MicroTorque
Smart Integrated
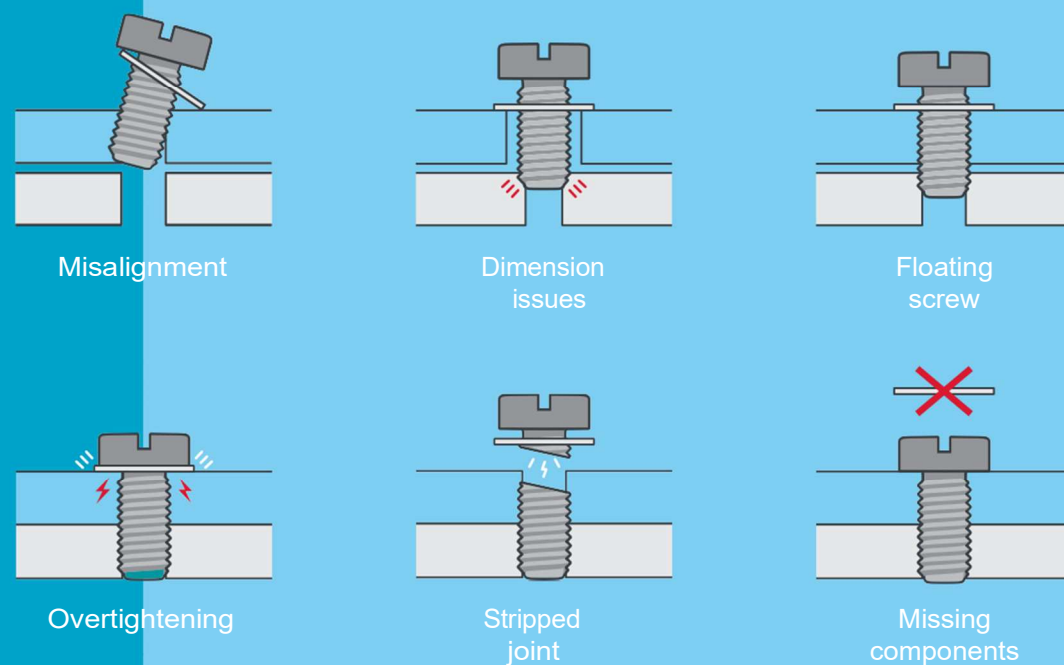# Electronics

Get smart, connected
and efficient
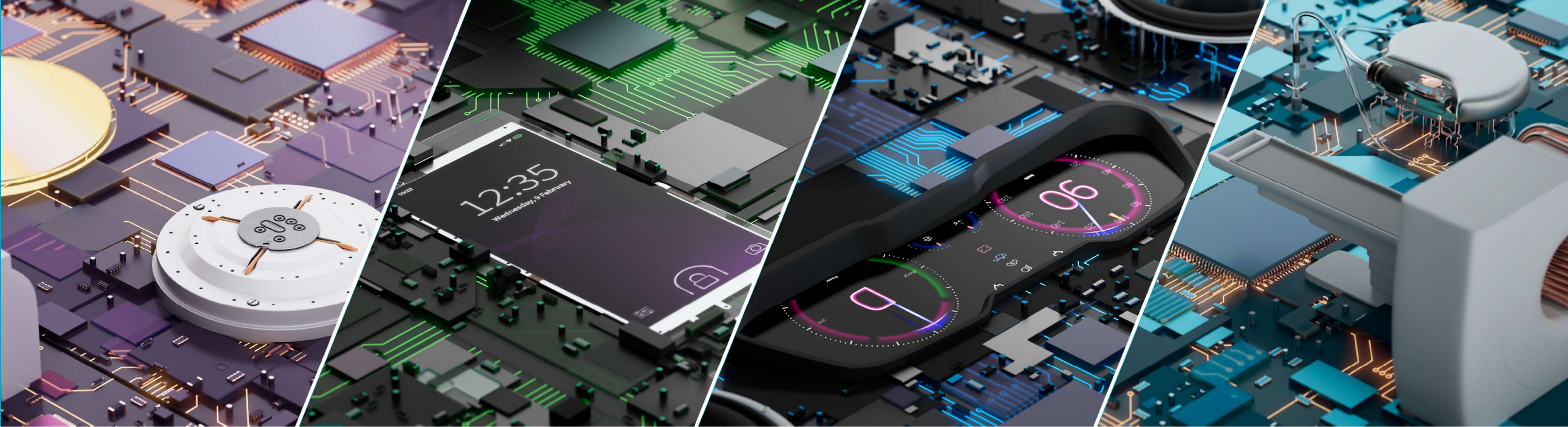
Assembly processes using screws...

