



Original operating manual

Electric nut runner:

DE1	DE1 <i>plus</i>
DE1-W	DE1 <i>plus</i> -W
DE1-J	DE1 <i>plus</i> -J



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1 Identification

1.1 Product identification

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Phone: +49 (2245) 62-0
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Email: info@plarad.de
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Machine designation: Electric nut runner
Type designation: DE1 / DE1plus – 10 - (W)
DE1 / DE1plus – 20 - (W)
DE1 / DE1plus – 25 J
DE1 / DE1plus – 30 - (W)
DE1 / DE1plus – 36 - (W)
DE1 / DE1plus – 48 - (W)
DE1 / DE1plus – 80 - (W)

1.2 Document identification

PA No.	Version	Date	Reason for change / comments
74280	1.0	12/09/2018	Initial version from 73789
74280	1.2	29/10/2019	Revision & correction acc.to 73789 V 1.2/PW

File path: 2_BA_DE1plus_GBR_V 1.2_74280

2 User instructions

2.1 Purpose of the document

This operating manual is intended to familiarise the owner/operator with the machine and provide information about its possible applications and intended use. The operating manual contains important information that allows the owner/operator to use the machine safely, correctly and efficiently. Observing this information helps avoid hazards, minimise repair costs and downtimes and increase the reliability and service life of the machine.

Information about precautions to be taken by the owner:

- Only entrust personnel who have the necessary qualification for the respective work with tasks on the machine.
- Clearly define the responsibilities and accountabilities of the operating and maintenance personnel.
- Supplement the operating manual by rules arising from national regulations regarding occupational health and safety and the environment (e.g. work organisation).
- Order and occasionally verify compliance with the operating manual and its supplements. Keep a copy of the operating manual at the place where the machine is used at all times!
- Only operate the machine when it is in technically faultless condition and maintain this.

In addition to the operating manual, the mandatory accident prevention regulations applicable in the country and the place where the machine is used must be observed. In addition, all recognised technical rules devised to ensure safe and correct working must be observed.

2.2 Target groups

- a) The **owner** as the superior legal person is responsible for the intended use of the machine and the training and deployment of authorised persons. He defines the mandatory competences and authorisations of the authorised personnel for his company.
- b) A **specialist** is defined as a person who is capable of assessing the tasks assigned to him and recognising possible hazards due to his professional training, knowledge and experience. This person is also familiar with all applicable regulations. Only trained specialist personnel or such personnel who have been selected and found capable by the owner are qualified to work with the machine.
- c) A **trained/instructed person** is a person who has been instructed and, if necessary, trained in the assigned tasks and the possible risks for incorrect behaviour. This person has also been informed about the necessary safety devices and protective measures. Personnel to be qualified, trained, instructed or undergoing general job training may only act under the constant supervision of an experienced person.

2.3 Re-orders and copyright

Additional copies of this operating manual can be ordered at the address specified in chapter 1 "Identification". Please note that all re-orders are subject to a charge. All rights expressly reserved. Copying or disclosing the content of this operating manual to third parties - in which form whatsoever - is not permitted without our written approval.

2.4 Liability and warranty

All tasks and instructions provided in this operating manual are based on our previous experience and findings and given to the best of our knowledge. The original version of this operating manual was prepared in German and reviewed by us for technical accuracy. The translation into the respective national/contractual language has been prepared by a certified translation agency.

This operating manual has been compiled with the greatest level of care. However, If you discover any parts that are incomplete and/or incorrect, please notify us in writing. Your suggested improvements help us create an operating manual that is more user-friendly.

3 Product safety

The prerequisite for the safety-compliant handling and trouble-free operation of this machine is knowledge of the basic safety instructions.

3.1 Organisational measures

- a) The operating manual must always be kept in legible condition and readily available at the place where the machine is used!
- b) The operating manual needs to be supplemented by rules that incorporate the specific conditions present on site
(e.g. duty of supervision and obligation to notify the authorities, work organisation, operational procedures, assigned personnel)
- c) The operating manual also needs to be supplemented by mandatory local regulations regarding accident prevention and environmental protection (e.g. handling hazardous materials, disposal of auxiliary and/or operating materials, and the provision/requirement to wear personal protective equipment)!
- d) Personnel must be instructed to observe the operating manual!

Personnel are required to notify the owner or his agent of any defects or hazards they have discovered.

3.2 Technically faultless condition

- a) All safety instructions and warnings at / on the machine must be maintained in complete and legible condition!
- b) Do not make any modifications, attachments and conversions to the machine that could impair safety without consultation/agreement with the manufacturer/supplier!

Substantial changes to the machine and/or programs can also invalidate the EC Declaration of Conformity!



- c) Observe all intervals for recurring checks/inspections that are required (by law) or set out in the operating manual!
- d) All spare parts used must comply with the technical requirements specified by the manufacturer. This requirement is always satisfied by the use of original spare parts.
- e) When having maintenance work performed independently, make sure to provide the appropriate workshop equipment necessary to complete the work!
- f) Apart from this operating manual, all information and instructions provided in the supplier documentations need to be observed (see appendix)!

3.3 General safety information for power tools

Read all safety information and instructions. Failure to observe the safety information and instructions can result in electric shock, fire and/or serious injuries.



The term "power tool" used throughout the safety information refers both to mains-operated power tools (with mains cable) and battery-powered electric tools (without mains cable).

3.3.1 Safety at the workplace

- a) Keep your work area clean and sufficiently illuminated. Working in untidy or unlit work areas can result in accidents.
- b) Do not use your power tool to work in explosive atmospheres that contain inflammable liquids, gases or dust. Power tools generate sparks that can ignite dust or vapours.
- c) Keep children and other persons away from the power tool while using it. Any distractions can cause you to lose control of your machine

3.3.2 Electrical safety

- a) The connection plug of the tool must fit in the power outlet. The plug must not be modified in any way. Unchanged plugs and matching power outlets reduce the risk of electric shock.
- b) Avoid body contact with grounded surfaces such as pipes, heaters, stoves and refrigerators. There is an increased risk of sustaining electric shock when your body is grounded.
- c) Do not expose the power tool to rain, moisture and a moist environment. Water penetrating a power tool increases the risk of electric shock.
- d) Do not divert the cable from its intended use and refrain from using it to carry or hang up the power tool or pull the plug out of the power outlet. Keep the cable away from heat, oil, sharp edges or moving machine parts. Damaged or entangled cables increase the risk of electric shock.

3.3.3 Safety of persons

- a) When working with a power tool, stay alert, pay attention to what you are doing and apply common sense. Never operate a power tool when you are tired or under the influence of drugs, alcohol or medication. Even a brief moment of carelessness during the use of a power tool can result in serious injuries.
- b) Always wear personal protective equipment and safety goggles. Wearing personal protective equipment such as a dust mask, non-slip safety shoes, hard hat or hearing protection (depending on the type and use of the power tool) reduces the risk of injury.
- c) Avoid any inadvertent start-up of the machine. Ensure that the power tool is switched off before connecting it to the power supply before picking it up or carrying it. Carrying the power tool with your finger on the switch or connecting it to the power supply while the device is switched on can result in accidents.
- d) Remove all adjusting tools or spanners before switching on the power tool. Any tool or spanner located in a rotating machine part can result in injuries.
- e) Refrain from assuming an abnormal body posture. Assume a firm stand and keep your balance at all times. This will help you retain better control over the power tool if faced with unexpected situations.
- f) Wear suitable clothing. Do not wear any loose-fitting clothes or jewellery. Keep hair, clothing and gloves out of reach of moving parts. Loose-fitting clothes, jewellery or long hair may become caught in moving components.

