

# Machine tool software support article

## Productivity+™ Active Editor Pro

## Using Productivity+™ Active Editor Pro to integrate probing into machining programs

## Overview

Machining a component requires a mixture of probing and cutting operations, often including post-process inspection.

Traditionally the machining cycle would stop to allow the operator to manually run measurement programs, but this is costly and time consuming.

Productivity+™ Active Editor Pro allows a seamless mix of machining and probing operations, with the machine performing automatic component measurement, and determining subsequent actions based on the results of these measurements.

This document outlines various methods of integrating probing operations into your machine code using Productivity+™ Active Editor Pro.

### **Software family/product concerned**

Productivity+™ Active Editor Pro, all versions

## Method 1: Add probing into an existing machining operation

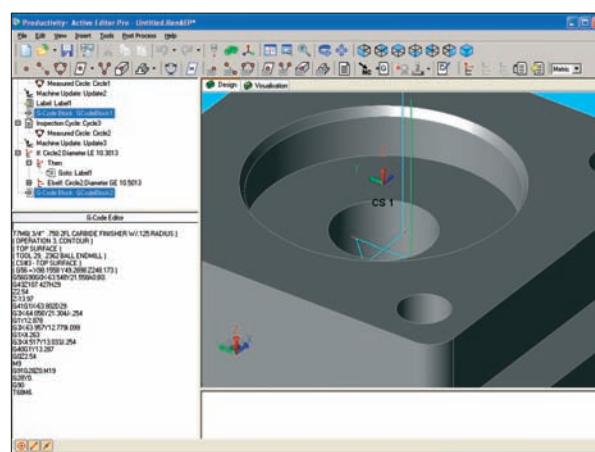
This method combines cutting and probing cycles directly into a single file and is the most flexible method when using logic (Control Statements) and updates. However, it requires 'stable' machining code as it may be difficult to make changes to the code at a later date.

Load your existing G-Code program. Before the G-Code element, add any required 'predictive' job set-up or tool setting elements.

Split the G-Code block at the required position to, for example, inspect a recently machined feature and check that it is the correct size. Add 'active' logic elements to update tool diameter and re-machine (if undersize), or to raise an alarm or call the next part (if the feature is out of tolerance and the part is scrap).

Probing elements after the final G-Code block can be used to provide 'informative' output, such as verifying a component is in tolerance and producing a report.

Although the program contains several small blocks of G-Code separated by probing, the Post Process operation combines them and outputs all elements in a single file.



## Method 2: Calling a machining program from a G-Code block

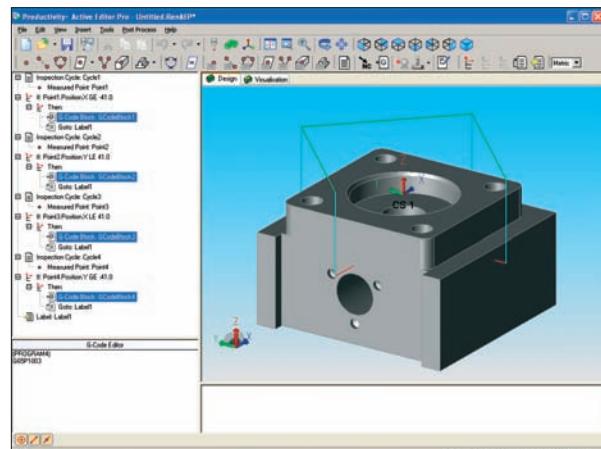
This method is best suited for applications where a probe is used to identify the loaded component and a machining program is selected based on the result. It can also be used to call an existing cutting program from a Productivity+™ Active Editor Pro program. If you want to change the machining program at a later date, you only have to change the sub program.

The disadvantage of this method is that it is harder to integrate logic; however, by splitting each program for each orientation, you can combine the benefit of easy upgrades with the benefits of in-process control.

Example 1: a component requires multiple machine programs. These programs can be called from multiple G-Code blocks.

Example 2: a component requires a specific machining program depending on its set-up. The component can be probed to determine orientation, and (using logic) the required machining program can then be called.

(No image provided for this example.)



## Method 2, example 1

### Method 3: Calling a generic probing program from machine code

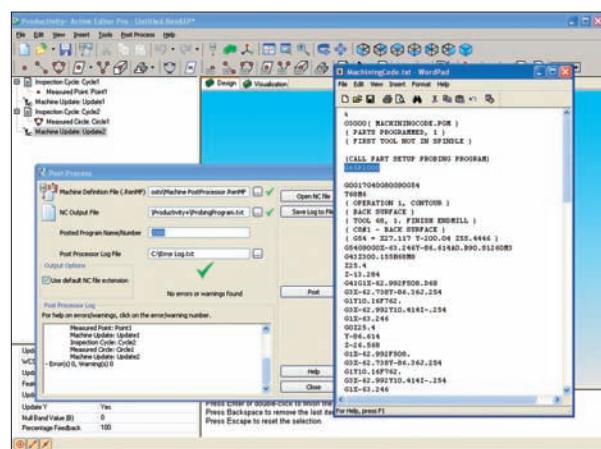
This method is useful when program names or numbers cannot be changed, or where you want to use a single program to set-up multiple jobs. Although appropriate for most types of measurement, but it will be difficult to perform in-cycle logic.

Productivity+™ Active Editor Pro can be used to create a program that only contains probing, and call it from your machining program.

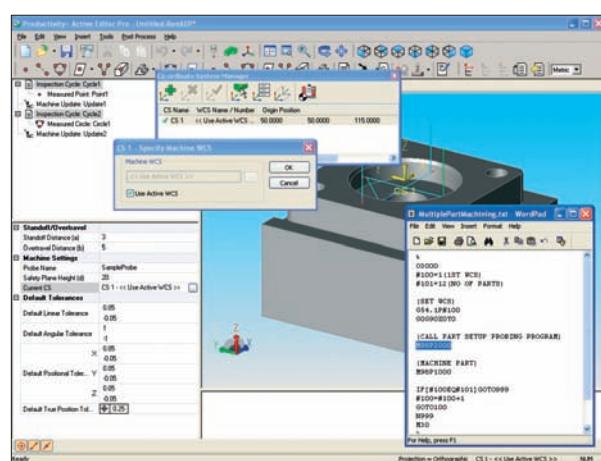
Unlike Method 1, probing cannot interact with machining code; for example, it is not possible to inspect a feature and then re-machine if necessary. This method simply uses probing elements for job set-up and part verification, independently of machining programs.

Example 1: create and post a Productivity+™ program to set the component WCS. Call this program from the machining program before metal cutting begins.

Example 2: where multiple parts are being manufactured, create a generic job set-up program in Productivity+™ Active Editor Pro that uses the WCS active on the machine tool rather than specifying a CS for each component. This way, the WCS active on the machine tool dictates the CS for each component and is set in the machining program.



### Method 3- example 1



### Method 3, example 2

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