



DRTQ Series Torque Tester

User Manual



Delta Regis Tools, Inc.
7370 Commercial Circle
Fort Pierce, FL 34951

sales@deltaregis.com
www.deltaregis.com

Delta Regis_DRTQ_M_R1.1

Table of Contents

Safety	3
Specifications	4
Component Identification	5
Glossary of Terms	6
Display Features and Settings	7–9
Display Screen	7
Main Menu	7
Settings	8–9
Editing Profiles	10
Settings Lock	11
Measuring Torque	12–14
Collecting Torque Data	12
Using Quick Run	12
Using Measuring Mode	12
Exporting Data From Measure Mode	13
Rundown Joints	14
Troubleshooting Guide	15
Warranty / Limitation of Liability	16

Safety



WARNING !

Do not operate unit until you read and understand ALL safety information. Failure to do so may result in damage to the product and/or bodily injury.

Safety Information

- Do not wear any loose articles of clothing or jewelry when operating unit
- Always wear appropriate attire when using these products (i.e. protective eye wear, pants, closed-toed shoes)
- Always check for loose wires and cables on and around unit before beginning operation
- Keep unit and charger away from water, always store in a dry and safe environment
- Do not operate unit in a flammable or explosive environment
- Never apply torque to this unit that exceeds the maximum torque value. Doing so may result in damage to the unit and injury to the operator
- Unauthorized personnel should never be permitted to operate this unit
- Never use additional accessories with this unit that were not included and are not from this manufacturer. Doing so could result in damage to the unit
- Always operate unit in a clean and organized work place
- This unit should always be kept clean, dry, and free from oil and grease
- Do not perform repairs on this unit, unless you are an authorized service technician
- Always unplug unit before inspecting, cleaning, or performing maintenance on the unit
- Never perform maintenance on unit that is not in accordance with the maintenance procedures listed in the service and maintenance portion of this manual. Failure to comply with these instructions may result in damage to the unit

CAUTION !



Due to the high torque capabilities of the torque tester, repeated cycling of the rundown joint can cause significant heat build-up in the joint. If the joint becomes hot to the touch, allow time for the rundown joint to cool before continuing with testing.

Mounting

The tester must be mounted firmly to a solid surface so that its base can react the torque that is applied to the input shaft of the tester without movement. Any movement of the tester while taking readings will affect the displayed torque value.



CAUTION !

Failure to properly secure the tester could result in damage and/or personal injury.

There are (4) M10 x 1.5 holes provided in the underside of the tester for mounting directly to a bench using appropriate fasteners (not included). An optional bench mount bracket can be purchased as an alternative solution for securing the tester in position.

Specifications

DRTQ Series Features

The DRTQ series torque tester offers an unparalleled number of features and provides intuitive menu selection through the use of an easy to operate touch screen interface.

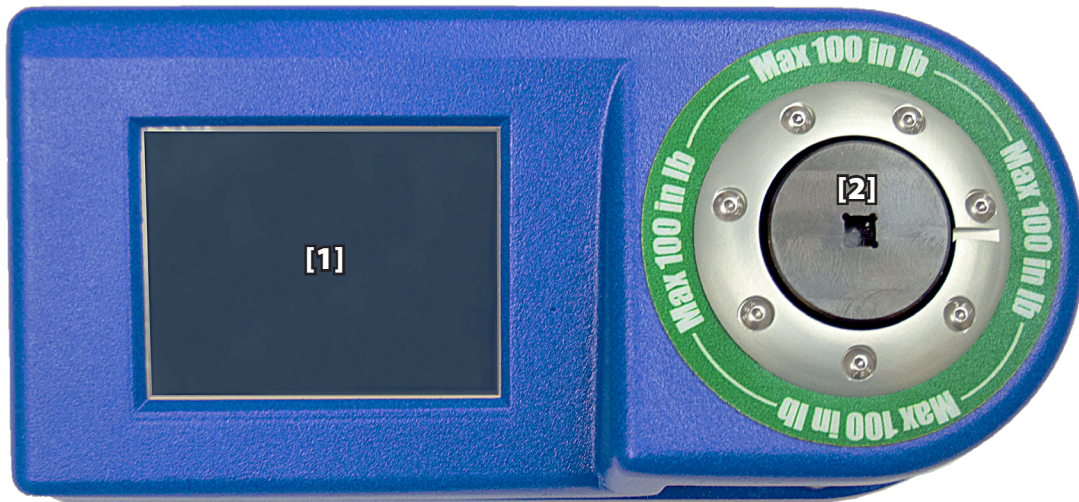
The DRTQ series provides unsurpassed accuracy for testing torque wrenches, screwdrivers and other torque-controlled power tools. The unit provides the ability to do a quick audit or metrology level calibration making it an incredibly versatile and priceless instrument for any QA department.

