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INTRODUCTION

The NorTronic® is an electronic torque and angle wrench capable of measuring, displaying, storing and transmitting test results and receiving configuration settings from TDS (Torque Data System PC software) via the USB or wireless interface.

The tool comes in 3 torque capacities: - 50 N·m, 200 N·m & 330 N·m.

The NorTronic® features 2 identical colour displays positioned at 90 degrees to each other. This enables the user to see a display when the tool is being operated in the vertical or horizontal plane.

The NorTronic® gives visual, audible and physical indication via vibration that the Tool Target has been reached.

Part Numbers Covered by This Manual

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Torque Capacity</th>
<th>Ratchet Square Drive</th>
<th>Wireless Communication Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>43500</td>
<td>50 N·m</td>
<td>⅜&quot;</td>
<td>868 MHz</td>
</tr>
<tr>
<td>43501</td>
<td>50 N·m</td>
<td>½&quot;</td>
<td>868 MHz</td>
</tr>
<tr>
<td>43502</td>
<td>200 N·m</td>
<td>½&quot;</td>
<td>868 MHz</td>
</tr>
<tr>
<td>43503</td>
<td>330 N·m</td>
<td>½&quot;</td>
<td>868 MHz</td>
</tr>
<tr>
<td>43504</td>
<td>50 N·m</td>
<td>⅜&quot;</td>
<td>915 MHz</td>
</tr>
<tr>
<td>43505</td>
<td>50 N·m</td>
<td>½&quot;</td>
<td>915 MHz</td>
</tr>
<tr>
<td>43506</td>
<td>200 N·m</td>
<td>½&quot;</td>
<td>915 MHz</td>
</tr>
<tr>
<td>43507</td>
<td>330 N·m</td>
<td>½&quot;</td>
<td>915 MHz</td>
</tr>
</tbody>
</table>

NorTronic® models 43500, 43501, 43502 & 43503 use an 868 MHz wireless frequency; this is designed for use in Europe.

NorTronic® models 43504, 43505, 43506 & 43507 use a 915 MHz wireless frequency; this is designed for use in USA, Canada, Australia and New Zealand.

For use outside the above areas, disable wireless feature until regulatory approval is obtained.

Parts Included

<table>
<thead>
<tr>
<th>Parts Included</th>
<th>Part Number</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>NorTronic® electronic torque wrench.</td>
<td>4350X</td>
<td>1</td>
</tr>
<tr>
<td>USB flash drive (Manuals / Software).</td>
<td>61131</td>
<td>1</td>
</tr>
<tr>
<td>Quick reference guide.</td>
<td>34398</td>
<td>1</td>
</tr>
<tr>
<td>USB lead to PC (Mini USB to Type A).</td>
<td>39678</td>
<td>1</td>
</tr>
<tr>
<td>AA Rechargeable Battery</td>
<td>39663</td>
<td>3</td>
</tr>
<tr>
<td>Calibration Certificate.</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>NorTronic® carry case.</td>
<td>44506 - 44508</td>
<td>1</td>
</tr>
</tbody>
</table>

USB Wireless Adapters (Accessory)

<table>
<thead>
<tr>
<th>USB Wireless Adapters</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>USB Wireless Adapter (868 MHz)</td>
<td>43508</td>
</tr>
<tr>
<td>USB Wireless Adapter (915 MHz)</td>
<td>43509</td>
</tr>
</tbody>
</table>

Software Compatibility

<table>
<thead>
<tr>
<th>NorTronic®</th>
<th>TDS</th>
<th>Reason for upgrade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version 2.XX</td>
<td>2.0.XX</td>
<td>-</td>
</tr>
</tbody>
</table>

NOTE: ‘X’ is shown in place of the latest software release version #.
FEATURES AND FUNCTIONS

- TDS (Torque Data System) software included for complete data management and archiving to a PC. Includes seamless data synchronisation. See TDS Manual part number 34397 for more information.
- All NorTronic® tools are Torque Handles with a 16 mm spigot to interface to additional end fittings and offsets. A push through ratchet head end fitting is supplied as standard.
- Ability to enter offset compensation for non-standard end fitting.
- NorTronic® can be locked from adjustment “P type” for production environments (via TDS).
- 2 colour 0.95” OLED displays for visual indication of measurement against target status.
- Audible indication of target status.
- Vibration feedback when target reached.
- 4 digit resolution for all NorTronic® electronic torque wrenches.
- Maximum of 2,400 (date & time stamped) reading memory store.
- 5 user buttons.
- Operational from three AA internal rechargeable / non-rechargeable batteries.
- Up to 15 linked (or non-linked) targets can be on the tool at any one time.
- USB port for interface to TDS.
- Built in wireless transceiver for wireless interface to TDS.
- 12 Torque units.
- Time & date stamped test results.
- Displays torque only or torque & angle.
- IP44 protection against dust and water ingress.
- Ability to ratchet when measuring angle.
- Directly display and save the output torque of a HT (HandTorque®) gearbox when used in conjunction with a NorTronic®.
- Produce, save, view and print real time torque & angle graphs in conjunction with TDS.
- View and print reports for results in conjunction with TDS.
- 4 target modes - Torque Target only, Snug Torque followed by Angle Target, Snug Torque followed by Angle Target + final Torque Target or Audit Torque Target.
- Improved battery life when sleeping (batteries do not need to be removed for storage).
- ASCII mode for interfacing to third party control systems.
BEFORE USE
Preparation

IMPORTANT: IF THE EQUIPMENT IS USED IN A MANNER NOT SPECIFIED BY THE MANUFACTURER, THE PROTECTION PROVIDED BY THE EQUIPMENT MAY BE IMPAIRED.

WARNING: ALLOW THE NORTRONIC® TO EQUALISE TO THE AMBIENT TEMPERATURE/HUMIDITY BEFORE SWITCHING ON. WIPE OFF ANY MOISTURE BEFORE USE.

Battery Fitting / Replacement

NOTE: Insert positive battery terminal into handle cavity first. Rotate the end cap clockwise to tighten and counter-clockwise to release.

Ratchet Head Fitting / Replacement

NOTE: All NorTronic® tools are Torque Handles with a 16 mm spigot. Should you wish to change to a different spanner end fitting, depress the plunger on the ratchet head and pull to release.
BUTTON FUNCTIONS

Throughout set up and operation, the buttons perform the following functions:

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
<th>Operation</th>
<th>SET UP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Change target</td>
<td>Scroll through options or change a selected value. When changing a value, hold the button down for a faster rate of change.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Zero Torque &amp; Angle display if below the Active From threshold. Cancel the peak reading if above the Active From threshold and send via USB / Wireless.</td>
<td>Confirm a setting.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exit the measure display.</td>
<td>Exit current menu / screen.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Save test results to NorTronic®.</td>
<td>None</td>
</tr>
</tbody>
</table>

MEASURE DISPLAY

NOTE: Both of the displays on the NorTronic® show the same information at all times.

---

# Function
1. Number of readings that have been saved for the current target
2. Shows the next peak reading that will be saved to the NorTronic® (if Auto Reset enabled)
3. Wireless connected to P.C. (TDS)
4. USB connected to P.C. (TDS)
5. Low battery / flat battery
6. Target less than 10% of tool capacity (ISO6789:2017)
7. Current torque units
8. Torque reading
9. Angle reading
10. Current Snug Torque & Angle Target
11. Torque CRS has been changed from default value
12. Multiplier in use
13. Audit Target
OPERATION

Start Up

The NorTronic® does not have a power on/off switch. The NorTronic® is always powered up or in a deep sleep mode.

Upon fitting the batteries and end cap, press any button to wake the NorTronic® up from sleep. The Norbar logo is displayed for 2 seconds followed by the measure display:

![Torque display](image)

**Peak Reading with Manual Reset Operation**

![Diagram](image)

When torque is applied, the NorTronic® will track the torque input until it has exceeded the *Active From* setting (See page 20) and then enters into peak mode for torque and angle.

The Angle display is shown as “0°” until the Torque is above the *Active From* setting for the tool. If the *Snug Torque* value is set (See page 14) and is above the *Active From* setting, the Angle display is shown as “0°” until the Torque reaches the *Snug Torque* value and then displays the Angle value in peak mode.

After a peak torque or angle has been applied and then the torque has dropped below the *Active From* setting, both the torque and angle readings continuously flash.

Press the ZERO button to **Reset** the Torque display to the current Torque input and Angle Display to “0°”.

Press the SAVE button to **Reset & Save** the peak torque and angle readings to the Data Store on the NorTronic® tool.

If a *Target* is in use and a reading has been saved, press the UP button (and hold in for 2 seconds) to **delete the last reading** that has been **saved** via the *Delete Last Result?* confirmation screen.

![Delete Last Result?](image)

Y / N
Peak Reading with Auto Reset

When torque is applied, the NorTronic® will track the torque input until it has exceeded the **Active From** setting (See page 20) and then enters into peak mode for both Torque & Angle.

The angle display is shown as "0°" until the torque is above the **Active From** setting for the tool. If the **Set Target (Snug Torque)** is set, the angle display is shown as "0°" until the torque reaches the **Set Target (Snug Torque)** value (see page 14) and then displays the angle value in peak mode.

When a peak torque or angle has been applied after which the torque has dropped below the **Active From** setting, both the torque and angle readings continuously flash for the duration of the **Hold Time** (See page 22). The displays are then reset to the current torque input.

If the **Save** button (which now becomes **latching**) has been pressed prior to the **Peak** being detected, the **Torque & Angle** readings are **saved** to the **Data Store** on the NorTronic®.

