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DC Electric Assembly Tools

Cleco®



COOPER Power Tools

SP-1020-EN 1006 5M

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ISO 9001

Quality System Certified

Cooper Power Tools Division has attained ISO 9001 Quality System Certification for seven of our facilities. The driving force behind the implementation of the Quality System is the commitment "to provide our customers with the **best value delivered** by offering only products and services **that meet or exceed their expectations**".


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MANAGEMENT SYSTEM CERTIFICATE

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Dayton, Ohio


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Springfield, Ohio


CERTIFICATE OF APPROVAL

Braunschweig, Germany


CERTIFICATE OF APPROVAL

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CERTIFICATION

Ozoir-la-Ferrière, France

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Warranty

Cooper warrants products and parts sold by it, insofar as they are of its own manufacture, against defects of material and workmanship, under normal use and service in accordance with its written instructions, recommendations, and ratings for installation, operation, maintenance, and service of products, for a period of **ONE YEAR FROM THE DATE OF INITIAL USE, BUT IN NO EVENT SHALL THE WARRANTY EXCEED 24 MONTHS FROM DATE OF DELIVERY TO DISTRIBUTOR.** Proof of Purchase with shipment date must be furnished by the user to validate the warranty. This warranty applies only to products manufactured by Cooper and specifically excludes products manufactured by others. Products not manufactured by Cooper are warranted only to the extent and in the manner warranted to Cooper by the manufacturer and then only to the extent Cooper is able to enforce such warranty. Cooper's warranty with respect to products manufactured by it is limited to the repair or replacement, as Cooper may elect, of any defective part regarding which the Distributor has given 5 days written notice from the discovery of such defect. Installation and transportation costs are not included. Cooper shall have the option of requiring the return to it of the defective material, transportation prepaid, for inspection. No allowance will be made for repairs without Cooper's approval. **COOPER MAKES NO OTHER WARRANTY OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, AND HEREBY DISCLAIMS ALL WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**

Lubrication Products

Cooper Power Tools' products are classified as non-hazardous manufactured items, defined in the OSHA 1910.1200 Hazard Communication Standard as "Articles". These products, under conditions of normal use, do not release or cause exposure to a hazardous chemical.

Under normal conditions of use, lubrication products sold separately for or used within these tools should not cause an exposure hazard. Refer to the Material Safety Data Sheet (M.S.D.S.) for Safety and Disposal Information. M.S.D.S. sheets are available upon request from Cooper Power Tools.

Cooper is also aware of, and complies with, the provisions of section 611 amendments to the Clean Air Act of 1990. No ozone depleting chemicals have been used in the manufacture of our products.

If you resell or distribute these products, you have the responsibility for ensuring that the Material Safety Data Sheets are provided to the purchaser.

Proper lubrication is essential to the economical operation of pneumatic and electric tools. Cooper Power Tools perform better and their life is extended by using the recommended lubricants. All lubricants that are listed in the accessory section of this catalog have undergone extensive testing and are recommended for use with Cooper Power Tools products.

Fastener Selection

The suggested fasteners listed in this catalog are determined by matching a tool's maximum rated load to Society of Automotive Engineers (SAE) Grade 5 and International Organization of Standardization (ISO) Grade 9.8 fasteners. The torque capabilities for SAE Grade 5 fasteners are from SAE Manual, SAE J429 (Mechanical and Material Requirement for Externally Threaded Fasteners). The torque capabilities for ISO Grade 9.8 fasteners are from ISO 898-1 (Mechanical Properties of Fasteners). All values selected are based on lubricated fasteners.

The suggested fasteners listed in this catalog are advisory only, and Cooper Power Tools recommends that you further consult other technical references before final tool selection. Reliance on the accuracy of this catalog data for any purpose by anyone is at the sole risk of that person. Cooper Power Tools is not responsible for any loss, claim, or damage arising from improper tool selection.

The torque values listed under the headings "TORQUE" are tested on an ISO 5393 soft joint rate test fixture unless otherwise stated by a special note.

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The Total Solution For Critical Fastening Operations

Any number of companies can offer you power hand tools. Only Cooper Power Tools can offer you the innovative concept of Tightening Management.

It is an idea born of necessity, because Cooper Power Tools' fastening technology is used principally in the assembly of some of the most demanding products in the world – the automobiles and aircraft in which we all entrust our lives.

In demanding manufacturing environments such as automotive and aircraft assembly, "good enough" will never be acceptable. As a result, the Cooper concept of Tightening Management has been forged on a foundation of dedication to technical concepts, creative thinking, diligent scientific inquiry, and the continuous pursuit of perfection. Nothing is left to chance. Nothing is forgotten.

Because of our drive for perfection, you can excel in your job. Indeed, due to our uncommon focus on total fastening solutions instead of just products, our customers look upon us not merely as vendors, but as strategic allies. And at Cooper Power Tools, we welcome the challenge of leadership this imposes.

The System

Cooper Power Tools' state of the art Cleco Tightening Manager System delivers unprecedented performance, productivity and accountability in the most critical assembly applications.

The system is comprised of the industry's most comprehensive line of DC electric assembly tools, driven by the remarkable Cleco Tightening Manager Controllers, which are available in a number of different configurations. The system also encompasses our proprietary network communications software – Tightening Manager Communications (TM-COM) – a



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host of innovative accessories, and Cooper Power Tools' highly acclaimed service and support.

Significantly, the Cleco Tightening Manager System is designed for flexibility and with a common platform:

- One controller will run any Cleco tool from 2 to 4000 Nm. No other manufacturer in the industry offers one controller that does everything.
- One cable connects to any Cleco tool. This reduces the need for technical knowledge of your on-site service, maintenance and support professionals, because they do not have to keep up with a multitude of different cables and other accessories. Their effectiveness increases because of commonality of mechanical components and identical trouble-shooting.
- One user interface drives every Cleco Tightening Manager Controller. Each controller, regardless of its configuration, uses the same user interface, which means operators have to be trained only once in how to set up or trouble shoot a system.
- One controller can control a multitude of operations. This modularity allows you to move a Cleco Tightening Manager Controller from one assembly line to another even with completely different Cleco tools, without the need to purchase special cables or adapters.

When considering the cumulative impact of all these components – the tools, the controllers, the software, the flexibility, the accessories and the support – it becomes easy to see why the Cleco Tightening Manager System is the benchmark for all DC electric tool systems.

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The Controllers: Single-Channel & 2-Channel TME

The heartbeat of the system is the Cleco Tightening Manager Controllers. These extraordinary controllers improve productivity by providing programmable automation on the assembly line. They use technology that is both user-friendly and technically advanced, delivering speed and repeatability and reducing the possibility of error. And they increase profit potential with their design ingenuity that enables Cleco controllers to trouble shoot simultaneously. They not only do the work; they also look for problems in the process.



Shown above from left to right are the Cleco TME Single-Channel, TME 2-Channel, and the new TMEM Mini Tightening Manager Controllers.

Cleco Tightening Manager Controllers are available in three basic configurations – single-channel TME, 2-channel TME, and now introducing Cooper Power Tools' newest addition, the "Mini" TME (or TMEM).

With a wide range of hardware and software options, any of the Cleco controllers can be customized to accommodate your specific fastening requirements and assembly line protocols.

All of the Cleco Tightening Manager Controllers are designed to help overcome the most persistent problems inherent in many of today's complex manufacturing environments:

- Built-in versatility ensures that you are not forced to buy more tools than needed to achieve fastening strategies. Cleco Tightening Manager Controllers are capable of handling a broad array of tools ranging in torque from 2 to 4000 Nm, including right-angle, inline and pistol-grip tools, as well as specialty nutrunners such as flush socket, floating spindle, crowfoot, tube nut and hold-n-drive.

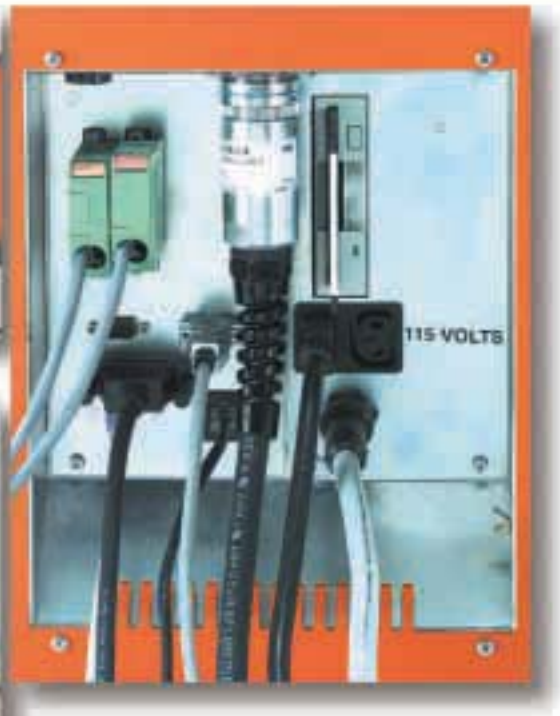
- One of the inherent drawbacks of other controllers is the user interface – which tends to be unnecessarily complex and difficult to use. So, we have designed ours to be as simple as possible, to improve speed and reduce the potential for error. Ours is highly intuitive – there is no need to consult a manual or use a laminated "cheat sheet," because



Removable mounting bracket permits quick and easy mounting and exchanging of controllers.



All critical connects are shielded from inadvertent damage on the factory floor.







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everything needed to operate the controller is right on the screen.

■ Cooper Power Tools helps save both time and money by employing a navigational strategy that makes it easy to find your way around. We have eliminated the sequential nature of other controllers, enabling efficiency and avoiding wasted steps.

■ Perfection in critical fastening applications demands an accurate and consistent flow of real-time information. Cleco Tightening Manager Controllers allow for the monitoring and evaluation of any procedure through the use of unique graphic displays, including histograms, diagnostics and statistical process control data. X-Bar and R chart histograms provide the ability to correct programming requirements before little problems become big problems. Cooper Power Tools' oscilloscope screen allows a thorough analysis of the torque and the rotation relationship on every application. We provide you with the means to truly manage the tightening process.

■ Our controllers offer a wide range of innovative design features that save time,



money and wear-and-tear, including removable mounting brackets, strategically placed connections to minimize possible damage, and fully configurable inputs and outputs to ensure compatibility with in-plant error proofing systems.



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The Controllers: TMEM or “Mini TME”

Control, Flexibility and Affordability

The new Cleco TMEM Controller delivers the benefit of greatly enhanced performance and productivity in critical assembly applications, at a value that’s certain to be a pleasant surprise.

The TMEM, a streamlined version of the remarkable Cleco Tightening Manager Controller, offers the same sophisticated fastening strategies as its more elaborate cousin – torque control, angle control, the ability to change speeds and the like. But in creating the less expensive TMEM, we’ve taken the cost of the internal graphic user interface out of the Tightening Manager and made it programmable with a laptop computer or through an Ethernet network.



Front faceplate includes two-line LCD display, red, green, and yellow status lights and serial connector for programming.

Two-line LCD display indicates system status, error messages, and rundown results.

Built-in versatility ensures against the unnecessary purchase of more tools than are needed to achieve desired fastening strategies. The TMEM, like all Tightening Manager Controllers from Cooper Power Tools, is capable of handling a broad array of tools ranging in torque from 2 to 4000 Nm, including right-angle, inline and pistol-grip tools, as well as specialty nutrunners such as flush socket, floating spindle, crowfoot, tube nut and hold-n-drive.

This wide range of tools is the same wide range of tools used on the original Cleco Tightening Manager Controller, the TME. The cables are also the same, regardless of controller or tool. Cooper Power Tools offers easy interchangeability.

The new Cleco TMEM controller is available in two basic forms: Standard and I/O. The standard TMEM is the most cost effective controller available that delivers precision control to the most critical tightening applications. The green lights on the tool, as well as on the front of the controller, are your indication that the fastening was completed to the stringent requirements you’ve come to expect from the Cleco Tightening Manager family of controllers.



The I/O version of the TMEM includes additional hardware to allow interface to line control devices:

- Fully configurable 24 volt input and output connectors are

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compatible with existing TME accessories such as socket trays and start/stop boxes.



The TMEM hardware architecture tracks the time-proven TME hardware.

- An additional RS232 serial connector allows connection to serial devices such as barcode scanners.

This can be used to select the correct application, as well as associate the resultant data to the ID number scanned.

- An RJ-45 Ethernet connector allows connection to Cooper's TM-COM1 software for single point programming and analysis or Cleco TM-COM software for a complete networking communications solution. The Ethernet connector can also be used to communicate to customer networks.



24 volt inputs and output connectors on the I/O version controller are compatible with existing TME accessories.



The standard TMEM is very simple – only 3 connectors – power, tool, and serial for programming.



TMEM with I/O including configurable 24 volt, ethernet, and additional serial connectors.

Standard TMEM

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The Controllers: User Friendly Interface

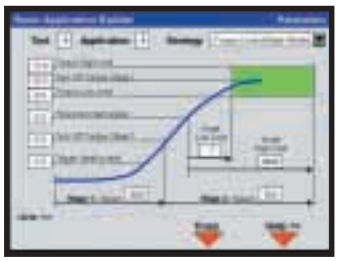
Intuitive On-Screen Setup

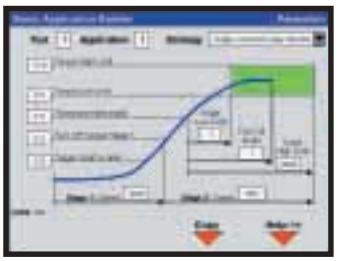
The System In a Nutshell: The new line of Cleco DC electric assembly tools, driven by the remarkable Cleco Tightening Manager Controllers, gives you enhanced productivity and accountability in critical fastening applications using advanced and user-friendly technology.

The intuitive graphic user interface, as shown in the following, is designed for ease of use.

1 The Navigational Strategy

- time is money, and we help you save both by making it easy to find your way around.
- we've eliminated the sequential nature of other controllers, so you can go where you need to be with no wasted steps.
- no need for manuals or "cheat sheets," because everything's on the screen including help windows on demand.





Basic Application Builder screen offers one screen programing for simple two-step rundown applications.

2 Basic Application Builder

- simple one screen programming for two-step rundown operations.
- ability to monitor or control degrees of rotation.
- programming is independent of the tool, therefore reprogramming current parameters or programming the next function can be done without having to shut down the line.

3 Standard Application Builder

- allows programming of multi-step applications for more complex torque strategies.
- helps avoid expensive, time-consuming manual operations and tool changes since all functions are handled within the system.



Standard Application Builder screen can be used for more complex applications requiring up to six steps.

- enhances productivity in applications with torque traceability or safety issues.

4 Advanced Application Builder

- allows for fine-tuning strategies for the most complex of fastening strategies.
- maximizes efficiency and product quality.
- enhances productivity by allowing direct access to "Advanced" without having to step through time-consuming sequential steps.



Advanced Applications Builder screen permits fine-tuning of complex applications, maximizing efficiency and product quality.

5 Run Screen

- large full-color LCD screen with enhanced indicator features removing any doubt as to the outcome of the rundown.
- easy-to-read data and graphics.
- screen can be configured to display counters and rundown details.
- oscilloscope imaging provides a rare "inside-the-process" picture of the joint and angle dynamics.
- helps not only in running the application, but also anticipates and helps in solving problems.



Run screen



Diagnostics screen displays an oscilloscope style torque trace of the joint to help identify potential problems.

6 Communications

- on-board PC enhances flexibility in data collection and network interface.
- industry standard computer ports accommodate a variety of peripherals, including bar code readers and networked computer monitoring and reporting.
- wide variety of protocols for data stream.



Communications screen enhances flexibility in data collection and network interface

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7 Tool Setup

- auto recognition feature simplifies access to all critical tool values stored on each tool.
- enhances functionality and flexibility by minimizing need for multiple backup tools.



Tool Setup screen simplifies access to all critical tool values.

8 Statistics

- statistical process control data provides early identification of any problems before they become a real threat.
- provides real-time dynamic collection of rundowns used in charting, record-keeping and SPC analysis.





Statistics screen displays valuable SPC data to aid in process evaluation promoting early identification of unforeseen problems.

9 Diagnostics

- helps troubleshoot any system problem.
- allows access to input/output status, tool functions, and fieldbus functions.



10 Utilities

- system software updates can be made with simple on-screen interface.



11 Administration

- allows easy selection of the system language.
- load/save screen allows one-button upload or download of setup data from 3.5” floppy.
- allows system security enhancements by programming password protection.



Administration screen allows one-button upload or download of controller set-up data. All data points can be downloaded to a single file.



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The Network Software: TM-COM

Cleco Tightening Manager Controllers are supported by familiar Windows CE based software, making application programming easy and intuitive.



But the real genius built into the Cleco Tightening Manager Controllers is the network communications software. Cooper Power Tools' proprietary TM-COM Software delivers the ultimate in control, because it empowers users to control the controllers.

Every Cleco Tightening Manager controller on the plant floor can be controlled from a central location, such as an office, through a desktop PC.



That means, that each of our controllers can be monitored – or even changed by re-programming from any central or remote location. Even if your plant has different controllers in different departments or assembly stations, they can all be under the control of a tool or process engineer or anyone who is charged with making sure that the plant's fastening activities are performing to required standards. Efficient and centralized management of the tightening process assures quality products.

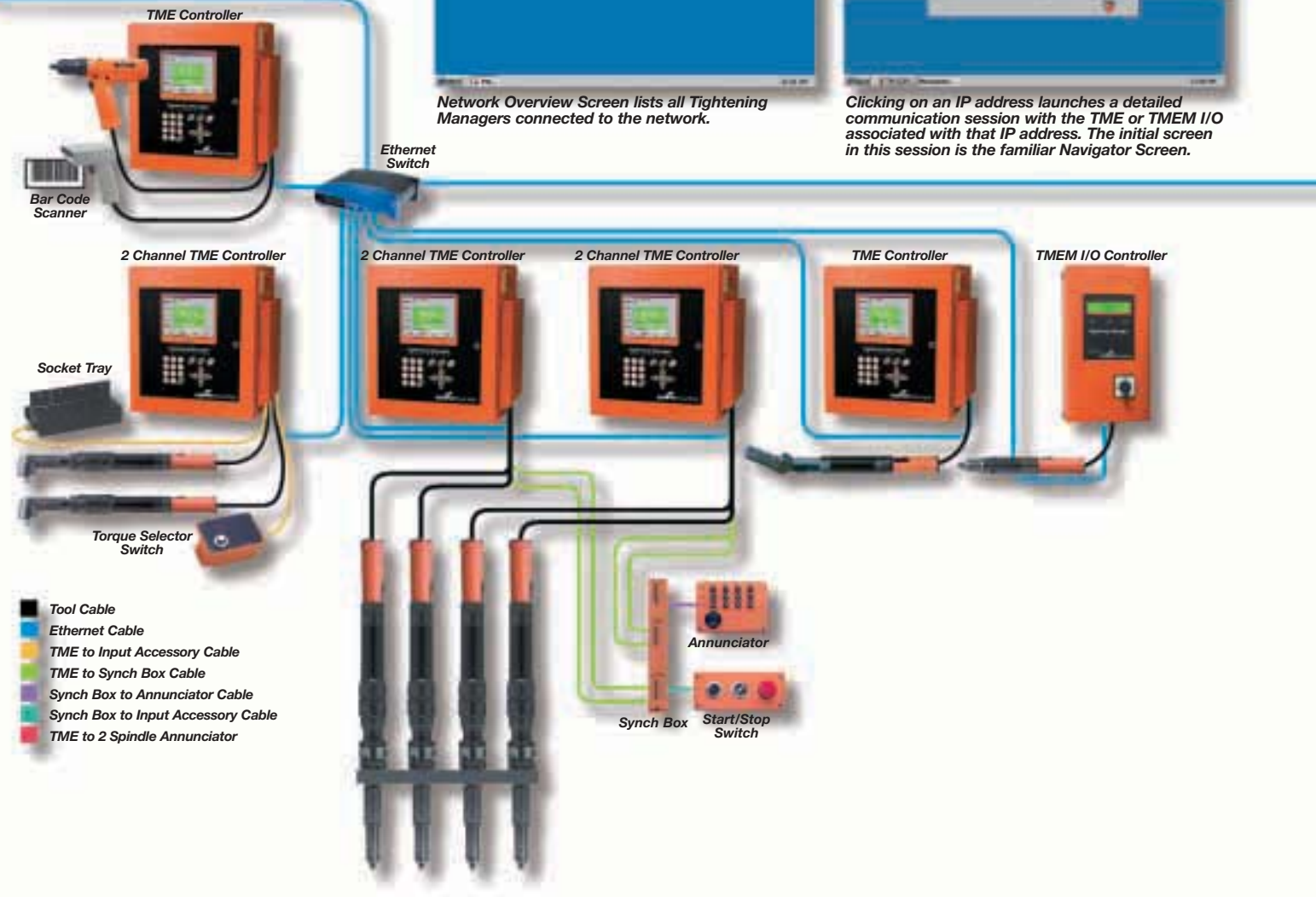
The Cleco Tightening Manager system has always provided the user ease of walking up to the controller and reviewing on-site the real-time fastening results on its screens. But now, anything that can be seen on the controller, can also be seen at a remote location, because the exact same screens



Network Overview Screen lists all Tightening Managers connected to the network.



