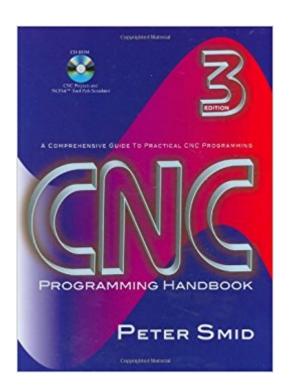# CNC Programming Handbook, Third Edition

Synopsis

Over its first two editions, this best-selling book has become the de facto standard for training and reference material at all levels of CNC programming. Used in hundreds of educational institutions around the world as the primary text for CNC courses, and used daily by many in-field CNC programmers and machine operators, this book literally defines CNC programming. Written with careful attention to detail, there are no compromises. Many of the changes in this new Third Edition are the direct result of comments and suggestions received from many CNC professionals in the field. This extraordinarily comprehensive work continues to be packed with over one thousand illustrations, tables, formulas, tips, shortcuts, and practical examples.The enclosed CD-ROM now contains a fully functional 15-day shareware version of CNC tool path editor/simulator, NCPlotâ„¢. This powerful, easy-to-learn software includes an amazing array of features, many not found in competitive products. NCPlot offers an unmatched combination of simplicity of use and richness of features. Support for many advanced control options is standard, including a macro interpreter that simulates Fanuc and similar macro programs.The CD-ROM also offers many training exercises based on individual chapters, along with solutions and detailed explanations. Special programming and machining examples are provided as well, in form of complete machine files, useful as actual programming resources. Virtually all files use Adobe PDF format and are set to high resolution printing.FEATURES Fully functional shareware version of CNC toolpath simulator/editor, NCPlot(TM), included on the CD-ROM. This powerful software includes an amazing array of features, including those not found in competitive products. Support for many advanced features is standard, and the included macro interpreter can simulate Fanuc and compatible macro toolpath programsDetailed section on CNC lathes with live tooling, including examplesImage files of many actual parts, used as examples More programming examples (both in printed text and on the CD-ROM) Optimized for the latest Fanuc and related control systemsAdditional formulas, calculations and handy reference materialFourth axis programming (indexing and rotary)CD-ROM based projects, including several as interactive PDF formsImproved index for better search of topics

Book Information

Hardcover: 600 pages

Publisher: Industrial Press, Inc.; 3 edition (November 26, 2007)

Language: English

ISBN-10: 0831133473

ISBN-13: 978-0831133474

Product Dimensions: 7.9 x 1.3 x 10.1 inches

Shipping Weight: 2 pounds (View shipping rates and policies)

Average Customer Review: 4.5 out of 5 starsÂ Â See all reviewsÂ (112 customer reviews)

Best Sellers Rank: #42,023 in Books (See Top 100 in Books)   #4 inÂ Books > Engineering & Transportation > Engineering > Industrial, Manufacturing & Operational Systems > Industrial Technology   #7 inÂ Books > Computers & Technology > Graphics & Design > CAD   #9 inÂ Books > Engineering & Transportation > Engineering > Industrial, Manufacturing & Operational Systems > Manufacturing

Customer Reviews

This is an incredibly detailed and helpful book for learning the concepts behind programming CNC machine tools. Although most programming is now done with the aid of CAM programs which generate G-code based on a drawing of the part to be machined, the complexities of CNC machining demand that the operator have a thorough understanding of CNC programming. From configuring a post processor in a CAM program, to fixing simple errors in a generated program "on the fly", to entering single lines in a machine's Manual Data Input mode, the helpfulness of this book cannot be understated. Besides programming tutorials, the book also covers strategies for programming various cycles and tool changes. The CD-ROM contains tests and projects which make this a useful textbook in a classroom setting.The book begins with an overview of Numerical Control concepts, CNC Milling and Turning machines, coordinate geometry, and control systems. For the student or engineer producing drawings or parts that are to be machined, these sections will allow an understanding of what operations the machines are capable of performing, and how they do the work.The remaining chapters deal with the planning and structure of a program, so that a drawing can be understood, the various machining operations separated, and the order of operations decided upon. In order to direct a machine to mill a particular pocket, you must include variables such as the diameter of an endmill, the amount of step over per pass, the feed rate, the spindle speed, the endmill shape, etc. This book gives you good practice at doing just that.

I bought "CNC Programming Handbook" and found it useful. It does a credible job of explaining Fanuc tape code. It might be the best of its genre of CNC programming books but like most of its kind the only thing contemporary about it is its date of publication. Otherwise, it is a throw back to the late 1970's and early 1980's when CNC could get along with a dearth of explanations and explanations that were hardly rigorous. For example: 1) Mr. Smid brings forward a 50 year definition

of Numerical Control that is just as useless today as it was in its time. 2) He doesn't define interpolation; the word does not even appear in the book's appendix. 3) There is no discussion of servo and associated topics like proportional negative feedback control and following error. 4) Mr. Smid keys his explanation of CNC Cartesian systems with reference to "Home" as if this word has meaning. Words like reference return and machine zero have meanings established by CNC configuration functions but the word "Home" has meaning only in context. Operators will call "Home" a variety of machine positions such as tool change positions and load stations. (Even in the assumed meaning of "Home" as synonymous with machine reference how would a programmer or operator clarify the "Home" position on an axis with distance coded scales?) 5) The book does not dissociate machine reference (a landmark position) from the machine zero position (associated with the machine coordinate system which is the "ground" system of the coordinate system hierarchy). Even in the early 1980's Fanuc CNC had machine setup parameters to specify the reference return point as a point in the machine coordinate system. 6) The idea of a hierarchy of Cartesian systems (frames) is beyond the books comprehension.

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