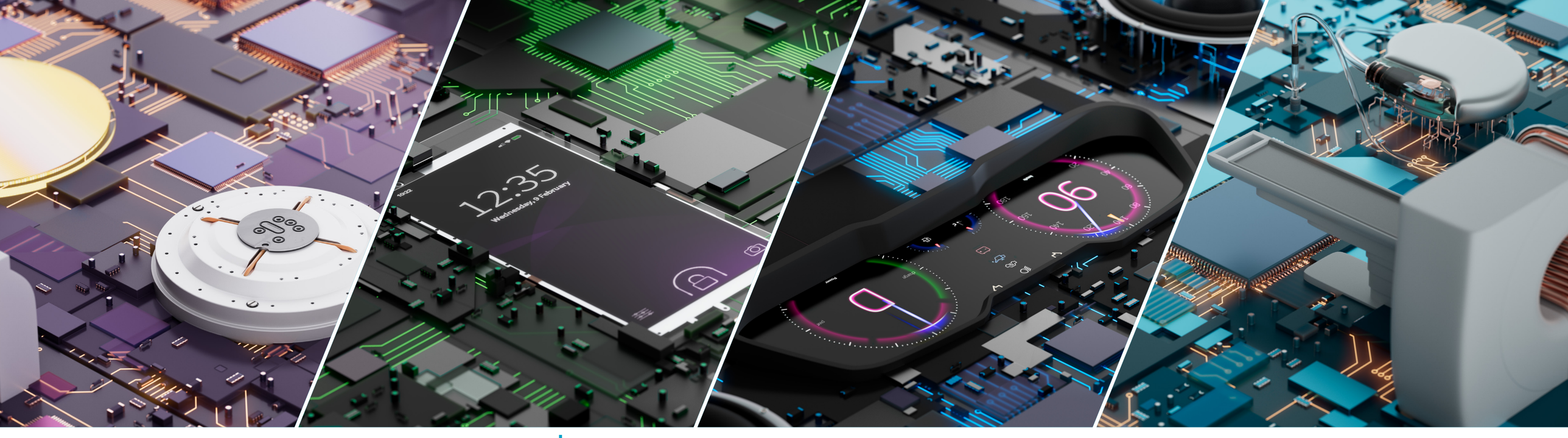
Atlas Copco

MicroTorque Smart Integrated Electronics

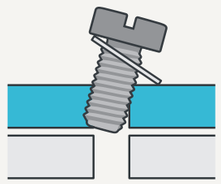
Get smart, connected and efficient



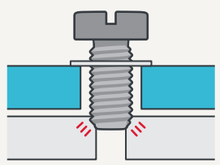
Assembly processes using screws...

... present several challenges. In electronics, precision is everything, and accurate screw tightening plays a crucial role in maintaining cost-efficiency and quality.

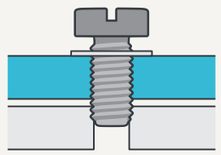
Challenges



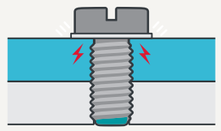
Misalignment



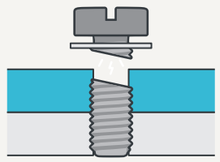
Dimension issues



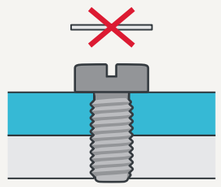
Floating screw



Overtightening



Stripped joint

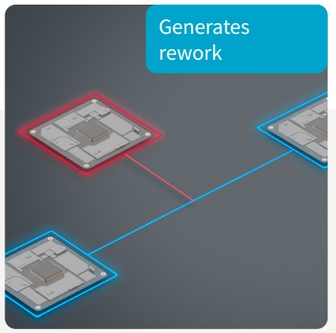


Missing components

Proper tightening is absolutely vital within the semiconductor, consumer electronics, automotive, and medical industries.

The effects of incorrect tightening on production cannot be underestimated. These challenges are immensely complex to identify and adequately address.

Effects on production



Smart Seating Strategies – more than just Torque and Angle

Customers using clutch screwdriver, only have the ability to measure torque. This type of tool has limitations on the quality control it can provide, as it depends on the materials to have consistent friction properties. This consistency is very hard to achieve due to the low torques in the Electronics Universe.