If a **Target** is in use and a reading has been saved, press the UP button (and hold in for 2 seconds) to **delete** the **last reading** that has been **saved** via the **Delete Last Result?** confirmation screen.

![Delete Last Result?](image)

**Tool Target**

Having already set a **Tool Target** (See page 14 for more details), the NorTronic® beeps as the applied torque approaches the torque target (starting slow and getting faster) until a continuous tone is heard when the target has been reached. This stops after the torque has been released.

The Torque & Angle digits will be shown as:
- White = below Active From setting or no Target set
- Yellow = above Active From setting, but below Target Lower Limit
- Green = above Target Lower Limit and below Target Upper Limit
- Red = above Target Upper Limit

The tool **Vibrates** when the **Torque Target** or **Angle Target** has been reached (if enabled in **SET UP – Vibrate**, see page 21 for more information).

**TIP:** If an angle only target has been set, the beeper sounds as the user approaches the angle target, quickening in frequency until a continuous tone when the angle target has been reached.
Target(s) – Change

Press UP or DOWN to change displayed Target. The UP button has a different function if a Target is active (See pages 8, 9 & 13).

Zero Display Offset

Exercise the NorTronic® in required direction of use.

Press the ZERO button to Zero both the Torque & Angle values when the Torque is below 3% of the wrench capacity.

TIP: Zero the NorTronic® in the vertical position with the ratchet head removed, so that the weight of the tool is not affecting the reading. If the displayed reading does not zero, increase the reading by applying and maintaining a small torque (<3%) and then press the ZERO button. Remove the torque and press the button again.

# of Saved Readings

Every time a Test Result is saved to the NorTronic® memory, the Reading # (bottom left of display) is incremented. This is reset when the Tool Target has been changed.

Sleep

The NorTronic® will Sleep if any of the events listed below have not happened during the time period specified in Tool set up – Sleep (see page 20 for more information):

a) A button has been pressed.

b) The Torque reading has changed by more than 2% of the wrenches capacity.

TIP: The NorTronic® can be forced to sleep at any time by pressing the button for 2 seconds.

Resume from Sleep (Gyroscope Drift Calibration)

To wake the NorTronic®, press any button. After the display of the Norbar logo the NorTronic® will perform a gyroscope drift calibration. The gyroscope drift calculation will also be done if the temperature changes by more than 3 degrees. This is necessary to ensure the angle measurement is accurate.

WARNING: PLACE THE TOOL ON A FLAT LEVEL SURFACE AND DO NOT MOVE BEFORE “CALCULATING” IS DISPLAYED.
This screen is displayed during the gyroscope drift calculation.

The NorTronic® can now be used.

**NOTE:** The gyroscope drift calibration will not be done if the NorTronic® is woken less than 30 seconds after going to sleep.

**USB Interface**

The NorTronic® can be connected to a PC with TDS installed using the cable supplied.

**NOTE:** Remove the *USB cover* to access the *USB connector*. The USB cover must be fitted for *IP44 protection*.

*Test Results* saved on the NorTronic® (to the *Data Store*) will be copied to TDS when synchronising. The *Tool Target* and *Tool SET UP* configuration can also be sent from TDS.

When plugged in, the USB icon  will appear on the bottom left of the display. When connected to TDS, the icon will go green.
Wireless Interface

The NorTronic® can be connected to a PC with TDS installed using an additional USB wireless Adapter.

Test Results saved on the NorTronic® (to the Data Store) will be copied to TDS when synchronising. The Tool Target and Tool SET UP configuration can also be sent to the NorTronic® tool from TDS.

There are 2 USB Wireless Adapters available:
- 868 MHz (part # 43508) for the UK & Europe
- 915 MHz (part # 43509) for the USA, Canada, Australia & New Zealand.

When connected, the wireless icon will appear on the bottom left of the display. The tool can now be synchronised with TDS.

NOTE: Only NorTronic® tools fitted with the matching Transceiver will work the 868/915 MHz USB Wireless Adapters.

The Wireless Interface must be Enabled in SET UP with the correct 868/915 MHz frequency (see page 21 for more information).

Multiple Tools must be set up with individual Node numbers (see page 21 for more information).

Low Battery

The LOW BATTERY icon will be shown when there is approximately 20 minutes of operational life left in the NorTronic®.

NOTE: This icon will overwrite the Wireless or USB icons (but the NorTronic® will remain connected).

Flat Battery

The Flat Battery icon will be shown for approximately 30 seconds before shutting down. Further button presses will not wake up the tool. The batteries must be removed and re-charged or replaced.

NOTE: This icon will overwrite the Wireless or USB icons (but the NorTronic® will remain connected).

Torque CRS

The Torque CRS (centres) value only needs to be changed if the end fitting has been changed. This setting ensures the NorTronic® displays the correct torque when fitting a non-standard spanner end fitting: - i.e. with a 100 mm Torque CRS.

The icon will be shown in the top left hand corner of the Measure display if the Torque CRS value has been changed from the default value.

Multiplier

The Multiplier value only needs to be changed if a Norbar HT (HandTorque®) gearbox is being used in conjunction with the NorTronic®. This setting ensures the NorTronic® displays the correct torque for the output of the Torque Multiplier: - i.e. with a 100:1 Ratio.

The icon will be shown in the top left hand corner of the Measure display if the Multiplier value has been changed from the default value.

NOTE: This is a Torque only mode, so Angle measurement cannot be displayed.
Exit Measure Display (Options Menu)

Press \( \) to exit Measure. The Options Menu (shown below) is displayed.

Press \( \) or \( \) to change highlighted option.
Press \( \) to confirm.
Press \( \) to enter Measure.

TDS Receive Results Interface

Test Results can be sent as they happen (i.e. in real time) from the NorTronic\textsuperscript{®} tool to TDS via the Receive Results window using the USB or wireless interfaces.

Only one tool can be interfaced at any one time.

If the USB interface is used, the USB icon will appear on the bottom left of the display.

If the wireless interface is used, the wireless icon will change from \( \) to \( \) when the tool is connected to Receive Results in TDS.

After a peak has been detected, press ZERO to send both the peak Torque & Angle values to Receive Results in TDS. If the tool is configured for Auto Reset, the readings are automatically sent during the Hold Time.

The save button is inactive (i.e. Test Results are NOT saved on the NorTronic\textsuperscript{®}). When the button is pressed, Test Results will be sent via USB or wireless to the Receive Results window on TDS.

If a Target is in use and a reading has been saved, press the UP button (and hold in for 2 seconds) to delete the last reading that has been output to "Receive Results" in TDS.
TOOL TARGET - SETTING

Set Target

Press ▲ or ▼ to change.

Press ◄ to confirm and go to the Audit mode?.

The ✗ button is not functional.

- Minimum = 0 (No Target), Maximum = 100% of NorTronic® torque capacity.

Audit Mode

NOTE: This screen will only be shown if Angle is Enabled ‘✓’ in Set up and Target is larger than ‘Active from’ threshold.

Audit mode?

Press ▲ or ▼ to enable ‘✓’ or disable ‘✗’.

Press ◄ to confirm and go to either Set Angle Limit or Set Angle.

The ✗ button is not functional.

- ‘✓’ go to Set Angle Limit, ‘✗’ go to Set Angle.

Set Angle Limit

NOTE: This screen will only be shown if ‘✓’ was selected on the Audit mode? screen.

Set Angle Limit

Press ▲ or ▼ to change value.

Press ◄ to confirm and go to Options Menu.

The ✗ button is not functional.

- Minimum = 1, Maximum = 720.

Set Angle Target

NOTE: This screen will only be shown if ‘✗’ was selected on the Audit mode? screen.

Set Angle

Press ▲ or ▼ to change.

Press ◄ to confirm and go to Set Torque Target.

The ✗ button is not functional.

- Minimum = 0, Maximum = 999.
Set Final Torque Target

NOTE: This screen will only be shown if Angle Target is larger than ‘0’ on the ‘Set Angle’ screen.

Set Final N·m

298.4

Press ▲ or ▼ to change.

Press ZERO to confirm and go to Options Menu.

The ▼ button is not functional.

- Minimum = 0 (No Final Torque Target), Maximum = NorTronic® torque capacity.

- If the Final Target value is set to 0, the Final Target is disabled (Torque + Angle Target), if it is set to a value above the Torque Target setting, the Final Target is enabled (Torque + Angle (with Final Torque) Target).

Linked Targets

Linked Targets can only be set up in TDS.

The # of Tests & Next Target can only be specified in the TDS Target.

Linked Targets can be sent via the USB or wireless interface to the Tool.

If after the final target has completed (and no further target has been specified), the last Target is enabled.

To carry on, link the last Target to the first.
The NorTronic® has up to **15 active Targets**. **Multiple Targets** can be set up in **TDS** and individually **downloaded** to NorTronic®.

The target can be changed on the tool unless the “**Locked**” option has been **ticked** in “**Set Tool Options**” and **downloaded** to the NorTronic® by clicking the **Update** button on “**Set Tool Options**” as shown below (See page 17 for more information on “**Tool Setup**”).

The Locked option **disables** the NorTronic® user from altering the **Target SETTING** and **Tool SET UP** on the NorTronic®.
TOOL – SET UP

All NorTronic® Tool - set up can be configured in TDS and downloaded to the tool.

NorTronic® Tool - set up includes: Limits, Units, Time & Date, Sleep, Angle Display, Auto Zero, Active From, Vibrate, Wireless, Auto Reset, Inverse Display, Torque Centres and Multiplier.