Clicking on an IP address launches a detailed communication session with the TME or TMEM I/O associated with that IP address. The initial screen in this session is the familiar Navigator Screen.



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will be on the PC's desktop. For example, when watching a fastening histogram on the screen and noticing that the torques are beginning to overshoot, the controller can be re-programmed to adjust the speeds that will give a better run-down – all from the computer's desktop at a remote location.

There is a strong benefit in being able to keep historical records of all fastening operations, which is totally impractical on a controller-by-controller basis. And, since Cooper Power Tools continually improves its software, we are able to provide new features and benefits, such as with our TM-COM, which allows the downloading of software enhancements to a desktop and the upgrading of each controller from one central location.

TM-COM Software increases your efficiency and productivity. It improves production line speeds. It makes trouble-shooting quicker and easier. And, since time translates into money, it significantly enhances the bottom line.



You can review the chronological history, review statisical graphs, and even export the data to your PC for further analysis or future reference.



From the Navigator Screen, you can access all the programming screens available on the TME or TMEM I/O. For example, you can view and change the torque parameters.



You can launch sessions with multiple TME/TMEMs connected to your network. For example, you can monitor the Run Screens on four TME/TMEMs.



You can also launch multiple sessions to the same TME or TMEM I/O so you can monitor the Run Screen and the Oscilloscope at the same time.



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The Set-Up Software: TM-COM1

Same software with more options!

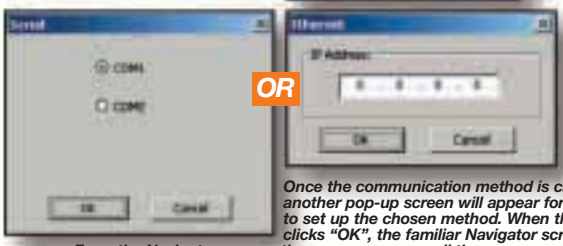


Cooper Power Tools' network software is now also available for non-networked environments. TM-COM1 works just like TM-COM except it communicates to only one TME or TMEM at a time. This software was developed specifically for the TMEM because this new controller requires programming set up from a PC. However, because all our software is based on the same platform, TM-COM1 can also communicate to TMEs.

TM-COM1 can communicate to any TMEM via the RS232 serial port. TM-COM1 can also communicate via Ethernet to a TME or TMEM equipped with Ethernet.

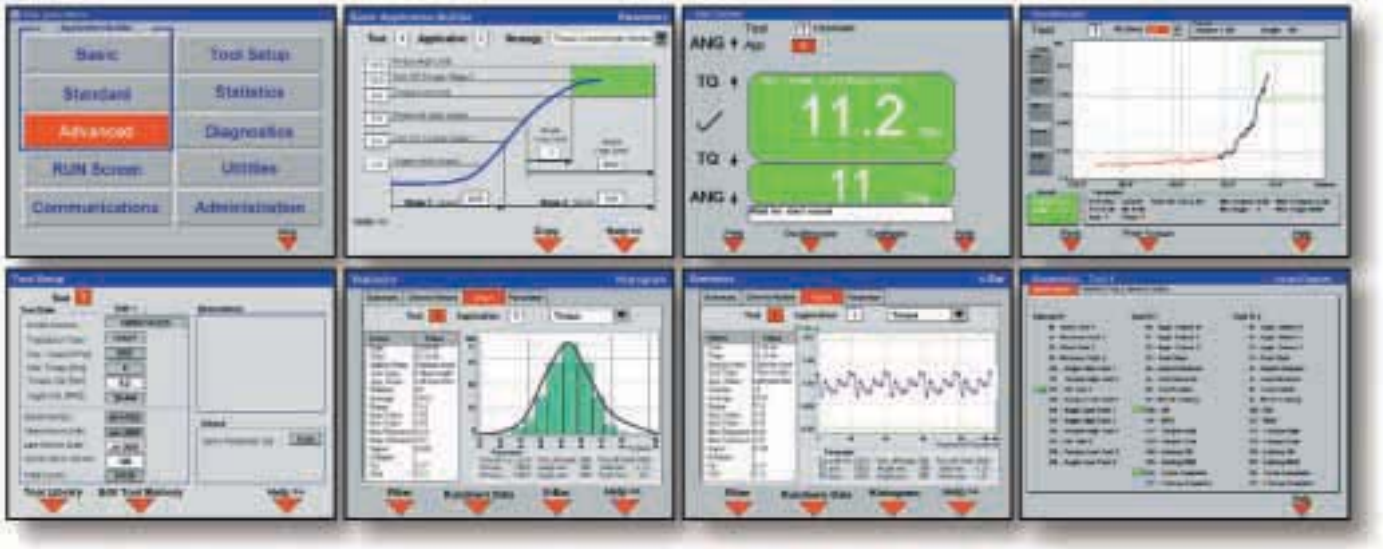


When TM-COM1 is first launched, a pop-up menu will be displayed. From this menu, the user will choose the communication method to the TME or TMEM – either RS232 serial or Ethernet. The user can also change the language from this menu.



Once the communication method is chosen, another pop-up screen will appear for the user to set up the chosen method. When the user clicks "OK", the familiar Navigator screen appears. From the Navigator screen, the user can access all the programming screens to completely set up the TME or TMEM for normal operation.

All screens available on TME and TM-COM are also available in TM-COM1.





TM-COM1 connected to standard TMEM via RS232 serial.

TM-COM1 connected to TMEM I/O via RS232 serial.

TM-COM1 connected to TME via Ethernet crossover cable.

TM-COM1 connected to TME 2-channel via Ethernet crossover cable.

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Same software simplified!



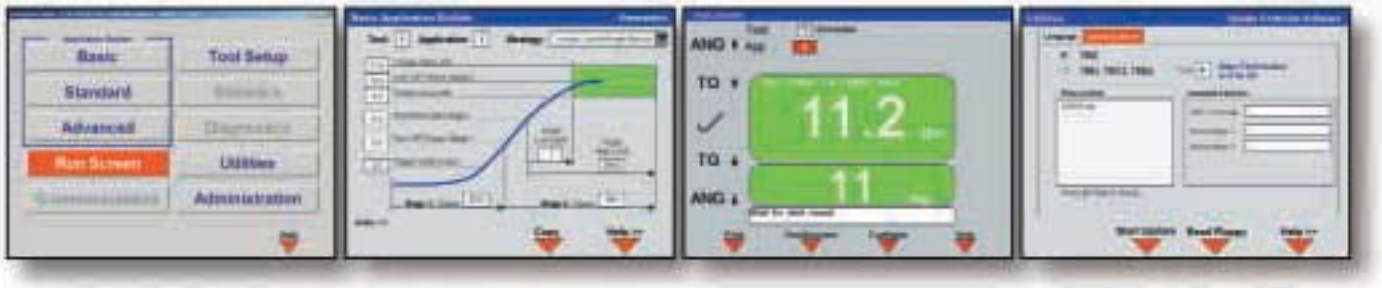
Just want to see the tool lights? Our software is also available in a “Mini” version – TM-COM1M. This software is a simplified version of TM-COM1. Like TM-COM1, TM-COM1M connects to one TME or TMEM at a time. However, for better value under certain conditions, not all screens are available. We left just enough to program the required critical fastening strategy – and thus avoiding unnecessary features.

TM-COM1M still allows the setup of multiple stage rundowns, changing speeds, and achieving the same fastening control that professionals expect from Cleco. But if torque data is not being sent to the server, using bar code scanners to automatically choose the torque, or interfacing with other plant floor automation, there is no reason to have the customer pay for such capability. By combining the TM-COM1M software with the standard TMEM controller and Cooper Power Tools’ family of Tightening Manager tools and cables, the most economical solution to critical tightening is achieved.



TMEs that are out of reach can be re-programmed or analyzed through an Ethernet crossover cable with TM-COM, TM-COM1, or TM-COM1M.

A limited number of screens are available in TM-COM1M.





TM-COM1M connected to standard TMEM via RS232 serial.

TM-COM1M connected to TMEM I/O via RS232 serial.

TM-COM1M connected to TME via Ethernet crossover cable.

TM-COM1M connected to TME 2-channel via Ethernet crossover cable.

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Tightening Manager Controllers

TME Single Channel

Model Number		Language	Features	Weight		Width		Height		Depth	
115VAC	230VAC			lbs.	kg	in.	mm	in.	mm	in.	mm
TME-211-15-U	TME-211-30-U	English	Ethernet	87	39.5	16.5	419.1	17.5	444.5	12.3	312.4
TME-211-15-U-ED	TME-211-30-U-ED	English	Ethernet & DeviceNet	87	39.5	16.5	419.1	17.5	444.5	12.3	312.4
TME-211-15-U-EP	TME-211-30-U-EP	English	Ethernet & Profibus	87	39.5	16.5	419.1	17.5	444.5	12.3	312.4
TME-211-15-D	TME-211-30-D	German	Standard*	87	39.5	16.5	419.1	17.5	444.5	12.3	312.4
TME-211-15-D-ED	TME-211-30-D-ED	German	Ethernet & DeviceNet	87	39.5	16.5	419.1	17.5	444.5	12.3	312.4
TME-211-15-D-EP	TME-211-30-D-EP	German	Ethernet & Profibus	87	39.5	16.5	419.1	17.5	444.5	12.3	312.4
TME-211-15-S	TME-211-30-S	Spanish	Standard*	87	39.5	16.5	419.1	17.5	444.5	12.3	312.4
TME-211-15-S-ED	TME-211-30-S-ED	Spanish	Ethernet & DeviceNet	87	39.5	16.5	419.1	17.5	444.5	12.3	312.4
TME-211-15-S-EP	TME-211-30-S-EP	Spanish	Ethernet & Profibus	87	39.5	16.5	419.1	17.5	444.5	12.3	312.4
TME-211-15-P	TME-211-30-P	Portuguese	Standard*	87	39.5	16.5	419.1	17.5	444.5	12.3	312.4
TME-211-15-P-ED	TME-211-30-P-ED	Portuguese	Ethernet & DeviceNet	87	39.5	16.5	419.1	17.5	444.5	12.3	312.4
TME-211-15-P-EP	TME-211-30-P-EP	Portuguese	Ethernet & Profibus	87	39.5	16.5	419.1	17.5	444.5	12.3	312.4

**3.5" floppy drive, 24 volt I/O, Ethernet, 2 serial connectors, printer connector, keyboard connector. TMCOM-1M software included.*

TME 2-Channel

Model Number		Language	Features	Weight		Width		Height		Depth	
115VAC	230VAC			lbs.	kg	in.	mm	in.	mm	in.	mm
TME-221-15-U	TME-221-30-U	English	Standard*	103	46.8	16.5	419.1	17.5	444.5	14.1	358.1
TME-221-15-U-ED	TME-221-30-U-ED	English	Ethernet & DeviceNet	103	46.8	16.5	419.1	17.5	444.5	14.1	358.1
TME-221-15-D	TME-221-30-D	German	Standard*	103	46.8	16.5	419.1	17.5	444.5	14.1	358.1
TME-221-15-D-ED	TME-221-30-D-ED	German	Ethernet & DeviceNet	103	46.8	16.5	419.1	17.5	444.5	14.1	358.1
TME-221-15-S	TME-221-30-S	Spanish	Standard*	103	46.8	16.5	419.1	17.5	444.5	14.1	358.1
TME-221-15-S-ED	TME-221-30-S-ED	Spanish	Ethernet & DeviceNet	103	46.8	16.5	419.1	17.5	444.5	14.1	358.1
TME-221-15-P	TME-221-30-P	Portuguese	Standard*	103	46.8	16.5	419.1	17.5	444.5	14.1	358.1
TME-221-15-P-ED	TME-221-30-P-ED	Portuguese	Ethernet & DeviceNet	103	46.8	16.5	419.1	17.5	444.5	14.1	358.1

**3.5" floppy drive, 24 volt I/O, Ethernet, 2 serial connectors, printer connector, keyboard connector. TMCOM-1M software included.*

TMEM

Model Number		Language	Features	Weight		Width		Height		Depth	
115VAC	230VAC			lbs.	kg	in.	mm	in.	mm	in.	mm
TMEM-114-15-U	TMEM-114-30-U	English	Serial connector	46	20.9	7.9	200.7	16.2	411.5	12.7	322.6
TMEM-114-15-U-IO	TMEM-114-30-U-IO	English	I/O*	46	20.9	7.9	200.7	16.2	411.5	12.7	322.6
TMEM-114-15-U-ED	TMEM-114-30-U-ED	English	Ethernet & DeviceNet	46	20.9	7.9	200.7	16.2	411.5	12.7	322.6
TMEM-114-15-U-EP	TMEM-114-30-U-EP	English	Ethernet & Profibus	46	20.9	7.9	200.7	16.2	411.5	12.7	322.6
TMEM-114-15-D	TMEM-114-30-D	German	Serial connector	46	20.9	7.9	200.7	16.2	411.5	12.7	322.6
TMEM-114-15-D-IO	TMEM-114-30-D-IO	German	I/O*	46	20.9	7.9	200.7	16.2	411.5	12.7	322.6
TMEM-114-15-D-ED	TMEM-114-30-D-ED	German	Ethernet & DeviceNet	46	20.9	7.9	200.7	16.2	411.5	12.7	322.6
TMEM-114-15-D-EP	TMEM-114-30-D-EP	German	Ethernet & Profibus	46	20.9	7.9	200.7	16.2	411.5	12.7	322.6
TMEM-114-15-S	TMEM-114-30-S	Spanish	Serial connector	46	20.9	7.9	200.7	16.2	411.5	12.7	322.6
TMEM-114-15-S-IO	TMEM-114-30-S-IO	Spanish	I/O*	46	20.9	7.9	200.7	16.2	411.5	12.7	322.6
TMEM-114-15-S-ED	TMEM-114-30-S-ED	Spanish	Ethernet & DeviceNet	46	20.9	7.9	200.7	16.2	411.5	12.7	322.6
TMEM-114-15-S-EP	TMEM-114-30-S-EP	Spanish	Ethernet & Profibus	46	20.9	7.9	200.7	16.2	411.5	12.7	322.6
TMEM-114-15-P	TMEM-114-30-P	Portuguese	Serial connector	46	20.9	7.9	200.7	16.2	411.5	12.7	322.6
TMEM-114-15-P-IO	TMEM-114-30-P-IO	Portuguese	I/O*	46	20.9	7.9	200.7	16.2	411.5	12.7	322.6
TMEM-114-15-P-ED	TMEM-114-30-P-ED	Portuguese	Ethernet & DeviceNet	46	20.9	7.9	200.7	16.2	411.5	12.7	322.6
TMEM-114-15-P-EP	TMEM-114-30-P-EP	Portuguese	Ethernet & Profibus	46	20.9	7.9	200.7	16.2	411.5	12.7	322.6

**24 volt I/O, Ethernet, and 2 serial connectors. TMCOM-1M software included.*

Tightening Manager Upgrade Kits

Part Number	Description
543481	Upgrades a Standard TMEM to a TMEM I/O
543334-EN	Upgrades a Standard TME with a 6 character serial number to an Ethernet TME
543334J-EN	Upgrades a Standard TME with a serial number having a J as the seventh character to an Ethernet TME
543335-ED	Upgrades a Standard TME with a 6 character serial number to a DeviceNet TME
543335J-ED	Upgrades a Standard TME with a serial number having a J as the seventh character to a DeviceNet TME
543941	Upgrades a Standard TME 200-U to -EP (Ethernet & Profibus TME)
543942	Upgrades a Standard TME 200-U to -ED (Ethernet & DeviceNet TME)

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Software

Part Number	Description
TM-COM-V2.05	Network software *(Serial cable included)*
TM-COM1-V2.05	Setup software *(Serial cable included)*
TM-COM1M-V2.05	Mini setup software *(Serial cable included)*
543448	Notebook computer loaded with TM-COM *(Carrying case included)*
543449	Desktop computer loaded with TM-COM *(Monitor, keyboard and mouse included)*
543488	Notebook computer loaded with TM-COM1 *(Carrying case included)*



TM-COM Minimum System Requirements

Operating System: *Windows 2000, NT or XP*
Processor: *Pentium*
Memory: *256MB*
Free Disk Space: *10MB per controller*
Other: *Ethernet connection, MS Office 2000*



TM-COM1 & TM-COM1M Minimum System Requirements

Operating System: *Windows 2000, NT or XP*
Processor: *Pentium*
Memory: *256MB*
Other: *MS Office 2000*
If connected to: *TMEM Standard– RS232 serial connection*
TMEM I/O – RS232 serial or Ethernet connection
TME – Ethernet connection

USB Software Keys

Part Number	Description
543969	TM-COM-V2.05
543970	TM-COM1-V2.05



Parallel Software Keys

Part Number	Description
543971	TM-COM-V2.05
543972	TM-COM1-V2.05

Software Functionality

	TM-COM	TM-COM1	TM-COM1M
Overview Screen	*		
Network Software	*	*	*
Single point serial connection	•	•	•
Single point Ethernet connection	•	•	•
Navigator	•	•	•
Basic Application Builder	•	•	•
Torque Control/Angle Monitor	•	•	•
Angle Control/Torque Monitor	•	•	•
Standard Application Builder (Seq11,30,50,41)	•	•	•
High Speed Rundown	•	•	•
Torque Control/Angle Monitor	•	•	•
Angle Control/Torque Monitor	•	•	•
Angle Controlled Backoff	•	•	•
TubeNut	•	•	•
Advanced Application Builder	•	•	•
Setup Matrix	•	•	
+24V Inputs/Outputs	•	•	
I/O Mapping	•	•	
FieldBus DeviceNet	•	•	
Profibus	•	•	
Linking	•	•	
System Settings	•	•	•
Run Screen	•	•	•
Oscilloscope graphs	•	•	
Communications	•	•	
Data Transmission	•	•	
Part ID (Barcode)	•	•	
Printer	•	•	
Tool Setup	•	•	•
Read Tool Memory	•	•	•
Tool Library	•	•	•
Statistics	•	•	
Chrono History	•	•	
X-bar, Range, Histogram charts	•	•	
Export Data	•	•	
Data Filter	•	•	
Diagnostics (I/0, Fieldbus, Arcnet, Tool)	•	•	•
Inputs/Outputs	•	•	
FieldBus	•	•	
Tool	•	•	•
Arcnet	•	•	
Serial	•	•	
Utilities	•	•	•
Software Upgrade	•	•	•
Administration	•	•	•
Load/Save system setup	•	•	
Print reports + system setup	•	•	
Password	•	•	
Time/Date	•	•	
Language Selection	•	•	•
Counter	•	•	

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Simply the most serviceable DC electric tools in the world!