3.3.4 Using and handling the power tool

- a) Do not overload the machine. Use the power tool that is designed for the work you wish to complete. Using the appropriate power tool will help you work more efficiently and safely within the specified range of capacity.
- b) Do not use any power tools that have a defective switch. A power tool that can no longer be switched on or off is dangerous and must be repaired.
- c) Remove the plug from the power outlet and/or remove the battery before making any adjustments to the machine, changing accessories or putting the machine away. This precaution prevents the power tool from starting up inadvertently.
- d) Store power tools that are not in use out of reach of children. Never allow persons to use the machine who are not familiar with its operation or who have not read the instructions. Power tools are dangerous if used by inexperienced persons.

3.3.5 Service

- a) Have your power tool repaired only by qualified experts using original spare parts. This ensures that the safety of your power tool will be maintained.
- b) Maintain the power tool with care. Check if moving parts function properly and without sticking and whether parts are broken or damaged so that the power tool's function is impaired. Have damaged parts repaired before using the machine. Many accidents can be attributed to poorly maintained power tools.
- c) Use power tools, accessories, insertion tools, etc. in accordance with these instructions. During use, take into consideration the operating conditions and the task to be completed. The use of power tools for applications other than the ones specified can result in dangerous situations.

4 Training of personnel

4.1 Selection and qualification of personnel

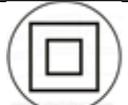
- a) Only reliable personnel are permitted to work on/with the machine. Observe the minimum age requirements stipulated by law!
- b) Only use trained or at least instructed personnel! Instruct and occasionally verify that only authorised personnel are used to work on/with the machine!
- c) Clearly define the responsibilities and accountabilities of the personnel with regard to operation, set-up, maintenance and repair!
- d) Only let personnel undergoing training, instruction or in the context of general training work on the machine while under constant supervision by an experienced person!
- e) Work on electrical equipment of the machine must only be performed by qualified electricians or instructed persons under the management and supervision of a qualified electrician. The electrical engineering regulations must be complied with for safety reasons.

4.2 Presentation of safety instructions

The operating manual uses the following illustrations to depict safety instructions:

Danger: Specifications / instructions and warnings intended to prevent personal injury	 Danger!
Attention: Particular specifications / instructions and warnings intended to prevent property damage	 Attention!
Notice: Particular specifications / instructions and warnings regarding the proper and efficient use of the machine	

4.3 Symbols on the machine

Warning about dangerous electrical voltage	
Crushing hazard warning	
Warning about hot surface	
Read all safety information and instructions. Failure to observe the safety information and instructions can result in electric shock, fire and/or serious injuries.	
Class 2 protective insulation	
This symbol indicates that the product must not be disposed of with regular household waste as specified in the WEEE directive (Waste Electrical and Electronic Equipment Directive, 2002/97/EC) and national laws.	
Service seal specifying the date of the next inspection.	

4.4 Personal protective equipment (PPE)

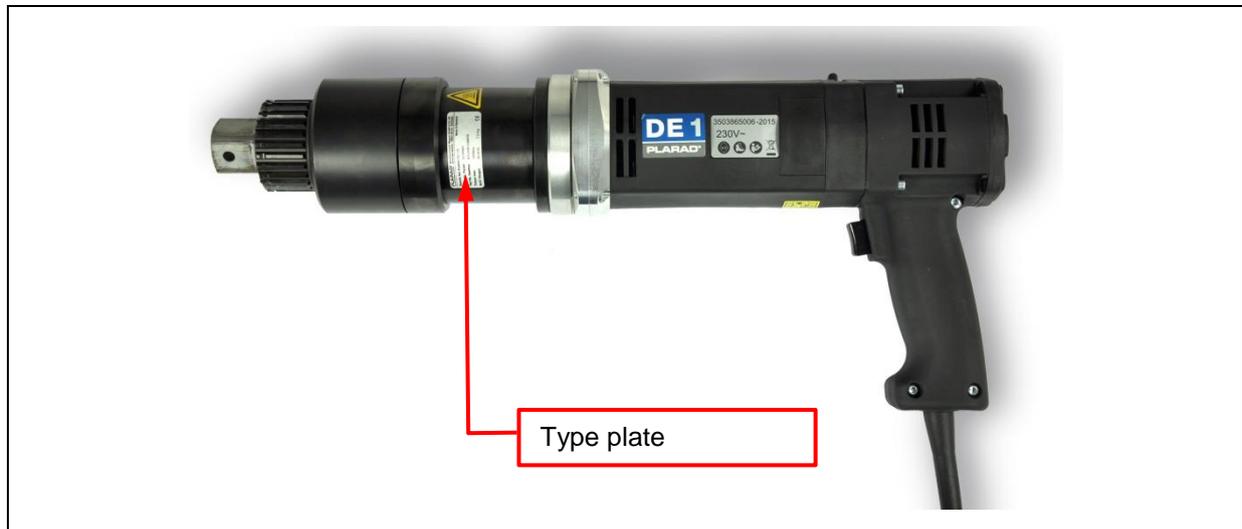
Use gloves	
Use protective footwear	
Wear hearing protection	
Wear protective headgear	
Use protective eye wear	

5 Description of the machine

Illustration and identification

The electric nut runner is identified by its type plate.

The position of the type plate is found in the illustration below:



The following specifications are given on the type plate:

- Company name including complete address
- Machine designation:
- Type designation:
- Item or Serial no.:
- Maximum torque:
- Year of manufacture:
- Weight:
- Mains voltage / frequency:
- CE mark

Note the mains voltage and frequency stated on the rating plate!



Attention!

5.1 Intended use

Within the limits of supply, the machine has been manufactured in accordance with the state of the art and the recognised technical safety rules. Regardless, the use of the machine involves certain risks to the life and limb of the user or third parties as well as the risk of damage to the machine and other material assets.

The machine may only be used if in proper technical condition, in accordance with its intended use, with an awareness of safety and the risks involved and in observance of the operating manual!

It is of particular importance in this regard to have any faults that may affect safety eliminated without delay!

The electric nut runner is a hand-held tool that is designed exclusively for tightening and loosening bolted connections (see ch. 5.1).

It may only be used for commercial purposes.

Any use deviating from or exceeding the scope of intended use is considered to be improper.

The manufacturer/supplier **cannot** be held liable for any damage resulting from such improper use.

The risk lies solely with the owner.

