MicroTorque Smart Connected Electronics

Get smart, connected and efficient

Realizing the Smart Factory with Atlas Copco MicroTorque

Industry 4.0 – The Fourth Industrial Revolution – is driving the evolution of the assembly process. The digitalization of manufacturing and assembly means shifting the way we look at manufacturing in terms of production optimization and automation.

The more informed you are, the better decisions you can make. Having smart tools on your line means that you have specific tightening information fed into the production system, information communicated to you concerning critical details of your components, materials and tightening process. This provides a valuable opportunity to increase efficiency and results with pro-active problem solving, alongside with considerable energy savings from efficiency improvements.

We call it – Smart Connected Electronics.

A part of Atlas Copco Smart Connected Electronics. The industry is moving forward with Industry 4.0 – and the benefits to gain from the evolution are huge. With MicroTorque you have a fastening solution that is fully equipped to meet the requirements of the future. Whatever your needs – there is a solution in the MicroTorque family.

Increased uptime: Schedule preventive maintenance and use multiple and flexible tightening strategies to easily switch settings and increase your uptime. Decrease downtime with instant reaction to tightening issues and drive data driven process improvements.

Reduction in defects: A secure and effective error proofing assembly with smart tightening strategies and work flow instructions directly in the compact controller.

New product introduction: Save time and make efficient new product introductions. Set up new advanced processes quickly – and utilize existing information for the future.

Improved productivity: Drive process improvements and boost your productivity while reducing rework from common tightening issues such as floating screws and stripped joints.

Human factors: Give the tightening system full control. Assure high quality tightenings with smart and advanced tightening strategies, and simplify the process with work flow sequences and instructions.

Reduction in energy use: MicroTorque is designed to be energy efficient with its compact and lightweight systems and integrated functionalities.

Is this your factory Today?

1. **Lack of operator guidance**

No error proofing & poor process control

High turnover of operators combined with lack of guidance and error proofing leads to high human errors in production process.

2. **Multiple screwdrivers**

More human errors & lower productivity

Operators can easily choose the wrong screwdrivers for tightening. This affects productivity and has high risk of quality issues.

3. **Unreliable and unintelligent screwdrivers**

Lower yield rate but higher inspection investment cost

These low-end clutch screwdrivers cannot screw properly based on component variations and detect common tightening issues, e.g. floating screws. Issues will pass undetected to testing station affecting the yield rate of the line.

4. **No error detection of missing screws and screw misalignment**

Higher rework & scrap costs due to poor product quality

Robots failing to detect missing screws can result in cycle time increase, loss of productivity and quality issues. Without detection of screw misalignment, unnecessary rework and damaged parts and components can increase, resulting in high scrap costs.

5. **Lack of quality data and assembly process information**

No traceability of defects & process visibility

Without data and information about the process, it becomes a guessing game to address issues and optimize your production process.

we shape your Future!

1. **Operator guidance with SQS & TPS**

More error proofing & full process control

Clear operator guidance and instructions with SQS and full position and sequence control with TPS can increase error proofing and minimize mistakes to the workstation.

2. **One smart MicroTorque, multiple torques delivered**

Higher productivity with lower human errors

Multiple torque programs of smart MicroTorque combined with batch sequence make the process extremely easy and reliable.

3. **MTF6000 & advanced tightening strategies**

Higher yield rate & lower investment cost in inspection

Clamp torque measurement & multi step tightening, configurable speed, angle monitoring guarantee that the screw is properly tightened and assembled correctly.

4. **Smart screw pick up & automatic rework**

Lower rework & scrap cost with better product quality

Smart screw pick up & detection of misaligned screws with smart vacuum pump eliminates time waste, improving the cycle time and product quality. Automatic rework directly inside the station helps to minimize reworks, inspections and makes it right at first time.

5. **Process optimization with QA Station MT & ToolsNet 8**

Full traceability of defects and process visibility

QA Station MT stores all the torque verification data, which can be exported as a digital report for quality assurance audit. Meanwhile, ToolsNet 8 software can collect all the tightening data, enabling continuous process improvement.

Your Vision, Our Mission

Atlas Copco has more than 140 years of experience of improving the production process for our customers. Now, as a pioneer to drive innovation in smart manufacturing process, we would like to guide our customers through the journey of Industry 4.0.

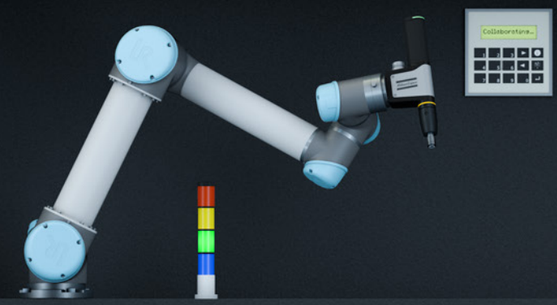
Ready for Industry 4.0 when you are

Connecting it, controlling it, and passing it forward.

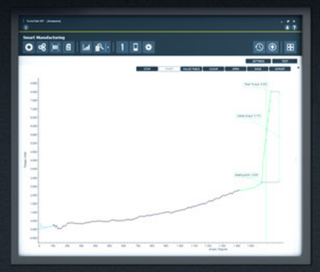
The only way to deliver in the era of Industry 4.0, is to work with smart tools and smart solutions that connect and communicate. The MTF6000 is revolution-ready!

