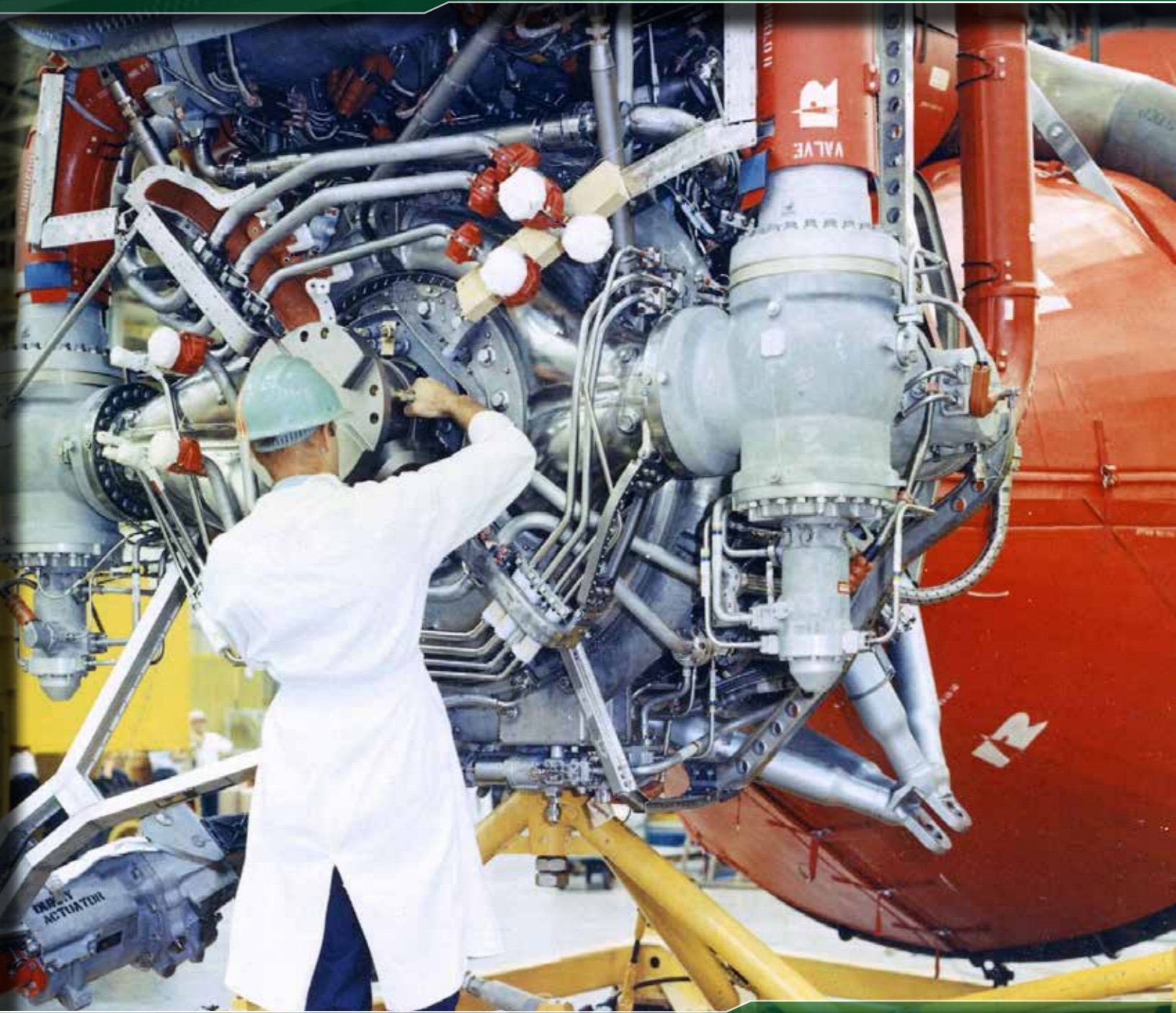


# AUDITOR



## Torque Measurement Solutions



Tightening and Verifying Assembly is Mission Critical



For over 40 years AIMCO has been working with manufacturers around the world, we are the complete global source for all assembly, fastening, and critical bolting needs. AIMCO can effectively and swiftly meet your needs whether you're in Thailand fastening a 3 mm nut at 3 Nm, or in Tennessee, USA torquing the last lug nut. AIMCO provides the tools and solutions, on a global scale, that guarantee the success of your project. It is with great pride that AIMCO can say the products that we manufacture are **MADE IN THE USA.**

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# TORQUE MEASUREMENT: OVERVIEW

**TORQUE MEASUREMENT AND THE VERIFICATION OF TORQUE TOOLS AND APPLIED TORQUE ARE AN INTEGRAL PART OF TODAY'S THREADED ASSEMBLY PROCESS.** The method used to measure torque can affect the judgments made regarding tool performance, assembly processes and overall product quality.

## DYNAMIC TORQUE

The torque produced during the actual tightening process, normally measured using rotary transducers and a torque analyzer. **Advantages:**

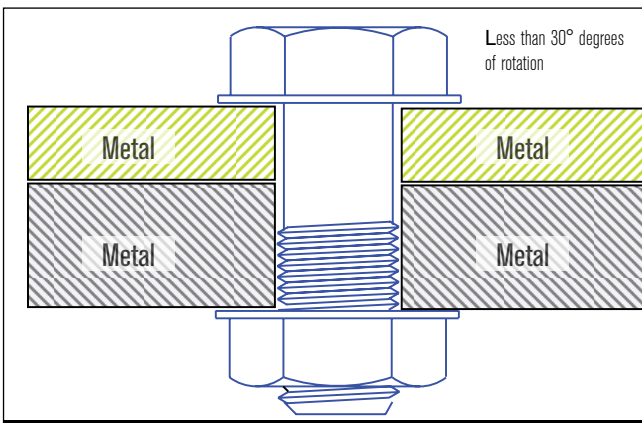
- Reduces operator influence.
- Measures applied torque.
- Can also include angle of rotation as error proofing parameter.

## RESIDUAL TORQUE

The torque measured by producing an incremental amount of movement of the fastener after the actual tightening process, normally measured using a dial or digital torque wrench. **Advantages:**


- Easy access to fastener.
- Error proofing.
- Can detect missed fasteners or joints with significant relaxation.


**HARD JOINT**



AUDIT METHOD

OR

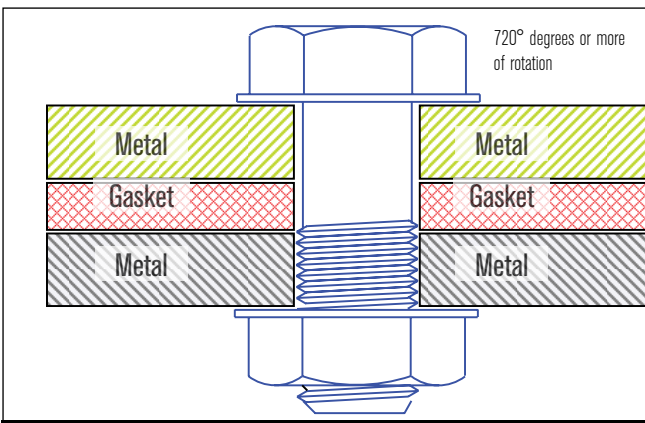




Dynamic Torque: 15 Nm


Residual Torque: 18 Nm

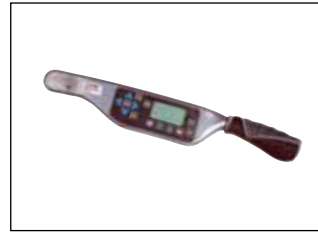
**SOFT JOINT**



AUDIT METHOD

OR





Dynamic Torque: 15 Nm

Residual Torque: 12 Nm

Values as examples only

A hard joint, one requiring a low degree of rotation during tightening, will normally show very little relaxation after tightening. Due to the high amount of remaining clamp load and friction within the joint members, additional movement of the fastener requires additional torque energy to be applied. Therefore, Residual Torque values will be higher than Dynamic Torque values.

Values as examples only

A soft joint, one requiring a high degree of rotation during tightening, will normally show significant amounts of relaxation after tightening. Relaxation leads to a loss of clamp load and friction within the joint members. Due to this relaxation, additional movement of the fastener requires relatively small amounts of additional torque energy and Residual Torque values will be lower than Dynamic Torque values.

# TORQUE MEASUREMENT: OVERVIEW

## CHECKING TORQUE MEASUREMENT BEFORE, DURING, AND AFTER ASSEMBLY ENSURES QUALITY

**MANUFACTURING.** Proper torque measurement is critical in many assembly operations. AIMCO utilizes years of experience to design a process around your specific auditing requirements. From simple dial wrenches to electronic data collectors and joint analyzers for R&D, AIMCO is with you every step of the way.

### BEFORE ASSEMBLY – TOOL CAPABILITY

#### *Is the tool working correctly?*

Testing and verifying tools under controlled conditions. Identify the accuracy & repeatability of the tool before using it in production.

#### **Equipment used:**

- Desktop testers with internal transducers.
- Auditor™ analyzers with either stationary or rotary transducers.
- UFT hydraulic joint simulators and rotary transducers.

### PRODUCTS TO USE...



### DURING ASSEMBLY – PROCESS CAPABILITY

#### *How does the tool work with the product being assembled?*

Testing the tools during the actual process helps ensure that the process is working correctly. This is where variables in the parts and influences from the operator can be accounted for.

#### **Equipment used:**

- Torque Data Collectors/Analyzers
- Auditor™ Rotary Transducers



### AFTER ASSEMBLY – PRODUCT CAPABILITY

#### *Does the finished product meet the user's expectations?*

Checking the product after assembly is the final opportunity to check the product prior to user delivery. This is the way to verify that product quality is satisfactory.

#### **Equipment used:**

- Click/Dial wrenches
- Electronic wrenches with Auditor™ analyzers.
- Rotary transducers and Auditor™ analyzers with hand driver to move fastener.



# TORQUE MEASUREMENT: OVERVIEW

## MEASURING QUALITY – PROCESS CAPABILITY

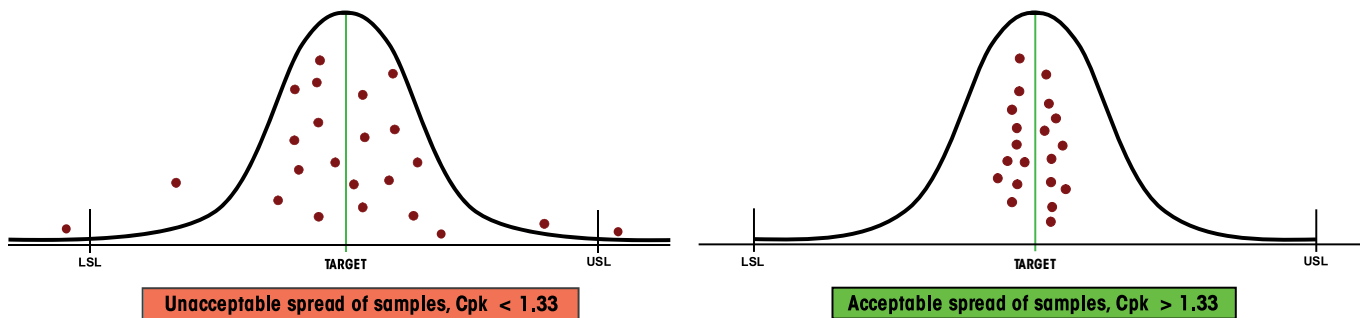
### STATISTICAL ANALYSIS IS AN IMPORTANT STEP IN ANY QUALITY CONTROL PROCESS.

