

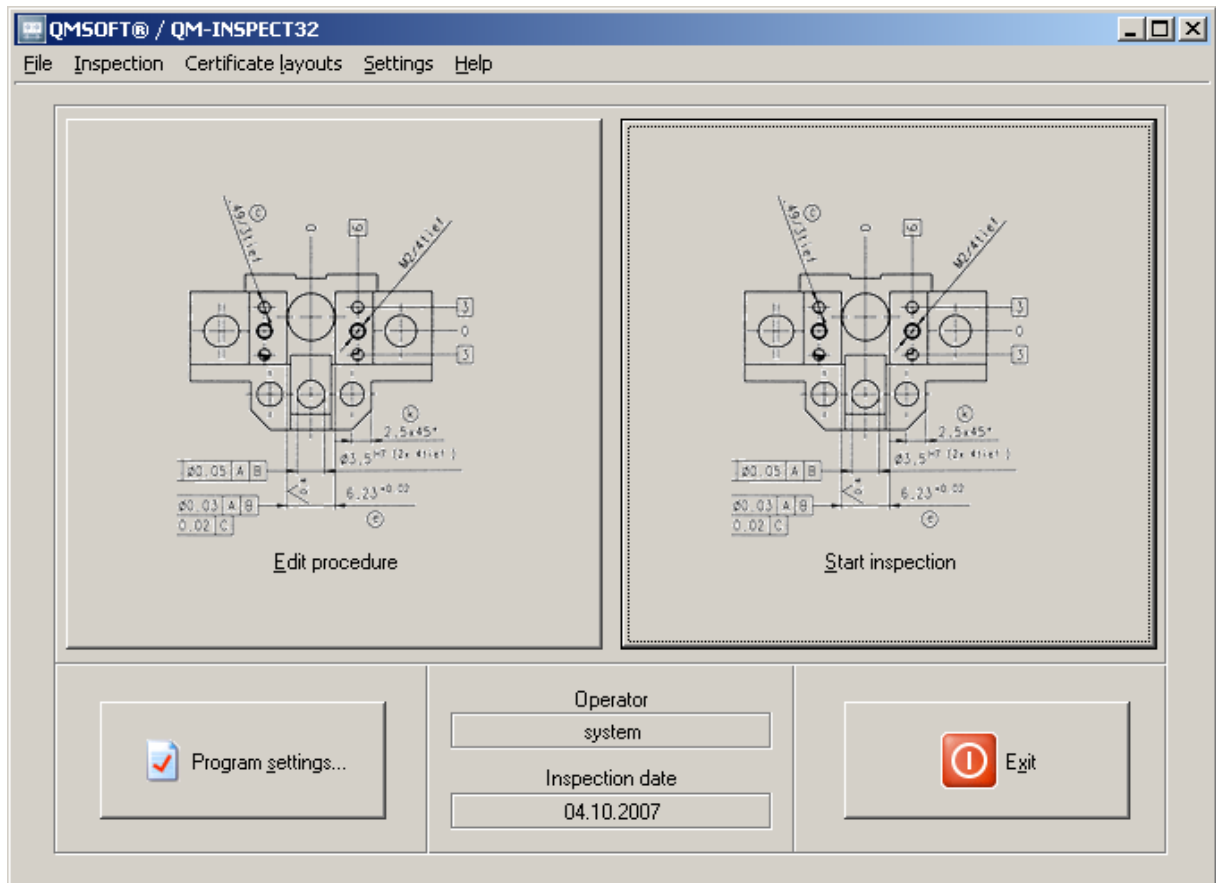
XV. Inspection program QM-INSPECT32 (inspection schedules)

The program QM-INSPECT32 has been designed to create „Inspection schedules“ to inspect special – usually non standardized – gauges (e.g. inspection fixtures) and to support the computer aided inspection of these gauges based on the created inspection schedules.

Generally an “Inspection schedule” does consist of a consequence of gauge characteristics to be inspected. Such characteristics may be simple texts (e.g. the gauge designation), selection lists (for example a “Pass” / “Fail” decision for the gauges valuation) or numerical values. For “numerical values” you have the possibility to define the nominal value and the related tolerance limits.

Measurement data can be entered through an on-line connection of the measurement device or on the keyboard. If the former is the case, the measurement device must be connected to the serial interface of the PC (V.24, RS 232) or by a PC interface card (Heidenhain IK220) or TRIMOS WinDHI indication program.

The QM-INSPECT program can be started directly from the gauge data management system QM-MANAG. In this case the gauge nominal values can be taken over from the database and the inspection results, including the calibration certificate, will be sent back to the database to be stored in the gauges history record.



XV.1. Program start

Usually you will start the QM-INSPECT program directly from the QMSOFT-command-Shell (click the corresponded symbol in the shell) or by calling up it through the QM-MANAG database system when executing a gauge inspection (please see the manual section III.5.3. for it).

XV.2. Program settings

Before you start the program, you can set a number of parameters to define the program environment and describing the inspection conditions.

These settings you can do using the menu "Settings | Program settings"

Register "General"

Here you can choose the program language, select the default data input device (keyboard of the computer, online connection to an indication device). If you set "Online" as the default device the Online connection to the device installed (see page "Directories" – "Indication program") will be started automatically if a gauge measurement will start.

Register "Save automatically"

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

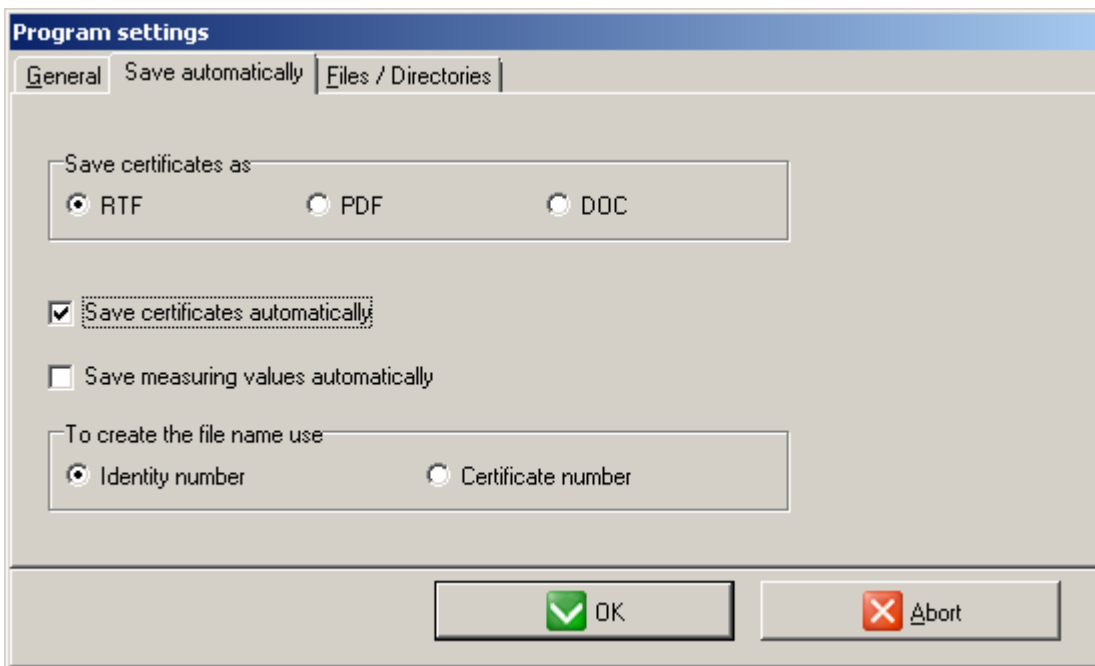


Figure: Program settings

Register "Files / Directories"

For some functions (indicating of measuring values; creation and edit of calibration certificates) external programs will be used. Here you can enter the directory where the corresponding program can be found. Additionally you can set a directory to save your certificate templates, calibration certificates,

While doing the program installation all directories will be set to a correct value!

ATTENTION: Make sure that these entries are correct. Errors may happen while operating the program caused by incorrect settings in the screen "Directories"

XV.3. Creating and editing of inspection schedules (procedures)

In the programs start window click at the button "Edit procedure" to open the shown window:

