

HIGH CAPABILITY TOOLING
The Most Advanced Collection of Controlled Tools Anywhere



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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\* E logo indicates where ERGO-DRIVE sockets/extensions benefit tool operation.

ERGO-DRIVE sockets are uniquely designed to seat deeper on the tool anvil while an O-ring inside the socket fits tight onto the anvil to reduce vibration. By reducing run-out and vibration, ERGO-DRIVE sockets allow the most repeatable, accurate rundowns, ensuring excellent product quality, longer tool life, and better ergonomics for the tool user.

Look for the ERGO-DRIVE logo in this catalog to see where ERGO-DRIVE sockets/extensions benefit tool operation, operator, and rundown.

## **ACRADYNE® GEN IV CONTROLLER**



#### **GEN IV CONTROLLER**

The AcraDyne Gen IV controller is the culmination of more than 40 years of serving our industrial fastening customers with 15 years of designing and manufacturing DC tools that are Made in the USA. It is filled with countless advanced capabilities and features. The Gen IV Controller is the core of the modular AcraDyne DC system. One controller will command any tool in the AcraDyne line from 0.5 Nm to 8100 Nm, all with one cable.

#### FEATURES AND BENEFITS

- Backward compatible Works with any Gen III tool from 0.5 Nm – 8100 Nm.
- Bright LED screen View Torque, Angle, Bolt Count, Parameter Set, Job/Sequence easily from a distance.
- Graphical Screen with on-board software that is the same on all devices
- Web browser based programing Receive data on your PC, Tablet, SmartPhone, or any other web-capable device. You can use more than one device at a time: Be in program mode on one device while reviewing realtime curves on another while watching tool diagnostics on a third.
- Multiple Fastening Strategies Program up to 256 Parameters with as many as 20 Steps.
- Jobs Capability 99
- Backup & Restore through USB or Ethernet.
- Removable Flash Memory
- Assignable I/O (8 X 8)
- Rundown storage 1,000,000
- Curve storage 10,000
- Event log 5,000
- · Real-time curve viewing
- Programmable Calibration and Service alerts.
- Top exit tool cable option available.



#### **NETWORKING CAPABILITIES**

- Ethernet Protocols including Open Protocol, Ethernet/IP & PFCS
- Modular field bus connectivity: PROFIBUS, DeviceNET, Modbus TCP, or any Fieldbus offered by



- Data collection
- Serial protocols and string output
- Bar Code Scanning & printing
- Multi-spindle synchronization

## ACRADYNE® GEN IV CONTROLLER

#### Four Digit Torque Display

#### **Secondary Display**

Allows user to easily set and toggle through information:

- Angle
- Engineering Units
- Bolt Count
- Job/Job Sequence

#### Optional 7" Graphical Display

- Runs the same software on PC for ease of use.
- Real Time Graphing for Application Review.
- Selectable Run Screens.
- Touch-screen



#### **LED Display**

Large numbers can be seen from a distance.

#### Parameter Set Display

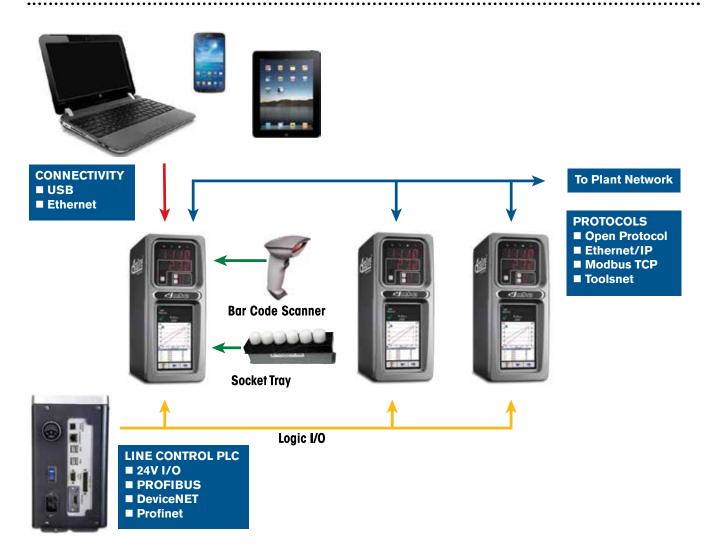
Displays current parameter set and enables user to quickly change by scrolling up or down.

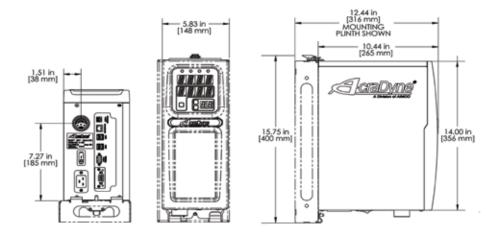
MODEL	SYSTEM PORT & REMOVABLE MEMORY	LIGHTS (L) LED DISPLAY (D) GRAPH (G)	24V I/O ASSIGNABLE 8 X 8"	SERIAL PORT WITH PROTOCOLS	BACKUP & RESTORE (USB)	ETHERNET*	DEVICENET	PROFIBUS
iEC4E	Х	L/D		χ	χ	Х		
iEC4EV(T)	Х	L/D	Х	Х	Х	Х		
iEC4EG(T)	Х	L/D/G		χ	χ	χ		
iEC4EGV(T)	Х	L/D/G	Х	Х	Х	Х		
iEC4ED	Х	L/D		Х	Х	Х	Х	
iEC4EP	Х	L/D		Х	Х	Х		Х
iEC4EVD	Х	L/D	Х	χ	χ	χ	Х	
iEC4EVP(T)	Х	L/D	Х	Х	Х	Х		Х
iEC4EGD	Х	L/D/G		χ	χ	Х	Х	
iEC4EGP	Х	L/D/G		Х	Х	Х		Х
iEC4EGVD	Х	L/D/G	Х	Х	Х	Х	Х	
iEC4EGVP	Х	L/D/G	Х	χ	χ	Х		Х

<sup>\*</sup> Ethernet channel supports The Open Protocol, Toolsnet, EtherNet/IP, Modbus/TCP, and other protocols. Add (-T) to model number for top exit tool cable option

# **ACRADYNE® GEN IV CONTROLLER**

#### **NETWORK CONNECTIVITY**





WIDTH	HEIGHT	DEPTH	WEIGHT
5.83 in / 148 mm	15.75 in / 400 mm	12.44 in / 316 mm	15.65 lbs / 7.1 kg

## **ACRADYNE® SOFTWARE**

#### **SOFTWARE**

AcraDyne's software package is on-board every AcraDyne controller and is provided FREE of charge. This comprehensive, user-friendly program allows programming, analysis, and diagnostics.

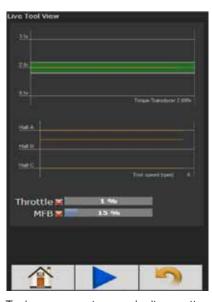
The software is based on a standard web browser. This allows you to connect the AcraDyne controller with any computer, tablet, or smart device. Connect through Ethernet, USB, or wirelessly via a network to which both devices are connected.



Adding and editing Parameter Sets (256) and Jobs (99) Is easy and intuitive in the parameter set up function



View curve results in real time or one of the up to 10000 stored in memory to program the application for optimal performance



Tool programming and diagnostics for repair, calibration and advanced troubleshooting





Several run screens to choose from. The large screen indicators are helpful in viewing real time results of the rundown from a distance

# **ACRADYNE® 1000 SERIES NUTRUNNERS**

#### **FEATURES AND BENEFITS**

Superior -

- Size
- Speed
- **Duty Cycle**







#### **APPLICATION DATA**

		MAX			TORQUE	FREE SPEED		WEIGHT (-)		OUTPUT
1000 SERIES	NM	TORQUE	FT-LB	NM	RANGE FT-LB	RPM	LB	SOCKET	KG	DRIVE
ANGLE*										
AEN4C12004B	4		3	1 - 4	0.7 - 3	3,111	2.0		0.91	1/4 Q.C.
AEN4C12009B	9		6.6	2.3 - 9	1.7 - 6.6	1,750	2.2		1.00	3/8 sq. dr.
AEN4C12O14B	14		10	3.5 -14	2.6 - 10	875	2.2		1.00	3/8 sq. dr.
AEN4C12018B	18		13	4.5 - 18	3.3 - 13	691	2.2		1.00	3/8 sq. dr.
AEN4C12022B	22		16	5.5 - 22	4.1 - 16.	560	2.2		1.00	3/8 sq. dr.
IN-LINE**										
AES4A12003B(V)(Q)	3		2.2	0.8 - 3	0.6 - 2.2	2,625	2.0		0.91	3/8 sq. dr.
AES4A12006B(V)(Q)	6		4.4	1.5 - 6	1.1 - 4.4	2,625	2.0		0.91	3/8 sq. dr.
AES4A12011B(V)(Q)	11		8.1	2.8 - 11	2 - 8.1	1,313	2.2		1.00	3/8 sq. dr.
AES4A12014B(V)(Q)	14		10	3.5 - 14	2.6 - 10	1,037	2.2		1.00	3/8 sq. dr.
AES4A12018B(V)	18		13	4.5 - 18	3.3 - 13	840	2.2		1.00	3/8 sq. dr.
AES4A12022B(V)	22		16	5.5 - 22	4.1 - 16	656	2.2		1.00	3/8 sq. dr.
PUSH-TO-START										
AEL4A12003B(Q)	3		2.2	0.8 - 3	0.6 - 2.2	2,625	2.0		0.91	3/8 sq. dr.
AEL4A12006B(Q)	6		4.4	1.5 - 6	1.1 - 4.4	2,625	2.0		0.91	3/8 sq. dr.
AEL4A12011B(Q)	11		8.1	2.8 - 11	2 - 8.1	1,313	2.2		1.00	3/8 sq. dr.
AEL4A12014B(Q)	14		10	3.5 - 14	2.6 - 10	1,037	2.2		1.00	3/8 sq. dr.
AEL4A12018B	18		13	4.5 - 18	3.3 - 13	840	2.2		1.00	3/8 sq. dr.
AEL4A12022B	22		16	5.5 - 22	4.1 - 16	656	2.2		1.00	3/8 sq. dr.
FIXTURED***										
AEF4(A)(C)(X)12003B(B)	3		2.2	0.8 - 3	0.6 - 2.2	2,625	2.0		0.91	3/8 sq. dr.
AEF4(A)(C)(X)12006B(B)	6		4.4	1.5 - 6	1.1 - 4.4	2,625	2.0		0.91	3/8 sq. dr.
AEF4(A)(C)(X)12011B(B)	11		8.1	2.8 - 11	2 - 8.1	1,313	2.2		1.00	3/8 sq. dr.
AEF4(A)(C)(X)12014B(B)	14		10	3.5 - 14	2.6 - 10	1,037	2.2		1.00	3/8 sq. dr.
AEF4(A)(C)(X)12018B(B)	18		13	4.5 - 18	3.3 - 13	840	2.2		1.00	3/8 sq. dr.
AEF4(A)(C)(X)12022B(B)	22		16	5.5 - 22	4.1 - 16	656	2.2		1.00	3/8 sq. dr.

<sup>\*</sup> Add "F" to part numbers for flush socket.

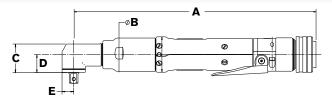
<sup>\*\* &</sup>quot;V" indicates extended Ergo-Drive output Replace "V" with "0" for 1/4" quick change output.

\*\*\* Add "A" to part numbers for 1/2" sliding spindle models. Add "C" to part numbers for 1-3/4" sliding spindle models. Add "X" to part numbers for fixed 3/8" square drive output models.

<sup>\*\*\*</sup> Add "B" to part numbers for bottom exit cable.

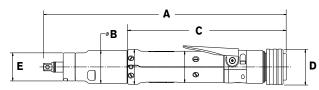
 $<sup>{}^{*}</sup>$   $\bigcirc$  logo indicates where ERGO-DRIVE sockets/extentions benefit tool operation.

# **ACRADYNE® 1000 SERIES NUTRUNNERS**



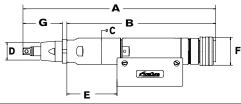
#### **DIMENSIONS**

ANGLE	IN	(A) MM	IN	(B)	MM	IN	(C)	MM	IN	(D)	MM	IN	(E)	MM
AEN4C12004B	11.65	295.9	1.47		37.3	.98		24.8	.62		15.8	.40		10.2
AEN4C12009B	11.00	279.5	1.47		37.3	1.29		32.8	.82		20.9	.52		13.1
AEN4C12O14B	11.66	296.4	1.47		37.3	1.29		32.8	.82		20.9	.52		13.1
AEN4C12O18B	11.66	296.4	1.47		37.3	1.29		32.8	.82		20.9	.52		13.1
AEN4C12022B	11.66	296.4	1.47		37.3	1.29		32.8	.82		20.9	.52		13.1



#### **DIMENSIONS**

INLINE	IN	(A) MM	IN	(B)	ММ	IN	(C)	MM	IN	(D)	MM	IN	(E)	ММ
AES4A12003B	11.12	282.7	1.47		37.3	7.38		187.5	1.59		40.4	1.25		31.8
AES4A12006B	11.12	282.7	1.47		37.3	7.38		187.5	1.59		40.4	1.25		31.8
AES4A12011B	11.44	290.5	1.47		37.3	7.38		187.5	1.59		40.4	1.25		31.8
AES4A12014B	11.44	290.5	1.56		39.6	7.38		187.5	1.59		40.4	1.25		31.8
AES4A12018B	11.44	290.5	1.47		37.3	7.38		187.5	1.59		40.4	1.25		31.8
_AES4A12022B	11.44	290.5	1.47		37.3	7.38		187.5	1.59		40.4	1.25		31.8
PUSH-TO-START	IN	(A) MM	IN	(B)	MM	IN	(C)	MM	IN	(D)	MM	IN	(E)	MM
AEL4A12003B	11.31	287.3	1.56		39.6	7.38		187.5	1.59		40.4	1.25		31.8
AEL4A12006B	11.32	287.4	1.56		39.6	7.38		187.5	1.59		40.4	1.25		31.8
AEL4A12011B	11.62	295.4	1.56		39.6	7.38		187.5	1.59		40.4	1.25		31.8
AEL4A12014B	11.62	295.4	1.56		39.6	7.38		187.5	1.59		40.4	1.25		31.8
AEL4A12018B	11.62	295.4	1.56		39.6	7.38		187.5	1.59		40.4	1.25		31.8



