



EAF

Operation and Maintenance Manual

Battery powered torque multiplier

Operating and service manual

Preamble

Congratulations on your purchase of an *alkitronic*[®] *EAF*, our battery powered torque multiplier. You have acquired a superior quality product setting international standards and meeting highest safety requirements. To ensure continued compliance with these requirements the device needs to be maintained and serviced regularly. We therefore suggest that you read these operating and service instructions carefully and observe the following:

The *alkitronic*[®] *EAF* including the battery charger station supplied may only be serviced and repaired by alki TECHNIK GmbH staff or personnel trained by alki TECHNIK GmbH, or by employees of a certified partner company.

In case of improper maintenance or operation there will be health hazards or material damages to the devices imminent. In such a case the warranty will be rendered null and void.

This operating and service manual contains basic information to be observed during operation and maintenance. The operating personnel is required to read these before any operation or maintenance. The manual must be available and accessible at the location of the *alkitronic*[®] tools/ devices. This operating and maintenance manual refers exclusively to the *alkitronic*[®] *EAF* torque multiplier and wrench, *alkitronic*[®] Li-Ion battery packs and the *alkitronic*[®] charger station.

Please observe not only the general safety notices and warnings listed in this section "Identification of Notices", but also all generally applicable regulations, directives and warnings.

Identification of Notices



Safety notices for the prevention of hazards to life and limb of persons.



Safety notices for the prevention of damages to *alkitronic*[®] tools, devices, their functions and the environment.



Notices regarding the proper and safe operation.



Advice to make work easier.

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alkitronic® battery powered torque multiplier

A Incoming inspection and packaging

Delivery scope:

alkitronic® EAF battery powered torque multiplier, 2 x high performance Li-ion rechargeable battery packs, alkitronic® charger station



IMPORTANT!

All parts must be visually inspected for possible transport damages. If any such damage is identified, please notify the shipping agent immediately. All returns must be in the original packaging to prevent damages to the alkitronic® tools/devices. Always retain packaging for future use.

B General description

alkitronic® EAF torque multipliers are continuously rotating power tools. Nuts/bolts are tightened or loosened with a high torque and when a set value or required final torque value is reached, the machine is switched off. The device is driven with a maintenance-free, low-wear brushless synchronous motor, a wide torque range and high assembly speed.

B 1 Model description

alkitronic® EAF are dual gear torque multipliers with rechargeable batteries and integrated, fully-automatic release function. This function enables a fast, secure "run free" of the reaction arm (DMA) and also relieves stresses within the multiplier.

Torque range*: 130 Nm to 6,000 Nm / 95 ft.lbs to 4,430 ft.lbs.

A constant torque precision and exact shut-off torque are also ensured at low battery charging levels. There is a simple and quick switching from the fast gear for run down to the power gear for reaching the shut-off torque. Each gear has eleven torque values to choose from.



High performance Li-Ion rechargeable battery pack



A full charge of the battery pack ensures approx. 180 boltings in a row (model EAF2/150*). With the second battery pack included, the number of boltings can be doubled without interruption. Smart electronics prevent a depth discharge of the cells. The charging level can be checked any time directly on the battery pack.

*) See also **Technical Data** page 12 / page 13

alkitronic® charger station



Intelligent battery charging technology ensures rapid charging. The overload protection and the cooling function provide for a long battery life.

* all torque values depending on model (see pos. 10 Techn. Data)

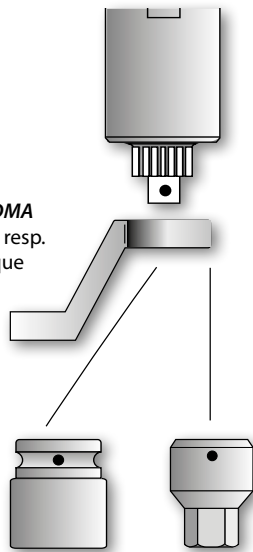


alkitronic® accessories

For each case original accessories

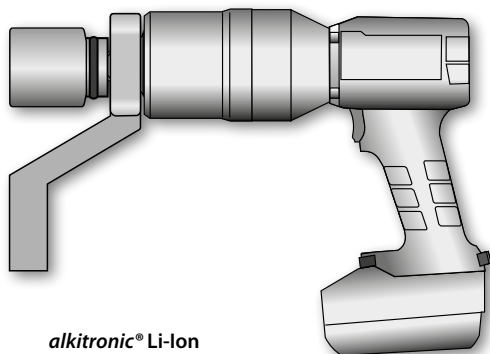
alkitronic® accessories
for torque wrenches and torque
multipliers with axial drive

alkitronic® DMA
Support arm resp.
reaction torque
absorber



alkitronic® STACO
Standard socket

alkitronic® STABI
Standard connector



alkitronic® Li-Ion
rechargeable battery packs

1. Technical Data alkitronic® EAF & accessories

alkitronic® Li-Ion rechargeable battery pack

Voltage 18 V, 5,2 Ah, charging time approx. 100 min.

Optimum storage temperature 10° - 30°.

