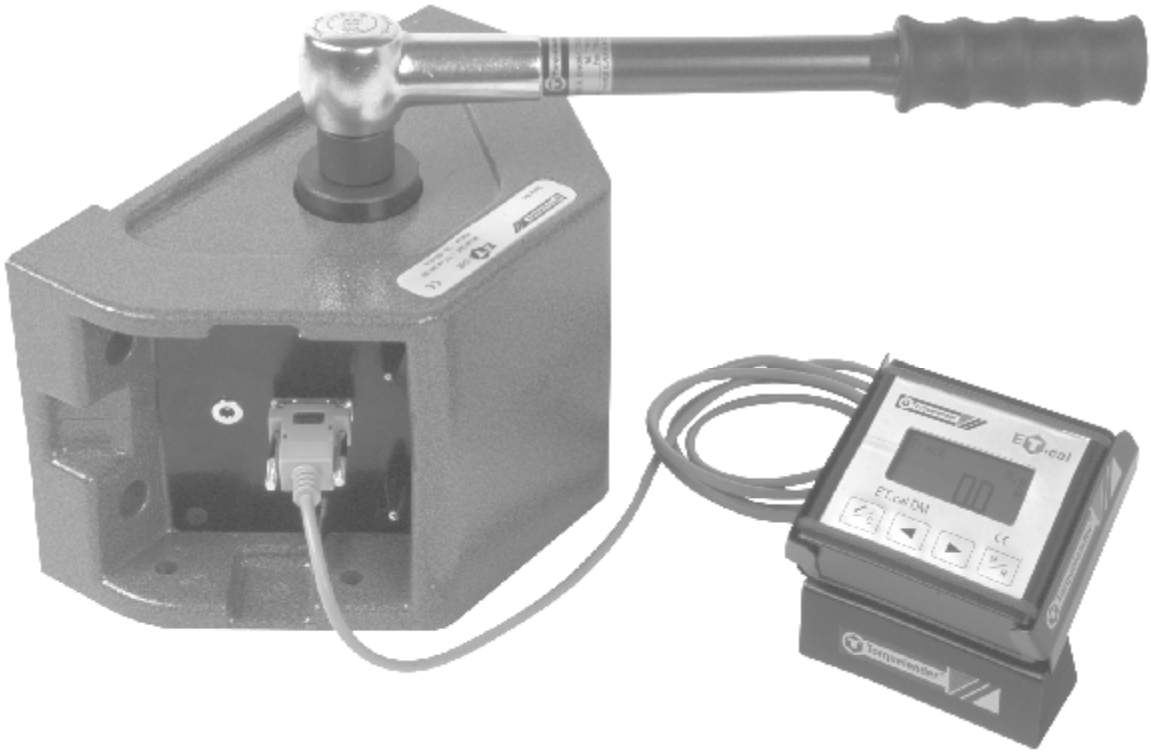
Torqueleader

Leading the World in Torque Technology

ET•cal

Operating Instructions



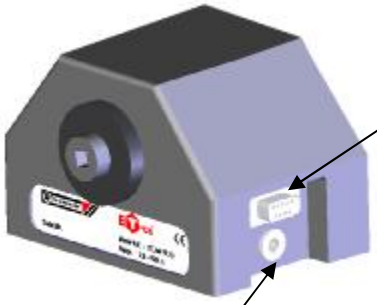
Models
ET.cal 15
ET.cal 100
ET.cal 500
ET.cal 1000

Table of contents

1. Technical data

Measuring range:	ET.cal 15: 50-1500 cN.m ET cal 100: 4-100 N.m ET.cal 500: 20-500 N.m ET.cal 1000: 50-1000 N.m
Zero balance:	Push-button.
Transducer:	ET.cal 15: Torsion shaft with SG – full bridge circuit and mechanical overload protection. From ET.cal 100: Torsion shaft with SG – full bridge circuit.
Measurement precision:	max. ±1% ±1 digit from actual measured value.
Resolution:	ET.cal 15: 0.001N.m ET cal 100: 0.01 N.m ET.cal 500: 0.1 N.m ET.cal 1000: 0.1 N.m
Measurement shaft Input square drive	ET.cal 15: ¼" – input square ET.cal 100: ½" – input square ET.cal 500: ¾" – input square ET.cal 1000: ¾" – input square
Torque display:	LCD – graphic display.
Power supply:	12 V DC
Temperature range:	+10 to +40 °C ambient temperature.
Dimensions:	ET.cal 15 120 x 93 x 80 From ET.cal 100 159 x 245 x 148
Interface:	RS 232; 9600 Baud, No parity, 8 data bits, 1 stop bit.

