

Operating instructions

Electric nutrunner

DE1power, DE1docu, DE1control



**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 the safe and efficient handling of the electric nutrunners *DE1power*, *DE1docu* and *DE1control* (referred to in the following as “nutrunner”).

The manual is a component of the nutrunner 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 nutrunner’s area of application apply.

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

Versions

This manual applies to the following versions of the electric nutrunners *DE1power*, *DE1docu* and *DE1control*, each with and without angular gearbox:

DE1power	DE1docu	DE1control	with angular gearbox
DE1power-10	DE1docu-10	DE1control-10	DE1power/docu/control-10-W
DE1power-20	DE1docu-20	DE1control-20	DE1power/docu/control-20-W
DE1power-30	DE1docu-30	DE1control-30	DE1power/docu/control-30-W
DE1power-36	DE1docu-36	DE1control-36	DE1power/docu/control-36-W
DE1power-48	DE1docu-48	DE1control-48	DE1power/docu/control-48-W
DE1power-80	DE1docu-80	DE1control-80	DE1power/docu/control-80-W

Other applicable documents

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

- Rating plate
- EU declaration of conformity
- Torque chart
Individual assignment of fastening operations and torques to the torque levels of the supplied nutrunner
- Test report for testing electrical equipment as per DIN VDE 0701-0702
Testing of equipment as per DGUV Regulation 3
- Certificates (option)
- Technical data sheet

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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.*

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1 Unpacking

Delivery

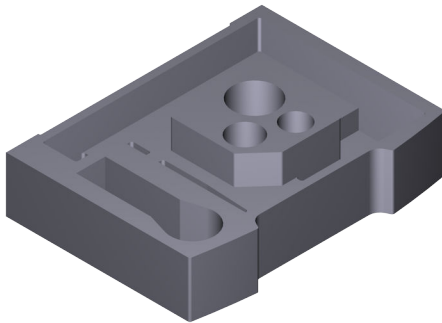


Fig. 1: Foam inlay

The nutrunner is delivered in a plastic transport case together with the other items in the scope of delivery.

The transport case is packed in a cardboard box upon delivery. In some cases, the cardboard box will be delivered on a pallet.

The transport case is fitted with a foam inlay. The recesses in the inlay enable precision storage of the scope of delivery.

Checking the delivery



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

Scope of delivery

The scope of delivery includes:

- Transport case
- Nutrunner
- Reaction arm
- Circlip pliers
- Circlip
- O-ring
- Document folder
 - Operating instructions
 - Torque chart
 - EU declaration of conformity
 - Test reports
- Handle on nutrunners with angular gearbox

Options:

- Impact wrench socket
- Test certificate for torque chart
- Reaction arm versions
- Any accessory ordered



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

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 and storage

Always store and transport the nutrunner in the transport case.

Do not take the nutrunner out of the transport case until shortly before use.



A trolley to match the transport case is available for order as an optional accessory.



2 Getting to know the nutrunner

2.1 Illustration of the nutrunner

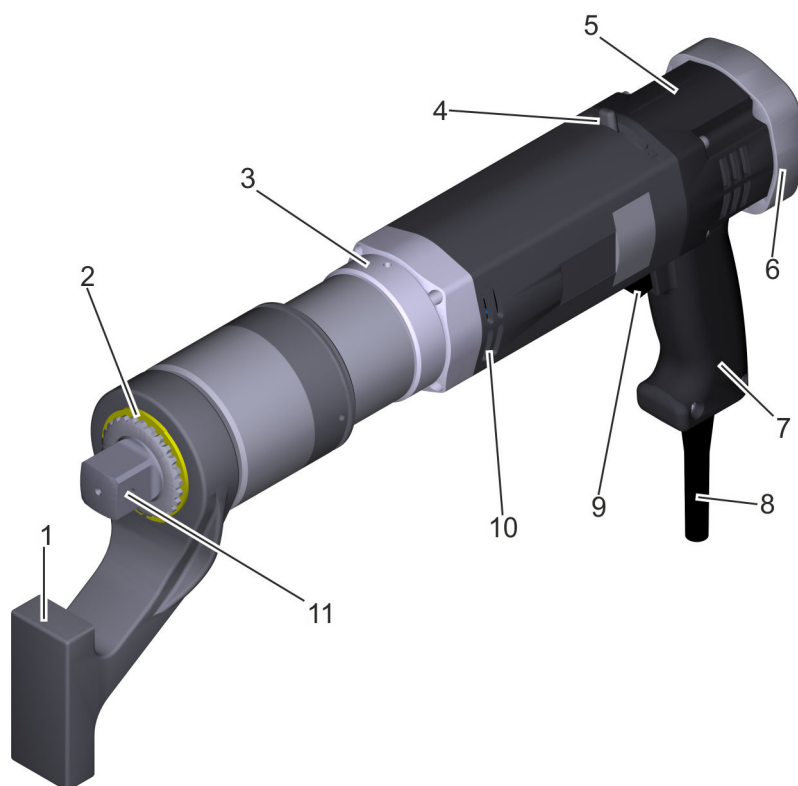


Fig. 2: Illustration of the nutrunner

- | | | | |
|---|-----------------------------|----|----------------------------|
| 1 | Reaction arm | 7 | Pistol grip |
| 2 | Reaction arm circlip | 8 | Power cord |
| 3 | Safety swivel joint | 9 | Trigger |
| 4 | Rotation direction adjuster | 10 | Lower ventilation slots |
| 5 | Drive motor | 11 | Square drive (tool holder) |
| 6 | Display | | |

Documentation

DE1*docu* and DE1*control* are equipped with WiFi and documentation options.

DE1*power* does not have a WiFi module. Unable to record data.

Illustration of the nutrunner with angular gearbox

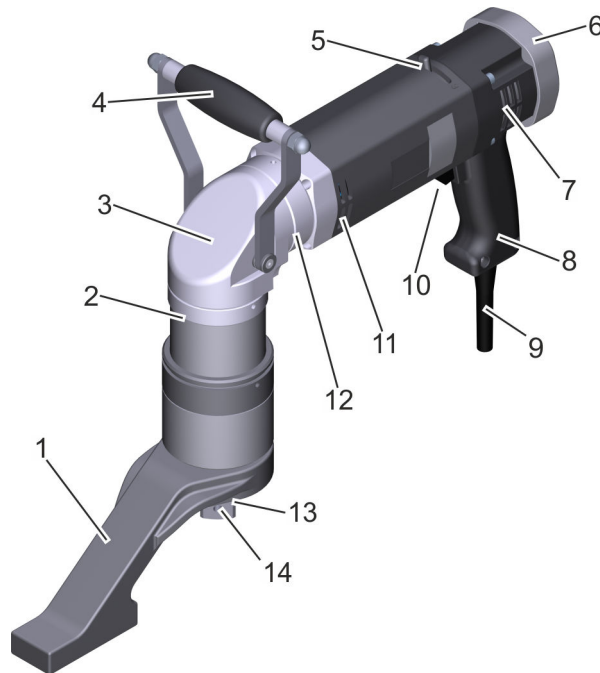


Fig. 3: Illustration of the nutrunner with angular gearbox

- | | | | |
|---|-----------------------------|----|----------------------------|
| 1 | Reaction arm | 8 | Pistol grip |
| 2 | Safety swivel joint | 9 | Power cord |
| 3 | Angular gearbox | 10 | Trigger |
| 4 | Handle | 11 | Lower ventilation slots |
| 5 | Rotation direction adjuster | 12 | Safety swivel joint |
| 6 | Display | 13 | Reaction arm circlip |
| 7 | Drive motor | 14 | Square drive (tool holder) |

2.2 Brief description

The nutrunner is a hand-held tool for tightening and loosening bolted connections in a dry environment.

The nutrunner is electrically powered.

An individually adjustable reaction arm is used to brace the tool against the torque.

The controls offer functions for a broad range of fastening operations. You can save fastening operations as presets.

The nutrunner versions differ in the scope of their functions
 ➔ *Chapter 2.8 'Overview of functions' on page 15.*

With *DE1docu* and *DE1control*, the fastening operations and all obtained results are logged and can be accessed through a web server. To do so, the nutrunners are capable of communicating with a terminal device via WAP or WiFi.

All nutrunner versions are available with an angular gearbox.



2.3 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 torque
- Year of construction
- Weight
- Mains voltage/frequency
- CE mark

2.4 Versions

Overview of available nutrunner versions:

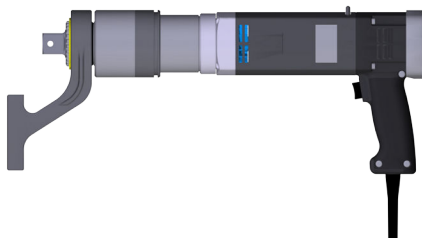


Fig. 4: DE1

Nutrunners without angular gearbox

DE1power	DE1docu	DE1control
DE1power-10	DE1docu-10	DE1control-10
DE1power-20	DE1docu-20	DE1control-20
DE1power-30	DE1docu-30	DE1control-30
DE1power-36	DE1docu-36	DE1control-36
DE1power-48	DE1docu-48	DE1control-48
DE1power-80	DE1docu-80	DE1control-80

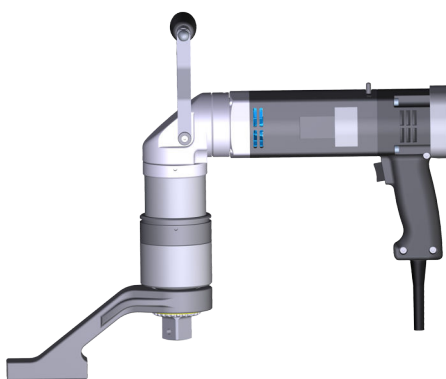
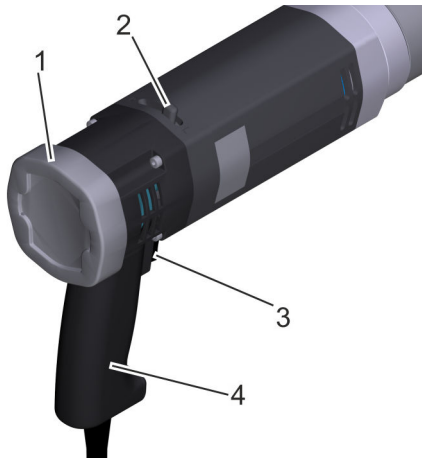


Fig. 5: DE1 – W

Nutrunners with angular gearbox

DE1power	DE1docu	DE1control
DE1power-10-W	DE1docu-10-W	DE1control-10-W
DE1power-20-W	DE1docu-20-W	DE1control-20-W
DE1power-30-W	DE1docu-30-W	DE1control-30-W
DE1power-36-W	DE1docu-36-W	DE1control-36-W
DE1power-48-W	DE1docu-48-W	DE1control-48-W
DE1power-80-W	DE1docu-80-W	DE1control-80-W

2.5 Nutrunner controls



- 1 Display
- 2 Rotation direction adjuster
- 3 Trigger
- 4 Pistol grip

The nutrunner features the following controls:

Fig. 6: Controls

Display

The display (Fig. 6/1) comprises the controls, the screen and the function keys. A WiFi module is installed for DE1docu and DE1control.

🔗 Chapter 2.6 'Display' on page 13

Rotation direction adjuster

The direction of rotation can be changed using the rotation direction adjuster (Fig. 6/2).



Default setting: right-hand thread.



CW - Tightening in clockwise direction



CCW - Loosening in anti-clockwise direction

Trigger

The set fastening operation is initiated with the trigger (Fig. 6/3) and is executed for as long as the trigger is pressed.



Do not pulse!

Always execute the fastening operation in full. To this end, press and hold the trigger for the entire duration of the fastening operation.

Pistol grip

The nutrunner can be gripped securely and carried by the pistol grip (Fig. 6/4). The trigger and display can be used ergonomically.



Handle

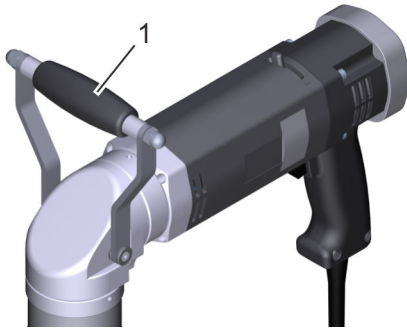


Fig. 7: Handle

The handle (Fig. 7/1) offers an additional option for securely holding and transporting the nutrunner.

Nutrunners with the angular gearbox come with the handle as standard.

2.6 Display



Fig. 8: Display

- ▲. Function key [RED] – back
Parameter value + 10
- ▲. Function key [UP]
Raise value by 1
Move up 1 line on screen
- . Function key [MENU ENTER]
Confirm
Move display cursor right by 1
- ▼. Function key [DOWN]
Reduce value by 1
Move down 1 line on screen
- ▼. Function key [GREEN] – confirm
Parameter value – 10
- 1 Operation indicator

The display comprises the controls, WiFi module, operation indicator and function keys.

Operation indicator

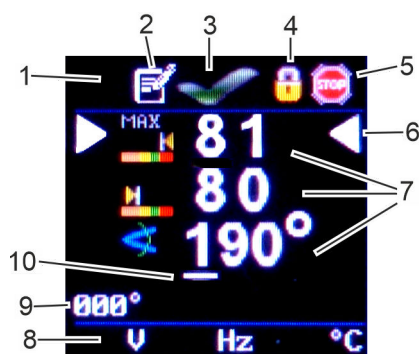


Fig. 9: Illustration of operation indicator

The operation indicator summarises the essential information about the current fastening operation.

The information shown depends on the selected function.