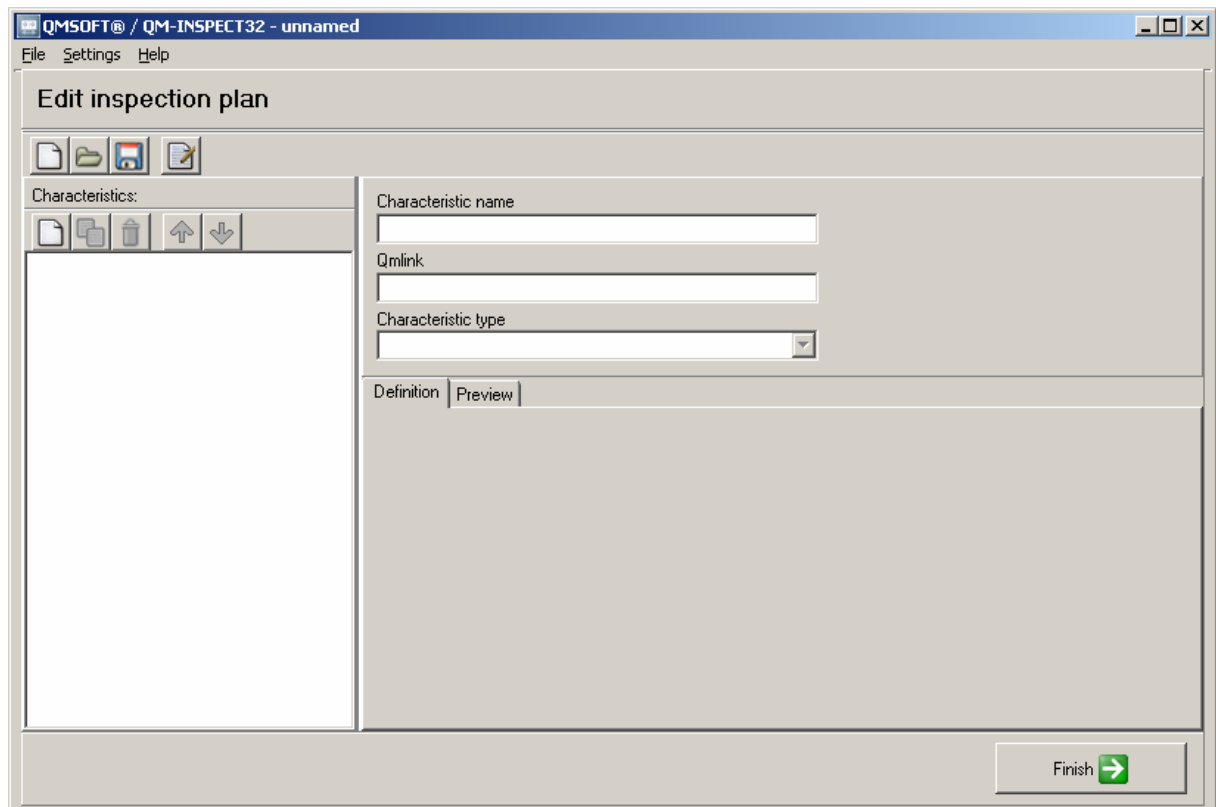


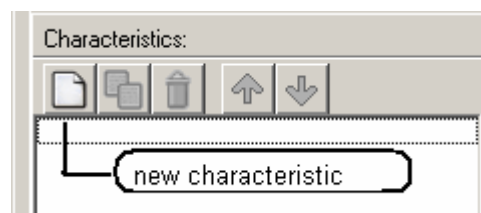
Figure: create / edit inspection procedures



Use the shown icons to open existing procedures or to save a procedure after you have made changes on it.

To create a new procedure you have to define step by step the gauge characteristics which should be a part of your "inspection schedule".

To start with it click the button "New characteristic":



General properties of a characteristic are:

Characteristic name: Enter here the name of the characteristic.

Qmlink: the "QmLink" is the internal used unique name of a characteristic. This name will be used to identify a characteristic when creating a certificate template for the inspection certificates and for the connection to gauge data stored in the QM-MANAG database. The name of the QMLink can be selected at your own conceptions. We suggest to use it similar the characteristic name or use a sequential numbering like ("M_1", "M_2"..).

Characteristic type Please select one of the characteristic types "Numeric value", "Text" or "Text list".

Figure: define the general properties of a characteristic

Depended on the type of characteristic now you have to define further parameters:

"Text": a text can be used to enter simple „Text“ information, the properties are:

Line number: define here the number of lines you want to use for your text field.

Preview: here you can enter a preview text to define a „default“ text which will be filled in automatically when executing the inspection procedure.

"Text list": Text lists can be used to create simple “drop down lists” to select one item from this list when doing a gauge inspection. A simple example for it is the “Pass / Fail” decision for a visual or functional inspection to select an “OK” or “not OK” result.

Figure: defining a text list for a “drop down box”

To create a new entry for your text list use the button „New“.

Now define the following parameters for this list entry:

Designation: enter the text for your selection (e.g. "OK");

QmLink: define a QMLink for this selection(e.g. "LST_VISUAL_INSPECTION_OK");
(generally you can define the QMLink at you own rules)

Valuation: please select if and how the selection of this item does influence the inspection result.
If you select "no valuation" the selection of this item will not change the valuation. If you select "in order" and you will select this item during the inspection, the valuation for this characteristic will be set to "in order" (OK).
Note: that the total valuation of an inspection is only "in order" if all defined characteristics will get the result "in order".

Default list value: activate this check box, if you want a pre-selection of this item as the default value.

If required you can use the buttons „Edit“ and „Delete“ to modify a text list.

"Numeric value":

Using numeric values, usually the mostly used characteristics, you define the different dimensions, diameters, lengths or other parameters which may be described with a „value“.

Numeric values do have the following properties:

Nominal value: Here you define the "Nominal value", the "Unit" of this value and the number of digits.

Number of values: define the number of measures you want to take for this characteristic when working with the procedure. If you enter more than one value the program will calculate automatically the maximum and the minimum value, the range, the mean value and the standard deviation.

Incl. Valuation: if you activate this check box the characteristic will be used for the valuation of the gauge and the fields to enter tolerance or limit values will be activated. If you do not activate it, the value will be used only for recording the actual value without checking of limits and without valuation.

Defining of tolerances or limits:

Symmetric: activate it, if you want to use a "symmetric" tolerance. In this case you have to enter only the upper tolerance limit. The lower tolerance will be set automatically.