Even when customer uses a current controlled or transducerized tool, which are capable of measuring Torque and Angle parameters, it is possible to have False OK RESULTS due to parts variation.

Instead of the traditional Target Torque approach, Atlas Copco focus on measure the **Clamping Torque** since this is the best way to guarantee consistency on the parts even if each component has friction variations.

Clamp Torque is thus the measurement of the force between the screw head and the component it is seated on. Hence monitoring or targeting Clamp Torque can assist you to better understand the stress on a joint enabling customers to eliminate quality issues related to tightening.

Smart Torque Seating Monitoring

Accurate clamp torque monitoring

Smart Seating Control Strategy

Automatic adjustment when tightening

Bringing connectivity to a new level...

... of low torque tightening, MTF6000 has a wide range of connection choices. Available on the back side of the controller.

MTF6000

The Brain Behind our Smart Tools, the MTF controller with the Tools Talk MT software lets you set up tightening processes to fit your production needs.

The controller can be used with three different IAMs, namely Basic, Smart Process and Smart Automation which enable different functionality levels.

ETD MT

With superior accuracy, ETD MT with built-in transducer can precisely measure the real torque applied on each screw, giving a more accurate and reliable tightening result.

- Torque Range from 2 cNm up to 500 cNm
- Full Process Monitoring
- True Torque Measurement
- Can work with the advanced tightening strategies which focus on more than Torque and Angle.

reddot award

Common for all tools

- Clean room certified
- Work with the smart tightening strategies of TSM and SCS
- ESD certified

Transducerized tool accuracy

± 5%

This verifies that 3 standard deviation, % of mean, scatter is within 5,0%

Non-transducerized tool accuracy

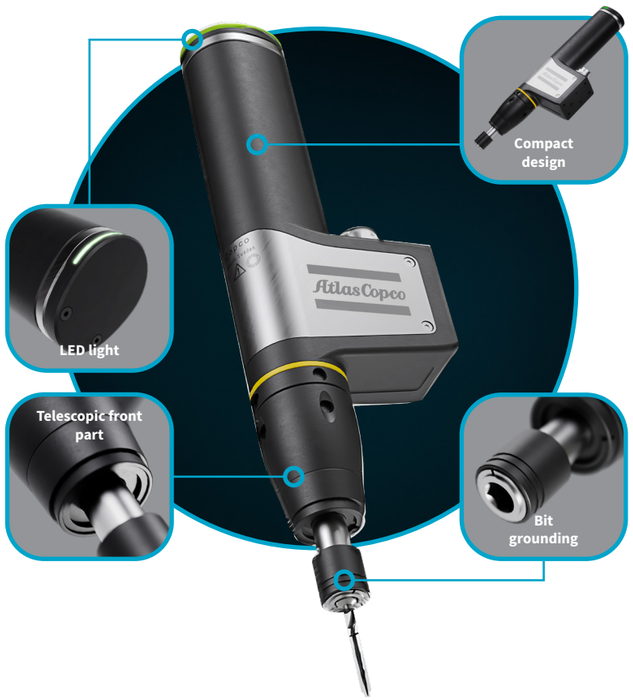
± 7.5%

QMT

With compact and lightweight design, QMT has significant saving on robot size and weight capacity and ensure the maneuverability of the robot during tightening. QMT is designed to be easily attached to any robot for an automated workstation.

- Torque Range from 2cNm up to 500 cNm
- Full Process Monitoring
- True Torque Measurement
- Can work with the advanced tightening strategies which focus on more than Torque and Angle.