MES

Information transparency:
ToolsNet 8 delivers the information and the overview you need to form correct decisions. Or integrate via Open Protocol with any MES system and make the information available where and when needed. With the power of knowledge your process will be optimized – and your results will speak for themselves.



Interoperability:
MTF6000 makes sure that all your machines, devices and sensors are connected and communicating efficiently – anything from barcode readers to PLC:s, sensors and collaborative robots. With the interoperability and commonality of working with tools that are made to collaborate, you gain complete error proof workstations.



Technical assistance:
Powered by ToolsTalk MT, the MTF6000 takes responsibility of the process. With a user friendly software interface, and the power to easily analyze and configure improvements, it makes complex processes simple. The MicroTorque system is a natural step towards automating and systemizing manual operations.

Decentralized decisions:
The MicroTorque system decentralizes the decision, down to the smallest of components making sure no faulty products leave your hands. With advanced error proofing tightening strategies and complete workflows, MicroTorque takes control of your tightening process – giving you an automated, stable and flexible production process.

The enabler of Smart Connected Electronics

ToolsTalk MT lets you take advantage of all the benefits the MicroTorque system has to offer your assembly process. ToolsTalk MT is a powerful software for setup, viewing results, analyzing graphs and keeping track of tool information. Taking your tightening into Industry 4.0.

ToolsTalk MT – empowering the MicroTorque System

ToolsTalk MT is the software that makes everything possible. It is an important piece that completes and empowers the MicroTorque System – and it is the right solution for any low torque application management system.

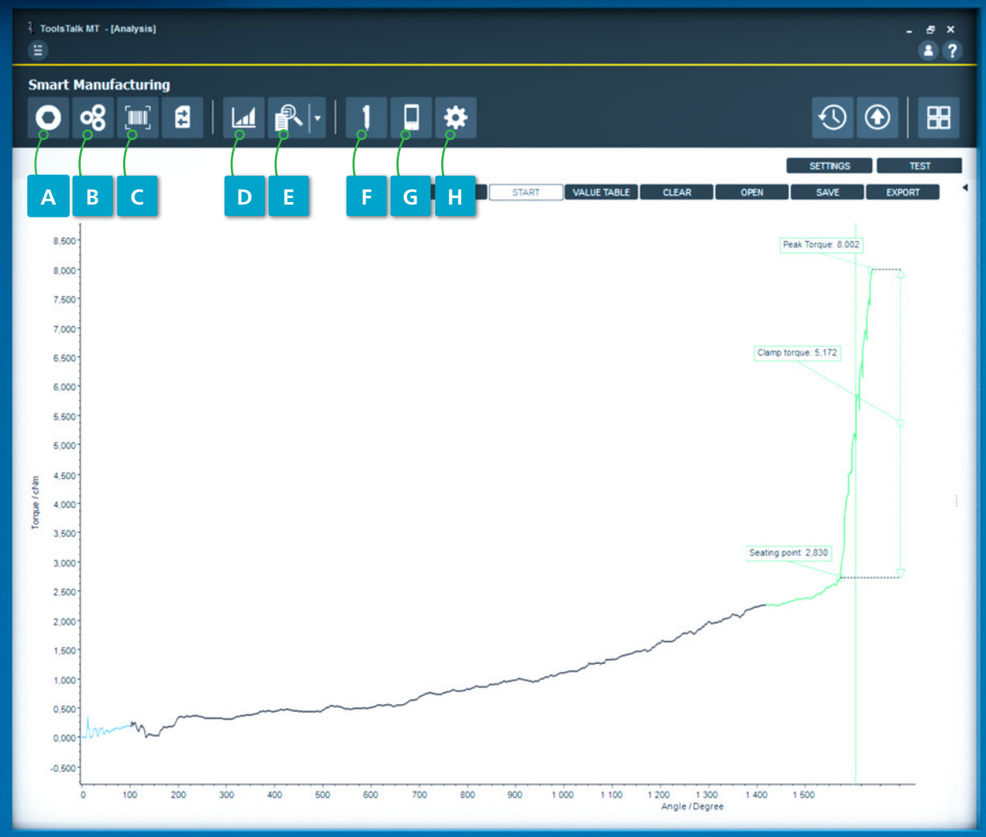
A PSETS: Optimize your quality and productivity by creating customized tightening programs, Psets, for each joint. Define angle, speed and torque – or simply use our smart tightening strategies. And easily change the settings whenever needed.

B BATCH SEQUENCES: Set your workflow sequence with batch sequence, and let your MTF6000 do the rest. It will automatically apply requested torque or instruct the operator, all to ensure an error proof and productive assembly.

C IDENTFIERS: Reach higher flexibility by adding barcodes or RFID codes to easily activate workflow instructions (batch sequences), tightening programs (Psets), save important information to your tightening or set up rejection management.

D ANALYSIS: Review your tightening in depth, with information from critical details of your process and components. Elevate your productivity and quality by making decisions based on accurate and reliable information.

E RESULTS: Review your results. Understand your process and make informed decisions. Make sure to have a traceable production and track results to understand current and previous tightening results.



F TOOL SETTINGS: Keep track of the quality of your tools, by analyzing the tool lifetime performance and setting calibration intervals.

G CONTROLLER SETTINGS: Modify your controller to fit your needs. Name it, customize units for your reports, choose your result view and make it an integrated part of your process. Simply access everything you need to set up the controller the way you want it.

