AUDITOR

User Manual

One Too Moment Alpha Torque Wrench

Production — Quality

$C\,E$

USER MANUAL SOFTWARE VERSION 1.6.1 AND NEWER

AIMCO

Contents

1 General Presentation

1.1   Function

The Moment Alpha Wrench is a unique platform with a single "brain" wrench handle designed to be used with a variety of accessories. By using the correct accessory, the system is able to tighten a fastener in a controlled process, delivering torque at the application from 0.1 to 1,000 NM.

1.2   Kits

Moment Alpha Systems can be configured in different "kits" depending on the needs of the user:

The Bench-Mount Kit includes:
- 1 Bench-Mount Controller with:
    – 1 Serial port RS232 to connect a printer or a barcode reader
    – 1 USB slave to connect a computer
    – 1 Ethernet port RJ45 to connect to network
    – 1 Wifi 2 GHz to connect to network
    – 1 Bluetooth connection for the wrench
    – 1 Power supply 110/220V
- 1 Torque/Angle Wrench Handle (Brain), 0.5 to 5 Nm on Screwdriver mode & 4 to 40 Nm on Flexion mode
- 1 Battery + Charger
- 1 Adapter Flexion mode exit 1/2"

The Portable includes:
- 1 Portable Controller with:
    – 1 USB slave to connect a computer
    – 1 Wifi 2.4 or 5 GHz to connect to network
    – 1 Bluetooth connection for the wrench
    – 1 Power supply 110/220V
- 1 Torque/Angle Wrench Handle (Brain), 0.5 – 5 Nm on Screwdriver mode and 4 – 40 Nm on Flexion mode
- 1 Battery + Charger
- 1 Adapter Flexion mode exit 1/2"

In addition to the hardware kits described, these systems have a variety of preinstalled Software options depending on needs of the user. Production (assembling product) or Quality (auditing preassembled product) are loaded onto the controller hardware prior to delivery
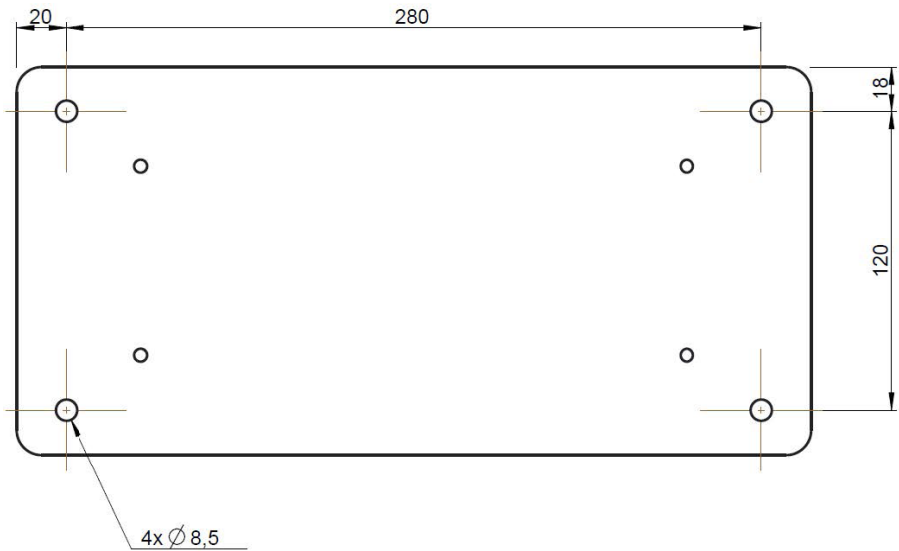
1.3 Features

1.3.1 Mechanical

Bench-Mount Controller

Dimensions: 180 x 320 x 83 mm (7.1 x 12.6 x 3.3 in)
Weight: 3.2 kg (7.1 lb)

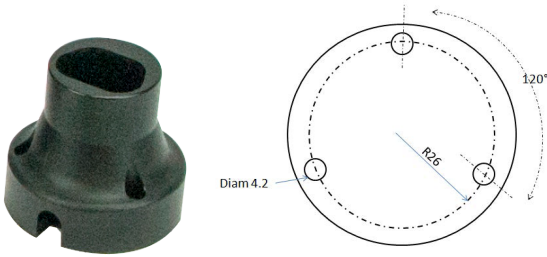Size to center to install controller

The controller needs to be connected to an Earth Ground.

Portable Controller

Dimensions : 221 x 138 x 32 mm (8.7 x 5.4 x 1.3 in)
Weight: 44 g / 0.1 lb

Battery Charger

Wrench Handle Dimensions

Ergonomic handle: 38 mm / 1.5 in

Weight: 365 g / 0.8 lb)

200 mm
7.9 in

1.3.2 Electrical
The Power Supply connects to standard input voltage 110-240 VAC / 50-60Hz. Use ONLY the supplied Power Supply for the system Controller and Battery Charger. Battery pack is Li-Ion 7.4V providing 5-6 hours of continuous operation.

1.3.3 Measurement
Torque range:

Screwdriver Mode: 0.5 to 5 Nm
Flexion Mode: 4 to 40 Nm

Model	Description	Dimension	Weight
CPSKS90	Adapter 60 Nm	89 mm / 3.5 in	14 g / 0.03 lb
CPSKS93	Adapter 40 Nm 9 x 12 short	49 mm / 1.9 in	10 g / 0./02 lb
CPSKS86	Extension 100 Nm	145 mm / 5.7 in	28 g / 0.06 lb
CPSKS81	Extension 200 Nm	366 mm / 14.4 in	50 g / 0.1 lb
CPSKS85	Extension 300 Nm	688 mm / 15.3 in	1,200 g / 2.6 lb
CPSKS87	Extension 400 Nm	769 mm / 30.3 in	1,400 g / 3.1 lb
CPSKS82	Extension 600 Nm	1,085 mm / 42.7 in	2,300 g / 5.1 lb
CPSKS98	Extension 1,000 Nm	1,711 mm / 67.4 in	6,500 g / 14.3 lb

Extensions are useable within 20% to 100% of the maximum torque value (i.e. 1,000 Nm extension is usable from 200 – 1000 Nm)

Static torque accuracy: ± 1% of the read value (ISO 6789)
Angle accuracy: ± 1°
Resolution: 0.01 Nm

1.3.4 CE Certification

C E

We certify and communicate that the product described in this manual is in conformity with the CE directive for the following:

- DIRECTIVE 2014/30/UE of 26 February 2014 concerning the directive CEM
- DIRECTIVE 2014/53/UE of 16 April 2014 concerning the directive RED
- DIRECTIVE 2014/35/UE of 26 February 2014 concerning the Directive low Tension
- DIRECTIVE 2011/65/UE of 8 June 2011 concerning the Directive ROHS
- DIRECTIVE 2012/19/UE of 4 July 2012 concerning the Directive DEEE

1.3.5 Technical Features

- Vibration level: <0.1 m/s
- Noise level: < 75 Db (You can adjust the sound level directly on the controller)
- Bluetooth features: Sensibility input -93 dBm
                        Max power output: +10 dBm*
                        Frequency: 2.4 Ghz
- Plastic handle: Polyamide and Isothane 1075A
  Clean the Handle with a neutral product like Polywater Rubber Goods Cleaner

1.4 Description

Bench-Mount Controller

Bluetooth   *WiFi*

RJ45 Port   *USB Port*   *RS232 Port*   *On/Off Switch*
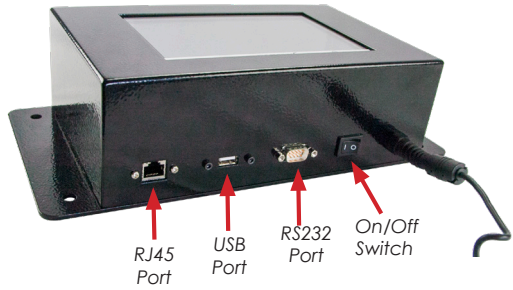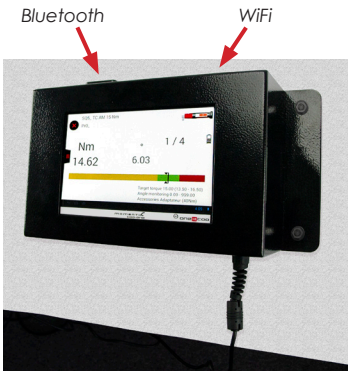
Ethernet RJ45 cables should employ a Ferrite if the cable length exceeds 10 meters to eliminate any external electrical interference within the local environment.

Portable Controller

On/Off Switch

USB & Charging Port

1.5 Software Versions

The Moment Alpha has 4 software versions

	Production		Quality	
	Start	Premium	Start	Premium
Tightening and Quality Strategy				
Re-Tight Mode			X	X
Angle Control/Peak Torque			X	X
Residual Torque			X	X
Torque Control/Angle Monitoring	X	X	X	X
Angle Control/Torque Monitoring	X	X	X	X
Prevailing Torque		X		X
Setting Box/Connection				
USB: Backup, Restore, Download	X	X	X	X
Serial Port (Bar Code/Printer)	X	X		
WiFi		X	X	X
Ethernet RJ45		X		
OneToo Protocol		X		X
Setting Sequence				
Sequence number	10	1,000	10	1,000
Sequence name	X	X	X	X
Auto sequence	X	X	X	X
Auto reset	X	X		X
Jump		X		X
Retry		X		X
Setting Program				
Program number	10	99	10	99
Bare code		X		X
Tightening direction		X		X
Batch count	999	999	999	999
Data viewer				
Result Ok/NOk	X	X	X	X
Data	X	X	X	X
Trace	X	X	X	X
Export Data				
USB	X	X	X	X
Operating System				
Trace Memory	3	1,000	3	1,000
Data Memory	1,000	50,000	1,000	50,000
Accessories Management				
Up to 15 Accessories	X	X	X	X
Extension	X	X	X	X
Electro-Mechanical Cutout	X	X	X	X