reddot award



IAM Functionality Matrix	IAM Basic 8432 0852 11	IAM Smart Process 8432 0852 25	IAM Smart Automation 8432 0852 35
Tightening			
Number of Psets	50	150	999
Multi Step Tightening	✔	✔	✔
Number of Tightening Steps	5	10	15
Number of Batch sequences	20	50	100
Batch Sequence – Batch Count	250	250	250
Batch Sequence – Steps	30	30	30
Number of identifiers	20	50	100
Torque & Angle Control	✔	✔	✔
Smart Engagement Step		✔	✔
Angle Step	✔	✔	✔
Torque Step	✔	✔	✔
Smart Seating Control Strategy (SSCS)		✔	✔
Smart Torque Seating Monitoring (STSM)		✔	✔
Bit Slip Detection		✔	✔
Damaged Thread Detection		✔	✔
Friction Control Strategy		✔	✔
Digital I/O Step			✔
Data Storage & Analysis			
Detailed Data Results Stored in the Controller	✔	✔	✔
Results – Data Storage	100 000	100 000	100 000
Graphs – Data Storage		1 000	1 000
Download Results Data via USB Memory	✔	✔	✔
Download Graphs Data via USB Memory		✔	✔
Realtime Trace Analysis – ToolsTalk MT (USB Only)	✔	✔	✔
Download Results Data via ToolsTalk			
Save Graphs via ToolsTalk Analysis (USB)		✔	✔
Auto Save Graph via ToolsTak Analysis (USB Only)	✔	✔	✔
ToolsNet 8 Data Reporting		✔	✔
Communication			
Configurable Digital I/0s	✔	✔	✔
Number of Digital I/Os (in/out)	(12/8)	(12/8)	(12/8)
Open Protocol (Microtorque Legacy)		USB, RS232	USB, RS232
Open Protocol (Atlas Copco V2)		USB, RS232, Ethernet	USB, RS232, Ethernet
Direct Communication with ToolsNet 8		✔	✔
Fieldbus Module Compatible			✔
URCaps Compatible			✔
Ports (Hardware)			
RS232	1	1	1
Fieldbus	1	1	1
USB Device	1	1	1
USB Host	1	1	1
I/O Bus	1	1	1
Ethernet	1	1	1
Digital I/Os	(12/8)	(12/8)	(12/8)
Others			
Transducerized Tools		✔	✔
Barcode Reader	✔	✔	✔
Quick Programing	✔	✔	✔
Password Protection	✔	✔	✔
Customized 3 Levels of Password Protection	✔	✔	✔
Remote Configuration via Ethernet		✔	✔
Vacuum Pick Up Screw Detection	✔	✔	✔

**MID2500 is only available with IAM MT Smart Automation*

Software

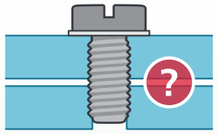
Software feature comparison

	Torque	Torque / Angle	Smart Torque Seating Monitoring (STSM)	Smart Seating Control Strategy (SSCS)
Apply Target Torque	✔	✔	✔	✔
Control Takt Time/Speed of the Tool		✔	✔	✔
Misaligned Screws		✔	✔	✔
Floating Screws		✔	✔	✔
Stripped Joints		✔	✔	✔
Missing Components		✔	✔	✔
If parts are not consistent:				
Consistent Target Torque / Monitoring Clamping Torque (STSM)			✔	✔
Dynamic Target Torque / Consistent Clamping Torque (SSCS)				✔
No Rework Required				✔

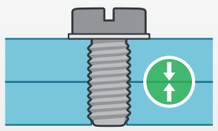
Smart Torque Seating Monitoring

Torque Seating Monitoring is best suited where you are required to provide a peak target torque value while monitoring the clamp torque applied using pass and fail limits on the latter.

This strategy can detect Clamp Torque variation but not automatically compensate.

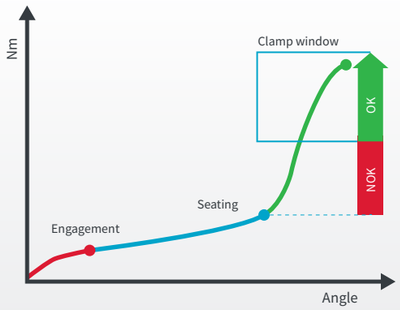


Unknown clamp torque



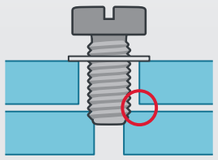
Accurate clamp torque monitoring

Clamp torque within set limit

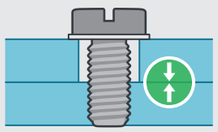


Smart Seating Control Strategy

Our most advanced tightening strategy monitors the seating point and then adjust the final torque to target the Clamp Torque. This means that any inconsistencies in your application based on friction variation between joints will be eliminated as the specified clamp torque will be met. This strategy can automatically compensate for any joint or process varation making it our most advanced tightening strategy.