NOTE: Tool - set up is active unless the “Lock” option has been ticked and downloaded to NorTronic® via the TDS software. This disables the NorTronic® user from altering the Tool set up or Target SETTING.
Torque Limits

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HI Limit</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>LO Limit</strong></td>
<td>4</td>
</tr>
</tbody>
</table>

Press ▲ or ▼ to change highlighted value.

Press ▶ to confirm and go to **LO Limit**.

Press ◀ to exit to set up (saving changes).

* % of Torque Target setting: Minimum = 0, Maximum = 20. Default = 4.
Angle Limits

Angle ?

HI Limit 4
LO Limit 4

- Press ▲ or ▼ to change highlighted value.
- Press ← to confirm and go to LO Limit.
- Press ◯ to exit to set up (saving changes).

- Target + HI Limit, Target - LO Limit in degrees (°).

Units

Units ?

N·m  Kgf·m
dN·m  Kgf·cm
cN·m  gf·m

- Press ▲ or ▼ to highlight required unit.
- Press ← to select unit and exit.
- Press ◯ to exit to set up (no changes).

- Press the ◯ button with ‘gf·m’ highlighted to go to 2nd units screen (shown below).

Units ?

lbf·ft in·lb
lbf·in ozf·in
ft·lb in·oz

- Press ▲ or ▼ to highlight unit.
- Press ← to select unit and exit.
- Press ◯ to exit to set up (no changes).

- Minimum Enabled = 1, Maximum Enabled = 1. Default = N·m.

Date & Time

Date & Time ?

24 01 14
16:05:14

- Press ▲ or ▼ to change highlighted value.
- Press ← or → to confirm and step onto next change (month, year, hours, minutes & seconds).

- 24 hour clock format. The Date & Time will always be checked and updated when synchronising to TDS.
- Date format can be changed in TDS Set Tool Options, DD/MM/YY, MM/DD/YY or YY/MM/DD.

Date format : DD/MM/YY
Torque CRS MM/DD/YY
Multiplier N8: changes to the code number only.
Sleep

The NorTronic® will go to **Sleep** if there has been *no activity* for the time set in ‘Sleep After’. During sleep, none of the NorTronic® functions operate.

### Sleep After

<table>
<thead>
<tr>
<th>Setting</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum</td>
<td>10</td>
</tr>
<tr>
<td>Maximum</td>
<td>300</td>
</tr>
<tr>
<td>Default</td>
<td>120</td>
</tr>
</tbody>
</table>

Press ▲ or ▼ to change value. Press ENTER or EXIT to confirm and exit to *set up*.

- Minimum = 10, Maximum = 300. Default = 120
- Set the time to *Never* (below 10) to disable SLEEP.

### Angle

<table>
<thead>
<tr>
<th>Setting</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Press ▲ or ▼ to change setting. Press ENTER or EXIT to confirm and exit to *set up*.

- ✔ = Display Torque & Angle.
- ✗ = Display Torque only.

### Auto Zero

<table>
<thead>
<tr>
<th>Setting</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Press ▲ or ▼ to change setting. Press ENTER or EXIT to confirm and exit to *set up*.

- ✔ = both the TORQUE & ANGLE readings will Auto Zero on power up or resume from sleep.
- ✗ = the user must press the ZERO button to reset the torque display to the current torque input and Angle Display to “0”.

### Active From

<table>
<thead>
<tr>
<th>Setting</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Press ▲ or ▼ to change value. Press ENTER or EXIT to confirm and exit to *set up*.

- Minimum = 1.8 %, Maximum = 100.0 %. Default = 7.0 %
Vibrate

Vibrate ?

Press ▲ or ▼ to change setting.

Press □ or ◯ to confirm and exit to set up.

• ✓ = Tool will Vibrate when Torque Target reached.
• x = Tool does not vibrate when Torque Target reached.

Wireless

Wireless ?

Node 2
868 MHz

Press ▲ or ▼ to change setting.

Press □ to confirm and go to Node X.

Press ◯ to confirm and exit to set up (saving changes).

• ✓ = Wireless communication is Active.
• x = Wireless communication is Not Active.

Wireless ?

Node 2
868 MHz

Press ▲ or ▼ to change value.

Press □ to confirm and go to set up (saving changes).

Press ◯ to confirm and exit to set up (saving changes).

• A Node number is an individual identification of a tool on the wireless network. If multiple NorTronic® tools are communicating with the same USB wireless adapter (at the same time), they must each have individual node numbers.
• Minimum = 1, Maximum = 254. Default = Randomly generated number.
• An 868 MHz or 915 MHz Transceiver is fitted inside the tool. This is country specific and needs to match the operational frequency of your USB Wireless Adapter.
Auto Reset (Hold Time ?)

Auto Reset ?

Press ▲ or ▼ to change setting.
If ✔, pressing ▲ or ▼ will take the user to ‘set up Hold Time ?’. If ✗, the user will return to set up.

• ✔ = Hold the torque (and angle) values the length of the Hold Time setting after the torque has been removed and then reset the display to 0.

• ✗ = Hold the torque (and angle) values until the ZERO button has been pressed and then reset the display to 0.

Hold Time ?

Hold Time ?

Press ▲ or ▼ to change value.
Press ZERO or  to confirm and go to set up (saving changes).

• Minimum = 1, Maximum = 10. Default = 4

Display

Inverse ?

Press ▲ or ▼ to change setting.
Press ZERO or  to confirm and go to set up (saving changes).

• ✔ = Black digits on White background, ✗ = White digits on Black background, when in the Measure display.

WARNING: BLACK DIGITS ON WHITE BACKGROUND WILL REDUCE THE OPERATIONAL BATTERY LIFE BY APPROXIMATELY 65%.

Multiplier

Multiplier ?

Press ▲ or ▼ to change value.
Press ZERO or  to confirm and go to set up (saving changes).

• Minimum = 1.000, Maximum = 1000.000. Default = 1.000
Complete

Complete Screen ?

Press ▲ or ▼ to change setting.
Press ◼ or ▼ to confirm and go to set up (saving changes).

- ✓ = Show the Complete Screen when the Number of Results saved equal the Number of Results specified for the Target.
- × = Do not show the Complete Screen when the Number of Results saved equal the Number of Results specified for the Target.

Warnings

Warnings Screen ?

Press ▲ or ▼ to change setting.
Press ◼ or ▼ to confirm and go to set up (saving changes).

- ✓ = Show the Warnings Screen on power up (or resume from sleep) if the Multiplier or Torque CRS settings are not default.
- × = Do not show the Warnings Screen on power up (or resume from sleep) if the Multiplier or Torque CRS settings are not default.

Torque CRS

Distance ?

31.8 mm

Press ▲ or ▼ to change value.
Press ◼ or ▼ to confirm and go to set up (saving changes).

- Minimum = 0.1, Maximum = 999.0. Default: - NorTronic® 50 & 200 = 31.8 mm, NorTronic® 330 = 35.0 mm.
DATA STORE

Press the or buttons to change highlighted option.
Press to confirm.
Press to go to set up.

View Results

Result
30/03/12
10:48:10
334.6 N·m 93°

Result
30/03/12
10:48:23
360.5 N·m 101°

Press the or buttons to scroll through the Saved Test Results screen(s).
Press the button to exit back to Data Store.

Erase All

Delete Results ?
Y / N

Press the or buttons to change highlighted option.
Press to confirm.
Press to go to set up.

WARNING: SAVED TEST RESULTS CANNOT BE RETRIEVED FROM THE TOOL ONCE THEY HAVE BEEN DELETED.
ABOUT

Each of the 3 screens (starting with serial #), is displayed for 2 seconds before returning to set up. The 'Extended Capacity' screen is shown if the 'Multiplier', 'Torque CRS' or both have been changed from their default values.

Tool Identification

Serial #
2017/123456
Part #
43536

Version #, Capacity

Version #
2.XX
Capacity
200 N·m

Hardware options fitted.

Options
Wireless
Angle

Extended Capacity.

Extended Capacity
2970 N·m
SPECIFICATIONS

<table>
<thead>
<tr>
<th>Model</th>
<th>Resolution</th>
<th>Zero Suppression</th>
<th>Weight</th>
<th>Dimensions (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NorTronic® 50</td>
<td>0.01 N·m</td>
<td>± 1 L.S.D (0.01 N·m)</td>
<td>1.20</td>
<td>41 x 41 x 468</td>
</tr>
<tr>
<td>NorTronic® 200</td>
<td>0.1 N·m</td>
<td>± 1 L.S.D (0.1 N·m)</td>
<td>1.45</td>
<td>41 x 41 x 593</td>
</tr>
<tr>
<td>NorTronic® 330</td>
<td>0.1 N·m</td>
<td>± 1 L.S.D (0.1 N·m)</td>
<td>1.89</td>
<td>41 x 41 x 808</td>
</tr>
</tbody>
</table>

Display: 2 x 0.95” OLED colour displays. With update rate of five readings per second (5Hz).

Torque unit conversions: To ‘BS 350:2004 Conversion factors for units’.

Units of measurement: N·m, dN·m, cN·m, Kgf·m, Kg·cm, gf·ft, lb·in, ozf·in, ft·lb, in·lb & in·oz.

Date / Time: Date format DD/MM/YY / MM/DD/YY or YY/MM/DD (set up via TDS), Time format HH:MM:SS (24 hour clock).

Frequency response: 860 Hz.

Torque accuracy: +/-2% of reading from 10% - 19%.
                 +/-1% of reading from 20% - 100%.

Angle display (CW & CCW): 1° Resolution, Maximum angle 999 degrees.

