



**Bolting solutions
for cranes**

What can you expect

- Crane assembly challenges
- Our solutions for your bolting needs
- Different crane systems / crane types
- The alkitronic® product portfolio for crane assembly
- alkitronic® electric torque multipliers
- alkitronic® hydraulic torque multipliers
- alkitronic® hydraulic pumps
- alkitronic® battery-driven torque multipliers
- Overview of applied crane bolting with alkitronic® torque multipliers
- Appendix

Crane assembly challenges

- Quick bolting needed!
- Exact torque must be achieved!
- Avoiding lengthy assembly times and thus high costs for you.
- Compliance with the highest safety standards for crane bolting.
- Extended crane service life in all weather conditions.
- Quick dismounting of rusted bolts!
- Significantly higher loosening forces are required than in ordinary bolting cases.
- Limited space

Heavy-duty bolting



Limited space



Quick disassembly



Our solutions for your bolting needs

alkitronic® advantages at a glance:

- ✓ User-friendly operation with angled design for confined spaces.
- ✓ Brushless synchronous motor ensures high repeat accuracy.
- ✓ Longer service life and thus lower maintenance costs.
- ✓ The torque multiplier switches off automatically after reaching the preset torque.
- ✓ No control effort required!
- ✓ Consistent torque accuracy across all international power grids from 110V to 253V/45-66Hz.

Easy handling



The EC-A for Liebherr - Special support



Optimum bolting quality



Our solutions for your bolting needs

Additional alkitronic® Features:

- ✓ Powerful torque multipliers that work reliably and are virtually indestructible.
- ✓ Our electric multipliers can be used on all gensets worldwide, with no height-related voltage drop (100 -253 V/ 45-66 Hz).
- ✓ Uniform bolting achieved by elevated multiplier repeat accuracy.
- ✓ Minimal reaction forces on the operator.

All-weather display



Built for heavy-duty construction site use



Safe operation



Crane systems/types

Our primary expertise covers crane systems from Liebherr, Terex, SAEZ and AMS on rotating tower cranes with 2 or 4 bolting on the outside of the respective tower segments.

It is important to note that these are tower segments on rotating tower cranes, and we only work with bolted but not pinned tower segments!

LIEBHERR

Crane types

Bolted tower segments:

71 EC
120/132 HC
140/154 HC
16 HC 175
170 HC/ 17 HC 200
256/290 HC/ 21 HC 290

Bolted swivel platforms:

355/390 HC
24 HC 420
500/550 HC
24 HC 630
1000 HC
1250 HC
3150 HC
4000 HC

TEREX

Crane types

Bolted tower segments:

TS 23
TS 212
TS 211
TS 21
TS 16
TS 14
TS12

SAEZ

Crane types

Bolted tower segments:

S 41 S41-46-50-52
S 41-46-50-52
S 41-46-50-52-65

AMS

Crane types

Bolted tower segments:

M20/18
M20/22
M15/54
M20/26

Our alkitronic® product portfolio for crane assembly

alkitronic® XE-SERIES

Electric torque multipliers



alkitronic® XE-SERIES

Battery-driven torque multipliers



Our alkitronic® product portfolio for crane assembly

alkitronic® X^H-SERIES

Hydraulic torque multipliers

alkitronic® AX



alkitronic® AT



Norwolf X-Driver



alkitronic® X^H-SERIES

Hydraulic pumps

alkitronic® Velox



alkitronic® Nova



alkitronic® electric torque multipliers

Advantages:

- ✓ Quick and safe bolting.
- ✓ Menu-guided intuitive operation, with control and warning messages.
- ✓ Intelligent, processor-controlled shut-off electronics.
- ✓ Robust motor housing made of closed aluminium profiles.
- ✓ Holding handles can be mounted at several fastening points as required.

High repeat accuracy



OLED anti-glare display



EF-A: Angled version



alkitronic® electric torque multipliers

Advantages:

- ✓ The automatic switch-off feature ensures torque precision.
- ✓ Automatic free rotation function. The free rotation angle is fully adjustable.
- ✓ Repeat accuracy of $\pm 2\%$.
- ✓ High torque multiplier assembly speed achieved by continuous rotation!
- ✓ Greatly minimised risk of failure of our torque multipliers!
- ✓ Models with an IP54 rating are protected against moisture, dust and even rain!
- ✓ All international power grids (100–253V/45–66Hz) with consistent torque accuracy.

Simple and ergonomic operation



Flexible use in any environment



Short assembly time



alkitronic® hydraulic torque multipliers

Advantages:

- ✓ Extremely flat design ensures flexible torque multiplier use even in confined spaces!
- ✓ Flush support of the drive part and hexagonal head.
- ✓ Safe and accurate bolting in confined or hard-to-reach bolting situations.
- ✓ The precision-fit support achieves the desired torque precisely, regardless of sideloads.
- ✓ Quick and easy replacement of the hexagonal head.

Versatile



Easy assembly



Precision work



alkitronic® hydraulic pumps

Advantages:

- ✓ High pump operating speed!
- ✓ A quick set-up time ensures efficiency!
- ✓ Robust, compact design.
- ✓ Possible connection of up to four hydraulic torque multipliers.
- ✓ Simple automatic operation for all cylinder sizes without manual presetting.
- ✓ Housing design with optimised heat transfer.
- ✓ alkitronic® Nova: Supplied with "Multibox": It features eyelets and handles, and is certified for crane transport!

alkitronic® Nova



alkitronic® Multibox



alkitronic® Velox



alkitronic® battery-driven torque multipliers

Advantages:

- ✓ Powerful 18V 5.2Ah rechargeable battery.
- ✓ Spare battery included as standard.
- ✓ More powerful battery packs can be ordered on request.
- ✓ Ultra-fast charging: Fully charged in just 1h 45 min!
- ✓ Powered by a brushless motor!
- ✓ Precise and accurate torque achieved, even with a low battery charge.
- ✓ Efficient and failure-free bolting!
- ✓ Sturdy torque multiplier design.

alkitronic EAF



Powerful torque multiplier with angular gearbox



Brushless synchronous motor



LIEBHERR

Tower system (old name)	Bolting	Width across flats	Torque	Drive Type	alkitronic® Model	Support	Other accessories
71 EC	M 39 Grade 10.9	SW 60	3,040 Nm	Electric	EFCip 80 ECWip 80 EF-A 400 EAF 2/400 (Battery) EAFW2/400 (Battery)	DMA D72 Liebherr crane up to 5,000 Nm Item number: 11474 Alternative: Special support Liebherr/SAEZ Item number: 11418	1½" Staco SW 60 Item number: 31456
				Hydraulic	AX-4 SW 60 X-Driver with 4-A Drive 4 SW 60 AT-5	DMA AX 4 in combination with accessories Staco IN/OUT Short version Item number: 70343	Staco IN/OUT SW 60/60 1½" Staco SW 60 Item number: 31456 <u>Pumps:</u> Velox Nova

LIEBHERR

Tower system (old name)	Tower system (new name)	Bolting	Width across flats	Torque	Drive Type	alkitronic® Model	Support	Other accessories
120/132 HC 140/154 HC	16 HC 175	M 36 Grade 12.9	SW 55	2,900 Nm	Electric	EFCip 80 ECWip 80 EF-A 400 EAF 2/400 (Battery) EAFW 2/400 (Battery)	DMA D72 Liebherr crane up to 5,000 Nm Item number: 11474 Alternative: Special support Liebherr/SAEZ Item number: 11418	1½" Staco SW 55 L= 110 mm with phase Item number: 31455
					Hydraulic	AX-4 SW 55 X-Driver with 4-A Drive 4 SW 55 AT-5	DMA AX 4 in combination with accessories Staco IN/OUT Short version Item number: 70343	Staco IN/OUT SW 55/55 1½" Staco SW 55 Item number: 31455 <u>Pumps:</u> Velox Nova

LIEBHERR

Tower system (old name)	Tower system (new name)	Bolting	Width across flats	Torque	Drive Type	alkitronic® Model	Support	Other accessories
170 HC 256/290 HC	17 HC 200 21 HC 290	M 45 Grade 12.9	SW 70	5,830 Nm	Electric	EFCip 100 ECWip 100 EF-A 600 EAF 2/600 (Battery) EAFW 2/600 (Battery)	DMA D72 Liebherr crane up to 5,000 Nm Item number: 11476 Alternative: Special support Liebherr/SAEZ Item number: 11418	1½" Staco SW 70 L= 110 mm with phase Item number: 31408
					Hydraulic	AX-8 SW 70 X-Driver with 8- A Drive 8 SW 70 AT-5	DMA AX 8 in combination with accessories Staco IN/OUT Short version Item number: 70344	Staco IN/OUT SW 70/70 1½" Staco SW 70 Item number: 31408 <u>Pumps:</u> Velox Nova

