Instruction Manual
P1890E/EN
2011-09

Cleco®

17BP…B…

Cordless EC Tool

LIVEwire™

For additional product information visit our website at http://www.apextoolgroup.com

For this Instruction Manual

This Instruction Manual is a – translation of the original Instruction Manual – intended for all persons who work with this tool but do not do any programming work.

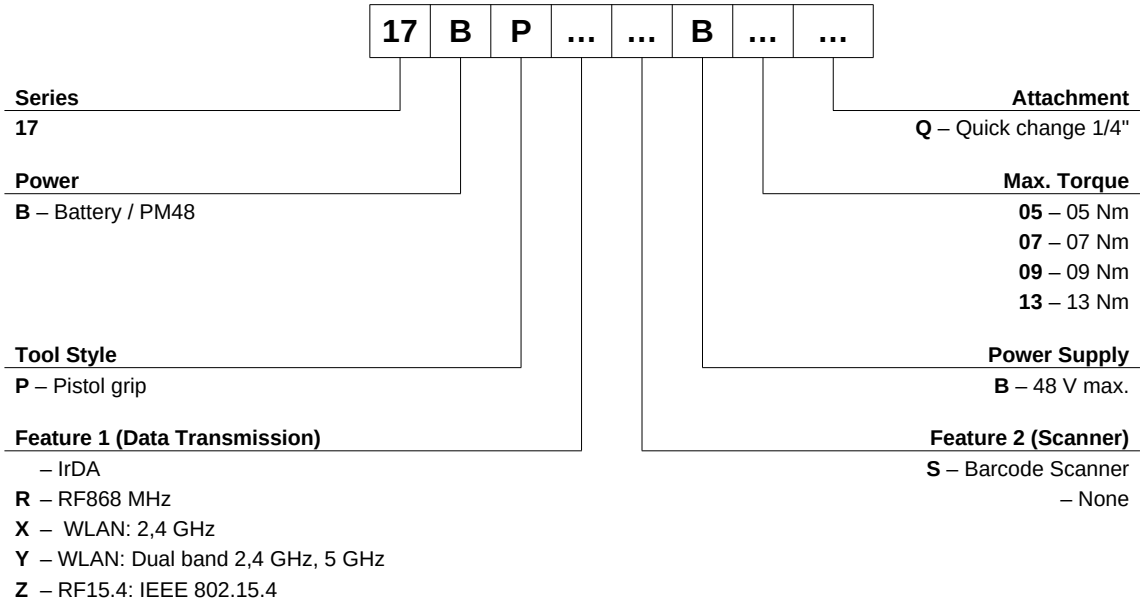
The Instruction Manual

- provides important notes for safe and effective use.
- describes the function and operation of the cordless EC tool.
- serves as a reference work for technical data, service intervals and spare part orders.
- provides information on options.

For more information on the operation of the 17BP see

- Installation instructions Cordless EC tool with WLAN data transmission, no. P1894E
- Programming manual controller TMEC-200, no. P1934E
- Programming manual controller TMEB-200, no. P1895E
- Programming manual TMEB-COM, no. P1898E for PC application
- Programming manual Nutrunner control m-Pro-400S/SE
- Programming manual Nutrunner control mPro400GC
- Instruction manual Power Module PM48, no. P1963E
- Instruction manual accupack 26 V 935377, no. P1970E
- Instruction manual accupack 44 V 936400PT, no. P2070BA
- Instruction manual battery charger 26 V 935391, no. P1893E
- Instruction manual battery charger 44 V 936491PT, no. P2069BA

Nomenclature



Identification text:

17BP	represents all models of the cordless EC tool as described here.
PS	represents all models of power supply as described here: Accupack / Power Module
RF15.4	represents the Wireless Fidelity IEEE 802.15.4
LMC	represents the interchangeable memory module LiveWire Memory Chip
➔	refers to required actions.
•	refers to lists.
kursiv	refers menu items, i. e.: *Diagnostics*
<…>	refers elements, that have to be selected or deselected, such as buttons or control boxes, i.e.: <F5>
`Courier`	refers names of paths and files are written in Courier font i.e.: **`setup.exe`**
\	refers selection of an item from the menu i.e.: *file* \ *print*

Identification graphic:

⟵	refers a movement in one direction.
⇩	refers function and force.

Copyright protection

Contents

1 Safety

1.1 Warnings and notes

Warning notes are identified by a signal word and a pictogram:

- The signal word describes the severity and the probability of the impending danger.
- The pictogram describes the type of danger.

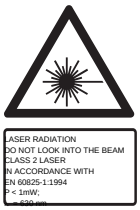
WARNING!

Indicates a potentially **hazardous** situation
which, if not avoided, could result in serious injury.

2009-08

CAUTION!

Indicates a potentially **hazardous** situation which, if not avoided, may result in minor or moderate injury or property and environmental damage. If this warning is not observed, injuries, property or environmental damage may occur.



Class 2 laser product
Class 2 laser scanners use a laser diode that produces a low-power visible light beam that is comparable to a very bright source of light, such as the sun.
Do not look into the laser beam when the laser is on.
Doing so can cause damage to the eyes.

NOTE

General notes
include application tips and useful information but no hazard warnings.

1.2 Basic requirements for safe working practices

You should read all instructions. Nonobservance of the instructions below may result in electrical shock, burns and serious injuries.

CAUTION! Work area

- ➔ Ensure there is enough space in the work area.
- ➔ Keep the work area clean.
- ➔ Electrical safety
- ➔ Protect the 17BP from rain and moisture. Use only in the inner zone (IP40).
- ➔ Follow the safety instructions printed on the battery pack and charger.
- ➔ Use 17BP only with power supply (PS) by Cleco.
- ➔ Do not open the battery pack.

Safety of persons

- ➔ The head can close when pushing the start button inadvertently (eg when putting down the tool). Fingers can be bruised or severed. Do not reach into the open head.
- ➔ Ensure a secure standing position. Maintain balance.
- ➔ Make sure that the PS is securely installed before operating the 17BP.
- ➔ Hold the 17BP tightly in the hand – be prepared for high short-term reaction torques.
- ➔ Do not carry the 17BP with the finger on the start button – prevent accidental operation.
- ➔ Do not look into the laser beam of tools with built-in barcode scanners.
- ➔ Follow generally valid and local safety and accident prevention rules.

Safe working with and around fastening tools

- ➔ Inspect bits for visible damage and cracks. Replace damaged bits immediately.
- ➔ Disconnect the 17BP from the PS before replacing the bits.
- ➔ Only use bits for machine-controlled fastening tools.
- ➔ Only use bits from Cleco, see 10.9 Socket for C1, C3, optional, page 66.
- ➔ Do not attach sockets on the head aslant.
- ➔ Make sure that the bits are securely inserted.

1.3 Operator training

All operators must be trained and experienced before operating the 17BP.
The 17BP may be repaired by authorized technicians only.

1.4 Personal protective equipment

When working
- Wear the protective goggles to protect against spurting metal splinters.

Danger of injury by being wrapped up in and caught by machinery
- Wear a hairnet.
- Wear close-fitting clothing.
- Do not wear jewelry.

1.5 Designated use

The 17BP is designed exclusively for fastening and releasing threaded fasteners.
The communication with the controller is allowed only over the following interface ports:

Types	Communications
All	IrDA interface port of the tool holder, order no. 935290
17BPR…	868 MHz with base station, order no. 961300 (EU)
17BPX...	WLAN standard IEEE 802.11b WEP, WPA/WPA2
17BPY...	WLAN standard IEEE 802.11a/b/g WEP, WPA(2), LEAP, PEAP
17BPZ…	WPAN standard IEEE 802.15.4

- Do not use it in areas where there is a risk of explosion.
- Do not open it or modify it structurally.
- Only use with accessory parts which are approved by the manufacturer (see 4 Accessories, page 17).
- Do not use as a hammer or for re-bending.

1.6 Codes and standards

It is mandatory that national, state and local codes and standards be followed.

1.6.1 FCC conformity

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

1.6.2 Canada conformity

Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

1.6.3 EMC

Industrial environment EMC limit class A.
The tool complies with the following EMC standards:
DIN EN 61000-6-4 Emitted interference
DIN EN 61000-6-2 Interference immunity

1.7 Noise and vibration

Noise level< 60 dB(A) free speed (without load) according to DIN EN ISO 4871:1997-03.
Vibration values < 2.5 m/s² according to DIN EN ISO 20643:2005-03.

2 Scope of supply, transport and storage

2.1 Items supplied

Check shipment for transit damage and ensure that all items have been supplied:

1 17BP
1 This instruction manual
1 Declaration of Conformity
1 Factory test certificate for transducers
1 Machine capability analysis

2.2 Transport

Transport and store the 17BP in the original packaging. The packaging is recyclable.

2.3 Storage

For short-term storage and for protection against damage:

➔ Place the 17BP in the tool holder.

For storage longer than 100 hours:

➔ Disconnect battery pack from the 17BP.
The battery pack is discharged by the electronics integrated in the tool.

Object	Time period	Storage temperature
17BP without PS	No guideline	-25 °C to +40 °C (-13 to 104 °F)

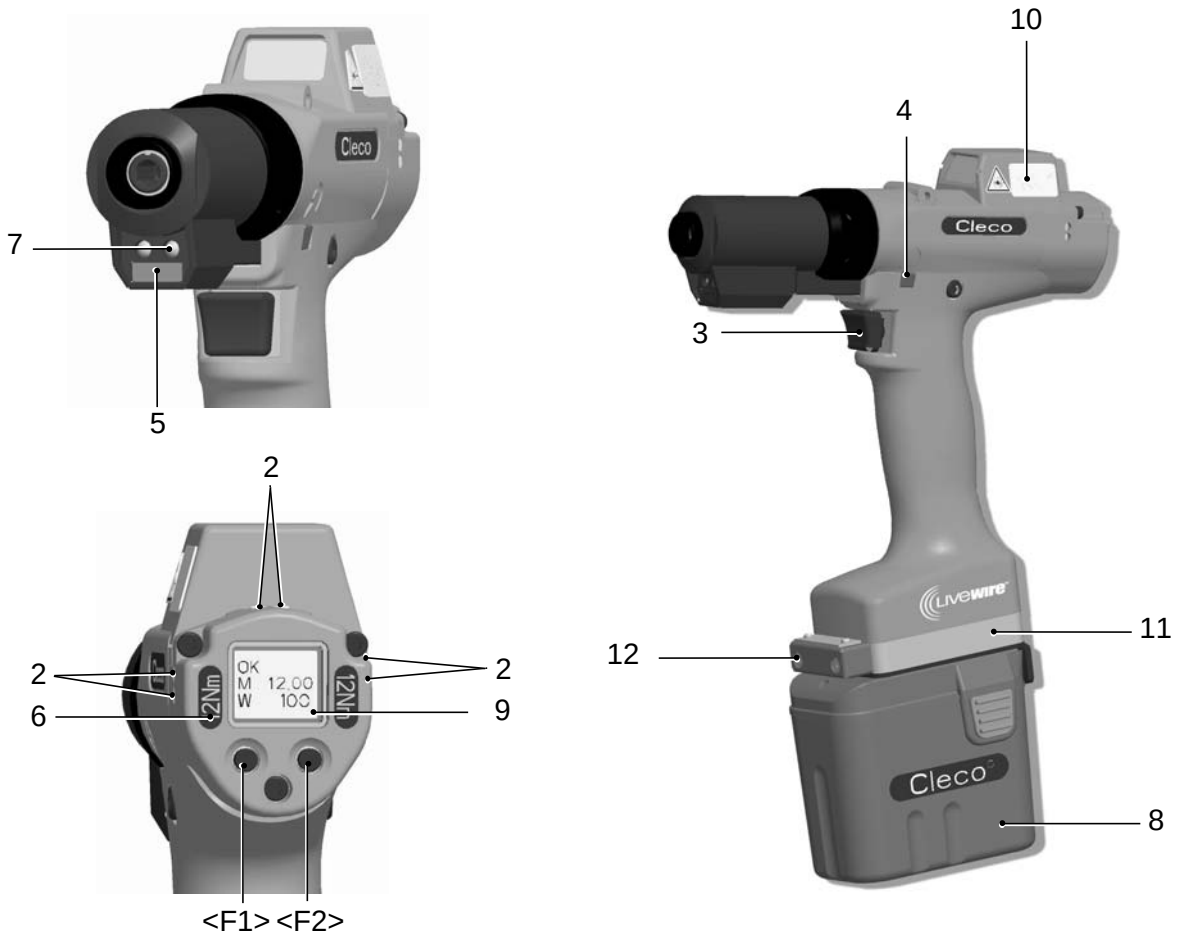
3 Product description

3.1 General description

- Sturdy, brushless motor with resolver.
  Shutoff is torque/angle-controlled.
- LCD display with information on status, torque and angle.
- Green OK and red NOK LED display provides information on the current fastening result.
- LED lighting makes it possible to find the screw point quickly.
- Clockwise/counterclockwise rotation
- Low vibration level
- Servo and fastening electronics are integrated in the 17BP.
- Fastening parameters are set with the controller or to a computer.
- An interchangeable memory module LiveWire Memory Chip (LMC) is installed to enable easy replacement of the tools, without changing the parameter.
- Data is transmitted between the controller and tool via (type dependent)
  - infrared (IrDA)
    Parameters and rundown results are transmitted to the control or to a computer simply by placing the 17BP in the tool holder.
  - 868 MHz
  - WLAN (IEEE 802.11b/g)
  - RF15.4 (IEEE 802.15.4).
- Power supply via
  - Akkupack 26 V / 44 V
  - Power Modul 48 V
- Built-in acoustic signal. The signal is activated after barcodes are scanned. It can also be activated after NOK rundowns for a programmable time.

