

Creation and calibration of your probe

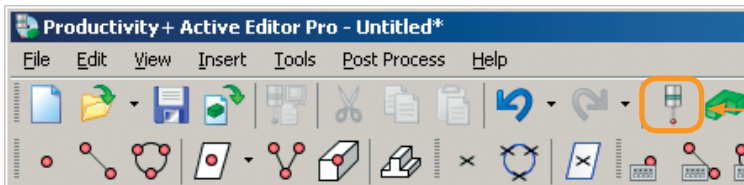
This module demonstrates how to create a new probe in the Probe Database and how to create a calibration program which must be run on a machine prior to any inspection cycles. This program records the calibrated information to a location on the machine (the exact location is dependant on the controller type).

These figures are then used when running day-to-day inspection cycles. Without probe calibration, the run-out of the stylus will lead to inaccurate results. By calibrating, the run-out is automatically accounted for, and calibrating the probe on a known reference surface stores the length based on the electronic trigger point of the probe.

Note: Before starting this module, ensure you have a blank screen, i.e. no imported solid model.

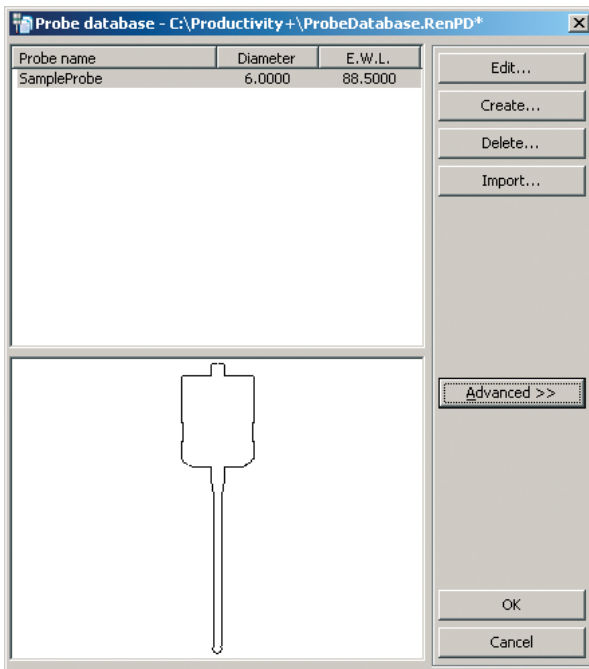
Having completed this module you will be able to:

- Create a probe in the Probe Database
- Create a calibration program ready for post processing



Setting up the probe database

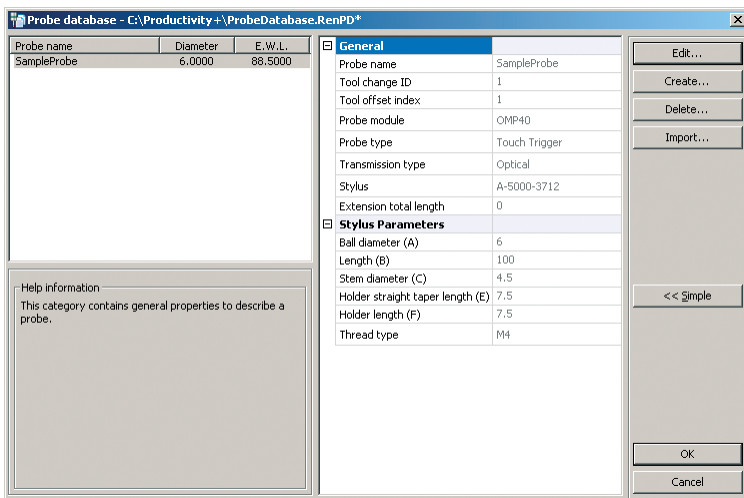
Click on the indicated icon to open the Probe Database dialog.



This database will store information on the various probes you have.

The database already contains information for a sample probe.

To add a new probe to the database, select Create, and simply complete the fields to represent the probe you have in your machine.



