



## TABLE OF CONTENTS

<b>TABLE OF CONTENTS .....</b>	<b>1</b>
<b>MANUAL REVISION HISTORY .....</b>	<b>2</b>
<b>IMPORTANT SAFETY NOTICE.....</b>	<b>3</b>
<b>1.0 General Information .....</b>	<b>5</b>
1.1 System Components .....	5
1.2 Specifications .....	5
1.2.1 Torque Ranges.....	5
1.2.2 Battery Specifications.....	6
1.2.3 Environmental Specifications .....	6
1.2.4 Cycle of Operation .....	6
<b>2.0 Tool System .....</b>	<b>6</b>
2.1 Tool Handle .....	6
2.1.1 Trigger Lock.....	7
2.2 LED Display Interface.....	7
2.3 RAD Li-Ion Battery Pack.....	8
2.3.1 Insert/Remove the RAD Li-Ion Battery Pack .....	8
2.3.2 Check RAD Battery Charge .....	8
2.4 RAD Battery Charger.....	8
2.4.1 Charging the RAD Li-Ion Battery Pack .....	9
2.4.2 Charging Errors .....	9
<b>3.0 LED Display Operation .....</b>	<b>9</b>
3.1 Torque Select Mode .....	10
3.1.1 Setting Torque .....	10
3.1.2 Unit Select Menu .....	10
3.1.3 Program and Gearbox Information .....	11
3.2 Lock Mode .....	11
<b>4.0 Calibration .....</b>	<b>12</b>
4.1 Calibration Menu Navigation .....	12
4.2 Tool Calibration .....	12
4.2.1 Table of Calibration Menus .....	12
4.2.2 Table of Tool Models.....	12
4.2.3 Calibration Procedure.....	13
<b>5.0 General Operating Instructions .....</b>	<b>14</b>
5.1 Reaction Arm .....	14
5.1.1 Installing the Reaction Arm .....	14
5.1.2 Reaction Arm Height.....	15
5.1.3 Reaction Arm Foot.....	16
5.1.4 Reaction Points .....	16
5.2 Torque Operation .....	17
<b>6.0 Troubleshooting.....</b>	<b>17</b>
<b>7.0 Contact Us .....</b>	<b>18</b>



## MANUAL REVISION HISTORY

Revision 2014.07.03:

- Initial Manual Release

Revision 2014.12.17:

- Updated Hardware – Handle

Revision 2015.11.03:

- B-RAD Select Upgrade

Revision 2016.02.12:

- Update Firmware Release 2.07.02

Revision 2016.02.25:

- Update Firmware Release 2.08.01
- Added 3000-2/4000-2 Tool Model



## IMPORTANT SAFETY NOTICE

### WARNING!



**READ ALL SAFETY WARNINGS AND ALL INSTRUCTIONS. FAILURE TO FOLLOW THE WARNINGS AND INSTRUCTIONS MAY RESULT IN ELECTRIC SHOCK, FIRE, AND/OR SERIOUS INJURY.**

**RAD TOOLS ARE SAFE AND RELIABLE. NOT FOLLOWING PRECAUTIONS AND INSTRUCTIONS OUTLINED HERE CAN RESULT IN DAMAGE TO THE TOOL, AND INJURY TO THE OPERATOR AND FELLOW WORKERS.**

**NEW WORLD TECHNOLOGIES INCORPORATED IS NOT RESPONSIBLE FOR ANY SUCH INJURY.**

### B-RAD Select Tool System Safety

The intended use of the B-RAD Tool System is for commercial and industrial bolting applications.

Do not operate the B-RAD Tool System before reading and understanding this user manual and noting the Safety Notices displayed on the B-RAD Select Tool System and throughout this manual.

Only qualified personnel with training in the safe operation of torque tooling and the B-RAD Tool System should attempt the installation, operation and diagnosis of the B-RAD Tool System.

The B-RAD Tool System is connected to high-current power and consists of external rotating parts. Improper training and use can cause serious or fatal injury.

Do not disassemble or attempt to repair the B-RAD Tool System; doing so will void warranty. If breakdown, malfunction or damage occurs and the B-RAD Tool System fails to operate correctly, contact New World Technologies Inc. Technical Support (refer to Section 7.0 – Contact Us).

The B-RAD Tool System should only be used if environmental storage and operation specifications have been met. Refer to Section 1.2.3 – Environmental Specifications.

Do not operate the B-RAD Tool System in explosive atmospheres, including, but not limited to, the presence of flammable liquids, gases or dust. The B-RAD Tool System creates sparks which could ignite these substances.

Do not expose the B-RAD Tool System to wet conditions. Water in the B-RAD Tool System will cause damage to the tool and increase the risk of electric shock.