One of the most widely accepted statistical indicators of process quality, and therefore product quality, is Cpk, or the process capability for a centered process. This value indicates how capable a process is and whether the results of that process are properly centered near a specific target. A capable process is one that approaches, as a limit, 100% conformance to specifications.

Cpk is a statistical value that indicates how tightly grouped a series of samples is around the target value. Cpk is a function of the Upper Specification Limit (USL), the Lower Specification Limit (LSL), the mean of the samples and the standard deviation ( $\sigma$ ) of the samples.

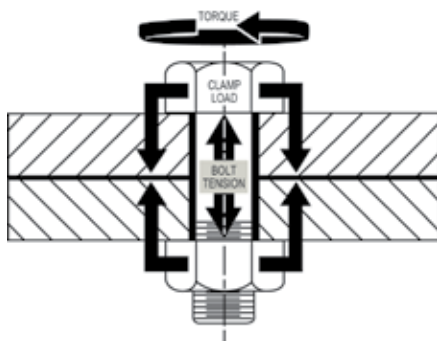
$$Cpk = \text{either } \frac{(USL - \text{Mean})}{(3 \times \sigma)} \text{ or } \frac{(\text{Mean} - LSL)}{(3 \times \sigma)}, \text{ whichever is smaller.}$$

**An acceptable, or capable, process will normally have a Cpk value of at least 1.33.**



## MEASURING QUALITY – CLAMP LOAD

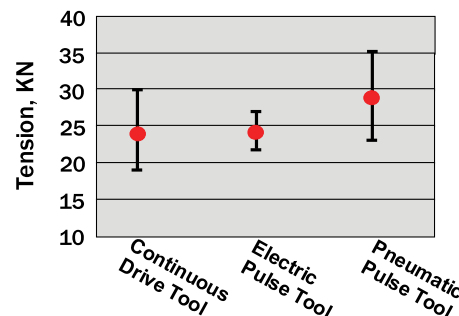
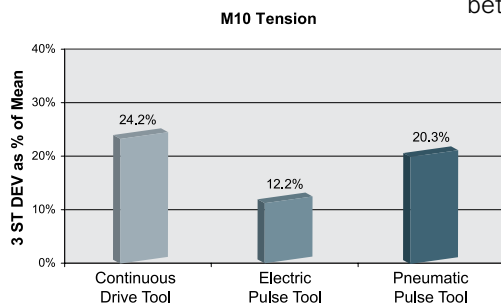
### THE PURPOSE OF THREADED FASTENING IS TO PRODUCE THE CORRECT AMOUNT OF CLAMP LOAD WITHIN THE JOINT.



Due to the cost and difficulty of measuring clamp load during the actual assembly process, torque is used as the control parameter during tightening.

Many manufacturers use torque values as the primary indicator of threaded assembly quality. However, achieving repeatable clamp load is a better indicator of joint quality.

Studies have shown that discontinuous drive tools can produce equal or better clamp load results when compared to continuous drive tools.



# TORQUE MEASUREMENT SYSTEMS



TORQUE MEASUREMENT SYSTEMS										
Devices	Model Series	Data Collector	Integrated Transducer	Torque Wrench	Torque Wrench Loader	External Transducer Port	Stationary Transducers -Smart	Stationary Transducers -Ind Std	Rotary Transducer -Smart	Rotary Transducer - Ind Std
Tester	ATC		X							
	AUET		X							
	AUET-DC	X	X							
	AUET/MTM		X			X				
	AUET/MTM-DC	X	X			X				
Analyzer	ATDA					X				
	ATDA-DC	X				X				
	ATDA-8000 -10-DCA(-TA)(-TP)	X				X				
	ADET	X				X				
	DataTouch3	X				X				
Wrench	ADW			X						
	ADW-DC	X								
	APTW			X						
	ATW			X						
	ATWL				X					
	FRDM3	X		X						
	FWE			X						
Transducer	ARTIS									X
	ASTIS							X		
	AISI						X			
	AISF						X			
	AIRI								X	
	AIRF								X	
	ARTB (Bluetooth)									X
	ASTB (Bluetooth)								X	
Rundown Fixtures	AJKR									
	AJKS									
	ARDFA									
	ARDIA									
	ARDA (Spline Drive)									
Joint Simulator	UFT									
Test Stands	AHCTS*	X*	X*	X*			X*	X*	X*	X*
	AHCTS-K*	X*	X*	X*			X*	X*	X*	X*
	AHDTS*	X*	X*	X*			X*	X*	X*	X*
	AHBTS*	X*	X*	X*			X*	X*	X*	X*
	AIMTS*	X*	X*	X*			X*	X*	X*	X*
Torque Cart	IVTC*	X*	X*	X*			X*	X*	X*	X*
	FTY*									
	MSB*	X*	X*	X*			X*	X*	X*	X*

\*configured to customer specifications





# TORQUE MEASUREMENT TESTERS

## TORQUE MEASUREMENT: TESTERS

### Features and Benefits

- Heavy Industrial Design
- All Software included
- Auditor Torque Testers are designed for intuitive and functional usability. AUET/MTM models are available with our unique dual integrated torque transducer package.

Testers are designed to audit torque wrenches and power tools, including pulse tools

					
	ATC	AUET	AUET/MTM	AUET-DC	AUET/MTM-DC
Auditor Torque Cube		Auditor Universal Electronic Tester	Auditor Universal Electronic Tester - Multiple Transducer Module	Auditor Universal Electronic Tester - Data Collector	Auditor Universal Electronic Tester - Multiple transducer Module - Data Collector
Compact vertical or horizontal bench-mount tester.		Bench mount or line side tester utilizing integrated transducer.	Bench mount or line side tester with dual integrated transducer and external transducer capacity.	Bench mount or line side tester utilizing integrated transducer. Provides data collection capability with included software to interface with PC.	Bench mount or line side tester with dual integrated transducer and external transducer capacity. Provides data collection capability with included software to interface with PC.
Integrated Transducer Range (values are in full scale)	100 in/oz - 1,000 ft/lbs 1 - 1,350 Nm	100 in/oz - 750 ft/lbs 1 - 1,000 Nm	100 in/oz - 750 ft/lbs 1 - 1,000 Nm	100 in/Oz - 750 ft/lbs 1 - 1,000 Nm	100 in/oz - 750 ft/lbs 1 - 1,000 Nm
External Transducer Capacity (transducer sizes exceeding this range may be special ordered)			up to 5,000 ft-lbs		up to 5,000 ft-lbs
Vertical / Horizontal Mount	X				
Bi-directional accuracy of +/- X of indicated reading within the top 90% of the Tester's capacity	1%	0.50%	0.50%	0.50%	0.50%
Data Output to PC	X	X	X	X	X
Integrated Torque Transducer	1	1	2	1	2
External Transducer Port			X		X
Number of stored readings	999	999	999	999	999
Adjustable rundown fixture included *	1	1	2	1	2
Rechargeable NiMH Battery	X	X	X	X	X
<b>Measurement Modes</b>					
Peak	X	X	X	X	X
First Peak (Click)	X	X	X	X	X
Pulse	X	X	X	X	X
Track	X	X	X	X	X
Units of Measure Options	8	8	8	8	8
Tool Manager Software Included				X	X

\* Included with all testers and analyzers with a range up to 1000 in/lbs.

## TORQUE MEASUREMENT TESTERS USED IN CONJUNCTION WITH

External Transducers					
ASTIS - Stationary			X		X
ARTIS - Rotary			X		X
Switch box for External Transducer					
AISWT-4L > 4 Way Intellect box			X		X
AISWT-6L > 6 Way Intellect box			X		X
Cables					
ICBL-USB - USB Serial > PC	X	X	X	X	X
ATDBLIS - IS Transducer w/angle (10 Pin)			X		X
ATDBRIS - IS Transducer (4 Pin)			X		X
ICBL-10P - Intellect transducer cable Identification chip in cable - 10 pin connector			X		X
ICBL-4P - Intellect transducer cable. Identification chip in cable - 4 pin connector			X		X



# AUDITOR™ TORQUE CUBE™



ATC-10  
ATC-25  
ATC-100  
ATC-250  
ATC-500



ATC-250F  
ATC-750F



## AUDITOR™ TORQUE CUBE™

The Auditor Torque Cube (ATC) is a compact, versatile desktop tester and provides a multitude of capabilities. The ATC is designed to test hand or power tools with the following:

- Peak, first peak and track modes.
- Multiple engineering units.
- Manual and auto clear function.
- Multiple frequency response settings.
- Bi-directional use and accuracy.
- Accuracy is better than 1% of indicated reading top 90% of range.
- Serial data output.
- Memory 999 data samples.
- Battery and/or mains powered.

Because precision and quality are critical, you can depend on our testers to calibrate and certify your tools. Whether you are assembling large complicated systems or small precise time pieces, AIMCO provides the best system for your application. Our instruments have been judged "best in class" by independent National Standards laboratories. The Auditor Torque Cube is rugged enough to test and verify tools at "point of use" while still being accurate enough to calibrate hand and power tools.

Each tester is shipped with a mains/battery charger power cord, a joint rundown fixture, a hex to allen drive bit and a bolting template. The ATC can be positioned vertically or horizontally for the ergonomic testing of inline or pistol grip tools.

MODEL	MAX TORQUE		WEIGHT		W X H X D		SQUARE DRIVE
	Nm	in-lb	kg	lb	mm	in	in
ATC-10	1.13	10	1.13	2.5	79 x 95 x 83	3.13 x 3.75 x 3.25	1/4
ATC-25	2.8	25	1.13	2.5	79 x 95 x 83	3.13 x 3.75 x 3.25	1/4
ATC-100	11.3	100	1.13	2.5	79 x 95 x 83	3.13 x 3.75 x 3.25	1/4
ATC-250	28.25	250	1.13	2.5	79 x 95 x 83	3.13 x 3.75 x 3.25	3/8
ATC-500	56.5	500	1.13	2.5	79 x 95 x 83	3.13 x 3.75 x 3.25	3/8
ATC-250F	339	250 ft-lb	2.25	5	79 x 95 x 83	3.13 x 3.75 x 3.25	1/2
ATC-750F	1017	750 ft-lb	2.25	5	79 x 95 x 83	3.13 x 3.75 x 3.25	3/4

# AUDITOR™ BENCH MOUNT TESTERS



AUET



AUET/MTM



AUET/MTM-DC

## AUDITOR™ UNIVERSAL ELECTRONIC TESTERS

The Auditor Universal Electronic Testers (AUET) have a broad range of features to accommodate most requirements. These instruments are designed to be bench top mounted and are available in several configurations and various single or multiple torque ranges. They are also available with file capability (DC) models. The DC models require PC software Auditor Tool Manager (ATM).

These AUET instruments utilize the same transducers that are featured in the ATC instruments, providing the same high quality accuracy and durability. The common interface makes the Auditor tester extremely user friendly.

Instruments up to 1,000 in-lb are supplied with rundown adapters/joint kits. Rundown kits for larger instruments can be ordered separately. AUET/MTM units are supplied with an external transducer port and selector switch for connecting additional transducers.



