

DC Electric Assembly Tools

Cleco[®]



COOPER PowerTools

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**".



Lexington, South Carolina



Dayton, Ohio



Hicksville, Ohio



Springfield, Ohio



Braunschweig, Germany



Westhausen, Germany



Ozoir-la-Ferrière, France

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.

Cleco®



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.

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



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

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.

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

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



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.

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.

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.

Built-in versatility ensures against the unnecessary

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



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



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

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



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



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

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.



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

Standard TME

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 programming 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.



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

- helps avoid expensive, time-consuming manual operations and tool changes since all functions are handled within the system.

- 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

7 Tool Setup

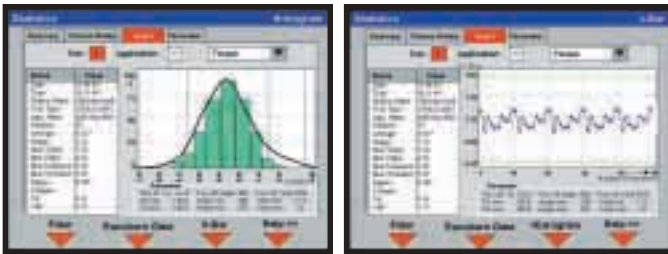
- auto recognition feature simplifies access to all critical tool values stored on each tool.
- enhances functionality and flexibility by minimizing need for multiple backup tools.



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.



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.

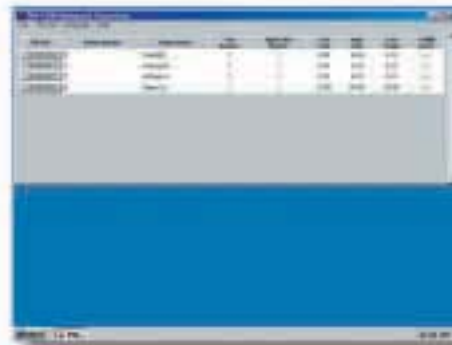
Cooper Power Tools' proprietary TM-COM Software delivers the ultimate in control, because it empowers users to control the controllers.

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.

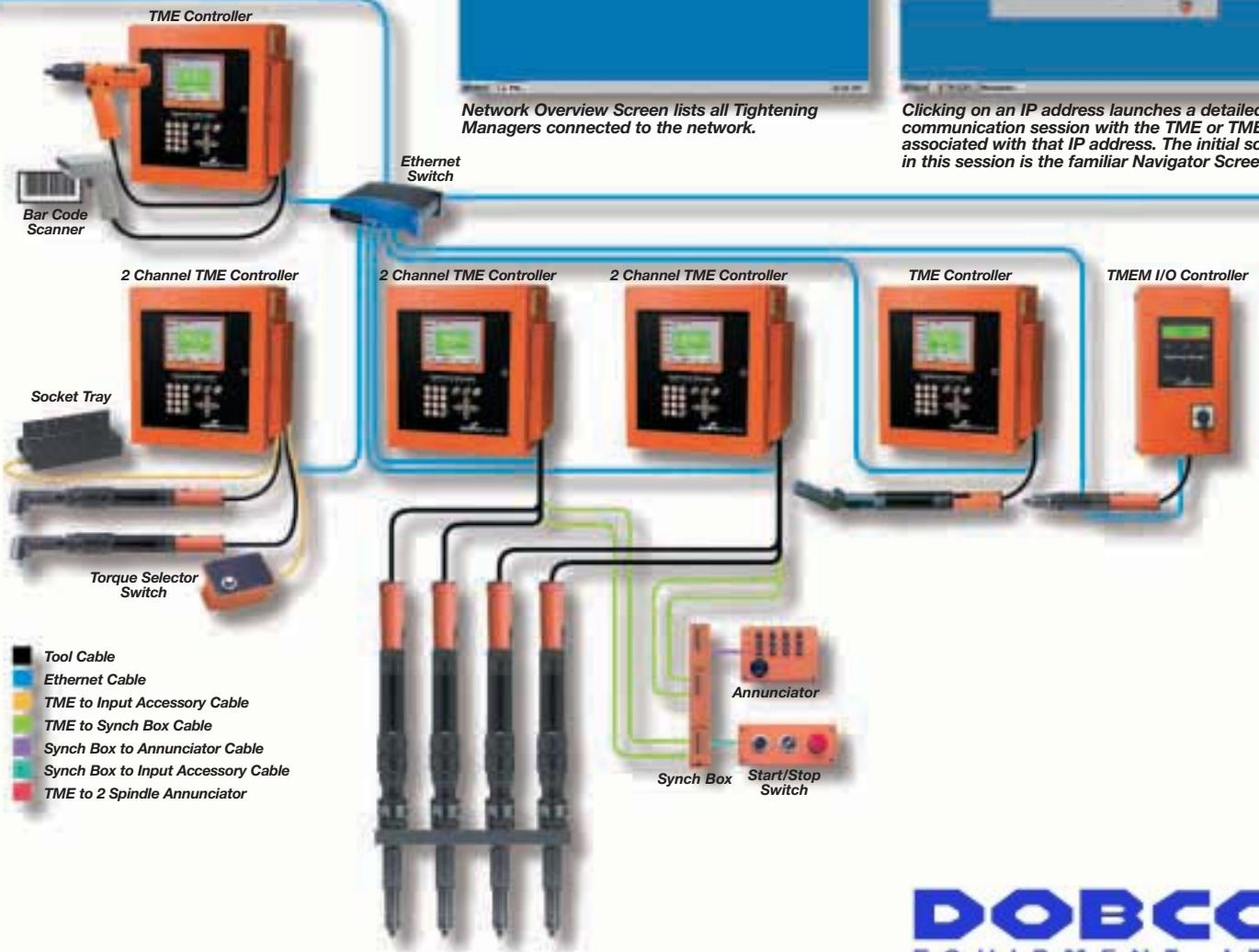
The Cleco Tightening Manager system has always provided the user ease of walking up to the controller and reviewing on-site the real-time fastening results on its screens. But now, anything that can be seen on the controller, can also be seen at a remote location, because the exact same screens



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.



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 statistical 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.



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

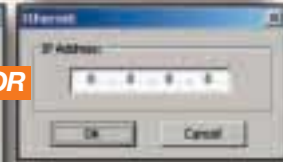
RS232 serial port. TM-COM1 can also communicate via Ethernet to a TME or TMEM equipped with Ethernet.



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.

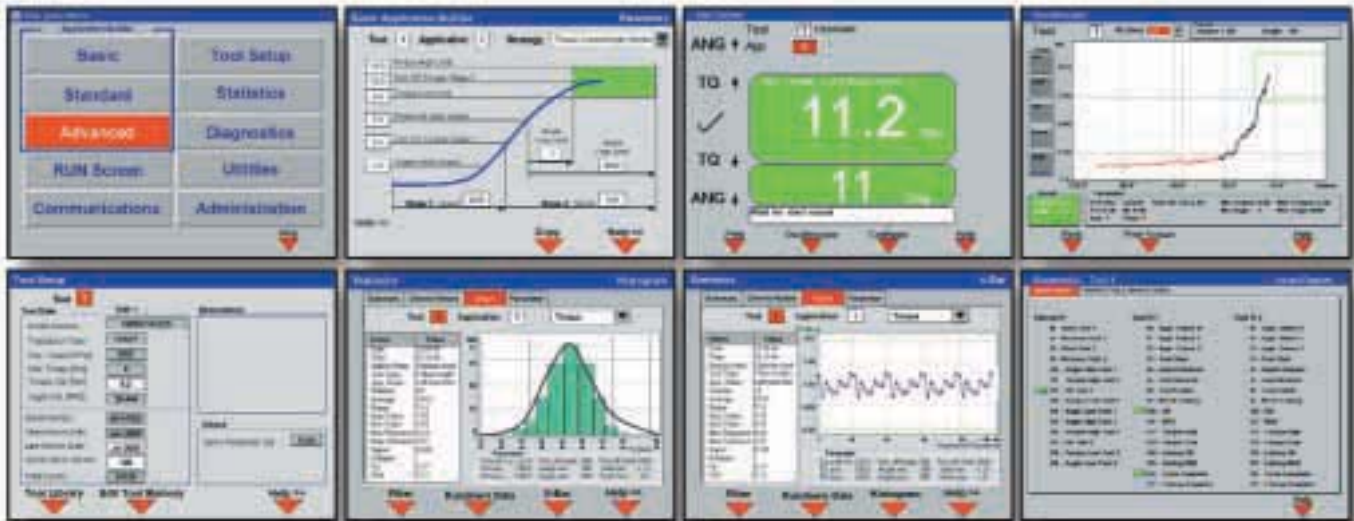


OR



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.