LIEBHERR

Tower system (old name)	Tower system (new name)	Bolting	Width across flats	Torque	Drive Type	alkitronic® Model	Support	Other accessories
355/390 HC 500/550 HC 1000 HC 1250 HC	24 HC 420 24 HC 830 24 HC 1000 24 HC 1250	Taper pin 80 mm	SW 55	800 Nm	Electric	EFCip 30 (1") EAF 2/100 (1") (Battery)	Special support DMA 1000 Tower SW 55 Item number: 11487	Staco SL 110" SW 55 Item number: 31540
1000 HC 3150 HC 4000 HC		Taper pin 100 mm	SW 70				Special support DMA 1000 Tower SW 70 Item number: 11488	Staco SL 120" SW 70 Item number: 31543

TEREX

Tower system	Bolting	Width across flats	Torque	Drive Type	alkitronic® Model	Support
TS 23 TS 211 TS 212	M 72 x 6 x 210	SW 90	4,500 Nm	Electric	EFCip/ ECWip 100 EF-A 600 EAF 2/600 (Battery) EAFW2/600 (Battery) PG2/600	Square CTT Item number: 11398
TS 12 TS 14 TS 16 TS 21	M 48 Grade 10.9	SW 55	3,000 Nm			

SAEZ

Tower system	Bolting	Width across flats	Torque	Drive Type	alkitronic® Model	Support
S 41-46-50-52	M 39	SW 60	2,500 Nm	Electric	EF-A 400 EF-A 600 EAFW2/600 (Battery) EAF 2/600 (Battery)	SAEZ Special DMA Item number: 11418
S 41-46-50-2	M 41	SW 65	3,200 Nm			
S 41-46-50-52-65	M 44					

AMS – Kranbau

Tower system	Bolting	Width across flats	Torque	Drive Type	alkitronic® Model	Support
M20/18	M60	SW 80	4,000 Nm	Electric	EFCip/ ECWip 100 EF-A 600 EAF 2/600 (Battery) EAFW2/600 (Battery) PG2/600	Square CTT Item number: 11398
M20/22	M80	SW 100	6,000 Nm			
M15/54	M48	SW 60	2,000 Nm			
M 20/26	M100	SW 125	8,000 Nm	Hydraulic	AX-8 SW 125 Pump: NOVA, VELOX, LEVA	-

Appendix

We know that we work with products that require explanation, so sometimes just providing a lot of information is not enough. Please refer to the following appendix to learn more about the technical components of our torque multipliers:

They contain:

- All brochures of the recommended crane assembly torque multipliers.
- A catalogue with all suitable special supports and other accessories that you need for optimum on-site operation.

Please feel free to contact us if you have any questions.
We are happy to help!

www.alkitronic.com

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Article description	Support square CTT
Article number	11398-P1

Date	28.09.2021
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Applications

Tower crane e.g.: Manufacturer Comedil/Peiner up to max. 5.000Nm.

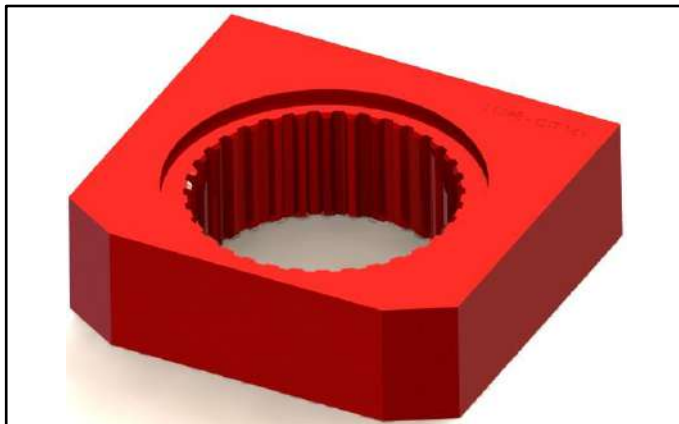
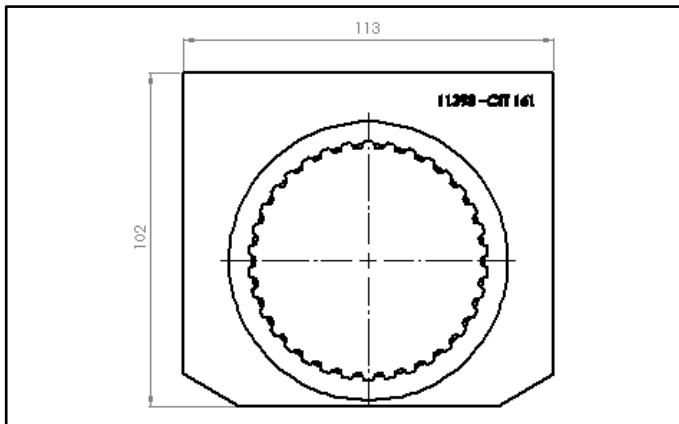
Peiner TS 19 - 8xM48, grade 10.9, SW 55, 3000 Nm. Comedil TS 12/16/21 - 8xM48, grade 10.9, SW 55, 3000 Nm.

Suitable alkitronic® torque multipliers

EFCip/ECWip 80/90/100

EF-S/EF-A 400/600

EAF/EAFW 2/400/600



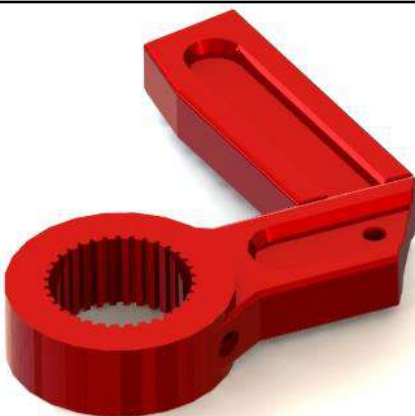
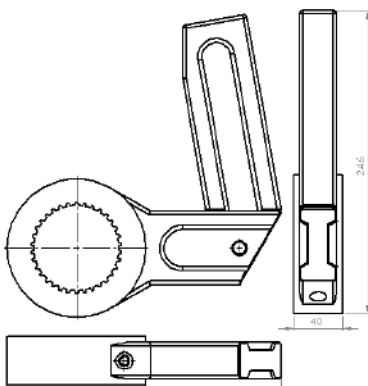
Article description	DMA Saez/Liebherr EC	Date	21.09.2021
Article number	11418-P1		

Applications

Tower crane e.g.: Liebherr EC M48 5800 Nm; Saez up to 6,500 Nm.

Suitable alkitronic® torque multipliers

EF-A 400/600
ECWip 80/90/100
EAF/EAFW 2/400/600



Article description	Liebherr DMA D72	Date	15.09.2021
Article number	11474		

Anwendungen

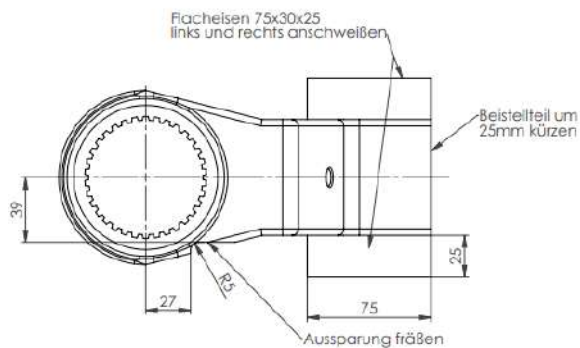
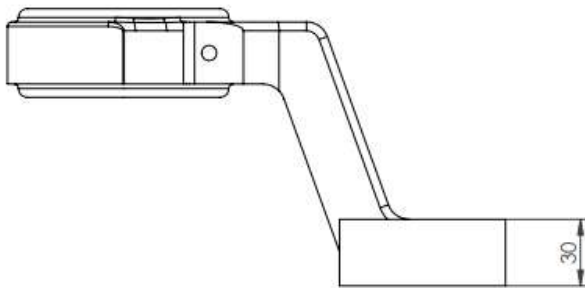
Liebherr tower crane, applications up to 5000 Nm