More powerful battery packs are also available as an option.

alkitronic® charger station

220-240 V / 50-60 Hz / 65 W

output 12-42 V --- / 3,0 A max

(optional 110 V / 50 Hz)

2. Safety instructions

2.1 Intended use

The **alkitronic® EAF** has been designed for continuous tightening and loosening of heavy duty nuts and bolts. The power supply must be only through **alkitronic® Li-Ion rechargeable battery packs**. Other types of rechargeable batteries may cause fires or physical injury. The **alkitronic® charger station** has been dimensioned exclusively for charging **alkitronic® Li-Ion rechargeable battery packs**.

Any other use is considered improper, any damages resulting from improper use are the responsibility of the user.

2.2 Operators responsibilities

The user is obliged to read the operating and maintenance instructions before using or servicing the device. The device must only be used by persons aware of the purpose, the consequences of their action and the precise usage of the device. Users must not be under the influence of intoxicating substances, e.g. drugs, alcohol, medication.

For further information on the safety measures and applications please contact your **alkitronic® partner**.



Incorrect or improper use, operation by unqualified personnel can result in severe physical injury and material damage.



The user is responsible for any third parties accessing the work zone.



alkitronic® EAF and **alkitronic® charger station** must not be used in areas with an explosion hazard rating. Always observe the locally applicable and relevant safety instructions



Independent modifications or changes on the product are not permissible.

alkitronic® battery powered torque multiplier

2.3 Hazard notices



In case of mechanical or electrical damages to the **alkitronic® EAF**, Li-Ion rechargeable battery pack or the **alkitronic® charger station**, the use of the specific device must be interrupted immediately. The damaged unit must be inspected mechanical or electrical damages and safety. Any defects must be repaired by qualified personnel and before renewed use.

Before repairing mechanical or electrical components or devices always disconnect the rechargeable power pack and the mains power supply from the power supply to the power tool.



Protect rechargeable battery packs (1) against damp and wetness and do not subject to open fire!



Do not use deformed or defective battery packs! Do not attempt to open battery packs! Do not touch or short battery pack contacts! Keep away from small metal objects that could cause an electrical short between contacts; a short circuit can cause fire and physical injury through burns.



A slightly acidic and flammable liquid may seep out of defective Li-Ion rechargeable batteries!



If the battery liquid comes into contact with human skin immediately rinse with plenty of water. If battery liquid comes into contact a human eye immediately rinse and wash with plenty of water and consult a physician!



Do not attempt to charge non-rechargeable batteries. Explosion risk!
Do not recharge fully charged batteries!



Do not use the charger station out of doors. Protect the charger station against dampness and wet!



Keep children away from the charger station and the work area!

In case of smoke or fire from the charger station immediately pull out the electric mains supply plug!

Do not insert objects in the ventilation slots of the charger station - risk of electric shock or short circuit!

3. Operating the **alkitronic®** charger station



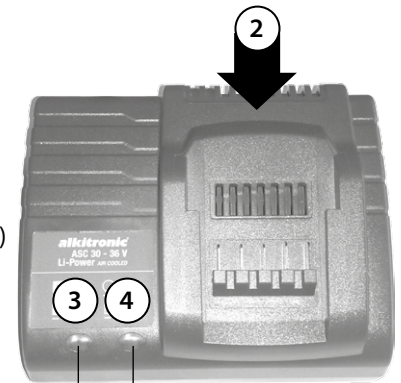
The charger station must only be used if the mains electrical supply matches the voltage and frequency specifications on the type label of the station. The charger station is an electrical device creating a direct current which can trip simple residual current circuit breakers (RCCB). Use type F or better, with a trigger current of no more than 30 mA.



Before using the charger station make sure that the ventilation slots are not covered or blocked. The minimum distance to other objects should at least 5 cm!

3.1 Self-test

Plug the main plug into a suitable outlet. The warning indicator (4) and the operation indicator (3) will light up in sequence for approx. 1 second; the built-in fan will run for approx. 5 seconds.



Operation indicator Warning indicator

3.2 Starting

Charging: push rechargeable battery pack (1) completely onto the seat (2). The operating indicator will start to flash



To check the charging level of the battery pack first remove the pack from the charger and then push the button on the battery pack.

Trickle charging: If the battery pack is fully charged the charger station will switch automatically to trickle charging. The battery pack can be left in the charger and ready for use any time. The operating indicator (3) will remain lit



Fault: The warning indicator (4) is lit permanently; the battery pack is not charged. This is due to the temperature being too high or too low. Once the battery pack temperature is between 0°C and 50°C charging is started automatically.



If the warning indicator (4) flashes check for correct seat of the battery pack, or the battery pack is defective. Immediately remove the battery pack from the charger.



4. Operation *alkitronic*® EAF

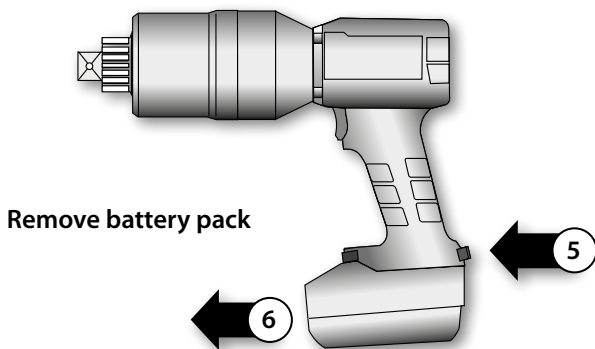


The *alkitronic*® EAF must not be damp or wet, neither operated nor stored in moist or humid environment. Always provide rain protection. Before first use always fully charge the battery pack. Before any later use always check the charge status of the battery pack and recharge, also in case of power decrease.