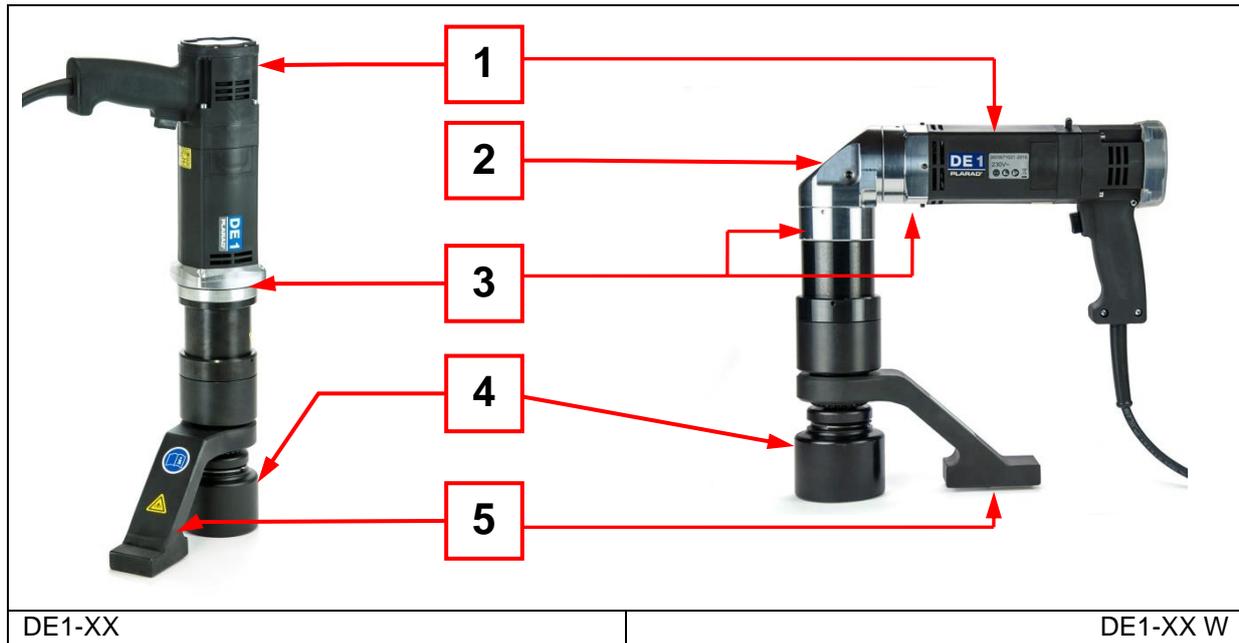
Intended use also includes observing the operating manual and the conditions specified for inspections and maintenance.



5.2 Foreseeable misuse

- The electric nut runner is not suitable for continuous operation as a drive unit.
- Do not subject bolting systems and accessories to more than the permissible torque. Ch. 8.4
- The tool must not be used to tighten pretensioned bolts. Ch. 8.4
- Impermissible support scenario. Ch. 8.7
- Lower deviation from starting rotation angle. Ch. 8.7
- Observe the protection rating. Ch. 5.5
- The assignment of torque level and torque has been determined on a test set-up according to ISO 5393 (medium hard test set-up). Other torque levels can be necessary depending on the bolting application. Ch. 8.4

5.3 Design and components of the machine



Tool components:

1. Drive motor
2. Angular gearbox
3. Safety pivot

The safety pivot situated between drive motor and gearbox/angular gearbox makes it possible to rotate the grab handle into any desired position - even under load.

The total reaction force of the nut runner will not affect your hand during this process.

Shearing of the mains power cable! Contact with live components can result in serious injuries and death from electric shock.

The mains power cable must never be situated between reaction arm and contact surface while you are working with the tool.

Only use the insulated handles to guide the tool during work.



Danger!

Accessories:

4. Impact socket with retaining clip
5. Reaction arm

When setting the torque, strictly ensure that the maximum permissible torque of the accessories is not exceeded.



Danger!

There is a crushing hazard between the reaction arm and the contact surface. The reaction arm attached to the tool can cause serious crushing injuries. Do not reach between the reaction arm and the contact surface. Do not place hands/feet close to the contact surface.



Danger!

Only components and accessories that do not impair the function and safety of the tool are permitted to be used.



Danger!

5.4 Hazard areas

5.4.1 Mechanical strength

<p>Only components and accessories that do not impair the function and safety of the tool are permitted to be used. Only use impact sockets</p>	 Attention!
<p>Unsecured components or tools can be flung out! Secure reaction arm and impact socket before start-up! Follow the instructions and warnings provided on the tool and the accessories.</p>	 Danger!
<p>When setting the torque, strictly ensure that the maximum permissible torque of the accessories is not exceeded.</p>	 Danger!
<p>To avoid premature damage to tool and accessories, we recommend that you operate the PLARAD nut runners at 80 % of the devices' max. torque when using them continuously. Loads with a negative impact on durability may occur especially when the devices operate in loosening mode. Torque levels > 80% (relative to the max. torque of the device) should only be used in exceptional cases.</p>	

5.4.2 Temperature

<p>Risk of burns! The tool can reach surface temperatures of up to 80°C. Wear protective gloves!</p>	 Danger!
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5.4.3 Noise

<p>Hearing damage from noise! Wear hearing protection during operation.</p>	 Danger!
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5.4.4 Electrical energy

Contact with live components can result in serious injuries and death from electric shock.



Danger!

Observe the following safety information when operating electric nut runners:

- a) When operating the tool, observe all applicable laws and regulations at the operating site.
- b) Verify every time before using the tool that it operates in a reliable manner and is in proper condition.
- c) Before putting the tool into operation, check the tool and the mains power cable for damage.
- d) Never continue using a tool with defective cables or connectors
- e) Have damaged cables or connectors replaced by authorised qualified electricians before resuming operation.
- f) When using an extension cable with small cross section and large length, a voltage drop can occur which adversely affects the function of the nut runner.
- g) When working outdoors, only use extension cables that are approved for this purpose and labelled accordingly.
- h) Do not expose electric tools to rain. Do not use power tools in a moist or wet environment.
- i) Keep your tools in a safe place. Store unused power tools in a dry room.
- j) Disconnect the tool from the mains power supply before all repair and maintenance work.

**Minimum cross section of supply lines 2.5 mm² !
Fully unwind cable drums!**



Attention!

5.5 Technical specifications

Dimensions:	see technical data sheet
Weight:	see type plate
Range of capacity:	see included torque table
Accuracy of set torque:	±5% of the nominal value (max. torque)
Accuracy of set angle:	±5° of the set value
Mains voltage:	220 -240 V/50-60 Hz
	230 V/50-60 Hz
	110 V/50-60 Hz
	120 V/50-60 Hz
Power consumption:	1.4 kW
Insulation class:	E
Protective insulation:	Protection rating IP 20
Minimum power input for mobile power generators:	4 kVA
Ambient temperature:	$0^{\circ} \text{C} \leq T \leq 50^{\circ} \text{C}$
Emission values according to EN 60745:	
Sound pressure level:	79dB(A), uncertainty factor: 3 dB(A)
Vibration emission value:	< 2.5 m/s ² , uncertainty factor: 1.5 m/s ²

Allow the tool to warm up for 10 minutes in temperatures below 0°C!	 Attention!
The technical specifications of accessories and the safety data sheets must be observed as well!	 Attention!

6 Scope of delivery

- Electric nut runner, ready for operation
- Reaction arm
- Optional impact socket
- Circlip pliers for installing the retaining ring on the reaction arm
- Operating manual including EC Declaration of Conformity
- Torque table with (optional) test certificate
- Case

7 Preparing the tool

Only components and accessories that do not impair the function and safety of the tool are permitted to be used.
Only use impact sockets



Attention!

1. Attach O-ring to tothing



2. Attach the reaction arm to the toothed holder on the nut runner.
3. Secure the reaction arm using the retaining ring / circlip pliers.
4. Put the socket insert (socket) on the square drive on the nut runner and secure it. Only use impact sockets.
5. Secure the impact socket.



6. Nut runner with secured reaction arm and secured impact socket.



Unsecured components or tools can be flung out!
Secure reaction arm and impact socket before start-up!
Follow the instructions and warnings provided on the tool and the accessories.



Danger!

