



Assembly Technologies

# QPM DC Electric Tools

User Manual

20Z102500



## Important Safeguards

For your protection, please read these instructions completely, and keep this manual for future reference. Carefully observe and comply with all warnings, cautions and instructions placed on the equipment or described in this manual.

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W A R N I N G

**To Avoid Injury:**

This information is provided to assist in making rough estimates of sound and vibration exposure levels in the workplace. The declared emission values were obtained by laboratory type testing in accordance with the stated standards. **Levels measured in individual workplaces may be higher.**

The actual exposure levels and risk of harm experienced by an individual user depends upon the work piece, workstation design, duration of exposure, and the physical condition and work habits of the user. To help prevent physical impairment, a program of health surveillance is highly recommended to detect early symptoms which may relate to sound and/or vibration exposure, such that appropriate preventive measures may be taken.

1.2 Operator Protection

W A R N I N G

**ROTATING EQUIPMENT**

**To Avoid Injury:**

- Always wear eye and foot protection when operating, installing, or maintaining power tools, and when in areas where power tools are being used, maintained, or installed. Some applications may require the use of safety glasses and face shields. Use eye protection that conforms to ANSI Z87.1.[3] and ANSI Z41-PT99M I/75 C/75.
- Always stay alert when operating tools and/or their accessories. Do not operate tools and/or their accessories while tired, under the influence of drugs, alcohol or any other mind-altering substance.
- Repetitive work motions or vibration may be harmful to your hands, arms, shoulders or back.
- Use suitable protective equipment and work methods whenever an application presents a hazard.

### 1.2.1 Repetitive Motion

The use of power tools may involve highly repetitive motions of the fingers, hands, wrists, and shoulders. These repetitive motions can lead to cumulative trauma disorders (CTD). Many personal and workplace factors can contribute to these disorders.

Currently available data have identified the following risk factors. These risk factors are not necessarily causation factors of CTDs. The mere presence of a risk factor does not necessarily mean there is excessive risk of injury. Generally, the greater the exposure to a single risk factor or combination of factors the greater the risk for CTDs.

- Forceful exertions and motions
- Extreme postures and motions
- Repetitive exertions and motions
- Intended duration of exertion, postures, motions, vibration, and cold
- Insufficient rest or pauses
- Work organization risk factors
- Environmental risk factors

These risk factors span job design and content, operator training, work method, work pace, work environment, proper tool selection and other work place factors beyond the control of the tool manufacturer. Tool owners and employers should analyze jobs for all of the risk factors identified above and take appropriate action.

Some measures which may reduce the risk of CTDs:

- Use minimum hand grip force consistent with proper control and safe operation.
- Keep wrists as straight as possible.
- Avoid repetitive movements of the hands and wrists.
- If wrist pain, hand tingling, numbness, or other disorders of the shoulders, arm, wrist or finger occur; notify supervisor, discontinue task, reassign user to a different job; if relief is not found contact experts skilled in treating such disorders.

Wrist supports, torque reaction devices, and balancers should be used if it can be determined that such devices can reduce the risk of repetitive motion disorders.

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### **1.2.2 Hearing Protection**

Power tool operators and adjacent personnel may be exposed to excessive sound levels. The tool in use is generally only one of many sources of noise that an operator experiences. Other tools and machines in the area, joint assembly noise, work processes, and other ambient noise sources all contribute to the sound level operators are exposed to.

The actual sound level an individual is exposed to and the individual's exposure time over the work day are important factors in determining hearing protection requirements. Worker sound level exposure can only be determined at the job site and is the responsibility of tool owners and employers.

Measure worker sound level exposure and identify high-risk noise areas where hearing protection is required.

Follow federal (OSHA), state or local sound level statutes, ordinances and or regulations.

### **1.2.3 Vibration**

Power tools can vibrate during use. To minimize the possible effects of vibration:

- Keep hands and body dry.
- Avoid anything that inhibits blood circulation such as tobacco, cold temperatures and certain drugs.
- Operators should notify their employer when experiencing prolonged symptoms of pain, tingling, numbness or blanching of the fingers.
- Wear vibration damping gloves if it can be determined that they reduce the risk of vibration disorders without introducing other hazards.

### **1.2.4 Breathing Protection**

Respirators shall be used where contaminants in the work area present a hazard.

### 1.3 Tool Installation



#### WARNING

##### To Avoid Injury:

- Always wear eye and foot protection when installing equipment.
  - Only use equipment and accessories specifically designed to operate with Stanley assembly tools and use them only in the manner for which they are intended.
  - Do not install worn, damaged, or modified equipment that may be unsuitable for safe use.
  - Train all operators in the safe and proper use of power tools. Operators should report any unsafe condition.
  - Store idle tools and accessories in a safe location accessible only by trained persons.
  - Disconnect power source (air, electricity, etc.) from tool prior to making adjustments, changing accessories, or storing.
  - Prior to operation, always check and test tools and accessories for damage, misalignment, binding or any other condition that may affect operation. Maintenance and repair should be performed by qualified personnel.
  - Do not operate tools in or near explosive environments or in the presence of flammable liquids, gases, dust, rain or other wet conditions.
  - Keep the work area clean, well lit and uncluttered.
- Keep unauthorized personnel out of the work area.

##### DC Electric Tools & Controllers:

- Install tools in dry, indoor, non-flammable, and non-explosive environments only – Humidity: 0 to 95% non-condensing and Temperature: 32 to 122 °F (0 to +50 °C).
- Installation, maintenance and programming should be performed by qualified personnel. Follow all manufacturer installation instructions and applicable regulatory electrical codes and safety codes.
- Tool and controller plugs must match the outlet. This equipment must be earth grounded. Never modify a plug in any way or use any adaptor plugs.
- Avoid body contact with electrically energized surfaces when holding a grounded tool.
- Prior to connecting a power source, always ensure the tool or controller is turned off.
- Limit controller access to trained and qualified personnel. Lock controller cabinets.

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Turn off controllers when removing or attaching tools.

Stanley electric tools must be connected to a controller to operate. To ensure superior performance and safe operation, use a Stanley controller specifically designed for each tool. These instructions are specific to Stanley electric tools when used with Stanley electric tool controllers and accessories. Some features may not be applicable, performance may be degraded and some safety systems may not be available when tools are connected to non-Stanley controllers and accessories.

### 1.3.1 Sockets and Adapters

Use only industrial grade sockets and adapters (power bit and power or impact socket type).

Replace worn or damaged sockets that are unsuitable for safe operation immediately.

Always ensure drive socket is fully seated and locked into position before connecting power to tool.

### 1.3.2 Suspension Devices

Tool suspension devices or bails help support the weight of the tool during tightening operations. Attach these devices securely and periodically inspect them for damage or loosening.

### 1.3.3 Cable Installation



#### W A R N I N G

##### **ELECTRICAL HAZARD**

##### **To Avoid Injury:**

- Never use a tool with a damaged cable.
- Never abuse a cable, carry a tool by its cable, hang a tool by its cable, or pull on a cable to disconnect it from the tool or the controller.

To ensure superior performance and safe operation, use the Stanley cables specifically designed to operate these tools.

Never use a tool with a damaged cable. Never abuse a cable, carry a tool by its cable or pull a cable to disconnect it. Also, keep the cord away from heat, sharp edges, or moving parts.

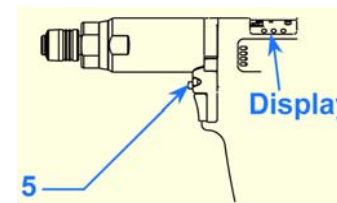
Use cables of appropriate length (60M maximum) for each application; position and or suspend them in such a way as to prevent tripping and cable damage, and to provide good work area maneuverability.



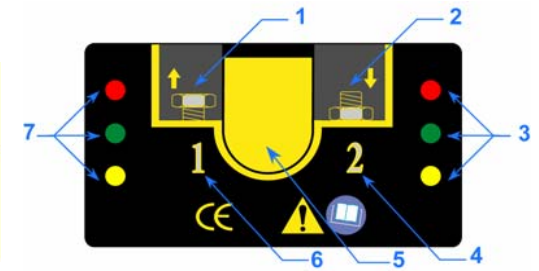
## 1.4 QPM Tools

### 1.4.1 Display and Multiple Function Button for Hand Held Tools

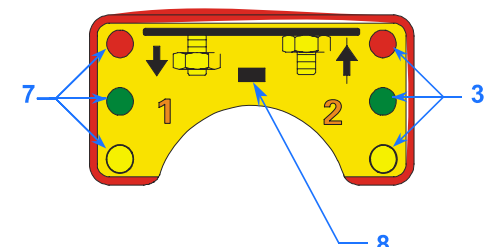
Handheld QPM tools have a display and a multiple function button (MFB). Two sets of lights [3 and 7] indicate tightening cycle status. Two blue lights indicate whether the tool is armed (on) or not armed (off) and tool rotation direction, disassembly [1] or assembly [2]. A single multiple function button [5] can change tool direction and or parameter sets. When the button is used to select the Job, one of two orange indicators [4 or 6] illuminates to show the active Job. EA/EB/EC tools have four sets of lights [3 and 7] and an LED [8] indicates when the tightening cycle count exceeds the PM limit.



