



U-RAD USER MANUAL



LEADING MANUFACTURER OF ADVANCED TORQUE SYSTEMS



PNEUMATIC



BATTERY



ELECTRONIC



ELECTRIC

THE INDUSTRY STANDARD...BELIEVE IT!

Torque Range
50-8500 ft. lbs.

ELECTRIC SERIES (V-RAD)



- ✓ **Quick adjust torque settings**
Fast and accurate “dial a torque” for maximum versatility and efficiency
- ✓ **Soft-start vary speed trigger**
Allows operator to safely and quickly set reaction arm before full torque is applied
- ✓ **Equal power in forward and reverse**
Convenience and cost effective use of same tool for break away and final torque
- ✓ **Advanced ultra-durable electric motor design**
Extreme duty designed to reduce maintenance cost and increase reliability
- ✓ **Advanced gearbox design**
PATENTED planetary gear reduction drive system delivering one of the highest power-to-weight ratios of any controlled bolting system



- ✓ **Push-button select torque**
Fast and convenient error-free digital single increment torque settings
- ✓ **Digital torque console display**
Maximum accuracy by seeing the set torque value and the actual delivered torque value
- ✓ **Lightweight and Ergonomic pistol grip design**
Advanced low-profile handle to reduce operator fatigue and increase productivity
- ✓ **Extremely low noise level only 75db**
World's quietest extreme torque gun, ideal for sensitive environments and standards
- ✓ **LED Green (Pass) or Red (Fail) indicator lights**
Unmistakable visual signal indicates status of torque procedure for maximum accuracy and speed

BATTERY SERIES (B-RAD)



- ✓ **Quick adjust torque settings**
Fast and accurate “dial a torque” for maximum versatility and efficiency
- ✓ **Soft-start vary speed trigger**
Allows operator to safely and quickly set reaction arm before full torque is applied
- ✓ **Equal power in forward and reverse**
Convenience and cost effective use of same tool for break away and final torque
- ✓ **Imagine the freedom – no air lines, no power cords!**
The lightweight design of the B-SERIES makes them ideal for any application, especially where compressed air and electricity are not readily available.
- ✓ **Advanced gearbox design**
PATENTED planetary gear reduction drive system delivering one of the highest power-to-weight ratios of any controlled bolting system

PNEUMATIC SERIES



- ✓ **PATENTED planetary gear reduction**
Delivers one of the highest power-to-weight ratios of any pneumatic controlled bolting system
- ✓ **Smooth continuous flow of controlled torque**
Eliminates destructive hammering
- ✓ **Lightweight ergonomic pistol grip design**
Reduces operator strain and injury; resulting in increased productivity
- ✓ **Unmatched reliability and quality**
Delivered by one of the most advanced engineered gear boxes on the market

TABLE OF CONTENTS

TABLE OF CONTENTS	1
MANUAL REVISION HISTORY	2
IMPORTANT SAFETY NOTICE.....	3
1.0 General Information	4
1.1 System Components	4
1.2 Specifications	4
1.2.1 Torque Ranges.....	4
1.2.2 Electrical Specifications.....	4
1.2.3 Environmental Specifications.....	4
2.0 Power Requirements	5
2.1 AC Mains Power.....	5
2.2 Earth Grounding Safety	5
2.3 Ground Fault Current Interrupt (GFCI).....	5
3.0 Tool System	5
3.1 Tool Handle Description	5
3.2 Torque Chart.....	6
3.3 Setting Dials.....	6
4.0 General Operating Instructions	7
4.1 Reaction Arm	7
4.1.1 Installing the Reaction Arm.....	7
4.1.2 Reaction Arm Height	8
4.1.3 Reaction Arm Foot.....	9
4.1.4 Reaction Points	9
4.2 Torque Operation	10
5.0 Errors	10
6.0 CONTACT US	11



MANUAL REVISION HISTORY

REVISION: 2014.07.03



IMPORTANT SAFETY NOTICE

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

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

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

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

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

The V-RAD Tool System is connected to high voltage 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 V-RAD Tool System; doing so will void warranty. If breakdown, malfunction or damage occurs and the V-RAD Tool System fails to operate correctly, contact New World Technologies Inc. Technical Support (refer to Section 6.0 – Contact Us).

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

Electrical Shock can cause serious or fatal injury. Do not apply power to the V-RAD Tool System without verifying the Earth Ground.

Ensure all AC Mains Power wiring to the V-RAD comply with all National and Local Electrical Codes. Improper wiring may result in unsafe conditions for equipment and personnel.

