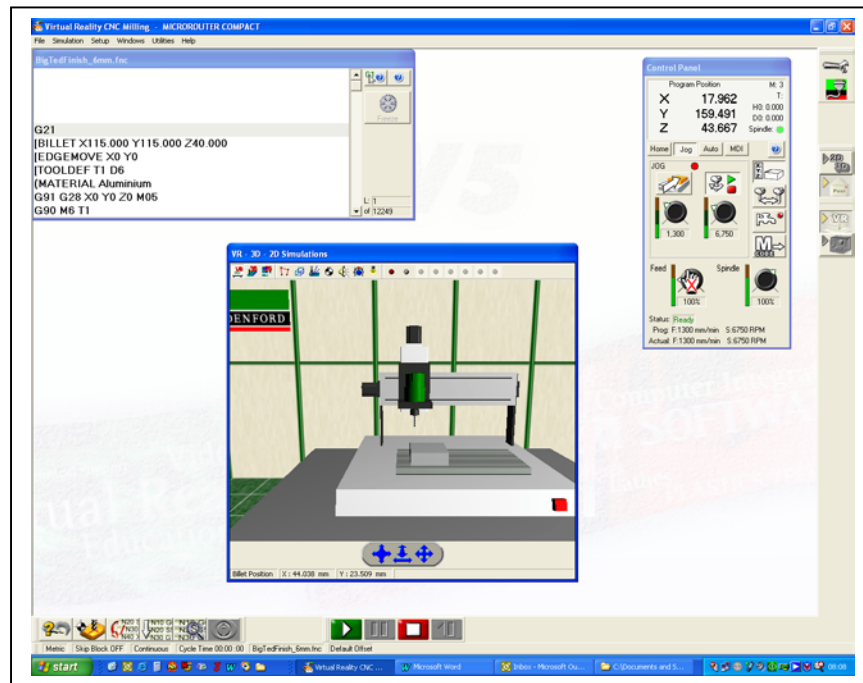


Reasons to Upgrade to VR MILLING 5

VR CNC Milling is a Windows based software package allowing full editing and control of CNC files, either offline (away from the CNC machine) or online (controlling the operation of a CNC machine).

Information is accessed and displayed using an interface similar to other popular software applications. The familiar dropdown menus, toolbars and software display windows can be configured to suit the level and requirements of each user. Since the software supports full offline facilities, it allows many tasks such as setting tool offsets, to be carried out away from the CNC machine itself. Options such as these allow groups of students to work simultaneously whilst helping to free valuable CNC machine resources. The same interface is used online, allowing students to produce their designs without having to learn any new CNC machine control software.



VR Milling 5 is the machine operating software supplied with the current Denford range of milling and routing machines.

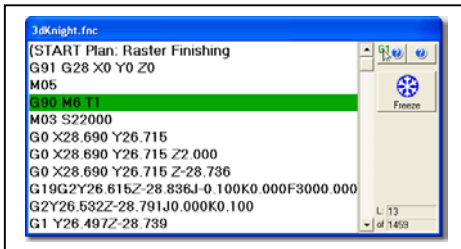
The Version 5 software must be used with the latest machine hardware (NextMove ST control Card) to gain the full benefits, which include:

- Faster manufacturing times (up to 10 times faster).
- Move Buffering and IVAC (Inter Vector Angle Control) Allows 50 moves to be buffered and slows the machine around sharp corners, but runs quickly over smooth contours.
- USB connectivity in addition to the standard RS232 (windows 2000, NT XP). This greatly increases throughput of moves to the machine, enabling smoother contouring.
- DXF or DWG File Import. This allows Drawings from any major CAD package to be imported and using a simple Wizard type program to create cutter paths.
- Gerber File Import (for making PCB's). This allows PCB designs from any major PCB design Package to be imported using a simple Wizard type program to create cutter paths.
- Improved Virtual Reality Simulation. Shows the actual part being cut within the machine. Detects cutter collision and can be used to set tool offsets and datum's using the same commands as would be used to set the real machine.

- Machine information mode. This function checks the program prior to manufacture taking into account the programmed moves the tool offsets and the datum position. If a move exceeds the machine capability then an alarm message will be given and corrective action can be taken.
- Arcs can be programmed in 3 planes (XY G17, XZ G18, YZ G19).
- Helical Arcs can be programmed.
- Program Restart function. Allows the program to be restarted from any line of the program.
- Material Library and Editor. A library of materials, feeds, speeds and cut depth relative to the machine are available and can be edited by the user.
- Integral Help files with “DO IT NOW” prompts.

