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48619852
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QX Series Display

User Manual

Save These Instructions

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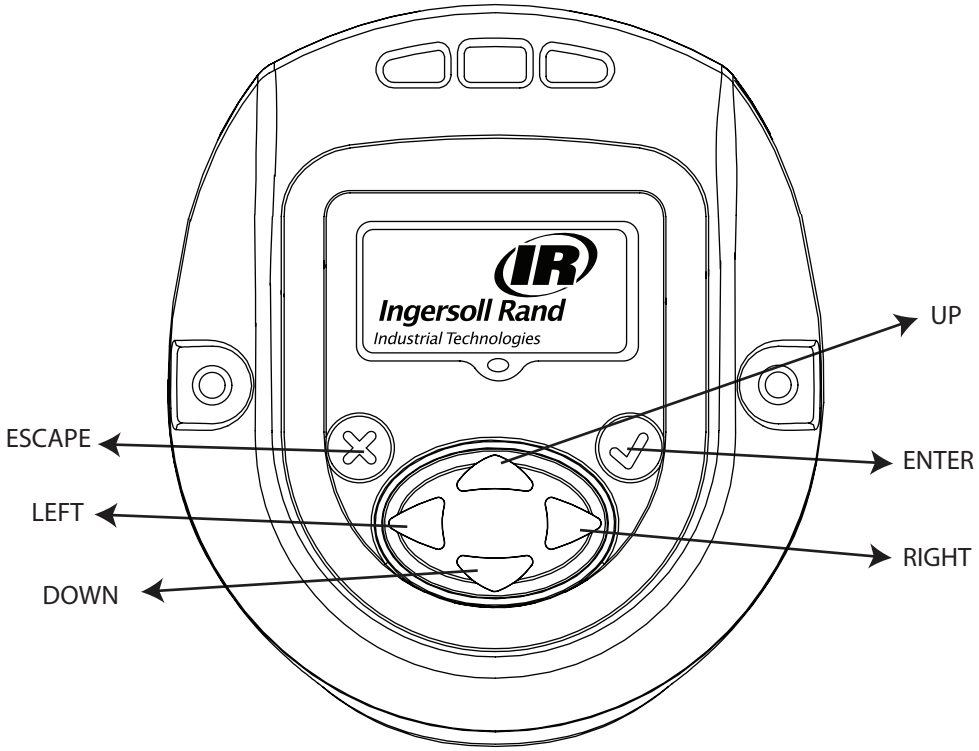
Purpose of the document:

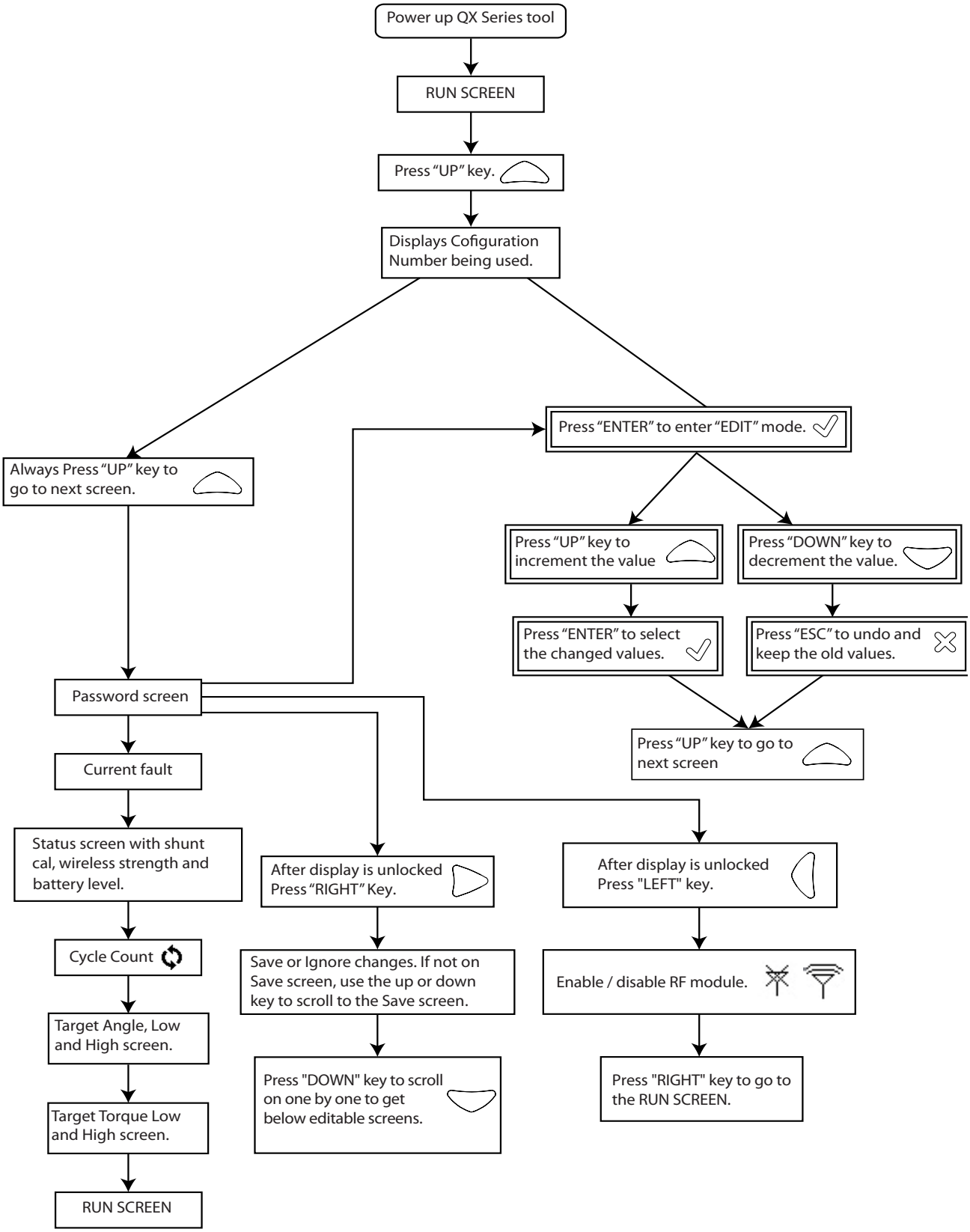
This document provides details about different menu screens, their description and how to edit those screens in display module, required for the operation of QX Series Hand Tool.

The image Below shows the display of QX Series display module with descriptions of the programming keys.