4.1 Starting

4.1.1 *alkitronic*® Li-Ion battery pack

Remove / charge / insert or change



Remove battery pack

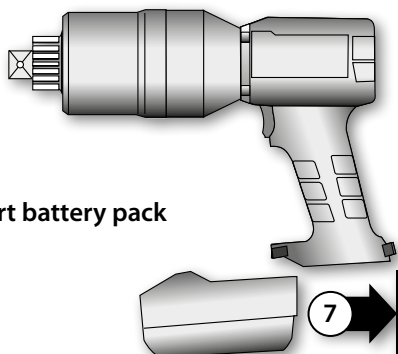
Push safety catch (5), pull battery pack to the front (6).

Charge battery pack

Push the battery pack completely onto the seat of the charger.



Insert battery pack

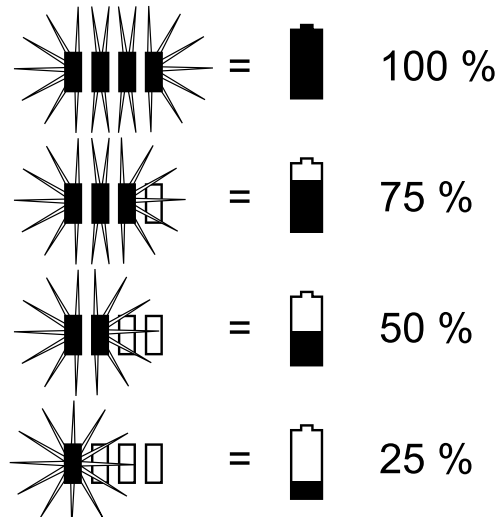
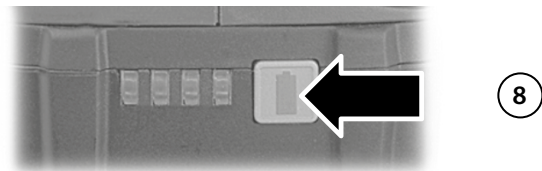


Push the battery pack into the battery seat of the power tool all the way (7) until the safety catch locks audibly.

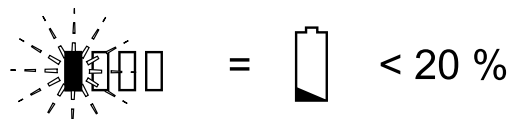
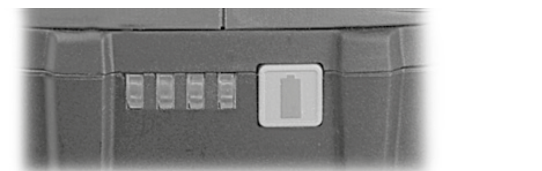
4.1.2 Battery pack, capacity and signal display*



Push button (8) on the battery pack and check the charge status. If the battery pack is almost empty it must be recharged! Replace the battery pack on the power tool.



If one of the LEDs flashes the battery pack is almost empty. The electronic circuitry protects the battery pack against damage due to complete discharge. Replace battery pack on the power tool. Recharge battery pack!



* The charge status indicators are approximate and may be slightly different depending on the battery pack type.

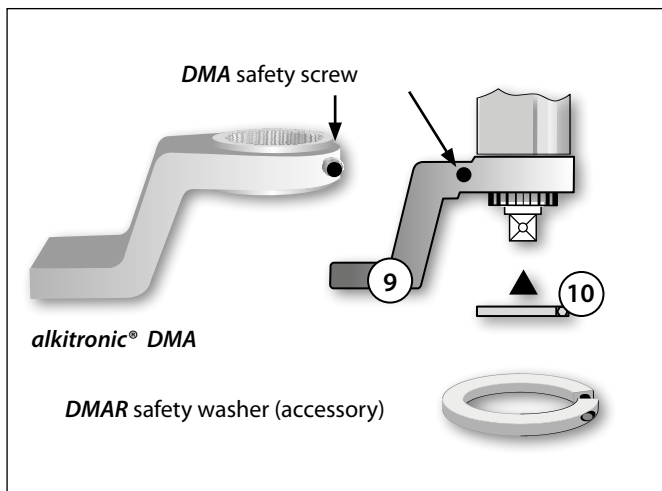
4.2 Preparing for work with the power tool



Before preparing the power tool for work remove the **alkitronic® Li-Ion battery pack** from the tool.

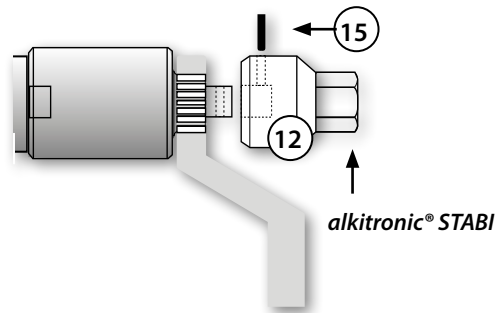
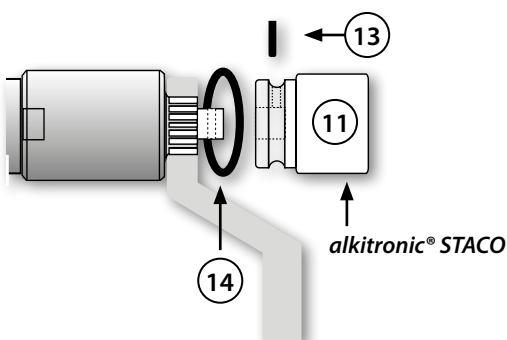
Depending on the specific job various **alkitronic® STACO/STABI/DMA** or special adapters for tightening and loosening of bolted connections are needed.