ET-Cal transducers (XD)



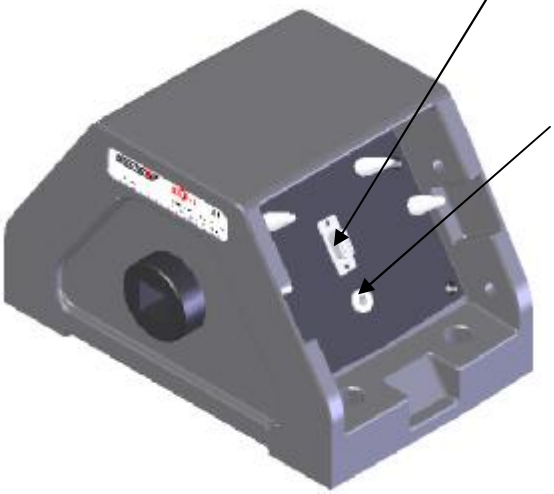
RS232 Interface connection. One only

ET-Cal 15 Transducer

Power connection One only

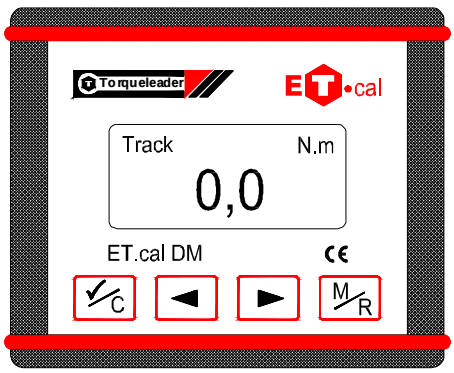
RS232 Interface & Display connection. One each side

Power connection One each side

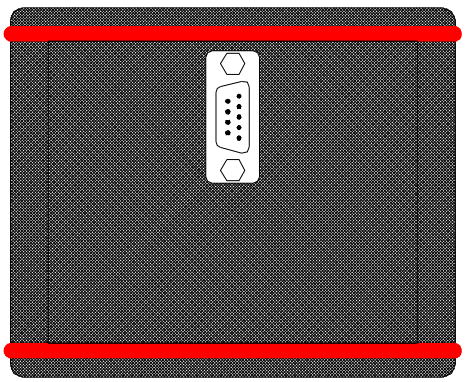


ET-Cal 100/500/1000 Transducer

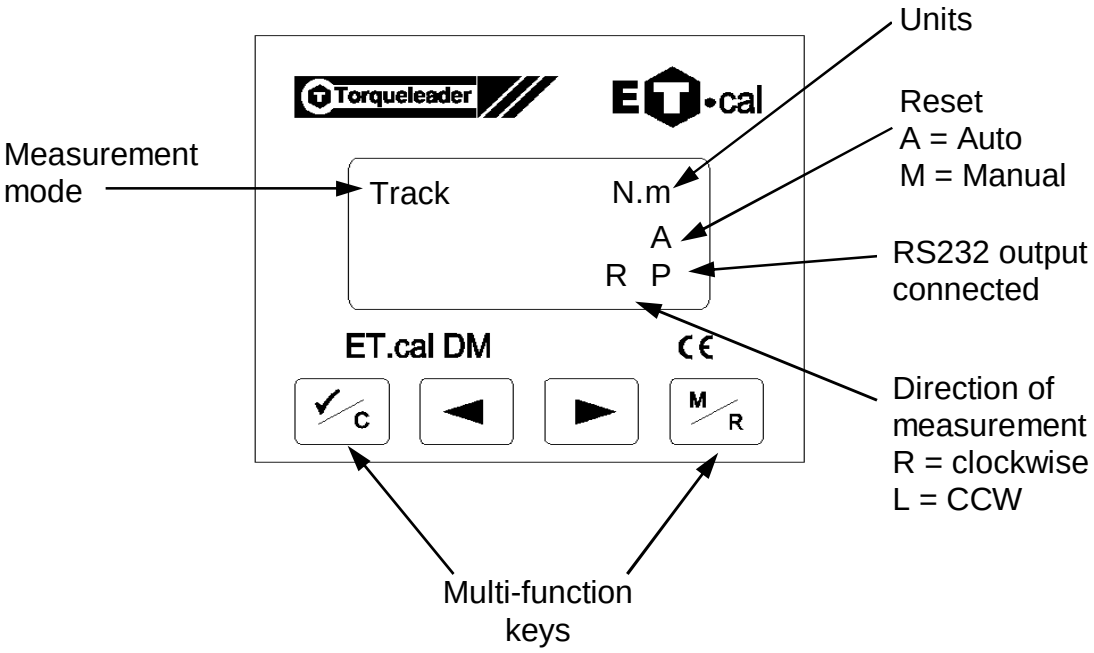
ET-Cal Display Module (DM)