After long durations of use, the B-RAD Tool System will become hot. It is recommended to use the tool in short intervals and allow for cooling between uses to prevent injury to the operator or damage to the B-RAD Tool System.

While operating the B-RAD Tool System, always wear safety goggles and keep all body parts clear of moving parts and the reaction arm contact point.

Never exceed the Maximum Torque of the B-RAD Tool System. Failure to comply will result in void warranty.

The B-RAD Tool System has been calibrated by a qualified Calibration Technician; calibration must be done by a qualified Calibration Technician. Improper calibration can cause damage to the tool and joint.



## **RAD Li-Ion Battery Pack Safety**

Only use the RAD Li-Ion Battery Pack with the B-RAD Tool System. The use of other batteries with the B-RAD Tool System will cause damage to the tool.

The RAD Li-Ion Battery Pack should only be charged on the RAD Battery Charger. If an incompatible charger is used, damage to the RAD Battery will occur.

Keep the RAD Li-Ion Battery Pack away from any metal objects. If the battery terminals are connected by a metal object, the battery will short and will cause damage to the battery and injury to the operator.

Do not expose the RAD Li-Ion Battery Pack to wet conditions. This will cause damage to the RAD Battery and increase the risk of electric shock.

Do not use faulty or deformed RAD Batteries. Do not attempt to open the RAD Battery. Do not short circuit the RAD Battery. Failure to comply will cause damage to the RAD Battery and injury to the operator.

If liquid is ejected from the RAD Battery, avoid contact. If contact with skin occurs, immediately flush with water. If contact with eyes occurs, immediately flush with water and seek medical aid. Liquid from the RAD Battery may cause irritation and/or burns.

RAD Li-Ion Battery Packs cannot be disposed of with regular waste. Return RAD Batteries to your RAD Distributor.



# 1.0 General Information

## 1.1 System Components

The B-RAD Select Tool System is shipped from New World Technologies Inc. in a case with the following parts:

- B-RAD Select Tool (Figure 1.1-1)
- Two RAD Li-Ion Battery Packs (Figure 1.1-2)
- RAD Battery Charger (Figure 1.1-3)
- Standard Reaction Arm and Snap Ring (Figure 1.1-4)
- Calibration Certificate
- User Manual



Figure 1.1-1: B-RAD Select



Figure 1.1-2: RAD Li-Ion Battery Pack



Figure 1.1-3: RAD Battery Charger



Figure 1.1-4: Standard Reaction Arm

**Note:** Some distributors may ship additional parts along with the B-RAD Select Tool System.

## 1.2 Specifications

### 1.2.1 Torque Ranges

The following table outlines the torque ranges, in Foot-Pounds and Newton-Meters, of each B-RAD Select Tool System:

Imperial		Metric		
B-RAD Select 500	125-500 FtLb	or	B-RAD Select 700	170-700 Nm
B-RAD Select 500-2		B-RAD Select 700-2		
B-RAD Select 1000	200-1000 FtLb	or	B-RAD Select 1400	300-1400 Nm
B-RAD Select 1000-2		B-RAD Select 1400-2		
B-RAD Select 1500	300-1500 FtLb	or	B-RAD Select 2000	400-2000 Nm
B-RAD Select 1500-2		B-RAD Select 2000-2		
B-RAD Select 3000	600-3000 FtLb	or	B-RAD Select 4000	800-4000 Nm
B-RAD Select 3000-2		B-RAD Select 4000-2		

Table 1.2.1: Torque Ranges



### 1.2.2 Battery Specifications

Ensure that all Battery Specifications are followed when utilizing the B-RAD Tool System.

<b>Battery Output</b>		
Voltage	18 VDC	
Current	30 A	
<b>Charge Time</b>	60 minutes	
<b>Charger Voltage</b>		
Input	115 VAC	
Output	12 – 18 VDC	
<b>Charger Output Current</b>	2.5 A	

Table 1.2.2: Battery Specifications

### 1.2.3 Environmental Specifications

#### CAUTION!

Only operate the B-RAD Tool System if the following environmental storage and operation specifications have been met.

<b>Temperature Ranges</b>	<b>°C</b>	<b>°F</b>
Operating Temperature	0 – 35	32 – 95
Charging Temperature	0 – 50	32 – 122
Storage Temperature	-25 – 70	-13 – 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	

Table 1.2.3: Environmental Specifications

### 1.2.4 Cycle of Operation

A Cycle of Operation or a Tool Cycle as used in this manual is defined as:

- 5 seconds forward
- 10 seconds rest and switch to reverse mode
- 5 seconds reverse mode
- 20 seconds rest and switch to forward mode

**Note:** An actual Torque Cycle may vary from the general definition above.

## 2.0 Tool System

The following sections give a visual and functional description of the Tool Handle, LED Display Interface, RAD Li-Ion Battery Pack and RAD Battery Charger.

