



Mirac PC Quickstart Set-up Guide

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Introduction

This Quickstart guide contains information regarding the initial installation of the machine, the installation of any software required and the powering up of the machine for the first time.

Computer Requirements

This CNC machine is operated by a personal computer which must be positioned next to the machine.

Computer Minimum Specifications

IBM PC or 100% compatible personal computer

Pentium III based system

Windows 98, NT, 2000, XP Operating system.

Double speed CD-ROM drive

40Mb Free hard disc space

Colour monitor at 800 x 600 resolution (1024 x 768 recommended) with 16bit (high colour) graphics

SVGA graphics card with 512KB VRAM

1 free serial (COM) port for the machine connection cable. Note that a second free serial port is required if you intend controlling your machine with a Denford Desk Top Tutor.

1 free parallel (printer) port for the software security key.

Installing the VR CNC Turning software

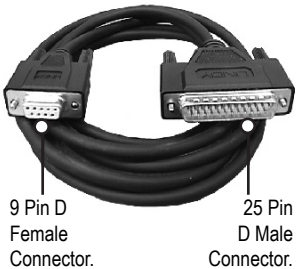
A software application is required to be installed on the computer in order for the machine to run. This software is called 'VR CNC Turning' and is supplied on CD-ROM. A separate floppy disc must then also be installed which is called a 'Machine Configuration Disk'.

The software is protected by a security key to prevent the software being run on other computers. The security key must be connected to the parallel port at any time the machine is in operation. Care must be taken not to lose this key as replacements will be charged at a cost of the full value of the software.

Please refer to the 'Virtual Reality CNC Turning for Windows Quickstart Guide' for information on how to install the software onto the computer.

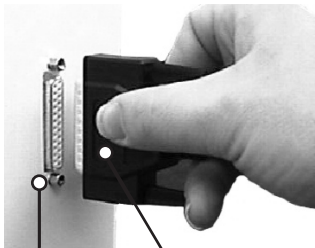
Connecting the Cable

Denford Machine Link Cable.



9 Pin D Female Connector.

25 Pin D Male Connector.



25 pin D female connector fitted to right panel of the machine cabinet.

25 pin D male connector fitted to Denford machine link cable.

Connect the 25 pin D male end of the Denford machine link cable to the 25 pin D female port mounted on the right-hand side panel of the machine cabinet, as shown right.

Connect the remaining 9 pin D female end of the Denford machine link cable to the 9 pin D male COM port on your PC

Standard 9 pin D COM port.



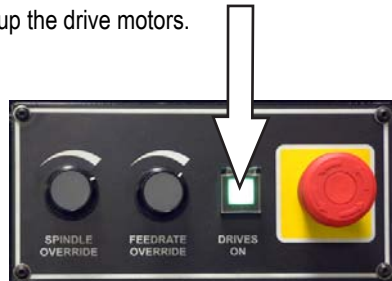
9 pin D female connector fitted to Denford machine link cable.

9 pin D male connector fitted to pc (back) panel.

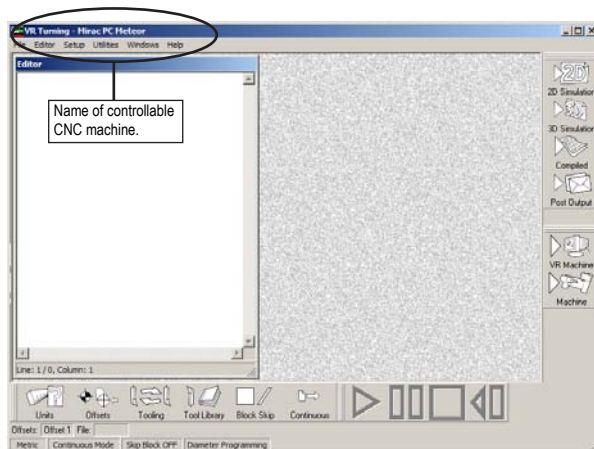
Switching On for the First Time

Follow these instructions to switch on your machine:

- 1) Check the Denford machine link cable is fitted securely between the serial (COM) port socket on the machine controller PC and the RS232 socket, located on the right-hand end panel of the Meteor cabinet.
- 2) Plug the CNC Machine mains supply cable into an available power socket. Switch the power on using the switch located on the side of the machine.
- 3) Ensure that the emergency stop button is not activated (not pushed in)
- 4) Press the 'DRIVES ON' button to power up the drive motors.