Front view showing display And control buttons



Rear view showing RS232 Interface connection



= Scroll Key, to set limit values (increase)

= Scroll Key, to set limit values (decrease)

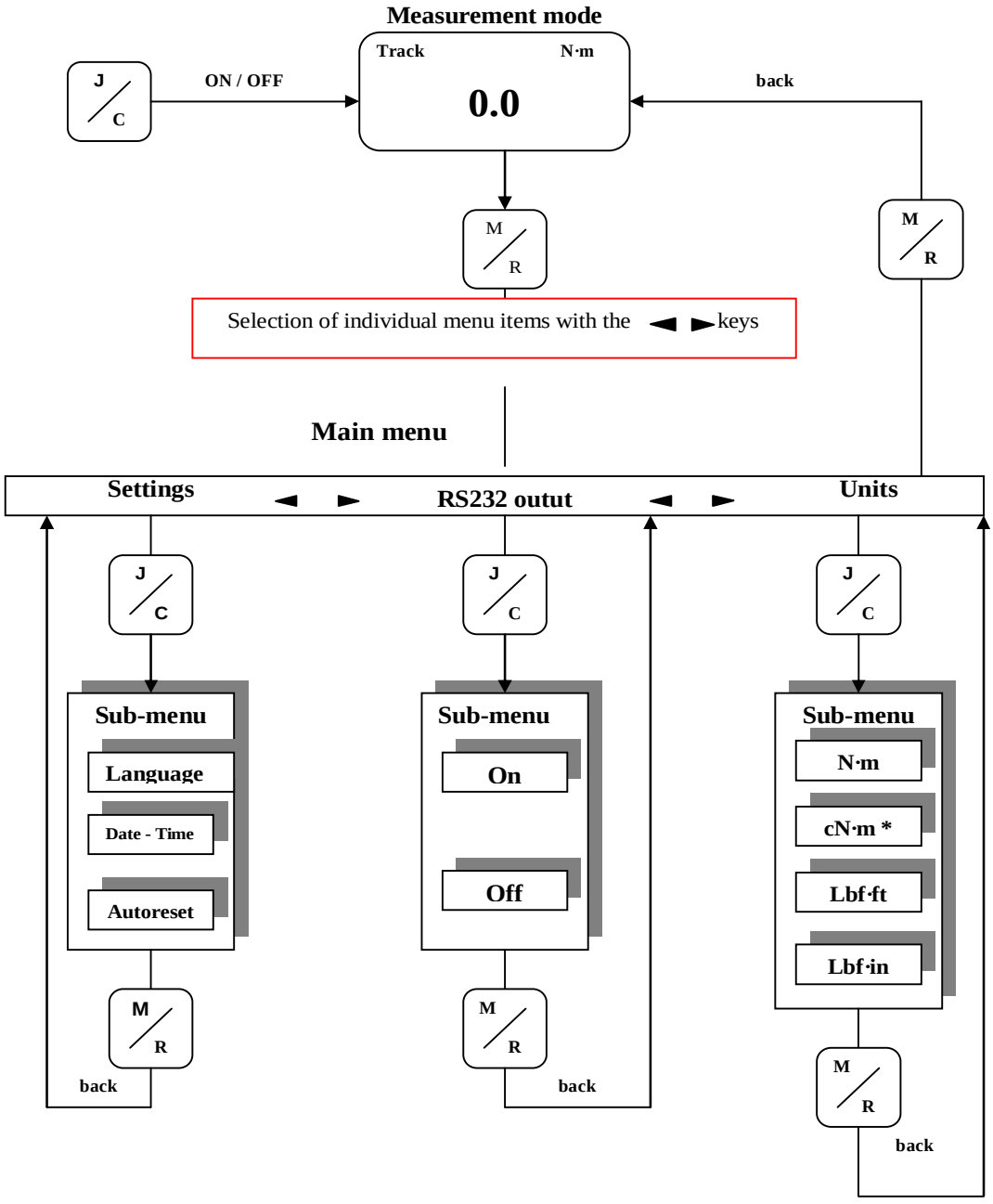
M = Menu selection (multi-function key)