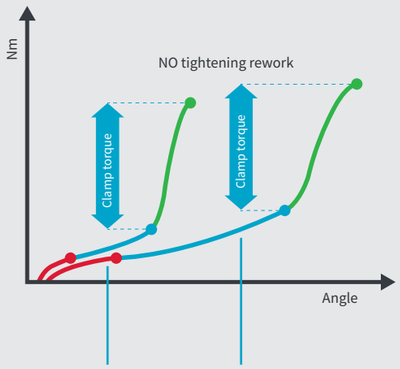


Inconsistent components



Automatic adjustment when tightening

Correct clamp torque applied – no rework required



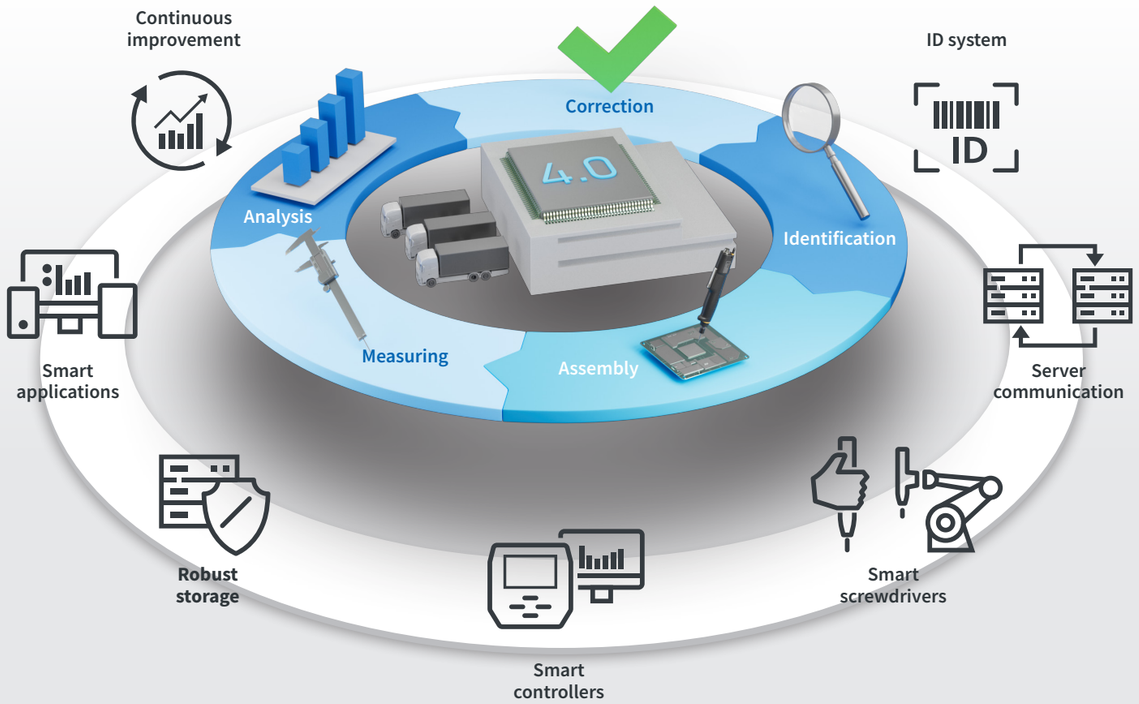
Smart Manufacturing Ecosystem

Microtorque tools and software solutions by Atlas Copco offer customers numerous advantages, including seamless integration with the broader Atlas Copco ecosystem. These tools are designed to work in harmony with solutions like ToolsNet and Industrial Location Guidance (ILG), enhancing the overall user experience.

One significant benefit is the incorporation of error-proofing solutions. By linking with ToolsNet and ILG, these tools help prevent errors in the tightening process, ensuring that fasteners are consistently and accurately tightened. This is especially critical in industries where precision and safety are top priorities.