8 Operation

8.1 Controls on the tool



1. Display / buttons
2. Power button
3. Rotation direction lever

8.2 Display controls



Function button "RED":

- RESET function
- Parameter setting +Tens digit

Function button "UP":

- Reset function
- Parameter setting +Ones digit

Menu Enter button:

Selection of the function menu

Function button "GREEN":

- OK function
- Parameter setting -Tens digit

Function button "Down":

- Reset function
- Parameter setting -Ones digit



8.3 Display elements - main display



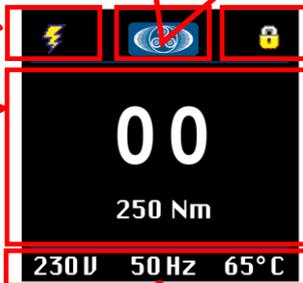
Error messages:

- Mains voltage not sufficient
- Motor temperature too high
- Motor does not reach the minimum speed

- Ready for operation /bolting process in progress
- Bolting OK
- Bolting **not** OK

Tool function/ parameter

- set function
- Torque level
- The ISO 5393 torque associated with the torque level can be displayed as an option.



Button lockout:

- Button lockout active

Current values

- Mains voltage [V],
- Mains frequency [Hz],
- Motor temperature [°C]

The Nm information in the display of the tool corresponds to the values achieved for the respective settings on the reference bolting application for the respective tool type.

These values can be exceeded or undercut depending on the bolting application!



Danger!

The error messages and their causes are described in ch. 8.7.5



Attention!

8.4 Display element - function selection



Invoke function selection



Function icons

<p>Move selection cursor</p>	 
<p>Activate check box</p>	
<p>Invoke function</p>	
<p>Cancel</p>	

<p>When setting the torque, strictly ensure that the maximum permissible torque of the accessories is not exceeded.</p>	 <p>Danger!</p>
<p>You need to set the desired torque (torque angle) before starting the bolting process! Making adjustments while the bolting process is underway is not possible!</p>	 <p>Attention!</p>
<p>The indicated torque has been determined on a dynamometer and corresponds to a medium hard test set-up according to ISO5393. Other torque levels can be necessary depending on the bolting application! For accuracy, see ch.5.5 Technical specifications.</p>	 <p>Attention!</p>
<p>The torque is selected by adjustment of the corresponding torque level. Refer to the included torque table for the required torque level. The associated torque for the respective torque level is optionally shown in the display.</p>	

8.4.1 Torque mode

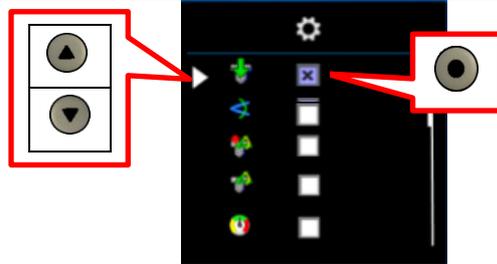
DE1(-W)
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In torque mode, the bolt will be tensioned to the torque that corresponds to the set torque level.

1. Invoke function selection



2. Select torque mode



3. Invoke torque mode



4. Set the torque level



Once set up, the tool is ready for operation



The tool tensions the bolt until reaching the torque that corresponds to the set torque level.

The torque is selected by adjustment of the corresponding torque level. Refer to the included torque table for the required torque level. The associated torque for the respective torque level is optionally shown in the display.



8.4.2 Torque-angle mode

DE1plus(-W)



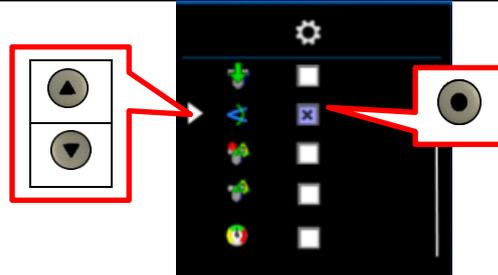
In torque-angle mode, the bolt will be turned further with the set torque angle.
The torque angle is counted starting with $M_{d_{min}}$ (minimum measurable torque).
 $M_{d_{min}} < \text{torque level } 00$

The set torque level limits the maximum torque

1. Invoke function selection



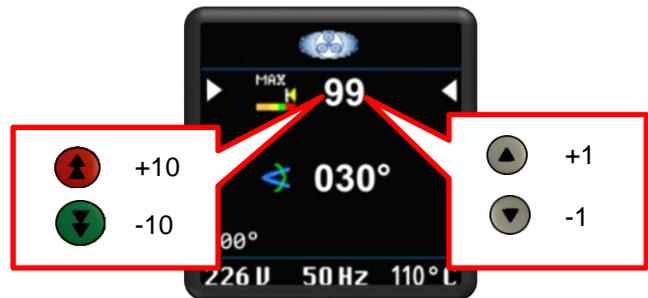
2. Select torque-angle mode



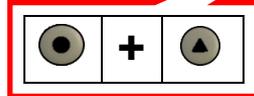
3. Invoke function



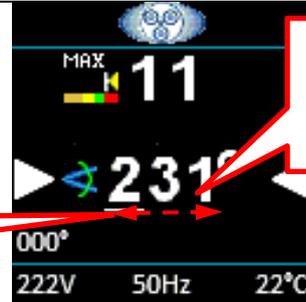
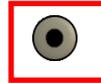
4. Set the torque level



5. Switch between parameter entries
(Toggle between torque level / torque angle)



6. Set torque angle



Once set up, the tool is ready for operation



The tool tensions the bolt by applying M_{dmin} before turning the bolt further with the set tightening angle.

If the torque associated with the torque level is reached before the set torque angle, the tool will switch off!
The bolting is not OK!



Attention!

The tightening angle is counted starting with M_{dmin} (minimum measurable torque)



Attention!

8.4.3 Torque / torque-angle mode

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In torque / torque-angle mode, the bolt is tensioned to snug torque before being turned further with the set angle torque.

The set torque level limits the maximum torque.

1. Invoke function selection



2. Select torque-angle mode



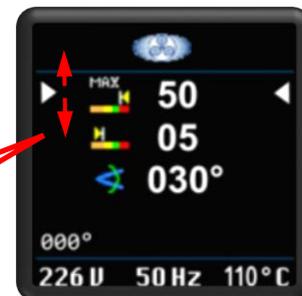
3. Invoke torque-angle mode



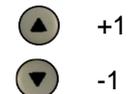
4. Switch between parameter entries

Toggle between:

- Max. torque level
- Snug torque
- Torque angle



5. Setting of the max. torque level



6. Setting of the snug torque



7. Setting of the tightening angle



Once set up, the tool is ready for operation



The tool tensions the bolt with the set snug torque level before turning the bolt further with the set tightening angle.

If the torque associated with the maximum torque level is reached before the set torque angle, the tool will switch off!
The bolting is not OK!



Attention!

8.4.4 Torque angle counting mode

DE1plus(-W)

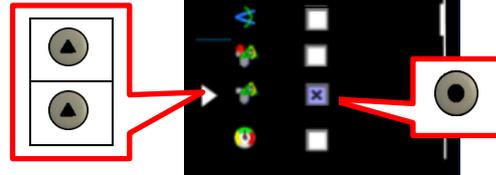


In torque mode, the bolt will be tensioned to the torque that corresponds to the set torque level.
The torque is counted starting with torque level 00.

