

CE



CHRISTIE
TOTAL TORQUE SOLUTIONS

VC-RAD SELECT ELECTRIC SERIES

USER GUIDE



Image for Illustration Purposes Only

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ISSUE

Description	Issue	Date	Initials
First Issue	1	Sept 2019	PR

INTRODUCTION

The VC-RAD Select Electric torque wrench is a handheld electrically driven power tool intended to tighten and un-tighten nuts, bolts and threaded fasteners.

The VC-RAD Electrical torque wrench must always be used with the following:-

- 240V or 110V electrical power supply (dependant on model purchased)
- Impact Quality Sockets
- Ring and pin fastener system (or similar)
- Reaction Arm

It is the responsibility of the user to consider associated site risks before introducing the equipment into the work-place.

TRAINING REQUIREMENTS

Training on the correct use of the VC-RAD Select Electric Torque Wrench is available. Please contact W. Christie (Industrial) Ltd for more information.

VC-RAD SELECT WRENCH MODELS COVERED BY MANUAL

Model	Weight (Kg)	Speed (RPM)	Torque Range (Nm)		Square Drive
		Single	Minimum	Maximum	
VC-RAD 14 Select	4.0	8.8	140	1,400	3/4"
VC-RAD 20 Select	4.5	5.7	200	2,000	1"
VC-RAD 40 Select	6.2	2.7	400	4,000	1"

ELECTRICAL SPECIFICATIONS

	Units	120V Model	240V Model
Nominal Input Voltage:-	VAC	120	220 – 240
Minimum Input Voltage	VAC	108	207
Maximum Input Voltage	VAC	132	253
Frequency	Hz	50 / 60	50 / 60
Nominal Input Current:-	A _{RMS}	9.6	6

ENVIRONMENTAL SPECIFICATIONS

Temperature Ranges	°C	°F
Operating Temperature	0 to 35	32 to 95
Storage Temperature	-25 to 70	-13 to 158
Humidity	10% to 90% non-condensing	
Shock	10G according to DIN IEC 68-2-6/29	
Vibration	1G, 10-150Hz according to DIN IEC 68-2-6/29	
Required Operating Conditions	- Non explosive atmosphere - Dry location	

GENERAL SAFETY

All personnel in the vicinity of the equipment should wear as a minimum the following personal protective equipment (PPE):-

Safety Glasses.

Hearing Protection.

Full Length Sleeves / Trousers.

Steel Toe Cap Shoes or Steel Toe Cap Boots.

Safety Gloves

The end user of this equipment should carry out their own risk assessments prior to operating.

Only use VC-RAD Select wrenches with impact quality sockets. Do not use with extension bars or universal joints.

Do not use in the presence of explosive gases or liquids - fire/explosion hazard

Prevent unintentional starting. Ensure the switch is in the off position before connecting to a power source and/or battery pack, picking up, or carrying the tool. Carrying power tools with your finger on the switch or energizing power tools that have the switch on invites accidents.

Only use VC-RAD Select wrench with 240v or 110v electrical power supply (dependant on model purchased)

To prevent entanglement with rotating parts operators must not wear loose clothing, ties, jewellery etc... Long hair must be tied back.

Always keep hands, fingers and body parts clear of the reaction arm at all times. Trapping in this area can result in serious personal injury.

All Electrical equipment and ancillary products should be inspected for damage and irregularities prior to use. If in doubt **do not use**.

Avoid body contact with earthed (grounded) surfaces. There is an increased risk of electric shock if your body is earthed (grounded).

Do not expose power tools to rain or wet conditions. Water entering a power tool will increase the risk of electric shock.

If operating a power tool in a damp location is unavoidable, use a Ground Fault Circuit Interrupter (GFCI) protected supply. Use of a GFCI reduces the risk of electric shock.