- 5) Open the VR CNC Turning software, by clicking “Start” on your startbar, then select “Programs” followed by “Denford” and “VR Turning”.

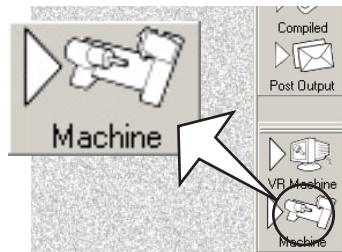


The name of the CNC machine that can be directly controlled by the VR CNC Turning software is shown in the main program titlebar - it should read “Mirac PC Meteor”, as shown above. If not, please check that you have installed the 'Machine Configuration Disk' supplied with your machine.

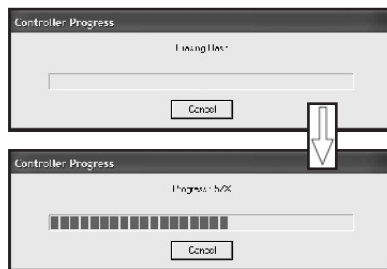
Switching On for the First Time

- 6) To establish a communication link between your computer and your Machine, left click on the [Machine] button.

The VR CNC Turning software automatically scans all the COM ports on your PC until it finds the CNC Machine.

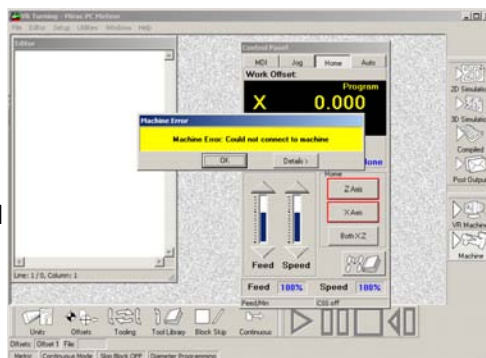


- 7) The “Controller Progress” window will be displayed, indicating the stages involved during connection.

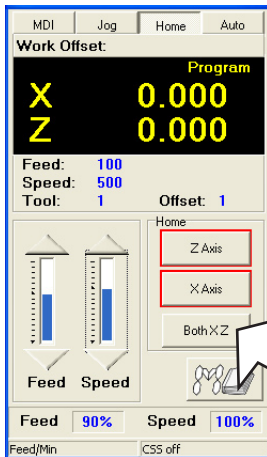


The “Control Panel” window will appear, indicating a successful link has been established.

If a problem occurs when attempting to establish a link, a warning window will be displayed. Click the [Details >] button, read and follow the instructions in the window to solve the indicated communication problem.



Homing the Machine



When a CNC machine is first started, the “Machine Mode” window will be displayed with only the [Home] tab active, as shown.

Before you can start using the machine, each axis needs to be 'Homed'.

Note: The guard must be closed to perform this operation.

To home both axes together, click the [Both] button. All machine slides will move until the limits of co-ordinate movement have been found.

Performing a tool change

Use the following procedure to perform a tool change on the machine.

Note : The guard must be closed for this operation.

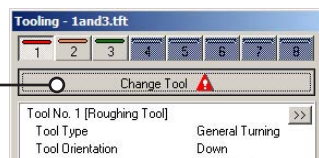
- 1) Click on the tool number button.



- 2) Click on the [Auto] tab.

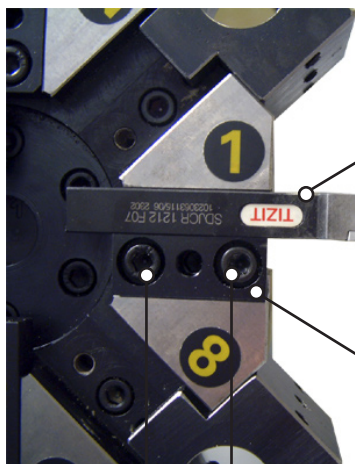


- 3) Click the [Change Tool] bar to perform the tool change. The tool post will traverse to the tool change position first before changing the tool.