### 2.1 Tool Handle

The B-RAD Select (Figure 2.1-1) is activated with a Trigger Switch. The Forward/Reverse Switch controls the direction of rotation. Torque values and tool information are displayed on the 4-digit LED display. Two buttons are used to enter the desired torque setting. The RAD Li-Ion Battery Pack is attached to the bottom of the Tool Handle.

1. Trigger Switch – tool activation
2. Forward/Reverse Switch – controls direction of rotation
3. LED Display and Up/Down Button Module
4. RAD Li-Ion Battery Pack – refer to Section 2.3 – RAD Li-Ion Battery Pack
5. Battery Release Button – refer to Section 2.3.1 – Insert/Remove the RAD Li-Ion Battery Pack



Figure 2.1-1: B-RAD Select and LED Display

### 2.1.1 Trigger Lock

The Trigger Lock is useful while transporting or storing the B-RAD. The Trigger Lock disables the use of the On/Off Trigger, therefore disabling the tool. It is suggested that while the B-RAD is not in use, the Trigger Lock should be enabled.

To enable the Trigger Lock:

- Slide the Forward/Reverse Switch to the Centre Position (neither fully to the right nor fully to the left).  
**Note:** The On/Off Trigger cannot be depressed.

To disable the Trigger Lock:

- Slide the Forward/Reverse Switch to the Forward Position or the Reverse Position.  
**Note:** The On/Off Trigger can be depressed.

### 2.2 LED Display Interface

The LED Display and Up/Down Button Interface is the user control module for the B-RAD Select Tool System (See Figure 2.2-1). The LED Display has 4 numeric digits, used to display torque values in Torque Select mode and the calibration menus in Calibration mode. The 2 Up/Down navigation buttons are used to increment and decrement numeric values, as well as enter and navigate the various menu systems in the module. The LED Display will light a small indicator LED near each button to confirm that a button is being pushed or held down.



Figure 2.2-1: LED Display



## 2.3 RAD Li-Ion Battery Pack

### CAUTION!

Only use the RAD Li-Ion Battery Pack with the B-RAD Tool System. Using third-party batteries may damage the B-RAD Tool System.

### CAUTION!

Keep the RAD Li-Ion Battery Pack away from any metal objects. If the battery terminals are connected by a metal object, the battery will short and cause damage to the battery and injury to the operator.

The RAD Li-Ion Battery Pack supplies power to the tool; for the B-RAD to perform best, ensure the RAD Battery is fully charged and in good condition before use. In optimal conditions, the RAD Battery should be capable of approximately 100 Torque Cycles at 50% of the Maximum Torque on a joint with a hardness of approximately 10 degrees.

**Note:** The application torque, joint hardness, battery condition, age and operating temperature will affect the actual number of Torque Cycles per charge.

### 2.3.1 Insert/Remove the RAD Li-Ion Battery Pack

To insert the RAD Battery:

1. Ensure the On/Off Trigger is in the Off Position (not depressed).
2. Align the RAD Battery with the bottom of the Tool Handle.
3. Slide the RAD Battery into place until it is fully seated.  
**Note:** A click will confirm that the RAD Battery is locked in place.
4. Check that the RAD Battery is locked in place by trying to slide it out of place.

To remove the RAD Battery:

1. Press and hold the Battery Release Button.
2. Slide the RAD Battery away from the Tool Handle.

### 2.3.2 Check RAD Battery Charge

To check the RAD Battery Charge:

1. Press the "Charge" button on the RAD Battery (Figure 2.3.2-1).  
**Result:** The Red or Green Bars will light up. If all the Bars are illuminated, the Battery is fully charged. If only one of the Bars are illuminated, the RAD Battery is discharged and needs charging (refer to Section 2.4.1 – Charging the RAD Li-Ion Battery Pack).

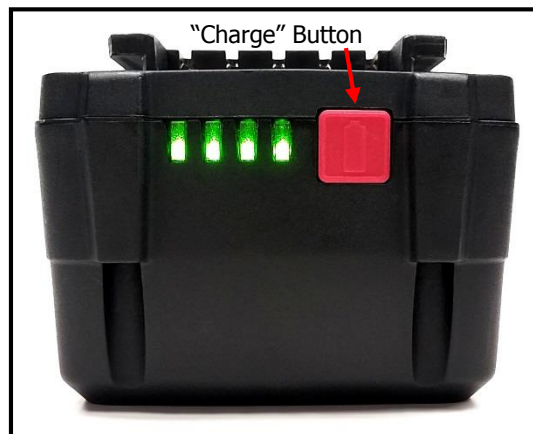


Figure 2.3.2-1: RAD Li-Ion Battery Pack

## 2.4 RAD Battery Charger

### CAUTION!

**The RAD Li-Ion Battery Pack should only be charged on the RAD Battery Charger.** If an incompatible charger is used, damage to the RAD Battery will occur.