- Place the **alkitronic® EAF** on a flat surface.
- If the **DMA** (reaction torque absorber) is fitted with a safety screw, completely remove this screw (the position of this screw varies between the tool types).
- Push the **DMA** (9) onto the gear cogs (10).
- Tighten the safety screw completely to secure the **DMA**.



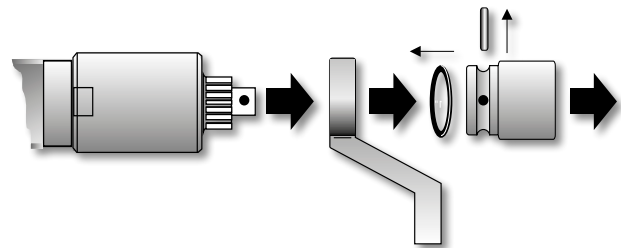
For **DMA**s without safety lock a safety washer is available as an accessory. This washer prevents a loosening of the **DMA** and can be pushed over the gear cogs and screwed tight.

- Push the **STACO / STABI** (11)/(12) onto the square drive (bore holes of the adapter and of the square must be aligned).
- Insert safety pin (13), secure with rubber ring (14) or completely tighten **STABI** safety screw (15).



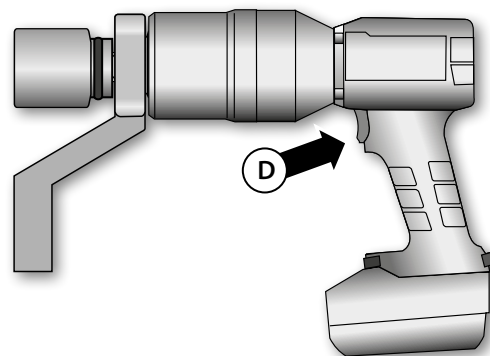
Replacing accessories

Follow steps in the opposite direction.



5. Electric operation

5.1 Switching on / off



Switching on: Push and hold button (D). The electronic control system will ensure a soft start.

Switching off: Release button (D).

Note: The noise that will be emitted during starting is due to the construction of the tool and has no influence on the function or longevity of the machine.

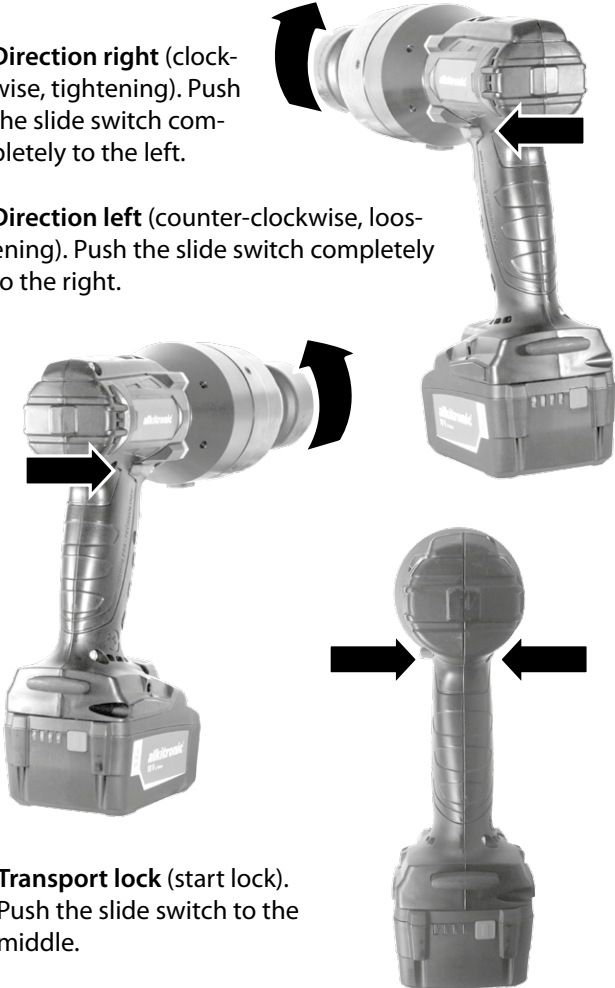


Never block the rocker switch, this would make proper operation impossible.

5.2 Direction of rotation, transport lock

Direction right (clockwise, tightening). Push the slide switch completely to the left.

Direction left (counter-clockwise, loosening). Push the slide switch completely to the right.



Transport lock (start lock). Push the slide switch to the middle.

5.3 Gear change Type EAF (rapid mode / power mode)



Do not shift to 1st or 2nd gear during operation, otherwise the changeover gear will be damaged.



NOTE!

In order to optimize the bolt-cycling it is recommended to start in gear 2 (fast) and then, depending on the required torque switch to gear 1 (power gear) until the stopping point. See also pos. 5.4 Setting the stopping torque.

Gear 2 ← **Gear 1**



5.4 Setting the shut-off torque

Setting the torque is done by means of the torque table on the **alkitronic® EAF** or according to the Calibration certificate included.



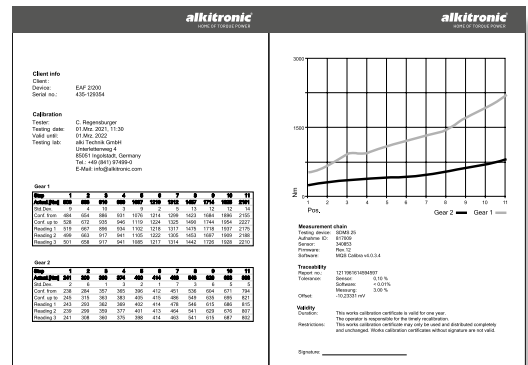
NOTE!

The machine-specific torque values are compiled and documented by the alki TECHNIK calibration lab and are enclosed with these operating and maintenance instructions.

Pos.	Gang 2	1
1	90	300
2	110	360
3	125	420
4	145	480
5	160	540
6	180	600
7	200	660
8	215	720
9	235	780
10	250	840
11	270	900

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Torque table



Calibration certificate (sample)

In the torque table each position number is assigned a respective torque. The shut-off torque is set by means of the setting wheel (SR) using the position number (1-11) (Fig. 1). Position 12 is not calibrated.

- The selection of the shut-off torque is done by means of the setting wheel, with 11 settings per gear (values 1-11 according to torque table).
- Position number 12 cannot be selected.



CAUTION!

Position 12 on the setting wheel (Fig. 1) is not calibrated and must not be used.

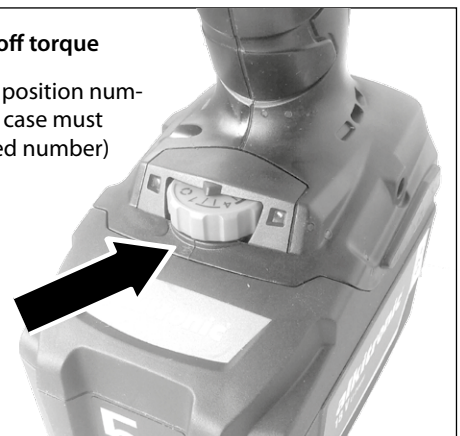
When the set torque value has been reached the tool will switch off precisely and an acoustic signal (beep) is sounded.

Preselection shut-off torque

Setting wheel with position numbers (arrow on tool case must point to the required number)

SR

Fig. 1



6. Mechanical operation

6.1 Safety instructions for tightening and loosening



CAUTION!

Always observe local regulations and directives when starting the tool. Always inspect power tool as to its function and safety condition – never work with damaged tools or objects!

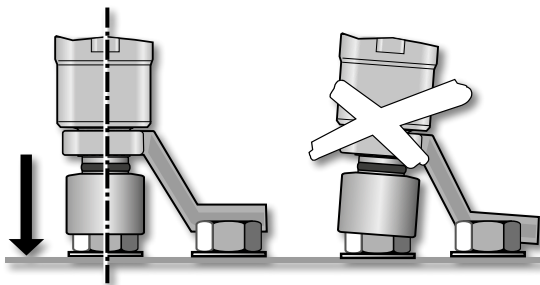


DANGER!

Beware of freely rotating accessories (*alkitronic® DMA / STACO / STABI*). Loose garments, long hair, cables etc. must be kept outside the danger zone / rotation range.

The *alkitronic® EAF* torque multiplier must never be operated without supervision. An immediate stopping must be possible at all times. Observe safety distances.

6.1.1 Tightening and loosening



IMPORTANT!

Always place the *STACO/STABI* completely and safely on the bolt/nut. The support of the *DMA* to absorb the reaction torque must always be safe and stable. Please consult your *alkitronic® partner* for customized *DMA* solutions.



CAUTION!

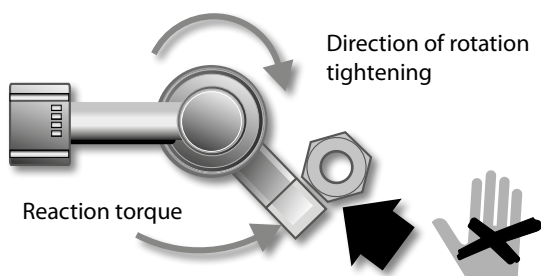
An incomplete or incorrect connection or support will lead to the following when bolting:

- Possible overload fractures of the *STACO/STABI* gear and even drive square
- Incorrect torque application
- Contusions or severe injuries caused by spun off parts or splinters.

- An improper usage may also render all warranties null and void.