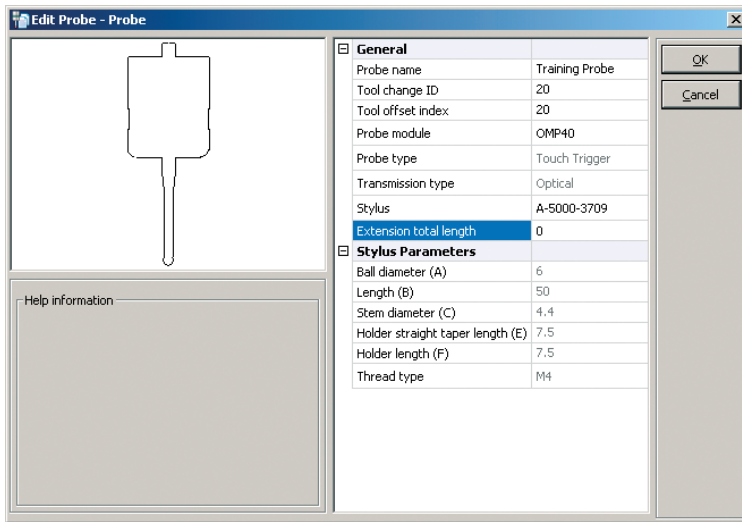
Probe name: use a name that will identify your probe to a particular machine.

Tool change ID: tool number of your probe.

Tool offset index: set this value to be the same as the tool change ID.

Probe module: click the drop down menu and select your probe from the list given. This selection will automatically populate further fields.

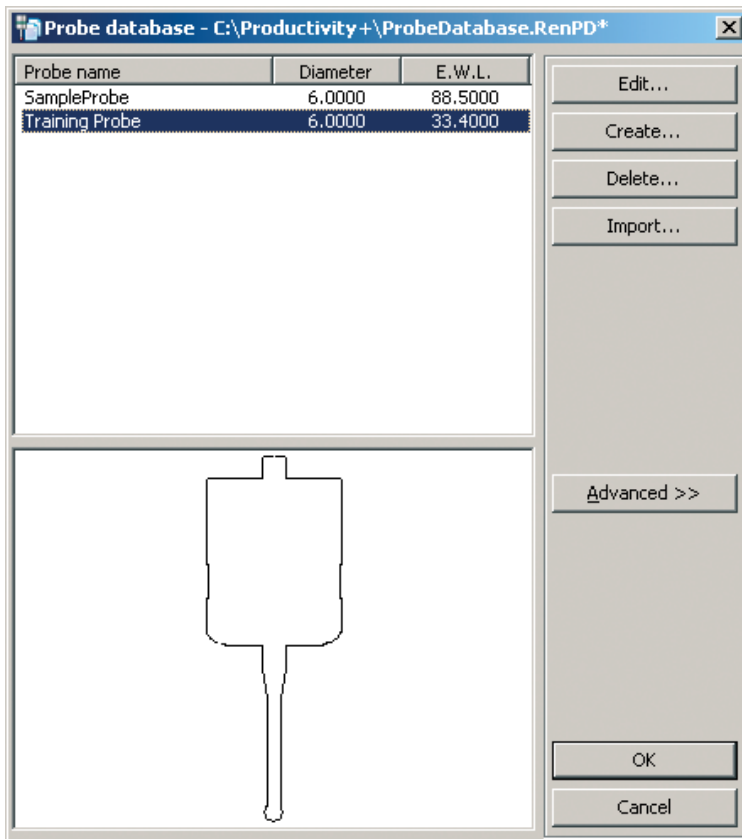
Stylus: click the drop down menu and select the part number of your stylus (if known), or leave the default Custom setting and edit the Stylus Parameters fields to complete the stylus configuration.



The sample probe data shown on the left uses a stylus part number which represents a 50 mm long stylus with a 6 mm diameter ruby ball. By using this stylus number, the software automatically populates the Stylus Parameters fields with the correct information.