Angle accuracy: CW = 1% +/-1 digit.
                 CCW = 2% +/-1 digit.

Operating temperature range: +5°C to +40°C.

Storage temperature range: -20°C to +70°C. Batteries -10°C to +35°C

Maximum operating humidity: 85% Relative Humidity @ 30°C. Batteries 50%

Operational life from fully charged: 34 hours continuous, 136 hours with a 25% duty ratio (17 x 8 hour shift). Dependant on display settings.

Power consumption: 130 mW – maximum.

Batteries: AA, 2500 mAh, 1.2 volt NiMH (Nickel metal Hydride).

Coin cell: Renata 36 mAh (CR1220).


Environmental protection: IP44.

USB: 2.0 Device (5 pin mini).

Wireless Transceiver: 868 MHz – see Declaration of Conformity
915 MHz
Contains FCC ID: OA3MRF89XAM9A
This device complies with Part 15 of the FCC Rules, subpart C.
Contains transmitter module IC: 7693A-89XAM9A.

Mechanical overload: NorTronic® 50, 100% of Torque Capacity
NorTronic® 200, 50% of Torque Capacity
NorTronic® 330, 50% of Torque Capacity

Directive 1999/5/EC: Norbar hereby declares that this NorTronic® (Part # 43500, 43501, 43502 & 43503) are in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC”.

FCC Rules (USA): This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment OFF and ON, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

RSS Standard (Canada): This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

NOTE: Due to continuous improvement all specifications are subject to change without prior notice.
EU Declaration of Conformity  (No 0019)

This declaration of conformity is issued under the sole responsibility of the manufacturer.

The object of the declaration: 
NorTronic® Electronic Torque Wrench.

The object of the declaration described above is in conformity with the relevant union harmonisation legislation:

<table>
<thead>
<tr>
<th>Model Name (Part Number):</th>
<th>NorTronic® 50 3/8&quot; 868MHz (43500)</th>
<th>NorTronic® 50 3/8&quot; 915MHz (43504)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NorTronic® 50 1/2&quot; 868MHz (43501)</td>
<td>NorTronic® 50 1/2&quot; 915MHz (43505)</td>
</tr>
<tr>
<td></td>
<td>NorTronic® 200 1/2&quot; 868MHz (43502)</td>
<td>NorTronic® 200 1/2&quot; 915MHz (43506)</td>
</tr>
<tr>
<td></td>
<td>NorTronic® 300 1/2&quot; 668MHz (43503)</td>
<td>NorTronic® 300 1/2&quot; 915MHz (43507)</td>
</tr>
</tbody>
</table>

NOTE: Turn wireless feature off for use in Europe (SETUP / Wireless / Not Enabled).

Legislation


The object of the declaration described above has been designed to comply with the following standards:

<table>
<thead>
<tr>
<th>EMC directive</th>
<th>BS EN 61326-1:2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>RED directive</td>
<td>EN 301 489-1 V2.1.1 &amp; EN 301 489-1 V2.2.0, EN 301 489-17 V3.1.1 &amp; EN 301 489-17 V3.2.0, EN 330 220-1 V3.1.1 &amp; EN 330 220-2 V3.1.1, BS EN 62311:2008.</td>
</tr>
</tbody>
</table>

The basis on which conformity is being declared:
The technical documentation required to demonstrate that the product meets the requirements of the above Directives has been compiled by the signatory below and is available for inspection by the relevant enforcement authorities.

The CE mark was first applied in: 2014.

Signed for and on behalf of Norbar Torque Tools Ltd.

Signed: [Signature]  Full Name: Trevor Mark Lester  B.Eng.

Date: 8 February 2018  Authority: Compliance Engineer

Place: Norbar Torque Tools Ltd., Wildmere Road, Banbury, Oxfordshire. OX16 3JU
MAINTENANCE

NorTronic® Calibration

Your NorTronic® has been supplied with a certificate of calibration. To maintain the specified accuracy it is recommended that the NorTronic® is recalibrated at least once per year. Re-calibration should be carried out at Norbar or by a Norbar approved agent, where all the facilities to ensure the instrument is functioning at maximum accuracy are available.

IMPORTANT: DO NOT REMOVE SIDE PANELS; THERE ARE NO CALIBRATION SETTINGS INSIDE.

Battery Replacement

There are 2 types of batteries in this product. 3 standard AA batteries for powering the NorTronic® (which can be removed by the user and recharged when necessary) and a coin cell to power the clock.

The coin cell should only be replaced by Norbar or a Norbar approved agent.

Repair

Repair should be carried out at Norbar or by a Norbar approved agent, where all the facilities to ensure the NorTronic® is functioning at maximum accuracy are available.

Cleaning

Do not use abrasives or solvent based cleaners.

Product Disposal

This symbol on the product indicates that it must not be disposed of in the general waste.

Please dispose of according to your local recycling laws and regulations.

Contact your distributor or see the Norbar web site (www.norbar.com) for further recycling information.

Battery Disposal

This product contains 2 types of Batteries. Only dispose of batteries at end of product life.

Batteries contain substances that can have a negative effect on the environment and human health.

The crossed-out wheeled bin means that batteries must NOT be disposed of in the general waste. All batteries must be disposed of at a local waste battery collection point.

The batteries do NOT contain mercury (Hg), cadmium (Cd) or lead (Pb). If the battery substances exceed the legal limits the battery would be marked with Pb, Cd or Hg.
TROUBLE SHOOTING

Tips are located within the manual to help with troubleshooting. Common problems are listed below:

<table>
<thead>
<tr>
<th>Problem</th>
<th>Likely Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>NorTronic® displays are blank.</td>
<td>Remove and recharge AA batteries or replace batteries.</td>
</tr>
<tr>
<td>NorTronic® only powers up for a short time.</td>
<td>Remove and recharge AA batteries or replace batteries.</td>
</tr>
<tr>
<td>Torque will not zero and displays “Err=1”.</td>
<td>Torque reading must be within ± 3% of the wrench capacity.</td>
</tr>
<tr>
<td>Display shows “Err=2”.</td>
<td>Torque over range – return to Norbar.</td>
</tr>
<tr>
<td>Display shows “Err=3”.</td>
<td>Hardware error – return to Norbar.</td>
</tr>
<tr>
<td>Display shows “Err=4”.</td>
<td>Hardware error – return to Norbar.</td>
</tr>
<tr>
<td>Date &amp; Time not remembered.</td>
<td>The coin cell battery has failed. Return to Norbar.</td>
</tr>
<tr>
<td>Cannot zero NorTronic®.</td>
<td>Tool has possibly been overstrained. Return to Norbar.</td>
</tr>
<tr>
<td>Measurement does not function correctly.</td>
<td>Ensure the ‘Active From’ setting is not too low or too high.</td>
</tr>
<tr>
<td>NorTronic® locks up.</td>
<td>Remove batteries, then re-insert to reset configuration.</td>
</tr>
<tr>
<td>NorTronic® continuously triggers.</td>
<td>Check that ZERO of the NorTronic® has been set with no torque applied i.e. the weight of the tool. Change the Active From setting to a larger value.</td>
</tr>
<tr>
<td>Frequency of beep does not get faster when approaching a Target.</td>
<td>Apply the torque slower.</td>
</tr>
</tbody>
</table>

GLOSSARY OF TERMS

<table>
<thead>
<tr>
<th>Word or Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>#</td>
<td>Number</td>
</tr>
<tr>
<td>Active From</td>
<td>Value from which the memory modes operate</td>
</tr>
<tr>
<td>Capacity</td>
<td>NorTronic® full scale</td>
</tr>
<tr>
<td>CRS</td>
<td>Centres</td>
</tr>
<tr>
<td>Frequency Response</td>
<td>Frequency value below which signals are passed</td>
</tr>
<tr>
<td>Hold Time</td>
<td>The length of time a reading is displayed until automatically reset</td>
</tr>
<tr>
<td>Hz</td>
<td>Hertz, unit of frequency</td>
</tr>
<tr>
<td>L.S.D.</td>
<td>Least Significant Digit</td>
</tr>
<tr>
<td>mAh</td>
<td>milli ampere hour; Rate of charge/discharge of a battery</td>
</tr>
<tr>
<td>PC</td>
<td>Personal Computer</td>
</tr>
<tr>
<td>Sleep After</td>
<td>The time after, when not used, the NorTronic® goes to sleep; this will save battery power</td>
</tr>
<tr>
<td>Snug Torque</td>
<td>Torque value that must be reached before measuring angle</td>
</tr>
<tr>
<td>Spanner End Fitting</td>
<td>Optional extra fitted in place of the ratchet</td>
</tr>
<tr>
<td>Target</td>
<td>Torque or angle value required. Each Target has an Upper Limit and a Lower Limit</td>
</tr>
<tr>
<td>TDS</td>
<td>Torque Data System – Software included for PC use</td>
</tr>
<tr>
<td>Tool</td>
<td>A reference to the tool being used</td>
</tr>
<tr>
<td>Transceiver</td>
<td>Internal wireless module to enable data to be transmitted / received by the NorTronic®</td>
</tr>
<tr>
<td>USB</td>
<td>Universal Serial Bus</td>
</tr>
<tr>
<td>Work Id</td>
<td>Work identification - the reference to the task, application or job e.g.: a bolted flange, engine cylinder head, vehicle wheel nuts, etc</td>
</tr>
<tr>
<td>Zero Suppression</td>
<td>Value of torque that has to be achieved for the NorTronic® not to display zero</td>
</tr>
</tbody>
</table>
INTRODUCTION

The NorTronic® is an electronic torque and angle wrench capable of measuring, displaying, storing and transmitting test results and receiving configuration settings from TDS (Torque Data System PC software) via the USB or Bluetooth® interface.