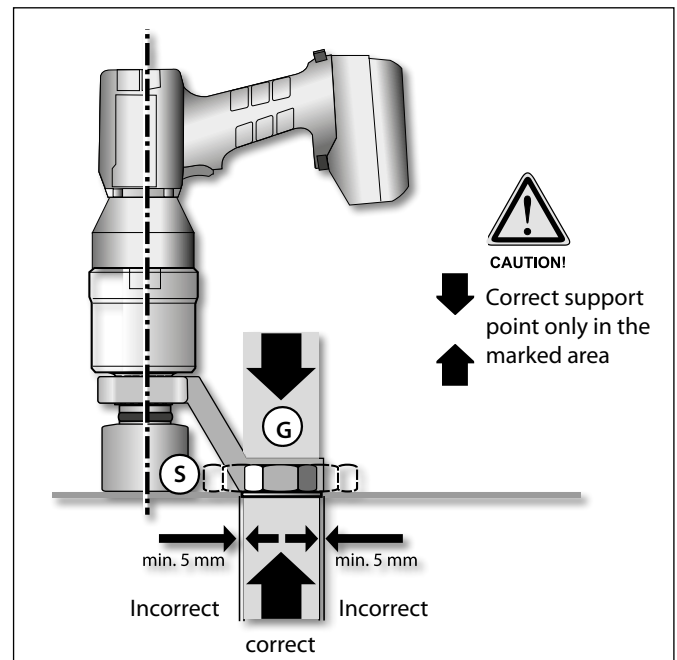


DANGER!



DANGER!

Never reach between *DMA* and support point. High risk of injuries (contusion)!



CAUTION!

- Correct support point only in the marked area

Work steps

- Place *alkitronic® EAF* with *STACO / STABI* onto the bolt / nut.
- The *DMA* must absorb the reaction torque on the level of the *STACO / STABI* (S); a stable abutment (G) must be provided.
- Always hold the torque multiplier perpendicular over the bolt axis.
- Start bolting action.
- The tool will stop as soon as the set shut-off torque or entered value has been reached.



CAUTION!

Do not retighten bolts/nuts! Because the pre-set torque is exceeded and it can lead to damage to the torque multiplier or to the screw / threaded bolt.

***alkitronic® EAF* model - before moving to the next bolt / nut:** Various torque multipliers from other manufacturers cannot be removed from the bolt joint (torsional force).



NOTE!

No problem for the *alkitronic® EAF* model, with integrated, fully-automatic release function. This function enables a fast, secure "run free" of the reaction arm (*DMA*) and also relieves torsional stresses within the multiplier.

- Switch off motor
- Remove machine, place on next bolt/nut
- Start bolting process

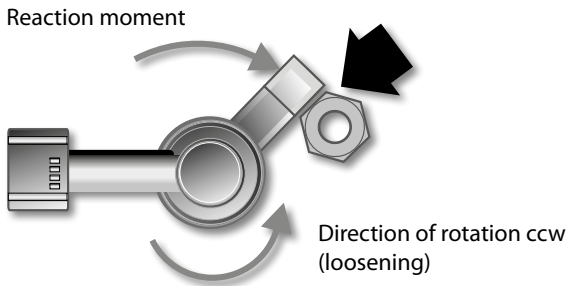
For Information:

When loosening the bolted connection, up to 20% higher torque (loosening torque) may be required.

Loosening the bolted joint

In principle, measures and operating behavior are largely identical to those for tightening, e.g. ensure a stable counter-mount and correct reaction point; keep the torque multiplier in axis line to the bolt, etc.

When loosening, however, up to 20% higher torque (loosening torque) may be required.



CAUTION!

If the torque multiplier cannot loosen the bolt joint and it switches off automatically for safety reasons - **do not press the pushbutton again.**

The torque can build up disproportionately and cause damage to the gear unit!

If the bolt/nut cannot be opened with the preset torque, interrupt the loosening process!

Change the direction of rotation and start the torque multiplier briefly to relieve torsional stresses in the torque multiplier. Then set the next higher torque at the setting wheel. Set the torque multiplier to the ccw direction of rotation and start the loosening process again.

If the torque is not sufficient to loosen the bolt/nut even at level 11 (see setting wheel, Fig. 1, page 8), switch to a stronger *alkitronic*® product.

7. Function and operation test

7.1 Visual and mechanical inspection



IMPORTANT!

Battery packs, charger station, operating and display elements, case and accessories, such as e.g. the torque brace *DMA* must be regularly inspected for damages and must be replaced professionally if necessary.



CAUTION!

Keep ventilation opening unobstructed. Soiled or blocked ventilation openings can cause malfunction and damage to the motor.



CAUTION!

In case of reduced power, strong gear noise or obvious severe damage an immediate repair is necessary. Please send all devices to be repaired in their original packaging to your nearest *alkitronic*® partner or to *alki TECHNIK GmbH*.

8. Servicing / storage / maintenance

8.1 Replacing accessories

See 4.2 Preparation for bolting

8.2 Storage in lockable containers



CAUTION!

Store *alkitronic*® EAF and the charger station in a dry and cooled off state in the original case, or any other closable container. Heat and damp lead to oxidation of the gear and other components inside the case. The consequences are malfunctioning, damages to the electronic circuitry and motor. Ensure that also during storage the power cable of charger station is not squeezed in anywhere or damaged in any way.

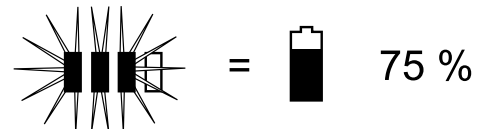
Notes for the *alkitronic*® Li-Ion rechargeable battery pack



CAUTION!

Always remove the battery pack from the power tool when not in use. Do not touch or short the contacts! Although the electronic circuitry will protect the battery packs against complete discharging, a long life is best ensured by maintaining a sufficient charge in the battery pack.