FIXTURED	IN	(A) MM	IN	(B) MM	IN	(C)	MM	IN	(D)	ММ	IN	(E)	ММ	IN	(F)	ММ	IN	(G)	ММ
AEF4A12003B	11.53	292.9	9.10	231.04	1.47		37.3	1.13		28.57	2.06		52.2	1.59		40.4	2.18		55.5
AEF4A12006B	11.53	292.9	9.10	231.04	1.47		37.3	1.13		28.57	2.06		52.2	1.59		40.4	2.18		55.5
AEF4A12011B	12.20	309.8	9.10	231.04	1.47		37.3	1.13		28.57	2.72		69.1	1.59		40.4	2.18		55.5
AEF4A12014B	12.20	309.8	9.10	231.04	1.47		37.3	1.13		28.57	2.72	I	69.1	1.59		40.4	2.18		55.5
AEF4A12018B	12.20	309.8	9.10	231.04	1.47		37.3	1.13		28.57	2.72		69.1	1.59		40.4	2.18		55.5
AEF4A12022B	12.20	309.8	9.10	231.04	1.47		37.3	1.13		28.57	2.72		69.1	1.59		40.4	2.18		55.5
AEF4C12003B	15.32	389.2	9.10	231.04	1.47		37.3	1.13		28.57	2.06		52.2	1.59		40.4	5.98		151.8
AEF4C12006B	15.32	389.2	9.10	231.04	1.47		37.3	1.13		28.57	2.06		52.2	1.59		40.4	5.98		151.8
AEF4C12011B	15.99	406.1	9.10	231.04	1.47		37.3	1.13		28.57	2.72		69.1	1.59		40.4	5.98		151.8
AEF4C12014B	15.99	406.1	9.10	231.04	1.47		37.3	1.13		28.57	2.72	- 1	69.1	1.59		40.4	5.98		151.8
AEF4C12018B	15.99	406.1	9.10	231.04	1.47		37.3	1.13		28.57	2.72		69.1	1.59		40.4	5.98		151.8
AEF4C12022B	15.99	406.1	9.10	231.04	1.47		37.3	1.13		28.57	2.72		69.1	1.59		40.4	5.98		151.8
AEF4X12003B	9.35	237.5	9.10	231.04	1.47		37.3	1.13		28.57	2.06		52.2	1.59		40.4	.80		20.4
AEF4X12006B	9.35	237.5	9.10	231.04	1.47		37.3	1.13		28.57	2.06		52.2	1.59		40.4	.80		20.4
AEF4X12011B	10.00	254.4	9.10	231.04	1.47		37.3	1.13		28.57	2.72		69.1	1.59		40.4	.80		20.4
AEF4X12014B	10.00	254.4	9.10	231.04	1.47		37.3	1.13		28.57	2.72		69.1	1.59		40.4	.80		20.4
AEF4X12018B	10.00	254.4	9.10	231.04	1.47		37.3	1.13		28.57	2.72		69.1	1.59		40.4	.80		20.4
AEF4X12022B	10.00	254.4	9.10	231.04	1.47		37.3	1.13		28.57	2.72		69.1	1.59		40.4	.80		20.4

# **ACRADYNE® PISTOL GRIP NUTRUNNERS**

#### **FEATURES AND BENEFITS**

- · Cable configurations available in rear exit, bottom exit, or right angle exit.
- Configured with AcraDyne's multi-function button (MFB) enabling flexibility in operation.
- On-board lights and audible signal for operator feedback.
- Push-To-Start models also available.







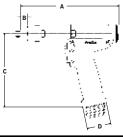


#### **APPLICATION DATA**

1000 SERIES*	NM	MAX TORQUE	FT-LB	NM	TORQUE RANGE	FT-LB	FREE SPEED RPM	LB	WEIGHT (-) SOCKET	KG	OUTPUT DRIVE
AEP4(A)(R)(T)12003B(V)(Q)	3		2.2	0.8 - 3		0.6 - 2.2	2,625	2.2		1.00	3/8 SQ. DR.*
AEP4(A)(R)(T)12006B(V)(Q)	6		4.4	1.5 - 6		1.1 - 4.4	2,625	2.2		1.00	3/8 SQ. DR.*
AEP4(A)(R)(T)12011B(V)(Q)	11		8.1	2.8 - 11		2 - 8.1	1,313	2.3		1.04	3/8 SQ. DR.
AEP4(A)(R)(T)12014B(V)(Q)	14		10	3.5 - 14		2.6 - 10	1,037	2.3		1.04	3/8 SQ. DR.
AEP4(A)(R)(T)12018B(V)	18		13	4.5 - 18		3.3 - 13	840	2.3		1.04	3/8 SQ. DR.
AEP4(A)(R)(T)12022B(V)	22		16	5.5 - 22		4.1 - 16	656	2.3		1.04	3/8 SQ. DR.

		MAX			TORQUE		FREE SPEED		WEIGHT (-)		
2000 SERIES*	NM	TORQUE	FT-LB	NM	RANGE	FT-LB	RPM	LB	SOCKET	KG	OUTPUT DRIVE
AEP4(A)(R)(T)22020B(V)	20		14	5 - 20		3.7 - 14	1,313	2.4		1.09	3/8 SQ. DR.
AEP4(A)(R)(T)22025B(V)	25		18	6.3 - 25		4.6 - 18	1,037	2.4		1.09	3/8 SQ. DR.
AEP4(A)(R)(T)22030B(V)	30		22	7.5 - 30		5.5 - 22	840	2.4		1.09	3/8 SQ. DR.
AEP4(A)(R)(T)22035B(V)	35		25	8.8- 35		6.5 - 25	747	2.4		1.09	3/8 SQ. DR.
AFP4(A)(R)(T)22040B(V)	40		29	10 - 40		7.4 - 29	656	2.4		1.09	3/8 SO. DR.

<sup>\*</sup> Add "Q" to part numbers for 1/4" quick change output standard



1000 SERIES	IN	(A)	ММ	IN	(B)	ММ	IN	(C)	MM	IN	(D)	ММ
AEP412003BV	7.34		186.3	0.54		13.7	6.01		152.6	1.96		49.7
AEP412006BV	7.34		186.3	0.54		13.7	6.01		152.6	1.96		49.7
AEP412011BV	8.00		203.3	0.54		13.7	6.01		152.6	1.96		49.7
AEP412014BV	8.00		203.3	0.54		13.7	6.01		152.6	1.96		49.7
AEP412018BV	8.00		203.3	0.54		13.7	6.01		152.6	1.96		49.7
AEP412022BV	8.00		203.3	0.54		13.7	6.01		152.6	1.96		49.7
2000 SERIES	IN	(A)	MM	IN	(B)	MM	IN	(C)	MM	IN	(D)	MM
AEP422020BV	8.66		219.9	0.56		14.2	6.87		174.4	1.96		49.7
AEP422025BV	8.66		219.9	0.56		14.2	6.87		174.4	1.96		49.7
AEP422030BV	8.66		219.9	0.56		14.2	6.87		174.4	1.96		49.7
AEP422035BV	8.66		219.9	0.56		14.2	6.87		174.4	1.96		49.7
AEP422040BV	8.66		219.9	0.56		14.2	6.87		174.4	1.96		49.7

<sup>\*</sup> E logo indicates where ERGO-DRIVE sockets/extentions benefit tool operation.

Add "A" to part numbers for bottom exit cable models,

Add "R" to part numbers for rear exit cable models,

Add "T" to part numbers for top exit cable models,

<sup>&</sup>quot;V" indicates extended Ergo-Drive output **E** Replace "V" with "Q" for 1/4" quick change output. Push To Start models available by special order.

# **ACRADYNE® PISTOL GRIP NUTRUNNERS**





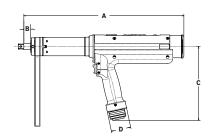
#### **APPLICATION DATA**

5000 05DI50		MAX		TORQUE	57.0	FREE		WEIGHT (-)		OUTPUT
5000 SERIES	NM	TORQUE FT-L		RANGE	FT-LB	SPEED RPM	LB	SOCKET	KG	DRIVE
AEP35075AV(T)	75	55	19 - 75		14 - 55	944	9.2		4.17	1/2 SQ. DR.
AEP35090AV(T)	90	66	23 - 90		17 - 66	767	9.2		4.17	1/2 SQ. DR.
AEP35110AV(T)	110	81	28 - 110		21 - 81	634	9.2		4.17	1/2 SQ. DR.
AEP35135AV(T)	135	99	34 - 135		25 - 99	515	9.2		4.17	1/2 SQ. DR.
AEP35170AV(T)	170	125	43 - 170		32 - 125	418	9.2		4.17	1/2 SQ. DR.
AEP35280A(T)	280	206	70 - 280		52 - 207	236	13.6		6.17	3/4 SQ. DR.
AEP35350A(T)	350	258	88 - 350		65 - 258	192	13.6		6.17	3/4 SQ. DR.
AEP35420A(T)	420	310	105 - 420		78 - 310	159	13.6		6.17	3/4 SQ. DR.
AEP35515A(T)	515	380	128 - 515		95 - 380	129	13.6		6.17	3/4 SQ. DR.
AEP35635A(T)	635	468	159 - 635		117 - 469	104	13.6		6.17	3/4 SQ. DR.

<sup>&</sup>quot;V" indicates extended Ergo-Drive output.



Add "T" to part numbers for top exit cable models,



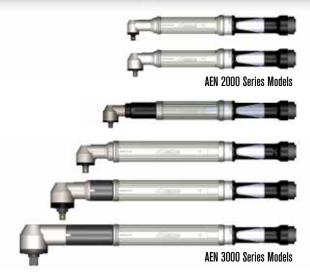
5000 SERIES	IN	(A)	MM	IN	(B)	MM	IN	(C)	MM	IN	(D)	MM
AEP35075AV	15.95		405.2	.68		17.4	7.37		187.1	1.96		49.7
AEP35090AV	15.95		405.2	.68		17.4	7.37		187.1	1.96		49.7
AEP35110AV	15.95		405.2	.68		17.4	7.37		187.1	1.96		49.7
AEP35135AV	15.95		405.2	.68		17.4	7.37		187.1	1.96		49.7
AEP35170AV	15.95		405.2	.68		17.4	7.37		187.1	1.96		49.7
AEP35280A	18.43		468.2	1.11		28.1	7.37		187.1	1.96		49.7
AEP35350A	18.43		468.2	1.11		28.1	7.37		187.1	1.96		49.7
AEP35420A	18.43		468.2	1.11		28.1	7.37		187.1	1.96		49.7
AEP35515A	18.43		468.2	1.11		28.1	7.37		187.1	1.96		49.7
AEP35635A	18.43		468.2	1.11		28.1	7.37		187.1	1.96		49.7

<sup>\*</sup> **E** logo indicates where ERGO-DRIVE sockets/extentions benefit tool operation.

# **ACRADYNE® ANGLE NUTRUNNERS**

#### **FEATURES AND BENEFITS**

AcraDyne® angle nutrunners provide are the perfect solution to space-limited fastening applications that are not practical with inline or pistol model tools. A compact, durable head houses a precision right angle gear set which fits into the tightest of spaces and delivers a highly accurate fastening cycle. Lightweight materials and a uniform body diameter provide a comfortable grip and an ergonomically placed start lever allows for simple control.



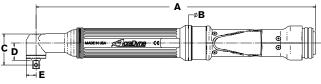
#### **APPLICATION DATA**

2000 SERIES*	NM	MAX TORQUE	FT-LB	NM	TORQUE RANGE	FT-LB	FREE SPEED RPM	LB	WEIGHT (-) SOCKET	KG	OUTPUT DRIVE
AEN32015C(F)(DL)	15		11	3 - 15		2.2 - 11	1,481	2.7		1.22	3/8 SQ. DR.
AEN32025C(F)(DL)	25		18	5 - 20		3.7 - 15	833	2.7		1.22	3/8 SQ. DR
AEN32030C(F)(DL)	30		22	6 - 30		4.4 - 22	803	2.8		1.27	3/8 SQ. DR.
AEN32040C(F)(DL)	40		30	8 - 40		5.9 - 29	574	2.8		1.27	3/8 SQ. DR.

		MAX			TORQUE		FREE SPEED		WEIGHT (-)		OUTPUT
3000 SERIES*	NM	TORQUE	FT-LB	NM	RANGE	FT-LB	RPM	LB	SOCKET	KG	DRIVE
AEN33042C(F)	42		31	9.5 - 42		7 - 31	1,095	4.4		2.00	3/8 SQ. DR.
AEN33053C(F)	53		39	12 - 53		8 - 39	865	4.4		2.00	3/8 SQ. DR.
AEN33060C(F)(DL)	60		44	12 - 60		9 - 44	845	6.6		2.99	1/2 SQ. DR.
AEN33090C(F)(DL)	90		66	18 - 90		13 - 66	568	6.6		2.99	1/2 SQ. DR.
AEN33120C(F)(DL)	120		89	24 - 120		18 - 88	442	9.3		4.22	1/2 SQ. DR.
AEN33200C(F)(DL)	200		148	40 - 200		29 - 147	245	9.4		4.26	3/4 SQ. DR.
AEN33210C(F)(DL)	210		95	50 - 210		37 - 155	234	10.0		4.54	3/4 SQ. DR.
AEN33300C(F)(DL)	300		221	60 - 300		42 - 221	151	10.0		4.54	3/4 SQ. DR.
AEN33375C(F)(DL)	375		277	75 - 375		55 - 276	151	10.0		4.54	3/4 SQ. DR.

<sup>\*</sup> Add "F" to part numbers for flush socket.

Add "DL" to part numbers for dual levers.