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

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

After long durations of use, the V-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 V-RAD Tool System.

While operating the V-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 V-RAD Tool System. Failure to comply, will result in void warranty.

The V-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.

1.0 General Information

1.1 System Components

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

- V-RAD Tool (Figure 1.1-1)
- Standard Reaction Arm and Snap Ring (Figure 1.1-2)
- Calibration Certificate
- User Manual



Figure 1.1-1: V-RAD Tool



Figure 1.1-2: Standard Reaction Arm

Note: Some distributors may ship additional parts along with the V-RAD 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 V-RAD Tool System:

Imperial			Metric	
V-RAD 4	100-400 FtLb	or	V-RAD 6	135-540 Nm
V-RAD 10	400-1000 FtLb	or	V-RAD 14	550-1350 Nm
V-RAD 16	500-1600 FtLb	or	V-RAD 21	675-2170 Nm
V-RAD 23	800-2300 FtLb	or	V-RAD 31	1100-3100 Nm

Table 1.2.1: Torque Ranges

1.2.2 Electrical Specifications

Ensure that all Electrical Specifications are followed when utilizing the V-RAD Tool System.

	Units	120V Model	230V Model
Nominal Input Voltage	VAC	120	230
Minimum Input Voltage	VAC	108	185
Maximum Input Voltage	VAC	133	260
Nominal Tool Voltage	VDC	170	325
Minimum Tool Voltage	VDC	153	262
Maximum Tool Voltage	VDC	188	368
Nominal Input Current	ARMS	8.1	4.2
Nominal Input Power	W	900	900

Table 1.2.2: Electrical Specifications

1.2.3 Environmental Specifications

CAUTION!

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

Temperature Ranges	°C	°F
Operating Temperature	-20 – 35	32 – 104
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

2.0 Power Requirements

The installer of this equipment is responsible for complying with National Electrical Code (NEC) or equivalent and Federal and Local Guidelines and Application Codes that govern protection, earth grounding, disconnects and other current protection for electrical equipment for use in outdoor or indoor applications.

The following sections outline the V-RAD power requirements.

2.1 AC Mains Power

DANGER!

Electrical Shock can cause serious or fatal injury. Do not apply power to the V-RAD Tool System without verifying the Earth Ground. If using a power plug adapter, ensure the Earth Ground pin is present and firmly connected.

WARNING!

Ensure all AC Mains wiring to the V-RAD Tool System comply with all National and Local Electrical Codes. Improper wiring may result in unsafe conditions for equipment and personnel.

The V-RAD Tool System requires model specific single phase 120VAC or 230VAC.

The single phase line must be electrically symmetrical with respect to earth ground. The branch circuit must be a dedicated 15A to ensure proper tool operation and to avoid circuit loading and nuisance trips.

Note: The V-RAD is internally fused for self-protection. Contact New World Technologies Inc. Technical Support for assistance if a blown fuse is suspected.

2.2 Earth Grounding Safety

Important!

Earth grounding is the primary electrical shock protection and is mandatory!

The V-RAD is assembled with a dedicated Earth Ground connection to the Tool Handle. It is the operator's responsibility to adhere and follow, at minimum, an Assured Grounding Program and all National and Local Electrical Codes.

2.3 Ground Fault Current Interrupt (GFCI)

GFCI's are secondary protection devices which protect against electric shock in the event of a ground wiring fault.

Standard Class A-GFCI typically have a leakage current trip range of 4mA – 6mA and may be used if required.

Note: National and Local Electrical Codes may require use of GFCI. Check National and Local Electrical Code for compliance.

2.4 Extension Cords

Extension cord quality and condition is important to ensure personal safety and V-RAD performance. Check National and Local Electrical Codes for compliance.

For extension cords under 30ft, 12AWG is recommended. For extension cords over 30ft, 10AWG is recommended.

Generally 100ft is the maximum recommended length for any extension cord, although some installations demand longer cords. Longer extension cords will reduce the voltage and speed of the V-RAD Tool System and may cause nuisance trips at higher torque demand.

3.0 Tool System

The following sections give a visual and functional description of the Tool Handle and Navigation Keypad.

3.1 Tool Handle Description

The V-RAD (Figure 3.1-1) is trigger activated with a Forward/Reverse Switch and a LCD Display.