LED display on the battery pack



IMPORTANT!

In order to maintain the battery pack in a fully charged a trickle charge of about 70 to 75% is required (see illustration above).

8.3. Decommissioning



IMPORTANT!

If the *alkitronic*® tools and devices are not used over an extended period of time they should be cleaned and stored in a dry and closable space not accessible to children. The optimum storage temperature is between 10° and 30°C. Rotating components must be protected against oxidation (see pos. 8.2).

8.4 Service and maintenance



IMPORTANT!

The *alkitronic*® EAF torque multiplier is an extremely powerful and robust product. To ensure a long life and reliability over many years the machine must be serviced in regular intervals (performance check, motor check, safety inspection, calibration service).

Service intervals


The power tool must be inspected at least once per year. In case of high usage or strain as well as many operating hours servicing and calibration will be necessary more frequently. In case of unusual gear

noises a lubrication of the gears is urgently recommended to prevent subsequent damages.

alkitronic® EAF torque multipliers must always be packed in the original packaging when sent to your **alkitronic®** partner or **alki TECHNIK** GmbH.

9. Technical notes

9.1 Safety shut-off general

 In order to prevent faulty boltings and / or damages to the power tool the **alkitronic® EAF** torque multiplier is fitted with a multi-functional monitoring system.

If the machine switches itself off then the electronic system has activated the self-protection mode. There is an acoustic warning (30 second tone or until the push button (D) is released) (Fig. 3).



9.2 Causes and problem solving

Battery pack almost empty


The electronic system protects the battery pack against complete discharging.

If the LED display (L, Fig.4) flashes the battery pack is almost empty. If necessary, press the button on the battery pack (8, Fig. 4) to check the charge state, and iff the battery pack is almost empty it must be recharged.

See also pos. 4.1.2 Battery pack, displays

Excessive temperature

Overheating of the power tool over an extended period of time will result in the temperature switch-off. The tool or the battery pack must be cooled down.

 If the battery pack is very warm to the touch it is recommended to cool it in the charger station. The motor will cool down quicker in the idle mode.

Excessive current increase

The power tool was switched off automatically.

If the current increase is quick (such as when, e.g. there is a sudden blockage or seizing) the tool is switched off. Switch off the power tool on the push button (D, Fig.3). Then restart and continue working normally. Prevent further blockages.

10. Noise level and vibration

Permanent noise level measured at maximum idle speed:

Model **alkitronic® EAF** : 76 dB(A)

Measurement of noise emissions at various working cycles. Distance of the sound sensor 1 m from the geometric centre of the power tool.

Vibration: medium until just before reaching the preselected torque.

11. Environmental protection

Do not immerse battery packs in water.




Protect the environment and do not dispose of electrical power tools and battery packs in normal household waste. Observe national regulations regarding recycling separation of unusable machinery, accessories and packaging. Secure the contacts against shorts (e.g. cover with PTFE).

12. EEC Declaration of Conformity

according to the EEC Machinery Directive 2006/42/EG Annex II A

On our own responsibility we hereby declare alki Technik GmbH that the **alkitronic®** battery driven torque multipliers identified by Type EAF and Serial Number (e.g. YOM* 2021: 129.... or YOM* 2022: 229....) meet all relevant requirements of directives:

 2006/42/EG, 2011/65/EU, 2004/108/EG (EMC Guideline), DIN EN 62841-2-2:2015-05, Part 2-2: Particular requirements for hand-held screwdrivers and impact wrenches (IEC 62841-2-2:2014, modified)

2021-01



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Techn. documents at alki Technik GmbH, Unterlettenweg 4, 85051 Ingolstadt / Germany.

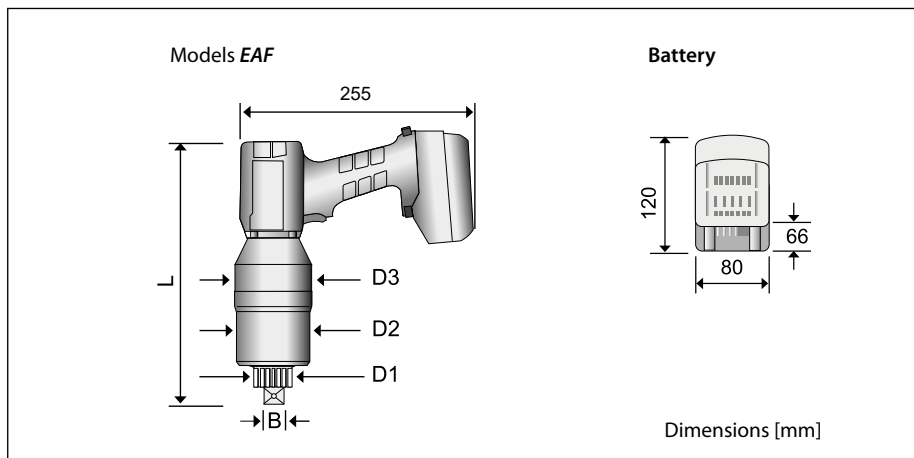
*) YOM Year of Manufacture

13. Annex

- Technical Data, Pages 12-13
- Notes, Pages 14-15
- Calibration certificate with machine-specific torque values (attachment)