Number	Symbol	Description
1	Error messages	
		Insufficient mains voltage. Mains voltage failing. Nutrunner not starting.
		Timeout. Nutrunner has failed to reach minimum speed. Contact angle too small. Torque already reached during startup. Bolting result is NOK!
		Drive motor temperature in stator too high (shut-off temperature 110°C).
2		Documentation switched on.
3		Bolting result is OK!
		Error Bolting result is NOK!
		Nutrunner ready for operation. Bolting in progress.
4		Button lock active
5		Safe Start active
6		Selection display
7	Function parameter	
		Torque
		Maximum torque level
		Snug torque
		Rotation angle



Number	Symbol	Description
8		Current operating values: ■ Operating voltage [V] ■ Mains frequency [Hz] ■ Temperature [°C]
9		Actual rotation angle
10	0	Cursor: this digit can be changed.

2.7 Menu structure

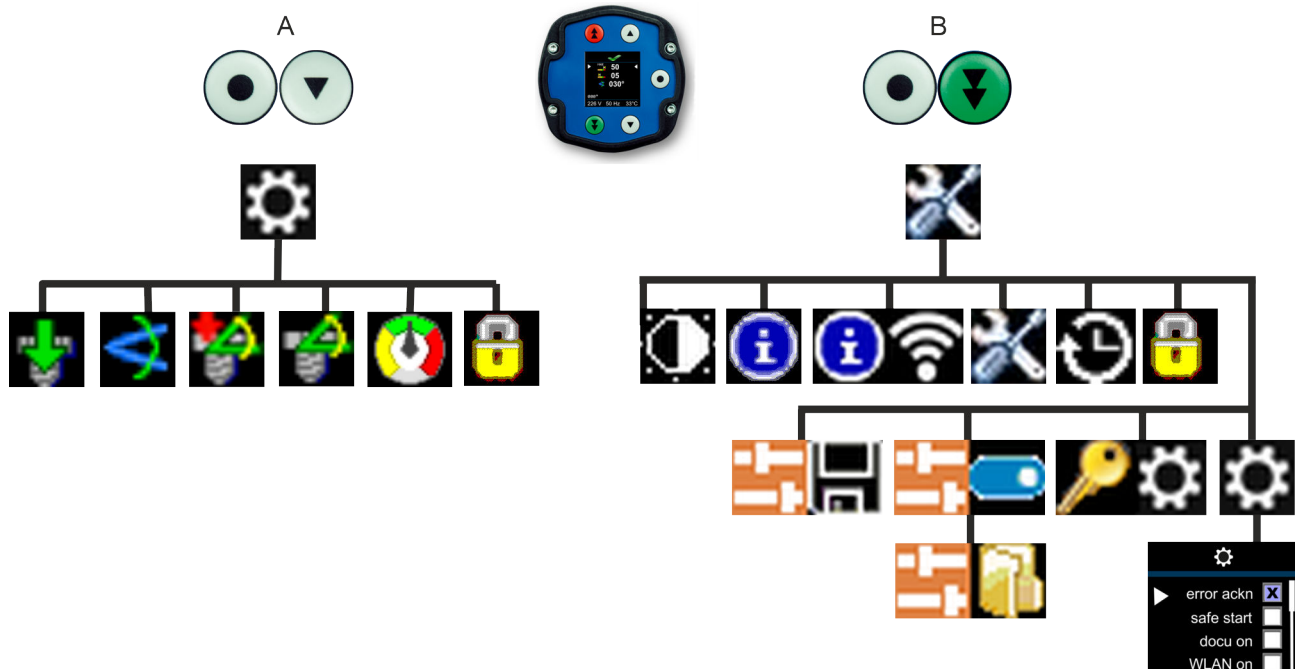


Fig. 10: Menu structure

2.8 Overview of functions



Overview of nutrunner functions

All DE1 versions offer these functions:

- Torque function
- Loosening function
- Button lock

These functions are available on DE1control versions:

-  - Torque function
-  - Rotation angle function
-  - Torque – rotation angle function
-  - Rotation angle counter function
-  - Check function
-  - Loosening function
-  - Button lock

2.9 Overview of nutrunner settings



Overview of nutrunner and display settings.

-  - Load presets (only if presets have been stored and enabled)
-  - Contrast
-  - Information
-  - Information on communication (WAP, WiFi)
-  - Service counter – number of fastening operations
-  - Total counter – number of fastening operations and error messages
-  - Lock/unlock setting levels
-  - Creating presets
-  - Enable/disable presets
-  - Changing passwords
-  - System setup



Screen saver

The screen switches off after 5 minutes of inactivity.



2.10 Accessories

The following accessories are available for ordering together with the nutrunner and may be included in the delivery:

- Impact wrench socket with circlip (spring clip)
- Reaction arm with circlip
 - Special reaction arm
 - Nose extension
- Impact wrench sockets in various designs
- Trolley for transport case
- Certificate
 - Technical, more detailed supplement to the torque chart
- Extender gear for long studs
- Offset gear

Special accessories

Contact PLARAD[®] service.

2.11 Offset gear accessories

Reference number pA# 83103

2.11.1 Overview

Versions

Three versions of PLARAD[®] offset gears are available.

For more details, visit <https://www.plarad.de/download-center.html>

Illustration example STX

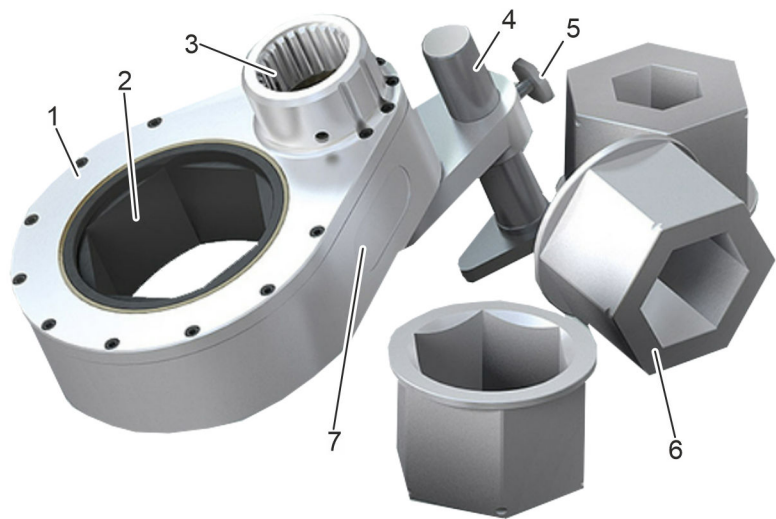


Fig. 11: Illustration example STX

- 1 STX offset gear
- 2 Hexagon insert
- 3 Square drive holder
- 4 Offset gear brace
- 5 Locking screw
- 6 Hexagon reducer pieces
- 7 Rating plate

Brief description

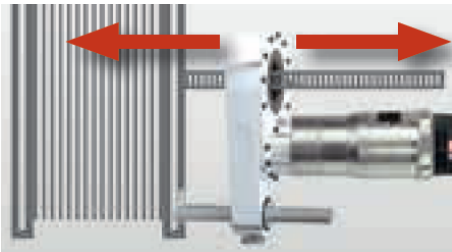


Fig. 12: Example: long threaded spindles

Offset gears let you perform fastening operations in spaces that are too small to accommodate a nutrunner directly above the bolt. The nutrunner's square drive and hexagon insert for bolting are offset to one side.

Offset gears facilitate screwing nuts along long threaded spindles (Fig. 12).

Gearbox damage



NOTICE!

Gearbox damage from exceeding the maximum torque!

Exceeding the maximum torque can lead to gearbox damage.

- Note the following torque calculations for offset gears ST, STX and ST2.
- Never exceed the torque.



ST, STX – torque chart

The following applies to ST and STX offset gears:



The ST and STX offset gears have their own torque chart.

Maximum input torque = output torque ÷ transmission ratio

ST2 – no torque chart

The following applies to ST2xxx offset gears:



The adapted transmission ratio means that no separate torque chart is required for the offset gear.

Input torque = output torque

There is the option of creating a factory certificate.

Technical data sheet



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

Rating plate

The rating plate lists the following data:

- Name of the manufacturer including their full address
- Type designation
- Article/serial number
- Maximum torque
- Year of construction
- Weight
- Gear reduction
- Multiplier “x”

“x” – conversion of the rotation angle

The rotation angle of the square drive and the hexagon insert differ by multiplier “x”.

Multiplier “x” is specified for each offset gear in the following locations:

- Rating plate
- Technical data sheet

2.11.2 Installing the offset gear

- Personnel: ■ Qualified nutrunner personnel
- Protective equipment: ■ Protective work clothing
■ Safety shoes

The following section outlines the installation of an ST2 offset gear on nutrunners from PLARAD[®] tool generation DE1, DA2, DP1, DP2.

1. ➤ Dismantle the union nut and remove the two retaining rings.
2. ➤ Dismantle the O-ring behind the serration of the planetary gear.
3. ➤ Attach the union nut.
4. ➤ Insert the retaining ring without serration. Position the centring spigot facing the gearbox.
5. ➤ Insert the retaining ring with serration. Position the centring spigot facing the gearbox.
6. ➤ Attach the offset gear and insert the nutrunner into the offset gear holder by turning the square drive.
7. ➤ Tighten the union nut by hand.

2.11.3 Using an offset gear

- Personnel: ■ Qualified nutrunner personnel
- Protective equipment: ■ Protective work clothing
■ Safety shoes

Further details ➤ *Chapter 5 'Preparing the nutrunner' on page 49.*

Preparing the offset gear

1. ➤ Choose an offset gear suitable for the bolting operation.
2. ➤ If necessary, insert a hexagon reducer piece for the offset gear into the hexagon insert.
3. ➤ Insert the offset gear's brace. Securely tighten the offset gear brace's locking screw.

If there are bracing panels available, use these to brace the nutrunner.

Offset gear brace

4. ➤ Attach the offset gear to the bolted connection.
5. ➤ Brace the offset gear. To do so, loosen the locking screw, position the offset gear's braces on a suitable bracing surface and securely tighten the locking screw.
6. ➤ Attach the nutrunner's square drive.

⇒ The offset gear is ready to perform bolting.



Note the direction of rotation. Configure the nutrunner correctly.

2.11.4 Dismantling the offset gear

- Personnel: ■ Qualified nutrunner personnel
- Protective equipment: ■ Protective work clothing
■ Safety shoes

The following section outlines the disassembly of an ST2 offset gear on nutrunners from PLARAD[®] tool generation DE1, DA2, DP1, DP2.

1. ➤ Loosen the union nut.
2. ➤ Remove the nutrunner from the offset gear holder.
3. ➤ Remove the retaining ring with serration.
4. ➤ Remove the retaining ring without serration.
5. ➤ Remove the union nut.
6. ➤ Install the O-ring behind the serration of the planetary gear.
7. ➤ Insert the two retaining rings and secure the union nut.

2.11.5 Maintaining an offset gear

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.
- With regard to maintenance tasks, only allow “Lubricate”, “Clean” and “Check for damage” to be performed by the user.
- Have all repairs performed by the manufacturer.
- Use only PLARAD[®] original parts.

Maintenance tasks

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 all components for damage and correct operation.	User
Every month if used frequently	If there are any grease nipples, lubricate with Molykote LT165 or Molykote BR2.	User
Once a year	If there are any grease nipples, lubricate with Molykote LT165 or Molykote BR2.	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 nutrunner to hand to enable quick and easy processing:

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

🔗 *'PLARAD® service' on page 4*



Offset gear maintenance by the user

Personnel: ☒ User

Perform the following maintenance steps before and after every use:

Cleaning

1. ➔



NOTICE!
Damage from improper cleaning!

Clean the offset gear 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 offset gear 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.

Checking components

3. ➔

Check all components (offset gear, head, interchangeable inserts, reducer pieces, offset gear braces, safety splints, circlips etc.) for damage, deformation and correct operation. Arrange for exchange if there is damage.

4. ➔



WARNING!
Danger of injury from faulty offset gear!

Do not use the offset gear if it is faulty. Have it repaired immediately or have the faulty parts exchanged. Contact PLARAD[®] service.

Lubricating

If an offset gear with grease nipples is used frequently, lubricate it once a month.

1. ➔

Squeeze Molykote LT165 or Molykote BR2 lubricant into the grease nipple with a grease gun.

2. ➔

Dispose of excess lubricant properly.

3. ➔

Clean the offset gear and work environment. Dispose of cleaning agents and excess lubricant in an environmentally sound manner.

3 Before you begin

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 instructions

Safety instructions are indicated by symbols in this manual. The safety instructions are initiated by signal words that indicate the degree of the danger.

**DANGER!**

This combination of symbol and signal word indicates an imminently dangerous situation which, if not avoided, will result in death or serious injury.

**WARNING!**

This combination of symbol and signal word indicates a potentially dangerous situation which, if not avoided, could result in death or serious injury.

**CAUTION!**

This combination of symbol and signal word indicates a potentially dangerous situation which, if not avoided, could result in slight or minor injuries.

**NOTICE!**

This combination of symbol and signal word indicates a potentially dangerous situation which, if not avoided, could result in damage to property.

**ENVIRONMENT!**

This combination of symbol and signal word indicates potential dangers to the environment.

Safety instructions in specific instructions

Safety instructions may refer to specific, individual instructions. Such safety instructions are integrated into the instruction so that they do not interrupt the flow of reading when carrying out the task. The signal words described above are used.



Example:

1. ➡ Loosen the screw.

2. ➡



CAUTION!
Risk of pinching by cover!

Close the cover carefully.

3. ➡ Tighten the screw.

Tips and recommendations



This symbol highlights useful tips and recommendations as well as information designed to ensure efficient and smooth operation.

