

COMMANDER XT1000 / XT2000 User Manual



COMMANDER XT1000 / XT2000 *User Manual*

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ABOUT THE COMMANDER MOBILE COMPUTER

Torq-Comm's COMMANDER XT1000 is a rugged IP65 sealed handheld PC for PRODUCTION CONTROL that provides up to the minute work instructions and bolting schematics to the operators in the field or factory. The work instructions are downloaded in real time to guide the operator through the entire assembly process while providing DATA COLLECTION during the bolting process.

This data, along with an unlimited amount of user-definable traceability information (such as operator, tool etc.), can then be stored on the Commander XT1000 or sent via Wi-Fi or cellular to a Cloud server immediately upon completion for remote storage and analysis. Equipment, materials and torqueing data for each bolt is automatically date & time stamped along with a GPS location. With front and rear facing high resolution cameras, barcode scanning with a 1D/2D imager or 1D laser scanner, as well as integrated RFID and NFC reading capabilities, Bluetooth, Wi-Fi, and 3G-4G cellular capability, almost all data collection scenarios are possible. Smart battery power management ensures you'll get through your busy day effortlessly.

The COMMANDER XT1000 survives repeated 5' drops to concrete across a wide operating temperature range, is sealed to IP65 standards and is UL 1604 Class 1 Div. 2 (A, B, C, D) certified to provide ultimate reliability and safety in extreme and hazardous locations.

CAUTION!

Do Not Use Tool Without Reading This First!

Before using any Torq-Comm tool, READ THIS MANUAL! Your safety, and the safety of others, may depend on your proper use of this tool. This manual provides information about the proper use of this tool that is important for your protection and for the protection of your work. If you don't understand any part of this manual **do not use the tool**. Instead, seek assistance from your distributor or from Torq-Comm customer support.

Torque can be critical! Incorrect torque can be dangerous! Although Torq-Comm, Inc.'s tools are designed to be safe when used properly, improper use of these tools may create unsafe conditions resulting in catastrophic failures and other accidents, causing severe **injury** or **death**, significant property damage, expensive shut down of industry equipment or infrastructure, and environmental damage.

Understand torqueing specifications, conditions, and variables. The software embedded in this Torq-Comm tool makes preliminary torque calculations required for different applications based upon published specifications such as ASME PCC-1 2013, API flange specifications, ANSI material specifications, and other specifications that are common in the industry. Nonetheless, there are a number of variables that affect final torque calculations that must be properly accounted for when using this tool. These variables include, *but are not limited to*:

- design specifications for the work to which the tool is applied
- other information input by the tool user
- dirt or debris in a tapped hole
- grease or oil on the threads
- damaged threads
- hole misalignment

Don't ignore calibration and warnings. Your tool communicates with the digital pressure gauge and other components using wireless communications technology that must be properly calibrated and maintained. The digital pressure gauge is calibrated when it is shipped, but it is up to the user to re-calibrate it as required by the appropriate internal calibration schedule. Also, do not ignore or circumvent built-in safety features such as the requirement for supervisor approval of out-of-specification readings.

DISCLAIMER AND LIMITATION OF LIABILITY

EXCEPT FOR THE LIMITED PRODUCT WARRANTY PROVIDED WITH THE TOOL, THIS TOOL IS DELIVERED BY TORQ-COMM, INC., WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTY OF DESIGN, ANY IMPLIED WARRANTY OF MERCHANTABILITY, ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR FOR A GENERAL PURPOSE, AND ANY WARRANTY ARISING BY LAW OR STATUTE, COURSE OF DEALING, OR USAGE OF TRADE.

IN NO EVENT, REGARDLESS OF CAUSE, SHALL TORQ-COMM, INC., BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, PUNITIVE, OR CONSEQUENTIAL DAMAGES OF ANY KIND, WHETHER ARISING UNDER BREACH OF CONTRACT, TORT, STRICT LIABILITY, PRODUCTS LIABILITY, OR OTHERWISE.

POWER MANAGEMENT

Power Management-Conserving Battery Power

COMMANDER XT1000 Series devices feature multiple power conservation options, some of which employ timers that can be set to strike a balance between user preference and optimal battery life.

On battery power timers control the selected action only when the device is being operated on battery power.

On external power timers control the selected action only when the device is being used with an external power supply.

 **Tip:** *Whenever practical, you can conserve battery life by:*

- 1. Using the AC adapter to plug the COMMANDER XT1000 Series device into an external power source.*
- 2. Manually or auto-suspend device operation as often as is practical*
- 3. Reduce the backlight brightness setting*
- 4. Turn off any wireless functionality (phone, Wi-Fi, Bluetooth or GPS) when not in use*

Main and backup battery status

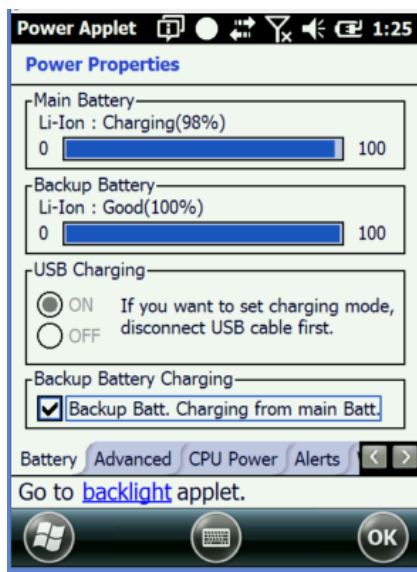
1. Tap **SETTINGS** from the Windows Start desktop.



2. Tap **POWER**.



3. Main Battery and Backup Battery status are displayed in bar charts from 0% to 100%.



Screen Off Function

To adjust Screen Off function (device suspend mode):

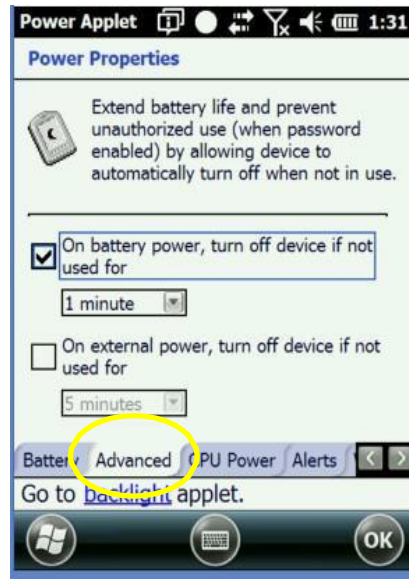
1. Tap **SETTINGS** on the Windows **Start** desktop.



2. Tap **POWER** on the Windows Settings desktop.



3. Tap **Advanced** on the **Power**

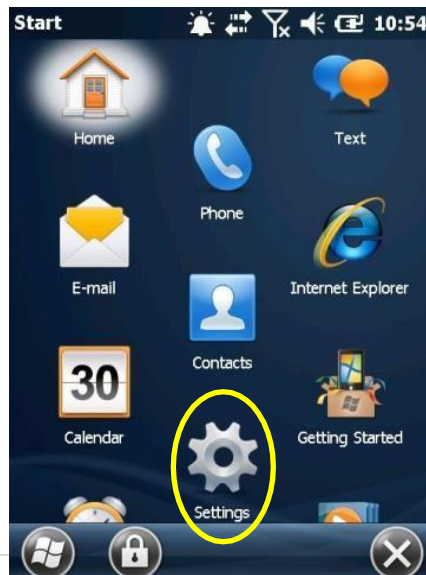


4. Un-check **ON BATTERY POWER**.
5. Though this will use more power, there will be no interruption in the COMMANDER XT1000 program usage or data collection.
6. Un-check **ON EXTERNAL POWER**.
7. Repeat Step 5.
8. Tap **OK**

Backlight Off Delay Function

To adjust backlight off delay function:

1. Tap **SETTINGS** on the Windows **Start** desktop.



2. Tap **SYSTEM** folder on the Windows **Settings** desktop.



3. Tap **BACKLIGHT** on the Windows System desktop.



4. Check the **"Turn off the backlight if device not used for"** box and select the preferred length of inactivity before activation of the screen off power saving function from the pull-down menu. Shorter *off* delays will increase battery power conservation.

Backlight Brightness Adjustment Function

To adjust backlight brightness function:

1. Follow previous directions for Backlight Delay Function
2. Adjust the brightness level using the sliding bar in 20% increments. The Backlight will be turned off when the **Enable**



Backlight check box is disabled

Keypad backlight Enable and Duration To adjust keypad backlight duration function:

1. Tap **Settings** (icon) on the Windows **Start** desktop.
2. Tap **System** > **Backlight** (tab)> **Keypad backlight**
3. Enable the keypad backlight function by selecting the check box.

RESETTING THE COMMANDER

Resetting

In addition to on (Resume) and Off (Suspend) functions, COMMANDER XT1000 mobile computers provide a range of device reset (boot) procedures whose functions may be called upon when required.

IMPORTANT NOTE!

Some device reset options irretrievably delete stored user data! Always read and understand the parameters of selected reset procedures before execution.

On (Resume) / Off (Suspend) and Reset Functions

On (Resume) / Off (Suspend)

To Suspend or Resume COMMANDER XT1000 mobile computer operation:

- Press the **Red Power key** once to suspend operation and press again to resume.

Reset the COMMANDER XT1000

To Soft Reset (or Warm Boot):

A soft reset restarts the device and reboots the operating system. Applications and files remain intact. However, any data in RAM that has not been saved could be lost. Make sure to save any open work before executing a soft reset.

To perform a soft reset:

1. Press the Power button and hold for 3 seconds.
2. Choose 'Soft Reset' on the power menu.

To Hard Reset (or Cold Boot):

A hard reset, resets the hardware and cold starts the operating system. All applications and files remain but any unsaved data in RAM will be lost. Make sure to save all open work before executing a hard reset.

To perform a hard reset:

1. Press the Power button and hold for 3 seconds.
2. Choose 'Hard Reset' on the power menu.

Wi-Fi / WLAN (802.11 a/b/g/n) RADIO

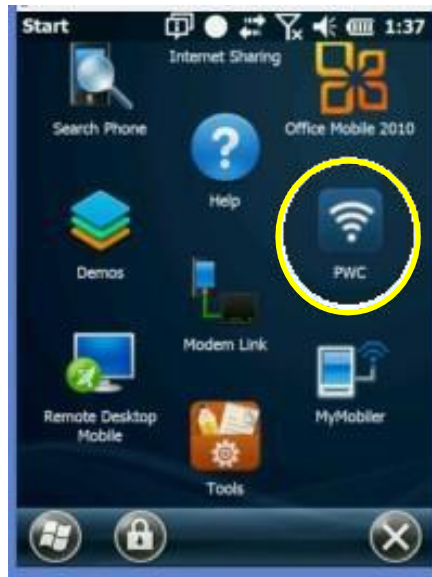
The COMMANDER XT1000 has a 2.4 GHz and 5GHz **802.11 a/b/g/n** WLAN (Wireless Local Area Network) radio. The radio is interoperable with other 802.11a/b/g/n, Wi-Fi compliant products including wireless controllers, access points (APs), workstations via PC card adapters, and other wireless portable devices.

By default, the 802.11a/b/g/n radio is powered-off (i.e., disabled) "out of the box". Once enabled the state of the radio will survive subsequent soft and hard resets. The next step is to configure the connection parameters of the radio to connect to a wireless network.

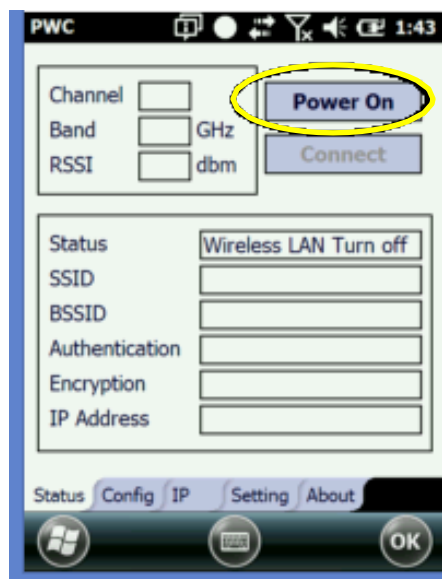
Configuring the WLAN Radio

The WLAN radio is configured using the Portable Wireless Configuration Utility (PWC).

1. Tap **PWC**

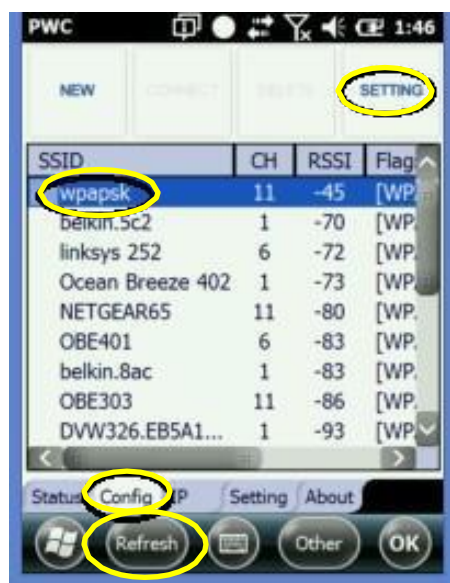


2. Tap **Power On**



3. Tap the **CONFIG** tab at the bottom and **REFRESH** to identify the available Wi-Fi signals in your area.

If a SSID is already connected and indicated with a check mark in front of the name, first tap on that name and tap DISCONNECT. You are now free to choose another.



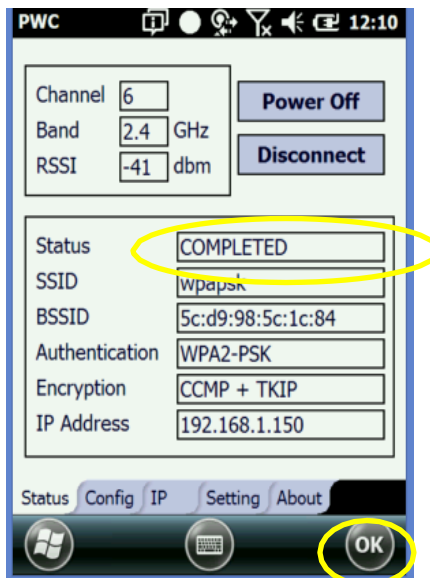
4. Tap the SSID you wish to connect with then tap **SETTING** to input the password.

5. Tap the PSK block and type in your PreShared Key or password.



Tap **OK** when complete.

6. Configuration is complete and accurate when the "Status" changes to "COMPLETED". The "Status" panel provides useful information about your wireless connection including the channel.