3.2 Operation and functional elements

This chapter describes operational and functional elements and their tasks in the order of their respective item nos.



Item	Designation
<F1>, <F2>	Function keys
2	LED display
3	Start button
4	Reverse switch
5	IrDA (infrared interface port)
6	Set torque – stick-on marking foil
7	LED lights for fast location of the fastening position
8	Power supply (PS); accupack 26 V shown
9	LCD display with information on torque, angle and status
10	Barcode scanner
11	Wireless module
12	LiveWire Memory Chip (LMC); 17BPY…shown

3.2.1 Function keys

Left function key <F1>

- Confirm error message

➔ Press once.

Programmable: Depending on how the key is programmed, actions can be carried out by pressing it briefly.

- Exit menu

➔ Press for two seconds.

Right function key <F1>

- Activate menu

➔ Press until the display shows the *Main menu* (for additional information, refer to 7.3 Operating menu, page 24).

- Select functions, if menu is activated

➔ Press for two seconds. Alternatively, the start button can be pressed.

3.2.2 LED display

The LED display shows the respective operating status and the result of the last fastening sequence (see 6.2 Operating status, page 20):

LEDs	Operating status	Result after screwing cycle
Steady light Green	Active	OK
Steady light Red	Active	NOK
Flashing light Green – low frequency	Energy saver mode	
Off	Sleep	

If Linking is selected on the controller:

Flashing light Green – high frequency	Active / Settings: Linking	Linking OK
Flashing light Red	Active / Settings: Linking	Linking NOK

Software update

During *Software Update*, the actual programming process is indicated by rapid flashing alternating at irregular intervals between red and green.

NOTE

Do not interrupt programming by removing the PS during this phase.

3.2.3 Start button

According to settings the start button has 3 different functions:

- It activates the LED lighting.
  ➔ Press the start button halfway down and hold it.
- It starts the motor, the LED light goes out.
  ➔ Press the start button all the way down.
- It activates the barcode scanner—only for types of the 17BP series.

➔ Press the start button all the way down.

3.2.4 Reverse switch

The reverse switch changes the rotation direction of the 17BP:

Clockwise rotation – for screwing in screws
Press reverse switch as far as it will go.
When the start button is pressed *Active* appears on the LCD display.

Counterclockwise rotation – for loosening or screwing out screws
Press reverse switch as far as it will go.
When the start button is pressed *Left* appears on the LCD display.

3.2.5 IrDA interface port

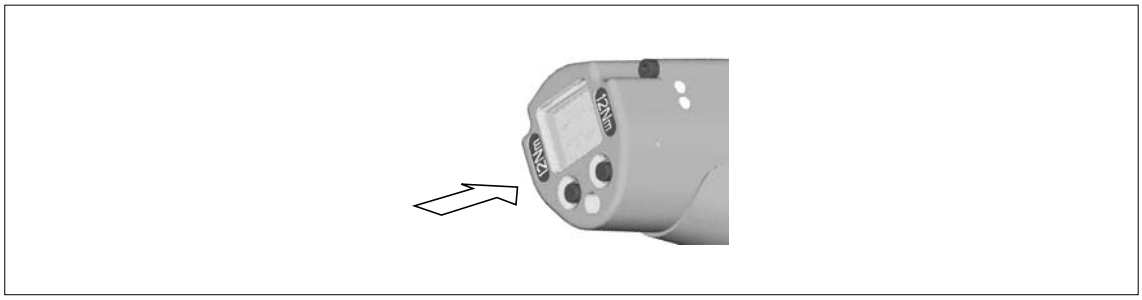
The 17BP communicates with the controller or a computer (TMEB-COM) via the IrDA interface port. For secure data transmission and for programming the 17BP, place the 17BP in the tool holder with IrDA interface port, Order no. 935144. Data transmission is possible in the Active, Energy saver mode and Standby operating modes, but not possible in Sleep
(see 6.2 Operating status, page 20).

NOTE

If the data transmission has been interrupted, the 17BP reports *Synch error* on the LCD display. Replace the 17BP in the tool holder. The complete data transmission is acknowledged on the display with *Remain 512*.

3.2.6 Identification – set torque (Optional equipment)

To identify the set torque on the 17BP, glue the corresponding marking foil to the right and the left of the LCD display. See 4 Accessories, page 17.



3.2.7 LED lighting

LED lighting make it possible to quickly find the screw point.
3 different activation methods are possible. Define the method by programming the controller correspondingly:

- Activation by pressing the start button halfway down (3.2.3 Start button, page 14).
- Time-controlled beginning at start
- You also have the option of disabling it.

The lighting distance is up to 19.7" (500 mm).

3.2.8 Power supply

See Instruction manual battery pack / Instruction manual Power Module PM48.

3.2.9 LCD display

See 7 LCD display, page 21

3.2.10 Barcode scanner

For tools of the 17BP series, the built-in barcode scanner is a class 2 laser scanner with a wavelength of 650 nm.

CAUTION!

Eye injury from class 2 laser beam

- ➔ Do not look into the laser beam window when the laser is on.
- ➔ Repair any damage immediately.
  Damage of the optical components can cause laser radiation.
- ➔ Modifications to the barcode scanner and procedures not outlined in these operating instructions are strictly prohibited.
- ➔ Take defective devices out of operation immediately.

The barcode scanner reads one-dimensional linear barcodes:

Scanning operation	Acoustic signal
• Successful	50 ms long
• Faulty • Not within 3 seconds • *Canceled* by pressing the start button	3 times in rapid succession

Depending on how the controller is programmed, there are two different operating modes:

Barcode as release for further rundowns

- ➔ Press the start button on the tool; this activates the barcode scanner.
  The successful scan is acknowledged by an acoustic signal.
- ➔ Press the start button on the tool again; this starts the rundown.

If is necessary to read another barcode, proceed as follows.

Barcode not necessary as release for further rundowns

- ➔ From the *Scanner* tool menu, select *Read barcode*.
- ➔ Press the start button on the tool; this activates the barcode scanner.
  The successful scan is acknowledged by an acoustic signal.
- ➔ Press the start button on the tool again; this starts the rundown.

Alternative: Assign the *Read barcode* function to the left function key <F1> on the tool.

➔ Press the left function key <F1> on the tool once.

➔ Press the start button on the tool again; this activates the barcode scanner.

Programming the barcode scanner is described in the programming manual of the controller.

3.2.11 Radio interface port

Tools are equipped with an wireless interface port in addition to the IrDA interface port.

Type	Communication	necessary counterpart
17BPR…	RF868 MHz	Base station order no. 961300
17BPX…	WLAN Standard IEEE 802.11b	Access Point according to Standard IEEE 802.11b
17BPY…	WLAN Standard IEEE 802.11a/b/g	Access Point according to Standard IEEE 802.11a/b/g
17BPZ…	WPAN Standard IEEE 802.15.4	Base station order no. 961390/961410

The tool uses the radio interface port for continuous communication with the controller. This interface port is used to transmit both the parameters and the rundown results. Data transmission is possible in the *Active*, *Energy saver mode* and *Standby* operating modes, but not possible in *Sleep* (see 6.2 Operating status, page 20). Programming and setting up the radio interface port are described in the programming manual of the controller.

NOTE

After the tool is switched on, it can take up to 35 seconds until the communication via WLAN is active.

3.2.12 LiveWire Memory Chip (LMC) – only for types of the 17BPY… series

To enable easy replacement of the tools during production, the interchangeable memory module LMC is installed. When the tool is switched on, the network settings are read from the LMC and used to establish the WLAN connection. During a tool change, the LMC from the tool being replaced must be transferred to the new tool to be used.

The following data are stored on the LMC:

- MAC address
- Network name (SSID)
- Encryption
- Network key
- Use of the DHCP server
- IP address
- Subnet mask
- Gateway
- Country-specific settings

The MAC address is defined by Apex Tool Group and cannot be changed. The other data can be changed via infrared connection of the tool to the controller.

4 Accessories

	Battery pack, Li-ion, 26 V Order no. 935377		Battery pack, Li-ion, 44 V Order no. 936400
	Battery charger, Li-ion 26 V (110 – 230 VAC) Order no. 935391 – 1-fold Order no. 935302 – 4-fold		Battery charger, Li-ion 44 V (85 – 270 VAC) Order no. 936491PT – 1-fold
	Power Module PM48 Order no. 961350		LMC Order no. 961327 – Europe Order no. 961461PT – USA/ Canada Order no. 961462PT – Japan
	Adapter cable Order no. 961341-030 – 3 m Order no. 961341-060 – 6 m Order no. 961341-080 – 8 m Order no. 961341-100 – 10 m		
	Extension cable Order no. 961342-030 – 3 m Order no. 961342-060 – 6 m Order no. 961342-080 – 8 m Order no. 961342-100 – 10 m		
	With IrDA interface, RS232 connection cable Order no. 935144 Without IrDA interface, RS232 connection cable Order no. 935396		
	RS232 Extension cable (IrDA) Order no. 935154 – 3 m (9.84") Order no. 935155 – 6 m (19.7") Order no. 935157 – 10 m (32.8")		
	Protective sleeve Order no. 941407 – Pistol Order no. 941410 – Scanner		
	Identification – set torque Order no. 935078		

5 Before initial operation

The 17BP has been configured by Apex Tool Group. A setting for your specific screw joint needs must only be made with the controller or a computer by a qualified person. For more information, refer to the controller programming manual.

5.1 Setting up tool holder

➔ Mount the tool holder on a stable base.

For tool holder with IrDA interface port:

➔ Select the location in such a way that no outside light shines onto the tool holder. This can inhibit data transmission.

➔ Lay the connection cable in such a way that there is no danger that persons can trip.

5.2 Ambient conditions

Ambient temperature	0 °C (32 °F) to maximum +40° C (+104° F)
Humidity	0 to 80 %, not with dew
Working height	up to 1000 m above sea level

5.3 Charging the battery pack

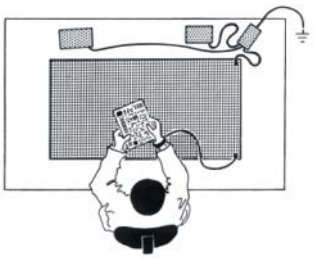
Battery pack is only partly charged when delivered.

➔ Charge fully before first use. See Instruction manual battery pack.

5.4 Changing the LMC

NOTE Observe Handling Instructions. Electrostatically sensitive component.

The electronic components of the cordless EC tool can be destroyed or damaged by electrostatic discharge (ESD) leading to an immediate or later failure. To prevent damage when exchanging the LMC, make sure that a potential equalization occurs between operator and tool.

