	Exchange damaged markings (e.g. seals).
	Test as per DGUV Regulation 3.
	Perform the software update.
	Check the oil-immersed motor and gearbox for damage. Rectify any damage.
Accessories	Check for damage; exchange.
	Exchange damaged markings.

9 Troubleshooting

9.1 Identifying faults

The table below provides an overview of possible faults, their causes, and remedies.

Fault description	Cause	Remedy	Personnel
The power pack does not start up when the buttons on the radio remote control are pressed, red LED flashes	Radio remote control battery empty	Replace the radio remote control battery ↳ *'Replacing the radio remote control battery' on page 59*.	User
	Hydraulic hose not connected	Check the hydraulic hose connection.	User
	Battery empty	Charge the battery.	User
Power pack starts up but then switches off immediately.	Hydraulic hose not connected correctly	Check the quick-release coupling.	User
Power pack is running but there is insufficient pressure build-up. Piston stroke too small	Solenoid valve faulty	Contact ↳ *'PLARAD® service' on page 4*. Send in the hydraulic power pack.	PLARAD® service
	Insufficient oil quantity (tool too big)	Check the oil level ↳ *Chapter 9.4 'Checking the oil level' on page 59*. Use the correct tool.	User
The power pack is working but there is no pressure build-up	Air in the system, connected hydraulic hose not fully filled with oil	↳ *Chapter 9.3 'Venting' on page 58*	User PLARAD® service
Power pack is working normally but the switch-off pressure is too low	Pressure limitation misadjusted	Contact ↳ *'PLARAD® service' on page 4*. Send in the hydraulic power pack.	PLARAD® service
The working pressure is not reached and the battery LED is illuminated red.	There is insufficient battery capacity	Charge the battery.	User
Final pressure is reached very slowly or is not reached	Pump elements faulty	Contact ↳ *'PLARAD® service' on page 4*. Send in the hydraulic power pack.	PLARAD® service
	Solenoid valve faulty	Contact ↳ *'PLARAD® service' on page 4*. Send in the hydraulic power pack.	PLARAD® service
	Battery empty	Check the battery for damage. Replace the battery if damaged. Charge the battery.	User

9.2 Error messages on the display

Contact ↬ 'PLARAD® service' on page 4 if you have any questions about error messages.

Number	Message	Meaning	Note
100	Error	Invalid system configuration	Switch off. Troubleshoot.
101	Error	No program configuration	Switch off. Troubleshoot.
102	Error	Excessive pressure detected	Switch off. Troubleshoot.
103	Error	Motor temperature too high	Allow it to cool. Confirm with OK.
200	Error	Invalid voltage values for the pressure sensor detected	Switch off. Troubleshoot.
800	Warning	Excessive rise in pressure	Check the hydraulic hose connection. Confirm with OK.
801	Warning	Motor control temperature too high	Allow it to cool. Confirm with OK.
802	Warning	Motor power consumption too high	Allow it to cool. Confirm with OK.
803	Warning	High motor power consumption over a prolonged period detected	Allow it to cool. Confirm with OK.
804	Error	Battery management system fault	Check the batteries and replace if necessary (temperature, voltage too high/too low, BMS fault). Confirm with OK.
805	Error	Undervoltage - motor standstill	Check the batteries and charge/ replace if necessary. Confirm with OK.

9.3 Venting

To vent the hydraulic power pack, proceed as follows:

1. Connect the hydraulic hose and tool to the hydraulic power pack.
2. Tilt the hydraulic power pack down with the coupling.
3. Let the hydraulic power pack run for roughly 3 minutes.

   ⇨ The air escapes into the tank.

   The hydraulic power pack is ready for operation again.
4. If the fault occurs more frequently, contact ↬ *'PLARAD® service' on page 4*.

   Send in the hydraulic power pack.

9.4 Checking the oil level

Have the oil topped up or replaced by ↳ 'PLARAD® service' on page 4 only as part of service work stipulated by the manufacturer.