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

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.

Challenges

Misalignment

Dimension issues

Floating screw

Overtightening

Stripped joint

Missing components

Effects on production

Affects productivity

Generates rework

Causes scraps

Lowers quality

Increases costs

Negatively impacts brand image
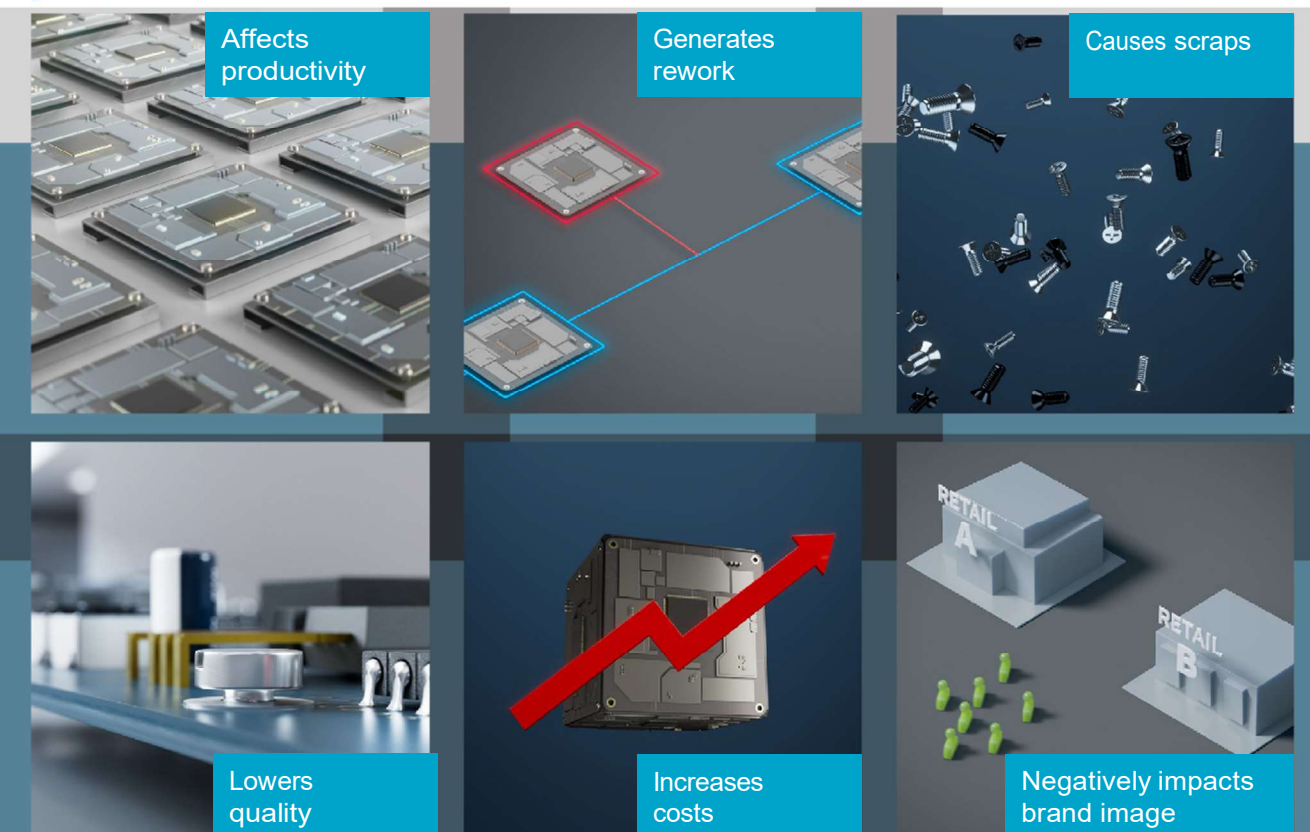
Smart Seating Strategies
– more than just Torque
and Angle

