



XIII. The inspection program QM-TORQUE

The program QM-TORQUE serves as a computer support program for the inspection of indicating and setting hand torque tools according to DIN ISO 6789 or self defined factory standards.

The use of the program itself, however, requires only little knowledge of computers. Help texts as well as the integration of thorough safety measures ensures quick a simple operation of the program.

Measurement data can be entered directly from a connected measuring device or from the keyboard. The connection of a torque testing device to the computer can be made with the RS232 interface.

The evaluation results can be re-produced on the screen and/or the printer. Tolerance excesses will be shown at the certificate.

The permissible tolerances will be determined according to ISO 6789 or according to your own factory standards. The program does provide the functions necessary to define your own tolerance values and to set the evaluation method.

The program QM-TORQUE can be started directly out of the database program QM-MANAQ - also offered by L&W GmbH - and provided with initial data (such as ID-number, Gauge designation, Measuring range), in this case the inspection results and the inspection certificate are directly transmitted back to the database.

XIII.1. Program start

You can start the QM-TORQUE program directly from the QMSOFT-command-Shell (click the corresponded symbol in the shell). The other way is to start the program through the WINDOWS Explorer .

Especially at the first start of the program you should check some basic parameters of the program. See the next section for this

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XIII.2. Settings

Working with the program you should make different settings to define the program environment and especially program conditions. Use the menu "Settings" to do this.

XIII.2.1. Settings | General settings

Using this option you have the following registers to change program settings:

Register „General“

Here you can choose the program language and the default certificate template.

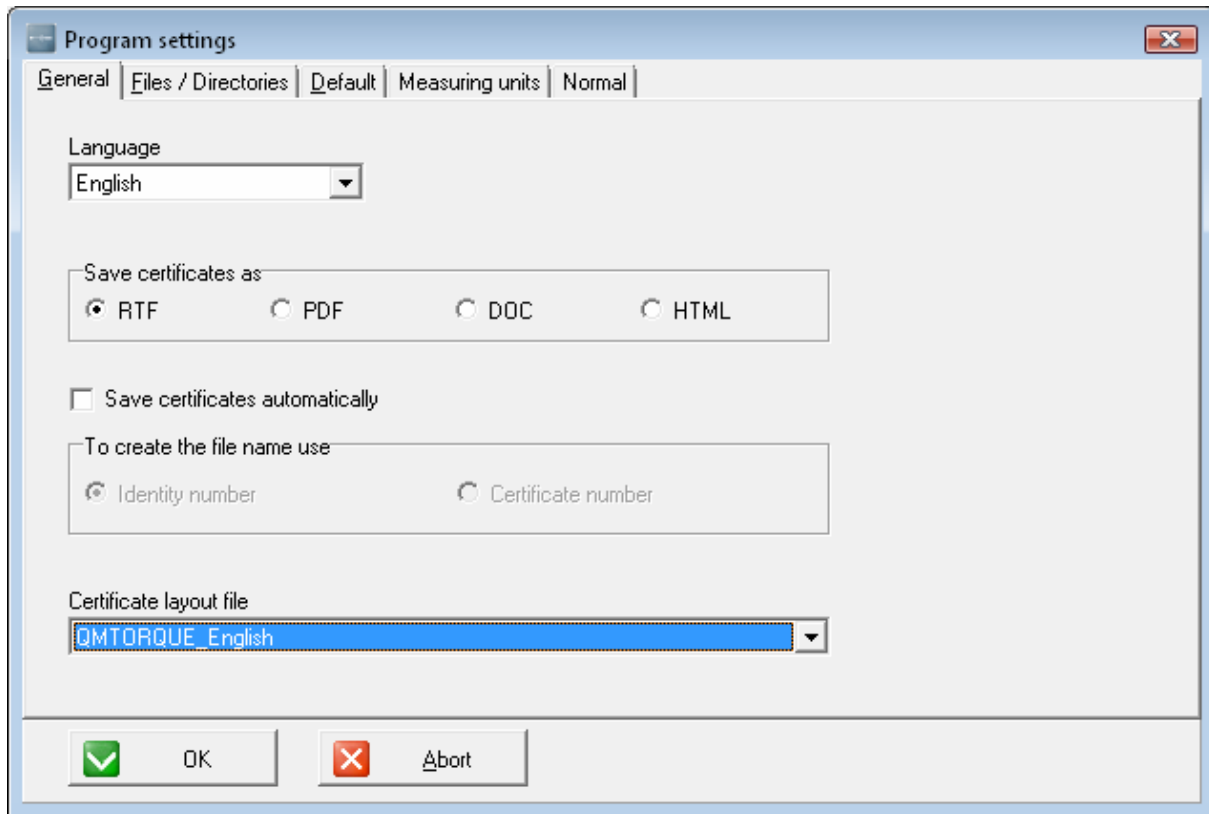


Figure: Settings | General settings

Using the option "Save certificates automatically" any calibration certificate will be saved into the "Certificate directory". The file name will be created by the gauges identity number or the entered certificate number. You can select if you want to save the certificate as "RTF", "PDF", ... file format.