7. Tap **OK** when complete.

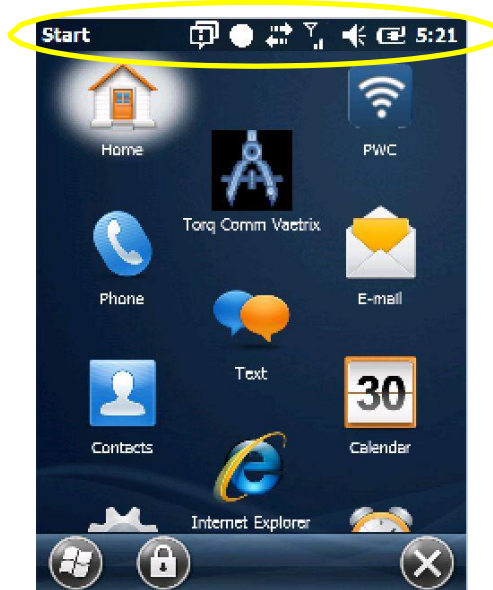


The IP tab shows your network configuration.

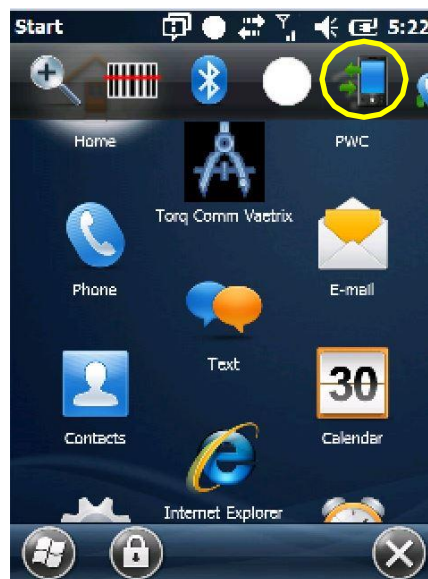
CONTROLLING THE WI-FI, BLUETOOTH AND CELLULAR FUNCTIONS

1. The Commander XT1000 has WI-FI, Bluetooth and Cellular communication capabilities that can be turned on or off from any screen or program.

First, tap the small icon bar at the top of the screen as shown below. It doesn't matter where you tap it.



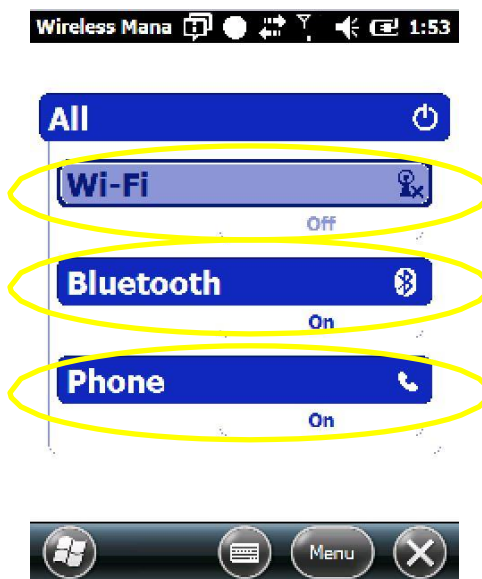
2. A larger icon bar will drop down. Tap the Connectivity icon shown.



3. The Connectivity Window will appear. Tap the words **Wireless Manager**. It is a hyperlink to the Wireless Manager



4. From the Wireless Manager screen, you can turn On and Off each of the functions simply by tapping the Input Box. The function will toggle On and Off and the block fade or darken with each tap.



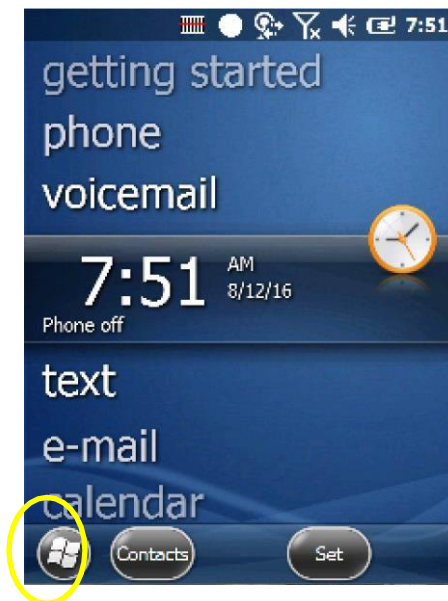
If the Commander is having trouble communicating to Pressure Gauge or Control Module, be sure Bluetooth is turned on.

If the Commander is having trouble communicating to the Commander Cloud in order to Update From Master or Retrieve Jobs, be sure the Wi-Fi or Phone are turned on.

COMMANDER PROGRAM

Accessing the COMMANDER Program:

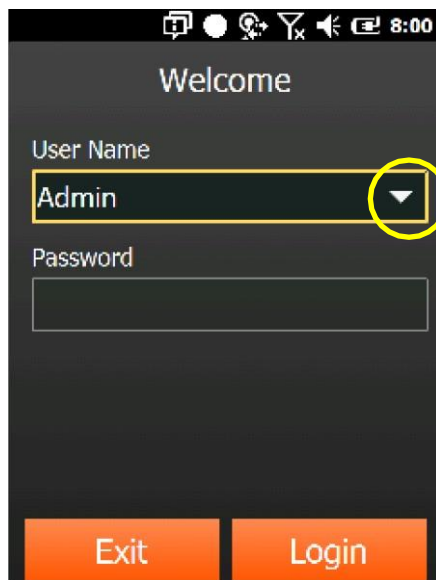
1. Tap **Windows** (icon) from the Windows **Start** desktop.

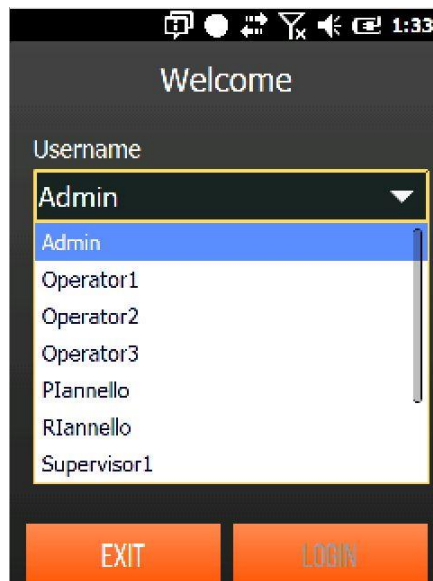


2. Tap **Torq-Comm Vaetrix** (icon). This will open the COMMANDER XT1000 program.
3. Torq-Comm COMMANDER XT1000 welcome screen.



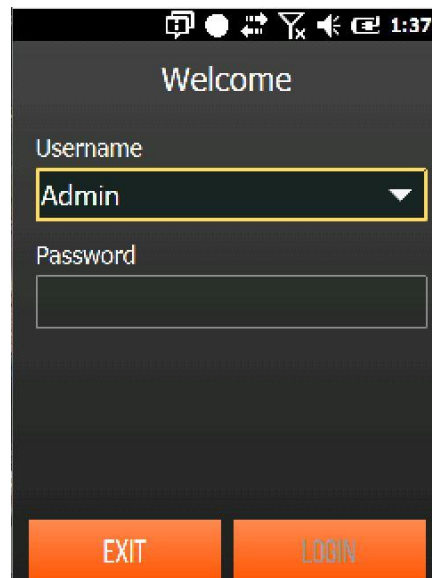
4. Tap the **USER NAME** block and select your user name from the drop down menu. (The System Administrator must first create a user name and password for each operator using the COMMANDER CLOUD system)
5. The downward arrow at the end of the Input Box indicates a drop down menu is available





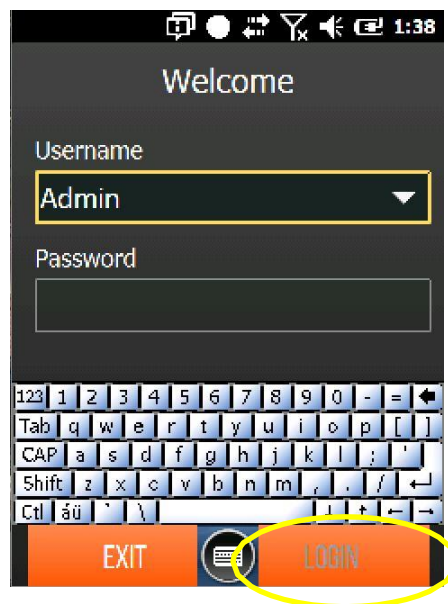
Tap the User you wish to use to login.

6. Tap the **PASSWORD** block and type in your password.





A virtual keyboard is available by tapping the OK button on the handheld while in a window. The information can be typed using the keyboard on the COMMANDER or tapped in using the virtual keyboard and stylus. Tap the OK button again to make the keyboard disappear.

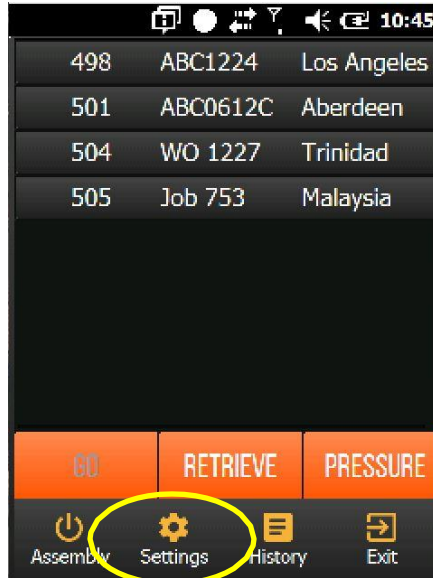


Tap LOGIN to begin

CONFIGURING THE COMMANDER

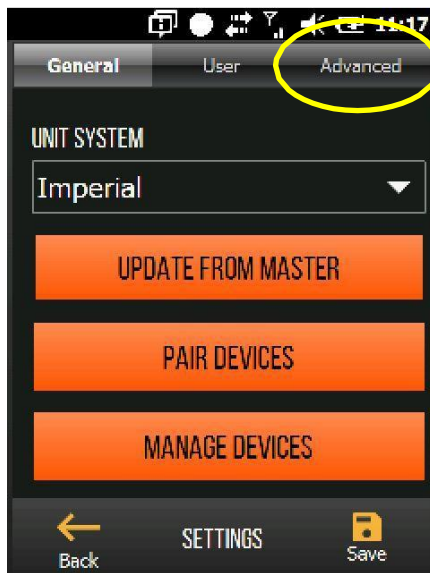
HOME / Job Assignment Screen

1. The COMMANDER XT1000 must first be configured properly before it can be used. Downloading tool and program databases as well as torque assembly jobs can be easily completed and Bluetooth devices easily paired.



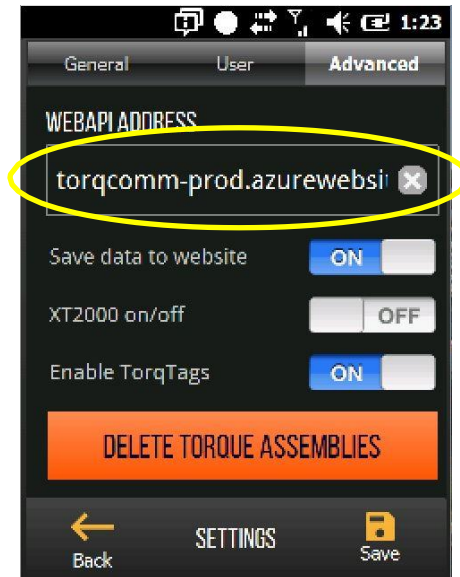
To begin, tap **SETTINGS** from the Home Screen.

2. From the **SETTINGS** screen, there are a number of options to configure your COMMANDER. Tap the **ADVANCED** tab to begin the set up.



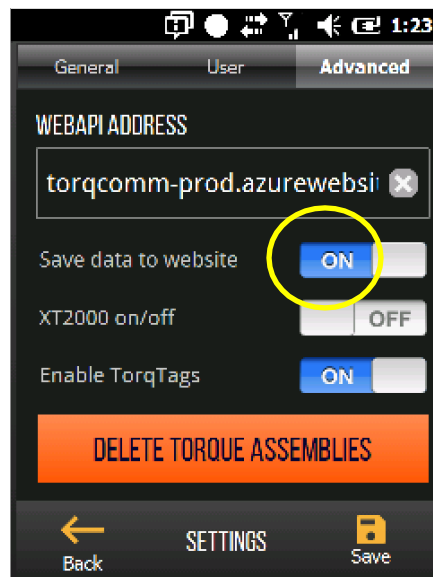
Assigning the COMMANDER CLOUD Address

1. Tap the **WEB API ADDRESS** box and type the web address of your COMMANDER CLOUD system. This is unique to your organization and can be provided by your System Administrator. From this web address, the COMMANDER will be able to retrieve your torque assembly jobs and update your databases.

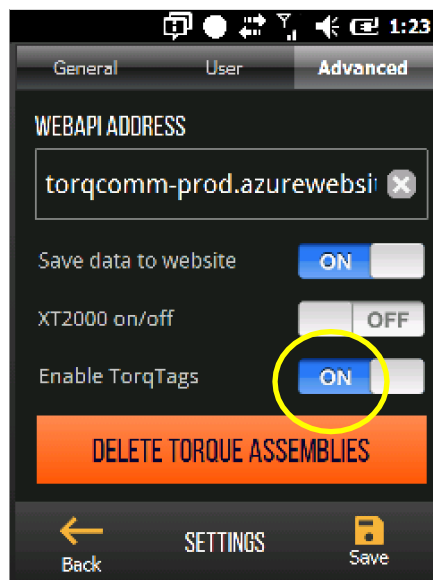


NOTE: It is imperative that the **WEB API ADDRESS** be correct for complete and proper communication to and from your **COMMANDER CLOUD**.

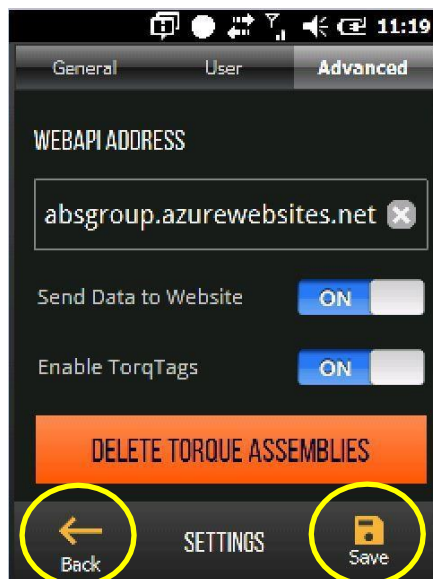
2. If you do not wish to automatically send torque assembly and traceability data to your COMMANDER CLOUD system, tap **ON** to toggle to **OFF**. Data will be stored on the COMMANDER and sent to your COMMANDER CLOUD when **ON**.



3. If you do not wish to require TorqTags to be used during the torque assembly jobs, tap **ON** to toggle to **OFF**. More information regarding TorqTags can be found in the Options Section of this document.