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.
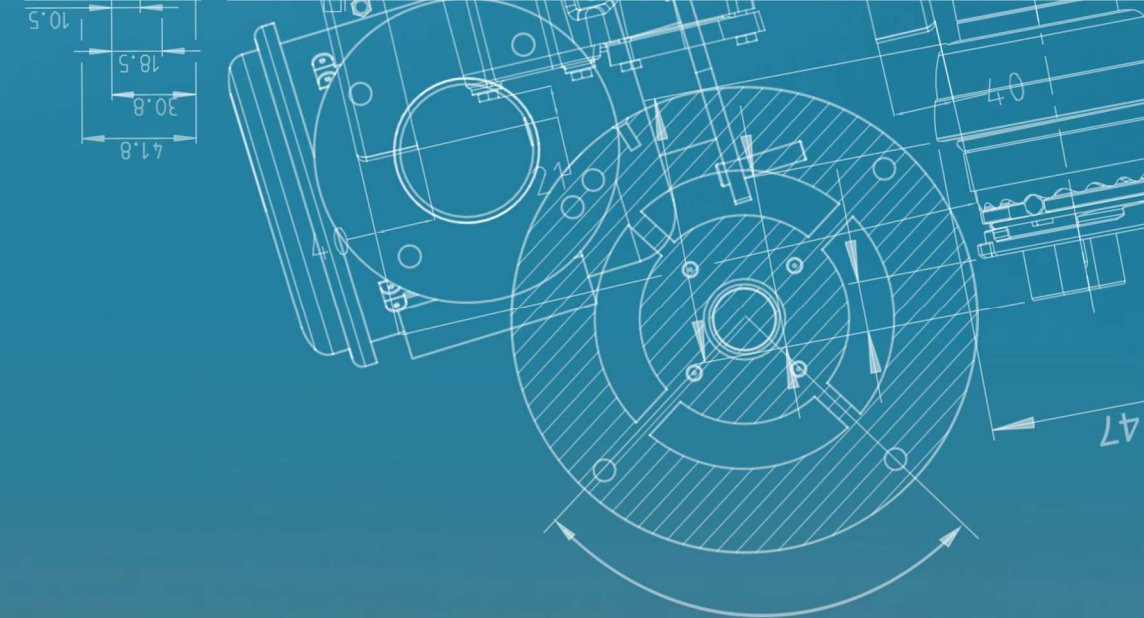
ETD MT

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.

Trigger button

Integrated vacuum

Tactile feedback

Bit grounding

Guiding light

reddot award

Transducerized tool accuracy

± **5%**

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

Common for all tools

→ Clean room certified

→ Work with the smart tightening strategies of TSM and SCS

→ ESD certified

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.