Suitable alkitronic® torque multipliers

ECWip 80/90

EF-A 400

EAF/EAFW 2/400/600



Article description	Liebherr DMA D72	Date	15.09.2021
Article number	11476		

Applications

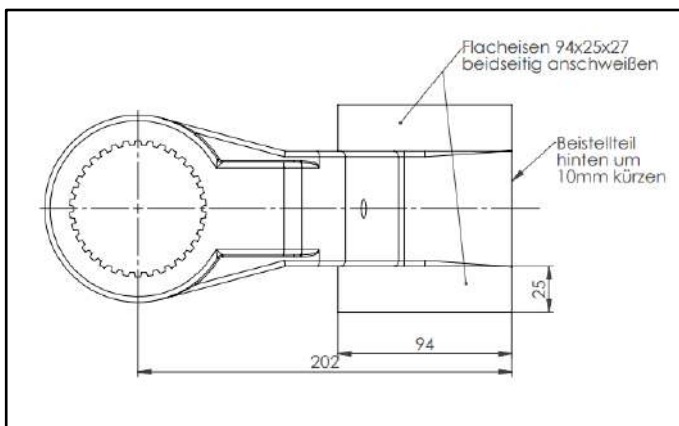
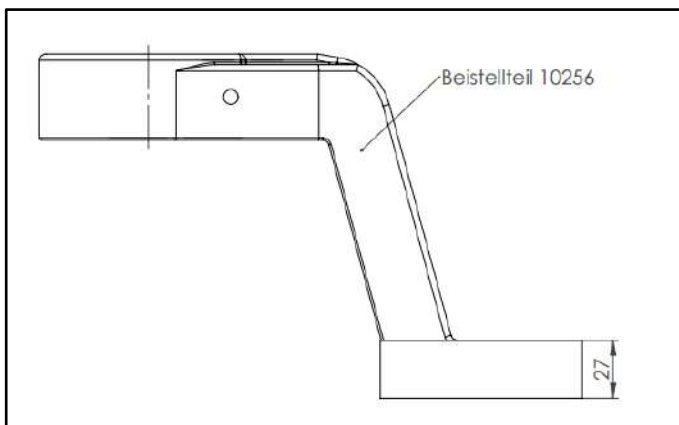
Liebherr tower crane, applications from 5000 Nm

Suitable alkitronic® torque multipliers

ECWip 100

EF-A 600

EAF/EAFW 2/600



Applications

- **alkitronic® EF-S** electrical torque multipliers for torques of 430 to 42,000 Nm (315 to 30,980 ft.lbs).
- **Consistent torque accuracy** on all international power supplies.
- **Precise shut-off torque** also operates with voltage-controlled portable generators.
- Models **alkitronic® EF-A** in angled design with high operating comfort in confined spaces for torques of 900 to 9,800 Nm (665 to 7,230 ft.lbs).

Advantages

- **Low running costs** due to maintenance-free, low-wear, brushless synchronous motor with excellent efficiency.
- **High motor speed:** Up to three times faster than conventional electrical torque multipliers.
- **Permanent higher joint quality** compared to ratchet torque tools by continuous rotation of the square drive.
- **Menu-guided intuitive operation**, with control and warning signals.
- **OLED-Display** anti-glare and high contrast - for perfect reading under all weather conditions.
- **Comfortable working** due to the 360° rotatable motor unit; in addition, hardly any reaction forces are transmitted to the user.

alkitronic® specials

- **Quality bolting** with torque/angle method.
- **Innovative motor protection** with automatic shutdown to ensure bolting quality.
- **Intelligent processor-controlled shut-off electronics** for constant exact reproduction of the preselected torque.
- **Repeat shut-off accuracy $\pm 2\%$** for the same bolting application.
- **Exceptionally robust** motor housing (aluminum alloy).
- **For safe, comfortable tool guidance, model-specific operating and holding handles are included** in the scope of delivery. These can be mounted as required at several fastening points provided.

Specifications

All **alkitronic®** electric torque multipliers have CE-certification. Universal AC input 100 V - 253 V, frequency 45 Hz - 66 Hz, power max. 1400 W. Protection category I.



Bolting programs

For user-specific applications, modular software packages can be optionally purchased.

- Software suite 1:** Torque controlled bolting (standard)
Software suite 2: Torque/angle procedure for high-quality bolting connections
Software suite 2 Premium: Torque/angle procedure with adjustable min./max. torque limitation
Software suite 3: Bolting with preset rotations and torque limit
Software suite 4: Bolting parameters according to individual customer requirements
Software suite 5: Bluetooth transmission via **alkitronic® APP**.
 Documentation of the bolted joints (target-actual status, recording for each joint)

Software suite 1 is pre-installed in the basic equipment. The setting steps of the torque values are in increments of 10 Nm or 10 ft.lbs.

Display views

Software suite 1 (mode 1) and software suite 2 (mode 2)

Mode 1 / M1 (Standard)

M1
1100 Nm
-15°

Bolting via torque.
 Automatic release according to pre-set angle degrees.

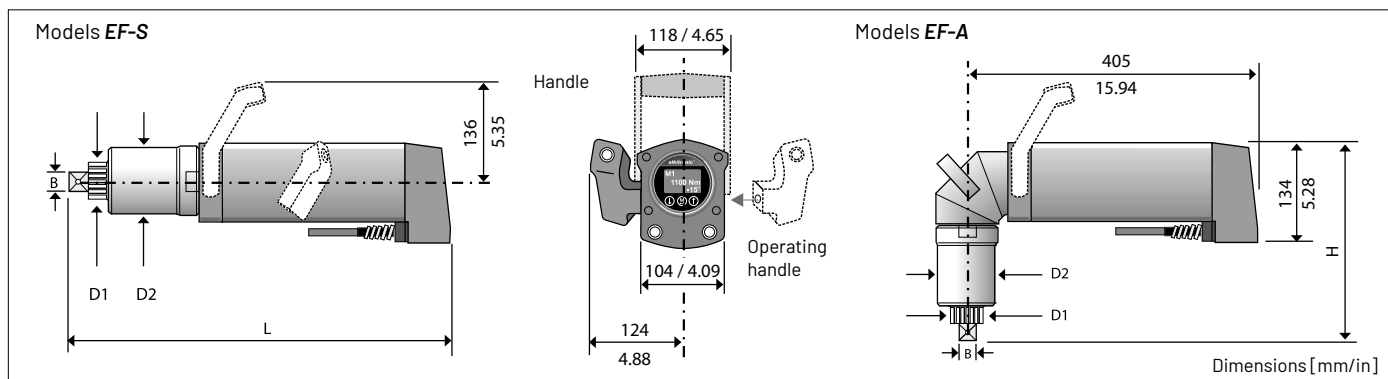
Mode 2 / M2 (Option)

M2
300 Nm
150°, -15°

Torque/angle procedure for high-quality bolting connections.
 Display example of pre-torque, angle and release angle.

During the bolting process, the current torque value is shown in the display. Reaching the set value is indicated by an "OK". If the selected value cannot be achieved, the bolting operation is evaluated as "nOK".

Technical Data



Models EF-S

Type		EF-S 250	EF-S 300	EF-S 400	EF-S 600	EF-S 800	EF-S 1000	EF-S 2000	EF-S 4000
Torque range (approx.) *	Nm	430-2700	500-3100	900-4300	1150-6200	2000-7800	2050-9500	3500-20600	6200-42000
	ft.lbs	315-1990	370-2285	665-3170	850-4575	1475-5755	1510-7010	2580-15195	4575-30980
Square drive	B	1"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	2 1/2"	2 1/2"
Diameter (approx.)	D ₁	mm / in	54 / 2.13	72 / 2.83	72 / 2.83	72 / 2.83	91 / 3.58	SW 120 / A/F 4.7	SW 120 / A/F 4.7
Diameter (approx.)	D ₂	mm / in	85 / 3.35	98 / 3.86	98 / 3.86	109 / 4.29	133 / 5.24	173 / 6.8	275 / 10.83
Length (approx.)	L	mm / in	515 / 20.3	535 / 21	535 / 21	550 / 21.6	550 / 21.6	565 / 22.2	760 / 30
Weight without DMA** (approx.)	kg / lbs	13 / 29	14 / 31	14.5 / 32	16 / 35	19.5 / 43	27 / 59.5	60 / 132	62 / 137
Idle speed	rpm	10	8	6	5	4	3	1	0.7

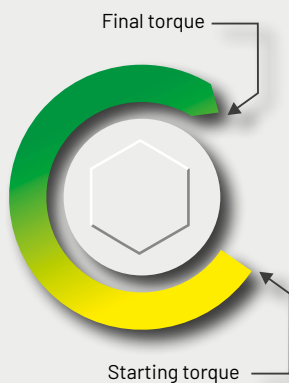
Models EF-A

Type		EF-A 400	EF-A 600	EF-A 800	EF-A 1000
Torque range (approx.) *	Nm	900-4300	1150-6200	1060-8000	2050-9800
	ft.lbs	665-3170	850-4575	780-5900	1510-7230
Square drive	B	1 1/2"	1 1/2"	1 1/2"	1 1/2"
Diameter (approx.)	D ₁	mm / in	72 / 2.83	72 / 2.83	91 / 3.58
Diameter (approx.)	D ₂	mm / in	98 / 3.86	109 / 4.29	133 / 5.24
Height (approx.)	H	mm / in	320 / 12.6	350 / 13.8	350 / 13.8
Weight without DMA** (approx.)	kg / lbs	15.5 / 34	17.5 / 38.6	20 / 44	29 / 64
Idle speed	rpm	5	4	3	2

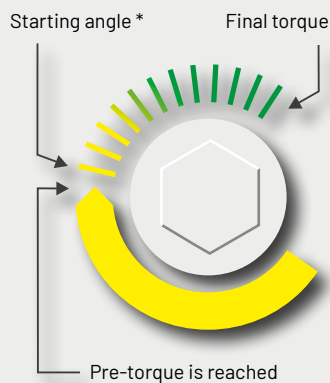
*) When loosening bolts, a higher torque (up to 20 %) may be necessary (release torque). We will be pleased to help you with your choice. **) Torque reaction arm

Scheme bolting programs

Torque controlled bolting mode 1



Torque/angle procedure mode 2



* Information on rotational angle setting for torque/angle method.