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)
	Press and hold and press .
	Navigation: press or .
	Navigation: press or . Then press .
'Menu' → 'Submenu' → 'Setting'	Shortened description of navigation: Call up menu, call up submenu, change settings

3.2 Symbols on the torque wrench

Overview

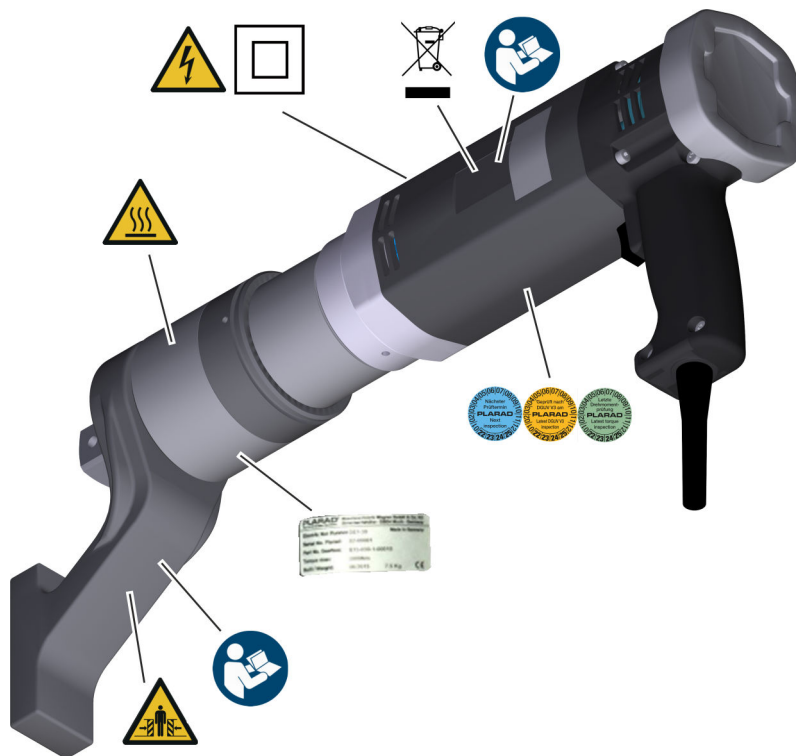


Fig. 13: Symbols on the nutrunner

-  ⚡ 'Voltage' on page 27
-  ⚠ 'Danger of crushing' on page 27
-  ⚠ 'Hot surface' on page 27
-  ⓘ 'Follow the manual' on page 27

-  ⓘ 'Protection class II' on page 27
-  ⓘ 'Separate collection' on page 27
-  ⓘ 'Test badges' on page 27
-  ⓘ Chapter 2 'Getting to know the nutrunner' on page 9

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.

The following symbols and information notices are located on the torque wrench:



Voltage



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

Do not open the nutrunner.

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.

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

Hot surface



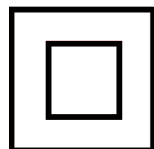
Hot surfaces, such as the housing of the drive motor, cannot always be identified as such. Do not touch surfaces marked in this way without protective gloves.

Follow the manual



Read the operating instructions prior to using the torque wrench.

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



For nutrunners with certificate:

Date of the last torque test.

3.3 Intended use

The electric nutrunner DE1 is a hand-held tool and may only be used for tightening and loosening bolted connections within the defined specifications (↪ *Chapter 16 'Technical data' on page 99*).

The nutrunner may only be used for commercial purposes.

The nutrunner must never be used in a potentially explosive atmosphere.

The nutrunner may only be used in a dry environment.

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

Unadjusted torque levels



WARNING!

Danger of injury due to unadjusted torque levels!

The assignment of torque level (power level) and torque was determined on a test joint according to ISO 5393 (medium joint). If these values do not correspond to the actual fastening operation, this could result in injuries and damage.

- Determine the specific fastening operation and adjust the torque levels.



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 nutrunner can lead to dangerous situations.

- Never operate without the reaction arm.
- Do not operate the nutrunner as a driving motor without consulting PLARAD[®] first.
- Do not operate the nutrunner at temperatures below freezing without consulting PLARAD[®] first.
- Do not operate the nutrunner in continuous operation.
- Never subject the nutrunner, bolts or accessories to loads exceeding the permitted torque.
- Never operate unless properly braced.
- Always maintain the minimum contact angle.
- 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.
- Never allow anybody to create or select pre-sets unless they have been instructed and authorised to do so, are aware of the particulars of the fastening operation and are capable of judging the resulting risks.
- Do not “pulse” (briefly start up the nutrunner multiple times).
- Do not switch on in a damp environment.
- Never operate in a potentially explosive atmosphere.

3.5 General power tool safety warnings

EN 62841-1, EN 62841-2-2

Safety instructions according to:

- EN 62841-1
Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety – Part 1: General requirements
- EN 62841-2-2
Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety – Part 2-2: Particular requirements for hand-held screwdrivers and impact wrenches

⚠ WARNING Read all safety warnings, instructions, illustrations and specifications provided with this power tool. Failure to follow all instructions listed below may result in electric shock, fire and/or serious injury.

Save all warnings and instructions for future reference.

The term "power tool" in the warnings refers to your mains-operated (corded) power tool or battery-operated (cordless) power tool.

3.5.1 Work area safety

- **Keep work area clean and well lit.**
Cluttered or dark areas invite accidents.
- **Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust.**
Power tools create sparks which may ignite the dust or fumes.
- **Keep children and bystanders away while operating a power tool.**
Distractions can cause you to lose control.

3.5.2 Electrical safety

- **Power tool plugs must match the outlet. Never modify the plug in any way.** Do not use any adapter plugs with earthed (grounded) power tools.
Unmodified plugs and matching outlets will reduce risk of electric shock.
- **Avoid body contact with earthed or grounded surfaces, such as pipes, radiators, ranges and refrigerators.**
There is an increased risk of electric shock if your body is earthed or grounded.
- **Do not expose power tools to rain or wet conditions.**
Water entering a power tool will increase the risk of electric shock.
- **Do not abuse the cord. Never use the cord for carrying, pulling or unplugging the power tool. Keep cord away from heat, oil, sharp edges or moving parts.**
Damaged or entangled cords increase the risk of electric shock.
- **When operating a power tool outdoors, use an extension cord suitable for outdoor use.**
Use of a cord suitable for outdoor use reduces the risk of electric shock.
- **If operating a power tool in a damp location is unavoidable, use a residual current device (RCD) protected supply.**
Use of an RCD reduces the risk of electric shock.



3.5.3 Personal safety

- **Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication.**
A moment of inattention while operating power tools may result in serious personal injury.
- **Use personal protective equipment. Always wear eye protection.**
Protective equipment such as a dust mask, non-skid safety shoes, hard hat or hearing protection used for appropriate conditions will reduce personal injuries.
- **Prevent unintentional starting. Ensure the switch is in the off-position before connecting to power source and/or battery pack, picking up or carrying the tool.**
Carrying power tools with your finger on the switch or energising power tools that have the switch on invites accidents.
- **Remove any adjusting key or wrench before turning the power tool on.**
A wrench or a key left attached to a rotating part of the power tool may result in personal injury.
- **Do not overreach. Keep proper footing and balance at all times.**
This enables better control of the power tool in unexpected situations.
- **Dress properly. Do not wear any loose clothing or jewellery. Keep your hair and clothing away from moving parts.**
Loose clothes, jewellery or long hair can be caught in moving parts.
- **If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used.** Use of dust collection can reduce dust-related hazards.
- **Do not let familiarity gained from frequent use of tools allow you to become complacent and ignore tool safety principles.**
A careless action can cause severe injury within a fraction of a second.

3.5.4 Power tool use and care

- **Do not force the power tool. Use the correct power tool for your application.**
The correct power tool will do the job better and safer at the rate for which it was designed.
- **Do not use the power tool if the switch does not turn it on and off.**
Any power tool that cannot be controlled with the switch is dangerous and must be repaired.

- **Disconnect the plug from the power source and/or remove the battery pack, if detachable, from the power tool before making any adjustments, changing accessories, or storing power tools.**

Such preventive safety measures reduce the risk of starting the power tool accidentally.

- **Store idle power tools out of the reach of children. and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool.**

Power tools are dangerous in the hands of untrained users.

- **Maintain power tools and accessories. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tool's operation. If damaged, have the power tool repaired before use.**

Many accidents are caused by poorly maintained power tools.

- **Keep cutting tools sharp and clean.** Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.

- **Use the power tool, accessories and tool bits etc. in accordance with these instructions, taking into account the working conditions and the work to be performed.**

Use of the power tool for operations different from those intended could result in a hazardous situation.

- **Keep handles and grasping surfaces dry, clean and free from oil and grease.**

Slippery handles and grasping surfaces do not allow for safe handling and control of the tool in unexpected situations.

3.5.5 Service

- **Have your power tool serviced by a qualified repair person using only identical replacement parts.**

This will ensure that the safety of the power tool is maintained.

3.6 Residual risks

The following section outlines the residual risks potentially posed by the nutrunner even when it is 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.



3.6.1 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 nutrunner.
- If the housing is damaged, disconnect the nutrunner from the power supply immediately and arrange for repair.
- Never operate the nutrunner if the trigger or display is faulty.
- 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 make modifications to the nutrunner.
- 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.
- Hold the nutrunner only by the insulated pistol grip when bolting or loosening.
- During operation with mobile power generators, ensure continuous and constant compliance with the specified values for voltage, frequency, sufficient power and earthing.
- Do not “pulse” (briefly start up the nutrunner multiple times). Instead, always perform the fastening operation in full.

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.
Have the nutrunner repaired immediately if there is any damage. Never put the nutrunner into operation if it is damaged.
Never replace the power cord yourself.
- Do not crush, shear or overload the power cord (pressure, strain).
- Do not carry the nutrunner by the power cord, hang it up by the power cord, or use the power cord to relieve weight when using the device.
- Do not pull on the power cord in order to disconnect the power plug from the power socket.
- Do not wrap the power cord tightly around the nutrunner.
- 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.
- Do not wrap the power cord around the nutrunner.
- Keep the power cord away from the reaction arm and support surfaces.
- Ensure that extension cables routed outdoors or through humid environments are approved for the ambient conditions.
- Ensure that supply lines have a minimum cross-section of 2.5 mm².

**EMC****WARNING!****Danger of injury due to very strong electromagnetic radiation!**

Very strong electromagnetic radiation can cause the nutrunner to malfunction, resulting in serious injuries and major property damage.

- Do not operate in the immediate vicinity of strong transmitting antennas.
- Suspend use immediately and pull the power plug from the power socket as soon as there are signs of malfunction.

Batteries**WARNING!****Danger of injury if batteries are handled incorrectly!**

The display contains a lithium button cell battery.

If batteries are handled incorrectly, there is the danger that batteries will explode or that harmful substances will escape from the batteries. Skin contact could cause burns, ingestion could cause severe poisoning, and eye contact could cause blindness.

- Do not open the nutrunner. Do not replace the battery yourself.
- Never attempt to charge batteries.
- Always protect batteries against access from unauthorised persons, especially children.
- Dispose of the nutrunner with waste electrical and electronic equipment; do not disassemble it.

3.6.2 Mechanical dangers

Moving components and rotational movements



WARNING!

Danger of injury due to moving components!

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

Dirt can be ejected from the lower ventilation slots and cause eye injuries.

- During operation, do not reach into moving components or handle moving components. Do not touch the reaction arm, drive axle, impact wrench socket, socket etc.
- Before starting the unit, properly secure the reaction arm and impact wrench socket with circlips ↗ *Chapter 5 'Preparing the nutrunner' on page 49.*
- Do not switch on the nutrunner while carrying it. Transport the nutrunner in the transport case.
- Use the Safety-Start option ↗ *Chapter 7.13 'Enabling/disabling Safe Start' on page 67.*
- Never open the nutrunner.
- Wear tight fitting work clothing with a low tear resistance
- Wear safety goggles.
- Wear a protective cap (hair net) to prevent long hair from being pulled in by rotating parts.

Incorrect bracing and overloading



WARNING!

Danger of injury due to incorrect bracing, overloading, breakage!

Incorrect bracing or overloading of the nutrunner or individual components can result in serious injuries.

- Do not use the nutrunner if the bolting process is not entirely clear.
- Note the torque chart.
- Check the reaction arm for visible damage prior to use. Do not use the reaction arm if it is damaged.
- Brace the reaction arm correctly ↗ *Chapter 10 'Bracing the reaction arm' on page 83.*
- Do not operate the nutrunner in continuous operation and do not use it as a drive unit.
- Use only PLARAD[®] original parts.



Crushing



WARNING!

Danger of crushing when bracing and due to high weight!

During operation, very strong forces act on the nutrunner, reaction arm, bracing surface and bolts. There is a danger of crushing between the reaction arm and bracing surface during tightening and loosening. The high weight of the nutrunner can cause crushing if it falls down.

- Handle the nutrunner with care and as intended.
- Give due consideration to the weight during transport and during all work.
- Have work performed only by persons who are physically capable of using the nutrunner safely despite its high weight.
- Do not reach between the reaction arm and bracing surface.
- Secure the nutrunner against falling when working at height.
- Wear safety shoes.
- Also wear an industrial safety helmet for over-head work.

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 nutrunner dry, clean and free of lubricants. Clean them immediately if they are dirty.

Impact wrench sockets



NOTICE!

Property damage due to incorrect use of impact wrench sockets!

- Use impact wrench sockets suitable for the bolting process without exception.
- Ensure a flawless, positive connection between the nutrunner, impact wrench socket and bolt. Ensure that there is a positive connection between the tool holder (square drive of the nutrunner) and square drive of the impact socket wrench.