- $\pm 0.5\%$ precision from 20% to 100% of full scale, $\pm 1\%$ precision between 10% and 20%
- Full color LCD touch screen
- On-screen torque calculator
- Made in North America
- Charging via USB C cable
- 1-year warranty
- Processes statistical calculations: Cp, Cpk, Sigma
- On-Screen graphing capability for tool performance analysis
- Export data to USB Removable Memory Stick or USB C Cable
- Automatic screen rotation (level sensor flips screen to keep it properly oriented)
- "Quick Run" mode provides the ability to quickly audit and verify a tool
- Metrology level "Measure Mode" allows users to establish acceptable tolerances
- Eight available engineering units: In Oz, In Lb, Ft Lb, Nm, cNm, KgCm, gfCm, Kgm
- Li-Ion technology provides extended battery life (up to 8 hours of continuous use or 12 hours idle)
- Advanced user programmable options

Precision / Accuracy	$\pm 0.5\%$
Data Output Port	USB Memory & USB C
Battery	3.7V, 4400 mAh Lithium Ion
Charge Time	8 hours
Battery Life	8 hours
Charger	Output 5V 1A Max
Weight	4.5 Lbs

Model #	Torque Range
DRTQ-160-z	16.00–160.00 In Oz
DRTQ-10-i	1.00–10.00 In Lb
DRTQ-25-i	2.50–25.00 In Lb
DRTQ-100-i	10.00–100.00 In Lb
DRTQ-250-i	25.00–250.00 In Lb
DRTQ-100-f	10.00–100.00 Ft Lb

Component Identification



1	LCD Touch Screen
2	Transducer
3	USB 2.0 Memory Card Slot
4	Wake-Up Switch
5	USB C Port
6	Battery Disconnect Switch



Glossary of Terms

Profile: A profile allows the user to quickly select a predetermined testing strategy. The DRTQ series torque tester allows for up to 8 different profiles to be preset.

Quick Run: The mode for gaining quick access to the torque tester's measuring capability.

Measure Mode: The mode for saving or exporting data related to a tool's performance.

Rundown Joint: An accessory for simulating the tightening of a fastener. Common types of joints are hard, medium, and soft. A rundown joint is required for testing power tools such as screwdrivers and nutrunners.

Peak: Peak mode is used to measure the maximum torque that a tool experiences.

Track: Track mode is used to measure the amount of force that is applied to the transducer in real time.

Peak Filter: The expected period of time needed to capture a peak (milliseconds).

Torque Threshold: The minimum reading that the unit will display. This feature is designed to help avoid picking up a reading due to operation setup.

Torque High Limit: The Torque High Limit is used to notify an operator when the reading falls above the maximum torque value. Maximum acceptable reading.

Torque Low Limit: The Torque Low Limit is used to notify an operator when the reading falls below the minimum torque value. Minimum acceptable reading.

Cpk: The Cpk value, also known as the process capability index, is a statistical value that is used to indicate how closely a series of test samples are grouped around the target value.

Display Features & Settings

Power-up & Display Screen

When the operator switches on the unit (press the switch on the left hand side of the unit to power on the torque tester) this screen will appear. Touch any part of the display to continue to the main menu.



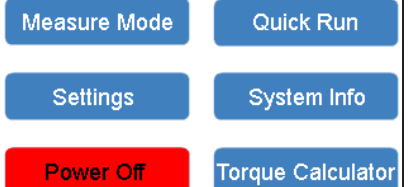
Touch Screen To Start

04 Battery=3.952 3.01

Main Menu

The main menu allows users to navigate through the DRTQ series torque tester's features. Users may return to this screen when they are finished with one function and would like to move on to another, or when they want to power down the unit.