Upper and lower limit: enter here your upper and lower tolerance values. With the selection "Tolerance values", "Tolerance (%)" or "Limit" you can decide if you want to enter it as a tolerance value related to the nominal value, as a percent value related to the nominal value or if you want to enter the upper or lower limits of the size directly.

Figure: Example for the definition of a numeric value

Other functions to edit inspection procedures:

Copy:



You can use this function to copy existing characteristics. Please note that the name and the QMLink of each characteristic has to be unique for your defined procedure.

Delete:



Use this button to delete characteristics from your list. Note: there is no „undo“ function available.

Move „up“ and „down“:



Change your list by moving up and down of the defined characteristics.

XV.4. General used parameters (Header and foot lines):

For each inspection procedure there does exist some general parameter which you do not need to define. These fields can be print out at the calibration certificate and exist even if your procedure does not include any other characteristics.

Existing fields for header lines are:

- the gauge designation / type
- the gauge identity number
- the gauge "Nominal size" / "Description" / "Measuring range"

Figure: Header lines, general available in each procedure

After finishing an inspection based on an inspection procedure you have the following fields available:

- Customer: here you can enter a customer name; if the program is called from the database system the "Client" name will be shown here;
- Calibration certificate number: enter, if required, a calibration certificate number; if the program is called from the database, this number will be taken over from there;
- Valuation: based on the valuation of the single characteristics, the program will automatically set the total valuation;
- Comments: here you can enter comments for the inspection;
- Actual date: here the date of inspection will be shown;
- Next inspection: here the date of the next inspection will be shown; if the program is called from the database system the value for it will be taken over;
- Operator: the operator name (database "login" name)

XV.5. Certificate layout files (templates)

XV.5.1. General usage of layout files

Naturally, a main part of the program is the creation of calibration reports to record the inspection results.

The program gives you the possibility to customise the layout of your calibration certificate. The layout of the calibration certificate is based on a template so called "Certificate layout file". This file contains all information about the form of the certificate and the values should appear in this.

Generally we recommend to create a certificate layout for each inspection procedure which you create. But it is also possible to use a general layout file for different procedures. The predefined layout file "**Template_English**" will give you an example for it.

All this certificate layout files you have created will be saved in the "Certificate directory" (See section XV.2. Program settings). The files have the extension ".L32".

Using the menu "**Certificate layouts | Edit certificate layouts**" you can load a certificate layout file into the QMSOFT editor program.

NOTE: Usually a certificate layout file does include information defined in a certain inspection procedure. This means that there exist links between the characteristics defined in the procedures and the information you can print out at your certificate. The link between the gauge characteristics and the fields to be filled in the certificate print out will be done by the "QMLink"! To make sure that all required fields are available when you are editing the certificate layout file we recommend to open this file only if the related inspection procedure is already loaded! See the next figure for it!



Figure: Open the layout files when the related procedure is loaded

NOTE: Do *never* open a "L32" certificate file outside of the program. In this case you will loose all "placeholders" representing the "actual values" when the certificate will be created !

XV.5.2. Editing a layout file

Open a certificate layout file by the related menu (see figure)