3.6.3 Vibrations, noise and ergonomics

Noise



WARNING!

Danger of injury from noise!

The noise level occurring in the work area can cause hearing damage.

The specific noise level depends on how it is used.

- Always wear hearing protection when working.
- Remain in the danger zone only for as long as your presence is required.
- Measure the noise and adjust the noise protection measures if necessary.

Vibrations



WARNING!

Danger of injury from vibrations!

The measured total vibration value does not exceed 2.5 m/s². However, depending on how the nutrunner is used, vibrations may differ from these measured values and cause injury.

- Estimate vibration loads occurring under the actual conditions of use. Take into account the relative impact of the various operating cycles. If loads are higher, take additional precautions.
- Brace correctly.
- Use the pistol grip and, if present, the carrying handle properly.
- If there are notable vibration loads, stop working.

**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.

Inadequate ergonomics**CAUTION!****Damage to the musculoskeletal system due to the high weight of the nutrunner!**

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.
- Lift the nutrunner as close to your body as possible.
- Avoid one-sided loading. Avoid twisting your spine. Do not carry one-handed.
- Never move the nutrunner abruptly.
- Use the safety swivel joint to rotate the trigger in such a way that it is possible to work without any discomfort.
- Use suitable auxiliary devices (e.g. lifting eyes).

Inattention



WARNING!

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

Distraction, inattention or irresponsible use can result in losing control of the nutrunner 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 nutrunner seems familiar to you after frequent use.
- When the nutrunner is not in use, always store it in the transport case out of reach from children and other unauthorised persons.
- Wear the prescribed personal protective equipment.

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 nutrunner is equipped with the following safety devices and safety functions:

- Insulation of the power cord
- Protection rating 2
- Insulated pistol grip
- Undervoltage detection
The nutrunner switches off if there is undervoltage (loss of power). An error message is displayed.
- Automatic start-up protection
The nutrunner is protected against automatic start-up when the power supply is switched on.
- Display: start-up protection
You can prevent the nutrunner from starting unintentionally. To do so, enable Safe Start ↗ *Chapter 7.13 'Enabling/disabling Safe Start' on page 67.*



- Reaction arm circlip
The reaction arm is protected against outward ejection by means of a circlip.
- Spring clip for impact wrench socket
The impact wrench socket is secured against outward ejection by means of a spring clip on the square drive of the nutrunner.
- Password protection
The nutrunner is password-protected to prevent unauthorised use.
Making changes through the display requires entering the correct password ↪ *Chapter 7.11 'Changing passwords' on page 64.*
- Back-up battery in display to prevent data loss
- Display protection
- Display button lock
↪ *Chapter 9.7 'Button lock' on page 82*
- Voltage equalisation
The nutrunner is capable of equalising minor fluctuations in mains voltage and frequency.
- Drive motor speed monitor
- Optional: anti-fall protection, balancer

A residual current-operated circuit breaker must be installed by the operator.

3.7 Operator's obligations

The nutrunner is used in the commercial sector. The operator of the nutrunner 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 nutrunner's area of application must be adhered to.

The following specifically applies in this regard:

- The operator 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 nutrunner. This risk assessment must be implemented in the form of safety instructions for operation of the nutrunner.
- During the entire time the nutrunner 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 nutrunner. 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 nutrunner and ensure that only commissioned and instructed personnel work with the nutrunner. Only allow personnel to be trained or instructed and those undertaking vocational training to work on the nutrunner under the supervision of an experienced person.
- The operator must ensure that the nutrunner is not opened and that no work is performed on the electrical equipment by unauthorised persons.

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 work environment, method of use and specific conditions of the respective bolting job may result in vibration and noise emissions to differ from those indicated.

Measure the actual noise emissions.

Estimate vibration loads occurring under the actual conditions of use. Take into account the relative impact of the various operating cycles.

The operator must ensure that the applicable safety, occupational safety and environmental regulations are observed and that their limits are not exceeded. In the event of additional loads or stresses, define and implement additional safety precautions.

The operator is also responsible for ensuring that the nutrunner 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.



Data protection

When using the nutrunner, data may be recorded.

The operator must ensure that saving and processing of personal data complies with the locally applicable data protection laws.

3.8 Who is permitted to use the torque wrench?



WARNING!

Danger of injury if personnel are insufficiently qualified!

If unqualified personnel perform work on or with the nutrunner or if such persons loiter 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 working areas.

User

The user of the torque wrench has the requisite knowledge and the requisite training for handling electrical tools. 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.

The user is trained in how to use the personal protective equipment, is familiar with the most important specifications, situations and information relating to the specific fastening operation and is physically capable of using the torque wrench safely despite its weight. This includes overhead work, working at heights etc.

The user must be older than the legally permissible minimum age.

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 the torque wrench. The user is specifically able to:

- Select presets.
- Select and use the functions of the torque wrench enabled for them.

Password level: User

Qualified nutrunner personnel

Qualified nutrunner 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 nutrunner personnel are able to perform work with the nutrunner, recognise and avoid potential dangers independently and convey this to users.

Specific capabilities of qualified nutrunner personnel include:

- Identify the particulars of a fastening operation.
- Prepare the nutrunner. Select the appropriate impact wrench socket.
- Create presets.
- Use all functions of the nutrunner.
- Create passwords for users.
- Uphold safety, occupational safety and health protection when using the nutrunner and convey this to users.
- Identify damage on the nutrunner and arrange for repairs or get in touch with the manufacturer.
- Instruct users in the proper manner.

Password level: Master

Operator

The operator is the person who operates the nutrunner for commercial or economic purposes themselves, 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 42*

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 13.3 'Having service tasks performed by the manufacturer' on page 93*



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 caused 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 that resists tearing to some degree, 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 involving the nutrunner.

3.10 Environmental protection



ENVIRONMENT!

Danger for the environment due to 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.



The nutrunner must not be lubricated by the operator. If lubricants do however escape, arrange for them to be disposed by a specialist disposal company.

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.

4 Determining the fastening operation

Information about bolted connections

The torque wrench reacts differently to “soft” and “hard” bolted connections. Even “soft” and “hard” bolted connections react individually to each other, as the thread and lubrication state can vary from bolted connection to bolted connection.

The torque setting of the nutrunner must be made for each fastening operation individually and checked directly during the fastening operation.

Use a rotating, electrical measuring transducer or a calibrated torque spanner for checking purposes.

Personnel: ■ Operator

The torque wrench can only be used safely and properly if the particulars of the fastening operation are known.

Determining the fastening operation

1. ➤ Determine the particulars of the fastening operation. To do so:

Determine a suitable bracing surface and select a suitable reaction arm for proper bracing.

Determine the appropriate impact wrench socket.

Determining torques and angles

2. ➤ Determine the requisite torques and angles for the fastening operation.

To do so, for example, measure the torque of a fastening operation applied using a mobile measuring unit (not included in the scope of delivery; see available accessories).

Providing accessories

3. ➤ Make further accessories (bracing aids, suspension etc.) available according to the situation.



5 Preparing the nutrunner

Unsecured or overloaded components



WARNING!

Danger of injury due to unsecured or overloaded components!

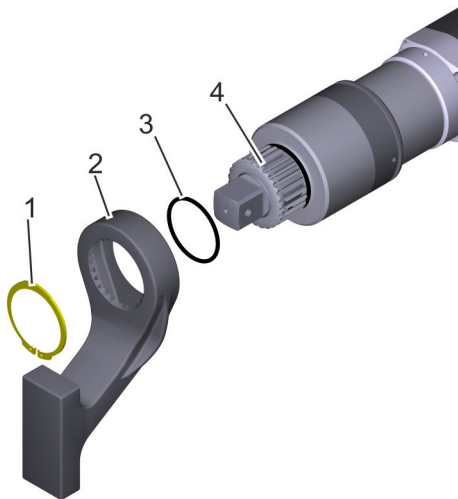
Unsecured components or components subjected to loads exceeding the intended use could result in uncontrolled nutrunner behaviour, outward ejection of components or breakage and thereby cause serious injuries.

- Carefully determine all parameters for a bolting process.
- Ensure that all components are used within the scope of their intended use.
Never exceed load limits (e.g. maximum torques).
- Only use impact wrench sockets.
- Never put the nutrunner into operation if the reaction arm or impact wrench socket are unsecured.

Personnel: ■ Qualified nutrunner personnel

Protective equipment: ■ Protective work clothing

■ Safety shoes



Prior to being used for tightening or loosening, the bolting process must be known and the nutrunner must be prepared.

1. → Ensure that the bolting process has been determined & Chapter 4 'Determining the fastening operation' on page 48 and that all parameters are available.

2. →



NOTICE!

Property damage to the O-ring!

Carefully slide the O-ring (Fig. 14/3) onto the serration (Fig. 14/4) on the nutrunner.

3. → Push the reaction arm (Fig. 14/2) onto the serration.

Fig. 14: Securing the reaction arm

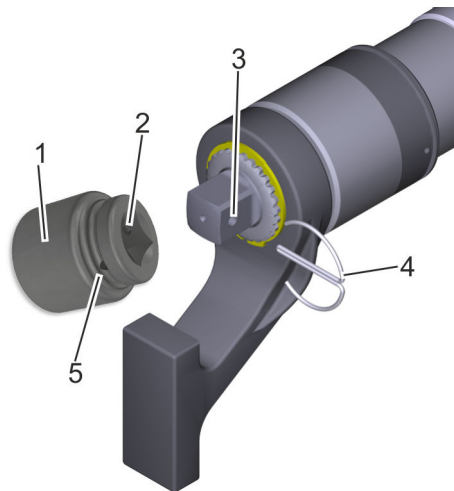
- 1 Circlip
- 2 Reaction arm
- 3 O-ring
- 4 Serration



Fig. 15: Circlip pliers

4. ➤ Slide on the circlip (Fig. 14/1) with the aid of the circlip pliers (Fig. 15) and clamp it.

⇒ The reaction arm is secured.



5. ➤ Attach the impact wrench socket (nut) to the square drive on the nutrunner and secure it.

To do so, push the impact wrench socket (Fig. 16/1) fully onto the square drive (Fig. 16/3). The bores (Fig. 16/2, 3 and 5) for securing must be on top of each other.

Fully insert the spring clip (Fig. 16/4) in all bores (Fig. 16/2, 3 and 5) until the ring is fully seated.

⇒ The impact wrench socket is secured.

6. ➤ Attach further accessories if such accessories have been determined for the bolting process.

Fig. 16: Securing the impact wrench socket

- 1 Impact wrench socket
- 2 Bore
- 3 Square drive with bore
- 4 Spring clip for impact wrench socket
- 5 Bore



6 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.

- 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 cable.
- 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 in a damp environment or in the rain.
- 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 cords!

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.
Have the nutrunner repaired immediately if there is any damage. Never put the nutrunner into operation if it is damaged.
- Do not crush, shear or overload the power cord (pressure, strain).
- Do not carry the nutrunner by the power cord, hang it up by the power cord, or use the power cord to relieve weight when using the device.
- 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.
- Do not wrap the power cord around the nutrunner.
- Keep the power cord away from the reaction arm and bracing surfaces.
- Ensure that extension cables (power leads) routed outdoors or through damp environments are approved for the ambient conditions.
- Ensure that supply lines have a minimum cross-section of 2.5 mm².



- Personnel: ■ User
- Protective equipment: ■ Protective work clothing
■ Safety gloves
■ Safety shoes

The nutrunner 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 16 'Technical data' on page 99.*

Set the correct voltage on mobile generators.



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

Power lead

2. ➔ Have a power lead suitable for the operating site ready.
3. ➔ Ensure that the nutrunner, 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 nutrunner ready at the operating site. When doing so, ensure that ambient conditions correspond to the specifications ↗ *Chapter 16 'Technical data' on page 99.*

Connecting

6. ➔ Plug the power lead's plug into the power socket and connect the nutrunner's power cord to the power lead.

⇒ The nutrunner is connected to the electrical power.



The display shows the function last selected.

Clearance from previously entered passwords is revoked. Any menu items enabled by entering a password are locked again.

The nutrunner is ready to operate the previously selected function.

7 Configuring the nutrunner

You can adjust a number of basic operating and display settings on the display.

7.1 Using the display

Overview



- Function key [RED]
- Function key [UP]
- Function key [MENU ENTER]
- Function key [DOWN]
- Function key [GREEN]
- 1 Display

Fig. 17: Display

Select



- 1 Selection display
- 2 Menu
- 3 Cursor on menu item
- 4 Activated menu item
- 5 Function/setting

Below, you will find general instructions on how to use the display.

Fig. 18: Menu example

Calling up menus



1. To call up the overview of the nutrunner's settings, press and hold and press .

⇒ The 'Overview of nutrunner settings' menu appears.



2. To call up the functions overview, press and hold and press .

⇒ The 'Functions overview' menu appears.





Navigating (scrolling)



→ To scroll through a menu, press  or .

⇒  moves the selection highlighter and cursor up by one menu line.

 moves the selection highlighter and cursor down by one menu line.

Selecting a menu item (check box)



→ To select or deselect the menu item under the cursor, press .

⇒ ☒ Menu item is selected.

☐ Menu item is deselected.

☐ Greyed out menu items cannot be selected.

Confirm



1. →  *'Functions overview'*:

To confirm the selected function and exit the menu, press .

 *'Overview of nutrunner settings'*:

To confirm the selected nutrunner setting and call up its associated menu, press .

⇒ The next menu level appears.

2. → Set values or read information in the lowest menu level. To save the changes and jump back to the parent menu level, press .

⇒ The changes have been saved.