Display and MFB for Pistol Models



Display and MFB for E23L to E55L Lever Models



Display for EA/EB/EC Lever Models

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### 1.4.2 MFB Mode

The *MFB Mode* configures the multiple function button for handheld QPM tools. The button can be configured to operate in any of the following modes.

Disable (default)	The button does nothing.
Reverse (Disassembly)	Pressing the button toggles between assembly and disassembly and illuminates the appropriate blue light [1] or [2]. All tool status lights [3] and [7] flash when the tool is in disassembly mode.
Job/Task Select	Pressing the button toggles between Job/Task 1 and Job/Task 2 and illuminates the appropriate orange light [6] or [4].
Arm	Pressing the button arms (activates) the trigger but does not start the tool. The blue assembly light [2] comes on to show that the tool is armed for three seconds.
Reset Reject	This function, when selected, will cause the tool to disable after a NOK tightening cycle. The Reject Tone, when enabled, will sound. Pressing the button re-enables the tool indicating the operator acknowledges the rejected tightening cycle and wishes to repair it.
Job Reset	Pressing the button causes the selected Job to be reset. This means that the fastener count is set to zero and the tool, if disabled due to Error Proofing requirements, re-enables.
Reset and Reverse	This function, when selected, causes the tool to disable after a NOK tightening cycle. The Reject Tone, when enabled, will sound. Pressing the button re-enables the tool in the Reverse direction and indicates that the operator acknowledges the rejected tightening cycle and wishes to repair it. The tool switches to the forward direction after the controller detects a fastener has been removed.

### 1.4.3 Tool Memory

QPM tools have an onboard tool memory that stores tool identification, calibration factors and tightening cycle counters. Memory parameters include:

- *Model Number*
- *Serial Number*
- *Torque Cal* (calibration) factor
- *Angle Cal* (calibration) factor
- Tightening cycle counters

#### 1.4.4 Tightening Cycle Counters

QPM tools have onboard counters that record the number of tightening cycles completed by the tool.

- *Odometer Counter.* Records the total number of tightening cycle completed.
- *Trip Counter.* Records the number of tightening cycles completed since the last reset.
- *PM Counter.* Records the number of tightening cycles completed since the last reset.
- *PM Threshold.* A static value set by the end user. When the PM Counter exceeds the PM Threshold (Limit), the controller provides a maintenance alert. The alert is an orange LED on the front panel and the tool.

The controller reads the tightening cycle counters from the tool on each power up. Each counter increments after the tool is ran and reaches the target value.

## 1.5 Tool Operation



### WARNING

#### ROTATING SPINDLE

##### To Avoid Injury:

- Always wear eye and foot protection when operating and when in areas where power tools are being used.
  - Keep all body parts and clothing away from the rotating end of the tool.
- Dress properly. Do not wear loose-fitted clothing or jewelry.

#### TORQUE REACTION FORCE

##### To Avoid Injury:

- Be alert and maintain good balance, footing, and posture at all times in anticipation of the tool's torque reaction. Do not over-extend or over-reach.
- Be prepared for the change in direction and or a higher reaction force when a tool is in reverse.
- The start lever should be positioned to avoid trapping the operator's hand between the tool and the work piece.

#### TOOL MAY NOT SHUT OFF

##### To Avoid Injury:

- If the tool does not shut off at the end of the tightening cycle, contact the person responsible for tool installation or repair. Note: When the tool does not shut off, a stall condition occurs. A stall condition can cause a higher than expected torque reaction impulse.
- Ensure tool is properly installed, adjusted and in good working order.
- Do not use the power tool if the switch does not turn it on and off.
- Apply the tool to the joint following all recommendations in this manual.
- Check to ensure the drive socket is fully seated and locked into position before connecting power to the tool.

Prepare to resist the tool's torque reaction:

Start the tool by depressing the start lever or trigger.

Release start lever after the cycle is complete.