The “Mini” Software: TM-COM1M

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.

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) |

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/O, 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 | • | • | • |

The Tools

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.

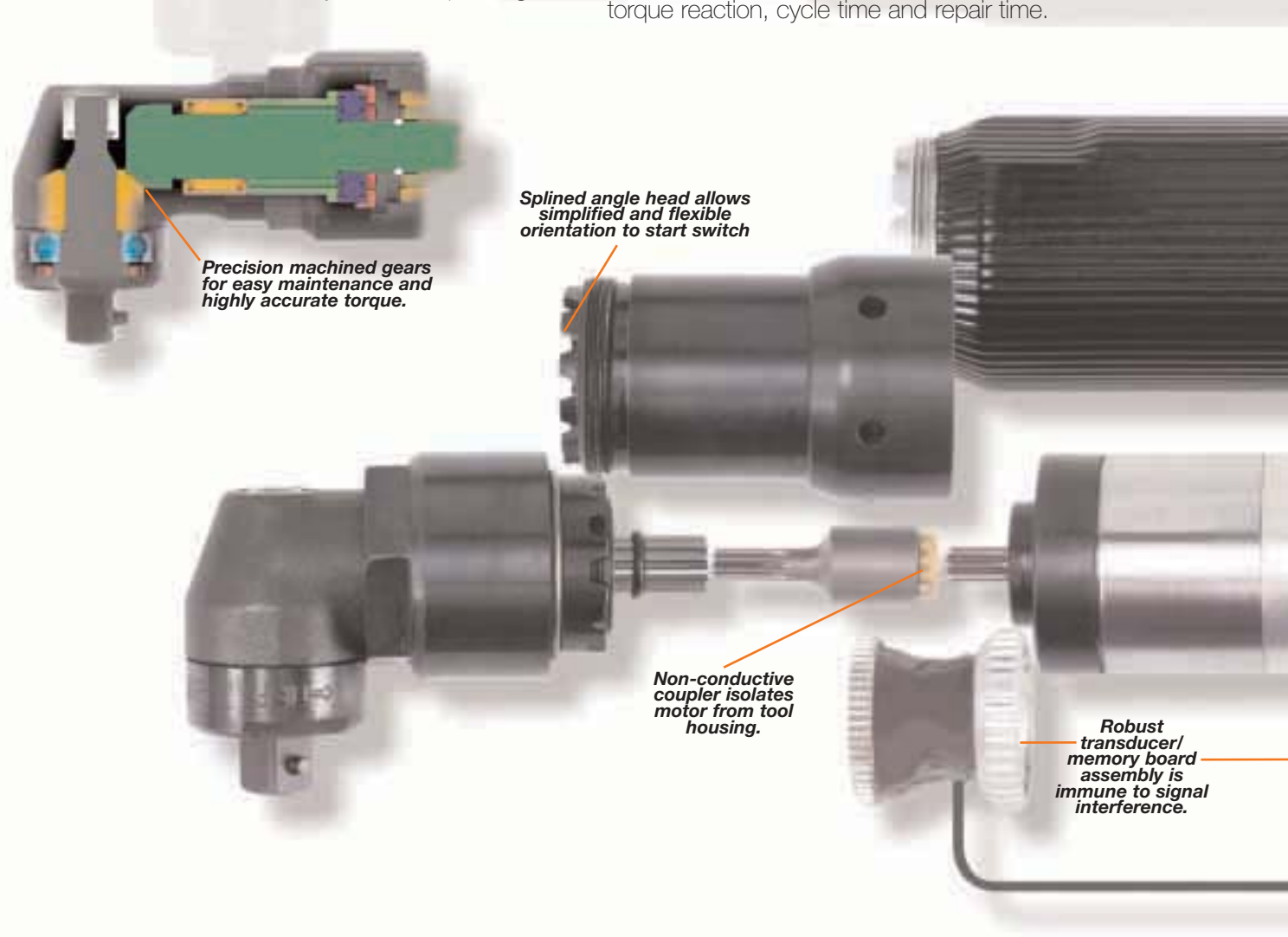
In the real world, industrial and production engineers translate the designs of the automotive or aeronautical engineers into fastening strategies that turn those designs into reality. Invariably, that means a broad variety of fastening applications requiring a wide range of tool types.

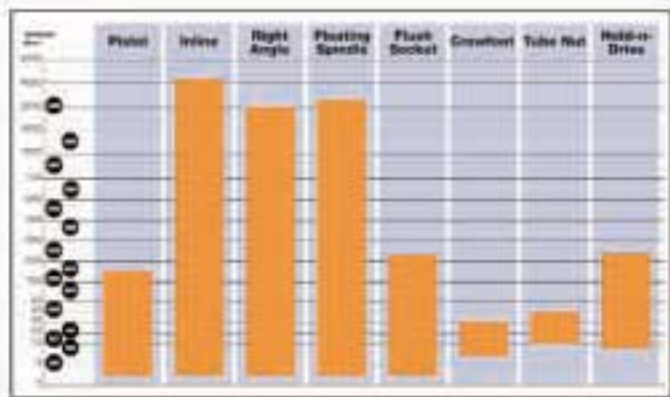
At Cooper Power Tools, our focus is to make tools to match production dynamics, instead of requiring the production line to fit our tools. So, the Cleco Tightening Manager System offers the most robust line of electric tools to meet all fastening applications. They are available in right-angle, inline 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.

