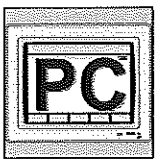
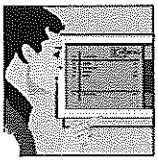
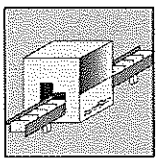


4.2.8 Weinmann CNC control PC 85 8-482-42-8040

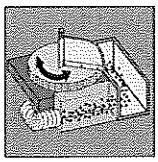
4.7.2 Unmachined parts list 8-482-47-2020
WUPWorks



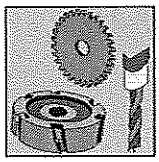
4.7.2 Fundamentals 8-482-47-2030
WUPWorks



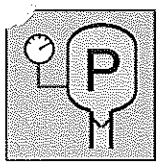
5.1.1 Processing center 8-482-51-1200
WBZ



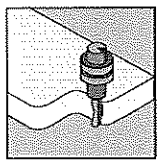
5.1.3 Chip removal 8-482-51-3030



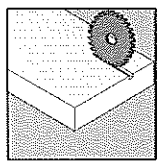
5.1.6 Main spindle 8-482-51-6020
WBZ



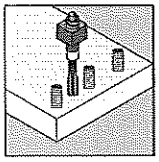
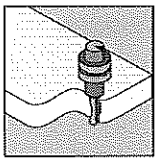
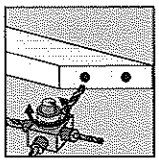
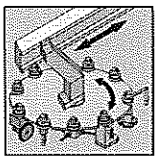
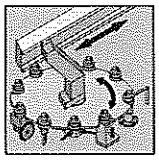
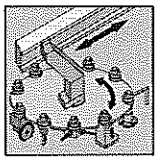
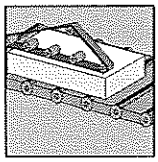
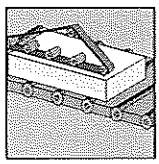
5.3.1 Central lubrication 8-482-53-1040
Type MKU3

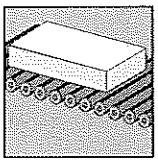
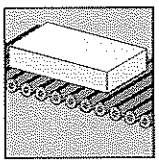
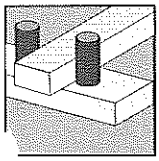
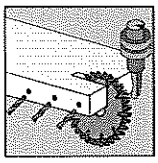
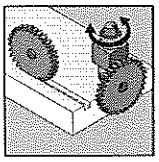


5.5.1 Tool data sheet 8-482-55-1010
Vertical trimmer



6.4.2 Tool data sheet 8-482-55-1030
Sawing Unit D=240

	5.5.1	Tool data sheet Vertical drill	8-482-55-1050
	5.5.1	Tool data sheet Horizontal trimmer	8-482-55-1140
	5.5.1	Tool data sheet Drilling horizontal	8-482-55-1290
	5.5.4	12-part tool holder	8-482-55-4020
	5.5.4	Testing device for tool changer	9-082-55-4110
	5.5.4	12-Part tool holder	9-082-55-4130
	5.5.5	Cooling Unit For Tool Changing Spindle	8-482-55-5010
	6.1.3	Conveyor belt	8-482-61-3010
	6.1.3	Transport roller for short workpieces	8-482-61-3040

	6.1.7	Infeed roller table	8-482-61-7060
	6.1.7	Outfeed roller table	8-482-61-7070
	6.2.3	Clamp WBZ	8-482-62-3090
	6.4.1	Combination trimming and drilling unit WBZ	8-482-64-1050
	6.4.2	Fixed sawing unit with automatically adjustable A-axis	8-482-64-2070

The input unit PC 85 with keyboard and screen is used to manage workpiece programs and to control machining centers and gantry machines.

Features	Values
Keypad	MF II
Screen	Color 17" SVGA-standard
Mouse	Microsoft mouse
Memory	SCSI > 4 GB
Printer interface	RS 232 serial
RS 232C ports	2
Max. baud rate	38400
Processor	INTEL Celeron CPU 433 MHz or subsequent model
Operating system	Industrial PC Windows NT 4.0
Network connection	ETHERNET (Option)
User guidance	Yes

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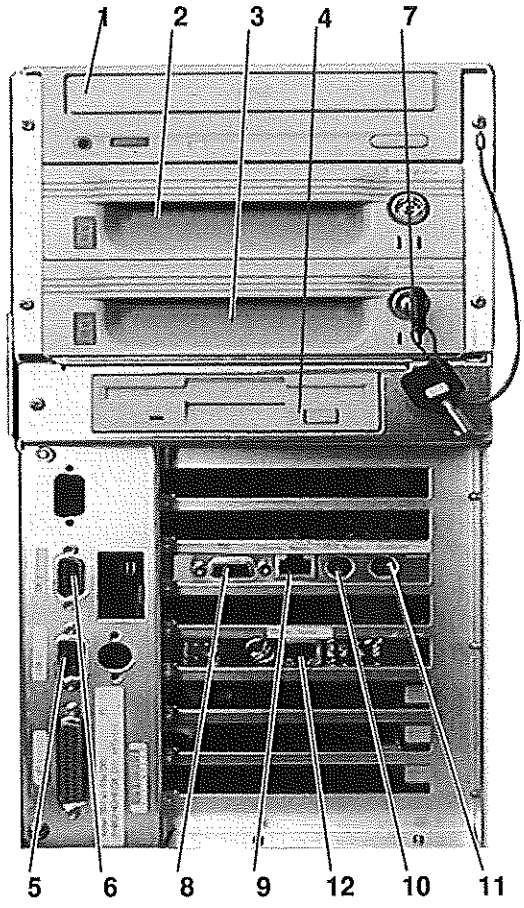
1 Functions / cycles

1.1 Industrial PC layout



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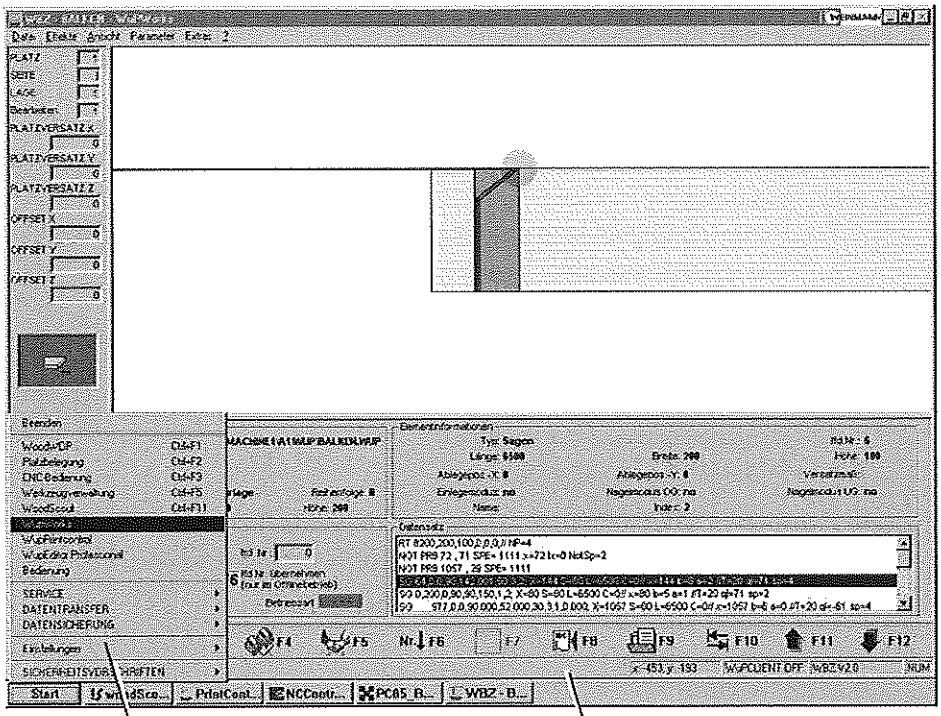
1	CD ROM drive
2	Boot disk
3	Backup disk
4	Floppy disk drive
5	Modem, serial port COM2
6	USV, COM1 port
7	Locking key for exchange disks
8	Monitor (VGA)
9	Ethernet machine
10	Mouse connection (PS/2)
11	Keyboard connection (PS/2)
12	Ethernet customer

1.2 Screen layout



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1	Start menu
2	Task bar or process bar

Start menu

The start menu is used to call up control function and to start programs such as WoodWOP.