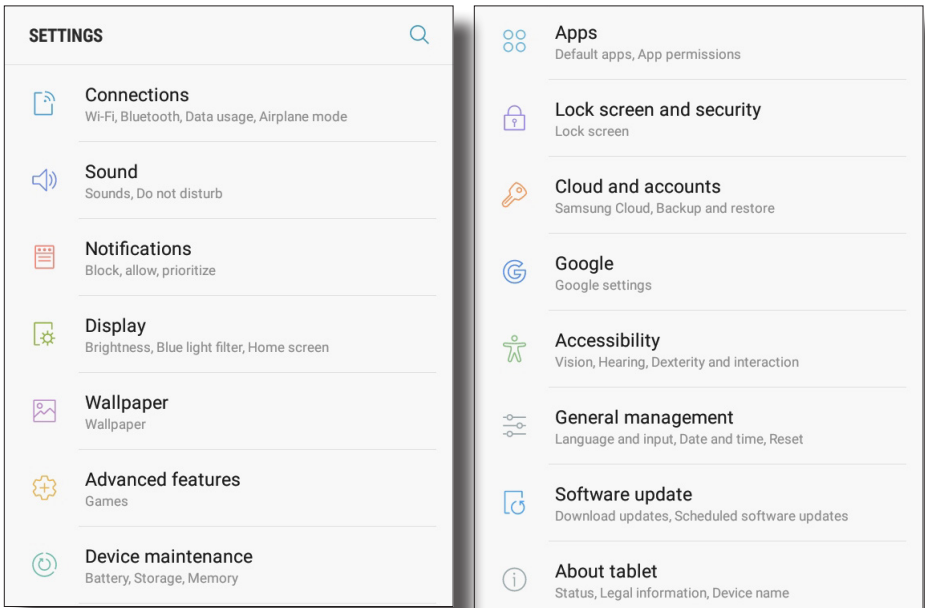### 2.1 General Setup

Moment Alpha software runs on an Android system. To access setup, swipe down from the top of the screen, and select the Settings icon
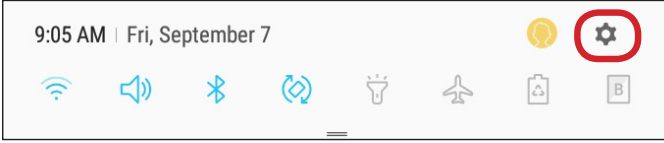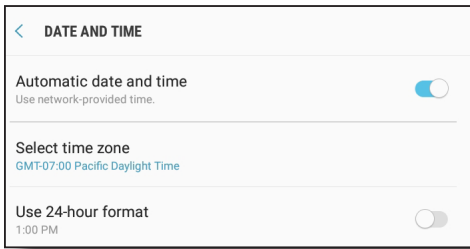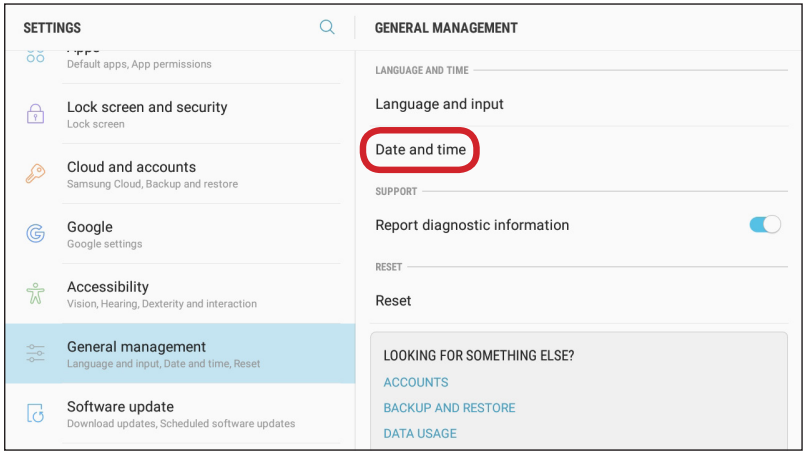

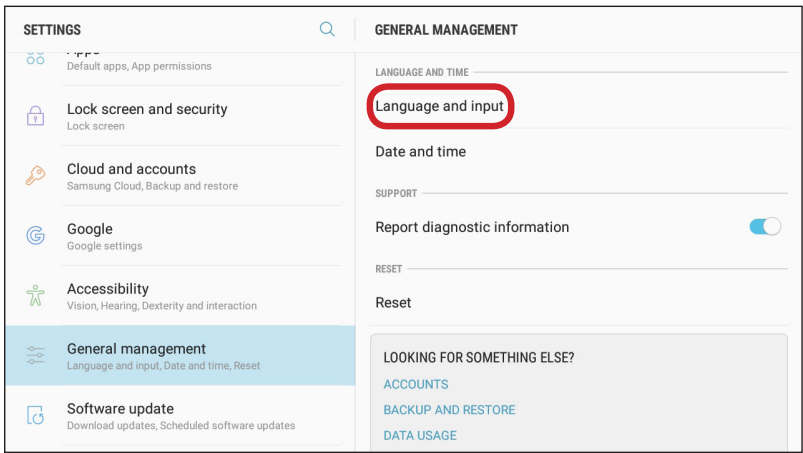This will open up the **Settings** menu with the following options:

2.1.1 Adjust Time
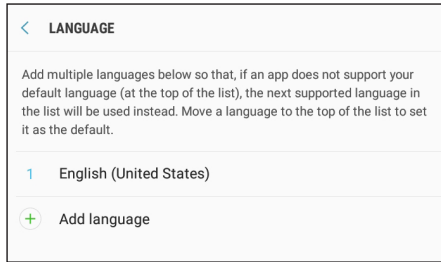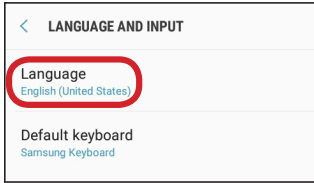Click on General Management, then click on *Date and Time* and adjust the value:

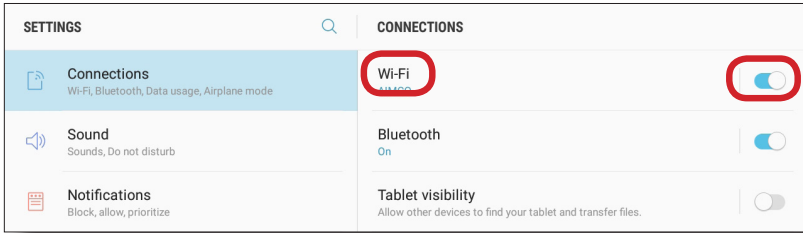### 2.1.2 Change Language
Click on *Language and Input* to modify:

Click on *Language* to select the language that you need. If the Moment Alpha software does not have your language, the default language will be English.
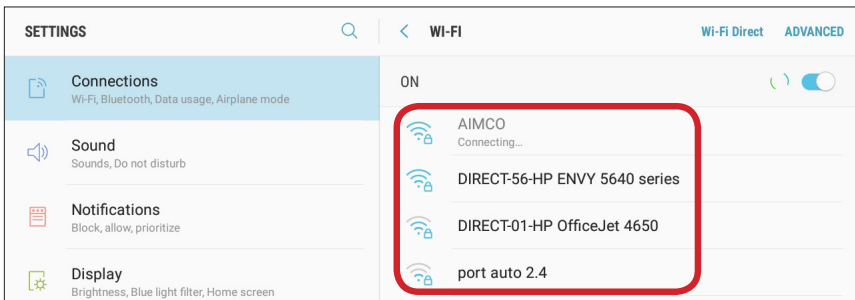

2.1.3 WiFi Management

Click on *Connections*. Make sure that the Wifi switch is toggled to "On, then select *WiFi*.

Select the appropriate WiFi network from the list of available networks to start the communication.

Click on the arrow "back" or "Home" to come back to the main menu.

2.2 Application Management

On the main menu, click on to bring up the app menu.
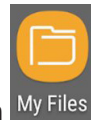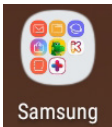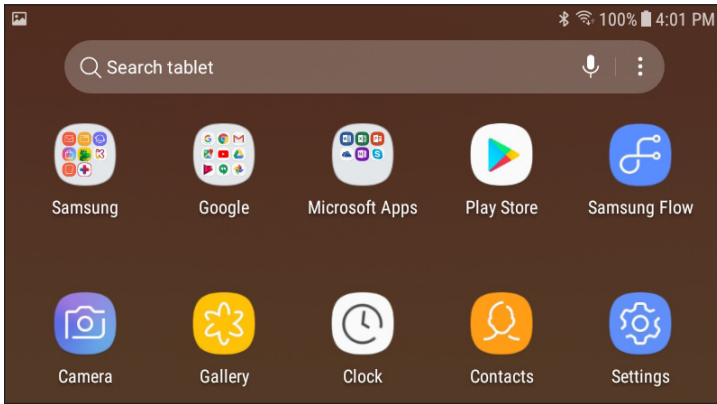
Click on and then click on . The Internal Storage should show the following folder. All data (results, curves, backup, etc.) is stored here

When you connect your computer to the controller, you have the same folder to download all CSV files.

3 Setup Moment Alpha

To begin Moment Alpha setup, click on the Moment Alpha icon on your home screen.
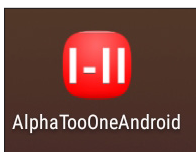
Turn on the wrench by pressing the on/off button.

On the controller screen, click on **Reconnection** if the unit does not connect automatically.
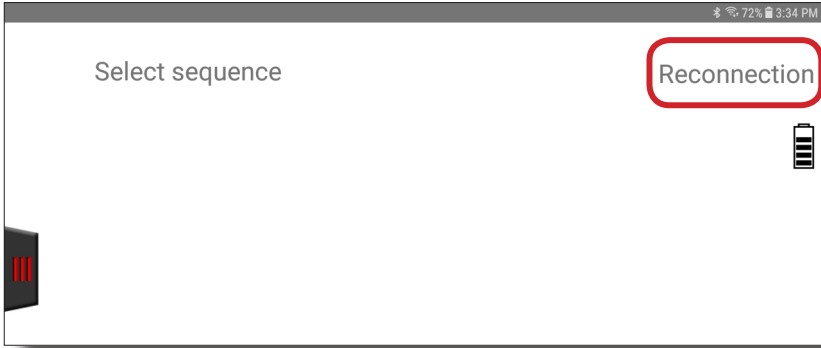
Syncing is complete when **Reconnection** is replaced by the image of a wrench handle on the screen.