Symbol	Function
	Escape / Exit
	Enter / Edit
	UP
	DOWN
	RIGHT
	LEFT

1. Overview of different Menu screens



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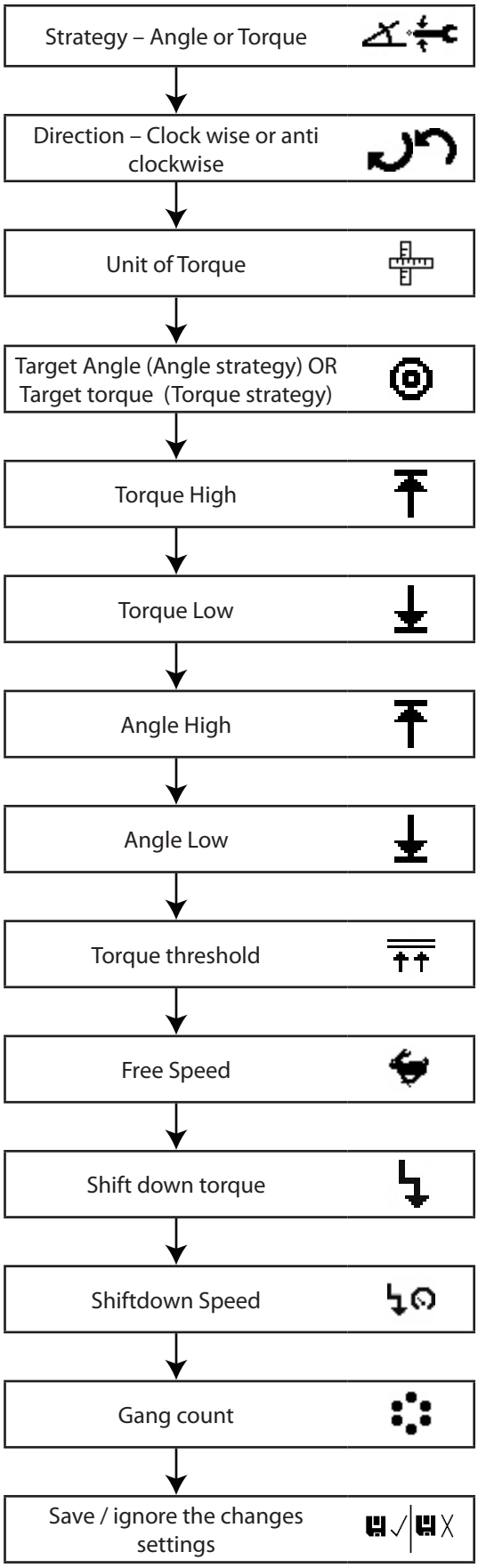

Strategy – Angle or Torque
Direction – Clock wise or anti clockwise
Unit of Torque
Target Angle (Angle strategy) OR Target torque (Torque strategy)
Torque High
Torque Low
Angle High
Angle Low
Torque threshold
Free Speed
Shift down torque
Shiftdown Speed
Gang count
Save / ignore the changes settings

2. Description of the Display screen in detail

There are three sections in the QX Series display screen, one "PRIMARY" on the top and two "SECONDARY" which are on left and right bottom of the display.

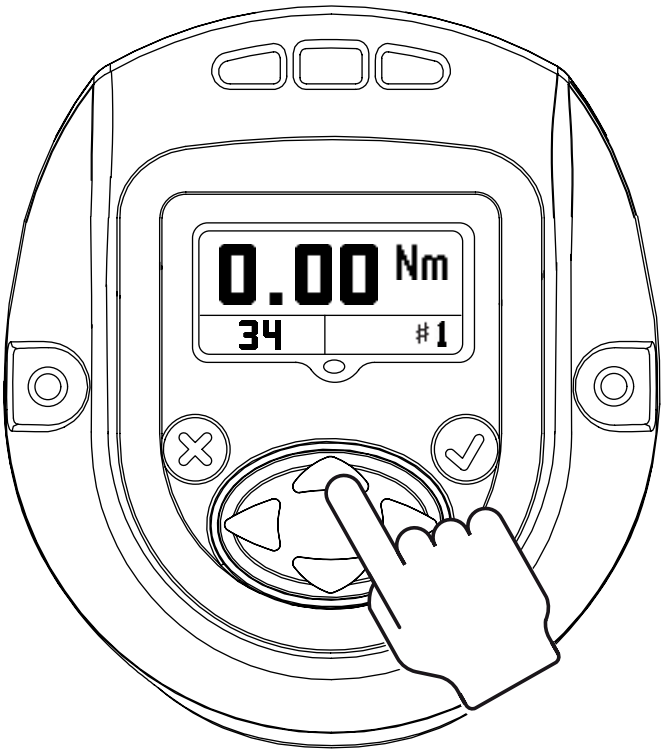
2.1. Run Screen

Pressing "ENTER" key after switching on the display will show this image.

PRIMARY Section - shows latest peak torque (for a torque strategy) or the latest peak angle (for an angle strategy), with units.

The SECONDARY LEFT - shows the cycle count or gang count, if gang count is programmed.

The SECONDARY RIGHT - shows the active configuration number.



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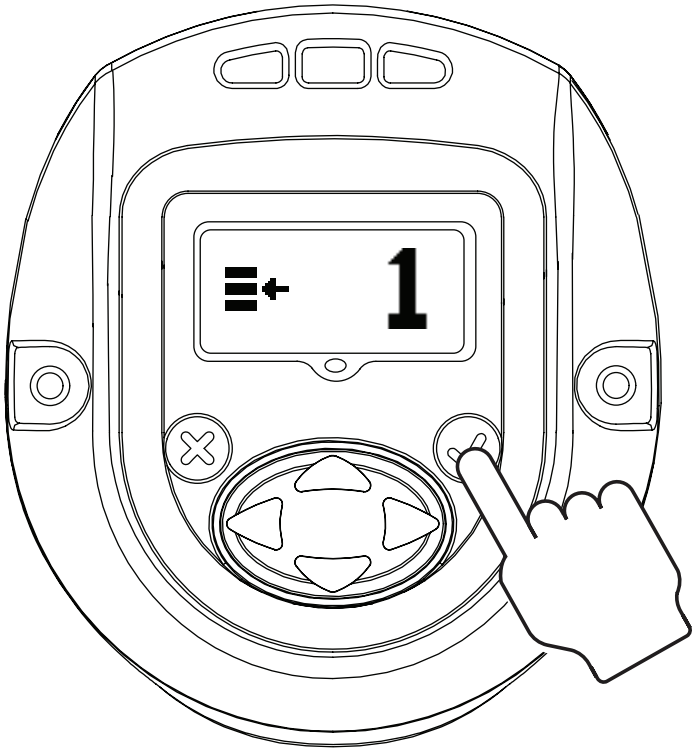
2.2. Configuration

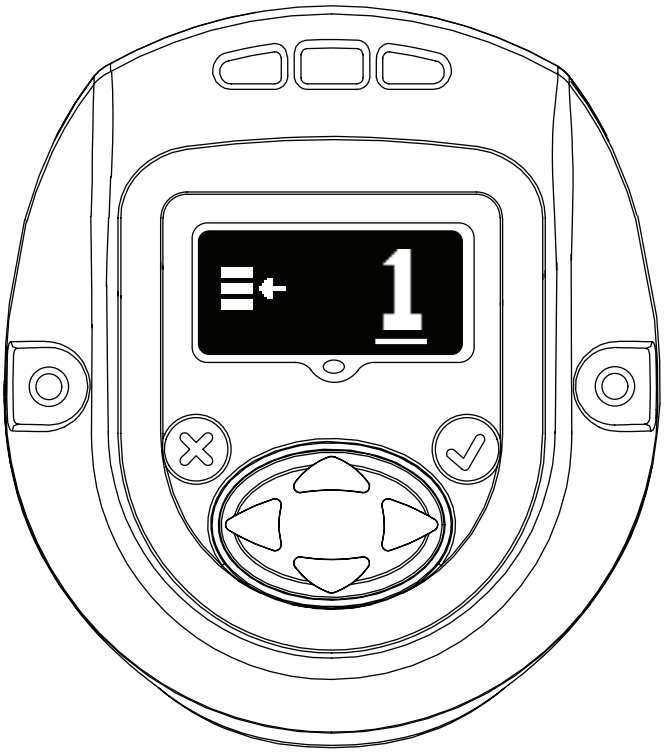
Pressing "UP" will advance to next screen.