1. Invoke function selection



2. Select torque angle counting mode



3. Invoke function



4. Set the torque level



Once set up, the tool is ready for operation

 α 

The bolt is tensioned with the set torque level
Torque angle α is counted starting with torque level 00

Notice:

The tool operates in torque mode (see ch. 8.4.1).
The counting of the angle is merely a control variable and does not affect the function/control of the tool



8.4.5 Test mode

DE1plus(-W)



Test mode is used to check if the bolt has been tensioned to the corresponding minimum tightening torque.

1. Invoke function selection



2. Select test mode



3. Invoke function



4. Set the torque level



Once set up, the tool is ready for operation



The tool tensions the pretensioned bolt with the set torque level and the corresponding minimum tightening torque.

It is not possible to use the complete range of the adjustable torque levels!



Attention!

- If the necessary torque for further turning of the present bolting is higher than the specified setpoint torque, the nut runner switches off without further turning.
- If the necessary torque for further turning of the bolting is smaller than the specified setpoint torque, the turning continues until the setpoint torque is reached.
- Whether the bolt has actually been turned further can only clearly be recognised using a previously applied marking.



Attention!

- If no further turning is performed, this has only established that the breakaway torque is above the specified value! (e.g.: in the case of a corroded bolt, the breakaway torque can be significantly higher than the original tightening torque of the bolt).
- Further turning occurs if the breakaway torque is slightly below the specified setpoint torque. If the specified torque is reached immediately afterwards, the energy in the system can result in slightly exceeding the setpoint torque.
- This possible overshoot is in the same tolerance range as for bolting mode and is limited to 5% of maximum torque for the DE1.
- In the case of multiple tests on the same bolting, further overshoots can occur each time; however, the maximum overshoot of 5% of maximum torque also applies here.



Attention!

The Test mode can be used to "test" any bolting.
For this, the tool moves with very reduced speed "against" the bolt and then slowly increases the applied torque to the specified value.



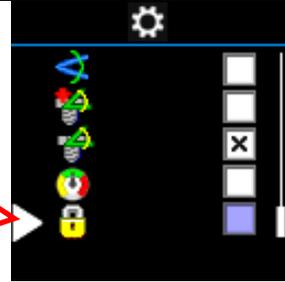
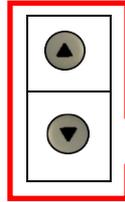
8.4.6 Button lockout

DE1(-W)
DE1plus(-W)

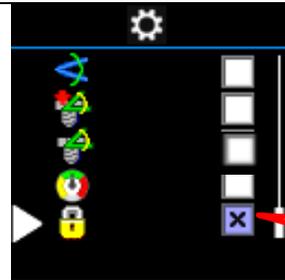
1. Invoke function selection



2. Select button lockout



3. Switch button lockout on/off

4. Activation / deactivation
Button lockout setting

8.5 Display element / loosening mode

DE1(-W)
DE1*plus*(-W)



In loosening mode, the tool applies 1.2 times the nominal torque to loosen the bolted connection

1. Switch on loosening mode



2. Switch off loosening mode



Loosening mode is only available for the following functions:

- Torque mode



- Torque angle counting mode for DE1*plus*



Loosening mode is not approved for tensioning



Danger!

Operation in loosening mode can overload the tool / the accessories!

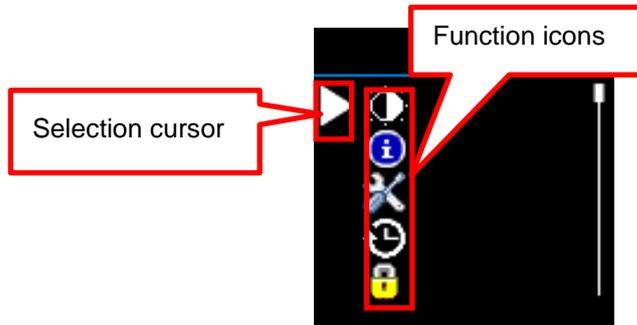


Danger!

8.6 Display elements - settings



Invoke settings



Move selection cursor



Invoke setting



Cancel



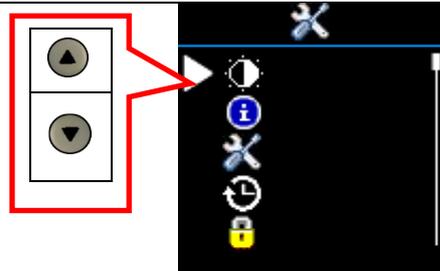
8.6.1 Contrast



1. Invoke settings



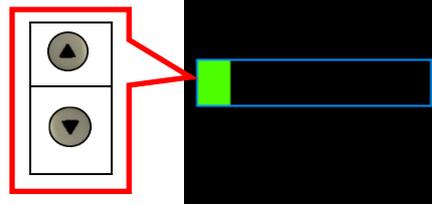
2. Select contrast



3. Invoke menu item



4. Set contrast



5. Save



Cancel



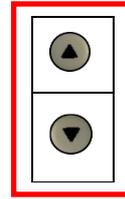
8.6.2 Information



1. Invoke settings



2. Select info

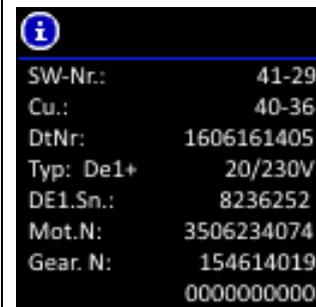


3. Invoke menu item



4. Displayed information:

- | | |
|---------------|--------------------------|
| • SW no. | Firmware version display |
| • CU.SW no. | Firmware version control |
| • Dt no. | Data record |
| • Device type | DE1-XX / xxxV |
| • Serial no. | 82-XXXXX |
| • Motor no. | Parts no. |
| • Gearbox no. | Parts no. |



5. Exit



8.6.3 Service counter



The service counter records the number of boltings since the last service.

1. Invoke settings



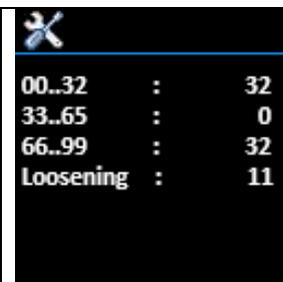
2. Select info



3. Invoke service counter



Level	00 - 32
	33 - 65
	66 - 99
	00 - 99
Loosening	Loosening mode



```

00..32 : 32
33..65 : 0
66..99 : 32
Loosening : 11

```

4. Exit menu item



8.6.4 Total counter

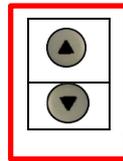


The total counter records the number of boltings and the error messages since the last service.

1. Invoke settings



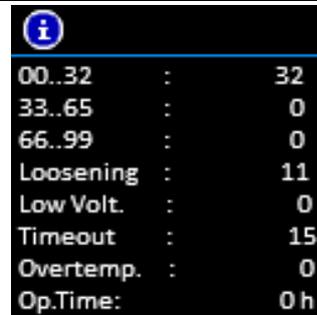
2. Select info



3. Invoke total counter



Level	00 - 32
	33 - 65
	66 - 99
	00 - 99
Loosening	Loosening mode
Low Volt.	Voltage too low
Timeout	Bolting process was not started
Overtemp.	Overtemperature
Op.Time	Total operating hours counter



		
00..32	:	32
33..65	:	0
66..99	:	0
Loosening	:	11
Low Volt.	:	0
Timeout	:	15
Overtemp.	:	0
Op.Time:		0 h

4. Exit menu item



8.6.5 Locking / unlocking the setting levels

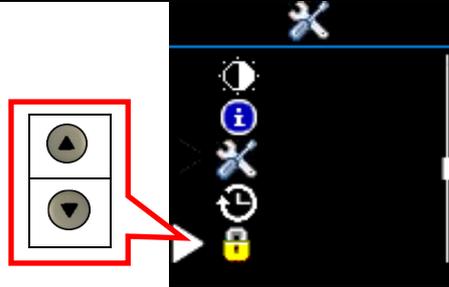


It is possible to lock individual setting levels to keep the operator from using them.