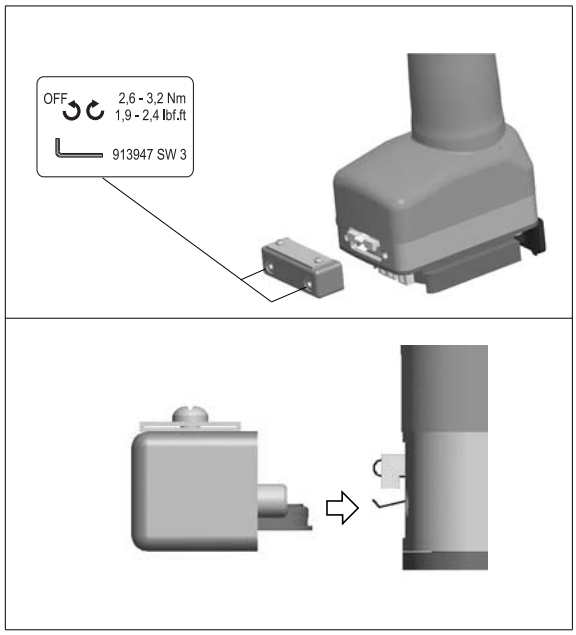


Grafik: CANESPA

➔ Assembly is best done in an ESD-protected environment. Recommendation for an ESD workplace: Electroconductive work surfaces, antistatic bands, appropriate furniture, clothing, shoes, flooring as well as grounding of all components..

NOTE

LMC may only be used with the battery pack inserted.



Removing LMC

- ➔ Remove the battery pack.
- ➔ Unscrew the screws (M4, DIN 912).
- ➔ Carefully pull LMC out of the handle and replace it.

Inserting LMC

- ➔ Carefully insert LMC according to the illustration.
- ➔ Tighten the screws (M4, DIN 912).
- ➔ Insert the battery pack.

Fig. 5-1: Changing the LMC

5.5 Changing the screw inserts

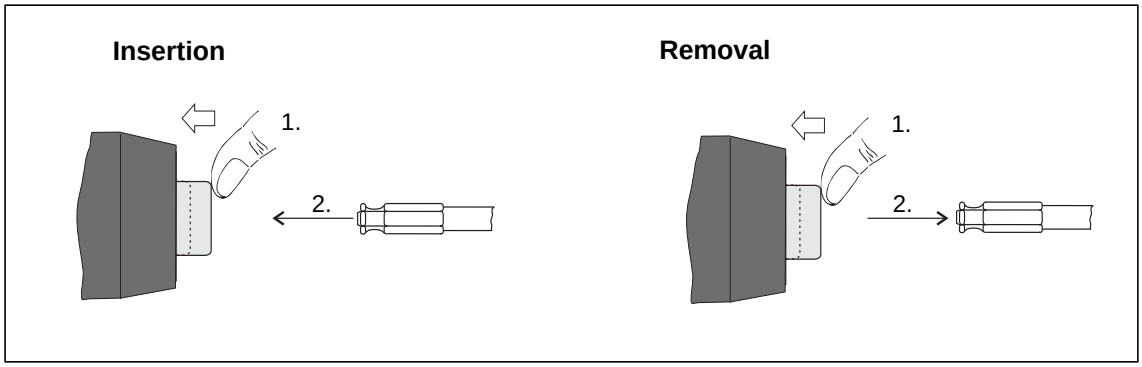


Abb. 5-2

Screw bits (GETA / APEX recommended):
Connection in accordance with DIN 3126, form E 6,3 (¼" shank).

6 First Operation

6.1 Carrying out the rundown

Make sure that the battery pack is securely installed before operating the 17BP. The 17BP is now ready for use.

➔ Press and release the start button: the LCD display reads *Ready*.

Types with wireless transmission continuously communicate with the controller. The tool automatically receives the parameters and, when the rundown is complete, automatically sends the rundown results to the control system. Programming and setting up the wireless interface port are described in the programming manual of the controller.

Types without wireless transmission must be placed in the tool holder when the rundown is complete. The rundown results are transmitted and shown under the *Run screen* menu item.

6.2 Operating status

The operating modes change in the following order.
The following functions are available depending on the display:

Operating status	**LED display**	**LCD display**	**Function**
Active	Steady light: Red – Rundown NOK Green – Rundown OK	On	Screws Data transmission
Automatic switch to the following after 1 minute idle time:			
Energy saver mode	Flashing light Green	Off	Data transmission
Automatic switch to the following after further 10 minutes:			
Sleep	Off	Off	Data transmission not possible
Manual switch from *Sleep* to *Active*: Press down start button and hold down for approx. 1 second. To switch off the 17BP manually, pull out the battery.			

7 LCD display

The LCD display on the tool is divided into the result display, status display, operating menu and system error messages.

7.1 Result display

The LCD display consists of a three lines, each with 6 characters,
to display the status, torque and angle. The result display is updated after the rundown ends.

First line – result:

OK	Result is OK
NOK	Result is not OK
OFF	Torque encoder offset error
CAL	Torque encoder calibration error
ENC	Angle encoder error
IP	Current overload in output section
IIT	Requested motor output is too high
TMAX	Maximum fastening time exceeded
RC	Rundown terminated by disabled start signal
TS	Depth sensor signal was enabled at start or was subsequently disabled during the rundown (only for 17BP series)
Tq<	Torque too low
Tq>	Torque too high
A<	Angle Low
A>	Angle High
Error	Error occurred

The status is displayed in alternation with the Application being used.

Second line – Shut-off torque in Nm:

T Torque Target

Third line – Shut-off angle in degrees:

A Shut-off angle

The ⚿ symbol at the top right shows an interrupted data connection to the control.

7.2 Status display

The status display is divided into the "Standard" and "Linking" modes. "Standard" is selected if "Linking" is not enabled at the control system

➔ See **`Advanced Application Builder\Linking`**). The application is selected at the <Run Screen> or via the App. selection inputs.

Ready

No other status messages take priority.
The tool is ready.

Remain 512

Number of remaining rundowns that can still be carried out until the rundown data memory is full and the rundown data have to be transmitted to the control.

Emerge Strate

Emergency strategy active. Indicates that the emergency strategy is currently enabled and thus that no connection to the control must exist.
A maximum of 512 rundowns can be carried out.

Job comple Sync

All fastening sequences have been completed.

➔ Synchronize the tool with the control once again.

No Job Sync

No fastening sequences have been initialized.

➔ Synchronize the tool with the control once again.

Parame not set

No fastening sequence parameters have been set.

➔ Check the Application and Tightening group selected on the control to determine whether the tool settings and process programming have been carried out.

App locked Sync

Application locked.

➔ Synchronize the tool with the control once again.

Reject Releas Sync

Reject Release active.
The Reject Release was programmed in the control.

➔ See **`Advanced Application Builder\Reject Release`**.

➔ Depending on the programming, unlock the tool via the external input *NOK release* or Release on Backoff. For unlocking via the external input *NOK release*, set the external input and synchronize it with the control.

Sync Error

Error in last data synchronization with the control.

➔ Synchronize the tool with the control once again.

Tool not set

Tool has not yet been synchronized with a control.

➔ Synchronize the tool with the control for the first time.

Input Enable Missin

The *Tool Enable* input is missing.

➔ Set the *Tool Enable* input.

➔ Synchronize the tool with the control once again.

This message can appear only if **`External Tool Enable`** has been activated in **`Advanced Application Builder\System settings`**.

Need Part ID

No barcode was detected within the timeout or an invalid barcode was read. The display switches to *Expect barcod*.

➔ Scan the barcode in again.

Additional messages in "Linking" mode

N.Pos1 of 3 Rpl 0

First line: The next position to be fastened.
Second line: Number of positions.
Third line: Number of repetitions at this position in case of an NOK rundown.

Linkin No Result

Linking has been canceled without a batch result.
Not all of the positions in the tightening group have been programmed.

➔ Check the Application and Tightening group selected on the control to determine whether the tool settings and process programming have been carried out.

Linkin OK

Linking result OK.

Linkin NOK

Linking result NOK.

Linkin locked Synch

Linking disabled.

➔ Synchronize the tool with the control once again.

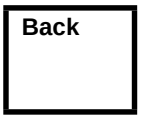
7.3 Operating menu

7.3.1 General

The operating menu on the tool is divided into a main menu and submenus. You can navigate through the menus using the two function keys below the LCD display. In the following description, <F1> is used for the left function key and <F2> is used for the right function key. The menu is activated by pressing the right function key, <F2>. The menus can be disabled by configuring appropriate parameter in the controller.

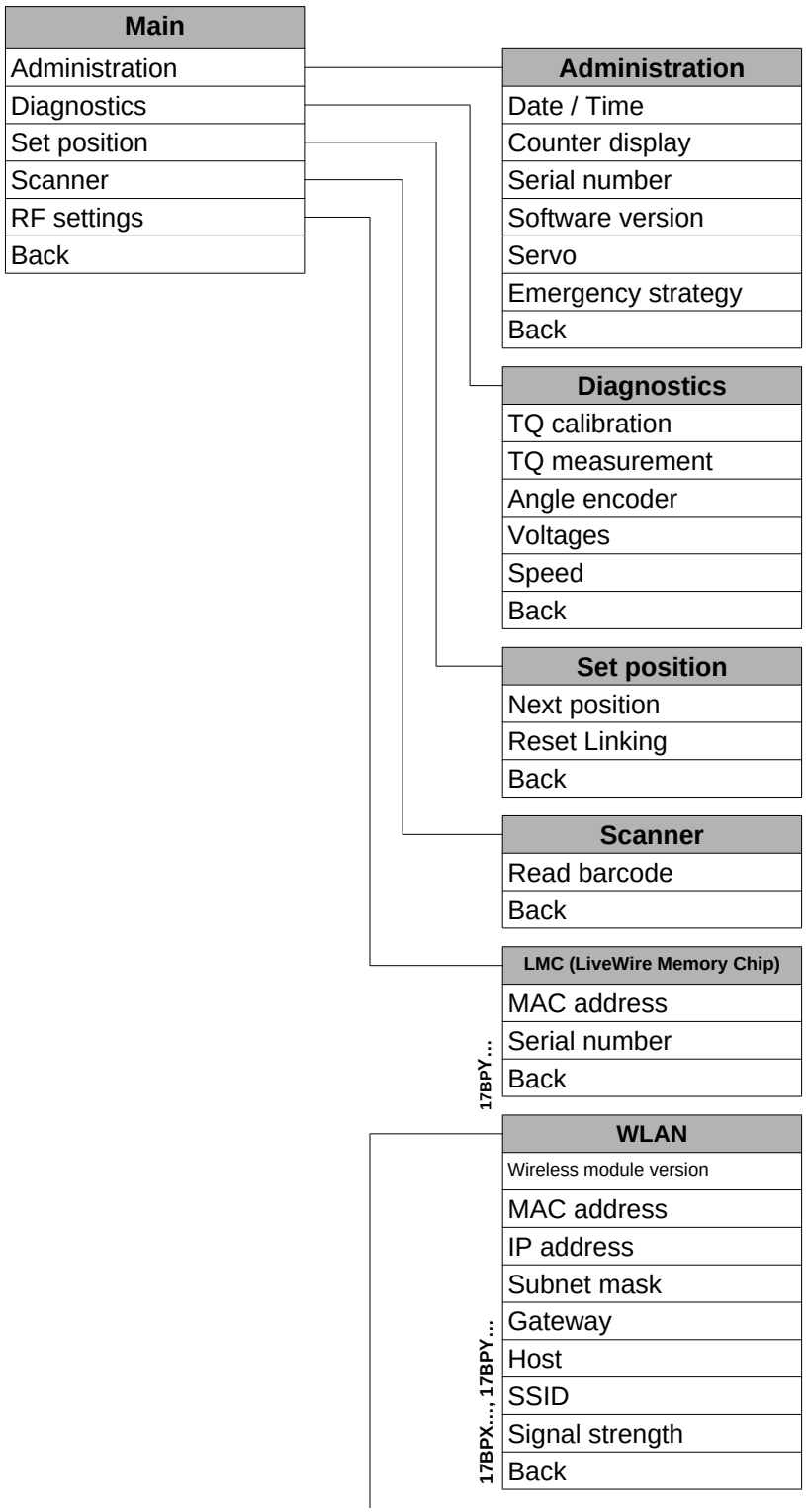
Basic functions:

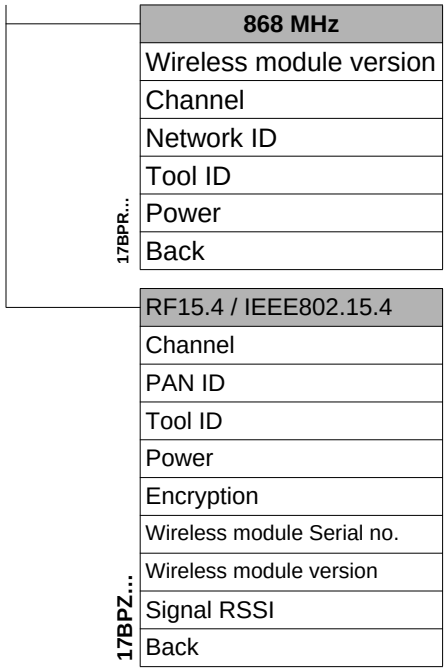
- ➔ <F2>: Activate main menu.
- ➔ <F1>: Go to previous menu item.
- ➔ <F2>: Go to next menu item.
- ➔ Press <F1> longer than 2 seconds
  to go to the next higher menu level. If the main menu is activated, the system goes into production mode.
- ➔ Press the start button or <F2> longer than 2 seconds
  to activated the highlighted item or execute the highlighted action. Actions that start the tool can be carried out only by pressing the start button.
- ➔ If the menu is enabled, no rundowns are possible.
- ➔ Each submenu has an entry for *Back*.