Register „Files / Directories“

Here you can enter the file names and directories used to save certificate templates, calibration certificates and tolerance values.

As well you can enter for each gauge type a reference to a corresponded text file including your "Inspection instructions".

Register "Default"

Here you will find the possibility to define a "pre set" for different program and inspection parameters.

Register "Measuring units"

Torque tools may have very different "measuring units" to indicate or set the values. Here you can define the measuring units which can be used in the program and also the required Torque value conversion factors.

IMPORTANT: *the conversion factor "Factor to measuring unit" does define the conversion from the unit selected to the Basic unit "Nm"*

The conversion of measured values will be done automatically when the values are entered in the program and the units of your torque tool and the "Testing device" selected are different! Set the "measuring unit" of your used testing device (see section "Inspection conditions") to "adjustable" when you enter the values via Keyboard!

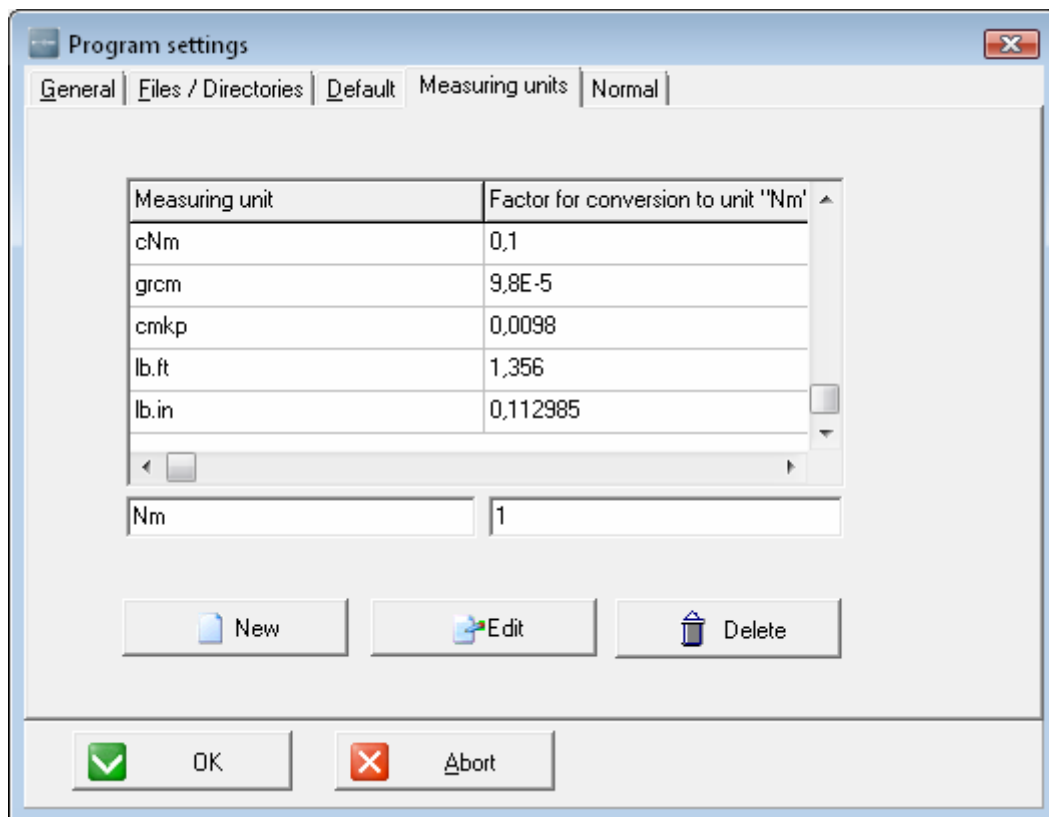


Figure: Entering of measuring units and conversion factors to "Nm"

Use the buttons

"New": to define a new unit

"Edit": to change an existing unit (confirm your changes with the button "Save")

"Delete": to delete an unit

Register "Normal" (Reference)

Please enter here the related parameters to describe your used "Test device" for the torque tool inspection. You can also handle the information for different torque tool testing instruments here.

