

## For fast set up of CNC machinery

Where parts contain additional machining such as grooves, routs, drilling and cut-outs the Machining interface module is used to create and store the part drawings (via the Machining library) and also send the correct machining instructions for each part to the CNC machining centres.

Most machining centre formats are supported including DXF, Homag/Weeke WoodWop, and other proprietary formats.

The MI module requires one of the Optimiser modules SO, PO or the Nesting optimiser (NE) fro shaped parts.

The machining editor provides full facilities for creating machining drawings. A wide variety of machining functions are provided:-

Saw groove
San groove
Horizontal drilling
Vertical drillings
Cut-outs
Arc router
Circle router
Pockets
Contours
Vacuum pods
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The machining library contains the part drawing and instructions.

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I Houre Dowel Hole (0.⇒Y.50) 25         BASE-CABINET-BOTTOM         1200 × 800 × 20           ► 2 Houre Dowel Hole (=X.⇒Y.50) 25         0         200         400         600         800         1200	5
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Machining library

The panes at the left show the details of each instruction and the full part is shown in the diagram at the right.

Drawings can be set up with formulae so they are fully parametric and automatically adjust if the part size changes. Common machining patterns can be dealt with by one drawing assigned to many different parts.

The above example shows a set of drilling and routing instructions for a part.

*Machining Instructions* - At the left of the screen is the FUNCTION toolbar to select the type of machining operation (such as drilling or routing).

Enter the details of each operation in the boxes to the right of the toolbar. The part drawing illustrating the machining is shown in the area to the far right of the screen. The drawing is built up as you enter machining operations.

For example, for a vertical drill operation enter the co-ordinates of the first hole - depth and diameter of the hole and the number, separation and direction of the repeated holes.

You can also enter the tool number and other machine specific details.

To move directly to a machine operation (for example to edit the details) click on the relevant part of the drawing. The current instruction is highlighted.

You can also use the mouse to enter instructions, for example, to specify the start and end of a groove.

*External drawings* – where the drawings are external files such as DXF or Homag/Weeke MPR(X) the Machining editor can still be used to view and adjust drawings and the drawing information is sent to a machining centre via the Machining Interface.

DXF drawings suitably layered can also be imported to the Machining library.

#### Shaped parts

The drawing editor allows for contours to define shaped parts.



Each machining instruction can include extra tooling information to allow for tool speeds, tool path compensation etc.

Use the mouse to quickly draw the function and use the boxes at the left to add the detailed measurements where required.



The transfer of machining data to CNC machines is set up via the following parameters:-

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Machining centre parameters
Machining centre transfer parameters
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The machining centre parameters set up the general features for the machining drawings/instructions such as the Drawing origin, and specific features for proprietary machines such as the 'Park mode' for Homag/Weeke WoodWop.

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Images ir	n preview are	a	7					
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Machining centre parameters

The Machining centre transfer parameters control the transfer of data to the machining centre. File format, where files are located and whether there are separate files for Front and Back instructions.

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1.	WoodW0P	8 - Homag/Weeke Woodwop V4/V5/V6/V7 (MPR/X)	c:\v11\Demo\Mch\MPR\Parts\	Subfolders for parts		_
2.	2D-DXF	0 - 2D DXF Non-layered (DXF)	c:\v11\Demo\Mch\DXF\Parts\	Use common transfer name for	parts	
3.	Nested DXF	9 - 2D DXF nested layered (DXF)	c:\v11\Demo\Mch\DXF\Parts\	Path for parts		
4.	Nested XXL	14 - Xilog (XXL)	c:\v11\Demo\Mch\Xilog\Parts\	Back		
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8.				Pattern path		
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<			>	Options		~

Machining centre transfer parameters

### A wide range of transfer formats are supported:-

Homag/Weeke WoodWop V4/V5/V6/V7	(MPR(X))
Homag Weeke WoodWop V2.5 (MPR)	
2D DXF non layered	
2D DXF layered	
D DXF layered	
Biesse RoverCad (CID)	
Morbidelli Aspan V3.2 (ASC)	
Morbidelli Aspan V4.0 (ASC)	
Busellato Autolink (DXF)	
ASCII/Unicode PTX	
MDB PTX	

The machining centre transfer parameters also include a 'Tooling replacement table', so that tooling instructions can be translated to a specific format for a machine. This allows for a single set of drawings which can then be interpreted for different CNC machines.

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1.	WoodWOP	8 - Homag/Weeke Woodwop V4/V5/V6/V7 (MPR/X)	c:\v11\Demo\Mch\MPR\Parts\	BHX500 Macro file		
2.	2D-DXF	0 - 2D DXF Non-layered (DXF)	c:\v11\Demo\Mch\DXF\Parts\	ABD Macro file		
3.	Nested DXF	9 - 2D DXF nested layered (DXF)	c:\v11\Demo\Mch\DXF\Parts\	ADD (10)		
4.	Nested XXL	14 - Xilog (XXL)	c:\v11\Demo\Mch\Xilog\Parts\	ABD (LIS) path	Subfolder	
5.				Convert machining data from incl	hes to mm	
6.				Include border on part drawings		
7.				Tool sequence parameters	tsp01 v 🗁	
8.				Nesting machine origin	Bottom left 🗸 🗸	
9.				- Part machine origin	Top right	
10.					Top light •	
11.				Mirror pattern	None ~	
12.				TLG file	Work area	
13.				Spare		
14.				Tooling replacement		
15.				No Instruction Replac	cement Materix 🔿	
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				2. T=1 T=101		
				3.	v	
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Machining centre transfer parameters Tooling



# Machining summary and costs

The summary reports in Review runs, for examplee, Job costing, include the details for machining where these are relevant.

11 Review runs						-	
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Favourites Batch reports	Job costing					Shaped	Nesting
🍇 Job costing						Sh	anadNasting
💐 Fittings						51	apeurvesuig
(a) Operations	Code	Description	Quantity	Linear	Area	Cost	Total
Batch material	Board	Material	Quantity		Area	Cost/m2	Total
summary	MEL-CHIP-15MM/01	MEL-CHIP-15MM 3050.0 x 1220.0	5		18.605	2,590	48,187
	MEL-CHIP-15MM/02	MEL-CHIP-15MM 2440.0 x 1220.0	1		2.977	2,560	7.621
			6		21.582		55.808
	Operation	Description	hh:mm			Cost per hour	Total
	Nesting		1:10			50.000	58.069
Summaries							58.069
Advanced	Total						113.877
Patterns							110.011
Machining							
Custom							
	,						

Machining job costing report

There are several specific reports and optiosn for Machining under the 'Machining' tab.

#### Machining drawing

The machining drawing shows each drawing fully resolved.



The drawing shown has been resolved to absolute values fready for transfer.

# Machining Instructions

At the foot	of each	machining	drawing	are a	set of t	tabs sł	nowina t	he full	machining	instructions	5.
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11 Review runs											-			×
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Patterns					Re	vision 53 : 1	27 Au	g 201	8 14:26 :	Recalcul	ated b	y Sea	ın-Ler	nove
Machining	No	Fn	Description	Xstart	Ystart	Diameter	Wid	l/ang	Depth	Offset	Rpt	Dir	Тоо	<u>^</u>
44.14.11.1.1	001	Vbore	Shelf hole	485	200	8			6	32	20	0		
preview	002	Vbore	Dowel hole	560	861	10			6	178.33	3	L		
Machining	003	Vbore	Dowel note	560	150	10			6	1/8.33	3	L		
drawings	004	Vbore	Hole	540	150	8			6	405	1	i		
Machining editor	006	Vbore	Shelf hole	45	200	8			6	32	20	0		
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🚓 Nested Drawings	009	Vbore	Dowel	85	20	10			6	32	2	0		
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At Review runs the instructions are resolved to absolute values.

With the parts and labels feature route cards or labels for each machined parts can be printed at the office.

Optimised Parts			
Run:Nesting - Part library			
Edgebander setup time: 0:00 Saw setup time: 0	:00		
Part code: F-UNIT-END-LEFT Material code:MED-DEN-FIBRE-18MM Length: 585.0 Width: 870.0 Quantity: 3 Non Grained Ref. Code: MEDF-U3	Bottom edge: Top edge: Left edge: WHITE-TAPE-22MM Right edge:	Drawing name: 0011429F Part Volume: LOW	
Part code: F-UNIT-END-RIGHT Material code:MED-DEN-FIBRE-18MM Length: 585.0 Width: 870.0 Quantity: 2 Non Grained Ref. Code: MEDF-U2	Bottom edge: Top edge: Left edge: Right edge: WHITE-TAPE-22MM	Drawing name: 0011430F Part Volume: LOW	
Part code:N-BTH-WORKTOP Material code:MED-DEN-FIBRE-18MM Length: 1500.0 Width: 620.0 Quantity: 3 Non Grained Ref. Code: MEDN-B3	Bottom edge: Top edge: Left edge: Right edge:	Drawing name: 0011431F Part Volume: LOW	
Part code:N-OCT-TABLE Material code:MED-DEN-FIBRE-25MM Length: 965.0 Width: 965.0 Quantity: 3 Non Grained Ref. Code: MEDN-O3	Bottom edge: Top edge: Left edge: Right edge:	Drawing name: 0011432F Part Volume: LOW	

With the pattern editor last minute adjustments can be made to any drawing before sending the data to the CNC machining centre.

*External drawings* - The drawing editor and transfer of data to a CNC machine can be integrated with the use of external drawing files such as DXF and MPR(X).



In this case the stand-alone drawings can be used with parts so items do not have to be duplicated in the machining library or drawn twice.

#### Summary of Machining Interface

	MI
Machining Drawings	99999
Machining functions (drill, route,)	•
Support for proprietary formats	•
Support for DXF	•
Transfer to Machining centre	•
Shaped drawings	•

Labels for drawings	•
Parametric drawings	•