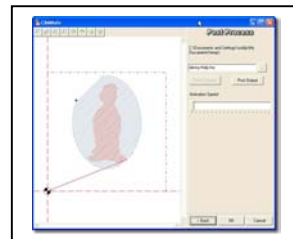
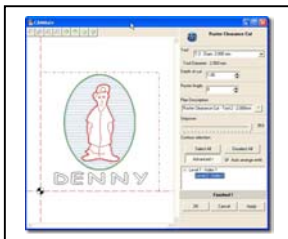
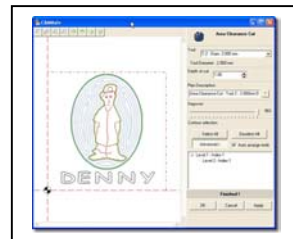
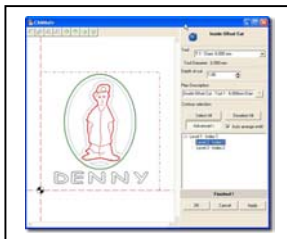
Faster Manufacturing

This comes as a result of several improvements which all improve the speed of manufacture, which are Fast program Editor, USB Connection, IVAC control and buffering of moves.



DXF / DWG drawing import

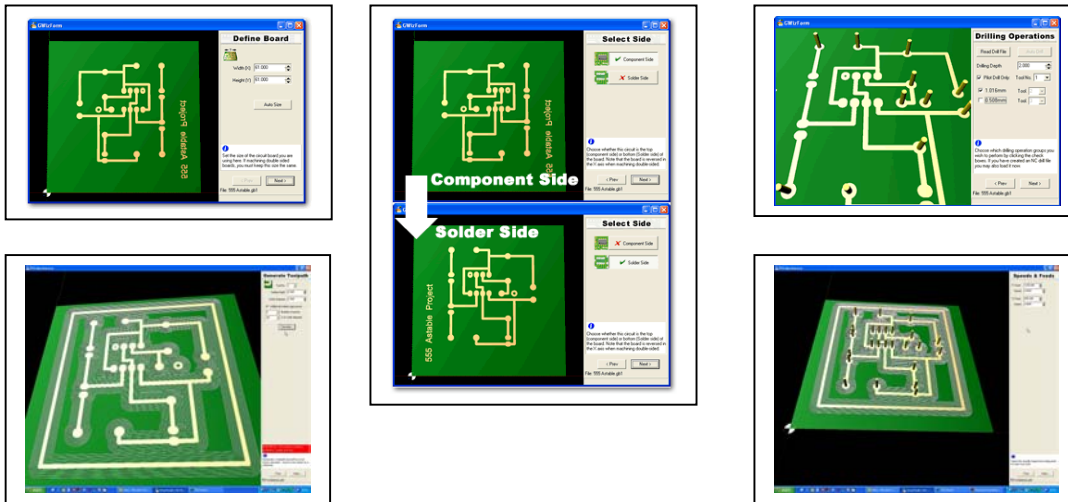
- Simple “Wizard” program with 2D Graphics
- Integrated Material and Tool Library
- Imports DXF and DWG files from all major CAD Packages
- Pro/DESKTOP, ArtCAM, AutoCAD, Corel Draw, Techsoft.
- Multiple cutter path strategies including:
 - Follow Path
 - Inside Offset (cutter path offset by radius)
 - Outside Offset (cutter path offset by radius)
 - Area Clearance (Offset by outline) with programmable step-over.
 - Area Clearance (Raster) with programmable step-over and angle.
 - Drilling cycles
- Intelligent selection of Islands.
- Toolpath Simulation
- Links directly to VR Milling



Gerber PCB Import

Allows PCB files to be imported from all major PCB design software packages and converts them to a cutter path using a simple wizard.