1. Invoke settings



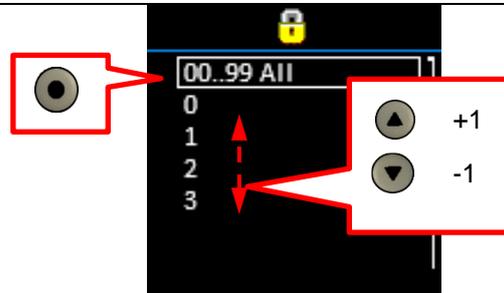
2. Select info



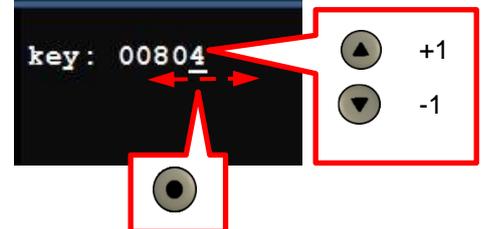
3. Invoke menu item



4. Invoke bolting level



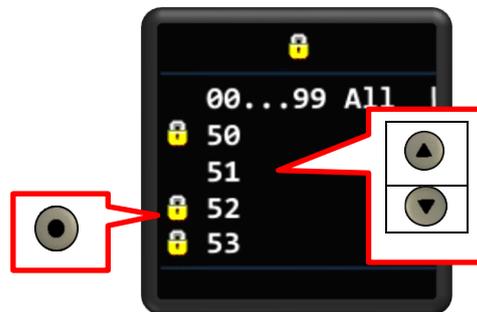
5. Enter PIN **05384**



6. Confirm PIN 05384



7. Activate / deactivate lock



If requiring only certain bolting levels, you may want to lock all levels first before unlocking the levels you need



8. Save



Cancel



8.6.6 Creating bolting applications



You can save customer-specific bolting applications in a file structure and retrieve them as described in ch. 8.6.7 Switching pre-sets . This is a quick and easy way to set up the tool.

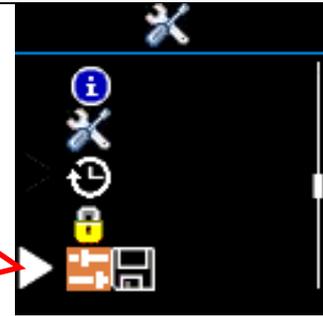
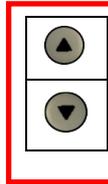
While entering the values, you can always use the  button to return to the previous input level.



1. Invoke settings



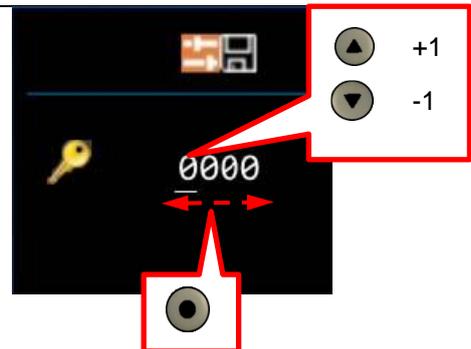
2. Select info



3. Invoke menu item



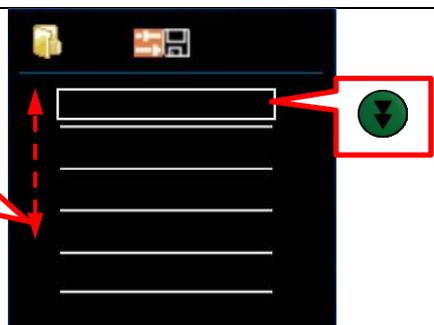
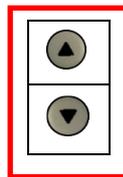
4. Enter PIN **0000**



5. Confirm PIN 0000



6. Select folder



<p>7. Name folder (optional)</p>	
<p>8. Select folder </p> <p>You can select/name a maximum of 5 folders.</p>	
<p>9. Select bolting application</p>	
<p>10. Name bolting application (optional)</p>	
<p>11. Save </p> <p>The folder name must not contain more than 12 characters!</p>	
<p>12. Select bolting mode</p>	<p>See ch. 8.4 "Display element - function selection". </p>
<p>13. Save </p>	
<p>14. Exit menu item </p>	

8.6.7 Switching pre-sets on / off

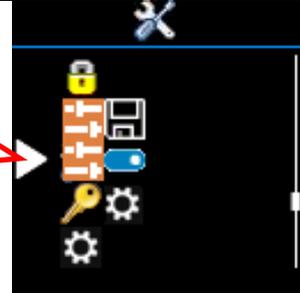
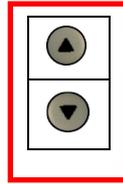


You can invoke the saved bolting applications to set up the tool quickly and easily.

1. Invoke settings



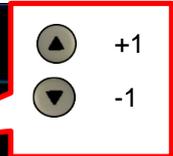
2. Select info



3. Invoke menu item



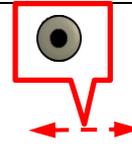
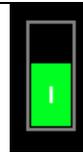
4. Enter PIN 0000



5. Confirm PIN 0000



6. Switch pre-sets on / off



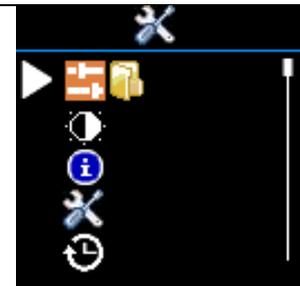
7. Save



Cancel



8. Pre-sets display active

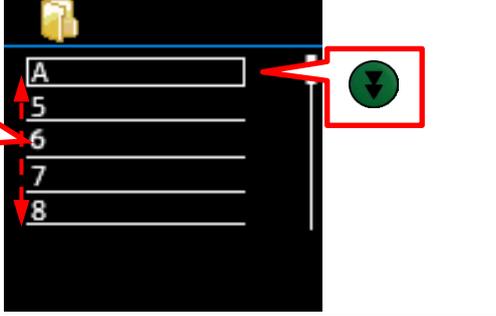
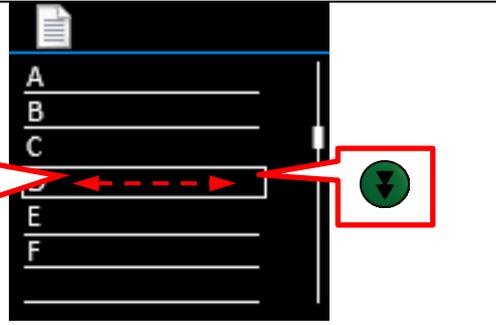