Screen shows CONFIGURATION setting used in the tool.

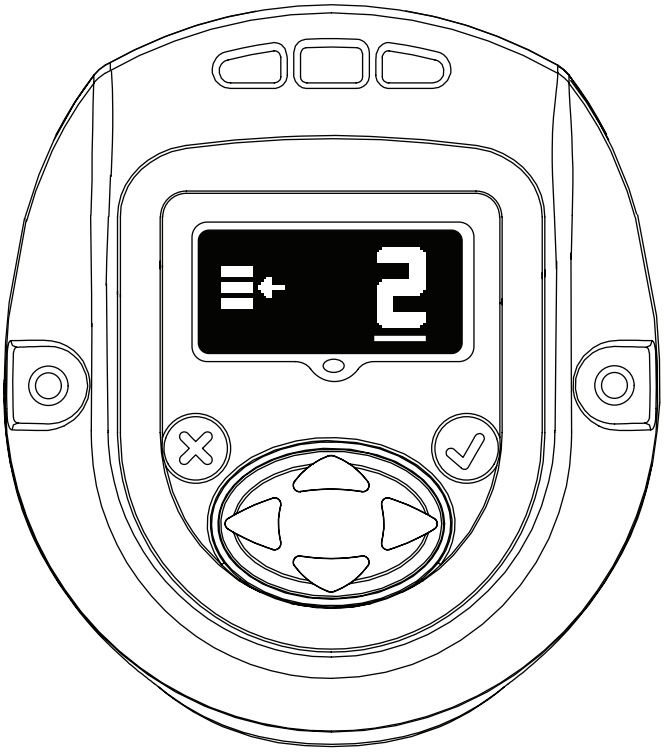
NOTE: Only Configuration 1 can be programmed through the display module.



Pressing "ENTER" will enable the "EDIT MODE" (This procedure to enter "EDIT MODE" is same for all settings update).

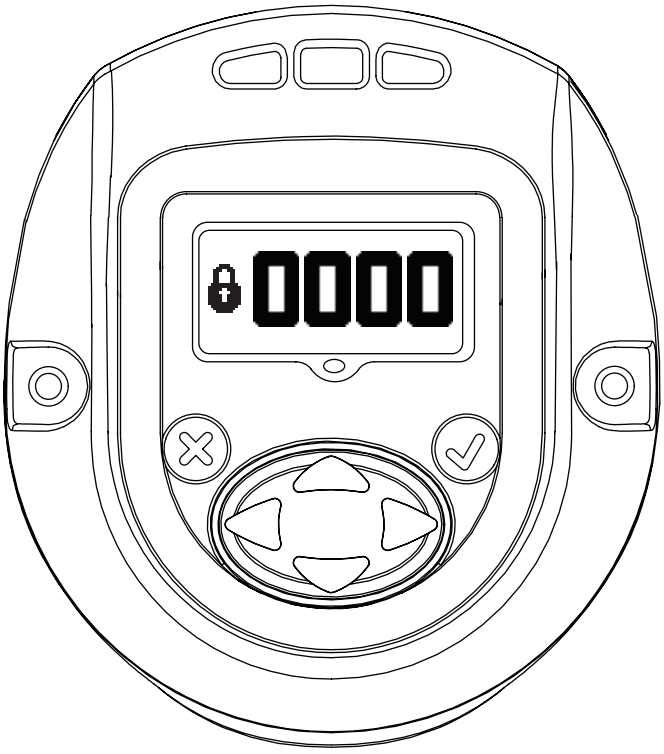


"UP" or "DOWN" key can be used to update the configuration. Pressing "ENTER" again will select the modified configuration.



2.3. Password

The password screen shows whether the display is locked or unlocked. If the display is locked the parameters of the QX Series Hand tool cannot be edited.



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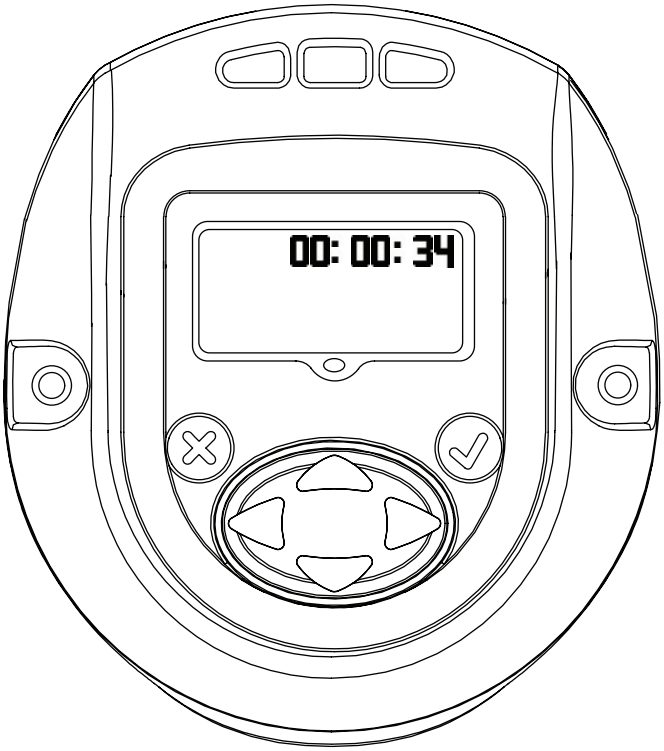
Password can be changed by entering into "EDIT MODE" and using "UP" or "DOWN" key.

If "1234" is entered on the Password screen, the user may use the left arrow to go to the Tool ID and software version page.

The Primary Display is the "Tool Location ID".