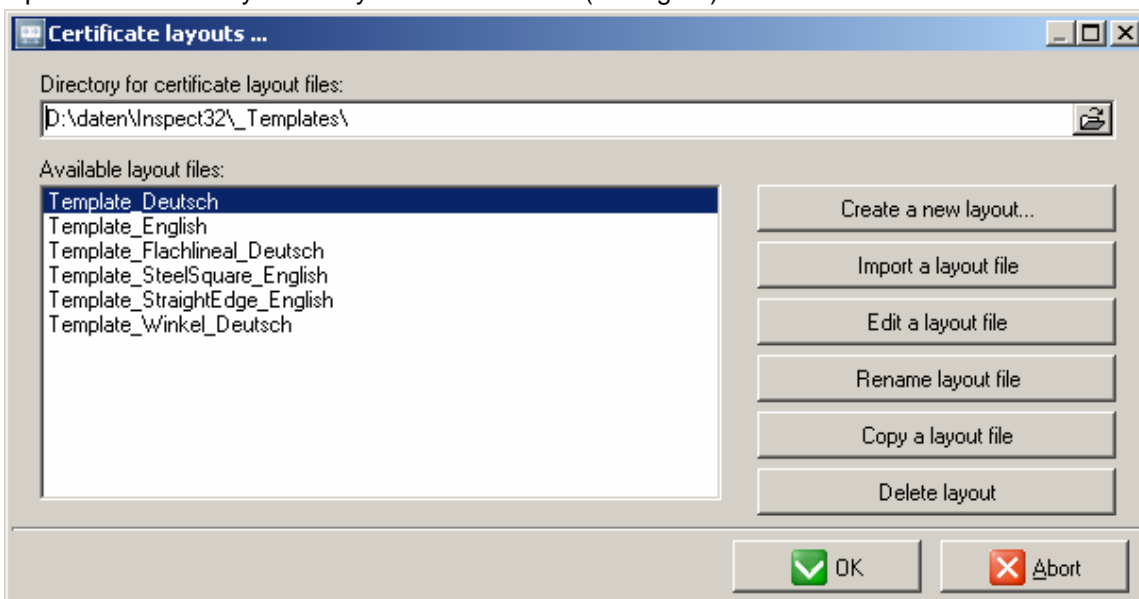


Figure: Create, edit, copy certificate layout files

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

- **standard 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 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. While editing a certificate layout file you can change "field" positions, delete "fields" (if you do not need the related information) and insert new "fields".
- **"Text conditions"**: A text condition gives you the possibility to control the certificate layout in dependence of different program situations. A text or field following to a text condition will be print 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.

XV.5.2.1. The usage of "Place holders" (fields)

To insert a new "Place holder" in your certificate layout use the menu **"Insert / Field.."**.

Using this menu you can also see all available "Place holders" (Fields) and the related information. The fields are grouped to different categories (e.g. "Characteristics"). The category "QM-MANAG" does content all information you can take over from the gauge database. If you select a field (click on it) you can see the field designation. When you click on the "Insert" button the selected field will be inserted at the current cursor position.

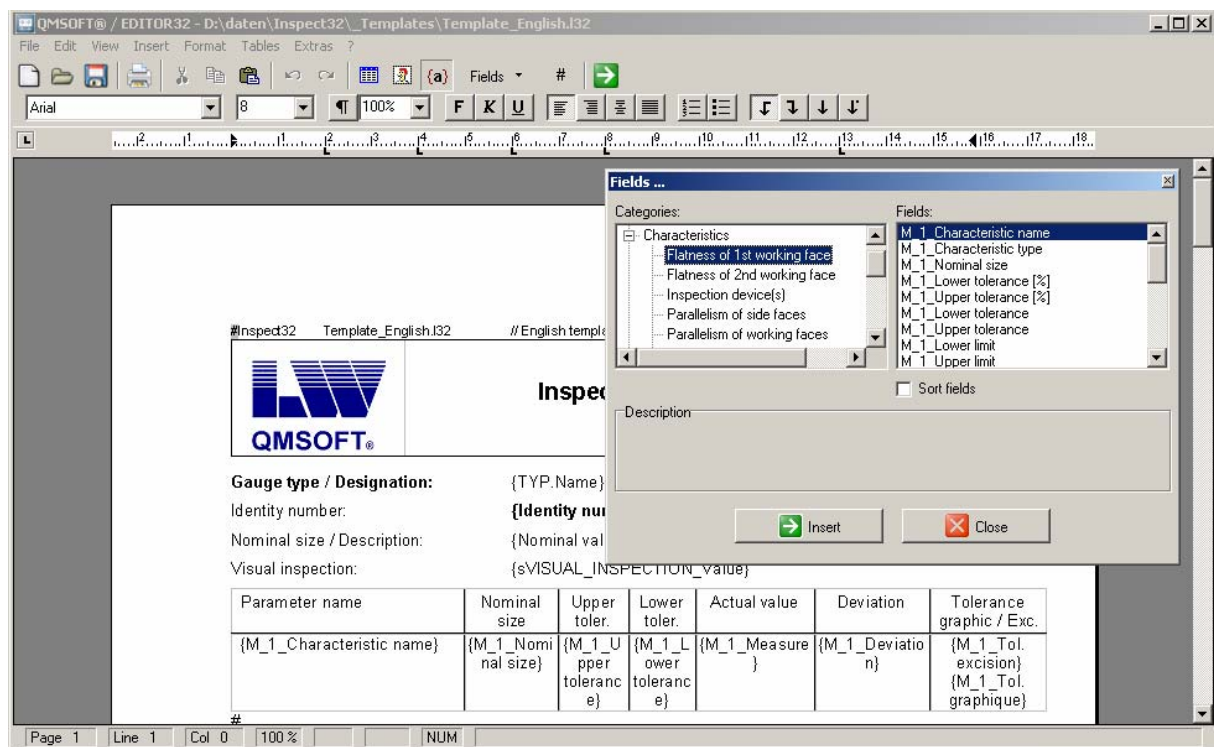


Figure: Insert inspection results ("Fields") at the inspection certificate

Depended on the characteristic type for each characteristic – defined in you related inspection procedure - there are different fields available. The field name itself will be created by the "QMLink" Name of the characteristic and the related property.

For each characteristic the fields "Characteristic_name" and "Characteristic_type" are available.

For "Text" and "Text list" characteristics the field "_Value" does include the entered text or the selected list item.

For „Numeric values“ the following properties (fields) are additionally available:

- The "Nominal size", the tolerance and limit values
- The "unit"
- The "maximum", "minimum", "range", "mean value" if you have several measured values for this characteristic

- A list of all measured values including a sequential number, the actual value, the deviation to the nominal value, the excision of the given limits (if it is out of limits) and the tolerance graphic (if it is inside the tolerance limits)

XV.5.2.2. The usage of "Text conditions"

Text conditions may be used to control the text you want to print out dependent on the current program situation. Inside a certificate layout file you can see a text condition as a "#" character.