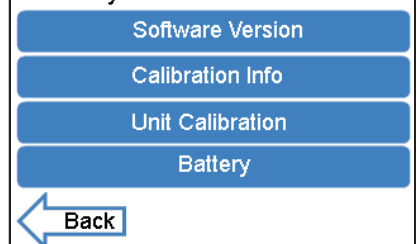
Main Menu



System Info

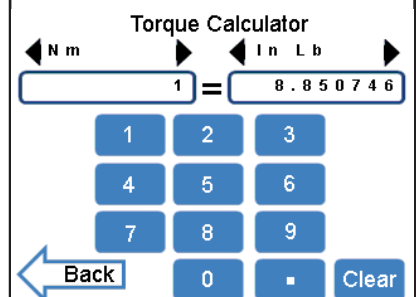
The system information menu allows the user to access various information about the unit, including the software version, the serial number, battery information, and calibration data. It also contains the calibration functions for the unit. The calibration screen and certain functions of the battery screen are password protected. Please contact the factory for further information. The battery screen will still display available battery information even if an incorrect password or no password is entered.

System Information



Torque Calculator

The torque calculator is provided to allow the user to conveniently convert between different units of torque.



Display Features & Settings

Settings The settings menu gives the user access to all of the functions for configuring the unit to their specific needs.		Settings Menu Auto Clear Language Sleep Mode Clock Back Light Brightness Profiles Auto Start Back Settings Lock
Auto Clear	The auto clear function allows users to set a desired amount of time (in seconds) for a torque reading to be displayed before it is automatically cleared from the screen. This time can be set from 1 to 9 seconds using the numbers on the keypad, or the feature can be disabled by pressing [Off] . If turned off, the user will need to manually clear the torque reading from the display.	Settings Menu Auto Clear Time 5 Second(s) 1 2 3 4 5 6 7 8 9 Back Off
Sleep Mode	The sleep mode feature automatically shuts down the torque tester when it is not in use in order to conserve battery life. The time before automatic shutdown can be set from 1 to 40 minutes using the numbers on the keypad, or the feature can be disabled by pressing [Off] .	Settings Menu Sleep Mode 5 Minute(s) 1 5 10 15 20 25 30 35 40 Back Off
Back Light	The back light keeps the screen lit on the torque tester for a specified amount of time while the torque tester is not in use. The time can be set from 30 seconds to 8 minutes using the numbers on the keypad, or the power saving feature can be disabled by pressing [Off] . If the back light has turned off, it can be turned back on by simply tapping the screen.	Settings Menu Back Light 5 Minute(s) .5 1 2 3 4 5 6 7 8 Back Off
Profiles	The profiles menu allows for up to 8 different testing strategies to be preset and stored in the memory. All functions of these profiles can be customized to each testing strategy.	Edit Profiles 200 IN - LB 500 IN - LB 100 IN - LB 50 IN - LB Disabled Disabled Disabled Disabled Back Measure Mode

Display Features & Settings

Language	At the time of printing, the torque tester supports the English language. Other languages may be added in the future, and any available language can be selected by pressing the corresponding button on this screen.	Settings Menu Language Language Selected: E n g l i s h English ← Back
Clock	The clock settings allow users to set the time and date on the DRTQ series torque tester. These may be adjusted using the numbers on the keypad.	Set Clock 03 / 31 / 2016 10 : 28 : 23 0 1 2 3 4 5 6 7 8 9 OK Cancel
Brightness	The brightness setting allows users to adjust the touch screen's level of brightness. The brightness can be increased or decreased to the desired level by using the [+] and [-] buttons.	Settings Menu Brightness —  + ← Back
Auto Start	The auto start feature allows the torque tester to be configured to boot automatically into Quick Run or Measure Mode, bypassing the main menu.	Settings Menu Auto Start None Quick Run Measure Mode ← Back
Settings Lock	The settings lock can be configured to prevent users from accessing certain functions of the torque tester. A four-digit PIN must be entered to change the lock. The default PIN is 1234.	Settings Lock CHANGE 4-DIGIT PIN Select one of the following options Full Profile + Settings Settings Secure ← Back Note: UNLOCKALL to adjust the clock setting. Current Profile: P R O F I L E 2

Display Features & Settings

Editing Profiles

Tapping on a profile on the profiles menu allows the user to view and edit its attributes. To edit an attribute, the user must press the blue label for that attribute. Once a profile has been edited, the **[Set]** arrow must be pressed in order to confirm the changes.