The Charging Status Display (Figure 2.4-1) on the RAD Battery Charger is used to notify the operator when the RAD Battery is charging, when the charge is complete and if there is an error.



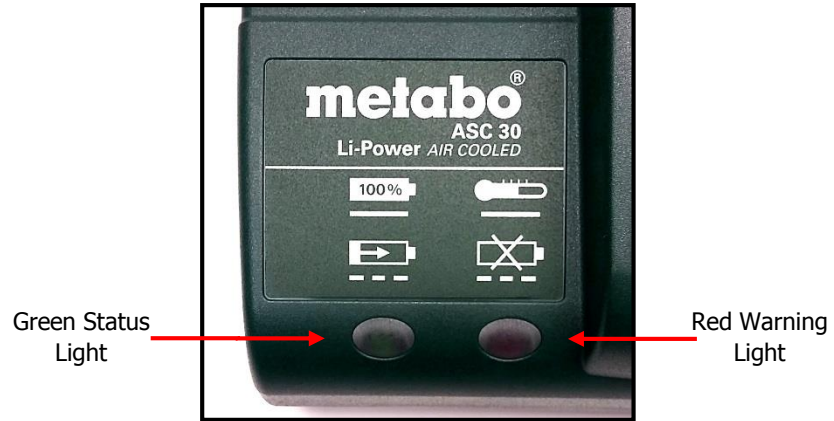


Figure 2.4-1: Charging Status Display

### 2.4.1 Charging the RAD Li-Ion Battery Pack

**Note:** The temperature range for charging is 0°C to 50°C (32°F to 122°F).

To charge the RAD Battery:

1. Plug the RAD Battery Charger into the wall outlet.  
**Result:** The Red Warning Light will turn on for one second and then the Green Status Light will turn on for one second.
2. Align the RAD Battery with the RAD Battery Charger.
3. Slide the RAD Battery into place.  
**Result:** The Green Status Light will flash while the RAD Battery is charging.

When the RAD Battery has been fully charged, the Green Status Light will stop flashing and stay illuminated. Until the RAD Battery is removed from the RAD Charger, the Charger will switch to conservation mode which will maintain the battery charge at maximum capacity.

To remove the RAD Battery:

1. Slide the RAD Battery away from the RAD Charger.
2. Check that the RAD Battery is fully charged (refer to Section 2.3.2 – Check RAD Battery Charge).

### 2.4.2 Charging Errors

The Red Warning Light is on:

The RAD Battery is not charging because its temperature is not within the required temperature range for charging. When the RAD Battery's temperature moves within the required range for charging, the Red Warning Light will turn off and charging will commence.

The Red Warning Light is flashing:

The RAD Battery may be placed incorrectly on the RAD Battery Charger. Remove the RAD Battery and replace it correctly on the RAD Battery Charger. If the Red Warning Light continues to flash, the RAD Battery is defective; remove the RAD Battery immediately.

If these problems continue, contact New World Technologies Inc. Technical Support (refer to Section 7.0 – Contact Us) or your RAD Distributor.

## 3.0 LED Display Operation

### CAUTION!

The LED Display and Button Module is susceptible to mechanical shock and any excessive force exerted on the module may result in damage.

### CAUTION!

The LED Display can be damaged by moisture or water and high temperatures. Avoid such conditions and gently wipe clean or let dry before use.

The LED Display and Up/Down Button Module is used to enter torque values, select units of measurement, and calibrate the tool, and view basic tool information. This section describes the functions and use of each setting within the Interface.



### 3.1 Torque Select Mode

#### CAUTION!

The B-RAD Select must be calibrated before use. If the LED Display shows anything other than the normal Torque Select screen, the Unit Select Menu, or the Calibration Menus, contact New World Technologies Inc. Technical Support (refer to Section 7.0 – Contact Us) or your RAD Distributor.

When the RAD Li-Ion Battery is first attached to the B-RAD Select handle, the LED Display Module will remain off until the Trigger Switch is depressed. The LED Display will start in Torque Select Mode when the Trigger Switch is depressed.

**Note:** If the tool has just been calibrated, the LED Display will show the tool's rated minimum torque.

**Note:** If the tool has not been calibrated, the LED Display will display the minimum of the Default gearbox, which is 250 FtLb.

When Nm (metric) units are used, the LED Display will light a small LED dot in the bottom left corner of the display (Refer to Section 3.1.2 – Unit Select Menu).