2000 SERIES	IN	(A)	MM	IN	(B)	MM	IN	(C)	MM	IN	(D)	MM	IN	(E)	MM
AEN32015C	14.61		371	1.85		47	1.37		34.8	.90		22.9	.52		13.1
AEN32025C	14.61		371	1.85		47	1.37		34.8	.90		22.9	.52		13.1
AEN32030C	14.42		366.2	1.85		47	1.65		41.8	1.16		29.4	.70		17.8
AEN32040C	14.42		366.2	1.85		47	1.65		41.8	1.16		29.4	.70		17.8
3000 SERIES	IN	(A)	MM	IN	(B)	MM	IN	(C)	MM	IN	(D)	MM	IN	(E)	MM
AEN33042C	16.63		422.33	1.85		47	1.66		42.11	1.17		29.67	.7		17.78
AEN33053C	16.63		422.33	1.85		47	1.66		42.11	1.17		29.67	.7		17.78
AEN33060C	18.92		480.53	1.85		47	1.90		48.36	1.37		34.90	.83		20.96
AEN33090C	18.92		480.53	1.85		47	1.90		48.36	1.37		34.90	.83		20.96
AEN33120C	21.00		533.46	1.85		47	2.78		70.59	2.08		52.81	1.05		26.67
AEN33200C	23.21		589.64	1.85		47	2.59		65.75	1.89		47.98	1.05		26.67
AEN33210C	23.58		598.88	1.85		47	2.90		73.53	1.97		50.04	1.25		31.75
AEN33300C	23.58		598.88	1.85		47	2.90		73.53	1.97		50.04	1.25		31.75
AEN33375C	23.58		598.88	1.85		47	2.90		73.53	1.97		50.04	1.25		31.75

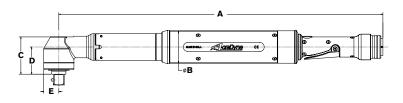
# **ACRADYNE® ANGLE NUTRUNNERS**



#### **APPLICATION DATA**

5000 SERIES*	NM	MAX TORQUE	FT-LB	NM	TORQUE RANGE	FT-LB	FREE SPEED RPM	LB	WEIGHT (-) SOCKET	KG	OUTPUT DRIVE
AEN35090B(F)	90		66	23 - 90		17 - 66	607	6.9		3.13	1/2 SQ. DR.
AEN35140B(F)	140		103	35 - 140		26 - 103	472	10.4		4.72	3/4 SQ. DR.
AEN35175B(F)	175		129	44 - 175		33 - 129	384	10.5		4.76	3/4 SQ. DR.
AEN35225B(F)	225		166	56 - 225		41 - 166	291	12.3		5.58	3/4 SQ. DR.
AEN35285B(F)	285		210	71 - 285		52 - 210	236	12.3		5.58	3/4 SQ. DR.
AEN35350B(F)	350		258	88 - 350		65 - 258	191	12.3		5.58	3/4 SQ. DR

<sup>\*</sup> Add "F" to part numbers for flush socket.



5000 SERIES	IN	(A) MM	IN	(B)	MM	IN	(C)	ММ	IN	(D)	MM	IN	(E)	MM
AEN35090B	22.59	573.7	2.31		58.7	1.90		48.4	1.37		34.9	.81		20.6
AEN35140B	22.52	571.9	2.31		58.7	2.59		65.8	1.89		48	1.05		26.7
AEN35175B	22.52	571.9	2.31		58.7	2.59		65.8	1.89		48	1.05		26.7
AEN35225B	22.88	581.1	2.31		58.7	2.90		73.5	1.97		50	1.25		31.8
AEN35285B	22.88	581.1	2.31		58.7	2.90		73.5	1.97		50	1.25		31.8
AEN35350B	22.88	581.1	2.31		58.7	2.90		73.5	1.97		50	1.25		31.8

## **ACRADYNE® IN-LINE NUTRUNNERS**

#### FEATURES AND BENEFITS

AcraDyne® inline nutrunners are the perfect choice for fixtured fastening applications because of their compact size and durability. A uniform body diameter and a hex shaped mounting point allow for simple installation into fixture plates. Simply machine a female hex into a steel plate, insert the nutrunner, secure with the factory supplied nut and your fastening machine is assembled. A reaction bar for use in handheld applications is also included with all AcraDyne® inline nutrunners.



#### **APPLICATION DATA**

0000 055150*	N 10.4	MAX	ETLD		TORQUE	ET 1.0	FREE		WEIGHT (-)	140	OUTPUT
2000 SERIES*	NM	TORQUE	FT-LB	NM	RANGE	FT-LB	SPEED RPM	LB	SOCKET	KG	DRIVE
AES32010C(V)(Q)	10		7.4	2 - 10		1.5 - 7.4	2,222	2.5		1.13	3/8 SQ. DR.*
AES32020C(V)(Q)	20		15	4 - 20		3.0 - 15	1,250	2.5		1.13	3/8 SQ. DR.*
AES32025C(V)(Q)	25		18	5 - 25		3.7 - 18	893	3.2		1.45	3/8 SQ. DR.*
AES32038C(V)	38		28	7.5 - 38		5.5 - 28	595	4.2		1.91	3/8 SQ. DR.
		MAX			TORQUE		FREE SPEED		WEIGHT (-)		OUTPUT
3000 SERIES*	NM	MAX TORQUE	FT-LB	NM	TORQUE RANGE	FT-LB	FREE SPEED RPM	LB	WEIGHT (-) SOCKET	KG	OUTPUT DRIVE
3000 SERIES* AES33040C(V)(-2)	NM 40		<b>FT-LB</b> 30	NM 8 - 40		<b>FT-LB</b> 5.9 - 30		LB 6.4	- ' '	KG 2.90	
							RPM		- ' '		DRIVE
AES33040C(V)(-2)	40		30	8 - 40		5.9 - 30	RPM 1,314	6.4	- ' '	2.90	DRIVE 1/2 SQ. DR.

<sup>\*</sup> Add "Q" to part numbers for 1/4" quick change output standard. Add "V" to part numbers for standard spindle models. Add "-2" to part numbers for 2" sliding spindle models, and add 2.3 lb to the weight listed.

34 - 184

59 - 295

89 - 440

221

122

82

46 - 230

80 - 400

120 - 600

170

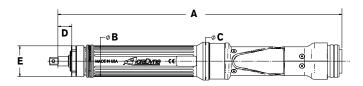
295

440

230

400

600



8.1

13.0\*\*

13.0\*\*

1/2 SO. DR.

3/4 SQ. DR.

3/4 SQ. DR.

3.67

5.90\*

5.90\*

#### **DIMENSIONS**

AES33230C(V)(-2)

AES33400C

AES33600C

2000 SERIES	IN	(A)	ММ	IN	(B)	ММ	IN	(C)	MM	IN	(D)	MM	IN	(E)	MM
AES32010CV	13.85		351.7	1.59		40.4	1.85		47	.56		14.3	1.50		38.1
AES32020CV	13.85		351.7	1.59		40.4	1.85		47	.56		14.3	1.50		38.1
AES32025CV	13.85		351.7	1.59		40.4	1.85		47	.56		14.3	1.50		38.1
AES32038CV	16.69		424	1.50		38.1	1.85		47	.51		12.9	1.50		38.1
3000 SERIES	IN	(A)	MM	IN	(B)	MM	IN	(C)	MM	IN	(D)	MM	IN	(E)	MM
AES33040CV	18.24		463.38	1.94		49.28	1.85		47	.68		17.17	1.85		47
AES33060CV	18.24		463.38	1.94		49.28	1.85		47	.68		17.17	1.85		47
AES33100CV	22.56		572.99	1.94		49.28	1.85		47	.68		17.17	1.85		47
AES33150CV	22.56		572.99	1.94		49.28	1.85		47	.68		17.17	1.85		47
AES33230CV	22.56		572.99	1.94		49.28	1.85		47	.68		17.17	1.85		47
AES33400C	24.90		532.36	1.94		49.28	1.85		47	1.11		28.08	2.64		67.1
AES33600C	24.90		532.36	1.94		49.28	1.85		47	1.11		28.08	2.64		67.1

<sup>\*</sup> E logo indicates where ERGO-DRIVE sockets/extentions benefit tool operation.

<sup>\*\*</sup>Includes reaction bar and fixture nut

# **ACRADYNE® IN-LINE NUTRUNNERS**

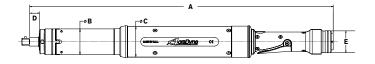


**AES 5000 Series Models** 

#### **APPLICATION DATA**

5000 SERIES	NM	MAX TORQUE	FT-LB	NM	TORQUE RANGE	FT-LB	FREE SPEED RPM	LB	WEIGHT (-) SOCKET	KG	OUTPUT DRIVE
AES35075AV	75		55	19 - 75		14 - 55	944	9.2		4.17	1/2 SQ. DR.
AES35090AV	90		66	23 - 90		17 - 66	767	9.2		4.17	1/2 SQ. DR.
AES35110AV	110		81	28 - 110		21 - 81	634	9.2		4.17	1/2 SQ. DR.
AES35135AV	135		100	34 - 135		25 - 100	515	9.2		4.17	1/2 SQ. DR.
AES35170AV	170		126	43 - 170		32 - 126	418	9.2		4.17	1/2 SQ. DR.
AES35280A	280		207	70 - 280		52 - 207	236	12.8		5.81	3/4 SQ. DR.
AES35350A	350		258	88 - 350		65 - 258	192	12.8		5.81	3/4 SQ. DR.
AES35420A	420		310	105 - 420		78 - 310	159	12.8		5.81	3/4 SQ. DR.
AES35515A	515		380	128 - 515		95 - 380	129	12.8		5.81	3/4 SQ. DR.
AES35635A	635		469	159 - 635		117 - 469	104	12.8		5.81	3/4 SQ. DR.

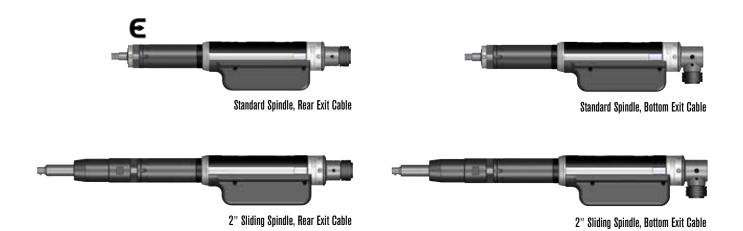
"V" indicates extended Ergo-Drive output.



5000 SERIES	IN	(A)	ММ	IN	(B)	ММ	IN	(C)	ММ	IN	(D)	ММ	IN	(E)	MM
AES35075AV	21.86		555.2	1.85		47	2.31		58.7	.68		17.4	1.78		45.2
AES35090AV	21.86		555.2	1.85		47	2.31		58.7	.68		17.4	1.78		45.2
AES35110AV	21.86		555.2	1.85		47	2.31		58.7	.68		17.4	1.78		45.2
AES35135AV	21.86		555.2	1.85		47	2.31		58.7	.68		17.4	1.78		45.2
AES35170AV	21.86		555.2	1.85		47	2.31		58.7	.68		17.4	1.78		45.2
AES35280A	24.22		615.1	2.64		67.1	2.31		58.7	1.11		28.1	1.78		45.2
AES35350A	24.22		615.1	2.64		67.1	2.31		58.7	1.11		28.1	1.78		45.2
AES35420A	24.22		615.1	2.64		67.1	2.31		58.7	1.11		28.1	1.78		45.2
AES35515A	24.22		615.1	2.64		67.1	2.31		58.7	1.11		28.1	1.78		45.2
AES35635A	24.22		615.1	2.64		67.1	2.31		58.7	1.11		28.1	1.78		45.2

<sup>\*</sup> **E** logo indicates where ERGO-DRIVE sockets/extentions benefit tool operation.

# **ACRADYNE® FIXTURED NUTRUNNERS**

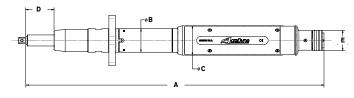


#### **APPLICATION DATA**

5000 SERIES*	NM	MAX TORQUE	FT-LB	NM	TORQUE RANGE	FT-LB	FREE SPEED RPM	LB	WEIGHT (-) SOCKET	KG	OUTPUT DRIVE
AEF35075A(V)(VB)(-2)(B-2)	75		55	19 - 75		14 - 55	944	9.6		4.35	1/2 SQ. DR.
AEF35090A(V)(VB)(-2)(B-2)	90		66	23 - 90		17 - 66	767	9.6		4.35	1/2 SQ. DR
AEF35110A(V)(VB)(-2)(B-2)	110		81	28 - 110		21 - 81	634	9.6		4.35	1/2 SQ. DR
AEF35135A(V)(VB)(-2)(B-2)	135		100	34 - 135		25 - 100	515	9.6		4.35	1/2 SQ. DR
AEF35170A(V)(VB)(-2)(B-2)	170		125	43 - 170		32 - 125	418	9.6		4.35	1/2 SQ. DR
AEF35280A(V)(VB)(-2)(B-2)	280		207	70 - 280		52 - 207	236	13.6		6.17	3/4 SQ. DR.
AEF35350A(V)(VB)(-2)(B-2)	350		258	88 - 350		65 - 258	192	13.6		6.17	3/4 SQ. DR
AEF35420A(V)(VB)(-2)(B-2)	420		310	105 - 420		77 - 310	159	13.6		6.17	3/4 SQ. DR
AEF35515A(V)(VB)(-2)(B-2)	515		380	128 - 515		95 - 380	129	13.6		6.17	3/4 SQ. DR
AEF35635A(V)(VB)(-2)(B-2)	635		469	159 - 635		117 - 469	104	13.6		6.17	3/4 SQ. DR

<sup>\*</sup> Add "V" to part numbers for standard spindle with rear exit cable models. Add "VB" to part numbers for standard spindle with bottom exit cable models.

<sup>\*</sup> Item 28843 is a panel mount 2" sliding spindle for 280 - 635 Nm models.