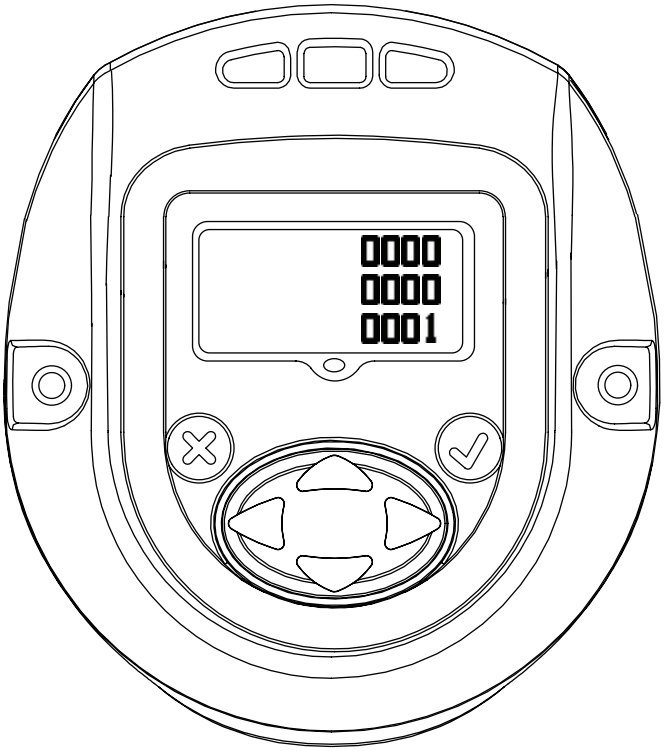
Lower Secondary Right is the "Display Firmware" Version.

Lower Secondary Left is the "Motor Controller Firmware" Version.



Displays Tool time in HH:MM:SS format. Press the Down key to display the tool time in HH:MM:SS format.

Remaining screens are for internal use only to view log location. Press the Down key to display a screen for internal use only to view log location. Press the Down key again to display a second log screen.



Press the Down key again to return to the Tool ID page. Pressing the right arrow from this page exit back to the Run screen.

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Press 'ENTER' to enter the 'EDIT' mode. Enter the appropriate password to unlock the tool. Press 'ENTER' to exit the 'EDIT' mode.

2.3.1. Updating fastening parameters of the QX Series tool

After display is unlocked with a valid password, Pressing "RIGHT" key will advance to following settings that can be modified as required.

The settings can be modified by entering "EDIT MODE" and using "UP" or "DOWN" key or "RIGHT" or "LEFT" key as required.

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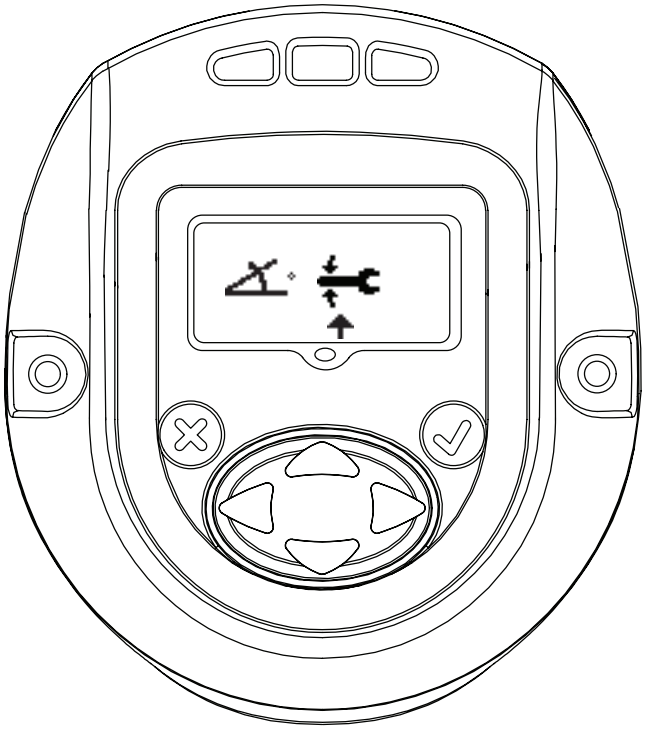
2.3.1.1. Strategy

This screen indicates configuration strategy being used.

Left – Angle, Right – Torque.

The pointing arrow indicates the present configuration being used.

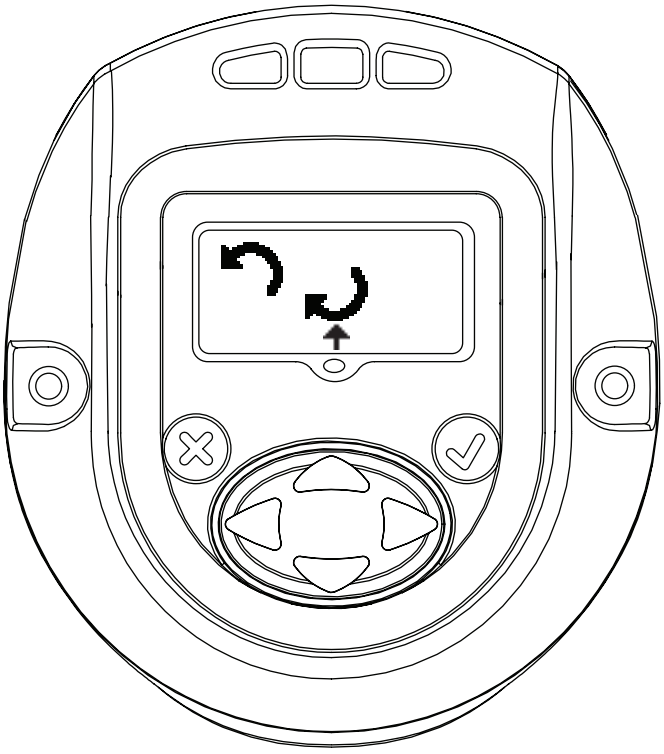
This can be changed by entering "EDIT MODE" and using "RIGHT" or "LEFT" key.



2.3.1.2. Direction of Rotation

Image shows direction of rotation in which the QX Series hand tool rotates. Indicates counter clock wise rotation. Indicates clock wise rotation

This can be changed by entering "EDIT MODE" Key and updating using "RIGHT" or "LEFT" key.



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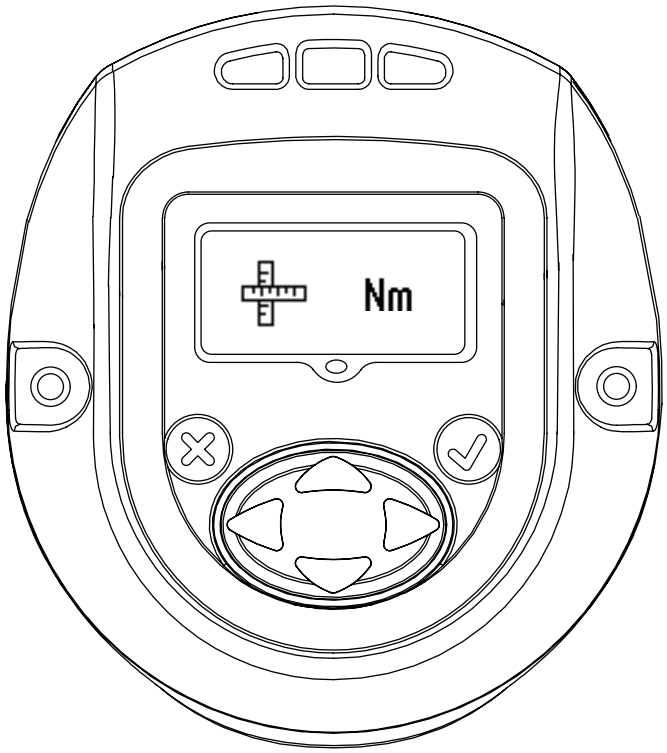
2.3.1.3. Unit of the Torque

Indicates unit of the Torque displayed in Configuration 1.