### SINGLE TRANSDUCER MODELS

MODEL**	RECOMMENDED TORQUE RANGE	
AUET-0100(-DC)	10 - 100 in-oz	0.7 - 7.2 kgf-cm
AUET-10(-DC)	1 - 10 in-lb	1.1 - 11.5 kgf-cm
AUET-50(-DC)	5 - 50 in-lb	0.5 - 5.6 Nm
AUET-100(-DC)	10 - 100 in-lb	1.1 - 11.3 Nm
AUET-250(-DC)	25 - 250 in-lb	2.8 - 28.3 Nm
AUET-1000(-DC)	100 - 1,000 in-lb	11.3 - 113 Nm
AUET-1200(-DC)	120 - 1,200 in-lb	13.6 - 135.6 Nm

### DUAL TRANSDUCER MODELS

MODEL**	RECOMMENDED TORQUE RANGE			
	Transducer 1	Transducer 2	Transducer 1	Transducer 2
AUET/MTM-10-100(-DC)	1.0 - 10 in-lb	10 - 100 in-lb	0.11 - 1.12 Nm	1.3 - 11.3 Nm
AUET/MTM-50-250(-DC)	5.0 - 50 in-lb	25 - 250 in-lb	0.56 - 5.65 Nm	2.8 - 28.3 Nm
AUET/MTM-50-500(-DC)	5.0 - 50 in-lb	50 - 500 in-lb	0.56 - 5.65 Nm	5.65 - 56.49 Nm
AUET/MTM-100-500(-DC)	10 - 100 in-lb	50 - 500 in-lb	1.13 - 11.3 Nm	5.65 - 56.49 Nm
AUET/MTM-100-1000(-DC)	10 - 100 in-lb	100 - 1,000 in-lb	1.13 - 11.3 Nm	11.3 - 113 Nm

\*Custom sizes are also available, please inquire. \*\*Add "-DC" to part numbers for data collecting models.

**Data collecting models allow multiple files/tools/applications to be associated with torque data. Requires Tool Manager software.**



# AUDITOR™ TORQUE MEASUREMENT ANALYZERS

## TORQUE MEASUREMENT: ANALYZER

### Features and Benefits

- Auditor Torque Analyzers share similar features across all products and are designed for intuitive and functional usability.
- Connects to AIMCO's line of rotary and stationary transducers



ATDA

ATDA-DC

Auditor Torque Data Analyzer

Auditor Torque Data Analyzer with Data Collection

Portable analyzer to be connected to various transducers

Portable analyzer to be connected to various transducers. Provides data collection capability with included software to interface with PC

Bi-directional	X	X
Data Output to PC	X	X
External Transducer Port	1	1
Number of stored readings	999	999
Rechargeable NiMH Battery	X	X
Digital I/O for external devices	X	X
<b>Measurement Modes</b>	X	X
Peak	X	X
First Peak (Click)	X	X
Pulse	X	X
Track	X	X
Measurement Units	8	8
<b>Software Included</b>		X
Firmware		
LAB - Line Side Auditing		
SPC - Quality Control		
Barcode Reader	X	X
Bluetooth Wireless Option		

## USED IN CONJUNCTION WITH

### Transducers

AISI / AISF - Digital		
ASTIS - Stationary	X	X
ASTB - Stationary Wireless		
ARTIS - Rotary	X	X
ARTB - Rotary Wireless		

### Wrenches

ATW	X	X
FWE		

### Switch boxes for External Transducers

AISWT-4L > 4 Way Intellect box	X	X
AISWT-6L > 6 Way Intellect box	X	X

### Cables

ICBL-USB - USB Serial > PC	X	X
ATDBLIS - IS Transducer w/ angle (10 Pin)	X	X
ATDBRIS - IS Transducer (4 Pin)	X	X
ICBL-10P - Intellect transducer cable. Identification chip in cable - 10 pin connector	X	X
ICBL-4P - Intellect transducer cable. Identification chip in cable - 4 pin connector	X	X
ICBL-8000DIG - Connect from ATDA-8000 series analyzer to AISI / AIFI transducer		
RMC Cable DT.ET		
FWE Cable DT.ET		

# AUDITOR™ TORQUE MEASUREMENT ANALYZERS



ATDA-8000

Auditor Torque Data Analyzer with 7" screen

7" screen with high resolution display and intuitive user interface



ATDA-8000-10-DCA(-TA)(-TP)

Auditor Torque Data Analyzer -10" display with Data Collection. TA = Torque & Angle, TP = Torque & Pressure

10" touch screen with high resolution display and intuitive user interface with multiplexer



ADET

Auditor Torque Data Analyzer with Data Collection

Portable with 2.8" touchscreen that displays graphical data with zoom/plot features and 1 GB memory



DataTouch3

Torque and Angle Data Collector designed to operate with SQnet software

Portable with 2.8" touchscreen that displays graphical data with zoom/plot features and 1 GB memory

X	X	X	X
X	X	X	X
4	4	1	1
999	999	20,000	20,000
X	X	X	X
X	X	X	X
X	X	X	X
X	X	X	X
X	X	X	X
X	X	X	X
X	X	X	X
8	8	8	8
X	X	X	X
		X	X
			X
X	X	X	X

X	X		
		X	X
		X	X
		X	X

X	X	X	X
		X	X

# AUDITOR™ TORQUE DATA ANALYZERS



ATDA-DC

## AUDITOR™ TORQUE DATA ANALYZERS

The Auditor Torque Data Analyzer (ATDA) DC is designed to be portable or conveniently placed on a bench. Depending on requirements, the tester can be connected to various transducers. In addition, it can be connected to transducerized wrenches, rotary or stationary transducers. The user interface is common between the ATC (Cube), AUET, AUET-DC, AUET/MTM, AUET/MTM-DC, ATDA, and ATDA-DC. All of these instruments have similar menus. Additionally, all data collector testers utilize Auditor Tool Manager for tool testing and data management.

The Auditor Torque Data Analyzer is available in two configurations:

- ATDA: A simple torque analyzer with sequential memory, 999 data samples, engineering limits, limited statistical processing average, range, Cp and CpK with serial output.
- ATDA-DC: Contains all of the features of the ATDA and has additional file capability. It can associate data with file names and manage data collection with a computer and Auditor Tool Manager software.

This is a great “starter” tool management system. It provides testing, archiving, and analysis of tools at single or multiple torque targets. The tool and torque data is stored in a SQL database and can be exported to Excel or any .csv spreadsheet.



MODEL	DESCRIPTION
ATDA	Auditor Torque Data Analyzer
ATDA-DC	Auditor Torque Data Collector

# AUDITOR™ TORQUE DATA ANALYZERS



ATDA-8000

ATDA-8000-10-DCA(-TA)(-TP)

## TOUCH SCREEN AUDITOR™ TORQUE DATA ANALYZERS

Auditor offers the ATDA-8000 and the ATDA-8000-10-DCA(-TA)(-TP). The ATDA-8000 is a touch screen instrument with a high resolution display and user interface that facilitates “point of use” tool validation. The user interface is intuitive and the display provides clear easy to read data. Features and parameter settings are password protected to ensure parameters cannot be inadvertently changed. After initial setup, the instrument provides semi-automatic tool validation and judgment.

The ATDA-8000 is a single channel instrument – the ATDA-8000-10-DCA(-TA)(-TP) is a larger instrument that includes a multiplexor for connection to multiple transducers allowing a wide range of tools to be tested with one instrument. Both systems work with AIMCO's line of digital transducers.

MODEL	DESCRIPTION
ATDA-8000	Auditor Torque Analyzer Single channel 7" touch screen point of use validation system
ATDA-8000-10-DCA(-TA)(-TP)	Auditor Torque Analyzer Multiple transducer 10" touch screen point of use validation system

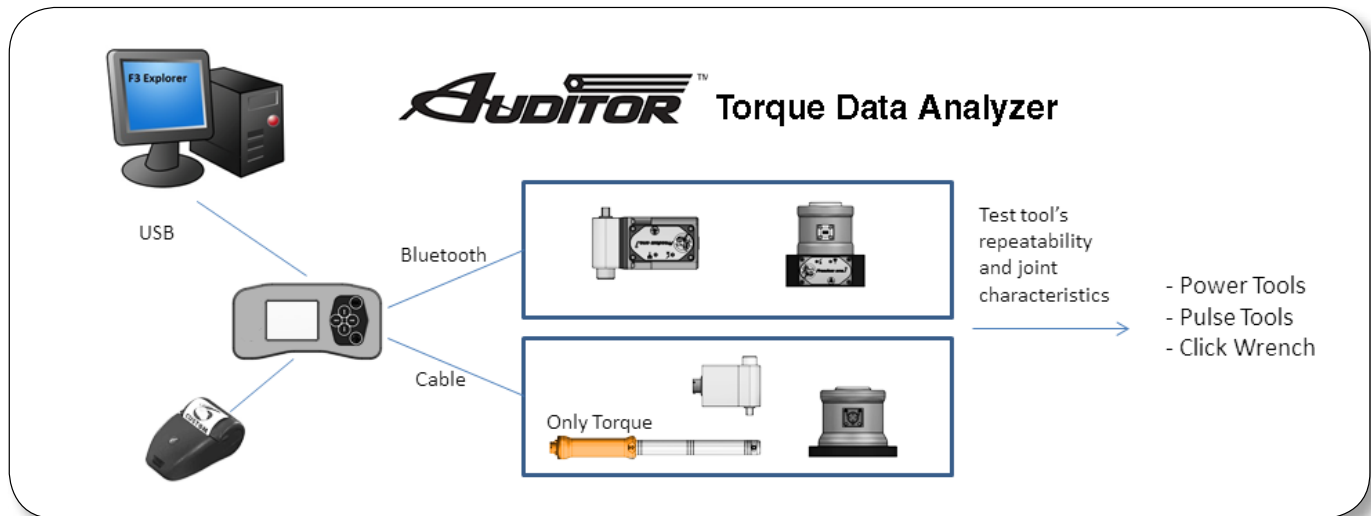


# AUDITOR™ TORQUE DATA ANALYZER

Auditor Data Analyzer provides a simple way to control nutrunners and torque wrenches on the assembly line. This quick and simple data collector provides an economical alternative to the DataTouch Data Analyzer.

## Features and Benefits

- Full-color touchscreen
  - Graphical display with zoom/plot features
  - Transducer auto-recognition
  - Bluetooth wireless (standard)
  - Advanced tightening strategies with easy input steps
  - Embedded firmware (Lab)
  - 1 GB memory
  - Li-Ion battery with 8 hour life
  - Available in two versions
    - Basic - ADET
    - Advanced - ADETB
- Advanced version connects with wireless transducers and printers, and exports data using system software.



## Specifications

Internal Memory: 1 GB  
20,000 results, 20,000 curves,  
1,000 programs  
High-resolution 2.3" touchscreen,  
320 x 240 pixels, 65,535 colors





# DATATOUGH DATA ANALYZER

DataTouch3 is a torque/angle data collector designed to operate with SQnet software. Test tightening tools by connecting stationary or rotary transducers. Test joints by connecting the FWE Wrench.



DataTouch 3

## Features and Benefits

- Full-color touchscreen
- Graphical display with zoom/plot features
- Transducer auto-recognition
- Wireless and Bluetooth options
- Keyboard for navigation and switching on/off
- Advanced tightening strategies with easy input steps
- Embedded firmware (LAB and SPC) targets all operational functions
- 1 GB memory
- Li-Ion battery with 8 hour life
- Optional bar code reader

SQnet software provides protection protocols and allows user to define routes linked to location and tool ID. User downloads events to wrench, performs tasks and sends results back that can be graphed or charted so that statistics can be analyzed.