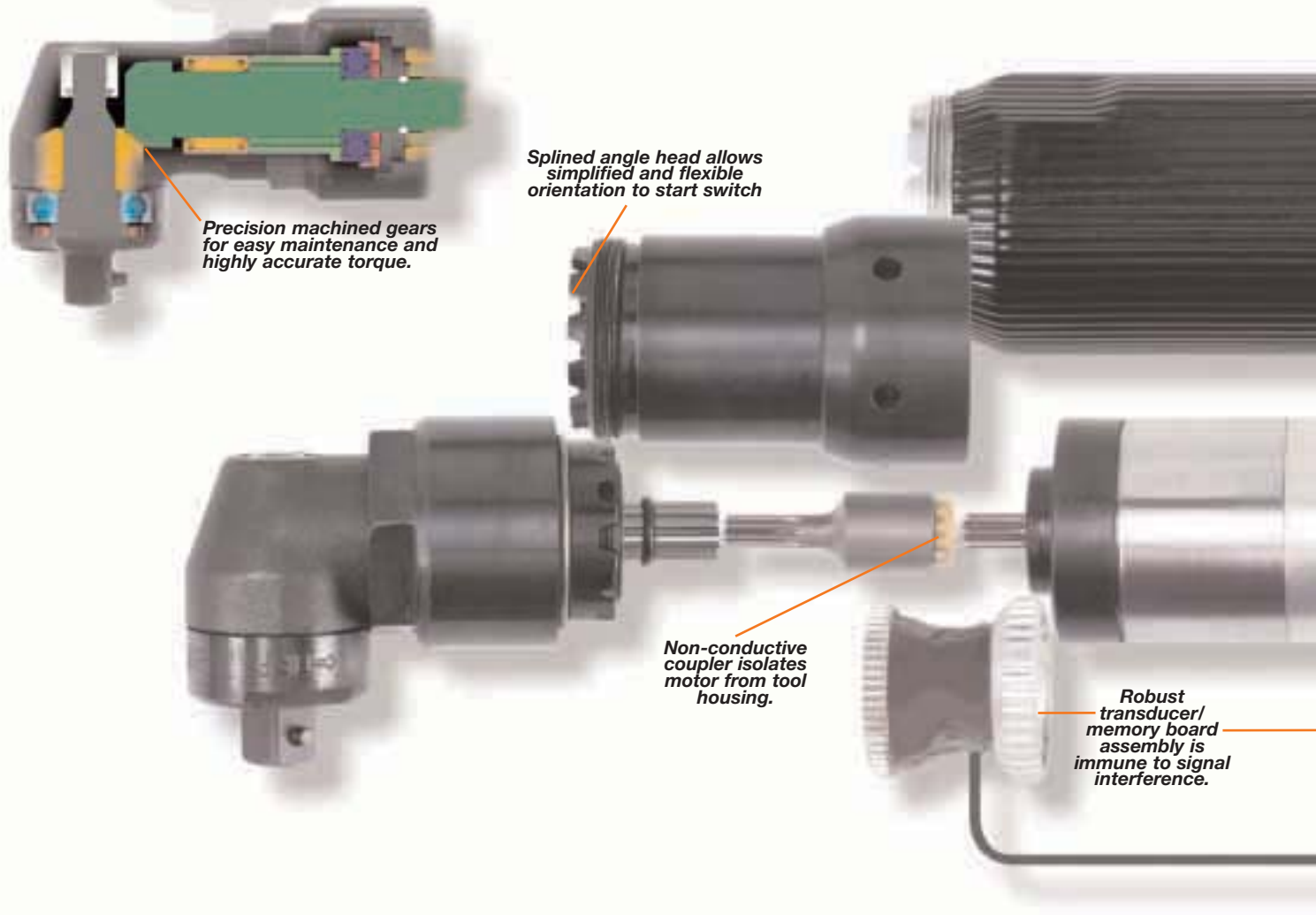
In a perfect world, every nut and bolt would be just alike. Only one DC electric tool would be required.

In the real world, industrial and production engineers translate the designs of the automotive or aeronautical engineers into fastening strategies that turn those designs into reality. Invariably, that means a broad variety of fastening applications requiring a wide range of tool types.

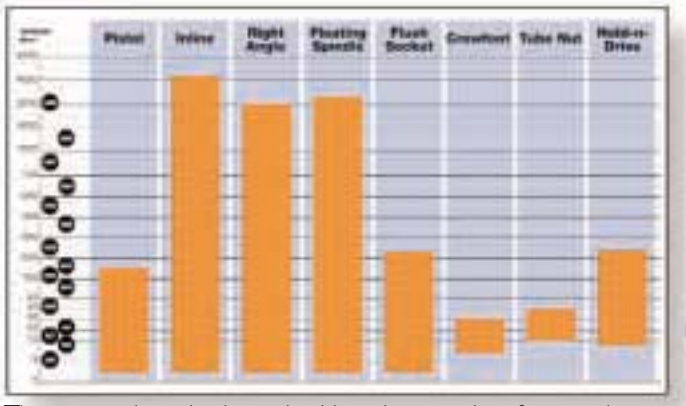
At Cooper Power Tools, our focus is to make tools to match production dynamics, instead of requiring the production line to fit our tools. So, the Cleco Tightening Manager System offers the most robust line of electric tools to meet all fastening applications. They are available in right-angle, inline and pistol-grip configurations, in addition to specialty nutrunners such as flush socket, floating spindle, crowfoot, tube nut and hold-n-drive tools. They deliver torque ranges from 2 to 4000 Nm and accommodate bolt sizes from #10 to 1-3/4".

All of our tools are extremely robust, yet complex, highly sophisticated and technically advanced machines. They are engineered with precision gearing. They are designed with electric motors controlling the speed. They have resolvers that monitor the rotation of the motor and send those signals back, so that when the operator engages the shaft of the bolt and runs it down, the controller determines how much the bolt is stretching, how tight the clamp is, what the rotation and speed and stress/strain curve are. Our tools meet and exceed the most stringent global tool standards for accuracy, durability, vibration and noise.

All Cleco DC electric tools are engineered to provide greater torque repeatability, minimal torque loss, increased speed control and ease of maintenance. They are designed to provide wider torque ranges for unprecedented flexibility and to enhance profit potential with engineering innovations that decrease torque reaction, cycle time and repair time.



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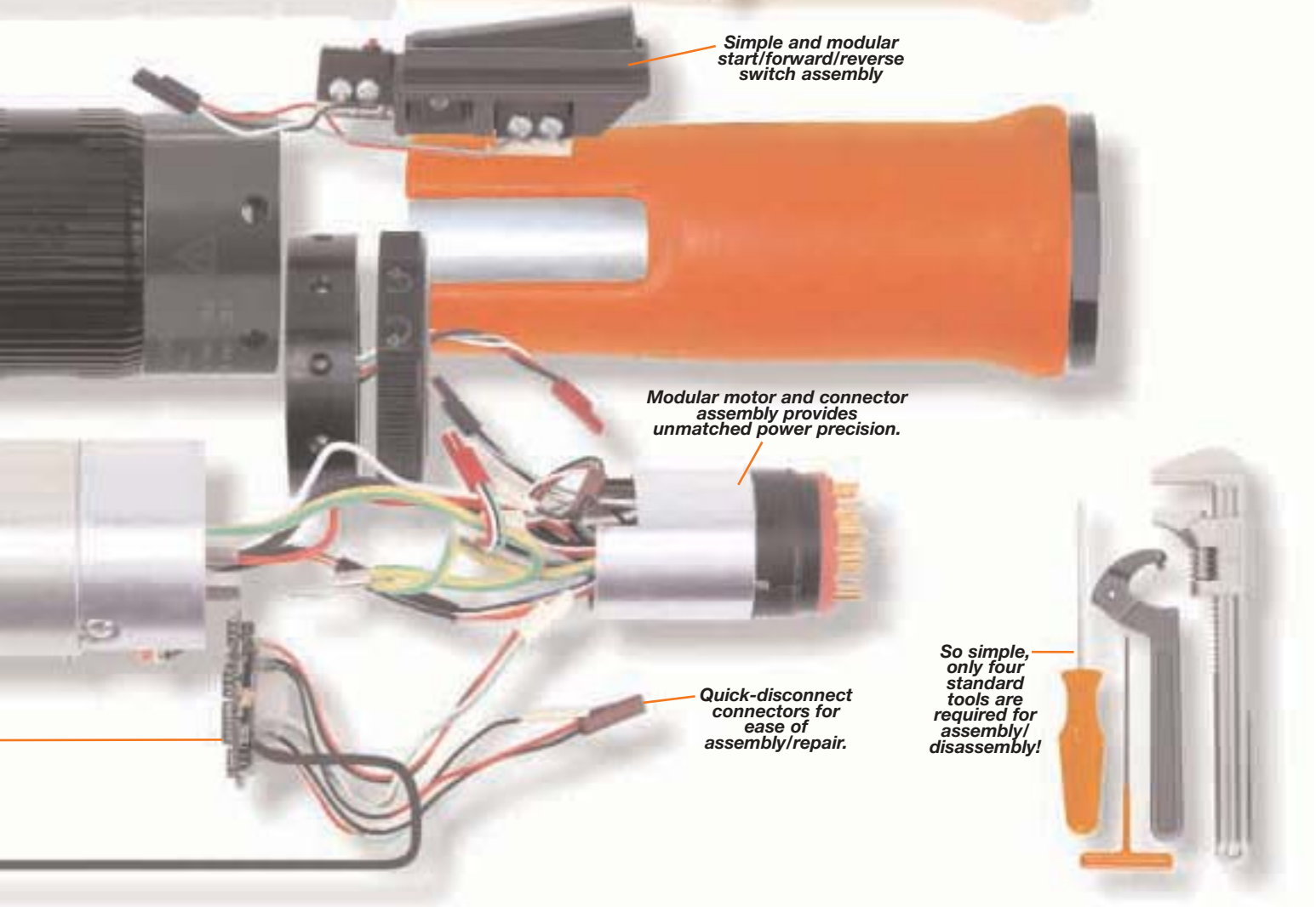


performed, you know when it is time for preventive maintenance before it is too late and becomes a repair job.



They are also designed with advanced software that is operator-friendly. Their ergonomic engineering features make them lighter and faster enabling them to deliver enhanced performance, increased safety and reduced operator fatigue.

And a remarkable onboard memory chip records set-up values and performance history, making accurate analysis a reality, time after time. Because the tool records the number of cycles it has



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Cleco® Instrumented Electric Nutrunners

Pistol Grip & Right Angle Electric Tools

17EP & 47EP Series

Torque Range	Bolt Size
2 - 150 Nm	M5 - M14
1.5 - 113 Ft. Lbs.	#10 - 5/8”

17EA, 47EA & 67EA Series

Torque Range	Bolt Size
2 - 2000 Nm	M5 - M36
1.5 - 1475 Ft. Lbs.	#10 - 1 1/2”

Fastening Strategies

Torque Control with Angle Monitoring
Angle Control with Torque Monitoring
Torque Control with Time Monitoring

- Smart Tool Technology
- DC Brushless Motor
- Resolver
- Reversible



17EP

47EP

47EP



67EA (AL6)

17EA (AL2)

47EA (AM4)

Standard Tool Nomenclature

XX	X	X	XXXX	XX	XX	X

Motor
17, 47, 67

Power
E – Electric

Tool Style
A – Right Angle
P – Pistol
S – Straight

Max Output Torque (Nm)
Under 60 Nm, rounded up to the nearest 1 Nm.
Over 60 Nm, rounded to the nearest 5 Nm.

Tool Termination
A – Angle non-retractable
M – Angle medium duty
D – Inline non-retractable

Drive Type
2 – 1/4” Sq.Dr.
3 – 3/8” Sq.Dr.
4 – 1/2” Sq.Dr.
6 – 3/4” Sq.Dr.
8 – 1” Sq.Dr.
12 – 1 1/2” Sq.Dr.
Q – Quick change
QS – with depth sensor

Retainer
B Ball retainer

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Model Number			Bolt Size Gr. 5	Bolt Size Gr. 9.8	Free Speed	Torque Range		Length		Weight**		Side to Center	
1/4" QC*	3/8" Sq. Dr.	1/2" Sq. Dr.	in.	mm	RPM	ft. lbs	Nm	in.	mm	lbs.	kg	in.	mm
Pistol Grip													
17EP06Q[1]			#10	M5	2600	1.5-4.4	2-6	7.0	178	2.2	1.0	0.84	21
17EP12Q	17EP12D3		1/4	M6	1200	2.2-8.9	3-12	7.7	196	2.4	1.1	0.84	21
17EP17Q	17EP17D3		5/16	M7	860	3.0-12.5	4-17	7.7	196	2.4	1.1	0.84	21
	17EP22D3		5/16	M8	650	3.7-16.2	5-22	7.2	183	2.4	1.1	0.84	21
	17EP31D3		3/8	M8	460	5.2-22.9	7-31	7.2	183	2.4	1.1	0.84	21
47EP12Q[1]			1/4	M6	2600	2.2-8.9	3-12	8.2	208	2.7	1.2	0.84	21
	47EP25D3		5/16	M8	1200	3.7-18.4	5-25	8.4	213	2.9	1.3	0.84	21
	47EP36D3		3/8	M8	860	5.9-26.6	8-36	8.4	213	2.9	1.3	0.84	21
	47EP48D3		7/16	M10	650	7.4-35.4	10-48	8.6	218	3.0	1.4	0.84	21
		47EP65D4	7/16	M10	500	12.0-48	16.3-65	11.4	290	5.0	2.2	1.1	29
		47EP90D4	9/16	M12	340	16.8-67	22.5-90	12.0	305	5.3	2.4	1.1	29
		47EP125D4	9/16	M14	245	23.5-94	31.3-125	12.0	305	5.3	2.4	1.1	29
		47EP150D4	5/8	M14	160	28.3-113	37.5-150	12.0	305	5.3	2.4	0.9	23

* [1] Replace "Q" with "D2" for 1/4" sq. dr.
** Weights are without tool cable. suspension bail, reaction bar or dead handle if so equipped.

GENERAL:
All tools must be used with Tightening Manager Electronic Controller.

STANDARD EQUIPMENT:
Suspension Bail; Dead Handle is included with 17EP12Q and 17EP12D3. Reaction bar is included with pistol tools with output torques of 17-48 Nm. (542127)

EXTRA EQUIPMENT:
Std.Tool Cable 542778-XX, Swivel Cable 542780-XX, Extension Cable 542779-XX.

Additional Accessories (Pages 41-49)

Model Number		Bolt Size Gr. 5	Bolt Size Gr. 9.8	Free Speed	Torque Range		Length		Weight**		Head Height		Side to Center	
3/8" Sq. Dr.*	1/2" Sq. Dr.*	in.	mm	RPM	ft. lbs	Nm	in.	mm	lbs	kg	in.	mm	in.	mm
Right Angle														
17EA08AL2[1]		#10	M5	2000	1.5-5.8	2-7.8	13.6	345	2.9	1.3	1.4	36	0.5	13
17EA15AM3		1/4	M7	860	3.3-11.1	5-15	14.8	376	3.6	1.6	1.6	41	0.59	15
47EA15AL3		1/4	M7	1900	3.7-11.1	5-15	15.6	396	4.1	1.9	1.6	41	0.59	15
17EA22AM3		5/16	M8	610	4.6-16.2	6-22	14.8	376	3.6	1.6	1.6	41	0.59	15
17EA28AM3		5/16	M8	465	6.6-20.7	9-28	14.8	376	3.6	1.6	1.6	41	0.59	15
47EA33AM3		3/8	M8	895	5.2-24.3	7-33	17.7	450	5.0	2.3	1.9	48	0.75	19
47EA43AM3		3/8	M10	685	6.6-31.7	9-43	17.7	450	5.0	2.3	1.9	48	0.75	19
47EA60AM3	47EA60AM4	7/16	M10	485	9.6-45.0	13-61	17.7	450	5.0	2.3	1.9	48	0.75	19
	47EA90AH4	1/2	M12	340	13.3-64.2	18-87	18.4	467	6.7	3.0	2.3	58	0.81	21
	47EA105AH4	9/16	M12	230	15.5-76.7	21-104	18.4	467	6.7	3.0	2.3	58	0.81	21
	47EA135MH4	9/16	M14	180	19.9-98.1	27-133	19.0	483	7.3	3.3	2.4	61	0.94	24
	47EA175AX6[2]	5/8	M14	130	26.6-129.8	36-176	21.5	546	10.2	4.6	2.7	69	1.06	27
	47EA230AX6[2]	5/8	M16	100	33.9-169.6	46-230	21.5	546	10.2	4.6	2.7	69	1.06	27
	67EA235AL6[3]	3/4	M18	135	33.9-169.6	46-230	25.8	655	12.9	5.9	2.3	58	1.03	26
	67EA255AL6[3]	3/4	M18	115	40.6-188.1	55-255	25.8	655	12.9	5.9	2.3	58	1.03	26
	67EA310ML6[3]	3/4	M18	100	44-229	60-310	29.1	739	20.2	9.2	2.55	65	1.06	27
	67EA340AM6[3]	3/4	M18	90	51.6-247.1	70-335	31.6	803	21.0	9.5	3.1	79	1.38	35
	67EA460AM6[3]	7/8	M20	66	70.1-339.3	95-460	31.6	803	21.0	9.5	3.1	79	1.38	35
	67EA570AM6[3]‡	1	M22	53	84.8-420.4	115-570	31.6	803	21.0	9.5	3.1	79	1.38	35
	67EA730AM6[3]‡	1	M22	46	110.6-538.4	150-730	31.6	803	21.0	9.5	3.1	79	1.38	35
	67EA860AH8[4]	1 1/8	M24	33	129.1-634.3	175-860	25.3	643	22.7	10.3	9.32	237	1.50	38
	67EA1035AH8[4]	1 1/4	M27	25	154.9-763.3	210-1035	26.3	668	23.0	10.5	9.32	237	1.50	38
	67EA1340AH8[4]	1 1/4	M27	20	199.1-988.3	270-1340	26.3	668	23.0	10.5	9.32	237	1.50	38
	67EA1700AH8[4]	1 3/8	M30	16	250.8-1253.8	340-1700	26.3	668	23.0	10.5	9.32	237	1.50	38
	67EA2010AH8[4]	1 1/2	M36	13	295.0-1475.0	400-2000	26.3	668	23.0	10.5	9.32	237	1.50	38

* [1] 1/4" sq. dr.; [2] 5/8" sq. dr.; [3] 3/4" sq. dr.; [4] 1" sq. dr.;
** Weights are without reaction bar and tool cable.
‡ **NOTE:** Limited anglehead durability at rated torque.

GENERAL:
All tools must be used with Tightening Manager Electronic Controller.

STANDARD EQUIPMENT:
Suspension Bail.
Mounting Plate (67...AL6, 67...AM6)
Reaction Bar (67...AH8)

EXTRA EQUIPMENT:
Std.Tool Cable 542778-XX, Swivel Cable 542780-XX, Extension Cable 542779-XX.
17 & 47 series: For ball retainer (in place of pin retainer) add "B" to end of model number.