3.1 Track Mode

Click on the wrench to activate the Track Mode.
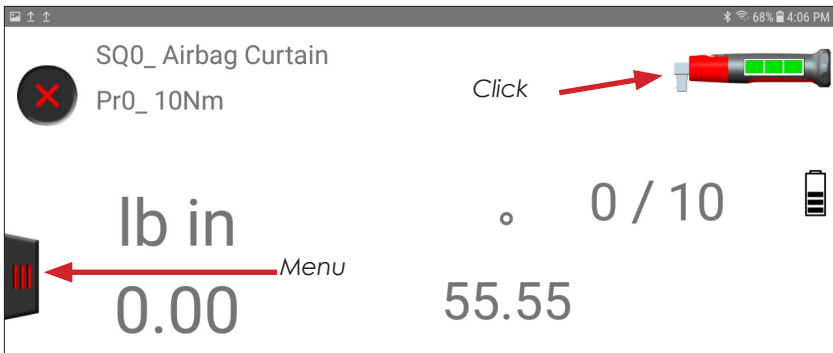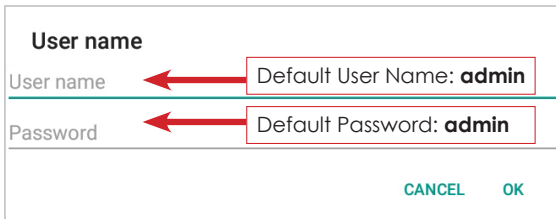
3.2 Setup

When you open the Menu, Touch the pencil icon, which takes you to the **User name** screen.
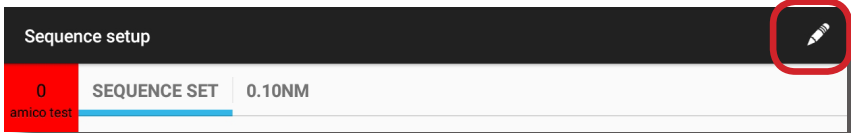
Log in using default user name and password.

On the main menu, click on General.
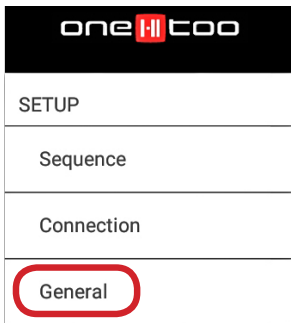
You can modify something ONLY if you are on Admin mode.

3.2.1 Controller Setup

This windows give you access to:

- Controller name
- Change language: see 2.2.2
- Date & Time: see 2.2.1
- Torque tolerance by default

- Angle tolerance by default
- Time to see the report (Green or Red)
- Orange Led : Use to activate the vibration of the wrench when the user arrive at x% of the target

General Setup

| CONTROLLER | USER | TONE | DETAILS |

CHANGE LANGUAGE

Name   Name

Date   Sep 7, 2018

Time   9:45 AM

Brightness

Unit   lb in

Default torque tolerance (%)   10

Default angle tolerance (%)   10

Report display time (s)   3.00

Orange led torque threshold (50-99%)   70

Previbration threshold (0-10%)   5

ACCESSORIES SET   ACCESSORIES LIST

3.2.2 Torque Wrench Adjustment

You may need to adjust the torque calibration of the wrench with an external transducer.
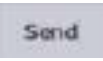
To do that, click on ACCESSORIES SET

Select the right accessory

The following window appears:
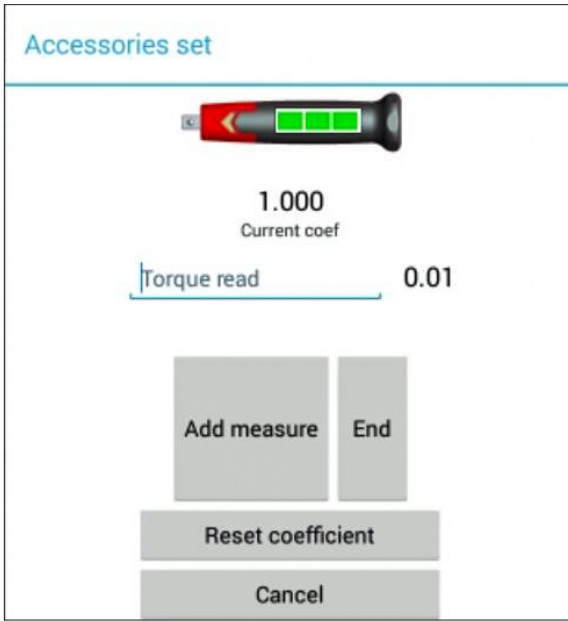
Apply a torque with the wrench on an external torque transducer and

write the real torque in the field "Torque Read." Click on [Send]

The coefficient of the wrench will be automatically adjusted in function of the external torque.

To save the new wrench calibration, click on "End." If you don't want save the modification, click on Cancel

If you need to change the feature of the accessories, click on

[ACCESSORIES LIST]

This menu allows you to modify each accessory.

1.	Screwdriver mode	
2.	Adapter (40Nm)	
3.	Cutout	
4.	100 Nm extension	100Nm
5.	200 Nm extension	200Nm
6.	300 Nm extension	300Nm
7.	400 Nm extension	400Nm
8.	600 Nm extension	600Nm
9.	1000 Nm extension	1000Nm
10.	Extension adapter	ADAPT
11.	Adapter 3/8	ADAPT 3/8
12.	Screwdriver adapter	ADAPT 1/2
13.	1	1
14.	2	2
15.	3	3
16.	4	4
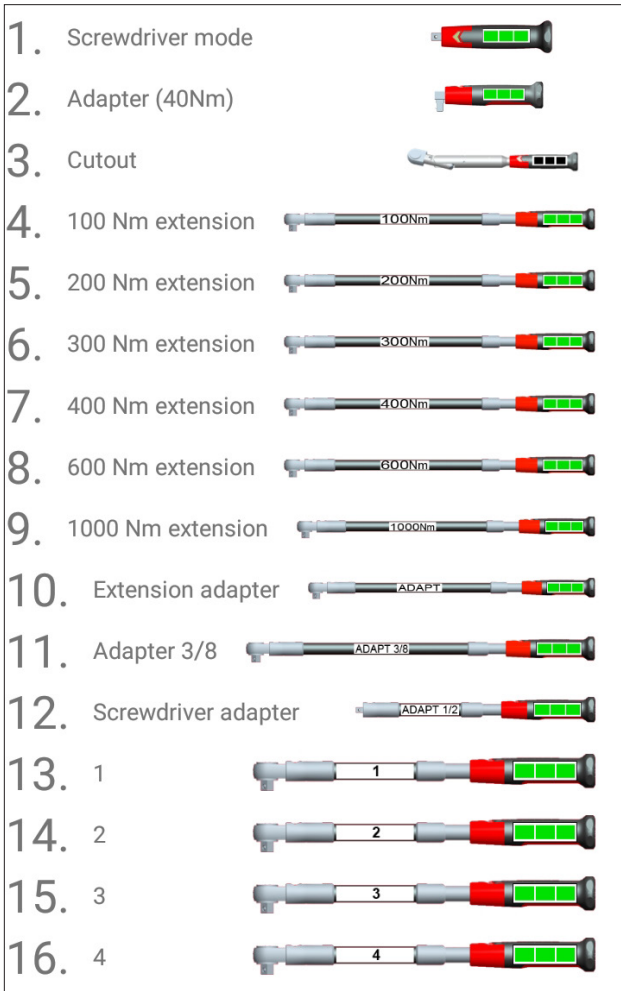
When choosing the accessory, take into account that accurate readings must be greater than 10% of the maximum torque for that accessory.

When you click on an accessory, the following screen appears

Accessories set

100NM

100 Nm extension

▷ Accessory length

154   mm   SAVE

▷ Bending coefficient

0.211   SAVE

▷ Max Torque

120.00   Nm

▷ Torque coefficient

1.000
Current coef

Torque read   0.14

ADD MEASURE   END

CANCEL
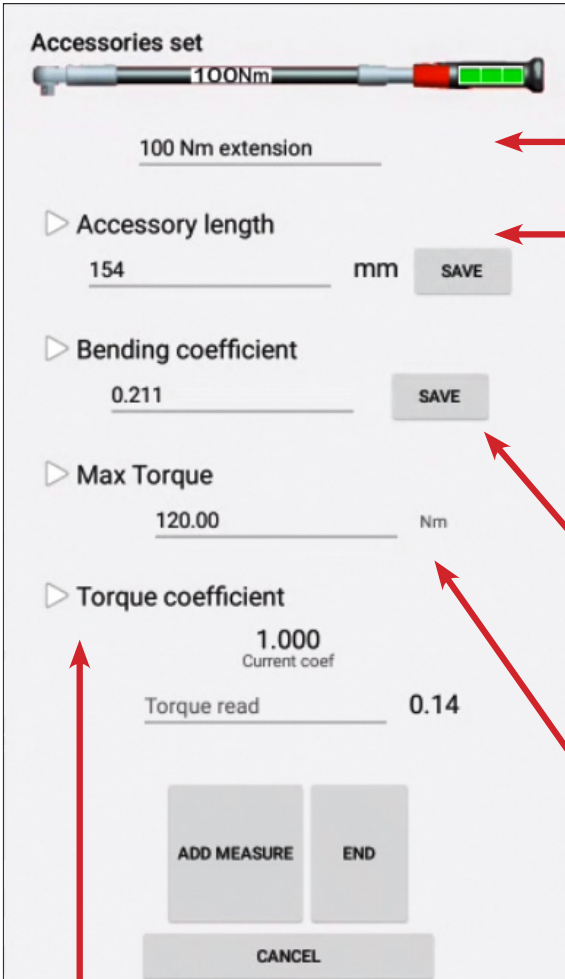
You can change the name of the accessory, but not the icon.

The accessory length can be adjusted to its real value. Note: This value must be adjusted prior to use to insure the correct torque coefficient. Once the values are correctly entered, click Save

Bending Coefficient is used to adjust the real Angle value within the accessory connected.

Max Torque defines the maximum torque that can be applied with this accessory. From the max torque setting, the system will automatically define the minimum usable torque of this accessory, which is 10% of the maximum torque defined in this setting.

Torque coefficient is used to calculate the torque reading in function of the length of this accessory.

When you use a click extension type CPSPH00, you need to select "Breakout" on the accessory setup:
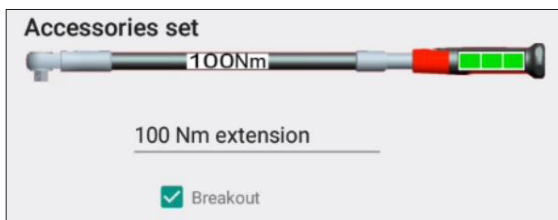
This function is need for the breakout (click type) extension and requires use of "Torque control & Angle monitoring" strategy.