This can be changed by entering "EDIT MODE" and updating using "UP" or "DOWN" key.



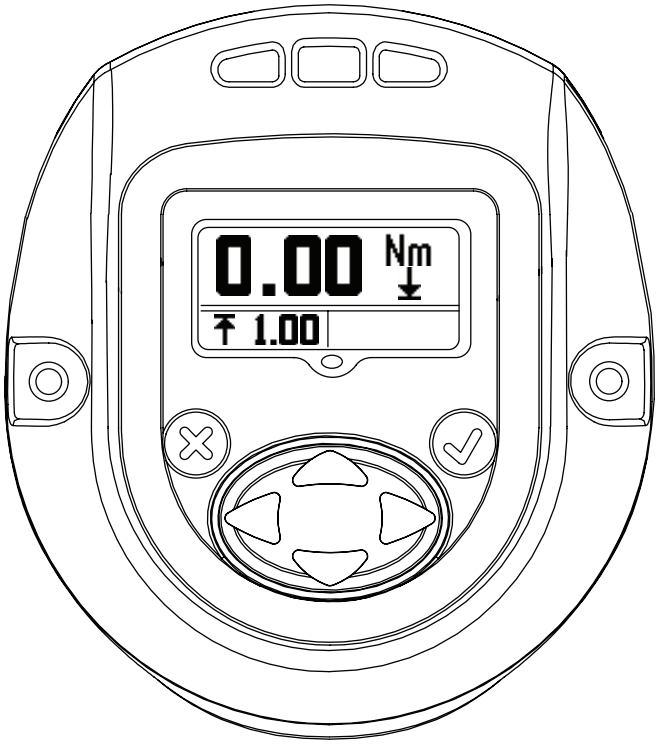
2.3.1.4. Torque

Torque "LOW" Display

Torque "LOW" can be modified in this mode by entering "EDIT" mode and using "UP or "DOWN" key.

Torque "HIGH" Display

Torque "HIGH" can be modified in this mode by entering "EDIT" mode and using "UP or "DOWN" key



Torque "TARGET" Display.

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Torque "TARGET" can be modified in this mode by entering "EDIT" mode and using "UP or "DOWN" key.

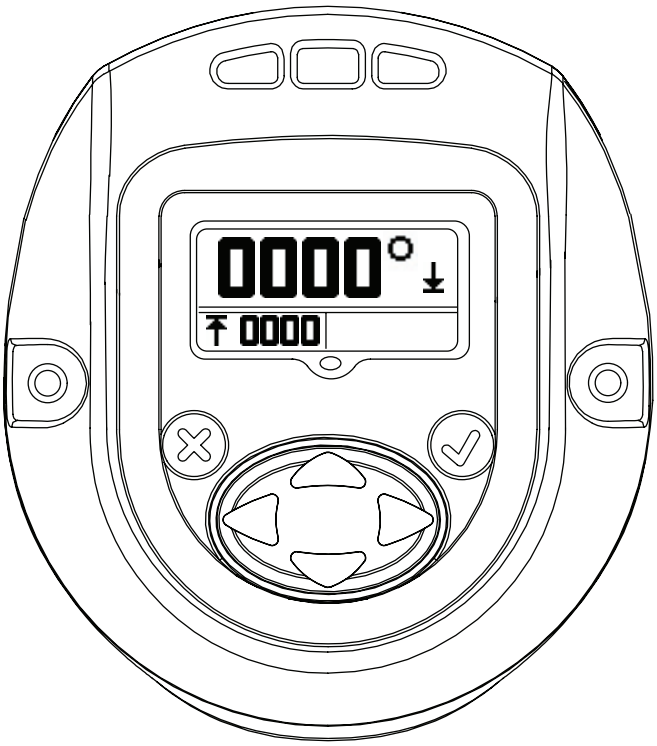
2.3.1.5. Angle

Angle "LOW" Display

Angle "LOW" can be modified in this mode by entering "EDIT" mode and using "UP or "DOWN" key.

Angle "HIGH" Display

Angle "HIGH" can be modified in this mode by entering "EDIT" mode and using "UP or "DOWN" key.



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2.3.1.6. Torque Threshold

The Torque at which reading of the angle will be started. The value can be edited by entering "EDIT" mode and using "UP" and "DOWN" arrow.

2.3.1.7. Free Speed

The below screen indicates free speed of the QX Series tool. The value can be edited by entering "EDIT" mode and using "UP" and "DOWN" arrow. Programmed speed is a percentage of tool maximum speed.

2.3.1.8. Shiftdown Point Config

This screen indicates "Torque Threshold for shiftdown point". This can be changed by entering "EDIT MODE" and updating using "UP" or "DOWN" key.

2.3.1.9. Shiftdown Speed

This screen indicates shiftdown speed of the QX Series tool. Shiftdown speed can be edited by entering "EDIT MODE" and updating using UP and DOWN arrow. Programmed speed is a percentage of tool maximum speed.

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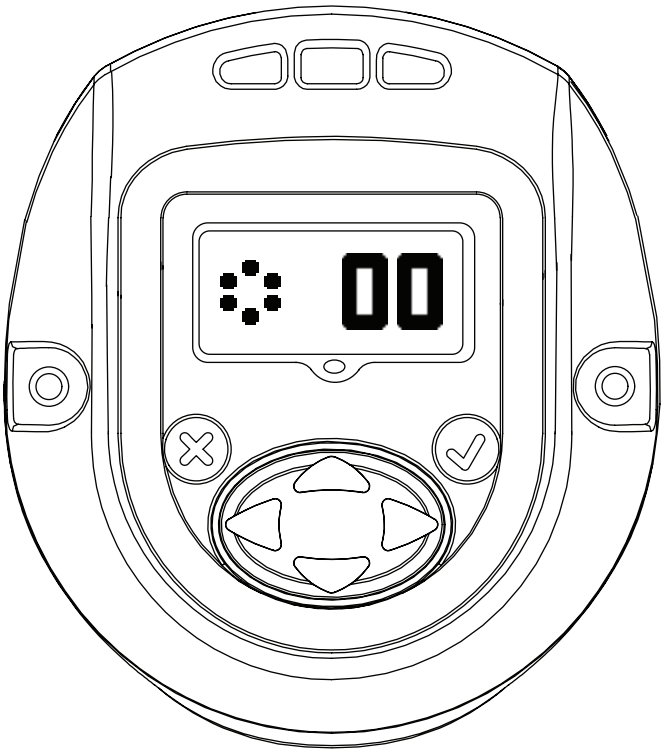
2.3.1.10. Gang count

The below screen shows the gang count number of bolts to be fastened per Group, Gang, or Set for Configuration 1.

This can be modified by entering "EDIT MODE".



2.3.1.11. Save / Ignore Settings

After all the required changes are completed, Press enter to highlight the save settings box on the left. Press the right or left arrow key to select cancel on the right. Pressing enter a second time causes the tool to leave edit mode.