The tool comes in 3 torque capacities: - 50 N·m, 200 N·m & 330 N·m.

The NorTronic® features 2 identical colour displays positioned at 90 degrees to each other. This enables the user to see a display when the tool is being operated in the vertical or horizontal plane.

The NorTronic® gives visual, audible and physical indication via vibration that the tool target has been reached.

Part Numbers Covered by This Manual

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Torque Capacity</th>
<th>Ratchet Square Drive</th>
</tr>
</thead>
<tbody>
<tr>
<td>43534</td>
<td>50 N·m</td>
<td>⅜”</td>
</tr>
<tr>
<td>43535</td>
<td>50 N·m</td>
<td>½”</td>
</tr>
<tr>
<td>43536</td>
<td>200 N·m</td>
<td>½”</td>
</tr>
<tr>
<td>43537</td>
<td>330 N·m</td>
<td>½”</td>
</tr>
</tbody>
</table>

Parts Included

<table>
<thead>
<tr>
<th>Parts Included</th>
<th>Part Number</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>NorTronic® electronic torque wrench</td>
<td>4353X</td>
<td>1</td>
</tr>
<tr>
<td>USB flash drive (Manuals / Software)</td>
<td>61131</td>
<td>1</td>
</tr>
<tr>
<td>Quick reference guide</td>
<td>34398</td>
<td>1</td>
</tr>
<tr>
<td>USB lead to PC (Mini USB to Type A)</td>
<td>39678</td>
<td>1</td>
</tr>
<tr>
<td>AA Rechargeable Battery</td>
<td>39663</td>
<td>3</td>
</tr>
<tr>
<td>Calibration Certificate</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>NorTronic® carry case</td>
<td>44506 - 44508</td>
<td>1</td>
</tr>
</tbody>
</table>

USB Bluetooth® Adapters (Accessory)

<table>
<thead>
<tr>
<th>USB Bluetooth® Adapter</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>USB Bluetooth® Adapter (2.4GHz)</td>
<td>43513</td>
</tr>
</tbody>
</table>

Software Compatibility

<table>
<thead>
<tr>
<th>NorTronic®</th>
<th>TDS</th>
<th>Reason for upgrade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version 2.XX</td>
<td>2.0.XX</td>
<td>-</td>
</tr>
</tbody>
</table>

NOTE: ‘X’ is shown in place of the latest software release version #.
FEATURES AND FUNCTIONS

- Bluetooth® interface with plaintext protocol for easy integration into user environments; set targets, get results, and stream live torque and angle data using your own software and equipment on phones, computers, tablets, and more, via Bluetooth® or USB. Refer to the ASCII mode function operators manual (34472) for more information.

- ASCII mode for interfacing to third party control systems.

- TDS (Torque Data System) software included for complete data management and archiving to a PC. Includes seamless data synchronisation (USB only). See TDS Manual part number 34397 for more information.

- All NorTronic® tools are Torque Handles with a 16 mm spigot to interface to additional end fittings and offsets. A push through ratchet head end fitting is supplied as standard.

- Ability to enter offset compensation for non-standard end fitting.

- NorTronic® can be locked from adjustment “P type” for production environments (via TDS or ASCII mode instruction from external device).

- 2 colour 0.95” OLED displays for visual indication of measurement against target status.

- Audible indication of target status.

- Vibration feedback when target reached.

- 4 digit resolution for all NorTronic® electronic torque wrenches.

- Maximum of 2,400 (date & time stamped) reading memory store.

- 5 user buttons.

- Operational from three AA internal rechargeable / non rechargeable batteries.

- Up to 15 linked (or non-linked) targets can be on the tool at any one time.

- USB port for interface to TDS or user software.

- 12 torque units.

- Time & date stamped test results.

- Displays torque only or torque & angle.

- IP44 protection against dust and water ingress.

- Ability to ratchet when measuring angle.

- Directly display and save the output torque of a HT (HandTorque®) gearbox when used in conjunction with a NorTronic®.

- Produce, save, view and print real time torque and angle graphs in conjunction with TDS, or stream real time data to user software via ASCII mode communication.

- View and print reports for results in conjunction with TDS.

- 4 Target modes - Torque Target only, Snug Torque followed by Angle Target, Snug Torque followed by Angle Target + final Torque Target or Audit Torque Target.

- Improved battery life when sleeping (batteries do not need to be removed for storage).
BEFORE USE

Preparation

IMPORTANT: IF THE EQUIPMENT IS USED IN A MANNER NOT SPECIFIED BY THE MANUFACTURER, THE PROTECTION PROVIDED BY THE EQUIPMENT MAY BE IMPAIRED.

WARNING: ALLOW THE NORTRONIC® TO EQUALISE TO THE AMBIENT TEMPERATURE/HUMIDITY BEFORE SWITCHING ON. WIPE OFF ANY MOISTURE BEFORE USE.

Battery Fitting / Replacement

NOTE: Insert positive battery terminal into handle cavity first. Rotate the end cap clockwise to tighten and counter-clockwise to release.

Ratchet Head Fitting / Replacement

NOTE: All NorTronic® tools are Torque Handles with a 16 mm spigot. Should you wish to change to a different spanner end fitting, depress the plunger on the ratchet head and pull to release.
BUTTON FUNCTIONS

Throughout set up and operation, the buttons perform the following functions:

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
<th>Operation</th>
<th>set up</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Button" /> <img src="image2" alt="Button" /></td>
<td>Change Target</td>
<td>Scroll through options or change a selected value. When changing a value, hold the button down for a faster rate of change.</td>
<td></td>
</tr>
<tr>
<td><img src="image3" alt="Button" /></td>
<td>Zero Torque &amp; Angle display if below the Active From threshold. Cancel the peak reading if above the Active From threshold and send via USB / Bluetooth®</td>
<td>Confirm a setting.</td>
<td></td>
</tr>
<tr>
<td><img src="image4" alt="Button" /></td>
<td>Exit the measure display</td>
<td>Exit current menu / screen.</td>
<td></td>
</tr>
<tr>
<td><img src="image5" alt="Button" /></td>
<td>Save test results to NorTronic®</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

MEASURE DISPLAY

NOTE: Both of the displays on the NorTronic® show the same information at all times.

![Image of display]

<table>
<thead>
<tr>
<th>#</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Number of readings that have been saved for the current Target</td>
</tr>
<tr>
<td>2</td>
<td>Shows the next peak reading that will be saved to the NorTronic® (if Auto Reset enabled)</td>
</tr>
<tr>
<td>3</td>
<td>Bluetooth® connected</td>
</tr>
<tr>
<td>4</td>
<td>USB connected to P.C. (TDS)</td>
</tr>
<tr>
<td>5</td>
<td>Low Battery / Flat Battery</td>
</tr>
<tr>
<td>6</td>
<td>Target less than 10% of Tool Capacity (ISO6789:2017)</td>
</tr>
<tr>
<td>7</td>
<td>Current Torque Units</td>
</tr>
<tr>
<td>8</td>
<td>Torque reading</td>
</tr>
<tr>
<td>9</td>
<td>Angle reading</td>
</tr>
<tr>
<td>10</td>
<td>Current Snug Torque &amp; Angle Target</td>
</tr>
<tr>
<td>11</td>
<td>Torque CRS has been changed from default value</td>
</tr>
<tr>
<td>12</td>
<td>Multiplier in use</td>
</tr>
<tr>
<td>13</td>
<td>Audit Target</td>
</tr>
</tbody>
</table>
OPERATION

Start Up

The NorTronic® does not have a power on/off switch. The NorTronic® is always powered up or in a deep sleep mode.

Upon fitting the batteries and end cap, press any button to wake the NorTronic® up from sleep. The Norbar logo is displayed for 2 seconds followed by the measure display:

---

Peak Reading with Manual Reset Operation

When Torque is applied, the NorTronic® will track the torque input until it has exceeded the Active From setting (See page 50) and then enters into peak mode for Torque & Angle.

The Angle display is shown as “0°” until the Torque is above the Active From setting for the tool. If the Snug Torque value is set (See page 44) and is above the Active From setting, the angle display is shown as “0°” until the torque reaches the Snug Torque value and then displays the angle value in peak mode.

After a peak torque or angle has been applied and then the torque has dropped below the Active From setting, both the Torque & Angle readings continuously flash.

Press the ZERO button to reset the torque display to the current torque input and angle display to “0°”.

Press the SAVE button to Reset & Save the peak Torque & Angle readings to the Data Store on the NorTronic® tool.

If a Target is in use and a reading has been saved, press the UP button (and hold in for 2 seconds) to delete the last reading that has been saved via the Delete Last Result? confirmation screen.
Peak Reading with Auto Reset

When torque is applied, the NorTronic® will track the torque input until it has exceeded the *Active From* setting (See page 50) and then enters into peak mode for both Torque & Angle.

The angle display is shown as “0°” until the torque is above the *Active From* setting for the tool. If the *Set Target (Snug Torque)* is set, the angle display is shown as “0°” until the torque reaches the *Set Target (Snug Torque)* value (see page 44) and then displays the angle value in peak mode.

When a peak torque or angle has been applied after which the torque has dropped below the *Active From* setting, both the torque & angle readings continuously flash for the duration of the *Hold Time* (see page 52). The displays are then reset to the current torque input.