Edit Profile	
Profile	PROFILE1
Status	Active
Units	In L b
Target torque	10.00
Variance	10 %
Peak threshold	2.00
Test Direction	CW
Filter	500
Back	# 1
Set	

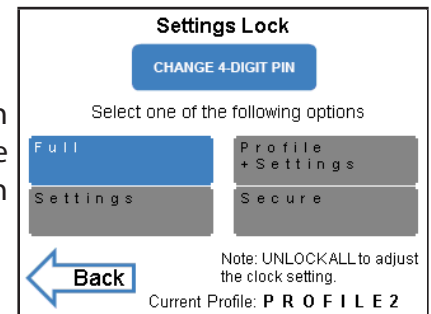
On the profile editing screen, a profile will show the following customizable attributes:

Profile	The name of the profile.
Status	The profile's status as either 'Active' or 'Inactive'. Inactive profiles are locked and must be made active before they can be used.
Units	The units in which torque will be measured when this profile is active. Options are Ft Lbs, In Lbs, In Oz, Nm, Kgf Cm, Kgf m, Gf Cm, and cNm.
Target Torque	The desired torque value for the tool being tested with this profile.
Variance	Acceptable deviation ($\pm$ %) from the target torque value.
Peak Threshold	The lowest torque value that will be recognized and logged by this profile in peak mode. Any torque measurement smaller than this value will be ignored.
Test Direction	The direction of torque that will be measured with this profile. This can be set to CW (clockwise), CCW (counterclockwise) or both directions.
Filter	The maximum allotted period of time, in milliseconds, to find a greater peak value after a potential peak is identified.

Display Features & Settings

Settings Lock

The settings lock can be configured to prevent users from accessing certain functions of the torque tester. A four-digit PIN must be entered to change the lock. Once the PIN has been entered, the user is granted access to a screen from which the settings lock or PIN can be changed.



The different lock settings are as follows:

Lock Setting	Permissions
Full	All settings and functions are unlocked
Profiles + Settings	Profiles cannot be edited but active profiles can be selected, clock settings are locked but other settings can be adjusted
Settings	User is locked into a single profile, clock settings are locked but other settings can be adjusted
Secure	User is locked into a single profile and all settings are locked

Resetting the PIN: If the PIN is lost, it can be recovered by tapping the **[Forgot PIN?]** button. Pressing this button will bring up a screen with a hexadecimal keypad and a five-digit code in the upper-left corner. The user may contact the manufacturer's customer service department during regular business hours and give them the code displayed in the corner to receive the code required to reset the PIN.

Measuring Torque

Collecting Torque Data

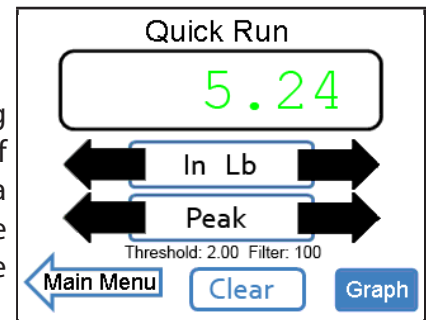
The DRTQ series torque tester provides two modes for collecting torque data: **Quick Run** and **Measure Mode**. Both are accessible from the main menu and each may be run in either Peak or Track mode, depending on the requirements of the user.

Peak is used to measure and display the maximum torque that a tool experiences. It is most commonly used for electric/pneumatic clutch tools, clicker style torque wrenches and hand torque drivers.

Track measures the amount of force that is applied to the transducer in real time. This is used to verify the calibration of dial indicating and beam style torque wrenches. Track mode may also be used for bottle cap fastening.

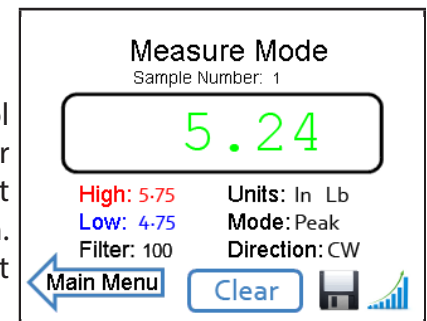
Using Quick Run

Quick run provides quick and simple access to the torque tester's measuring capability. The arrows beneath the readout allow the user to select units of measurement and to toggle between peak and track modes. Collected data can be viewed as a graph by tapping the **[Graph]** button. In peak mode, the graph is only present as long as there is a number in the display window. The **[Clear]** button can be used to clear the data from the display.