ADDITIONAL ACCESSORIES (Page 41-49)

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Cleco® Instrumented Electric Nutrunners

Inline & Fixed Spindle Electric Tools

17ES & 47ES Series

Torque Range	Bolt Size
2 - 150 Nm	M5 - M14
1.5 - 113 Ft. Lbs.	#10 - 5/8”

67ES Series

Torque Range	Bolt Size
13 - 4050 Nm	M10 - M42
10 - 2985 Ft. Lbs.	7/16” - 1 3/4”

Fastening Strategies

Torque Control with Angle Monitoring
Angle Control with Torque Monitoring
Torque Control with Time Monitoring

- Smart Tool Technology
- DC Brushless Motor
- Resolver
- Light ring
- Reversible



17ES



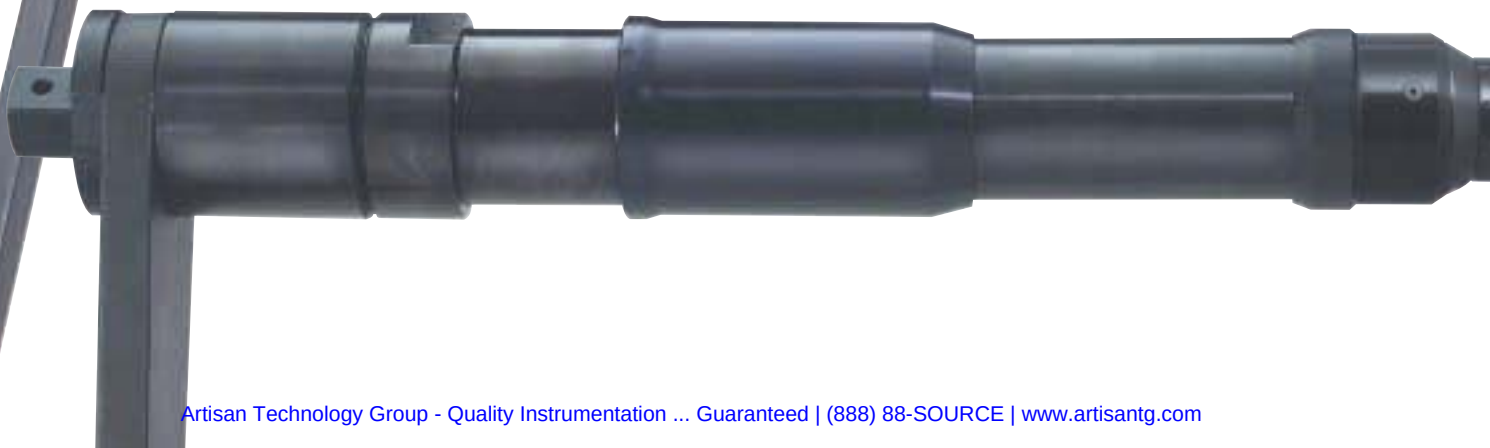
47ES



67ES135D4



67ES2060D8



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Model Number			Bolt Size Gr. 5	Bolt Size Gr. 9.8	Free Speed	Torque Range		Length		Weight**		Side to Center	
1/4" Slip Ck*	3/8" Sq. Dr.	1/2" Sq. Dr.	in.	mm	RPM	ft. lbs	Nm	in.	mm	lbs.	kg	in.	mm
17ES & 47ES Series Inline													
17ES06Q[1]			#10	M5	2600	1.5-4.4	2-6	12.3	312	2.5	1.1	0.91	23
17ES12Q	17ES12D3		1/4	M6	1200	2.2-8.9	3-12	13.0	330	2.7	1.2	0.91	23
17ES17Q	17ES17D3		5/16	M7	860	3.0-12.5	4-17	13.0	330	2.7	1.2	0.91	23
	17ES22D3		5/16	M8	650	3.7-16.2	5-22	12.4	315	2.7	1.2	0.91	23
	17ES31D3		3/8	M8	460	5.2-22.9	7-31	12.4	315	2.7	1.2	0.91	23
47ES12Q[1]			1/4	M6	2600	2.2-8.9	3-12	13.5	343	3.0	1.4	0.91	23
	47ES25D3		5/16	M8	1200	3.7-18.4	5-25	13.6	345	3.2	1.5	0.91	23
	47ES36D3		3/8	M8	860	5.9-26.6	8-36	13.6	345	3.2	1.5	0.91	23
	47ES48D3		7/16	M10	650	7.4-35.4	10-48	13.8	351	3.3	1.5	0.91	23
		47ES65D4	7/16	M10	500	12.0-48	16.3-65	16.6	420	5.3	2.4	1.1	29
		47ES90D4	9/16	M12	340	16.8-67	22.5-90	17.1	435	5.6	2.5	1.1	29
		47ES125D4	9/16	M14	245	23.5-94	31.3-125	17.1	435	5.6	2.5	1.1	29
		47ES150D4	5/8	M14	160	28.3-113	37.5-150	17.1	435	5.6	2.5	0.9	23

* [1] Replace "Q" with "D2" for 1/4" sq. dr.
** Weights are without tool cable or suspension bail.

GENERAL:
All tools must be used with Tightening Manager Electronic Controller.

STANDARD EQUIPMENT:
Suspension Bail; Dead Handle is included with 17ES12Q and 17ES12D3. Reaction bar is included with pistol & inline tools with output torques of 17-48 NM. (542127).

EXTRA EQUIPMENT:
Std.Tool Cable 542778-XX, Swivel Cable 542780-XX, Extension Cable 542779-XX.
Mounting Plates: 543231 - (all with exception to listed below)
543235 - 17ES06Q, 47ES12Q
49087108 - 47ES65D4, 47ES90D4, 47ES125D4, and 47ES150D4.

ADDITIONAL ACCESSORIES (Pages 41-49)

Model Number	Drive	Bolt Size Gr. 5	Bolt Size Gr. 9.8	Free Speed	Torque Range		Length		Weight*		Side to Center	
		in.	mm	RPM	ft. lbs	Nm	in.	mm	lbs	kg	in.	mm
67ES Series Fixed Spindle												
67ES65D4	1/2	7/16	M10	535	10-47	13-64	21.0	533	10.3	4.7	1.31	33
67ES105D4	1/2	9/16	M12	330	15-77	21-104	21.0	533	10.3	4.7	1.31	33
67ES135D4	1/2	9/16	M14	245	20-100	27-135	21.0	533	10.3	4.7	1.31	33
67ES190D6	3/4	5/8	M16	165	28-140	38-190	20.5	521	11.6	5.3	1.31	33
67ES285D6	3/4	3/4	M16	115	42-210	57-285	20.5	521	11.6	5.3	1.31	33
67ES385D6	3/4	3/4	M18	83	57-285	77-386	20.5	521	11.6	5.3	1.31	33
67ES475D6	3/4	7/8	M20	67	70-350	95-475	20.9	531	12.0	5.4	1.31	33
67ES610D6	3/4	1	M22	50	90-450	122-610	20.9	531	12.0	5.4	1.31	33
67ES850D8	1	1 1/8	M24	33	125-625	170-848	23.8	605	17.0	7.7	1.50	38
67ES1050D8	1	1 1/4	M27	27	155-775	210-1050	23.8	605	17.0	7.7	1.50	38
67ES1670D8	1	1 3/8	M30	17	246-1230	334-1668	23.8	605	17.0	7.7	1.50	38
67ES2060D8	1	1 1/2	M36	14	304-1520	412-2060	23.8	605	17.0	7.7	1.50	38
67ES4050D12	1 1/2	1 3/4	M42	6	597-2985	810-4050	24.5	622	45.2	20.5	2.35	60



* Weights are without tool cable or reaction bar if so equipped.

GENERAL:
All tools must be used with Tightening Manager Electronic Controller.

STANDARD EQUIPMENT:
Reaction bar; Slave drive reaction bar on 67ES4050D12.

EXTRA EQUIPMENT:
Std.Tool Cable 542778-XX, Swivel Cable 542780-XX, Extension Cable 542779-XX.
Mounting Plates: 67ES...D4 – 49087108; 67ES...D6 – 44597101; 67ES...D8 – 49487101.

ADDITIONAL ACCESSORIES (Pages 41-49)



Standard Tool Nomenclature

XX	X	X	XXXX	XX	XX	X

Motor
17, 47, 67

Power
E – Electric

Tool Style
A – Right Angle
P – Pistol
S – Straight

Max Output Torque (Nm)
Under 60 Nm, rounded up to the nearest 1 Nm.
Over 60 Nm, rounded to the nearest 5 Nm.

Tool Termination
A – Angle non-retractable
M – Angle medium duty
D – Inline non-retractable

Drive Type
2 – 1/4" Sq.Dr.
3 – 3/8" Sq.Dr.
4 – 1/2" Sq.Dr.
6 – 3/4" Sq.Dr.
8 – 1" Sq.Dr.
12 – 1 1/2" Sq.Dr.
Q – Quick change
QS – with depth sensor

Retainer
B Ball retainer

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Cleco® Instrumented Electric Nutrunners

Floating Spindle Electric Tools

Inline Floating Spindle 17ES & 47ES Series

Torque Range	Bolt Size
2 - 247 Nm	M5 - M16
1.5 - 182.2 Ft. Lbs.	#10 - 5/8”

Inline Floating Spindle 67ES Series

Torque Range	Bolt Size
13 - 2060 Nm	M10 - M36
10 - 1520 Ft. Lbs.	7/16” - 1 1/2”

Fastening Strategies
- Torque Control with Angle Monitoring
- Angle Control with Torque Monitoring
- Torque Control with Time Monitoring

- Smart Tool Technology
- DC Brushless Motor
- Resolver
- Light ring
- Reversible



Right Angle Floating Spindle 17EA, 47EA & 67EA Series

Torque Range	Bolt Size
3 - 255 Nm	M7 - M18
2.4 - 188.1 Ft. Lbs.	1/4” - 3/4”

Fastening Strategies
- Torque Control with Angle Monitoring
- Angle Control with Torque Monitoring
- Torque Control with Time Monitoring

- Smart Tool Technology
- DC Brushless Motor
- Resolver
- Light ring
- Reversible

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Model Number	Drive	Bolt Size Gr. 5 in.	Bolt Size Gr. 9.8 mm	Free Speed RPM	Torque Range ft. lbs	Torque Range Nm	Length in.	Length mm	Weight* lbs	Weight* kg	Side to Center in.	Side to Center mm
Inline Floating Spindle 17ES, 47ES & 67ES Series												
17ES06ZA	1/4	#10	M5	2600	1.5-4.4	2-6	15.5	394	3.0	1.4	0.91	23
17ES12ZA	1/4	1/4	M6	1200	2.2-8.9	3-12	16.0	406	3.2	1.5	0.91	23
17ES17ZA	1/4	5/16	M7	860	3.0-12.5	4-17	16.0	406	3.2	1.5	0.91	23
47ES12ZA	1/4	1/4	M6	2600	2.2-8.9	3-12	16.7	425	3.4	1.5	0.91	23
47ES221ZA(1)	1/4	5/16	M7	1490	3.7-16.2	5-22	22.0	559	5.8	2.6	0.92	23
47ES281ZA(1)	1/4	3/8	M10	1145	4.4-20.7	6-28	22.0	559	5.8	2.6	0.92	23
47ES401ZA(1)	1/4	3/8	M10	810	5.9-29.5	8-40	22.0	559	5.8	2.6	0.92	23
47ES602ZA	1/2	7/16	M10	570	8.9-42.0	12-57	24.4	620	8.4	3.8	1.10	28
47ES702ZA	1/2	7/16	M10	380	10.3-50.2	14-68	24.4	620	8.4	3.8	1.10	28
47ES802ZA	1/2	1/2	M12	300	12.5-60.5	17-82	26.7	678	9.6	4.4	1.22	31
47ES1152ZA	1/2	9/16	M12	215	18.4-84.8	25-115	26.7	678	9.6	4.4	1.22	31
47ES1502ZA	1/2	5/8	M14	165	22.1-110.6	30-150	26.7	678	9.6	4.4	1.22	31
47ES1653ZA	3/8	5/8	M14	150	24.3-121.7	33-165	28.6	726	14.6	6.6	1.57	40
47ES2503ZA	3/8	5/8	M16	100	36.1-182.2	49-247	28.6	726	14.6	6.6	1.57	40
67ES65Z4	1/2	7/16	M10	535	10-47	13-64	21.0	533	10.8	4.9	1.31	33
67ES105Z4	1/2	9/16	M12	330	15-77	21-104	21.0	533	10.8	4.9	1.31	33
67ES135Z4	1/2	9/16	M14	245	20-100	27-135	21.0	533	10.8	4.9	1.31	33
67ES190Z6	3/4	5/8	M16	165	28-140	38-190	22.0	559	15.6	7.1	1.31	33
67ES285Z6	3/4	3/4	M16	115	42-210	57-285	22.0	559	15.6	7.1	1.31	33
67ES385Z6	3/4	3/4	M18	83	57-285	77-386	22.0	559	15.6	7.1	1.31	33
67ES475Z6	3/4	7/8	M20	67	70-350	95-475	22.4	569	16.0	7.3	1.31	33
67ES610Z6	3/4	1	M22	50	90-450	122-610	22.4	569	16.0	7.3	1.31	33
67ES850Z8	1	1 1/8	M24	33	125-625	170-848	23.8	605	20.0	9.1	1.50	38
67ES1050Z8	1	1 1/4	M27	27	155-775	210-1050	23.8	605	20.0	9.1	1.50	38
67ES1670Z8	1	1 3/8	M30	17	246-1230	334-1668	23.8	605	20.0	9.1	1.50	38
67ES2060Z8	1	1 1/2	M36	14	304-1520	412-2060	23.8	605	20.0	9.1	1.50	38

* Weights are without tool cable. suspension bail, reaction bar or dead handle if so equipped.

GENERAL:
All tools must be used with Tightening Manager Electronic Controller.

STANDARD EQUIPMENT:
17ES & 47ES series: Suspension Bail. 67ES Series: Mounting plate.
All standard 17ES and 47ES tools have thru hole output.

EXTRA EQUIPMENT:
Std.Tool Cable 542778-XX, Swivel Cable 542780-XX, Extension Cable 542779-XX.

ADDITIONAL ACCESSORIES (Pages 41-49)

Model Number	Square Drive Size	Bolt Size Gr. 5 in.	Bolt Size Gr. 9.8 mm	Free Speed RPM	Torque Range ft. lbs	Torque Range Nm	Length in.	Length mm	Weight* lbs	Weight* kg	Side to Center in.	Side to Center mm
Right Angle Floating Spindle 17EA, 47EA & 67EA Series												
17EA16S131	3/8”	5/16	M6	810	2.4-11.8	3.2-16	16.0	406	4.4	2.00	0.55	14
17EA23S131	3/8”	5/16	M8	570	3.4-17.0	4.6-23	16.0	406	4.4	2.00	0.55	14
17EA30S131	3/8”	5/16	M8	440	4.4-22.1	6.0-30	16.0	406	4.4	2.00	0.55	14
47EA30S231	3/8”	5/16	M8	995	4.4-22.1	6.0-30	18.7	474	5.4	2.43	0.67	17
47EA39S231	3/8”	3/8	M8	760	5.8-28.8	7.8-39	18.7	474	5.4	2.43	0.67	17
47EA55S231	3/8”	7/16	M10	540	8.1-40.6	11-55	18.7	474	5.4	2.43	0.67	17
47EA43S341	1/2”	3/8	M10	695	6.3-31.7	8.6-43	20.0	509	6.0	2.74	0.87	22
47EA56S341	1/2”	7/16	M10	535	8.3-41.3	11-56	20.0	509	6.0	2.74	0.87	22
47EA80S341	1/2”	1/2	M12	380	11.8-59.0	16-80	20.0	509	6.0	2.74	0.87	22
47EA110S341	1/2”	9/16	M12	265	16.2-81.1	22-110	20.5	521	7.4	3.38	0.87	22
47EA135S461	3/4”	9/16	M14	180	19.9-99.6	27-135	20.6	522	8.9	4.03	1.06	27
47EA230S461	3/4”	5/8	M16	100	33.9-169.6	46-230	22.2	563	10.6	4.79	1.06	27
67EA150S461	3/4”	5/8	M14	210	22.1-110.6	30-150	25.8	655	12.9	5.90	1.03	26
67EA185S461	3/4”	5/8	M16	170	27.3-136.3	37-185	25.8	655	12.9	5.90	1.03	26
67EA210S461	3/4”	5/8	M16	155	31.0-154.8	42-210	25.8	655	12.9	5.90	1.03	26
67EA235S461	3/4”	3/4	M18	135	33.9-169.6	46-230	25.8	655	12.9	5.90	1.03	26
67EA255S461	3/4”	3/4	M18	115	40.6-188.1	55-255	25.8	655	12.9	5.90	1.03	26

* Weights are without mounting plate and tool cable.

GENERAL:
All tools must be used with Tightening Manager Electronic Controller.

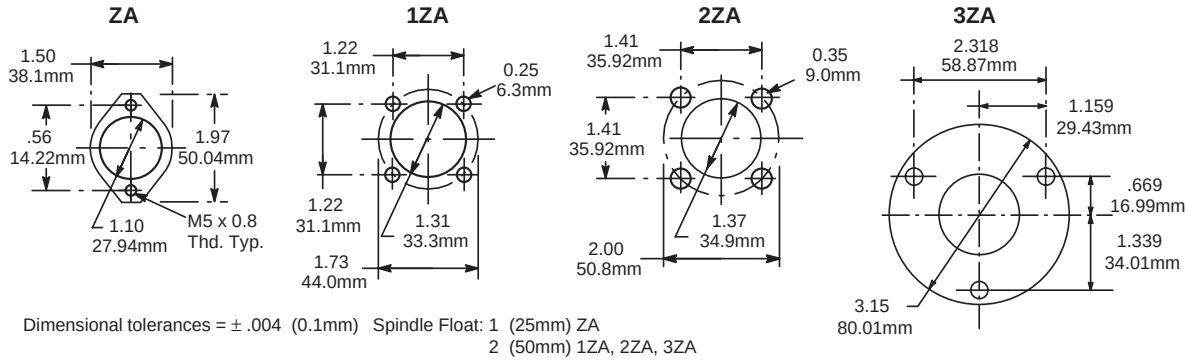
STANDARD EQUIPMENT:
Mounting plate.

EXTRA EQUIPMENT:
Std.Tool Cable 542778-XX, Swivel Cable 542780-XX, Extension Cable 542779-XX.

ADDITIONAL ACCESSORIES (Page 41-49)

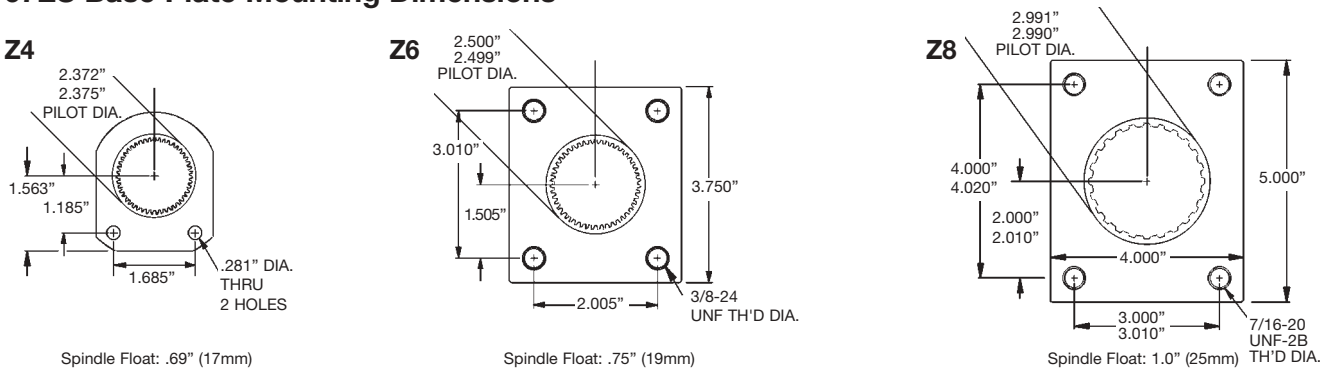
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B17ES & 47ES Base Plate Mounting Dimensions



Dimensional tolerances = ± .004 (0.1mm) Spindle Float: 1 (25mm) ZA
2 (50mm) 1ZA, 2ZA, 3ZA

67ES Base Plate Mounting Dimensions



Spindle Float: .69" (17mm)

Spindle Float: .75" (19mm)

Spindle Float: 1.0" (25mm)

Inline Floating Spindle Tool Nomenclature

XX	E	S	XX	XX

Motor
17
47
67

Electric

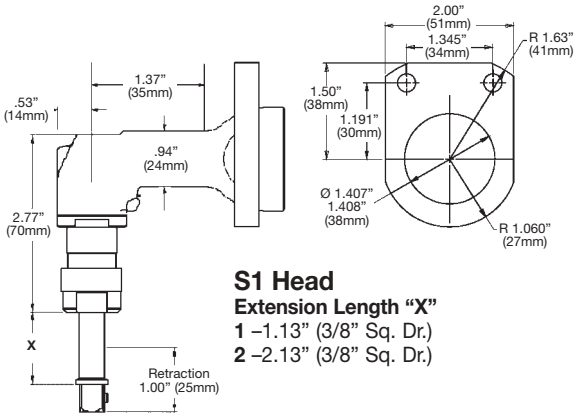
Tool Style
S – Inline

Max Output Torque
06 = 6 Nm
12 = 12 Nm
17 = 17 Nm
etc.