R = Return (multi-function key)

ü = Confirm entry (multi-function key)

C = Calibration mode (multi-function key)

2.1.2. Quick Start Menu



* This unit is only available as standard with the ET.cal 15 model.

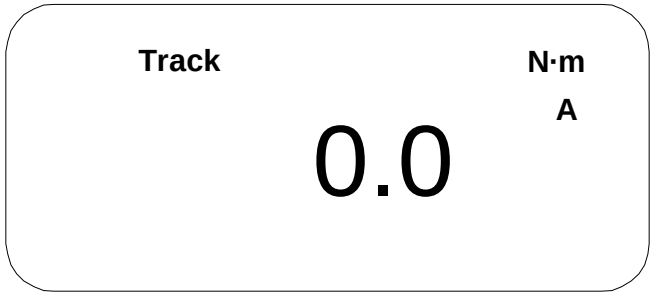
3 Operating instructions

3.1 Switch on

The ET.cal torque tester switches on automatically when the power supply is switched on.

The electronic torsion torque tester can be switched on manually by pressing the key.

The display shows:



3.2 Switch off

To switch off the ET.cal, you must press the key for ca. 3 – 4 seconds.

The display then shows the message "Calibration" and then, after ca. 2 seconds, the message
"OFF in 2 seconds".

Please keep the key depressed until the display goes out.

Note:
The background lighting of the electronic unit remains active even after the ET.cal is switched off (see 3.2). The background lighting can only be deactivated by disconnecting the torque tester from the power supply.

3.3 Measurement process settings

The ET.cal can be operated with three different measurement processes:

Track Mode: The **Track Mode** is a "Continuous value measurement"
This means that the current torque is continually displayed on the display during tightening. The peak value is not retained on the display or saved during the measurement and after release.

1.Peak: **1.Peak** is a "Break point measurement" that displays the trigger moment of the test object.
During tightening, the current torque is continuously displayed. If the torque falls during tightening, the maximum tightening torque is shown on the display.
If a maximum tightening torque (break point) is reached, this tightening torque is shown for about 2 seconds (when the Autoreset function is active) in the display. The display then returns to the actual torque.

To implement a manual RESET, briefly press the key once.

2.Peak: **2.Peak** is an "End value measurement"
In this measurement process, the actual end torque of a measurement is displayed.
If a maximum tightening torque (**2.Peak**) is reached, this tightening torque is shown for about 2 seconds (when the Autoreset function is active) in the display. The display then returns to the actual torque.

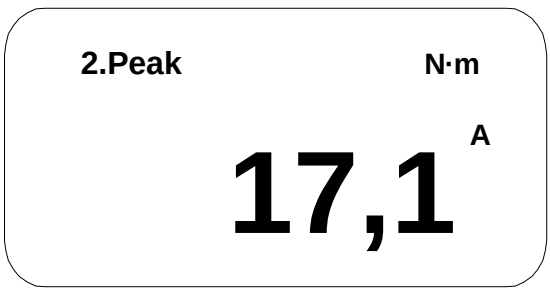
To implement a manual RESET, briefly press the key once.

Note:
The ET.cal normally always determines the 1.Peak and 2.Peak during every measurement.
In order to display these determined values, proceed as described below.

Example: End value measurement

Press the keys until **2.Peak** appears in the display.