#### 3.1.1 Setting Torque

To change the torque value displayed on the LED Display:

1. Press either the Up or the Down button to increment or decrement the number.
2. The torque value will increment/decrement in multiples of 10 units when a button is pressed briefly or repeatedly.
3. If the LED Display shows a torque value as a multiple of 100 (for example 400 FtLb), the Display will increment or decrement the number by 100 as long as a button is pushed and held down.
4. If the Display shows a torque value between multiples of 100 units (for example 430 FtLb), the Display will change by 10 units when a button is pressed and held down, until the number again reaches a multiple of 100.
5. The LED Display will automatically save the selected torque value after 5 seconds, enabling the user to remove and replace the battery without losing the selected torque value.

#### 3.1.2 Unit Select Menu

The display units can be changed at any time using the Unit Select menu.

To enter the menu:

1. Press and hold both buttons on the Display Module until the Display flashes a pattern. The Display will read "u- F" or "u- n" as shown in Figures 3.1.2-1 and 3.1.2-2 below.



Figure 3.1.2-1: Units – FtLb



Figure 3.1.2-2: Units – Nm

2. The units can be changed by pressing the Up or Down button to toggle between "F" (FtLb) and "n" (Nm) units as desired.

To exit the Unit Select menu:

1. Press and hold both buttons on the Module until the Display flashes, then release the buttons.
2. The LED Display will light a small LED dot in the bottom left corner of the display when Nm units are used (Figure 3.1.2-3), and will not light the dot when FtLb units are used (Figure 3.1.2-4).



Figure 3.1.2-3: Nm Display



Figure 3.1.2-4: FtLb Display

**Note:** When the units are changed, the LED Display will convert the previous displayed torque setting into the nearest torque setting in the desired units.

### 3.1.3 Viewing Program and Gearbox Information

The Program and Gearbox menus are useful to view tool information. The program version number and the currently selected tool model can be reviewed using these functions.

To view the tool information:

1. Navigate into the Unit Select menu (refer to Section 3.1.2 – Unit Select Menu).
2. Press and hold the Up (left) button until the indicator LED starts blinking.
3. Press the Down (right) button, then release both buttons.
4. The Program menu is displayed, scrolling the firmware version number across the display.
5. Repeat steps 2 and 3 to view the Gearbox menu.
6. The gearbox number, model, and units will scroll across the display.
7. To exit the menu at any time, press and hold both buttons until the display starts blinking.

### 3.2 Lock Mode

The B-RAD Select has a built-in Lock function to prevent the user from changing preset torque values or changing torque units. The set torque value will remain saved on the LED Display even if the RAD Battery is removed.

The B-RAD requires a combination code to enter or exit Lock Mode. Contact your RAD Distributor or New World Technologies Inc. See Section 7.0 for contact information.

When the B-RAD Select Tool System is in Lock Mode, the torque value cannot be changed using the Up or Down buttons. The B-RAD must be first unlocked, the torque setting changed to the desired value, then locked again to prevent the torque setting from being changed.

When the B-RAD is put into Lock Mode, the LED Display will scroll the word "Lock" until the buttons are released. In Lock Mode, the LED Display will light 2 small dots in the bottom left-hand side of the display. When the B-RAD is unlocked with the code, the LED Display will scroll the word "unlock" until the buttons are released.



## 4.0 Calibration

### WARNING!

Only qualified personnel with training in the safe operation of torque tooling and the B-RAD Select Tool System should operate this tool.

### CAUTION!

Do not calibrate at Target Torques that result in exceeding the B-RAD Select Tool System’s Torque Range. Severe tool damage will occur.

### CAUTION!

Calibration should only be done by a Qualified Calibration Technician. Improper use of the calibration function will result in tool damage.

This function allows the operator to access the calibration values for the B-RAD. These values should only be modified by a Qualified Calibration Technician and using a Calibration Stand.

The B-RAD requires a combination code to enter Calibration Mode. Contact your RAD Distributor or New World Technologies Inc. See Section 7.0 – Contact Us.

### 4.1 Calibration Menu Navigation

The 2-button navigation in Calibration Mode functions differently than in Torque Select Mode.

To change values within each menu:

- Press the Up or Down button briefly.
- When changing torque values, the displayed value will change initially by 1 unit per button press.
- After a torque value of a multiple of 10 has been reached, the displayed value will change by 10 units per button press as long as a button is being pressed repeatedly.
- After about ¾ of a second with no button presses, the torque value will again be changed by 1 unit per button press.

**Note:** Pressing and holding buttons to change values in Calibration Mode is not supported.

To change which menu appears on the Display:

1. Press and hold the Up button until the corresponding indicator LED begins flashing.
2. While the LED is flashing, press the Down button briefly, then release both buttons.
3. The title of any Calibration menu can be displayed by pressing and holding the Up button without pressing the Down button to navigate to the next menu.
4. To quickly navigate through menus, keep the Up button depressed until the LED flashes, and press the Down button as many times as needed.