Enables the main menu.

7.3.2 Structure





7.3.3 Main menu

>Main Admini strati

Administration – General items such as Date/Time, Counter display, etc.

>Main Diag- nostic

Diagnostics – Diagnostic functions for the tool.

>Main Posi- tion

Position – Selects the position to be used next.

>Main Scan- ner

Scanner – Deletes a previously read barcode and activates a new read cycle.

>Main RF-SET WLAN

RF settings – Displays the settings used for wireless transmission.

7.3.4 Administration submenu

Time **07:47** **30.09**

Date/Time
Displays the tool system time.
The system time can be displayed in US or European format.

➔ Refer to "Setting the system time on the control" under **`Administration\Date\Time`**.

Counte **99** **XXXXXX**

Counter display
The tool counter display is incremented after each rundown throughout the service life of the tool.

➔ Refer to control under **`Diagnostics\Tool\Tool Memory`**.

S/N **000000** **245**

Serial number
Displays the tool serial number.

➔ See serial number on the control under **`Tool`** or **`Diagnostics\Tool\Tool Memory`**.

Vers. **V1.00.** **00**

Control software version
Displays the installed software version.

Servo **V:T10C** **N00015**

Servo software version
Displays the installed software version.

NOTE

The emergency strategy can be enabled only if this is enabled on the control.

➔ See **`Advanced Application Builder\System settings`** *Emergency strategy* enabled.

Emerge **Strate** **locked**

Emergency strategy disabled.

➔ See **`Advanced Application Builder\System settings\Enable emergency strategy`**.

Emerge **Strate** **Off**

Emergency strategy off.
If the emergency strategy has been enabled on the control, see
`See Advanced Application Builder\System settings\Enable` *emergency strategy*
The emergency strategy can be enabled and disabled via the tool start button or by pressing <F2> for 2 seconds. The Emergency strategy is disabled automatically when the tool links to the control.

Emerge Strate On	Emergency strategy on. If the emergency strategy is enabled and *Linking* is disabled, the fastening parameters of the last selected Application are used. For *Linking* operating mode, all steps are used with the corresponding parameters of the last selected Tightening Group. The memory of the tool stores data from up to 512 rundowns. If more rundowns than this are executed while the Emergency strategy is active, the oldest results are always discarded once 512 rundowns have been recorded.
Emerge Active	*Emergency strategy* active. Is displayed during fastening.

7.3.5 Diagnostics submenu

Cal OK
K 1.11
O 0.00

TQ calibration
This test function cyclically recalibrates the system with the values used immediately before the start of a rundown. For this, the tool must not be tensioned!
First line: Calibration test and status.
Second line: TQ calibration voltage.
Third line: Offset voltage. If a value lies outside the tolerance range, the corresponding error is displayed.

Value	Rated value	Tolerance
TQ calibration voltage:	1.10 V	± 45 mV
Calibration offset	0 V	± 58 mV

Torque
T 5.57
T 8.23

TQ measurement
In this test function, after the start button is pressed, the same calibration is carried out as immediately before the start of a rundown. For this, the tool must not be tensioned!
Then, the tool starts with speed "0". The torque is continuously measured and displayed until the start button is released.
Second line: Current torque.
Third line: Peak value, highest value since the start button was pressed.

Angle
A 360
OK

Angle encoder
The start button starts the tool at 30% of the maximum speed. After one revolution of the output shaft (nominal angle 360°), measured with the resolver, the tool is stopped. During a fixed dwell time of 200 ms, any further angle pulses occurring are traced. The total result is shown as Actual Angle. If the test run is not terminated by a monitoring criterion and the batch result is greater than or equal to 360 degrees, it is evaluated and displayed as OK. Monitoring criteria are the torque and a monitoring time.

If the torque exceeds 15 % of the calibration value (even during the dwell time), or if the monitoring time of 4 seconds expires, the test run is terminated with a *TQ>* or *TMAX* result. However, you specifically need to check whether the output shaft has actually turned by the value indicated (e. g. by placing a mark on the spindle). If the angle reached by the output shaft does not agree with the value displayed, either the angle factor has been entered incorrectly or the resolver is defective.

Voltage
V26.40
U19.00

Voltages
Second line: Current battery voltage. To ensure high utilization potential, this voltage is monitored continuously during fastening operation. If the voltage drops below limit, a warning output on the tool.
Third line: Programmed value.
This can be changed using the control (under **`Tool`**).

Speed
Rpm466
T 0.02

Speed
The start button starts the tool at the maximum speed.
Second line: Current output shaft speed.
Third line: Current torque.
Rotational speed measurement is based on the angle information of the resolver. If you release the start button, the tool stops. As a safety function the torque is monitored by the tool transducer. If it exceeds 15 % of its calibrated value, the speed measurement is terminated.

7.3.6 Set position submenu – only with Linking enabled

>Posit Change Positi

Selects the position to be used next.

Select Positi 2/6

You can skip the position.
You can select the position to be used next using the function keys:

- ➔ <F1>: Activate the previous position.
- ➔ <F2>: Activate the next position.
- ➔ Press the start button or <F2> longer than 2 seconds to accept the select and display the next menu item.
- ➔ Press <F1> longer than 2 seconds to delete the selection and exit the menu.

>Posit Reset Positi

Reset linking to position 1. The machine operator can cancel Linking.

7.3.7 Scanner submenu – only for types of the – only for types of the 17BP…S series

>Scann Activa Scanne

Scanner – Deletes a previously read barcode and activates a new read cycle.

- ➔ Press the Start button or <F2> for longer than 2 seconds.

7.3.8 WLAN wireless transmission submenu – only for types of the 17BPX…/17BPY… series

The WLAN RF settings submenu shows the settings being used.
If no actions are carried out, the menu is automatically exited after 60 seconds.
Programming the RF settings for WLAN data transmission is described in the programming manual of the control.

Versio #27173 Dec 1

Displays the installed software version of the wireless module.

MAC 00302e e162f8

MAC address display

IP 010 .122.0 77.110	IP address display
Sub255 .255.2 40.0	Subnet display
Gat010 122.0 61.001	Gateway display
SSID CPT	Display SSID. Only a maximum of the first 12 characters are displayed.
N: 34 S: -60	When the start button is pressed, the current wireless signals are displayed. 17BPX…/17BPY…: N = Signal strength (%) S = Signal strength (dBm)

7.3.9 868 MHz wireless transmission submenu – only for types of the 17BPR… series

The 868 MHz RF settings submenu shows the settings being used. If no actions are carried out, the menu is automatically exited after 60 seconds.
Programming the RF settings is described in the control programming manual.

Versio B868 MC-tin	Displays the installed software version of the wireless module.
Chan- nel 1/3	Displays the radio channel being used and allows you to configure settings. With 868 MHz, you can select channel 1 – 3. ➔ <F1>: Activate a lower channel. ➔ <F2>: Activate a higher channel. ➔ Press the start button or <F2> longer than 2 seconds to accept the select and display the next menu item. ➔ Press <F1> longer than 2 seconds to delete the selection and exit the menu.

NOTE

The channel must match the set channel of the base station.

Networ ID 1/16

Defines the network identification. You can operate no more than 4 tools per network ID.

- ➔ <F1>: Activate a lower network ID.
- ➔ <F2>: Activate a higher network ID.
- ➔ Press the start button or <F2> longer than 2 seconds to accept the select and display the next menu item.
- ➔ Press <F1> longer than 2 seconds to delete the selection and exit the menu.

NOTE

The network ID must match the set network ID of the base station.

Tool ID 1/4

Displays the tool ID and allows you to configure settings.
You can select a channel from 1 – 4.

- ➔ <F1>: Activate a lower network ID.
- ➔ <F2>: Activate a higher network ID.
- ➔ Press the start button or <F2> longer than 2 seconds to accept the select and display the next menu item.
- ➔ Press <F1> longer than 2 seconds to delete the selection and exit the menu.

NOTE

Each tool can be used only once for each base station.

Power 25 mW

Displays the transmission power and allows you to configure settings.

- ➔ <F1>: Activate a lower transmission power.
- ➔ <F2>: Activate a higher transmission power.
- ➔ Press the start button or <F2> longer than 2 seconds to accept the select and display the next menu item.
- ➔ Press <F1> longer than 2 seconds to delete the selection and exit the menu.

For 868 MHz, the maximum transmission power depends on the selected channel. If channel 1 is selected, you can choose between 1, 5, 10, and 25 mW for the transmission power. If channel 2 or 3 is selected, you can choose either 1 or 5 mW for the transmission power.

- ➔ Press the start button or <F2> longer than 2 seconds to accept the select and display the next menu item.
- ➔ Press <F1> longer than 2 seconds to delete the selection and exit the menu.

7.3.10 Wireless transmission RF15.4 submenu only available on models from series 17BPZ…

The RF15.4 wireless transmission submenu shows the settings being used. If no actions are carried out, the menu is automatically exited after 60 seconds.

Programming the wireless settings is described in the controller programming manual.

RF15.4 Chan-nel

Displays the radio channel being used and allows you to configure settings.
Channel 11 – 26 as per IEEE802.15.4 are available for selection (2.4 GHz range).

Chan-nel 21

Displays the radio channel being used and allows you to configure settings.

- ➔ Start button>: show channel (default: 21).
- ➔ <F1>: Activate a lower channel.
- ➔ <F2>: Activate a higher channel.
- ➔ Press the start button or <F2> longer than 2 seconds to accept the selection and display the next menu item.
- ➔ Press <F1> longer than 2 seconds to delete the selection and exit the menu.

NOTE

The channel must match the set channel of the base station.

RF15.4 PAN

Defines the network identification. You can operate no more than 4 tools per PAN ID.

- ➔ Start button>: show PAN ID (default: C007).

PAN

1234

The PAN ID consists of 4 hexadecimal numbers.
A maximum of 65 535 different PAN IDs are therefore available.
Cursor flashes under the number to be modified:

- ➔ <F1>: lower number
- ➔ <F2>: higher number.
- ➔ Press the start button: the selected number is adopted and the cursor moves to the next number.
- ➔ Press <F1> longer than 2 seconds to delete the selection and exit the menu.
- ➔ Press <F2> longer than 2 seconds to confirm the selection and exit the editing field.

Once all 4 numbers are confirmed, the editing field closes.

NOTE

The PAN ID must match the preset PAN ID of the base station.

RF15.4 Tool ID

Displays the tool ID and allows you to configure settings.
You can select a channel from 1 – 4.

- ➔ Start button>: show tool ID (default: 1).
- ➔ <F1>: Activate a lower network ID.
- ➔ <F2>: Activate a higher network ID.
- ➔ Press the start button or <F2> longer than 2 seconds to accept the selection and display the next menu item.
- ➔ Press <F1> longer than 2 seconds to delete the selection and exit the menu.

NOTE

Each tool can be used only once for each base station.

RF15.4 Power

Displays the transmission power and allows you to configure settings.
5 transmission power settings are available.

Power

Displays the transmission power and allows you to configure settings.

- ➔ <Start button>: show power settings on display (default: maximum).
- ➔ <F1>: Activate a lower transmission power.
- ➔ <F2>: Activate a higher transmission power.
- ➔ Press the start button or <F2> longer than 2 seconds to accept the selection and display the next menu item.
- ➔ Press <F1> longer than 2 seconds to delete the selection and exit the menu.

Display	Transmission power dBm	Transmission power mW
	0	1
	-2	0.63
	-4	0.40
	-6	0.25
	-10	0.10

RF15.4 **AES**

Displays the data transmission encryption.
AES = Advanced Encryption Standard, code length = 128 bit.

AES **On**

On and *Off* are available for selection.

- ➔ Start button>: show encryption (default: off).
- ➔ <F1>: Activate *On*.
- ➔ Press the start button or <F2> longer than 2 seconds to accept the selection and display the next menu item.
- ➔ Press <F1> longer than 2 seconds to delete the selection and exit the menu.