5000 SERIES	IN	(A) MM	IN	(B)	MM	IN	(C)	MM	IN	(D)	MM	IN	(E)	MM
AEF35075AV	17.67	448.8	1.85		47	2.31		58.7	.72		18.4	1.59		40.4
AEF35090AV	17.67	448.8	1.85		47	2.31		58.7	.72		18.4	1.59		40.4
AEF35110AV	17.67	448.8	1.85		47	2.31		58.7	.72		18.4	1.59		40.4
AEF35135AV	17.67	448.8	1.85		47	2.31		58.7	.72		18.4	1.59		40.4
AEF35170AV	17.67	448.8	1.85		47	2.31		58.7	.72		18.4	1.59		40.4
AEF35075A-2	23.43	595.1	1.85		47	2.31		58.7	2.22		56.4	1.59		40.4
AEF35090A-2	23.43	595.1	1.85		47	2.31		58.7	2.22		56.4	1.59		40.4
AEF35110A-2	23.43	595.1	1.85		47	2.31		58.7	2.22		56.4	1.59		40.4
AEF35135A-2	23.43	595.1	1.85		47	2.31		58.7	2.22		56.4	1.59		40.4
AEF35170A-2	23.43	595.1	1.85		47	2.31		58.7	2.22		56.4	1.59		40.4
AEF35280A	18.43	468.2	1.11		28.1	7.37		187.1	1.96		49.7	20.4		518
AEF35350A	18.43	468.2	1.11		28.1	7.37		187.1	1.96		49.7	20.4		518
AEF35420A	18.43	468.2	1.11		28.1	7.37		187.1	1.96		49.7	20.4		518
AEF35515A	18.43	468.2	1.11		28.1	7.37		187.1	1.96		49.7	20.4		518
AEF35635A	18.43	468.2	1.11		28.1	7.37		187.1	1.96		49.7	20.4		518

<sup>\*</sup> E logo indicates where ERGO-DRIVE sockets/extentions benefit tool operation.

<sup>\*</sup> Add "-2" to part numbers for 2" sliding spindle with rear exit cable models. Add "B-2" to part numbers for 2" sliding spindle with bottom exit cable models.

## **ACRADYNE® TUBENUT NUTRUNNERS AND SPECIALTY GEARHEADS**

#### FEATURES AND BENEFITS

- · Patented Safety Algorithm.
- Transducer senses resistance in the initial 90 degrees of rotation and returns to open upon any resistance encountered.
- Durable tubenut head design.

Simple, one-touch back to open operation for maximum productivity.



#### WITH INNOVATIVE SAFETY SENSOR TECHNOLOGY!





AET 2000 Series Model with Double Levers

#### APPLICATION DATA

1000 SERIES*	NM	MAX TORQUE	FT-LB	NM	TORQUE RANGE	FT-LB	FREE SPEED RPM	LB	WEIGHT (-) SOCKET	KG	IN	OUTPUT DRIVE	NM
AET4AA12018B	18		13	3.6 - 14		2.7 - 11	516	3.1		1.41	1/4 - 7/16		7 - 12
AET4AB12025B	25		18	5 - 20		3.7 - 15	387	3.1		1.41	3/8 - 5/8		10 - 17
AET4A12025B-KD	25		18	5 - 20		3.7 - 15	387	3.1		1.41	3/8 - 5/8		10 - 17
							FREE						
		MAX			TORQUE		SPEED		WEIGHT			OUTPUT	
2000 SERIES*	NM	TORQUE	FT-LB	NM	RANGE	FT-LB	RPM	LB	(-) SOCKET	KG	IN	DRIVE	NM
AET32020C(DL)	20		15	4 - 16		3.0 - 12	622	3.1		1.41	1/4 - 7/16		7 - 12
AET32025C(DL)	25		18	5 - 20		3.7 - 15	466	4.0		1.81	3/8 - 5/8		10 - 17
AET32035C(DL)	35		26	7 - 28		5.2 - 21	347	4.5		2.04	1/2 - 7/8		13 - 24
_AET32050C(DL)	50		37	10 - 40		7.4 - 30	257	5.6		2.54	5/8 - 1-3/16		17 - 32

<sup>\*</sup> Add "DL" to part numbers for double levers. Request specific socket size when placing your order. AIMCO offers a wide variety of socket sizes to fit your needs. Contact AIMCO at 1-800-852-1368.

#### **SPECIALTY GEARHEADS**

AIMCO can provide specialized heads for almost any application. Tubenut, Hold and Drive, Crow Foot, Offsets and Sliding Spindles are just a few of the head styles available. Whatever your requirements are, we will help select the head configuration to get the job done.





# **ACRADYNE® HOLD & DRIVE NUTRUNNERS**

#### **FEATURES AND BENEFITS**

- Torques Ranging from 20 Nm 200 Nm.
- Very Robust modern design.
- 1" and 2" travels are standard.
- · Sockets and holders are custom to order.

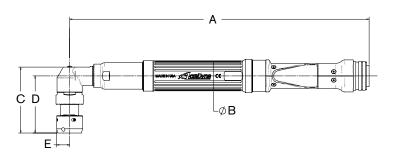




#### **APPLICATION DATA**

MODEL*	NM	MAX TORQUE	FT-LB	NM	TORQUE RANGE	FT-LB	FREE SPEED RPM	WEIGH	HT LB	MIN/MAX SOCKET
AEH4F12020B-(1,2)	20		15	4 - 20		3 - 15	533	-1=2.8,	-2=3.0	9/16 (14 MM) / 13/16, (21 MM)
AEH4F12026B-(1,2)	26		19	5 - 26		4 - 19	432	-1=2.8,	-2=3.1	9/16 (14 MM) / 13/16, (21 MM)
AEH32025C-(1,2)	25		18	5 - 25		4 - 18	833	-1 = 3.5,	-2=3.5	9/16 (14 MM) / 13/16, (21 MM)
AEH32030C-(1,2)	30		22	6 - 30		4 - 22	803	-1 = 3.5,	-2=3.6	9/16 (14 MM) / 13/16, (21 MM)
AEH32040C-(1,2)	40		30	8 - 40		6 - 30	574	-1 = 3.5,	-2=3.7	9/16 (14 MM) / 13/16, (21 MM)
AEH33042C-(1,2)	42		31	10 - 42		7 - 31	1,095	-1=5.6,	-2=5.8	9/16 (14 MM) / 13/16, (21 MM)
AEH33053C-(1,2)	53		39.	12 - 53		8 - 39	865	-1=5.6,	-2=5.8	9/16 (14 MM) / 13/16, (21 MM)
AEH33060C-(1,2)	60		44	12 - 60		9 - 44	845	-1=7.3,	-2=7.5	5/8 (16 MM) / 1-1/4, (32 MM)
AEH33090C-(1,2)	90		66	18 - 90		13 - 66	568	-1=7.3,	-2=7.6	5/8 (16 MM) / 1-1/4, (32 MM)
AEH33120C-(1,2)	120		89	24 - 120		18 - 89	442	-1=10.0,	-2=10.3	5/8 (16 MM) / 1-1/4, (32 MM)
AEH33200C-(1,2)	200		148	40 - 200		29 - 148	245	-1=10.0,	-2=10.4	5/8 (16 MM) / 1-1/4, (32 MM)
AEH35140B-(1,2)	140		103	35 - 140		26 - 103	472	-1=10.6,	-2=11.0	5/8 (16 MM) / 1-1/4, (32 MM
AEH35175B-(1,2)	175		129	44 - 175		33 - 129	384	-1=10.6,	-2=11.1	5/8 (16 MM) / 1-1/4, (32 MM)

<sup>\*</sup> Add "1" to part numbers for 1" travel. Add "2" to part numbers for 2" travel.



MODEL	IN	(A)	MM	IN	(B)	MM	IN	(C)	MM	IN	(D)*	MM	IN	(E)	MM
AEH4F12020C-1	14.59		370.7	1.59		40.4	3.72		94.4	3.17		80.6	.76		19.3
AEH4F12026C-1	14.59		370.7	1.59		40.4	3.72		94.4	3.17		80.6	.76		9.3
AEH32025C-1	14.59		370.7	1.85		47	3.72		94.4	3.17		80.6	.76		19.3
AEH32030C-1	14.59		370.7	1.85		47	3.72		94.4	3.17		80.6	.76		19.3
AEH32040C-1	14.59		370.7	1.85		47	3.72		94.4	3.17		80.6	.76		19.3
AEH33053C-1	16.79		426.5	1.85		47	3.72		94.4	3.17		80.6	.76		19.3
AEH33060C-1	18.92		480.53	1.96		49.8	4.04		102.5	3.37		85.66	.94		23.9
AEH33090C-1	18.92		480.53	1.96		49.8	4.04		102.5	3.37		85.66	.94		23.9
AEH33120C-1	21.00		533.49	1.96		49.8	4.87		123.66	4.09		103.82	1.13		28.6
AEH33200C-1	23.21		589.5	1.96		49.8	4.87		123.66	4.09		103.82	1.13		28.6
AEH35140C-1	22.52		572.0	2.31		58.7	4.87		123.66	4.09		103.82	1.13		28.6
AEH35170C-1	22.52		572.0	2.31		58.7	4.87		123.66	4.09		103.82	1.13		28.6

## **ACRADYNE® MID-EXIT CABLE NUTRUNNERS**

#### **FEATURES AND BENEFITS**

#### Length

- The tool's length is reduced by the cable exiting in front of the grip surface.

#### Ergonomics

- Torque reaction is reduced relative to pistol style tools.
- The hand is positioned farther away from the application for more leverage. This is maximized by the cable being in front of the hand. The handle is inline putting less stress on the wrist.

#### Cable management

- If used with a spring balancer, the tool hangs naturally near its center of gravity, the cable is controlled by the balancer.
- The front position of the cable provides easy cable management. This is especially beneficial where one plane has length constraints and at 90° is free from obstruction (vertical for Doors-On).

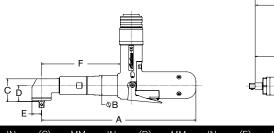


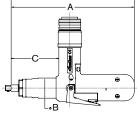
Specialized heads and blades available by request. Contact AIMCO at 1-800-852-1368.

#### **APPLICATION DATA**

MODEL*	NM	MAX TORQUE FT-LB	NM	TORQUE RANGE FT-LB	FREE SPEED RPM	LB	WEIGHT (-) SOCKET K	G	OUTPUT DRIVE
AEN4C22O15BM(F)	15	11	3.75 - 15	2.77 - 11	700	2.6	1.	18	3/8 SQ. DR.
AEN4F22030BM(F)	30	22	7.5 - 30	5.53 - 22	675	3.3	1.5	50	3/8 SQ. DR.
AEN4F22037BM(F)	37	29	9.25 - 37	6.82 - 29	533	3.3	1.5	50	3/8 SQ. DR.
AEN4F22044BM(F)	44	32	11 - 40	8.11 - 29	432	3.3	1.5	50	3/8 SQ. DR.
AES4A22020BVM	20	15	5 - 20	3.7 - 15	1050	2.4	1.0	)9	3/8 SQ. DR.
AES4A22025BVM	25	18	6.3 - 25	4.6 - 18	830	2.4	1.0	)9	3/8 SQ. DR.
AES4A22030BVM	30	22	7.5 - 30	5.5 - 22	672	2.4	1.0	)9	3/8 SQ. DR.
AES4A22040BVM	40	30	10 - 40	7.4 - 30	525	2.4	1.0	)9	3/8 SQ. DR.

<sup>\*</sup> Add "F" to part numbers for flush socket.





MODEL	IN	(A)	MM	IN	(B)	MM	IN	(C)	MM	IN	(D)	MM	IN	(E)	MM	IN	(F)	MM
AEN4C22O15BM	9.02		229.1	1.47		37.3	1.29		32.8	.82		20.9	.52		13.1	5.53		140.4
AEN4D22O23BM	11.1		280.3	1.47		37.3	1.42		36.1	.92		23.4	.56		14.1	5.67		144.1
AEN4D22O29BM	11.1		280.3	1.47		37.3	1.42		36.1	.92		23.4	.56		14.1	5.67		144.1
AEN4D22O35BM	11.1		280.3	1.47		37.3	1.42		36.1	.92		23.4	.56		14.1	5.67		144.1
AEN4F22030BM	11.24		285.6	1.47		37.3	1.66		42.1	1.17		29.7	.70		17.8	5.73		145.6
AEN4F22037BM	11.24		285.6	1.47		37.3	1.66		42.1	1.17		29.7	.70		17.8	5.73		145.6
AEN4F22044BM	11.24		285.6	1.47		37.3	1.66		42.1	1.17		29.7	.70		17.8	5.73		145.6
AES4A22020BM	9.0		228.1	1.47		37.3	3.49		88.6									
AES4A22025BM	9.0		228.1	1.47		37.3	3.49		88.6									
AES4A22030BM	9.0		228.1	1.47		37.3	3.49		88.6									
AES4A22040BM	9.0		228.1	1.47		37.3	3.49		88.6									

# **ACRADYNE® RIV-NUT NUTRUNNERS**

#### **FEATURES AND BENEFITS**

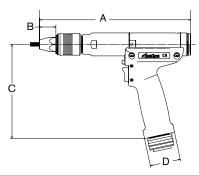
- Top and Rear exit cable are standard.
- Straight, Fixtured and Push to Start models are available by request. Contact AIMCO at 1-800-852-1368.



#### **APPLICATION DATA**

MODEL*	NM	MAX TORQUE	FT-LB	NM	TORQUE RANGE	FT-LB	FREE SPEED RPM	LB	WEIGHT (-) SOCKET	KG	OUTPUT DRIVE
AEP4(A,R,T)12011BR	11		8.1	2.8 - 11		2 - 8.1	1,313	2.3		1.04	3/8 SQ. DR.
AEP4(A,R,T)12014BR	14		10	3.5 - 14		2.6 - 10	1,037	2.3		1.04	3/8 SQ. DR.
AEP4(A,R,T)12018BR	18		13	4.5 - 18		3.3 - 13	840	2.3		1.04	3/8 SQ. DR.
AEP4(A,R,T)12022BR	22		16	5.5 - 22		4.1 - 16	656	2.3		1.04	3/8 SQ. DR.
AEP4(A,R,T)22020BR	20		15	5 - 20		3.7 - 15	1,313	2.4		1.09	3/8 SQ. DR.
AEP4(A,R,T)22025BR	25		18	6.3 - 25		4.6 - 18	1,037	2.4		1.09	3/8 SQ. DR.
AEP4(A,R,T)22030BR	30		22	7.5 - 30		5.5 - 22	840	2.4		1.09	3/8 SQ. DR.
AEP4(A,R,T)22040BR	40		30	10 - 40		7.4 - 30	656	2.4		1.09	3/8 SQ. DR.