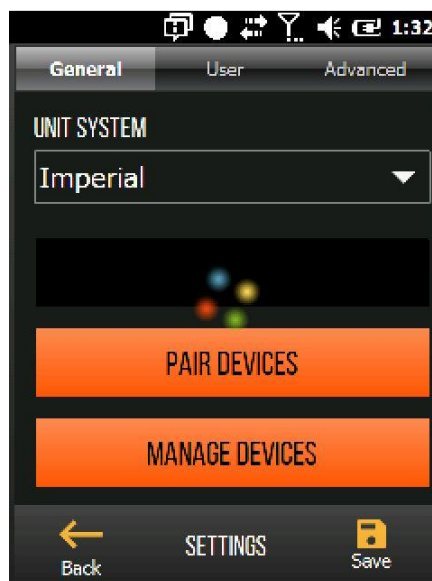
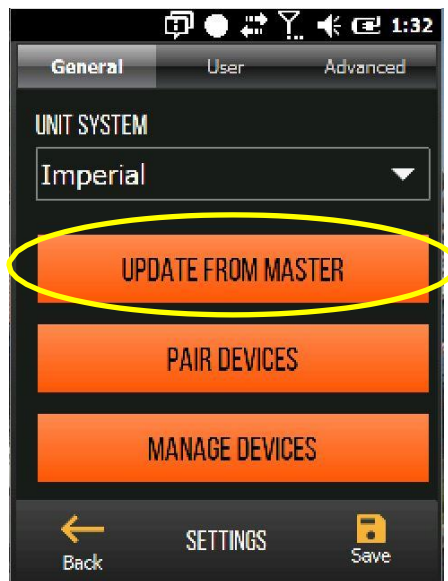
4. Tap **SAVE** to save your changes and updated settings and the **BACK** arrow to return to the previous screen.



Updating the COMMANDER Databases

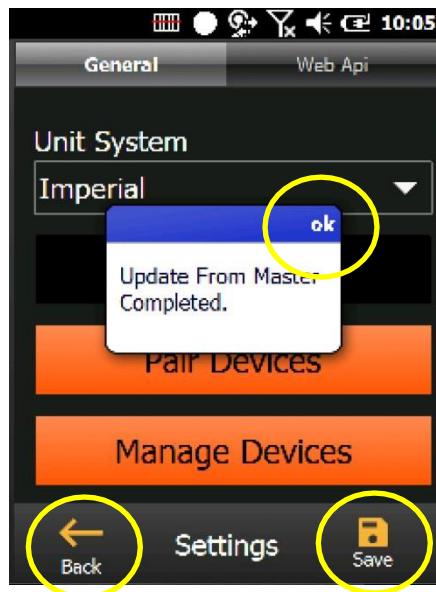
1. Tap **UPDATE FROM MASTER** to down load the COMMANDER CLOUD system databases for Traceability, Wrenches, Equipment, Bolts and Flanges.

NOTE: You should update your handheld any time there are changes to any of your COMMANDER CLOUD databases. Without a complete and current database on your COMMANDER, it is possible you will not be able to complete torque assembly jobs if they require information not currently on your handheld.



The colored pin wheel indicates the down load process has begun. Depending on your COMMANDER CLOUD database size and your transmission rate, an UPDATE FROM MASTER can take 2-4 minutes.

2. Tap **OK** when the completion screen appears indicating the update is complete.



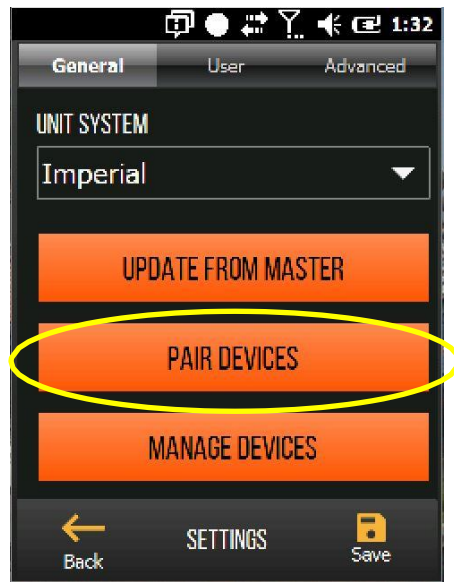
3. Tap **SAVE** and tap the **BACK** arrow to return to the previous screen.

If the Commander is having trouble communicating to the Commander Cloud in order to Update From Master or Retrieve Jobs, be sure the Wi-Fi or Phone are turned on and properly configured.

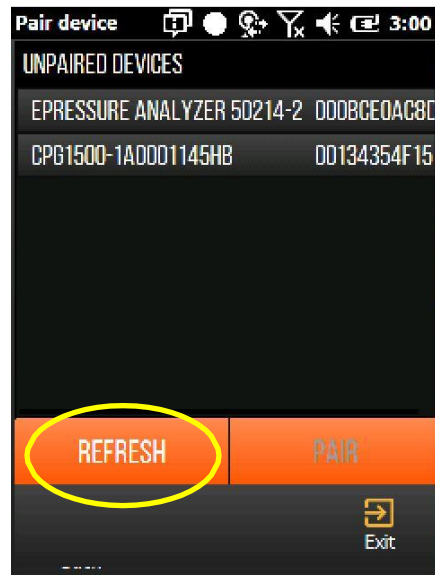
Refer to the CONTROLLING THE WI-FI, BLUETOOTH AND CELLULAR FUNCTIONS section on page 13 for complete instructions.

Pairing and Managing a Bluetooth Device

1. Pairing a Bluetooth device is easy whether it is a Pressure Gauge or Control Module.
Several devices of each type can be paired simultaneously but the COMMANDER XT1000 can only collect data from one gauge or command one module at a time.
Once paired, the device does not need to re-paired to initiate Bluetooth communication unless it is intentionally deleted from the COMMANDER XT1000.
2. Tap **PAIR DEVICES**.



3. Tap **REFRESH** to initiate a search for Bluetooth devices.
All available Bluetooth devices within range will be listed for your selection. Chose and tap one for pairing.



- The list of the available Bluetooth devices will appear. Tap the device you wish to pair with from the list and tap **PAIR**.



- Type the device **PIN** to approve the communication with the device and provide a **DESCRIPTION** of the device for your future reference.

The PIN for the Taylor Digital Pressure Gauge is: **EGAUGE**

The PIN for the WIKA Digital Pressure Gauge is: **31671500**

The PIN for the Control Module, Reve 2 and 3, is: **1234**

The description is for you to easily identify the different devices. The description can be alpha- numeric so a name or a serial number can be used.

TAYLOR DIGITAL PRESSURE GAUGE

Enter PIN 11:01

ENTER PIN

EGAUGE

NAME

ePressure Analyzer 50214-2

DESCRIPTION

Taylor 50214-2 10kpsi

DEVICE TYPE

Pressure Gauge

DEVICE KIND

Taylor Vaetrix eGauge 1

Enter PIN 11:02

NAME

ePressure Analyzer 50214-2

DESCRIPTION

Taylor 50214-2 10kpsi

DEVICE TYPE

Pressure Gauge

DEVICE KIND

Taylor Vaetrix eGauge 1

NEXT CANCEL

WIKA DIGITAL PRESSURE GAUGE

Enter PIN 8:30

ENTER PIN

31671500

NAME

CPG1500-1A00O1145HB

DESCRIPTION

WIKA 10kpsi gauge

DEVICE TYPE

Pressure Gauge

DEVICE KIND

WIKA CPG1500

Enter PIN 8:30

NAME

CPG1500-1A00O1145HB

DESCRIPTION

WIKA 10kpsi gauge

DEVICE TYPE

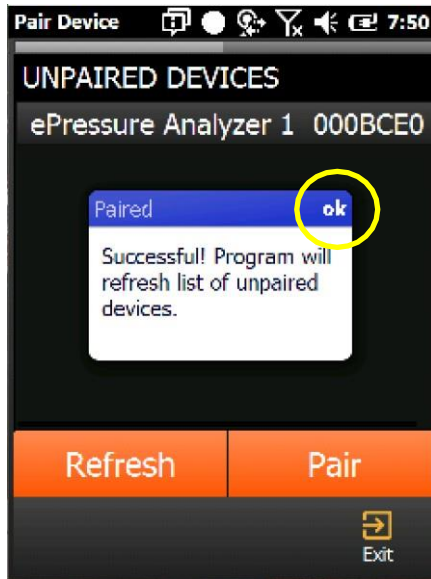
Pressure Gauge

DEVICE KIND

WIKA CPG1500

NEXT CANCEL

Tap **NEXT** to complete pairing.

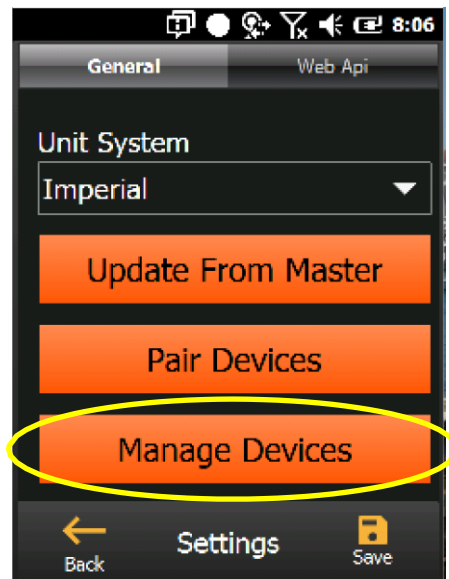


6. When the pairing is successful, a message box will display confirming the operation. Tap **OK**.

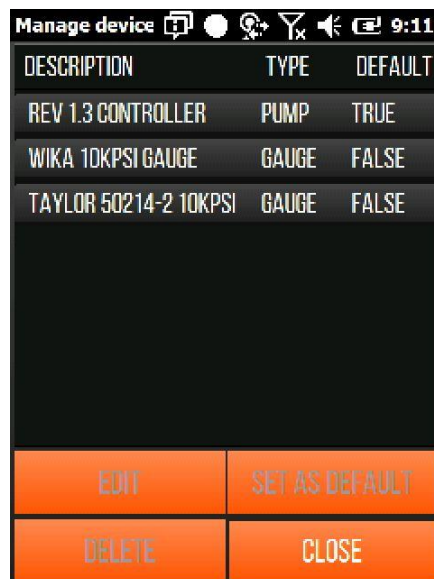
You can now pair another device, repeating steps 4 – 5, or tap **EXIT** to continue.

Now that the various Bluetooth devices are paired with you Commander, you have to identify which device the Commander is to communicate with.

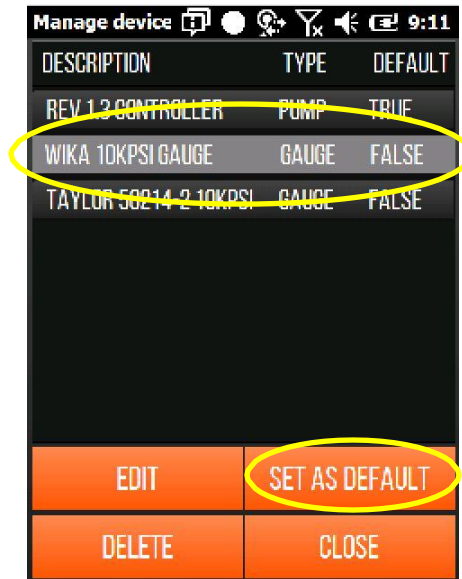
7. From the Settings screen, tap **MANAGE DEVICES**, to select the Bluetooth device to use.



8. The list of paired Bluetooth devices will be displayed.



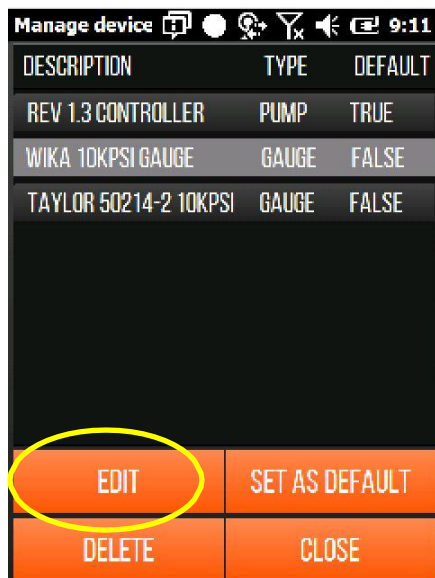
- From the list of paired Bluetooth devices, select the one you wish to communicate with. Tap **SET AS DEFAULT**. The Default will be set as TRUE. The COMMANDER XT1000 will now only communicate with this device.



Tap **CLOSE** to continue.

The Bluetooth device you wish to use can be changed for each job simply by selecting a different device and setting it as default. The Default status will change from False to True for the new device.

10. You can change or edit the description of the paired device by first selecting the device and then tapping **EDIT**.



The Edit Device screen appears allowing you to change the description of the device as it appears on the Manage Device screen. You can also change the device type whether it is a pressure gauges or a pump controller.

The Name of the device cannot be changes as it is read directly from the device itself.

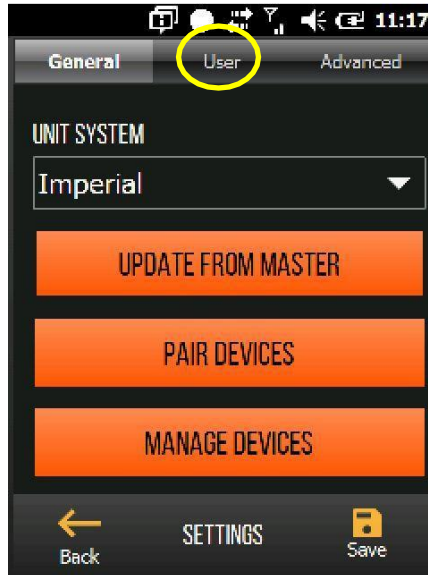


Tap **SAVE** to retain your changes.

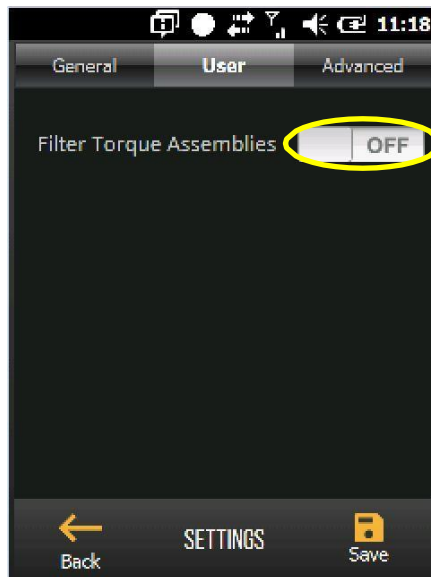
Setting the USER FILTER on the COMMANDER

- a. The COMMANDER XT1000 can be configured to display only the open torque assembly jobs assigned to the User who logged onto the device.

From the Settings Screen, tap **USER** to access this feature.



- b. Tap the Filter Torque Assembly to toggle from ON to OFF.



In the **ON** setting, the COMMANDER will only display the open torque assembly jobs assigned to the User who logged onto the device.

In the **OFF** setting, the COMMANDER will display all of the open torque assembly jobs for an organization regardless of who logged onto the device.

RETRIVING JOBS ON THE COMMANDER

1. From the Home Screen, tap **RETRIEVE JOBS** to down load all of the open torque assembly jobs from the COMMANDER CLOUD.

NOTE: An active Wi-Fi or cellular connection is required to retrieve jobs.



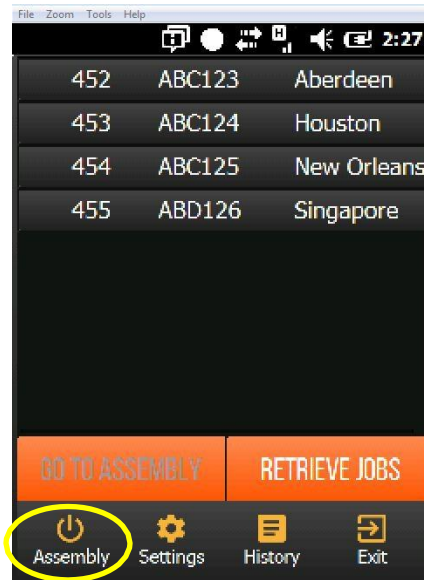
2. Tap on the torque assembly job you wish to open and tap **GO TO ASSEMBLY** to begin the data collection.



CREATING JOBS WITH THE COMMANDER

You can create torquing jobs on the COMMANDER XT1000 just as you can on the COMMANDER CLOUD. Step by step, either method is exactly the same using the same database of equipment and materials.

1. From the Home / Job Assignment screen, tap **ASSEMBLY**

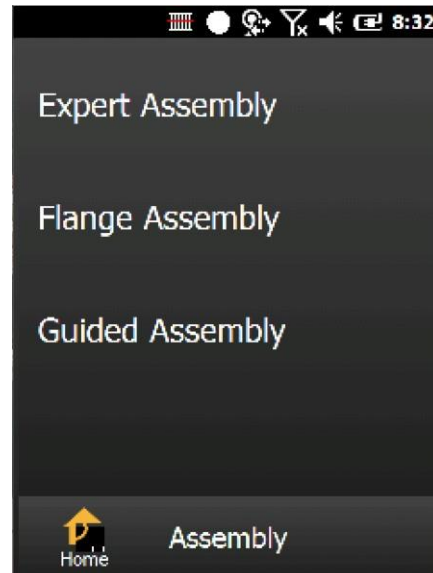


2. You can select three different modes in creating your torquing jobs.

Expert Assembly – the simplest method to enter existing jobs requiring the fewest inputs

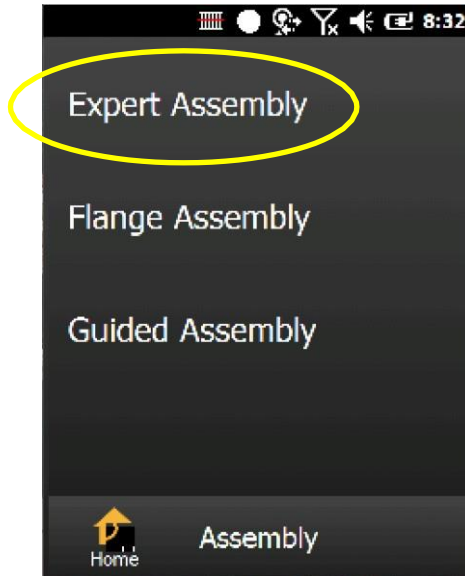
Flange Assembly – creates jobs based on the pipe size and the working pressure of the fluid inside

Guided Assembly – creates jobs based on the number / size of the bolts and percent yield



Expert Assembly Method

1. Tap **EXPERT** to begin

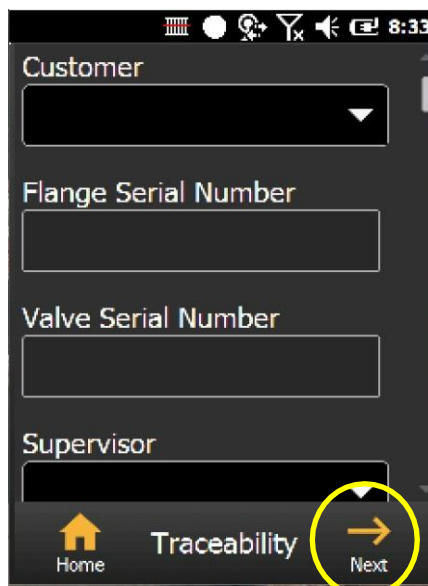


1. Enter the required Traceability information.

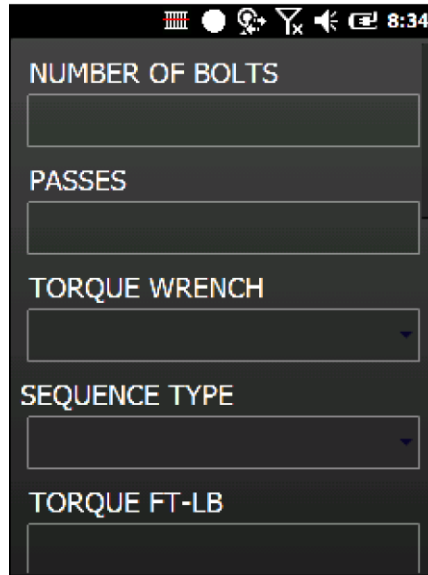
The Traceability information can be inputted in a number of different ways depending how the System Administrator configured the blocks.

The information can be inputted by typing, picking from a drop down menu or barcode scanning.

Tap **NEXT** when complete.

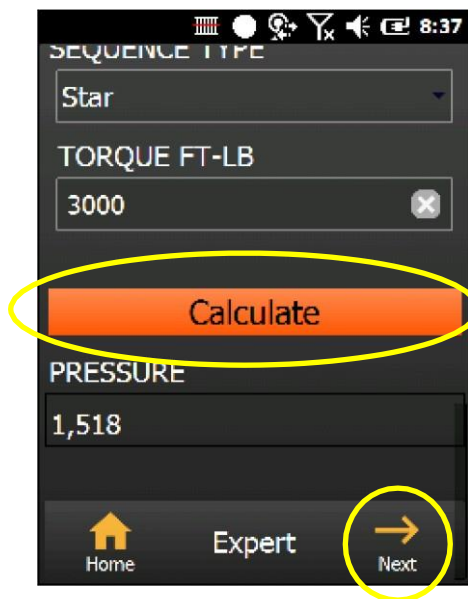


2. Enter the number of bolts, passes, torque wrench, sequence type and the required final torque. The drop down menus can be accessed by tapping on each block.



A screenshot of a mobile application interface. At the top, there is a status bar with various icons and the time 8:34. Below the status bar, the app has a dark background with white text. The first section is labeled 'NUMBER OF BOLTS' and has a text input field. The second section is labeled 'PASSES' and has a text input field. The third section is labeled 'TORQUE WRENCH' and has a dropdown menu. The fourth section is labeled 'SEQUENCE TYPE' and has a dropdown menu. The fifth section is labeled 'TORQUE FT-LB' and has a text input field.

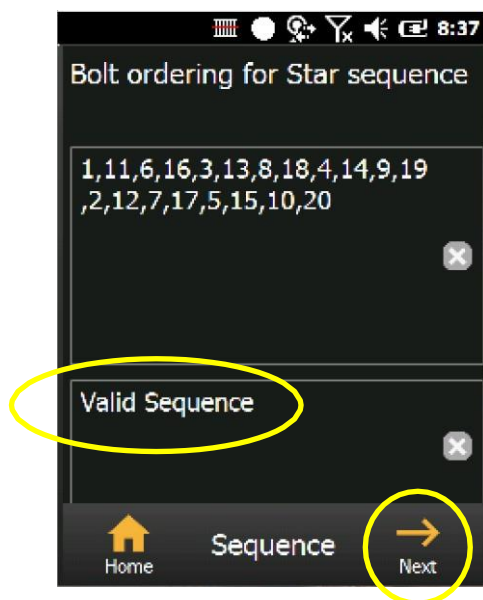
3. Tap **CALCULATE** to determine the required final pressure.



A screenshot of the same mobile application interface, but now showing the results of the calculation. The 'SEQUENCE TYPE' dropdown is set to 'Star'. The 'TORQUE FT-LB' input field contains the value '3000'. Below these fields is a large orange button labeled 'Calculate', which is circled in yellow. Below the 'Calculate' button is a section labeled 'PRESSURE' with a text input field containing the value '1,518'. At the bottom of the screen, there is a navigation bar with three buttons: 'Home' (with a house icon), 'Expert' (with a right arrow icon), and 'Next' (with a right arrow icon). The 'Next' button is also circled in yellow.

Tap **NEXT**

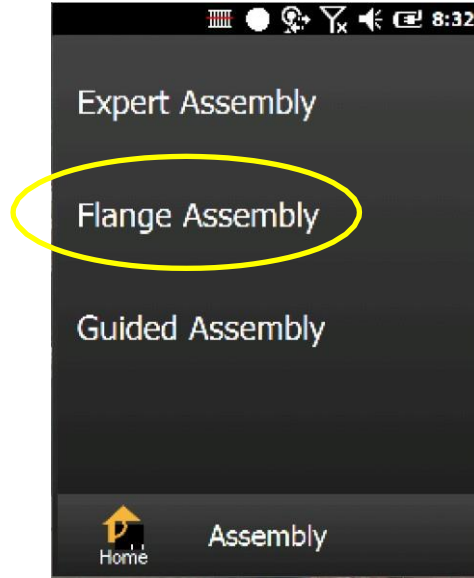
4. The COMMANDER XT1000 will review the information for accuracy and present the bolting sequence based on the number of bolts and the sequence type. It will present Valid Sequence if correct.



5. Tap **NEXT** to begin the data collection.

Flange Assembly Method

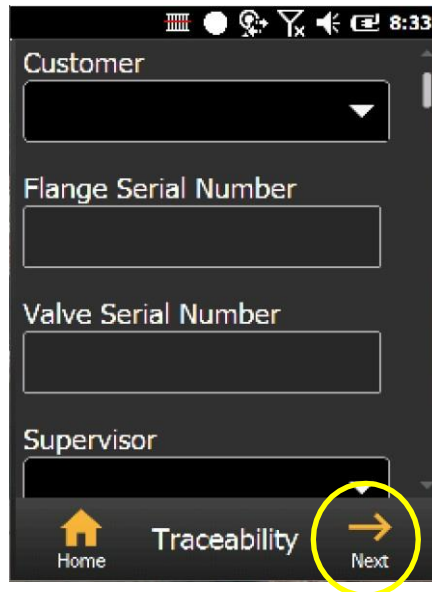
1. Tap **FLANGE ASSEMBLY** to begin



2. Enter the required Traceability information.

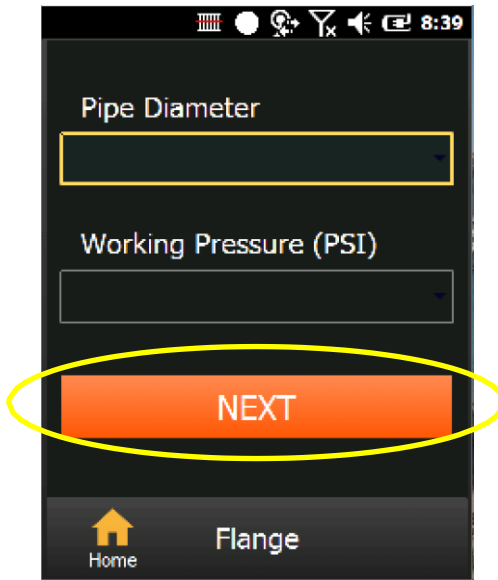
The Traceability information can be inputted in a number of different ways depending how the System Administrator configured the blocks.

The information can be inputted by typing, picking from a drop down menu or barcode scanning.

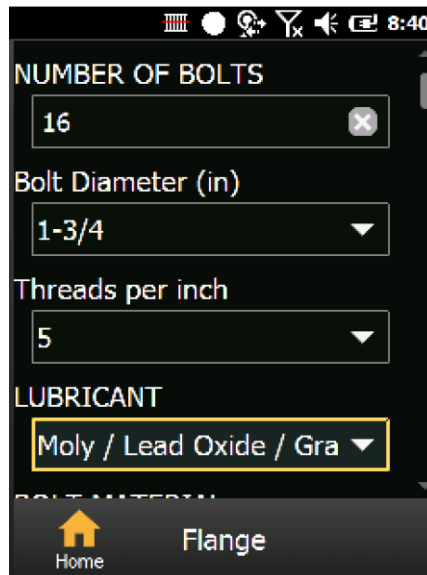


Tap **NEXT** when complete.

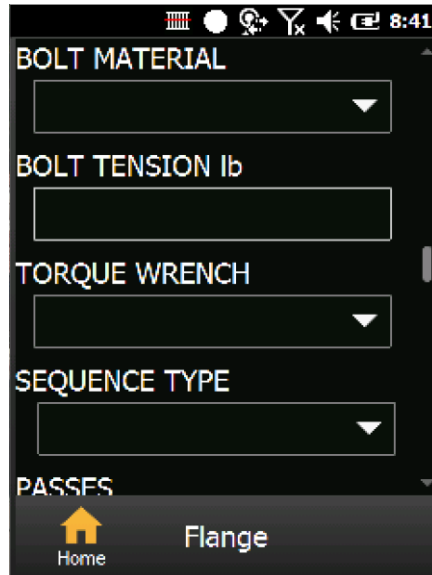
3. Tap the Pipe Diameter block to access the pull down menu. Select the appropriate size.
4. Tap the Working Pressure block to access the appropriate pressure for that Pipe Diameter.



5. Tap **NEXT** to continue.
6. Enter the number of bolts, bolt diameter, thread pitch, lubricant. The drop down menus can be accessed by tapping on each block.

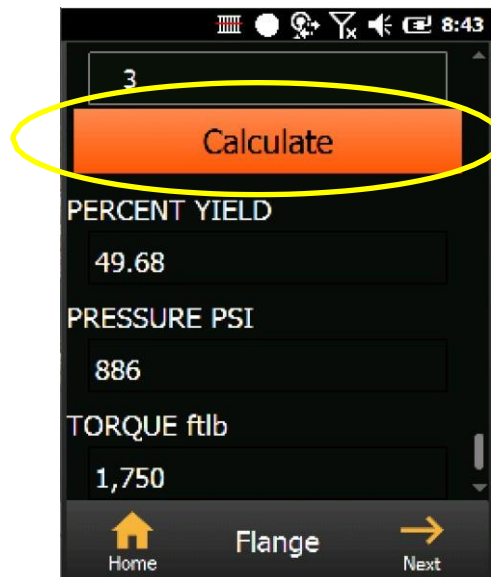


7. Enter the bolt material, bolt tension, torque wrench, sequence type and number of passes. The drop down menus can be accessed by tapping on each block.