Using Measure Mode

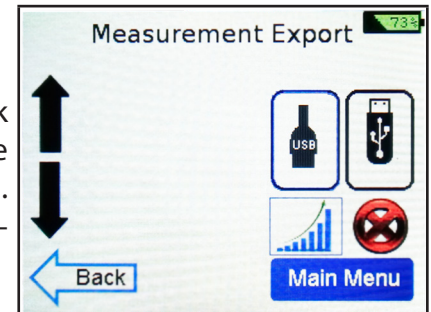
Measure mode allows the user to acquire and save data related to tool performance. After selecting **[Measure Mode]** from the main menu, the user will be prompted to choose between peak and track modes and to select a measurement profile before being taken to the data collection screen. Tapping the graph icon in the corner of the screen will show statistics about the collected data set. Peak data can be exported by tapping the disk icon.



Measuring Torque

Exporting Data From Measure Mode

Peak data collected in measure mode can be exported by tapping on the disk icon near the lower-right corner of the screen. When this icon is tapped, the user will first be prompted to provide a name for the data set being exported. Once a name has been entered, the screen will show a scrollable list containing the data, as well as a number of buttons on the left side of the screen.



Pressing the USB Device icon will export the data to a removable USB Memory Stick inserted into the unit. Data may also be exported via USB C connection by pressing the USB C icon (Note: this requires the use of Terminal Software or other data acquisition software). As on the main measure mode screen, pressing the graph icon will display statistics about the collected data set. Pressing the red 'X' icon will clear the data logged by the unit.

Data is exported to an SD card in the form of a Rich Text Format (.rtf) document, which can be opened by most major word processing applications. The following is an example of this output:

```
Date:03/31/2016   Time:12:31:53   Unit S/N:DR1234   Transducer: 100 In Lb
Job:CAL36 #1
Measurement direction:    CW
Maximum Torque Limit:     27.50 In Lb
Minimum Torque Limit:     22.50 In Lb
Threshold Torque Limit:   5.00 In Lb
Peak Time:    0.100 Seconds
Maximum recorded: 24.31 In Lb
Minimum recorded: 23.75 In Lb
Sigma:    0.185
Cp:    4.509
Cpk:    2.655
Readings above maximum:    0
Readings below minimum:    0
Percentage not OK:    0.000%
Reading #      Peak
1             24.04
2             24.02
3             23.75
4             23.79
5             23.96
6             24.27
7             24.31
8             23.85
9             23.92
10            24.31
11            23.90
12            23.85
13            23.83
14            23.88
15            23.90
```

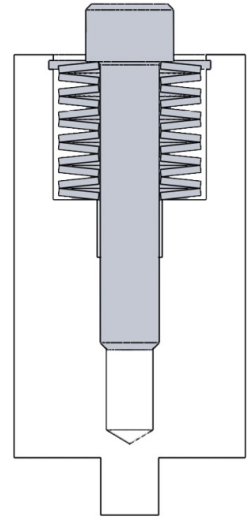
Measuring Torque

Rundown Joints

Rundown joints are included with most DRTQ series torque testers for testing power tools. The rundown joint allows the tool to simulate the tightening of a threaded fastener.

The rundown joint consists of the following:

- Main body with male square drive and internal thread. The square drive installs into the matching female square drive socket of the torque tester.
- Belleville (spring) washer stack to simulate the action of a joint being fastened.
- Retaining ring to prevent the washer stack from coming out of the main body if the fastener is completely unthreaded (ring must be removed to reconfigure washers).
- Socket head cap screw and corresponding hex bit. The hex bit is installed into the screwdriver being tested and used to tighten/loosen the cap screw during testing.



The Belleville washer stack in the rundown joint may be removed and reconfigured to simulate various types of joints. They can be stacked one up/one down (as shown) for a soft joint, or nested in groups of 2 (2 facing up, 2 down, 2 up, etc), 3, or 4 for harder joint configurations. Please make sure to use all of the supplied washers to prevent the cap screw from bottoming out during rundowns. The threads of the cap screw are lightly greased at assembly. Please re-apply a light coat of grease as required to maintain smooth rotation of the cap screw. Discontinue use if the rundown joint appears to be binding or acting inconsistently.

Note: A torque tester used in conjunction with a rundown joint provides a good indication of the repeatability (capability) of a mechanical clutch power screwdriver. Since the torque output of mechanical clutch power tools is joint and operator dependent, the actual torque value displayed on the tester may vary from the final torque of the installed fastener in the workpiece. It is strongly advised that the user audits the final torque of an installed fastener(s) to ensure that the power tool is set properly to meet their requirements.