Program settings

General | Files / Directories | Default | Measuring units | Normal

Specification of the used Test device

Test device designation: ELORA 2446-STT 340

Identification number: 1001

Next calibration date: 31/12/2007

Uncertainty of the Test device: 1.00 % of measuring value

Calibration certificate number:

Measuring units: Nm

Online settings

Interface: Com1

Baud rate: 4800

Parity: None

Stop bits: _1

Data bits: _8

Position of first measure character: 4

"End of line" character: 13

Decimal separator: .

New Edit Delete

OK Abort

Figure: test device parameter

The most important parameters here are:

Measuring units: Please select here the measuring unit of the testing instrument indication. This selection will be used to make the correct conversion of entered values if the measuring units of your testing instrument and the inspected tool are different.

"Online settings":

If an Online connection to your used Testing instrument is available please enter here the parameter of your serial interface (RS232). You will get this information usually from the manual of your testing device.

XIII.2.3 Settings | Factory standards

Additional to the usual inspection of an torque tool according to ISO 6789 the program does offer the possibilities to enter your own tolerances. Use the menu "Settings | Factory tolerances" for it.

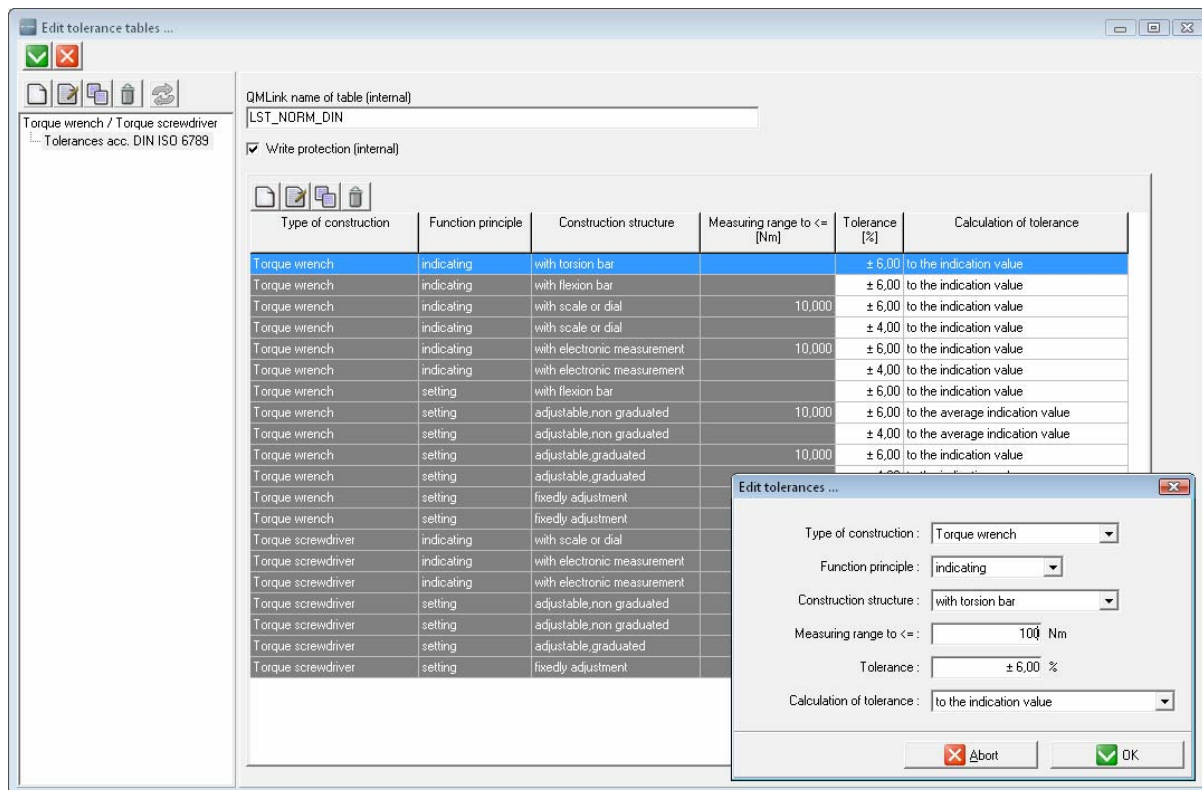


Figure: Entering of Factory tolerances

Here you can now add your own tolerance tables.