H DIGITAL I/O AND PASSWORD SETTINGS: Make MTF6000 an integrated part of the assembly process by managing the configurable Digital I/O, and define access levels for different users. Make your controller an integrated, intelligent part of your process.

MTF6000 – our latest innovation in MicroTorque

Whether you are manufacturing high value consumer goods or sensitive electronics, MTF6000 together with ToolsTalk MT and our wide range of screwdrivers, is designed to bring productivity and quality to your production.

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Smart

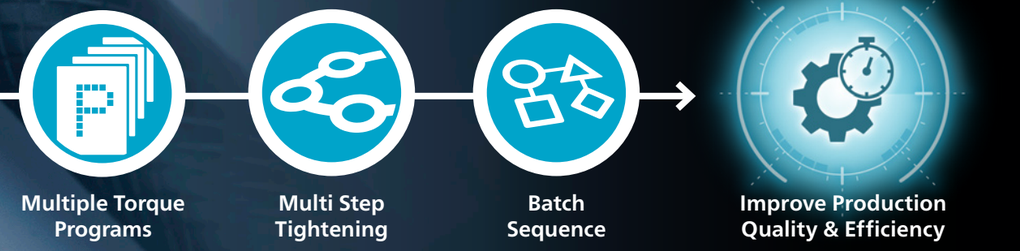
Get full process control, improved quality and an optimized tightening process with MTF6000. The smart tightening strategies Torque Seating Monitoring and Seating Control Strategy automatically reveal and eliminate tightening issues such as floating screws, stripped joints or insufficient torque. Combined with saving and graphically displaying tightening data, MTF6000 assures detection and reporting of process abnormalities. Providing you with invaluable information on the tightening, as well as the complete assembly process. This is the investment that will, from day one, save you time and money.

Connected

Reduce down time and setup time, assure full traceability and integrate with any system using one of the many communication ports. Get complete access from anywhere, using Remote Access and Ethernet to detect and react instantly to any tightening process abnormality. Connect barcode scanner and RFID reader directly with the controller to assure traceability, control operators' access level and add rejection management. Easily connect to the powerful software ToolsNet 8 for full visualization of your process. All of this, only using MTF6000.

Efficient

It has never been easier to combine productivity with flexibility. Multiple Torque Programs minimizes and eliminates setups while Multistep Tightening helps you to reduce cycle time maintaining high quality. With batch sequence it is easy to create work flow sequences that combine multiple strategies, customized for your product, that will error proof your assembly – sometimes eliminating the need of a PLC altogether. It is all you need to maintain maximum productivity with maximum flexibility.