- The angle of rotation is specified by the design for the bolting connection.
- The angle of rotation can be determined individually and easily with **alkitronic® HSD**. We will gladly provide you with detailed product information.

Accessories: Remote control with operating handles



The **alkitronic® EF** bolting system.

Extremely flexible with the **alkitronic®** remote control as an accessory: **alkitronic® FB - EF** - cable length 5 m or 10 m

world's No. 1 choice

Applications

- **alkitronic® EFCip / ECWip** electric torque multipliers from 75 to 6,500 Nm (55 to 4,800 ft.lbs).
- Consistent torque accuracy on all international power supplies 100 - 253 V / 45 - 66 Hz.
- Precise shut-off with on-site voltage-controlled portable generators.
- Models **ECWip** angled tools, low height for difficult access applications.

Advantages

- Safe interruption-free work in any weather (moisture, rain) - thanks to protection class IP54.
- **Low running costs:**
Low-wear, maintenance-free, brushless synchronous motor.
- Permanent higher joint quality by continuous rotation of the square drive.
- Simple 1-finger trigger operation for forward and reverse.
- OLED-Display anti-glare and high contrast - for perfect reading under all weather conditions.
- Menu-driven operation, control or warning signals.
- **Ergonomic and comfortable operation:**
The 360 degree rotating handle prevents reaction forces being transferred to the operator.

alkitronic® specials

- High-quality bolting, according to torque/angle procedure.
- Highly innovative generation of electric torque multipliers with new sensorless control motor technology. Lower power consumption increases the service life of the electronic components.
- Repeat shut-off accuracy $\pm 2\%$ for the same bolting application. Precise reproduction of preselected torque through intelligent, processor-controlled motor with automatic shut-off.
- **Longer service life:** Low heat generation - thus highest reliability and almost no downtime.
- **Robust and long lasting:** Motor housing of cast aluminum.



Specifications

Bolting programs:

For user-specific applications, the manufacturer can activate optional modular software (**alkitronic® EFCip / ECWip** from serial number 712700).

Software suite 1:	Torque controlled bolting (pre-installed)
Software suite 2:	Torque/angle procedure for high-quality bolting connections
Software suite 2 Premium:	Torque/angle procedure with adjustable max. torque limit
Software suite 3:	Bolting with preset rotations and torque limit
Software suite 4:	Bolting parameters according to individual customer requirements
Software suite 5:	Bluetooth transmission via alkitronic® APP Documentation of the bolted joints (target-actual status, recording for each joint)

Remote control of single or multiple torque multiplier can be manual or fully automated.

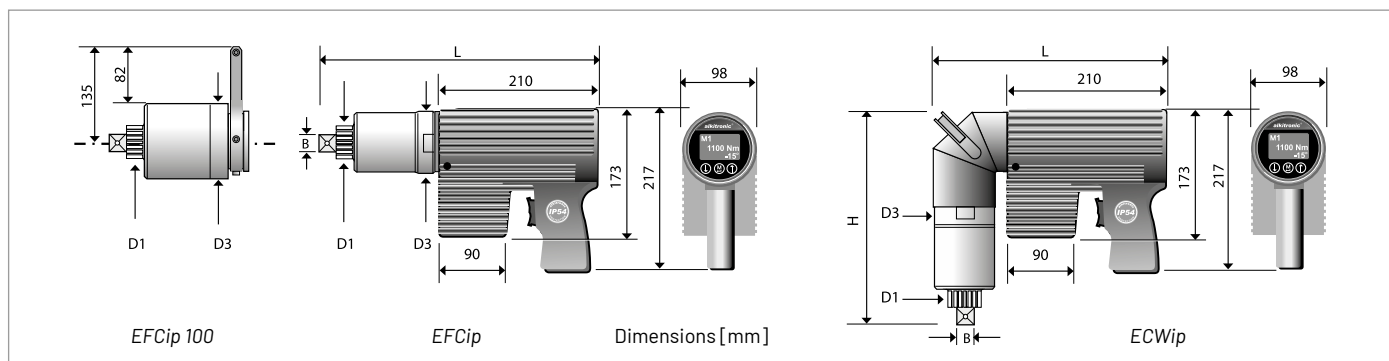
Special solution: Preset torque increment according to customer's requirement (5 Nm / 4 ft.lbs min.)
All **alkitronic®** torque multipliers with CE-certification.

Electrical data:

Universal AC input 100 V - 253 V, frequency 45 Hz - 66 Hz, power max. 1100 W, protection category I, protection class IP 54 (standard).



Technical Data



Models EFCip

Type		EFCip 10	EFCip 20	EFCip 30	EFCip 35	EFCip 40	EFCip 50	EFCip 60	EFCip 65	EFCip 70	EFCip 80	EFCip 90	EFCip 100
Torque range (approx.) * Nm		75-420	80-620	100-940	150-1300	150-1500	190-1850	250-2350	290-2900	350-3500	440-4300	500-5000	650-6500
Torque range (approx.) * ft.lbs		55-305	60-540	75-690	110-960	110-1100	140-1360	185-1660	215-2135	260-2580	325-3170	370-3690	480-4800
Square drive	B	3/4"	3/4"	3/4"	3/4"	1"	1"	1"	1"	1 / 1 1/2"	1 1/2"	1 1/2"	1 1/2"
Diameter (approx.)	D ₁ mm	41	41	41	41	54	54	54	54	72	72	72	72
Diameter (approx.)	D ₃ mm	88	88	88	88	88	88	88	88	98	98	109	109
Length (approx.)	L mm	330	330	330	352	382	382	388	388	406	406	405	430
Weight without DMA (approx.)	kg	9	9	9	9	10	10	11	11	13	13	14.5	15.5
Idle speed	rpm	70	40	30	22	15	14	11	8	7	5	4	3

Models ECWip

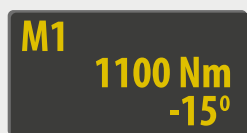
Type		ECWip 10	ECWip 20	ECWip 30	ECWip 35	ECWip 40	ECWip 50	ECWip 60	ECWip 65	ECWip 70	ECWip 80	ECWip 90	ECWip 100
Torque range (approx.) * Nm		75-420	80-620	100-940	150-1300	150-1500	190-1850	250-2350	290-2900	350-3500	440-4300	500-5000	650-6500
Torque range (approx.) * ft.lbs		55-305	60-540	75-690	110-960	110-1100	140-1360	185-1660	215-2135	260-2580	325-3170	370-3690	480-4800
Square drive	B	3/4"	3/4"	3/4"	3/4"	1"	1"	1"	1"	1 / 1 1/2"	1 1/2"	1 1/2"	1 1/2"
Diameter (approx.)	D ₁ mm	41	41	41	41	54	54	54	54	72	72	72	72
Diameter (approx.)	D ₃ mm	88	88	88	88	88	88	88	88	98	98	109	109
Length (approx.)	L mm	310	310	310	310	310	310	310	310	318	318	326	315
Height (approx.)	H mm	249	249	249	271	300	300	305	305	315	315	345	350
Weight without DMA (approx.)	kg	12	12	12	12	13	14	14	14	16	16	17	18
Idle speed	rpm	70	40	30	22	15	14	11	8	7	5	4	3

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

OLED Display EFCip / ECWip

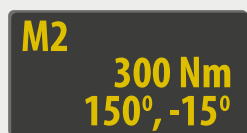
Display bolting programs mode 1 and mode 2

Mode 1 (standard)



Mode 1
Bolting via torque.
Automatic relief according to
pre-set angle degrees.

