

The following list is a compilation of various tips and suggestions for successful CNC programming, collected over many years of actual part program development. Many subjects mentioned in the list range from the basic common sense items, all the way to some advanced applications. Even if you use a CAD/CAM system to develop a part program, these are very timely points to consider. You are not expected to understand any of the subjects at this point. The purpose of this exercise is *to make you think ahead*. There is no particular order in the list.



THIS EXERCISE IS NOT INTENDED FOR TESTING OR GRADING - THERE IS ONLY ONE UNUSUAL OBJECTIVE:

Add *another* item or items to the list - one or more *NOT* listed below
Enter items that you strongly believe should be included - use common sense and/or your previous experience

- ☐ Approach any CNC programming in a logical and methodical way
- ☐ Always *calculate* unknown values - never guess
- ☐ Check the actual size of the stock (blank material) - do not count on paper dimensions
- ☐ Develop and standardize a programming style - then adhere to it
- ☐ Program dimensional values in absolute mode whenever possible
- ☐ Make a setup sheet and/or tooling sheet *before* programming - not after
- ☐ Program as many machining operations in a single setup as possible - must adhere to the drawing
- ☐ Use *minimum* number of tools for *maximum* number of jobs - standardize whenever possible
- ☐ Always program for the safety of CNC machining - this is a paramount requirement
- ☐ Document your work and store everything relating to the program development
- ☐ Program all rapid motions with sufficient clearances - they must be a part of the program structure
- ☐ Use cutter radius compensation for contouring - if available and whenever possible
- ☐ Use any suitable built-in cycles the CNC system offers (fixed cycles, multiple repetitive cycles, macros, ...)
- ☐ Watch for programming errors 'that just happen' - they may be syntax or logical - all errors are avoidable
- ☐ Use a microcomputer and a text editor to write and print the program hard copy (CNC editor preferred)
- ☐ Develop subprograms to prevent errors caused by repetition - verify first
- ☐ Make simple sketches for mathematical calculations - make them clear and always in approximate scale
- ☐ Place comments and/or messages to the CNC operator in the program printed copy
- ☐ Do not forget 'small' items - such as coolant, offset number, spindle stop, coolant on, etc.
- ☐ CNC operator can be an excellent resource of valuable information - communicate and exchange ideas
- ☐ Avoid programming excessive clearances or dwells - cutting air is never productive
- ☐ Keep the program under *your* control - not the operator's - yet, listen to the operator for suggestions
- ☐ Admit an error if you make one - do not blame other people
- ☐ Always write a program for the convenience of the CNC operator - not yours
- ☐ Check - double check - and triple check the program - then repeat the procedure
- ☐ Write as much of the program in one sitting as possible - concentrate

.... see next page

These are the items - or at least one item - I would like to add to the list on the previous page: