

The Art
And Science
Of Tightening
Management



 **COOPER** Tools

The Total Solution For Critical Fastening Operations

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

It is an idea born of necessity, because CooperTools' 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 CooperTools, we welcome the challenge of leadership this imposes.

The System

CooperTools' 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

host of innovative accessories, and CooperTools' 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 troubleshooting.
- 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 CooperTools' 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

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

- CooperTools helps save both time and money by employing a navigational strategy that makes it easy to find your way around. For example, 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. CooperTools' 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.



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

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

Modular design makes access to critical components fast and easy.

Standard equipment features a 3.5" floppy drive, fully configurable 24 volt inputs and outputs, two serial connectors, printer connector, and keyboard connector.

TME shown with Ethernet and DeviceNet connectors.



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



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.

elaborate cousin – torque control, angle control, the ability to change speeds and the like. But in creating the less expensive TMEM, we've taken the cost of the internal graphic user interface out of the Tightening Manager and made it programmable with a laptop computer or through an Ethernet network.

Built-in versatility ensures against the unnecessary



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

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

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

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

- Fully configurable 24 volt input and output connectors are com-

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



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

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



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



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

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 CooperTools' TM-COM1 software for single point programming and analysis or CooperTools' TM-COM software for a complete networking communications solution. The Ethernet connector can also be used to communicate to customer networks.



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

Standard TMEM

The Controllers: User Friendly Interface

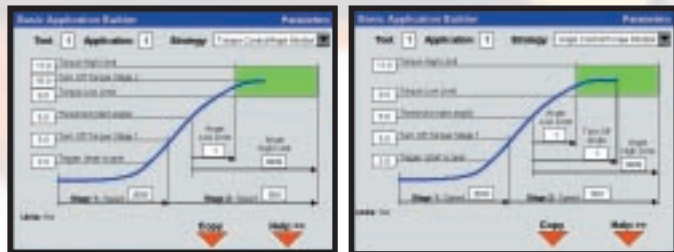
Intuitive On-Screen Setup

The System In a Nutshell: The new line of Cleco DC electric assembly tools from CooperTools, 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.



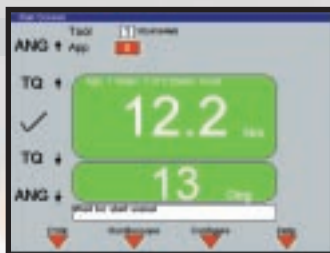
Advanced Applications Builder screen permits fine-tuning of complex applications, maximizing efficiency and product quality.

- maximizes efficiency and product quality.

- enhances productivity by allowing direct access to "Advanced" without having to step through time-consuming sequential steps.

5 Run Screen

- large full-color LCD screen with enhanced indicator features removing any doubt as to the outcome of the rundown.

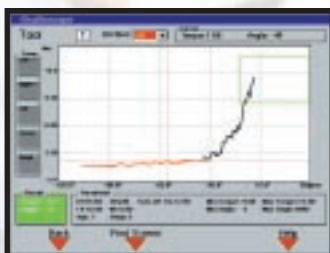


Run screen

- 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.



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

- helps not only in running the application, but also anticipates and helps in solving 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.

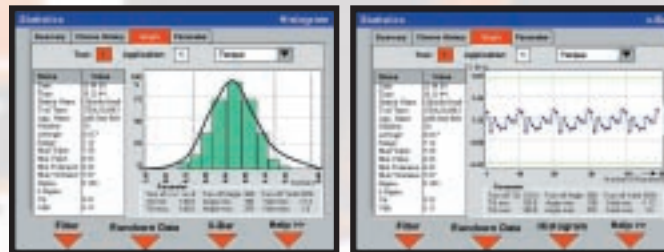


Tool Setup screen simplifies access to all critical tool values.

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.

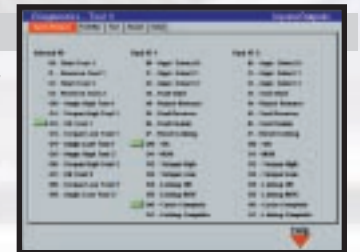


Statistics screen displays valuable SPC data to aid in process evaluation promoting early identification of unforeseen problems.

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 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 CooperTools'

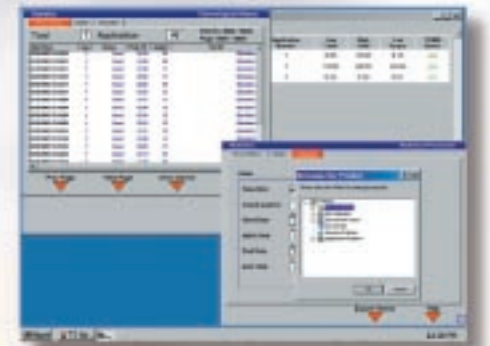
controllers can be monitored – or even changed by re-programming from any central or remote location. Even if your plant has different controllers in different departments or assembly stations, they can all be under the control of a tool or process engineer or anyone who is charged with making sure that 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

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 CooperTools 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.

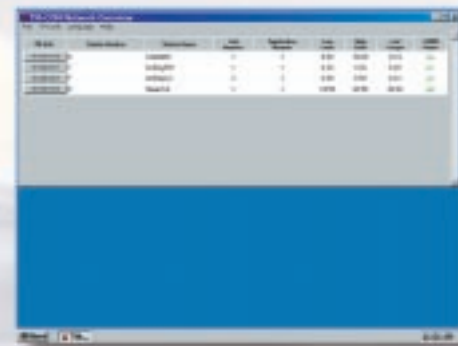
TM-COM Software increases your efficiency and productivity. It improves production line speeds. It makes trouble-shooting quicker and easier. And, since time translates into money, it significantly enhances the bottom line.



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



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.



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



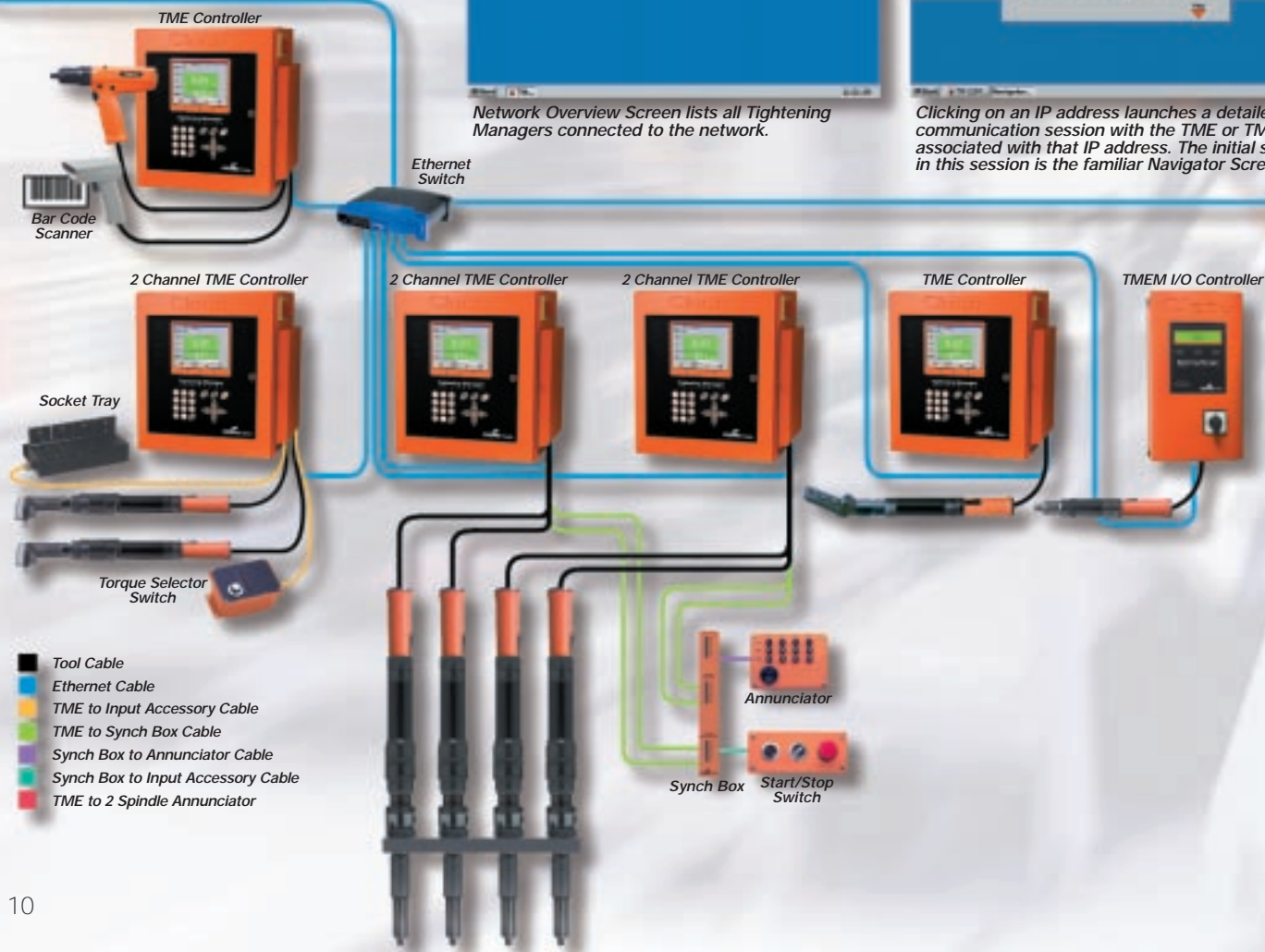
Clicking on an IP address launches a detailed communication session with the TME or TMEM I/O associated with that IP address. The initial screen in this session is the familiar Navigator Screen.