SAVE SETTINGS

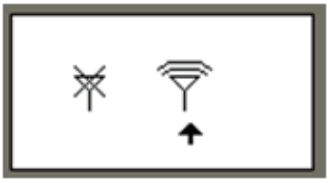
CANCEL SETTINGS

2.3.2. General Settings of the QX Series tool

After display is unlocked with a valid password, pressing "LEFT" key will advance to following settings that can be modified as required. The settings can be modified by entering "EDIT MODE" and using "UP" or "DOWN" key or "RIGHT" or "LEFT" key as required.

2.3.2.1. Radio Enable/Disable

This screen allows the user to enable or disable the radio module. The selection on the left disables the radio module and the selection on the right enables the radio module.

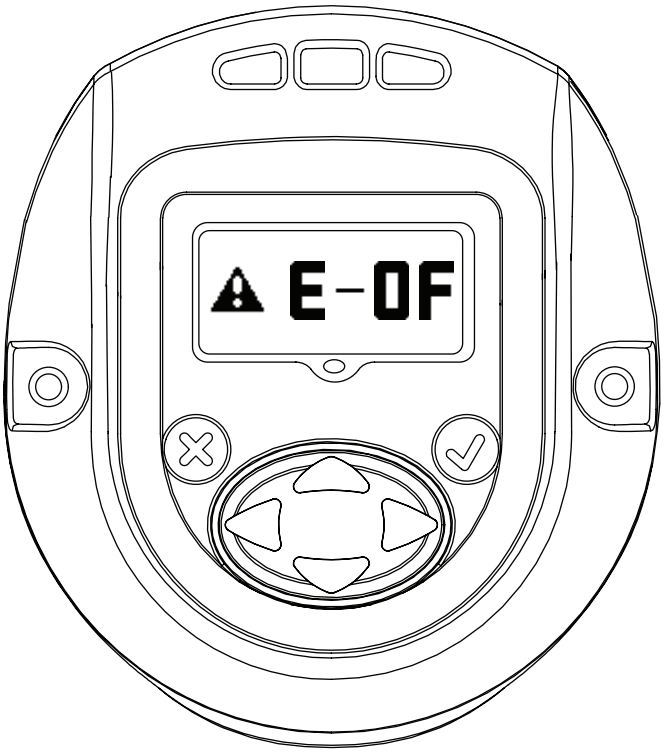


RADIO DISABLED

RADIO ENABLED

2.4. Warning Screen

This is the next screen obtained after pressing "UP" key when QX Series displays the Password screen.

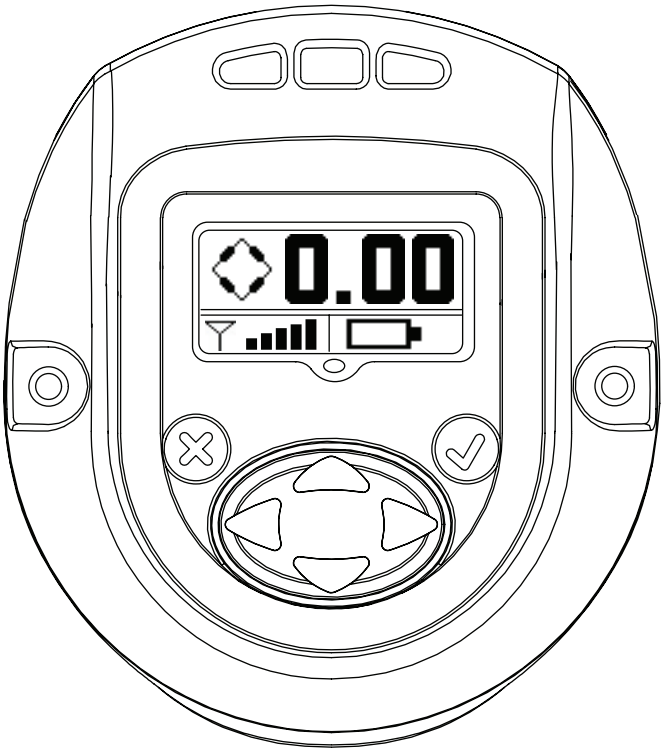


2.5. Shunt Calibration, RF Signal Strength and Battery level

This is the next screen obtained after pressing "UP" key when QX Series displays password screen.

Primary display indicates Shunt Calibration Value.

Secondary display on left indicates RF signal strength and the one on the right indicates Battery Level.



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2.6. Cycle count

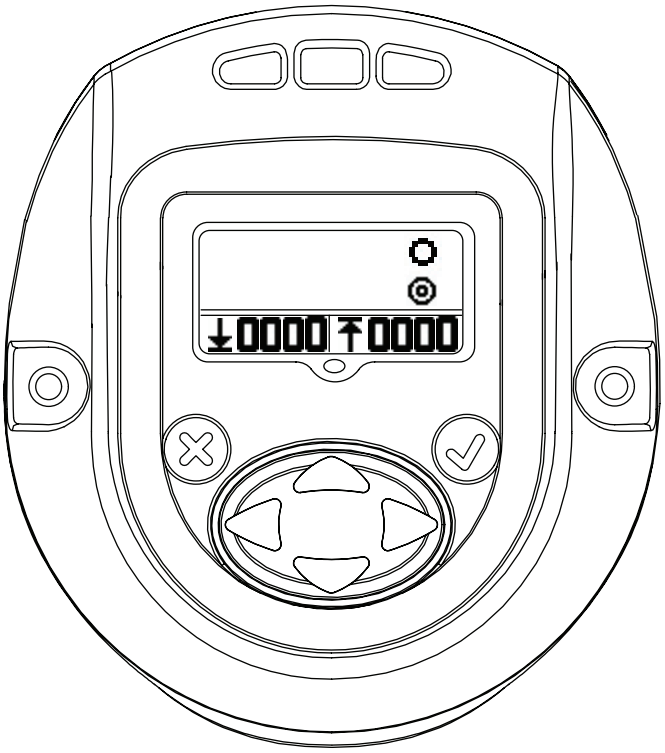
This value shows number of cycles run by the QX Series tool, Since the last time it was changed.

With the tool unlocked, press 'ENTER" key to edit this screen. Press either the 'UP' or 'DOWN' key to clear the cycle count. For this change to be retained a cycle must be run before removing power to the tool. Otherwise, the old cycle count is restored.

NOTE: After entering the correct password, user has to use the UP arrow button from password settings screen to move to the cycle count screen.

2.7. Angle

Primary display – Target Angle.
Secondary Display on left - Angle low.
Secondary Display on right - Angle High.



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2.8. Torque

Primary Display -Target Torque.

Secondary display on left - Torque low.

Secondary display on Right - Torque high.

Pressing "UP" advances back to "RUN SCREEN", the first display screen.

