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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>⅜&quot;</td>
<td>868 MHz</td>
</tr>
<tr>
<td>43504</td>
<td>50 N·m</td>
<td>¾&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>

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 1.XX</td>
<td>1.0.X</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 16mm 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 3000 (date & time stamped) reading memory store.
- 5 user buttons.
- Operational from three AA internal rechargeable / non rechargeable batteries.
- Ability to link targets for applications that require tightening in a sequence via TDS.
- 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.
- 3 Target modes - Torque Target only, Snug Torque followed by Angle Target or Snug Torque followed by Angle Target + final Torque Target.
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 16mm 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 SETUP and Operation, the buttons perform the following functions:

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
<th>Operation</th>
<th>SETUP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Change Units</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>Zero Torque &amp; Angle display if below the <em>Active From</em> threshold. Cancel the peak reading if above the <em>Active From</em> threshold and send via USB / Wireless.</td>
<td>Exit the measure display.</td>
<td>Confirm a setting.</td>
</tr>
<tr>
<td></td>
<td>Exit current menu / screen.</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 | Current Torque Units.
7 | Torque reading.
8 | Angle reading.
9 | Current Snug Torque & Angle Target.
10 | Torque CRS has been changed from default value.
OPERATION

Start Up

The NorTronic® does not have a power ON/OFF switch. The NorTronic® is always powered up and in a deep sleep mode.

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

![Norbar Logo and Measure Display]

Peak Reading with Manual Reset Operation

![Diagram of Torque and Angle Display]

When Torque is applied, the NorTronic® will track the torque input until it has exceeded the Active From setting (See page 19) 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 13) 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, press the UP button to delete the last reading that has been saved via the Delete Last Result? confirmation screen.

![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 19) 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 Snug Torque is set, the angle display is shown as “0°” until the torque reaches the Snug Torque value (see page 13) 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 21). 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, press the UP button to delete the last reading that has been saved via the Delete Last Result? confirmation screen.

Tool Target

Having already set a Tool Target (see page 13 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 SETUP – Vibrate, see page 20 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.
Torque Units - Change

Press UP or DOWN to change displayed Torque Units. The UP button has a different function if a Target is active (see pages 7, 8 & 12).

TIP: Units that have been disabled in (SETUP - Units) will NOT be shown. See page 18.

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 SETUP– Sleep (see page 19 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 Gyro 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 SETUP* configuration can also be sent from TDS.

When connected, the USB icon 🌐 will appear on the bottom left of the display.
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 SETUP 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 or 915 MHz USB Wireless Adapters.

The Wireless Interface must be Enabled in SETUP with the correct 868/915 MHz frequency (see page 20 for more information).

Multiple Tools must be set up with individual Node numbers (see page 20 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 100mm 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.

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® Tool to TDS via the *Receive Results* window using the USB or Wireless interfaces.

Only one tool can be interfaced at any one time.

![Receive Results Interface](image)

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 ![USB icon](image) to ![Wireless icon](image) 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®). 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, press the UP button to delete the last reading that has been output to "Receive Results" in TDS.
TOOL TARGET - SETTING

Set Target Units

NOTE: Set Snug will be shown as Set Target if Angle is Not Enabled.

Set Snug
N·m
0.0

Press ▲ or ▼ to change.
Press □ to confirm and go to the Set Snug Torque.
The ▼ button is not functional.

- Only enabled Torque Units will be shown (see page 18).

Set Snug Torque

NOTE: This screen will not be shown if Angle is Not Enabled in Tool - SETUP.

Set Snug
N·m
0.0

Press ▲ or ▼ to change.
Press □ to confirm and go to the Set Angle Target.
The ▼ button is not functional.

- Minimum = 0, Maximum = 100% of NorTronic® Torque capacity.

Set Angle Target

NOTE: This screen will not be shown if Angle is Not Enabled in SETUP.

Set Angle
32°

Press ▲ or ▼ to change.
Press □ to confirm and go to Set Torque Target.
The ▼ button is not functional.

- Minimum = 0, Maximum = 999.

Set Torque Target

Set Target
N·m
298.4

Press ▲ or ▼ to change.
Press □ to confirm and go to Options Menu.
The ▼ button is not functional.

- Minimum = 0, Maximum = NorTronic® Torque capacity.
- If the Torque Target value is set to 0, the Target is disabled, if it is set to a value above the Active From setting, the Target is enabled.
Linked Targets

*Linked Targets* can only be set up in **TDS**.

![TDS Target Table]

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

![Modify Target Window]

*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 **Target** becomes **not enabled**, i.e. **No Target** is shown on the **Tool**.

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

The NorTronic® has 1 active Target. 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 16 for more information on “Set Tool Options”)

The Locked option disables the NorTronic® user from altering the Target SETTING and Tool SETUP on the NorTronic®.
TOOL - SETUP

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

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

NOTE: Tool - SETUP 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 SETUP or Target SETTING.
LIMITS
UNITS
DATE / TIME
SLEEP

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

NOTE: Tool - SETUP is a scrolling screen. Press the DOWN button with SLEEP highlighted to go to ANGLE etc.

ANGLE
AUTO ZERO
ACTIVE FROM
VIBRATE

WIRELESS
AUTO RESET
DISPLAY
TORQUE CRS

Torque Limits

Press ▲ or ▼ to change highlighted value.
Press □ to confirm and go to LO Limit.
Press ■ to exit to SETUP (saving changes).

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

Angle Limits

Press ▲ or ▼ to change highlighted value.
Press □ to confirm and go to LO Limit.
Press ■ to exit to SETUP (saving changes).

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

Press [Arrow] or [Arrow] to highlight unit.
Press [Enter] to enable (green) or disable (red).
Press [X] to confirm and exit to SETUP (saving changes).