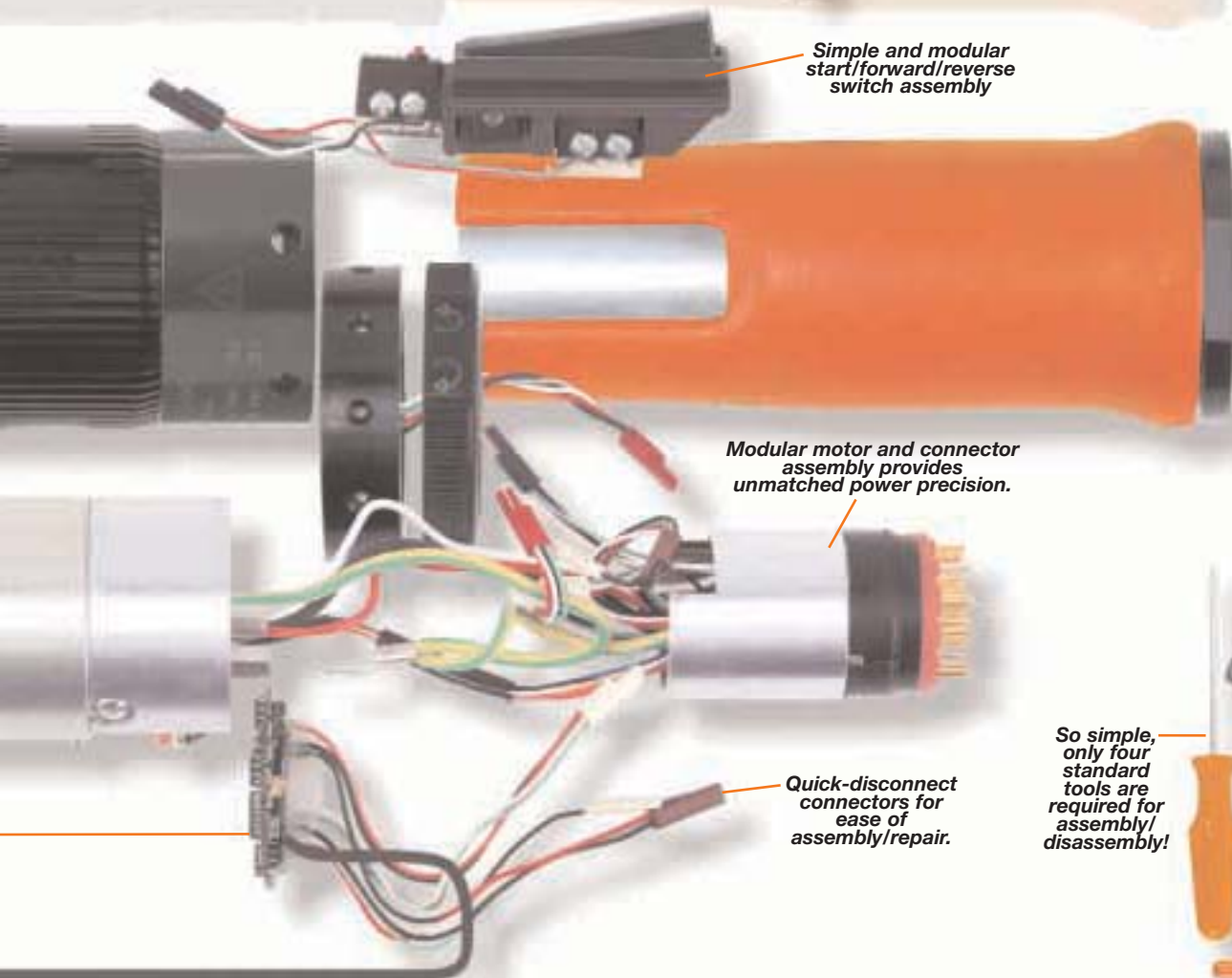




performed, you know when it is time for preventive maintenance before it is too late and becomes a repair job.

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



Simple and modular start/forward/reverse switch assembly

Modular motor and connector assembly provides unmatched power precision.

Quick-disconnect connectors for ease of assembly/repair.

So simple, only four standard tools are required for assembly/disassembly!



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



Standard Tool Nomenclature



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.

Retainer

B Ball retainer

Drive Type

| | |
|-----------------|------------------------|
| 2 - 1/4" Sq.Dr. | 8 - 1" Sq.Dr. |
| 3 - 3/8" Sq.Dr. | 12 - 1 1/2" Sq.Dr. |
| 4 - 1/2" Sq.Dr. | Q - Quick change |
| 6 - 3/4" Sq.Dr. | QS - with depth sensor |

Tool Termination

A - Angle non-retractable
M - Angle medium duty
D - Inline non-retractable

| Model Number | | | Bolt Size | | Free Speed | Torque Range | | Length | | Weight** | | Side to Center | |
|------------------------|--------------|--------------|-----------|---------|------------|--------------|----------|--------|-----|----------|-----|----------------|----|
| | | | Gr. 5 | Gr. 9.8 | | ft. lbs | Nm | in. | mm | lbs. | kg | in. | mm |
| 1/4" QC* | 3/8" Sq. Dr. | 1/2" Sq. Dr. | in. | mm | RPM | | | | | | | | |
| 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 | | Free Speed | Torque Range | | Length | | Weight** | | Head Height | | Side to Center | |
|--------------------|----------------------------|--|-----------|---------|------------|--------------|----------|--------|-----|----------|------|-------------|-----|----------------|----|
| | | | Gr. 5 | Gr. 9.8 | | ft. lbs | Nm | in. | mm | lbs | kg | in. | mm | in. | mm |
| 3/8" Sq. Dr.* | 1/2" Sq. Dr.* | | in. | mm | RPM | | | | | | | | | | |
| Right Angle | | | | | | | | | | | | | | | |
| | | | #10 | M5 | 2000 | 1.5-5.8 | 2-7.8 | 13.6 | 345 | 2.9 | 1.3 | 1.4 | 36 | 0.5 | 13 |
| | | | 1/4 | M7 | 860 | 3.3-11.1 | 5-15 | 14.8 | 376 | 3.6 | 1.6 | 1.6 | 41 | 0.59 | 15 |
| | | | 1/4 | M7 | 1900 | 3.7-11.1 | 5-15 | 15.6 | 396 | 4.1 | 1.9 | 1.6 | 41 | 0.59 | 15 |
| | | | 5/16 | M8 | 610 | 4.6-16.2 | 6-22 | 14.8 | 376 | 3.6 | 1.6 | 1.6 | 41 | 0.59 | 15 |
| | | | 5/16 | M8 | 465 | 6.6-20.7 | 9-28 | 14.8 | 376 | 3.6 | 1.6 | 1.6 | 41 | 0.59 | 15 |
| | | | 3/8 | M8 | 895 | 5.2-24.3 | 7-33 | 17.7 | 450 | 5.0 | 2.3 | 1.9 | 48 | 0.75 | 19 |
| | | | 3/8 | M10 | 685 | 6.6-31.7 | 9-43 | 17.7 | 450 | 5.0 | 2.3 | 1.9 | 48 | 0.75 | 19 |
| | 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)

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



| Model Number | | | Bolt Size | | Free Speed RPM | Torque Range | | Length | | Weight** | | Side to Center | |
|--------------------------------------|--------------|--------------|--------------|---------------|-------------------|--------------|----------|--------|-----|----------|-----|----------------|----|
| | | | Gr. 5 in. | Gr. 9.8 mm | | ft. lbs | Nm | in. | mm | lbs. | kg | in. | mm |
| 1/4" Slip Ck* | 3/8" Sq. Dr. | 1/2" Sq. Dr. | | | | | | | | | | | |
| 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 | | Free Speed RPM | Torque Range | | Length | | Weight* | | Side to Center | |
|--------------|-------|--------------|---------------|-------------------|--------------|----------|--------|-----|---------|------|----------------|----|
| | | Gr. 5 in. | Gr. 9.8 mm | | ft. lbs | Nm | in. | mm | lbs | kg | in. | mm |
| 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:

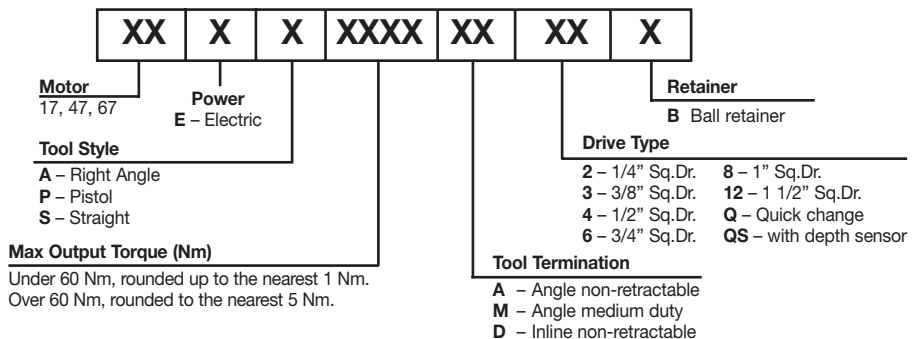
Reaction bar; Slave drive reaction bar on 67ES4050D12.

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



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

| Model Number | Drive | Bolt Size | | Free Speed RPM | Torque Range | | Length | | Weight* | | Side to Center | |
|-------------------------------------------------------------|-------|-----------|---------|-------------------|--------------|----------|--------|-----|---------|-----|----------------|----|
| | | Gr. 5 | Gr. 9.8 | | ft. lbs | Nm | in. | mm | lbs | kg | in. | mm |
| | | in. | 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 | | Free Speed RPM | Torque Range | | Length | | Weight* | | Side to Center | |
|------------------------------------------------------------------|-------------------|-----------|---------|-------------------|--------------|--------|--------|-----|---------|------|----------------|----|
| | | Gr. 5 | Gr. 9.8 | | ft. lbs | Nm | in. | mm | lbs | kg | in. | mm |
| | | in. | 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.