## Specifications

Internal Memory: 1 GB  
20,000 results, 20,000 curves,  
1,000 settable programs  
High-resolution 2.8" touch-  
screen, 320 x 240 pixels,  
65,535 colors

### Dimensions

Length 215 mm  
Width 144 mm (with battery cap)  
Depth 63 mm  
Weight 750 g + 90 g (belt)



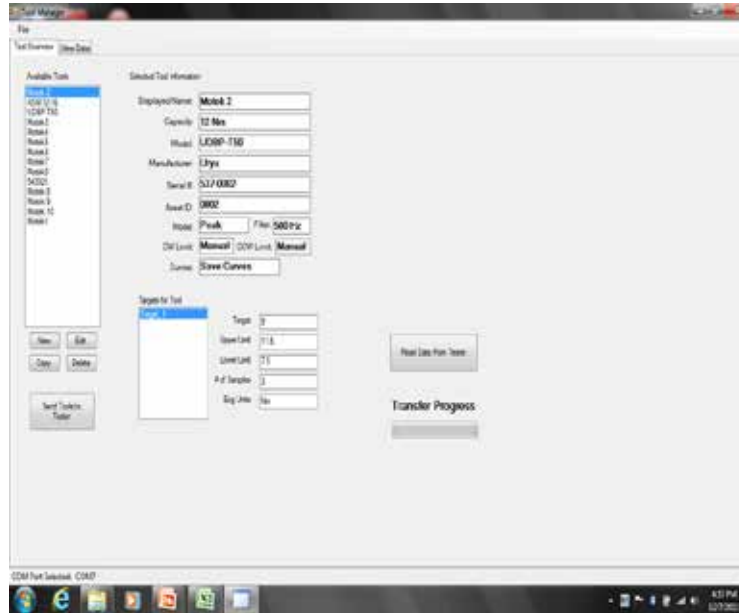
### Power Supply

- Li-Ion changeable battery  
3.6 V, 2700 mA
- 9 hours battery life
- 6 hours to recharge  
battery by PC USB port
- 4 hours to recharge  
battery using external  
battery charger (optional)

# AUDITOR™ TOOL MANAGER/AUDIT MANAGER

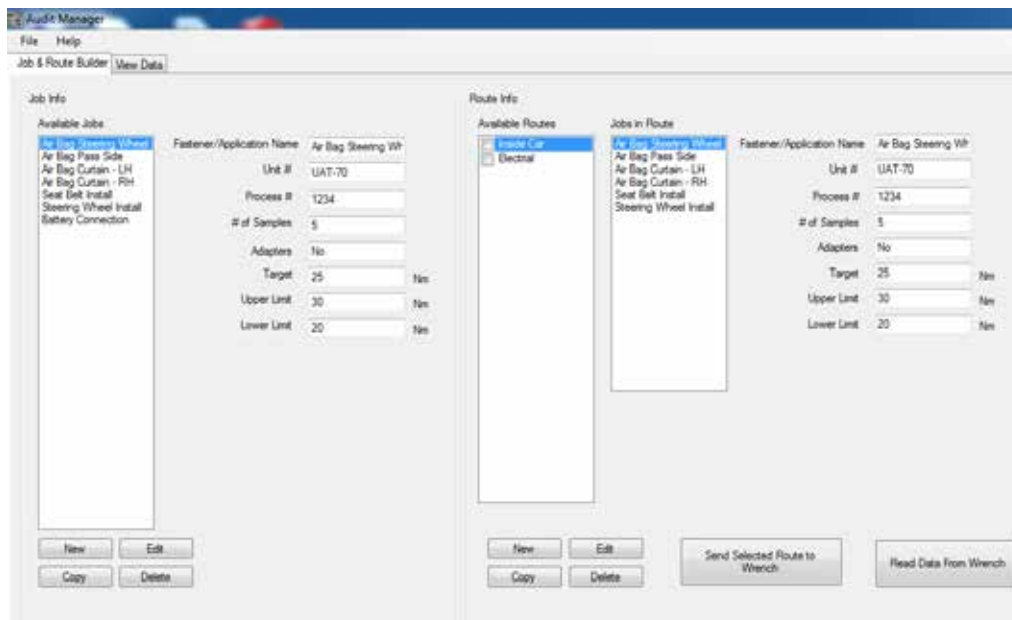
## AUDITOR™ TOOL MANAGER SOFTWARE

Tool Manager Software is included with the purchase of DC torque testers. Create a database of tools and store test results with this easy-to-use software integrator to/from tester to PC.



## AUDITOR™ AUDITOR MANAGER SOFTWARE

Auditor Manager Software is included with the purchase of DC torque analyzers. The View Data tab allows you to look at the collected data and the trace file. This data can be exported to Excel as a .csv file and displayed by Excel charts. The trace file displays the data in a torque/time graph and allows the user to supersede the move-on reading selected by the wrench by visually discerning via the trace where the fastener started to rotate. When selecting a single job the average, range, sigma, Cp, and CpK values are listed.








# AUDITOR™ HIGH CAPACITY TEST STANDS

## TORQUE MEASUREMENT: HIGH CAPACITY TEST STANDS

### Features and Benefits

- Advanced test stations for larger tools and higher torque output
- Configured to meet application requirements
- Durable industrial grade devices

					
	AHCTS	AHCTS-K	AHDTS	AHBTS	AIMTS
	Auditor High Capacity Test Stand	Auditor High Capacity Test Stand - Hydraulic	Auditor High Capacity Test Stand Dual Transducer	Auditor High Capacity Stand w/variable joint simulation	Auditor High Capacity Impact Test Stand
	Designed for testing tools with continuous rotating output spindles and pulse tools.	Specifically designed for hydraulic wrenches testing.	Two transducers, one for rotary tools and one for hydraulic tools. Includes rundown & reaction fixtures with a single display.	Designed for testing rotating tools without the use of rundown fixtures. Adjustable airbrake joint simulation eliminates CCW rotation after rundown.	Ideal for testing impact wrenches and is recommended to utilize rundown fixtures when testing impacts.
Capacity	6,750 Nm	33,750 Nm	33,750 Nm	6,750 Nm	2,700 Nm

### ACCESSORIES

Rundown fixtures					
AHCTS-3/4RDF		X		X	
AHCTS-1RDF		X		X	
AHCTS-1.5RDF		X		X	
Insert Square Drive Adapters					
CA1510	1-1/2" Male to 1" Female	X		X	
CA1550	1-1/2" Male to 1/2" Female	X		X	
CA1575	1-1/2" Male to 3/4" Female	X		X	
CA2510I	2-1/2" Male to 1" Female	X		X	
CA2515I	2-1/2" Male to 1-1/2" Female	X		X	
CA2575I	2-1/2" Male to 3/4" Female	X		X	
CA150100DHD	1-1/2" Male to 1" Male Hex Dr		X		
CA250108DHD	2-1/2" Male to 1-1/2" Male Hex Dr		X		

Please refer to the Test Stand Configurator in Appendix C on page 42 for required ordering options.

# AUDITOR™

# AUDITOR™ HIGH-CAPACITY TEST STANDS



AHCTS-5000



AHCTS-001K

## AHCTS TEST STANDS FOR ROTATING TOOLS

Designed for testing tools with continuous rotating output spindles. The test stand includes a rundown fixture, bushing for side load support, reaction post or reaction paddles, transducer and torque analyzer display.

MODEL	DESCRIPTION
AHCTS-0500	3/4" Square Drive w/rundown fixture
AHCTS-1000	1" Square Drive w/rundown fixture
AHCTS-2500	1.5" Square Drive w/rundown fixture
AHCTS-5000	1.5" Square Drive w/rundown fixture
AHCTS-7500	1.5" Square Drive w/rundown fixture
AHCTS-5025*	1.5" Sq Dr dual station w/rundown fixture and reaction devices

\*This stand has two transducers embedded into the base, one for rotary tools and one for hydraulic tools, and comes with rundown and reaction fixtures and one display.

\*\*Please refer to Appendix C: Test Stand Configurator on page 42 for required ordering options.

## AHCTS-K STANDS

The AHCTS-K stands are specifically designed for hydraulic wrench testing. Hydraulic wrenches have very low profiles but very high torque output, therefore, working height must be minimized to prevent side loading which could lead to errors in data or damage to tool or reaction devices.

Either stand can be ordered with options such as extension legs, casters, embedded or attached torque analyzers with various rundown fixtures and reaction devices. Contact an AIMCO Customer Service Associate for additional information, 1-800-852-1368.

MODEL	DESCRIPTION
AHCTS-0.5K	3/4" Square Drive w/reaction device
AHCTS-001K	1" Square Drive w/reaction device
AHCTS-2.5K	1.5" Square Drive w/reaction device
AHCTS-005K	1.5" Square Drive w/reaction device
AHCTS-010K	1.5" Square Drive w/reaction device
AHCTS-025K	2" Square Drive w/reaction device

Optional Pelican Case shown (ordered separately)



25503

# AUDITOR™ HIGH-CAPACITY TEST STANDS

## AIMTS STANDS

These test stands are designed to test impact wrenches, it is necessary to bolt them to a bench. We also recommend that a rundown fixture is always used for testing impacts. These test stands are compatible with any Auditor Torque Analyzer.



**AIMTS-0500**  
Test stand for small impact tools

MODEL	DESCRIPTION
AIMTS-0500	3/4" square drive impact test stand
AIMTS-2000	1.5" square drive impact test stand

Please refer to the Test Stand Configurator in Appendix C on page 42 for required ordering options.




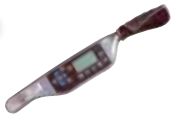




## AHBTS STANDS

These test stands are for testing rotating tools without requiring the use of rundown fixtures. We utilize an airbrake for testing tools that cannot or should not be used in reverse. These test stands are compatible with any Auditor Torque Analyzer.

MODEL	DESCRIPTION
AHBTS-2500	1.5" square drive brake system w/reaction device, rotary transducer and display
AHBTS-5000	1.5" square drive brake system w/reaction device, rotary transducer and display

# AUDITOR™ TORQUE WRENCHES

## TORQUE MEASUREMENT: TORQUE WRENCH

Features and Benefits						
	ADW	ADW-DC	APTW	ATW	Freedom3 Digital Wrench	FWE
	* Auditor Digital Wrench	* Auditor Digital Wrench with Data Collection	Auditor Preset Torque Wrench	Auditor Torque Wrench	Freedom3 Torque/Angle Wrench	Electric Torque Wrench
Torque Range	7 - 370 ft/lbs 10 - 500 Nm	7 - 370 ft/lbs 10 - 500 Nm	4 - 250 ft/lbs 5 - 340 Nm	4 - 148 ft/lbs 5 - 200 Nm	1.1 - 885 ft/lbs 1.5 - 1,200 Nm	1.1 - 885 ft/lbs 1.5 - 1,200 Nm
	Digital wrench with multiple head options for line side testing/auditing	Digital wrench with multiple head options for line side testing/auditing. Data Collector	Interchangeable heads. Preset uses proprietary adjustment tool to guard against unauthorized setting changes	Transducer on a stick. Communicates with Data Collector Testers and Analyzers	Freedom3 offers a uniquely complete tightening solution with large color touchscreen and 1 GB of memory	Transducerized wrench communicates with DataTouch and ADEC Analyzers (required)
Bi-Directional accuracy of +/- X of indicated reading within the top 90% of the Tester's capacity	1%	1%	3%	0.50%	1%	1%
Software Included	X	X			X	

## USED IN CONJUNCTION WITH

ATDA(DC) Data Analyzer				X		
AUET(DC) Tester				X		
AUET/MTM(DC) Tester				X		
ADEC						X
DataTouch3 Data Analyzer						X

## TORQUE WRENCH LOADERS



For Calibration of all types of torque wrenches eliminating human variable for more accurate measurement - digital transducer used with ATDA-8000-10-DCA

ATWL-250	Torque range up to 250 ft/lbs
ATWL-750	Torque range up to 750 ft/lbs
ATWL-1000	Torque range up to 1000 ft/lbs

See Appendix B on page 40 to configure wrench with options.