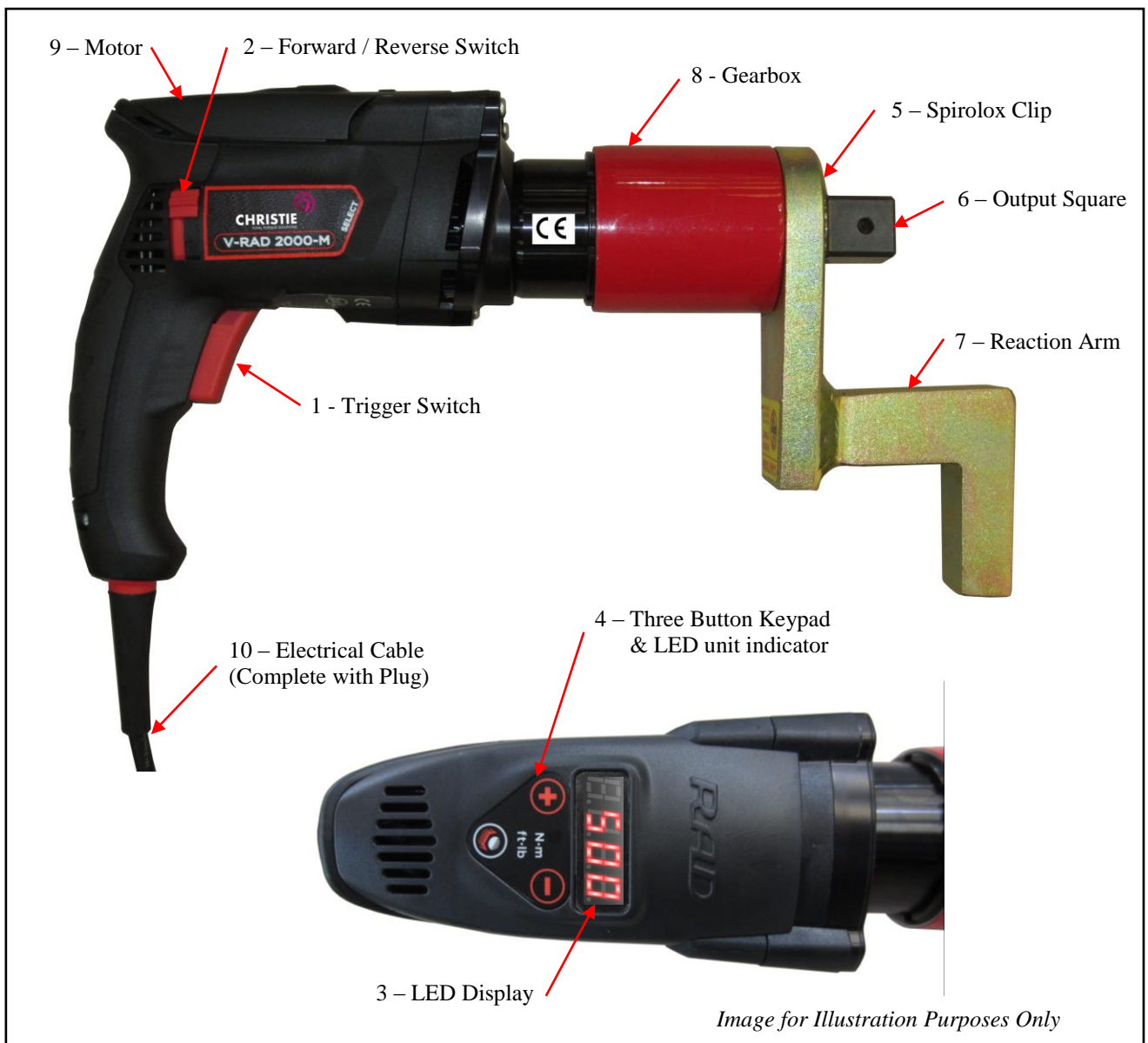
CAUTION: ANY MODIFICATION TO THE EQUIPMENT OR CHANGE OF USE BY ANYONE OTHER THAN W. CHRISTIE WILL INVALIDATE W. CHRISTIE (INDUSTRIAL) LTD KEY RESPONSIBILITIES AS A MANUFACTURER & INVALIDATE WARRANTY, UNLESS PRIOR WRITTEN CONSENT IS RECEIVED FROM W. CHRISTIE (INDUSTRIAL) LTD.