### 4.2 Tool Calibration

#### 4.2.1 Table of Calibration Menus

The order and function of the menus in Calibration Mode are outlined in Table 4.2.1 below.

Menu Title	Description of Function
G# (G00, G01, ... G10)	Gearbox Select – Sets tool model, sets maximum and minimum torque. Each model is shown in Table 4.2.2 below.
CPLO	Calibration Point Low – Sets the minimum energy limit for Calibration, shown in Percentage of Output Energy (default is 14.6%).
CPHI	Calibration Point High – Sets the maximum energy limit for Calibration, shown in Percentage of Output Energy (default is 80.1%).
CAL1, CAL2, CAL3, CAL4, CAL5, CAL6	Tool Calibration Points – Six points to calibrate the tool’s range, shown in torque at 3, 20, 40, 60, 80, and 99% of energy output.
SAVE	Save Calibration – Calibration Mode must be exited from this menu to save the calibration settings.

Table 4.2.1: Calibration Menu Titles and Functions

#### 4.2.2 Table of Tool Models

The first Menu in Calibration Mode is the Gearbox Select Menu. Table 4.2.2 shows which Gearbox setting in the Menu corresponds to the desired tool model.



Gearbox Designator	Tool Model
G00	<i>Default: 250-500 FtLb</i>
G01	125 – 500 FtLb
G02	170 – 700 Nm
G03	200 – 1000 FtLb
G04	300 – 1400 Nm
G05	300 – 1500 FtLb
G06	400 – 2000 Nm
G07	<i>Custom</i>
G08	<i>Custom</i>
G09	600 – 3000 FtLb
G10	800 – 4000 Nm

Table 4.2.2: Calibration Mode Gearbox Select Values

**Note:** Odd-numbered gearbox models are FtLb units; Even-numbered gearbox models are Nm units.

### 4.2.3 Calibration Procedure

The recommended steps for calibrating the B-RAD Select Tool System are as follows:

1. Install a fresh battery into the B-RAD handle (See Section 2.3.1 – Insert/Remove the RAD Li-Ion Battery Pack).
2. Enter Calibration Mode using the button combination code (contact your RAD Distributor or New World Technologies Inc. See Section 7.0 – Contact Us).
3. Select the correct Tool Model using Table 4.2.2-1 above.
4. Navigate to the next Calibration menu (See Section 4.1 – Calibration Menu Navigation). "CPLO" will be displayed while the Up button is depressed.
5. Before any calibration points are set, it is recommended that the tool is warmed up near the tool's maximum setting. Navigate forward again to the next Calibration Menu. "CPHI" will be displayed while the buttons are being pressed.

**CAUTION!**  
**CAUTION!**

DO NOT operate the tool above 80.1% before testing lower values of around 75%.

DO NOT operate the tool above 95.7%, as tool and/or joint damage may occur.

6. Set the level displayed on the screen to a value lower than 80%, then take a pull on the calibration stand.
7. If the output torque is much lower than the rated maximum of the tool, gradually increase the tool percentage until the torque readings nearly match the maximum torque of the tool. Do not go beyond the maximum of the tool at this point.
8. Do approximately 10 pulls in "CPHI" mode to warm up the tool.
9. Cycle through the Calibration Mode menus to find the "CPLO" menu.
10. Take a pull at the default setting.
11. Gradually increase or decrease the percentage setting until the tool pulls approximately 50 units *below* the tool's rated minimum. For example, a 1000 FtLb tool has a minimum of 200 FtLbs, so the torque to be reached would be 150 FtLbs. See Table 4.2.2 for a full list of B-RAD Tool ranges.
12. Navigate to the next menu ("CPHI"). The previous value will be saved in the Module's memory.

**CAUTION!**

DO NOT operate the B-RAD Select Tool System beyond 50 units above the rated maximum torque. Overtorquing the tool will cause severe tool damage.

13. Gradually increase the previous value and take pulls until the output torque reaches approximately 50 units *above* the tool's rated maximum torque.
14. Navigate to the next menu in Calibration Mode. The display will show "CAL 1."
15. The display will show a torque value approximately 3% above the minimum set by the level selected in step 11 above.
16. Take one pull at "CAL 1" and record the measured torque value.
17. Enter the torque value by incrementing/decrementing the default torque value (See Section 4.1 – Calibration Menu Navigation).
18. Navigate to the next Calibration menu "CAL 2." Take a pull and record the measured value, as before.
19. Enter the value into the module.
20. Navigate through the Menus and repeat Steps 18-19 for CAL 3, 4, 5, and 6.



21. Finally, navigate to the last menu, "SAVE," then press and hold both buttons until the Display scrolls the message "Saved." This exits Calibration Mode and saves the Calibration Data.