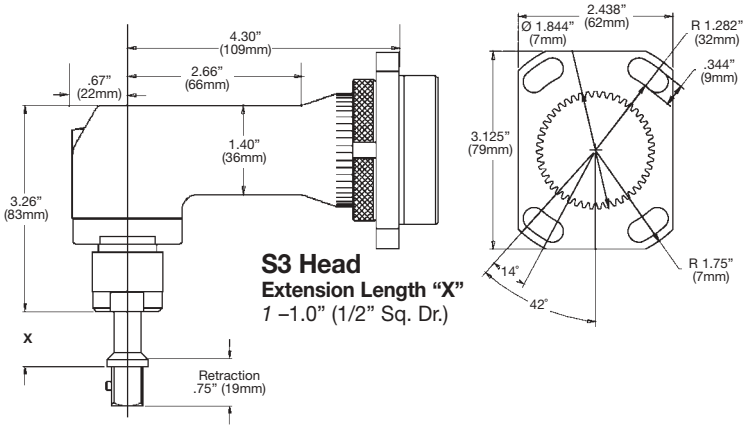
Attachment
ZA = 1/4" Square Drive Floating Spindle
1ZA = 3/8" Square Drive Floating Spindle
2ZA = 1/2" Square Drive Floating Spindle
3ZA = 3/4" Square Drive Floating Spindle
Z4 = 1/2" Square Drive Floating Spindle
Z6 = 3/4" Square Drive Floating Spindle
Z8 = 1" Square Drive Floating Spindle

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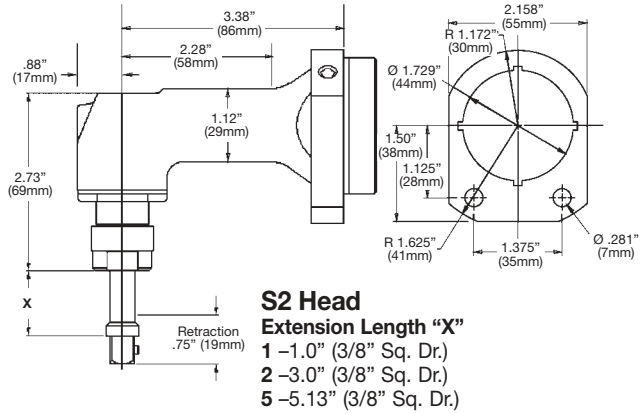
B17EA, 47EA & 67EA Floating Spindle Angle Heads



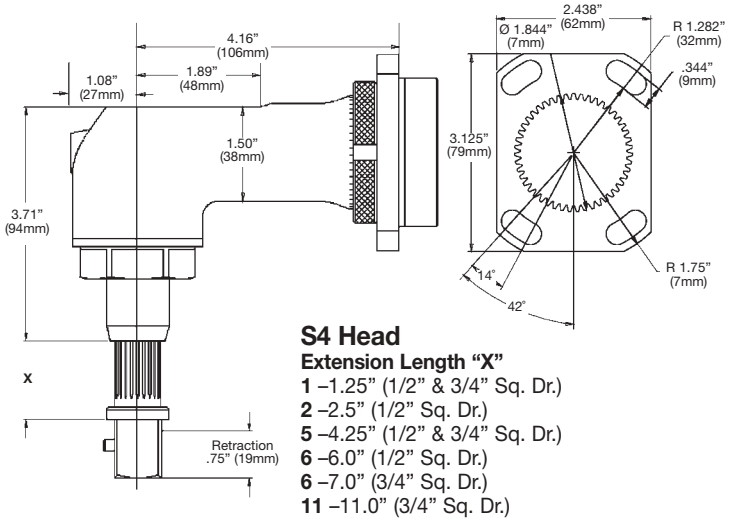
S1 Head
Extension Length "X"
1 –1.13" (3/8" Sq. Dr.)
2 –2.13" (3/8" Sq. Dr.)



S3 Head
Extension Length "X"
1 –1.0" (1/2" Sq. Dr.)



S2 Head
Extension Length "X"
1 –1.0" (3/8" Sq. Dr.)
2 –3.0" (3/8" Sq. Dr.)
5 –5.13" (3/8" Sq. Dr.)



S4 Head
Extension Length "X"
1 –1.25" (1/2" & 3/4" Sq. Dr.)
2 –2.5" (1/2" Sq. Dr.)
5 –4.25" (1/2" & 3/4" Sq. Dr.)
6 –6.0" (1/2" Sq. Dr.)
6 –7.0" (3/4" Sq. Dr.)
11 –11.0" (3/4" Sq. Dr.)

Right Angle Floating Spindle Tool Nomenclature

XX	E	A	XXX	XX	X	X

Motor
17
47
67

Electric

Tool Style
A – Right Angle

Max Output Torque
S1 Head – 16, 23, or 30 Nm
S2 Head – 30, 39 or 55 Nm
S3 Head – 43, 56, 80, or 110 Nm
S4 Head – 135 or 230 Nm (47 series)
S4 Head – 150, 185, 210, 235 or 255 Nm (67 series)

Tool Termination
S1 Sliding (Floating) Spindle
S2 Sliding (Floating) Spindle
S3 Sliding (Floating) Spindle
S4 Sliding (Floating) Spindle

Extension Length
1 –1.13" (S1), 1.00" (S2 & S3), 1.25" (S4)
2 –2.13" (S1), 3.00" (S2), 2.5" (S4 1/2" Dr.)
5 –5.13" (S2), 4.25" (S4)
6 – 6.0" (S4 1/2" Dr.), 7.0" (S4 3/4" Dr.)
11 – 11.0" (S4 3/4" Dr.)

Square Drive Size
3 – 3/8" (S1, S2) **4** – 1/2" (S3, S4) **6** – 3/4" (S4)

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Cleco® Instrumented Electric Nutrunners

Flush Socket Tools

17EA & 47EA Series

Torque Range
3 - 230 Nm
2.4 - 169.6 Ft. Lbs.

Bolt Size
M8 - M21
1/2" - 1 3/16"

Fastening Strategies
Torque Control with Angle Monitoring
Angle Control with Torque Monitoring
Torque Control with Time Monitoring

- Smart Tool Technology
- DC Brushless Motor
- Resolver
- Light ring
- Reversible



17EA16F1

Flush Socket Tool Nomenclature

XX	E	A	XXX	XX

Motor
17
47

Electric

Tool Style
A – Right Angle

Max Output Torque
<60 Nm, rounded up to the nearest 1 Nm. >60 Nm, rounded to the nearest 5 Nm.

Head Type
F1 Flush Socket (17) with 5701 Rotor head (16, 23, 30 Nm)
F2 Flush Socket (47) with 4328 Rotor head (30, 39, 55 Nm)
F3 Flush Socket (47) with 4801 Rotor head (43, 56, 80 & 110 Nm)
F4 Flush Socket (47) with 4805 Rotor head (135, 230 Nm)

Socket Nomenclature

XX	X	X

Output Type
0–Standard **1**–Fast Lead **2**–Magnetic

Extension Length
0 – Flush **4** – 1/2" **8** – 1"
2 – 1/4" **6** – 3/4"

Socket Size
EA - 1/4"
EC – 3/8
ED – 7/16
EE – 1/2
EF – 9/16
EH – 11/16
EJ – 13/16
MB – 8mm
MD – 10mm
ME – 11mm
MF – 12mm
MG – 13mm
MH – 14mm
MI – 15mm
MJ – 16mm (5/8")
MK – 17mm
ML – 18mm
MM – 19mm (3/4")
MN – 20mm
MO – 21mm

Drive Socket
- Specials

Max Hex Socket Size

MI, EF	F1 Head Type
MJ, 5/8"	F2 Head Type
MO, EJ	F3 Head Type
MR, 15/16"	F4 Head Type
00, ## (Specials)	All Head Types

Model Number	Free Speed	Torque Range		Length		Weight*		Head Height		Side to Center	
	RPM	ft. lbs	Nm	in.	mm	lbs	kg	in.	mm	in.	mm
17EA16F1	810	2.4-11.8	3.2-16	16.0	406	4.4	2.00	1.54	39	0.55	14
17EA30F1	440	4.4-22.1	6.0-30	16.0	406	4.4	2.00	1.54	39	0.55	14
47EA30F2	995	4.4-22.1	6.0-30	18.7	474	5.4	2.43	1.69	43	0.67	17
47EA39F2	760	5.8-28.8	7.8-39	18.7	474	5.4	2.43	1.69	43	0.67	17
47EA55F2	540	8.1-40.6	11-55	18.7	474	5.4	2.43	1.69	43	0.67	17
47EA43F3	695	6.3-31.7	8.6-43	20.0	509	6.0	2.74	2.32	59	0.87	22
47EA56F3	535	8.3-41.3	11-56	20.0	509	6.0	2.74	2.32	59	0.87	22
47EA80F3	380	11.8-59.0	16-80	20.0	509	6.0	2.74	2.32	59	0.87	22
47EA110F3	265	16.2-81.1	22-110	20.5	521	7.4	3.38	2.32	59	0.87	22
47EA135F4	180	19.9-99.6	27-135	20.6	522	8.9	4.03	2.40	61	1.06	27
47EA230F4	100	33.9-169.6	46-230	22.2	563	10.6	4.79	2.40	61	1.06	27

* Weights are without reaction bar and tool cable.

GENERAL:
All tools must be used with Tightening Manager Electronic Controller.

STANDARD EQUIPMENT:
Suspension Bail.

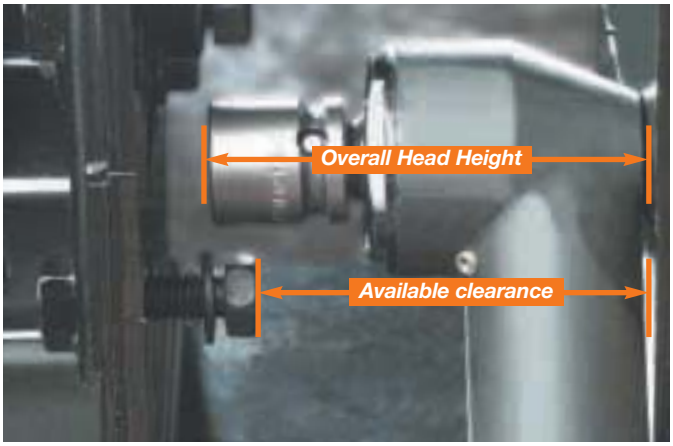
EXTRA EQUIPMENT:
Std.Tool Cable 542778-XX, Swivel Cable 542780-XX, Extension Cable 542779-XX.

ADDITIONAL ACCESSORIES (Page 41-49)

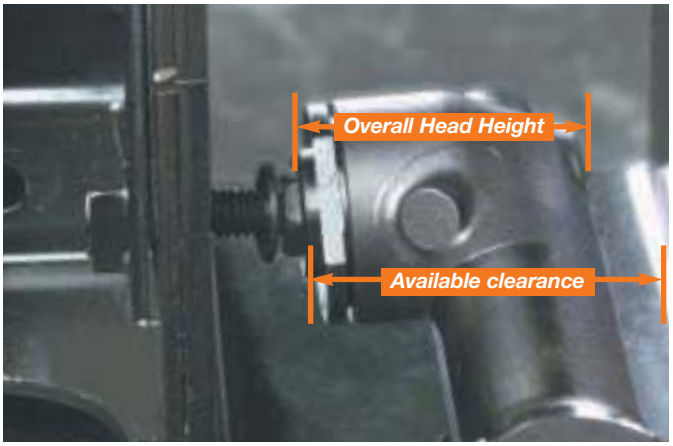
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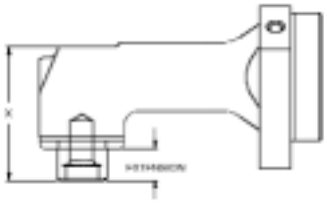
Tight clearance applications, once only accessible by the use of hand tools or crowfoot attachments, can now be tightened by the new family of Cleco Flush Socket Electric Tools at a speed that maximizes productivity. When combined with the Cleco Tightening Manager controller, torque repeatability is assured and documentation of the tightening cycle is provided.



Standard right angle head with square drive and separate socket will not fit on tight clearance applications. The overall head height is greater than the available clearance.



Flush socket tools have plenty of clearance to fit on the same application. Electric flush socket tools tighten with much higher accuracy than tools with crowfoot attachment. The overall head height is less than the available clearance.



X Dimension For Flush Socket

Head	Inches	Milimeters	Socket Size Range
F1	1.54	39	8–15mm
F2	1.69	43	10–15mm
F3	2.32	59	13–21mm
F4	2.4	61	17–21mm

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Cleco® Instrumented Electric Nutrunners

Crowfoot Electric Tools

Crowfoot 47EC Series

Torque Range
- **7 - 30 Nm**
- **5 - 22 Ft. Lbs.**

Fastening Strategies
- **Torque Control with Angle Monitoring**
- **Angle Control with Torque Monitoring**
- **Torque Control with Time Monitoring**

- Smart Tool Technology
- DC Brushless Motor
- Light ring
- Reversible



Crowfoot Tool Nomenclature

XX	E	C	XX	XX

Motor
17
47

Electric

Tool Style
C – Crowfoot

Max Output Torque
<60 Nm, rounded up to the nearest 1 Nm. >60 Nm, rounded to the nearest 5 Nm.

Head Type
C1 - 15° Crowfoot (17,47 series)
C3 - 15° Crowfoot (17,47 series)
D1 - 30° Crowfoot (17,47 series)
D3 - 30° Crowfoot (17,47 series)

Socket Nomenclature

XX	XX	X

Output Type
1 – Thru Hex

Extension Length
0 – Flush **4** – 1/2" **6** – 3/4"

Socket Size

EA - 1/4"	**MA** – 7mm
EC – 3/8	**MB** – 8mm
ED – 7/16	**MC** – 9mm
EE – 1/2	**MD** – 10mm
EF – 9/16	**ME** – 11mm
	MF – 12mm
	MG – 13mm
	MH – 14mm
	MI – 15mm

Model Number		Free Speed	Torque Range		Length		Weight**	
15° Head	30° Head	RPM	ft. lbs	Nm	in.	mm	lbs	kg
47EC30D1	47EC30D3	760	5-22	7-30	20.5	521	5.5	2.3

** Weights are without reaction bar and tool cable.

GENERAL:
All tools must be used with Tightening Manager Electronic Controller.

STANDARD EQUIPMENT:
Suspension Bail.

EXTRA EQUIPMENT:
Std.Tool Cable 542778-XX, Swivel Cable 542780-XX, Extension Cable 542779-XX.
Sockets: Select from table on page 35

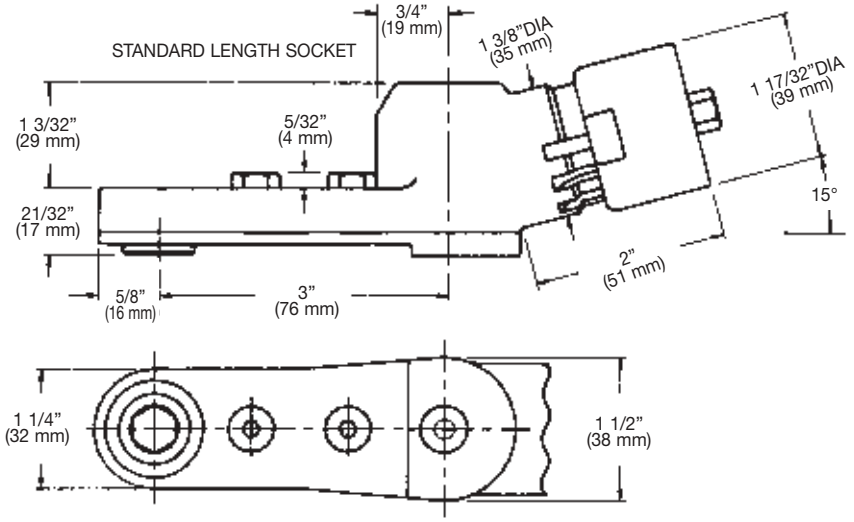
ADDITIONAL ACCESSORIES (Page 41-49)

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15° HEAD

Part No. 301071

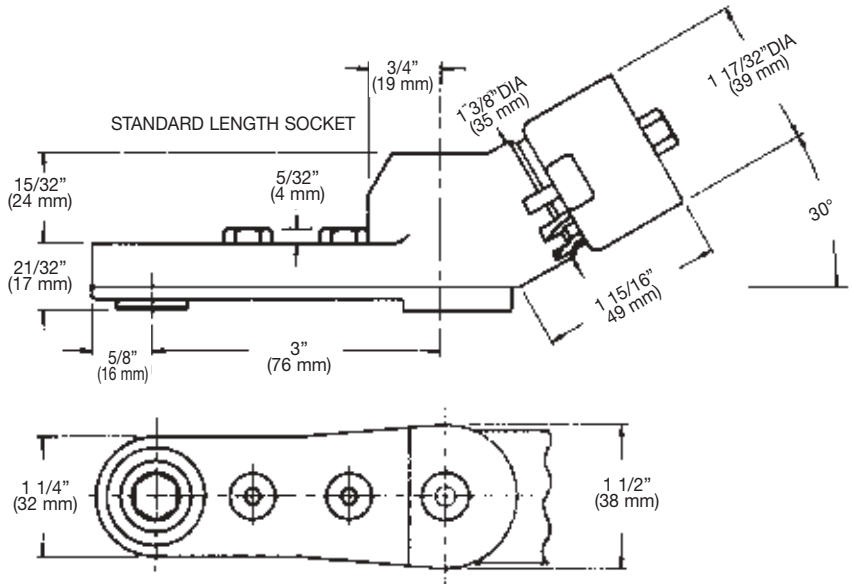
Maximum Recommended Torque: 22 ft. lb. (30 Nm)



30° HEAD

Part No. 301072

Maximum Recommended Torque: 22 ft. lb. (30 Nm)



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Cleco® Instrumented Electric Nutrunners