The next higher menu level appears.

Cancel/back



→ To exit a menu without saving any changes, press .

Entering numerical values

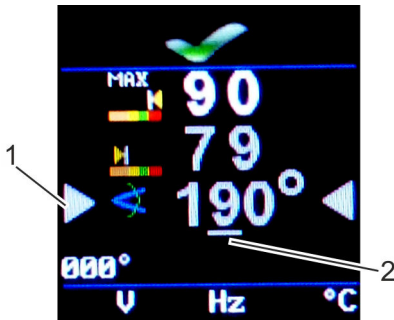
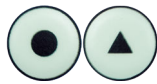


Fig. 19: Adjusting numbers

- 1 Selection display
- 2 Cursor on numerical value

To enter numerical values in menus with multiple lines, proceed as follows.



1. To select a numerical value for multi-line displays, press and hold ● and press ▲.

⇒ The value in the selected line can be changed (Fig. 19/1).

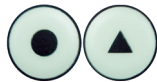


2. **In the event of double-digit values:**

To increase the digit of the tens value, press ▲.

To decrease the digit of the tens value, press ▼.

To raise or lower the value by one, press ▲ or ▼.



3. **For three-digit values, the digit to be changed is underlined:**

To select a numerical value for multi-line displays, press and hold ● and press ▲.

⇒ The selection highlighter (Fig. 19/1) indicates the line in which you can edit the values.

The cursor is on the first digit in this line. The digit is underlined (Fig. 19/2).



4. To raise or lower a digit the cursor is on (underlined), press ▲ or ▼.

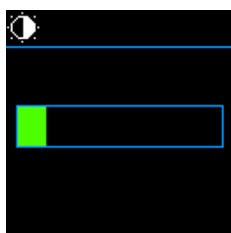


5. To confirm the digit the cursor is on and move to the next digit, press ●.

6. Proceed this way until you have set each digit in every line to the desired value.



7.2 Adjusting contrast

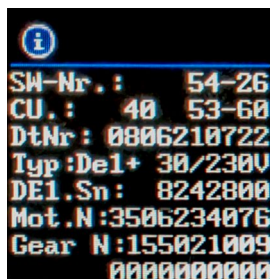


1. Call up 'Overview of nutrunner settings' → 'Contrast'.

2. To reduce contrast, press .
To increase contrast, press .

3. Confirm with or cancel with .

7.3 Calling up information



1. Call up 'Overview of nutrunner settings' → 'Information'.

2. Review the following information:

Item	Meaning
SW-No.	Display software version
CU.	Control unit software version
DtNr.	Control unit hardware version
Type	DE1 version/operating voltage
DE1.Sn.	Serial number of the torque wrench
Mot.N.	Motor number
Gear N.	Gearbox number

3. Press or to exit the menu.

7.4 Calling up information on communication



1. Call up 'Overview of nutrunner settings' → 'Information on communication'.

2. Review the following information:

■ Network settings

Possible items	Meaning
WLAN not con. WAP active	There is no connection to a WiFi network. The nutrunner's access point is active.
WLAN connecting...	The unit is connecting to a WiFi network.
WLAN connected	Connection to a WiFi network has been successfully established.
MUSTER_WLAN	Name of the connected WiFi network
MAC:60019428793A	MAC address (example)
192.168.10.191	IP address assigned by DHCP (example)
WLAN connect failed	Attempt to connect has failed. Pull the power plug. Keep unit unpowered for around 5–10 s or switch WiFi on/off.

■ Date: date

■ Time: time

■ Docu No.

Number of stored data sets/maximum available number of storable data sets



3. **Network signal strength:**

If less than two blue bars are shown, move the nutrunner closer to the WiFi network's WiFi router/repeater or the terminal device (WAP).



4. Press or to exit the menu.

7.5 Resetting the service counter

The service counter logs the fastening operations at the various torque levels. You can reset the service counters.



Master password required for deleting data.



1. Call up 'Overview of nutrunner settings' → 'Service counter'.
2. Number of fastening operations in the various categories since the last reading:

Level	Meaning – number of fastening operations
00 – 32	Torque levels 00 to 32
33 – 65	Torque levels 33 to 65
66 – 99	Torque levels 66 to 99
00 – 99	Total number of all fastening operations
Loosening	Clockwise loosening



3. Enter password (# 048791).



4. Confirm password with or cancel with .
- ⇒ If you have entered an incorrect password, no data will be deleted.
- If you have entered the correct password, all service counters are reset to 0.

5. Confirm with .
- ⇒ All service counters are reset to 0.



6. Press or to exit the menu.

7.6 Calling up the total counter

The total counter logs the fastening operations at the various torque levels. You cannot reset the total counter.



1. Call up 'Overview of nutrunner settings' → 'Total counter'.

2. ➔ Review the number of fastening operations in the various categories:

Level	Meaning – number of fastening operations
00 – 32	Torque levels 00 to 32
33 – 65	Torque levels 33 to 65
66 – 99	Torque levels 66 to 99
00 – 99	Total number of all fastening operations
Loosening	Clockwise loosening
Low Volt	Undervoltage
Timeout	Nutrunner has failed to reach minimum speed. Contact angle too small. Torque already reached during startup.
Overtemp.	Overtemperature
Op.Time	Operating hours



3. ➔ Press  or  to exit the menu.



You cannot delete the total counter. The total counter is reset to 0 after PLARAD[®]-Service.



7.7 Locking/unlocking setting levels



Master password required for locking/unlocking.



Setting level lock is only active in torque mode.



1. Call up 'Overview of nutrunner settings' → 'Lock/unlock setting levels'.



2. To lock or unlock a torque level, use or to reach the desired torque level and press to confirm.

You will need to enter the master password the first time you make a change.



3. Enter password (#05384).



4. Confirm password with or cancel with .

⇒ If the password is incorrect, the torque level will not be locked/unlocked.

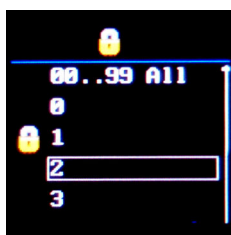
If you have entered the correct password, you can lock/unlock torque levels.



5. To lock or unlock a torque level, use or to reach the desired torque level and press to confirm.

'00 ..99 All' lets you lock/unlock all torque levels in one go.

⇒ The status is displayed as locked or unlocked for each separate torque level or for '00 ..99 All'.



6. Confirm with or cancel with .

7.8 Creating fastening operations (presets)



Master password required for creating presets.



1. Call up 'Overview of nutrunner settings' → 'Create presets'.



2. Enter password (#0000).



3. Confirm password with or cancel with .

⇒ If 'wrong password' appears, you have entered an incorrect password. You will not be able to create presets.

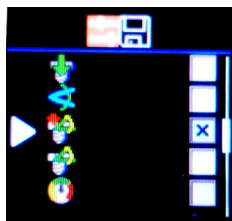
If you have entered the correct password, you can create presets.



4. To create a fastening operation, move to a free preset slots using or and press to confirm.



5. Enter a name. To do so, press or to select a letter and press to confirm and move the cursor to the next position.



6. Confirm with .

⇒ The function selection opens. For information on the various functions, see [Chapter 9 'Setting functions in the display'](#) on page 78.



7. To choose a function, press or to reach the desired one and press to select it.



8. Confirm with .



9. Enter the function parameters.



10. Confirm your input with .

⇒ You can edit or use the created preset.

There are five folders with 10 memory slots each.



11. ➔ Press to exit the menu.

7.9 Enabling/disabling a preset



User or master password required for enabling/disabling presets.



1. ➔ Call up 'Overview of nutrunner settings' → 'Enable/disable presets'.



2. ➔ Enter password.



3. ➔ Confirm password with or cancel with .

⇒ If 'wrong password' appears, you have entered an incorrect password. You will not be able to enable/disable any presets.

If you have entered the correct password, you can enable/disable presets.

4. ➔ To switch between presets on and presets off , press .

Alternatively:

To disable presets, press .

To enable presets, press .



5. ➔ Confirm with .

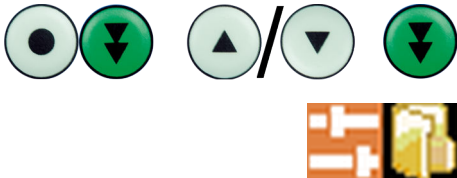


⇒ The menu 'Overview of nutrunner settings' now shows a new menu item 'Load presets'.

7.10 Loading presets



At least one preset must have been created.



1. → Call up 'Overview of nutrunner settings' → 'Load presets'.
 2. → Select the folder.
Choose a preset and confirm with .
- ⇒ All of the chosen preset's parameters are shown.
The nutrunner is ready for use.
- ⇒ If there is no pre-programmed preset, is displayed.
The nutrunner will not start without a preset.

7.11 Changing passwords

Password

Access to the display is protected by two password levels:



- Master

- Creating presets
- Blocking torque levels
- Assigning/changing/deleting passwords
- Resetting the service counter
(default: '0000')



- User

- Enabling/disabling presets



Master password required for changing password.



1. → Call up 'Overview of nutrunner settings' → 'Change password'.



2. Enter password.



3. Confirm password with or cancel with .

⇒ If 'wrong password' appears, you have entered an incorrect password. You will not be able to change any passwords.

If you have entered the correct password, you can reassign the user and master passwords.



4. To reassign the user password, select and confirm with .



5. Enter the new user password and confirm with .

6. Confirm your input. Re-enter the new user password and confirm with .

⇒ You have changed the user password.



7. To reassign the master password, select and confirm with .



8. Enter the new master password and confirm with .

9. Confirm your input. Re-enter the new master password and confirm with .

⇒ You have changed the master password.



10. Confirm with or cancel with .



Once you have entered the password, all password-protected menu levels remain accessible until the next time power to the nutrunner is cut.



Do not forget your password!
Only PLARAD®-Service can reset the password.

7.12 Enabling/disabling error acknowledgement

Error messages require duplicate acknowledgement.



Master password required for all changes to 'System Setup'.



1. ➤ Call up 'Overview of nutrunner settings' → 'System Setup'.



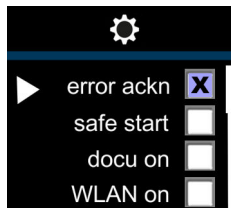
2. ➤ Enter password.



3. ➤ Confirm password with or cancel with .

⇒ If 'wrong password' appears, you have entered an incorrect password. You will not be able to make any changes.

If you have entered the correct password, you can enable/disable error acknowledgement.



4. ➤ Use / to select 'error ackn' and confirm with .

⇒ ☒ Error acknowledgement is enabled.

☐ Error acknowledgement is disabled.



5. ➤ Confirm with or cancel with .



⇒ When error acknowledgement is enabled, each 'Bolting NOK!' message requires acknowledgement in the display.

6. ➤



WARNING!

Danger of injury, danger to third parties and risk of process failure from ignoring improperly completed fastening operations!

Identify and rectify the cause of error.

Acknowledge the error twice with .

⇒ This brings faulty fastening operations to the conscious attention of the user.

The next fastening operation can be started.

7.13 Enabling/disabling Safe Start

With Safe Start enabled, the nutrunner can only be started up through deliberate action by the user. This prevents inadvertent start-up.



Master password required for all changes to 'System Setup'.



1. Call up 'Overview of nutrunner settings' → 'System Setup'.



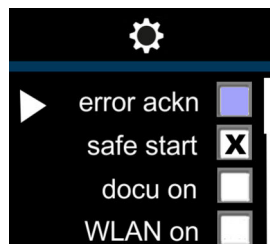
2. Enter password.



3. Confirm password with or cancel with .

⇒ If 'wrong password' appears, you have entered an incorrect password. You will not be able to make any changes.

If you have entered the correct password, you can enable/disable Safe Start.



4. Use / to select 'safe start' and activate it with .

⇒ ☒ Safe Start enabled.

☐ Safe Start disabled.



5. Confirm with or cancel with .



⇒ indicates that Safe Start is enabled.

6. To begin a fastening operation with Safe Start, press and at the same time.

Press the trigger within five seconds.

⇒ The nutrunner starts with the selected function.

7.14 Enabling/disabling documentation

The nutrunner can record all fastening operations and events and provide the documentation on a web server. This requires establishing communication ⇨ Chapter 8 'Connecting to WiFi and starting documentation' on page 69.

After 8,000 recordings, the message “memory full” will be shown each time the nutrunner is connected to the mains power:

‘Attention!’ ‘Documentation’ ‘memory at 80%’

The nutrunner can record 10,000 fastening operations. After this, no more records will be created.



After 10,000 fastening operations,  *‘NoDoku’ will flash on the display every time the nutrunner is started.*

Acknowledge this error with  before starting up the nutrunner.



Master password required for all changes to  *‘System Setup’.*



1. ➤ Call up  *‘Overview of nutrunner settings’* →  *‘System Setup’.*



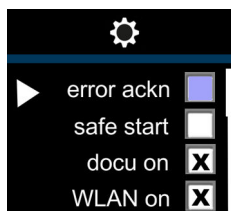
2. ➤ Enter password.



3. ➤ Confirm password with  or cancel with .

⇒ If *‘wrong password’* appears, you have entered an incorrect password. You will not be able to make any changes.

If you have entered the correct password, you can enable/disable documentation.



4. ➤ Use / to select *‘docu on’* and activate it with .

⇒ ☒ Documentation is enabled.

☐ Documentation is disabled.



5. ➤ Confirm with  or cancel with .



⇒  indicates that the documentation function is enabled.

6. ➤ Set date and time on the web server.

🔗 Chapter 8 *‘Connecting to WiFi and starting documentation’* on page 69



8 Connecting to WiFi and starting documentation

Only DE1docu and DE1control are equipped with a WiFi module.