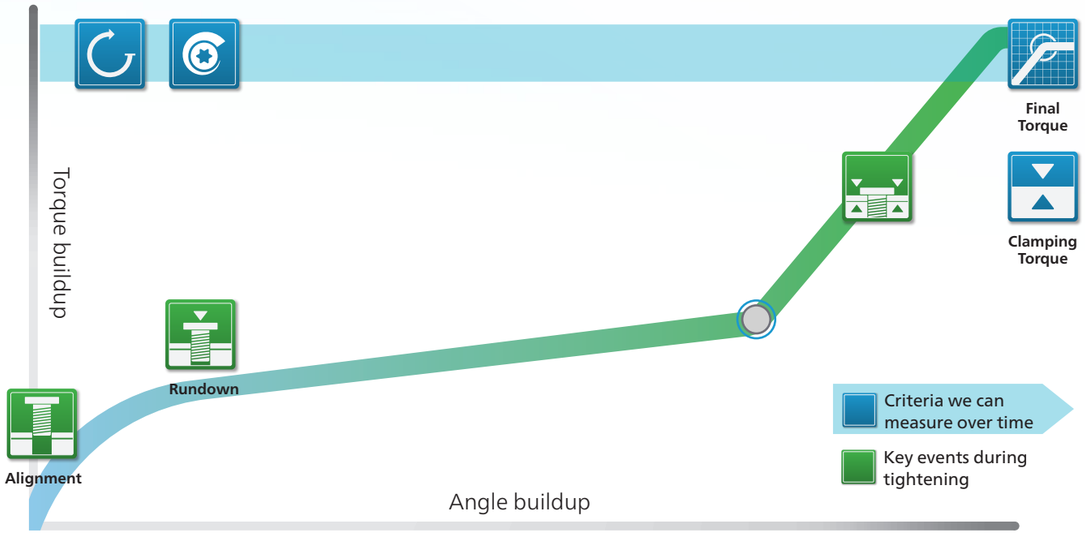


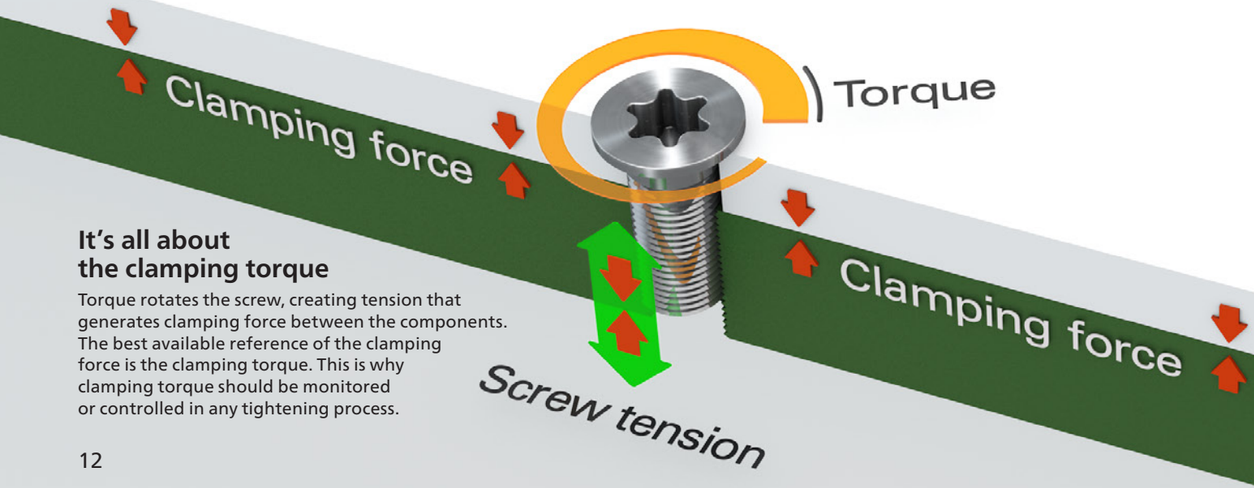
We focus on clamping torque – so should you

It really pays off to take a closer look at what happens during a tightening. There is a lot more to it than meets the eye. In order to visualize the general concept of a tightening we split the process into three phases: alignment, rundown and clamping. In the alignment phase, the tightening process is initiated, and the screw gently aligned with the joint. In the rundown, productivity is of importance and the screw is quickly tightened. The clamping force is initiated at the seating point, the point where the screw head meets the surface.

During all phases, critical factors are controlled and monitored; rotation angle, running torque and clamping torque.

With this information actions can be triggered in order to achieve a perfect tightening. And also, of course, in order to abort tightenings where errors such as damaged threads, missing parts and floating screws, would occur. These are all issues that would go undetected if you use conventional clutch screwdrivers. More about that on the page to the right.





It's all about the clamping torque

Torque rotates the screw, creating tension that generates clamping force between the components. The best available reference of the clamping force is the clamping torque. This is why clamping torque should be monitored or controlled in any tightening process.

The clutch tool will let a floating screw pass…

Many errors can go undetected when using clutch tools. As long as the final torque is reached, the tool will shut off. Even if, for instance, the tightening results in a floating screw, and your product leaves the assembly line with a built in defect. Resulting in rework, expensive recalls and damage to your brand.

- Misaligned entry
- Broken screw
- Damaged thread
- Missing parts
- Floating screw

Know when to avoid a clutch tool

When it comes to error proofing, all parameters you set for angle and torque are really to control the clamping torque. So why not just control the clamping torque to start with? A clutch tool will shut off when the right tension is reached on the clutch.

The relation between the tension and the torque is not consistent for different joints, nor a reliable measurement. So it really says nothing about the clamping torque. And this is a good reason to use a smart tool, for anyone working with high quality requirements!

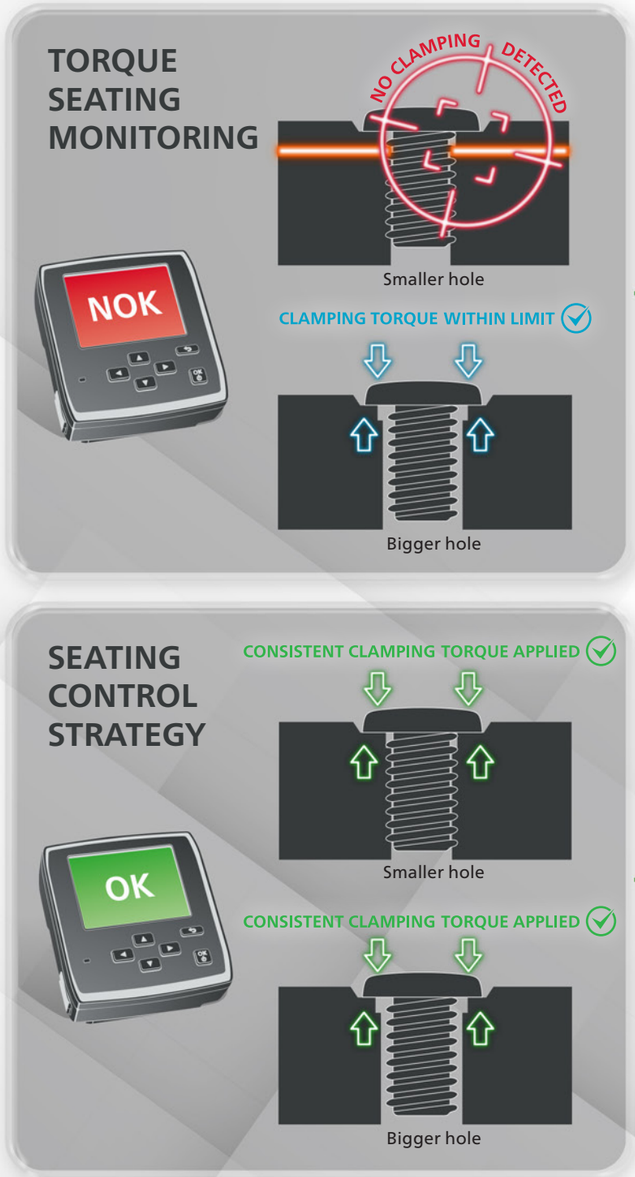
False comfort

The clutch tool has signaled the tightening as OK. But there is no way to know what really happened during the tightening. It's really just guess work.