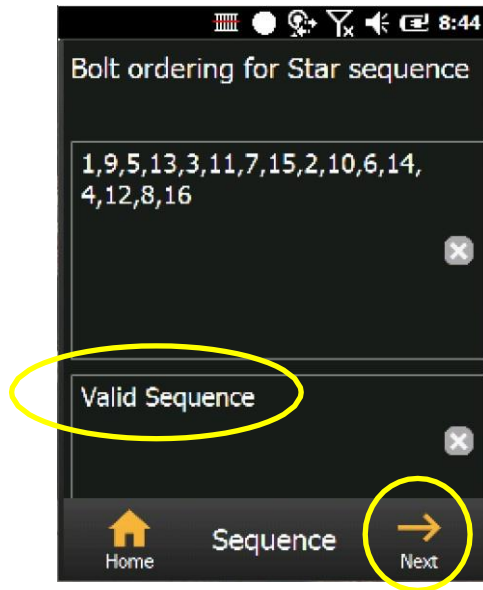
A screenshot of the COMMANDER XT1000 / XT2000 app interface. The screen displays five input fields with labels: "BOLT MATERIAL", "BOLT TENSION lb", "TORQUE WRENCH", "SEQUENCE TYPE", and "PASSES". Each field has a dropdown arrow on the right. The status bar at the top shows the time as 8:41. The bottom navigation bar includes a "Home" icon and the text "Flange".

Tap **CALCULATE** to determine the percent yield, final pressure and final torque.



A screenshot of the COMMANDER XT1000 / XT2000 app interface showing the results of a calculation. The "Calculate" button is highlighted with a yellow circle. The screen displays the following values: "3" in the top input field, "PERCENT YIELD" 49.68, "PRESSURE PSI" 886, and "TORQUE ftlb" 1,750. The status bar at the top shows the time as 8:43. The bottom navigation bar includes a "Home" icon, the text "Flange", and a "Next" button with a right arrow.

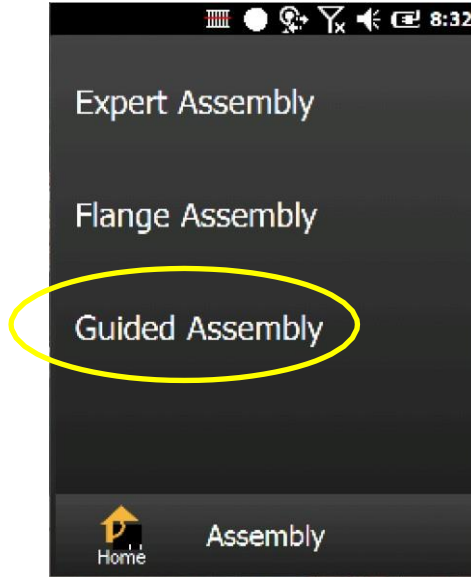
8. The COMMANDER XT1000 will review the information for accuracy and present the bolting sequence based on the number of bolts and the sequence type. It will present Valid Sequence if correct.



9. Tap **NEXT** to begin the torqueing job.

Guided Assembly Method

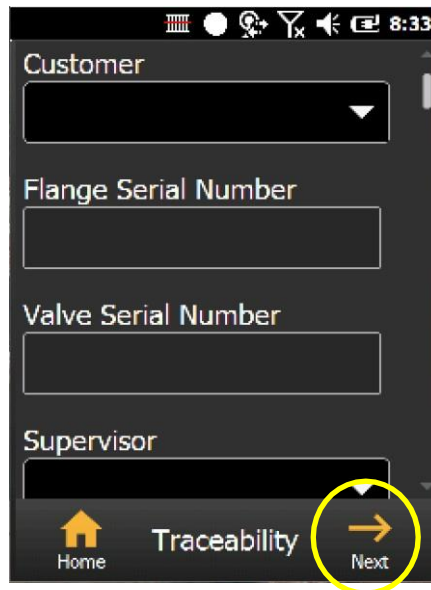
1. Tap **GUIDED ASSEMBLY** to begin



2. Enter the required Traceability information.

The Traceability information can be inputted in a number of different ways depending how the System Administrator configured the blocks.

The information can be inputted by typing, picking from a drop down menu or barcode scanning.



Tap **NEXT** when complete.

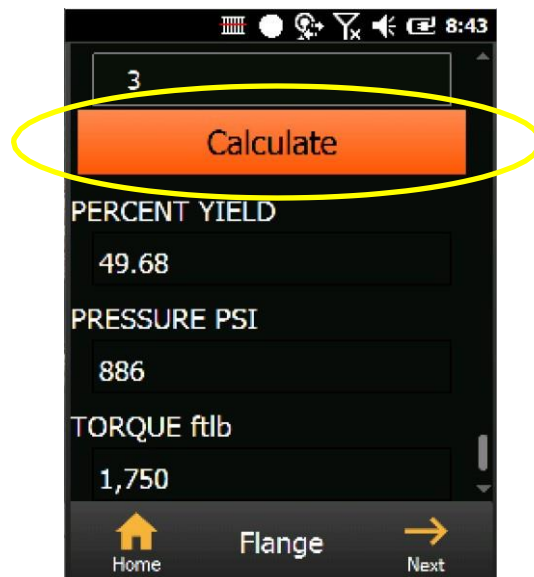
3. Enter the number of bolts, bolt diameter, thread pitch, lubricant. The drop down menus can be accessed by tapping on each block.

A screenshot of a mobile application interface for a flange calculator. The screen is dark-themed with white text. At the top, there's a status bar with various icons and the time 8:40. Below the status bar, the title 'NUMBER OF BOLTS' is displayed. Underneath, there's a text input field containing '16' and a clear button (X). Below that, the label 'Bolt Diameter (in)' is followed by a dropdown menu showing '1-3/4'. The next label is 'Threads per inch' followed by a dropdown menu showing '5'. Below that, the label 'LUBRICANT' is followed by a dropdown menu showing 'Moly / Lead Oxide / Gra'. At the bottom, there's a navigation bar with a home icon and the text 'Home', and a button labeled 'Flange'.

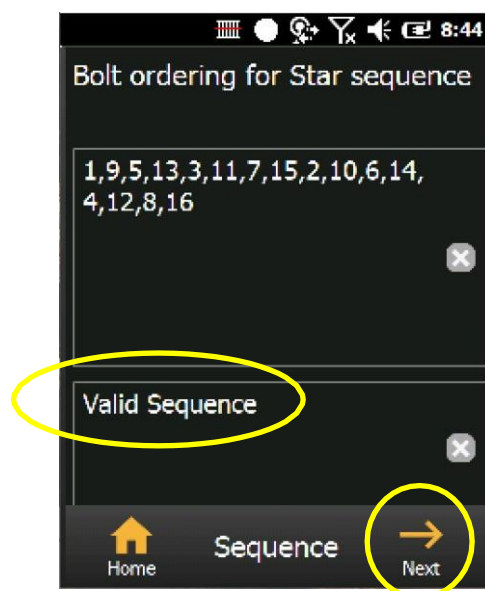
4. Enter the bolt material, bolt tension, torque wrench, sequence type and number of passes. The drop down menus can be accessed by tapping on each block.

A screenshot of the same mobile application interface, showing the next set of input fields. The title 'BOLT MATERIAL' is displayed above a dropdown menu. Below that, the label 'BOLT TENSION lb' is followed by a text input field. The next label is 'TORQUE WRENCH' followed by a dropdown menu. Below that, the label 'SEQUENCE TYPE' is followed by a dropdown menu. At the bottom, the label 'PASSES' is followed by a dropdown menu. The navigation bar at the bottom remains the same, with a home icon and the text 'Home', and a button labeled 'Flange'.

5. Tap **CALCULATE** to determine the percent yield, final pressure and final torque.



6. The COMMANDER XT1000 will review the information for accuracy and present the bolting sequence based on the number of bolts and the sequence type. It will present Valid Sequence if correct.



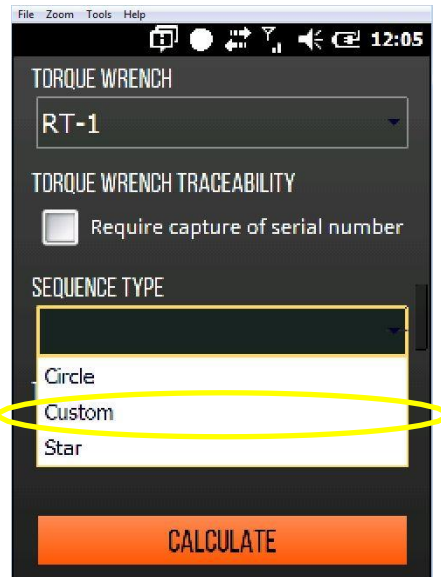
7. Tap **NEXT** to begin the torquing job.

Creating a Torqueing Job with a Custom Bolting Pattern

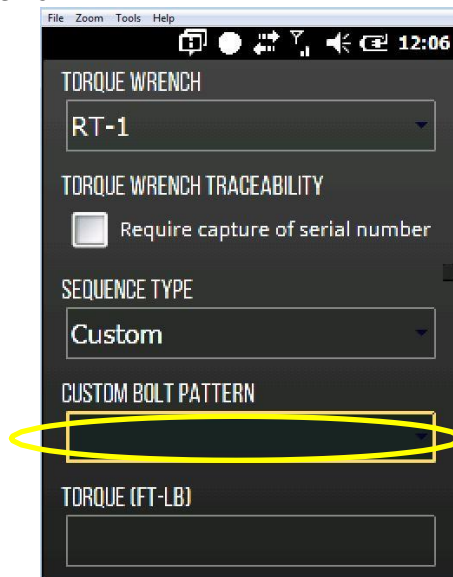
The COMMANDER XT1000 and XT2000 are not limited to circular flanges. Any bolting pattern you can image can be accommodated if you can simply supply a jpeg file. The jpeg can be from a picture or a CAD file.

Creating a Custom Bolting Pattern is detailed in the COMMANDER CLOUD User Manual.

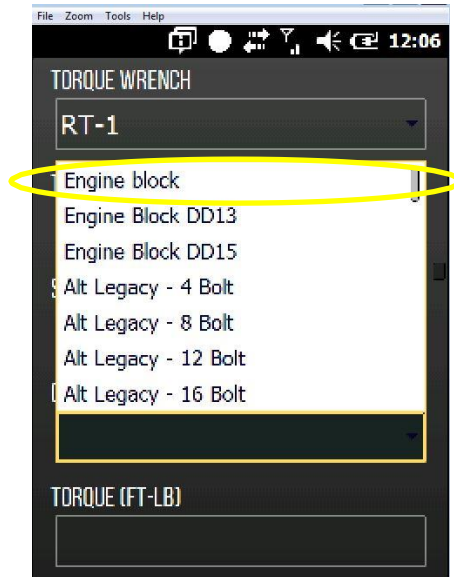
1. Start by initiating the torqueing assembly in the Expert Mode. When selecting the bolting sequence type, select Custom.



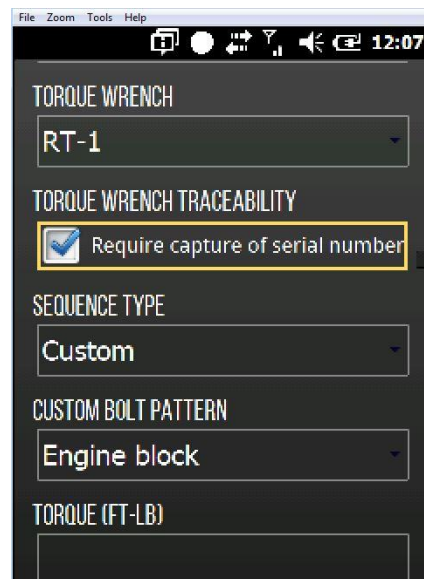
2. The Custom Bolting Pattern window will appear. Tap the window to display the drop down of patterns.



3. Select the Custom Bolting Pattern you wish to use.

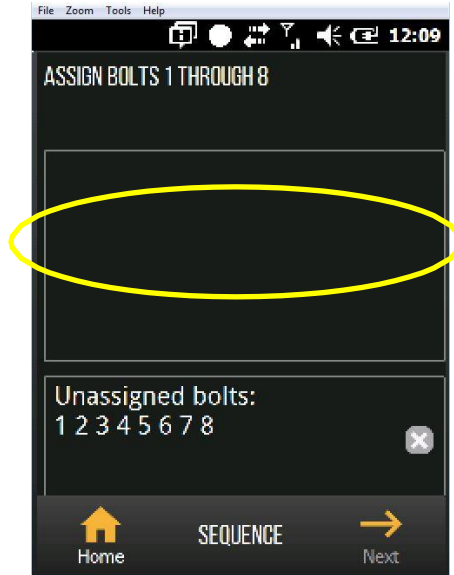


4. Complete the Expert torquing assembly job creation as normal.

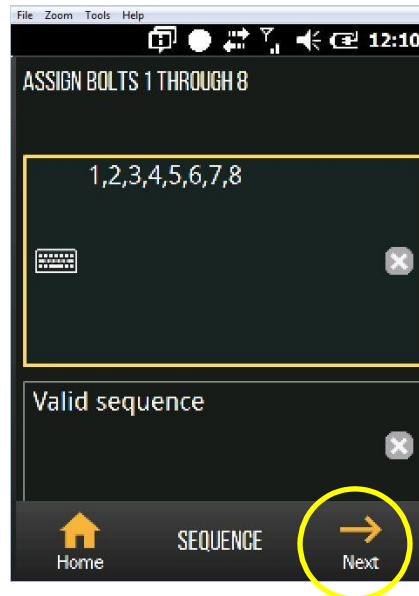


5. Assign the bolting sequence as designed. As each bolt number is listed in the box above, it will be removed from the box labeled Unassigned bolts below.

Bolts numbers are separated by a comma (,).



6. When all bolts are assigned in the correct order, the lower box will display Valid Sequence. Tap **NEXT** to continue to the Bolt Sequence screen.



7. The picture of the Custom Bolting Sequence will be displayed on the handheld.

The COMMANDER will guide the operator through the bolting sequence as with the circular flanges.



GETTING STARTED WITH THE COMMANDER

The Commander is as easy and convenient to use in the field as it is powerful. But with these few simple steps, it's even easier to get started.

1. The Digital Pressure Gauge and the Commander have already been paired through Bluetooth. Review the section on **Pairing and Managing a Bluetooth Device** on page 24 for further assistance.

All that is needed is to establish communication between the two.

TAYLOR DIGITAL GAUGE

2. Press the **RED Power Button** on the display face of the Taylor Digital Pressure Gauge to power it on. The Gauge will establish the communication with the COMMANDER and it will display the current pressure without transmitting data. You can set the pump using the pressure display. (Digital Pressure Gauge battery is extended by not using the Bluetooth)
3. It is best to start the Bluetooth transmission just before you ready to start the bolting job.