### 1.5.1 Directional Control

WARNING	
<b>UNEXPECTED REACTION FORCES</b>	
<b>To Avoid Injury:</b>	
<ul style="list-style-type: none"><li>• Be prepared – when a tool operates in reverse, the tool's torque reaction is opposite to the reaction produced when the tool operates in forward direction.</li><li>• The tool can have a higher initial reaction force when loosening a fastener.</li><li>• Always stop the tool before changing direction of spindle rotation.</li></ul>	

### 1.5.2 Torque Reaction Devices



WARNING	
<b>PINCH POINT BETWEEN TORQUE REACTION BAR AND WORK PIECE</b>	
<b>To Avoid Injury:</b>	
<ul style="list-style-type: none"><li>• Never place any body part between a reaction bar and the work piece.</li><li>• Before starting the tool, position the reaction bar firmly against a stationary rigid member that is opposite to the spindle rotation.</li></ul>	

Torque reaction devices absorb tool torque reaction forces. Always use reaction devices when high reaction force could injure an operator.

## 1.5.3 Tool Temperature



### WARNING

#### **POTENTIAL BURN HAZARD**

Fixtured tools have higher operating temperatures and do not have additional thermal protection.

#### **To Avoid Injury:**

Wear thermal protective gloves when handling fixtured tools.

Stanley electric tools are thermally protected to prevent overheating. Temperature is sensed inside the tool, either in the motor windings of E series or on the resolver board on EA/EB/EC tools and the value is reported to the controller. The thermal protection does not allow the tool to operate if the tool temperature raises abnormally – the thermal protector resets automatically when the tool cools down. The maximum tool temperature before damage occurs is 150°C.

EN60745-1 Hand-Held Motor-Operated Electric Tools - Safety is the most applicable standard to the E/EA/EB/EC series tools. It defines +60°C as the limit for thermal rise over ambient of a contactable surface (e.g. if the ambient is 25°C, the surface limit is 85°C). Since the default limit is 85°C inside the tool regardless of ambient, no external surface can exceed this value no matter what the ambient temperature.

Stanley Assembly allows the temperature limit adjustment to provide flexibility to the professional user. Once a customer changes the setting from the factory default, it is their responsibility to ensure the safety of the user.

Controller parameter settings can have a significant effect on tool operating temperatures.

### 1.5.4 Tool Status Lights

Handheld tools from STANLEY ASSEMBLY TECHNOLOGIES have three (green, yellow, and red) status lights. The status light mirror or copy the status lights on the controller or control panel.

Light	Status	Description
Green	Tightened to specified limits	The tightening cycle meets all of the specified parameters.
Yellow	Low torque or angle	The tightening cycle was rejected for not achieving either low torque or low angle.
Red	High torque or angle	The tightening cycle was rejected for exceeding either high torque or high angle.
All lights	Reverse	The next time the start trigger is engaged the tool will remove the fastener.

### 1.5.5 Setting Torque, Angle, and Other Operating Parameters



W A R N I N G	
<b>EXCESSIVE TORQUE CONDITION</b>	<p><b>To Avoid Injury:</b></p> <ul style="list-style-type: none"> <li>• Only trained and qualified personnel should program controllers.</li> <li>• Never set control limits above the maximum rating of the tool.</li> <li>• Setting control limits above the maximum rating of the tool can cause high reaction torque.</li> <li>• Always test for proper tool operation after programming the controller.</li> </ul>

The Alpha controller can be setup to change tightening Jobs or Tasks from the tool's MFB.

Press, or hold, the MFB to change the operating program on the controller. See section 1.4.2 for programming the MFB.

Press, or hold, the MFB to return the tool to the previous operating program.

## 1.6 Special Application Tools

### 1.6.1 Exposed Gear Socket Tools



#### WARNING

##### **PINCH POINT AT THE EXPOSED GEARS OR TEETH**

##### **To Avoid Injury:**

Keep body parts and clothing away from the exposed gear sockets.  
Dress properly. Do not wear loose-fitted clothing or jewelry.

Exposed gear socket tools are designed to fit into tight spaces where other tools do not fit. These tools have exposed gears or ratchet teeth. It is recommended to use the ARMING feature for these types of tools.

### 1.6.2 Tubenut Nutrunners



#### WARNING

##### **PINCH POINT AT THE EXPOSED GEARS OR TEETH**

##### **To Avoid Injury:**

- Never place body parts or clothing, near the socket opening. Dress properly. Do not wear loose-fitted clothing or jewelry.
- Follow the Tubenut Nutrunner Sequence of Operation

Tubenut nutrunners are used for installing tube fittings.

Tubenut Sequence of Operation (QPM Tools):

- Place nutrunner socket on fastener
- Press the MFB to *arm* the start function
- Depress start lever within five seconds of arming, else arming clear and need to be repeated
- The tool stops after reaching torque
- Release the lever and lift the tool from the fastener, all tool status lights flash to indicate the tool will now run in reverse to open the socket
- Depress the start lever until the socket returns to the open position and stops
- Release the lever
- Remove the tool