9. Save



Cancel



10. Select folder	 <p>The screenshot shows a folder selection menu with options A, 5, 6, 7, and 8. A red box highlights the up and down arrow buttons on the left. A red arrow points from the up arrow to the 'A' folder. Another red arrow points from the down arrow to the '6' folder. A green circle with a downward arrow is also shown on the right side of the screen.</p>
11. Select bolting application	 <p>The screenshot shows a bolting application selection menu with options A, B, C, D, E, and F. A red box highlights the up and down arrow buttons on the left. A red arrow points from the up arrow to the 'C' application. A red dashed arrow points from the down arrow to the 'D' application. A green circle with a downward arrow is also shown on the right side of the screen.</p>
12. Display bolting application	 <p>The screenshot shows the bolting application display screen. It displays the number '7' and '8', followed by 'MIN/MAX/TRO/ANG' and '10/91/90/100°'. Below this, it shows '000°' and '220V 50Hz 24°C'.</p>

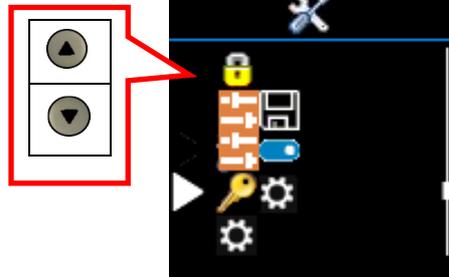
8.6.8 Change password



1. Invoke settings



2. Select password



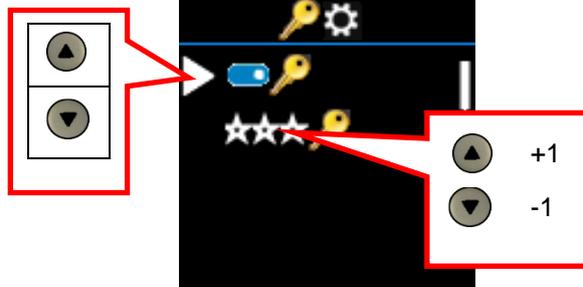
3. Invoke menu item



8.6.8.1 Pre-sets password On/Off



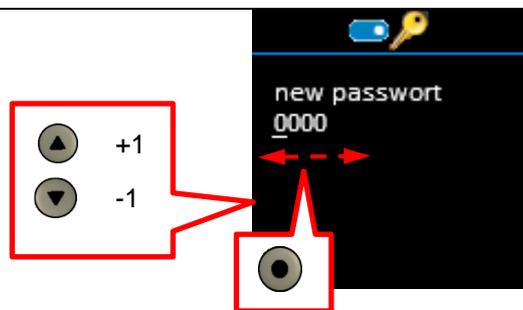
1. Select password ON / OFF



2. Invoke bolting application password



3. Enter password



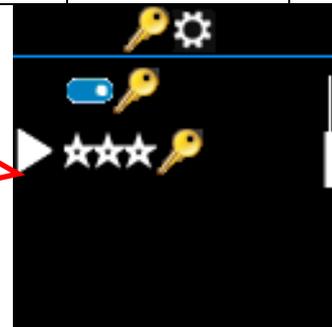
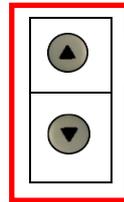
4. Confirm password



8.6.8.2 Master password



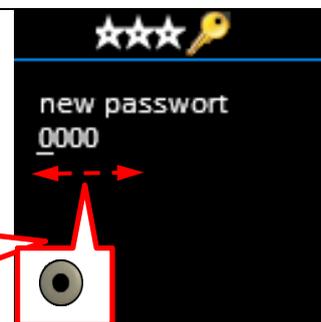
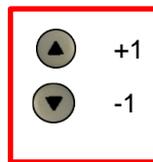
1. Select master password



2. Invoke menu item



3. Enter master password



4. Confirm master password



8.6.9 Error confirmation On / Off

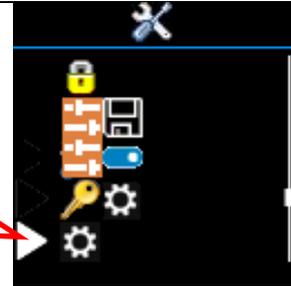


1. Invoke settings



2. Select password

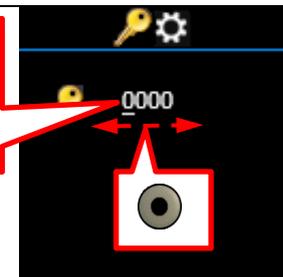
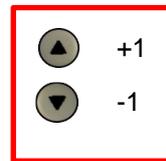
K20-
001-
4-
4731
-



3. Invoke menu item



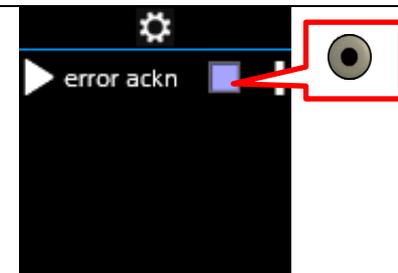
4. Enter master password



5. Confirm master password



6. Switch On / Off



7. Save



Cancel



If error confirmation is enabled, every **“Bolting not OK”** error must be confirmed! Only after this confirmation can the next bolting process be started.

This is supposed to ensure that the operator will consciously perceive faulty bolting processes.



Error confirmation



8.7 Operation of the tool

<p>Do not work in a way that may endanger safety! Tie back long hair and refrain from wearing loose clothing or jewellery (there is a risk of injury from becoming entangled or drawn in)!</p>	 Danger!
<p>Do not use the machine unless it operates in a reliable manner and is in proper condition!</p>	 Danger!
<p>Before switching the machine on, make sure that no one is put at risk by the machine starting up!</p>	 Danger!
<p>Only use reaction arms or extensions that have been approved by the manufacturer.</p>	 Danger!
<p>Check the machine for visible external damage and defects at least once per shift! Report any detected changes (including changes in performance) to the supervising staff without delay! If necessary, shut down and secure the machine immediately!</p>	 Attention!
<p>Modifications to the reaction arm can invalidate the included original performance table.</p>	 Attention!
<p>Operate the tool as specified in the operating manual, follow control indicators!</p>	
<p>Suitable reaction arms - including custom models - are available on request. Reaction arms must never be modified.</p>	

8.7.1 Supporting the reaction arm

Torques cannot be generated without an absorption of the reaction forces. This function is provided by the nut runner's reaction arm. A standard reaction arm is included in the scope of delivery of the tool.

The tool is only permitted to be used with the included reaction arm.

<p>If the reaction arm rests only partially against the surface at the corners of the reaction foot, considerable forces can impact the tool. The device accessories can break, and the tool may be flung out. Do not support tool on the corners of the support feet!</p> <p>Only support tool on the surfaces of the support feet!</p>	 Danger!
<p>Make sure the supporting plate rests fully against the surface!</p>	 Attention!



<p>If supported insufficiently, the tool can slip off and be flung out. The thrust bearing at the bolting position must prevent the reaction arm from slipping off the contact surface!</p> <p>See also ch. 5.3 Design and components of the machine</p>	 Danger!
--	---

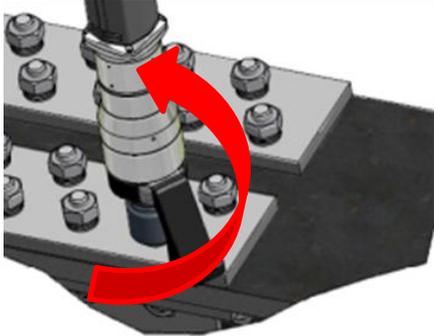
8.7.2 Bolting process

a) Place the nut runner on top of the bolting so that the bolt head/nut is captured in its entirety by the impact socket.