Models DRTQ-160-z, DRTQ-10-i, DRTQ-25-i and DRTQ-100-i have an access slot and set screw which allow for the rundown joint to be secured in place when installed on the tester. Please use the supplied 1/16" hex key to tighten the set screw after installing the rundown joint. This will eliminate play in the square drive interface which could affect the readings at low torque values.

Troubleshooting Guide

Problem	Possible Cause	Solution
Inconsistent torque readings	Wrong filter set	Adjust peak time filter
	Rundown joint not being used	Always use a rundown joint when testing power tools
	Tool is not being held consistently	Ensure that driver is held securely and in the same plane for every rundown
	Torque tester is not properly secured	Ensure that tester base is anchored securely
	Tool being tested is unable to hold consistent torque value	Send tool in for evaluation
	Torque tester needs calibration	Send torque tester in for calibration
Unit turns off by itself	Low battery	Recharge the unit
	Sleep mode time set too short	Adjust sleep mode time
Unit will not turn on	Low battery	Recharge the unit
	Flash memory error	Perform hard reset

Calibration of Unit

Periodic calibrations are required in order to maintain a high standard of accuracy. In most applications a 6-12 month calibration interval is acceptable. Please contact your local distributor or the manufacturer when your unit is due for calibration.

Performing a Hard Reset

A hard reset can be performed by completing the following steps:

- 1) Unplug DRTQ
- 2) Slide battery disconnect switch to the **Left** position and wait 60 seconds
- 3) Slide battery disconnect switch to the **Right** position
- 4) Plug in DRTQ and reset the Date/Time once prompted

Warranty / Limitation of Liability

Warranty

Delta Regis Canada Inc. (Manufacturer) warrants to Purchaser that all goods supplied hereunder, which are manufactured by Delta Regis Canada Inc or individual manufacturer's, will be free from defect in material or workmanship for a period of one (1) year from the delivery date unless a different period is set forth in the body of the proposal in which these terms are incorporated. Should any defect appear during the warranty period, Delta Regis Canada Inc shall, if given prompt notice by Purchaser, correct such nonconformity by, in Delta Regis Canada Inc' sole discretion, either repair or replacement of the nonconforming goods F.O.B. Delta Regis Canada Inc' designated repair facility. The foregoing warranties are subject to revocation in Delta Regis Canada Inc' sole discretion in the event that Purchaser (1) modifies the goods in any way without the express written consent of Delta Regis Canada Inc; (2) employs such goods in a manner that is not in accordance with Delta Regis Canada Inc' supplied instructions; or (3) damages the goods in any manner through any means.

The foregoing warranties also are subject to revocation or modification in Delta Regis Canada Inc' sole discretion in the event that Purchaser uses or transfers the goods outside of the country from which they were sold without notice to and written consent from Delta Regis Canada Inc. In such event, Delta Regis Canada Inc may charge Purchaser, at prevailing prices.

Repair parts are warranted by Delta Regis Canada Inc for a period of one (1) year from the date of delivery, provided, however, that repairs or replacements to original goods shall not renew or extend the warranty period of such goods. Replaced goods or parts become the property of Delta Regis Canada Inc. Goods supplied hereunder, which have been purchased by Delta Regis Canada Inc from other manufacturers, shall have only the warranty offered by the manufacturer thereof, and Delta Regis Canada Inc disclaims any responsibility with respect to the performance of such goods. Service labor provided by Delta Regis Canada Inc is warranted by Delta Regis Canada Inc for a period of ninety (90) days from the date that the Field Service Report is executed.

THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES OF QUALITY OR PERFORMANCE, EXPRESS, IMPLIED, STATUTORY OR OTHERWISE, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE.

Limit of Liability

DELTA REGIS CANADA INC SOLE AND EXCLUSIVE LIABILITY HEREUNDER SHALL BE TO REPAIR OR REPLACE GOODS OR PARTS THERE-OF FOUND TO BE DEFECTIVE WITHIN THE WARRANTY PERIOD. IN NO EVENT SHALL DELTA REGIS TOOLS INC BE LIABLE TO PURCHASER FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES WHETHER IN CONTRACT, TORT, OR OTHERWISE, INCLUDING BUT NOT LIMITED TO DAMAGES RELATED TO LOSS OF PROFITS OR REVENUE, LOSS OF USE OF THE GOODS OR ANY ASSOCIATED EQUIPMENT, COST OF SUBSTITUTE GOODS, DOWNTIME COSTS, OR OTHER DAMAGES TO PURCHASER OR ITS CUSTOMERS.