To check the oil level, proceed as follows:

1. If a tool is connected, make sure that the tool is in the starting position. To do so, press and hold the red button.
2. Check the oil level via the slot on the right side of the housing.
   ⇨ If the slot is fully filled with oil, the oil level is correct.
3. If no oil is visible at the slot, have the oil topped up. Contact ↳ *'PLARAD® service' on page 4* in this regard.

9.5 Performing troubleshooting

Improperly performed trouble-shooting

WARNING!

Danger of injury from improperly performed troubleshooting!

Improper troubleshooting can cause serious injuries and significant property damage.

- Have all repairs performed by the manufacturer.
- Never open components of the hydraulic power pack.
- Use only PLARAD® original parts.

Device damage

→ Contact ↳ *'PLARAD® service' on page 4* if there is any damage to the hydraulic power pack.

Replacing the radio remote control battery

If the hydraulic power pack does not respond when buttons are pressed on the radio remote control, the battery needs to be replaced.

Battery type: CR2032

1. **NOTICE!**

   Damage due to wrong batteries!

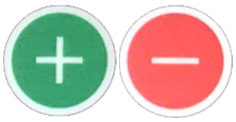
   Check the battery type.

2. Open the radio remote control cover.
3. Remove the empty battery and dispose of in an environmentally sound manner. Observe the provisions of the battery collection schemes applicable locally.
4. Insert a new battery. Make sure that the polarity is correct.
5. Close the radio remote control cover.

Connecting the radio remote control

To connect the radio remote control, perform “pairing”.

1. Screw on the radio remote control and carefully remove the battery.
2. Start the hydraulic power pack.



3. Press and hold the green and red button on the hydraulic power pack.
   ⇨ LED4 flashes on the hydraulic power pack control.
4. Insert the radio remote control battery. Make sure that the polarity is correct.

   Press the micro button on the printed circuit board.
   ⇨ Pairing takes place automatically.

   LED4 is illuminated continuously if pairing was successful.

Power supply

1. Check the batteries for damage and replace them if damaged.
2. Charge the batteries. Insert only original batteries with the same state of charge.

Mechanical pressure relief (only in an emergency)

Should a system failure occur and the hydraulic pressure continues to be applied, proceed as follows:

1. Remove the two plugs on the back of the housing.
2. Insert a long thin object (e.g. screwdriver) through the holes.
3. Press the emergency relief on the solenoid valves horizontally.
   ⇨ The applied hydraulic pressure is relieved.

Returning to service after remedying the error

WARNING!

Danger of injury due to faulty hydraulic power pack!

If a hydraulic power pack is not properly repaired, this can cause serious injuries.

– Never return a defective hydraulic power pack to service.
– Never put faulty batteries into service.

→ Prior to first use, have a test performed as per DGUV Regulation 3.

10 Disposal

The hydraulic power pack must be disposed of in an environmentally sound manner at the end of its service life.

Disassembly

WARNING!

Danger of injury due to short circuit and stored residual energy!

If components are damaged, there is a danger of injury due to short circuit or the continued presence of stored residual energy.

1. Disconnect the hydraulic power pack from the power supply. To do so, remove the batteries.
2. Remove the hydraulic hoses.
   ⇨ Reuse these components if necessary.

Draining oil

3. Supply a container with sufficient capacity (↯ *Chapter 11 'Technical data' on page 63*) and use a suitable pump to drain the oil from the hydraulic power pack.
4. Clean the work environment in the proper manner. Dispose of the oil in an environmentally sound manner or reuse it.
5. Do not dismantle the hydraulic power pack any further.

Disposal

If no take-back or disposal agreement has been put in place, dispose of the hydraulic power pack as electronic waste in accordance with local regulations. Use authorised collection points for the reprocessing of old electrical and electronic devices.

Dispose of waste oil in an environmentally sound manner as per local regulations.

ENVIRONMENT!

Danger to the environment due to incorrect disposal!

Incorrect disposal can be hazardous to the environment.

Do not allow electronic components to enter bodies of water, the sewage system, the soil or household waste collection.