The probe image at the top left of the screen is based on the information within the General and Stylus Parameters fields. As information within these fields change, so does the image.

When you have added all necessary information, select OK.



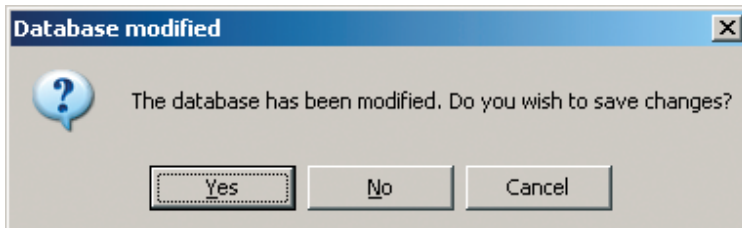
The probe you have just created is now shown in the probe database.

If you have several machines with probes fitted, simply repeat the probe creation process adding in all your probes.

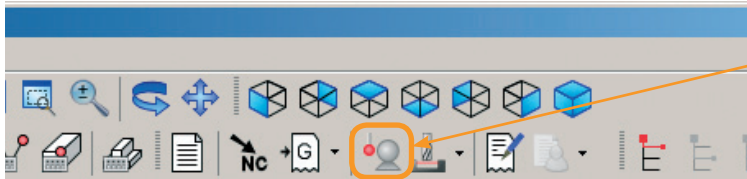
Remember to give them a probe name that makes it easy to identify which machine they are fitted to.

When you have created all your probes, select OK.

A message will then appear to indicate that the probe database has been modified and asking if you wish to save the changes. If you are happy with the information you have added, select Yes.

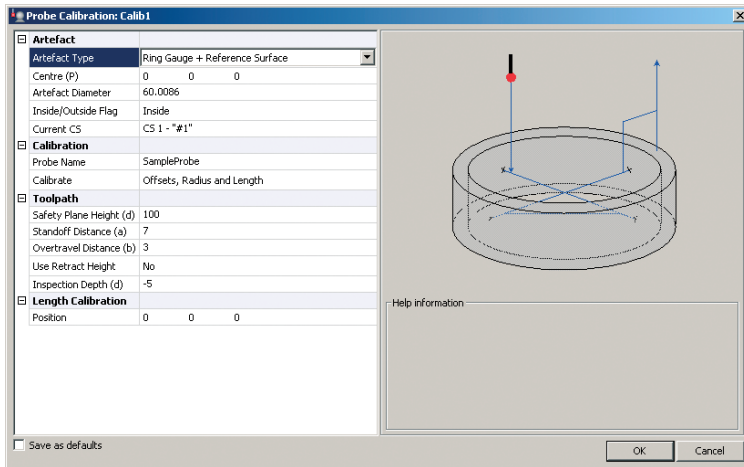


You have now added your probe(s) to the probe database, and must now create a calibration cycle to run on the machine. As mentioned previously, this calibration cycle needs to be run before running any inspection cycles in order to record the calibrated information to a specific location on your machine. This location is defined inside your machine specific .RenMF file.



Calibrating your probe

To create a probe calibration cycle, select the Probe Calibration icon.

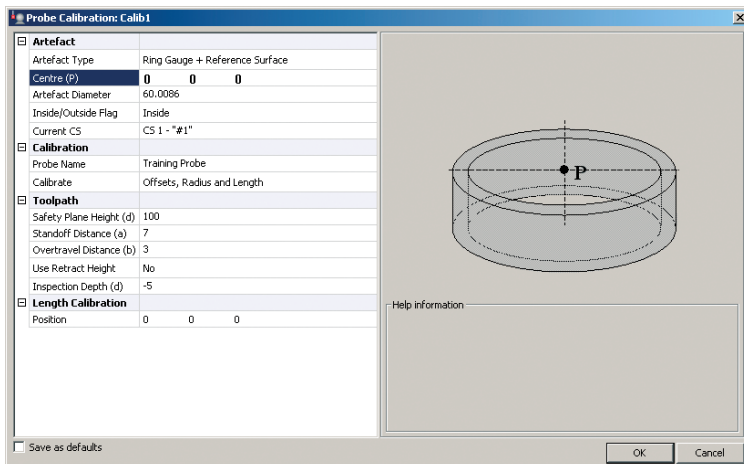


Add values to the various fields to suit the set-up being used on your machine. A number of fields have drop down boxes allowing you to select from pre-defined options.