Task bar

The task bar is used to call up control functions and programs already started. If the task bar is not visible, it can be called up using Ctrl + Esc.
The properties of the task bar can be adjusted using a right mouse click on an unused part of the task bar.

1.3 Keypad

The definition of the function keys and the data input procedure are the same as in other Windows applications.

Input	Meaning
Ctrl + Alt + Del	Logon Key combination to start the logon process, or to lock the workstation for a system that has already logged on.
F1	Info system
F10	Activate menu line The cursor keys are used to select the desired function. To activate this function, press the ↵ key.
Ctrl + F11	Activate error window The error window is brought to the foreground if it is in the background, or to the background if it is already in the foreground.
Alt + F12 or Ctrl + Esc	Show start menu
Esc	Cancel The function that has been started is interrupted, in other words, the original value is restored for entries.
Page Up	Page up The screen is scrolled up one page.
Page Down	Page down The screen is scrolled down one page.

Note:
All input data is checked for:

- Allowed symbols
- Minimum and maximum values
- The keys of key combinations containing a + sign have to be pressed simultaneously

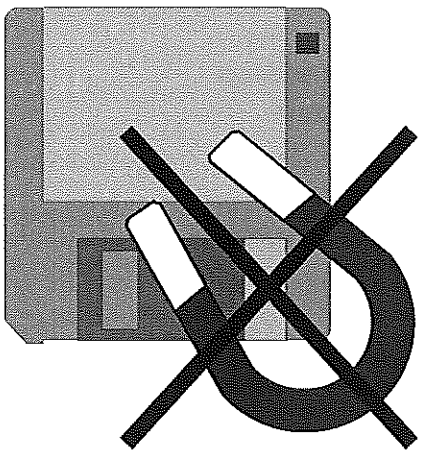
1.4 Data memory

Floppy disk drive, floppy disks and CD-ROMs

The floppy disk drive allows data to be exchanged with other processors or to be copied for backup.

Note:

- CD-ROMs, CD-ROM drives, floppy disks and floppy disk drives are sensitive to dust.
  Always keep door to control cabinet closed.
- Protect floppy disks and CD-ROMs from dust and dirt.
- Floppy disks are sensitive to magnetic fields. Keep away from transformers, motors, screen, magnets, radios, etc.
- Store backup floppy disks in a safe place (example: in a safe). This will prevent your programs on the hard disk and your backup copies from being destroyed as a result of damage.



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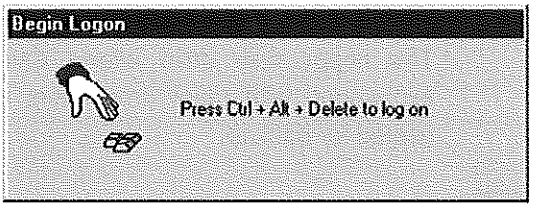
Hard disks

Two hard disks are integrated on the front side of the industrial PC. All data and programs of the computer are saved on the top hard disk (LED display "0").
Since the PC reads all necessary information from the top hard disk during startup (=booting), this disk is also designated as the boot disk.
The bottom hard disk (LED display "1") is used to backup the boot disk.
It is also referred to as the backup disk.

2 Operation

2.1 Start and logon

Main switch **On**. To be able to work with the machine and the corresponding programs, the user has to log on.



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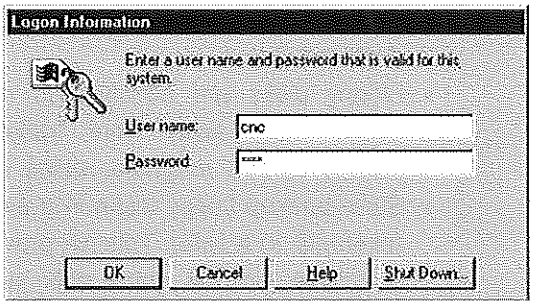
After pressing the key combination Ctrl + Alt + Strg the following prompts appear:

- **User name** and
- **Password**

User name:	Enter agreed name and Tab
Password:	Enter password and ↵. The password entry is hidden, i.e. not visible on the screen.



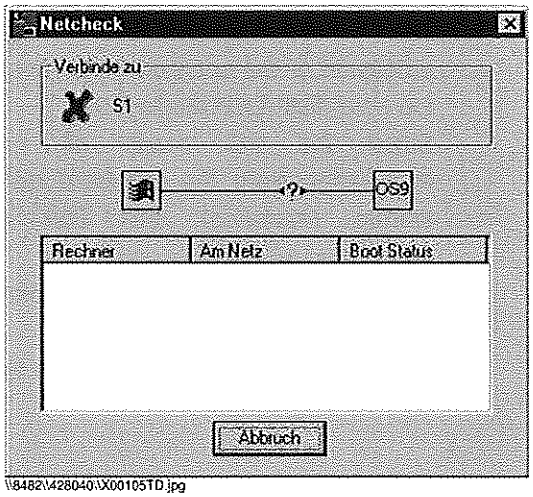
T:\\8482\\428040\\X00104TD.jpg

After this data has been entered, the computer starts the appropriate user menu.

Note:
The logon preset by WEINMANN for the machining center is:

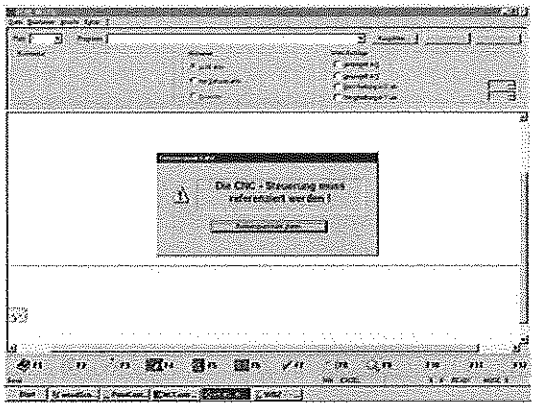
User name:	cnc
Password:	user

- Please note that the entries of **User name** and **Password** are case-sensitive!



\\8482\\428040\\X00105TD.jpg

After logging on, a reference point routine (RPF) must be carried out. After calling up the menu item "CNC mode", the following screen mask will appear:


T:\8482\426040\D00022TD.jpg

- Turn on control voltage on the control panel. The key lights up
- Turn override to 100 %
- Click on the "Start reference point routine" key to start the referencing of the machine.

Note:
The reference point routine can only be carried out if no CNC malfunction exists (possible fault causes ➔ see operating instructions "Machine set-up").