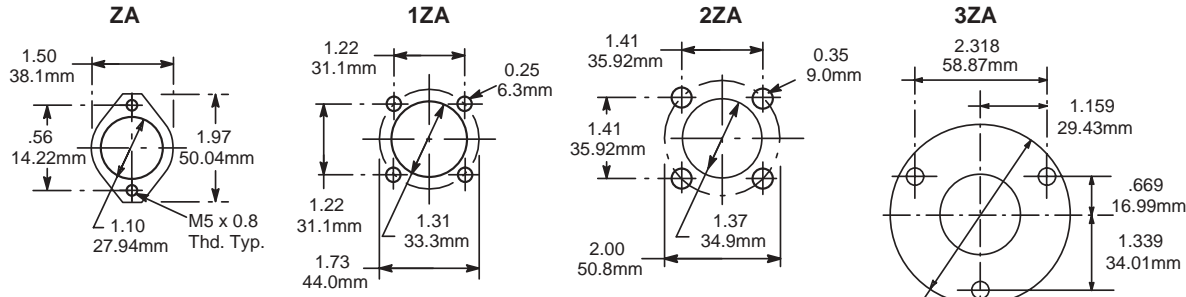
EXTRA EQUIPMENT:

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

ADDITIONAL ACCESSORIES (Page 41-49)

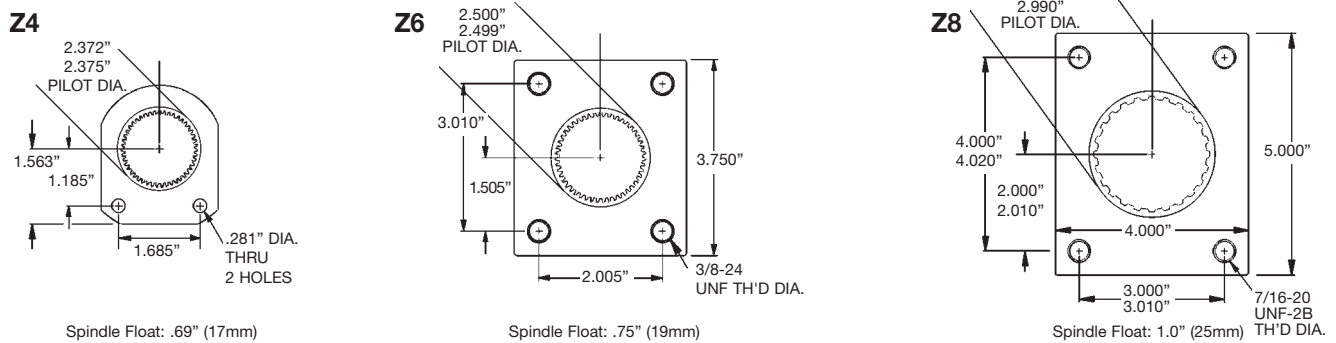
Floating Spindle Electric Tools

B17ES & 47ES Base Plate Mounting Dimensions

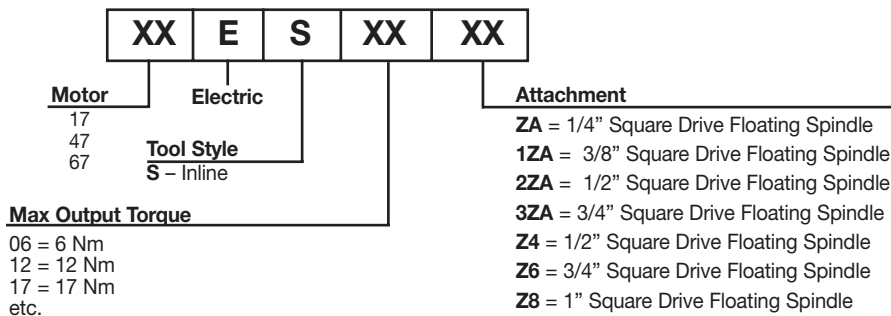


Dimensional tolerances = ± .004 (0.1mm) Spindle Float: 1 (25mm) ZA
 2 (50mm) 1ZA, 2ZA, 3ZA

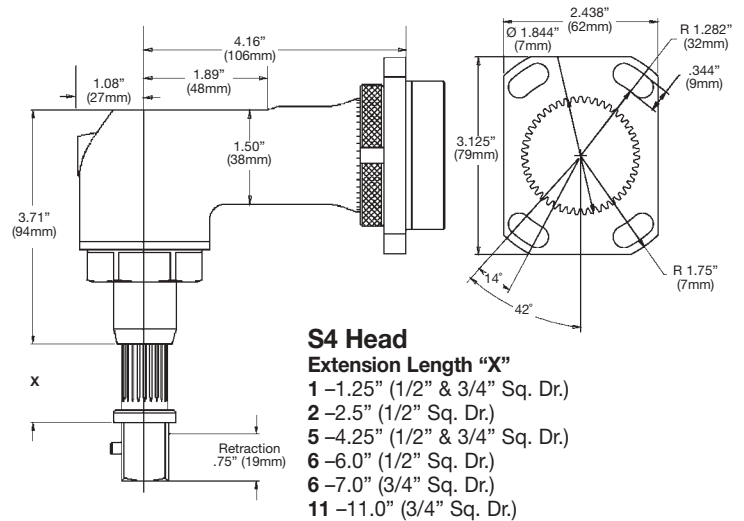
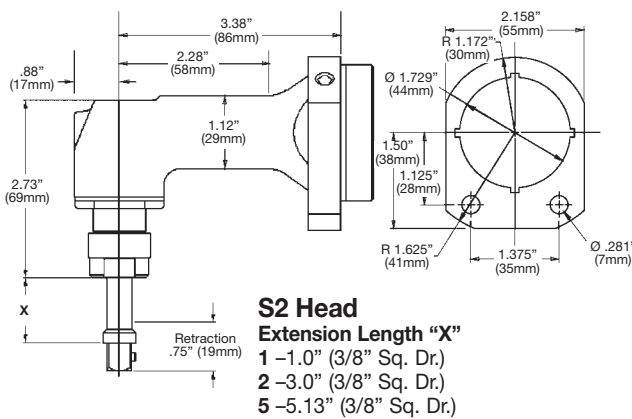
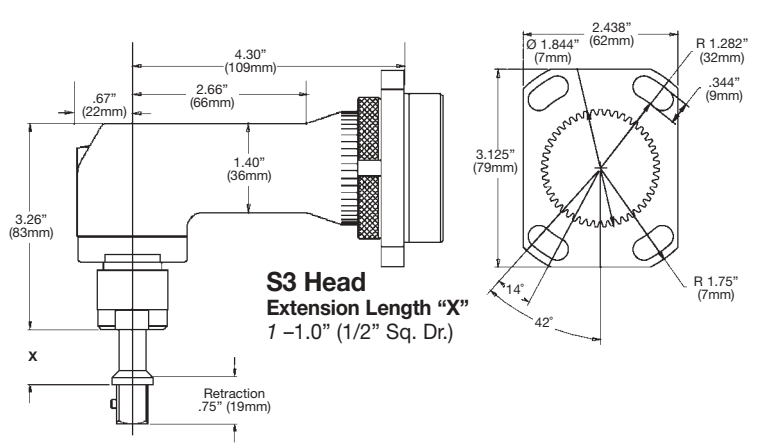
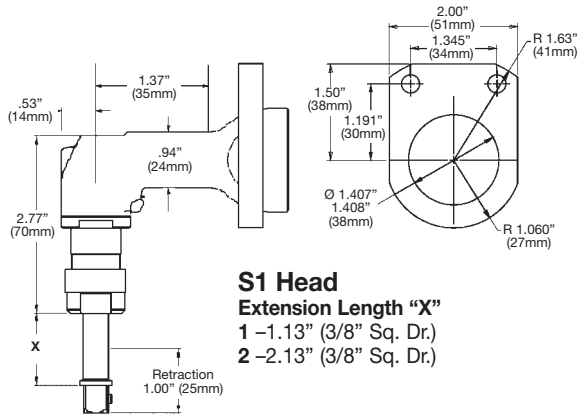
67ES Base Plate Mounting Dimensions



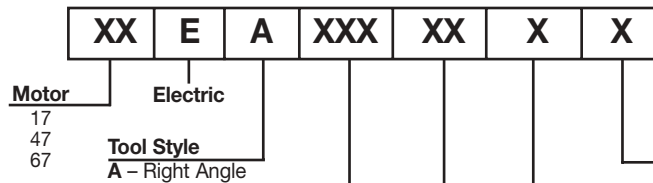
Inline Floating Spindle Tool Nomenclature



B17EA, 47EA & 67EA Floating Spindle Angle Heads



Right Angle Floating Spindle Tool Nomenclature



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)