The first selection to make is the Artefact Type that you are using e.g. ring gauge or datum sphere.

This example will use a ring gauge and a reference surface (which will be the top of the ring gauge).

Set-up the ring gauge on your machine. Click on centre in X and Y and set your work offset/datum to this position. Z zero will be the top of your ring gauge and X and Y zero will be in the centre.



If you have an artefact in a known position already set-up on your machine, you can use this datum and edit the field called Centre (P) in X, Y and Z to input its position from that datum.

Artefact Diameter: type in the diameter of your ring gauge/plug gauge or datum sphere.

Inside/outside Flag: select if you are using a ring/plug gauge.

Current CS: the datum you are using. This is for reference only.

Probe Name: use to select your probe from the probe database.

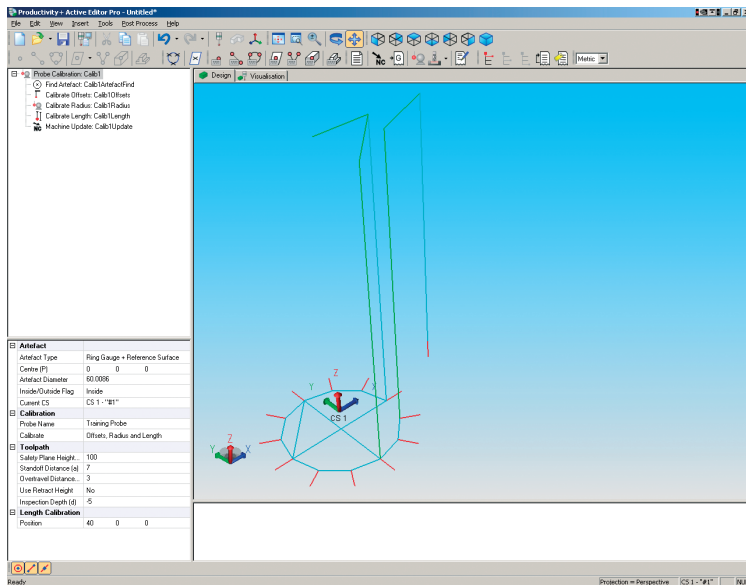
Calibrate: select Offsets, Radius and Length to give your probe a full calibration.

Safety Plane: use 100 mm.

Standoff and Overtravel: should be set as in the example or to smaller values as you know exactly where the artefact is.

Inspection Depth: select a suitable depth for your artefact.

Length Calibration: input an X, Y and/or Z offset of the position where you would like to calibrate the length of your probe.



When you have completed all necessary options, select OK. You should then see the probe tool path. (If no path is visible, select the isometric view icon.)

Use the visualisation tool to view the probe path. The probe will move into your artefact and probe a normal circle. This is to set the X and Y offsets and the ball radius.)

The probe will then go into the bore again but this time it will probe a point every 30° in an anti-clockwise direction. This is calibrating the ball radius at each of these points.

Finally the probe will retract to the safety plane and take a single point in Z to calibrate the probe length. All of this information is stored on the machine tool control and is used by all Productivity+™ Active Editor Pro probing cycles.

You are now ready to post process the program and run it on your machine tool. This will set it up ready to run all of the different inspection cycles you may wish to use in the future.

There are some instances when you will need to re-calibrate your probe:

- If a new stylus is fitted to your probe
- If it is suspected that the stylus has become distorted or the probe has crashed
- At regular intervals to compensate for mechanical changes to your machine tool

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