Just before you are to begin the job, press **START** button on the display face of the Digital Pressure Gauge and it will immediately begin data transmission. You can now tap **START** on the COMMANDER to begin collecting the data the Digital Pressure Gauge is transmitting.

WIKA DIGITAL GAUGE

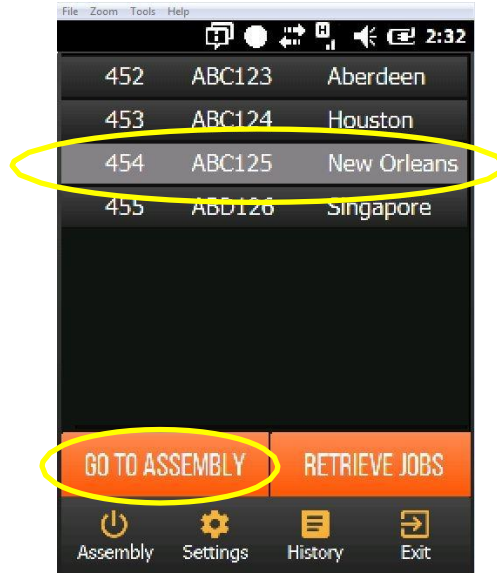
3. Press and hold the Power Button on the right side of the display face. The Gauge will establish the communication with the COMMANDER and it will display the current pressure without transmitting data. You can set the pump using the pressure display.

NOTE: The Bluetooth communication is usually good to 40 feet provided there is a clean line of sight. Obstacles and high frequency electrical sources can interrupt the transmission. It will re-establish the connection on its own. If necessary, simply tap CONNECT on the Data Collection screen to re-establish connection.

COLLECTING DATA WITH THE COMMANDER

The Home Screen / Job Assignment screen will show the jobs assigned to a particular operator.

1. Select the job to be completed. Then tap **GO TO ASSEMBLY**.



2. The Job Summary screen will give an overview of the job outlining the materials and equipment required.

Tap **CONTINUE**.

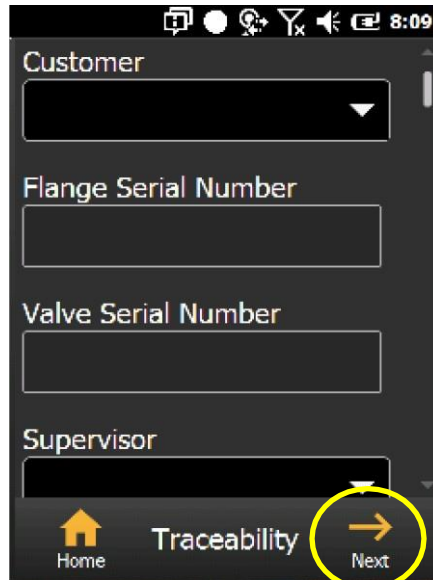


3. Enter the required Traceability information.

The Traceability information can be inputted in a number of different ways depending how the System Administrator configured the blocks.

The information can be inputted by typing, picking from a drop down menu or barcode scanning.

Tap **NEXT** when complete.



The screenshot shows a mobile application interface for data entry. At the top, there's a status bar with various icons and the time 8:09. Below it, the title 'Customer' is followed by a dropdown menu. Underneath are three text input fields labeled 'Flange Serial Number', 'Valve Serial Number', and 'Supervisor'. At the bottom, there's a navigation bar with three buttons: 'Home' (with a house icon), 'Traceability' (with a right arrow icon), and 'Next' (with a right arrow icon). The 'Next' button is highlighted with a yellow circle.

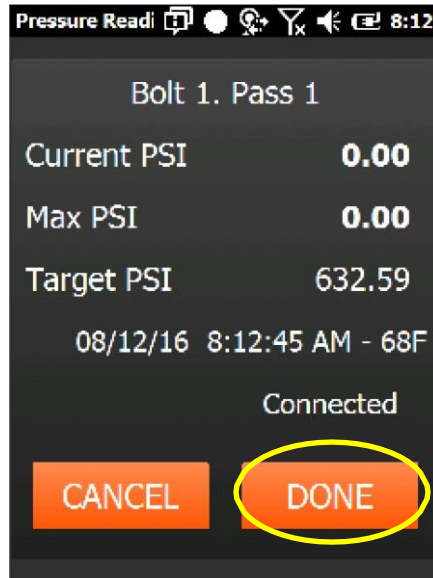
4. The Collection screen tells which pass you are on, which bolt is to be tightened as well as the torque wrench to be used and the pump pressure setting.



The screenshot shows a mobile application interface for data collection. At the top, there's a status bar with various icons and the time 1:57. Below it, there's a header with three tabs: 'Collect', 'Chart', and 'Options'. The main content area shows 'PASS 1' and a circular diagram with 10 bolts. The first bolt is highlighted with a red dot and the number 1. Below the diagram, there's a barcode and the text 'RT-1'. At the bottom, there's a section with 'ACTUAL' and 'TARGET 2.590 PSI'. Below this, there are two buttons: 'SKIP' and 'START'. The 'START' button is highlighted with a yellow circle.

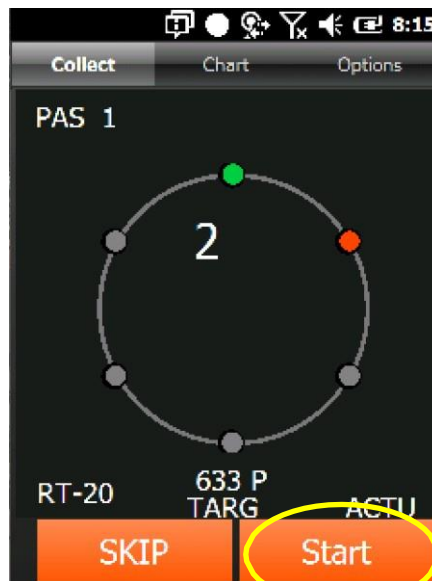
Tap **START** to begin collecting data.

5. The Data screen shows the information received for a particular tightening sequence. The pass and bolt number are displayed on top. Additional data such as the date and time of the tightening are recorded as is the temperature of the pump fluid. The target pressure, maximum pressure and the current pressure are displayed. The maximum pressure for each bolt is displayed in the resulting graphs. Tap **DONE** when the tightening sequence is complete.



6. The Collection screen will highlight the next bolt to be tightened. The current bolt is highlighted in **RED** and the completed bolts are highlighted in **GREEN**.

Tap **START** to begin the next bolting sequence.



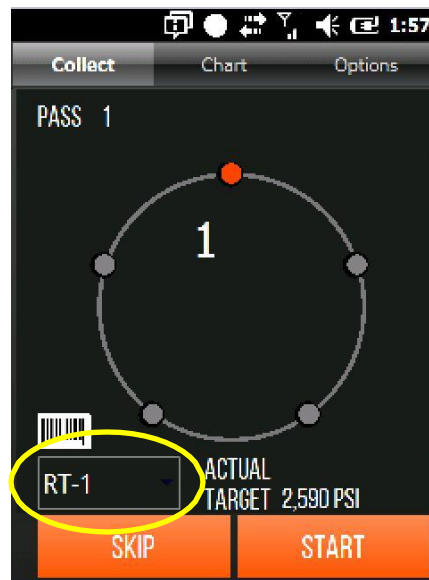
Tap **SKIP** to move to skip this bolt and move to the next bolt in the sequence. Continue, repeating steps 4-5, until all bolts are tightened for each pass.

CHANGING WRENCHES DURING A JOB

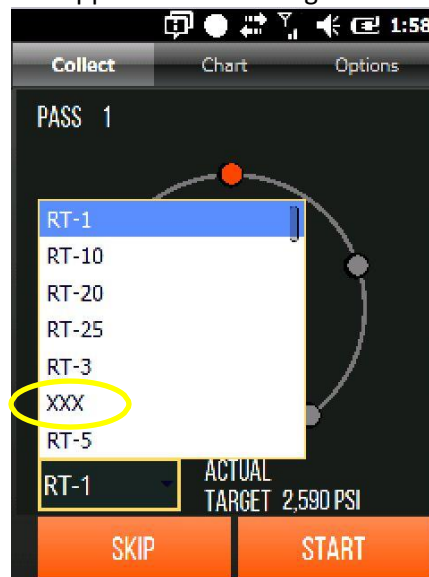
The COMMANDER allows the Torque Wrench to be exchanged at any time during a torque assembly job quickly and easily without losing data or traceability.

The new torque and target pressure will be calculated and shown. The Traceability information will be updated with the new Torque Wrench and parameters.

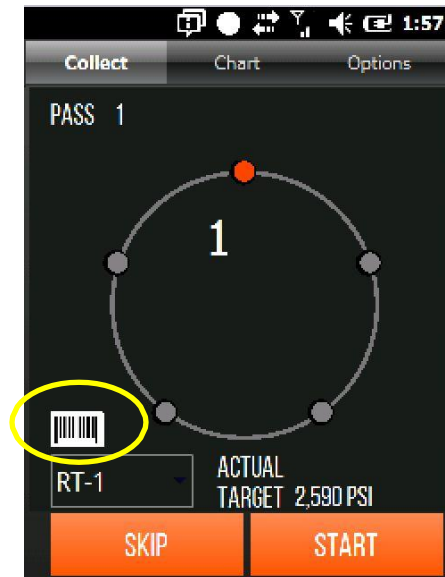
1. The Bolt Pattern screen shows the pass, the current bolt number, the target pressure as well as the Torque Wrench in use.



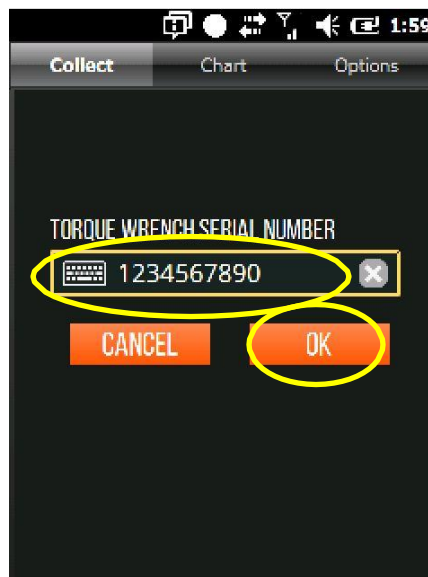
2. By tapping on the Torque Wrench Input Box, a drop down menu of all of the available Torque Wrenches will appear. Scroll through the list and select the correct one.



3. The new Torque Wrench can quickly be identified by inputting the Torque Wrench serial number if available. This can be done by scanning a barcode label on the Torque Wrench or typing in the number. Tap on the Barcode symbol as shown.



4. Tap on the Serial Number Input Box. You can scan the barcode label on the tool using one of the three orange buttons on the COMMANDER or type the number by hand. Tap **OK** to continue.

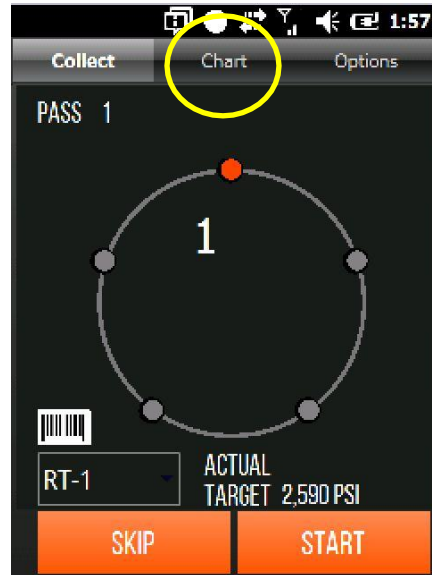


Note: The COMMANDER will warn the operator if the target pressure is outside the range of the Torque Wrench selected and will not permit them to continue until a suitable wrench is selected.

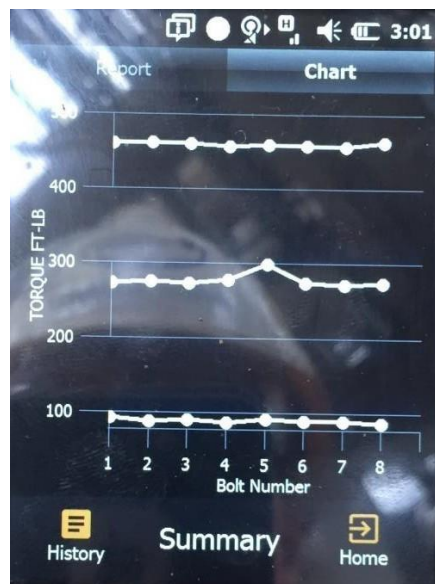
REVIEWING TORQUING CHARTS

At any time during the torquing job, you can review your progress by monitoring the charts. The chart provides the bolting data for each bolt completed.

1. Tap **CHART**

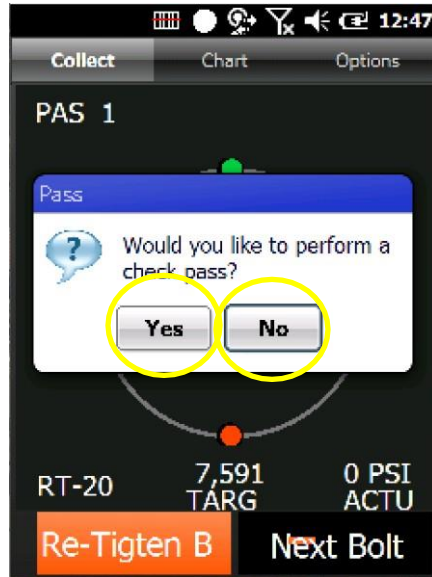


The Torqueing data, taken thus far in the job, will be displayed by pass. The torque or the pressure data can be displayed for the vertical axis. Simply tap the screen to toggle between the two.

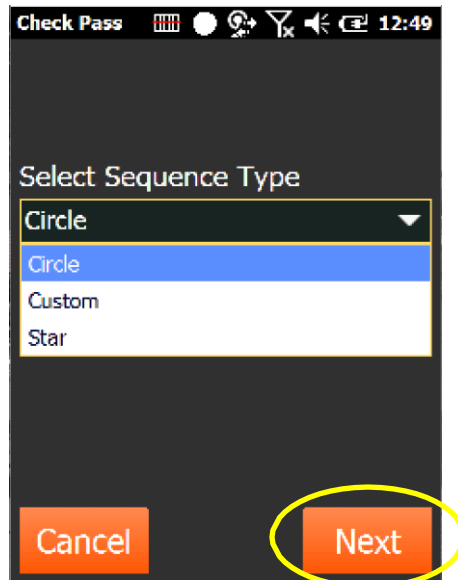


ADDING A CHECK PASS

1. After the required passes are complete, the COMMANDER XT1000 will ask if you would like to perform a check pass. Tap either YES to perform a check pass or NO to complete and close the tightening job.



2. Tap the SELECT SEQUENCE TYPE block to select a sequence from the drop down menu and tap **NEXT**. The default is CIRCLE based on ASME PCC-1 2013.