Save the modification by clicking on "End"

Introduction to Accessory Length

The torque is measured with the accessory length. **If you change the accessory, it is mandatory to change the length in the settings of your key.** Without that, your results will be Not Ok

Explanation
- The point 0 for the torque calculation is in the ball axis. This axis is at **X** mm from the border of the plastic part (You have to measure, to 8 from 10 mm).
- The length **L** is the length of the red extremity to the ball.
- The final calculation for the accessory length will be

     L – **X** – 10 = Length accessory

- One-Too extensions are calibrated with FACOM ratchets:
    – FACOM S.372V P
   – FACOM S.382V R

Notes:
- If you use a different ratchet, the length reference will change (up to 10 mm difference). If you don't modify your

accessory length, your result will be Not Ok.

- If you modify your accessory, **it is imperative that you redo the calculation** in order to obtain the correct accessory length.

Example: **173** – **9** – 10 = 154 mm (new accessory length)

This new accessory length will need to be configured. For that, go to "Accessories list," select the accessory that needs to be adjusted, and change the new value in "Accessory length." Click "SAVE" to store the value on the wrench.
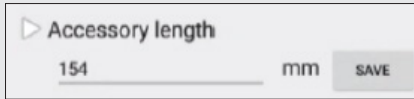
Bending Coefficient
The bending coefficient is calculated as a function of the applied torque. This compensates for angle variation within the mechanical components of the accessory.

Real angle = Actual Angle – (actual torque x bending coefficient)

Example: 75° – (25 Nm x 0.05) = Real Angle
                   75° – 1.25° = 73.75°

At 25 Nm, we have lost 1.25° on the extension flexion.

After the validation of the modification, the wrench will stop.

Before using the wrench with the accessory modification, ensure that the torque is always Ok with an external torque transducer. These new coefficients are saved on the wrench at the end of the modification.

3.2.3 User Management
In this window, you can modify, add a new user, and allow access.
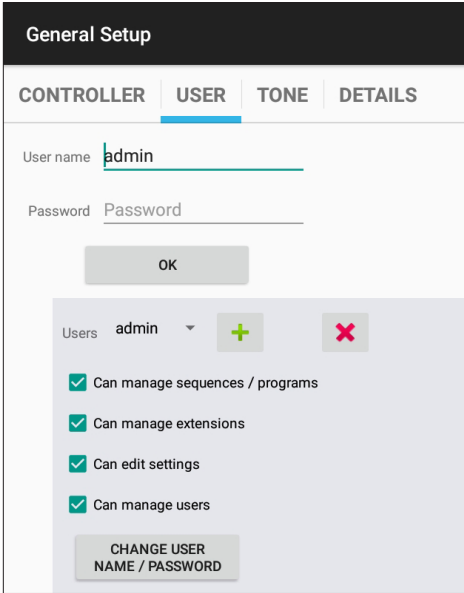
To require opearator sign-in prior to use of the wrench, activate the Tightening Permission function. To have the permission time out after X hours of use, enter that amount of time in the Control Frequency. The operator will be required to sign back in to the wrench once that time has elapsed.

3.2.4 Sound Level
Scroll the bar to increase or decrease the sound level.
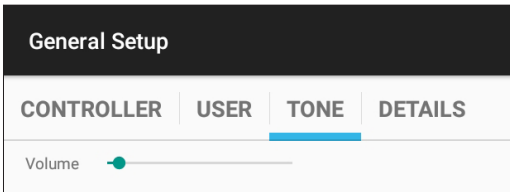
3.2.5 Controller Information

On the Details tab, you can see information about the software and wrench version.
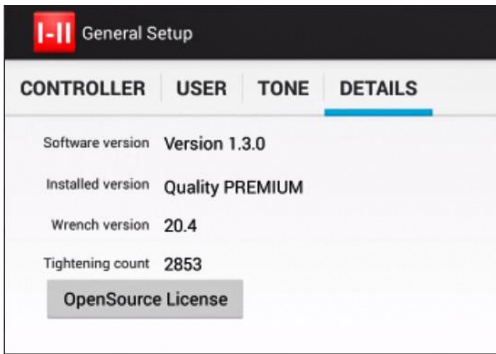
In the future, if you need to change to upgrade the software version (Start to Premium), click 5 times on the "Installed version" and enter the new key.

3.3 Import/Export data

Click on the main menu and select **Connection.** The Connection setup screen opens

3.3.1 Backup

Select what you want to backup. Note: If you select Results and Curves, the backup can take a long time.
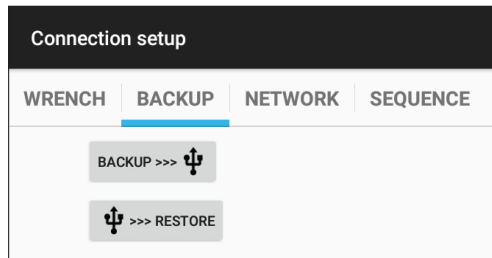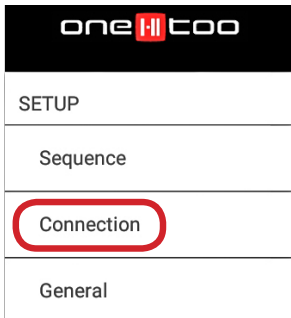
What do you want to backup?

☑ Settings

☑ Results

☑ Curves

CANCEL   OK

Once backup is complete, you will see the message "Backup done." Backups are store on the folder "OneToo_Backups."

3.3.2 Restore

The restore function re-installs the last software backup on the controller.

Connection setup

| WRENCH | BACKUP | NETWORK | SEQUENCE |

BACKUP >>> ⟨USB⟩

⟨USB⟩ >>> RESTORE
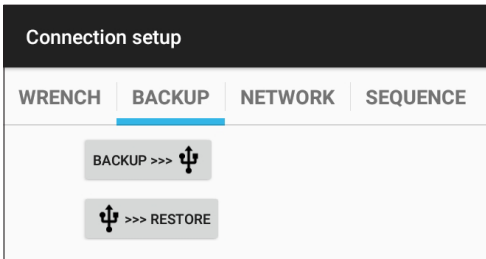
If you use this backup feature on another controller, it will also replace the wrench ID number. Note this ID number before restoring a configuration.

Selectionner la sauvegarder à restaurer

OneToo__14-12-24_12-53-41

Once complete, you will see the message "Restore Done."

3.3.3 Set up Wrench ID

This setup has already been completed when you received a kit, so you should not need to change anything.

If you need to connect another wrench, you need to change the wrench ID. The wrench ID is written on the battery compartment. For this example, we'll use Wrench number 0145.
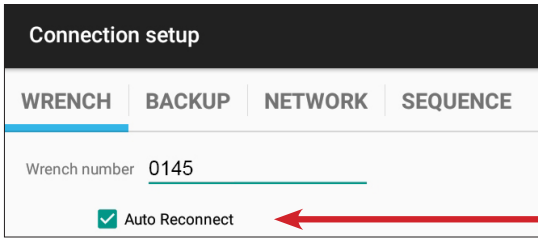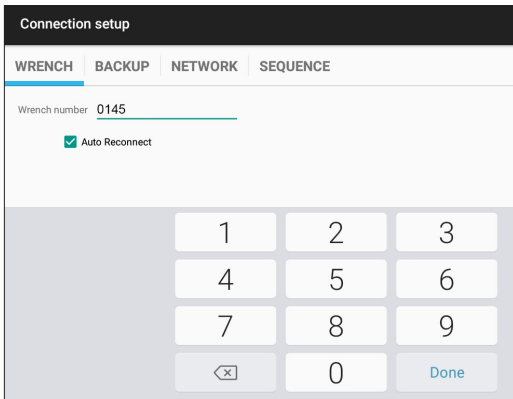
Auto Reconnect: When selected, the wrench will automatically re-connect to the controller when the operator changes the battery.

Go back to the tightening window and click on ⟨Reconnection⟩

You will see the message: ⟳ Search wrench...

The code PIN of the wrench is the ID wrench, but Inverse

ID wrench = 0145   PIN = 4501

Click on OK. Once connected, you will see this image
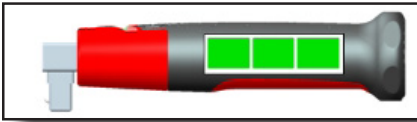
Note: You can't start a new connection while an extension is attached to the wrench. Remove the extension before attempting a connection.

3.3.4 Network
You can use the Network tab to set up:

- **LastData Function:** The last 10 tightening results are stored in CSV files in the folder "OneToo_Lastdata"

  This function is used when you want connect the controller to a computer and download live the results of each tightening via the USB port
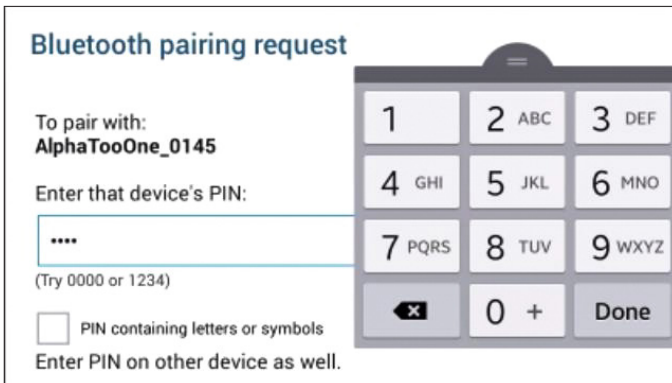

- **Ethernet:** If you enable this function, you have access through TCP/Client.

  The OneToo protocol is used for:

  Controller input
  - Create a new sequence
  - Delete a sequence
  - Select a sequence number
  - Select a sequence with barcode
  - Stop a sequence, jump a program, etc
  - Reconnect the wrench

  Controller Output
  - Status: actual torque, angle value, etc
  - Results: torque & angle value (min/max/apply), batch count, etc
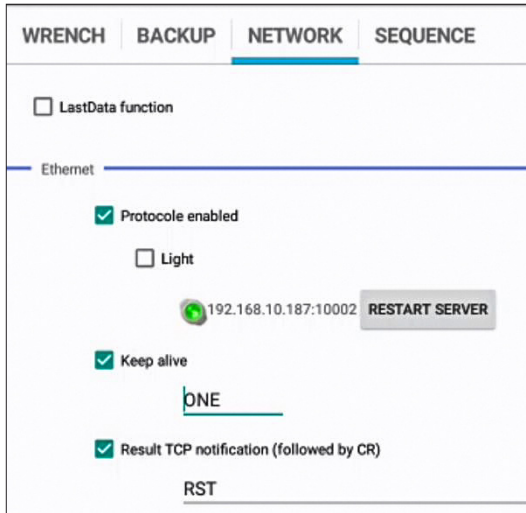
- **Light:** Reduces the number of characters sent to the server. Refer to the protocol manual.
- **Keep alive:** Maintains the connection between the controller and the server if needed. When activated, an ASCII message is sent every 7 seconds (default). In the example above, an ASCII message will be sent every "One" second. If the Txt is removed, only a <Carriage return> is sent.