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.



The Set-Up Software: TM-COM1

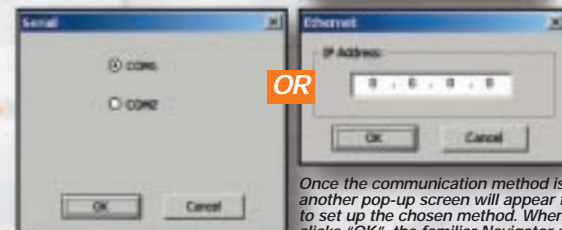
Same software with more options!



CooperTools' 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.



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.

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.

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 CooperTools' 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.

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.

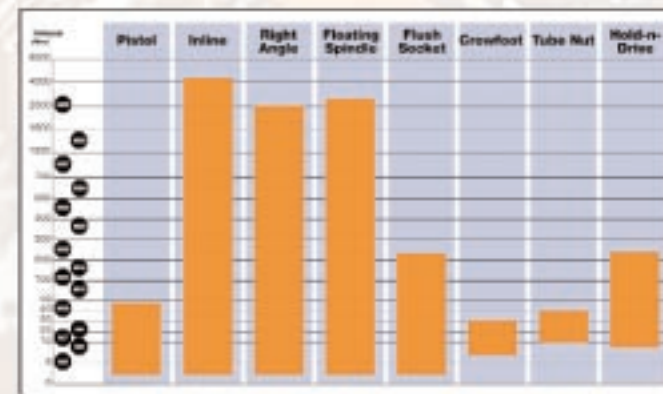
In the real world, industrial and production engineers translate the designs of the automotive or aeronautical engineers into fastening strategies that turn those designs into reality. Invariably, that means a broad variety of fastening applications requiring a wide range of tool types.

At CooperTools, 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.