Moreover, the ToolsNet software provides users with the capability to analyze tightening trends, distinguishing between correct and incorrect procedures. This analytical feature empowers users to identify patterns and areas for enhancement in their tightening processes, ultimately facilitating the maintenance of quality and efficiency.

Furthermore, these solutions and many more contribute to reducing downtime. With error-proofing, precise tightening, and improved traceability, customers operations run more smoothly, resulting in less time spent on diagnosing and rectifying errors.



Accessories and part numbers

MT FOCUS 6000

Controller & IAM

Controller Unit & IAM	Order nr.
MTF6000	8432 0851 00
IAM MT Basic	8432 0852 11
IAM MT Smart Process	8432 0852 25
IAM MT Smart Automation	8432 0852 35
IAM MT QA	8432 0852 40

*Please note that with only IAM QA, MTF6000 can be used as a stationary QA controller, if you need portability & agility, it is recommended to purchase the whole QA Station MT.

MTF6000 Portable Station

MTF6000 Portable Station

Model	Order nr.
MTF6000 Portable Station	8432 0851 10

MTF6000 Portable Station includes:

- Holder
- MTF6000 controller
- 36V lithium battery

Please note that the following accessories need to be purchased separately:

- IAM
- MicroTorque tools
- Tool cable
- Power supply

QMC 21-05

QMC 21
QMC 41
QMC 61

Fixtured Screwdrivers – QMC range

Model	Torque range cNm	Torque range in lb	Speed rpm	Length mm	Overall width mm	Weight kg	Weight lb	Bit Drive	Order nr.*
Fixtured current controlled									
QMC 21-05-HM4	1,2–5	0,11–0,44	1500	124	57	0,3	0,46	HM4	8432 0844 05
QMC 21-10-HM4	3,0–10	0,27–0,89	1500	178	57	0,3	0,66	HM4	8432 0844 10
QMC 21-25-HM4	5,5–25	0,49–2,21	1000	178	57	0,3	0,65	HM4	8432 0844 25
QMC 41-50-HM4	12,5–50	1,11–4,42	2000	200	65	0,6	1,32	HM4	8432 0844 52
QMC 41-100-HM4	25,0–100	2,21–8,85	2000	200	65	0,6	1,32	HM4	8432 0844 53
QMC 41-50-I06	12,5–50	1,11–4,42	2000	205	65	0,6	1,32	1/4" Hex	8432 0844 61
QMC 41-100-I06	25,0–100	2,21–8,85	2000	205	65	0,6	1,32	1/4" Hex	8432 0844 62
QMC 41-150-I06	37,5–150	3,32–13,27	1000	213	65	0,6	1,32	1/4" Hex	8432 0844 63
QMC 41-250-I06	62,5–250	5,53–22,13	850	224	65	0,7	1,54	1/4" Hex	8432 0844 64
QMC 61-500-I06	125–500	11,1–44,2	600	242	300	0,76	1,68	1/4" Hex	8432 0844 90

* Ordering number for screwdriver only. Tool cable, controller and PSU need to be ordered separately.

QMT 41
QMT 61

QMT21

Fixtured Screwdrivers – QMT range

Model	Torque range cNm	Torque range in lb	Speed rpm	Length mm	Overall width mm	Weight kg	Weight lb	Bit Drive	Order nr.*
Fixtured transducerized									
QMT 21-10-HM4	2 - 10	0,18 - 0,89	2000	183	22	0,30	0,66	HM4	8432 0843 10
QMT 21-25-HM4	5 - 25	0,44 - 2,21	1000	182,4	22	0,30	0,66	HM4	8432 0843 25
QMT 41-50-HM4	10 - 50	0,9 - 4,4	2000	204	30	0,61	1,30	HM4	8432 0843 50
QMT 41-100-HM4	20 - 100	1,8 - 8,9	2000	204	30	0,61	1,30	HM4	8432 0843 60
QMT 41-50-I06	10 - 50	0,9 - 4,4	2000	209	30	0,61	1,30	1/4" Hex	8432 0843 51
QMT 41-100-I06	20 - 100	1,8 - 8,9	2000	209	30	0,61	1,30	1/4" Hex	8432 0843 61
QMT 41-150-I06	30 - 150	2,7 - 13,3	1000	217	30	0,63	1,40	1/4" Hex	8432 0843 70
QMT 41-250-I06	50 - 250	4,4 - 22,1	750	217	30	0,63	1,40	1/4" Hex	8432 0843 80
QMT 61-500-I06	100-500	8,8 –44,2	600	245	30	0,74	1,65	1/4" Hex	8432 0843 90

* Ordering number for screwdriver only. Tool cable, controller and PSU need to be ordered separately.