Documenting fastening operations

The nutrunner can record up to 10,000 fastening operations and events.

The recorded data can be accessed through a WiFi-capable terminal device using a web browser.



The nutrunner can only connect to a single terminal device. Multiple connections are not possible.

Reading out data through WiFi is not possible during fastening operations.



To use the WiFi network, the antivirus software needs to be configured to allow local IP addresses. Consult the appointed network administrator if you have any questions.

Disable antivirus JavaScript injection (e.g. Kaspersky Antivirus).

The nutrunner should not be moved further than 5 metres from the WiFi router/repeater and terminal device.

It may take several minutes to establish the connection. The nutrunner will perform multiple connection attempts in succession.

There are two connection options:

Wireless Point Access (WAP)



The nutrunner acts as a Wireless Access Point (WAP) for the terminal device to connect to directly (point-to-point connection).

Wireless Local Area Network (WLAN, also referred to as WiFi)



The nutrunner automatically connects to a WiFi network. In this case, any connected terminal device can access the nutrunner.

Data protection



Data transfer by Wireless Point Access (WAP) is encrypted and thus secure.

Data transfer through a WiFi network is not encrypted.

8.1 Setting connectivity type

Information on WiFi connection

You can review the current information on WiFi connection on the display.



1. ➔ To call up '*Information on WiFi connection*' on the display, press and hold and press .

⇒ The nutrunner's settings are shown.



2. ➔ Use / to reach the menu item '*WiFi connection*'.



3. ➔ Confirm with .



4. ➔ The '*WiFi connection*' menu provides the following information:

■ Network settings

Possible items	Meaning
WLAN not con. AP active	There is no connection to a WiFi network. The nutrunner's access point is active.
WLAN connecting...	The unit is connecting to a WiFi network.
WLAN connected	Connection to a WiFi network has been successfully established.
MUSTER_WLAN	Name of the connected WiFi network
MAC:60019428793A	MAC address (example)
192.168.10.191	IP address assigned by DHCP (example)
WLAN connect failed	Attempt to connect has failed. Pull the power plug. Keep unit unpowered for around 5–10 s or switch WiFi on/off.

■ Date: date

■ Time: time

■ Docu No.

Number of stored data sets/maximum available number of storable data sets



Choosing WAP or WiFi

To connect to the nutrunner, you can choose either WAP or WiFi.



1. To call up 'System Setup' on the display, press and hold and press .

⇒ The nutrunner's settings are shown.



2. Use / to reach the menu item 'System Setup'.



3. Confirm with .



4. Use / to move to the menu item 'WLAN on'.

Press to confirm the desired connectivity.

⇒ ☒ 'WLAN on' is enabled. You can connect the nutrunner through WiFi.

☐ You can connect the nutrunner via WAP.

8.2 Direct WAP connection

1. Make sure that 'WLAN on' is not selected ↗ Chapter 8.1 'Setting connectivity type' on page 70.
2. Switch on WiFi on the terminal device.
3. Wait for the nutrunner to be shown as a WiFi access point.



The nutrunner's WAP network name is 'DE1-WAP82xxxx'.

The factory default network name (SSID) is the nutrunner's serial number '82xxxxx'. You can change this network name through the web server (WiFi/WAP settings).

4. Select the nutrunner in the WiFi list and connect.
5. Enter password.
The factory default password is '12345678'.
6. Some mobile terminal devices will show the message 'no internet connection'. This does not mean that the connection to the nutrunner has failed.
Acknowledge the message so that the nutrunner remains connected to the WiFi.
⇒ The nutrunner has been connected to the terminal device directly through WAP.
7. Start a web browser on the terminal device (we recommend Firefox or Chrome).

8. ➤ Call up IP address '192.168.4.1'.
 - ⇒ The website will ask for authentication.
9. ➤ Enter authentication:
 - Name: Nutrunner's serial number '82XXXXXX'
 - Password: master password (default: '0000')
 - ⇒ The nutrunner's web server starts.

8.3 Connecting to WiFi network

Firewall



To use the WiFi network, the antivirus software needs to be configured to allow local IP addresses. Consult the appointed network administrator if you have any questions.

Connections are only made using the WPA2 security standard. WPA is not supported.

WiFi

Dial-in settings for a WiFi network need to be made on the web server.

To do so for first setup, connect the nutrunner through WAP first.

1. ➤ Connecting through WAP ➤ *Chapter 8.2 'Direct WAP connection' on page 71.*
2. ➤ On the web server, select 'Setup'.
3. ➤ Enter authentication:
 - Name: Nutrunner's serial number '82XXXXXX'
 - Password: master password (default: '0000')
 - ⇒ The nutrunner's web server starts.
4. ➤ Choose a WiFi network or enter a WiFi network name (SSID).
5. ➤ Enter WiFi password and accept.
6. ➤ Disconnect the nutrunner from the mains for 10 seconds.
7. ➤  Switch-on WiFi: call up 'Overview of nutrunner settings' → 'System Setup' → confirm 'WLAN on'.
 - 'Choosing WAP or WiFi' on page 71
8. ➤ Check connection status in 'Overview of nutrunner settings' → 'Information on WiFi connection'.
 - 'Information on WiFi connection' on page 70
9. ➤ Make a note of the displayed IP address.



Network signal strength



Bitte melden Sie sich an

http://192.168.xxx.xxx

Die Verbindung zu dieser Website ist nicht sicher

Benutzername:

Passwort:

Anmelden

Abbrechen

Fig. 20: Web server login

10. The more blue bars you can see on the display, the better the connection to the WiFi network. If there are fewer than two blue bars, find a better location for data transfer.

11. Log the terminal device into the same WiFi network and start a web browser (we recommend Firefox or Chrome).

12. Enter the nutrunner's IP address you noted down in the address line.

13. Enter authentication:

- Name: nutrunner's serial number '82XXXXXX'
- Password: master password (default: '0000')

⇒ The nutrunner's web server starts.

8.4 Getting to know the web server interface

Web server



Fig. 21: DE1 web server

Web server – settings

PLARAD[®]
Torque & Tension Systems 

DE Webserver - 82xxxx

Dokumentation verwalten / Manage documentation | **Einstellung / Setup**

WLAN Netzwerkeinstellung
WLAN Network Settings

Zum verbinden des Drehschraubers mit einem vorhandenen WLAN Netzwerk (nur 2,4GHz)
Connect the nutrunner to an existing WLAN network (only 2.4GHz)

SSID auswählen: / Select SSID: -

SSID:

Passwort/Password:

☐ Passwort anzeigen/show password

Neu scannen/Rescan

Übernehmen/Save

WiFi Access Point Einstellungen
WiFi Access Point Settings

Der Drehschrauber stellt einen Accesspoint bereit (nur 2,4GHz)
The nutrunner will provide a WLAN access point (only 2.4GHz)

AP SSID:

AP Passwort/AP Password:

☐ Passwort anzeigen/show password

Übernehmen/Save

Datum und Uhrzeit einstellen
Set Date and Time

Setzt das Datum und die Uhrzeit auf dem Drehschrauber auf die aktuelle des Computers (Systemzeit)
Set date and time of the nutrunner to the actual settings of the computer (Sys.time)

Datum und Uhrzeit setzen (Systemzeit) / Set Date and Time (Sys.time)

Fig. 22: DE1 web server settings



When connected through a WiFi network, you cannot change any WiFi settings for security reasons. You can only configure WAP. The 'WiFi network settings' area is not shown.

Connections are only made using the WPA2 security standard (WPA is not supported).

If you cannot see the WiFi setup even when connected through WAP, then the antivirus software is blocking the settings. Try your mobile terminal device.

You can adjust the following settings on the web server:

- **WiFi settings**
You can connect the nutrunner with a 2.4-GHz WiFi network.
- **WAP settings**
The nutrunner acts as a Wireless Access Point (WAP). The terminal device can connect to this WAP.
- **Date and time settings**
These settings must be made during initial commissioning. The WiFi-capable terminal device's system time is transmitted to the nutrunner. This should be updated regularly.



Setting the date and time

The terminal device's system time needs to be transmitted to the nutrunner for synchronisation.

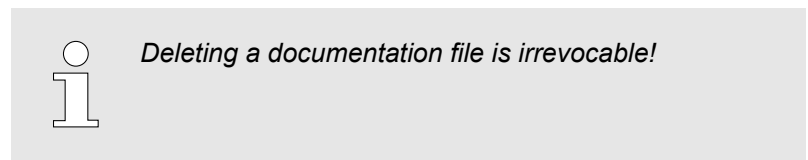
1. ➤ Select web server → 'Setting' → 'Set date and time (system time)'.
⇒ 'Date and time changed successfully.' appears.
2. ➤ Confirm with 'OK'.
⇒ Date and time have been synchronised.

Web server – managing documentation



Fig. 23: DE1 web server documentation

Data loss possible



The web server lets you manage the documentation recorded by the nutrunner.

- Download data sets
Depending on the size of the file, this may take several minutes.
- Delete data sets
Deleted data sets cannot be restored.

Downloading a data set

You can download data sets from the nutrunner.

1. ➤ Select web server → 'Manage documentation' → 'Download'.

⇒ A *.csv file will be downloaded.



Do not change the .csv file name extension. Saving as an Excel file, for example, leads to loss of data.

Modifying the file is considered tampering.

2. ➤ Open the downloaded file in a spreadsheet program.

⇒ You can analyse the information ↗ 'Spreadsheet contents' on page 76 contained in the file.

Deleting a data set

You can delete data sets.



1. ➤ Select web server → 'Manage documentation' → 'Delete'.

2. ➤ Confirm the warning prompt with 'OK'.

⇒ The data set on the nutrunner is deleted.

Spreadsheet contents

The CSV file lists the following information in spreadsheet form:

Nutrunner information	
DE1.S.no	Serial number of the nutrunner on which the data sets were created
Mot.no, Gear.S.no	Serial number of the motor (drive unit) and gearbox
Disp.Sw, CuSw, WLANSw	Software version number of display, control unit and WiFi module
DtNo	Data set number. Each nutrunner generates a unique identifier for these data sets
Type	DE1 version


Fastening operation information

ID	Sequential number of the data set, one per fastening operation performed
	Total fastening operation counter
Date	Date of fastening operation
Time	Time of fastening operation
Mode	Tightening mode
Set Torque	Setpoint torque (for torque mode), 120 (for loosening function), snug torque (for torque-angle mode)
Actual Torque	Actual torque
Min. Torque	In rotation angle mode: set minimum torque
Max. Torque	In rotation angle mode: set maximum torque
Actual Snug Torque	Actual snug torque
Unit	By default, the unit shown is torque level.
Set Angle	Setpoint rotation angle
Actual Angle	Actual angle
State	State of bolted connection

Mode information coding

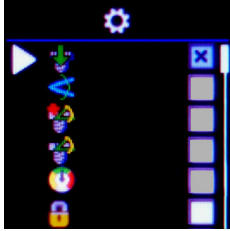
Mode	0	Torque mode
	1	Rotation angle mode
	2	Torque-angle mode
	3	Rotation angle counter mode
	4	Inspection mode

State information coding

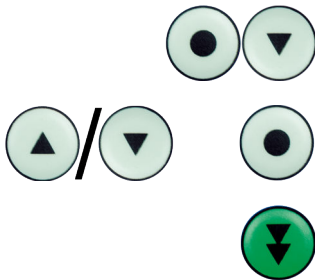
State	OK	Fastening operation OK
	Err 1	Cancelled by user
	Err 2	Insufficient mains voltage
	Err 3	Mains voltage general fault
	Err 4	Motor still spinning during start attempt
	Err 5	Motor temperature too high
	Err 6	Aborted start (time out)

9 Setting functions in the display

9.1 Selecting functions



Depending on the DE1power and DE1docu version, not all functions will be available. Unavailable functions cannot be selected in the menu.



1. → Call up 'Functions overview'. To do so, press and hold and press .

2. → Select a function.

3. → Confirm with .

⇒ The function's operation indicator is shown.

9.2 Setting the torque function

The torque function only sets a torque level.

The nutrunner tightens the bolt until the torque associated with the torque level is reached.



1. → Select the torque function Chapter 9.1 'Selecting functions' on page 78.

2. → To change the value, press and .



Torque levels marked with cannot be used.

⇒ The nutrunner is ready for use.

9.3 Setting the rotation angle function

The rotation angle function turns the bolt through the set angle.

The rotation angle is measured as of $M_{d\min}$ (lowest detectable torque). $M_{d\min}$ is less than torque level 00.

The torque level set is the maximum torque limit.

The nutrunner will rotate the bolt until it detects a bolt counter-torque of no more than $M_{d \min}$. The bolt is then rotated further through the rotation angle set or until the maximum torque level is reached.



1. ➔ Select the rotation angle function Chapter 9.1 'Selecting functions' on page 78.
 2. ➔ To adjust the torque level (maximum limit), set the value digit-by-digit using and .
 3. ➔ Use to switch to the line 'Rotation angle'.
 4. ➔ To adjust the rotation angle, set the value digit-by-digit using , confirming each with .
- ⇒ The nutrunner is ready for use.



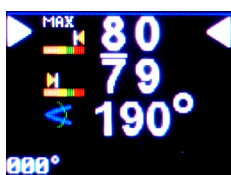
The nutrunner switches off if the torque associated with the maximum torque level is reached before bolt rotation has completed travel through the set angle.

The bolted connection is not OK!

9.4 Setting the torque-angle function

The torque-angle function tightens the bolt to the set snug torque and then turns the bolt further through the set angle.

The set maximum torque level limits the maximum torque.



