

PART PROGRAMMING ON A C.N.C.
VERTICAL MILLING MACHINE
AND DESIGN OF A MILLING
FIXTURE

NIKOS KYRIAKOU

DIPLOMA PROJECT

M/998

JUNE 2005

HIGHER TECHNICAL INSTITUTE	PROJECT NO
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**PART PROGRAMMING ON A C.N.C. VERTICAL MILLING
MACHINE AND DESIGN OF A MILLING FIXTURE**

By

Nikos Kyriakou

Project report submitted to the
Department of Mechanical Engineering
Of the Higher Technical Institute
Nicosia Cyprus

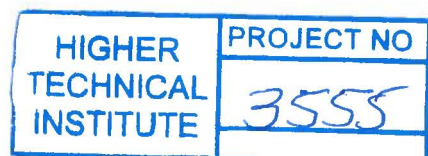
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I would also like to thank both of my parents and my family for all their support throughout my studies.

Kyriakou Nikos
3rd year student in
Mechanical Engineering
H.T.I.

To my family

ABSTRACT

This project deals with the manufacturing of a component on the C.N.C vertical milling machine as well as the design and manufacturing of a milling fixture to ensure location, support and clamping of the component to be manufactured.

First the theory of the project was prepared with the basic principles of Numerical Control following a general study of the C.N.C Bridgeport IMKII milling machine and the TNC 155 Heidenhaim control. Also few words mentioned about programming, machining forces, trigonometric formulas and relative knowledge about milling.

The main part of this project is the part programming for the manufacture of two components from which the first one will be used as a fixture for the manufacturing of the second one.

Both parts have to be performed using linear interpolation, circular interpolation, canned cycles and subroutines.

**HIGHER TECHNICAL INSTITUTE
NICOSIA – CYPRUS
MECHANICAL ENGINEERING DEPARTMENT**

DIPLOMA PROJECT 2004/2005

Project Number: M/998

Title: “Part programming on a CNC vertical milling machine and design of a milling fixture”

Objectives:

1. Study the programming and machining characteristics of the Bridgeport IMKII (with TNC 155 Heidenhein control) CNC vertical milling machine.
2. Produce detail drawings of the components to be manufactured.
3. Design a milling fixture to ensure location, support and clamping of the component to be manufactured. Detailed drawings of the proposed fixture must be prepared.
4. List the procedure to be followed for machining each of the two components.
5. Write a part program for the manufacture of each component.
6. Make use of Linear Interpolation, circular interpolation and canned cycles.
7. Test of the above programme on the Heidenhein Control simulation facility.
8. Construction of designed milling fixture and manufacturing of components selected on the CNC milling machine.

Terms and Conditions:

1. All recommendations should be according to ISO.
2. Selection of components for the milling fixture should be according to standard components.

Student : Kyriacou Nicos (3ME)
Supervisor : Dr Vassilios Messaritis

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