ETD M08

ETD M250

Handheld Screwdrivers – ETD M ABL V2 range

Model	Torque range cNm	Torque range in lb	Speed rpm	Length mm	Overall width mm	Weight kg	Weight lb	Bit Drive	Order nr.*
Handheld current controlled, without push-to-start									
ETD M08 ABL V2	2–8	0,18–0,7	1350	185	29	0,30	0,66	HM4	8432 0815 18
ETD M20 ABL V2	5–20	0,44–1,77	900	185	29	0,30	0,66	HM4	8432 0815 21
ETD M27 ABL V2	7,5–27	0,66–2,4	900	185	29	0,30	0,66	HM4	8432 0815 27
Handheld current controlled, configurable push-to-start									
ETD M50 ABL V2	15–50	1,33–4,4	1000	238	36	0,61	1,37	HM4	8432 0815 50
ETD M80 ABL V2	20–80	1,77–7,1	1100	238	36	0,61	1,37	HM4	8432 0815 80
ETD M120 ABL V2	30–120	2,7–10,6	900	240	43	0,65	1,43	1/4" Hex	8432 0815 82
ETD M200 ABL V2	50–200	4,42–17,7	700	240	43	0,65	1,43	1/4" Hex	8432 0815 84
ETD M250 ABL V2	75–250	6,64–22,13	700	240	43	0,65	1,43	1/4" Hex	8432 0815 86
ETD MC 61-500-I06	125–500	11,1–44,2	600	281	35	0,82	1,8	1/4" Hex	8432 0846 90

* Ordering number for screwdriver only. Tool cable, controller and PSU need to be ordered separately.

ETD MT 41
ETD MT 61

ETD MT 21

Handheld Screwdrivers – ETD MT range

Model	Torque range cNm	Torque range in lb	Speed rpm	Length mm	Overall width mm	Weight kg	Weight lb	Bit Drive	Order nr.*
Handheld transducerized, without push-to-start									
ETD MT 21-10-HM4	2 - 10	0,18 - 0,89	2000	226	32	0,35	0,77	HM4	8432 0845 10
ETD MT 21-25-HM4	5 - 25	0,44 - 2,21	1000	226	32	0,35	0,77	HM4	8432 0845 25
Handheld transducerized, configurable push-to-start									
ETD MT 41-50-HM4	10 - 50	0,9 - 4,4	2000	248	34	0,60	1,32	HM4	8432 0845 50
ETD MT 41-100-HM4	20 - 100	1,8 - 8,9	2000	248	34	0,60	1,32	HM4	8432 0845 60
ETD MT 41-50-I06	10 - 50	0,9 - 4,4	2000	254	34	0,65	1,43	1/4" Hex	8432 0845 51
ETD MT 41-100-I06	20 - 100	1,8 - 8,9	2000	254	34	0,65	1,43	1/4" Hex	8432 0845 61
ETD MT 41-150-I06	30 - 150	2,7 - 13,3	1000	254	34	0,65	1,43	1/4" Hex	8432 0845 70
ETD MT 41-250-I06	50 - 250	4,4 - 22,1	750	254	34	0,65	1,43	1/4" Hex	8432 0845 80
ETD MT 61-500-I06	100-500	8,8 –44,2	600	281	35	0,78	1,72	1/4" Hex	8432 0845 90

* Ordering number for screwdriver only. Tool cable, controller and PSU need to be ordered separately.