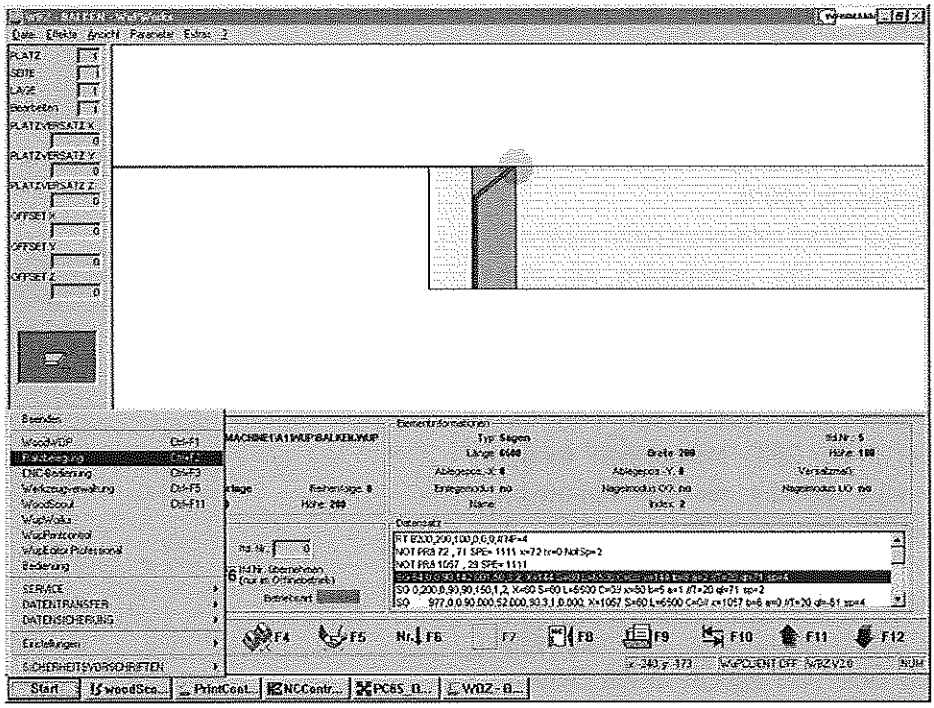
The mouse pointer will appear as an hourglass during referencing. The message "Reference table" will appear in the Station assignment status bar.

After conclusion of the reference point routine, the "Reference point routine" window will disappear.

Input: Ctrl + Esc,
The start menu appears again

Note:
Referencing at a later stage can be performed in the CNC mode via the menu item **File > Reference**!

2.2 Start menu



T:\\8482\\428040\\D00020TD.JPG

Note:
This screen mask is always referred to as the start menu.

- All control functions can be called from here, and all function calls are described.
- Press Ctrl + Esc or Alt + F12 to return to the start menu at any time.

WUPWorks

The Weinmann program WUP-works generates a machine program using the previously generated data or the data stored by the CAD.

Option:
*Start of the Weinmann editing system **WUP-Editor** to process or generate data for workpiece machining.*

Station assignment / PC85_Beleg

In the Station assignment menu, work programs are assigned to the individual machining places (tables).

CNC mode / NC- Control

This program allows you to operate the machine either in the automatic or in the manual mode.

Tool management

Access to tool data base.
All data required for a specific tool are stored in the tool database.

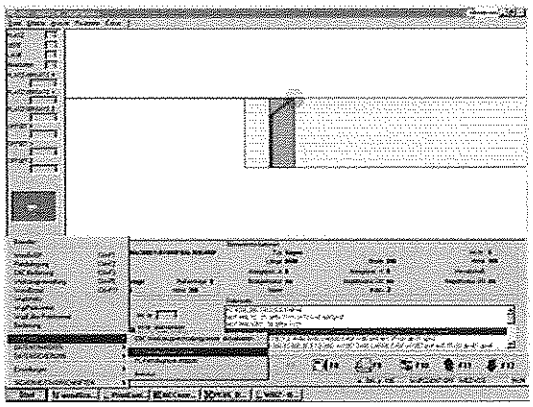
For a detailed description, see the operating instructions "Tool handling and management"!

Error visualization / wood Scout

For calling up HOMATIC error diagnosis.

Service

The menu items to start remote diagnosis by modem.



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Data transfer

The menu items used for copying tool data to floppy disk (transfer to AV-PC) are shown on the right menu field.

Data backup

The menu items for the data backup are shown in the right menu field.

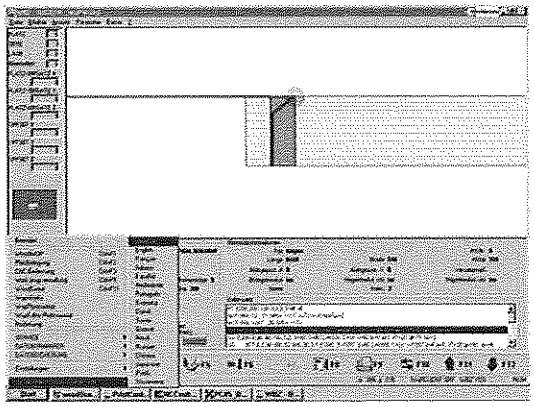
Settings

The menu items for various settings are shown in the right menu field.

Safety regulations

Safety regulations are available in all European languages.

Note:
The user must read them before beginning work on the machine!



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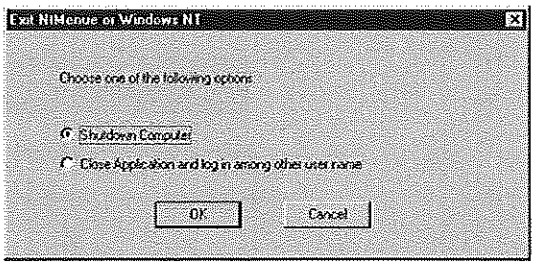
Logging off: **Exit**

After selecting this menu item, the following dialog appears. This dialog allows you to select whether to

- shut down the industrial PC, or
- to close all programs and log on as a different user



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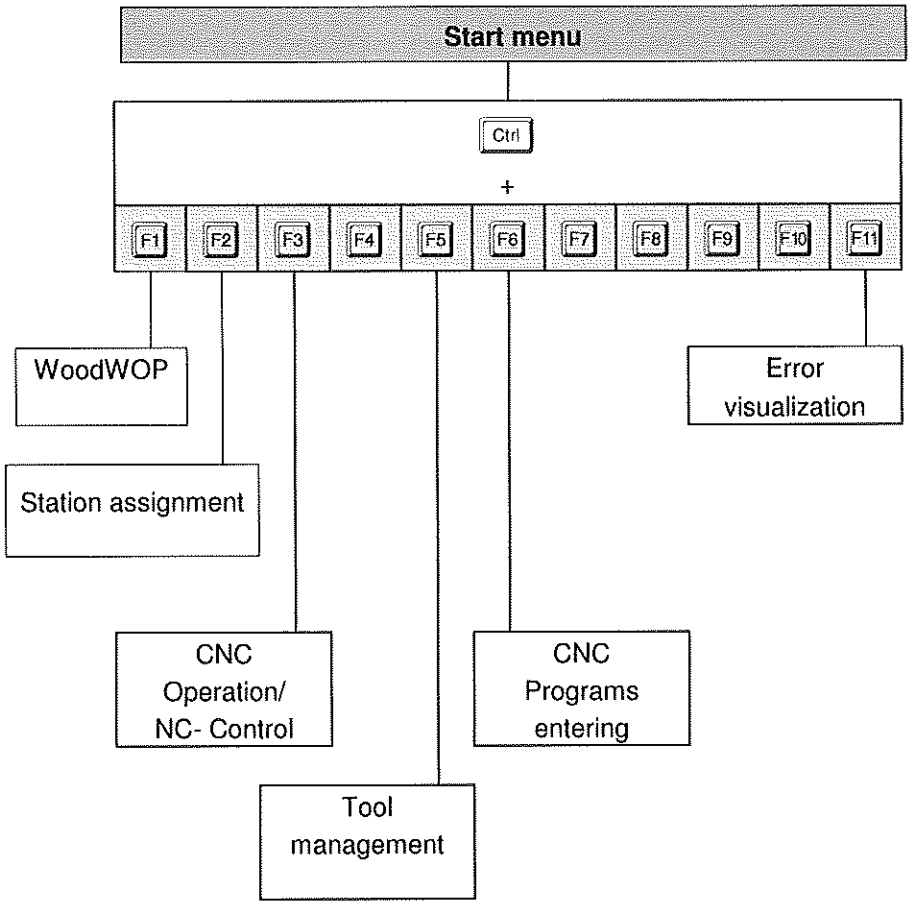
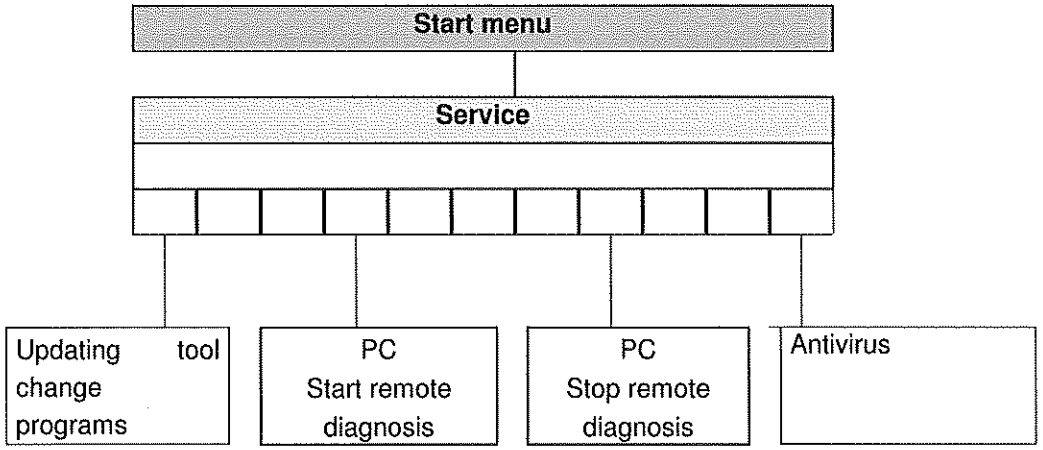
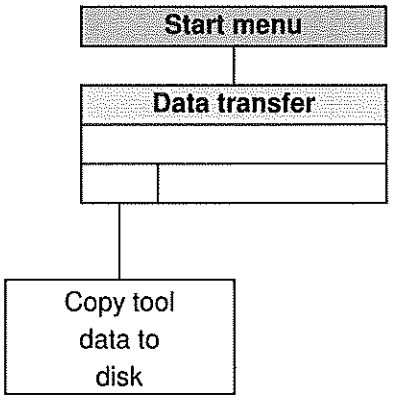
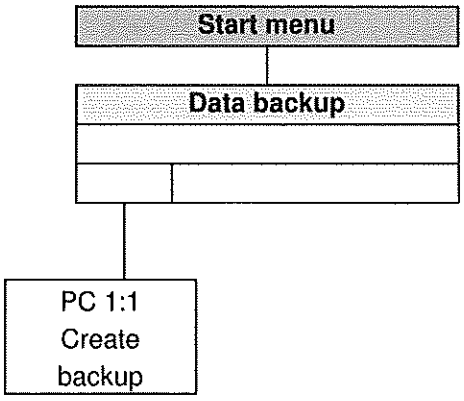
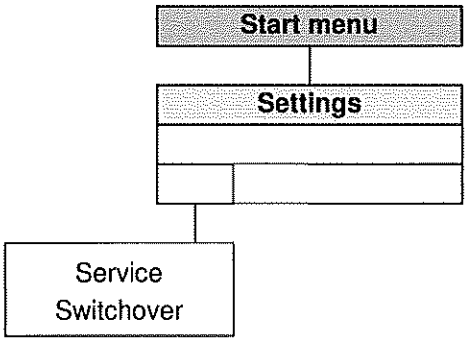
2.3 Menu structure overview

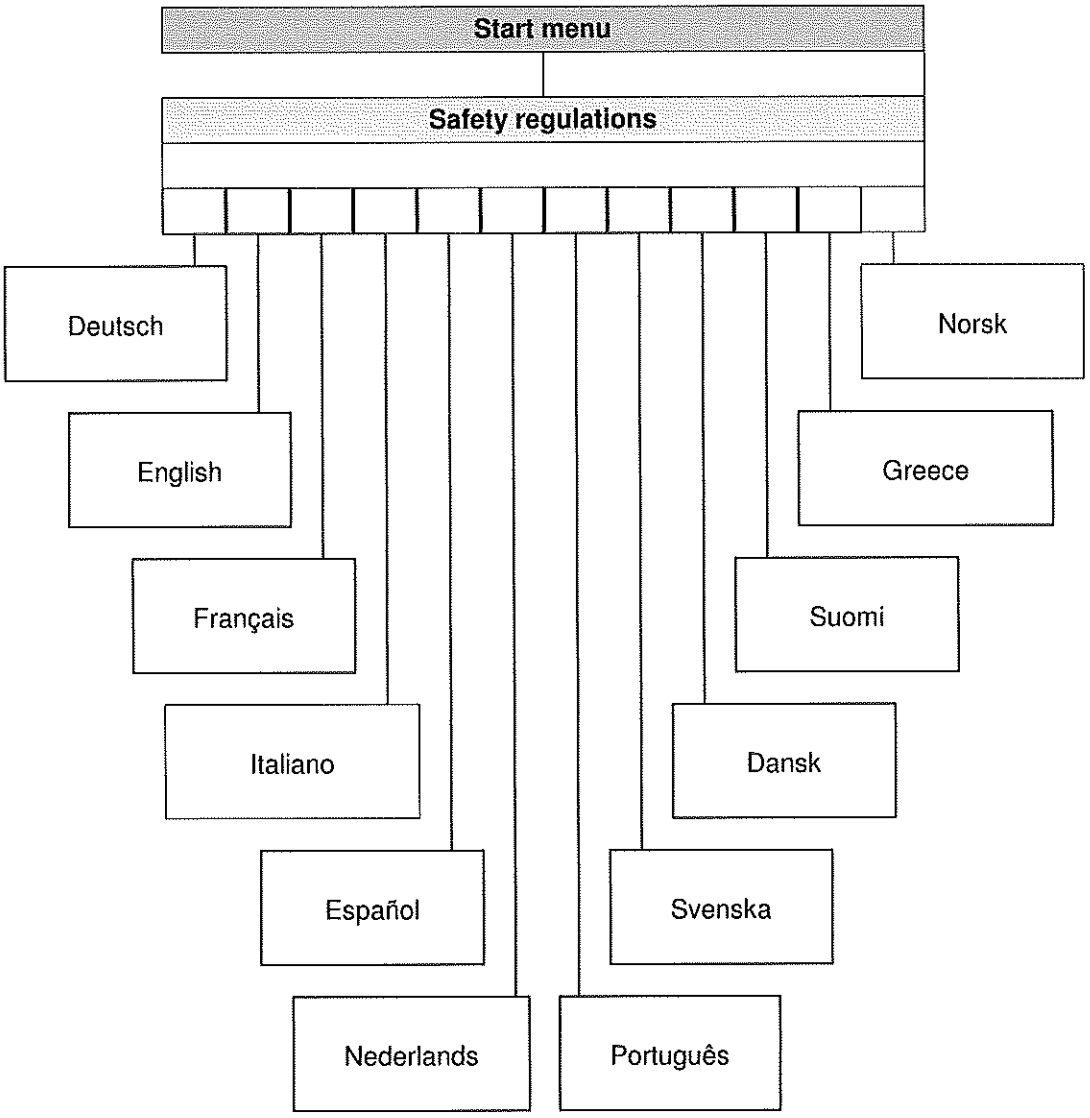



Start menu
Service
Updating tool change programs
PC Start remote diagnosis
PC Stop remote diagnosis
Antivirus