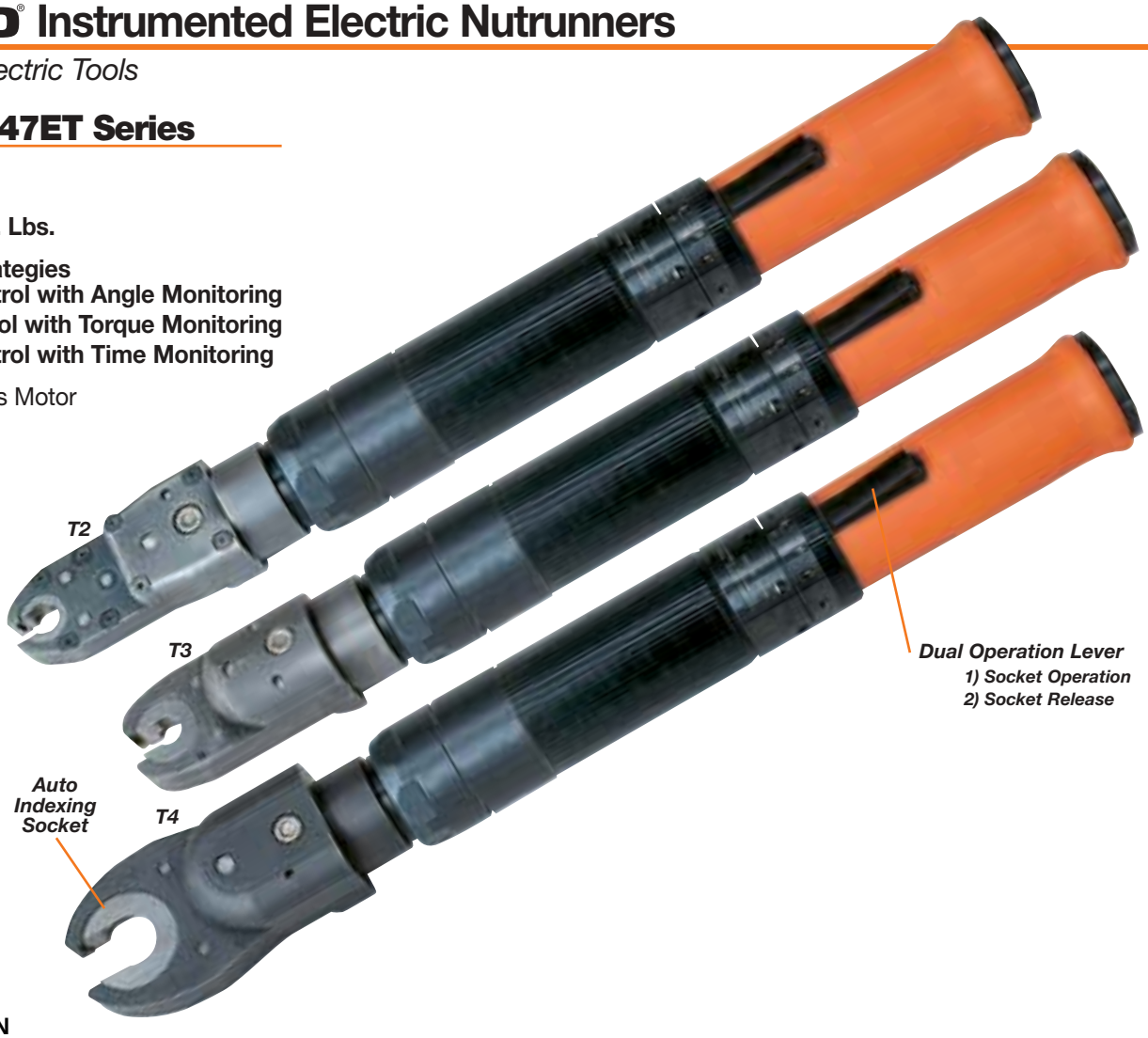
Tube Nut Electric Tools

Tube Nut 47ET Series

Torque Range
- **10 - 40 Nm**
- **7.4 - 29.5 Ft. Lbs.**

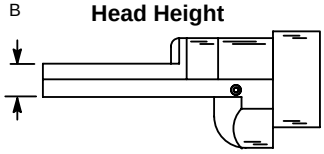
Fastening Strategies
- **Torque Control with Angle Monitoring**
- **Angle Control with Torque Monitoring**
- **Torque Control with Time Monitoring**

■ DC Brushless Motor

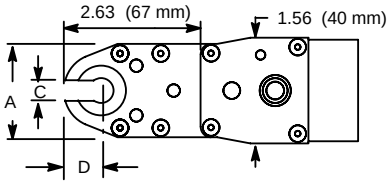


TERMINATION

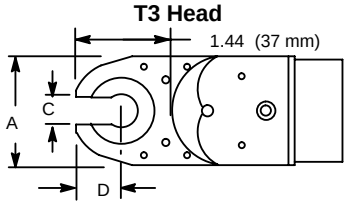
T2, T3 & T4 Head Height



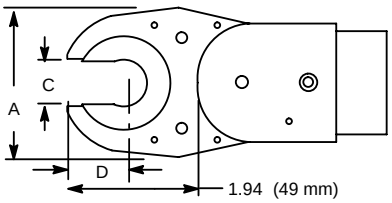
T2 Head



T3 Head



T4 Head



Model Number	Free Speed	Torque Range		Length		Weight*		"A" Width		"B" Blade Ht.		"C" Opening Width		"D" End/Center	
	rpm	Ft. Lbs.	Nm	In.	mm	lbs.	kg	In.	mm	In.	mm	In.	mm	In.	mm
Tube Nut															
47ET20T2	950	7.4-14.8	10-20	16.93	430	4.3	2.0	1.42	36	0.55	14	0.28	7	0.53	13
47ET30T3	680	11.1-22.1	15-30	16.63	422	4.4	2.0	1.65	42	0.59	15	0.51	13	0.73	19
47ET40T4	515	14.8-29.5	20-40	17.86	454	5.1	2.3	2.36	60	0.59	15	0.71	18	0.93	24

GENERAL:
All tools must be used with TM-111 Series Electronic Controller.

STANDARD EQUIPMENT:
Suspension Bail.

EXTRA EQUIPMENT:
Swivel Bail 541715-2
Std. Tool Cable 542778-XX, Swivel Cable 542780-XX, Extension Cable 542779-XX.

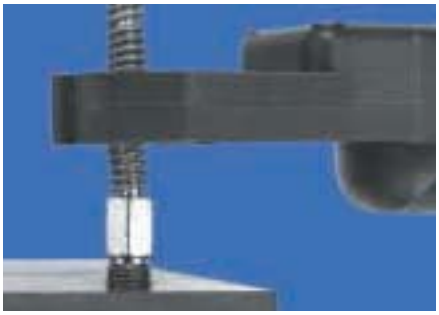
ADDITIONAL ACCESSORIES (Pages 41-49)

***NOTE:** Weights are without tool cable, suspension bail, reaction bar or dead handle if so equipped.

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Tube and hose applications, once only accessible by the use of hand tools, can now be tightened by the new family of Cleco Tube Nut Wrenches at a speed that maximizes productivity. When combined with the Cleco Tightening Manager controller, torque repeatability is assured and documentation of the fastening cycle is provided.

The productivity of most assembly line operations is greatly increased with the use of our dual operation lever and auto indexing socket. The tool alternates the direction of rotation each time the lever is actuated. When rotating in reverse, the socket will stop at the open position. Slide the tool onto the fastener and press the lever to run the fastener down. To free the tool from the work, slide the tool off the tightened fastener and press the lever to release the socket back to the open position.



The 47ET tube nut wrench alternates the direction of rotation each time the lever is actuated. When rotating in reverse, the socket will stop at the open position.



Slide the tool onto the fastener and press the lever to run the fastener down.



To free the tool from the work, slide the tool off the tightened fastener and press the lever to release the socket back to the open position.

Tube Nut Tool Nomenclature

XX	E	T	XX	XX

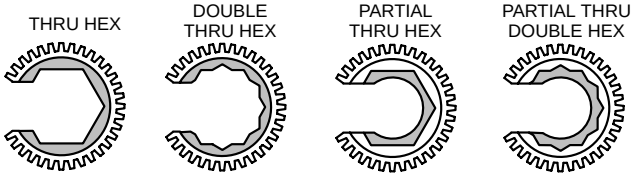
Motor
47

Electric

Tool Style
T – Tube Nut

Max Output Torque
<60 Nm, rounded up to the nearest 1 Nm. >60 Nm, rounded to the nearest 5 Nm.

Head Type
T2 - 20 Nm
T3 - 30 Nm
T4 - 40 Nm



Socket Nomenclature

XX	XX	X

Output Type
0 -Partial Thru Hex
1 -Thru Hex
2 -Double Thru Hex
3 -Partial Thru Double Hex

Extension Length
0 – Flush
2 – 1/4"
4 – 1/2"
6 – 3/4"
8 – 1"

Maximum Hex Socket Size

MG, EE	T2 Head Type
MM, 3/4"	T3 Head Type
MU, 1 1/16"	T4 Head Type
00, ## (Specials)	All Head Types

Socket Sizes

EA - 1/4"	**M5** – 5mm	**MK** – 17mm
EC – 3/8	**M6** – 6mm	**ML** – 18mm
ED – 7/16	**MA** – 7mm	**MM** – 19mm (3/4")
EE – 1/2	**MB** – 8mm	**MN** – 20mm
EF – 9/16	**MD** – 10mm	**MO** – 21mm
EH – 11/16	**ME** – 11mm	**MP** – 22mm
EJ – 13/16	**MF** – 12mm	**MQ** – 23mm
EK – 7/8	**MG** – 13mm	**MR** – 24mm (15/16")
EM – 1	**MH** – 14mm	**MS** – 25mm
EO – 1 1/8	**MI** – 15mm	**MT** – 26mm
EP – 1 3/16	**MJ** – 16mm (5/8")	**MU** – 27mm (1 1/16")
EQ – 1 1/4		

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47EA Series

Torque Range
8.6 - 230 Nm
6.3 - 169.6 Ft. Lbs.

Fastening Strategies
Torque Control with Angle Monitoring
Angle Control with Torque Monitoring
Torque Control with Time Monitoring

- Smart Tool Technology
- DC Brushless Motor
- Resolver
- Light ring
- Reversible

Sometimes called shock absorber tools, "Hold-n-Drive" bolts are used with these tools in automotive and truck frame applications. They reduce assembly handling to one person working from one side of the workpiece. The bolt is held stationary by the tool while the nut is tightened from the same side. This also eliminates reaction bars since the bolt absorbs the torque.

Hold-n-Drive tool approaches the application.



Hold socket fits over bolt and prevents it from rotating.



Tool is pushed down and started until drive socket engages and tightens nut.

Model Number	Free Speed	Torque Range		Length		Weight*		Head Height		Side to Center	
	RPM	ft. lbs	Nm	in.	mm	lbs	kg	in.	mm	in.	mm
47EA43H3	695	6.3 – 31.7	8.6 – 43	20.2	512	7.9	3.60	2.40	61	1.06	27
47EA56H3	535	8.3 – 41.3	11.2 – 56	20.2	512	7.9	3.60	2.40	61	1.06	27
47EA80H3	380	9.0 – 11.8	16 – 80	20.2	512	7.9	3.60	2.40	61	1.06	27
47EA110H3	265	16.2 – 81.1	22 – 110	20.6	522	8.9	4.03	2.40	61	1.06	27
47EA135H3	180	19.9 – 99.6	27 – 135	20.6	522	8.9	4.03	2.40	61	1.06	27
47EA230H3	100	33.9 – 169.6	46 – 230	22.2	563	10.6	4.79	2.40	61	1.06	27

* Weights are without reaction bar and tool cable.
GENERAL:
All tools must be used with Tightening Manager Electronic Controller.
STANDARD EQUIPMENT:
Suspension Bail.Retraction 1" standard for hold kit.

EXTRA EQUIPMENT:
Std.Tool Cable 542778-XX, Swivel Cable 542780-XX, Extension Cable 542779-XX.
ADDITIONAL ACCESSORIES (Page 41-49)

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Hold-n-Drive Tool Nomenclature

XX	E	A	XXX	H	X

Motor
47

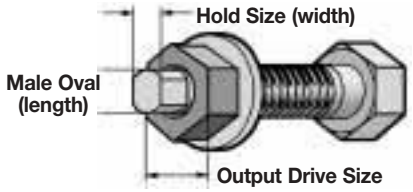
Electric

Tool Style
A – Angle

Max Output Torque
<60 Nm, rounded up to the nearest 1 Nm. >60 Nm, rounded to the nearest 5 Nm.

Head Type
H - Hold-n-Drive

Retainer Shaft
3 - 3 1/2”
4 - 4”
5 - 5 3/8”
6 - 5 7/8”
9 - 9 1/2”



Socket Nomenclature

XX	X	XX	X

Oval Dimension (length)
If socket style =0 (female oval)

Hold Socket (width)
EA thru **EF**
M5 thru **MJ**
Torx Drive (30, 40, 45)
Oval Tang Holders
00 No socket
Specials

Socket Style
F – Female Hex
M – Male Hex
T – Torx
O – Female Oval

Maximum Hex Drive Socket

MG, EE	T2 Head Type
MM, 3/4”	T3 Head Type
MU, 1 1/16”	T4 Head Type
00, ## (Specials)	All Head Types

Socket Sizes

EA - 1/4”	**M5** – 5mm	**MK** – 17mm
EC – 3/8	**M6** – 6mm	**ML** – 18mm
ED – 7/16	**MA** – 7mm	**MM** – 19mm (3/4”)
EE – 1/2	**MB** – 8mm	**MN** – 20mm
EF – 9/16	**MD** – 10mm	**MO** – 21mm
EH – 11/16	**ME** – 11mm	**MP** – 22mm
EJ – 13/16	**MF** – 12mm	**MQ** – 23mm
EK – 7/8	**MG** – 13mm	**MR** – 24mm (15/16”)
EM – 1	**MH** – 14mm	**MS** – 25mm
EO – 1 1/8	**MI** – 15mm	**MT** – 26mm
EP – 1 3/16	**MJ** – 16mm (5/8”)	**MU** – 27mm (1 1/16”)
EQ – 1 1/4		

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Introducing The World's First Intelligent Cordless





Where operational flexibility is essential to your application needs, Cleco cordless tools offer the productivity, durability and traceability to get the job done. Cleco cordless tools have unique speed, angle, torque control and monitoring characteristics. Torque and angle traceability are accomplished using proven resolver and transducer technologies. Programmable speed control allows you to optimize the speed of the tool. Infrared (IrDA) data transmission from the tool-to-tool holder provides fast and accurate plant level line control and communication.

The right angle and pistol grip tools incorporate leading features from our wide range of assembly tools. High performance brushless motors are used to produce increased speed and torque characteristics while improving torque accuracy due to lower rotor inertia. Cleco cordless tools have a long service life and high torque accuracy with leading edge Ni-MH battery technology.

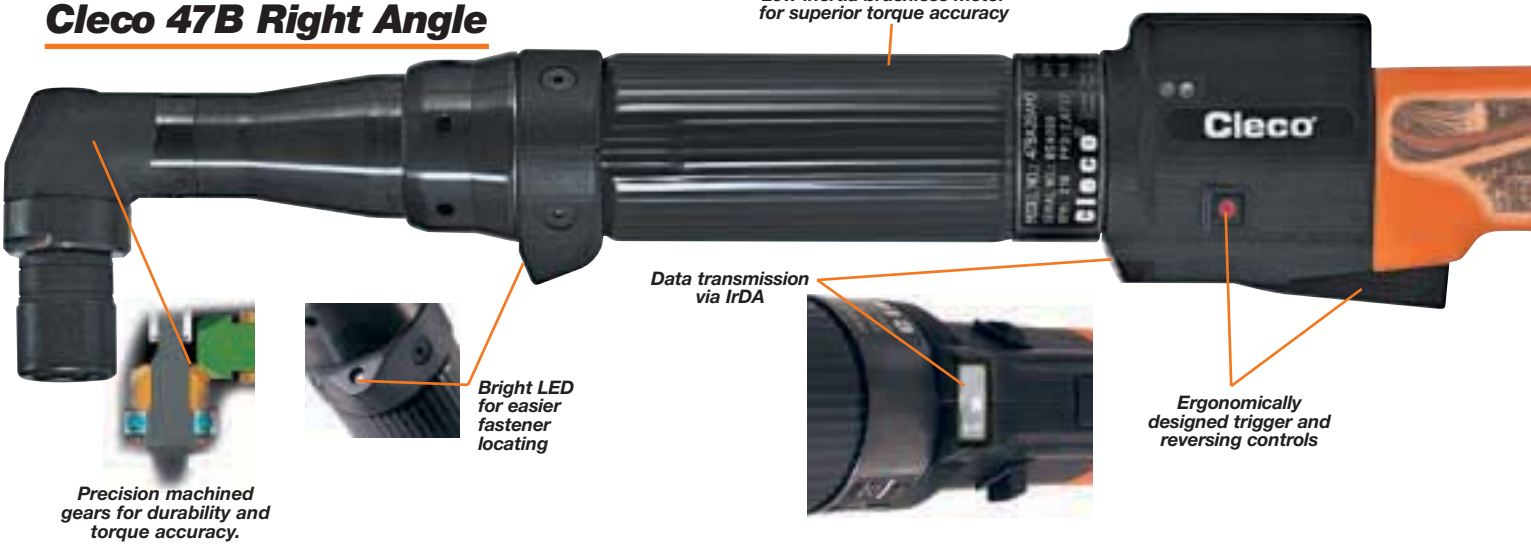
When using a single tool to perform multiple applications, the auto-linking feature automatically changes parameter sets from application to application through programmable batch counting. The 512-cycle tool memory buffer provides cordless versatility, convenience, flexibility and productivity in a single tool.

Cordless Applications

- Interior & Exterior trim
- Center console
- Roof systems
- Steering assembly
- Seat assembly
- Seat belt
- Seat to floor
- Front and side airbag
- Door assembly
- Dash board assembly
- Instrumentation
- Engine and trunk compartments
- Exterior lighting
- Repair stations
- Assembly build cells
- Cargo door latch
- Final dress
- Repair bays



Cleco 47B Right Angle



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Power Tools With Speed, Angle & Torque Control.



Features

- Low inertia brushless motors
- Resolver speed and angle control
- Transducer torque traceability
- IrDA uplink communications
- Live torque and angle tool LCD
- OK / NOK tool LEDs
- Tool LEDs illuminate dark applications
- Supports 255 parameter sets
- 6 Programmable tightening stages
- 6 Programmable speed stages
- Reverse programming
- Cordless error proofing
- CE certification
- Comfortable soft grip handle
- Easy to service
- No tool cables required
- Common 18V Ni-MH battery
- Up to 1,000 tightenings per charge

Cleco®





Cleco 17B Pistol Grip

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Cleco® Instrumented Electric Nutrunners

17B & 47B Industrial Cordless Tools & Accessories

17B Battery Pistol Grip Tool – 18VDC

Model Number*	Output Drive Size	Bolt Size Gr. 5 in.	Bolt Size Gr. 9.8 mm	Free Speed RPM	Torque Range ft. lbs	Torque Range Nm	Length in.	Length mm	Weight** lbs.	Weight** kg	Side to Center in.	Side to Center mm
17BP13Q	1/4" Hex	1/4	M6	465	2.2-9.6	3-13	8.44	214.5	4.3	1.94	0.84	21
17BP09Q	1/4" Hex	1/4	M5	650	2.2-6.6	3-9	8.44	214.5	4.3	1.94	0.84	21
17BP07Q	1/4" Hex	#10	M5	860	2.2-5.2	3-7	8.44	214.5	4.3	1.94	0.84	21
17BP05Q	1/4" Hex	#10	M4	1000	2.2-3.7	3-5	8.44	214.5	4.3	1.94	0.84	21

* Q = Quick change without depth sensor
QS = Add "S" after model number for quick change with depth sensor.
** Weights include battery (1.4lbs./0.65kg).

GENERAL:
All tools must be used with TMEB Controller.

STANDARD EQUIPMENT:
One 18V NIMH battery

47B Battery Right Angle Tool – 18VDC

Model Number*	Output Drive Size	Bolt Size Gr. 5 in.	Bolt Size Gr. 9.8 mm	Free Speed RPM	Torque Range ft. lbs	Torque Range Nm	Length in.	Length mm	Weight** lbs.	Weight** kg	Side to Center in.	Side to Center mm
47BA28AM3	3/8" Sq.	5/16	M8	215	7.4-20.7	10-28	20.79	528	5.7	2.6	0.59	15
47BA21AM3	3/8" Sq.	1/4	M6	305	5.9-15.5	8-21	20.79	528	5.7	2.6	0.59	15
47BA15AM3	3/8" Sq.	1/4	M6	400	4.1-11.1	5.5-15	20.79	528	5.7	2.6	0.59	15

* Q = Quick change without depth sensor
QS = Add "S" after model number for quick change with depth sensor.
** Weights include battery (1.4lbs./0.65kg).