Display:



You can now read the determined value of the **2.Peak** measurement.

3.4 Main menu

Switch to main menu

Press the following key to switch to the main menu:

The graphic display will switch from the measurement mode to the main menu. The display shows:

Use the arrow ◄ ► keys to switch to the required menu items.

The following main menu items are available:

3.4.1	**Settings**
3.5.1	**RS232 output**
3.6.1	**Units**

Once you have selected the required menu item, confirm the selection with the key

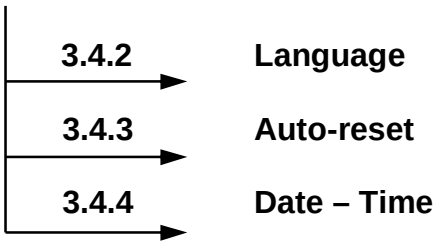
3.4.1 Main menu item Settings

Confirming the menu item "**Settings**" with the key opens up the sub-menu Settings.

Use the arrow keys to call up the required menu items.

The following sub-menu items are listed in the main menu item Settings (Setup):

Menu item **SETTINGS (Setup)**



Once you have selected the required sub-menu item, confirm the selection with the key:

3.4.2 Menu language

Use this menu to select the required menu language that should be displayed on the graphic display.
The following menu languages can be selected:

- German
- English

From the main menu (see also 3.4), use the keys to select the main menu

item "Settings" and confirm the selection with the key.

Use the keys to select the menu item "**Language**" and confirm with

The current language setting, e.g. "**German**" is shown in the display.

Press the keys to obtain the required language setting.

The changes must be confirmed with the key.

To return to the measurement mode, press the key twice.

3.4.3 Autoreset

ET.cal has the function of an automatic reset of the displayed measured value. This means that the value displayed on the display after the measurement is automatically reset to "zero" after ca. 3 seconds. This function can be switched on or off.

3.4.3.1 Switch on Autoreset

From the main menu (see also 3.4), use the ◄ ► keys to select the main menu item "**Settings**" and confirm the selection with the C key.

Use the keys to select the menu item "**Autoreset**" and confirm with C

The current setting, e.g. "**Off**" is shown in the display.

By pressing the ◄ ► keys, you can select "**On**".

The changes must be confirmed with the C key.

To return to the measurement mode, press the C key twice. You will now be in the measurement mode.

Note:
In the measurement mode, the display will show either an A = On or M = Off, depending on the selection. (A= automatic reset; M = manual reset)

3.4.3.2 Switch off Autoreset

From the main menu (see also 3.4), use the ◄ ► keys to select the main menu item "**Settings**" and confirm the selection with the C key.

Use the ◄ ► keys to select the menu item "**Autoreset**" and confirm with C

The current setting, e.g. "**On**" is shown in the display.

By pressing the ◄ ► keys, you can now select "**Off**".

The changes must be confirmed with the C key.

To return to the measurement mode, press the C key twice. You will now be in the measurement mode.

If the Autoreset function is switched off, the displayed peak value can be transferred with the C key in to the memory.

3.4.4 Date – Time settings

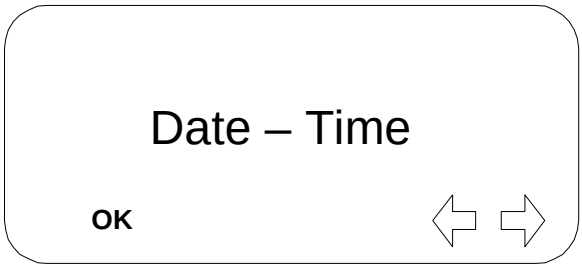
Normally, these settings are default set during initial commissioning of the torque tester in the factory.
Disconnection from the power supply has no effect on these settings.
However, there may be circumstances, where date and time settings need to be changed
(e.g. other time zones).