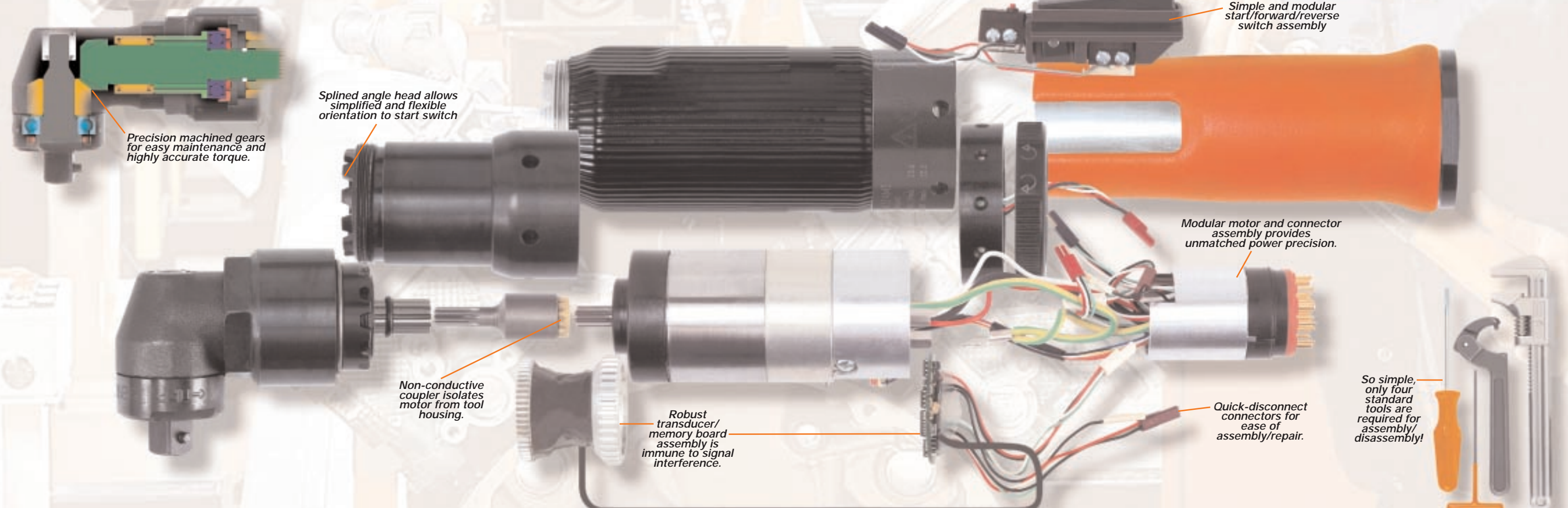
All Cleco DC electric tools are engineered to provide greater torque repeatability, minimal torque loss, increased speed control and ease of maintenance. They are designed to provide wider torque ranges for unprecedented flexibility and to enhance profit potential with engineering innovations that decrease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



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

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



Precision machined gears for easy maintenance and highly accurate torque.

Splined angle head allows simplified and flexible orientation to start switch

Non-conductive coupler isolates motor from tool housing.

Robust transducer/memory board assembly is immune to signal interference.

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!



The Total Solution

The total solution from CooperTools is supported by a broad array of accessories to help customize the Cleco Tightening Manager System to specific individual fastening requirements, as well as professional engineering and product support that are as close as a telephone or e-mail.

The accessory line includes synch boxes that enable the simultaneous use of multiple tools, keeping them synchronized so that the clamp-load is applied uniformly. The synch box also provides input and output connections for other accessories such as annunciators, remote start/stop devices, socket trays, and torque selector switches to help



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

engineer multi-phased fastening lines that meet special technical needs.

We have gone to great lengths to ensure that our cables and other accessories receive the same design and production attention that the more sophisticated components of the system enjoy. Our unique optional swivel cable is a testament to that effort. The built-in swivel mechanism absorbs the constant twisting and turning that will ultimately break even the most durable standard cables.

Cooper Tools maintains company-owned Service Centers in strategic locations throughout the world, staffed with professional tool repair

technicians who use genuine CooperTools parts and who are outfitted with the very latest in testing, calibration and inspection equipment. Each tool or controller that is returned to a customer from one of our Service Centers carries with it a warranty that is CooperTools' assurance that it will perform just like it did when it was new.

Our support personnel are fully capable of helping diagnose problems and to promptly recommend solutions. Moreover, we also offer custom software for your proprietary assembly applications.