The benefit of knowing – it's yours if you want it

Every step of the way

Two examples of a tightening process. Both utilizing clamping torque in some way. Throughout both processes angle and torque is measured, error proofing every step of the process. At completion, clamping torque and final torque is used to validate that the tightening was successful.



True error proofing – total comfort

When using clamping torque as one of the monitored factors you can rest assured that all your tightenings are done correctly. No "guess work" here.

OK

With the MTF6000 teamed up with ToolsTalk MT you set up and adjust any kind of tightening process to fit your exact needs. This is the fastest and most productive way for you to make sure that your products are assembled with perfect tightenings time after time. Safeguarding you from reworks and expensive recalls.

	Torque Seating Monitoring	Seating Control Strategy
Tightening Strategy Goal	Secures a precise final target torque and monitors to ensure a stable clamping torque during the tightening.	Secures a precise clamping torque by automatically adjusting the final target torque based on the seating torque.
Programme Process	You can set a pre-defined final target torque and an acceptable range of the clamping torque in MTF6000. Upon tightening completion, MTF6000 will verify whether the clamping torque is within the limit.	You can set a pre-defined clamping torque and an acceptable range of the final target torque in MTF6000. Upon tightening completion, MTF6000 will verify whether the final target torque is within the limit.
Customer Benefit from Strategies	Detect floating screws with enhanced process visibility	Eliminate floating screws with optimized productivity

Functionality design according to process needs

Intelligent Application Modules (IAM) offers the right functionality level to any process

IAM Workstation
For stand alone solutions

for the single work place...
- ✔ High quality tightening
- ✔ I/O integration
- ✔ Workflow control with batch sequence

High tightening quality

IAM Process
For fully connected solutions

all the benefits of IAM Workstation and more...
- ✔ Advanced tigthening strategies
- ✔ Full connectivity with Open Protocol
- ✔ Advanced data reporting with TN8 reporting

Full connectivty & advanced tightening strategies

IAM Automation
Made for automation

all the benefits of IAM Process and more...
- ✔ 999 Psets for joint optimization
- ✔ Field bus communication for simple integration
- ✔ Allow parameters updates of Pset through external system
- ✔ Support UR+ cobot integration

Simple automation integation with field bus

IAM Functionality Matrix

	IAM Workstation 8432 0852 10	IAM Process 8432 0852 20	IAM Automation 8432 0852 30
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	✔	✔	✔
Thread Engament Step	✔	✔	✔
Angle Step	✔	✔	✔
Torque Step	✔	✔	✔
Seating Control Strategy (SCS)		✔	✔
Torque Seating Monitoring (TSM)		✔	✔
Bit Slip Detection		✔	✔
Damaged Thread Detection		✔	✔
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, Ethernet	USB, RS232, Ethernet
Open Protocol (Atlas Cocpo 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	✔	✔	✔

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.

Take tightening to a whole new level

Impeccable solutions for smart manufacturing

Our transducerized screwdriver is the most intelligent tool on the market. The transducer inside the tool measures the actual calibrated torque applied to each joint at every tightening.

The closed feedback loop between the transducer and the controller ensures that the true torque values are continuously sent back to the controller from the tool.

True torque values measured at every tightening

The true torque data are sent between transducer and controller in a closed feedback loop

A smart algorithm continuously compensates for temperature and friction variations

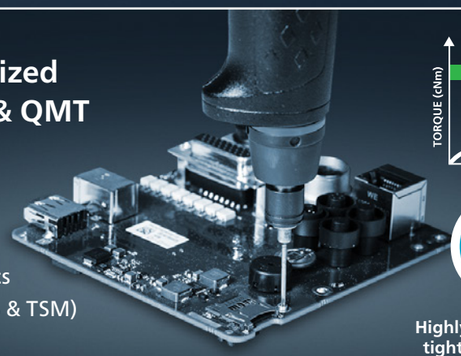
With the current controlled screwdriver, the desired target torque can be set in the controller. The controller automatically adjusts the current level supplied to the screwdriver in order to reach the pre-defined target torque, based on calculations from parameters such as friction and heat.

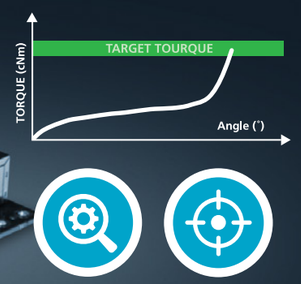
The current supply to the tool is automatically adjusted to achieve the pre-defined target torque

A smart algorithm continuously compensates for temperature and friction variations

Strengths of transducerized screwdrivers – ETD MT & QMT

- Superior torque accuracy
- Precisely detect overshoot
- Always measure the true torque applied
- Very reliable for process statistics
- Smart tightening strategies (SCS & TSM)

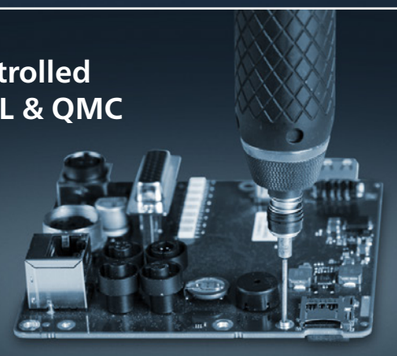




Highly reliable torque data, enhanced tightening visibility and traceability

Strengths of current-controlled screwdrivers – ETD M ABL & QMC

- High torque accuracy
- Integrated spring system and smart speed configuration to avoid overshoot
- Smart tightening strategies (SCS & TSM)



The transducerized handheld range –ETD MT

The MicroTorque's transducerized handheld screwdriver range ETD MT – An enhancer to further drive transformation of Industry 4.0 and smart manufacturing in your production process.