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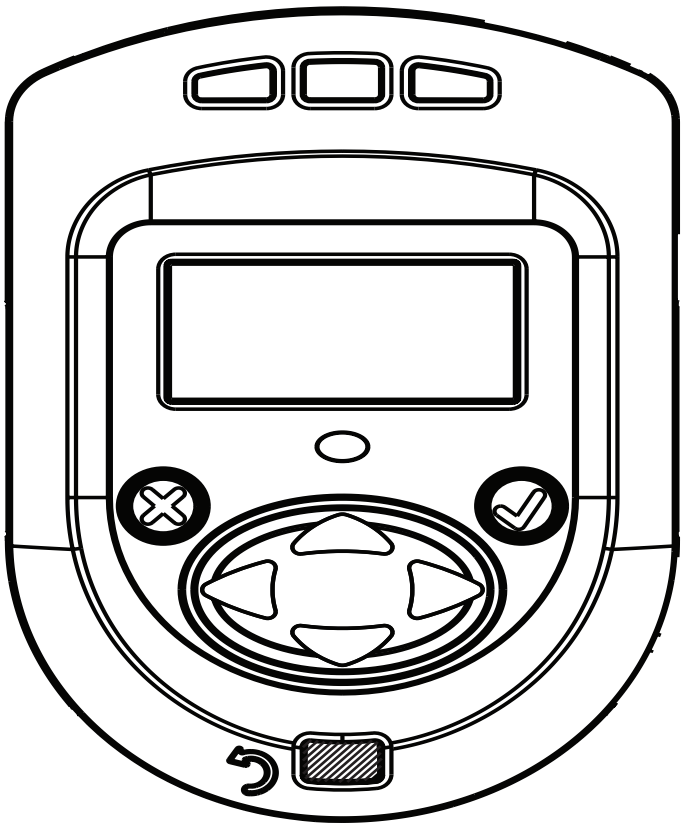

Appendix 1 : Status LED Definitions

There are four LEDs on the display module. 3 on the top and 1 below the display screen.

The Status LEDs shall be used as follows:

Red	--	The last tightening cycle exceeded its high limit.
Yellow	--	The last tightening cycle ended below its low limit.
Blue	--	Reverse LED (Angle tool only)
Green	--	The last tightening cycle ended between its high and low limits.
Blue	--	The tool has an active fault condition.

Appendix 2 : Tool Fault codes

The following table lists faults reported on the Viper Tool display. All of these faults are recorded in the tool's event log.

Fault Code	Category	Notes	Actions/Solutions
A-10	Motor Controller Timeout	Display did not communicate with the Motor Controller in the last 10 seconds .	Insert battery & Pull trigger to power-up the Motor Controller. If alarm does not go away then there is a possibility of damaged electronics. Contact the IR Service Center for service.
A-55	Display Update Detected	Only occurs after a software update has been applied, but no other changes were made in the tool's memory.	None. This code is for information only.
A-AA	Display Update Detected	Only occurs after a software update has been applied, and configuration data was reset to factory defaults.	Re-load tool configuration data from ICS or tool display.
B-01	Motor Controller Update Failed	An update to the motor controller firmware failed.	Re-load motor controller firmware through ICS.
B-50	RF Network Error	Tool detected a duplicate Tool ID on the RF network.	Change Tool ID to be unique.
B-80	RF Network Error	Tool failed to communicate with the PCM in the last 20 seconds.	Disable Wireless interface if PCM is not present.
B-E1, B-E5, B-E9	RF Network Error	Error code from the radio module inside the tool.	Check wireless settings using to ensure that tool's RF settings match with PCM.
C-01	Configuration Fault	Configuration ID value is 0 or greater than 8 .	Invalid configuration programmed Program the configuration from ICS.
C-02	Configuration Fault	Number of configuration steps is greater than 8.	Invalid configuration step is programmed. Value should be between 1 to 8. Program the configuration from ICS.
C-03	Configuration Fault	Current Step ID is greater than the current number of steps.	Current step-id value exceeded the programmed number of steps. Program the configuration from ICS.
C-04	Configuration Fault	Total Gang is greater than 8.	More than 8 configurations programmed. Un Assign all configurations from ICS and program the configuration.
C-05	Configuration Fault	Current Gang count is greater than Total Gang.	Invalid Gang count is programmed. Program the configuration from ICS.
C-06	Configuration Fault	Current Torque High Limit is greater than Tool's maximum Torque value (Tool's max torque value is configured in the Factory Set Points) OR Current Torque High Limit is less than 0.	Invalid Torque hi limit value is programmed. Program the Torque hi limit from ICS.
C-07	Configuration Fault	Current Torque Low Limit is greater than Tool's maximum Torque value OR Current Torque Low Limit is less than 0.	Invalid Torque lo limit value is programmed. Program the Torque lo limit from ICS.
C-08	Configuration Fault	Current Torque High Limit is less than Current Torque Low Limit.	Invalid Torque hi limit value is programmed. Program the Torque hi limit from ICS.

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Fault Code	Category	Notes	Actions/Solutions
C-09	Configuration Fault	Current Torque Low Limit is greater than Current Torque High Limit (Fault code to be removed).	Invalid Torque lo limit value is programmed. Program the Torque lo limit from ICS.
C-10	Configuration Fault	Tool configuration step is not set for either Angle or Torque.	Invalid configuration is programmed. Program configuration from ICS
C-11	Configuration Fault	Current Threshold value is greater than maximum tool torque OR Current Threshold value is less than 0.	Invalid Threshold value is programmed. Program Threshold value from ICS.
C-12	Configuration Fault	Current Free Speed is greater than maximum motor speed.	Invalid Free speed value is programmed. Program Free speed value from ICS.
C-13	Configuration Fault	Current Shiftdown Speed is greater than maximum motor speed.	Invalid Shift down speed value is programmed. Program Shift down speed value from ICS.
C-14	Configuration Fault	Current display unit value is unsupported.	Programmed display unit is not supporting currently. Program Display unit as Nm, In-Lbs, Ft-Lbs or dNm.
C-15	Configuration Fault	Current Shiftdown Point if above target or above Target (for torque strategy) or above tool's torque limit (for angle strategy).	For Angle strategy, program Shift down point less than target torque. For Torque strategy, program shift down point less than tool's max torque.
C-16	Configuration Fault	Number of configuration steps is set to 0.	Invalid configuration is programmed. Program configuration from ICS.
C-0A	Configuration Fault	Current Angle High Limit is greater than Tool's maximum Angle value (to be set to 9999).	Invalid Angle hi limit value is programmed. Program the Angle hi limit from ICS.
C-0B	Configuration Fault	Current Angle Low Limit is greater than Tool's maximum Angle value (to be set to 9999).	Invalid Angle lo limit value is programmed. Program the Angle lo limit from ICS.
C-0C	Configuration Fault	Current Angle High Limit is less than Current Angle Low Limit.	Invalid Angle hi limit value is programmed. Program the Angle hi limit from ICS.
C-0D	Configuration Fault	Current Angle Low Limit is greater than Current Angle High Limit (Fault code to be removed).	Invalid Angle lo limit value is programmed. Program the Angle lo limit from ICS.
C-0E	Configuration Fault	Tool configuration step is a Torque target and target value is outside torque high and low limits.	This is applicable for Torque Configuration step only. Invalid target torque is programmed. Program target torque from ICS.
C-0F	Configuration Fault	Tool configuration step is an Angle target and target value is outside angle high and low limits.	This is applicable for Angle Configuration step only. Invalid target angle is programmed. Program target angle from ICS.
E-00	Motor Controller Fault	Battery Fault.	Replace battery.
E-01	Motor Controller Fault	Invalid Hall State.	Faulty HALL cable. Contact the IR Service Center for service. Check wireless settings using ICS to ensure that tool's RF settings match with PCM. Also confirm that the tool's ID is in the PCM's list.