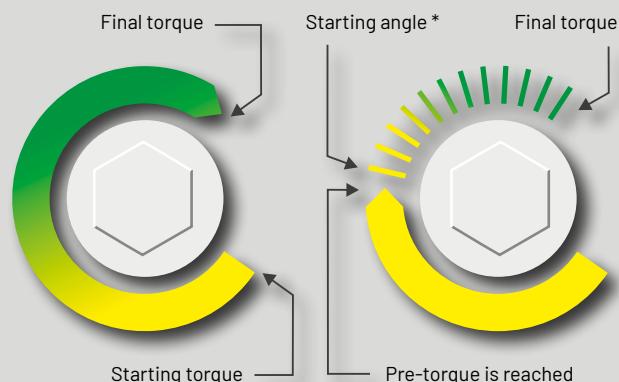
Mode 2 (option)



Mode 2
Torque/angle procedure for high-
quality bolting connections. Display
example of pre-torque, angle and
loosening angle.

Software mode 1 is pre-installed in the basic version.
For user-specific bolting applications or settings, other software is available
(see left side "bolting programs").

Chart Mode 1 and Mode 2



* Information on rotational angle setting for torque/angle method.

- The angle of rotation is specified specifically for the bolting connection.
 - The angle of rotation can be determined individually and easily with alkitronic® HSD.
- We will gladly provide you with detailed product information.

ready for use, everywhere

alkitronic® EAF

Applications

- **alkitronic® EAF:** Battery driven 2-speed torque multiplier from 130 Nm to 6,000 Nm / 95 ft.lbs to 4,430 ft.lbs.
- **Short fastening cycles:** Fast gear for run down and power gear for highest torques and precision.
- **Mobile and always ready for use:** Compact design for convenient working in limited spaces or without power supply.
- **Efficient operation:** Fast and easy gear-changing, great torque range - you can choose from 22 torque values.

Advantages

- **Integrated fully-automatic release function:** Caused by high torsional force, it is often impossible repositioning the multiplier on the next bolt joint. The automatic release function enables a fast, secure "run free" of the reaction absorber **DMA** and also relieves stresses within the multiplier.
- **Low running costs:** The low-wear, synchronous motor is maintenance free.
- **Health-preserving:** Lowweight, ergonomically designed, low noise emissions. No noise protection necessary.
- **High performance:** Two lithium-ion battery packs ensure up to 360 screw joints in a row. Each battery features an LED charge level indicator.
- **Exact shut-off torque** even at low battery levels.

alkitronic® Specials

- **Very low susceptibility to damage and failure:** Motor housing made of special polymer: Break-proof, impact-proof and resistant to corrosion.
- **Intelligent energy management and faster workflow:** Electronics protects battery cells from overcharging and depth discharge. Cooled battery packs during recharging. This reduces charging times and enhances maximum performance and durability.
- **High-performance gears,** produced in a chip-free high-precision process.

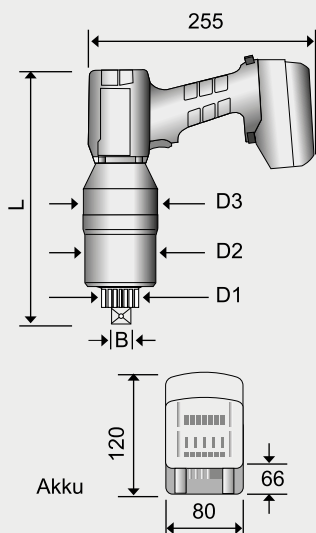


Technical Data

Type		EAF2 / 80	EAF2 / 150	EAF2 / 200	EAF2 / 280	EAF2 / 300	EAF2 / 400	EAF2 / 600
Torque range (approx.) *	Nm	130-850	220-1400	260-2200	300-2800	320-3200	380-4100	500-6000
	ft.lbs	95-625	160-1035	190-1625	220-2065	235-2360	280-3025	370-4430
Square drive	B	3/4"	3/4"	1"	1"	1"	1 1/2"	1 1/2"
Diameter (approx.)	D ₁ mm	41	41	54	54	72	72	72
Diameter (approx.)	D ₂ mm	85	85	85	85	93	93	109
Diameter (approx.)	D ₃ mm	88	88	88	88	97	97	109
Length (approx.)	L mm	295	295	320	350	370	370	380
Weight without DMA (approx.) **	kg	5,6	5,6	6,4	7,5	7,5	9,2	9,0
Idle speed 1 st gear	rpm	8,0	4,0	3,0	1,8	1,5	1,5	0,8
Idle speed 2 nd gear	rpm	26,0	14,0	10,0	6,5	6,0	5,4	3,0

*) When loosening bolts, a higher torque (up to 20 %) may be necessary (release torque). We will be pleased to help you with your choice. **) Torque reaction arm

Measurements



Scope of Delivery



2 lithium-ion battery packs 18 V, 5.2 Ah, battery charger, tool case.



Repeat shut-off accuracy $\pm 3\%$ (same bolting connection).
All **alkitronic®** torque multipliers are CE-certified.

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Product News

Battery Torque Multiplier EAW

Applications

- **alkitronic®EAW:** Battery powered 2-speed torque multiplier for torques from 90 Nm to 4,000 Nm. Angled design with high operating comfort.
- **Mobile and always ready for use:** Compact design for convenient working in limited spaces or without power supply.
- **Extremely short fastening cycles:** Fast gear for run down and power gear for highest torques and precision.
- **Efficient operation:** Fast and easy gear-changing, great torque range - each gear has eleven torque values to choose from.

Advantages

- **Low running costs:** The low-wear brushless synchronous motor is maintenance free.
- **Health-preserving:** Low weight, ergonomically designed, low noise emissions. No noise protection necessary.
- **High performance:** Two lithium-ion battery packs ensure up to 360 screw joints in a row. Each battery features a LED charge level indicator.
- **Exact shut-off torque even at low battery levels.**

alkitronic® specials

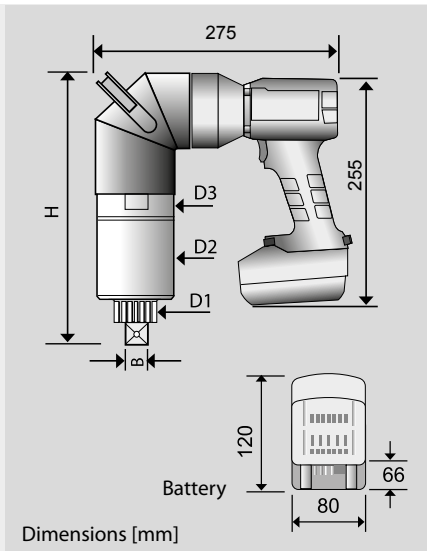
- **Very low repair requirements:** Robust motor housing made of special polymer. It is break-proof, impact-proof and resistant to corrosion.
- **Angle-drive with optimised efficiency and great running characteristics.**
- **Intelligent energy management:** Smart electronics protect every battery cell from overcharging and depth discharge.



Technical Data: alkitronic® EAW Models

Type		EAW2 / 80	EAW2 / 150	EAW2 / 200	EAW2 / 280	EAW2 / 300	EAW2 / 400
Torque range (approx.) *	Nm	115-860	150-1400	250-2200	300-2800	360-3200	500-4100
	lbf.ft	85-635	110-1030	185-1620	220-2065	265-2360	370-3025
Square drive	B	3/4"	3/4"	1"	1"	1"	1 1/2"
Diameter (approx.)	D ₁ mm	41	41	54	54	72	72
Diameter (approx.)	D ₂ mm	85	85	85	85	93	93
Diameter (approx.)	D ₃ mm	88	88	88	88	97	97
Height (approx.)	H mm	250	250	295	305	310	320
Weight without DMA (approx.) **	kg	7,5	7,5	9,0	9,5	9,5	11,2
Idle speed 1 st gear	rpm	7,0	4,0	2,0	1,7	1,5	1,0
Idle speed 2 nd gear	rpm	24,0	13,0	6,5	6,0	5,0	4,0

* When loosening bolts, a higher torque (up to 20 %) may be necessary (release torque). We will be pleased to help you with your choice. ** Torque reaction arm



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thinnest, fastest and most versatile

X Driver Hydraulic Wrench System

The **alkitronic®** Norwolf **X DRIVER SYSTEM** - the most revolutionary hydraulic torque wrench system ever created. The profiles are totally flat with no extrusions that create hangups. The design with a smaller cylinder bore but longer levers, creates less stress on all parts. Easier to get into confined areas and around nuts in hard to access spaces. With the durability of solid steel design, fewer parts, and clean-lined construction.

X Driver

- Hydraulic power head with two hydraulic hose system.
- Slimmest design - one piece piston construction.
- Only one high pressure o-ring - easily changed with four bolts.
- Novel swivel design - 360° or 360 x 360 with one piece add on.
- The power head locks into the separate drives without pins or screws.
- All alloy steel construction - only true convertible tool.
- Ready for optional handle.