Accessories and part numbers

Cables

Model	Order nr.
1,5m	8432 0835 15
2m	8432 0835 20
3,5m	8432 0835 35
5m	8432 0835 50
10m	8432 0835 99

*ETD MT/QMT: max 10m, 1 cable only - it is not possible to mix cable types
ETD M/QMC: max 10m - mixing cable types is possible

Tool Cable

MTF6000 Power Supply Units

Model		Order nr.
36V/180W	21 & 41 tool series	8432 0840 02
42V/252W	41 & 61 tool series	8432 0840 07

Power Supply Unit

Multicharger & Extra Battery (Optional)*

Model	Order nr.
Multicharger 18-36V	4211 6083 84
Extra Lithium Battery 36 V	4211 6130 14

* The charging rate of the multicharger is higher than normal power supply.
This is an optional product for customers who prefer a higher charging rate.

Multicharger

Extra Lithium Battery

Vacuum Adapters

Model	Nozzle Ø mm	Tool Bit Drive	Tool Model	Order nr.
QC Vacuum Adapter	5,8	HM4	For ETD MT with HM4 Bits	8432 0770 60
QC Vacuum Adapter	9,8	¼" HEX	For ETD MT with I06 Bits	8432 0770 61
QC Vacuum Adapter	5,8	HM4	For QMC21/QMT21/ETD M with HM4 Bits	8432 0770 62
QC Vacuum Adapter	9,8	¼" HEX	For QMC/QMT with I06 Bits	8432 0770 63
QC Vacuum Adapter	5,8	HM4	For QMC41/QMT41 with HM4 Bits	8432 0770 64
QC Vacuum Adapter	9,8	¼" HEX	For ETD M/C with I06 Bits	8432 0770 65
QC Vacuum Adapter	11,8	¼" HEX	For ETD MT with I06 Bits	8432 0770 66
QC Vacuum Adapter	11,8	¼" HEX	For QMC/QMT with I06 Bits	8432 0770 67
QC Vacuum Adapter	11,8	¼" HEX	For ETD M/C with I06 Bits	8432 0770 68

Vacuum Adapters

Vacuum Nozzles

Model	Nozzle Ø mm	Order nr.
Plastic Nozzle – HM4 (5 pack)	5,8	4216 2912 90
Plastic Nozzle – ¼" HEX (5 pack)	9,8	4216 2937 90
Metallic Nozzle – HM4 (1 pack)	5,8	8432 5251 00
Metallic Nozzle – ¼" HEX (1 pack)	9,8	8432 5251 01
Plastic Nozzle – HM4 (1 pack)	11,8	4216 2937 91
Metallic Nozzle (1 pack)	11,8	8432 5251 02

Vacuum Adapters

Vacuum Pump

Model	Order nr.
Smart Vacuum Pump MT	8432 0854 00

Smart Vacuum Pump

Fieldbus Module

Model	Order nr.
EtherCAT Module MT	8432 0853 10
Profinet Module MT	8432 0853 20
Ethernet/IP Module MT	8432 0853 30

Fieldbus Module

SDS SR

SDS

Screw Dispenser System

Model	Screw Size	Order nr.
Screw dispenser for magnetized bit		
SDS	M 1.0 –5.0	8432 0830 00
Screw dispenser for vacuum pick up		
SDS SR 10	M 1.0	8432 0870 30
SDS SR 12	M 1.2	8432 0870 32
SDS SR 14	M 1.4	8432 0870 34
SDS SR 17	M 1.7	8432 0870 31
SDS SR 20	M 2.0	8432 0870 33
SDS SR 23	M 2.3	8432 0870 35
SDS SR 26	M 2.6	8432 0870 36
SDS SR 30	M 3.0	8432 0870 37

Offset Gear Tooling

Model	Torque range cNm	From the bit center to the Front End mm	Height of the OSG mm	Order nr.*
Current controlled				
ETD 08 ABL V2 OG	2–8	2,3	41,1	8432 0815 81
QMC 21-12-OG	3–12,5	1,9	20,3	8432 0844 12
QMC 41-50-HM4-OG	18–50	2,3	41,1	8432 0844 81

* Ordering number for screwdriver only. Tool cable, controller and PSU need to be ordered separately.