If the B-RAD tool is calibrated in the FtLb version of a gearbox (for example, 1000 FtLb), the calibration values for the equivalent Nm gearbox (for this example, the 1400 Nm gearbox) will be saved in the calibration value table. The same applies if the Nm gearbox is calibrated; the FtLb gearbox will also be saved. The calibration values for other gearboxes will not be saved unless the B-RAD tool is calibrated again for a different tool model.

## 5.0 General Operating Instructions

### WARNING!

Only qualified personnel with training in the safe operation of torque tooling and the B-RAD Tool System should operate this tool. Refer to the Important Safety Notice for more information.

The B-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 instructs the operator in the use of the Reaction Arm needed for B-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 B-RAD Tool System is in use. Serious injury may occur.**

#### CAUTION!

Ensure the Reaction Arm has a solid contact point before operating the B-RAD Tool System.

#### 5.1.1 Installing the Reaction Arm

Ensure the Reaction Arm and Snap Ring are installed securely to hold the Reaction Arm in place. Make sure the Reaction Arm is in contact with a solid Reaction Point before you operate the tool. Keep your body parts clear of the Reaction Arm when the tool is in operation.

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 (Figure 5.1.1-1).

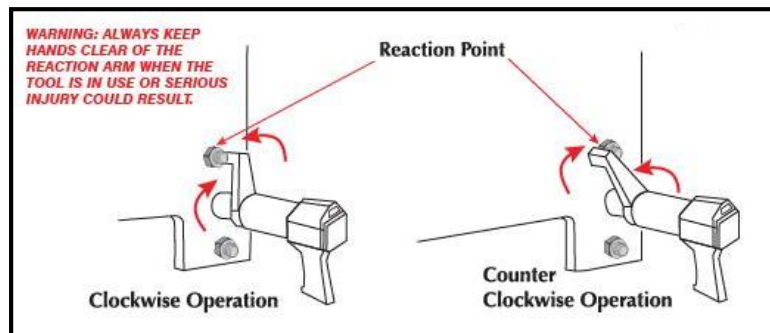


Figure 5.1.1-1 – Reaction Arm Rotation

#### CAUTION!

Keep your hand and body parts clear of the Reaction Arm and barrel when the tool is in operation.



Figure 5.1.1-2: Incorrect Placement of Hand/Body Parts During Operation

### 5.1.2 Reaction Arm Height

Ensure the height of the socket is even with the height of the Reaction Arm as seen below in Figure 5.1.2-1. The height of the socket cannot be shorter or higher than the height of the Reaction Arm as seen below in Figure 5.1.2-2.

**CORRECT:** The Reaction Arm and socket are even height.

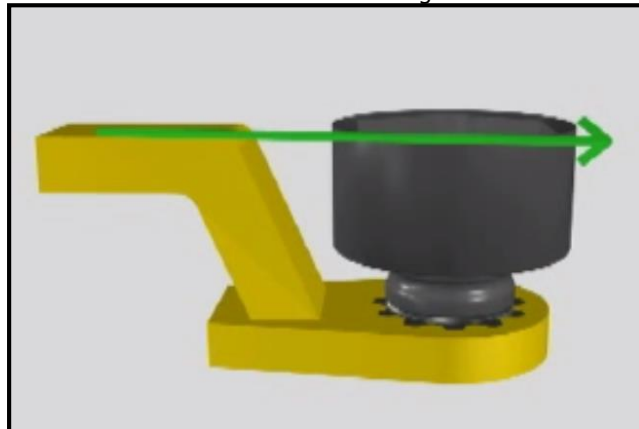


Figure 5.1.2-1: Correct Height

**INCORRECT:** The leg of the Reaction Arm is too short on the left side, and too long on the right side.



Figure 5.1.2-2: Incorrect Height

IMPROPER REACTION WILL VOID WARRANTY AND CAN CAUSE PREMATURE TOOL FAILURE.



### 5.1.3 Reaction Arm Foot

Ensure the foot of the Reaction Arm aligns with the length of the nut as seen in Figure 5.1.3-1. The length of the foot cannot be shorter or longer than the nut as seen in Figure 5.1.3-2.