To change or display these settings, proceed as described below:

From the main menu (see also 3.4), use the ◄ ► keys to select the main menu

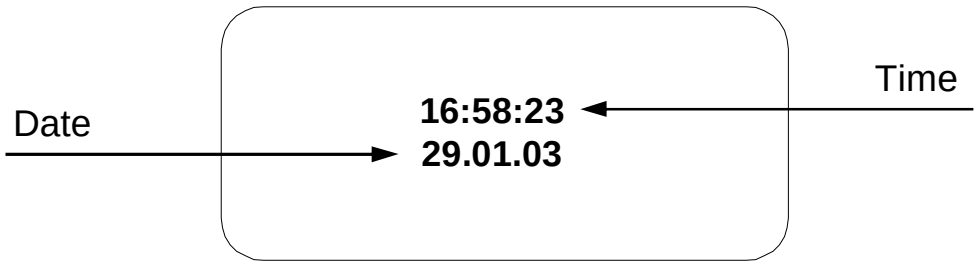
item "**Settings**" and confirm the selection with the C key.

Use the keys to select the menu item "**Date - Time**" and confirm with C



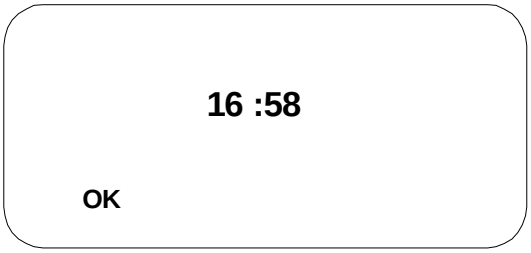
Following confirmation, the menu "**Display - Time**" will appear in the display.
The set time and date can be displayed here.

Confirm this selection with the C key.



To leave this menu, press the C key.

To set the time, use the keys to select the menu "**Set time**" and confirm with the key.



After confirmation, the time in hours and minutes appears in the display.

The hour is displayed in black, this means you can set the hour with the keys .
Once the required hour is set, confirm the settings with the key.

The black box now jumps automatically to the minutes, which you can also set using the keys. These settings must also be confirmed with the key.

The menu "**Set time**" will then appear again in the display.

Set date.
To change or display these settings, proceed as described below:

In the menu **Date – Time**, use the keys to select "**Set date**" and confirm this selection with the key.

The date will then be shown in the display, with the day displayed on a dark background.

Press the keys to change the settings.

The settings must be confirmed with the key.

Following confirmation, the black box jumps to the month display. To change this setting, use the arrow keys again for selecting and then the confirmation key. You can now set the year with the arrow keys and then confirm.

The menu "**Set date**" will then appear again in the display.

To return to the "**Settings**" mode, press the key twice.

To return to the **measurement mode**, press the key again.

3.5.1 RS232 output

The electronic torque tester ET.cal gives you the option, via the RS232 interface, to transfer the measured values directly to a printer.
This means that, after each test object is activated, the value of the "break point or 1.Peak" will be transferred via the interface to the printer.

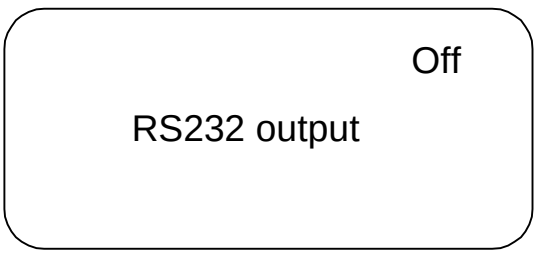
Sample printout:

```
***      TORQUELEADER          ***
***  Partner in the GEDORE Group   ***

ET.cal 1000 XD     SNo. 3010002

DATE: 12.02.2004  TIME: 15:18

WRENCH NUMBER:_____

No.                  MEAS.VALUE

001 ---------------------- 009.88 Nm
```

3.5.2 RS232 output, switch on/off

From the main menu (see also 3.4), use the ◄ ► keys to select the main menu item "**RS232 output**" and confirm the selection with the C key.

The following display then appears:



Now press the ◄ ► keys to activate the "**RS232 output**" or, if it is already active, to deactivate it.
Confirm the selection with the C key.

To return to the **measurement mode**, press the C key.

If you need a new heading for another test object, change to the menu item "**3.5.2 RS232 output**" as described above.

When there, and with the **RS232 output** active, press the C key twice.

To return to the **measurement mode**, press the C key.