# AUDITOR™ DIGITAL WRENCH SERIES



ADW-0010K111312222



## DATA COLLECTING MODELS

- Large memory capacity.
- Every torque value has associated trace file.
- “Pick a Point” and “Move On” feature.
- Barcode scanner.
- Alpha Numeric screen for entering text.
- Field replaceable batteries.
- Docking station connection.
- Serial connection.
- Battery charger connection.
- Ergonomic handle.
- Switch between measure and data collection modes at any time.
- Multiple files and route capability.
- Data memory and simple statistics “On Board”.
- Complete statistical analysis, data archiving and exporting in Audit Manager software.
- Five models standard ranges 10 - 500 Nm full scale.
- Torsion transducer – not length dependent.
- Transducer is replaceable.
- 1400 Nm model uses different handle design.

MODEL	TORQUE RANGE		WEIGHT		OVERALL LENGTH		SQ. DRIVE
	NM	FT-LB	LB	KG	IN	MM	IN
ADW-0010K	1 - 10	0.7 - 7.4	2.2	1	18	457.2	1/4
ADW-0075K	7.5 - 75	5.5-55	3.1	1.4	23.5	596.9	3/8
ADW-0180K	18 - 180	13-130	3.6	1.6	30.1	765.2	1/2
ADW-0270K	27 - 270	20-198	3.6	1.6	30.1	765.2	3/4
ADW-0500K	50 - 500	37-369	4	1.8	36	914	1
ADW-1400F	140 - 1,400	103-1,033	4.8	2.2	60	1524	1

Unit accuracy is  $\pm 1.0\%$  FSD of indicated reading for the top 95% of full scale as indicated above.

Each model includes a case, a battery charger, and a standard square-drive head. Other heads are available at additional cost.

\*Part numbers with K, D or F followed by a 1 designate models with file and route capability. K followed by 2 indicate sequential memory no file capability.

Part numbers with K, D or F followed by a 1,1 indicate file and route with bar code and docking station capability. K, D or F followed by a 1,2 indicate file and route capability with serial port only.

Please refer to the Wrench Configurator in Appendix B on page 40 for required ordering options.



ADW-DS

## DOCKING STATION

- Nest for accepting all wrench sizes.
- Charger and serial communication accomplished through docking station.
- Bench mountable.

# AUDITOR™ ELECTRONIC TORQUE WRENCHES

## ALLOW PRECISE TIGHTENING AND AUDITING OF YOUR ASSEMBLY APPLICATIONS



### “TRANSUCERS ON A STICK”

- Non-Length Dependent – Where the operator’s hand is positioned during use has no effect on torque readings.
- Available in Industry Standard (IS) or Intelligent (Intellect) Configurations – Transducer is compatible with a wide variety IS style instruments or Auditor™ Intellect instruments that self recognize the transducer.
- Durable – Steel, Aluminum and Carbon Fiber construction providing optimal strength and weight characteristics. Transducer supplied with overload capacity of 150% of full scale.
- Accurate – Torque readings are accurate to 1% of indicated reading in top 95% of full scale.

MODEL	TORQUE RANGE		SQUARE DRIVE
	Nm	ft-lb	in
ATW-0100F	14-136	10-100	3/8
ATW-0200F	27-272	20-200	1/2
ATW-0500F	68-680	50-500	3/4
ATW-1000F	136-1360	100-1000	1

Unit accuracy is  $\pm 0.5\%$  of indicated reading for the top 90% of full scale as indicated above.  
 Required Accessory: ATDBRIS IS cable to connect Auditor™ ATDA instrument.



# AUDITOR™ PRESET TORQUE WRENCHES

## FEATURES AND BENEFITS

- Easy-to-use preset wrenches for fastener torque auditing.
- Torque ranges from 5-340 Nm.
- User friendly, sleek, ergonomic design.
- Tactile feedback on achievement of preset torque.
- Proprietary adjustment tool guards against unauthorized setting changes.
- Wide range of interchangeable heads provide flexibility and convenience.
- +/- 3% accuracy when used in clockwise or counterclockwise directions.



Preset Wrenches	Description
APTW-25	Auditor Preset Torque Wrench, 5 - 25 Nm, Accepts 12 mm Inserts
APTW-50	Auditor Preset Torque Wrench, 10 - 50 Nm, Accepts 12 mm Inserts
APTW-100	Auditor Preset Torque Wrench, 20 - 100 Nm, Accepts 12 mm Inserts
APTW-150	Auditor Preset Torque Wrench, 30 - 150 Nm, Accepts 12 mm Inserts
APTW-200	Auditor Preset Torque Wrench, 40 - 200 Nm, Accepts 14 mm Inserts
APTW-340	Auditor Preset Torque Wrench, 60 - 340Nm, Accepts 14 mm Inserts

Ratchet and Square Drive Heads	Description
APTH-12RT25	Auditor Preset Torque Wrench Ratchet Insert, 1/4 SQ DR, 12 mm
APTH-12RT38	Auditor Preset Torque Wrench Ratchet Insert, 3/8 SQ DR, 12 mm
APTH-12RT50	Auditor Preset Torque Wrench Ratchet Insert, 1/2 SQ DR, 12 mm
APTH-14RT50	Auditor Preset Torque Wrench Ratchet Insert, 1/2 SQ DR, 14 mm
APTH-14RT34	Auditor Preset Torque Wrench Ratchet Insert, 3/4 SQ DR, 14 mm
APTH-12SD25	Auditor Preset Torque Wrench SQ DR Insert, 1/4 SQ DR, 12 mm
APTH-12SD38	Auditor Preset Torque Wrench SD DR Insert, 3/8 SQ DR, 12 mm
APTH-12SD50	Auditor Preset Torque Wrench SQ DR Insert, 1/2 SQ DR, 12 mm
APTH-14SD50	Auditor Preset Torque Wrench SQ DR Insert, 1/2 SQ DR, 14 mm



Open End Heads	Description
APTH-120E7	Auditor Preset Torque Wrench Insert 7 mm OE, 12 mm
APTH-120E8	Auditor Preset Torque Wrench Insert 8 mm OE, 12 mm
APTH-120E9	Auditor Preset Torque Wrench Insert 9 mm OE, 12 mm
APTH-120E10	Auditor Preset Torque Wrench Insert 10 mm OE, 12 mm
APTH-120E11	Auditor Preset Torque Wrench Insert 11 mm OE, 12 mm
APTH-120E12	Auditor Preset Torque Wrench Insert 12 mm OE, 12 mm
APTH-120E13	Auditor Preset Torque Wrench Insert 13 mm OE, 12 mm
APTH-120E14	Auditor Preset Torque Wrench Insert 14 mm OE, 12 mm
APTH-120E15	Auditor Preset Torque Wrench Insert 15 mm OE, 12 mm
APTH-120E16	Auditor Preset Torque Wrench Insert 16 mm OE, 12 mm
APTH-120E17	Auditor Preset Torque Wrench Insert 17 mm OE, 12 mm
APTH-120E18	Auditor Preset Torque Wrench Insert 18 mm OE, 12 mm
APTH-120E19	Auditor Preset Torque Wrench Insert 19 mm OE, 12 mm
APTH-140E13	Auditor Preset Torque Wrench Insert 13 mm OE, 14 mm
APTH-140E14	Auditor Preset Torque Wrench Insert 14 mm OE, 14 mm
APTH-140E15	Auditor Preset Torque Wrench Insert 15 mm OE, 14 mm
APTH-140E16	Auditor Preset Torque Wrench Insert 16 mm OE, 14 mm
APTH-140E17	Auditor Preset Torque Wrench Insert 17 mm OE, 14 mm
APTH-140E18	Auditor Preset Torque Wrench Insert 18 mm OE, 14 mm
APTH-140E19	Auditor Preset Torque Wrench Insert 19 mm OE, 14 mm
APTH-140E21	Auditor Preset Torque Wrench Insert 21 mm OE, 14 mm
APTH-140E22	Auditor Preset Torque Wrench Insert 22 mm OE, 14 mm
APTH-140E24	Auditor Preset Torque Wrench Insert 24 mm OE, 14 mm
APTH-140E27	Auditor Preset Torque Wrench Insert 27 mm OE, 14 mm
APTH-140E30	Auditor Preset Torque Wrench Insert 30 mm OE, 14 mm
APTH-140E32	Auditor Preset Torque Wrench Insert 32 mm OE, 14 mm
APTH-140E34	Auditor Preset Torque Wrench Insert 34 mm OE, 14 mm
APTH-140E36	Auditor Preset Torque Wrench Insert 36 mm OE, 14 mm
APTH-140E38	Auditor Preset Torque Wrench Insert 38 mm OE, 14 mm
APTH-140E41	Auditor Preset Torque Wrench Insert 41 mm OE, 14 mm

# SCS WRENCHES

## TORQUE MEASUREMENT: SCS WRENCHES

### Features and Benefits

- Torque and Angle Measurement
- Wireless Communication (optional)
- Use as a production wrench or for quality control with high-resolution touch screen display storing data points and curves for quick viewing or transfer to PC



	Freedom3 DIGITAL WRENCH	FWE TA	FWE
Torque Range	11 - 740 ft/Lbs 15 - 1000 Nm	11 - 740 ft/Lbs 15 - 1000 Nm	11 - 740 ft/LbS 15 - 1000 Nm
Performance/Display	1GB Memory stores 20,000 values / 20,000 curves / 1,000 parameter sets, 80 Mips CPU, 32-Bit processor HiRes 2.3" Touch-screen display, 320 x 240 pixel resolution Li-Io rechargeable battery 3.6V 2700mAh, 9 hrs charge	-	-
Bi-directional Measurement accuracy of + / -	.5% in top 80% of range 1.0% in top 90% of range 0.1% display deviation of angle	-	-
Firmware			
LAB: Use when storing results including curves on wrench. These results can be downloaded to PC via F3 Explorer	X	X	X
SPC: Jobs and routes are developed for QC and Production via SQnet and downloaded/uploaded to/from wrench	X	X	
PRW: Used as production tool - communicating on-line via radio, BT or Wi-Fi where results are published in real time using VPG software	X		
Software			
F3 Explorer: Collects data results/curves > edit/export to Excel	X	X	
SQnet: Transfers jobs and routes data to/from device to PC	X	X	
VPG: Real time data transfer via wireless communication	X		
Options (must include with tool purchase)			
Barcode Reader Integrated (optional)	X		
Bluetooth Module Integrated Beneficial in PRW mode to communicate with VPG Software	X		
WiFi Module Integrated Beneficial in PRW mode to communicate with VPG Software	X		

## ACCESSORIES

Battery Cradle	X		
USB Cable	X		
External Battery Charger	X		
Body Jacket	X		

## WRENCH USED IN CONJUNCTION WITH

DataTouch		X	X
EasyTouch			X

## FREEDOM RATCHETS AND SOCKETS

Reversible ratchet	X	X	X
Open end ratchet	X	X	X
Ring end ratchet	X	X	X
Ring open	X	X	X
Recognition chip option	X	X	X

# SCS FREEDOM3 WRENCH

The Freedom3 Wrench offers a uniquely complete tightening solution. Its patented angle measuring system, large color touchscreen, and internal 1 GB memory, make it the best performing and flexible torque/angle wrench on the market.