3.3.5 Serial Port Management

RS232: When using a bench-mount controller, you can set up the serial port to

- Send the results after each tightening on a printer or PLC
- Connect a barcode reader to select a sequence

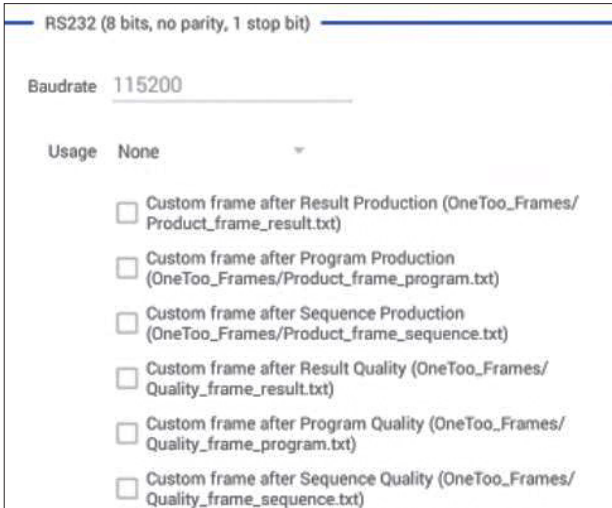The standard Setup for serial port is:

Speed: Baud rate / Data size : 8 / Parity: None / Stop Bit: 1

Software versions 1.3.4 and newer allow you to set up a special frame on a txt file and automatically send an ASCII frame after:

- Each tightening
- Each program
- Each sequence

To set up this function, first create a folder named OneToo_Frames. Inside this folder, you can create up to 6 special frames:

- Tightening sequence
    - Product_frame_result.txt — Frame sent after each tightening
    - Product_frame_program.txt — Frame sent after each program
    - Product_frame_sequence.txt — Frame sent after each sequence

- Quality sequence
    - Quality_frame_result.txt — Frame sent after each tightening
    - Quality_frame_program.txt — Frame sent after each program
    - Quality_frame_sequence.txt— Frame sent after each sequence

---

RS232 (8 bits, no parity, 1 stop bit)

Baudrate 115200

Usage None ▾

☐ Custom frame after Result Production (OneToo_Frames/Product_frame_result.txt)

☐ Custom frame after Program Production (OneToo_Frames/Product_frame_program.txt)

☐ Custom frame after Sequence Production (OneToo_Frames/Product_frame_sequence.txt)

☐ Custom frame after Result Quality (OneToo_Frames/Quality_frame_result.txt)

☐ Custom frame after Program Quality (OneToo_Frames/Quality_frame_program.txt)

☐ Custom frame after Sequence Quality (OneToo_Frames/Quality_frame_sequence.txt)

3.3.6 I/O 24V Management

A Module Input/output 24V is optional

- **Input:** 8 assignable pins.
  By default, all pins are assignable in this way

Reconnect: When this input is activated, the controller restarts the connecion with the wrench.

Extern Validation: Use this input when you to have a pop-up that needs validation.

- **Output:** 8 Assignable Pins
  By default, all pins are assignable in this way

List of Output functions:

Ready: The controller and the wrench are ready to start a sequence.
In cycle: A sequence is started.

3.3.7 Sequence
Click on the *Sequence* tab to set the sequence source

Keyboard: *Keyboard and Ethernet*
RS232: *Keyboard, RS232, and Ethernet*
Ethernet: *RS232 & Ethernet*
Accessory: *(version 1.3.3 and newer)*

Replay Sequence
Always restarts the same sequence. Operator will need to stop the sequence manually.

Manual Pause
Stops a sequence and starts it later. Operator can do this manually.

Barcode Mandatory
Requires operator to scan or create a barcode for each sequence

3.3.8 Sequence Pause « II » (version 1.3.7)
When you active the function « Manual Pause », the operator is allowed to stop a sequence and restart it in the future.

To activate Pause, click on the red "x" icon during a sequence and select "Pause."

Return to sequence

Pause

Stop sequence. In this case, the sequence is stopped and the report is stored on the controller.

When starting another sequence, you will see paused sequence will highlighted in blue. Simply click on it to finalize the sequence.
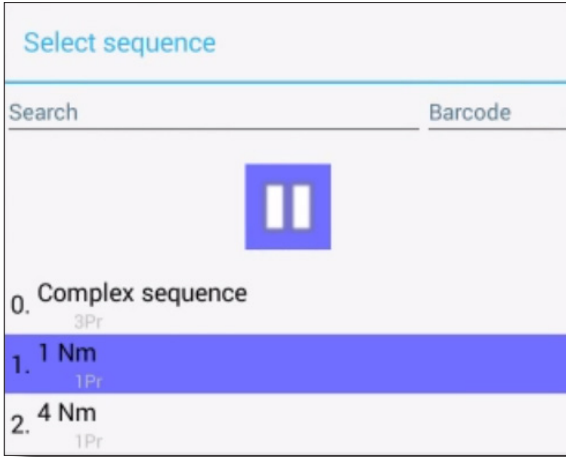
3.3.9 Function Redo and Loosening Detection (Version 1.3.7)
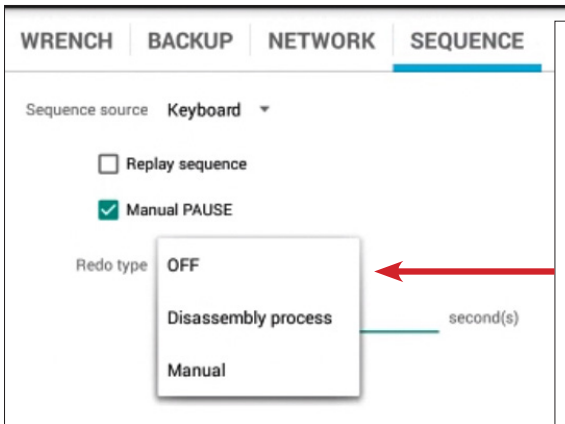
Disassembly process
When you disassemble a screw that's already been tightened, the system uncounts the screw. You need to set up the tightening direction (right or left).

Manual
The operator is allowed to retry a tightening event if the result was Ok. The system uncounts the disassembly. You need to set up the tightening direction (absolute).
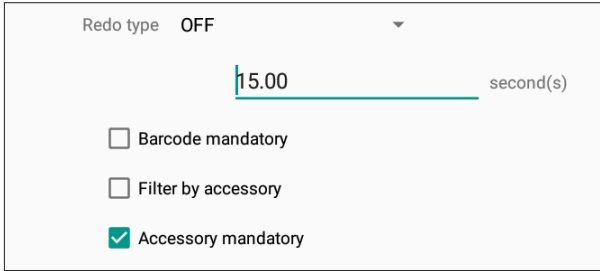
Disassembly Process
When you activate this option, the controller checks to see if the operator disassembled a screw and uncounted if this is the case. You need to setup the tightening direction (right or left) and select a tightening strategy (T/A or A/T). The function Replay Sequence allows an operator to retry the sequence after disassembly.

Manual Redo
When this option is activated, the operator is allowed to retry a good tightening. Just press the button (-1) for 2 seconds and disassemble the screw. The function Retry needs to activated and the tightening direction set to Absolute.

3.3.10 Filter by Accessory

Filter by Accessory reduces the sequences shown on the menu "Select sequence" at the sequence link to the connected accessory. When an accessory is not connected, you will see the Screwdriver and 40 Nm sequence. When you attach the 200 Nm accessory, for example, you will see only the sequence where the extension 200 Nm is set up.

3.3.11 Barcode mandatory (Version 1.5.0)
Use this function to ensure that the sequence starts ONLY if the operator types or scans the correct barcode information linked to the sequence. Activate this function when you have to set up 2 barcodes and when you want to start the sequence linked only to these 2 barcodes.

3.3.12 Accessory Mandatory (Version 1.5.3)
Use this function to start a sequence ONLY if the operator connects the right accessory to the wrench

3.4 Add/Modify a Sequence/Program

On the main menu, select Sequence.
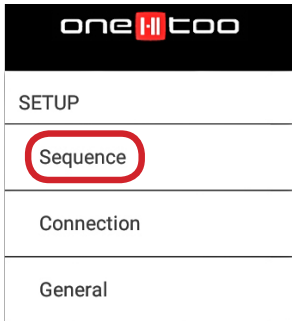
This opens the **Sequence Setup** screen. Login is required to develop a sequence. Touch the pencil icon, which takes you to the **User name** screen.
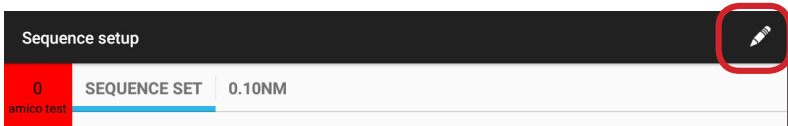
Log in. Default user name and password are shown below.
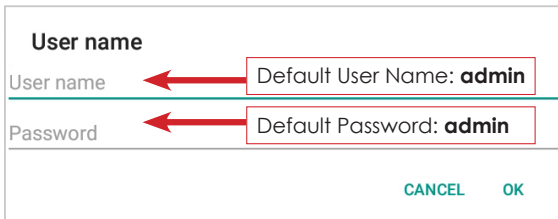
3.4.1 Add a Sequence

Click on .

Define which type of sequence you want to add: Quality and Control Sequence or Tightening Sequence.

Sequence setup

	SEQUENCE SET	0.NEW PROGRAM
2 **10 Nm**		

Sequence Number 2

Sequence name 10 Nm

Barcode Barcode

Barcode 2 Barcode 2

☐ Automatic sequence

☐ Jump activate

☐ Times management

☐ Retry activate
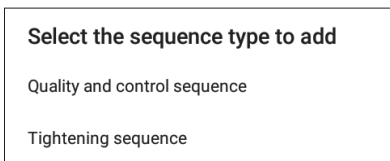
You can change the sequence number, add a name for the sequence, and add a barcode number to select the sequence with the keypad, Serial port, or Ethernet connection (maximum 32 characters).

✅ **Automatic sequence** If you set up more than 1 program on the sequence, the system will move automatically from the actual program to the next one.

✅ **Jump activate** If you don't find the way to finalize a program, the system will jump to the next program.