<sup>\*</sup> Add "A" to part numbers for bottom exit cable models, Add "R" to part numbers for rear exit cable models, Add "T" to part numbers for top exit cable models,



MODEL	IN	(A)	MM	IN	(B)	MM	IN	(C)	MM	IN	(D)*	MM
AEP412011BR	9.68	2	245.9	1.05		26.7	6.87		174.5	1.96		49.8
AEP412014BR	9.68	2	245.9	1.05		26.7	6.87		174.5	1.96		49.8
AEP412018BR	9.68	2	245.9	1.05		26.7	6.87		174.5	1.96		49.8
AEP412022BR	9.68	2	245.9	1.05		26.7	6.87		174.5	1.96		49.8
AEP422020BR	10.18	2	258.6	1.05		26.7	6.87		174.5	1.96		49.8
AEP422025BR	10.18	2	258.6	1.05		26.7	6.87		174.5	1.96		49.8
AEP422030BR	10.18	2	258.6	1.05		26.7	6.87		174.5	1.96		49.8
AEP422040BR	10.18	2	258.6	1.05		26.7	6.87		174.5	1.96		49.8

## **ACRADYNE® HIGH TORQUE D/C TOOLS**

#### FEATURES AND BENEFITS

Critical high torque assembly and bolting applications demand tools that will deliver torque with superior performance and durability. The precision design of AcraDyne's HT Series combines these features in an electric tool that beats the competition on productivity and ergonomics. AcraDyne's transducer torque control system provides consistent, reliable torque values as well as the ability to monitor rotational angle during the tightening process. When combined with AcraDyne's Controllers, customers have a high torque critical bolting system that can handle the toughest and most important bolting jobs. The faster speed, coupled with its extreme accuracy, makes this bolting system an outstanding cost effective investment.

- Transducerized closed-loop control, NOT current control like most High Torque products available.
- One of the only high torque tools in the world with the transducer at the output.
- Torque is measured at the output, not before the gearing like competing products.
- No effect on results caused by gear wear like all other tools available.
- The torque reported is the torque delivered to the fastener.
- · Most accurate high torque tools in the world.
- Up to three times faster than the competition.
- Interchangeable Tools, Cables, and Controllers Calibrations are specific to the tool not the system as a whole.
- Universal Controller for all AcraDyne® tools.
- On-tool LEDs for Accept / Reject signals.
- Designed and MADE IN THE USA.











FIXTURED TYPE (AEF)



STRAIGHT LEVER TYPE (AES)

MODEL*			TORQUE	APPROX. SPEED		IGHT	LEN	IGTH	DI		DRIVE	SOUND LEVEL
(HANDLE TYPE)	SERIES	Nm	ft-lb	rpm	kg	lb	mm	in	mm	in	in	dB(A)
( )4(A)(B)66250B	6000	250	185	315	5.3	12	305	12	66	2.6	0.75	66
( )4(A)(B)66425B	6000	425	315	165	5.3	12	305	12	66	2.6	0.75	66
( )4(A)(B)66625B	6000	625	460	106	5.5	12	305	12	66	2.6	0.75	66
( )4(A)(B)66925B	6000	925	682	72	5.5	12	305	12	66	2.6	0.75	66
( )4(A)(B)771200B	7000	1200	885	65	7.3	16	310	12.2	76	3.0	1	66
( )4(A)(B)773000B	7000	3000	2,213	25	8.2	18	345	13.6	76	3.0	1	66
( )4(A)(B)884200B1	8000	4,200	3,100	12	11.8	26	391	15.4	86	3.6	1	66
( )4(A)(B)884200B	8000	4,200	3,100	12	11.8	26	391	15.4	86	3.6	1.5	66
( )4(A)(B)885000B	8000	5,000	3,700	9	11.8	26	391	15.4	86	3.6	1.5	66
( )4(A)(B)896500B	8000/9000	6,500	4,800	7	16.4	36	429	16.9	101	4.0	1.5	66
( )4(A)(B)898100B	8000/9000	8,100	6.000	5	16.4	36	429	16.9	101	4.0	1.5	66

<sup>\*</sup> The fifth digit of the model number is "A" for fixed gearcase models and "B" for clutched gearcase models. Add "B" to the end of the model number for bottom exit cable (fixtured type). Above data is for clutched gearcase models. For no-clutched models, reduce weight by 1.5 lb (0.7 kg) and length by 2 in (51 mm).

# **ACRADYNE® HIGH TORQUE D/C ANGLE TOOLS**

#### **FEATURES AND BENEFITS**

- Transducerized closed-loop control like all AcraDyne HT-Series tools.
- Torque is measured at the output, not before the gearing like competing products.
- A unique solution: Low profile head, small diameter, lever operated tools with the transducer at the output.
- No effect on results caused by gear wear, like other angle tools. The torque reported is the torque delivered to the fastener.
- Most accurate right-angle high torque tools in the world.
- · Smallest tools of their kind on the market.
- Same durable high-cycle gearing as our other HT-series tools.
- Models up to 8,100 Nm available by special order.

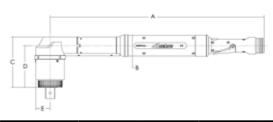






#### **SPECIFICATIONS**

	MAX. TO	DRQUE*	TORQUE	RANGE	FREE SPEED	WEI	GHT	
MODEL	nm	ft-lbs.	nm	ft-lbs.	RPM	lbs.	kg	OUTPUT DRIVE
AEN356540A	540	398	135-540	100-398	109	13.1	5.95	3/4" Square Drive
AEN3571000A	1000	737	250-1000	184-737	61	16.3	7.39	1" Square Drive
AEN3571600A	1600	1180	400-1600	295-1180	33	16.7	7.57	1" Square Drive
AEN3572600A	2600	1917	650-2600	479-1917	21	18.5	8.40	1" Square Drive





	/	4	E	3	(		[	)	E	
DIMENSIONS	in	mm	in	mm	in	mm	in	mm	in	mm
AEN356540A	22.58	573.6	2.31	58.7	4.75	120.6	4.05	102.8	1.33	33.7
AEN3571000A	22.92	582.2	2.31	58.7	5.36	136.1	4.44	112.7	1.53	38.7
AEN3571600A	22.92	582.2	2.31	58.7	5.36	136.1	4.44	112.7	1.53	38.7
AEN3572600A	22.92	582.2	2.31	58.7	6.77	171.9	5.86	148.8	1.53	38.7





#### **DUAL LEVER TOOLS**

#### **FEATURES AND BENEFITS**

- Additional safety when using a tool with a reaction bar or nose extension.
- Requires the operator to use both hands when starting the tool, which keeps hands clear of the application.
- · Helps to avoid accidental starting of the tool.
- Available in two handle types: "Handle Bar" style (F) and Straight (S) tool with side handle.



MODEL* (HANDLE TYPE)	SERIES		ROX. QUE ft-lb	APPROX. SPEED rpm	WE!	GHT lb	LEN mm	NGTH in	DI mm	A. in	DRIVE in	SOUND LEVEL dB(A)
AE(S)(F)4(A)(B)66250BDL	6000	250	185	315	4.6	10.5	254	10	66	2.6	0.75	66
AE(S)(F)4(A)(B)66425BDL	6000	425	315	165	4.6	10.5	254	10	66	2.6	0.75	66
AE(S)(F)4(A)(B)66625BDL	6000	625	460	106	4.8	10.5	254	10	66	2.6	0.75	66
AE(S)(F)4(A)(B)66925BDL	6000	925	682	72	4.8	10.5	254	10	66	2.6	0.75	66
AE(S)(F)4(A)(B)771200BDL	7000	1,200	885	65	6.6	14.5	259	10.2	76	3.0	1	66
AE(S)(F)4(A)(B)773000BDL	7000	3,000	2,213	25	7.5	16.5	294	11.6	76	3.0	1	66
AE(S)(F)4(A)(B)884200B1DL	8000	4,200	3,100	12	11.1	24.5	340	13.4	86	3.6	1	66
AE(S)(F)4(A)(B)884200BDL	8000	4,200	3,100	12	11.1	24.5	340	13.4	86	3.6	1.5	66
AE(S)(F)4(A)(B)885000BDL	8000	5,000	3,700	9	11.1	24.5	340	13.4	86	3.6	1.5	66
AE(S)(F)4(A)(B)896500BDL	8000/9000	6,500	4,800	7	15.7	34.5	378	14.9	101	4.0	1.5	66
AE(S)(F)4(A)(B)898100BDL	8000/9000	8,100	6,000	5	15.7	34.5	378	14.9	101	4.0	1.5	66

- \* The fifth digit of the model number is "A" for fixed gearcase models and "B" for clutched gearcase models.
- Above data is for clutched gearcase models. For no-clutched models, reduce weight by 1.5 lb (0.7 kg) and length by 2 in (51 mm).
- For Straight Type Tools Choose the Position of the Handle by Adding (L) for Left Side and (R) for Right Side

#### **HT GEARHEAD TOOLS**

#### **FEATURES AND BENEFITS**

- Custom made to fit virtually any application.
- Same high durability gearing as on AcraDyne's standard HT Series tools.
- Model types available:
  - o HT Offset Gearhead tools
- o HT Right Angle with Offset Gearhead Tools
  - o HT Right Angle Air Tools with Offset Gearhead
- Torque ranges from 250 Nm to 8100 Nm.





# **ACRADYNE® HIGH TORQUE NOSE EXTENSIONS**



#### **NOSE EXTENSIONS**

#### **FEATURES AND BENEFITS**

- Ideal for hard-to-reach applications when a torque tube, or arm, is not desirable.
- Used as a cost-effective, more flexible option to a multiple spindle system.
- Common Applications:
  - Wheel install and repair stations.
  - Large flange assembly



#### **REACTION BARS**

Each tool includes a standard spline-attachment reaction device. Custom reaction devices are also available; contact your AIMCO sales representative for more details, 1-800-852-1368.



MODEL	DESCRIPTION
26810	Single Ended, Flat, 6000 Series
26815	Single Ended, 2.375" Offset, 6000 Series
26830	Double Ended, Flat, 6000 Series
26885	Single Ended, 4.00" Offset, 6000 Series
26800	Single Ended, Flat, 7000 Series
27200	Single Ended, 3.10" Offset, 7000 Series
26820	Double Ended, Flat, 7000 Series
26890	Single Ended, 4.00" Offset, 7000 Series
25277	Single Ended, flat, 8000 Series
25274	Single Ended, 3.35" offset, 8000 Series
25275	Single Ended, 4.00" offset, 8000 Series
25278	Double Ended, flat, 8000 Series
25276	Double Ended, 3.35" offset, 8000 Series
27255	Single Ended, flat, 9000 Series
26840	Single Ended, 3.35" offset, 9000 Series

#### **ACCESSORIES**

Custom accessories are also available for your application; contact your AIMCO Sales Representative for more details, 1-800-852-1368.



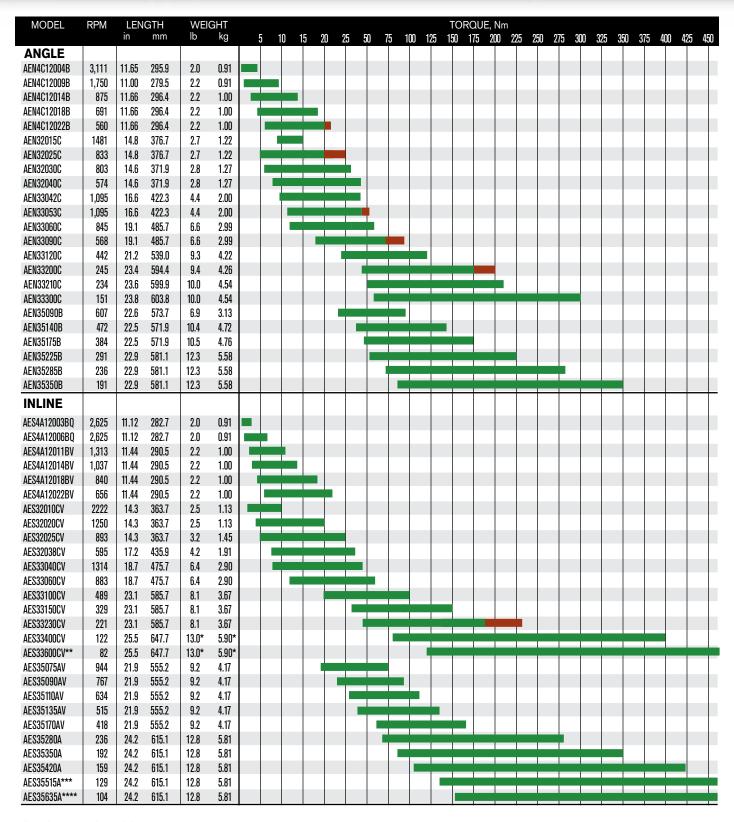




MODEL	DESCRIPTION
26477	Swivel Bail Assembly, 6000 Series
26478	Swivel "D" Handle Assembly, 6000 Series
26479	Stationary Bail Assembly, 6000 Series
26337	Rear Fixed Hoist Ring Sub-Assembly, 7000/8000 Series
26327	Swivel Bail Assembly, 7000 Series
26328	Swivel "D" Handle Assembly, 7000 Series
26336	Fixed Handle Sub-Assembly, 7000 Series
25291	Swivel Handle, 8000 Series
25287	Swivel Bail Hoist, 8000 Series
25497	Rear fixed hoist ring, 8000 Series
25289	Fixed hoist (handle not included), 8000 Series
25280	Auxiliary Handle, 8000 Series
27045	Sliding Spindle, 7000 Series
28549	Sliding Spindle, 6000 Series

# **NOTES**


## DC TOOLS: TOOL/SPINDLE SELECTION GUIDE

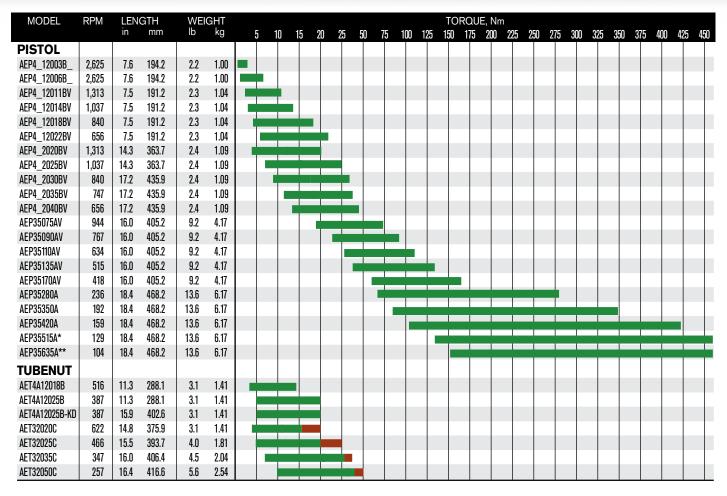


<sup>\*</sup>Includes reaction bar and fixture nut.