With superior ergonomic design and improved functionalities, ETD MT helps to minimize rework and scrapping cost, boosts productivity and further enhances detection and traceability of tightening errors.

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Smart

ETD MT & MTF6000's torque seating monitoring & seating control strategy are unique error proofing solutions in the market which detect seating point, securing a sufficient clamping torque every time. This ensures the best quality of each tightening. It also provides real-time tightening graphs & detailed data reporting for process control.

Torque Seating Monitoring → **Seating Control Strategy** → **Graphic Data & Analysis** → **Reduce Quality Cost**

Interactive

The front LED light is fully configurable & improves the ergonomics, illuminating the workpiece and error proofing, by providing operator feedback. Gentle vibration will be given to the operator as an immediate feedback when a NOK result occurs. Configurable function button is fully integrated with MTF6000 to light up the guiding light, start the vacuum & initiate a reverse tightening, etc. With batch sequence, the operator is guided through complex operations with repair & rejection assistance.

Operator Guiding Light & Tactile Feedback → **Multi-functional Button** → **Batch Sequence** → **Increase Operators' Productivity**

Precise

As a superior performer on tightening, ETD MT has a built-in transducer which can precisely measure the real torque applied on the screw at each tightening in real-time, giving extremely accurate and reliable tightening results. This further enhances the detection & traceability of tightening errors. Current monitoring provides an extra security to monitor the tightening torque.

Superior Torque Accuracy → **Real Torque Measurement** → **Visibility & Traceability** → **Improve Production Quality & Efficiency**

The current controlled handheld range – ETD M ABL

The MicroTorque's current-controlled handheld screwdriver range ETD M ABL is extremely ergonomic, very compact and full of functionalities.

Equipped with torque control functionality, ETD M ABL has high torque accuracy and ensures great tightening.

Smart

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Torque Seating Monitoring → **Seating Control Strategy** → **Graphic Data & Analysis** → **Reduce Quality Cost**

Operator friendly

ETD M ABL range is extremely ergonomic, very compact with light weight. Operator feedback guides and supports the user – assuring an operator-friendly system. With batch sequence, the operator is guided through complex operations with repair & rejection assistance. It is also full of different functionalities which can be customized to your production needs.

Operator Feedback → **Batch Sequence** → **Compact & Light Weight** → **Increase Operators' Productivity**

Error proofing

Bringing complete error proofing to your process, ETD M ABL range utilizes the angle monitoring and control, customizes the tightening strategy according to yours needs, detects wrong screws, missing components or floating and misaligned screws. With high torque accuracy, ETD M ABL delivers perfect tightenings time after time. Combined wtih error proofing solutions such as bit slip detection, damaged thread detection, torque and angle limits and automatic work flow sequences, it gives you a complete control of your assembly process.

High Torque Accuracy → **Angle Monitoring & Control** → **Error Proofing Integration** → **Improve Production Quality & Efficiency**

The transducerized fixtured range – QMT

The MicroTorque's transducerized fixtured screwdriver range QMT –Automation ready design combined with extremely high accuracy & enhanced traceability will further evolve your smart manufacturing process to Industry 4.0

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Torque Seating Monitoring → **Seating Control Strategy** → **Graphic Data & Analysis** → **Reduce Quality Cost**

Automation ready

MicroTorque QMT series is an innovative and revolutionary fixtured solution in the MicroTorque family. The compact design brings a powerful solution full of features to a lightweight tool – making it optimal for automation. It is easy to install on any robot or torque arm and the many communication ports allow communication with, and integration in, any production process.

Compact & Light Weight → **Easy Installation** → **Multi Communications** → **Reduce Automation Cost**

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Superior Torque Accuracy → **Real Torque Measurement** → **Visibility & Traceability** → **Improve Production Quality & Efficiency**

The current controlled fixtured range – QMC

Boosting productivity, improving quality and reducing costs – it is extremely light, compact and full of functionalities. The MicroTorque QMC Series fixtured screwdrivers, combined with the powerful MTF6000 controller, is the most advanced tightening solution for any low torque application.

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Made for Automation

QMC series brings years of development and experience from Atlas Copco into a compact tightening solution. QMC is made for automation, with countless error proofing possibilities making sure your costs are reduced.

Smart

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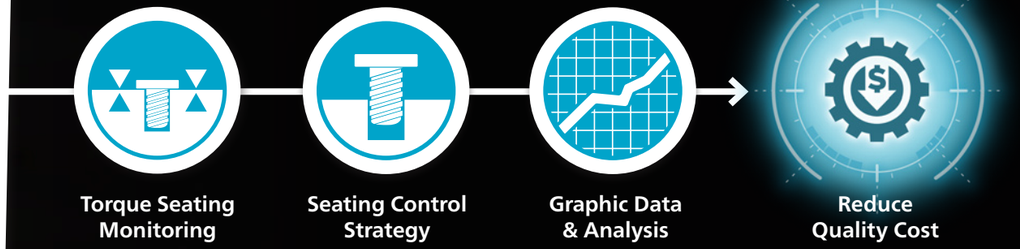

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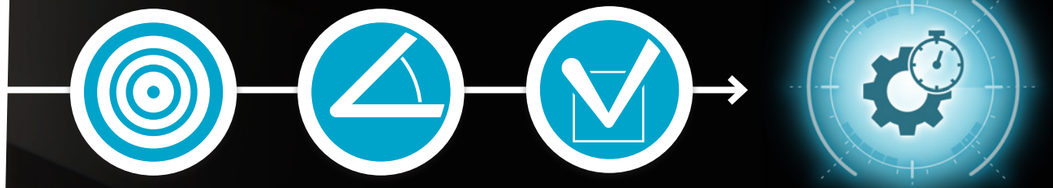


How is your quality assurance process nowadays?