✅ **Times management** When this function is activated, total sequence times are limited. If you don't finish the sequence in time, the sequence stops and the final report is Nok

✅ **Retry activate** When this function is activated, on a bad result, the operator is able to retry the tightening. The software counts ONLY the good results.

Barcode 1 and 2 (V1.5.0)
The sequence will start if the first barcode matches. This will only work if "Barcode mandatory" is deselected on the Menu Connection/ Sequence screen.
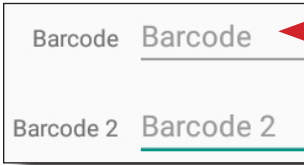
3.4.2   Add a Program

Click on to create a program.

Each strategy has 3 program options. You need to add at least 1 program per sequence, up to 99 (depending on the software version).

Quality mode
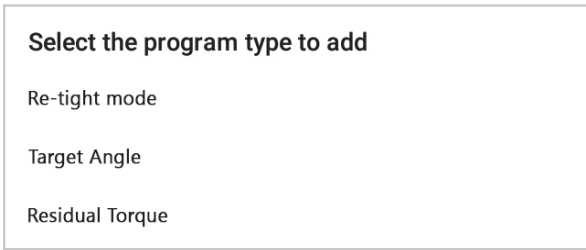
Re-Tight: Unscrew the screw from X° and retighten the screw back to the original position. The system records the disassembly torque and the torque when the screw returns to the same position.

Target Angle: The system records the torque when you reach the target angle.

Residual Mode: The system will analyze when the screw starts to move (Breakout torque) and calculate the torque on the assembly before it moved.

For all of the Quality sequences, you need to set up the estimated torque. The other parameters are set up by default.

Select the correct accessory to determine the final torque estimation.

Tightening Sequence

Select the program type to add
Torque control & Angle monitoring
Torque control
Angle control & Torque monitoring

Torque Control & Angle monitoring: Stops the tightening when target torque is reached. The system reports "Ok" if the final torque is between the Min/Max Torque and if the final Angle is between the Min/Max Angle. This strategy is used to ensure that you don't retighten a screw, and to ensure that the assembly joint meets requirements.

Torque control: Stops the tightening when target torque is reached. The system reports "Ok" if the final torque is between the Min and Max Torque.

Angle Control & Torque monitoring: Stops the tightening when target angle is reached. The system reports "Ok" if the final angle is between the Min/Max Angle and if the Final Torque is between the Min/Max Torque.

For user convenience, the system will populate with default settings once you enter the target value. You may change any of these default settings.

Sequence setup

SEQUENCE SET | **0.10NM** | **1.NEW PROGRAM**

Torque control & Angle monitoring

Target torque	Target torque	lb in
Min Torque	Min Torque	lb in
Max torque	Max torque	lb in
Threshold torque angle	Threshold torque angle	lb in
Min Angle	Min Angle	°
Max Angle	999.00	°
Program Number	1 ▼	
Program name	Program name	
Barcode	Barcode	
Threshold torque wrench	Threshold torque wrench	lb in
Accessories	Adapter (40Nm) ▼	
Tightening direction	Absolute ▼	
Reset auto time	3.0	s
Batchcount	1	
Redo type		
☐ Pop up start		
☐ Pop up end		
☐ Prevailing Torque		
Safety torque	0.00	lb in

Now you can populate program parameters specific to your application:
- Change the program number
- Add a name for the program

- Set the threshold, which is the torque that needs to be reached before the tightening starts. A report is only generated once this value is reached.
- Select accessories: Be sure to select accessories that areable to reach the target torque (for example, a 60 Nm target requires an accessory of 100 Nm or more). Minimum torque for the accessory is 10% of the max torque.
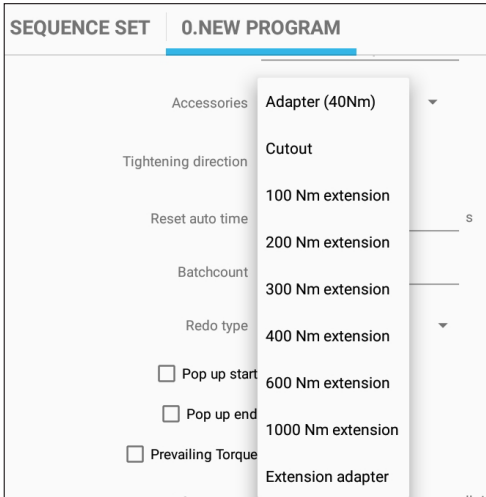
- Set tightening direction
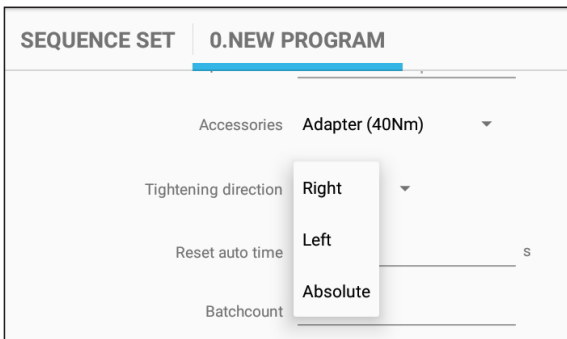
- Set time (in seconds) to reset the system and store the results.

- Enter number of screws that will be tightened.

Batchcount **1**

- Set the Redo Type (see section 3.3.9).

OFF

Disassembly process

Manual

Strategy	Add to target torque ▾
Value to use	Shift the 0
	Nothing

- Set pop-ups. When the time is set to zero, the operator must click the screen to start the program.

☐ Pop up start

☐ Pop up end

- Set prevailing torque. When using a break nut, you can analyze the average torque of the break and add it to the final torque.

0 10 Nm	SEQUENCE SET	0.NEW PROGRAM
1 4 Nm	☑ Prevailing Torque	
3 Airbag Curtain	Threshold torque angle	Threshold torque angle lb in
	Start angle	Start angle °
	Total angle	Total angle °
	Min Torque	Min Torque lb in
	Max Torque	Max Torque lb in
	Strategy	Add to target torque ▾
	Value to use	Average torque ▾
	Accessories	Adapter (40Nm) ▾
	☐ Persistent	
	Safety torque	0.00 Nm

- **Threshold torque angle:** Angle counting starts at this value.
- **Start angle:** When this value is reached, torque is checked up to the total Angle. Threshold torque needs to be set at least at this value.
- **Total Angle:** is used to measure angle from immediate movement of the wrench with no regard to threshold torque.
- **Min/Max Torque:** is used to check if the break nut meets application parameters.
- **Strategy:**
  - *Add to target torque:* Example: If average torque is 2.1 Nm and target torque is 10 Nm, target torque can be changed to 12.1 Nm.
  - *Shift the 0:* Example: If average torque is 2.1 Nm and target torque is 10 Nm, tightening can start at -2.1 Nm.
  - *Nothing:* This function is only used to test if the break nut meets parameters
- **Accessories:** Select an extension to do the prevailing torque (software version 1.5.0 and newer). The sequence will start ONLY if the correct extension is connected.
- **Persistent (version 1.5.0 and newer):** Select to save the prevailing torque value and apply it later in the case of bad tightening (Persistent). To use this function, the operator needs to be allowed to Retry a tightening after a bad result in the sequence parameters.
- **Safety torque:** At this value, show a message that states the screw needs to be changed.

Click on **P+** to add another program.

3.4.3 Copy/Paste or Delete a Sequence/Program

Press your finger for 2 seconds on the Program/sequence window to open this option.
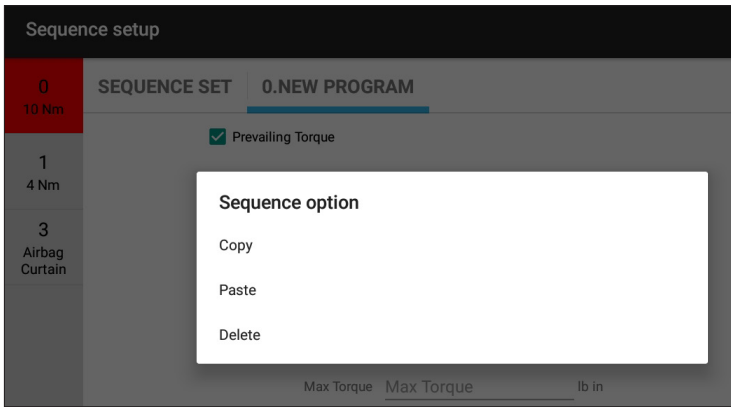
After you've copied a program or sequence, navigate to the window where you want to paste the info, press your finger on the window for 2 seconds, and select "Paste."

4 Tightening/Quality Screen

From the main screen, click on **Select sequence**.
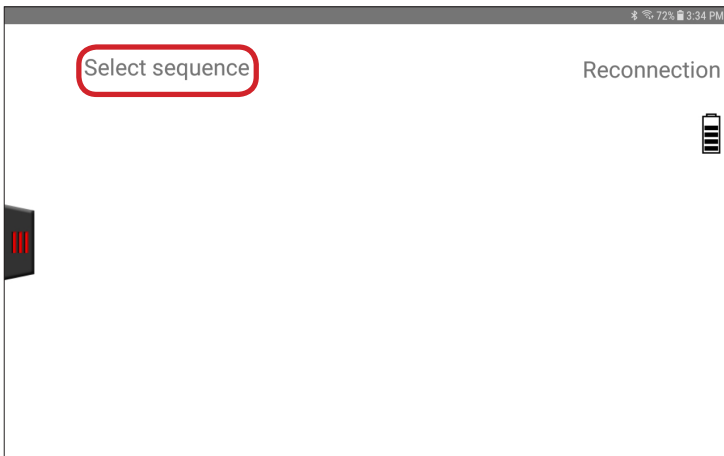
The following menu opens. You can scroll the menu, search a sequence with a name or type a barcode to select a sequence

Select sequence

Search	Barcode

0. **Complex sequence**
   3Pr

1. **1 Nm**
   1Pr

2. **4 Nm**
   1Pr

3. **20 Nm**
   1Pr

Stop sequence

Battery status

SQ0_ Airbag Curtain
Pr0_ 10Nm

0 / 10

Menu button

Batch

lb in

°

0.00   55.55
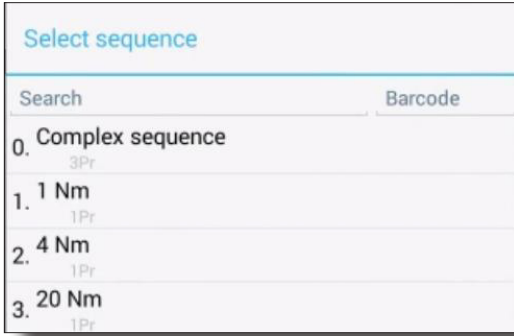
Tightening Information

Target torque 10.00 (9.00 - 11.00)
Angle monitoring -12.00 - 999.00
Accessories 100 Nm extension

Accessories to use: If a bad accessory is connected, this line is highlighted in red as shown.

