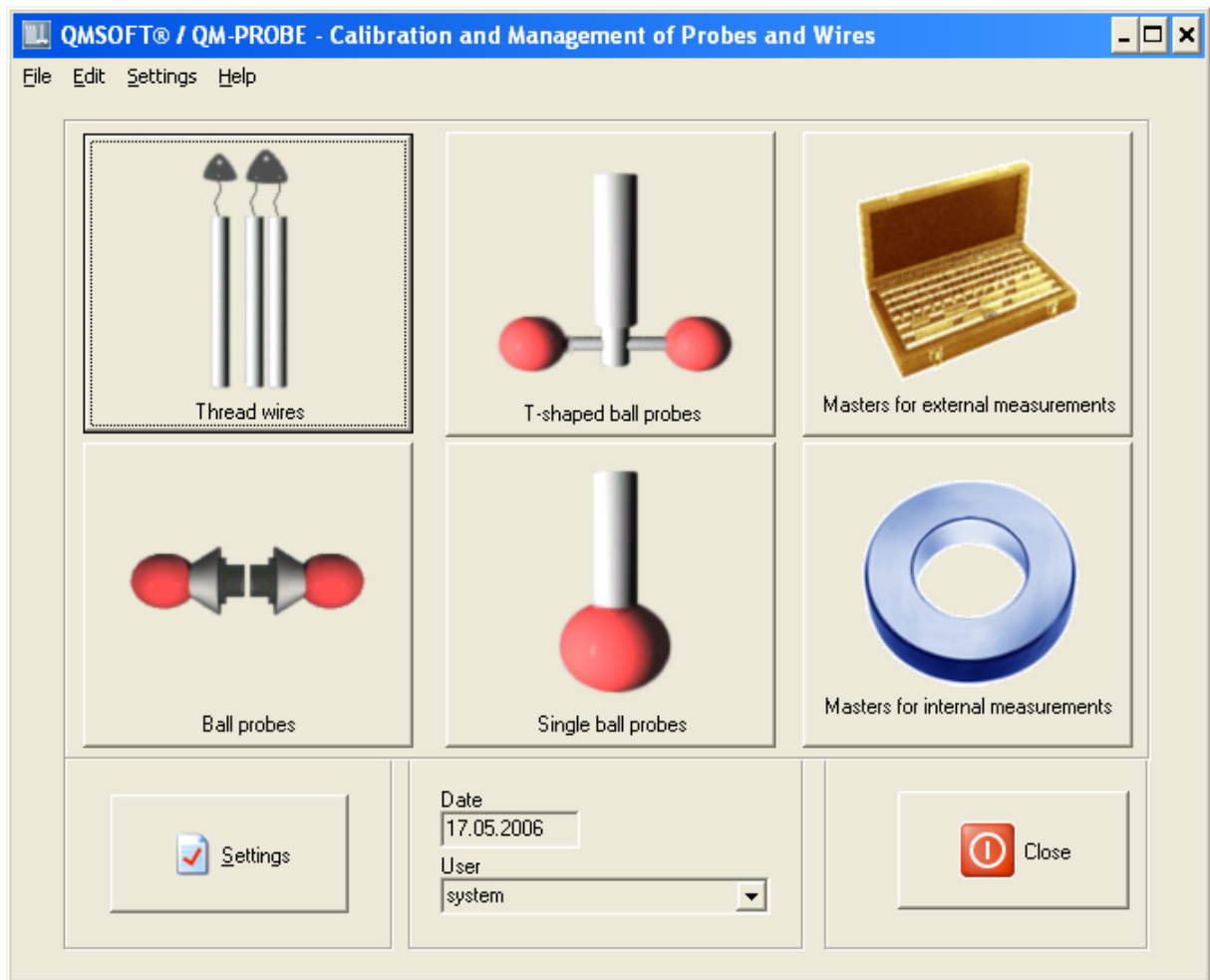


Appendix E

The probes and masters management program (QM-PROBE)



E.1. General

For a lot of measurements (differential measurements, all kind of internal measurements, thread measurements) you need a probe, wires or any other references to execute the measurement. For this purpose the program QM-PROBE (TASTER32.EXE) was designed to manage all the external and internal references, the wires and probes for the thread measurement and probes and balls for internal measurements.