Start menu
Data transfer
Copy tool data to disk

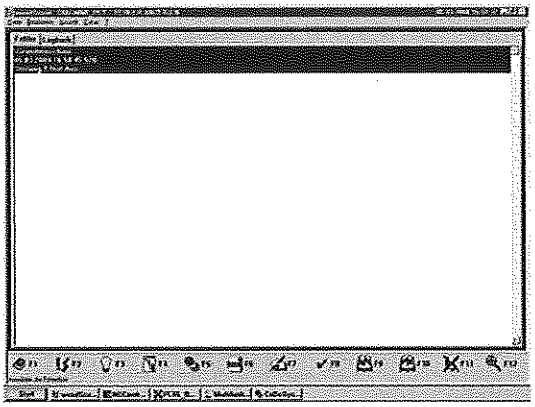

Start menu
Data backup
PC 1:1 Create backup


Start menu
Settings
Service Switchover


Start menu
Safety regulations
Deutsch
English
Français
Italiano
Español
Nederlands
Português
Svenska
Dansk
Suomi
Greece
Norsk

2.4 Error diagnosis

If an error occurs in the control system, the error diagnosis is opened and displays the error as a plain text message.
The message list includes, apart from these error messages, also other messages.



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Input	Meaning
Page Up / Page Down	Key to scroll 1 page forwards/backwards, 1 page = 9 messages
↑ / ↓	Key to scroll forwards/backwards line-by-line
F1	Information Information on the program version of woodScout
F2	Option - Messages
F3	Option - Displaying expert knowledge
F4	Option - System information Loading the operating manual
F5	PLC diagnosis Loading a simple graphic manual control
F6	Option - Machine documentation Loading the machine documentation
F7	Option - Documenting expert knowledge For an active error, so-called expert knowledge can be entered.
F8	Error acknowledgement Active errors are acknowledged, except for PLC errors, which are acknowledged by the PLC.
F9 / F10	Switches the display between the window containing the current error messages and the window showing the logbook list.
F11	Quits the error diagnosis and automatically returns to the previously selected program
F12	Option - Extended error diagnosis Loading the extended error diagnosis with graphic representation of the error location. Allows expert knowledge to be entered.

Note:
The error diagnosis always opens:

- when an error occurs (example: programming error in NC program)
- in case of messages from the PLC control (example: axis drive fault)

When PLC messages are acknowledged internally by the control and no new error is detected, the error diagnosis closes automatically.

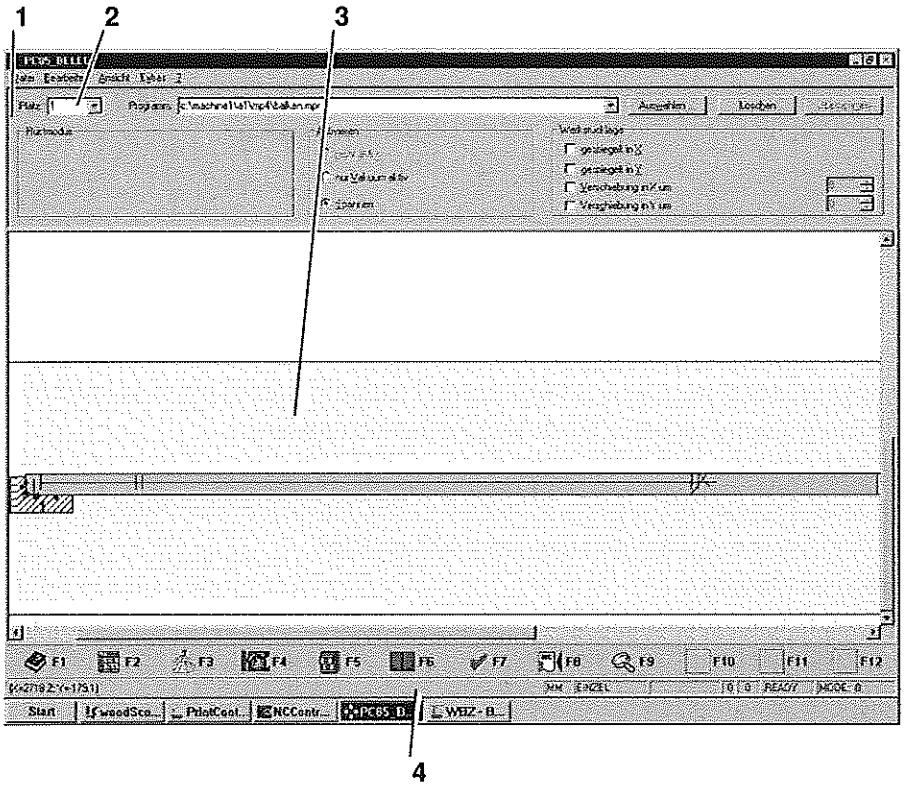
Note:
Selecting the error diagnosis:

- Ctrl + F11 or
- mouse click on error visualization on the task bar

2.5 Graphic station assignment

The program PC85_Beleg serves for graphically assigning the workpiece programs to be generated to clamping points on the machine table.

All actions necessary for parts manufacturing can be processed within this program.



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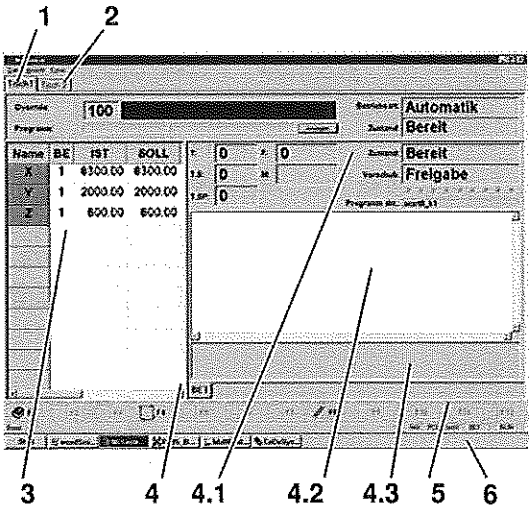
1	Station options
2	Selection: Machining station (table)
3	Graphics: Table assignment
4	Status bar

2.6 CNC mode

The screen layout comprises the following areas:



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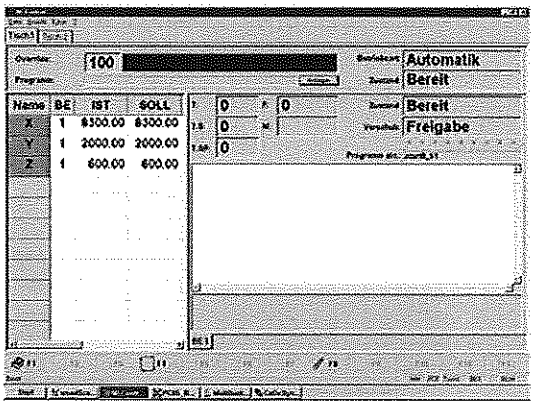
1	Menu line: Selection of various functions is possible
2	Table state display: Table-specific information is shown. In the case of machines equipped with several tables, it is possible to switch between the individual display windows by clicking on the tab (top left).
3	Axis position display: This window displays axis names, allocation of the machining unit, actual and target values, and the like, of the individual axes and spindles.
4	Machining unit display: All data specific to the machining unit will be displayed. In the case of machines equipped with several machining units, it is possible to switch between the individual machining units by clicking on the tab (at the bottom left corner).
4.1	Machining unit – Status display: In this area, the current states of the individual machining units are displayed.
4.2	Machining unit – NC program display: Here the NC program that is currently being executed is displayed.
4.3	Machining unit – Manual block entries: Manual block entries may be made. A manual block can consist of several NC lines.
5	Function key bar: The function keys used to initiate a direct function are shown. If the mouse pointer is placed on one of the selectable (not gray) function keys, a quick info is shown that briefly describes the function of the key.
6	Status bar: Here current information is shown.