1. ➔ Select the torque-angle function Chapter 9.1 'Selecting functions' on page 78.
 2. ➔ To adjust the torque level (maximum limit), set the value digit-by-digit using and .
 3. ➔ Use to switch to the line 'Snug torque'.
 4. ➔ To adjust the snug torque, set the value digit-by-digit using and .
 5. ➔ Use to switch to the line 'Rotation angle'.
 6. ➔ To adjust the rotation angle, set the value digit-by-digit using , confirming each with .
- ⇒ The nutrunner is ready for use.



The nutrunner switches off if the torque associated with the maximum torque level is reached before bolt rotation has completed travel through the set angle.

The bolted connection is not OK!

9.5 Setting the rotation angle counter function

The rotation angle counter function tightens the bolt to a torque matching the set torque level. Rotation angle α is then measured as of torque level 00.

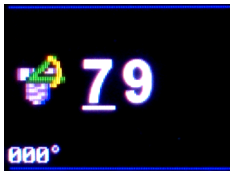
Rotation angle α is shown in the operation indicator.



1. → Select the rotation angle counter function ↗ Chapter 9.1 'Selecting functions' on page 78.

2. → To adjust the  torque level, set the value digit-by-digit using  and .

⇒ The nutrunner is ready for use.



The nutrunner uses the torque function (↗ Chapter 9.2 'Setting the torque function' on page 78). The angle measured by the rotation angle counter is only a reference value and affects neither function nor operation of the nutrunner.

It can be used to obtain a qualitative assessment of the bolted connection.

9.6 Setting the check function

The check function is used to ascertain whether a bolt has been tightened to a minimum tightening torque.

You can use the check function to inspect a bolted connection. The nutrunner will run "against" the bolt at significantly reduced speed, slowly raising the torque up to the value set.



The following applies to the check functions:

- 3,600 Nm or higher
- Up to level 72
- Not for angular gearbox
- Not for 110 VAC



1. Select the check function ↗ Chapter 9.1 'Selecting functions' on page 78.

2. To adjust the torque level, set the value digit-by-digit using / and /.

⇒ The nutrunner is ready for use.

Possible check scenarios:

- The set torque is reached without the bolt moving.
The nutrunner switches off.
 Check OK.
- The bolt moves before the set torque is reached.
The nutrunner retightens the bolt to the set torque.
-   The gap between the reaction arm and bolt is too small.



You cannot use the entire range of torque levels available for setting.

This could be caused by the following:

- If tightening the bolted connection further requires greater torque than the chosen setpoint torque, the nutrunner will switch off without turning further.
 Check OK.
- If tightening the bolted connection further requires less torque than the chosen setpoint torque, the nutrunner will continue tightening until reaching the setpoint torque.
 Check OK.
- If no further tightening occurs, you have merely established that the breakaway torque is greater than the value set.
For example, the breakaway torque on a corroded bolt may be considerably greater than the torque originally used to fasten it.
- The setpoint torque may be exceeded by 5% of the maximum torque.
- Checking the same bolted connection multiple times in succession can produce further excess values every time. Maximum excess here is also 5% of setpoint.



Automatic switchover to loosening is not available when check function is selected.

9.7 Button lock

Button lock prevents accidental operation of the display (e.g. changing the torque setting).



→ Select button lock ↗ *Chapter 9.1 'Selecting functions' on page 78.*

⇒ The display's function keys are locked. Button lock is indicated by  in the operation indicator.

The button combination   remains available so that you can disable button lock again.



10 Bracing the reaction arm

Reaction arm

Torques can only be generated if the reaction forces are absorbed. The reaction arm fulfils this function on the nutrunner:

The scope of delivery for the nutrunner contains a standard reaction arm. The nutrunner may only be used with the reaction arm included in the delivery.

For bolting processes for which the standard reaction arm is unsuitable, contact PLARAD[®] service.

Incorrect bracing and overloading



WARNING!

Danger of injury due to incorrect bracing, overloading, breakage!

If the nutrunner is not sufficiently braced, it can slip out of place and be ejected. Any point contact between the reaction arm and the corners of a bracing element can cause considerable forces to act on the nutrunner. Incorrect bracing or overloading of the reaction arm, bolts or other components can result in serious injuries and damage to the nutrunner.

- Do not use the nutrunner if the bolting process is not entirely clear.
- Note the torque chart.
- Check the reaction arm for visible damage prior to use. Do not use the reaction arm if it is damaged.
- Brace the reaction arm correctly. Note the following instructions regarding bracing.
- Always ensure that the reaction arm is in full contact with the surface.
- Use only PLARAD[®] original reaction arms.

Starting rotation angle



The nutrunner takes about 0.7 seconds to reach target speed. For this reason, the reaction arm (Fig. 24/1) should be displaced from the bracing position (Fig. 24/3) by the recommended starting rotation angle when starting.

Recommended starting rotation angle:

DE1-10 and DE1-20: 60°

DE1-30 to DE1-80: 30°

Bracing



Fig. 24: Bracing the reaction arm correctly

- 1 Reaction arm
- 2 Starting rotation angle
- 3 Bracing surface

1. Find the ideal bracing surface for the bolting process. Ensure that the reaction arm (Fig. 24/1) is in full contact with the bracing surface (Fig. 24/3) and cannot slip out of place. Note the starting angle of rotation (Fig. 24/2).

If the standard reaction arm is not suitable for this, use a suitable reaction arm. If you have questions, contact PLARAD[®] service.



Fig. 25: Reaction arm braced incorrectly

- Correct bracing point
- Incorrect bracing point

2. Ensure that only the points (Fig. 25) marked with → absorb the torque and are in full contact.



11 Tightening

Danger of crushing



WARNING!

Danger of crushing between the reaction arm and bracing surface!

During operation, very strong forces act on the nutrunner, reaction arm, bracing surface and bolts. Body parts could get between the reaction arm and bracing surface. This could result in serious injuries.

- Never put body parts between the reaction arm and bracing surface.
- Never attempt to hold the reaction arm in place or to turn it by hand.
- Never touch the reaction arm while the tool is running.
- Carefully attach the impact wrench socket.

Overloading and breakage



WARNING!

Danger of injury due to overloading and breakage!

Overloading of the nutrunner or individual components can result in serious injuries.

- Do not use the nutrunner if the particulars of the fastening operation are not entirely clear.
- Note the torque chart and starting angle of rotation.
- Check the reaction arm for visible damage prior to use. Do not use the reaction arm if it is damaged.
- Brace the reaction arm correctly ↪ *Chapter 10 'Bracing the reaction arm' on page 83.*

Starting the fastening operation



Contact PLARAD[®] service prior to operation at temperatures below 0°C.

- 1.** ➤ Ensure that the nutrunner has been properly prepared (↪ *Chapter 5 'Preparing the nutrunner' on page 49*) and that the fastening operation is known ↪ *Chapter 4 'Determining the fastening operation' on page 48.*
- 2.** ➤ Make sure that the nutrunner is being supplied appropriately with electrical power ↪ *Chapter 6 'Supplying with energy' on page 51.*
- 3.** ➤ Make sure that all necessary nutrunner settings have been made ↪ *Chapter 7 'Configuring the nutrunner' on page 54.*

4. ➤ Make sure that the function suitable for the fastening operation has been selected ➤ *Chapter 9 'Setting functions in the display' on page 78.*

5. ➤ Attach the nutrunner to the bolted connection in such a way that the full height of the bolt head or nut is gripped by the impact wrench socket.

If this is not possible, use an impact wrench socket and accessories that match the fastening operation. Apply a reduced torque only.

6. ➤ Ensure that the reaction arm is braced against a bracing surface/abutment on its side facing the nutrunner's desired direction of rotation. Make sure that there is full contact.

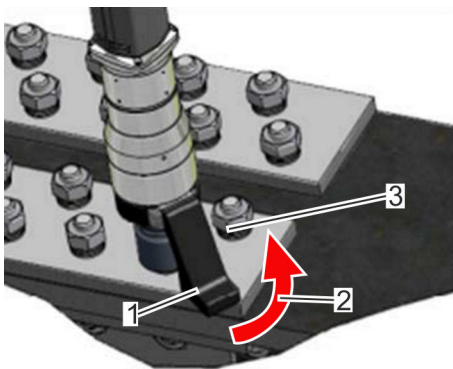


Fig. 26: Starting rotation angle

- 1 Reaction arm
- 2 Starting rotation angle
- 3 Bracing

7. ➤



NOTICE!

On pre-tightened bolted connections, torque mode will always exceed the set torque if the starting rotation angle between reaction arm (Fig. 26/1) and bracing position (Fig. 26/3) is too small.

Observe the starting rotation angle as per the chart.

DE1 version	Recommended starting rotation angle
DE1-10	60°
DE1-20	60°
DE1-30	30°
DE1-36	30°
DE1-48	30°
DE1-80	30°

Direction of rotation

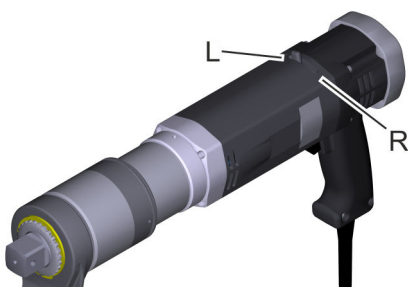


Fig. 27: Rotation direction adjuster

8. ➤ R - Tightening in clockwise direction
L - Loosening in anti-clockwise direction

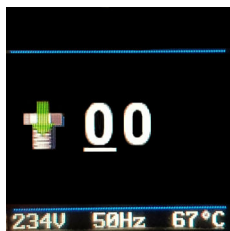


Default direction of rotation: right-hand thread.

For all functions other than loosening, make sure that the rotation direction adjuster (Fig. 27) is set to 'R'.

9. ➤ If Safe Start has been set, press  and  at the same time. Press the trigger within 5 seconds.





10.



NOTICE!
Damage due to pulsing!

Press and hold the trigger until the fastening operation has concluded. Do not pulse (briefly start up the nutrunner multiple times).

⇒  The fastening operation has been successfully concluded.

 The fastening operation has failed.



11.

If the fastening operation was not successful and error acknowledgement is active (↪ *Chapter 7.12 'Enabling/disabling error acknowledgement' on page 65*), acknowledge the error with .

Identify the source of the error, rectify it and repeat the fastening operation.



⇒ If the fastening operation was successful, the next fastening operation can be started.

Checking the result

12.

Check the torque with a suitable torque gauge to verify that the fastening operation was successful.

12 Loosening

Danger of crushing



WARNING!

Danger of crushing between the reaction arm and bracing surface!

During operation, very strong forces act on the nutrunner, reaction arm, bracing surface and bolts. Body parts could get between the reaction arm and bracing surface. This could result in serious injuries.

- Never put body parts between the reaction arm and bracing surface.
- Never attempt to hold the reaction arm in place or to turn it by hand.
- Never touch the reaction arm while the tool is running.
- Carefully attach the impact wrench socket.

Overloading



NOTICE!

Damage due to overloading!

Significant torques are exerted on the components during loosening. This can cause breakages.

- Do not overload components.

Starting the loosening process



Contact PLARAD® service prior to operation at temperatures below 0°C.



Fig. 28: Loosening

1 Rotation direction adjuster

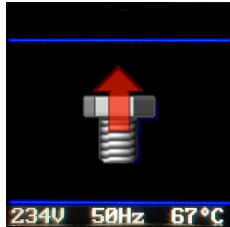
1. ➤ R - Tightening in clockwise direction
L - Loosening in anti-clockwise direction

Ensure that the nutrunner has been properly prepared (↪ Chapter 5 'Preparing the nutrunner' on page 49) and that the fastening operation is known ↪ Chapter 4 'Determining the fastening operation' on page 48.

2. ➤ Make sure that the nutrunner is being supplied appropriately with electrical power ↪ Chapter 6 'Supplying with energy' on page 51.
3. ➤ Set rotation direction adjuster (Fig. 28/1) to 'L'.



4. → If Safe Start has been set, press  and  at the same time. Press the trigger within 5 seconds.



5. →



NOTICE!
Damage due to pulsing!

Press and hold the trigger until loosening has concluded. Do not pulse (briefly start up the nutrunner multiple times).

⇒  Loosening has been concluded successfully.

 Loosening has failed.



6. → If loosening was not successful and error acknowledgement is active (↪ *Chapter 7.12 'Enabling/disabling error acknowledgement' on page 65*), or there are errors that always require acknowledgement (e.g. excess voltage, excess temperature), acknowledge the error with  and .

Identify the source of the error, rectify it and repeat the loosening operation.



⇒ If loosening was successful, the next fastening operation can be started.

13 Performing maintenance

13.1 Maintenance schedule

Improperly performed maintenance tasks



WARNING!

Danger of injury from improperly performed maintenance tasks!

Improper maintenance can cause serious injuries and significant property 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.
- With regard to maintenance tasks, only allow “Clean nutrunner” and “Have it checked for damage” to be performed by the user.
- Have all repairs performed by the manufacturer.
- Never open the nutrunner.
- 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 of the nutrunner.