E.2. Settings

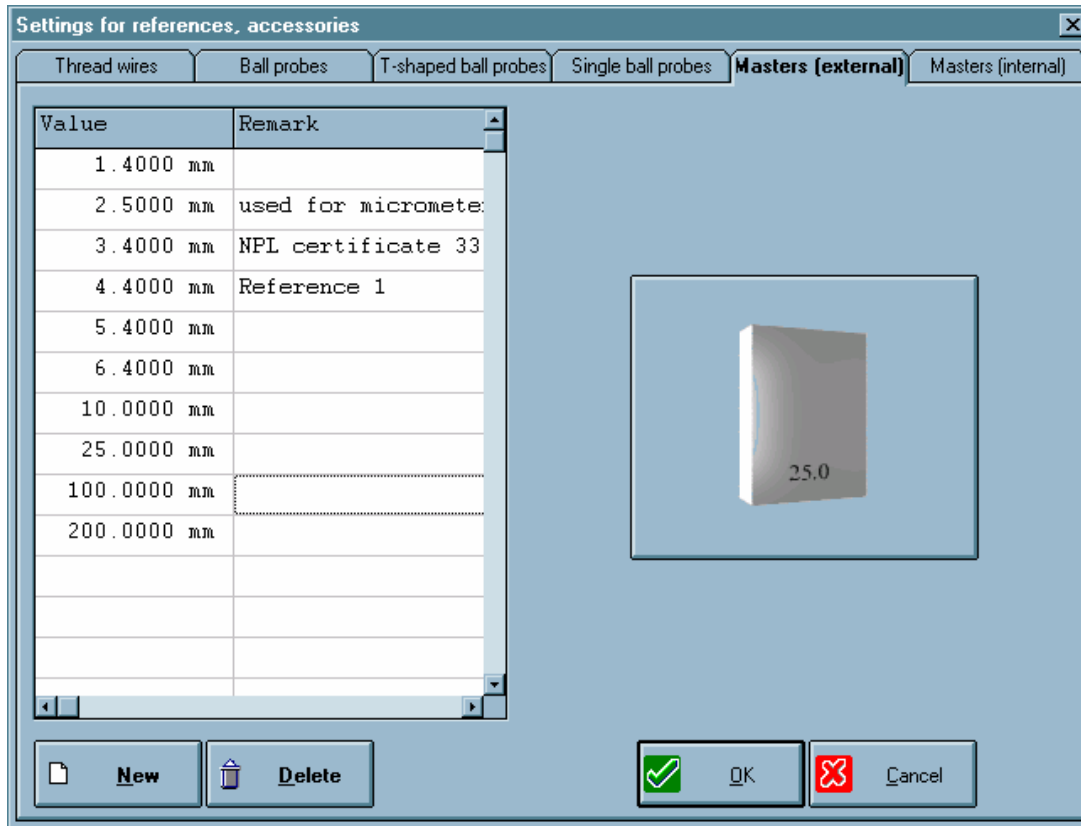
Here you can set or change the program language and the directories for the access to the indication program and the QMSOFT editor program. This parameters will be set while installing the program so that it normally not necessary to change it.

Using a serial interface for the Online connection to a measuring machine you should make sure, that all parameters in the indication program are set correctly.

E.3. The Master and Probe management

Press one of the shown buttons in the programs start screen or use the „Edit“ to select the wished action.

E.3.1. Masters for „External“ and „Internal“ measurement



If you select this options you get shown a list with the available external or internal references. Here you can insert new references, change the values or delete references from the list.

E.3.2. Thread wires

Here you can enter the diameters of the thread wires you want to use. The diameters will be stored in a list which you can access as „Customised wires“ in the thread measurement program QM-THREAD.

Using the button „Calibrate“ you can measure the wires to get the real diameter. This is important for the thread measurement because differences of the wire diameters will have an important influence to your measuring result.

E.3.3. Ball probes (Balls for measuring brackets)

Here you can enter the diameters of balls you want to use for internal measurements. This balls will be used with measuring brackets for the measurement of plain rings or snap gauges an for thread rings (two ball measurement).

Using the button „Calibrate“ you can measure the ball diameter. Using the correct diameter it is unimportant while measuring plain gauges because you have to calibrate your brackets on a Master ring.

For thread measurement it is very important to use the exact ball diameters because differences of this diameters will have an important influence to your measuring result.

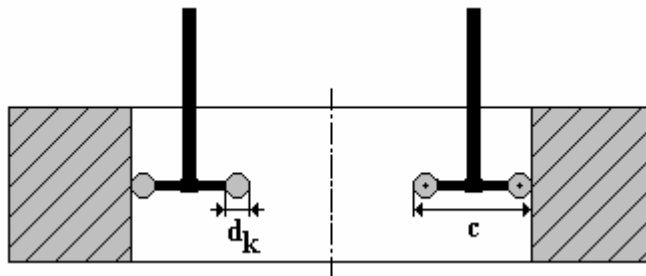
E.3.4. T-shaped ball probes

T-shaped ball probes may be used for the measurement of internal threads (Three ball method) or for plain rings.

Working with „T-shaped“ ball probes you need two values to describe the probe. At first the diameter of the measuring balls d_k (both balls should have the same diameters; normally you get this value from the probe manufacturer) and as second value the „Probe constant“ c . This probe constant is defined as the measure over both balls.

The probes should be calibrated before every measurement or at least before the first use. Entering probe values in the table use the „New“ button. To calibrate the probe using a master ring press the „Calibrate“ button. Be sure to check that the correct ball diameter d_k has been entered.

Figure: Calibration of a "T-shaped" ball probe



The calibration takes place after entering the diameter of the used setting ring. Carry out two measurements (left side / right side) on the setting ring as shown in the figure above.

E.3.5. Single ball probes

Such type of probes will mostly be used for the measurement of small ring gauges. While contacting the probes surface with the gauge should be measured you have a deflection of the probe. Therefore the probes have to be calibrated before use it to get the „virtual“ (effective) diameter of the probe. See section E.3.4. how to calibrate it.

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