When clicking with the right mouse button on such a "#" character you can use the menu item "**Field properties**" to show the definition of this condition.

To define a new text condition use the menu "View | Text conditions" to show the "Text condition" window on the screen.

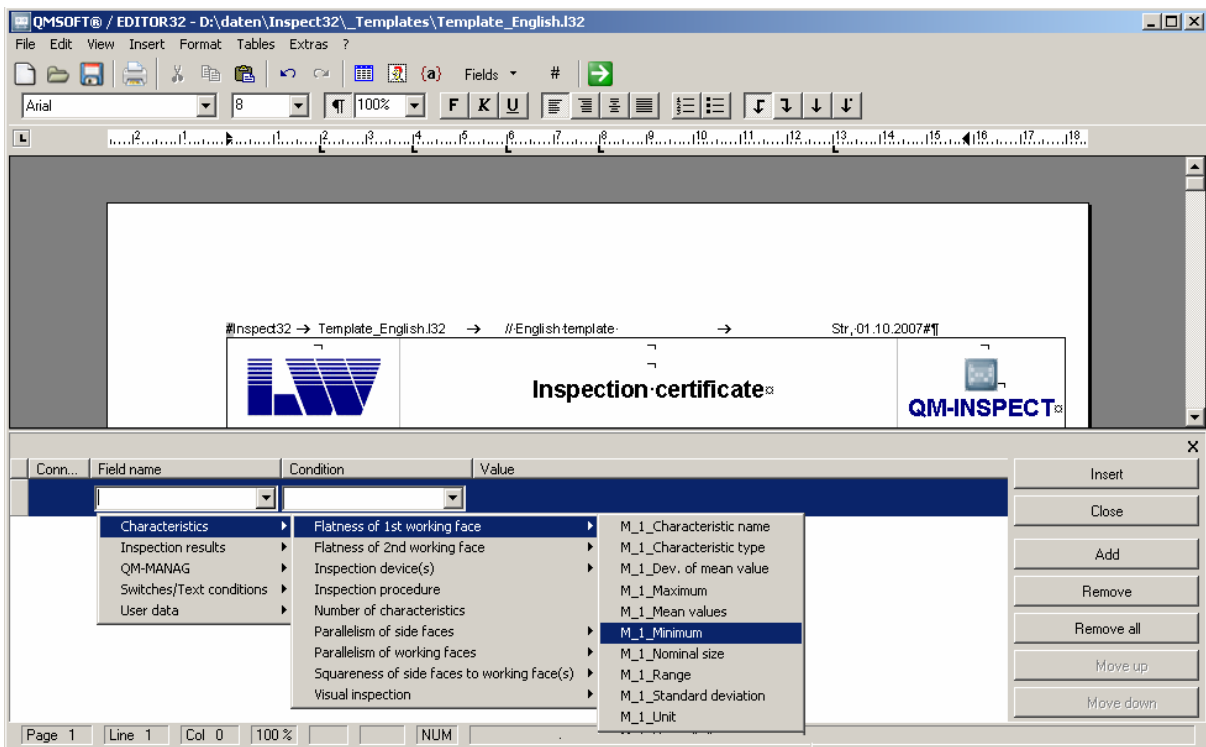


Figure: the definition of text conditions

Now click the "Add" button to add a new line to your list of conditions. Usually you will need only one condition to control your print out but you can also combine different conditions as well.

In this case, please pay attention to the field "Connection" (see the first column) which define the type of the combination of the single conditions. Using the "AND" operator is meaning that all single conditions has to be "true" to get the result "true". Using "OR" to join the conditions only one of the conditions needs to be "true" to get the result "true".

In the "condition line" at first select the "Field name". The field names are also divided in different categories as shown for the fields. After selecting the field you have to choose the "Condition" which your field have to fulfil. Available conditions are "empty", "not empty", "equal" and others. For some conditions (for example "contains") you have to add the related "value" you will test.

If your "list of conditions" is finished use the "Insert" button to insert the condition(s) in your certificate layout.

Note: A "Text condition" is not restricted to one line in your layout. The condition is active until a new "Text condition" is defined or an "empty" condition is set. The text after an "empty" condition will appear on your certificate in any cases.

XV.6. Executing a inspection procedure / making a gauge inspection

Use the main menu „Start inspection“ to start a new inspection for a gauge. If you start the program from the gauge management system this screen will coming up automatically.

Figure: start of an inspection

Now enter the values for the “Gauge type designation”, “Identity number”, “Measuring range” so far necessarily. Calling from the database this fields are already filled in.

Now use the „Load“ button to open the related inspection procedure. You will get the list with your defined characteristics on the screen. Now enter here all your actual values and/or texts for all defined parameters.

Figure: Entering of inspection values and results

After entering all required values, when you are reached the end of the „list of characteristics“, you can continue with the “**Continue**” button.

Use the „**Abort**“ button if you want to cancel the inspection.

XV.6.1. Creating the inspection certificate

After leaving the previous screen you will get the shown screen:

QMSOFT® - End of inspection / Valuation: "0899_xy" [Fixture ABC]

File Settings Help

Customer: Flintstone & Son

Calibration certificate number: 2007-10-05-001

Valuation: usable

Comments: everything well done

Inspection certificate layout: Template_English

Edit cert. layout

Show certificate

Print certificate

Actual Date: 05.10.2007 Next inspection: 05.10.2007 Operator: Smith

Abort Back Finish

Figure: end of inspection / creating the certificate

If required you can now enter additional information for „Customer“, „Calibration certificate number“ and „Comments“.

The „Valuation“ will be set automatically base on the valuation of each single characteristic you have inspected.

Use now the „Show certificate“ button to get the certificate on the screen.

- ☞ Please make sure, that you have selected the correct „Inspection certificate layout“ which does contain the fields related with the currently used inspection procedure!

XV.7. Starting the inspection procedure by the gauge management system

In the most cases it is useful to start an inspection procedure directly by the QMSOFT gauge management software. The reasons are:

- Information about the gauge – which is already available in the gauge management system – has not to be entered again;
- After finishing the inspection process you will get all information – or all information you want to keep in the management system – back to the database automatically. This does also include the inspection certificate.

XV.7.1. How to connect the program „Inspect“ with the gauge management

These conditions have to be fulfilled to start an inspection procedure from the gauge management system:

1. of course, a related gauge type does exist in the management system (
2. the action "Gauge inspection" of this type has to be connected with the program „INSPECT32“ (see the next figure).
3. you have to set links between the existing database fields and the related characteristics defined in your inspection procedure if you want to transfer nominal and/or actual data from the database to the INSPECT program and back to the database when an inspection is finished (NOTE: these links can be set only if you call the program inspect directly from the database system).

ATTENTION: The next step has to be done in the gauge management system! Please see also the manual section III.5.3. and III.4.6. for the QM-MANAG program

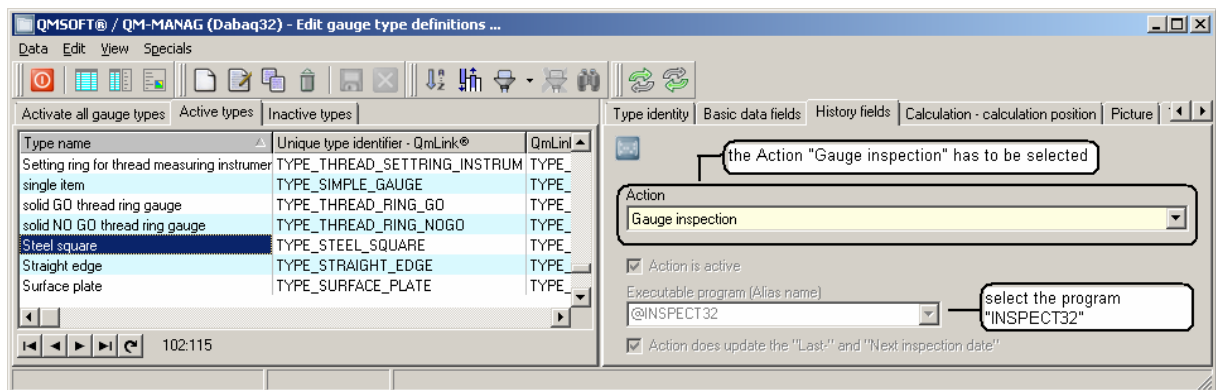


Figure: connect a gauge type with the program INSPECT32

Notes about the definition of the related Gauge type inside the gauge management system:

Generally you can define for each characteristic which is contained in your inspection procedure a complementary field in the gauges "Basic data fields" and in the "History fields" related to the action "Gauge inspection". The disadvantage of this method is, that you then need a separated gauge type for each modification of a fixture or other special gauge you have. Therefore we suggest to define only some - general existing - characteristics as a field in the database and define all other fields in special designed inspection procedures only.

After finishing the definitions of the Gauge type inside the gauge management system now you have to set the links between the database fields and the characteristics in the inspection procedure.

To do this you have to start the program "INSPECT32" from the gauge management system.

This means:

- insert a gauge item of the related type in the management system
- enter all related nominal values
- start a "Gauge inspection" for this gauge and start also the QMSOFT inspection program

Now at first load the required inspection procedure – if it is not already loaded – and click now the “Edit inspection procedure” button.

Enter the gauge characteristics

| | | |
|----------------------------------|---------------|---------------------------|
| Gauge type designation | Straight edge | Load |
| Identity number | 08999 | |
| Size/Measuring range/Designation | 500,0 mm | |
| | | Edit inspection procedure |

Figure: start the inspection procedure from the database system

Now you can see again the characteristics defined in your inspection procedure. For each characteristic you have now an additional page with the name "Qmlink" (see figure).