Compact design

LED light

Telescopic front part

Bit grounding

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 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.
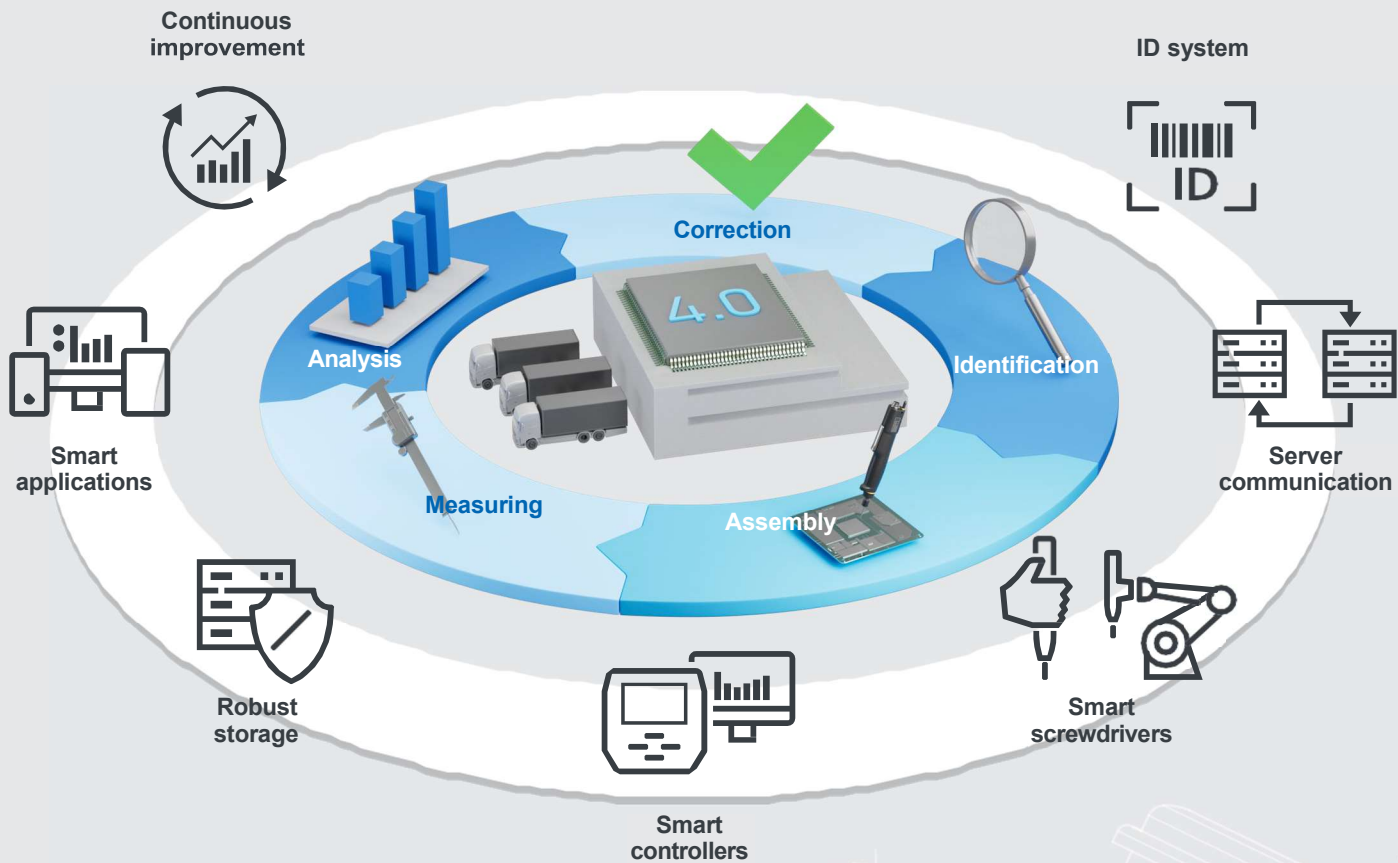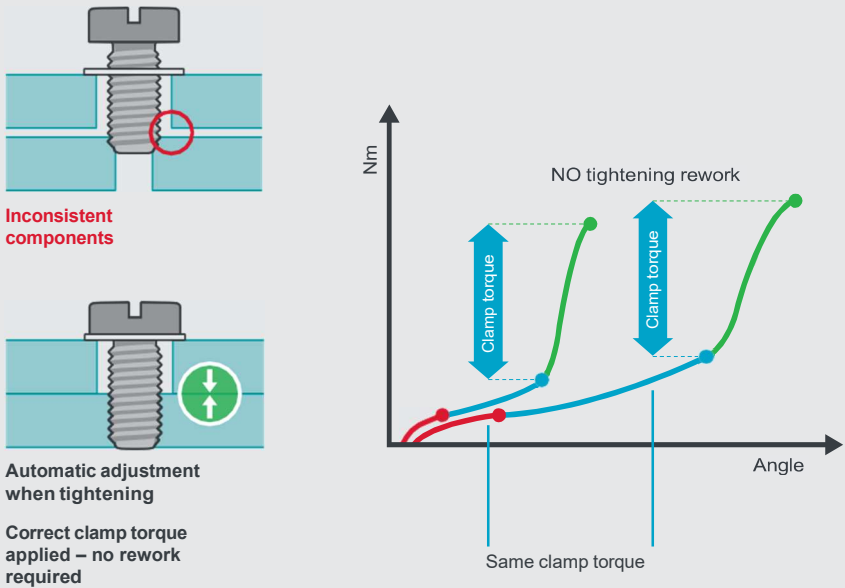
Smart Torque Seating Monitoring