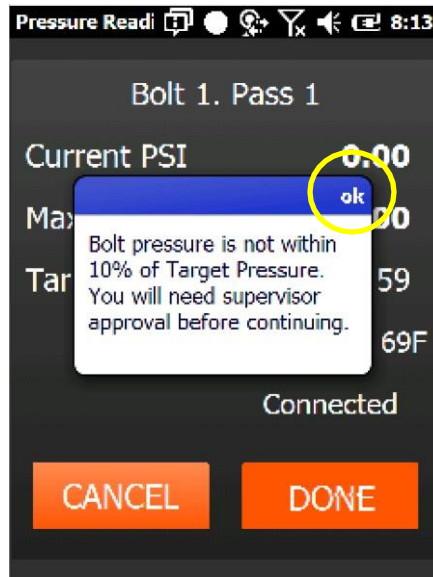


The program will walk you through an additional pass according to the previous section. When that pass is completed, it will again ask if you will like to perform a check pass. It will continue this until **NO** is selected.

OUT OF SPECIFICATION READINGS

1. If the pump is set improperly, it is possible to obtain pressure readings outside the tolerance for the target pressure. A message will appear alerting you to this fact.

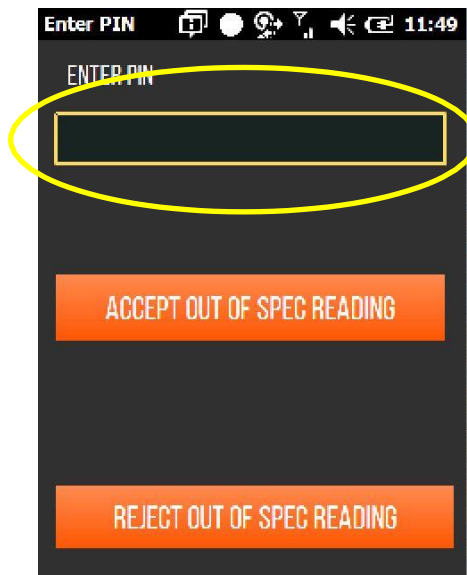
Tap **OK** to continue.



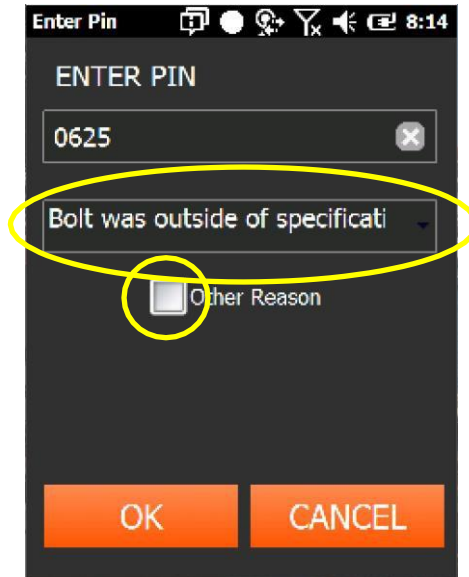
Accepting an out of specification reading

1. It is possible to accept the out of specification reading with a Supervisor's approval.

After tapping **OK** to the Alert, the Authorization screen appears. A Supervisor must enter a pre-assigned four-digit PIN in order to accept the out of specification. After typing in the PIN, tap **AUTHORIZE PIN**.

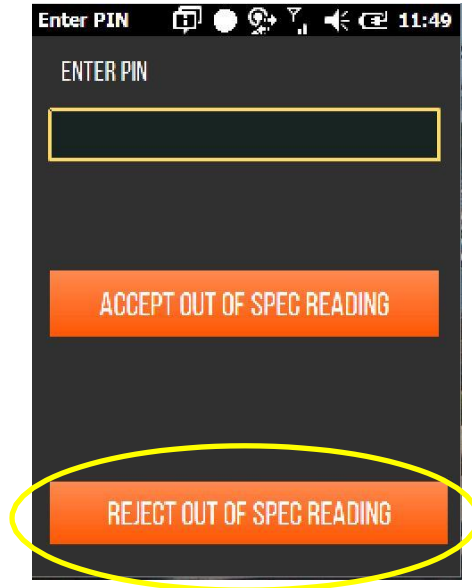


2. Upon authorizing the out of specification reading, the Supervisor is given the opportunity to add a comment. The comments can be predetermined and available in the drop down menu or typed to add alternates by selecting OTHER REASON. The comment will be included in the bolting data report.
3. Tap **OK** to accept and return to the tightening screen.



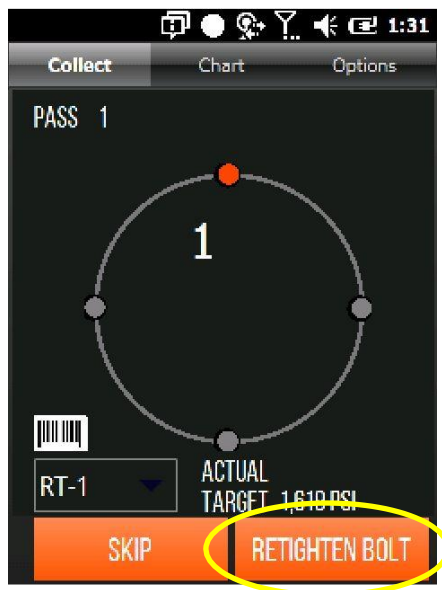
Rejecting an out of specification reading

1. If it is not desired to accept the out of specification reading, simply tap the **REJECT OUT OF SPEC READING** tab.



2. Once the reading is rejected, you will be taken to the tightening screen. Tap **RETIGHTEN BOLT**.

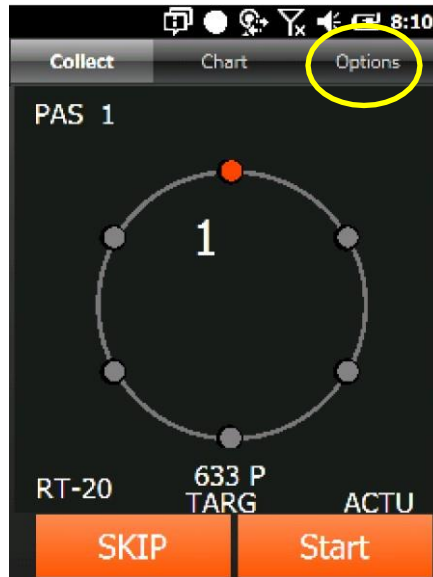
The out of specification reading will be noted in the bolting data but not displayed in the graph. The re-tightened reading will be noted in the bolting data and displayed in the graph.



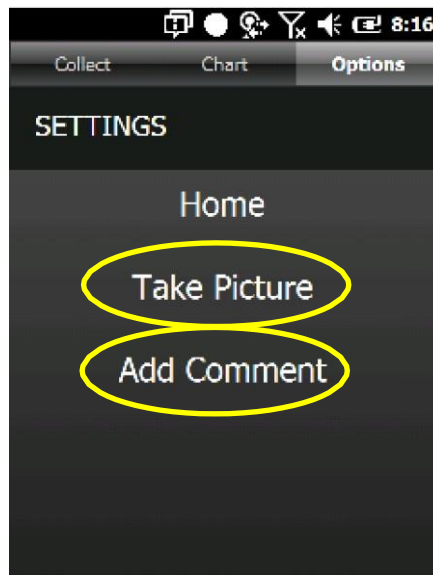
OPTIONS

Adding information to your report

1. At any time, you can add additional information to your bolting report in the form of text comments or pictures.
2. Simply tap the **OPTIONS** tab.



1. Tap **TAKE A PICTURE** or **ADD A COMMENT**.



2. At any time, you can go back to the Collection screen by tapping **COLLECT**.

Adding a picture to your report

1. The COMMANDER XT1000 has a high-resolution camera capable of amazing clarity.

Tap **TAKE PICTURE** from the OPTIONS screen. Tap **TAKE A PICTURE**.



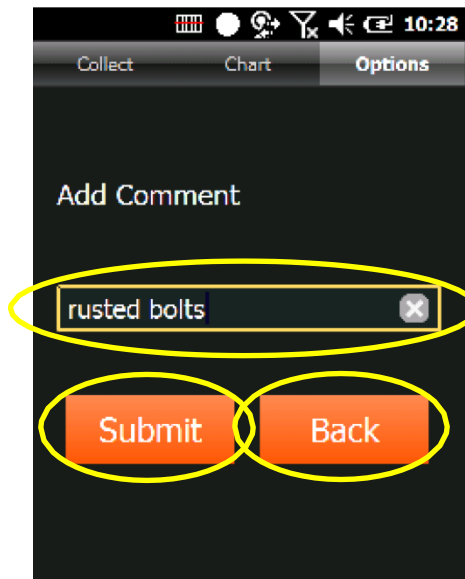
2. Tap the **KEYBOARD ICON** to show the keyboard. Tap the **CARRIAGE RETURN (CR)** to take the picture.



Adding a comment to your report

1. Tap **ADD COMMENT** from the Options page. Tap the ADD COMMENT block to pull down the preselected options or type in another.

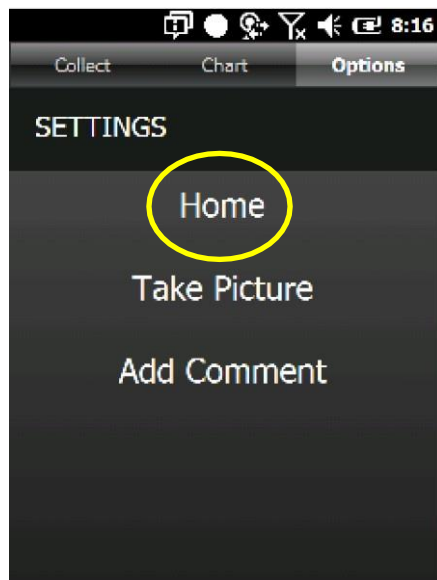
Tap **SUBMIT** to accept the comment. Tap **BACK** to return to the Option screen.



Saving a Job Before Completion

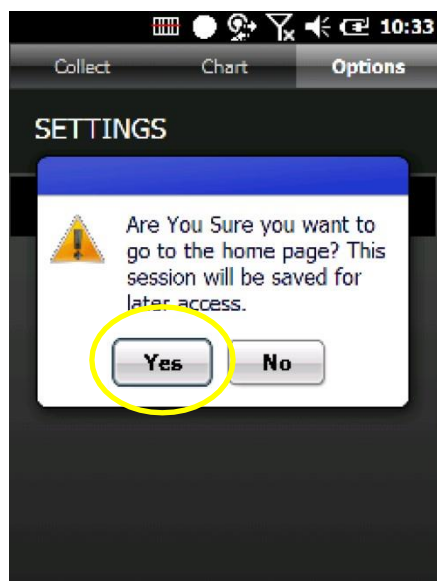
1. At any time during the bolting procedure, you can stop the job and save your data.

Simply tap **HOME**.



2. The program will ask if you want to save your progress and go Home. Your work will be saved and you will return to your point where you stopped.

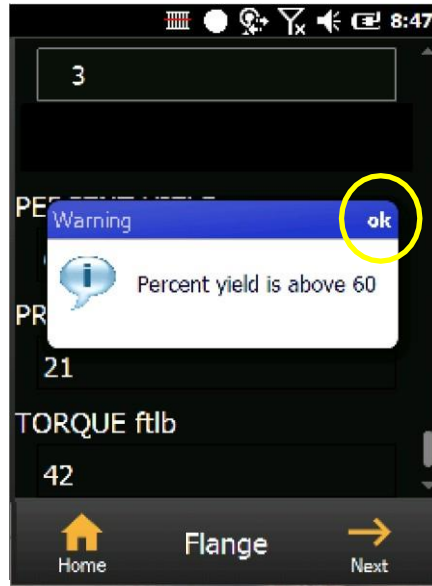
Tap **YES** to close the job and return Home.



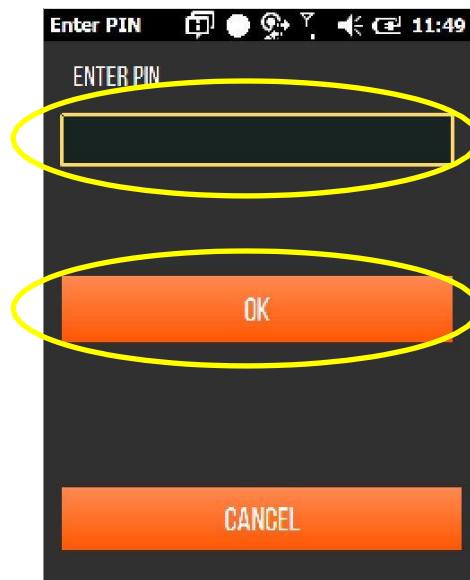
ERROR MESSAGES

1. If the Percent Yield is above 60%, the system will warn you but allow you to proceed.

Tap **OK** to proceed.

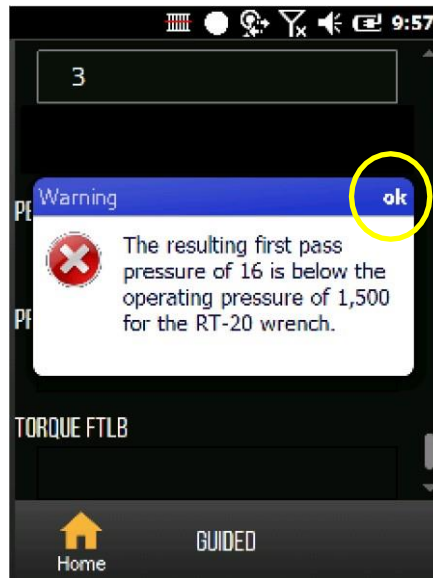


2. After tapping OK to the Alert, the Authorization screen appears. A Supervisor must enter a pre-assigned four-digit PIN in order to accept the out of specification. After typing in the PIN, tap AUTHORIZE PIN.

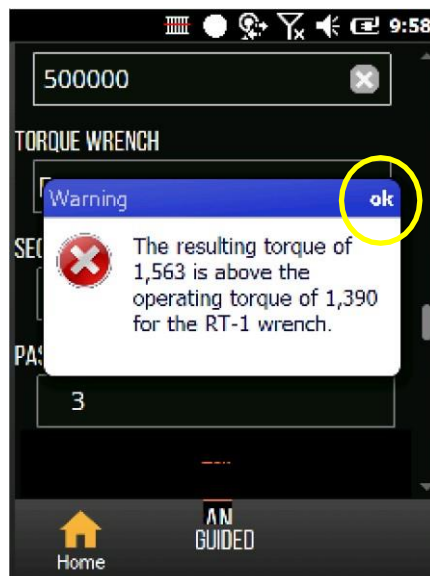


Tap **CANCEL** to return to the input screens.

3. If the resulting pressure is below the minimum recommended by the wrench manufacturer, the system will present a warning message. However, tapping **OK** will allow you to proceed should you choose.