Insofar as 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 power cord, power plug and fasteners for damage. ■ Check the impact wrench socket and spring clip for damage and correct operation. ■ Check the reaction arm and circlip for damage and correct operation. 🔗 Chapter 13.2 'Torque wrench maintenance by the user' on page 92	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 ■ In the event of constant work in the upper torque range Torque level 66 – 99 ■ In the event of soft fastening operations	■ Drive motor Perform service as stipulated by the motor manufacturer. ■ Perform the software update. ■ Planetary gearbox Perform service as stipulated by the manufacturer. Lubricate. ■ Nutrunner Exchange damaged markings. Test as per DGUV Regulation 3. Recalibrate. Determine characteristics. Create torque chart/factory certificate. ■ Accessories Check for damage; exchange. ■ Exchange damaged markings. 🔗 Chapter 13.3 'Having service tasks performed by the manufacturer' on page 93	PLARAD [®] service
Every 6 months ■ In the event of standard operating conditions ■ In the event of average frequency of use ■ In the event of work in the medium torque range Torque level 33 – 65		
Every 12 months ■ In the event of low frequency of use ■ In the event of work in the low torque range Torque level 00 – 32		

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 nutrunner to hand to enable quick and easy processing:

- Client
- Serial number of the torque wrench
- Desired spare part
- Desired quantity
- Desired mode of shipping

🔗 'PLARAD[®] service' on page 4

13.2 Torque wrench maintenance by the user

Personnel: ■ User

Perform the following maintenance steps before and after every use:

Cleaning

1. ➔



NOTICE!

Damage from improper cleaning!

Clean the nutrunner 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 nutrunner 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

3. ➔



DANGER!

Electric shock!

Check the power cord and power plug for damage and insufficient fastening. Have them exchanged by PLARAD[®] service if they are damaged.

Never replace them yourself.

Impact wrench socket

4. ➔

Check the impact wrench socket and spring clip for damage, deformation and correct operation. Arrange for exchange if there is damage.



Reaction arm

5. → Check the reaction arm for damage and deformation. Check the circlip for correct operation. Arrange for exchange if there is damage.

6. →



WARNING!

Danger of injury due to faulty nutrunner!

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

Transport case

7. → Store the cleaned and damage-free nutrunner in the transport case until its next use.

13.3 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 ■ In the event of constant work in the upper torque range Torque level 66 – 99 ■ In the event of soft fastening operations
Every 6 months	■ In the event of standard operating conditions ■ In the event of average frequency of use ■ In the event of work in the medium torque range Torque level 33 – 65
Every 12 months	■ In the event of low frequency of use ■ In the event of work in the low torque range Torque level 00 – 32

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

Component	Service task
Drive motor	Perform service in accordance with the manufacturer's specifications.
	Perform the software update.
Planetary gearbox	Perform service as stipulated by the manufacturer.
	Lubricate.
Accessories	Check for damage; exchange.
	Exchange damaged markings.
Nutrunner	Exchange damaged markings.
	Test as per DGUV Regulation 3.
	Recalibrate. Determine characteristics.
	Create torque chart/factory certificate.



14 Troubleshooting

14.1 Identifying faults

Malfunctions and faults can become noticeable in different ways:

- Nutrunner is not working for no apparent reason:
First note the list of typical errors and issues ↗ *'FAQs' on page 95.*
- Nutrunner, power cord or accessory is faulty or shows signs of damage.
Contact ↗ *'PLARAD® service' on page 4.*
- The display is showing an error message.
↗ *Chapter 14.2 'Error messages on the display' on page 96*
- WiFi/WAP connection error.
↗ *'Connection errors' on page 96*

FAQs

Below is a summary of typical malfunctions, issues and answers. This is intended to provide rapid assistance. For problems that cannot be solved in this way, contact ↗ *'PLARAD® service' on page 4.*

Fault symptom	Measure
The nutrunner will not switch on.	Is error acknowledgement active? ↗ <i>Chapter 7.12 'Enabling/disabling error acknowledgement' on page 65</i>
The password for presets is not being accepted.	Incorrect password entered. There are three passwords: PLARAD-Service, master and user.
WiFi module is not operating with the correct time.	The terminal device's system time needs to be transmitted to the nutrunner for synchronisation. ↗ <i>'Setting the date and time' on page 75</i>
Problems with torque-angle function	The  maximum limit must not be too close to the value for  snug torque and final torque after the rotation angle. ↗ <i>Chapter 9.4 'Setting the torque-angle function' on page 79</i>
Master password for presets lost	Send in nutrunner to manufacturer for reset.
The device gets hot too quickly.	Are the openings for the air supply dirty or clogged? Clean with a soft cloth. ↗ <i>Chapter 13.2 'Torque wrench maintenance by the user' on page 92</i>
Error messages while working or nutrunner not starting.	Are you operating the unit using an extension cable or generator? Check supply cable and power cord. Rectify any damage. Check the generator's power, voltage and frequency and correct any incorrect values.

Fault symptom	Measure
The display is blank.	Energy saving mode (screen saver) is active. Press a function key on the display.
The nutrunner is not connecting to the terminal device (WiFi, WAP).	🔗 <i>'Connection errors' on page 96</i>
The display battery is discharged.	Send in nutrunner to manufacturer.

Connection errors

Error	Measure
The terminal device does not show the nutrunner as a WAP.	Make sure that WAP is on. 🔗 <i>Chapter 8 'Connecting to WiFi and starting documentation' on page 69</i>
Then nutrunner is not connecting to the WiFi network.	Check the WiFi router's signal strength. If the  symbol does not show any blue bars, reception strength is insufficient. Bring the nutrunner closer to the WiFi router/repeater. Make sure that SSID and password have been entered correctly.
WAP not connecting.	Deactivate or delete other already connected WAP devices. Multiple connections are not possible.
Imported CSV file is missing elements.	Set the semicolon ";" as a separator in the spreadsheet software's import parameters. Check the CSV file by opening it in an editor program (e.g. Windows [®] Notepad).

14.2 Error messages on the display

The following messages can appear in the top line of the display:

Number	Message	Meaning Measure
000	OK	Fastening operation OK
001	User Abort	Aborted
002	Low Voltage	Undervoltage Check power cord and power supply.
003	Supply not OK	Supply voltage not OK Check power cord and power supply.
004	Mot not stand	Motor not at standstill when start was requested
005	Temp. to high	Motor coil too hot Allow it to cool. Clean.



Number	Message	Meaning Measure
006	Start Timeout	Timeout upon start-up
007	Max Trq exc	Maximum torque exceeded in rotation angle mode, torque-angle mode

14.3 Performing troubleshooting

Improperly performed troubleshooting



WARNING!

Danger of injury from improperly performed troubleshooting!

Improper troubleshooting can cause serious injuries and significant property damage.

- With regard to maintenance tasks, only allow “Clean nutrunner” and “Have it checked for damage” to be performed by the user.
- Have all repairs performed by the manufacturer.
- Never open the nutrunner.
- Use only PLARAD[®] original parts.

Device damage

- ➔ Contact ☎ ‘PLARAD[®] service’ on page 4 if there is any damage to the nutrunner.

Power supply

1. ➔ Check the power cord and connections and arrange for exchange if there is damage.
2. ➔ If operating with a generator: Check the electrical parameters and correct the power supply.

Returning to service after remedying the error



WARNING!

Danger of injury due to faulty nutrunner!

If a nutrunner is not properly repaired, this can cause serious injuries.

- Never start up a faulty nutrunner again.

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

15 Disposing of the nutrunner

The nutrunner 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 nutrunner from the power supply. To do so, unplug the power plug.
2. ➤ Remove the impact wrench socket, reaction arm and all other optional attachment parts.
⇒ Reuse these components if necessary.
3. ➤ Do not dismantle the nutrunner any further.

Disposal

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



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.



Do not dispose of button cells in household waste.

Dispose of the plastic transport case and foam inlay separately from the nutrunner.

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



16 Technical data

Technical data sheet



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

Dimensions and weight

Dimensions and weight depend on the DE1 version. See the technical data sheet for specific values for the nutrunner.

Data	Value	Unit
Weight*	5.7 – 17	kg
Length	303 – 565	mm
Width	192 – 393	mm
Height	85	mm

* Specific details on the rating plate.

Performance values

Data	Value	Unit
Performance range	See torque chart	
Accuracy of set torque	± 5% of nominal value (maximum torque)	
Accuracy of set angle	± 5° of set value	
Drive motor idle speed	8500 – 14000	rpm
Repeatability, depends on specific fastening operation*	≤ 4%	

* - Independently of the torque, repeatability depends on the individual fastening operation and must therefore always be determined for the actual fastening operation at hand.

Electrical connected loads

Data	Value	Unit
Mains voltage, 50 to 60 Hz	220 – 240	V
Mains voltage, 50 to 60 Hz	230	V
Mains voltage, 50 to 60 Hz	110	V
Mains voltage, 50 to 60 Hz	120	V
Power consumption, maximum	1.4	kW

Data	Value	Unit
Insulation class	E	
Protective insulation	Protection rating IP 20	
Minimum connected load for mobile power generators	4	kVA

Ambient conditions

Data	Value	Unit
Temperature range	0–50	°C
Relative humidity	Non-condensing	

Noise emissions

Emission levels as per EN 62841-1, EN 62841-2-2

Data	Value	Unit
Emitted sound pressure level L_{pA} , 20 μ Pa	81	dB(A)
Measurement uncertainty of sound pressure level K_{pA}	3	dB(A)
Sound power level L_{WA}	89	dB(A)
Measurement uncertainty of sound power level K_{WA}	3	dB(A)
Peak emitted sound pressure level L_{pC} peak, 20 μ Pa	94	dB(C)



The values provided have been obtained through a standardised testing procedure.

The values provided may serve as relative values for comparing the nutrunner with other electric tools and for a preliminary estimate of occurring loads.

Vibrations

Emission levels as per EN 62841-1, EN 62841-2-2

Nutrunners without angular gearbox:

Data	Value	Unit
Total vibration value for pistol grip a_h	1	m/s ²
Total vibration value for handle a_h	0.1	m/s ²
Measurement uncertainty for total vibration value K	1.5	m/s ²



Nutrunners with angular gearbox:

Data	Value	Unit
Total vibration value for pistol grip a_h	0.5	m/s ²
Total vibration value for handle a_h	0.2	m/s ²
Measurement uncertainty for total vibration value K	1.5	m/s ²



The values provided have been obtained through a standardised testing procedure.

The values provided may serve as relative values for comparing the nutrunner with other electric tools and for a preliminary estimate of occurring loads.

WiFi

Data	Value	Unit
Frequency range	2.4	GHz
WiFi standard	IEEE802.11b/g/n	
Security standard	WPA2	
Encryption standard	AES	
Network protocol	IPv4, TCP/http	
Communication protocol	DHCP	
Range outdoors, maximum	30	m
Range indoors, maximum	15	m

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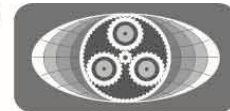
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Appendix



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

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



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	DE1power -10 / -20 / -30 / -36 / -48 / -80 (W) DE1docu -10 / -20 / -30 / -36 / -48 / -80 (W) DE1control -10 / -20 / -30 / -36 / -48 / -80 (W)
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
2014/30/EU	EMC Directive
2014/35/EU	Low Voltage Directive

The following harmonised standards have been applied:

EN ISO 12100:2010	Safety of machinery – General principles for design – Risk assessment and risk reduction
IEC 62841-1	Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery - Safety - Part 1
IEC 62841-2-2	Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery - Safety - Part 2-2
DIN EN 55014-1	Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus – Part 1
EN 61000-6-2	Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity standard for industrial environments

Much, 11/02/2026

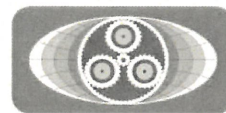
Claudia Beyert-Wagner
(Managing Director)



ISO 9001:2015
ISO 14001:2015
Management
System

www.tuv.com
ID 1100012007

PLARAD[®]
Torque & Tension Systems



EG – Konformitätserklärung

Original

Hersteller	Maschinenfabrik Wagner GmbH & Co. KG
	Birrenbachshöhe 17 53804 Much Deutschland
Dokumentations- Verantwortlicher	Claudia Beyert-Wagner
Produktbezeichnung	DE1 ^{power} -10 / -20 / -30 / -36 / -48 / -80 (W) DE1 ^{docu} -10 / -20 / -30 / -36 / -48 / -80 (W) DE1 ^{control} -10 / -20 / -30 / -36 / -48 / -80 (W)
Typ	Siehe Typenschild
Seriennummer Baujahr	Siehe Typenschild

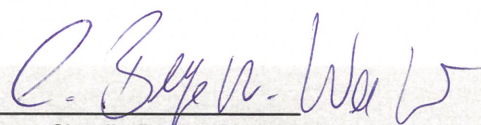
Der Hersteller erklärt, dass die Maschine allen einschlägigen Bestimmungen der Richtlinie entspricht:

2006/42/EG	EG- Maschinenrichtlinie
2014/30/EU	EMV-Richtlinie
2014/35/EU	Niederspannungsrichtlinie

Folgende harmonisierte Normen wurden angewandt:

EN ISO 12100:2010	Sicherheit von Maschinen- Allgemeine Gestaltungsgrundsätze- Risikobeurteilung und Risikominderung
IEC 62841-1	Elektrische motorbetriebene handgeführte Werkzeuge, transportable Werkzeuge und Rasen- und Gartenmaschinen – Sicherheit - Teil 1: Allgemeine Anforderungen
IEC 62841-2-2	Elektrische motorbetriebene handgeführte Werkzeuge, transportable Werkzeuge und Rasen- und Gartenmaschinen – Sicherheit – Teil 2-2: Besondere Anforderungen für handgeführte Schrauber und Schlagschrauber
DIN EN 55014-1	Elektromagnetische Verträglichkeit - Anforderungen an Haushaltsgeräte, Elektrowerkzeuge und ähnliche Elektrogeräte – Teil 1: Störaussendung
EN 61000-6-2	Elektromagnetische Verträglichkeit (EMV) – Teil 6-2: Fachgrundnormen - Störfestigkeit für Industriebereiche

Much, den 11.02.2026


Claudia Beyert-Wagner
(Geschäftsführung)