Have electronic waste, electronic components, lubricants and other auxiliary materials disposed of by approved specialist companies.

Dispose of rechargeable batteries and batteries in accordance with the provisions of the local collection schemes or have them 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.

11 Technical data

Technical data sheet

Technical data sheet is available online at: https://www.plarad.de/download-center.html

Dimensions and weight

Data	Value	Unit
Weight	8	kg
Weight with batteries	10	kg
Length	185	mm
Width	275	mm
Height	360	mm

* See the rating plate for specific details.

Performance values

Data	Value	Unit
Pressure, maximum*	800	bar
Maximum flow rate, 100 bar	1.8	l/min
Maximum flow rate, 800 bar	1	l/min
Drive power	0.5	kW

* See the rating plate for specific details.

Electrical connected loads

Data	Value	Unit
Battery system	3 replaceable FEIN batteries	
Operating voltage	54	V
Battery capacity	3 x 5.2	Ah
Remote control battery type	CR2032	

Environment

Data	Value	Unit
Temperature range	-20 – 40	°C
Battery temperature range	-10 – 40	°C
Relative humidity	0 – 100 %, non-condensing	

Emissions

Emission levels as per EN 60745

Data	Value	Unit
Emitted sound pressure level	< 70*	dB(A)
Measurement uncertainty of emitted sound pressure level	3	dB(A)

* Distance 1 m

Oil specifications

Data	Value	Unit
Oil volume	1	l
Hydraulic oil	Shell Tellus S2 VX 15	

12 Index

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Appendix

In addition to this manual, the following documents are supplied in a document folder enclosed with the hydraulic power pack.

- EU declaration of conformity
- Test report for testing electrical equipment as per DIN VDE 0701-0702
  Testing of equipment as per DGUV Regulation 3
- Certificates (option)

EC Declaration of Conformity

Translation of original

Manufacturer	Maschinenfabrik Wagner GmbH & Co. KG
	Birrenbachshöhe 17 53804 Much Germany
Person authorised to compile the technical file	Dr Marcus Stuhlert
Product name	XA1power
Type	See rating plate
Serial number Year of construction	See rating plate

The manufacturer declares that the machinery conforms to all relevant regulations:

2006/42/EC	Directive on machinery (Machinery Directive)
2014/30/EU	Directive on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (EMC Directive)
2011/65/EU	Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (ROHS 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 ISO 4413:2011-04	Hydraulic fluid power - General rules and safety requirements for systems and their components
EN 61000-6-4:2007 + A1:2011	Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Immunity standard for industrial environments
EN 61000-6-2:2005	Electromagnetic compatibility (EMC) – Part 6-2: Generic standards - Immunity standard for industrial environments

Much, 31/08/2023	Dr Marcus Stuhlert (Managing Director)

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	XA1power
Typ	Siehe Typenschild
Seriennummer Baujahr	Siehe Typenschild

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

2006/42/EG	Richtlinie über Maschinen (Maschinenrichtlinie)
2014/30/EU	Richtlinie über die elektromagnetische Verträglichkeit (EMV-Richtlinie)
2011/65/EU	Richtlinie zur Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten (ROHS-Richtlinie)

Folgende harmonisierte Normen wurden angewandt:

EN ISO 12100:2010	Sicherheit von Maschinen- Allgemeine Gestaltungsleitsätze- Risikobeurteilung und Risikominderung
DIN EN ISO 4413:2011-04	Fluidtechnik - Allgemeine Regeln und sicherheitstechnische Anforderungen an Hydraulikanlagen und deren Bauteile
EN 61000-6-4:2007 + A1:2011	Elektromagnetische Verträglichkeit (EMV) - Teil 6-4: Fachgrundnormen - Störaussendung für Industriebereiche
EN 61000-6-2:2005	Elektromagnetische Verträglichkeit (EMV) – Teil 6-2: Fachgrundnormen - Störfestigkeit für Industriebereiche

Much, den 31.08.2023

Dr. Marcus Stuhlert
(Geschäftsführer)

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