A Drive (hex link)

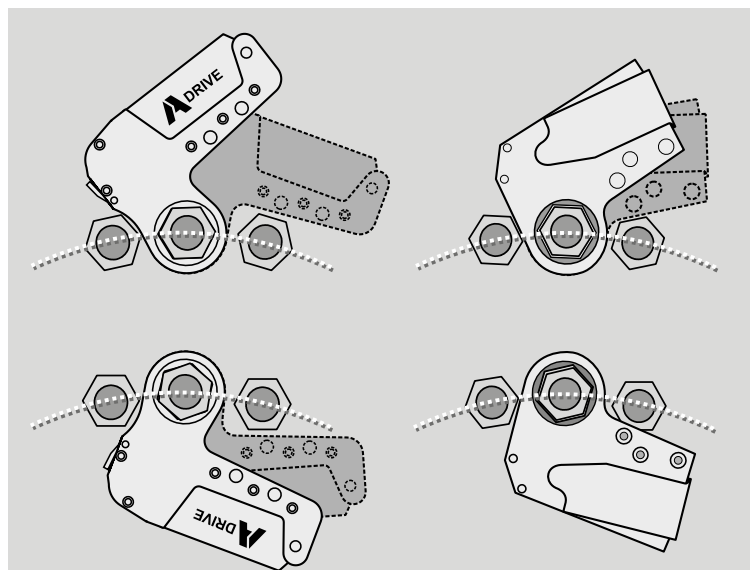
- Slimmest design - no loose shroud - totally enclosed.
- Reaction arm/pad ready with 2 pin holes.
- Patented reaction pawl easily disengaged with screw.
- Fewer parts. Other hex links have many moving parts, increasing breakdowns and need for complex repairs.
- Deepest reach on the market - fits all flanges.
- Upon testing, the A-Drive is 10-50% faster than other hydraulic wrenches.

V Drive (square drive)

- Push through drive with ball locks.
- Fastest 40° stroke making tool up to 30% faster per stroke.
- Most versatile, patented reaction arm. Arm never needs to come off tool for resetting, unlike competitors. Adjusts in all directions with posi lock locator buttons. Totally unique design.
- Thinnest width square drive tool on the market - totally enclosed.
- Optional solid reaction arm available.

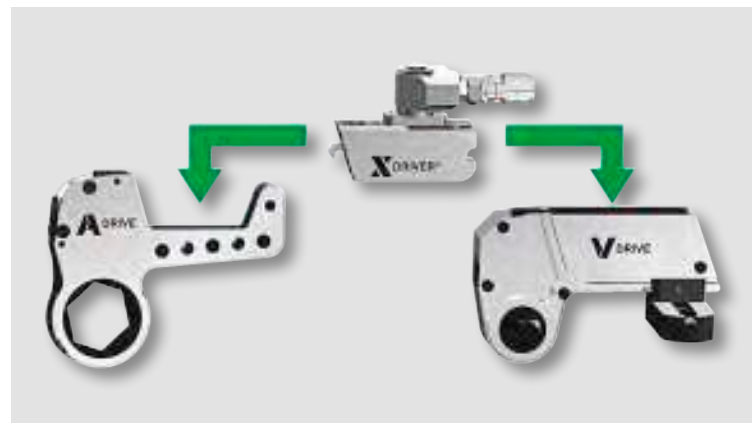
Specifications

A prerequisite for exact reproducibility of the specified torque ranges is an operating pressure of 100 to 700 bar. Repeatability +/- 3%.



A-Drive and X-Drive fits more applications than any other wrench.

The patented design curve creates the longest throat reach, allowing the widest approach angle to fit the tool on the nut, easily, without jogging or manually moving the ratchet. This curve makes the X-Drive the fastest to fit in the industry, on both in-line and inverted applications.



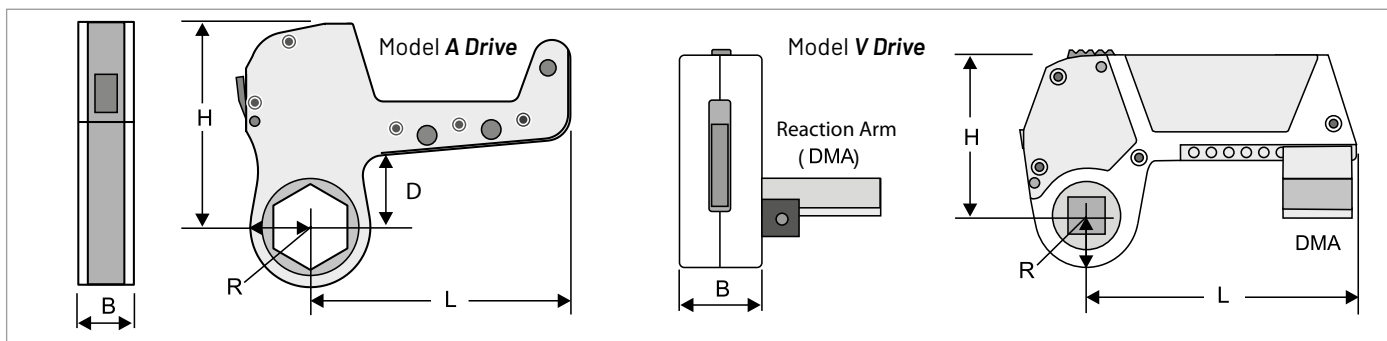
The hydraulic wrench is so advanced it's not only a tool, it's an entire system. The X-Drive locks into drives which fully protect the cylinder from reaction points. The X-Drive pivots inside the drives, in-line, to prevent side load and tension to the cylinder, for safety and endurance.



Application Example: A-Drive when fitting a flange coupling in plant construction.

Hands-Free a Drive Safety: The catch lever holds the tool against the reaction point on the piston retract, preventing the operator from holding the tool against the reaction area during tool kick-back on the retract stroke.

Technical Data



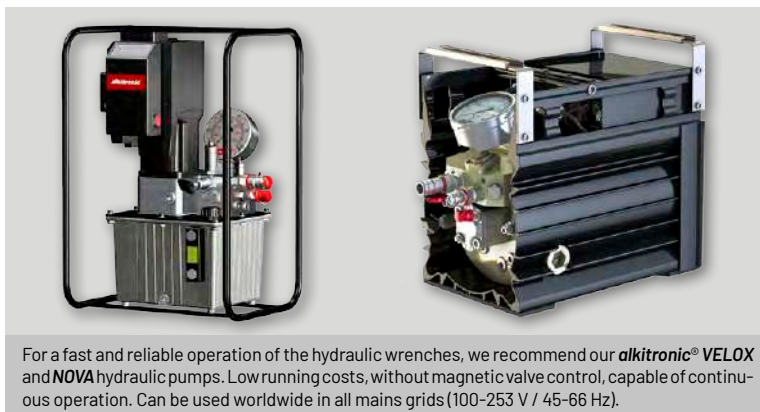
Models A Drive (Hex. link)

A Drive + X Driver		Type	A - 2	A - 4	A - 8	A - 16	A - 32	A - 64		
Torque range *		Nm	335-2240	805-5370	1560-10400	2690-17920	6600-44000	12450-83000		
Torque range *		ft.lbs	247-1652	594-3961	1151-7671	1984-13217	4868-32453	9183-61217		
Height	H	mm	104	139	174	208	278	347		
Length	L	mm	134	178	223	267	356	446		
Distance	D	mm	38	51	63	76	102	127		
Width	B	mm	29	38	48	57	76	95		
Weight (approx.)		kg / lbs	2.3 / 5.0	5.0 / 11.0	10.5 / 23.5	17.0 / 37.5	33.0 / 72.5	76 .0 / 167.0		
Type A 2-			SW 27	SW 32	SW 36	SW 41	SW 46	SW 50	SW 55	SW 60
Radius (approx.) R		mm	25	28	31	33	36	39	42	45
Type A 4-			SW 46	SW 50	SW 55	SW 60	SW 65	SW 70	SW 75	SW 80
Radius (approx.) R		mm	39	42	45	48	50	53	56	58
Type A 8-			SW 55	SW 60	SW 65	SW 70	SW 75	SW 80	SW 90	SW 100
Radius (approx.) R		mm	49	53	56	59	63	66	70	73
Type A 16-			SW 70	SW 75	SW 80	SW 90	SW 100	SW 105	SW 115	SW 125
Radius (approx.) R		mm	61	62	65	70	75	81	87	93
Type A 32-			SW 90	SW 100	SW 105	SW 115	SW 125	SW 135	SW 145	SW 155
Radius (approx.) R		mm	77	82	88	93	99	104	110	115
Type A 64-			SW 125	SW 135	SW 145	SW 155	SW 165	SW 175	SW 185	SW 195
Radius (approx.) R		mm	105	111	116	122	127	133	138	144