Fault Code	Category	Notes	Actions/Solutions
E-02	Motor Controller Fault	I2T Fault.	Too much current being drawn over an extended amount of time. Add a 10 second delay between cycles to try and remedy. If it is a very soft joint, try raising the shift down point so that the majority of the cycle is run at high speed.
E-03	Motor Controller Fault	Motor Stall.	Possible damaged electronics hardware. Contact the IR Service Center for service.
E-04	Motor Controller Fault	Motor current.	Possible damaged electronics hardware. Contact the IR Service Center for service.
E-05	Motor Controller Fault	Over temperature.	Add a delay between cycles to allow time for the tool to cool.
E-06	Motor Controller Fault	Current Offset.	Possible damaged electronics hardware. Contact the IR Service Center for service.
E-07	Motor Controller Fault	Shunt Calibration.	Faulty transducer or transducer wire. Contact the IR Service Center for service.
E-08	Motor Controller Fault	Torque Offset Fault.	Faulty transducer or transducer wire. Contact the IR Service Center for service.
E-09	Motor Controller Fault	Transducer Fault.	Faulty transducer or transducer wire. Contact the IR Service Center for service.
E-10	Motor Controller Fault	Under Angle.	Angle low limit is too high or the user released the trigger before the cycle was complete. The user should keep the trigger engaged until the cycle is complete.
E-11	Motor Controller Fault	Current Plausibility Low.	Current Plausibility Low Failure.
E-12	Motor Controller Fault	Early Trigger Release.	The trigger was released before the cycle completed.
E-13	Motor Controller Fault	Motor Controller Watchdog Reset.	Motor Controller Watchdog Reset.
E-14	Motor Controller Fault	Motor Controller Stop Timeout.	Motor Controller Stop Timeout.
E-18	Motor Controller Fault	Multi-step configuration did not complete due to early trigger release.	Cycle failed during one of the early stages of a prevailing torque strategy. Retry or check the joint for problems.
E-81	Motor Controller Fault	The configuration ID in the Motor controller's EOR did not match the currently selected configuration.	Configuration data in EOR does not match currently selected configuration.
E-0A	Motor Controller Fault	Step Execution Timeout.	Check the joint for stripped threads. If the joint is a soft joint, extend the step timeout parameter for the fastening configuration being run.
E-0B, E-15	Motor Controller Fault	Communication message timeouts.	Try pulling the trigger again.
E-0C	Motor Controller Fault	Over Torque limit.	Torque high limit is too low or the joint is too hard for the fastening settings. For a hard joint, try lowering the free speed to 70% and/or lowering the shift down torque.
E-0D	Motor Controller Fault	Over Angle Limit.	Check the joint for stripped threads. Angle limit is too low or the joint is too soft for the fastening settings.
E-0E	Motor Controller Fault	Current Plausibility High.	Current Plausibility High Failure.

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Fault Code	Category	Notes	Actions/Solutions
E-0F	Motor Controller Fault	Under Torque.	Torque low limit is too high or the user released the trigger before the cycle was complete. The user should keep the trigger engaged until the cycle is complete.
E-1B	Motor Controller Fault	Battery Cell Fault (detected by Motor Controller).	Tool did not run all steps.
E-1C	Motor Controller Fault	Low Battery Fault.	The tool will still operate properly. This is a warning that the battery voltage is almost drained. Replace or re-charge the battery.
E-1D	Motor Controller Fault	Critical Battery Fault (detected by Motor Controller).	Battery voltage critically low.
E-1E	Motor Controller Fault	Motor controller is going to sleep due to idle timeout (Fault is ONLY displayed if the tool is connected via USB).	Pull trigger to power-up tool.
E-1F	Motor Controller Fault	Wakeup Code received (but not expected)	Tool wakeup.
EE-E0	RF Protocol Error	RF Protocol Error - RF Message Packet too small.	RF message packet too small.
EE-E1	RF Protocol Error	RF Protocol Error - RF Packet too long.	RF packet too large.
F-01	Trigger Fault	Trigger was pulled while tool is disabled.	ICS, PCM, or tool display needs to enable the tool.
F-02	Trigger Fault	Trigger was pulled during a configured delay period between cycles.	Wait for configuration delay and pull trigger again.
F-03	Trigger Fault	Smart Socket function has the tool locked until PCM indicates the correct socket has been attached to the tool.	Attach the correct socket for the selected configuration.
1-FF	Tool Communication Error	USB enumeration fault.	Bad Command received by Communication Interface (USB or Wireless).
10-01	Tool Event	Configuration Page Update from Communication interface (USB or Wireless).	Configuration is updated from external communication.
10-02	Tool Event	Tool Locked by Communication Interface (USB or Wireless).	Tool locked from external communication.
10-03	Tool Event	Tool disabled by Communication Interface (USB or Wireless).	Tool disabled.
10-04	Tool Event	Configuration Selected by Communication Interface (USB or Wireless).	Configuration selected from external communication.
10-05	Tool Event	Gang Advanced by Communication Interface (USB or Wireless)	Gang advanced.
10-06	Tool Event	Gang reset by Communication Interface (USB or Wireless).	Gang reset.
10-07	Tool Event	Configuration advanced by Communication Interface (USB or Wireless).	Configuration advance.
10-08	Tool Event	Configuration Reset by Communication Interface (USB or Wireless).	Configuration reset.
10-09	Tool Event	SPI Memory erased by Communication Interface (USB or Wireless).	SPI Memory erased.

Fault Code	Category	Notes	Actions/Solutions
10-0A	Tool Event	Tool Reset by Communication Interface (USB or Wireless).	Tool Reset.
10-0B	Tool Event	Factory calibrations restored by Communication Interface (USB or Wireless).	Factory Calibration restored.
10-0C	Tool Event	Cycle log cleared by Communication Interface (USB or Wireless).	Cycle log cleared.
10-0D	Tool Event	Event log cleared by Communication Interface (USB or Wireless).	Event log cleared.
10-AA	Tool Event	Time updated by Communication Interface (USB or Wireless).	Time updated.
20-01	Reset Event	Complete Tool memory reset to defaults.	Complete Tool Memory reset to defaults.
20-02	Reset Event	Tool reset configuration to Defaults.	Tool reset configuration to defaults.
2-xx	PM Alarm Cycle Fault	User configured alarm that occurs after the tool runs the number of configured cycles, where xx = 01 to 05.	Reset alarm's cycle count configuration.
3-xx	PM Alarm Time Fault	User configured alarm that occurs after a specific time and date, where xx = 01 to 05.	Reset alarm's time/date occurrence.

Parts and Maintenance

Original instructions are in English. Other languages are a translation of the original instructions.

Tool repair and maintenance should only be carried out by an authorized Service Center.

Refer all communications to the nearest **Ingersoll Rand** Office or Distributor.

Notes:

Notes:

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