NOTE

On / *Off* must match the preset PAN ID of the base station.

S:0013 **A20×××** **××××××**

Displays the wireless module serial number.

Vers. **10A5** **1707**

Displays the firmware and hardware version of the RF15.4 module.
This serial number is also the MAC address of the wireless module.

RF15.4 **Signal**

Displays the current RSSI value.
RSSI = Received Signal Strength Indication, indication of the reception strength of wireless communication systems.
The lower the RSSI value, the poorer the signal strength.
Value range: 0 (very good) to -100 (no reception).
If the tool is positioned in the direct vicinity of the base station and the transmission power is preset to maximum, the RSSI value should be between -30 and -55. Data transmission become unreliable if the RSSI value falls below -85.

7.3.11 LMC submenu

MAC **00302e** **e162f8**

➔ MAC address display.

S: 5800 **00008D** **54C823**

➔ Displays the LMC serial number.

7.4 System error messages

NOTE

If an error is displayed, fastening is disabled until the error is acknowledged with the left-hand button on the tool. In the event of serious hardware errors, the tool is not enabled again even after the error is acknowledged, and must be returned to the manufacturer for repair.

Servo **Error** **Init**

Initialization error in tool servo.
- ➔ Remove the battery and then re-insert it. If this does not help:
- ➔ Return tool to *Sales & Service Centers* for repair.

Servo **Error** **PWM**

Speed specification from the measuring board to the servo is faulty.
- ➔ Remove the battery and then re-insert it. If this does not help:
- ➔ Return tool to *Sales & Service Centers* for repair.

Servo **Error** **IIT**

Too much power is being demanded from the tool.
- ➔ Switch the tool off for a time so that it can cool down.
- ➔ Increase the cycle time, reduce the fastening time or the torque.

Servo **Error** **IOFF**

The servo's current sensor is detecting a current offset error.
- ➔ Return tool to *Sales & Service Centers* for repair.

Servo **Error** **Other**

Collective servo error caused by hardware.
- ➔ Return tool to *Sales & Service Centers* for repair.

Servo **Error** **IP**

The current set point has been exceeded.
There may be a short circuit.
- ➔ Return tool to *Sales & Service Centers* for repair.

Servo Error Temp >	The servo has overheated. ➔ Switch the tool off for a time so that it can cool down. ➔ Increase the cycle time, reduce the fastening time or the torque.
Servo Error TempM>	The tool motor has overheated. ➔ Switch the tool off for a time so that the motor can cool down. ➔ Increase the cycle time, reduce the fastening time or the torque.
Servo Error Voltag	Operating voltage is outside the admissible range. ➔ Change the battery. If this does not help: ➔ Return tool to *Sales & Service Centers* for repair.
Servo Error Curr>	Current at servo output stage is too high. There may be a short circuit. ➔ Return tool to *Sales & Service Centers* for repair.
Servo Error Angle	Tool angle encoder is sending incorrect signals to the servo amplifier. ➔ Return tool to *Sales & Service Centers* for repair.
Low voltag warnin	Warns that battery is running low. ➔ Recharge battery or replace it with one that is already charged.
Servo Error Ande80	Servo firmware is not compatible with measuring board software. ➔ Update servo firmware.
Tool Error Counte	The rundown counter could not be read or written to. ➔ Return tool to *Sales & Service Centers* for repair.
Tool Error Ident	Tool memory could not be read. ➔ Return tool to *Sales & Service Centers* for repair.
Tool Error Start	Two-stage start button defective. ➔ Return tool to *Sales & Service Centers* for repair.

Transd Ref.V. Error	Transducer reference voltage error. ➔ Return tool to *Sales & Service Centers* for repair.
Trans CAL Error	Transducer calibration voltage error. Tool was not discharged at time of calibration. ➔ Allow tool to discharge and try again. If this does not help: ➔ Return tool to *Sales & Service Centers* for repair.
Trans Off Error	Transducer offset voltage error. Tool was not discharged at time of calibration. ➔ Allow tool to discharge and try again. If this does not help: ➔ Return tool to *Sales & Service Centers* for repair.
Unknow Error	General collective error. Return tool to *Sales & Service Centers* for repair.
Batter empty -> off	The battery is empty. ➔ Replace the battery
No result	The rundown evaluation torque was not reached. ➔ Repeat the current rundown.

8 Maintenance

8.1 Cleaning instructions

For tools with a built-in barcode scanner, the window must be free of dirt.

➔ Clean it regularly—or immediately, if it becomes dirty—using a damp cloth and a conventional window cleaner. Do not use acetone for cleaning. A dirty window may make it impossible to read barcodes.

8.2 Service schedule

Repairs may only be carried out by Apex Tool Group authorised personnel. Regular maintenance reduces operating faults, repair costs and downtime. In addition to the following service schedule, implement a safety-related maintenance program that takes the local regulations for repair and maintenance for all operating phases of the tool into account.

CAUTION!

Danger of injury due to unintentional activation
– before service - disconnect the 17BP from the battery.

After … fastening cycles[1)]	Actions
100.000	➔ Check to ensure the accu adapter, scanner and radio adapter are seated securely. ➔ Check the tool and PS for damage. ➔ Check to ensure scanner window is transparent. ➔ Check to ensure PS contacts are clean. ➔ Check to ensure battery charger is clean. ➔ Check the gearing for leaks
500,000	➔ Use grease-dissolving agent to clean the gearing components and then regrease, see 10.1 Gear, page 50. ➔ Check the gearing components for wear and replace if necessary. ➔ Check battery guide, locking mechanism and contacts for wear and replace if necessary.
1 million	➔ Recommendation: Recalibrate tool, see 12.1 Recalibration, page 62.
2.5 million	➔ General overhaul. Send it to *Sales & Service Centers*.

1) For the number of fastening cycles, refer to the counter display in 7.3.4 Administration submenu, page 27

8.3 Lubricants

For smooth function and a long service life, use of the correct grease type is essential.

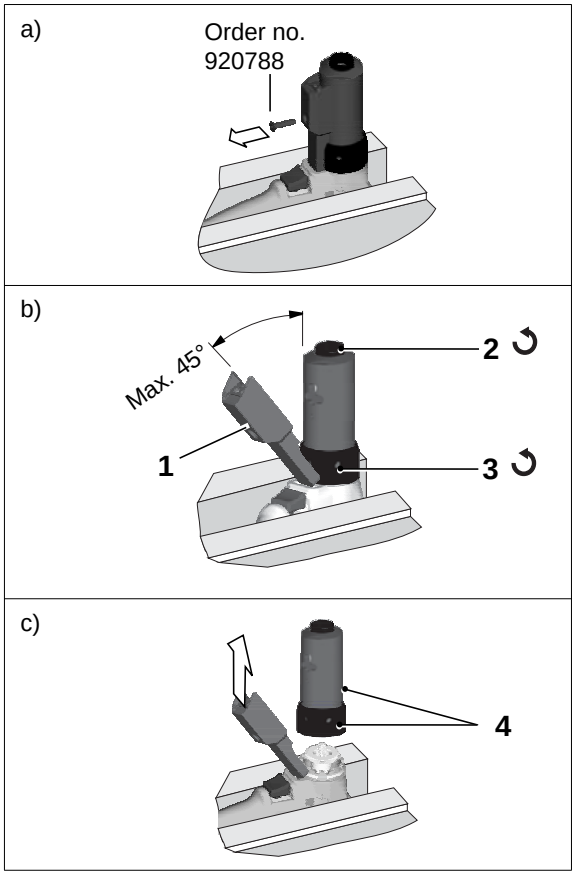
Grease lubricants according to DIN51502 /ISO3498

Order no. 	Packing unit	DIN 51502	ARAL	BP	elf	Mobil®	KLÜBER LUBRICATION	SHELL	Nye Lubricants, Inc.	Dow Corning
933027	1 kg	KP1K	–	–	–	–	Microlube GL 261	–	–	

8.4 Disassembling gear

Notes

If the 17BP is opened, the warranty is voided. Only specialized technicians should be allowed to open the gear for maintenance reasons.



- ➔ Carefully clamp the 17BP on the pistol grip in a vice with plastic jaws.
- ➔ Remove the countersunk screw, order no. 920788. Size 2.5 (internal hexagon).
- ➔ After the maintenance of the drive, tighten the countersunk screw: 1.6 – 1.9 Nm.

- ➔ Fold back **1** as shown.

Note!

Do not open it beyond the prescribed angle, as otherwise the internal, flexible board will be damaged.

- ➔ Unscrew **2** counterclockwise, size 28.
- ➔ Unscrew **3** counterclockwise. ø 42.5; Order no. 933336

- ➔ Completely remove **4**.

9 Troubleshooting

Problem	Possible cause	Action
General – Tool		
Tool does not start if reverse switch is active.	Backoff speed parameter is set to 0 rpm.	➔ Adjust the backoff speed value in the *Standard Application Builder* screen of the controller.
Tool light not active.	Deactivated by parameter setting.	➔ Adjust the parameter for *Tool light* in the *Advanced Application Builder/System Settings* screen of the controller.
Operating menu of tool not, or only partly, enabled.	Disabled by parameter setting.	➔ Activate the *Enable Tool menu* parameter in the *Advanced Application Builder/System Settings* screen of the controller.
Free speed parameter value is not reached.	Battery voltage is too low.	➔ Use a fully charged battery.
Could not reach the expected number of rundowns with one battery charge.	Battery is not fully charged.	➔ Use only fully charged batteries.
	Low voltage warning is not set to minimum value.	➔ In the *Tool Setup* screen of the controller, set the value for L*ow Level* to 17.5 Volts.
	During tightening sequence, high torque is required, for example with coated screws.	➔ If high torque is required for a longer period of time, e.g. for several turns, then the number of rundowns with one battery charge is significantly reduced.
	Battery has already cycled too often.	➔ After 800 charge cycles the capacity is reduced to about 60%.

Problem	Possible cause	Action
Infrared data communication between controller and tool		
No infrared data communication between controller and tool.	Wrong port is selected for connection with the controller.	➔ Check the port settings for infrared (IRDA) communication in the *Communication/Tool* screen of the controller. **Note:** If the settings are changed, it is necessary to press *Accept* <F1> in order to apply the settings.
		➔ Check that the tool holder is connected to selected port.
	Selected port is used for serial data transmission.	➔ In the *Communication/Data Transmission* screen of the controller, check whether serial data transmission is enabled (the protocol is set to anything except NONE), and whether the same port is being used. If so, select a different port or disable serial data transmission. Check all available tools as necessary. The same port cannot be used for serial data transmission and infrared data communication with the tool.

Problem	Possible cause	Action
WLAN data communication between controller and tool		
No WLAN communication between controller and tool.	IP address of tool is not entered correctly on the controller.	➔ Check in the *Communication/Tool* screen of the controller that the IP address of the tool is entered in the *RF Tool IP* field. The IP address of the tool is displayed on the tool in the *WLAN RF settings* submenu. **Note:** If the settings are changed, it is necessary to press *Accept* <F1> in order to apply the settings.
	Tool is not configured with correct WLAN parameter values.	➔ Configure the WLAN settings of the tool in the *Communication/Tool* screen of the controller via infrared communication.
	WLAN network settings of the controller and the access point differ.	➔ In the *Communication/Tool* screen of the controller, check that the settings of the access point match the wireless network settings (Network name, Security, Network key).
	MAC address filter of the access point is active.	➔ Add the MAC address of the tool to the address list of the access point. The MAC address of the tool is displayed on the corresponding label above the battery, and in the *WLAN RF settings* submenu.
	A firewall blocks port 4001.	➔ Reconfigure the firewall so that the specific IP/MAC address of the tool can use port 4001.
	The RF channel at the access point is out of the tool-supported range.	➔ Change the channel setting of the access point to a channel between 1 and 11.
	Tool is already assigned to a different controller.	➔ Check whether any other controller has already established a connection to this tool. That means another controller use same IP address.
WLAN communication partly interrupted.	Distance between access point and tool is too great.	➔ Check the signal strength in the *WLAN RF settings* submenu of the tool. For stable communication, the first value (N) should be greater than 15. If the value is less than 15, move the access point closer to the tool.
	Tool is also assigned to a different controller.	➔ Check whether this tool (IP address) is assigned to any other controller. If so, delete the assignment on the other controller. A tool can only be assigned to one controller.
	Too much traffic on the wireless network.	➔ Reduce traffic on the wireless network. Deactivate torque plot data transmission.