Cleco® Instrumented Electric Nutrunners

Flush Socket Tools

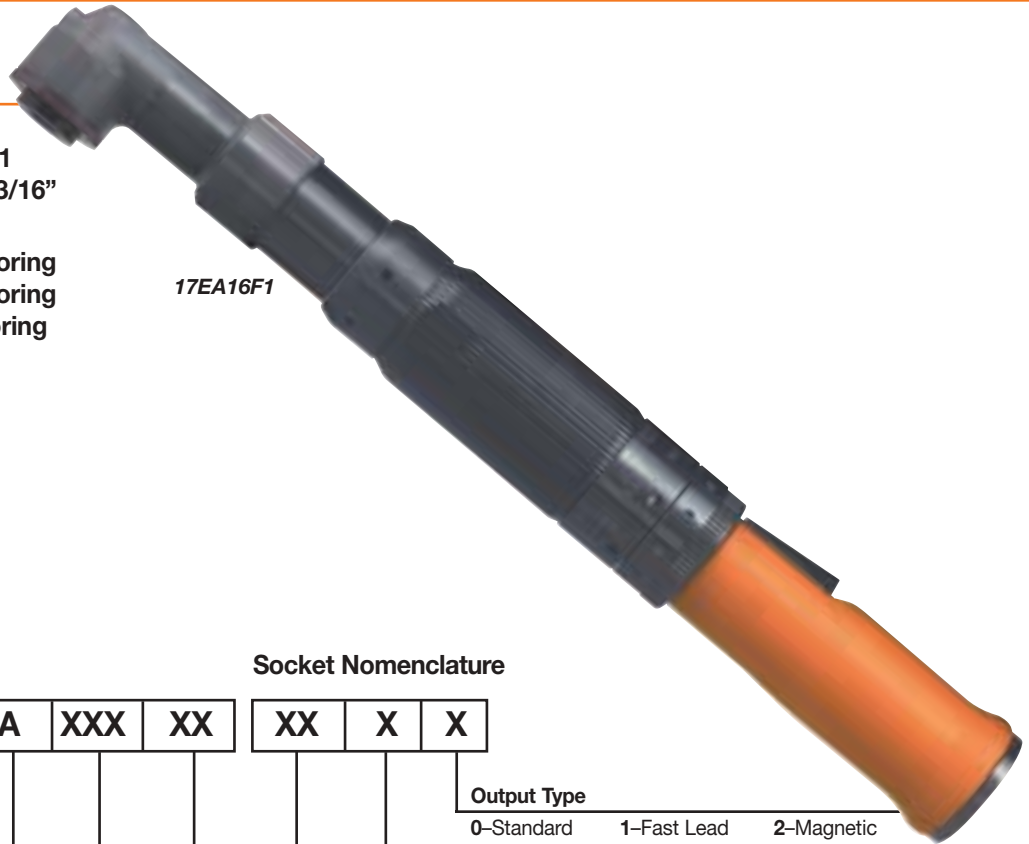
17EA & 47EA Series

| | |
|----------------------|------------------|
| Torque Range | Bolt Size |
| 3 - 230 Nm | M8 - M21 |
| 2.4 - 169.6 Ft. Lbs. | 1/2" - 1 3/16" |

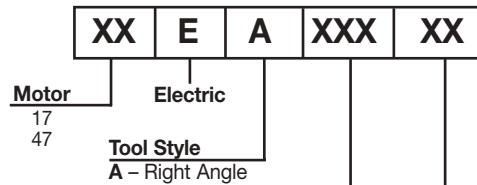
Fastening Strategies

- 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



Flush Socket Tool Nomenclature



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



Output Type

- 0-Standard
- 1-Fast Lead
- 2-Magnetic

Extension Length

- 0 - Flush
- 2 - 1/4"
- 4 - 1/2"
- 6 - 3/4"
- 8 - 1"

Socket Size

- | | |
|-------------|------------------|
| EA - 1/4" | MB - 8mm |
| EC - 3/8" | MD - 10mm |
| ED - 7/16" | ME - 11mm |
| EE - 1/2" | MF - 12mm |
| EF - 9/16" | MG - 13mm |
| EH - 11/16" | MH - 14mm |
| EJ - 13/16" | 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.

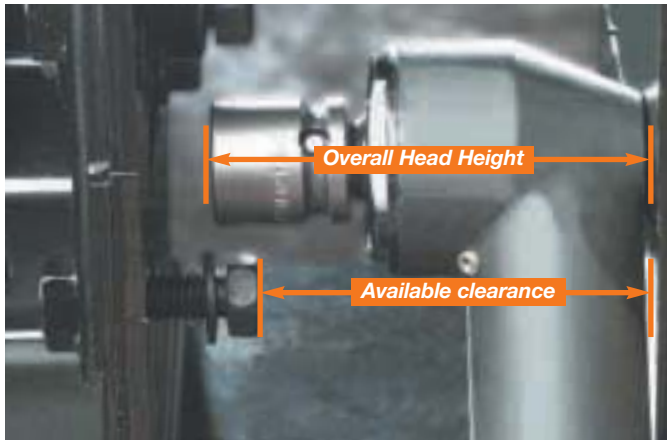
EXTRA EQUIPMENT:

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

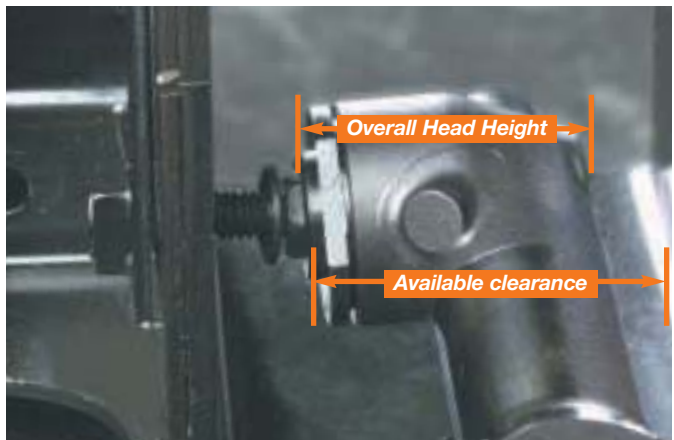
ADDITIONAL ACCESSORIES (Page 41-49)



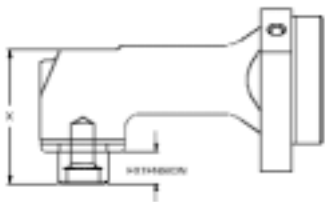
Tight clearance applications, once only accessible by the use of hand tools or crowfoot attachments, can now be tightened by the new family of Cleco Flush Socket Electric Tools at a speed that maximizes productivity. When combined with the Cleco Tightening Manager controller, torque repeatability is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

Cleco® Instrumented Electric Nutrunners

Crowfoot Electric Tools

Crowfoot 47EC Series

Torque Range

7 - 30 Nm
5 - 22 Ft. Lbs.

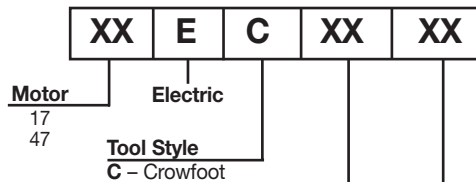
Fastening Strategies

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



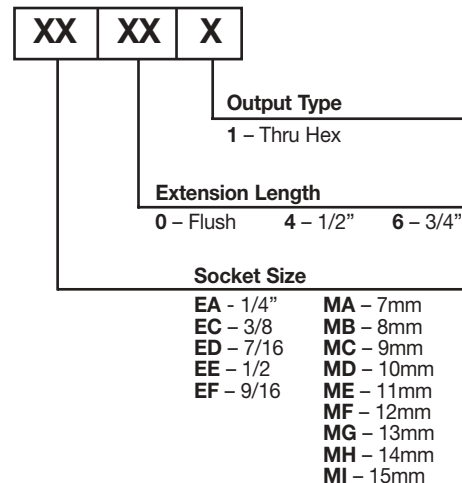
Max Output Torque

<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



| 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.