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
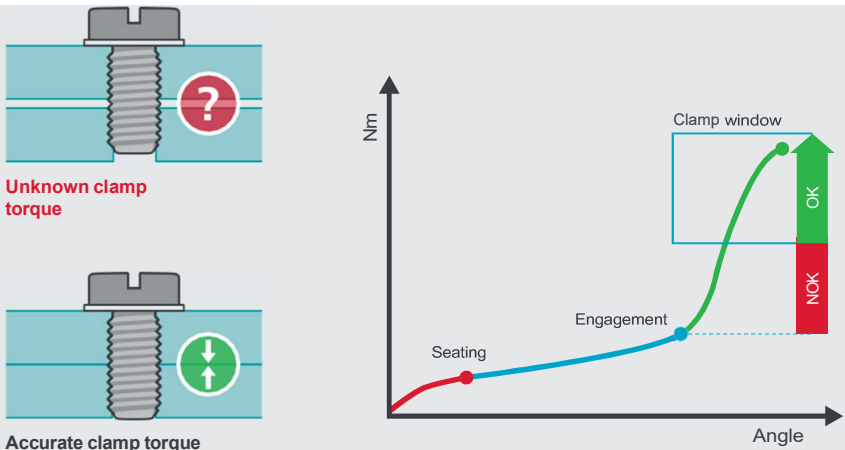
Smart Seating Control Strategy

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

Continuous improvement · ID system · Correction · Identification · Analysis · Smart applications · Measuring · Assembly · Server communication · Robust storage · Smart controllers · Smart screwdrivers

Accessories and part numbers

Controller & IAM

Controller Unit	Ordering No.
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.

MT FOCUS 6000

MTF6000 Portable Station

Model	Ordering No.
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

MTF6000 Portable Station

QMC 21-05

QMC 21 QMC 41

Fixtured Screwdrivers – QMC range

Model	Torque range cNm	in lb	Speed rpm	Length mm	Overall width mm	Weight kg	lb	Bit Drive	Ordering No.*
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

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

QMT 41 **QMT21**

Fixtured Screwdrivers – QMT range

Model	Torque range cNm	in lb	Speed rpm	Length mm	Overall width mm	Weight kg	lb	Bit Drive	Ordering No.*
Fixtured transducerized									
QMT 21-10-HM4	2 - 10	0,18 - 0,89	2000	183	22	0,30	0,66	HM4	8432084310
QMT 41-50-HM4	10 - 50	0,9 - 4,4	2000	204	30	0,61	1,30	HM4	8432084350
QMT 41-100-HM4	20 - 100	1,8 - 8,9	2000	204	30	0,61	1,30	HM4	8432084360
QMT 41-50-I06	10 - 50	0,9 - 4,4	2000	209	30	0,61	1,30	1/4" Hex	8432084351
QMT 41-100-I06	20 - 100	1,8 - 8,9	2000	209	30	0,61	1,30	1/4" Hex	8432084361
QMT 41-150-I06	30 - 150	2,7 - 13,3	1000	217	30	0,63	1,40	1/4" Hex	8432084370
QMT 41-250-I06	50 - 250	4,4 - 22,1	750	217	30	0,63	1,40	1/4" Hex	8432084380