Turret Tool Clamping

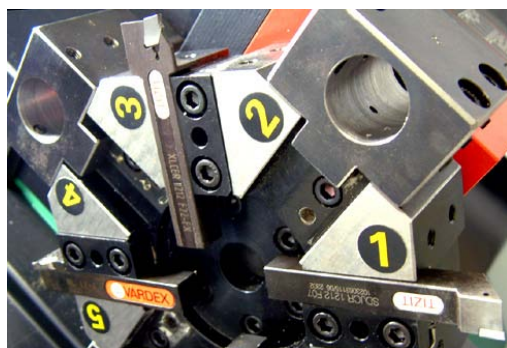
When installing the tools in the tool post, ensure the cutting edge of the tip is positioned facing down.



Place the cutting tool between the clamp and the turret head with approximately 21mm protruding from the turret.

Ensure tool and clamping block are square with turret.

Evenly tighten these screws to clamp the tool.



For CNC programs produced using Denford 'Lathe CAM Designer' it is recommended that three tools are installed as follows :-

Position 1 - Roughing / Finishing

Position 3 - Grooving

Position 5 - Threading (external)

Further information

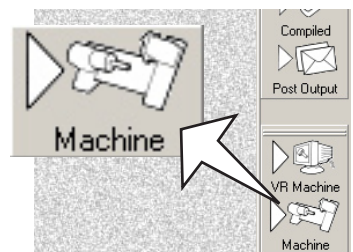
In order to run CNC programs on the machine you will need to now how to:

- 1) Configure the tools in the VR Turning Software
(See VR Turning Help section 'Contents | Tutorials | Using Tool Profiles | Using the Tool Library')
- 2) Manual / Jog Mode
(See VR Turning Help section 'Contents | Tutorials | Using a real CNC Machine | Moving the Axes on a real CNC Machine')
- 3) Setting the Tool Offsets
(See VR Turning Help section 'Contents | Tutorials | Using a real CNC Machine | Configuring the Tool Offsets with a real CNC Machine Part 1')
- 4) How to execute a CNC program
(See VR Turning Help section 'Contents | Tutorials | Using a real CNC Machine | Running a CNC file on a real Machine (Auto Mode) Part 1')

How to Switch off the Machine

When switching of the machine please do the following :

- 1) Left click on the [Machine] button to disconnect the software from the machine control.
The control panel window will disappear off the screen.



- 2) It is now safe to turn off the power using the main isolator switch.

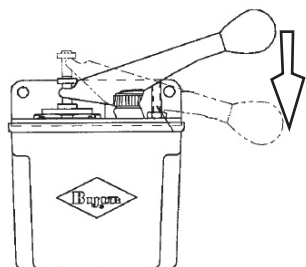


Maintenance Schedule

Daily	Clean and remove swarf Check/top-up slide lubrication oil in reservoir
Weekly	Clean machine thoroughly Check exposed screws and nuts for tightness
Bi-annually	Check condition of electrical connections Check all cables for kinks and breaks

Lubrication Chart

Lubrication Point	Lubrication System	Frequency	Recommended Oil / Grease	Quantity
Slide ways and ballscrews	Manual Oil Pump unit	Daily (when in use)	BP : CS 68 Shell : Vitrea 68 Castrol : Perfecto NN	0.5 Litre
Headstock	Grease seal	On Maintenance of Headstock	Kluber Isoflex NBU 15	4 cc/ Bearing
Axis Bearings	Grease seal	Once a year	BP : LS 3 Shell : Alvania No. 3	2 cc/ Bearing



Manual Oil Pump Operation

Lubricator is of a spring discharge type. It is operated by pushing the operating handle down, which raises a piston and compresses a spring. Releasing the handle automatically discharges oil into the system.

Frequency : Press and release the handle each day the machine is in use.