4. If the resulting torque is above the recommended torque by the wrench manufacturer, the system will present a warning message. It will not allow you to proceed.



Tapping **OK** will take you to the previous screen to adjust the values or tools.

COMMANDER XT2000 FUNCTIONALITY

The COMMANDER XT2000 delivers all of the that the COMMANDER XT1000 provides plus the ability to adjust the pressure of the hydraulic or pneumatic pump from up to 40 feet away when fitted with a COMMANDER CONTROL MODULE.

This section will highlight only the unique features of the COMANNDER XT2000.

1. Before using the Control Module, be sure the battery is fully charged by plugging the Charging into the Charging Port. A fully charged battery will last approximately 1 week of standard use.

2. The three Status Lights on the Control Module indicate unit's operation.

- i. The RED LED is lighted when the battery is low (20% capacity) or the Charger is plugged in.

The Charger can be plugged in continuously for extended duty with no damage to the battery or circuits.

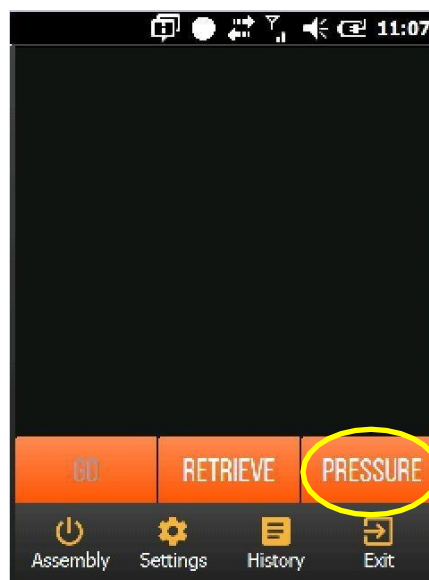
- ii. The first BLUE LED is lighted when a Bluetooth pairing is established.

- iii. The second BLUE LED is flashing when there is Bluetooth communication exchange.

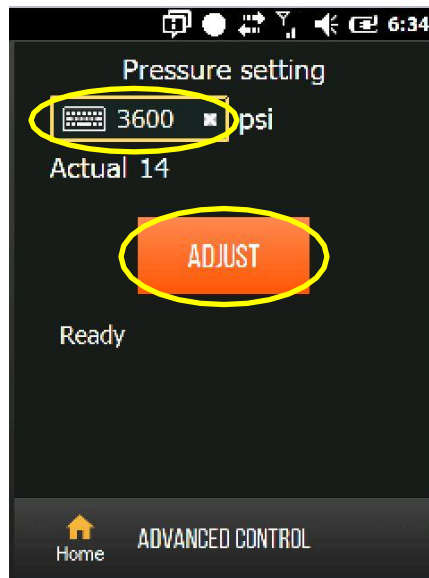
3. If a signal from the COMMANDER has not been received within 1 hour, the devise will go into a low power mode in order to extend battery life.

The Control Board is constantly looking for Bluetooth Communication and will wake immediately when a paired device is detected. The BLUE LED will immediately start flashing.

4. The COMMANDER XT2000 allows a User with Supervisor or higher privileges to adjust the pump pressure. From the Home screen, tap **PRESSURE** to begin.



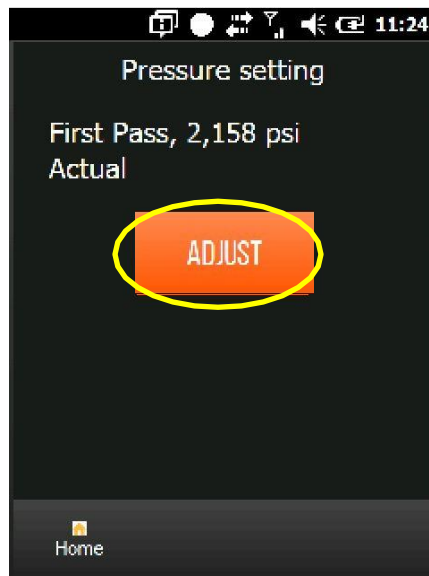
5. Tap the Pressure Setting Input Box. Type in the required pressure and tap **ADJUST**.



The Pump Pressure will be adjusted automatically. When the pressure is reached, tap **HOME**

NOTE: The pump needs to be at pressure and stabilized before the **ADJUST** button is tapped. This provides the correct starting point for the pump adjustment and allows the **COMMANDER** to calculate the direction and amount to adjust the pump pressure. Not having the pump at pressure or stabilized may increase the time to complete the adjustment.

6. Prior to collecting data during a torque assembly job, the COMMANDER XT2000 will inform the Operator of the required target pressure based on the pass. The Operator simply taps **ADJUST** to set the pressure up to 40 feet away.



The Pump Pressure will be adjusted automatically.

- Prior to the start of subsequent passes, the operator will receive similar screens informing them of the new target pressure. The Operator simply taps **ADJUST** to set the pressure.

The Pump Pressure will be adjusted automatically.

NOTE: The pump needs to be at pressure and stabilized before the **ADJUST** button is tapped. This provides the correct starting point for the pump adjustment and allows the **COMMANDER** to calculate the direction and amount to adjust the pump pressure. Not having the pump at pressure or stabilized may increase the time to complete the adjustment.

Changing an XT2000 to an XT1000

The Commander XT2000 can be changed to act as a Commander XT1000. In this configuration it will not be able to adjust the pressure of a pump retrofitted with a Control Module.

From the Advanced Settings screen, simply tap the **ON/OFF** toggle switch to change the Commander from an XT2000 to and XT1000 and back again.



Tap **SAVE** to retain the changes.

TORQTAGS – Incorporating Them into Your Process

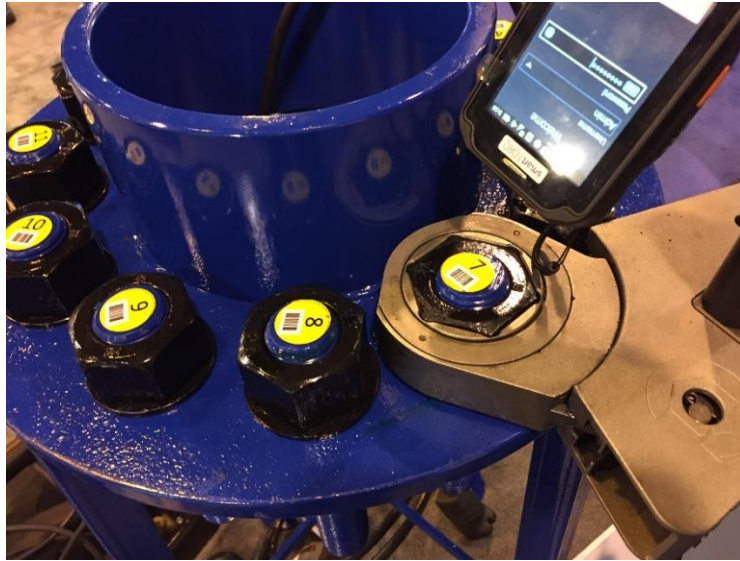
TorqTags are a quick and convenient method of numbering the bolts on a flange. No longer are chalk or paint pens needed. Rather this reusable magnetic disc can be used with the number and barcode clearly visible and able to be scanned by the COMMANDER XT1000.



The TorqTags are placed on the bolt or the flange according to your bolting pattern as shown below.

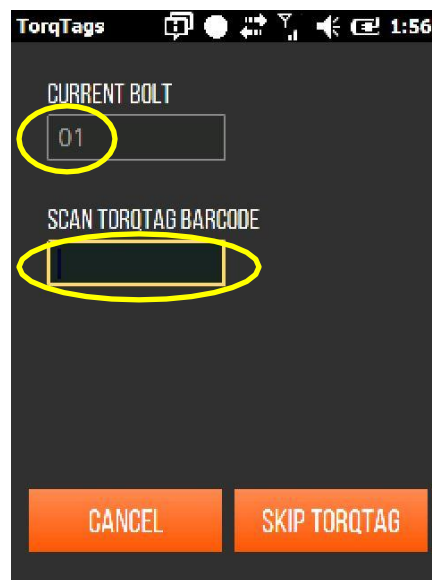


The TorqTag is scanned with the COMMANDER prior to torqueing to ensure the wrench is on the correct bolt.



Verifying the Bolting Sequence with TorqTags

1. Using TorqTags with the COMMANDER system is easy and seamless. After the Traceability information is imputed in a torque assembly job, and prior to the torquing data being collected, the COMMANDER will require a barcode scan of the TorqTag on the bolt to be tightened.

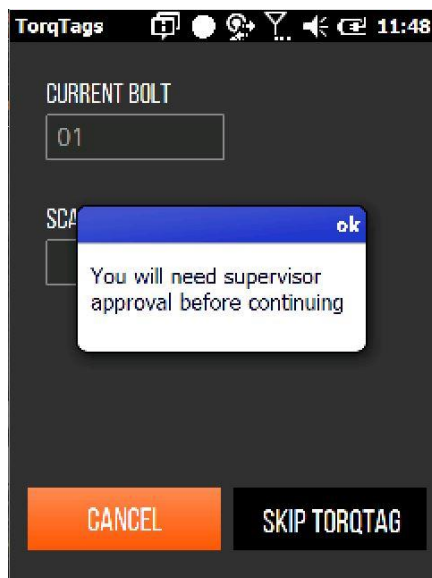


The COMMANDER tells you the correct bolt number in the sequence and compares the barcode scan to verify the wrench placement.

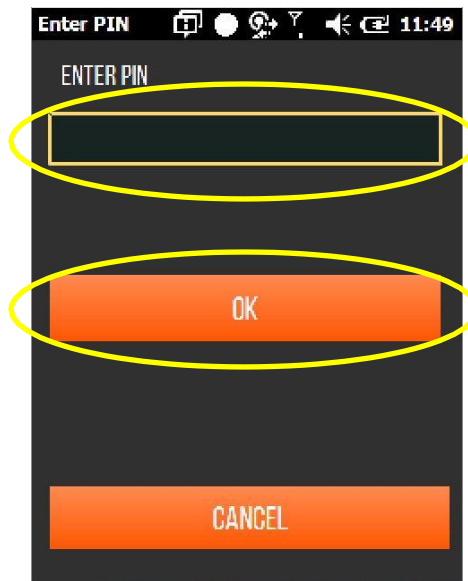
2. By pushing one of the three Orange buttons on the COMMANDER, the system will read the barcode on the TorqTag.



3. If the TorqTag does not match the bolt sequence, you will be instructed to move the wrench to the correct location.
When the numbers match, you will be taken to the Bolting Sequence screen.



4. A Supervisor must enter a pre-assigned four-digit PIN in order to accept the out of specification After typing in the PIN, tap **AUTHORIZE PIN**.



FREQUENTLY ASKED QUESTIONS

1. **What is the XT1000?** – It is a rugged IP65, handheld PC that provides data COLLECTION during the bolting process.
2. **What is the XT2000?** – It is an XT1000 plus a pump mounted assembly that wirelessly provides pressure CONTROL of the pump during the bolting process.
3. **Is Torq-Comm sold elsewhere as an OEM product?** - The Commander XT's and related products are available only through Torq-Comm's distribution channels at this time.
4. **Does Torq-Comm compete with GaugeFlex?** - The GaugeFlex system is designed for Quality Control data collection while the Torq-Comm products are designed for production and assembly data collection.
5. **Do the Torq-Comm Commander XT'S provide an error-proof system?** – Unfortunately, as long as humans are involved, there will always be the possibility of errors. Robots may be the only way to accomplish this. You can set most any gauge to the desired reading and press enter. Operator integrity is crucial, however, the Torq-Comm products greatly reduce the chances of operator error. Besides this, it is ten times better than what they are doing currently.
6. **Can I over-torque?** - By combining our collect and control capabilities with the XT2000, a supervisor can create a work instruction that specifies the correct pressure settings and be confident those settings will be unchanged. With our ability to limit the access certain operators have, we can automatically set the pressure settings and prevent operators from changing them.
7. **How can the Commander XT'S prevent rehits?** – With the XT2000, we can control the pump's pressure. Operators without privileges cannot increase the pressure past predetermined points. Hence, if they attempt to increase pressure, even accidentally, the system will not allow it.
8. **Are the Commander XT'S explosion proof?** - These units are Class 1 Div. 2 rated for explosive environments. Should you need Class 1 Div. 1 we have other units to satisfy these needs.
9. **How can I insure assembly integrity through the use of bolting patterns?** - The Commander XT'S are developed according to ASME specifications for flange assembly. Bolting patterns are included in the Commander XT's software. By following the instructions displayed on the screen, we can walk the operator through tightening each bolt of each pass of the assembly procedure, all the while collecting the necessary data to ensure traceability.
10. **Can I ensure the tool is being placed on the right bolt?** – Hopefully! We are currently working with the Rochester Institute of Technology to ensure the bolting pattern is followed. Should the operator place the tool on the wrong bolt, the pump will not be allowed to activate.

11. **Does it possess the ability of measuring angular rotation?** – Without a transducer and gyroscope installed on the wrench, we cannot measure angular rotation. However, with pumps that possess flow meters with output, we can measure and correlate flow to rotation. Similarly, if the pump has an ammeter with output, we can see when the pump is under load (rotation) and not.
12. **What if there is no Wi-Fi access?** - If you're out in the field and away from a Wi-Fi connection, the Commander XT's can utilize its on-board cellular capability to send data. When neither Wi-Fi nor cellular are available, you can retain the data to the Commander XT'S internal SD card, until which time either Wi-Fi or cellular connectivity returns. It will then automatically send all unsent data.
13. **Can I note defects observed?** - The Commander XT'S are capable of collecting any type of attribute data. Unlimited text comments can be included in each set of data. With the high resolution built-in camera, detailed pictures of the defects can be easily captured and stored.
14. **Can I enter traceability data?** - Traceability is key to understanding the quality of the assembly procedure and being able monitor changes over time. The number of traceability fields for a particular assembly is unlimited and is configurable by each user. Standard traceability fields are operator, flange serial #, GPS location, tool, etc., and are entered by pick list, barcode or keyboard.
15. **Can we send alerts in the event of a problem?** - Email, text or cell phone alerts can be sent if an error occurs either in the assembly or in the tools calibration. Torq-Comm takes the decision making out of the operator's hands and places it back into the supervisor's hands to provide real time decisions.
16. **Must I store my data to a cloud?** – You can transmit directly a local PC or server should you wish to keep the data in house.
17. **Whose pump does this work with?** - By incorporating a Bluetooth pressure gauge, the Commander XT'S can interface with most manufacturers' pump in order to collect the necessary assembly data. Optional mounting kits will be available according to the pump being used.
18. **Can I collect data that is not circular in nature like a flange?** - With an optional design module, you can create unique, non-circular assembly procedures for your assembly control.
19. **Is it unique?** – Torq-Comm has a patent pending on this technology. Other competitors have data collection methods, but nothing as sophisticated and innovative as the mobile Commander XT'S.