* 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	in lb	Speed rpm	Length mm	Overall width mm	Weight kg	lb	Bit Drive	Ordering No.*
Handheld current controlled, without push-to-start									
ETD M08 ABL V2	2 – 8	0.18 – 0.7	1350	185	29	0.30	0.66	HM 4	8432 0815 18
ETD M20 ABL V2	5 – 20	0.44 – 1.77	900	185	29	0.30	0.66	HM 4	8432 0815 21
ETD M27 ABL V2	7.5 – 27	0.66 – 2.4	900	185	29	0.30	0.66	HM 4	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	HM 4	8432 0815 50
ETD M80 ABL V2	20 – 80	1.77 – 7.1	1100	238	36	0.61	1.37	HM 4	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

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

ETD MT41 **ETD MT21**

Handheld Screwdrivers – ETD MT range

Model	Torque range cNm	in lb	Speed rpm	Length mm	Overall width mm	Weight kg	lb	Bit Drive	Ordering No.*
Handheld transducerized									
ETD MT 21-10-HM4	2 – 10	0,18 – 0,89	2000	226	32	0,35	0,77	HM4	8432084510
ETD MT 41-50-HM4	10 – 50	0,9 – 4,4	2000	248	34	0,60	1,32	HM4	8432084550
ETD MT 41-100-HM4	20 – 100	1,8 – 8,9	2000	248	34	0,60	1,32	HM4	8432084560
ETD MT 41-50-I06	10 – 50	0,9 – 4,4	2000	254	34	0,65	1,43	1/4" Hex	8432084551
ETD MT 41-100-I06	20 – 100	1,8 – 8,9	2000	254	34	0,65	1,43	1/4" Hex	8432084561
ETD MT 41-150-I06	30 – 150	2,7 – 13,3	1000	254	34	0,65	1,43	1/4" Hex	8432084570
ETD MT 41-250-I06	50 – 250	4,4 – 22,1	750	254	34	0,65	1,43	1/4" Hex	8432084580

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

Accessories and part numbers

Cables QMC, QMT, ETD M ABL V2, ETD MT	Ordering No.
1.5 m	8432 0835 15
2 m	8432 0835 20
3.5 m	8432 0835 35
5 m	8432 0835 50

Tool Cable

MTF6000 Power Supply Units	Ordering No.
36V/180W ETD M ABL V2 & QMC, all tools	8432 0840 02

Power Supply Unit

Multi Charger & Extra Battery (Optional) *	Ordering No.
Multichanger 18-36V	4211 6083 84
Extra Lithium Battery 36 V	4211 6083 86

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

Multichanger

Extra Lithium Battery

Vacuum Adapters

Model	Nozzle Ø mm	Tool Bit Drive	Tool Model	Ordering No.
QC Vacuum Adapter	5.8	HM4	ETD MT	8432 0770 60
QC Vacuum Adapter	9.8	¼" HEX	ETD MT	8432 0770 61
QC Vacuum Adapter	5.8	HM4	QMC 21, ETD M ABL V2, QMT 21	8432 0770 62
QC Vacuum Adapter	9.8	¼" HEX	QMC 41, QMT 41	8432 0770 63
QC Vacuum Adapter	5.8	HM4	QMC 41, QMT 41	8432 0770 64
QC Vacuum Adapter	9.8	¼" HEX	ETD M ABL V2	8432 0770 65
QC Vacuum Adapter	11.8	¼" HEX	ETD MT	8432 0770 66
QC Vacuum Adapter	11.8	¼" HEX	QMC 41, QMT 41	8432 0770 67
QC Vacuum Adapter	11.8	¼" HEX	ETD M ABL V2	8432 0770 68

Vacuum Adapters
for ETD M, QMC and QMT

Vacuum Nozzles

Model	Nozzle Ø mm	Ordering No.
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
for QMT