GENERAL:
All tools must be used with TMEB Controller.

STANDARD EQUIPMENT:
One 18V NIMH battery

TMEB 2-Channel Controllers

2-Channel Model Number 115VAC	2-Channel Model Number 230VAC	Language	Features
TMEB-120-15-U	TMEB-120-30-U	English	Standard*
TMEB-120-15-U-EN	TMEB-120-30-U-EN	English	Ethernet
TMEB-120-15-D	TMEB-120-30-D	German	Standard*
TMEB-120-15-D-EN	TMEB-120-30-D-EN	German	Ethernet
TMEB-120-15-S	TMEB-120-30-S	Spanish	Standard*
TMEB-120-15-S-EN	TMEB-120-30-S-EN	Spanish	Ethernet
TMEB-120-15-P	TMEB-120-30-P	Portuguese	Standard*
TMEB-120-15-P-EN	TMEB-120-30-P-EN	Portuguese	Ethernet
TMEB-120-15-F	TMEB-120-30-F	French	Standard*
TMEB-120-15-F-EN	TMEB-120-30-F-EN	French	Ethernet

**3.5" floppy drive, (8) 24 volt I/O, Ethernet, 2 serial connectors, parallel printer connector, ps/2 keyboard connector. Weight: TMEB-120 – 55.9 lbs. (25.4 kg)*

Tool Holders

Part No.	Description
935144	Pistol tool holder w/infrared interface and 2 foot cable
935290	Angle tool holder w/infrared interface and 2 foot cable



Tool Holder Extension Cables

Part No.	Description
935154	9' (3m) extension cable
935155	19.5' (6m) extension cable
935157	33' (10m) extension cable

Battery

Part No.	Description
935129	18V Ni-MH battery



Battery Chargers

115V Part No.	220V Part No.	Description
935151	935150	1-battery charger
935152	935143	4-battery charger



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Tool Cables

Tool	Extension	Swivel	Length Ft.	Length M
542778-1M*	542779-1M	542780-1M*	3	1
542778-2M*	542779-2M	542780-2M*	6	2
542778-3M	542779-3M	542780-3M	9	3
542778-6M	542779-6M	542780-6M	19.5	6
542778-8M	542779-8M	542780-8M	26	8
542778-10M	542779-10M	542780-10M	33	10
542778-15M	542779-15M	542780-15M	49	15
	542779-20M		66	20
	542779-25M		82	25
	542779-30M		98	30
	542779-40M		131	40
542778-50M	542779-50M	542780-50M	164	50

*Must be used with 542779 extension cable.

Swivel cable rotates 330° to absorb constant twisting and turning.



SWIVEL CABLE

8 Position Remote Parameter Switch

Description	Part Number
Remote Parameter Switch *(with 25' integrated cable)*	542979
Remote Parameter Switch *(with 50' integrated cable)*	542979-50



Accessory Cables

TME to Input Accessories	Input Acc. to Input Acc.	TME to Synch Box	TME to 1 Spindle Annunciator	TME to 2 Spindle Annunciator	Synch Box to Input Accessories	Synch Box to Annunciators (2/more spindles)	Length Feet	Length Meters
542985-3	542986-3	576058-3	542989-3	543451-3	542987-3	542988-3	3	1
542985-9	542986-9	576058-9	542989-9	543451-9	542987-9	542988-9	9	3
542985-25	542986-25	576058-25	542989-25	543451-25	542987-25	542988-25	25	7.5
542985-50	542986-50	576058-50	542989-50	543451-50	542987-50	542988-50	50	15



ACCESSORY CABLE

Input Accessories

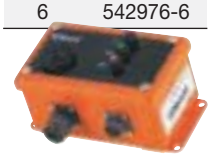
Torque Selector Switches

Torque Selector	Part Number
8 Select	542977-8
16 Select	542977-16
32 Select	542977-32
64 Select	542977-64



Annunciators

Spindles	Part Number
1	542976-1
2	542976-2
3	542976-3
4	542976-4
5	542976-5
6	542976-6



Start/Stop Switches

Description	Part Number
Start Box	542972
Stop Box	542973
Start/Stop Box	542974
Start/Stop/Reverse	542975



Socket Trays

Part No.	Description
542978-4	Four position w/10m cable
542978-8	Eight position w/10m cable

Notes: Up to 16 linked 4 position trays maximum. Minimum socket O.D. 1". Maximum O.D. 2.25".



Patch Cables

Connects Ethernet Switches to TME or PC

Part Number	Length Feet	Length Meters
543445-7	7	2
543445-50	50	15
543445-100	100	30

Synch Boxes

Spindles	Part No.
2	576060-2
3	576060-3
4	576060-4
5	576060-5
6	576060-6



Socket Posts

For use with 542978-4 & 542978-8 socket trays.

Part Number	Socket Post Size
9924-9181	.550/.540
9924-9169	1.062/1.052
9924-9165	.590/.580
9924-9164	.945/.935
9924-9163	.827/.817
9924-9162	.709/.699
9924-9161	.625/.615
9924-9160	.437/.432
9924-9159	.812/.802
9924-9158	.687/.677
9924-9157	.875/.865
9924-9156	1.000/.990
9924-9148	1.125/1.115
9924-9147	.938/.928
9924-9104	.750/.740
9924-9103	.669/.659
9924-9102	.562/.552
9924-9101	.500/.490

Note: Select socket post size within tolerance of socket used.

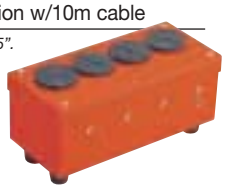
Ethernet Switches

Part Number	Ports Total	Ports In	Ports Out	Approx. Dimensions Inches	Approx. Dimensions mm	Approx. Weight Lbs.	Approx. Weight Kg
543444-8	8	1	7	6.5x4.5x1.5	160x110x35	0.6	0.3
543444-16	16	1	15	7x6x2.5	185x150x65	1.1	0.5
543444-24	24	1	23	10.5x7x2	270x170x50	3.0	1.3

Socket Trays

Part No.	Description
960645	Four position w/10m cable
960646	Eight position w/10m cable

Maximum socket diameter 1.125".



Replacement Inserts

Part Number
S970716



For use with 960645 & 960646 socket trays.

Lockout Washer

For use with 542978-4 & 542978-8 socket trays.

Part Number	
99248150	*Note: Vacant position lockout washer*

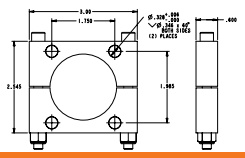
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Instrumented Electric Nutrunners

Accessories



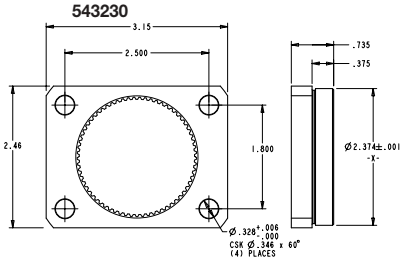
543235



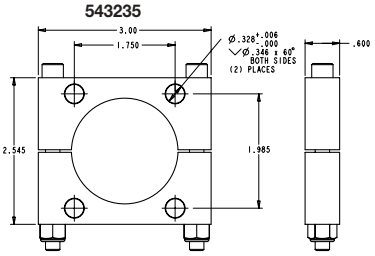


Tool Type	Model Number	Cover	Swivel Bail	Mounting Plate	Extension Kit
Right Angle	17EA08AL2	205832	541715-2	------	------
	17EA…AM3	205834	541715-2	------	------
	47EA…AM3/4	543070	541715-2	543235	542428
	47EA…AH4	543070	541715	543230	535833
	47EA135MH4	543071	541715	543230	535833
	47EA…AX6	205838	541715	543232	541860
	67EA…AL6	205838	35007004	49097101 (included with tool)	48316033
	67EA…AM6	------	48A17006	45017152 (included with tool)	------
Flush Socket	17EA…F1…	------	541715-2	57217101 (requires 57218103 screw)	------
	47EA…F2…	------	541715-2	43287131	------
	47EA…F3…	------	541715-2	49097101(requires 49098103 locknut)	------
	47EA…F4…	205838	541715	49097101(requires 49098103 locknut)	48316033
Hold-N-Drive	47EA …H…over 100NM	205838	541715	49097101(requires 49098103 locknut)	48316033
	47EA …H…under 100NM	205838	541715-2	49097101(requires 49098103 locknut)	48316033

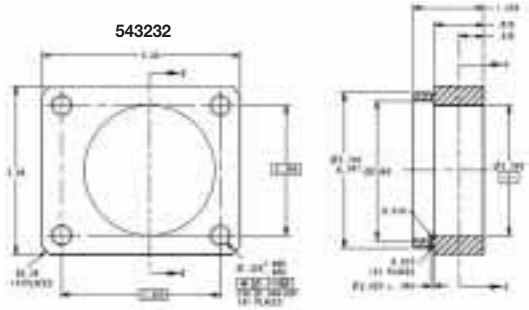
543230



543235



543232



Lever Extension Kits

Description	Part Number
Lever Extension Kit (non-swivel)	541757
Lever Extension Kit (swivel)	543414

Note: Models for standard tool cable (non-swivel) and swivel cable.



Test Fixture

Part Number
536185

Medium to Hard Torque
Belleville Washer Test Fixture may be clamped in a vise and used to test tools (10 in. LBS. – 100 Ft. Lbs., 1.13Nm – 135.6Nm). Washers may arranged stacked in pairs for "soft" make-up or arranged all cupped the same way for "hard" make-up.



Tool & Cable Tester

Part Number	Description
961024	Tool & cable tester tool memory programming
542991	Tool & cable tester



Direct Connect Cables

Connects TME or TMEM direct to PC

Part Number		Length Ft.	Length M
543446-7	Ethernet crossover cable	7	2
543490-10	Serial cable	10	3

Special Adapter Cable



Description	Part No.
Rotor Adapter Cable	542916-1

Phoenix Connectors

Part Number	Description
542892	Input Phoenix connector
542893	Output Phoenix connector
939348	Hood/strain TME I/O cable relief

Video Cable

Part Number	Description
542947-80	Video cable

For TME100 with "J" in serial number.

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Ergonomic Tool Balancers

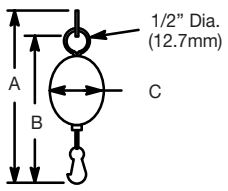
Capacity:
0.5 – 20.5 kg
1.0 – 45 Lbs

- **External tension Adjustment**
- **360° Swivel**
- **Retracting In-Line Cable**

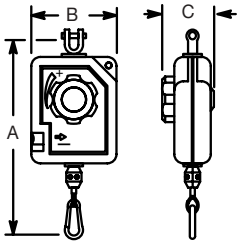
Model Number	Lock Feature	Capacity		"A"		"B"		"C"		Weight	
		lbs.	kg	in	mm	in	mm	in.	mm	lbs.	kg
Light Duty – 4.6 ft. (1.4m) Cable Travel											
PL-12A	–	12.0-1.0	5.5-0.5	6.8	171	5.1	130	2.3	58	–	–
Light Duty – 5.0 ft. (1.5m) Cable Travel											
200427	–	2.0-0	.9-0	10.9	277	4.4	112	1.6	41	1.3	0.6
200428	–	4.0-2.0	1.8-.9	10.9	277	4.4	112	1.6	41	1.3	0.6
200429	–	5.0-3.0	2.3-1.4	10.9	277	4.4	112	1.6	41	1.3	0.6
Light Duty – 5.2 ft. (1.6m) Cable Travel											
BL-2A	–	2.0-1.0	0.9-0.5	10.4	263	4.0	102	2.2	56	1.1	0.5
BL-4A	–	4.0-20	1.8-0.9	10.4	263	4.0	102	2.2	56	1.1	0.5
Light Duty – 6.7 ft. (2.0m) Cable Travel											
BL-6A	–	6.0-4.0	2.7-1.8	12.9	327	5.5	140	3.1	79	3.3	1.5
BLL-6A	Ratchet	6.0-4.0	2.7-1.8	12.9	327	5.5	140	3.1	79	3.3	1.5
BL-8A	–	8.0-6.0	3.6-2.7	12.9	327	5.5	140	3.1	79	3.3	1.5
BLL-8A	Ratchet	8.0-6.0	3.6-2.7	12.9	327	5.5	140	3.1	79	3.3	1.5
Medium Duty – 6.6ft. (2.0m) Cable Travel											
BM-13A	Automatic	13-9.0	5.9-4.1	13.8	350	6.9	175	4.5	114	9.0	4.1
BML-13A	Automatic/Ratchet	13-9.0	5.9-4.1	13.8	350	6.9	175	4.5	114	9.0	4.1
BM-18A	Automatic	18-13	8.2-5.9	13.8	350	6.9	175	4.5	114	9.0	4.1
Medium Duty – 6.0ft. (1.8m) Cable Travel											
BM-25A	Automatic	25-18	11.4-8.2	20.7	527	7.8	197	6.6	169	19	8.6
BM-35A	Automatic	35-25	15.9-11.4	20.7	527	7.8	197	6.6	169	19	8.6
BM-45A	Automatic	45-35	20.5-15.9	20.7	527	7.8	197	6.6	169	19	8.6

*4.9 ft. cable travel

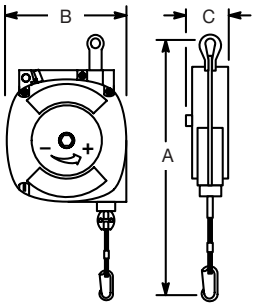
LIGHT DUTY (PL SERIES)



LIGHT DUTY (BL SERIES)



MEDIUM & HEAVY DUTY



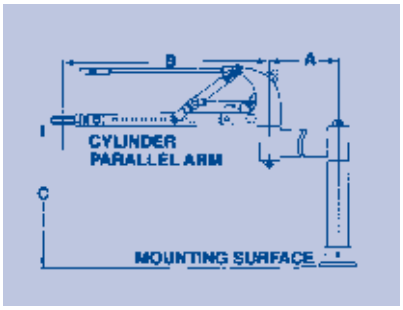
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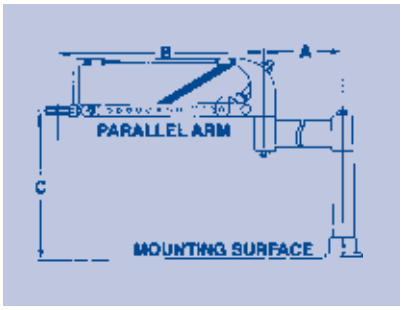
Instrumented Electric Nutrunners

Balance Arms

Cleco®

- **Ball bearing construction**
- **Post, wall, or adjustable height post mounting**
- **Single or parallel arms**







CPBA-18-AH

PBA-18

TOOLS NOT INCLUDED

Parallel Arms			Dimensions							
Model No.	Code No.		A		B		C		Post Height	
			in.	mm	in.	mm	in.	mm	in.	mm
Air Cylinder										
CPBA-18	520170		12	305	18	457	18	457	-	-
CPBA-30	520203		12	305	30	762	18	457	-	-
CPBA-12-AH	520178		12	305	12	305	-	-	30	762
CPBA-18-AH	520172		12	305	18	457	-	-	30	762
CPBA-30-AH	520215		12	305	30	762	-	-	30	762
CPBA-30-WM	520207		12	305	30	762	-	-	-	-
Spring										
PBA-12	520007		12	305	12	305	18	457	-	-
PBA-18	520010		12	305	18	457	18	457	-	-
PBA-24	520045		12	305	24	610	18	457	-	-
PBA-12-AH	520009		12	305	12	305	-	-	30	762
PBA-18-AH	520012		12	305	18	457	-	-	30	762
PBA-24-AH	520047		12	305	24	610	-	-	30	762
PBA-30-AH	520050		12	305	30	762	-	-	30	762
PBA-18-18-AH	520036		18	457	18	305	-	-	30	762
PBA-12-WM	520008		12	305	12	305	-	-	-	-

AH = Adjustable Height
WM = Wall Mounted
Tool weight capacity:
Air Cylinder: 10 lbs. (4.6 kg)
Spring: 5 lbs. (2.3 kg)

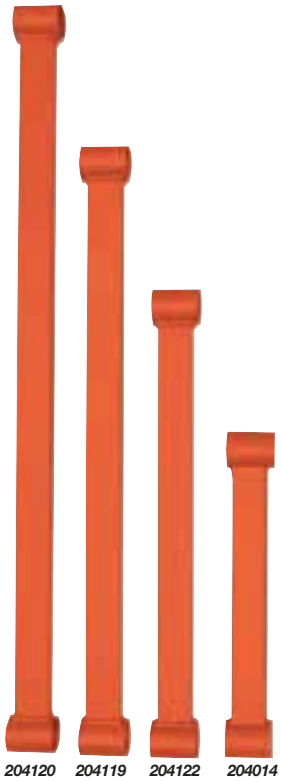
Torque capacity: 10 ft. lbs. (13.5 Nm)

STANDARD EQUIPMENT
Operating Instructions and Service Manual.
Regulator for Air Cylinders.

OPTIONAL EQUIPMENT
Additional accessories: See page 45.

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Articulating Arm Extensions



Part No.	Length (in.)
204014	12
204122	18
204119	24
204120	30

Conversion Kits for Cleco Screwdriver Balance Arms

To Convert Balance Arms		Part No.
From	To	
SBA-12	PBA-12*	521041
SBA-18	PBA-18*	521042
Spring	Cylinder	201606
SBA or PBA	SBA or PBA	
Standard Duty	Heavy Duty**	521060

* Conversion kits for -24 and -30 models are available upon request.
** Has four springs to support heavier tools or longer arms.

Tool Holders

Part Number	Description
301128	17/47 Pistol-Horiz. Tool Holder
301129	17/47 Pistol- Vert. Tool Holder
301130	17/47 Inline-Horiz. Tool Holder
301131	17/47 Inline-Vert. Tool Holder



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APEX®

Quality Fastener Tools

For more than half a century Apex has maintained the position of world leader in industrial fastening tools. Many power and insert bits, socket combinations and other drivers/adapters pioneered by Apex have today become industry standards, while Apex quality, service and selection give you unsurpassed value.



More Quality For Your Money

Apex quality starts with the selection of raw materials. Only carefully chosen, high grade tool steel is used to make Apex industrial fastener tools. Next, each tool is precision machined from solid bar stock to exacting standards of accuracy. You always get a snug, secure fit – a fit that is not possible from stamped tools.

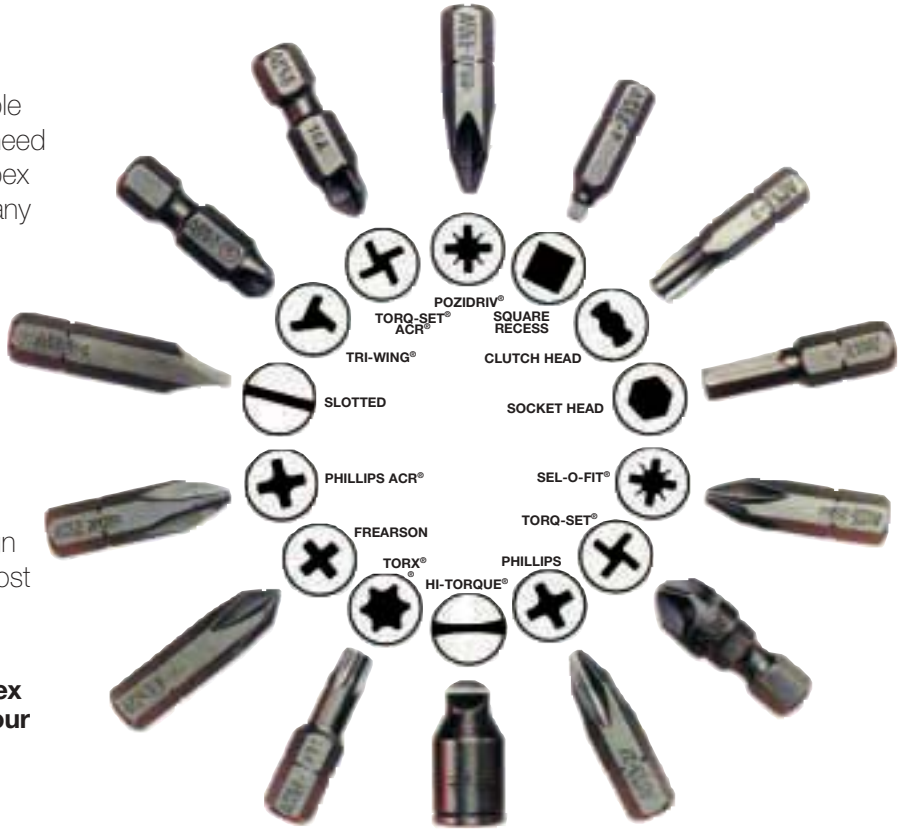
Finally, each Apex fastener tool is tempered with our exclusive heat treating process. During this step the degree of hardness is determined based upon the application.