1. On/Off Trigger – tool activation
2. Forward/Reverse Switch – controls direction of rotation
3. Torque Chart – settings and corresponding torque reference
4. Setting Dials – control output torque

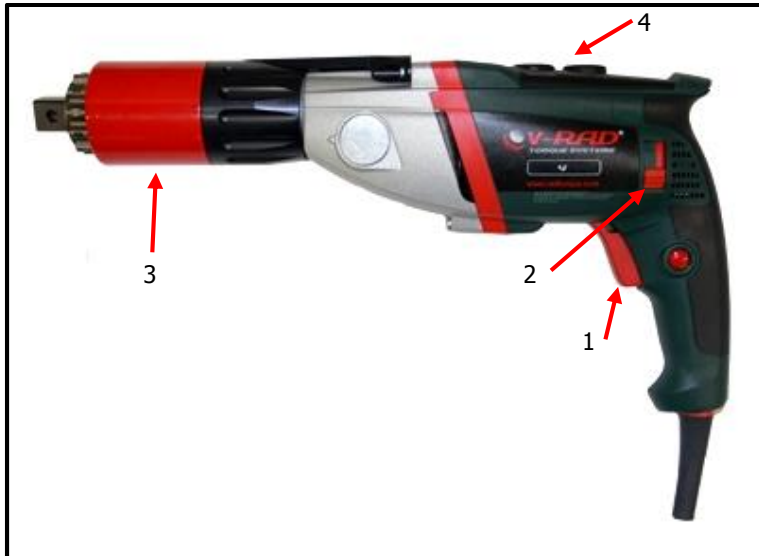


Figure 3.1-1: V-RAD

3.1.1 Trigger Lock

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

To enable the Trigger Lock:

1. Slide the Forward/Reverse Switch to the Centre Position.

Note: The On/Off Trigger cannot be depressed.

To disable the Trigger Lock:

1. Slide the Forward/Reverse Switch to the Forward Position or the Reverse Position.

Note: The On/Off Trigger can be depressed.

3.2 Torque Chart

The Torque Chart displays the Settings and the corresponding Torques. An example of a Torque Chart is shown in Table 3.2-1. To set the V-RAD to the desired Torque refer to Section 3.3 – Setting Dials.

V-RAD 1000 Torque Chart FtLbs		EXAMPLE	
Setting	Torque	Setting	Torque
B2	320	E3	750
C2	350	F3	800
E2	450	G3	830
F2	500	D4	850
G2	530	E4	900
C3	550	C5	930
D3	620	F4	960
		G4	1020
Cal. Date: 01/01/2010		Serial # V0000	SAMPLE

Table 3.2-1: Torque Chart

Note: Do not refer to Table 3.2-1 to determine the Setting for the V-RAD. Each V-RAD is different and has a different Torque Chart. Only use the Torque Chart attached to the V-RAD.

3.3 Setting Dials

The Setting Dials are used in correspondence with the Torque Chart. Refer to Section 3.2 – Torque Chart and the Torque Chart on the V-RAD to determine the appropriate Setting for the desired Torque.

The Setting consists of a letter and a number. The letter identifies the setting on the Alpha Dial and the number identifies the setting on the Numeric Dial. Figure 3.3-1 shown the Setting Dials set to D6.



Figure 3.3-1: Setting Dials

WARNING!

Do not use the V-RAD with the numeric dial at "+". This will result in damage to the tool and void warranty.

WARNING!

The selection switch located on the top of the tool must always be pushed to the right. Figure 3.3-2 shows the correct positioning of the selection switch.



Figure 3.3-2: Selection Switch

4.0 General Operating Instructions

WARNING!

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

The V-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 and the Actual Torque does not reach the Target Torque.

This section instructs the operator in the use of the Reaction Arm needed for V-RAD operation and how to conduct a Torque Cycle.

4.1 Reaction Arm

WARNING!

Always keep body parts clear of the Reaction Arm when the V-RAD Tool System is in use. Serious injury could occur.

CAUTION!

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

4.1.1 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 4.1.1-1).

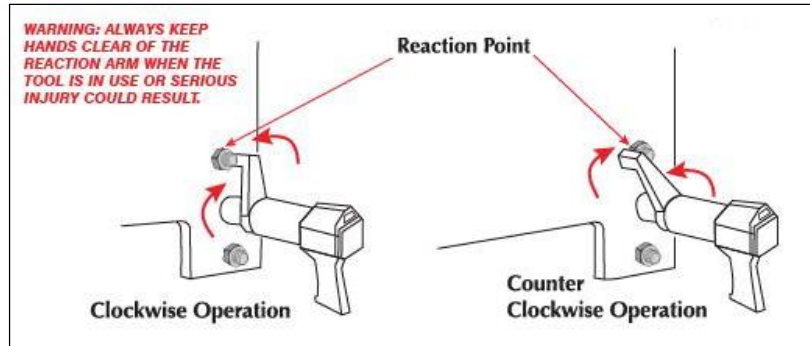


Figure 4.1.1-1: Reaction Point

CAUTION!