Note:
The display range of the table state, axis positions and machining units can be shifted with respect to one another. These ranges are shifted by clicking on the range keys. As long as the left mouse button is pressed down, the selected range boundary can be moved.

Automatic mode

The automatic mode serves for the display of machine data during the production process.



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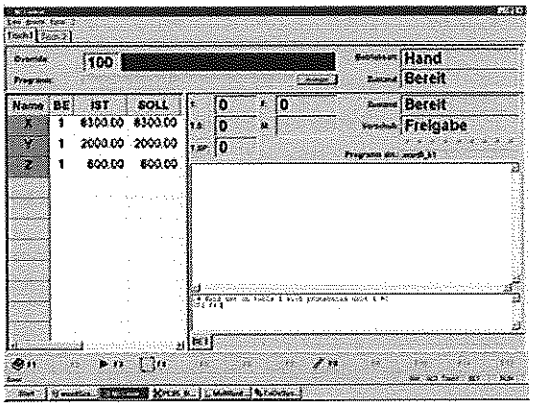
Manual mode

In the manual mode, individual movements and functions can be selected and/or executed manually.



T:\\8482\\428040\\D00009TD.jpg

Note:
When making manual block entries, please note that when entering a spindle speed (command S) the spindle speed value must be standardized to revolutions/minute.

Input	Meaning
F2	Interruption of a running NC program. The interrupted NC program sequence can be continued by pressing F3.
F3	Pressing this key will start the last entered manual block. Manual blocks are programmed individually for each machining unit. After selecting the machining unit via the corresponding tab, one or more NC lines can be entered after clicking on the Machining unit – manual block input field. They are started by pressing F3. A manual block interrupted by F2 can be continued by pressing F3.
F4	Switching between manual and automatic mode.
F8	Execution of an NC reset. This will interrupt all running NC programs.
F9	The interrupted NC program sequence can be cancelled by pressing F9.

Canceling NC programs

During execution of an NC program on a table, the following state will appear on the table state display: "PRG running".

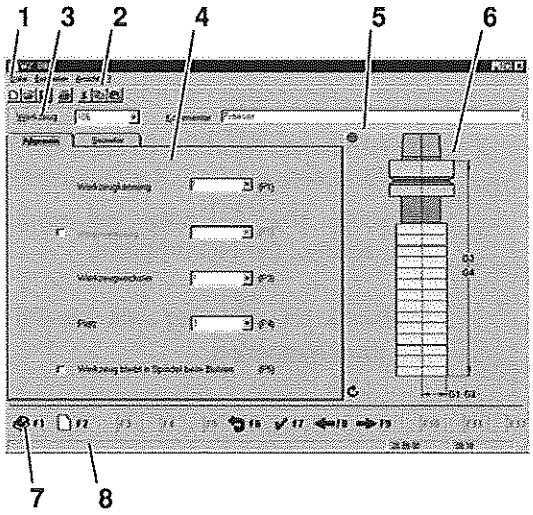
Pressing the F2 key will interrupt the NC program execution on the selected table.

Pressing the F3 key will continue the execution of the NC program.

Pressing the F9 key will cancel the NC program execution.

2.7 Tool database

All data required for a specific tool are stored in the tool database. The individual menu items are selected by using the mouse or pressing the Tab key.



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1	Menu line
2	Toolbar
3	Tool identification
4	Parameter field
5	Graphic status line
6	Graphics area
7	Function key line
8	Status line

Note:
Depending on the tool, only the required parameter fields are shown as being active. Parameter fields that are not required are shown in gray and cannot be selected.

Danger:
Tool data may only be changed, if
- no NC program is being executed
- no tool is being loaded

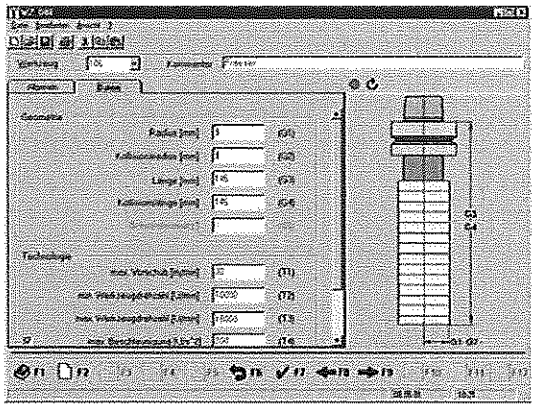
➔ **Risk of injury!**
➔ **Risk of collision!**
➔ **Risk of tool breakage!**

1	Menu line
2	Toolbar The toolbar allows certain functions to be called up via a mouse click.
3	Tool identification: This line shows the tool number and comment. Values between 1...999 can be used for the tool number (also called T number). If there are two identical tools for synchronous machining, both tools will receive the same number (example: 101), one of the tools is marked with a supplementary spare tool number (example: 101.1). The numbers are separated by a decimal point. Usually, the spare tool number is 0, which means that it can also be omitted (for example, the values 101.0 and 101 are equivalent). Recommendations for the T number are listed in each tool data sheet for the tool or unit. An overview in tabular form is contained in the operating instructions "T, G, M functions".
4	Parameter field Here different data, depending on the selected register card, can be processed. Each parameter field has a designator that identifies the parameter in question in the graphic.
5	Graphic status line Different states of the current tool are displayed in this line in a graphic. The first icon shows by means of a circle whether the tool has been loaded to the machine (green circle → tool has been loaded to the machine, red circle → tool has not been loaded to the machine). The second icon displays the direction of rotation of the tool.
6	Graphics area Depending on the tool, a graphic is displayed in this area. The graphic contains all important dimension with their designators.
7	Function key line: The function key line allows certain functions to be called up directly via mouse click or function keys.
8	Status line Here state-related help information can be displayed.