PROBLEMS

- In a typical electronics factory, operators need to record and edit all quality assurance results manually every day.
- Torque check results are written down on a piece of paper and CMK is calculated manually.

CUSTOMER CONCERNS

- How to guarantee data accuracy for quality audit?
- How to decrease labor hours with a manual reporting process?

POTENTIAL LOSSES

Higher labor cost

Legal liability

PROBLEMS

- Operators frequently need to verify the torque of a huge amount of different unintelligent clutch screwdrivers.
- Torque check without any traceability, for example, line, station ID, screwdriver & controller serials are rarely recorded.

CUSTOMER CONCERNS

- How to ensure that operators follow the right process specification of each tool for torque check and adjustment in hectic production lines?
- How to track the defected screwdrivers once issues occur?

POTENTIAL LOSSES

Higher quality cost

Higher rework/scrap cost

QA Station MT

The ultimate quality control for your production!

Better QA Quality

Increased QA Efficiency

Improved QA Process Visibility

SMART

- Digital reporting reduces human errors and guarantees data accuracy, saving tremendous labor hours and hassles on manual reporting.
- Intelligent real-time result feedback and statistic calculations, e.g. CMK & deviation allow operators to have a better monitoring of the whole quality assurance process.

FLEXIBLE

- Pre-defined torque verification programs based on the process specification of the tools (target torque & limit %) can be activated easily via USB sync and barcode scan through QA Station MT for all screwdriver types.
- Operators also have the possibility to store their ID and log in the QA Station MT with barcode scanner / RFID card reader.
- High portability with robust carrier for easy and comfortable grip with 16-hour battery life. This allows a full-day torque verification in all the lines.

CONNECTED

- With USB sync and barcode scan, the line numbers, station ID, tools' / controllers' info, even tightening results can be transferred to the QA Station MT, so this enhances the traceability.
- It is possible for QA Station MT to be connected with the PLC of robot via IO cable, QA results like OK/ NOK / test completed can be sent in between. The robot can be pre-programmed to run torque check automatically after certain amount of tightening.

Atlas Copco MicroTorque

Sustainable solutions have always been our focus.

We take pride in offering our customers

eco friendly tools and solutions.

From how they are produced, to how they run.

Prolonging product life. A decreased weight on our fixtured tools contribute to the possibility of higher cycle rates on robot applications. Spare parts and service instructions are provided for the customer to ensure long product life.

Software updates. Easy to update with new software, following industrial trends and customer needs. Updates available via Ethernet or USB memory stick prolonging life length of controllers and tools.

Decreased standby consumption. Energy consumption decreased through integrated standby mode via timer, open protocol, digital I/O or standby button.

Prohibited and restricted lists. Compliance with Atlas Copco Prohibited and Restricted lists ensure use of safe chemicals and materials.

RoHS II directive (2011/65/EU)

REACH (EC No 1907/2006)

Triple certification. Atlas Copco Industrial Technique and Assembly Solutions are certified against ISO14001, ISO9001 and OHSAS 18001.

Recycling Information. Information regarding dismantling and recycling has been added in the Product Information to facilitate correct handling of parts within the MicroTorque system when it has served its purpose.

WEEE (2012/19/EU)

Safe chemicals. All chemicals used are ensured not to contain prohibited substances. Safety data sheets are available for all chemicals.

Less transportation. Minimized packaging and lower product weight decreases environmental impact from transport. The Atlas Copco worldwide service organization provides immediate and local service, reducing the need for unnecessary transportation.

Accessories and part numbers

MT FOCUS 6000

Controller & IAM

Controller Unit	Ordering No.
MTF6000	8432 0851 00
IAM MT Workstation	8432 0852 10
IAM MT Process	8432 0852 20
IAM MT Automation	8432 0852 30
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

Model	Ordering No.
MTF6000 Portable Station	8432 0851 10

MTF6000 Portable Station

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

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	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	Torque range lb	Speed rpm	Length mm	Overall width mm	Weight kg	Weight lb	Bit Drive	Ordering No.*
Fixtured transducerized									
QMT 21-25-HM4	5 - 25	0,44 - 2,21	1000	182,4	22	0,30	0,66	HM4	8432084325
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.

Accessories and part numbers

ETD M27

ETD M50

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	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 MT41-100-HM4

ETD MT 21-25-HM4

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	Ordering No.*
Handheld transducerized									
ETD MT 21-25-HM4	5–25	0,44–2,21	1000	226	32	0,35	0,77	HM4	8432084525
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.