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



Figure 4.1.1-2: Incorrect Placement of Hand/Body Parts During Operation

4.1.2 Reaction Arm Height

Ensure the height of the socket is even with the height of the Reaction Arm as seen below in Figure 4.1.2-1. The height of the socket cannot be shorter or higher than the height of the Reaction Arm as seen below in Figure 4.1.2-2.

CORRECT: The Reaction Arm and socket are even height.

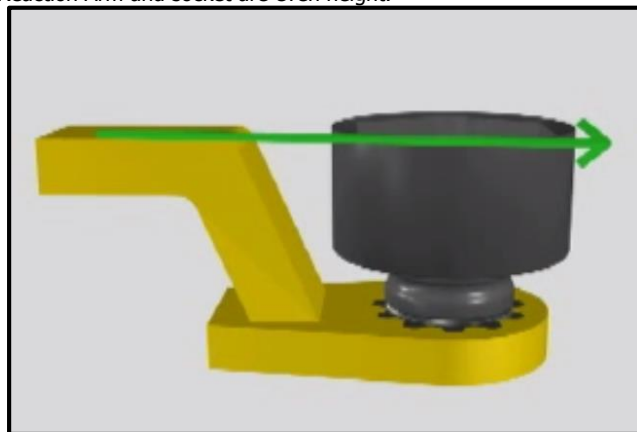


Figure 4.1.2-1: Correct Height

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

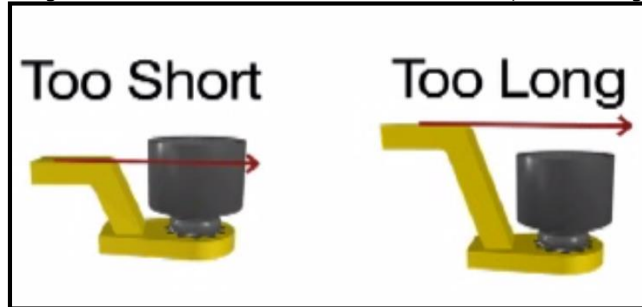


Figure 4.1.2-2: Incorrect Height

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

4.1.3 Reaction Arm Foot

Ensure the foot of the Reaction Arm aligns with the length of the nut as seen in Figure 4.1.3-1. The length of the foot cannot be shorter or longer than the nut as seen in Figure 4.1.3-2.

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

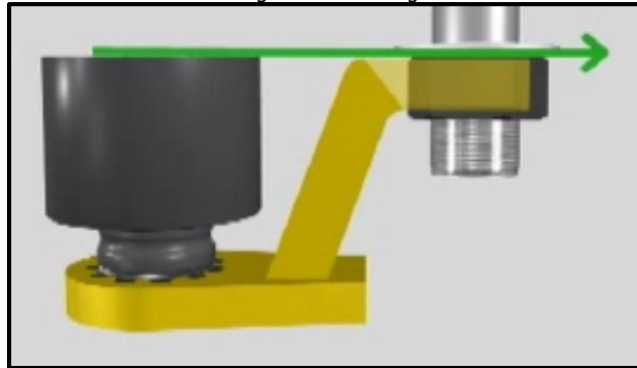


Figure 4.1.3-1: Correct Length

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

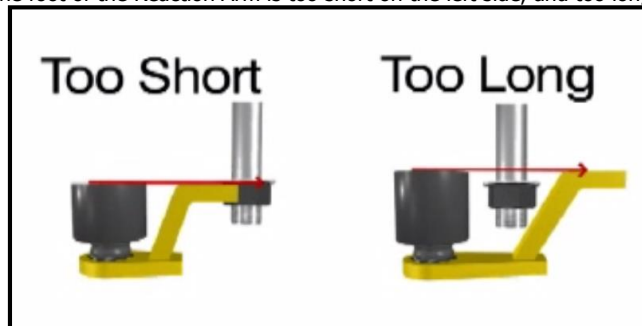


Figure 4.1.3-2: Incorrect Length

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

4.1.4 Reaction Points

Ensure the Reaction Arm reacts off the middle of the foot as seen in Figure 4.1.4-1. Do not react off the heel of the reaction foot as seen in Figure 4.1.4-2.