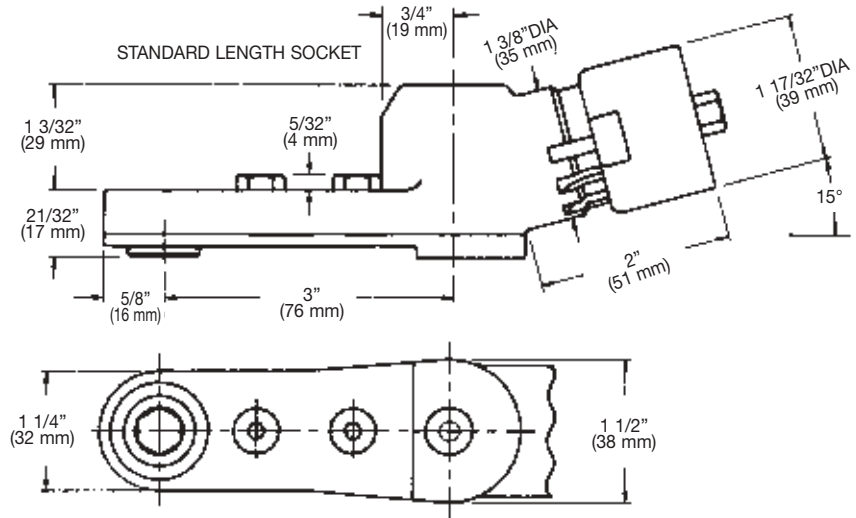
Sockets: Select from table on page 35

ADDITIONAL ACCESSORIES (Page 41-49)

15° HEAD

Part No. 301071

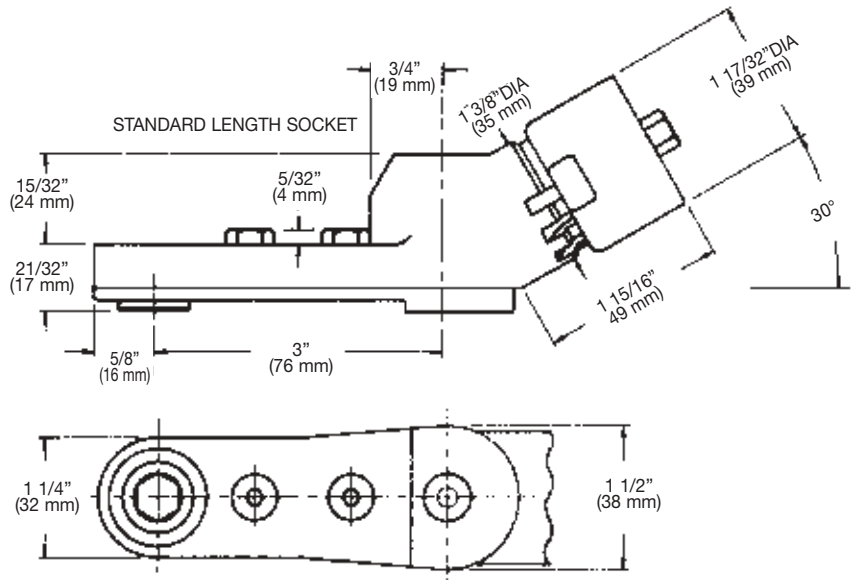
Maximum Recommended
Torque: 22 ft. lb. (30 Nm)



30° HEAD

Part No. 301072

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



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

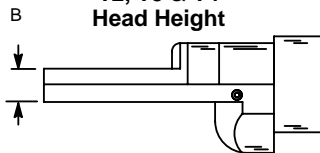
■ DC Brushless Motor



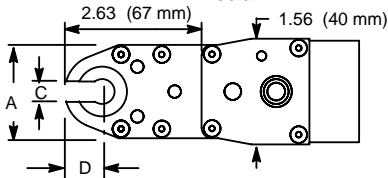
DOBCO
EQUIPMENT LTD

TERMINATION

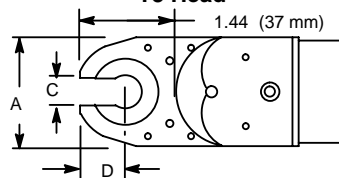
T2, T3 & T4
Head Height



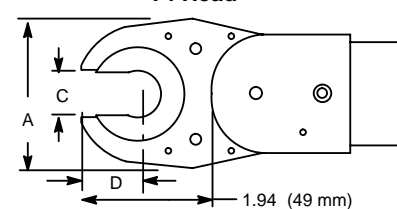
T2 Head



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.

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.

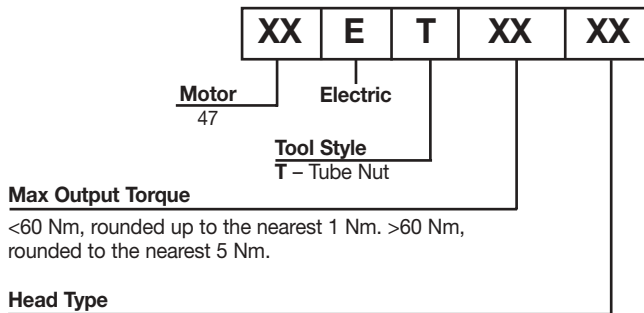


Slide the tool onto the fastener and press the lever to run the fastener down.

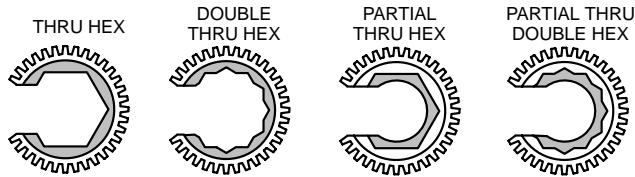
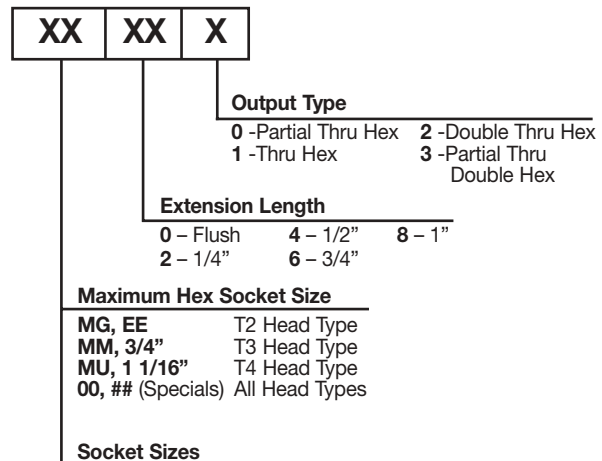


To free the tool from the work, slide the tool off the tightened fastener and press the lever to release the socket back to the open position.

Tube Nut Tool Nomenclature



Socket Nomenclature



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 | | |



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 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.

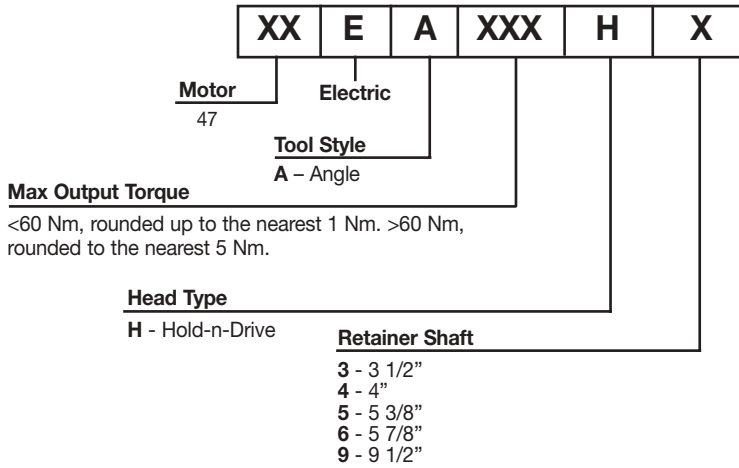
STANDARD EQUIPMENT:
Suspension Bail, Retraction 1” standard for hold kit.