The **General** register card contains the following values:

Parameter	Description
Tool code	Indicates the type of machining that can be carried out using the tool or unit. ➔ See the tool data sheet in question.
Main tool	This parameter field must be activated via the checkbox. Standard: not active. Exception: • Exchange units that are equipped with 2 or more tools used independently of one another, such as 4-spindle units. • Each individual tool has a unique T number. One of the T numbers is entered as the common main tool number for all individual tools.
Tool changer	Number of the tool changer containing the tool. 0 = Tool not in changer 1 = 1. Changer 2 = 2. Changer (option) 11 = Fixed tools (Machining unit 1) 12 = Fixed tools (Machining unit 2) 13 = Fixed tools (Machining unit 3)
Pocket	Number of the pocket in which the tool is deposited in the changer. Permanently fitted tools are entered with pocket number 0. Multiple assignment of a pocket number is prevented by the software. Exception: Tools having a registered main tool number.
+/- Spindle return stroke	*Certain tools can remain in the spindle during machining using fixed tools.* *The following maximum values are allowed:* • *Diameter: 100 mm* • *Length: 145 mm (spindle return stroke 150 mm)*

The register card **Data** is divided into the areas **Geometry** and **Technology** and contains the following values:



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Geometry:

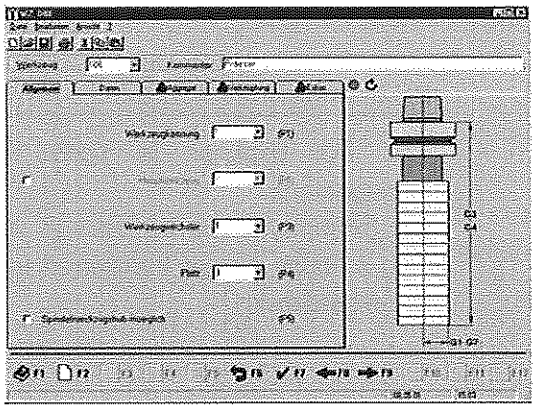
Parameter	Description
Radius	Tool radius for radius compensation
Collision radius	Max. tool radius (required for approach and withdrawal)
Length	Tool length for length correction
Collision length	Max. tool length (required for approach and withdrawal)
Swiveling angle	Swiveling angle for units with manual A axis

Technology

Parameter	Description
Max. feed	Max. feed of the tool
Min. tool speed	Min. speed of the tool
Max. tool speed	Max. speed of the tool
Max. acceleration	Max. acceleration of the tool If the checkbox has been activated, a value can be entered in the corresponding field. If the checkbox has not been activated, a standard value for acceleration is used.
Direction of rotation	Click on the appropriate symbol for the direction of rotation using the mouse. If the tool is a tool that does not require a direction of rotation (example: scraper), the crossed-out icon must be activated.

Parameter	Description
Selection of a tool	A tool is selected using either the box for the tool number in the tool identification line or the function keys F8 or F9 for scrolling backwards or forwards through a data record.
Processing the tool data:	To process tool data, use the mouse or the Tab key to jump to the respective parameter field. As soon as a value has been changed, that field will have a yellow background. In addition the function key F7 and the diskette symbol on the toolbar will also be yellow. This indicates that values have been changed and must still be accepted or transferred to the machine control system. If values have been changed, they must be accepted by clicking on the diskette symbol on the toolbar. No other tool can be selected until this has happened. As soon as all values have been changed and accepted, they must be transferred to the machine control system. This is done by pressing the F7 key. It is also possible to save each change by pressing the F7 key and to send it immediately to the machine control system. **Caution:** Data may only be transferred to the machine control unit (F7 key) if no tool has been selected or loaded and if no NC program is being executed.
Discarding changed data	If changes to tool values have not yet been transferred by clicking on the diskette symbol or by pressing the F7 key, they can again be discarded by pressing F6. This will undo all changes to values of the current tool.

The menu item **View > Setup** can be used to expand the view. This will display the register cards **Unit**, **Link** and **Tools**. These register cards contain data that are used only for servicing and can only be viewed but not changed by the user during daily work. This is why the tabs of these register cards have been provided with a red lock.



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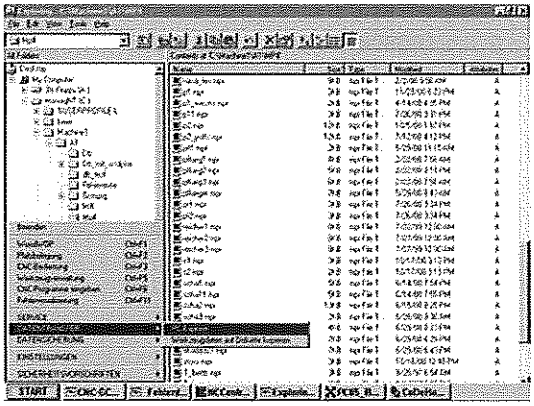
2.8 Data transfer

PC Explorer

The PC Explorer is used for data management.
For example, it can be used to write data onto a floppy disk or transferred from there to the hard disk.



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- WoodWOP programs

File storage on the machine	c:\machine1\a1\mp4
Filename extension	.mpr

- WUP data records

File storage on the machine	c:\machine1\a1\ml4
Filename extension	.mpr

- WUPEditor macros

File storage on the machine	c:\machine1\a1\wup\ makros
Filename extension	.wmk

- NC programs

File storage on the machine	c:\machine1\a1\prg
Filename extension	None or for example .ges, .sau or .rue

In this directory, the NC generator stores NC programs generated from WoodWOP.

Caution:
In this directory, setup, tool change and approach programs are also stored in-factory.
Do not delete, change or use!

- NC subprograms

File storage on the machine	c:\machine1\a1\upg
Filename extension	None

Caution:
In this directory, the approach and withdrawal programs are stored.
Do not delete or change!

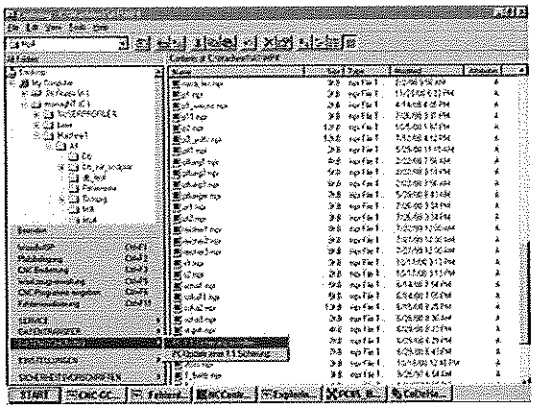
Caution:
Moving / deleting existing files / directories on the hard disk may result in impaired machine functionality.
This may result in machine malfunctioning or may damage the machine!

Copy tool data to diskette.

Executing this menu item will copy the tool data to diskette. This diskette can be used to install the current machine tool data on a WoodWOP-AV-PC.

2.9 Data backup

All data necessary for the control are saved on a hard disk (see chapter "Structure of an industrial PC"). This hard disk, identified by a "0" on the LED display, is also called boot disk. It is very important to carry out the data backup at regular intervals, at least 1 x per month. Below the boot disk, a backup disk can be integrated.



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Create PC 1:1 backup

The backup disk may only be inserted/removed when the machine is disconnected. Before switching off the machine, the CD-ROM with the designation SERVICE CD-ROM must be inserted into the CD-ROM drive.
To switch off the machine, refer to the chapter "Switching off the machining center".
When installing the backup disk, make sure that the hard disk plug-in is inserted as far as it will go. The locking and simultaneous activation of the backup disk takes place using the enclosed key.

After switching on the machine, the user is prompted by:
• Create data backup?

After answering with yes, the system creates an identical copy of the boot disk on the backup disk. This will also copy the complete Windows NT operating system.
After the backup procedure is complete, the machining center must be switched off again.
To remove the unit, unlocking the lock on the backup disk. Now the backup disk can be removed from the industrial PC.

Note:
After the data backup is complete, the backup disk must be removed from the industrial PC (first switch off the machine) and stored at a safe location (not on or in the machine). If the backup disk is kept in the machine, it might be destroyed by unpredictable events (example: overvoltage due to lightning).

PC data maintenance

Owing to their memory capacity, hard disks make it possible to store an almost unlimited number of programs.
This makes it imperative to carry out data maintenance and to delete programs that are no longer used on a regular basis (WoodWOP programs, NC programs) to ensure clarity for the machine operator. Additionally, the time required for the control unit to manage these programs in the respective directories is minimized. This will guarantee quicker access to existing files.