Bar graph represents progress on the application defined by pre-programmed limits.

5 Results

To access the last results of tightening or curves, open the main menu and click on **Last results** or **Last Curves**:

SETUP
Sequence
Connection
General
RESULTS
Last results
Last Curves

5.1 Last Results

The tightening results are shon as follows:

Last results			FILTER			Tightening	Quality Control	
Date	Time	Sq	Pg	Screw	Torque	Angle	Rp
24/08/18	10:39:07	1. Tom b1	4 Pg.	-	-	-	NOK
24/08/18	10:39:07	1. Tom b1	0. program0	6	-	-	NOK
24/08/18	10:38:46	1. Tom b1	0. program0	3	6	101.77	0.17	OK
24/08/18	10:38:32	1. Tom b1	0. program0	2	6	101.65	0.33	OK
24/08/18	10:38:16	1. Tom b1	0. program0	1	6	2.86	0.00	NOK
24/08/18	10:35:55	1. Tom b1	4 Pg.	-	-	-	NOK
24/08/18	10:35:55	1. Tom b1	0. program0	6	-	-	NOK

FILTER

Quality Control

0.aimco test

Re-tight Mode

Date	07/01/19	
time	08:50:28	
Barcode		
Sequence N°	0	
Sequence Name	aimco test	
Program N°	0	
Program Name	retite	
Target Angle	3.00	
Threshold torque angle	2.40	
Torque apply	10.00	
Min Torque	8.00	
Max torque	12.00	
Screw	5|5	
Report	OK	

Breakout torque	8.23
Torque Angle 0	11.13
Max Torque	11.34
Angle applied	3.18
Wrench number	0631

Re-tight Mode

Date	07/01/19
time	08:50:15
Barcode	

Breakout torque	8.36
Torque Angle 0	10.58
Max Torque	10.96
Angle applied	3.36
Wrench number	0631

5.2 Last Curves

As many as 1,000 curves can be stored in CSV files. From the Last curves screen, you can zoom, unzoom, and move the trace.
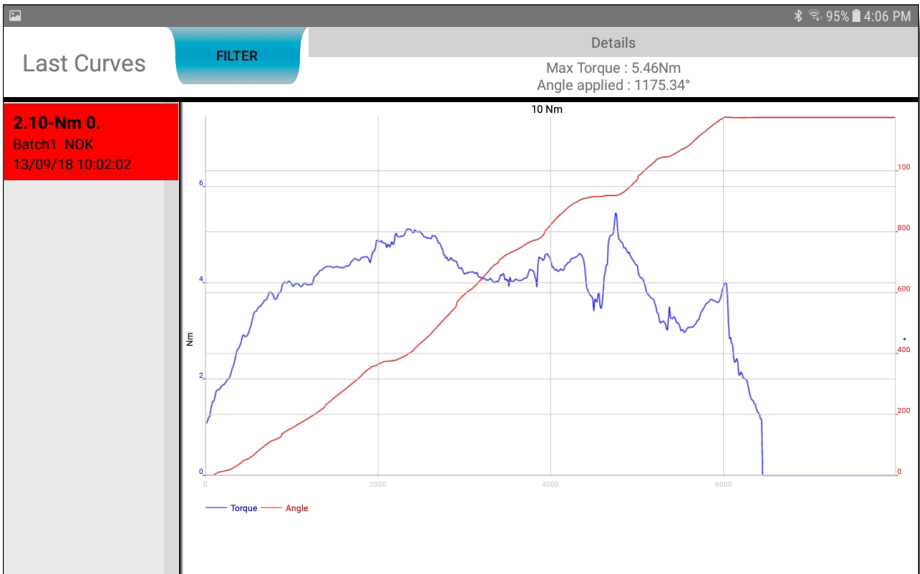
Torque is shown in blue, angle in red. To delete a curve, press your finger on the red curve for 2 seconds and select "Yes."

Erasing the chart

Do you really want to delete this chart?

NO   YES

Apply filters to more quickly locate results or curves.

Filter

☐ Results OK

☐ Results NOK

Barcode   Barcode

Sequence ID   All sequences   ▼

☐ Date min

☐ Date max

CANCEL   OK

6 Tightening and Quality Strategy

6.1 Tightening Strategy

Torque Control & Angle Monitoring
This tightening strategy is used to:
- Reach a target torque
- Detect all assembly problems (grip, no washer, assembly joint change, etc)
- Detect if you retighten the same screw.

If you want count screws, use this tightening strategy and set up the Min/Max Angle to detect if the operator retightens the same screw.

You will need to set up the following:

Torque control & Angle monitoring

Target torque	100.00	lb in
Min Torque	85.00	lb in
Max torque	110.00	lb in
Threshold torque angle	15.00	lb in
Min Angle	-5.00	°
Max Angle	999.00	°

Target torque (mandatory)
Once you enter the target torque, the system will set up other parameters by default. You can change them manually.

Threshold torque angle
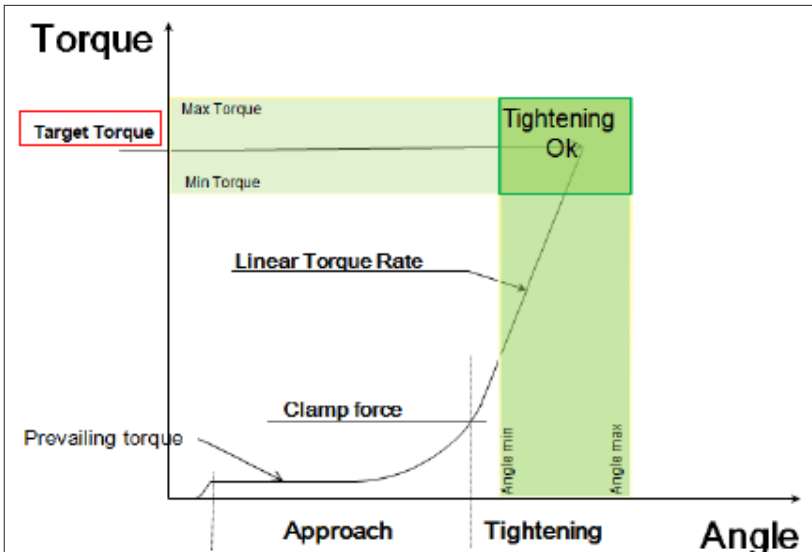Angle counting starts at this value.

Min and Max Angle
Used to validate that tightenings are done under the right conditions.

Select the appropriate accessories

| Accessories	100 Nm extension ▼

The report shows the torque & angle values. If the final torque is between the min/max torque and the final angle between the min/max angle, the result is OK.

Torque Control

This tightening strategy is used when you don't need to check the quality of the assembly joint or count the number of screws.

The report details ONLY the target torque. If the final torque is between the min/max torque, the result is Ok.
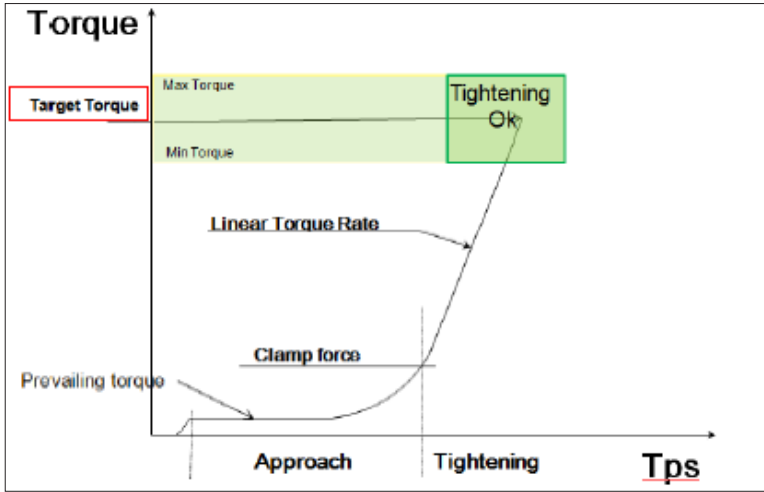
Enter the target torque, and the other fields are populated with default min/max torque.

Select the appropriate Accessories

Angle Control & Torque Monitoring

This strategy is used when you want improve the repeatability of the tension inside the assembly. Your engineering team can give you the right target.

You will need to set up the following:

Target Angle

Min & Max Torque

Threshold Torque Angle
Angle counting starts at this value.

The other values are set up by default, but you can change them manually

Angle control & Torque monitoring		
Angle target	10.00	°
Min Angle	-1.00	°
Max Angle	11.00	°
Min Torque	8.00	lb in
Max torque	12.00	lb in
Threshold torque angle	2.40	lb in
Program Number	3	▾
Program name	program3	

Select the appropriate accessories

Accessories	100 Nm extension	▾

The operator will be asked to stop the tightening when the wrench arrives at the target angle.

The report details the final angle & torque. If the "angle apply" and "torque apply" are within the min/max, the final result is Ok.
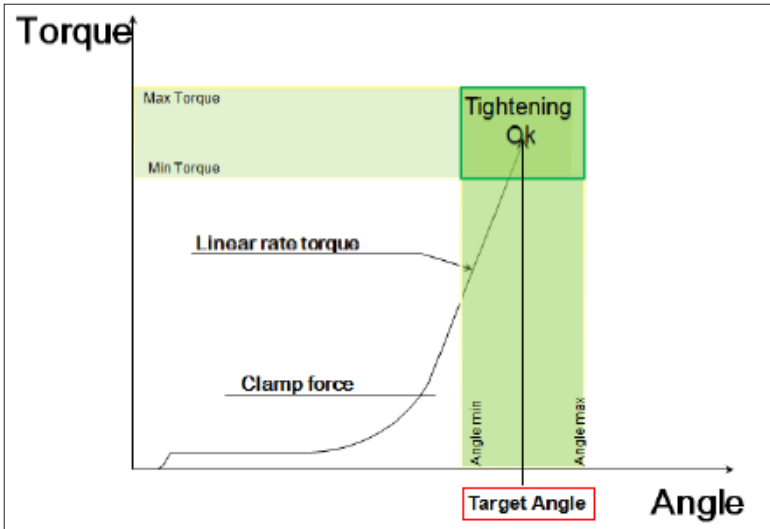
Prevailing Torque
Set prevailing torque when using a break nut. You can analyze the average torque of the break, and ensure the break nut follows specifications.