If the *Save* button (which now becomes *latching*) has been pressed prior to the *Peak* being detected, the Torque & Angle readings are *saved* to the *Data Store* on the NorTronic®.

If a *Target* is in use and a reading has been saved, press the UP button (and hold in for 2 seconds) to *delete* the *last reading* that has been *saved* via the *Delete Last Result?* confirmation screen.

**Tool Target**

The Torque & Angle digits will be shown as:

- White = below Active From setting or no Target set
- Yellow = above Active From setting, but below Target Lower Limit
- Green = above Target Lower Limit and below Target Upper Limit
- Red = above Target Upper Limit

The tool beeps and *Vibrates* when the *Torque Target* or *Angle Target* has been reached (if enabled in *set up – Vibrate*, see page 51 for more information).

**TIP:** If an angle only target has been set, the beeper sounds as the user approaches the angle target, quickening in frequency until a continuous tone when the angle target has been reached.
Target(s) – Change

Press UP or DOWN to change displayed Target. The UP button has a different function if a Target is active (see pages 37, 38 & 43).

Zero Display Offset

Exercise the NorTronic® in required direction of use.

Press the ZERO button to Zero both the Torque & Angle values when the torque is below 3% of the wrench capacity.

TIP: Zero the NorTronic® in the vertical position with the ratchet head removed, so that the weight of the tool is not affecting the reading. If the displayed reading does not zero, increase the reading by applying and maintaining a small torque (<3%) and then press the ZERO button. Remove the torque and press the button again.

# of Saved Readings

Every time a Test Result is saved to the NorTronic® memory, the Reading # (bottom left of display) is incremented. This is reset when the Tool Target has been changed.

Sleep

The NorTronic® will Sleep if any of the events listed below have not happened during the time period specified in Tool Set up – Sleep (see page 50 for information):

- c) A button has been pressed.
- d) The torque reading has changed by more than 2% of the wrenches capacity.

TIP: The NorTronic® can be forced to sleep at any time by pressing the button for 2 seconds.

Resume from Sleep (Gyroscope Drift Calibration)

To wake the NorTronic®, press any button. After the display of the Norbar logo the NorTronic® will perform a gyroscope drift calibration. The gyroscope drift calculation will also be done if the temperature changes by more than 3 degrees. This is necessary to ensure the angle measurement is accurate.

WARNING: PLACE THE TOOL ON A FLAT LEVEL SURFACE AND DO NOT MOVE BEFORE “CALCULATING” IS DISPLAYED.
This screen is displayed during the gyroscope drift calculation.

The NorTronic® can now be used.

**NOTE:** The gyroscope drift calibration will not be done if the NorTronic® is woken less than 30 seconds after going to sleep.

**USB Interface**

The NorTronic® can be connected to a PC with TDS installed using the cable supplied.

**NOTE:** Remove the **USB cover** to access the **USB connector**. The USB cover must be fitted for **IP44 protection**.

*Test Results* saved on the NorTronic® (to the **Data Store**) will be copied to TDS when synchronising. The **Tool Target** and **Tool Set up** configuration can also be sent from TDS.

When plugged in, the USB icon 🛡️ will appear on the bottom left of the display. When connected to TDS, the icon will go green. 🚁
Bluetooth® Interface

The NorTronic® can be connected to a PC, a phone, a tablet, or any other compatible Bluetooth® device. For convenience, we offer a USB Bluetooth® Adapter that is preconfigured to detect and communicate with the NorTronic® tools.

When inserted, this USB adapter appears as a serial port instead of a Bluetooth® device. This is to make it easier for you to interface with it in software, and to prevent it interfering with any existing Bluetooth® hardware and software that may be installed on the system.

The USB Bluetooth® Adapter is controlled by a simple plaintext AT command system that lets you scan for and connect to tools. Please see the ASCII mode operators manual (34472) for more details.

When connected, the Bluetooth® icon will appear on the bottom left of the display.

NOTE: Only NorTronic® tools fitted with Bluetooth® functionality will work with the USB Bluetooth® Adapter; it is not designed to talk to other Bluetooth® devices.

The USB Bluetooth® Adapter is not required to talk to a NorTronic® via Bluetooth® (for instance, most modern Android and Apple phones will work without it), but in that case, in your software you must configure your Bluetooth® hardware to work with the NorTronic® Bluetooth® Low Energy GATT profile.

TDS does not support the USB Bluetooth® Adapter or Bluetooth® connectivity. NorTronic® Bluetooth® functionality is for interfacing to 3rd party software only.

ASCII Mode Communication Protocol

By using the ASCII Mode communication protocol, users can directly interface with the NorTronic® using their own software and equipment to control and configure the tool and receive data.

This is an extremely powerful feature; it’s useful if you already have an application and wish to directly integrate data capture and control from the NorTronic®. It’s also useful if you want to create a bespoke solution tailored for your requirements, and have the tool work with that.

A great example would be integrating the NorTronic® into a production line, where you want to automatically control the tool target and settings, and guide the operator through tightening all the bolts to the required specifications while capturing the results.

Another example would be if you want to gather readings in a remote environment far away from computers. You could use a phone to read the results from the NorTronic® and send these via the Internet to a remote destination without needing to find a computer to connect to the tool and download everything.

The NorTronic® ASCII interface is designed to be easy to understand and easy for programmers to support in their software, and offers a huge range of commands that let you read and modify tool settings, read and set targets, stream live readings from the tool, and more. For more details please see the ASCII mode operators manual (34472).
Low Battery

The LOW BATTERY icon will be shown when there is approximately 20 minutes of operational life left in the NorTronic®.

NOTE: This icon will overwrite the Bluetooth® or USB icons (but the NorTronic® will remain connected).

Flat Battery

The Flat Battery icon will be shown for approximately 30 seconds before shutting down. Further button presses will not wake up the tool. The batteries must be removed and re-charged or replaced.

NOTE: This icon will overwrite the Bluetooth® or USB icons (but the NorTronic® will remain connected).

Torque CRS

The Torque CRS (centres) value only needs to be changed if the end fitting has been changed. This setting ensures the NorTronic® displays the correct torque when fitting a non-standard spanner end fitting: - i.e. with a 100 mm Torque CRS.

The icon will be shown in the top left hand corner of the Measure display if the Torque CRS value has been changed from the default value.

Multiplier

The Multiplier value only needs to be changed if a Norbar HT (HandTorque®) gearbox is being used in conjunction with the NorTronic®. This setting ensures the NorTronic® displays the correct Torque for the output of the Torque Multiplier: - i.e. with a 100:1 Ratio.

The icon will be shown in the top left hand corner of the Measure display if the Multiplier value has been changed from the default value.

NOTE: This is a torque only mode, so angle measurement cannot be displayed.
Exit Measure Display (Options Menu)

Press \( \text{	extbullet} \) to exit Measure. The Options Menu (shown below) is displayed.

Press \( \uparrow \) or \( \downarrow \) to change highlighted option.

Press \( \text{ZERO} \) to confirm.

Press \( \text{EXIT} \) to enter Measure.

TDS Receive Results Interface

Test Results can be sent as they happen (i.e. in real time) from the NorTronic® tool to TDS via the Receive Results window using the USB interface.

Only one tool can be interfaced at any one time.

Connect the USB interface; the USB icon will appear on the bottom left of the display.

After a peak has been detected, press ZERO to send both the peak Torque & Angle values to Receive Results in TDS. If the tool is configured for Auto Reset, the readings are automatically sent during the Hold Time.

The save button is inactive (i.e. Test Results are NOT saved on the NorTronic®). When the button is pressed, Test Results will be sent via USB to the Receive Results window on TDS.

If a Target is in use and a reading has been saved, press the UP button (and hold in for 2 seconds) to delete the last reading that has been output to "Receive Results" in TDS.
TOOL TARGET - SETTING

Set Target

Press \( \uparrow \) or \( \downarrow \) to change.

Press \( \text{confirm} \) to confirm and go to the Audit mode?.

The \( \text{button} \) is not functional.

- Minimum = 0 (No Target), Maximum = 100% of NorTronic\textsuperscript{®} torque capacity.

Audit Mode

NOTE: This screen will only be shown if Angle is Enabled \( \checkmark \) in Set up and Target is larger than ‘Active from’ threshold.

Press \( \uparrow \) or \( \downarrow \) to enable \( \checkmark \) or disable \( \times \).

Press \( \text{confirm} \) to confirm and go to either Set Angle Limit or Set Angle.

The \( \text{button} \) is not functional.

- \( \checkmark \) go to Set Angle Limit, \( \times \) go to Set Angle.

Set Angle Limit

NOTE: This screen will only be shown if ‘\( \checkmark \)’ was selected on the Audit mode? screen.

Press \( \uparrow \) or \( \downarrow \) to change value.

Press \( \text{confirm} \) to confirm and go to Options Menu.

The \( \text{button} \) is not functional.

- Minimum = 1, Maximum = 720.

Set Angle Target

NOTE: This screen will only be shown if ‘\( \times \)’ was selected on the Audit mode? screen.

Press \( \uparrow \) or \( \downarrow \) to change.

Press \( \text{confirm} \) to confirm and go to Set Torque Target.

The \( \text{button} \) is not functional.

- Minimum = 0, Maximum = 999.
Set Final Torque Target

NOTE: This screen will only be shown if Angle target is larger than ‘0’ on the ‘Set Angle’ screen.

Set Final N·m
298.4

Press ▲ or ▼ to change.

Press 0 to confirm and go to Options Menu.

The button is not functional.