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

Date & Time

Press [Arrow] or [Arrow] to change highlighted value.
Press [Enter] or [X] to confirm and step onto next change
(month, year, hours, minutes & seconds).

- 24 hour clock format. The Time & Date 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: YY/MM/DD
Torque CRS: DD/MM/YY
MM/DD/YY
YY/MM/DD

Wireless Node Number: (1 to 254)
NB: changes to the node number only take effect after a tool reset

Locked

Update  Set Track Mode  Done
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 ?**

Press \[ \uparrow \] or \[ \downarrow \] to change value.
Press \[ \leftarrow \] or \[ \rightarrow \] to confirm and exit to SETUP.

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

**Angle**

**Angle ?**

Enable

Press \[ \uparrow \] or \[ \downarrow \] to change setting.
Press \[ \leftarrow \] or \[ \rightarrow \] to confirm and exit to SETUP.

- Enabled = *Display Torque & Angle*.
- Not Enabled = *Display Torque only*.

**Auto Zero**

**Auto Zero ?**

Enable

Press \[ \uparrow \] or \[ \downarrow \] to change setting.
Press \[ \leftarrow \] or \[ \rightarrow \] to confirm and exit to SETUP.

- Enabled = both the TORQUE & ANGLE readings will *Auto Zero* on *power up* or *resume from sleep*.
- Not Enabled = the user must press the ZERO button to reset the Torque display to the current Torque input and Angle Display to “0”.

**Active From**

**Threshold ?**

9.0%

Press \[ \uparrow \] or \[ \downarrow \] to change value.
Press \[ \leftarrow \] or \[ \rightarrow \] to confirm and exit to SETUP.

- Minimum = 1.8 %, Maximum = 100.0 %. Default = 9.0 %
Vibrate

Vibrate ?

**Enabled**

Press \[\uparrow\] or \[\downarrow\] to change setting.

Press \[\rightarrow\] or \[\leftarrow\] to confirm and exit to **SETUP**.

- Enabled = Tool will **Vibrate** when **Torque Target** reached.
- Not Enabled = Tool **does not vibrate** when **Torque Target** reached.

Wireless

Wireless ?

**Enabled**

Node 2

868 MHz

Press \[\uparrow\] or \[\downarrow\] to change setting.

Press \[\rightarrow\] to confirm and go to **Node X**.

Press \[\rightarrow\] to confirm and exit to **SETUP** (saving changes).

- Enabled = **Wireless** communication is **Active**.
- Not Enabled = **Wireless** communication is **Not Active**.

Wireless ?

**Enabled**

Node 2

868 MHz

Press \[\uparrow\] or \[\downarrow\] to change value.

Press \[\rightarrow\] to confirm and go to **868/915 MHz**.

Press \[\rightarrow\] to confirm and exit to **SETUP** (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 = **2**.
- 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 ?

Not Enabled

Press \[\text{or } \text{to change setting.} \]

If Enabled, pressing \[\text{or } \text{will take the user to 'SETUP Hold Time ?'.} \]

If Not enabled the user will return to \textit{SETUP}.

- Enabled = \textit{Hold} the torque (and angle) values the length of the \textit{Hold Time} setting after the torque has been removed and then reset the display to 0.
- Not Enabled = \textit{Hold} the torque (and angle) values until the ZERO button has been \textit{pressed} and then reset the display to 0.

Hold Time ?

Hold Time ?

4 Sec

Press \[\text{or } \text{to change value.} \]

Press \[\text{or } \text{to confirm and go to \textit{SETUP} (saving changes).} \]

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

Display

Inverse ?

Not Enabled

Press \[\text{or } \text{to change value.} \]

Press \[\text{or } \text{to confirm and go to \textit{SETUP} (saving changes).} \]

- Enabled = \textit{Black} digits on \textit{White} background, Not Enabled = \textit{White} digits on \textit{Black} background, when in the \textit{Measure display}.

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

Torque CRS

Distance ?

31.8 mm

Press \[\text{or } \text{to change value.} \]

Press \[\text{or } \text{to confirm and go to \textit{SETUP} (saving changes).} \]

- Minimum = 0.0, Maximum = 999.0. Default: - NorTronic® 50 & 200 = 31.8 mm, NorTronic® 330 = 35.0 mm.
DATA STORE

Press ▲ or ▼ to change highlighted option.
Press ZERO to confirm.
Press EXIT to go to SETUP.

View Results

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

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

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

Erase All

Delete Results ?
Y / N

Press ▲ or ▼ to change highlighted option.
Press ZERO to confirm.
Press EXIT to go to SETUP.

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 SETUP.

Tool Identification

<table>
<thead>
<tr>
<th>SERIAL #</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012/123456</td>
</tr>
<tr>
<td>MODEL #</td>
</tr>
<tr>
<td>4350X</td>
</tr>
</tbody>
</table>

Version #

<table>
<thead>
<tr>
<th>Version #</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.XX</td>
</tr>
</tbody>
</table>

Hardware options fitted.

Options

<table>
<thead>
<tr>
<th>Wireless</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angle</td>
</tr>
</tbody>
</table>
SPECIFICATIONS

<table>
<thead>
<tr>
<th>Model</th>
<th>Resolution</th>
<th>Zero Suppression</th>
<th>Weight Kg</th>
<th>Weight lb</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>2.63</td>
<td>41 41 468</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>3.20</td>
<td>41 41 593</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>4.17</td>
<td>41 41 808</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, Kgf·cm, gf·m, lbf·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).

Wireless Transceiver: 868 MHz conforms to the following ETSI standards: -
EN 300 220-2 V2.3.1 (2001–02)
EN 301 489-3 V1.4.1 (2002–08)

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

NOTE: Due to continuous improvement all specifications are subject to change without prior notice.
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>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 &amp; 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>