Vacuum Pump	Ordering No.
Smart Vacuum Pump MT	8432 0854 00

Smart Vacuum Pump

Fieldbus Module	Ordering No.
EtherCAT Module MT	8432 0853 10
Profinet Module MT	8432 0853 20
Ethernet/IP Module MT	8432 0853 30

Fieldbus Module

SDS-SR

SDS SR

SDS

Screw Dispenser System	Screw Size	Ordering No.
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	Ordering No.*
Current controlled				
ETD M08 ABL V2 OG	2–8	2.3	41.1	8432 0815 81
QMC 21-08-OG	3–8	2.3	41.1	8432 0844 79
QMC 41-50-HM4-OG	18–50	5	43.5	8432 0844 81

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

ETD M08 ABL V2 OG

QMC 21-08-OG

QA Station MT & IAM QA

Model	Ordering No.
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

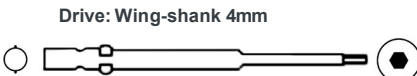| Model	cNm	lb	Drive	Overall Length	Ordering No.
MT TS 1	1	0,09	Ø 3 mm	87	8432 0822 20
MT TS 2	2	0,18	Ø 3 mm	87	8432 0822 21
MT TS 5	5	0,44	Ø 3 mm	87	8432 0822 22
MT TS 10	10	0,88	Ø 3 mm	87	8432 0822 23
MT TS 20	20	1,77	Ø 3 mm	87	8432 0822 24
MT TS 50	50	4,42	1/4" HEX	104,5	8432 0822 25
MT TS 100	100	8,85	1/4" HEX	104,5	8432 0822 26
MT TS 200	200	17,70	1/4" HEX	104,5	8432 0822 27
MT TS 500	500	44,25	1/4" HEX	103	8432 0822 28

In-line Rotary Transducer

In-line Rotary Transducer MT TRA Range

Model	cNm	lb	Drive	Overall Length	Ordering No.
MT TRA 50	50	4,42	1/4" HEX	105	8432 0820 45
MT TRA 100	100	8,85	1/4" HEX	105	8432 0820 46
MT TRA 200	200	17,70	1/4" HEX	105	8432 0820 47
MT TRA 500	500	44,25	1/4" HEX	105	8432 0820 48

Transducer cable

Transducer cable	Ordering No.
Transducer Cable 0, 23 m	8432 0822 31
Transducer Cable 1, 8 m	8432 0822 30

Test Joints

Test Joints

Hex bits

Model	cNm	Drive	Screw Head Profile	Ordering No.
M6 Soft joint	500-1000	1/4" HEX	HEX 5mm	8432 0833 62
M6 Soft joint	200-500	1/4" HEX	HEX 5mm	8432 0833 61
M4 Soft joint	27-200	1/4" HEX	HEX 3mm	8432 0833 60
M3 Soft joint	5-27	1/4" 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	1/4" 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	1/4" HEX	HEX 5mm	8432 0833 55
M4 Hard joint	27-200	1/4" HEX	HEX 3mm	8432 0833 54
M3 Hard joint	5-27	1/4" 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	1/4" HEX	HEX 1,5mm	8432 0833 51
M2 Hard joint	0-10	Ø 3 mm	HEX 1,5mm	8432 0833 50

Drive: half moon 4mm

Drive: Wing-shank 4mm

Drive: ¼" Hexagon, Style E6.3

Hex Bits for Test Joints

Screw Head Profile	Length (mm)	Ordering No.
HEX 1,5mm	44	4023 0002 41
HEX 2,5mm	44	4023 0002 43
HEX 3mm	44	4023 0002 44
HEX 1,5mm	60	4023 0002 60
HEX 2,5mm	60	4023 0002 62
HEX 3mm	60	4023 0002 63
HEX 2,5mm	49	4023 131200
HEX 3mm	49	4023 071000
HEX 4mm	49	4023 071100
HEX 5mm	49	4023 071200

To learn more, visit:

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