Fast Delivery

All Apex standard catalog items are available off-the-shelf for immediate delivery. If you need special assistance with your order, your Apex manufacturer's representative can handle any questions your may have.

Special Orders

Apex offers the broadest selection of screw driver and nut runner tools available, from bits, sockets and universal wrenches to extensions, adapters and nut setters. If you have a special application, contact your Apex representative. We may have what you need in stock, or can design and produce special fastener tools for almost any application.



For a catalog of the complete line of Apex Quality fastener Tools, please contact your local Apex Distributor.

Registered Trade Marks: HI-TORQUE, Voi-Shan; TORX, Camcar Division of Textron; ACR, POZIDRIV, TORQ-SET and TRI-WING, Phillips International Co.; SUPADRIV, EIS (Fasteners) LTD.; SEL-O-FIT, FLIP-TIP, and Apex, Cooper Industries, Cooper Power Tools Division, Apex Operation.

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Insert Bits

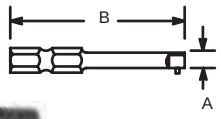
(1/4" hex for socket head cap screws and set screws)



Part Number	Hex Size In.	"A" In.	"A" mm	Cap Screw	Set Screw
185-00	1/16	1.00	25.4	1	5.6
185-0	5/64	1.00	25.4	2.3	8
185-1	3/32	1.00	25.4	4.5	10
185-9	7/64	1.00	25.4	6	—
185-2	1/8	1.00	25.4	8	1/4
185-10	9/64	1.00	25.4	8	—
185-3	5/32	1.31	33.3	10	5/16
185-4	3/16	1.31	33.3	1/4	3/8
185-5	7/32	1.31	33.3	—	7/16
185-6	1/4	1.31	33.3	5/16	1/2
185-7	5/16	1.25	31.8	3/8	5/8
185-8	3/8	1.25	31.8	7/16, 1/2	3/4

Square Drive Adapter

(1/4" hex drive sockets) Use with Quick Change and Bit & Finder Models, except as noted.





Part Number	"A" Sq. Drive	"B" In.	"B" mm	Bushing No.
EX250-2	1/4	2.00	50.8	–
EX250-3	1/4	3.00	76.2	847295*
EX250-4	1/4	4.00	101.6	–
EX250-6	1/4	6.00	152.4	–
EX370	3/8	1.63	41.3	–
EX370-3	3/8	3.00	76.2	847295*
EX500-2	1/2	2.00	50.8	–
EX500-3	1/2	3.00	76.2	–

* Note: Required for bit and finder models.

Hex Extensions



Part Number	Hex Drive (In.)	Type of Lock	Overall Length In.	Overall Length mm
Male Hex Drive with 1/2" Male Square				
EX-501-3	7/16	Pin	3	76
EX-501-4	7/16	Pin	4	102
EX-501-6	7/16	Pin	6	152
Male Hex Drive with 3/8" Male Square				
EX-371-3	7/16	Pin	3	76
EX-371-4	7/16	Pin	4	102
EX-371-6	7/16	Pin	6	152

Hex Drive Nutsetters



Part Number	Size (In.)	Overall Length (In.)	Socket Nose Diameter (In.)
7/16" 6 Point			
6N-1416-3	1/2	3	13/16
6N-1416-4	1/2	4	13/16
6N-1418-3	9/16	3	7/8
6N-1418-4	9/16	4	7/8
6N-1420-3	5/8	3	1
6N-1420-6	5/8	6	1

Insert Bits

Used with Bit Holders
(all bits are 1.0" (25.4 mm) long)



Point Size	Part Number Phillips	Part Number Pozi-Drive	Wood Flat & Oval	Wood Round	Machine & Self-tapping Flat, Oval & Pan	Machine & Self-tapping Fillister	Machine & Self-tapping Truss	Machine & Self-tapping Binding
0	446-0	446-1P2D	0.1	0.1	0.1	0.1	0.1	0.1
1	HPL-1	440-1PZD	2-4	2-4	2-4	2-4	2-4	2-4
2	HPI-2	440-2PZD	5-8	5-10	5-10	5-10	6-10	5-10
3	HPI-3	440-3PZD	10-16	12-16	12-16	12-5/16	12-16	12-1/4

6 Point Sockets



Part No.	Hex Opening	Overall Length	Diameter Nose End	Diameter Drive End	Opening Depth
3/8" Square Drive Sockets, SAE					
3112	3/8	1-1/4	19/32	3/4	1/4
3114	7/16	1-1/2	11/16	3/4	9/32
3116	7/16	1/2	1-1/2	13/16	11/32
3118	7/16	9/16	1-1/2	7/8	7/16
1/2" Square Drive Sockets, SAE					
5112	3/8	1-1/2	5/8	15/16	1/4
5114	7/16	1-1/2	11/16	15/16	9/32
5116	1/2	1-1/2	13/16	15/16	11/32
5120	5/8	1-1/2	1	1	7/16
5122	11/16	1-1/2	1-1/8	1-1/8	7/16
5124	3/4	1-1/2	1-1/8	1-1/8	15/32
3/4" Square Drive Sockets, SAE					
7128	7/8	2	1-1/2	1-1/2	9/16
7132	1	2	1-5/8	1-5/8	5/8
7136	1-1/8	2-1/8	1-3/4	1-3/4	3/4
7140	1-1/4	2-1/8	2	1-3/4	13/16
7144	1-3/8	2-1/8	2-1/8	2-1/8	13/16
7148	1-1/2	2-1/4	2-1/4	2-1/8	1
1" Square Drive Sockets, SAE					
8132	1	2-1/8	1-5/8	2	13/16
8140	1-1/4	2-1/8	2-1/8	2-1/8	13/16
8144	1-3/8	2-1/8	2-1/8	2-1/8	13/16
8148	1-1/2	2-1/4	2-1/4	2-1/8	15/16
8156	1-3/4	2-3/8	2-5/8	2-5/8	11/16
8164	2	2-5/8	3	2-5/8	1-3/16
1-1/2" Square Drive Sockets, SAE					
9156	1-3/4	2-7/8	2-7/8	3	1-1/8
9160	1-7/8	3	3-1/8	3	1-1/4
9164	2	3-1/8	3-1/4	3-1/4	1-3/8
9172	2-1/4	3-1/4	3-3//8	3-1/4	1-1/2
3/8" Square Drive Sockets, Metric					
12mm13	12	38.1	19.1	19.1	7.2
14mm13	14	38.1	22.2	22.2	11.1
16mm13	16	38.1	23.8	23.8	11.1
1/2" Square Drive Sockets, Metric					
16mm15	16	38.1	25.4	25.4	11.1
18mm15	18	38.1	28.6	28.6	11.1
20mm15	20	38.1	31.7	31.7	11.9
22mm15	22	38.1	33.3	33.3	14.3
5/8" Square Drive Sockets, Metric					
24mm16	24	51	38.1	38.1	15.9
3/4" Square Drive Sockets, Metric					
28mm17	28	54	44.4	44.4	19.1
30mm17	30	54	47.6	44.4	19.1
32mm17	32	54	50.8	44.4	20.6
34mm17	34	54	54.0	54.0	20.6
36mm17	36	57	57.1	54.0	23.8

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Torque verification products for all your critical assembly applications



Utica products, ranging from torque screwdrivers, ratchets and dial wrenches to electronic torque analyzers offer high quality solutions for the many critical torque applications in today's assembly market. Utica products add value to the assembly process by enabling you to assess and control both critical joint values as well as the torque accuracy of production tools. Whether the electronic, automotive, aerospace or general industry, Utica provides a wide range of products for most any assembly application.



Quality

Our goal is to provide high quality torque tools that will maintain accuracy as long as possible. Each Utica tool is calibrated according to ASME B107.14M standards before leaving the plant, using test equipment traceable to NIST. Certification can be provided with each tool for a nominal charge. Cooper Power Tools manufacturing processes are ISO 9001 certified, which means that the Utica brand is manufactured to the highest standards.

Warranty

Torque products (excluding accessories) are warranted for:

Product – *One (1) year from date of purchase to be free of defects in materials and workmanship.*

Calibration – *Ninety (90) days from date of purchase.*

This warranty does not extend to any product, which has been altered or abused.

Ordering Information

Utica products are distributed world-wide. For a complete catalog or to locate your nearest Utica distributor, visit our website at ***www.cooperpowertools.com*** or ***www.uticatools.com.***

"Click" Type Torque Sensing Wrenches

- Torque accuracy is +/- 4% of setting right hand (clockwise) and +/- 6% of setting left hand (counterclockwise) within upper 80% of scale.
- Audible "click" and/or a few degrees of travel provide accurate torque verification.
- Ergonomic handle and slim, lightweight design reduces fatigue and facilitates use in confined work areas.

Ratchet Head ***(Nm Graduations)***

Model No.	Drive Size	Range (in.)	Graduation Nm	Length Nm	Length in.	Weight mm	Weight lb.
TCM-75R	3/8	15–75	.5	14.75	375	2.2	1.0

Ratchet Head ***(in.-lb. Graduations)***

Model No.	Drive Size	Range in.-lb.	Range Nm	Graduation in.-lb.	Graduation Nm	Length in.	Length mm	Weight lb.	Weight kg
TCI-150RA-3/8"	3/8	30–150	2.8–17.5	1.0	.113	9.5	242	0.9	0.4

Ratchet Head ***(ft.-lb. Graduations)***

Model No.	Drive Size	Range ft.-lb.	Range Nm	Graduation in.-lb.	Graduation Nm	Length in.	Length mm	Weight lb.	Weight kg
TCI-150FRN*	1/2	30–150	47–210	1.0	1.4	18.5	470	1.4	0.6

**DualScale Model: Either in.-lb./Nm graduations, or ft.-lb./Nm graduations.*



TCM-75R

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Dial Indicating Torque Wrenches

- Torque accuracy of +/- 4% Indicated Value (from 20% to 100% capacity) in either clockwise or counterclockwise direction
- Nickel-plated handle for improved durability
- Memory indicator remains at maximum torque achieved for accurate torque verification
- Slim drive for tight work areas



DA-16

Nm/in.-lb. Scale

Model No.	Drive Size (in.)	Range		Graduations		Weight	
		Nm	in.-lb	Nm	in.-lb	lb.	kg
DA-8	1/4	0–8.2	0–75	0.2	2.5	1.8	0.8
DA-16	3/8	0–16.5	0–150	0.5	2.5	1.9	0.9
DA-35	3/8	0–35.0	0–300	0.5	5.0	1.9	0.9
DA-70	3/8	0–70.0	0–600	1.0	10.0	2.0	0.9

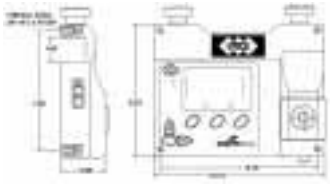
Nm/ft.-lb. Scale

Model No.	Drive Size (in.)	Range		Graduations		Weight	
		Nm	ft.-lb	Nm	ft.-lb	lb.	kg
DA-70F	3/8	0–70	0–50	1.0	1.0	2.0	0.9
DA-140F	1/2	0–140	0–100	2.0	2.0	3.3	1.5
DA-240F	1/2	0–240	0–175	5.0	5.0	6.7	3.0
DA-320F*x	1/2	0–320	0–250	10.0	5.0	5.5	2.5
DA-480F*x	3/4	0–480	0–350	10.0	10	12.4	5.6

*x includes extension bar *z includes extension bar and helper bar

TA4

110V Model	220V Model	Torque Range		Square Dr.	
		English	Metric	In.	mm
TA4-05B-1	TA4-05B-2	5–50 in.-lb.	.56–5.64 Nm	1/4	6.35
TA4-10B-1	TA4-10B-2	10–100 in.-lb.	1.13–11.29 Nm	1/4	6.35
TA4-05F-1	TA4-05F-2	5–50 ft.-lb.	6.78–67.79 Nm	3/8	9.53
TA4-25F-1	TA4-25F-2	25–250 ft.-lb	33.90–338.95 Nm	1/2	12.7





**Each TA4 unit comes complete with the appropriate rundown adapter, power supply, RS-232 cable.*

TA4 Accessories

Run Down Adapters*

Part No.	English	Metric	Sq. Drive
01-9232	5–50 in.-lb	56–564 cNm	1/4”
01-9233	10-100 in.-lb	112-1129 cNm	1/4”
01-9240	5-50 ft.-lb.	6-67 Nm	3/8”
01-9242	25-250 ft.-lb.	33-338 Nm	1/2”

Square drives conform to ASME B107 standards for proper fit with transducer.

Power Supplies*

Part No.	
01-9201	110V power supply for all TA4 systems
01-9202	220V power supply for all TA4 systems



P-15

Utica P-15 Torque Analyzer

Model No.	Graduations	Capacity	Height		Width		Length		Weight		Ordering No.
			In.	mm	In.	mm	In.	mm	Lb.	kg	
P-15	2 in.-lbs.	150-5 in.lbs.	8	203	5	127	18	457	23	10.4	810002
MP-15 (metric)	5 cm-kg	180-5 cm-kg	8	203	5	127	18	457	23	10.4	810151

GENERAL
Drive Size: 5/16”male hex

The Total Solution

The total solution from Cooper Power Tools includes not only a complete line of quality industrial tools and accessories but also a professional engineering and product support staff to help customize each tool to specific application requirements. All are as close as a telephone or e-mail.

Cooper Power Tools maintains company-owned Service Centers in strategic locations throughout the world, staffed with professional tool repair technicians who use genuine Cooper Power Tools parts and who are outfitted with the very latest in testing, calibration and inspection equipment. Each tool that is returned to a customer from one of our Service Centers carries with it a warranty that is Cooper Power Tools' assurance that it will perform just like it did when it was purchased new.

Our support personnel are fully capable of helping to diagnose problems and promptly recommend solutions.

Our complete line of tools are carefully designed and built from the finest materials available in order to provide years of trouble free service. But, as with any piece of equipment, service problems can occur. All tools are designed to be easy to service ... that is, of course, with properly trained personnnel.

To facilitate quick repairs, and limit downtime ... Cooper Power Tools conducts training seminars covering all aspects of every tool we make.

Introductory training seminars are designed to fully acquaint students with the entire line of tools and their fundamental operation. Advanced training seminars, which are often tailored to individual needs, are designed to hone the skills of the experienced student. Hands-on experience, with an emphasis on troubleshooting and repairing, are the focus of this training.

Service literature, product information, brand catalogs and FAQs are also available around the clock on the Web. Just access ***www.cooperpowertools.com*** for the latest information available about any of our products and services.

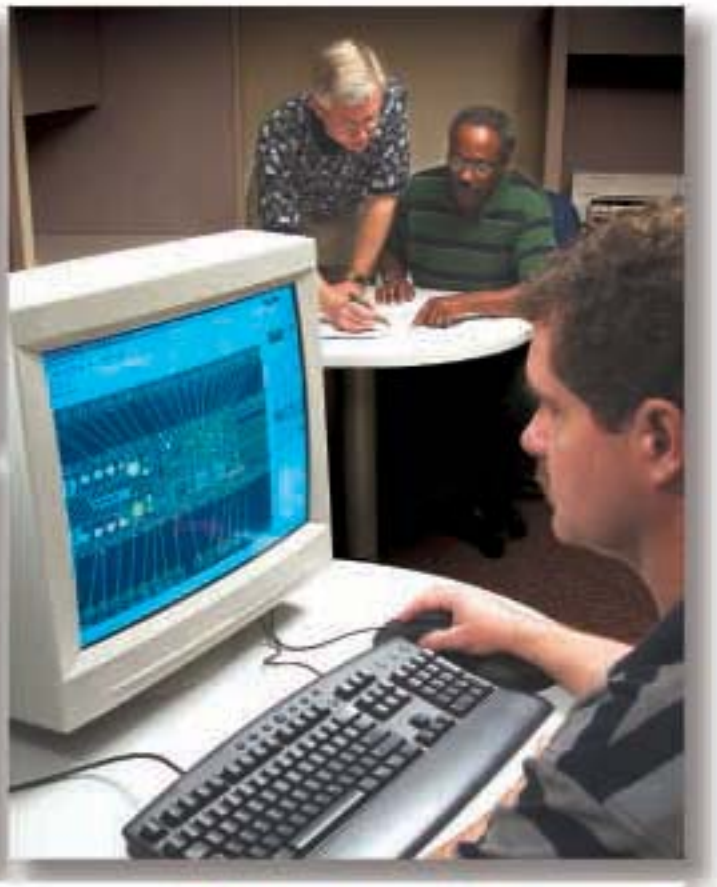




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Sales & Service Centers

Note: All locations may not service all products. Please contact the nearest Sales & Service Center for the appropriate facility to handle your service requirements.

Dallas, TX

Cooper Power Tools
Sales & Service Center
1470 Post & Paddock
Grand Prairie, TX 75050
Tel: (972) 641-9563
Fax: (972) 641-9674

Detroit, MI

Cooper Power Tools
Sales & Service Center
4121 North Atlantic Blvd.
Auburn Hills, MI 48326
Tel: (248) 391-3700
Fax: (248) 391-6295

Houston, TX

Cooper Power Tools
Sales & Service Center
6550 West Sam Houston
Parkway North, Suite 200
Houston, TX 77041
Tel: (713) 849-2364
Fax: (713) 849-2047

Lexington, SC

Cooper Power Tools
670 Industrial Drive
Lexington, SC 29072
Tel: (800) 845-5629
Tel: (803) 359-1200
Fax: (803) 358-7681

Brazil

Cooper Tools Industrial Ltda.
Av. Liberdade, 4055
Zona Industrial - Iporanga
18087-170 Sorocaba, SP Brazil
Tel: (011) 55 15 238 3929
Fax: (011) 55 15 228 3260

Canada

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Tel: (905) 501-4785
Fax: (905) 501-4786

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Fax: 011 8621 5111 8446

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Recoules Operation
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77831 Ozoir-la-Ferrière Cedex
France
Tel: (011) 33 1 64 43 22 00
Fax: (011) 33 1 64 40 17 17

Germany

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Cooper Power Tools Is On The Web!

Cooper Power Tools provides a complete resource for power tools on-line. Our website ***www.cooperpowertools.com*** offers product information, service literature, brand catalogs, press releases and more. A dominant source of information, the Cooper Power Tools website is your source for application solutions on-line.





Making your job easier is our goal!

You can access service literature anytime. Choose a category such as Assembly Tools or Material Removal Tools from the main menu and then click on the brand you're looking for. You'll be on your way to any current service literature you need, whether it's Cleco, Apex, Master Power, or any of our power tool brands.

Up-to-date product catalogs are also available online providing you with current information on our broad product line. Even Material Safety Data Sheets (M.S.D.S.) for Safety and Disposal Information are available on our website.



It's simple!

Our *Customer Care* section provides you with information such as answers to frequently asked questions or contact phone numbers and addresses for your area of the country. You can browse through the *What's New* information to learn how Cooper Power Tools continues to be your source for solutions.



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