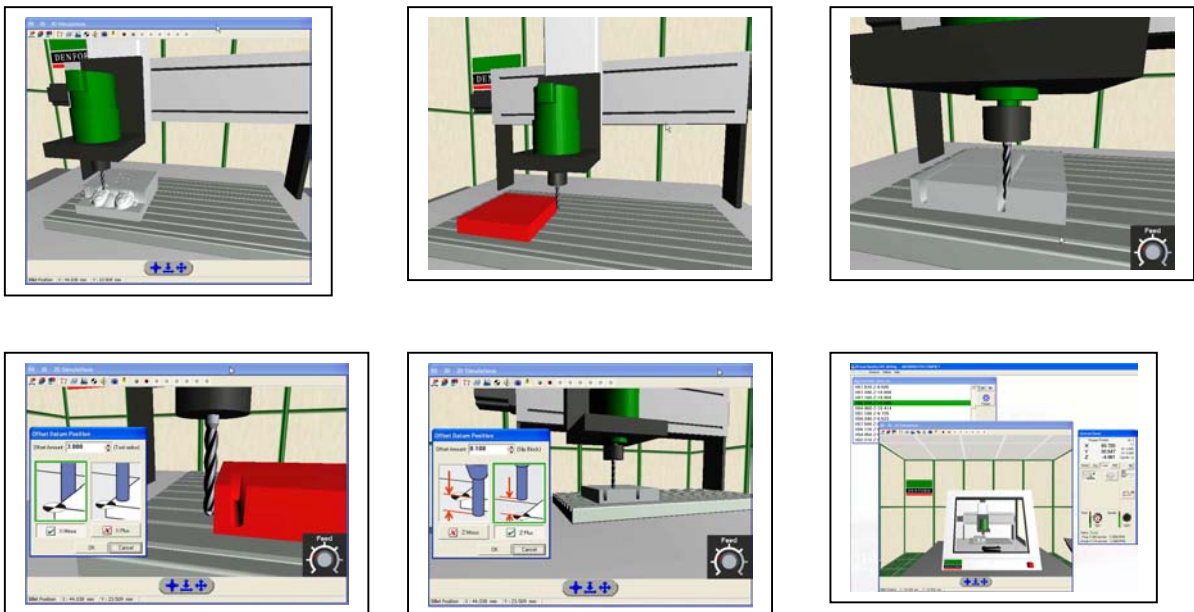
- Simple “Wizard” program with 3D Graphics
- Imports Gerber files from all major PCB design Packages
- Imports Drill files from all major PCB design Packages
- Multi pass machining strategy increases clearance around tracks
- Option to create drilling plan from pad hole diameters
- Option to centre drill pads
- Handles double sided boards
- Toolpath simulation
- Loads directly into VR Milling



Improved VR Simulation

Shows the part being cut within the Virtual Machine. Actual cutting of the virtual material in jog mode or program cycle. Tables, bases and work holding fixtures are simulated. Collision detection, objects change colour when cutter comes into contact with billet, work holding or tables.

Virtual feeds & speeds overrides can control the virtual machine. Auto datum facility, program can run without having to worry about setting the VR offsets.

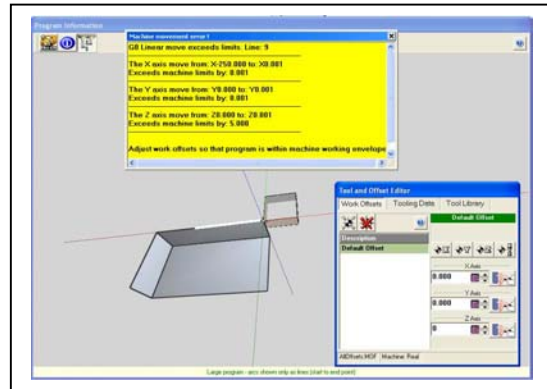
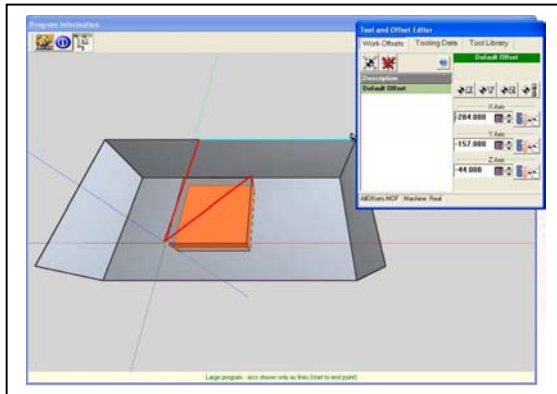


Machine Information Function



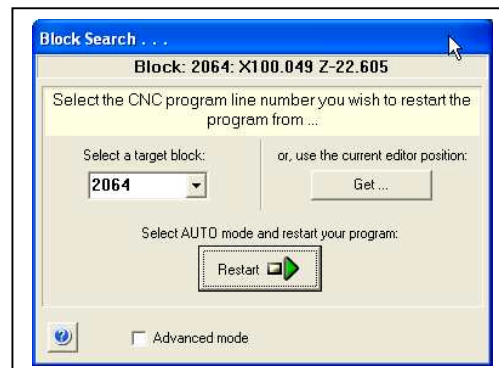
The information button is found on the options toolbar. This function is only available while working with the real machine and does not function with virtual Offsets.

With the active program open in the editor and the active clamp selected on selecting information the program moves will be displayed in the machining envelope. If the part cannot be manufactured because it is too big or the machine datum is incorrectly set the information window will show where the error is located.