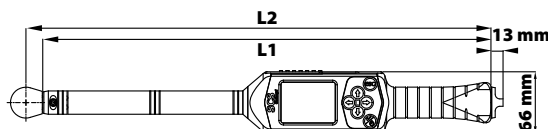
## Features and Benefits

- Full-color 2.8" touchscreen provides a graphical display with zoom/plot features.
- Vibration and LED visual queues
- Create a tightening strategy on the wrench.
- Capable of communicating with PLC and system network
- Auto-recognition of insert head (optional)
- Docking station
- Bar Code Reader (optional)
- Wireless technology (optional)
- Advanced tightening strategies with easy input steps
- Embedded firmware targeting all operational functions  
Lab analysis (LAB), Quality (SPC), Production (PRW)
- Highly functional software options
- Simple flexibility with end effectors
- Programmable or self recognizing length/torsion adjustments ensure accurate measurements with any custom attachment.
- Large internal memory
- Long battery life



## Specifications

Capacity	1.5–1,200 Nm (90% of full scale)
Output	1GB memory stores 20,000 Values with Curves over 1,000 Parameter sets
Repeatability	
Torque	+/- 1% accuracy when used in top 90% of wrench range.
Angle	+/- 0.1% display deviation of angle



Model	Capacity		Drive mm	L1* mm	L2* mm	Weight*	
	Nm	Ft-Lb				lb	kg
FRDM3-15	15	11	9 x 12 female	375	393	1.8	0.8
FRDM3-30	30	22	9 x 12 female	375	393	1.8	0.86
FRDM3-70	70	52	9 x 12 female	480	498	2.1	0.93
FRDM3-100	100	74	9 x 12 female	480	498	2.1	0.93
FRDM3-200	200	148	14 x 18 female	604	629	3.3	1.5
FRDM3-300	300	222	14 x 18 female	754	779	4.1	1.86
FRDM3-400	400	296	14 x 18 female	754	779	4.1	1.86
FRDM3-600	600	444	14 x 18 female	1,032	1,057	8.0	3.65
FRDM3-800	800	592	Ø20 male	1,250	1,330	11.2	5.1
FRDM3-1000	1000	740	Ø20 male	1,520	1,610	13.8	6.25
FRDM3-1200	1200	885	Ø28 SA female	1,732	1,578	15.4	7.0

\* without ratchet

Call for quote on devices with larger capacities

FRDM3 models include predisposition for battery cradle and auto recognition of inserted socket on wrench

# SCS FREEDOM3 WRENCH

With the SCS Freedom3 Wrench, tightening strategies can be monitored using techniques designed to minimize joint elongation of typical breakaway testing. New breakaway methods employ an algorithm to protect real breakaway point and produce similar results regardless of operator influence.



Choose testing method → Test joint → View torque/time, torque angle graphs on wrench  
 ↓  
 Transfer data where applicable.

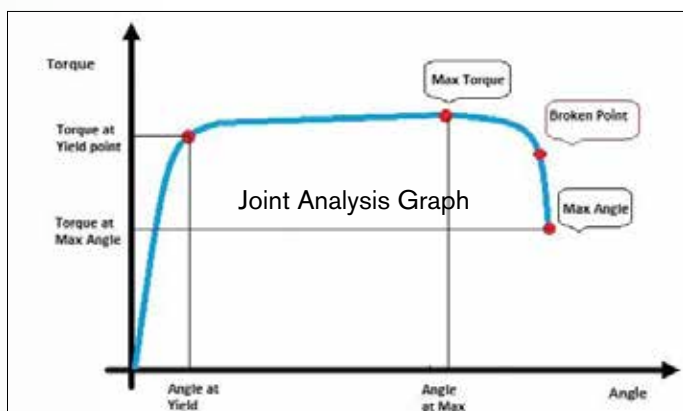
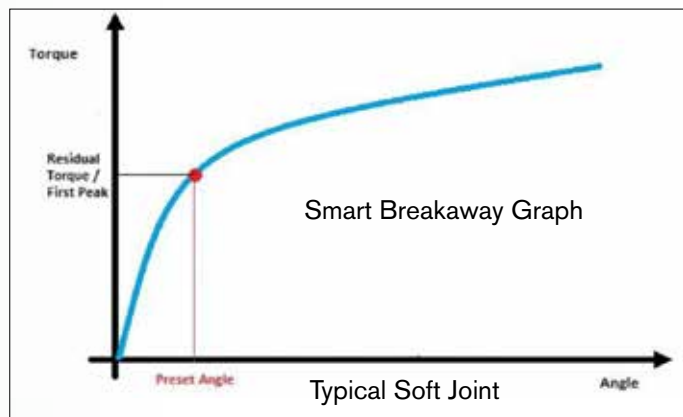
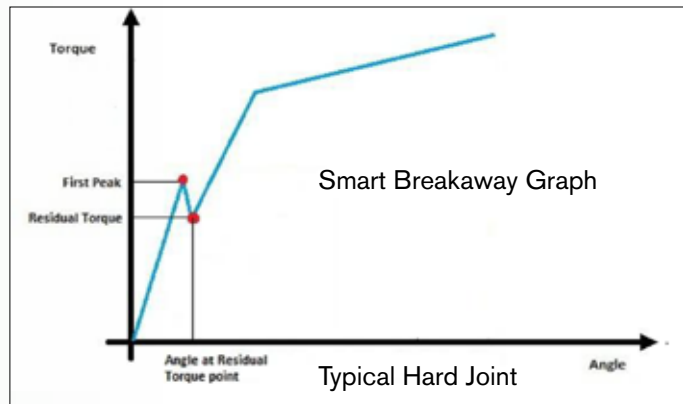
## Tightening Strategies

### SPC Quality Inspection

- **Breakaway Angle**  
Preset angle 1–4° and wrench will return torque value reached at the specified angle of rotation
- **Smart Breakaway Angle**  
Preset angle but returns either First Peak or Residual Torque values. See graphs of typical hard and soft joint curves
- **Breakaway Open/Close**  
Rotate joint CCW a specific degree of angle then retighten CW the same rotation value to move bolt back to original position. Wrench returns torque value at the preset rotation parameter
- **Minimum Torque**  
Validate that the joint meets established torque parameter by setting angle rotation value  
Wrench returns pass/fail value

### LAB Quality Inspection

- **Joint Analysis**  
Wrench will sense yield point and produce joint curves and save as yield torque, yield angle, max torque and angle at max torque



# SCS FWE/FWETA ELECTRONIC WRENCH

The FWE Wrench is an economic alternative to the Freedom3 Wrench. FWE utilizes the same high-quality firmware/software programs and can be cabled to several analyzer options.

## Features and Benefits

- Advanced tightening strategies with easy input steps
- Measure torque and torque/angle.
- Utilize SQNet and F3 Explorer software.
- Extended range covering 1.5 to 1,000 Nm. Other capacities on request.
- Available with internal memory for automatic recognition when connected to the DataTouch3.
- Standard end-fittings 9 x 12 or 14 x 18 allow the use of standard bits.



Use in conjunction with



Auditor Torque Data Analyzer  
FWE



DataTouch3 Analyzer  
FWE TA or FWE

## Specifications

Capacity 1.5–1,000 Nm (wrenches capable of function within top 90% of full scale)

Model	Function
FWE TA	Torque/Angle
FWE	Torque only

Model	Capacity		Drive
	Nm	ft-lb	in
Freedom FWE(TA) 15	15	11	9 x 12
Freedom FWE(TA) 30	30	22	9 x 12
Freedom FWE(TA) 70	70	52	9 x 12
Freedom FWE(TA) 100	100	74	9 x 12
Freedom FWE(TA) 200	200	148	14 x 18
Freedom FWE(TA) 300	300	222	14 x 18
Freedom FWE(TA) 400	400	296	14 x 18
Freedom FWE(TA) 600	600	444	14 x 18
Freedom FWE(TA) 800	800	592	Ø20
Freedom FWE(TA) 1000	1,000	740	Ø20

Call for quote on devices with larger capacities

# TORQUE CARTS

## TORQUE MEASUREMENT: TORQUE CARTS

### Features and Benefits

- Test on repeatable joint simulators or production joints
  - Simple to sophisticated options
  - Manual or self-propelled
  - Mobile test carts can be configured for testing continuous and discontinuous drive tools that include DC electric, clutch, battery, impulse, and torque wrenches
  - Each cart is customizable to meet testing needs from 1 - 1,356 Nm
- Contact your AIMCO representative for a quote or more information



IVCT

FTY

MSB

### Hydraulic Braking Technology

- Dry braking with multiple hydraulic cylinders where thrust is generated equally to allow better linear control of the braking ramp
- Programmable joint characteristics for use with continuous drive tools - no unwinding required after testing

### UFT Repeatability Joint Simulator

- Mechanically adjustable hydraulic pressure circuits allow the bolt tightening body to be configured to simulate various joint characteristics
- Ideal for repeatable, linear joint rate simulation while testing all tools including impulse tools

### DataPro Software

### Torque Wrench Loader Option

X

X

X\*

X\*

X

X

X

X

X

X

\* Optional equipment - extension added to cart

## AUDITOR TORQUE CART



AIMCO offers torque carts for “lineside” or “point of use” tool validation and calibration. Our torque carts allow testing of tools on repeatable joint simulators and “in process” use on production joints, allowing users to identify process capability. There are multiple torque cart options:

- Manual push carts equipped with simple torque testers.
- Manual push carts equipped with data collectors and database application software.
- Self propelled cart with computer and relational database application.
- Driven cart with computer and relational database application.

Each cart can be equipped to specific customer requirements. Maximum torque range on board torque cart is 1000 ft-lb or 1,356 Nm. Ancillary test stands up to 50,000 ft-lb available.

# SCS TORQUE CART

High-precision torque carts able to simulate a fastener in all conditions



FTY Torque Cart

## Features and Benefits

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- Hydraulic braking technology – dry braking with multiple hydraulic cylinders where thrust is generated equally to allow better linear control of the braking ramp
- ISO 5393, VDI 2862, ISO 6789, VDE 2647
- Sophisticated DataPro software
- Time saving testing of tools with the same tightening strategy as used on production line
- Comparative test analysis
- Lightweight



MSB Torque Cart

## Specifications

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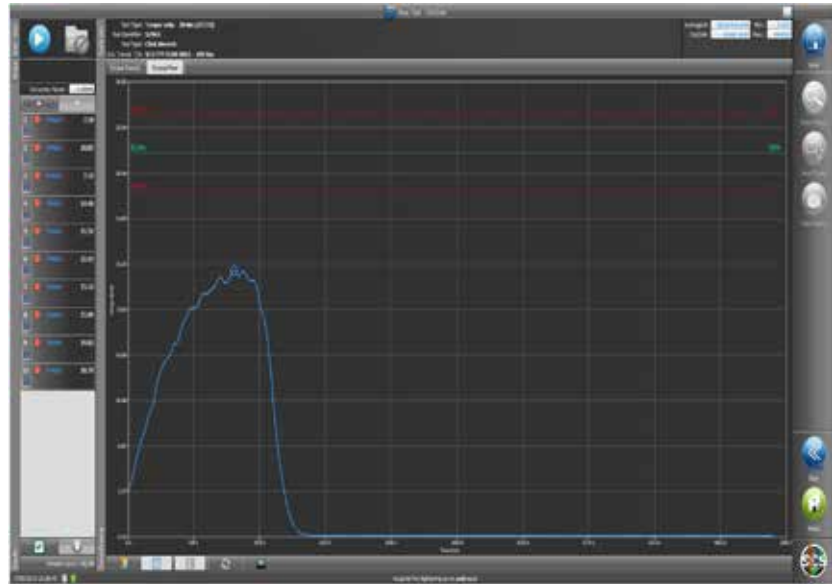
- USB interface
- Sampling frequency of up to 30 kHz with settable filter up to 3 kHz
- Accuracy of 0.5% within top 90% of full scale
- Tests power tools up to 1,356 Nm

# TORQUE CART DATAPRO + SQNET SOFTWARE

As the data management system for the AIMCO Torque Cart line, DataPro and SQnet software provides tool management, verification and calibration applications. Users can manage their complete tool inventory, create jobs / routes and store collected data. Calibration sequencing can be scheduled by time or number of rundowns.