Cables QMC, QMT, ETD M ABL V2, ETD MT	Ordering No.
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/72W	ETD M08/20/27 ABL V2 & QMC21-05/10/25	8432 0840 01
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

Accessories and part numbers

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

Vacuum Adapters

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

Vacuum Adapters

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

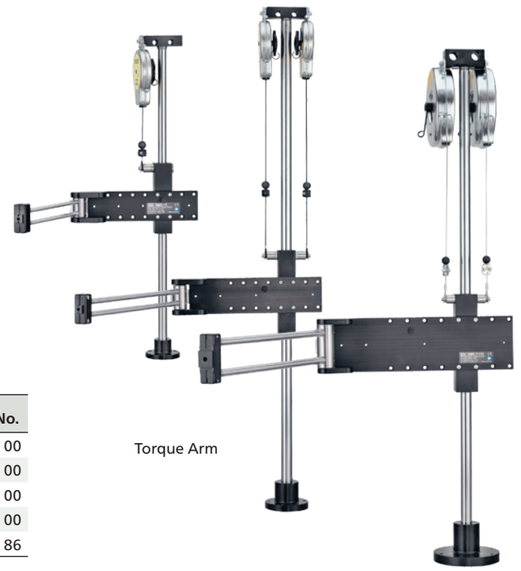
SDS SR

SDS

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

Tool Holder

Torque Arm	Model	Ordering No.
SMS T Series (Max 5Nm)	SMS T-5	4390 2006 00
SMS T Series (Max 12Nm)	SMS T-12	4390 2007 00
SML T Series (Max 5Nm)	SML T-5	4390 2000 00
SML T Series (Max 12Nm)	SML T-12	4390 2001 00
Tool holder		4390 1510 86



Torque Arm

Accessories and part numbers

QA Station MT

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 & IAM QA

Model	Ordering No.
QA Station MT	8432 0855 00

Static Transducer

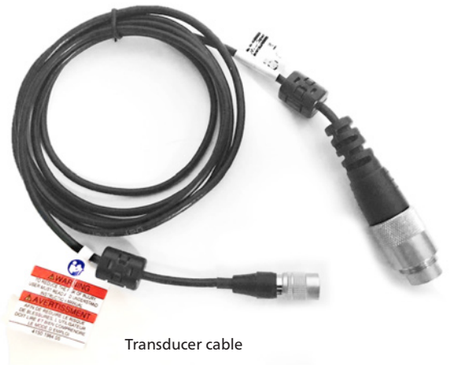
Static Transducer MT TS Range

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

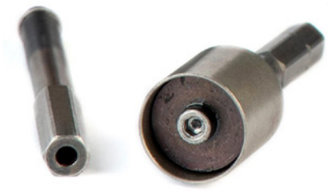
In-line Rotary Transducer MT TRA Range

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

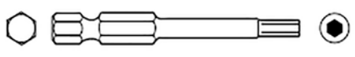
Model	cNm	Drive	Screw Head Profile	Ordering No.
M6 Soft joint	500-1000	1/4" HEX	HEX 5mm	8432 0833 62
M6 Soft joint	200-500	1/4" HEX	HEX 5mm	8432 0833 61
M4 Soft joint	27-200	1/4" HEX	HEX 3mm	8432 0833 60
M3 Soft joint	5-27	1/4" HEX	HEX 2,5mm	8432 0833 59
M3 Soft joint	5-27	Ø 3 mm	HEX 2,5mm	8432 0833 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

Hex bits

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

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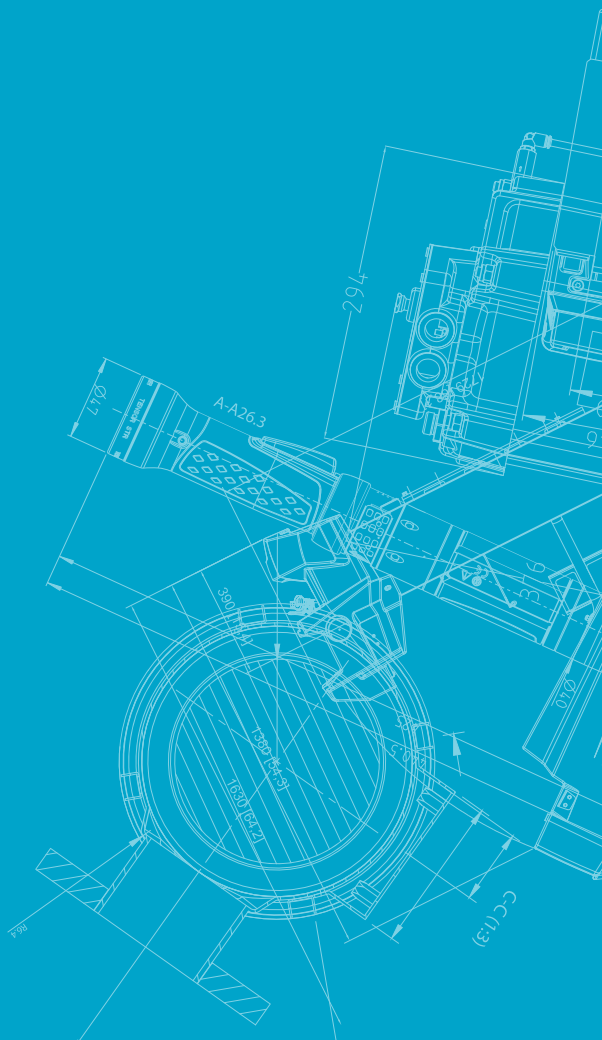

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