- Minimum = 0 (No Final Torque Target), Maximum = NorTronic® torque capacity.
- If the Final Target value is set to 0, the Final Target is disabled (Torque + Angle Target), if it is set to a value above the Torque Target setting, the Final Target is enabled (Torque + Angle (with Final Torque) Target).

Linked Targets

Linked Targets can only be set up in TDS.

The # of Tests & Next Target can only be specified in the TDS Target.

Linked Targets can be sent via the USB interface to the Tool.

If after the final Target has completed (and no further target has been specified), the last Target is enabled.

To carry on, link the last Target to the first.
TDS Target Interface

The NorTronic® has up to **15 active Targets. Multiple Targets** can be set up in **TDS** and individually **downloaded** to **NorTronic®**.

The **Target** can be changed on the tool unless the “**Locked**” option has been **ticked** in “**Set Tool Options**” and **downloaded** to the NorTronic® by clicking the **Update** button on “**Set Tool Options**” as shown below (See page 47 for more information on **“Tool Set up”**).

The Locked option **disables** the NorTronic® user from altering the **Target SETTING** and **Tool Set up** on the NorTronic®.
TOOL – SET UP

All NorTronic® Tool - Set up can be configured in TDS and downloaded to the tool.

NorTronic® Tool - Set up includes: Limits, Units, Time & Date, Sleep, Angle Display, Auto Zero, Active From, Vibrate, Wireless, Auto Reset, Inverse Display, Torque Centres and Multiplier.

NOTE: Tool - Set up is active unless the “Lock” option has been ticked and downloaded to NorTronic® via the TDS software. This disables the NorTronic® user from altering the Tool Set up or Target SETTING.

NOTE: Wireless Node number and Wireless settings are legacy options for non-Bluetooth® tools; they have no effect on the Bluetooth® NorTronic®.
LIMITS
UNITS
DATE / TIME
SLEEP

ANGLE
AUTO ZERO
ACTIVE FROM VIBRATE

BLUETOOTH
AUTO RESET
DISPLAY
MULTIPLIER

COMPLETE WARNINGS
TORQUE CRS

Torque Limits

Torque ?

HI Limit  4
LO Limit  4

Press ▲ or ▼ to highlight required setting.
Press ▼ to confirm the setting to change.
Press □ to exit to the Options Menu.

NOTE: Tool – Set up is a scrolling screen. Press the DOWN button with SLEEP highlighted to go to ANGLE etc.

% of Torque Target setting: Minimum = 0, Maximum = 20. Default = 4.
Angle Limits

- Target + HI Limit, Target - LO Limit in degrees (°).

Units

- Minimum Enabled = 1, Maximum Enabled = 1. Default = N·m.

Date & Time

- 24 hour clock format. The Date & Time will always be checked and updated when synchronising to TDS.
- Date format can be changed in TDS Set Tool Options, DD/MM/YY, MM/DD/YY or YY/MM/DD.
Sleep

The NorTronic® will go to Sleep if there has been no activity for the time set in ‘Sleep After’. During sleep, none of the NorTronic® functions operate.

- Minimum = 10, Maximum = 300. Default = 120
- Set the time to Never (below 10) to disable SLEEP.

Angle

- ✔️ = Display Torque & Angle.
- ✗ = Display Torque only.

Auto Zero

- ✔️ = both the TORQUE & ANGLE readings will Auto Zero on power up or resume from sleep.
- ✗ = the user must press the ZERO button to reset the Torque display to the current Torque input and Angle Display to “0”.

Active From

- Minimum = 1.8 %, Maximum = 100.0 %. Default = 7.0 %
Vibrate

Vibrate?

Press \( \uparrow \) or \( \downarrow \) to change setting.

Press \( \text{CLR} \) or \( \text{ENT} \) to confirm and exit to set up.

- \( \checkmark \) = Tool will Vibrate and beep when Torque Target reached.
- \( \times \) = Tool does not vibrate or beep when Torque Target reached.

Bluetooth®

Bluetooth?

Press \( \uparrow \) or \( \downarrow \) to change setting.

Press \( \text{CLR} \) to confirm and exit to set up (saving changes).

- \( \checkmark \) = Bluetooth communication is Active.
- \( \times \) = Bluetooth communication is Not Active.

Auto Reset (Hold Time ?)

Auto Reset?

Press \( \uparrow \) or \( \downarrow \) to change setting.

If \( \checkmark \), pressing \( \uparrow \) or \( \downarrow \) will take the user to ‘Set up Hold Time ?’. If \( \times \), the user will return to set up.

- \( \checkmark \) = Hold the torque (and angle) values the length of the Hold Time setting after the torque has been removed and then reset the display to 0.
- \( \times \) = Hold the torque (and angle) values until the ZERO button \( \text{CLR} \) has been pressed and then reset the display to 0.
Hold Time?

- Minimum = 1, Maximum = 10. Default = 4

Display

- ✓ = Black digits on White background, × = White digits on Black background, when in the Measure display.

WARNING: BLACK DIGITS ON WHITE BACKGROUND WILL REDUCE THE OPERATIONAL BATTERY LIFE BY APPROXIMATELY 65%.

Multiplier

- Minimum = 1.000, Maximum = 1000.000. Default = 1.000
Complete

Complete Screen ?

- Press [△] or [▽] to change setting.
- Press [ZERO] or [X] to confirm and go to set up (saving changes).

- ✓ = Show the Complete Screen when the Number of Results saved equal the Number of Results specified for the Target.
- × = Do not show the Complete Screen when the Number of Results saved equal the Number of Results specified for the Target.

Warnings

Warnings Screen ?

- Press [△] or [▽] to change setting.
- Press [ZERO] or [X] to confirm and go to set up (saving changes).

- ✓ = Show the Warnings Screen on power up (or resume from sleep) if the Multiplier or Torque CRS settings are not default.
- × = Do not show the Warnings Screen on power up (or resume from sleep) if the Multiplier or Torque CRS settings are not default.

Torque CRS

Distance ?

- Press [△] or [▽] to change value.
- Press [ZERO] or [X] to confirm and go to set up (saving changes).

- Minimum = 0.1, Maximum = 999.0. Default: - NorTronic® 50 & 200 = 31.8 mm, NorTronic® 330 = 35.0 mm.
DATA STORE

View Results

Result
30/03/12
10:48:10
334.6 N·m  93°

Press  or  to change highlighted option.
Press  to confirm.
Press  to go to set up.

Result
30/03/12
10:48:23
360.5 N·m  101°

Press the  or  buttons to scroll through the Saved Test Results screen(s).
Press the  button to exit back to Data Store.

Erase All

Delete
Results ?

Y / N

Press  or  to change highlighted option.
Press  to confirm.
Press  to go to set up.

WARNING: SAVED TEST RESULTS CANNOT BE RETRIEVED FROM THE TOOL ONCE THEY HAVE BEEN DELETED.
ABOUT

Each of the 3 screens (starting with serial #), is displayed for 2 seconds before returning to set up. The 'Extended Capacity' screen is shown if the 'Multiplier', 'Torque CRS' or both have been changed from their default values.

Tool Identification

Serial #
2017/123456
Part #
43536

Version #, Capacity

Version #
2.XX
Capacity
200 N·m

Hardware options fitted.

Options
Bluetooth
Angle

Extended Capacity.

Extended Capacity
2970 N·m
SPECIFICATIONS

<table>
<thead>
<tr>
<th>Model</th>
<th>Resolution</th>
<th>Zero Suppression</th>
<th>Weight</th>
<th>Dimensions (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Kg</td>
<td>lb</td>
<td>H</td>
</tr>
<tr>
<td>NorTronic® 50</td>
<td>0.01 N·m</td>
<td>1.20</td>
<td>2.63</td>
<td>51</td>
</tr>
<tr>
<td>NorTronic® 200</td>
<td>0.1 N·m</td>
<td>1.45</td>
<td>3.20</td>
<td>51</td>
</tr>
<tr>
<td>NorTronic® 330</td>
<td>0.1 N·m</td>
<td>1.89</td>
<td>4.17</td>
<td>51</td>
</tr>
</tbody>
</table>

Display: 2 x 0.95” OLED colour displays. With update rate of five readings per second (5 Hz).

Torque unit conversions: To ‘BS 350:2004 Conversion factors for units’.

Units of measurement: N·m, dN·m, cN·m, Kg·m, Kg·cm, gf·ft, lbf·in, ozf·in, ft·lb, in·lb & in·oz.

Date / Time: Date format DD/MM/YY / MM/DD/YY or YY/MM/DD (set up via TDS), Time format HH:MM:SS (24 hour clock).

Frequency response: 860 Hz.

Torque accuracy: +/-2% of reading from 10% - 19%.
+/-1% of reading from 20% - 100%.

Angle display (CW & CCW): 1° Resolution, Maximum angle 999 degrees.

Angle accuracy: CW = 1% +/-1 digit.
CCW = 2% +/-1 digit.

Operating temperature range: +5°C to +40°C.

Storage temperature range: -20°C to +70°C. Batteries -10°C to +35°C

Maximum operating humidity: 85% Relative Humidity @ 30°C. Batteries 50%

Operational life from fully charged: 34 hours continuous, 136 hours with a 25% duty ratio (17 x 8 hour shift). Dependant on display settings.

Power consumption: 130 mW – maximum.

Batteries: AA, 2500 mAh, 1.2 volt NiMH (Nickel metal Hydride).

Coin cell: Renata 36 mAh (CR1220).


Environmental protection: IP44.

USB: 2.0 Device (5 pin mini).