XIII.3 Certificate layout files

The program gives you the possibility to customise the layout of your calibration certificates. The layout of these certificates is based on the so called "certificate layout file" (template). This file contains all information about the form of the certificate and the values that should appear in this. By editing this certificate layout file you can change the layout. Saving this file with another file name gives you the possibility to work with different layout files.

All certificate layout files you have created will be saved in the selected directory (see program settings). The files have the extension ".L32".

Using the option "**Certificate layouts / Show / edit a certificate layout**" you can load an existing certificate layout file into the editor program.

ATTENTION: Do not open a certificate layout file ("L32" extension) directly with the QMSOFT editor or with any other program! In this case the program-dependent fields will be removed!!

A certificate layout file is consisting of three different types of information:

- "normal" text: is text information just like in a known text processing application; you can change the text as you want and you can set the different text parameters;
- "Placeholders" ("Fields"): a "Field" is including a variable information about the gauge, the measuring process or the measuring environment. A "field" will be fulfilled with the actual information while executing the program. Editing a certificate layout file you can change "field" positions, delete "fields" (if you do not need the related information) and insert new "fields". To insert a new "field" in your certificate layout use the menu "Insert | Fields". Using this menu you can also see all available "Fields" and the related information. For numerical fields you can set the number of decimal points using the menu "Insert | Fields".
- "Line conditions": A line condition gives you the possibility to control the certificate layout in dependence of different program situations. A text or field following to a line condition will be printed out on the certificate only if the condition is "true". For example you can print a special text only if an "External measurement" was done. Please open an existing certificate layout and see the comments for the "Line conditions" available.

XIII.4. Torque tool inspection

XIII.4.1 Entering of tool Parameter

Before starting an inspection at first you have to select the Gauge type you want to inspect and the related standard.

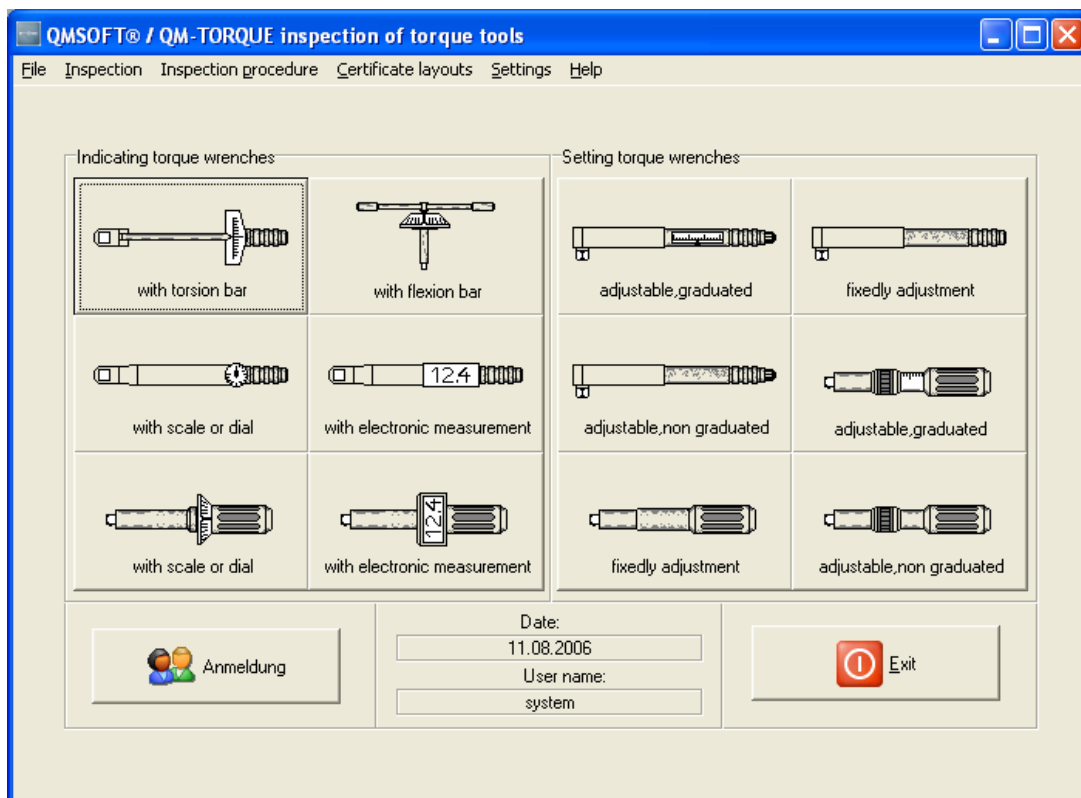


Figure: Start of inspection – Select the tool type

After choosing the type of gauge to be inspected (use the menu “Inspection” to select a “Master setting disc”), the dialog box shown in the figure will appear on your screen. Corresponding with your selection there are different fields showing the gauge parameters.