This prevailing torque value can be used to:

- *Add to target torque:* Example: If average torque is 2.1 Nm and target torque is 10 Nm, target torque can be changed to 12.1 Nm.
- *Shift the 0:* Example: If average torque is 2.1 Nm and target torque is 10 Nm, tightening can start at -2.1 Nm.
- *Nothing:* This function is only used to test if the break nut meets parameters

Prevailing Torque		
Threshold torque angle	Threshold torque angle	lb in
Start angle	Start angle	°
Total angle	Total angle	°
Min Torque	Min Torque	lb in
Max Torque	Max Torque	lb in
Strategy	Add to target torque ▾	
Value to use	Average torque ▾	

You will need to set up the following:

Threshold Torque Angle
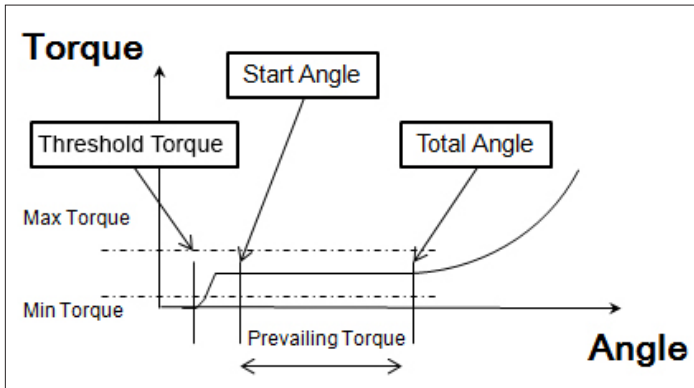Angle counting starts at this value.

Start Angle
When this value is reached, torque is checked up to the total angle.

Min/Max Torque
Used to validate the break nut torque.

If the prevailing torque is between the min/max torque value, the result is Ok and you can finalize the tightening.

6.2   Quality Strategy

Re-Tight Mode
This strategy involves untightening and retightening a screw to determine torque values.

You will need to set up the following:

Torque Apply
Enter the estimated torque to apply to the screw.

Min/Max Torque
Set up by default

Threshold Torque Angle
Angle counting starts at this value.

Angle Target
Hard joint: 3°   Soft joint: 5°

Starting with an already-tightened screw, the process is as follows:
- Unscrew by 5° (on hard joints, select 2° or 3°)
  – The system takes the real angle value
  – The system stores the disassembly torque
- Re-tighten the screw to come back to the initial position
  – The system trecords the value when the angle returns to the initial position

The report completes when the screw returns to its original position. If the final torque is between the min/max torque, the result is Ok.
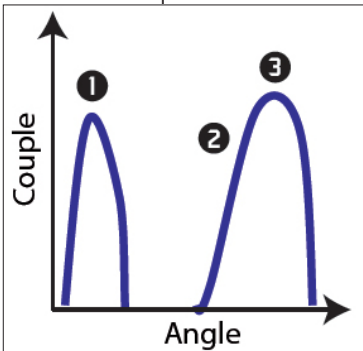
1) Disassembly torque (breakout) value
2) Torque value when the screw returns to the original position
3) Max torque apply

Target Angle Mode

This strategy can be used ONLY if you have a soft joint/elastic assembly joint.

You will need to set up the following:

Torque Apply
Enter the estimated torque to apply to the screw.

Min/Max Torque
Set up by default

Threshold Torque Angle
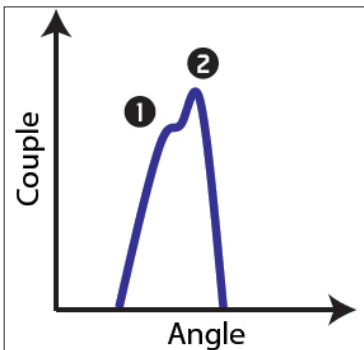Angle counting starts at this value.

Angle Target
Hard joint: 3°
Soft joint: 5°

The breakout torque is measured when the angle target is reached. The angle target is set by default at 3°, but you can change it. The minimum value is 1°.

Screwdriver mode: Set angle target at 1°.
Flexion mode: Set angle target to 2° or 3°.

1) Breakout Torque
2) Final torque

Residual Torque Mode

This strategy is the best way to check the assembly joint's residual torque. This information can be used to determing how much friction is occurring inside the assembly.

You will need to set up the following:

Estimate torque apply
Enter the estimated torque to apply to the screw.

Min/Max Torque
Set up by default

Threshold Torque Angle
Angle counting starts at this value.

Rate Torque Calculation
Screwdriver mode: 6 pts
Flexion for hard joint: 8 – 10 pts
Flexion for soft joint: 12 – 15 pts
Flexion elastic joint: 15 – 30 pts

Breakout Torque Detection
% of rate of torque change
When the screw moves, the angle Increases quickly and the torque slowly, so the rate torque decrease quickly. This value is used to detect when the screw starts to move.

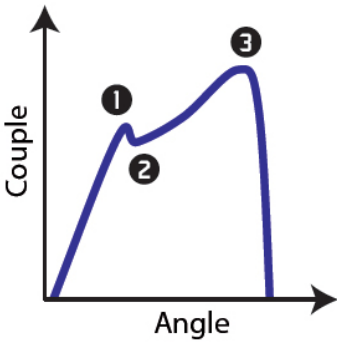| Residual Torque		
Estimate Torque Apply	Estimate Torque Apply	Nm
Min Torque	Min Torque	Nm
Max torque	Max torque	Nm
Threshold torque angle	Threshold torque angle	Nm
Rate Torque calculation (Points)	12	
Breakout Torque detection	150	%

The reference rate torque is calculated during the first step of retightening (when the screw doesn't move).

> Rate torque = (Torque 2 – Torque 1)/(Angle 2 – Angle 1)
> Rate Torque Unit = Nm/°

During the process, the actual rate torque is compared to the rate torque reference. (The Rate torque reference is the average rate torque of the 10 first values). If the rate torque decreases more than X%, breakout torque is measured. Breakout torque is the point when the screw starts to move.

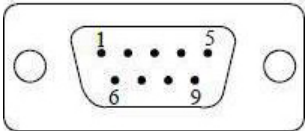To detect residual torque, angle and torque values are continually checked:
- If the angle increases and the torque decreases, we take the min torque value (on the graph pt. 2)
- If the angle increases and the torque increase, the residual torque = the breakout torque.
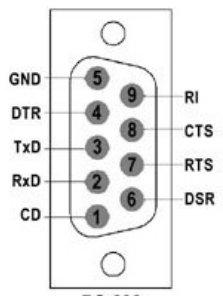

1) Breakout Torque
   This is the torque when the screw starts to move
2) Residual Torque
   This is the actual torque inside the assembly
3) Final Torque
   This is the max torque apply on the assembly

7 Male Serial Port

Pin 2 is used to received data from a barcode and Pin 3 is used to send data to a computer or serial printer. In all cases, Pin 5 needs to be connected to a ground.


DB9 Female (PIN)	RS-232C Interface Signal
2	Receiving data SIN (RXD)
3	Sending data SOUT (TXD)
5	Signal grounding GND

1	(8)	DCD	<----	Data Carrier Detector
2	(3)	RxD (or RD)	<----	Receive Data
3	(2)	TxD (or TD)	---->	Transmit Data
4	(20)	DTR/	---->	Data Terminal Ready
5	(7)	SG, GND	-----	Signal Ground
6	(6)	DSR/	<----	Data Set Ready
7	(4)	RTS/	---->	Request To Send
8	(5)	CTS/	<----	Clear To Send
9	(22)	RI	<----	Ring Indicator

8.1 Restore Factory Default

In some special case, you will need to restore the factory default, please follow this process to do that. Android Setting
Setting / Application / Onetoo soft
Click on » Clear Data «

AIMCO
WWW.AIMCO-GLOBAL.COM
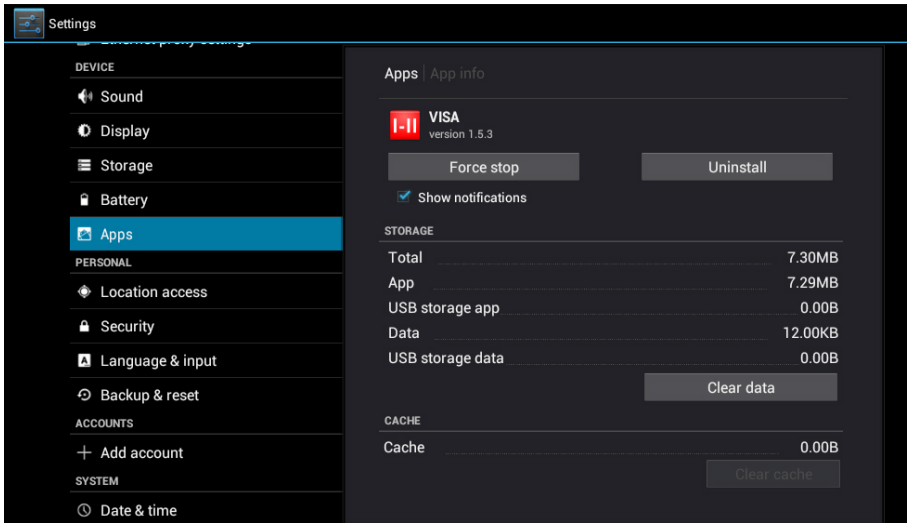
CORPORATE HEADQUARTERS
10000 SE Pine Street
Portland, Oregon 97216
Phone: (503) 254–6600
Toll Free: 1-800-852-1368

AIMCO CORPORATION DE MEXICO SA DE CV
Ave. Cristobal Colon 14529
Chihuahua, Chihuahua. 31125
Mexico
Phone: (01-614) 380-1010
Fax: (01-614) 380-1019

AIMCO CHINA
Room 607, No. 3998 Hongxin Rd
Minhang District, Shanghai
China
Phone: 0086-21-34319246
Fax: 0086-21-34319245

AIMCO SOUTH KOREA
B-1213, 167, Songpa-Daero
Songpa-Gu, Seoul 05800
South Korea
Phone: 0082-2-2054-8930
Cell: 0082-10-9804-8905

AIMCO SOUTH AMERICA
Calle Congreve No 800. Escobar
El Aromo. L207
Provincia de Buenos Aires
Argentina
CP: 1625
Phone: +54 9 11 3341 0543