1. ACCESSORIES AVAILABLE

The following accessories are available upon request and can be custom made to suit requirements. Please contact W-Christie for more information:-

- Special Reactions.
- Custom VC-RAD Select Wrench Lifting points.
- Nose Cone Extension.
- Offset Gearbox.
- Impact Quality Sockets.

2. VC-RAD SELECT WRENCH FEATURES



3. TOOL SYSTEM

3.1 Tool Handle:-

The VC-RAD Select is activated with a Trigger Switch. The Forward/Reverse Switch controls the direction of rotation. The 4-digit LED display shows the Target Torque and the various user menus. The keypad is used to set the desired torque and change tool settings.

Upon receiving the VC-RAD Select tool, please check the following:-

1. Check the shipping package condition and report any damage to the carrier that delivered your package.
2. Remove the VC-RAD Select and accessories from the shipping package and ensure that you have all the components listed above.
3. Do not use the VC-RAD Select Tool System if the power cord is cut, frayed, or is of the wrong type, or external damage has been done to the gearbox or tool handle.

3.1.1 Trigger Lock:-

The Trigger Lock is useful when transporting or storing the VC-RAD Select. The Trigger Lock blocks the Trigger Switch, disabling the tool. Enable the Trigger Lock while the VC-RAD is not in use.

To enable the Trigger Lock:

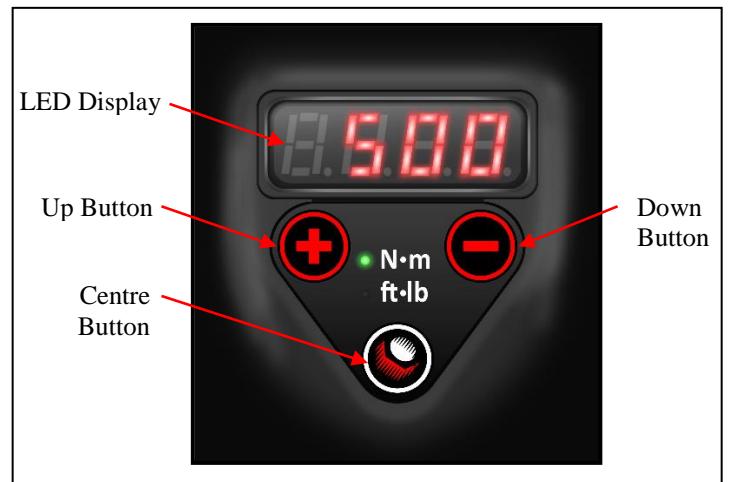
- Slide the Forward/Reverse Switch to the centre position so that the Trigger Switch cannot be pressed.

To disable the Trigger Lock:

- Slide the Forward/Reverse Switch to the forward or the reverse position. The Trigger Switch can be pressed.

3.2 LED Display Interface:-

The VC-RAD Select user interface consists of an LED display and three-button keypad (See Right). The LED display uses four digits to display torque values and the various menus. Use the up and down buttons are used to modify numbers and navigate menus. Use the centre button to enter the Main Menu and set options.



3.3 Power On:-

Before powering on the VC-RAD Select:

1. Ensure that the power cord and tool voltage are correct. Do not attempt to use an incompatible power source with the VC-RAD Select (see Electrical Specifications Section on page 1).
2. Ensure all loose clothing is kept away from the VC-RAD Select Tool.
3. Keep the gearbox, reaction arm, and motor components away from yourself when plugging in the VC-RAD Select.