Problem	Possible cause	Action
868 MHz data communication between controller and tool		
No serial communication is possible between the controller and the base station. (Error displayed after *Accept* <F1> is pressed in *Communication/Tool*.)	Wrong serial cable is used.	➔ Use a null modem cable (crossed).
	Wrong port is selected for connection with the controller.	➔ In the *Communication/Tool* screen of the controller, check the port settings for *RF Serial*. **Note:** If the settings are changed, it is necessary to press Accept <F1> in order to apply the settings.
		➔ Check that the serial cable is connected to the selected port.
	Selected port is used for serial data transmission.	➔ In the *Communication/Data Transmission* screen of the controller, check whether serial data transmission is enabled (the protocol is set to anything except NONE), and whether the same port is being used. ➔ If so, select a different port or disable serial data transmission. ➔ Check all available tools as necessary. The same port cannot be used for serial data transmission and data communication with base station tool.
	Power outlet not active.	➔ Check the voltage at the outlet socket where the base station is plugged in for power supply.

Problem	Possible cause	Action
868 MHz data communication between controller and tool		
No Ethernet communication is possible between the controller and the base station. (Error displayed after *Accept* <F1>) is pressed in *Communication/Tool*.)	Wrong Ethernet cable is used.	➔ A crossover cable is required if the base station is directly connected to the controller. If the base station is connected to a switch, a standard patch cable is required.
	IP address of the base station is not entered correctly on the controller.	➔ In the *Communication/Tool* screen of the controller, check that the IP address of the base station is entered in the *RF Base station* field. If the IP address of the base station is unknown use the *Network Enabler Administrator* program, which is included with each base station. **Note:** If the settings are changed, it is necessary to press *Accept* <F1> in order to apply the settings.
	IP address and subnet mask are not in the same range.	Without network administration, it is necessary for the IP address and subnet mask of the controller to be in the same range as those of the base station. ➔ Enter the same subnet mask for both IP addresses and use the same first three numbers for the IP addresses on both the controller and base station. E.g.: IP address controller: 192.168.1.xxx IP address base station: 192.168.1.xxx Subnet mask: 255.255.255.000
	A firewall blocks port 4001.	➔ Reconfigure the firewall so that the specific IP/MAC address of the tool can use port 4001.
	Base station is already connected to a different controller.	➔ Check whether any other controller has already used the same IP address for RF communication (*RF Base station*).
	Power outlet not active.	➔ Check the voltage at the outlet socket where the base station is plugged in for power supply.
No 868 MHz data communication is possible between controller and tool.	Settings are not configured correctly.	➔ In the *Communication/Tool* screen of the controller, check that *RF settings of the base station* correspond to the settings of the tool, which are displayed in the *868MHz RF settings* submenu of the tool. The settings for *Channel, Network ID* and *Tool ID* must match.
	Distance between base station and tool is too great.	If channel 1 is selected, the distance can be up to 98.4 ft (30 m). If channel 2 or 3 is selected, the distance can be up to 32.8 ft (10 m). ➔ Increase output power on base station and on the tool, or move the base station closer to the tool.

Problem	Possible cause	Action
868 MHz data communication between controller and tool		
RF communication is partly interrupted.	Distance between base station and tool is too great.	If channel 1 is selected, the distance can be up to 30 m. If channel 2 or 3 is selected, the distance can be up to 10 m. ➔ Move the tool close to the base station to check whether communication is successful. If so, increase output power on base station and on the tool, or move the base station closer to the tool.
	Output power is too low.	➔ Increase the output power of the base station and of the tool. If channel 1 is selected, you can choose up to 25 mW for the output power. If channel 2 or 3 is selected, you can choose 1 mW for the output power of the base station and 5 mW for the output power of the tool.
	Too much traffic on the same channel.	➔ Reduce traffic on the wireless network. Deactivate torque plot data transmission.
	Too many tools on the same channel.	➔ Use different channels for different base stations.
	Other 868 MHz devices on the same frequency.	➔ Use a different channel.
Distance for RF communication is too short	Antenna of the base station is not tightened securely.	➔ Manually tighten the base station antenna.
	Output power is too low.	➔ Increase the output power of both the base station and the tool.If channel 1 is selected, you can choose up to 25 mW for the output power. If channel 2 or 3 is selected, you can choose 1 mW for the output power of base station and 5 mW for the output power of the tool.
	Location of the base station bad.	➔ Move the base station to a location where there is an unobstructed line of view between the base station and the tool.

Problem	Possible cause	Action
RF15.4 data communication between controller and tool		
No serial communication is possible between the controller and the base station. (Error displayed after *Accept* <F1> is pressed in *Communication/Tool*.)	Wrong serial cable is used.	➔ Use a null modem cable (crossed).
	Wrong port is selected for connection with the controller.	➔ In the *Communication/Tool* screen of the controller, check the port settings for *RF Serial*. **Note:** If the settings are changed, it is necessary to press Accept <F1> in order to apply the settings.
		➔ Check that the serial cable is connected to the selected port.
	Selected port is used for serial data transmission.	➔ In the *Communication/Data Transmission* screen of the controller, check whether serial data transmission is enabled (the protocol is set to anything except NONE), and whether the same port is being used. ➔ If so, select a different port or disable serial data transmission. ➔ Check all available tools as necessary. The same port cannot be used for serial data transmission and data communication with base station tool.
	Power outlet not active.	➔ Check the voltage at the outlet socket where the base station is plugged in for power supply.
No RF15.4 data communication is possible between controller and tool.	Settings are not configured correctly.	➔ In the *Communication/Tool* screen of the controller, check that *RF settings of the base station* correspond to the settings of the tool, which are displayed in the *868MHz RF settings* submenu of the tool. The settings for *Channel, Network ID* and *Tool ID* must match.
	Distance between base station and tool is too great.	If channel 1 is selected, the distance can be up to 98.4 ft (30 m). If channel 2 or 3 is selected, the distance can be up to 32.8 ft (10 m). ➔ Increase output power on base station and on the tool, or move the base station closer to the tool.

Problem	Possible cause	Action
RF15.4 data communication between controller and tool		
RF communication is partly interrupted.	Distance between base station and tool is too great.	If channel 1 is selected, the distance can be up to 30 m. If channel 2 or 3 is selected, the distance can be up to 10 m. ➔ Move the tool close to the base station to check whether communication is successful. If so, increase output power on base station and on the tool, or move the base station closer to the tool.
	Output power is too low.	➔ Increase the output power of the base station and of the tool. If channel 1 is selected, you can choose up to 25 mW for the output power. If channel 2 or 3 is selected, you can choose 1 mW for the output power of the base station and 5 mW for the output power of the tool.
	Too much traffic on the same channel.	➔ Reduce traffic on the wireless network. Deactivate torque plot data transmission.
	Too many tools on the same channel.	➔ Use different channels for different base stations.
	Other 2,4 GHz devices on the same frequency.	➔ Use a different channel.
Distance for RF communication is too short	Output power is too low.	➔ Increase the output power of both the base station and the tool.
	Location of the base station bad.	➔ Move the base station to a location where there is an unobstructed line of view between the base station and the tool.

Problem	Possible cause	Action
Barcode scanner on tool		
Barcode scanner does not activate when the start switch is pressed.	Parameter for Part-ID is not set to Enable Interlocked.	➔ In the *Communication/Part-ID* screen of the controller, check that the Enable parameter is set to Enable Interlocked.
	Barcode has already been read.	➔ Activate a further read cycle in the scanner submenu.
		➔ Press the left function key on the tool in order to activate another read cycle. **Note:** Only available if the parameter for <F1> button on Tool is set to Read barcode in the *Advanced Application Builder / System Settings* screen of the controller.
Barcode is not read.	Barcode scanner window is not clean.	➔ Clean the window by using a damp cloth and a conventional window cleaner.
	Barcode type is disabled by parameter setting.	➔ In the *Communication/Part-ID* screen, check that parameter Barcode Type is set to the appropriate barcode type.

10 Spare parts

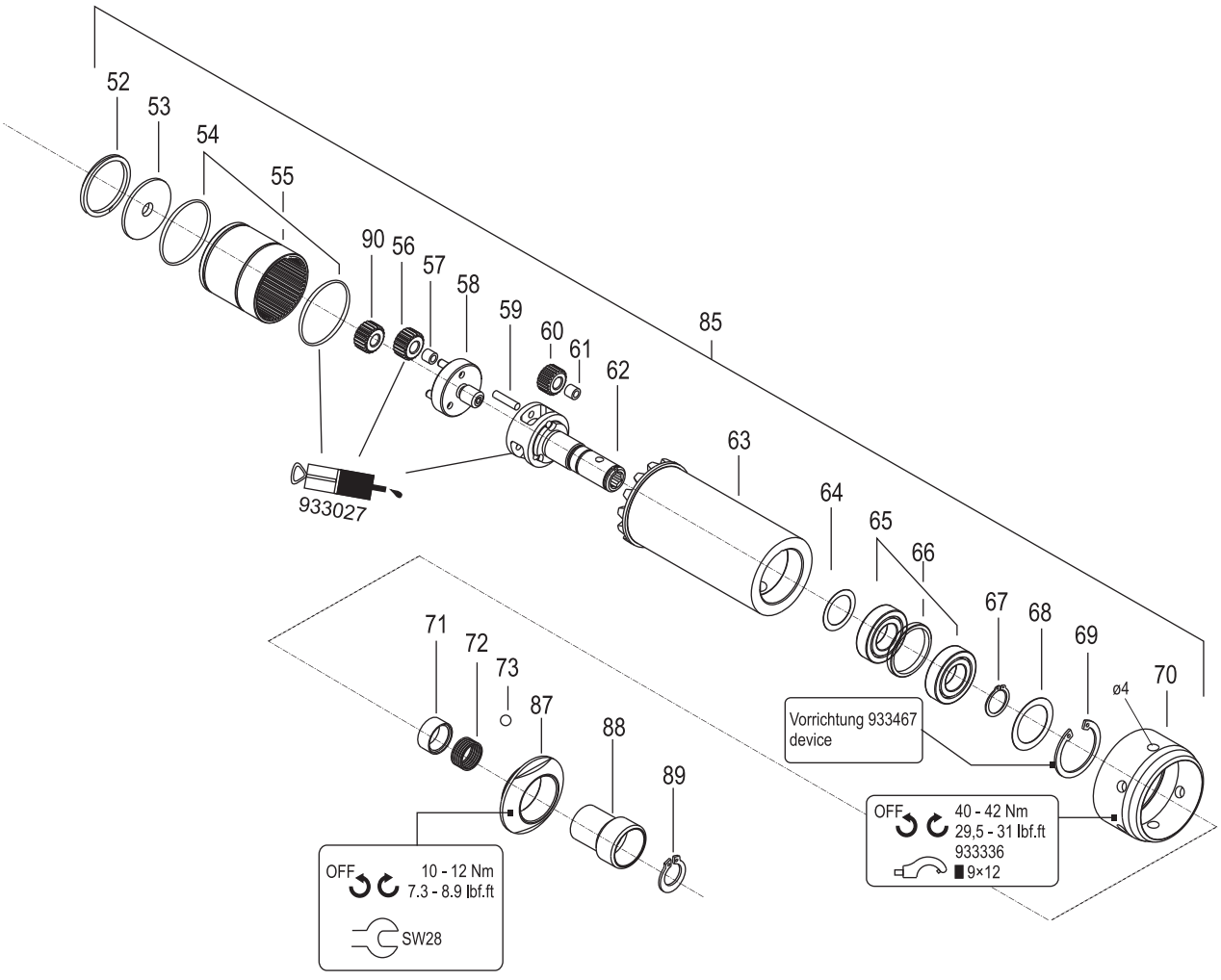
Note

Use only original Cleco spare parts. Failure to comply can result in reduced power and increased service requirements. If spare parts not manufactured by us are installed, the tool manufacturer is entitled to deny any warranty claims.