Note: If the program is started up from the gauge data management system **QM-MANAG** the dialogue fields are blocked and the nominal values of the gauge will be transferred from the database.

Following is a description of the fields in the nominal data dialog box:

- Identification number:* This field is used as a label for the gauges using an identity number. The ID number will appear in the calibration certificate.
- Nominal size of gauge:* Enter here the basic size of the gauge or rather the product limits. See the next points to explain the meaning and the differences caused by different standards.
- Measuring rang up .. to:* Enter the tools measuring range
- Indicating step:* Select the indication step (Graduation) from the shown list.
- Measuring unit:* Select the Unit from the list.

QMSOFT® / QM-TORQUE - Inspection of torque tools

File Help

Enter gauge data

Inspection procedure: DIN EN ISO 6789 (October 2003)

Identity number: 08999

Unit: Nm

Measuring range up: 0,000 Nm

Measuring range to: 100,000 Nm

Indicating step: 1,000 Nm

Type of construction: Torque wrench

Function principle: indicating

Construction structure: with flexion bar

Function direction: vertical

Tolerance table: Tolerances acc. DIN ISO 6789

Tolerance: 6,0 % to the indication value

Abort Instructions Continue

Figure: Entering of torque tool parameters

NOTE: If the "Green Arrow" in the OK Button does not appear you can not continue the program. In this case please check the values you have entered. Either there are missing information's (e.g. Identity number) or the parameters are not valid (e.g. "Measuring range to" is less the "Measuring range up"..).