QA Station MT & IAM QA

Model	Order nr.
QA Station MT	8432 0855 00

QA Station MT includes:

- Holder
- MTF6000 controller
- 0,23 m transducer cable
- 36V lithium battery

Please note that the following accessories need to be purchased separately:

- IAM QA
- Test joints
- Bits for test joints
- Transducers
- Power supply

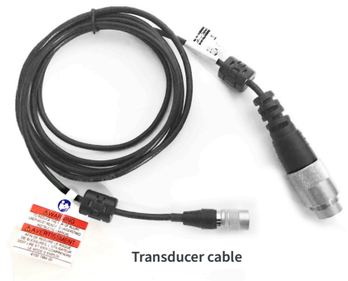
QA Station MT

Static Transducer

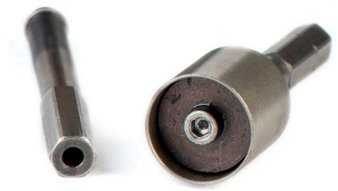
Static Transducer MT TS Range

Model	cNm	lb	Drive	Overall Length mm	Order nr.
MT TS 1	1	0,09	Ø 3 mm	87	8432 0770 60
MT TS 2	2	0,18	Ø 3 mm	87	8432 0770 60
MT TS 5	5	0,44	Ø 3 mm	87	8432 0770 60
MT TS 10	10	0,88	Ø 3 mm	87	8432 0770 60
MT TS 20	20	1,77	Ø 3 mm	87	8432 0770 60
MT TS 50	50	4,42	¼" HEX	104,5	8432 0770 60
MT TS 100	100	8,85	¼" HEX	104,5	8432 0770 60
MT TS 200	200	17,70	¼" HEX	104,5	8432 0770 60
MT TS 500*	500	44,25	¼" HEX	103	8432 0770 60

*Compatible with 5Nm tools



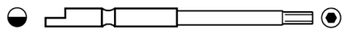
Transducer cable



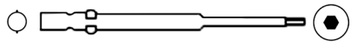
Test Joints

Hex bits

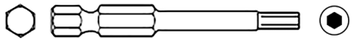
Drive: half moon 4mm



Drive: Wing-shank 4mm



Drive: ¼'' Hexagon, Style E6.3



Transducer cable

Model	Order nr.
Transducer Cable 0,23m	8432 0822 31
Transducer Cable 1,8m	8432 0822 30

Test Joints

Model	cNm	Drive	Screw Head Profile	Order nr.
M6 Soft joint	500-1000	¼" HEX	HEX 5mm	8432 0833 62
M6 Soft joint	200-500	¼" HEX	HEX 5mm	8432 0833 61
M4 Soft joint	27-200	¼" HEX	HEX 3mm	8432 0833 60
M3 Soft joint	5-27	¼" HEX	HEX 2,5mm	8432 0833 59
M3 Soft joint	5-27	Ø 3 mm	HEX 2,5mm	8432 0833 58
M2 Soft joint	0-10	¼" HEX	HEX 1,5mm	8432 0833 57
M2 Soft joint	0-10	Ø 3 mm	HEX 1,5mm	8432 0833 56
M6 Hard joint	200-1000	¼" HEX	HEX 5mm	8432 0833 55
M4 Hard joint	27-200	¼" HEX	HEX 3mm	8432 0833 54
M3 Hard joint	5-27	¼" HEX	HEX 2,5mm	8432 0833 53
M3 Hard joint	5-27	Ø 3 mm	HEX 2,5mm	8432 0833 52
M2 Hard joint	0-10	¼" HEX	HEX 1,5mm	8432 0833 51
M2 Hard joint	0-10	Ø 3 mm	HEX 1,5mm	8432 0833 50

Hex Bits for Test Joints

Drive: half moon 4mm	Length mm	Order nr.
HEX 1,5mm	44	4023 0002 41
HEX 2,5mm	44	4023 0002 43
HEX 3mm	44	4023 0002 44

Drive: Wing-shank 4mm	Length mm	Order nr.
HEX 1,5mm	60	4023 0002 60
HEX 2,5mm	60	4023 0002 62
HEX 3mm	60	4023 0002 63

Drive: ¼'' Hexagon, Style E6.3	Length mm	Order nr.
HEX 2,5mm	49	4023 131200
HEX 3mm	49	4023 071000
HEX 4mm	49	4023 071100
HEX 5mm	49	4023 071200

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