10.1 Gear

*

Typ	85	56 (3×)	58	60 (3×)	62	90
17BP…B05Q	935101	541894	542230	541894	935599	541899
17BP…B07Q	935102		542233	541897	935598	
17BP…B09Q	935103	541893	542231	541894	935599	–
17BP…B13Q	935104		542232	541897	935598	

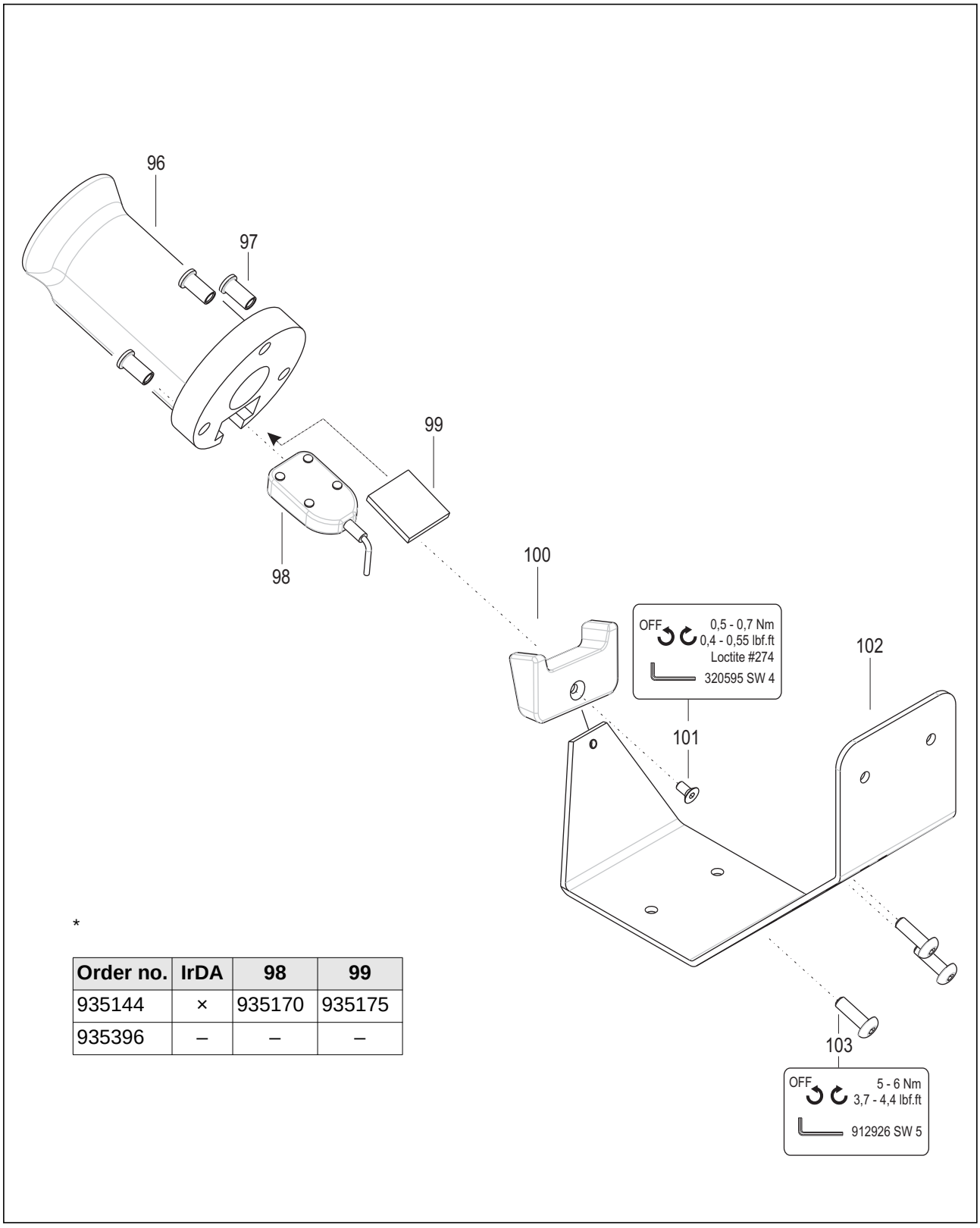


8.3 Lubricants, page 40
10.3 Fixture order list, page 53

Index	1)	2)	•	Description	3)
52	800116	1	1	circlip	25,98X0,94 IR
53	541887	1		washer	
54	542724	2		o-ring	28,24X 0,78
55	542722	1		gear ring	
56	*	3	6	idler gear	
57	923095	3	6	needle bearing	3,X5,X 7,
58	*	1		planet carrier	
59	541888	3	6	cylinder pin	
60	*	3	6	idler gear	
61	923095	3	6	needle bearing	
62	*	1		planet carrier	
63	934841	1		gear case	
64	1019356	1		equalizing washer	13,49X 18,64X 0,23
65	542089	2	4	ball bearing	
66	541775	1		spacer ring	
67	902180	1	1	circlip	12X1, AR
68	922361	1		equalizing washer	17,3X23,8X0,25
69	901602	1	1	circlip	24,X1,2IR
70	541904	1		union nut	
71	935597	1		sleeve	
72	540842	1		compression spring	
73	844265	1		ball	1/8"
87	935080	1		threaded ring	
88	935079	1		sleeve	
89	800135	1	1	circlip	10,03X0,64 AR
90	*	1	1	pinion gear	

1) Order no.
2) Quantity
3) Dimensions
• Recommended spare part for every five (5) tools
* See table, page 50

10.2 Tool holder (optional)



*

Order no.	IrDA	98	99
935144	×	935170	935175
935396	–	–	–

Index	1)	2)	•	Description	3)
96	935172	1		holster rubber	
97	935174	3		plug	
98	*	1		IrDA-Serial Adapter	57,6KBIT/S
99	*	1		mounting plate	
100	935173	1		screwdriver support	
101	918688	1		countersunk screw	M 6X 12
102	935171	1		screw-on bracket	
103	S902967	3		half round screw	M 8X 25

1) Order no.
2) Quantity
3) Dimensions
* See table, page 52

10.3 Fixture order list

Order no.		Description
933467		Assembly circlip <67>
	933468	Base
	933469	Awl
	933470	Sleeve
933336		Hook wrench Assembly union nut <70>

11 Technical data

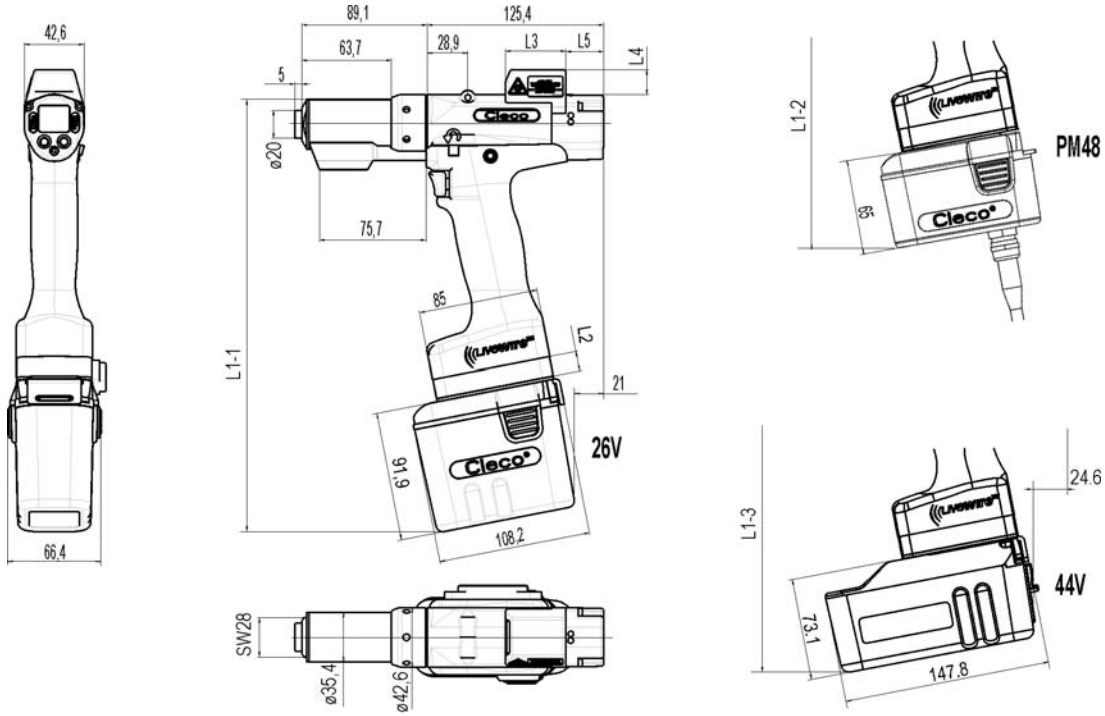
11.1 Dimensions in (mm)

Without scanner

Typ	L1-1	L1-2	L1-3	L2	L3	L4	L5
17BPB05Q	11.57 (294)	10.52 (267,1)	11.13 (282,7)	–	–	–	1.06 (26,9)
17BPB07Q							
17BPB09Q							
17BPB13Q							
17BPRB05Q	12.13 (308)	11.07 (281,1)	11.68 (296,7)	0.56 (14,2)			
17BPXB05Q							
17BPYB05Q							
17BPZB05Q							
17BPRB07Q							
17BPXB07Q							
17BPYB07Q							
17BPZB07Q							
17BPRB09Q							
17BPXB09Q							
17BPYB09Q							
17BPZB09Q							
17BPRB13Q							
17BPXB13Q							
17BPYB13Q							
17BPZB13Q							

With scanner

Typ	L1-1	L1-2	L1-3	L2	L3	L4	L5
17BPRSB05Q	12.13 (308)	11.07 (281,1)	11.68 (296,7)	0.56 (14,2)	1.69 (43)	0.70 (17,7)	1.06 (26,9)
17BPXSB05Q							
17BPYSB05Q							
17BPZSB05Q							
17BPRSB07Q							
17BPXSB07Q							
17BPYSB07Q							
17BPZSB07Q							
17BPRSB09Q							
17BPXSB09Q							
17BPYSB09Q							
17BPZSB09Q							
17BPRSB13Q							
17BPXSB13Q							
17BPYSB13Q							
17BPZSB13Q							



11.2 Dimensions of tool holder (optional)

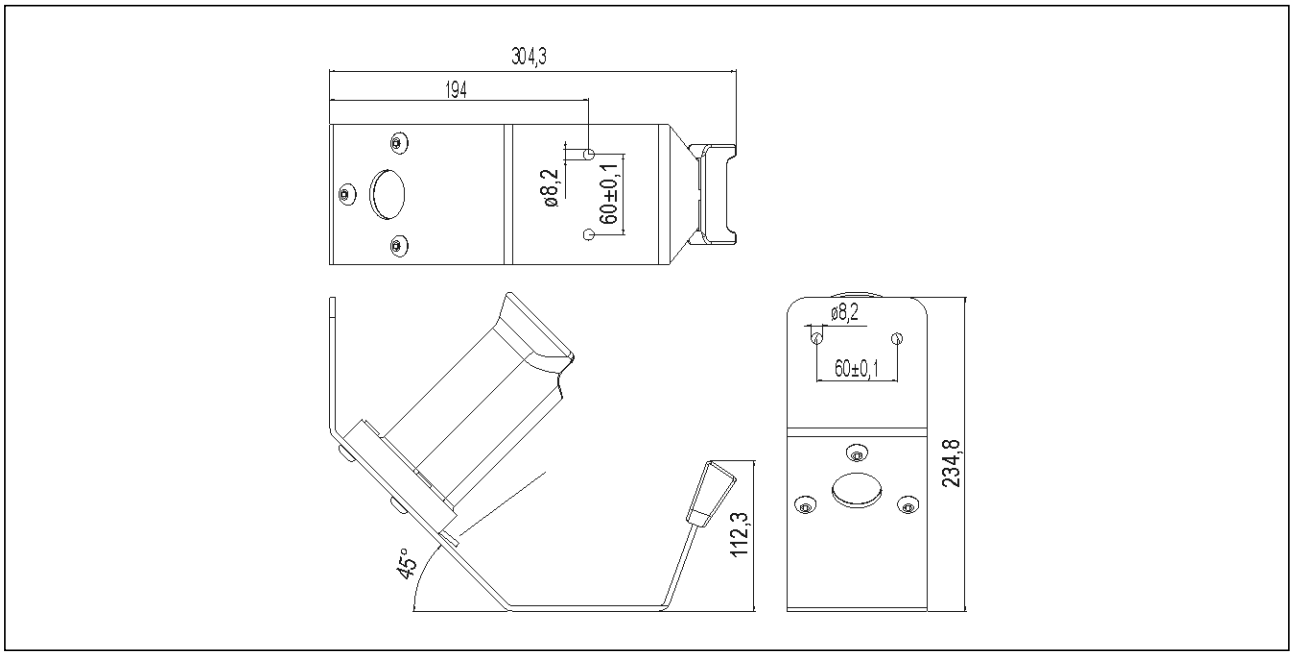


Abb. 11-1Dimensions of tool holder (mm)