Operating and service manual

Technical Data

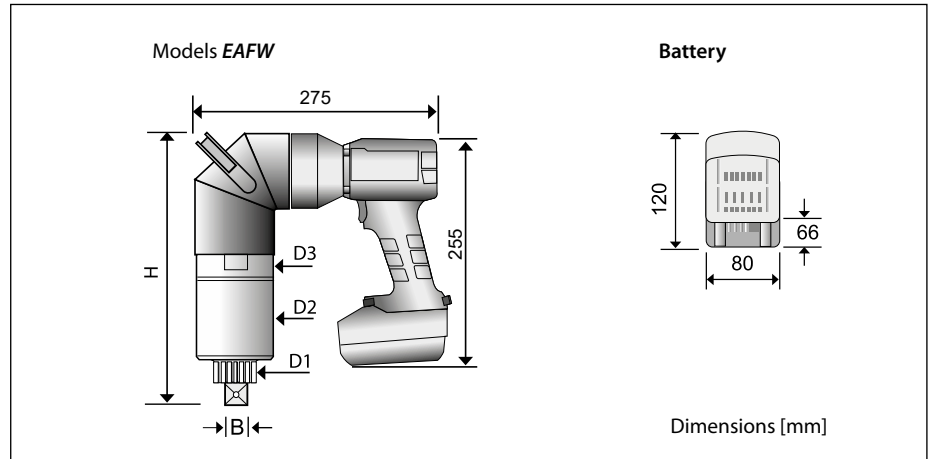


Type EAF		EAF2 / 80	EAF2 / 150	EAF2 / 280	EAF2 / 300	EAF2 / 400	EAF2 / 600
Torque range (approx.) *	Nm	130-850	220-1400	300-2800	320-3200	380-4100	500-6000
	ft.lbs	95-625	160-1035	220-2065	235-2360	280-3025	370-4430
Square drive	B	3/4"	3/4"	1"	1"	1 1/2"	1 1/2"
Diameter (approx.)	D ₁ mm	41	41	54	72	72	72
Diameter (approx.)	D ₂ mm	85	85	85	93	93	109
Diameter (approx.)	D ₃ mm	88	88	88	97	97	109
Length (approx.)	L mm	295	295	350	370	370	380
Weight without DMA** (approx.)	kg	5,6	5,6	7,5	7,5	9,2	9,0
Idle speed Gear 1	U/min	8,0	4,0	1,8	1,5	1,5	0,8
Idle speed Gear 2	U/min	26,0	14,0	6,5	6,0	5,4	3,0

*) When loosening a bolted connection, up to 20% higher torque may be required (loosening torque). We will gladly advise you in detail.

**) Torque reaction arm

alkitronic® battery powered torque multiplier



Type EAFW		EAFW2 / 280	EAFW2 / 300	EAFW2 / 400	EAFW2 / 600
Torque range (approx.) *	Nm	300-2800	320-3200	380-4100	500-6000
	ft.lbs	220-2065	235-2360	280-3025	370-4430
Square drive	B	1"	1"	1 1/2"	1 1/2"
Diameter (approx.)	D ₁ mm	54	72	72	72
Diameter (approx.)	D ₂ mm	85	93	93	109
Diameter (approx.)	D ₃ mm	88	97	97	109
Height (approx.)	H mm	305	310	320	330
Weight without DMA** (approx.)	kg	9,5	9,5	11,2	11,0
Idle speed Gear 1	U/min	1,7	1,5	1,0	0,8
Idle speed Gear 2	U/min	6,0	5,0	4,0	3,0

*) When loosening a bolted connection, up to 20% higher torque may be required (loosening torque). We will gladly advise you in detail.

**) Torque reaction arm

Notes

YOUR PLUS FOR MORE PERFORMANCE

Increased quality

Premium production
Highest quality materials
Long product life cycles
Since 1984 experience in bolting technology
Made in Germany – international patents

Increased precision

Precise, customer-specific torques
High repeatability
Reliability in permanent operation
Documentation of tightening results
Automatic shut-off

Increased productivity

Quicker tightening without reworking
No environmentally caused failures (IP54, ATEX)
High work safety
Easy to use: clear, simple instructions
Low maintenance and cost efficient

Better service

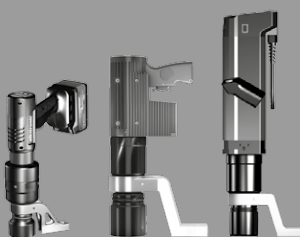
Technical advice on site
Training offers
Manufacturer's calibration and certification
Lifecycle support
Spare part and repair service

alki TECHNIK GmbH

Development, Production and Distribution of Bolting Systems

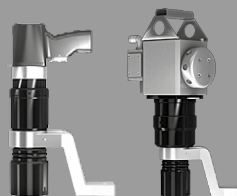
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EXTRACT FROM OUR PRODUCT RANGE



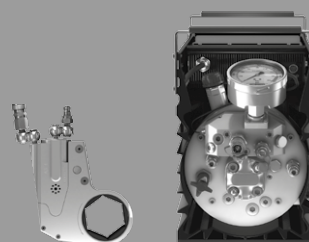
alkitronic X^E-SERIES

THE ELECTRICS



alkitronic X^P-SERIES

THE PNEUMATICS



alkitronic X^H-SERIES

THE HYDRAULICS



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THE MANUALS