If this is not possible, you may only subject the accessories to reduced torque or use a special impact socket/different accessories.

b) It must be possible to bring the nut runner with the supporting plate into contact with the thrust bearing against the desired rotational direction of the nut runner. Make sure it rests against the entire surface!

Observe the starting rotation angle!

<p>Attention! Keep the following in mind for pretensioned bolted connections: The tool can exceed the specified torque if the starting rotation angle (reaction arm + bolt) is too small. The following values are recommended for the starting rotation angle:</p>		 Danger!
	<p>DE1 / DE1plus:</p> <ul style="list-style-type: none"> - -10 (W) 60° - -20 (W) 60° - -25 J (W) 60° - -30 (W) 30° - -36 (W) 30° - -48 (W) 30° - -80 (W) 30° 	

<p>Components or the bolted connections may tear during work. The tool can be flung out of the bolting position.</p>	 Danger!
---	---

8.7.3 Tightening

- Connect the tool to the mains power supply.
- Preselect the rotation direction on the hand lever.
- Place the tool with the impact socket on top of the bolt head or the nut you wish to turn.
- It must be possible to bring the nut runner with the supporting plate into contact with the thrust bearing against the desired rotational direction of the nut runner. Make sure it rests against the entire surface! **See 8.7.2**
- Press down and hold the power button until the nut runner switches off.
- Check the torque using suitable means if necessary.

The result is shown on the display until any button is pressed.

Specified torque has been reached	
Specified torque has not been reached	

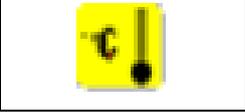
8.7.4 Loosening

<p>Loosening boltings often requires higher levels of torque than are necessary for tightening boltings.</p> <p>When faced with a situation like this, you will find that impact sockets and accessories often do not provide the necessary stability.</p> <p>Also, the power of the tool is usually greater than the load capacity of the accessories.</p>	
Operation in loosening mode can overload the tool / the accessories!	
Note that the accessories are only permitted to be loaded with the maximum permissible torque.	

- It must be possible to bring the nut runner with the supporting plate into contact with the thrust bearing against the desired rotational direction of the nut runner. Make sure it rests against the entire surface! **See 8.7.2**
- Activate loosening mode if required (see ch.8.5 “Display element / loosening mode”).
- Press down and hold the power button until the bolt or the nut has been loosened. Do not press the power button more than once!

<p>When the reaction arm is attached to the thrust bearing, never switch the tool on/off multiple times (pulsing).</p> <p>Tool and accessories might be overloaded (see ch. 8.7.2)</p>	
--	--

8.7.5 Error messages

<p>The symbol is displayed whenever a bolting process is not OK.</p>	
<p>If a bolting is interrupted (power button is released before switching off) or not even started due to any fault, bolting can be restarted immediately afterwards (by pressing the power button again).</p>	
<p>The display will also show the following error causes:</p>	
<p>Mains voltage not sufficient (tool does not start) or power failure.</p>	
<p>Timeout. The tool cannot reach its minimum speed (start angle too small, see 7.1). The torque has already been reached in the starting phase! Bolting result is not OK!</p>	
<p>Motor temperature inside the stator is too high. (Cut-off temperature 110° C)</p>	
<p>If bolting is aborted due to an error, the power button is blocked until "confirmation" of the error. This ensures that the user will register an error and not simply start the next bolting without noticing any incorrect bolting.</p>	

Flashing of the symbol indicates that confirmation is required by pressing any button on the display.
The symbol no longer flashes after the confirmation.

9 Maintenance / Service

Performing regular maintenance and inspections on the machine is of great importance. This minimises the occurrence of faults and increases operational reliability.	
Auxiliary and operating materials as well as cleaning agents and replacement parts need to be disposed of in a safe and environmentally compliant manner! Follow the instructions of the manufacturer when dealing with hazardous materials!	
Work on the technical equipment of the machine (electrical system) may only be performed by qualified experts!	 Danger!
Service work may only be performed by the manufacturer. Only allow Maschinenfabrik Wagner or bodies authorised by Maschinenfabrik Wagner to install, readjust, modify, expand and repair the tool.	 Attention!

9.1 Maintenance overview

The tool must be serviced as specified in the maintenance schedule before and after use.

Maintenance schedule				
Component / check	Type of check	Process	Interval	Comment
Surfaces Warning symbols and pictograms	Visual inspection	Check/clean	Before/after use	
Check the power cable for: <ul style="list-style-type: none"> • Proper fastening • Damage 	Visual inspection	Check	Before/after use	
Check the impact socket for: <ul style="list-style-type: none"> • Damage • Operation of the retaining clip 	Visual inspection	Check	Before/after use	
Check the reaction arm for: <ul style="list-style-type: none"> • Damage • Operation of the retaining ring 	Visual inspection	Check	Before/after use	

9.2 Service overview

Service work may only be performed by the manufacturer. Only allow Maschinenfabrik Wagner or bodies authorised by Maschinenfabrik Wagner to install, readjust, modify, expand and repair the tool.



Attention!

Throughout the useful life of the machine, it is necessary to perform a variety of service operations. The service intervals need to be shortened if the machine is used in particularly harsh and demanding work environments. The following service intervals must be observed depending on the conditions of use

(see also ch. 9.1 Maintenance overview):

Every 3 months:

- In extreme usage conditions
- If application frequency is high / multi-shift operation
- If used continuously for work in the upper torque range (level 66 - 99)
- if used for soft bolting applications

Every 6 months:

- In normal usage conditions
- If application frequency is medium
- If used for work in the medium torque range (level 33 - 65)

Every 12 months:

If application frequency is low

- If used for work in the low torque range (level 00 - 32)

Service schedule			
Component / service	Type of check	Process	Comment
Tool	Visual inspection	Damage Pictograms avail.	
Electric. Drive	Service drive	Check Software update	
Gearbox	Service gearbox	Check Service lubrication	
Tool	Check of electrical system	Check according to DGVU regulation 3	
Tool	Recalibration	Calculation of the characteristic curve	Preparation of the torque table / factory certificate
Accessories	Visual inspection / function check	Damage Pictograms avail. Check	

9.3 Spare and wear parts

All spare parts used must correspond to the technical requirements stipulated by us. This requirement is satisfied by the use of original spare parts. We only grant a warranty on the original spare parts we supply. The installation and/or use of spare parts not supplied by us may have a negative impact on the specified design properties, thereby impairing active and/or passive safety. We do not assume any liability and warranty for any damage that can be attributed to the use of spare parts / accessories other than those supplied by us.

We require the following information to process your order in an efficient and expedient manner:

1. Client
2. Serial number of the device
3. Designation of the desired spare part
4. Desired units
5. Desired shipping method

Refer to chapter 1 "Identification" for our address

10 Disposal

<p>All materials used need to be disposed of in a safe and environmentally compatible way. Observe all applicable national regulations!</p>	 Attention!
<p>The device must not be disposed of with regular household waste as specified in the WEEE directive (Waste Electrical and Electronic Equipment Directive, 2002/97/EC) and national laws.</p>	 Attention!
<p>Dispose of this product at an authorised waste collection facility. Return the product if, for instance, purchasing a similar product or take it to a waste collection facility that is authorised to recycle waste electrical and electronic equipment.</p>	 Attention!
<p>Turn to your local administration office, your public waste disposal authority, a facility that is authorised to dispose of waste electrical and electronic equipment or your waste management company.</p>	 Attention!