Program Restart

This option allows you to restart the program at any line of the program. The program restart moves the tool to a toolchange position, prompts to change to the correct tool, starts the spindle, moves at rapid to the X and Y co-ordinates of the selected start line then feeds down to the Z depth. At this point you are prompted to continue the program.



“Do It Now” Help Tutorials

The Do it now help tutorials load up at the right of the screen and take the user through some of the most commonly used functions of the software.

The tutorials show you how to add a tool to the library, Simulate a part in VR Milling and load a program, Set up a Datum and manufacture a part.

Each step of the way the help file explains what you need to do and has a do it now button that carries out the task for you if you are unsure.

The screenshot displays the 'Virtual Reality CNC Milling - MICROROUTER COMPACT' software interface. The main window shows a 3D simulation of a CNC mill in a virtual environment. The machine is labeled 'DENFORD'. The simulation window includes a 'Billet Position' display showing X: 44.038 mm and Y: 23.509 mm. The 'Control Panel' window displays program position coordinates (X: 355.962, Y: 159.491, Z: 43.667) and spindle speed (1000 RPM). The 'Editor' window is empty. The Windows taskbar at the bottom shows the 'start' button and several open applications, including 'Microsoft Word', 'Inbox - Micro...', 'C:\Documents...', 'Adobe Acrobat', and 'Denford V...'. On the right side, a help window titled 'Simulate Part using VR Machine' is open, displaying a tutorial with four steps: 1. Open a File, 2. Open VR Window, 3. Set Auto Datum, and 4. Check Auto Datum Position. Each step includes a 'Do It Now!' button.

Simulate Part using VR Machine

Open VR Milling Help

1. Open a File

Open a file (.nc) by selecting from the main menu select File|Open..., an open file dialog box will be displayed from it select the required file.

Do It Now!

2. Open VR Window

Open a the VR Window by clicking on this button

VR The VR Window will be displayed together with the machine control panel.

Do It Now!

3. Set Auto Datum

Click on the VR Window so that the Simulation Menu appears on the main menu, from the main menu select Simulation|Auto Datum, ensure Auto Datum is ticked.

Do It Now!

4. Check Auto Datum Position

Click on the VR Window so that the Simulation Menu appears on the main menu, from the main menu select Simulation|Datum Position, an auto datum position dialog box will be displayed. Check that Top is ticked and the position is set Front Left as shown.

Datum Position

Select where the datum is to be positioned.

Use this value

In addition to the do it now tutorials there are two additional help tutorials that take the user through using the DXF / DWG Wizard and the Gerber Import Wizard.

These are detailed instructions that cover every stage of the file import procedures.


Examples of "Do it Now" help files

Open VR Milling 5 Help


Cut Part with Single Tool


1. Open a File

Open a file (.inc) by selecting from the main menu select File|Open..., an open file dialogue box will be displayed from it select the required file. This file should contain only one tool change, preferably tool 1 (i.e. M06 T1). If more than one tool change (M06) appears in the file this tutorial will not work as there would be more setup procedures required.





2. Open the Machine Link

Open a the Machine Link by clicking on this button . The machine control panel will be displayed.



3. Home All Axes

On the Machine control panel, ensure the control is in Home mode and click the Home All Axes button . This will initialise the Machine by setting the axes positions to zero.



4. Place the Machine in 'Jog' Mode


Setup New Tool - 4mm Ball Nose

Open VR Milling Help

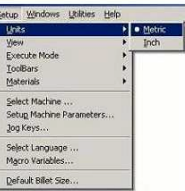
Setup a New Tool - 4mm Ball Nose


1. Place in Metric Mode

As this tutorial is written to setup a 4mm Ball Nose tool, ensure that VR Milling is set in Metric mode. Click the metric mode button if mode status is not 'Metric'





Alternatively select 'Metric' from the menu 'Setup|Units|Metric'.





2. Open Tool and Offset Editor

Open the Tool and Offset Editor window by clicking on this button 




Simulate Part using VR Machine


Simulate Part using VR Machine


1. Open a File

Open a file (.inc) by selecting from the main menu select File|Open..., an open file dialogue box will be displayed from it select the required file.




2. Open VR Window

Open a the VR Window by clicking on this button . The VR Window will be displayed together with the machine control panel.



3. Set Auto Datum

Click on the VR Window so that the Simulation Menu appears on the main menu, from the main menu select Simulation|Auto Datum, ensure Auto Datum is ticked.



4. Check Auto Datum Position

Click on the VR Window so that the Simulation Menu appears on the main menu, from the main menu select Simulation|Datum Position, an auto datum position dialog box will be displayed. Check that Tool is ticked.