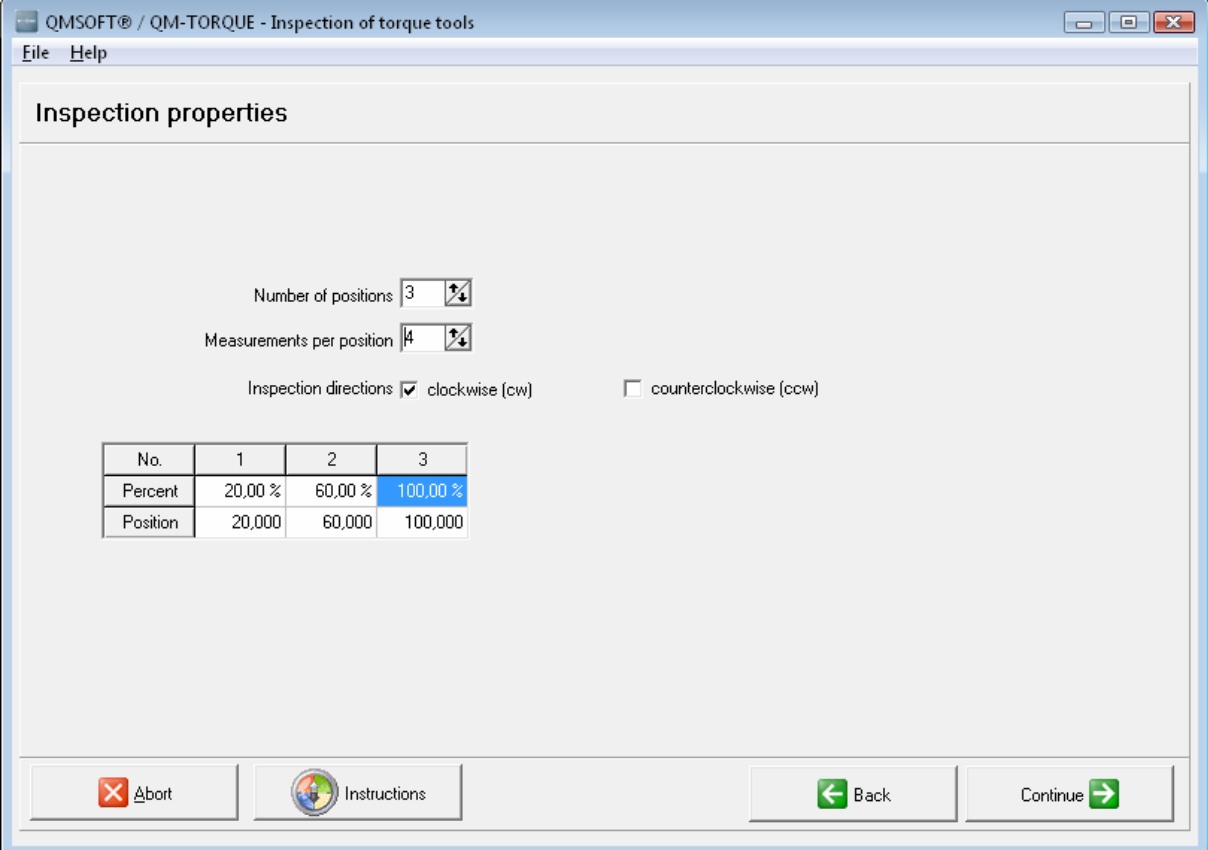
XIII.4.2. The measuring process

After pressing the “Continue button” at first you have to enter / select the results for the functional and visual inspection. If the “Functional inspection” fails, here you have the possibility to skip the measuring process and create a “Scrap record”.

XIII.4.2.1 Inspection conditions

Before starting to enter (take over) the measuring results you can now check and modify your inspection conditions.

Note: If you select the “Inspection procedure” according to DIN EN ISO 6789 the number of positions and measures can not be changed.



The screenshot shows a software window titled "QMSOFT® / QM-TORQUE - Inspection of torque tools". The window has a menu bar with "File" and "Help". The main area is titled "Inspection properties" and contains the following settings:

- Number of positions: 3 (with up/down arrows)
- Measurements per position: 4 (with up/down arrows)
- Inspection directions: ☒ clockwise (cw) and ☐ counterclockwise (ccw)

Below these settings is a table with the following data:

| No. | 1 | 2 | 3 |
|----------|---------|---------|----------|
| Percent | 20,00 % | 60,00 % | 100,00 % |
| Position | 20,000 | 60,000 | 100,000 |

At the bottom of the window, there are four buttons: "Abort" (with a red X icon), "Instructions" (with a circular icon), "Back" (with a green left arrow icon), and "Continue" (with a green right arrow icon).

Figure: Setting of inspection conditions

After “Continue” the measurement values have to be entered in the shown window.

XIII.4.2.2 Entering of measuring values

After entering a single measuring value this value will be evaluated and the cell will be marked with a "Red frame" if it is outside the tolerance.

Inspection

Inspection directions: clockwise (cw)

Tolerance : 6 % to the indication value

| | | | |
|------------|---------------|---------------|----------------|
| Minimum | 18,868 | 56,602 | 94,336 |
| Measure | 20,000 | 60,000 | 100,000 |
| Maximum | 21,277 | 63,833 | 106,388 |
| 1. Value | 21,000 | 60,400 | |
| 2. Value | 20,680 | | |
| 3. Value | 20,700 | | |
| 4. Value | 20,800 | | |
| 5. Value | 21,050 | | |
| Mean value | 20,846 | 60,400 | |
| Deviation | -4,99 % | -0,66 % | |

Figure: Entering of measuring values

If all required values are entered you can continue the program.

Doing an Online measurement the values will be taken over directly into the active "Cell" at your screen.

XIII.5 Valuation and Output of results

If the inspection is finished you get the screen shown in the next figure. The summary result of the inspection is shown. Here you can enter the name of the customer, the date for the next inspection and also some remarks to the inspection.

QMSOFT® / QM-TORQUE - Inspection of torque tools

File Help

QMSOFT® - End of inspection / Valuation: "08999"

Customer: Flintstone & Co.

Calibration certificate number: ZX/20080821-123

Valuation: usable

Comments:

Inspection certificate layout: QMTORQUE_English

Edit certif. layout

Show certificate

Print certificate

Actual Date: 21.08.2008

Next inspection: 21.08.2009

Operator: system

Abort Instructions Back Finish

Figure: End of Inspection / Show, Print Inspection certificate

Before creating the calibration certificate you can change the "certificate layout file" will be used.

To start the output of the results press the "Show certificate button.

All functions for the editing and the output of calibration certificates will be controlled by the EDITOR - program. See the manual of this program to see how to operate this.

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