**CORRECT:** The foot of the Reaction Arm aligns with the length of the nut.

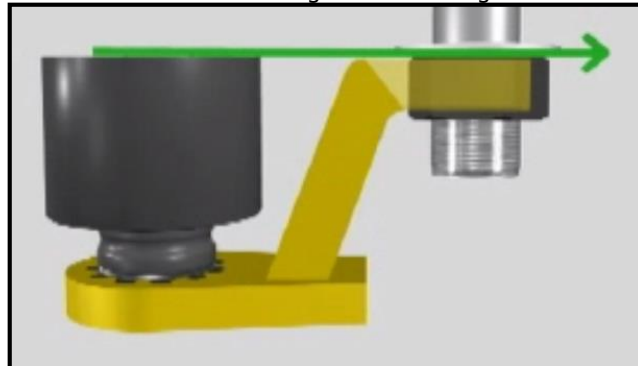


Figure 5.1.3-1: Correct Length

**INCORRECT:** The foot of the Reaction Arm is too short on the left side, and too long on the right side.

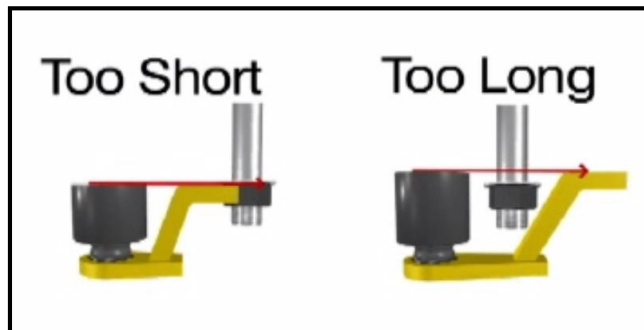


Figure 5.1.3-2: Incorrect Length

Please contact New World Technologies Inc. or your local RAD Authorized Distributor for custom Reaction Arms.

### 5.1.4 Reaction Points

Ensure the Reaction Arm reacts off the middle of the foot as seen in Figure 5.1.4-1. Do not react off the heel of the reaction foot as seen in Figure 5.1.4-2.

**CORRECT:** Reaction Arm is reacting off the middle of the Reaction Arm's foot.



Figure 5.1.4-1: Correct Reaction Point





**INCORRECT:** Reaction Arm is reacting off the heel of the Reaction Arm. This can cause premature tool failure.

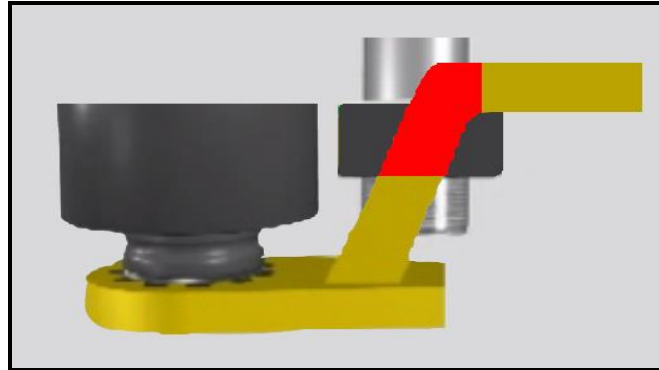


Figure 5.1.4-2: Incorrect Reaction Point

## 5.2 Torque Operation

To operate the tool in a Torque Cycle:

1. Ensure the tool is in Torque Select mode (example in Figure 5.2-1. Also see Section 3.1 – Torque Select Mode).



Figure 5.2-1: Torque Select Mode

2. Ensure the LED Display is showing the correct units (see Section 3.1.2 – Unit Select Menu).
3. Increment or decrement the displayed torque until the desired torque is displayed.  
**Note:** The Display will increment or decrement by 10 units with a single button push, or by 100 units if a button is held down. See Section 3.1.1 – Setting Torque for more information.
4. The B-RAD Select Tool System will immediately be ready to torque at the displayed setting. Place the B-RAD on the joint system.
5. Ensure the Forward/Reverse Switch is in the Forward position.
6. Press and hold the On/Off Trigger.  
**Note:** To stop the Torque Cycle at any time, release the On/Off Trigger.
7. When the B-RAD reaches the selected Torque, the tool will stop turning. Release the On/Off Trigger.

## 6.0 Troubleshooting

### Important!

Disassembling or attempting repair will void warranty.

If breakdown, malfunction, or error occurs, contact New World Technologies Inc. Technical Support (refer to Section 7.0 – Contact Us).

The LED Display may exhibit abnormal behaviour depending on operating conditions, frequency of use, or excessive wear on the Display Module.

The Display Module is designed to withstand normal use over the lifetime of the B-RAD Select Tool System; however, as a sensitive electronic device it is susceptible to damage caused by shock, moisture, or excessive force.



## 7.0 Contact Us

### **New World Technologies Inc.**

30580 Progressive Way  
Abbotsford, BC  
V2T 6Z2  
Canada



Toll Free: 1-800-983-0044

Fax: 604-852-0269

Web: [www.radtorque.com](http://www.radtorque.com)

Email: [info@radtorque.com](mailto:info@radtorque.com)

New World Technologies Inc. Technical Support: 1-800-983-0044  
(Ext. 227)

Email: [eradsupport@radtorque.com](mailto:eradsupport@radtorque.com)