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



are designed to be easy to service ... that is, of course, with properly trained personnel.

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



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

Service literature, product information, brand catalogs and FAQs are also available around the clock on the Web. Just access www.coopertools.com for the latest information available about the Cleco Tightening Manager System or any of our other products and services.



The Total Solution

TME Single Channel

Model Number		Language	Features	Weight		Width		Height		Depth	
115VAC	230VAC			lbs.	kg	in.	mm	in.	mm	in.	mm
TME-111-15-U	TME-111-30-U	English	Standard*	87	39.5	16.5	419.1	17.5	444.5	12.3	312.4
TME-111-15-U-EN	TME-111-30-U-EN	English	Ethernet	87	39.5	16.5	419.1	17.5	444.5	12.3	312.4
TME-111-15-U-ED	TME-111-30-U-ED	English	Ethernet & DeviceNet	87	39.5	16.5	419.1	17.5	444.5	12.3	312.4
TME-111-15-U-EP	TME-111-30-U-EP	English	Ethernet & Profibus	87	39.5	16.5	419.1	17.5	444.5	12.3	312.4
TME-111-15-D	TME-111-30-D	German	Standard*	87	39.5	16.5	419.1	17.5	444.5	12.3	312.4
TME-111-15-D-EN	TME-111-30-D-EN	German	Ethernet	87	39.5	16.5	419.1	17.5	444.5	12.3	312.4
TME-111-15-D-ED	TME-111-30-D-ED	German	Ethernet & DeviceNet	87	39.5	16.5	419.1	17.5	444.5	12.3	312.4
TME-111-15-D-EP	TME-111-30-D-EP	German	Ethernet & Profibus	87	39.5	16.5	419.1	17.5	444.5	12.3	312.4
TME-111-15-S	TME-111-30-S	Spanish	Standard*	87	39.5	16.5	419.1	17.5	444.5	12.3	312.4
TME-111-15-S-EN	TME-111-30-S-EN	Spanish	Ethernet	87	39.5	16.5	419.1	17.5	444.5	12.3	312.4
TME-111-15-S-ED	TME-111-30-S-ED	Spanish	Ethernet & DeviceNet	87	39.5	16.5	419.1	17.5	444.5	12.3	312.4
TME-111-15-S-EP	TME-111-30-S-EP	Spanish	Ethernet & Profibus	87	39.5	16.5	419.1	17.5	444.5	12.3	312.4
TME-111-15-P	TME-111-30-P	Portuguese	Standard*	87	39.5	16.5	419.1	17.5	444.5	12.3	312.4
TME-111-15-P-EN	TME-111-30-P-EN	Portuguese	Ethernet	87	39.5	16.5	419.1	17.5	444.5	12.3	312.4
TME-111-15-P-ED	TME-111-30-P-ED	Portuguese	Ethernet & DeviceNet	87	39.5	16.5	419.1	17.5	444.5	12.3	312.4
TME-111-15-P-EP	TME-111-30-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, 2 serial connectors, printer connector, keyboard connector.

TME 2-Channel

Model Number		Language	Features	Weight		Width		Height		Depth	
115VAC	230VAC			lbs.	kg	in.	mm	in.	mm	in.	mm
TME-121-15-U	TME-121-30-U	English	Standard*	103	46.8	16.5	419.1	17.5	444.5	14.1	358.1
TME-121-15-U-EN	TME-121-30-U-EN	English	Ethernet	103	46.8	16.5	419.1	17.5	444.5	14.1	358.1
TME-121-15-D	TME-121-30-D	German	Standard*	103	46.8	16.5	419.1	17.5	444.5	14.1	358.1
TME-121-15-D-EN	TME-121-30-D-EN	German	Ethernet	103	46.8	16.5	419.1	17.5	444.5	14.1	358.1
TME-121-15-S	TME-121-30-S	Spanish	Standard*	103	46.8	16.5	419.1	17.5	444.5	14.1	358.1
TME-121-15-S-EN	TME-121-30-S-EN	Spanish	Ethernet	103	46.8	16.5	419.1	17.5	444.5	14.1	358.1
TME-121-15-P	TME-121-30-P	Portuguese	Standard*	103	46.8	16.5	419.1	17.5	444.5	14.1	358.1
TME-121-15-P-EN	TME-121-30-P-EN	Portuguese	Ethernet	103	46.8	16.5	419.1	17.5	444.5	14.1	358.1