<sup>\*\*</sup>Torque Range: 120-480 Nm Max Torque: 600 Nm

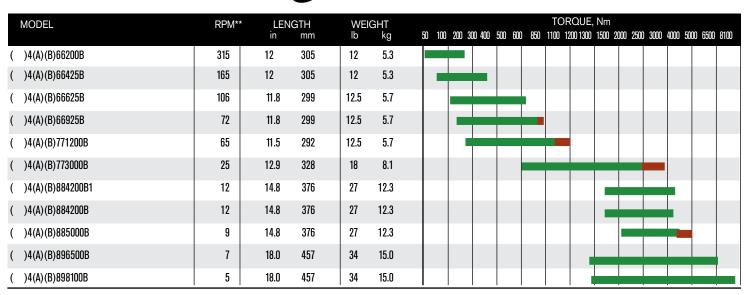
<sup>\*\*\*\*</sup> Torque Range: 128-515 Nm \*\*\*\*Torque Range: 159-635 Nm

## DC TOOLS: TOOL/SPINDLE SELECTION GUIDE



<sup>\*</sup> Torque Range: 128 - 515 Nm

# HIGH TORQUE SERIES - CraDyne LT



Recommended Torque Range

Max Torque

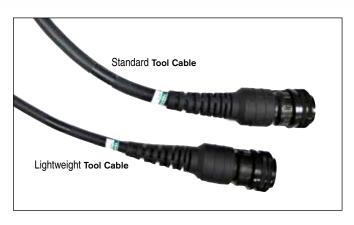
<sup>\*\*</sup>Torque Range: 159 - 635 Nm

# **ACRADYNE® ACCESSORIES**

#### **CABLE ASSEMBLIES**

The AcraDyne® DC electric nutrunner tool system uses a single cable to carry all necessary conductors for superior ergonomics and durability.

- Flexible polyurethane cover for maximum durability, abrasion and transmission fluid resistant.
- Quick disconnects at both ends facilitate tool changeover and troubleshooting.
- The CAN data/signal is via RJ45 for products such as the KDM, socket tray or computer.











		LEN	NGTH
MODEL	DESCRIPTION	m	ft
TOOL CABLES			
24330	Cable G3 Tool Cable 3M	3	9.8
25350	Cable G3 Tool Cable 5M	5	16.4
24320	Cable G3 Tool Cable 10M	10	32.8
27110	Cable G3 Tool Cable 3M Lightweight*	3	9.8
27115	Cable G3 Tool Cable 5M Lightweight*	5	16.4
27122	Cable G3 Tool Cable 10M Lightweight*	10	32.8
25646	G1 iEC to G3 Cable Adapter		
26934	G3 iEC to G1 Cable Adapter		
27210	G3 Tool to G1 Cable Adapter		
26364	Right Angle Cable Adapter		
26709	G3 Tool to G1 Cable (Cable Tester only)		
26700	Cable Tester Unit, G3		
26594	Conversion Kit G1 iEC to G3 iEC		
27370	Conversion Kit G3 iEC to G1 iEC		
25491	Breakaway Cable Connector - Ensures disconnect of cable should stress in excess of 40 lbs occur		
	*Lightweight cables are for use only with 1000 & 2000 Series tools.		
EXTENSION			
24320	Extension cable 10M	10	32.8
25518	Extension cable 20M	20	65.6
DATA			
20403	Data/signal connection cable - Accessories to controller	2.0	7
23490	I/O Wiring Connector - Simple Module to facilitate connections to I/O on iEC Controllers		
AEC-CIM	Interface module which allows communication between a computer and an AcraDyne® controller through USB or CAN connections. All necessary cables included.		

## **ACRADYNE® ACCESSORIES**

#### **SOCKET TRAY**

- Simply remove the assigned socket to select the application to be run.
- Quick and easy set up. Parameters assigned to socket position automatically.
- · Optional self illuminating socket receptacles.
- Delrin® blanks may be easily machined by the customer to accommodate custom socket profiling.
- Nothing to break, wear out or maintain.
- · Proximity sensors detect presence of socket.
- · Can also be used with UEC style controllers.



MODEL	DESCRIPTION
AMPST-2-I	2 Position Socket Tray for iEC Controllers
AMPST-4-I	4 Position Socket Tray for iEC Controllers
AMPST-6S-I	6 Position Socket Tray for iEC Controllers, Straight Line
AMPST-6-I	6 Position Socket Tray for iEC Controllers
AMPST-8-I	8 Position Socket Tray for iEC Controllers

#### **SLIDING SPINDLES**



MODEL	DESCRIPTION
20712	Sliding Spindle 2" Stroke 2000 Series Tools
20848	Sliding Spindle 2" Stroke 3000 Series Tools

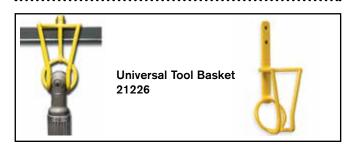
#### **TOOL BAILS**

- AcraDyne's spring bails are designed for use with any of the AcraDyne® 1000, 2000 or 3000 Series tools.
- The spring bails snap on quickly and firmly at any place on the body of the tool for perfect balance and secure suspension.



MODEL	DESCRIPTION
25501	Wire Bail for 1000 Series Tools
27594	Stationary Bail for 1000 Series Tools
27791	Rotating Bail Assembly for 1000 Series Tools
26327	Swivel Bail Assembly for 7000 Series Tools
26332	Stationary Bail Assembly for 7000 Series Tools
26629	Stationary Bail Assembly for 9000 Series Tools
26630	Hoist Swivel Bail Assembly for 9000 Series Tools
26632	Stationary Bail Assembly for 9000 Series Tools
26568	Cable Bail to Hang Tool Vertically for Gen III Cables
21159	2000/3000 Vertical Tool Hanger for Gen 1 Tools
21208	Spring Bail for 2000 Series Tools
23662	Rotating Bail for 2000 Series Tools
23575	Rotating Bail for 3000 Series Tools

#### **UNIVERSAL TOOL BASKET**



# **ACRADYNE® ACCESSORIES**







20322

20853

27816

#### **CONTROLLER BRACKETS**

MODEL	DESCRIPTION
20322	Wall Plate Bolts to wall allows controller bracket (23362) to hang without hard fastening
20853	Table Stand Free standing platform enables controller Bracket (23362) to simply hang from.
27816	Mounting Bracket for Gen IV Controller

#### **MOUNTING BRACKETS**

MODEL	DESCRIPTION
25717	Mounting Bracket for 1000 Series Angle Tools
25843	Mounting Bracket for 1000 Series Push-To-Start Tools
26443	Mounting Bracket for Straight and Pistol 1000/2000 Series
24924	Mounting Flange for Straight and Pistol 1000/2000 Series
25718	Mounting Bracket for 3000/5000 Series Angle Tools
26570	Mounting Bracket for 3000/5000 Series Straight Tools
25265	Angle head Mounting Bracket (Cradle type) for 3000/5000 Angle Tools over 225 Nm

#### **LIGHT TOWER**







#### **TOOL BODY JACKETS**

Keep your tools protected and avoid accidental damage to the application with AIMCO's tool body jackets.

MODEL	DESCRIPTION
BJ10051	For 1000 series angle tools
BJ10052	For 2015, 2025 series angle tools
BJ10053	For 2030, 2040, 2055 series angle tools
BJ10054	For 3060, 3090 series angle tools
BJ10055	For 3120, 3200 series angle tools

#### **BARCODE READER**



MODEL	DESCRIPTION
LS4208	RS232 Barcode Reader Kit
LS4278	RS232 Wireless Barcode Reader Kit

# **ACRADYNE® HIGH TORQUE PNEUMATIC TOOLS**





#### **FEATURES AND BENEFITS**

AcraDyne's High Torque Pneumatic Bolting Tools offer a reliable and dependable solution for the installation and removal of heavyduty fasteners in a variety of industries that require high torque capability, accuracy, power, and safety.

- Modular design allows for ease of maintenance.
- Motors and gearing are interchangeable.
- Durable and reliable gearbox
- Proven air motor
- Faster Free Speed
- · One-Hand Reverse







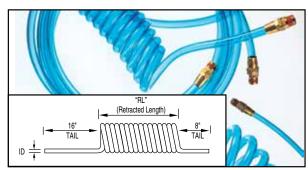


MODEL	TORQUE (Nm)	TORQUE (Ft-lb)	SPEED (rpm)	WEIGHT (lb)	SQUARE DR. (in)	AIR CONSUMPTION (CFM)
AAP1B66400A	400	300	70	9.75	3/4	22.9
AAP1B66600A	600	450	50	9.75	3/4	22.9
AAP1B66850A	850	625	36	9.75	1	22.9
AAP1B76950A	950	700	37	10.4	1	26.3
AAP1B771350A	1350	1000	22	10.4	1	26.3
AAP1B771800A	1800	1325	15	14.9	1	26.3
AAP1B772950A	2950	2175	9	14.9	1	26.3
AAP1B885100A1	5100	3775	7.5	23	1	31.5
AAP1B885100A	5100	3775	7.5	23	1-1/2	31.5

## **ACRADYNE® HT PNEUMATIC TOOL ACCESSORIES**

#### **AIR LINE**

#### **AIMCO AIR HOSE**





- Durable Polyurethane or Rubber hose.
- · Excellent recoil memory.
- · Maximum flexibility and lightweight.
- Polyurethane available in transparent hose color (opaque available).
- · Custom colors available.
- · High chemical resistance.

#### **REACTION BARS**

Each tool includes a standard spline-attachment reaction device. See page 24 for part numbers. Custom reaction devices are also available; contact your AIMCO Sales Representative for more details, 1-800-852-1368.



#### SINGLE AIR HOSE ASSEMBLIES (COILED)

MODEL WORKING PRESSURE 100 PSI	DESCRIPTION (OD x ID x LENGTH)	RETRACTED LENGTH	NPT FITTINGS
ASH-500C-15MSZ	3/4" x 1/2" x 15'	13"	1/2"
ASH-500C-25MSZ	3/4" x 1/2" x 25'	23"	1/2"

### SINGLE AIR HOSE (COILED) CUSTOM LENGTHS

Custom length coil assemblies and special colors are available in minimum order quantities.

#### STRAIGHT AIR HOSE (SOLD PER FOOT)

MODEL	DESCRIPTION
ASH-500Z	1/2" I.D.

- Assemblies include reusable swivel fitting.
- Burst pressure 428 PSI @ 68° F.
- Working temperature: -104° F to 175° F.
- Straight hose is available by the foot with, or without, hose fittings.
- Ask about full reel pricing. Call 1-800-852-1368.

#### **AIR HOSE FITTINGS**



#### **PLUGS**

MODEL	DESCRIPTION				
28161	1/2" x 1/4" MPT				
28162	1/2" x 3/8" MPT				
28163	1/2" x 1/2" MPT				
28164	1/2" x 1/2" FPT				

#### QUICK-CHANGE COUPLERS

MODEL	DESCRIPTION
27768	1/2" FPT
27769	1/2" MPT



#### PROTECTIVE COUPLER

MODEL	DESCRIPTION		
27771	Vinyl		



#### **BRASS FITTINGS**

MODEL	CAPACITY
500-RZ	1/2" NPT Rigid Fitting
500-SZ	1/2" NPT Swivel Fittina

#### **PROTECTIVE COVERS**

Durable protective covers prevent marring and damage.



MODEL	DESCRIPTION
BJ10078	Protective Cover, 6000 Series
BJ10077	Protective Cover, 7000 Series
BJ10076	Protective Cover, 8000 Series

## **AIR PREPARATION UNITS**

#### FEATURES AND BENEFITS

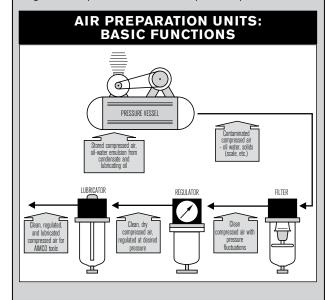
- All models include L-mount bracket, gauge, and metal bowl shields.
- Polycarbonate filter and lubricator bowls (metal bowls standard on AFRL-8).
- 25-micron filter included on all models.
- Regulating range: 7 125 PSI
- Custom order upgrade items include metal bowl, 5 micron filter, semi-automatic filter drain, and reduced PSI range regulator.
   Contact an AIMCO sales representative for more information, 1-800-852-1368.