11.3 Performance Data

Type	Recommended torque range ft.lbf (Nm)		Free speed accupack 26 V	Free speed PM48 / accupack 44 V	Screw size 8.8	Weight without PS[1)]	Calibration data	
							Torque (nominal)	Angle pulses (Resolver)
	max.	min.	rpm	rpm	mm	lb (kg)	ft.lbf (Nm)	1/ degrees
17BPB05Q	3.7 (5)	2.2 (3)	1639	2428	M4	3.0 (1,36)	4.7 (6,41)	0.7322
17BPRB05Q						3.2 (1,46)		
17BPXB05Q								
17BPYB05Q								
17BPZB05Q								
17BPRSB05Q						3.4 (1,52)		
17BPXSB05Q								
17BPYSB05Q								
17BPZSB05Q								
17BPB07Q	5.2 (7)	2.2 (3)	1161	1721	M5	3.0 (1,36)	9.3 (12,57)	1.0332
17BPRB07Q						3.2 (1,46)		
17BPXB07Q								
17BPYB07Q								
17BPZB07Q								
17BPRSB07Q						3.4 (1,52)		
17BPXSB07Q								
17BPYSB07Q								
17BPZSB07Q								
17BPB09Q	6.6 (9)	2.2 (3)	887	1314	M5	3.0 (1,36)	9.2 (12,43)	1.3529
17BPRB09Q						3.2 (1,46)		
17BPXB09Q								
17BPYB09Q								
17BPZB09Q								
17BPRSB09Q						3.4 (1,52)		
17BPXSB09Q								
17BPYSB09Q								
17BPZSB09Q								
17BPB13Q	9.6 (13)	2.2 (3)	629	931	M6	3.0 (1,36)	12.9 (17,43)	1.9091
17BPRB13Q						3.2 (1,46)		
17BPXB13Q								
17BPYB13Q								
17BPZB13Q								
17BPRSB13Q						3.4 (1,52)		
17BPXSB13Q								
17BPYSB13Q								
17BPZSB13Q								

1) Weight PS: Accupack 26 V 935377 1.1 lb (500 g), accupack 44 V 936400PT 1.8 lb (820 g)

11.4 Electrical data

Tool

Protection class III as per DIN EN 61140 (VDE 0140-1)
Degree of protection IP40 as per DIN EN 60529 (IEC 60529)

Tool holder

Protection class III as per DIN EN 61140 (VDE 0140-1)
Degree of protection IP40 as per DIN EN 60529 (IEC 60529)

11.4.1 Output stage servo electronics

Features	Data
Nominal motor phase current	8 A peak value, sine
Rated output	150 VA
Maximum power	500 VA

11.4.2 Control electronics

Features	Data
Rated voltage	26 V
Nominal current in *Active* operating mode	105 mA
Nominal current in *Standby* operating mode	95 mA
Nominal current in *Power-saving* operating mode	55 mA
Nominal current in *Sleep* operating mode	< 1 mA

11.4.3 IrDA interface port

Features	Data
Supply voltage	5.0 V (4.8 to 5.5 V)
Power consumption	0.30 VA
Maximum current	11 mA
Transmission rate	57.6 Kbps
Parity Bit	None
Data Bit	8 bit
Stop Bit	1 bit
Error check	CRC

11.4.4 Scanner

Features	Data
Scan rate	104 scans/sec. ±12 (bidirectional)
Scan angle	47° ±3 standard / 35° ±3 reduced
Crash resistance	2000 G
Ambient light	107,640 lux
Decode zone (typical)	4 mil 2.54 – 13.97 cm 5 mil 3.18 – 20.32 cm 7.5 mil 3.81 – 33.66 cm 10 mil 3.81 – 44.45 cm 100% 3.81 – 59.69 cm 15 mil 3.81 – 74.93 cm 20 mil 4.45 – 90.17 cm 40 mil [1] – 101.60 cm 55 mil [1] – 139.70 cm
Laser safety	Laser class 2, IEC 60825
EMI/RFI	FCC Part 15 Class B EN 55024/CISPR 22 AS 3548 VCCI
Barcode-Typen	UPC-A, UPC-E, UPC-E1, Trioptic Code39, Interleaved 2of5, Discrete 2of5, Chinese 2of5, Codabar, MSI barcode types, EAN8, EAN13, EAN128, ISBT128, Code11, Code39, Code93, Code128, RSS14, RSS Limited, RSS Expanded barcode types.
Standards	21CFR1040.10 and 1040.11 except for deviations in accordance with Laser Notice 50 of July 26, 2001. EN60825-1:1994+ A1:2002 +A2:2001 IEC60825-1:1993+A1:1997+A2:2001

1) Depending on the width of the barcode

11.4.5 RF15.4 data transmission

Features	Data
Frequency	2.4 GHz ISM
Channels	16
Modulation	0-QPSK (DSSS)
Output power, max.	1 mW (0 dBm)
Sensitivity (BER < 10-3)	-92 dBm
Wireless transmission rate	57.6 kbps
Range	up to 30 m (98.4”)
Standards	ETSI EN 300 328 V1.7.1 EN 301489-1 V1.6.1 EN 301489-3 V1.4.1 EN 50392:2004 FCC Part 15.247 / RSS-210

11.4.6 868 MHz data transmission

Features	Data
Frequency	868 – 870 MHz
Channels	1: Band 1i (869.4 MHz – 869.65 MHz) 2: Band 1k (869.7 MHz – 870.0 MHz)
Modulation	GFSK
Output power, max.	Channel 1: 25 mW Channel 2: 1.5 mW
Sensitivity (BER < 10-3)	-100 dBm
Wireless transmission rate	38.4 kbps
Range	Band 1i (869.4 MHz – 869.65 MHz): up to 30 m (98.4”) Band 1k (869.7 MHz – 870.0 MHz): up to 10 m (32.8”)
Standards	ETSI EN 300 220-3 V1.1.1 ETSI EN 300 220-1 V1.3.1 EN 301489-1 V1.6.1 EN 301489-3 V1.4.1 EN 50371:2002

11.4.7 WLAN data transmission

Series 17BPX…

Features	Data
Standard	IEEE 802.11b
Safety	WEP • 64/128 bit encryption WPA/WPA2/802.11 • 128 bit TKIP/CCMP encryption • 802.1x EAP authentication (LEAP, PEAP, TTLS, GTC, MD5, OTP, PAP, CHAP, MSC-HAP, MSCHAPv2, TTLS MSCHAPv2)· • Pre-shared key mode (PSK)
Range	Typically up to 50 m (164’ 0.5”)
Channels	1 – 11 (2.412 – 2.462 GHz)
Transmission rate:	16 dBm typical
Sensitivity	-92 dBm (typ. @ 1 Mbps) -82 dBm (typ. @ 11 Mbps)
Modulation	CCK/DQPSK/DBPSK
Standards	EN 300 328 V1.4.1 EN 300 328-2 EN 301 489-17 V1.2.1 EN 50371:2002 EN 60950 FCC part 15

Series 17BPY…

Features	Data
Standard	IEEE 802.11a/b/g
Safety	WEP • 64/128 bit encryption WPA/TKIP • WPA2-AES(CCMP) • LEAP, PEAP
Range	Typically up to 50 m (164’ 0.5”)
Canaux	• 2,4 GHz: 1 – 13 • 5 GHz: 36, 40, 44, 48 (52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140)[1)]
Transmission rate:	20 dBm typ. @ 2,4 GHz 15 dBm typ. @ 5,0 GHz
Sensitivity	-94 dBm (typ. @ 1 Mbps, 2,4 GHz) -80 dBm (typ. @ 5 GHz)
Modulation	DSSS / OFDM
Standards	EN 300328 EN 60950 EN 301489-3 FCC Part 15

1) In progress

11.4.8 Torque transducer

Torque is measured by a reaction transducer with expandable measurement strips. The reaction transducer is positioned between the motor and the gears in the handle housing.

Features	Data
Nominal calibration	see 11.3 Performance Data, page 57
Sensitivity	2mV/V
Bridge ohms	1000 Ohm
Precision class	0.5% of final value
Linearity error	+0.25% of final value
Measurement range	-125% to +125% of final value

12 Service

NOTE

If repair is required, send the complete 17BP to *Sales & Service Centers*. A repair is only permitted by Apex Tool Group authorized personnel. If the tool is opened, the warranty is voided.

12.1 Recalibration

The type-specific calibration data is saved on the integrated screw electronic system in the delivery state of the Cleco tool. If service is required to change the torque transducer, the screw electronic system or if a recalibration is required, please send the Cleco tool to *Sales & Service Centers*. This will ensure that after the service work, any required calibration data update is carried out properly.

13 Disposal

CAUTION!

Injuries and environmental damage from improper disposal.
Components and auxiliary materials of the tool pose risks to the health and the environment.

- ➔ Catch auxiliary materials (oils, greases) when drained and dispose of them properly.
- ➔ Separate the components of the packing and dispose of them by segregating them clearly.
- ➔ Follow the locally applicable regulations.

Observe generally valid disposal guidelines such as, in Germany, the Electrical and Electronic Equipment Act (ElektroG) and Battery Law (BattG):

- ➔ Return the tool and defective/used batteries to your company collection facility or to *Sales & Service Centers*.
- ➔ Do not throw the batteries in household refuse, fire or water.

Sales & Service Centers

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

Dallas, TX
Apex Tool Group
Sales & Service Center
1470 Post & Paddock
Grand Prairie, TX 75050
USA
Phone: +1-972-641-9563
Fax: +1-972-641-9674

Detroit, MI
Apex Tool Group
Sales & Service Center
2630 Superior Court
Auburn Hills, MI 48326
USA
Phone: +1-248-391-3700
Fax: +1-248-391-7824

Houston, TX
Apex Tool Group
Sales & Service Center
6550 West Sam Houston
Parkway North, Suite 200
Houston, TX 77041
USA
Phone: +1-713-849-2364
Fax: +1-713-849-2047

Lexington, SC
Apex Tool Group
670 Industrial Drive
Lexington, SC 29072
USA
Phone: +1-800-845-5629
Phone: +1-803-359-1200
Fax: +1-803-358-7681

Los Angeles, CA
Apex Tool Group
Sales & Service Center
15503 Blackburn Avenue
Norwalk, CA 90650
USA
Phone: +1-562-926-0810
Fax: +1-562-802-1718

Seattle, WA
Apex Tool Group
Sales & Service Center
2865 152nd Avenue N.E.
Redmond, WA 98052
USA
Phone: +1-425-497-0476
Fax: +1-425-497-0496

York, PA
Apex Tool Group
Sales & Service Center
3990 East Market Street
York, PA 17402
USA
Phone: +1-717-755-2933
Fax: +1-717-757-5063

Canada
Apex Tool Group
Sales & Service Center
5925 McLaughlin Road
Mississauga, Ont. L5R 1B8
Canada
Phone: +1-905-501-4785
Fax: +1-905-501-4786

Germany
Apex Tool Group
GmbH & Co. OHG
Industriestraße 1
73463 Westhausen
Germany
Phone: +49-73 63-81-0
Fax: +49-73 63/ 81-222

England
Apex Tool Group, LLC
Pit Hill
Piccadilly
Tamworth
Staffordshire
B78 2ER
U.K.
Phone: +44-191 4197700
Fax: +44-182 7874128

France
Apex Tool Group SAS
Zone Industrielle
BP 28
25 Avenue Maurice Chevalier
77831 Ozoir-la-Ferrière Cedex
France
Phone: +33-1-64432200
Fax: +33-1-64401717

China
Apex Power Tools Trading (Shanghai) Co., Ltd
A company of
Apex Tool Group, LLC
A8, No.38, Dongsheng
Road, Shanghai,
China 201201
Phone: +86-21-60880320
Fax: +86-21-60880298

Mexico
Cooper Tools
de México S.A. de C.V.
a company of
Apex Tool Group, LLC
Vialidad El Pueblito #103
Parque Industrial Querétaro
Querétaro, QRO 76220
Phone: +52 (442) 211-3800
Fax: +52 (442) 103-0443

Brazil
Cooper Tools Industrial Ltda.
a company of
Apex Tool Group, LLC
Av. Liberdade, 4055
Zona Industrial - Iporanga
18087-170 Sorocaba, SP Brazil
Phone: +55-15-3238-3929
Fax: +55-15-3228-3260

Lexington, SC
Apex Tool Group
670 Industrial Drive
Lexington, SC 29072
USA
Phone: +1-800-845-5629
Fax: +1-803-358-7681
www.apextoolgroup.com

Cleco®