3.6.1 Units

The following default units are available for the ET.cal :-

N·m
cN·m (ET.cal 15 only)
Lbf.ft.
Lbf.in.
ozf·in (ET.cal 15 only)

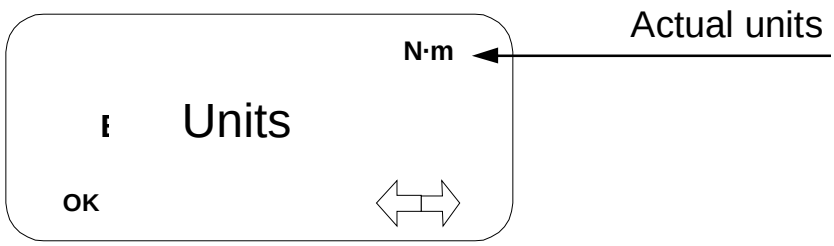
Further measurement units can be integrated as an option.

In order to set the units, you need to switch from the measuring mode to the main menu mode (**see Section 3.2**).

Use the arrow ◄ ► keys to select the main menu item "**Units**".

Confirm this selection with the C key.

The display now shows the current set unit.



Use the arrow ◄ ► keys to select the required units.

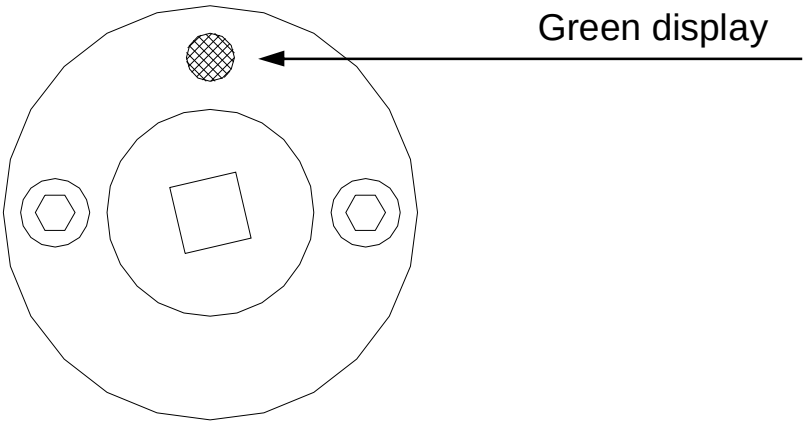
Confirm this selection with the C key.

You will now be back in the main menu item "**Units**".

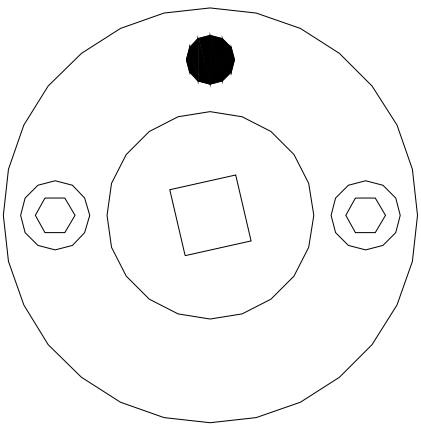
To return to the **measurement mode**, press the C key.

3.7 Mechanical overload protection (ET.cal 15 only)

To protect the ET.cal 15 from being overloaded, the mechanical overload protection is triggered when an excessive torque is applied (> 16 N.m).
You will notice a significant turning movement of about 10°
In addition, the green display on the measurement shaft will no longer be visible.



Overload protection deactivated



Overload protection activated

In order to deactivate the overload protection, use the reset wrench provided (1/4” square) and rotate the torsion shaft anti-clockwise. The correct position is reached when you can feel a clear engagement whilst rotating.
The green display will be visible again.

To ensure that no damage has been caused to the torsion shaft, it is recommended that you recalibrate the ET.cal.

In addition to the mechanical overload protection (ET.cal 15 only), you will also see the following information in the electronic unit display after an overload has occurred.

#	WARNING	#
#	OVERLOAD	#
#	check. mech.	#
#	coupling	#

Alternatively, display after overload for ET.cal 100, 500 & 1000

#	WARNING	#
#	OVERLOAD	#
#	E-tp must be	#
#	checked	#

3.7.1 Deleting the overload display

Once you have deactivated the mechanical overload protection,

press the  key, until the message “CALIBRATION” appears

in the display.

4 Calibration

If the ET.cal displays any deviation from zero point 0 when in an unloaded condition, it must be recalibrated.
To do this, when in an unloaded condition, simply press the C key.