MODEL	PORT	GAUGE PORT	FLOW RATE		BOWL SHIELD
			CFM	L/MIN	
AFRL-2	1/4	1/8	70	2,000	yes
AFRL-2-C	1/4"	1/8"	60	1,700	yes
AFRL-3	3/8"	1/4"	140	4,000	yes
AFRL-3-C	3/8"	1/4"	105	3,000	yes
AFRL-4	1/2"	1/4"	140	4,000	yes
AFRL-8	1"	1/4"	180	5,000	yes

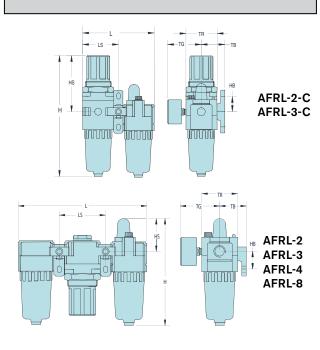
DIM.	AFRL-2	AFRL-2-C	AFRL-3	AFRL-3-C	AFRL-4	AFRL-8
Н	6.16 (156.5)	8.31 (211.1)	7.54 (191.5)	10.31 (261.9)	7.54 (191.5)	10.69 (271.5)
НВ	1.39 (35.3)	1.38 (35.1)	1.57 (40.0)	1.57 (39.9)	1.57 (40.0)	1.97 (50.0)
HS	1.50 (38.1)	3.64 (92.5)	1.61 (40.9)	4.41 (112.0)	1.61 (40.9)	1.89 (48.0)
L	7.13 (181.1)	4.61 (117.1)	9.37 (238.0)	6.06 (153.9)	9.37 (238.0)	11.81 (300.0)
LS	2.52 (64.0)	2.30 (58.4)	3.31 (84.1)	3.03 (77.0)	3.31 (84.1)	4.13 (104.9)
TB	1.61 (41.0)	1.61 (40.9)	1.97 (50.0)	1.97 (50.0)	1.97 (50.0)	2.75 (69.9)
TG	2.39 (60.7)	2.39 (60.7)	2.58 (65.5)	2.58 (65.5)	2.58 (65.5)	2.97 (75.4)
TR	2.09 (53.1)	2.09 (53.1)	2.76 (70.1)	2.76 (70.1)	2.76 (70.1)	3.54 (89.9)

The supply of clean, dry air is essential to the operation of pneumatic powered tools. Use only clean filtered air for longer tool life. Provide proper airflow (CFM) and regulate air pressure (PSI) for optimum performance.



#### To determine unit size for application, you need to know:

- Total air flow (CFM) required for application.
- Size of incoming air line.
- Size of air line required by tool.
- Air supply pressure (PSI).
- Allowable pressure drop.
- Does the application requires lubrication?
- Does the overall system have the required capacity?



## **ACRADYNE® SYSTEMS**



#### **MULTIPLE NUTRUNNING SYSTEMS**

AIMCO has the capability to integrate the AcraDyne® tool spindle into a customized Multiple Nutrunning System. From simple systems vertically suspended above the part to assembly stations that integrate with your line, AIMCO can effectively accommodate your project.

## LET US KNOW YOUR REQUIREMENTS AND WE WILL PROPOSE A SOLUTION TAILORED TO YOUR NEEDS.



#### SMALL ENGINE MANUFACTURER

- Air cooled small vehicle engine assembly.
- Ten spindle 2.4–2.8 kgf-m.
- Integrated PLC control of system functions.
- Supplied overhead rail follows line and returns powerhead to home position.
- Powerhead features single lever control and visual confirmation of accepted torque.

#### **FEATURES AND BENEFITS**

- Nutrunner sequencing Allows nutrunners to be sequenced at each phase of the tightening process providing even distribution of torque and load to each fastener.
- Even torque distribution Where there is uneven torque distribution, part damage or distortion could occur with possible fastener failure or loss of residual clamp load.
- Snug, threshold, final torque in one pass No need for multiple torque stage sequencing. Fixtured nutrunners save time and effort.
- No missed fasteners With multiple nutrunners there is a spindle dedicated to each location, ensuring quality on every rundown on every bolt.
- Better residual torques Synchronized controlled fastening allows residual torque levels to be consistent with the dynamic torque specification.
- Saving in cycle time Compared to using a single nutrunner tool with many rundowns, running all fasteners simultaneously reduces in-station cycle time.
- Cost saving benefits Saving installation cycle time frees operators to handle additional tasks and potentially reduce labor costs.
- Collect data Most common methods of collecting data for quality control and statistical analysis can be implemented from a serial data string using RS232 to formatted data from a network database.

#### **ENGINE MANUFACTURER**

- · Gasoline generator assembly.
- Six spindle 30 Nm
- Replaced hand assembly with rotation pattern to simultaneous rundown.

#### **AUTOMOTIVE MANUFACTURER**

- Wheel lug nut assembly.
- Four spindle 105 Nm
- Rotating spindle trunnion.
- Replaced competitive system.
- Built-in PC for data storage.
- Custom display panel showing application.
- Cpk range of 3.2–6.9 far exceed quality requirements.



# **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.

# HARD JOINT Less than 30° degrees of rotation Metal Metal Metal Metal Dynamic Torque: 15 Nm Residual Torque: 18 Nm

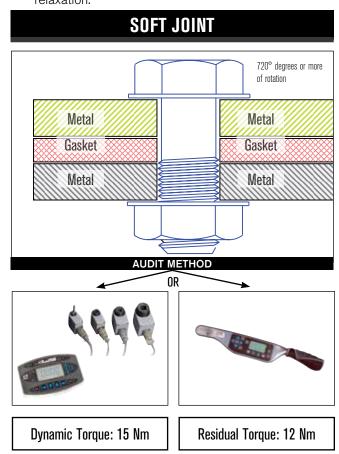
Values as examples only

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.

#### **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.



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**

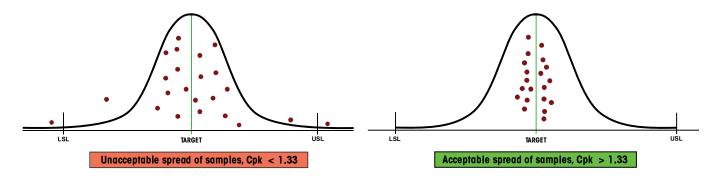
## STATISTICAL ANALYSIS IS AN IMPORTANT STEP IN ANY QUALITY CONTROL PROCESS.

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.

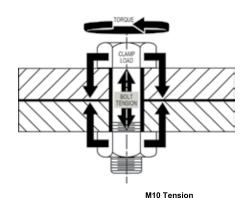
Cpk is a statistical value that indicates how tightly grouped a series of samples is around the target value. Cpk is a function of the Upper Specification Limit (USL), the Lower Specification Limit (LSL), the mean of the samples and the standard deviation ( $\sigma$ ) of the samples.

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

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



## **MEASURING QUALITY - CLAMP LOAD**



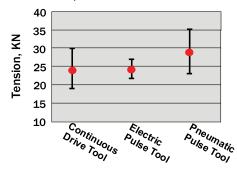
40% 24.2% 20.3% 20

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

 $<sup>^{\</sup>star}$ 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.











and functional usability. AUCT/WITM models are	ATC	AUET	AUET/MTM	AUET-DC	AUET/MTM-DC
available with our unique dual integrated torque transducer package.	Auditor Torque Cube	Auditor Universal	Auditor Universal Electronic	Auditor Universal	Auditor Universal Electronic
tranoution puotago.		Electronic Tester	Tester - Multiple Transducer	Electronic Tester - Data	Tester - Multiple transducer
Testers are designed to audit torque wrenches and			Module	Collector	Module - Data Collector
power tools, including pulse tools	Compact vertical or horizontal bench-mount	Bench mount or line	Bench mount or line side	Bench mount or line side	Bench mount or line side
	tester.	side tester utilizing integrated transducer.	tester with dual integrated transducer and external	tester utilizing integrated transducer. Provides data	tester with dual integrated transducer and external
	tootor.	intogratou transuuoor.	transducer capacity.	collection capability with	transducer capacity. Provides
			, ,	included software to	data collection capability with
				interface with PC.	included software to interface
	400 . 4 . 4 . 000 6 #!	100 / 750 / 11	400 . 4	100 10 750 6 11	with PC.
Integrated Transducer Range	100 in/oz - 1,000 ft/lbs	100 in/oz - 750 ft/lbs	100 in/oz - 750 ft/lbs	100 in/0z - 750 ft/lbs	100 in/oz - 750 ft/lbs
(values are in full scale)	1 - 1,350 Nm	1 - 1,000 Nm	1 - 1,000 Nm	1 - 1,000 Nm	1 - 1,000 Nm
External Transducer Capacity (transducer sizes exceeding this range may be special			up to 5,000 ft-lbs		up to 5,000 ft-lbs
ordered)			up to 0,000 it-ibs		ար ա մ,000 ու-ած
Vertical / Horizontal Mount	Х				
Bi-directional accuracy of +/- X of indicated reading	1%	0.50%	0.50%	0.50%	0.50%
within the top 90% of the Tester's capacity	·	·	0.00/0	·	·
Data Output to PC	Х	Х	Х	Х	Х
Integrated Torque Transducer	1	1	2	1	2
External Transducer Port			Х		Х
Number of stored readings	999	999	999	999	999
Adjustable rundown fixture included *	1	1	2	1	2
Rechargeable NiMH Battery	Х	Х	Х	Х	Х
<u>Measurement Modes</u>					
Peak	Х	Х	Х	Х	Х
First Peak (Click)	Х	Х	χ	Х	Х
Pulse	Х	Х	Х	Х	Х
Track	Х	Х	χ	χ	Х
Units of Measure Options	8	8	8	8	8
Tool Manager Software Included				Х	Х

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

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

## AUDITOR™ TORQUE CUBE™





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 To	ORQUE	WEIGHT		WXHXD		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/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).

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.

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.



#### SINGLE TRANSDUCER MODELS

MODEL**	RECOMMENDE	D 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**

	RECOMMENDED				
MODEL**	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	

<sup>\*</sup>Custom sizes are also available, please inquire.

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

<sup>\*\*</sup>Add "-DC" to part numbers for data collecting models.

# **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

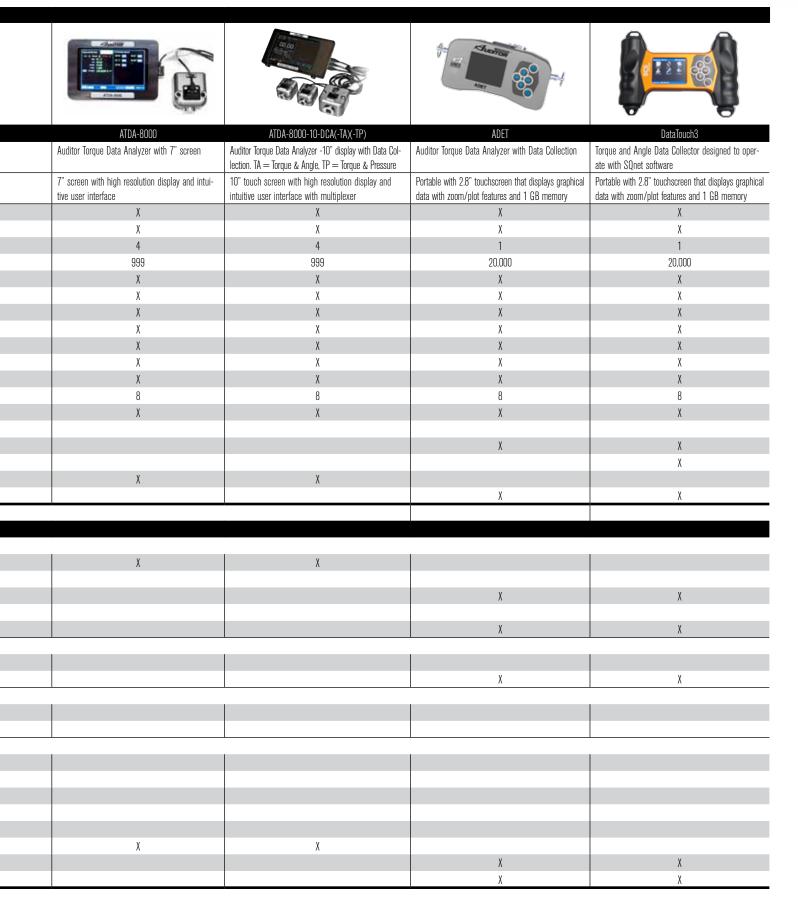




	ATDA	ATDA-DC	
	Auditor Torque Data Analyzer	Auditor Torque Data Analyzer with Data Collection	
	Portable analyzer to be connected to various transducers	Portable analyzer to be connected to various transducers. Provides	
		data collection capability with included software to interface with PC	
Bi-directional	Х	Х	
Data Output to PC	Х	Х	
External Transducer Port	1	1	
Number of stored readings	999	999	
Rechargeable NiMH Battery	Х	Х	
Digital I/O for external devices	Х	Х	
<u>Measurement Modes</u>	Х	Х	
Peak	Х	Х	
First Peak (Click)'	Х	Х	
Pulse	Х	Х	
Track	Х	Х	
Measurement Units	8	8	
Software Included		Х	
Firmware			
LAB - Line Side Auditing			
SPC - Quality Control			
Barcode Reader	Х	Х	
Bluetooth Wireless Option			

Х	Х	
Х	Х	
Х	Х	
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# **AUDITOR™ TORQUE MEASUREMENT ANALYZERS**



## **AUDITOR™ TORQUE DATA ANALYZERS**



#### **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**



### 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**

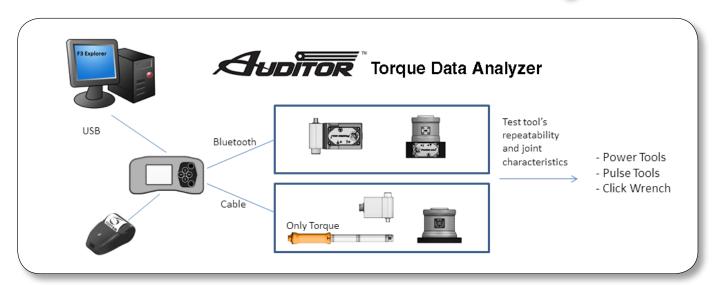
Auditor Data Analyzer provides a simple way to control nutrunners and torque wrenches on the assembly line. This quick and simple data collector provides an economical alternative to the DataTouch Data Analyzer.

