

HIGHER TECHNICAL INSTITUTE
MECHANICAL ENGINEERING COURSE
DIPLOMA PROJECT

MANUFACTURE OF COMPONENTS
ON A CNC LATHE

M / 754

BY: SAVVIDES GEORGIOS

JUNE 1996

HIGHER TECHNICAL INSTITUTE

MECHANICAL ENGINEERING COURSE

DIPLOMA PROJECT

MANUFACTURE OF COMPONENTS

ON

A CNC LATHE

M/754

SAVVIDES GEORGIOS

JUNE 1996

HIGHER TECHNICAL INSTITUTE	PROJECT NO 2595
----------------------------------	--------------------

**MANUFACTURE OF COMPONENT ON
CNC LATHE**

by

SAVVIDES GEORGIOS

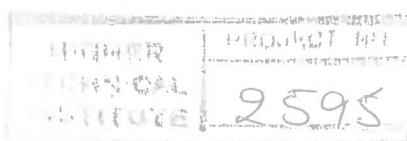
**Project Report
Submitted to
the Department of Mechanical
Engineering of the Higher Technical
Institute Nicosia Cyprus
In partial fulfillment of the requirements**

**for the diploma of
TECHNICIAN ENGINEERING**

In

**MECHANICAL ENGINEERING
June 1996**

Project Supervisor : Dr L.G. Lazarl



CONTENTS

	Page
Acknowledgements	
Abstract	
Contents	
CHAPTER 1: What is Numerical Control?	1
1.1 Definition of NC	1
1.2 Historical perspective	2
1.3 Advantages	3
1.4 Disadvantages	4
1.5 Where is NC most appropriate?	4
1.6 Methods of NC part programming	5
CHAPTER 2: Computer numerical control	8
2.1 CNC Technology	8
2.2 Advantages of CNC	12
CHAPTER 3: EMCO COMPACT 5 CNC	14
3.1 Introduction	14
3.2 Main element of the EMCO COMPACT 5 CNC	15

CHAPTER 4: Programs and programming	20
4.1 Definition of the program–part program	20
4.2 Programming	20
4.3 Types of interpolation	21
4.3.1 Linear interpolation	21
4.3.2 Circular interpolation	22
CHAPTER 5: Programming systems	26
5.1 Incremental system	26
5.2 Absolute system	29
CHAPTER 6: Data Preparation and input to machine control units	32
6.1 Data preparation	32
6.2 Data input	33
CHAPTER 7: Tools	39
7.1 Geometry and Application of tool used in COMPACT 5 CNC	40
7.2 Turret Toolholder	40

7.3 Collecting tool data with optical presenting device	41
CHAPTER 8: Components for sailing on board	45
8.1 First component	45
8.2 Second component	46
CHAPTER 9: Process evaluation of the production of the sailing on board component	48
CHAPTER 10: Conclusion	59
References	61
Appendices	

ACKNOWLEDGEMENTS

I would like to express my application to Dr. L.G.Lazari , lecturer in the Mechanical Engineering Department of the Higher Technical Institute for this valuable contribution and guidance during the preparation of this project.

Savvides Georgios

3rd year student in

Mechanical Engineering

H.T.I

ABSTRACT

This project deals with the manufacturing of a CNC lathe.

The basic theory of the project was prepared with CNC technology, following a general study of EMCO COMPACT 5 CNC lathe with its operating element. Absolute and incremental coordinates systems , data preparation and data input, linear and circular interpolation, alarm signs and tooling, are described as well.

The main part of this project is deal with the part programming for the manufacturing of a sailing on board following by the manufacturing of these component on the EMCO COMPACT 5 CNC lathe.

Finally a process evaluation for the production of sailing on board and some conclusions relative to the work carried out in this project.