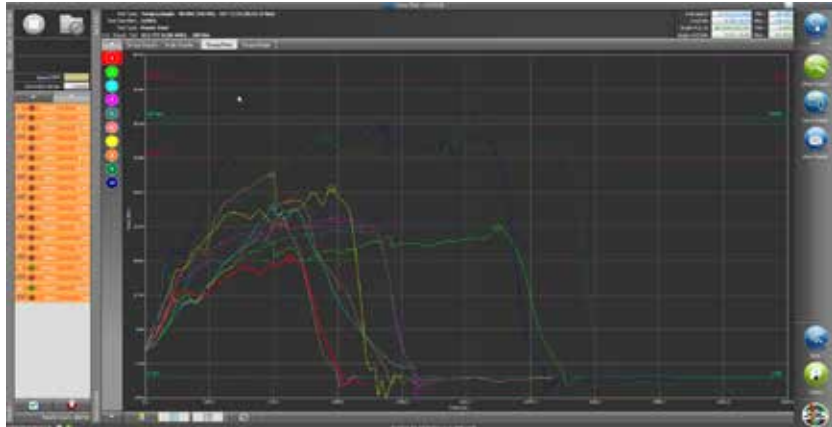
## TORQUE VERIFICATION

DataPro displays sample values of torque, angle and pulse count. It calculates statistics: average, Cp, Cpk, Six Sigma and Mean variation. As values are measured they are graphically plotted on a X-bar range chart scaled to specification limits.



## TRACES

The axis of the traces can be torque/time, torque/angle, angle/time,. You can save a trace, retrieve it and overlay a new trace for comparison. The trace details are displayed at the bottom of the graph. Maximum values, plot time (ms), number of data points, filter frequency and sample rate.



## DATABASE INFORMATION

These screens show Operation lists and associated tools along with the historic test or quality data recorded. From the historic data screen you can launch statistical graphs to view and analyze archived data. The graphs include X-bar range, histogram, Six Sigma, Cp & Cpk graphs.

Job No.	Date	Description	Status	Average	Standard Deviation	Max	Min	Range	CP	CPK	Six Sigma	Mean Variation
1000000001	2010-01-01	AIMCO Torque Cart	OK	100.00	0.50	101.00	99.00	2.00	1.00	0.99	1.00	0.01
1000000002	2010-01-02	AIMCO Torque Cart	OK	100.00	0.50	101.00	99.00	2.00	1.00	0.99	1.00	0.01
1000000003	2010-01-03	AIMCO Torque Cart	OK	100.00	0.50	101.00	99.00	2.00	1.00	0.99	1.00	0.01
1000000004	2010-01-04	AIMCO Torque Cart	OK	100.00	0.50	101.00	99.00	2.00	1.00	0.99	1.00	0.01
1000000005	2010-01-05	AIMCO Torque Cart	OK	100.00	0.50	101.00	99.00	2.00	1.00	0.99	1.00	0.01



# TRANSDUCERS

## TORQUE MEASUREMENT: TRANSDUCERS

### Features and Benefits






Superior:

- Accuracy
- Compatibility
- Durability

Auditor offers multiple styles of transducers in various configurations. Industry standard transducers (2mv/v) and intellect transducers for Auditor instruments that reduce configuration set up time.

Please contact our Customer Service Associates for additional information, 1-800-852-1368.

Used in Conjunction with Analyzers

	Stationary			Rotary	
					
	ASTIS	AISI - AISF	ASTB	ARTIS	ARTB
	Auditor Stationary Transducer Industry Standard	Auditor Industry Standard Stationary	Auditor Stationary Transducer Industry Standard Bluetooth	Auditor Rotary Transducer Industry Standard	Auditor Rotary Transducer Industry Standard Bluetooth
ATC	X			X	
AUET	X			X	
AUET/MTM	X			X	
ATDA	X			X	
ATDA-8000		X			
ADET			X	X	X
DataTouch3			X	X	X

See Appendix A on page 40 to configure complete part.

## AUDITOR™ STATIONARY TRANSDUCERS

Stationary Transducers with joint rundown fixtures and, where applicable, bench stands.



**AISI**

STATIONARY TRANSDUCER	MAX TORQUE		WEIGHT		W X H X D		DRIVE in
	Nm	in-lb/ft-lb	kg	lb	mm	in	
AISI-200025	2.8	25	1.13	2.5	79 x 95 x 83	3.13 x 3.75 x 3.25	1/4
AISI-200100	11.3	100	1.13	2.5	79 x 95 x 83	3.13 x 3.75 x 3.25	1/4
AISI-200500	56.5	500	1.13	2.5	79 x 95 x 83	3.13 x 3.75 x 3.25	3/8
AISF-200100	135.6	1,200/100	2.25	5	100 x 65	4 x 3	1/2
AISF-200250	339	3,000/250	2.25	5	100 x 65	4 x 3	1/2
AISF-201000	1350	12,000/1,000	2.8	6	100 x 65	4 x 3	1



**ASTIS**

STATIONARY TRANSDUCER	MAX TORQUE		DRIVE in
	Nm	in-lb/ft-lb	
ASTIS-25D-11	11	100 in-lb	1/4
ASTIS-25D-28	28	250 in-lb	1/4
ASTIS-38D-135	135	100 ft-lb	3/8
ASTIS-50D-270	270	200 ft-lb	1/2
ASTIS-75D-1000	1017	750 ft-lb	3/4
ASTIS-100D-1700	1695 Nm	750 ft-lb	1



**ASTB**

STATIONARY TRANSDUCER	MAX TORQUE		DRIVE in
	Nm	in-lb/ft-lb	
ASTB-75R-10P	10	7.4	3/4
ASTB-75S-10C	10	7.4	3/4
ASTB-75R-50P	50	36.8	3/4
ASTB-75S-50C	50	36.8	3/4
ASTB-75R-100P	100	73.6	3/4
ASTB-75R-250P	250	184	3/4
ASTB-75R-500P	500	369	3/4
ASTB-75R-1000P	1000	737	3/4
ASTB-75R-2500P	2500	1844	3/4

R= spline drive for pulse tool, S= square drive for continuous drive tools, Bluetooth

# AUDITOR™ TRANSDUCERS

## AUDITOR™ ROTARY TRANSDUCERS



MODEL	DRIVE	MAX TORQUE		LENGTH (A)	THICKNESS (B)	WIDTH (C)	WEIGHT lb
		Nm	in-lb/ft-lb				
ARTIS-25H-2T(A)	1/4 Hex	2	18 in-lb	4.6	1.1	2.2	1.0
ARTIS-25H-5T(A)	1/4 Hex	5	44 in-lb	4.6	1.1	2.2	1.0
ARTIS-25H-20T(A)	1/4 Hex	20	180 in-lb	4.6	1.1	2.2	1.0
ARTIS-25S-10T(A)	1/4 Sq.	10	88 in-lb	2.9	1.1	2.2	1.0
ARTIS-38S-75T(A)	3/8 Sq.	75	50 ft-lb	3.0	1.6	2.7	1.2
ARTIS-50S-180T(A)	1/2 Sq.	180	130 ft-lb	3.4	1.6	2.7	1.5
ARTIS-75S-500T(A)	3/4 Sq.	500	370 ft-lb	4.1	2.0	3.1	2.2
ARTIS-100S-1400T(A)	1 Sq.	1400	1025 ft-lb	4.9	2.4	3.6	4.0





\*Add "A" to the end of the part number to indicate torque/angle transducer.



STATIONARY TRANSDUCER	DRIVE in	MAX TORQUE	
		Nm	in-lb/ft-lb
ARTB-25H-2TA	1/4 Hex	2	1.4
ARTB-25H-5TA	1/4 Hex	5	3.7
ARTB-25S-10TA	1/4 Sq.	10	7.4
ARTB-25S-20TA	1/4 Sq.	20	14.7
ARTB-38S-25TA	3/8 Sq.	25	18.4
ARTB-38S-75TA	3/8 Sq.	75	55.3
ARTB-50S-180TA	1/2 Sq.	180	133
ARTB-75S-250TA	3/4 Sq.	250	184
ARTB-75S-500TA	3/4 Sq.	500	369
ARTB-100S-1400TB	1" Sq.	1400	1032
ARTB-150S-3000TB	1-1/2 Sq.	3000	2213
ARTB-150S-5000TA	1-1/2 Sq.	5000	3688

Bluetooth, Torque / Angle


# TORQUE MEASUREMENT RUNDOWN FIXTURES / JOINT SIMULATORS

RUNDOWN FIXTURE	MODEL SERIES	WEAR RESISTANT HEAVY DUTY	HEAVY DUTY FULLY ENCAPSULATED	HEAVY DUTY ENCAPSULATED WASHERS	STANDARD (INCLUDED W/ ANALYZER)	SPLINE DRIVE
	ARDIA-XXXHD	X				
	ARDFA-XXXXHD	X				
	ARDFA-XXXHDS		X			
	ARDIA-XXXHDS		X			
	ARDFA-XXXHDE			X		
	ARDIA-XXXHDE			X		
	ARDFA-XXX				X	
	ARDIA-XXX				X	
	ARDA-XXX	X	X			X*

Fixtures can be ordered to simulate hard, med, or soft joints

Mechanical Belleville system of bolt, nut or nut body, Belleville washers and main housing, 1/4" - 3/4" drive sizes, 10 in/lbs - 1,200 ft/lbs

\*Spline drive feature provides rundown control when testing pulse tools

JOINT SIMULATOR		
	AJKR-	Joint Kit for Rotary Transducer
	AJKS-	Joint Kit for Stationary Transducer

Provide linear response and are repeatable 1/4" - 1" drive sizes 28 - 1,695 Nm

HYDRAULIC MECHANICAL JOINT SIMULATOR	
	UFT SERIES

Accurate, repeatable, linear, and durable. Tests 3 - 690 Nm, M5 - M24 fastener sizes  
See page 89.

Design Type:	Power Tools	Impulse Tools
Square drive	X	
Spline Drive		X

Rundown Fixtures used in conjunction with these external transducers:	ASTIS	AISI-AISF	ARTIS	ASTB	ARTB
ARDIA/ARDFA	X	X	X		X
ARDA				X	X
AJKS	X		X		
AJKR			X		X
UFT			X		X

# TORQUE MEASUREMENT RUNDOWN FIXTURES / JOINT KITS

## AUDITOR™ RUNDOWN FIXTURES

To test power tools, pneumatic or electric, consistent rotational speed must be achieved. The joint rundown fixture/simulator provides the means by which the tool motor and spindle rotates freely at the start of the test cycle and then develops torque as resistance to rotation increases as load on the fastener and joint increases. The linearity and consistency of the joint rundown fixtures/simulators vary greatly and the tool test data is a product of the variations in these rundown fixtures. Higher quality joint rundown fixtures produce torque data with less scatter.



### Rundown fixtures for heavy duty use.

MODEL*	DESCRIPTION	RECOMMENDED TORQUE RANGE		SQUARE DRIVE
		IN-LB	Nm	
ARDIA-10(HD)(HDE)(HDS)	Rundown Fixture	1.0 - 10	.13 - 1.13	1/4
ARDIA-25(HD)(HDE)(HDS)	Rundown Fixture	2.5 - 25	.28 - 2.8	1/4
ARDIA-100(HD)(HDE)(HDS)	Rundown Fixture	10.0 - 100	1.3 - 11.3	1/4
ARDIA-250(HD)(HDE)(HDS)	Rundown Fixture	25.0 - 250	2.8 - 28.25	3/8
ARDIA-500(HD)(HDE)(HDS)	Rundown Fixture	50.0 - 500	5.6 - 56.5	3/8

\* Add "HD" to part numbers for wear resistant models. Add "HDS" to part numbers for fully encapsulated wear resistant models.  
 \* Add "HDE" to part numbers for partial encapsulated wear resistant models.

MODEL*	DESCRIPTION	RECOMMENDED TORQUE RANGE		SQUARE DRIVE
		IN-LB	Nm	
ARDFA-100(HD)(HDE)(HDS)	Rundown Fixture	10 - 100	13.6 - 136	1/2
ARDFA-150(HD)(HDE)(HDS)	Rundown Fixture	15 - 150	20.4 - 204	1/2
ARDFA-250(HD)(HDE)(HDS)	Rundown Fixture	25 - 250	34.0 - 340	1/2
ARDFA-600(HD)(HDE)(HDS)	Rundown Fixture	60 - 600	81.6 - 816	3/4

\* Add "HD" to part numbers for wear resistant models. Add "HDS" to part numbers for encapsulated wear resistant models.  
 \* Add "HDE" to part numbers for partial encapsulated wear resistant models.

## JOINT KITS

	DRIVE SIZE - IN	ROTARY KIT PART NUMBER	STATIONARY KIT PART NUMBER
		1/4	AJKR-28
3/8		AJKR-135	AJKS-38D
1/2		AJKR-271	AJKS-50D
3/4		AJKR-1017	AJKS-75D
1		AJKR-1695	AJKS-100D

# UFT SERIES JOINT SIMULATORS

## UFT SERIES JOINT SIMULATORS

- AIMCO's UFT Joint Simulators offer the most repeatable and linear joint rate simulation of any product on the market.
- Pulse tool and continuous drive tool certification and testing.
- Consists of a bolt tightening body and a hydraulic pressure loading mechanism. A hydraulic pressure circuit connects these two bodies. Ideal for ISO 5393 test procedures.
- Three joint rates can be easily and quickly simulated by opening or closing two external valves.
- Specially coated testing bolt produces over 100,000 cycles without variation or deformation.



UFT-24



UFT-S10

UFT-S16

MODEL	BOLT SIZE	TORQUE RANGE		SNUG TORQUE NM	A-JOINT RATE NM/DEG	B-JOINT RATE NM/DEG	C-JOINT RATE NM/DEG	D-JOINT RATE NM/DEG	CENTER TO OUTSIDE X HEIGHT MM	WEIGHT	
		FT-LB	NM							LB	KG
UFT-S10	M6	5 - 11	6.7 - 14.7	2.7	0.36	0.10	0.04	0.02	76 x 203	43	19.5
	M8	11 - 23	14.7 - 31.4	7.5	0.79	0.26	0.06	0.03			
	M10	23 - 40	31.4 - 53.9	14.9	1.22	0.35	0.09	0.06			
UFT-S16	M12	40 - 65	53.9 - 88.2	27.5	1.80	0.51	0.22	0.09	97 x 256	88	40
	M14	65 - 110	88.2 - 149	44.0	2.70	0.79	0.22	0.14			
	M16	110 - 140	149 - 190	73.5	4.70	1.22	0.35	0.21			
UFT-24*	M18	140 - 217	190 - 294						138 x 171	108	49.1
	M20	217 - 325	294 - 441								
	M24	325 - 506	441 - 686								

\* UFT-24 medium hard/soft joints only

Reaction fixture for continuous drive tools not included. Sockets included.

# TORQUE MEASUREMENT CABLES

## CABLES



ICBL-USB



ATDBLIS

### TORQUE MEASUREMENT: CABLES

MODEL	SERIAL CABLE	TRANSDUCER CABLE	ROTARY	ROTARY W/ANGLE	STATIONARY	IND STD	INTELLECT
1	ICBL-USB	X					
2	ATDBLIS		X	X		X	
3	ATDBRIS		X		X	X	
4	ICBL-10P		X	X			X
5	ICBL-4P		X		X		X
6	ICBL-8000DIG		X				
7	RMC Cable DT.ET		X	X	X		
8	FWE Cable DT.ET		X				

Cables 1-5 are compatible with ATDA, AUET, ADW products

1. Connects between comport of display to PC
2. Connect to IS transducer w/ angle - 10 pin
3. Connect to IS transducer - 4 pin
4. Intellect transducer cable. Identification chip in cable - 10 pin connector
5. Intellect transducer cable. Identification chip in cable - 4 pin connector
6. Connect from ATDA-8000 series analyzer to AISI / AIFI transducer
7. Connect from DataTouch3 / ADET analyzer to ARTB/ARTS transducers
8. Connect from DataTouch3 / ADET analyzer to FWE Wrenches



### CABLE COMPATIBILITY

	ATC	AUET	AUET/ MTM	AUET- DC	AUET/ MTM-DC	ATDA	ATDA- DC	ATDA- 8000	ATDA-8000-10- DCA(-TA)(-TP)	ADW	ADW- DC	FWE	AEDT	DataTouch
ICBL-USB	X	X	X	X	X	X	X			X	X			
ATDBLIS		X	X	X	X	X	X							
ATDBRIS		X	X	X	X	X	X							
ICBL-10P		X	X	X	X	X	X							
ICBL-4P		X	X	X	X	X	X							
ICBL-8000DIG								X	X					
RMC Cable DT.ET													X	X
FWE Cable DT.ET												X		



# APPENDICES

## APPENDIX A: TRANSDUCER CONFIGURATOR

Model Number	Base Model Number (1-11)						
	1	2	3	4	5	6	7
Examples of part numbers	A	I	S	I	-	2	0
	A	I	S	F	-	2	0
	A	X	R	N	-	1	0
Transducer Options and Configuration	Auditor	Configuration	Type	Units		Angle	
		I = Intellect X = Industry Standard	R = Rotary S = Stationary W = Wireless	I = in lb F = ft lb N = NM		1 = Yes 2 = No	

Base model number (first 11 characters) describes Auditor, Configuration Intellect or Industry Standard, Type Rotary, Stationary or Wireless, Engineering Units In Lb, Ft Lb or NM, Angle Yes or No and Capacity.

To complete configuration of a 15 character part number select options and configuration sequentially from column 1 through 15. Columns 7-11 specify torque capacity.

## APPENDIX B: WRENCH CONFIGURATOR

Model Number Columns	Base Model Number (1-9)								
	1	2	3	4	5	6	7	8	9
Examples of part numbers	A	D	W	-	0	0	7	5	K
	A	D	W	-	0	0	1	0	K
	A	T	W	-	0	2	0	0	F
Wrench Options and Configuration	Auditor	Type	Wrench	Capacity					Style
		D = Digital T = Transducer							K = Katana D = Katana w/dovetail transducer F = "Stick" straight handle

Base model number (first 9 characters) describes Auditor, Type; Digital or Transducer, Capacity, Style; Katana, Katana w/Dovetail transducer or Stick.

To complete configuration of a 18 character part number select options and configuration sequentially from column 1 through 18. Columns 5-8 specify torque capacity.



# APPENDICES

8	9	10	11	12	13	14	15
0	0	5	0	1	2	1	2
0	7	5	0	1	2	1	5
0	1	8	0	2	2	2	4
Capacity				Fixture	Expanded Range	Digital Transducer	Drive Size
				1 = Bench Stand 2 = Inline 3 = Loader	1 = Yes 2 = No	1 = Yes 2 = No	1 = 1/4" Hex 2 = 1/4" Sq 3 = 3/8" Sq 4 = 1/2" Sq 5 = 3/4" Sq 6 = 1" Sq 7 = 1-1/2" Sq

The base model number is not a complete part number, - Fixture, Expanded Range, Digital Transducer and Drive Size must be specified by building complete part number.

10	11	12	13	14	15	Future Options (15-18)		
10	11	12	13	14	15	16	17	18
1	1	3	3	1	2	2	2	2
1	1	1	3	2	2	2	2	2
2	2	3	1	2	2	2	2	2
Data Collector	Bar Code Docking Station	Sq Dr	Configuration	Engineering Unit	Angle	Accelerometer	Graphics	Tone Generator
1 = Yes 2 = No	1 = Yes 2 = No	1 = 1/4" 2 = 3/8" 3 = 1/2" 4 = 3/4" 5 = 1" 6 = NA	1 = Intellect (intelligent td) 2 = IS (industry standard) 3 = NA (digital wrench)	1 = NM 2 = ft lb 3 = in lb	1 = Yes 2 = No	1 = Yes 2 = No	1 = Yes 2 = No	1 = Yes 2 = No
Not yet available so always enter 2 (No) for these options.								

The base model number is not a complete part number, - Data Collector, Bar Code & Docking Station, Sq Dr, Configuration, Engineering Unit and Future Options must be specified by completing 18 character part number.

# APPENDICES

## APPENDIX C: TEST STAND CONFIGURATOR

	Base Model Number (1-10)									
Model Number Columns	1	2	3	4	5	6	7	8	9	10
Example of part numbers	A	H	C	T	S	-	5	0	0	0
	A	H	C	T	S	-	5	0	0	0
	A	H	C	T	S	-	0	0	5	K
	A	H	B	T	S	-	2	0	0	0
<b>Test Stand Configuration and options</b>	<b>Auditor</b>	<b>High</b>	<b>Cap</b>	<b>Test</b>	<b>Stand</b>		<b>Configuration &amp; Capacity K= Hydraulic</b>			

Base model number (first 10 characters) describes Auditor, High, Capacity or Brake, Test Stand, Torque Capacity and Configuration; Rotary or Hydraulic (K).

To complete configuration of a 18 character part number select options and configuration sequentially from column 1 through 18. Columns 7-10 specify torque capacity.

# APPENDICES

11	12	13	14	15	16	17	18
1	3	3	5	7	1	1	2
6	2	3	5	1	1	2	2
1							
4							
Display Options	Legs	Base Dimension	Rundown Fixture Options	Reaction Post Options	Casters	Arm for Display	Digital Module
1 = ATDA	1 = 6" Legs	0 = 8" x 8"	1 = 500 ft lb capacity	1 = 6" Post	1 = Yes	1 = Yes	1 = Yes
2 = No Embedded display	2 = No Legs	1 = 12' x 12"	2 = No rundown fixture	2 = No Post	2 = No	2 = No	2 = No
3 = ATDA-DC	3 = 18" Legs	3 = 14" x 19"	3 = 1000 ft lb capacity	3 = 6" Posts			
4 = ATDA-8000 (7)	4 = Custom Legs in 6" increments	4 = 18" x 24"	4 = 2500 ft lb capacity	4 = Paddles			
5 = ATDA-8000-10 (10)		5 = 18" x 36"	5 = 5000 ft lb capacity	5 = Custom			
6 = Embedded Display		6 = NA no base plate	6 = 7500 ft lb capacity	6 = 9" Post			
7 = ATRC Module			7 = 1.5" rundown kit for "K" stands.	7 = 9" Posts			
			8 = 2.5" rundown kit for "K" stands.				

The base model number is not a complete part number, - Display Options, Legs, Base Dimension, Rundown Fixture, Reaction Post, Casters, Arm and Digital Module must be specified by building complete part number.



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TORQUE M