Turn on the VC-RAD Select by plugging the power cable into the appropriate outlet. The LED display will show the Target Torque once the unit has powered on. The VC-RAD Select will be ready to operate when the torque display is shown. To change the Target Torque and access other user functions, (see Section 4 - Interface and Settings)

4. INTERFACE AND SETTINGS

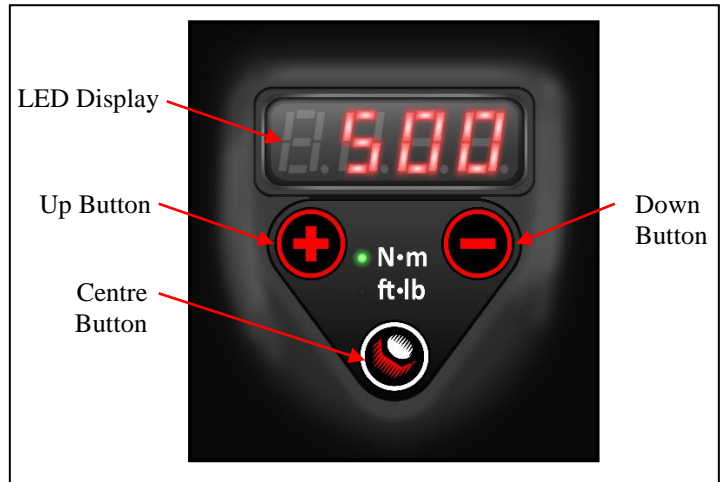
4.1 Changing Torque:-

When the VC-RAD Select is powered on, the LED Display will start in Torque Mode (See Right).

When N·m (metric) units are used, the “N·m” indicator will light on the keypad. When ft·lb (imperial) units are used, the “ft·lb” indicator will light. (Refer to Section 4.2.1 - Change the Torque Units)

To change the torque value:

1. Press and hold either the + or the - button until a digit starts blinking. The - (minus) button starts the left-most digit blinking. If you press and hold the - button again, the selected digit moves to the right. The opposite happens with the + (plus) button. If you hold a button down for a couple seconds or press the centre button, the digit stops blinking.
2. Press the + or - button to change the digits one unit at a time. You can select other digits (see Step 1) to fine-tune the torque setting.
3. Press the centre button or wait five seconds to save the torque. The display will flash, indicating that the value is saved.



Select Mode:

The torque may be selected in discrete levels from 1 to 50 over the calibrated range instead of using torque units. To enable Select Mode, enter the first code from the table below into the Lock menu (see section 4.2.3 - Enter a Lock or Unlock Code). To change the display mode back to Torque with ft·lb or N·m units, enter the second code.

Setting 1 is the minimum calibrated torque, setting 50 is the maximum calibrated torque, and the points in between are evenly spaced over the tool's range. When the tool enters Select Mode, the previously selected torque value is converted into the closest corresponding Select value.

Torque Display Mode	Access Code (enter in Lock menu)
Select Mode	+ - + -
Torque Mode	+ - + +

Note: You can enter the Select and Torque Mode codes in Basic or Calibrate access levels to toggle between the modes. If the Select Mode code is entered while already in Select mode, nothing will change. The same happens with the Torque Mode code.

4.2 Menu Items:-

The menu allows you to change torque units, change LED brightness, enter an unlock code, view the program version, and set up the tool configuration. This section refers to the features available in the Basic unlock mode (see Section 4.3 – Unlock Levels). The menu items are described below.

To enter the Main Menu:

- While in Torque mode, hold the centre button until the LED under the display starts to blink.
- To move to the next item, press the + button. To go to a previous menu item, press the - button.
- To enter a menu to view the submenu or change values, press the Centre button.
- To change values, press and hold either the + or the - button until one digit starts to blink. Number values can be changed by pressing + or -.
- To exit the menu or submenu, hold the Centre button until the LED under the display starts to blink. If an unlock code was entered, the locked or unlock mode will be displayed before the menu exits (see Section 4.3 – Unlock Levels for a list of codes).

4.2.1 Change the Torque Units:-

Press the + or the - button to toggle between *n* (newton-metres) and *f* (foot-pounds) – see right.

To exit the Unit Select menu, press the centre button.

The N·m indicator lights when Newton·metre units are used (See Nm Display Right), and the ft·lb indicator lights when foot-pound units are used (See Ft.lb Display Right).

Note: When the units are changed, the torque setting will be converted into the new units.