EXTRA EQUIPMENT:

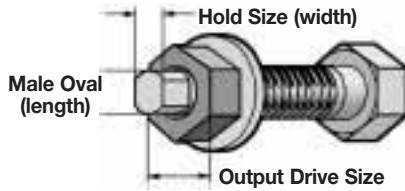
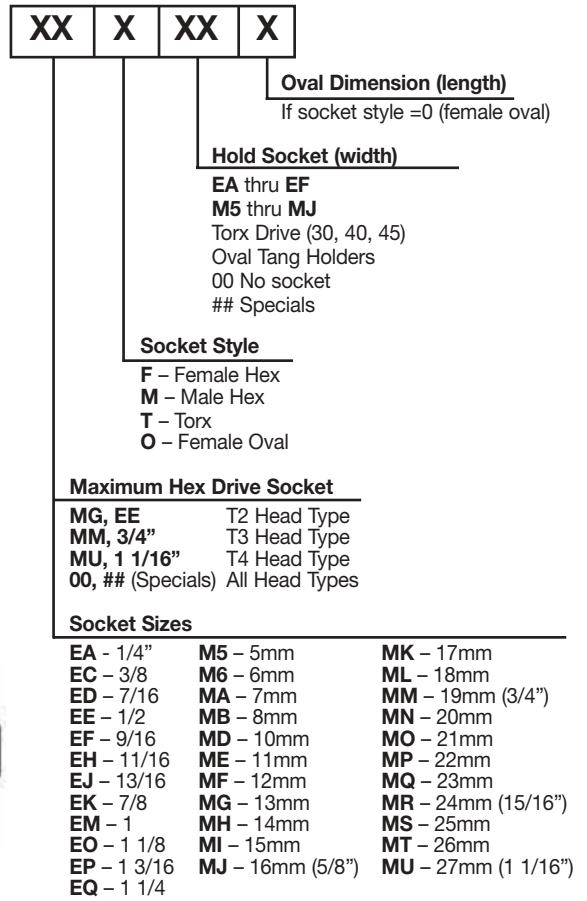
Std. Tool Cable 542778-XX, Swivel Cable 542780-XX, Extension Cable 542779-XX.

ADDITIONAL ACCESSORIES (Page 41-49)

Hold-n-Drive Tool Nomenclature



Socket Nomenclature



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.

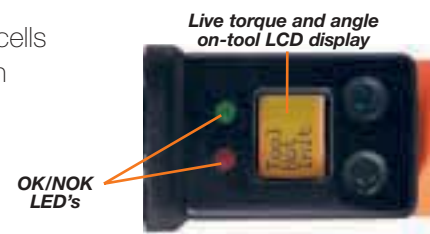


The right angle and pistol grip tools incorporate leading features from our wide range of assembly tools. High performance brushless motors are used to produce increased speed and torque characteristics while improving torque accuracy due to lower rotor inertia. Cleco cordless tools have a long service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

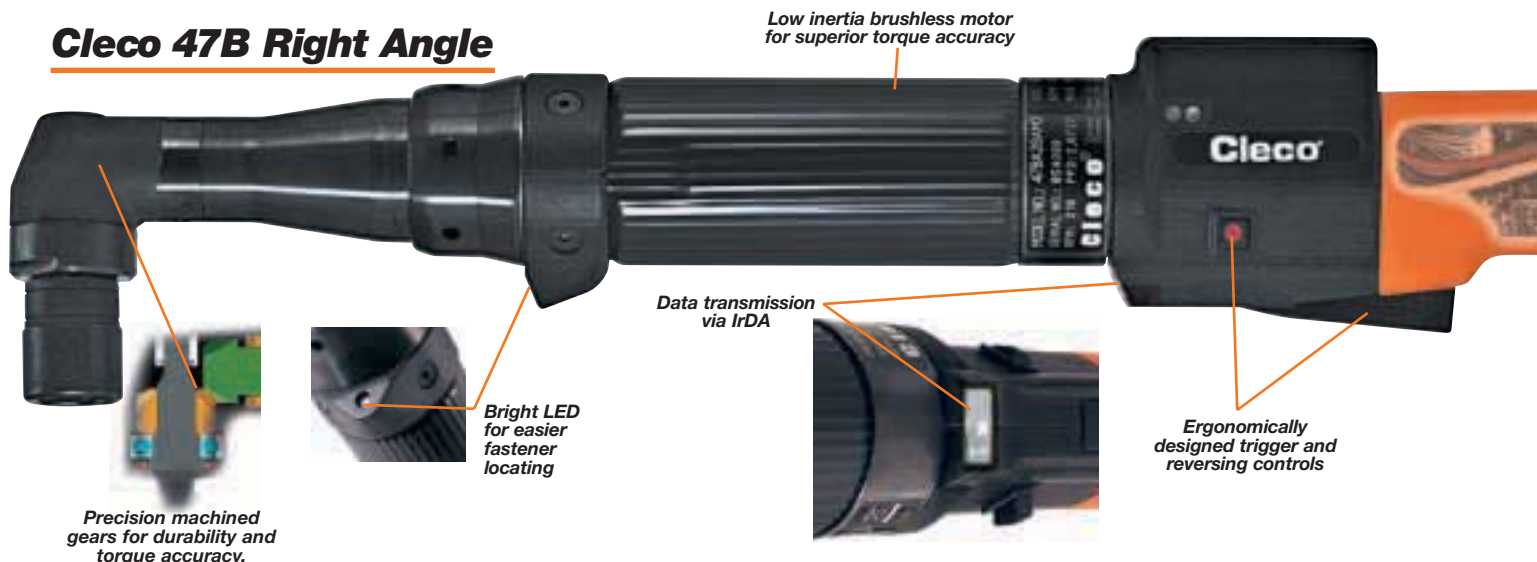
When using a single tool to perform multiple applications, the auto-linking feature automatically changes parameter sets from application to application through programmable batch counting. The 512-cycle tool memory buffer provides cordless versatility, convenience, flexibility and productivity in a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



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



17B & 47B Industrial Cordless Tools & Accessories

17B Battery Pistol Grip Tool – 18VDC

| Model Number* | Output Drive Size | Bolt Size | | Free Speed RPM | Torque Range | | Length | | Weight** | | Side to Center | |
|---------------|-------------------|-----------|---------|-------------------|--------------|------|--------|-------|----------|------|----------------|----|
| | | Gr. 5 | Gr. 9.8 | | ft. lbs | Nm | in. | mm | lbs. | kg | in. | mm |
| | | in. | 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 | | Free Speed RPM | Torque Range | | Length | | Weight** | | Side to Center | |
|---------------|-------------------|-----------|---------|-------------------|--------------|--------|--------|-----|----------|-----|----------------|----|
| | | Gr. 5 | Gr. 9.8 | | ft. lbs | Nm | in. | mm | lbs. | kg | in. | mm |
| | | in. | 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 | | Language | Features |
|------------------------|------------------|------------|-----------|
| 115VAC | 230VAC | | |
| 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 |



Tool Cables

| Tool | Extension | Swivel | Length | |
|------------|------------|------------|--------|--------|
| | | | Feet | Meters |
| 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.



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 | 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 |



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 | Meters |
| 543445-7 | 7 | 2 |
| 543445-50 | 50 | 15 |
| 543445-100 | 100 | 30 |

Ethernet Switches

| Part Number | Ports | | | Approx. Dimensions | | Approx. Weight | |
|-------------|-------|----|-----|--------------------|------------|----------------|-----|
| | Total | In | Out | Inches | mm | Lbs. | 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.



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.

Lockout Washer

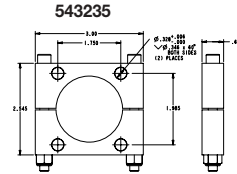
For use with 542978-4 & 542978-8 socket trays.

| Part Number |
|-------------|
| 99248150 |

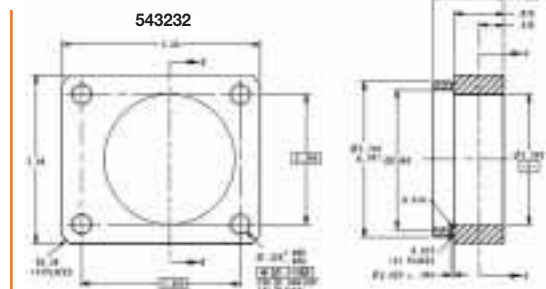
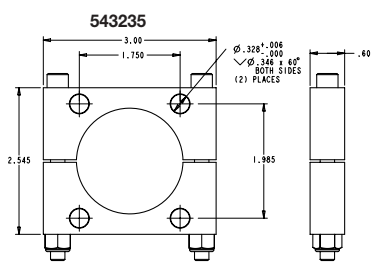
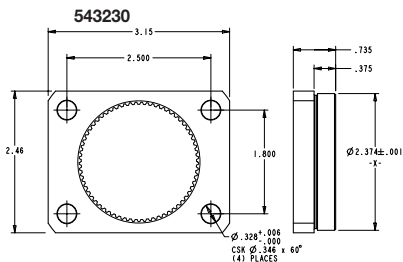
Note: Vacant position lockout washer

Instrumented Electric Nutrunners

Accessories



| 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 |



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.