QMSOFT® / QM-INSPECT32 - unnamed

File Settings Help

Edit inspection procedure

Characteristics:

- Visual inspection
- Flatness of 1st working face
- Flatness of 2nd working face
- Parallelism of working faces
- Parallelism of side faces
- Squareness of side faces to working face(s)
- Inspection device(s)

Characteristic name: Visual inspection

Qmlink: sVISUAL_INSPECTION

Characteristic type: Text list

click here to define the connection with the database fields, available for this gauge type

Definition Preview **Qmlink**

| Designation | QMLINK | Valuation | Default |
|-------------|----------------|--------------|---------|
| ok | LST_VISUAL_OK | in order | X |
| not ok | LST_VISUAL_NOK | not in order | |

New Edit Delete

Abort Back

Figure: edit an inspection procedure when the program was called up from the database

Open the "Qmlink" page to set now the links between the single properties of an inspection characteristic and the database fields related with it. To do it, at first select the property shown in the list on the left side. Then select the database field on the right side and click the “Link” button to connect it.

Links you have done will be shown in the area “Linked fields”. In case that an inspection characteristic has a number of properties there can exist several links between one characteristic and different database fields.

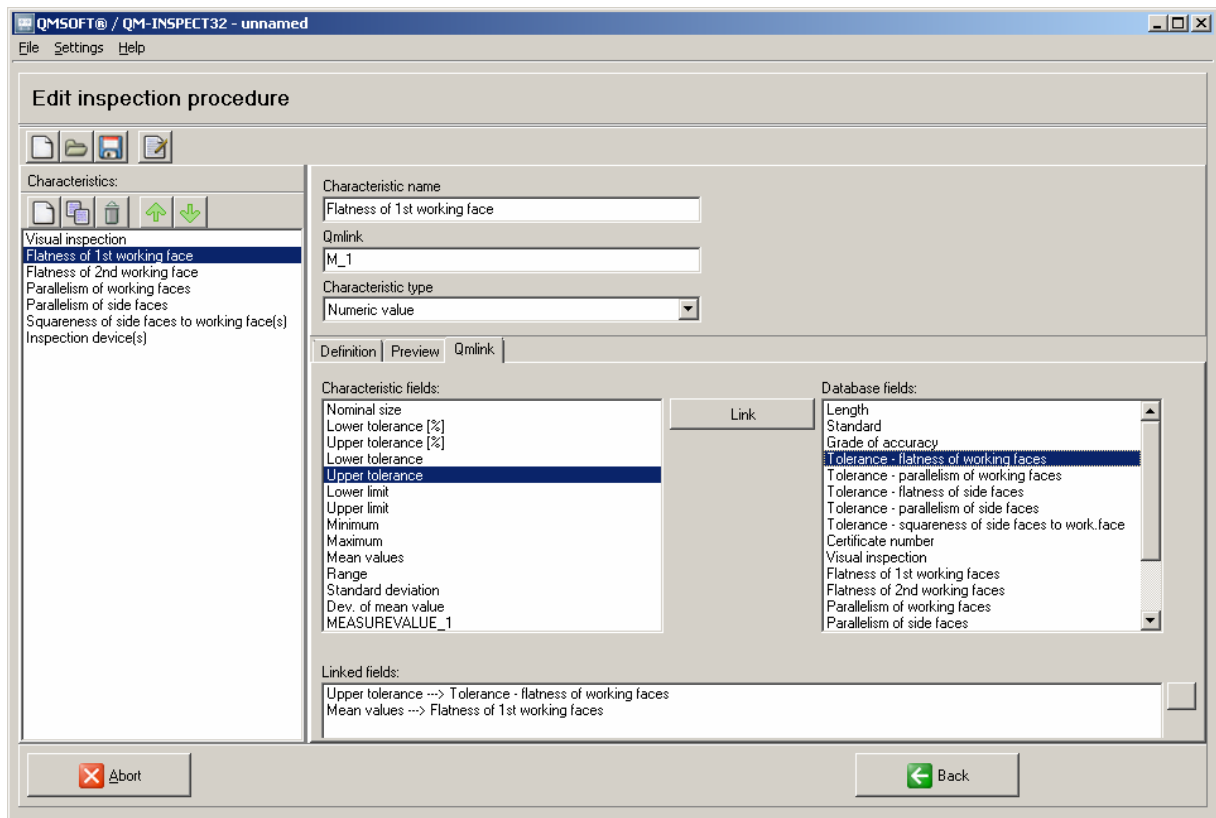


Figure: setting the connections (links) between the characteristics defined in the inspection procedure and the database fields

To delete a link please click on the delete button on the right side beside the “Linked fields” area.

If you have set all required connections you should use the „Disc“ icon to save your modified inspection procedure.

+ + +