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



Figure 4.1.4-1: Correct Reaction Point

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

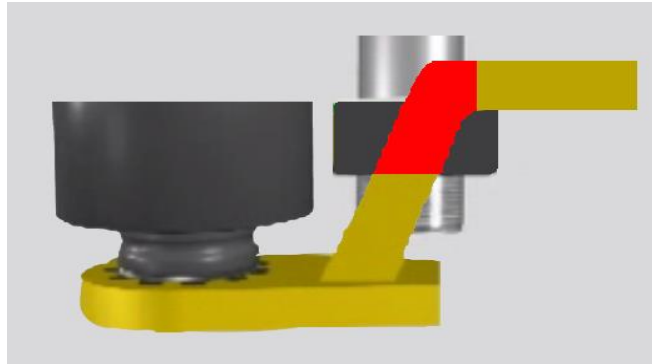


Figure 4.1.4-2: Incorrect Reaction Point

4.2 Torque Operation

To operate the Torque Cycle:

1. Set the V-RAD to the desired Torque. Refer to Section 3.2 – Torque Chart and Section 3.3 – Setting Dials.
2. Place the V-RAD on the joint system.
3. Ensure the Forward/Reverse Switch is in the Forward Position.
4. Press and hold the On/Off Trigger.
Note: To stop the Torque Cycle at any time, release the On/Off Trigger.
5. When the V-RAD reaches the Torque, the clutch mechanism will slip. Immediately release the On/Off Trigger.

CAUTION!

Damage will occur if the clutch is allowed to slip for extended periods of time.

5.0 Errors Important!

Disassembling or attempting repair will void warranty.

If breakdown, malfunction or error occurs, contact New World Technologies Inc. Technical Support (refer to Section 6.0 – Contact Us).

V-RAD Limited Warranty

New Tool Warranty

Any new tool branded with the RAD name and purchased from New World Technologies Inc., or through one of its authorized distributors or agents, is warranted to the original purchaser against defects in materials and workmanship for a period of one (1) year from the date of original calibration. Electric drive components such as electric motors, switches, and batteries etc., are covered for a period of three (3) months from the date of original calibration. Under the terms of this warranty, New World Technologies Inc., at its option and F.O.B. either its factory or an authorized service center, will replace or repair for the original purchaser, free of charge, any part or parts, found upon examination by New World Technologies Inc., to be defective in material or workmanship or both. If any product or part is replaced or repaired under the terms of this warranty, that product or part will carry the remainder of the warranty from the date of original calibration.

Repaired Tool Warranty

Once a tool is beyond its new tool warranty, New World Technologies Inc., for a period of three (3) months from the date of repair, will replace or repair for the original purchaser, free of charge, any part or parts, found upon examination by New World Technologies Inc., to be defective in material or workmanship or both. If any product or part is replaced or repaired under the terms and conditions of this warranty, that product or part will carry the remainder of the warranty from the date of original repair.

To qualify for the above mentioned warranties, written notice to New World Technologies Inc. must be given immediately upon discovery of such defect, at which time New World Technologies Inc. will issue an authorization to return the tool. The defective item must promptly be returned to New World Technologies Inc. all freight charges prepaid. When returning a tool, the reaction arm/s being used with the tool must also be returned.

New World Technologies Inc.: Telephone: 1 800 983 0044 Email: info@radtorque.com

Exclusions from Warranty

At New World Technologies Inc.'s sole judgment tools or accessories that have been altered, damaged, misused, abused, badly worn due to excessive utilization, lost, or improperly maintained will NOT be covered under the terms of this warranty.

Tools returned without the reaction arm/s will not be covered under the terms of this warranty.

Consumable parts and accessories (such as extensions, reaction blanks/arms) are not covered under this warranty.

Tools that have been relabeled without prior written consent of New World Technologies Inc. will not be covered under this warranty.

Equipment and accessories not manufactured by New World Technologies Inc. (measuring equipment, etc.) are warranted only to the extent of the original manufacturer's warranty.

**There is no other express warranty. Implied warranties, including those of merchantability and fitness for a particular purpose are limited to one year from date of calibration and to the extent permitted by law. Liability for consequential damages under any and all warranties are excluded to the extent exclusion is permitted by law.*