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 | Description | Length | |
|-------------|--------------------------|--------|---|
| | | Ft. | 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 |



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.



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.



Ergonomic Tool Balancers

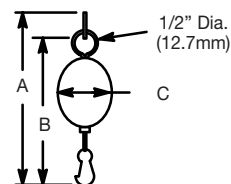
Capacity:
0.5 – 20.5 kg
1.0 – 45 Lbs

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

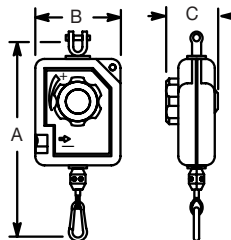
| Model Number | Lock Feature | Capacity | | "A" | | "B" | | "C" | | Weight | |
|-------------------------------------------------|-------------------|----------|-----------|------|-----|-----|-----|-----|-----|--------|-----|
| | | lbs. | kg | in | mm | in | mm | in. | mm | lbs. | kg |
| Light Duty – 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 | 1.8-0.9 | 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 | - | 4.0-2.0 | 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

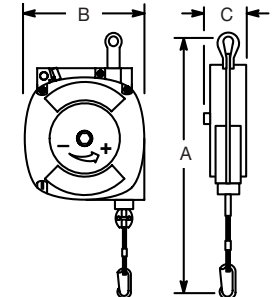
LIGHT DUTY (PL SERIES)



LIGHT DUTY (BL SERIES)



MEDIUM & HEAVY DUTY

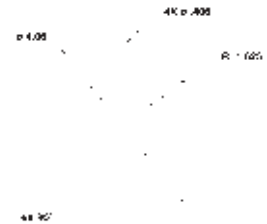
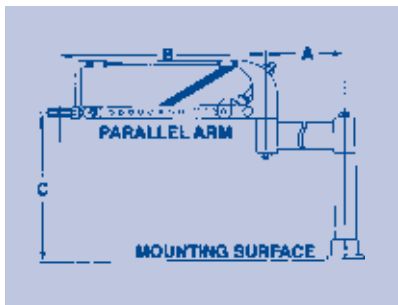
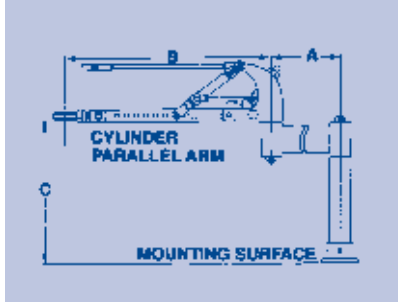


Instrumented Electric Nutrunners

Balance Arms

Cleco®

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



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.

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 Standard Duty | SBA or PBA 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 |



General Accessories

Apex Fastener Tools

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.

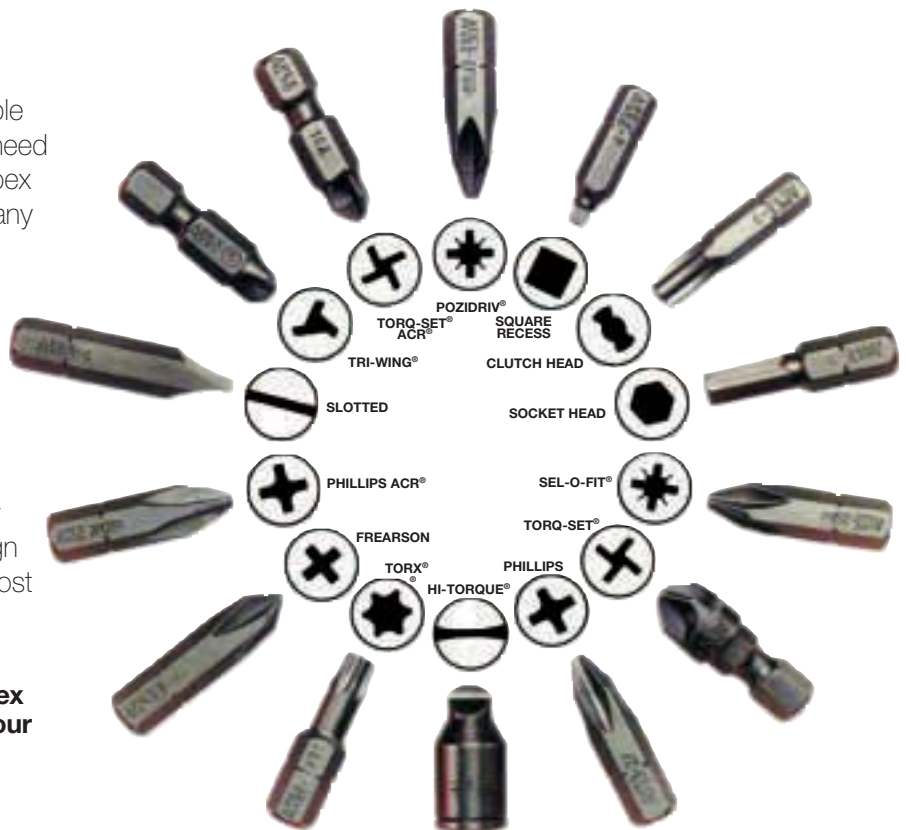
Fast Delivery

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 you 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.

Apex Fastener Tools

Insert Bits

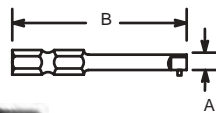
(1/4" hex for socket head cap screws and set screws)



| Part Number | Hex Size In. | "A" | | Cap Screw | Set Screw |
|-------------|--------------|------|------|-----------|-----------|
| | | In. | mm | | |
| 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" | | Bushing No. |
|-------------|---------------|------|-------|-------------|
| | | In. | mm | |
| 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. | 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 | | Wood | | Machine & Self-tapping | | | |
|------------|-------------|------------|-------------|-------|------------------------|-----------|-------|---------|
| | Phillips | Pozi-Drive | Flat & Oval | Round | Flat, Oval & Pan | Fillister | Truss | 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 |



General Accessories

Utica Torque Verification Tools

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 | | Graduation | | Length | | Weight | |
|-----------|------------|-------|--|------------|--|--------|-----|--------|-----|
| | | (in.) | | Nm | | Nm | in. | mm | 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 | | Graduation | | Length | | Weight | |
|----------------|------------|---------|----------|------------|------|--------|-----|--------|-----|
| | | in.-lb. | Nm | in.-lb. | Nm | in. | mm | lb. | 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 | | Graduation | | Length | | Weight | |
|-------------|------------|---------|--------|------------|-----|--------|-----|--------|-----|
| | | ft.-lb. | Nm | in.-lb. | Nm | in. | mm | lb. | 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

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



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 |

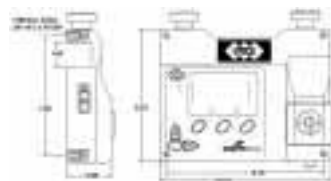
Nm/ft.-lb. Scale

| 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 |



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. | Description |
|----------|---------------------------------------|
| 01-9201 | 110V power supply for all TA4 systems |
| 01-9202 | 220V power supply for all TA4 systems |

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



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 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.

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Making your job easier is our goal!

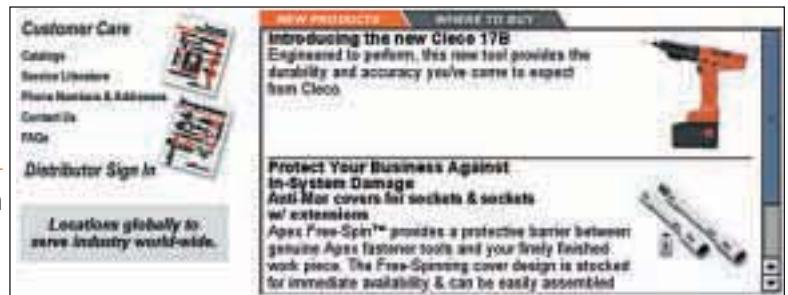
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