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

Models V Drive (Square drive)

V Drive + X-Driver	Type	V - 2	V - 4	V - 8	V - 16	V - 32	V - 64
Torque range *	Nm	265-1760	625-4174	1225-8155	2115-14100	5015-33420	9790-65280
Torque range *	ft.lbs	195-1298	461-3079	904-6015	1560-10400	3699-24649	7221-48148
Square drive		3/4"	1"	1 1/2"	1 1/2"	2 1/2"	2 1/2"
Height	H mm	83	111	139	166	222	277
Length (approx.)	L mm	140	190	240	290	390	490
Radius	R mm	25	34	42	51	68	85
Width	B mm	41	55	69	83	110	138
Weight (approx.)	kg / lbs	2.7 / 5.9	6.1 / 13.5	12.0 / 26.5	20.7 / 45.5	43.0 / 94.5	86.0 / 189.0



For a fast and reliable operation of the hydraulic wrenches, we recommend our **alkitronic® VELOX** and **NOVA** hydraulic pumps. Low running costs, without magnetic valve control, capable of continuous operation. Can be used worldwide in all mains grids (100-253 V / 45-66 Hz).

Applications

- Hydraulic torque wrench with two hydraulic hose system for tightening or loosening heavy bolt connections.
- alkitronic® AX** convertible type torque wrench up to 49,000 Nm. Drive element with interchangeable hexagon link from 14 to 145 mm.

Advantages

- Simple handling and low weight.
- Economic construction with few single components.
- High efficiency with minimum maintenance requirements and low costs.
- Hard-wearing, ergonomically shaped housing design, made of high-density aluminium alloy.
- Highly flexible due to simple, fast changing of the hexagon links. Trouble-free support without affecting the torque accuracy by lateral force.

alkitronic® specials

- Convenient, secure and reliable individually pivoting joint couplings (360°). Capable of withstanding up to 4x higher maximum operating pressure.
- Robust ratchet with fine teeth for high torque accuracy and a max. stroke of 28°.
- Constructive precise guided drive element.
- alkitronic® AX** developed for applications in restricted space and difficult to access areas: Drive element and hexagon link in line, extremely flat and flush design.



Technical Data

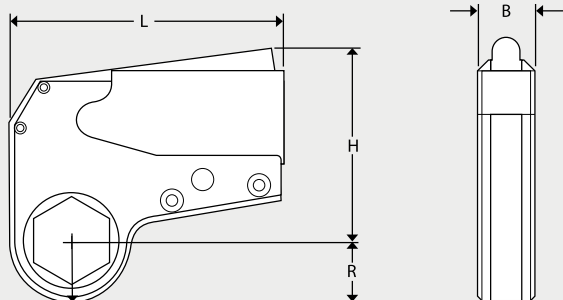
Type			AX 1	AX 2	AX 4	AX 8	AX 16	AX 32 ***
Torque range (approx.)*	Nm		60-770	260-2600	540-5400	1150-11900	2150-22900	4450-49000
		lbf.ft	45-560	192-1928	395-3950	830-8630	1560-16600	3220-35650
Hexagon	AF **	mm	14-32	27-55	36-70	55-95	80-115	95-145
Radius (approx.) from-to	R	mm	19-25	26-42	34-52	46-79	63-87	82-109
Width	B	mm	24	38	47	58	70	92
Length	L	mm	111	167	203	253	330	390
Height	H	mm	83	103	144	180	194	278
Weight (approx.)		kg	1	2.5	5.18	10.7	16.5	25

*) When loosening a bolted connection, up to 20% higher torque may be required (loosening torque). We will gladly advise you in detail.
Ask us about: **) other AF sizes *** models with larger torque range.

Important for the exact reproducibility of the specified torque is a pressure of max. 700 bar. Repeatability ±3%.

For a fast, safe and reliable operation of the hydraulic torque wrenches we recommend our **alkitronic® NOVA** or **VELOX** hydraulic pumps (700 bar pressure, can be used worldwide in all mains grids 100-253 V / 45-66 Hz).

Model **alkitronic® AX**



alkitronic® AX, when fitting a flange in plant construction.

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Application

- **Hydraulic torque wrenches** with two hydraulic hose systems for tightening or loosening heavy bolt connections.
- **alkitronic® AT** hydraulic torque wrenches from 110 up to 72,000 Nm for threads of M14 and larger.
- **No checking needed:** High repeatability $\pm 3\%$ for the same bolting process.

Advantages

- **Robust and ergonomic:** Hard-wearing, ergonomically shaped housing design made of high strength Aluminium-Titan-Alloy.
- **Simple and low weight:** Easy handling and low weight. Simply replug the square drive from tightening to loosening.
- **Durable and safe:** Bevelled torsion-resistant, highly-loaded one piece design. Higher work-safety due to an advanced and sustainable design.
- **High economic efficiency:** Long operating life, reliable bolting, low maintenance.

alkitronic® specials

- **alkitronic® AT** developed for flexible applications in restricted space, ¹ support arm incrementally adjustable (see drawing below).
- **High flexibility:** Convenient, secure and reliable pivoting one-piece joint couplings. Pivotal in two levels (360° horizontally, 180° vertically).
- Robust, rough toothed ratchet for **high torque accuracy**.
- **Solid, precise, especially powerful:** Unique design of the drive pawl.

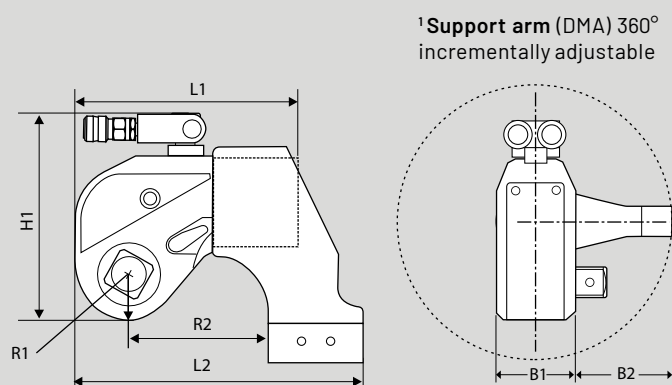


Technical Data

Type		AT 1	AT 2	AT 3	AT 5	AT 8	AT 10	AT 20	AT 25	AT 35	AT 50
Torque range (approx.)	Nm	110-1120	180-1840	450-4510	750-7530	1080-10780	1550-15520	2660-26660	3470-34730	4860-48600	7200-72000
Square drive size		3/4"	3/4"	1"	1 1/2"	1 1/2"	1 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
Height	H2 mm	108,1	131	176,5	199	217	232	270	297	332	341
Length	L1 mm	110,8	144,5	178	210,5	222	245,5	307,5	323	372,5	400
Length	L2 mm	139,3	173	229	270,5	293	317,5	383,5	401	496,5	516
Radius	R mm	20,5	26	34	39	47	51	59	66	77	81
Radius	R2 mm	68,3	85	114	137	153	154	186	199	214	259
Width	B1 mm	42	50	68	80	90	100	120	137	153	160
Width	B2 mm	54	66,5	89,5	100	120	128	153	159,5	167	178
Weight (approx.)	kg mm	1,8	2,5	5	8	11	15	26,5	35	50	87

Important for the exact reproducibility of the specified torque is a pressure of max. 700 bar. Repeatability $\pm 3\%$. For a fast, safe and reliable operation of the hydraulic wrenches, we recommend our alkitronic® NOVA or VELOX hydraulic pumps (700 bar pressure, can be used worldwide in all mains grids 100-253 V / 45-66 Hz).

Model **alkitronic® AT**



alkitronic® AT,
use in a wind power plant.

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Applications

Electric driven hydraulic pump, **usable worldwide 100-253 V / 45-66 Hz**, up to 700 bar / 10,000 psi for hydraulic wrenches with single or double-acting cylinders.