Once the C key is pressed, the display shows the message "Calibration".

Note: It is important that the torque tester is not loaded during the calibration.
This would lead to an incorrect zero point setting and to measurement inaccuracies.

Explanation:

Calibration = Action to determine measurement inaccuracy without implementing modifying measures to the measuring device.
Only the relationship between the input and output parameters – the difference between setpoint and actual value – is determined.
The calibration result can be used for adjustments.

Adjustment = Action that places the measuring device in an operational condition.
All misleading measurement inaccuracies are reduced by modifying the measuring device until the predefined error limits (e.g. DIN ISO standards) are once again met.

Test regulation for the calibration and adjustment of this torque tester is the DKD-R 3-8

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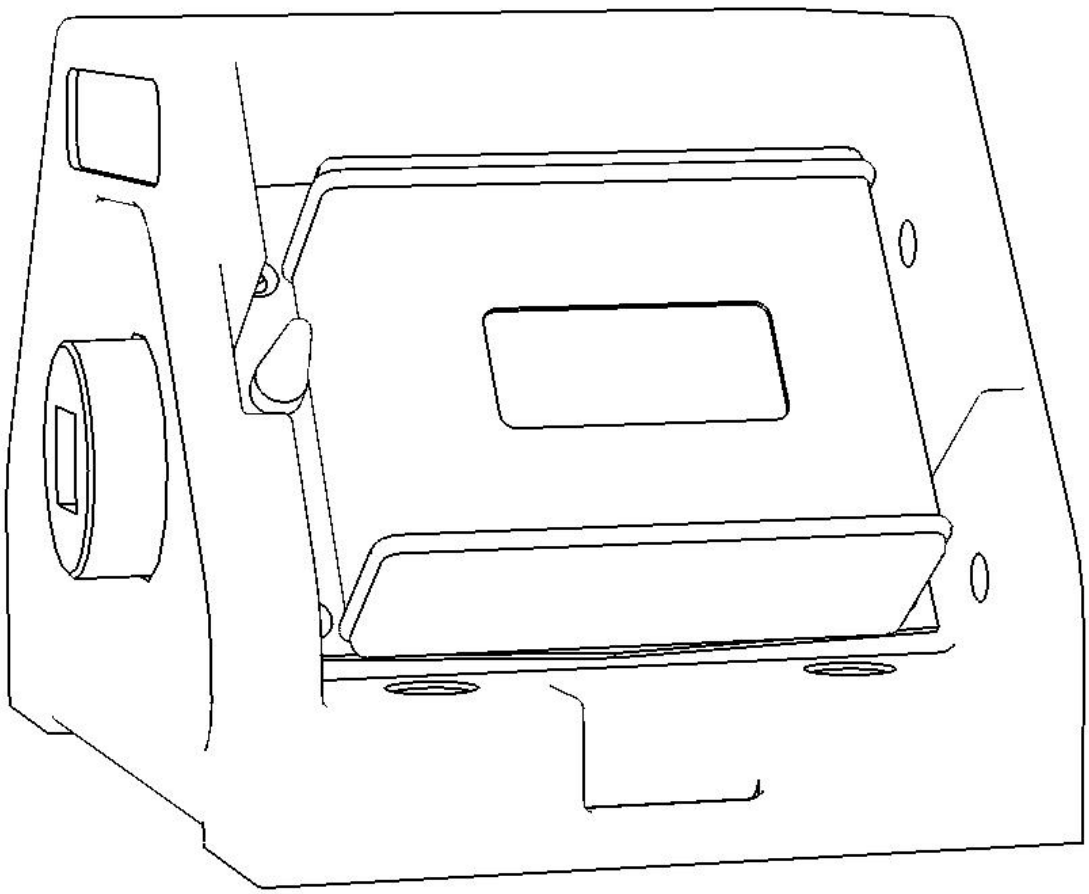

MHH Engineering Co. Ltd.
Tannery lane
Bramley
Guildford
Surrey
GU5 0AJ

TEL: +44 (0) 1483 892772
FAX: +44 (0) 1483 898536
E-MAIL: sales@torqueleader.co.uk
WEB: www.torqueleader.com