Bluetooth®: 2.4 GHz
Contains Transmitter Module FCC ID: QOQBLE112
Contains Transmitter Module IC: 5123A-BGBTBLE112
This device complies with Part 15 of the FCC Rules, subpart C.
Contains transmitter module IC: BLE112.
Mechanical overload: NorTronic® 50, 100% of Torque Capacity
NorTronic® 200, 50% of Torque Capacity
NorTronic® 330, 50% of Torque Capacity

FCC Rules (USA): This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment OFF and ON, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

RSS Standard (Canada): This device complies with Industry Canada license-exempt RSS standard(s).
Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

NOTE: Due to continuous improvement all specifications are subject to change without prior notice.
EU Declaration of Conformity (No 0019:1)

This declaration of conformity is issued under the sole responsibility of the manufacturer.

The object of the declaration:
NorTronic® Electronic Torque Wrench.

The object of the declaration described above is in conformity with the relevant union harmonisation legislation:

<table>
<thead>
<tr>
<th>Model Name (Part Number):</th>
<th>NorTronic® 50 3/6&quot; 868MHz (43500)</th>
<th>NorTronic® 50 915MHz (43500)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NorTronic® 50 1/2&quot; 868MHz (43501)</td>
<td>NorTronic® 50 1/2&quot; 915MHz (43501)</td>
<td></td>
</tr>
<tr>
<td>NorTronic® 200 1/2&quot; 868MHz (43502)</td>
<td>NorTronic® 200 1/2&quot; 915MHz (43502)</td>
<td></td>
</tr>
<tr>
<td>NorTronic® 330 1/2&quot; 868MHz (43503)</td>
<td>NorTronic® 330 1/2&quot; 915MHz (43503)</td>
<td></td>
</tr>
<tr>
<td>NorTronic® 50 3/6&quot; Bluetooth® (43534)</td>
<td>NorTronic® Bluetooth® (43535)</td>
<td></td>
</tr>
<tr>
<td>NorTronic® 50 1/2&quot; Bluetooth® (43556)</td>
<td>NorTronic® 200 1/2&quot; Bluetooth® (43556)</td>
<td></td>
</tr>
<tr>
<td>NorTronic® 330 1/2&quot; Bluetooth® (43557)</td>
<td>NorTronic® 330 1/2&quot; Bluetooth® (43557)</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** Turn wireless feature off for use in Europe (SETUP / Wireless / Not Enabled).

Legislation


The object of the declaration described above has been designed to comply with the following standards:

<table>
<thead>
<tr>
<th>EMC directive</th>
<th>RED directive</th>
</tr>
</thead>
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<tr>
<td>BS EN 81528-1:2013</td>
<td>EN 301 489-1 V2.1.1 &amp; EN 301 489-1 V2.2.0.</td>
</tr>
<tr>
<td></td>
<td>EN 301 489-17 V3.1.1 &amp; EN 301 489-17 V3.2.0.</td>
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<td></td>
<td>EN 300 220-3 V3.1.1 &amp; EN 300 220-2 V3.1.1.</td>
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<tr>
<td></td>
<td>EN 301 489-1 v.2.1.1.1 &amp; EN 301 489-17 v3.1.1.</td>
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<tr>
<td></td>
<td>EN 300 328 v2.1.1.</td>
</tr>
</tbody>
</table>

The basis on which conformity is being declared:
The technical documentation required to demonstrate that the product meets the requirements of the above Directives has been compiled by the signatory below and is available for inspection by the relevant enforcement authorities.

The CE mark was first applied in: 2014.

Signed for and on behalf of Norbar Torque Tools Ltd.

Signed: [Signature]
Full Name: Trevor Mark Lester B.Eng.
Date: 18 April 2019
Authority: Compliance Engineer
Place: Norbar Torque Tools Ltd., Wildmere Road, Banbury, Oxfordshire. OX16 3JU

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United Kingdom | Australia | United States of America
Singapore | China | India

Registered in England No 339489 | VAT No: GB 119 1060 05
MAINTENANCE

NorTronic® Calibration

Your NorTronic® has been supplied with a certificate of calibration. To maintain the specified accuracy it is recommended that the NorTronic® is recalibrated at least once per year. Re-calibration should be carried out at Norbar or by a Norbar approved agent, where all the facilities to ensure the instrument is functioning at maximum accuracy are available.

IMPORTANT: DO NOT REMOVE SIDE PANELS; THERE ARE NO CALIBRATION SETTINGS INSIDE.

Battery Replacement

There are 2 types of batteries in this product. 3 standard AA batteries for powering the NorTronic® (which can be removed by the user and recharged when necessary) and a coin cell to power the clock.

The coin cell should only be replaced by Norbar or a Norbar approved agent.

Repair

Repair should be carried out at Norbar or by a Norbar approved agent, where all the facilities to ensure the NorTronic® is functioning at maximum accuracy are available.

Cleaning

Do not use abrasives or solvent based cleaners.

Product Disposal

![Waste Management Symbol]

This symbol on the product indicates that it must not be disposed of in the general waste.

Please dispose of according to your local recycling laws and regulations.

Contact your distributor or see the Norbar web site (www.norbar.com) for further recycling information.

Battery Disposal

This product contains 2 types of batteries. Only dispose of batteries at end of product life.

Batteries contain substances that can have a negative effect on the environment and human health.

The crossed-out wheeled bin means that batteries must NOT be disposed of in the general waste.

All batteries must be disposed of at a local waste battery collection point.

The batteries do NOT contain mercury (Hg), cadmium (Cd) or lead (Pb). If the battery substances exceed the legal limits the battery would be marked with Pb, Cd or Hg.
TROUBLE SHOOTING

Tips are located within the manual to help with troubleshooting. Common problems are listed below:

<table>
<thead>
<tr>
<th>Problem</th>
<th>Likely Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>NorTronic® displays are blank.</td>
<td>Remove and recharge AA batteries or replace batteries</td>
</tr>
<tr>
<td>NorTronic® only powers up for a short time.</td>
<td>Remove and recharge AA batteries or replace batteries</td>
</tr>
<tr>
<td>Torque will not zero and displays “Err=1”.</td>
<td>Torque reading must be within ± 3% of the wrench capacity</td>
</tr>
<tr>
<td>Display shows “Err=2”.</td>
<td>Torque over range – return to Norbar</td>
</tr>
<tr>
<td>Display shows “Err=3”.</td>
<td>Hardware error – return to Norbar</td>
</tr>
<tr>
<td>Display shows “Err=4”.</td>
<td>Hardware error – return to Norbar</td>
</tr>
<tr>
<td>Date &amp; Time not remembered.</td>
<td>The coin cell battery has failed. Return to Norbar</td>
</tr>
<tr>
<td>Cannot zero NorTronic®.</td>
<td>Tool has possibly been overstrained. Return to Norbar</td>
</tr>
<tr>
<td>Measurement does not function correctly.</td>
<td>Ensure the ‘Active From’ setting is not too low or too high</td>
</tr>
<tr>
<td>NorTronic® locks up.</td>
<td>Remove batteries, then re-insert to reset configuration</td>
</tr>
<tr>
<td>NorTronic® continuously triggers.</td>
<td>Check that ZERO of the NorTronic® has been set with no torque applied i.e. the weight of the tool. Change the Active From setting to a larger value</td>
</tr>
</tbody>
</table>

GLOSSARY OF TERMS

<table>
<thead>
<tr>
<th>Word or Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>#</td>
<td>Number</td>
</tr>
<tr>
<td>Active From</td>
<td>Value from which the memory modes operate</td>
</tr>
<tr>
<td>Capacity</td>
<td>NorTronic® full scale</td>
</tr>
<tr>
<td>CRS</td>
<td>Centres</td>
</tr>
<tr>
<td>Frequency Response</td>
<td>Frequency value below which signals are passed</td>
</tr>
<tr>
<td>Hold Time</td>
<td>The length of time a reading is displayed until automatically reset</td>
</tr>
<tr>
<td>Hz</td>
<td>Hertz, unit of frequency</td>
</tr>
<tr>
<td>L.S.D.</td>
<td>Least Significant Digit</td>
</tr>
<tr>
<td>mAh</td>
<td>milli ampere hour; Rate of charge/discharge of a battery</td>
</tr>
<tr>
<td>PC</td>
<td>Personal Computer.</td>
</tr>
<tr>
<td>Sleep After</td>
<td>The time after, when not used, the NorTronic® goes to sleep; this will save battery power</td>
</tr>
<tr>
<td>Snug Torque</td>
<td>Torque value that must be reached before measuring angle</td>
</tr>
<tr>
<td>Spanner End Fitting</td>
<td>Optional extra fitted in place of the ratchet</td>
</tr>
<tr>
<td>Target</td>
<td>Torque or angle value required. Each Target has an Upper Limit and a Lower Limit</td>
</tr>
<tr>
<td>TDS</td>
<td>Torque Data System – Software included for PC use</td>
</tr>
<tr>
<td>Tool</td>
<td>A reference to the tool being used</td>
</tr>
<tr>
<td>Transceiver</td>
<td>Internal wireless module to enable data to be transmitted / received by the NorTronic®</td>
</tr>
<tr>
<td>USB</td>
<td>Universal Serial Bus</td>
</tr>
<tr>
<td>Work Id</td>
<td>Work identification - the reference to the task, application or job e.g.: a bolted flange, engine cylinder head, vehicle wheel nuts, etc</td>
</tr>
<tr>
<td>Zero Suppression</td>
<td>Value of torque that has to be achieved for the NorTronic® not to display zero</td>
</tr>
</tbody>
</table>