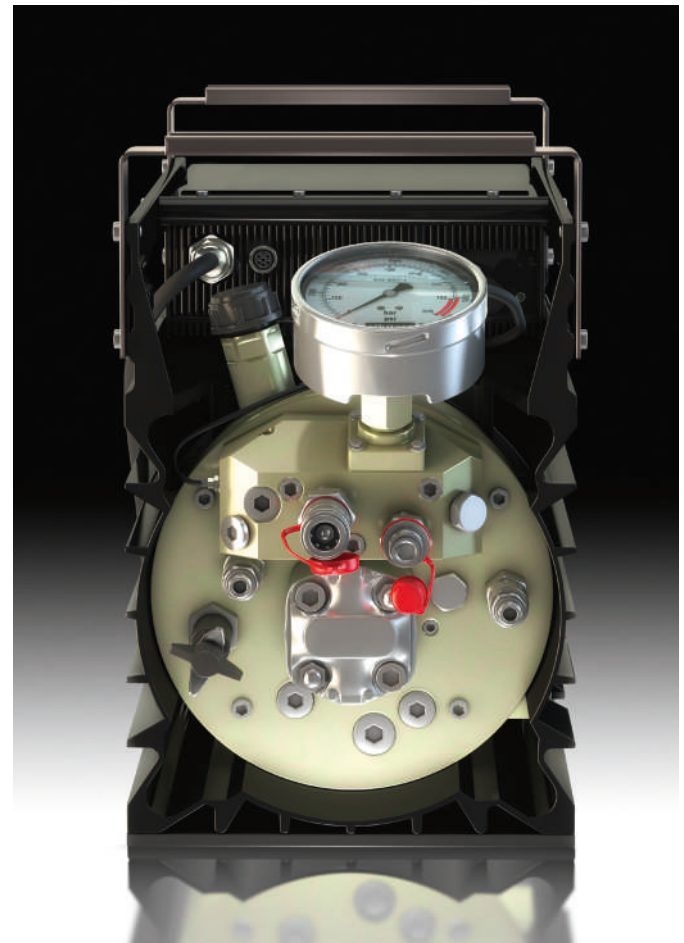
- Duo- or Quattro version (for 2 or 4 wrenches etc.) optional.
- Robust compact design for use on the roughest construction sites.

Advantages

- **Huge oil flow** due to intelligent electronic controlling, powerful motor.
- Easiest automatic operation **for all cylinder sizes** without any manual presetting.
- Ergonomic remote control for manual or automatic operation.

alkitronic® specials

- **No magnetic valve control**
Powerful but gentle changeover from power stroke to idle stroke, due to direction switch of the drive motor, which guarantees high durability of the equipment.
- **Capable of continuous operation – minimal heat generation**
No oil overheating by the innovative motor drive in combination with the automatic mode. The automatic operation only provides the flow supply with the working pressure necessary for efficient bolting.
- **Low running costs**
Brush-free synchronized motor, maintenance-free and low wear. Usable on all international mains supply without any change.



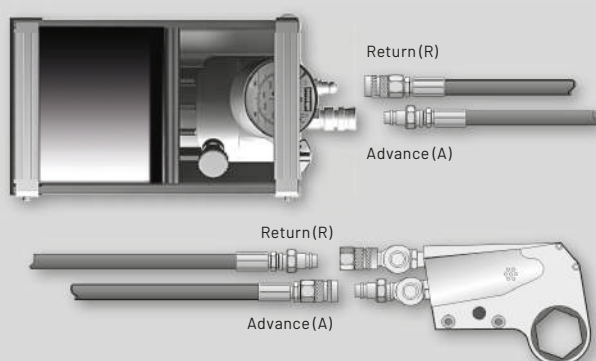
Technical Data

alkitronic® NOVA with infinitely adjustable pressure setting up to 700 bar / 10,000 psi (700 bar / 10,000 psi max. pressure).

Designation	alkitronic® NOVA
Drive electrical	100-253 V / 45-66 Hz
Nominal capacity	3500 W max.
Oil flow:	
low pressure	15 l/min up to 70 bar
medium pressure	10 l/min up to 180 bar
high pressure	1.5 l/min up to 700 bar
Weight including oil	28,5 kg
Dimensions L x W x H (mm)	350 x 220 x 300
Surrounding temperature	-20 °C up to +50 °C



Connection scheme hydraulic hoses



Delivery range: High pressure hoses (DN 8), Length 5m

alkitronic® NOVA multibox



Robust design with load hooks and handles, certified for crane transportation.

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Applications

- alkitronic® VELOX is a robust, long-life quality product made in Germany.
- This unique electrical hydraulic pump (protection class IP65) is protected against rain, splash water and dust deposit to eliminate costly downtime.
- Its suitable for 110V or 230V main grids and voltage- controlled mobile power units.

Advantages

- High precision** ($\pm 3\%$) through all pressure ranges, defined by precisely adapted oil flow rate.
- Air cooling, robust design, low weight.** The housing design ensures optimum heat dissipation.
- Simple operating: one-push-button remote control** for ergonomic, working convenience and distance safety.
- High working speed and short set-up times.** Can connect two hydraulic torque tools to increase productivity and to save time and money.
- Flexible bolting applications.** Compatible with almost all hydraulic torque wrenches, regardless of cylinder size and torque range.

alkitronic® specials

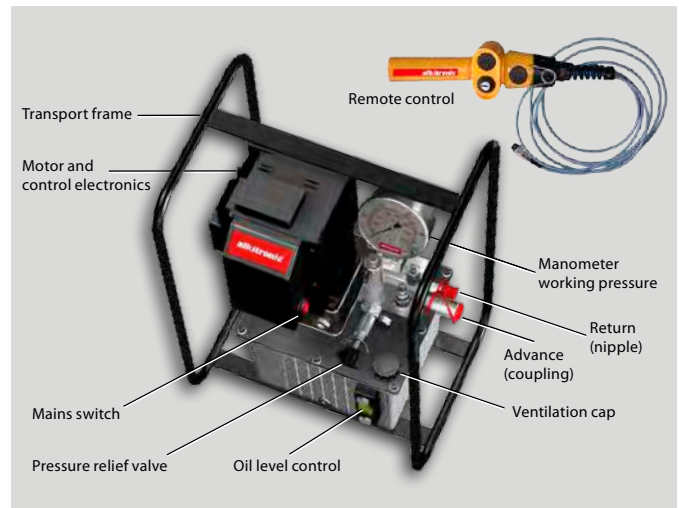
- Low maintenance costs** due to the maintenance-free, low-wear and brushless synchronous motor. No magnetic control valves and therefore no wear.
- Modular construction** for cost-saving upgrade or parts exchange.
- Individual operation** - basic version with manual control.
- Integrated motor protection** to avoid damage due to overload.



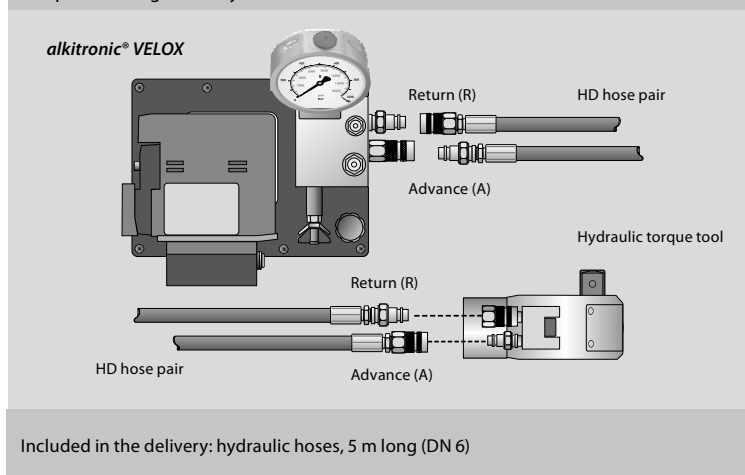
Technical Data

alkitronic® VELOX infinitely adjustable pressure setting up to 700 bar (maximum operating pressure: 700 bar)

Specification	alkitronic® VELOX	VELOX Speed Upgrade
Drive electrical / nominal sensitivity	110/230 V, 50/60 Hz, 1600 W	230 V, 50/60 Hz, 2100 W
Protection class	IP65	IP65
Output low pressure area	6 l/min up to 140 bar	8,5 l/min up to 140 bar
Output high pressure area	0,75 l/min up to 700 bar	1,15 l/min up to 700 bar
Tank capacity	4,0 l	4,0 l
Surrounding temperature	-20 °C up to +50 °C	-20 °C up to +50 °C
Noise emission	< 76 dB(A)	< 76 dB(A)
Weight incl. oil	24 kg	24 kg
Dimensions L x W x H (mm)	360 x 260 x 560	360 x 260 x 560
Dimensions L x W x H (mm) with transport frame	390 x 310 x 570	390 x 310 x 570



Compatible: Diagram of hydraulic hose connection



Hydraulic torque wrench alkitronic® AT



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YOUR PLUS FOR MORE PERFORMANCE

Increased quality

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

Increased precision

Precise, customer-specific torques
High repeatability
Reliability in permanent operation
Dokumentation 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

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EXTRACT FROM OUR PRODUCT RANGE



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THE ELECTRICS



alkitronic XP-SERIES

THE PNEUMATICS



alkitronic XH-SERIES

THE HYDRAULICS



alkitronic XM-SERIES

THE MANUALS