Nm Units



Ft.lb Units



Nm Display



Ft.lb Display

4.2.2 Change the LED Brightness:-

The next menu item is “Lite.” The number of lines shown depict how bright the LED Display is (The figures to the right). Use the + and - buttons to change the display brightness.



Lite Menu



LED Brightness

4.2.3 Enter a Lock or Unlock Code:-

1. The “Lock” menu allows you to change the set of features that are available to the user (see Section 4.3 – Unlock Levels). The flashing line indicators on the screen keep track of the number of button presses used to enter a code (See Right).
2. Enter a code using the + and - buttons. The desired code will depend on which features are needed.
3. Press the centre button to accept the code and close the menu. When you exit the main menu, the new Unlock level will scroll across the screen.



Lock Menu



Code Entry – Button Presses

4.2.4 View Temperature:-

The “Heat” menu displays the current internal temperature in degrees Celsius. Note that the tool will shut off if the temperature exceeds 90 °C until it cools down below 80 °C.



4.2.5 Tool Model:-

The Tool Model menu shows which gearbox model is selected. The tool model may only be changed by W. Christie.



4.2.6 Lower Limit:-

The “Lo” menu option displays the lower torque limit of the tool. This option is normally set to 10% of the rated torque and may be increased up to 20% of the rated torque by W. Christie



4.2.7 Upper Limit:-

The “Hi” menu option displays the upper torque limit of the tool. This value can only be set as high as the rated maximum torque, and may be set as low as 80% of the rated torque by W. Christie.



4.2.8 Serial Number:-

The last four digits of the unique stamped serial number are displayed in this menu.



4.2.9 Clock and Calendar:-

The Clock menu flashes the 24-hour time when the menu heading is displayed. You can set the date and time within the menu.



4.2.10 View Program Version:-

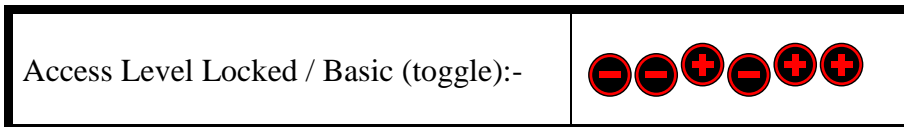
The program menu displays the controller firmware version. When you enter the menu, the program version number will scroll across the screen.



4.3 Unlock Levels:-

The VC-RAD Select has several access levels which change the operation of the tool and the interface. The access levels are described in the table below. The codes may be entered using the Lock Code menu (see Section 4.2.3 – Enter a Lock or Unlock Code). After the code is entered and the menu is closed, the level is displayed on the LED display. If the wrong code is entered, no message will be displayed after exiting.

<i>Access Levels and Functions</i>		
Function	Level	
	Locked	Basic
Change units	✓	✓
Change LED brightness	✓	✓
Enter unlock codes	✓	✓
View tool model	✓	✓
View low / high torque limit	✓	✓
View serial number	✓	✓
View program version	✓	✓
Set date and time	✗	✓
Set torque or select level	✗	✓
Change torque display mode	✗	✓



Note: To change the torque display type to Select mode (torque levels 1 – 50 with no units) or back to Torque mode (torque values with ft·lb or N·m units), see Section 4.1 – Changing Torque. The torque display modes have codes that you must enter in the Lock menu like the access codes above.

5. GENERAL OPERATING INSTRUCTIONS

Prior to operating this equipment the end user must perform a full risk assessment.

CAUTION ONLY QUALIFIED PERSONNEL WITH TRAINING IN THE SAFE OPERATION OF TORQUE TOOLING AND THE VC-RAD TOOL SYSTEM SHOULD OPERATE THIS TOOL. REFER TO THE GENERAL SAFETY SECTION FOR MORE INFORMATION.

The VC-RAD operates in Torque Cycles. The Torque Cycle passes when the Actual Torque reaches the Target Torque, and the Cycle fails if it is interrupted before the Actual Torque reaches the Target Torque. This section will cover how to use the Reaction Arm needed for VC-RAD operation and how to conduct a Torque Cycle.

5.1 Reaction Arm:-

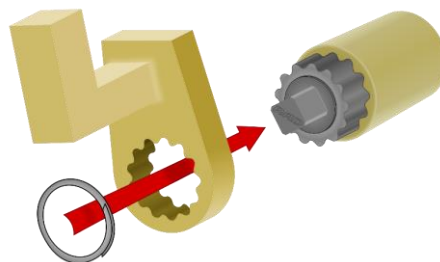
WARNING ALWAYS KEEP BODY PARTS CLEAR OF THE REACTION ARM WHEN THE VC-RAD SELECT TOOL SYSTEM IS IN USE. SERIOUS INJURY COULD OCCUR.

CAUTION ENSURE THAT THE REACTION ARM HAS A SOLID CONTACT POINT BEFORE OPERATING THE V-RAD SELECT TOOL SYSTEM. IMPROPER REACTION WILL VOID WARRANTY AND CAN CAUSE PREMATURE TOOL FAILURE.

Please contact W. Christie for information on special reaction arms.

Installing the reaction arm

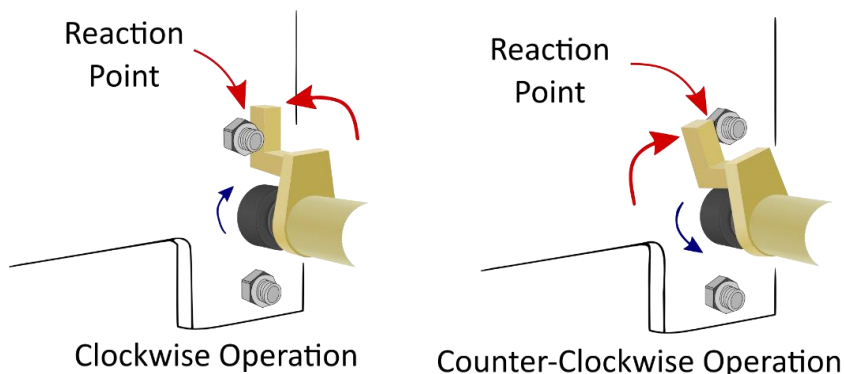
Slide the reaction arm on to the spline or serpentine fitting and secure the spirolox ring to hold the reaction arm in place.



Reaction Points

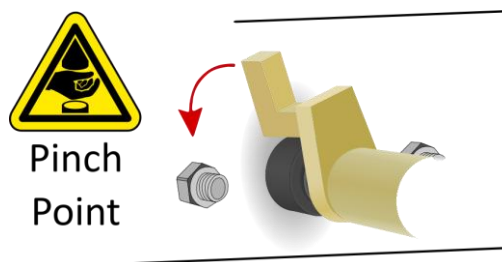
Make sure that the Reaction Arm is in contact with a solid Reaction Point before you operate the tool.

When the tool is in operation, the Reaction Arm rotates in the opposite direction to the Output Square Drive and must be allowed to rest squarely against a solid object or surface adjacent to the bolt to be tightened.



Personal Safety

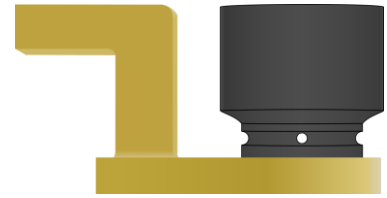
CAUTION KEEP YOUR HANDS CLEAR OF THE REACTION ARM AND JOINT WHEN THE TOOL IS IN OPERATION



Reaction Arm Height

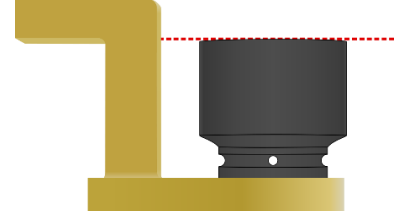
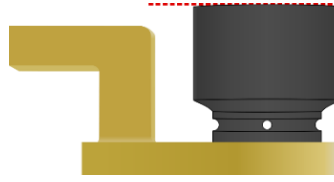
Ensure that the height of the socket is even with the height of the Reaction Arm

CORRECT: The Reaction Arm and socket are even.



The height of the socket cannot be shorter or longer than the height of the Reaction Arm.

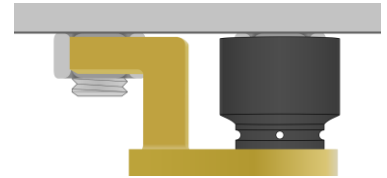
INCORRECT: The leg of the Reaction Arm is too short in the left image and too long in the right image.



Reaction Arm Foot

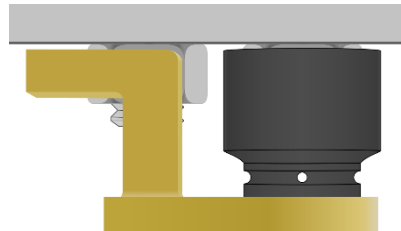
Ensure that the foot of the Reaction Arm aligns with the reaction point.

CORRECT: The foot of the Reaction Arm aligns with the reaction point.



The length of the foot cannot be shorter or longer than the reaction point.

INCORRECT: The reaction point is too close in the left image and too far in the right image. Do not react against the heel of the reaction arm.



5.2 Torque Operation:-

To operate the tool in a torque cycle:-

1. Ensure the tool is in Torque mode (for example see right).
2. Ensure the LED Display is showing the correct units (see Section 4.2.1 – Change the Torque Units).
3. Change the torque value as desired (see Section 4.1 – Changing Torque). Allow the display to flash after changing the torque, indicating that the torque value is saved and set.
4. The VC-RAD Select is ready to torque at the displayed setting. Place the VC-RAD on the joint system. Ensure the Forward/Reverse Switch is in the Forward position.
5. Press and hold the On/Off Trigger. (To stop the Torque Cycle at any time, release the On/Off Trigger.)
6. When the VC-RAD reaches the selected Torque, the tool will stop turning. Release the On/Off Trigger.



6. MAINTENANCE AND RECALIBRATION

To prevent premature failure and ensure confidence in torque supply, it is recommended that this equipment is serviced and calibrated at least on an annual basis, by W. Christie (Ind) LTD.

There are no user serviceable parts. If any failures occur then the wrench should be returned to W. Christie (Ind) LTD for evaluation.

7. WARRANTY

This equipment has a 12 month warranty.

This warranty excludes wear parts such as Square Drives and bearings.

The warranty does not include misuse.

For any further information please contact W. Christie (Industrial) LTD



E.C. DECLARATION OF CONFORMITY

MODELS COVERED: VC-RAD 14 Select, VC-RAD 20 Select,
VC-RAD 40 Select

DESCRIPTION: Electrical Torque Wrench

We hereby declare that the following machinery complies with the essential health and safety requirements of the European Machinery Directive 2006/42/EC published on the 9th June 2006

W Christie (Industrial) Ltd, Meadowbank Road, Rotherham S61 2NF, United Kingdom.

This machinery has been designed and manufactured in accordance with the following transposed harmonised European Standard:-

BS EN ISO 12100-2:2003 Safety of Machinery – Technical Principles

2006/42/EC Machinery Directive

ISO 9001:2015 Quality Management System

EN ISO 12100:2010 Risk Assessment + Risk Reduction

BS EN 60204-1:2006+A1:2009 Safety of Machinery – Electrical Equipment of Machines

2004/108/EC EMC Directive

BS EN 60745-1:2006 Hand-held Motor Operated Electric Tools – Safety – General Requirements

SIGNED: 

NAME: R. G. Askham

POSITION: Senior Applications Engineer

On behalf of W Christie (Industrial) Ltd



Site Assessment



Tool Maintenance & Calibration



Bespoke Engineering



Sockets & Ancillaries



Training



Hand Held Torque Tools



Offset Gearboxes



Hydraulic Torque Tools



In-house CNC Facilities



Storage Trolleys & Boxes

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