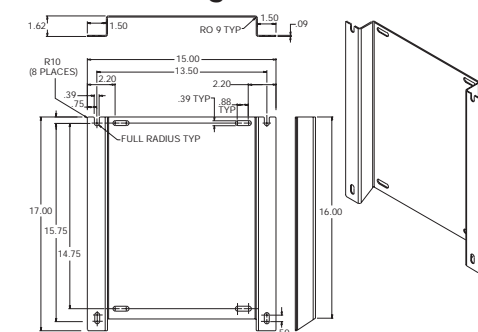
*3.5" floppy drive, 24 volt I/O, 2 serial connectors, printer connector, keyboard connector.

TMEM

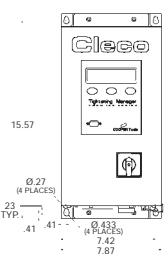
Model Number		Language	Features	Weight		Width		Height		Depth	
115VAC	230VAC			lbs.	kg	in.	mm	in.	mm	in.	mm
TMEM-114-15-U	TMEM-114-30-U	English	Serial connector	46	20.9	7.9	200.7	16.2	411.5	12.7	322.6
TMEM-114-15-U-IO	TMEM-114-30-U-IO	English	I/O*	46	20.9	7.9	200.7	16.2	411.5	12.7	322.6
TMEM-114-15-D	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-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-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

*24 volt I/O, Ethernet, and 2 serial connectors.

TME Mounting Dimensions



TMEM Mounting Dimensions



Software

Part Number	Description
TM-COM-V2.02	Network software
TM-COM1-V2.02	Setup software (Serial cable included)
TM-COM1M-V2.02	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)
543489	Notebook computer loaded with TM-COM1M (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

Software Functionality

	TM-COM	TM-COM1	TM-COM1M
Network Software	*		
Overview Screen	*		
Single point serial connection		*	*
Single point Ethernet connection	*	*	*
Navigator	*	*	*
Basic Application Builder	*	*	*
Torque Control/Angle Monitor	*	*	*
Angle Control/Torque Monitor	*	*	*
Standard Application Builder (Seq 11,30,50,41)	*	*	*
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	*	*	*

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



Tool Cables

Tool	Extension	Swivel	Length	
			Feet	Meters
542778-1M*†	-	542780-1M*	3	1†
542778-2M*†	-	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
542778-50M	542779-50M	542780-50M	164	50†

*Must be used with 542779 extension cable.
 † Indicates lengths not available for rapid delivery.



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



Ethernet Switches

Part Number	Ports			Approx. Dimensions		Approx. Weight	
	Total	In	Out	Inches	mm	Lbs.	Kg
543444-5	5	1	4	4.5x3.5x1.5	110x90x30	0.4	0.2
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



Patch Cables

Connects Ethernet Switches to TME or PC

Part Number	Length	
	Feet	Meters
543445-7	7	2
543445-25	25	7.5
543445-50	50	15
543445-100	100	30



543445-25

Direct Connect Cables

Connects TME or TMEEM direct to PC

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



543446-7

Annunciators

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



Synch Boxes

Spindles	Part Number
2	576060-2
3	576060-3
4	576060-4
5	576060-5
6	576060-6

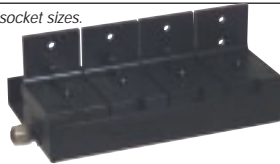


Input Accessories

Socket Trays

Description	Part Number
Four position	542978-4
Eight position	542978-8

Note: Specify socket sizes.



Torque Selector Switch

Torque Selector	Part Number
8 Select	542977-8



Start/Stop Switches

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



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