### **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-lon 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



## **DATATOUCH 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.



### **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-lon 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" touchscreen, 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)



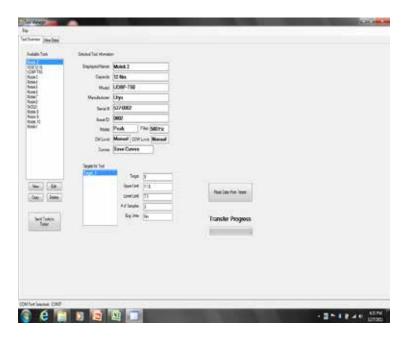
### Power Supply

- Li-lon 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**

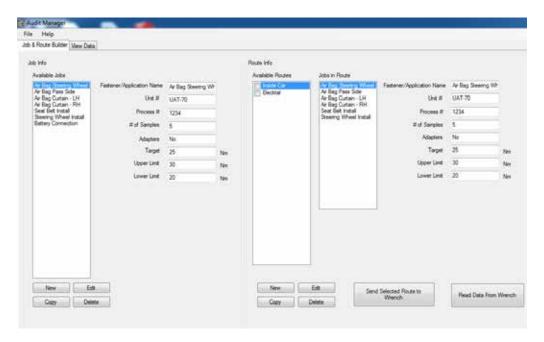
### **AUDITOR™ TOOL MANAGER SOFTWARE**

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**

#### TURQUE MEASUREMENT: HIGH CAPACITY TEST STAINDS

#### **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 Trans- ducer	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		χ		Х		
AHCTS-1RDF		χ		χ		
AHCTS-1.5RDF		Х		Х		
Insert Square Drive	Adapters					
CA1510	1-1/2" Male to 1" Female	Х		Х	Х	
CA1550	1-1/2" Male to 1/2" Female	χ		Х	Х	
CA1575	1-1/2" Male to 3/4" Female	Х		Х	Х	
CA2510I	2-1/2" Male to 1" Female	χ		Х	Х	
CA2515I	2-1/2" Male to 1-1/2" Female	Х		Х	Х	
CA2575I	2-1/2" Male to 3/4" Female	χ		χ	Х	
CA150100DHD	1-1/2" Male to 1" Male Hex Dr		Х			
CA250108DHD	2-1/2" Male to 1-1/2" Male Hex Dr		Х			

Please refer to the Test Stand Configurator in Appendix C on 94 for required ordering options.



## **AUDITOR™ HIGH-CAPACITY TEST STANDS**



### 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	¾" 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
AHDTS-5025*	1.5" Sq Dr dual station w/rundown fixture and reaction devices

<sup>\*</sup>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.

 $<sup>\</sup>ensuremath{^{**}\text{Please}}$  refer to 94 for required ordering options.





AHCTS-001K

### **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	¾" 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

## **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	¾" 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 72 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  Multiple Options from Simple to Sophisticated  Similar Interface with other Auditor Products	ADW	ADW-DC	APTW	ATW	Freedom3 Digital	FWE
• Durable	* Auditor Digital Wrench	* Auditor Digital Wrench	Auditor Preset	Auditor Torque Wrench	Wrench Freedom3	Electric Torque Wrench
	3	with Data Collection	Torque Wrench	,	Torque/Angle 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/audit- ing. 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%	19%
Software Included	Х	Х			χ	

USED IN CONJUNCTION WITH			
ATDA(DC) Data Analyzer		Х	
AUET(DC) Tester		Х	
AUET/MTM(DC) Tester		Х	
ADEC			Х
DataTouch3 Data Analyzer			Х

### TORQUE WRENCH LOADERS



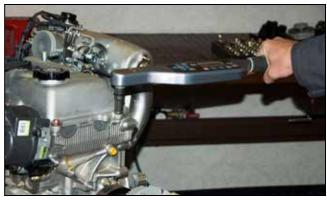
For Calibration of all types of torque wrenches eliminating human variable for more accurate measurement - digital transducer used with ATDA-8000-10-DCA

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/bs	

See Appendix B on page 70 to configure wrench with options.

## **AUDITOR™ DIGITAL WRENCH SERIES**





### 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.

	TORQUE	RANGE	WEI	GHT	OVERALL	LENGTH	SQ. DRIVE
MODEL	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 70 for required ordering options.



#### **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



### "TRANSDUCERS 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.

	TORQUI	SQUARE DRIVE	
MODEL	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 01 **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 Torque Range 11 - 740 ft/Lbs 15 - 1000 Nm 11 - 740 ft/Lbs 15 - 1000 Nm | 11 - 740 ft/LbS 15 - 1000 Nm 1GB Memory stores 20,000 values / 20,000 curves / Performance/Display 1,000 parameter sets, 80 Mips CPU, 32-Bit processor HiRes 2.3" Touch-screen display, 320 x 240 pixel resolution Li-lo 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. χ χ These results can be downloaded to PC via F3 Explorer SPC: Jobs and routes are developed for QC and Production χ χ via SQnet and downloaded/uploaded to/from wrench PRW: Used as production tool - communicating on-line via χ radio, BT or Wi-Fi where results are published in real time using VPG software Software F3 Explorer: Collects data results/curves > edit/export to Excel SQnet: Transfers jobs and routes data to/from device to PC χ X VPG: Real time data transfer via wireless communication Options (must include with tool purchase) Barcode Reader Integrated (optional) χ Bluetooth Module Integrated Beneficial in PRW mode to communicate with VPG Software WiFi Module Integrated χ Beneficial in PRW mode to communicate with VPG Software ACCESSORIES Battery Cradle χ USB Cable External Battery Charger χ Body Jacket WRENCH USED IN CONJUNCTION WITH DataTouch χ χ EasyTouch FREEDOM RATCHETS AND SOCKETS χ Reversible ratchet χ χ Open end ratchet χ χ Ring end ratchet χ χ χ Ring open χ Recognition chip option χ χ

## **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 gueues
- 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

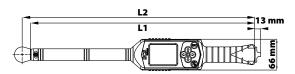
sets

Repeatability

Torque +/- 1% accuracy when used in top

90% of wrench range.

Angle +/- 0.1% display deviation of angle



	Capa	acity	Drive	L1*	L2*	Wei	ght*
Model	Nm	Ft-Lb	mm	mm	mm	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

<sup>\*</sup> without ratche

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



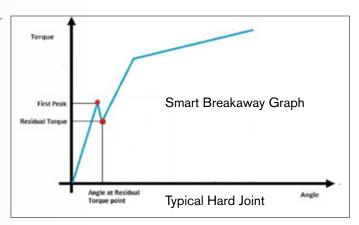
### **Tightening Strategies**

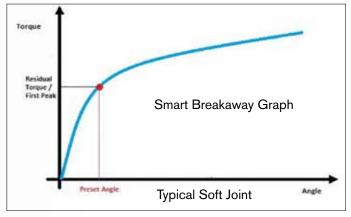
#### **SPC Quality Inspection**

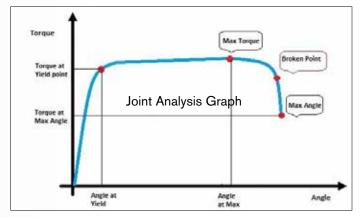
- Breakaway Angle
   Preset angle 1–4° and wrench will return torque value reached at the specified angle of rotation
- Smart Breakaway Angle
   Preset angle but returns either First Peak or Residual Torque values. See graphs of typical hard and soft joint curves
- Breakaway Open/Close
   Rotate joint 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.





## **Specifications**

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

Model	<u>Function</u>
FWE TA	Torque/Angle
FWE	Torque only

	Capa	acity	Drive
Model	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







Each cart is customizable to meet testing needs from 1 - 1,356 km  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		Х	
Per Repeatable 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	Х	Х*	Х*
DataPro Software	Х	Х	X
Torque Wrench Loader Option	Х	Х	Х

<sup>\*</sup> 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



**MSB Torque Cart** 



The FTY Torque Cart includes all of the features and benefits of the MSB Torque Cart, *plus* hydraulic braking technology for better linear control of the braking ramp.

### **Features and Benefits**

- 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



## **Specifications**

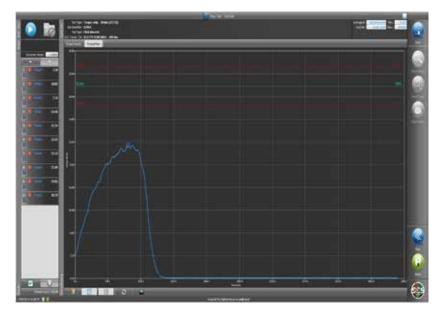
- USB interface
- Sampling frequency of up to 30 kHz with settable filter up to 3 kHz
- Accuracy of 0.5% within top 90% of full scale
- Tests power tools up to 1,356 Nm

## **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.

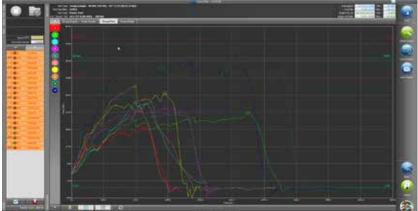
### **TORQUE VERIFICATION**

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.

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## **TRANSDUCERS**

#### TORQUE MEASUREMENT: TRANSDUCERS Stationary Rotary **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 ASTIS AISI - AISF ARTB ASTB configuration set up time. Auditor Stationary Trans-Auditor Industry Standard **Auditor Stationary Auditor Rotary** Auditor Rotary Transducer Industry Standard Stationary Transducer Industry Transducer Industry ducer Industry Standard Please contact our Customer Service Associates for Standard Bluetooth Standard Bluetooth additional information, 1-800-852-1368. Used in Conjunction with Analyzers ATC AUET χ AUET/MTM ATDA χ X ATDA-8000 ADET χ χ χ DataTouch3

See Appendix A on page 70 to configure complete part.

## **AUDITOR™ STATIONARY TRANSDUCERS**

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



AISI

STATIONARY	MAX	TORQUE	WEI	GHT	WX	HXD	DRIVE
TRANSDUCER	Nm	in-lb/ft-lb	kg	lb	mm	in	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 T Nm	ORQUE in-lb/ft-lb	DRIVE in
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 <sup>-</sup> Nm	FORQUE in-lb/ft-lb	DRIVE in
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**



		MAX	TORQUE	LENGTH	THICKNESS	WIDTH	WEIGHT
MODEL	DRIVE	Nm	in-lb/ft-lb	(A)	(B)	(C)	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

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



STATIONARY	DRIVE	MAX	TORQUE
TRANSDUCER	in	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 / Anlge

## 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	Х				
	ARDFA-XXXXHD	Х				
	ARDFA-XXXHDS		Х			
9	ARDIA-XXXHDS		Х			
(6)	ARDFA-XXXHDE			Х		
8	ARDIA-XXXHDE			Х		
	ARDFA-XXX				Х	
	ARDIA-XXX				Х	
	ARDA-XXX	X	X			Х*

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

<sup>\*</sup>Spline drive feature provides rundown control when testing pulse tools

JOINT SIMULATOR		
٩	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

Design Type:	Power Tools	Impulse Tools
Square drive	χ	
Spline Drive		Х

HYDRAULIC MECHANICAL JOINT SIMULATOR	
	UFT SERIES

Accurate, repeatable, linear, and durable. Tests 3 - 690 Nm, M5 - M24 fastener sizes See page 67.

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

## 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.

	RECOMMENDED TORQUE RANGE											
MODEL*	DESCRIPTION	IN-LB	Nm	SQUARE DRIVE								
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								

<sup>\*</sup> Add "HD" to part numbers for wear resistant models. Add "HDS" to part numbers for fully encapsulated wear resistant models.

<sup>\*</sup> Add "HDE" to part numbers for partial encapsulated wear resistant models.

	RECOMMENDED TORQUE RANGE										
MODEL*	DESCRIPTION	IN-LB	Nm	SQUARE DRIVE							
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							

 $<sup>\</sup>cdot \text{Add "HD" to part numbers for wear resistant models. Add "HDS" to part numbers for encapsulated wear resistant models. \\$ 

#### **JOINT KITS**

DRIVE SIZE - IN	ROTARY KIT PART NUMBER	STATIONARY KIT PART NUMBER
1/4	AJKR-28	AJKS-25D
3/8	AJKR-135	AJKS-38D
1/2	AJKR-271	AJKS-50D
3/4	AJKR-1017	AJKS-75D
1	AJKR-1695	AJKS-100D

<sup>\*</sup> Add "HDE" to part numbers for partial encapsulated wear resistant models.

## **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 FT-LB	E RANGE NM	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	WEI LB	GHT 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								

<sup>\*</sup> UFT-24 medium hard/soft joints only

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

# **TORQUE MEASUREMENT CABLES**

### **CABLES**





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

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 COMP	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	χ	Х	χ	Х	Х	Х	Х			Х	Х			
ATDBLIS		Х	Х	Х	Х	Х	Х							
ATDBRIS		Х	χ	Х	Х	Х	Х							
ICBL-10P		Х	Х	Х	Х	Х	Х							
ICBL-4P		Х	Х	Х	Х	Х	Х							
ICBL-8000DIG								Х	Х					
RMC Cable DT.ET													Х	Х
FWE Cable DT.ET												Х		

# NOTES

### **APPENDIX A: TRANSDUCER CONFIGURATOR**

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

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**

		Base Model Number (1-9)									
Model Number Columns	1	2	3	4	5	6	7	8	9		
Examples of part numbers	А	D	W	-	0	0	7	5	К		
Examples of part numbers	А	D	W	-	0	0	1	0	К		
	А	Т	W	-	0	2	0	0	F		
Wrench Options and Configuration	Auditor	Туре	Wrench	Capacity					Style		
		D = Digital							K = Katana		
		T = Transducer							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.

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	1 = Yes	1 = Yes	1 = 1/4" Hex
				2 = Inline	2 = No	2 = No	2 = 1/4" Sq
				3 = Loader			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.

					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  Not yet av	1 = Yes 2 = No ailable so always en	1 = Yes 2 = No ter 2 (No) for the	1 = Yes 2 = No ese 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.

## APPENDIX C: TEST STAND CONFIGURATOR

	Base Model Number (1-10)									
Model Number Columns	1	2	3	4	5	6	7	8	9	10
Evenue of part numbers	А	Н	С	Т	S	-	5	0	0	0
Example of part numbers	А	Н	С	Т	S	-	5	0	0	0
	А	Н	С	Т	S	-	0	0	5	K
	А	Н	В	Т	S	-	2	0	0	0
Test Stand Configuration and options	Auditor	High	Сар	Test	Stand		C		n & Capaci draulic	ty

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.

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	$0 = 8" \times 8"$	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)	in a maramana	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.

# NOTES



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