Note:
Deleting individual files will result in memory fragmentation (fragmentation: free hard-disk memory that is available in individual sectors rather than in a continuous section). This is caused by the operating system Windows NT 4.0, which breaks up new files into several pieces and stores them in unoccupied memory areas. As a result, access to these files is slower. To counteract this fact, a memory defragmentation should be carried out at regular intervals.

The creation of a PC 1:1 data backup automatically produces a memory defragmentation (minimization of memory fragmentation) on the backup disk.
All that remains to be done is to exchange the two hard disks.

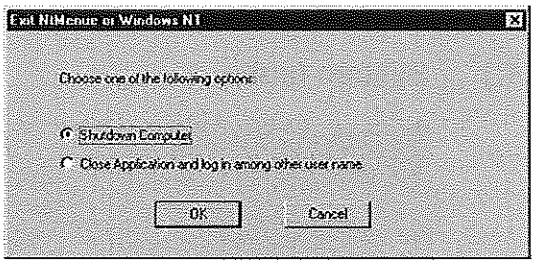
2.10 Switching off

- Set selector switch ***Manual/Automatic*** to **Manual**
- Move the machining center to **home position** by pressing the button ***Home position***.
- If used: Remove diskettes from the drive
- Log off in the start menu via menu item **Exit**

Logging off: **Exit**

After selecting this menu item, the following dialog appears. This dialog allows you to select whether to

- shut down the industrial PC, or
- to shut down the industrial PC and then to restart it, or
- to close all programs and log on as a different user
- Set the main switch on the PC cabinet to **"0"**



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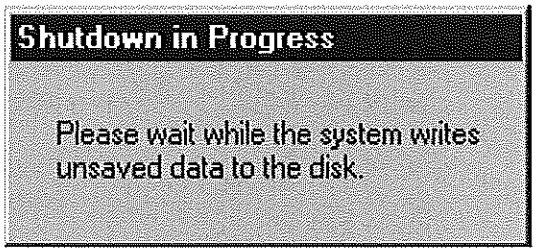
Caution:
Before switching off the industrial PC, the operating system Windows NT 4 requests a controlled shutdown of the operating system. While shutting down, unsaved data are copied to the hard disk.



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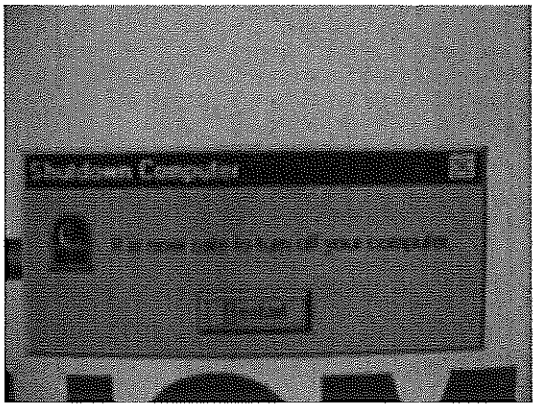
Switching off the machine without shutting down the operating system may result in data loss and in machine failure or damage!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3 Service / maintenance

Apart from the regular data backup / data maintenance, no further maintenance work is necessary.

4 Troubleshooting

Errors are displayed on the screen by messages in the error diagnosis.

4.1 System fault

Fault situation	Cause	Remedy
• Emergency Stop fault	• Emergency Stop activated	• Unlock the ***Emergency Stop*** button and press the ***Control On*** button.
• Fault protective door	• Protective door was opened	• Close protective door and press ***Protective door On***
• Motor protection fault	• The motor is overloaded or blocked	• Check the unit • Check motor ventilation • Check the motor protection switch setting • Switch on motor protection switch
• Thermal contact fault	• The motor is overloaded	• Check the unit • Is the motor "stuck"? • Check the input
• Brake module fault	• Brake module is overloaded	• Check motor or brake module ventilation • Check the input
• The machine does not start moving	• Override potentiometer is on 0%	• Turn on the override potentiometer

4.2 Bus system fault:

In case of bus problems, the flashing code should be verified.

Rapid flashing = start of the error code
First slow flashing = error
Brief pause
Second slow flashing = error argument

See description of the Beckhoff bus coupler

Fault situation	Cause	Remedy
• Bus coupler	• Bad contacts on the bus coupler • Bus coupler is defective	• Replace bus coupler • Check the bus system
• Input terminal	• Terminal destroyed by overvoltage • Bad contact with bus coupler	• Replace the terminal • Compress contacts
• Output terminal	• Terminal destroyed by overvoltage • Bad contact with bus coupler	• Replace the terminal • Compress contacts

Note:
Faults of the bus system can be reset by pressing the "*Emergency Stop*" button. This must be followed by pressing the *Control On button.*

4.3 "Blue Screen" diagnosis in case of computer crash

A Blue Screen describes hardware or driver problems that have occurred. When these problems occur, the operating system will output a STOP message. This STOP message consists of detailed information giving details on the particular fault. To allow this detailed information to be saved, after such a fault has occurred, wait for the message that the page has been saved, which will appear at the lower screen edge.
After inserting the "Service CD-ROM" into the CD-ROM drive, the machine must be switched off and on again. The booting process will now take place from the CD-ROM. You will be asked whether a 1:1 backup is to be performed. This must be refused by answering No. Then you will be asked:
"Do you want to save Blue Screen on diskette (drive B:)?"
If you answer with Yes, after a few seconds an MS-DOS editor will be started, and any Blue Screen present (STOP message) will be displayed. This message can now be saved to diskette. Please note that the diskette drive must be called "B:".
The STOP message is saved on the diskette as a "bluescreen.txt" file and can then be analyzed.

Note:
A Blue Screen can only be caused by hardware or driver problems but not by programs.

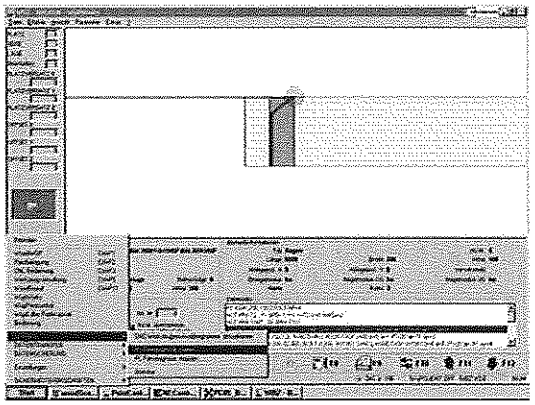
5 Options

5.1 Remote diagnosis

The remote diagnosis is used by the Weinmann Service for rapid fault finding and their elimination and as an aid to the on-site customer service personnel when an error occurs.

Start remote diagnosis

The PC remote diagnosis with the Weinmann Service is started automatically by selecting this menu item.



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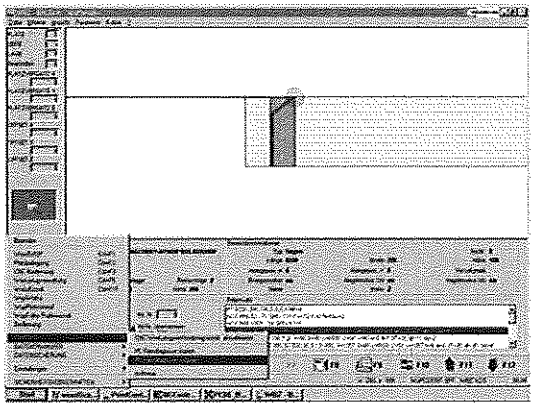
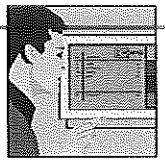
Stop remote diagnosis

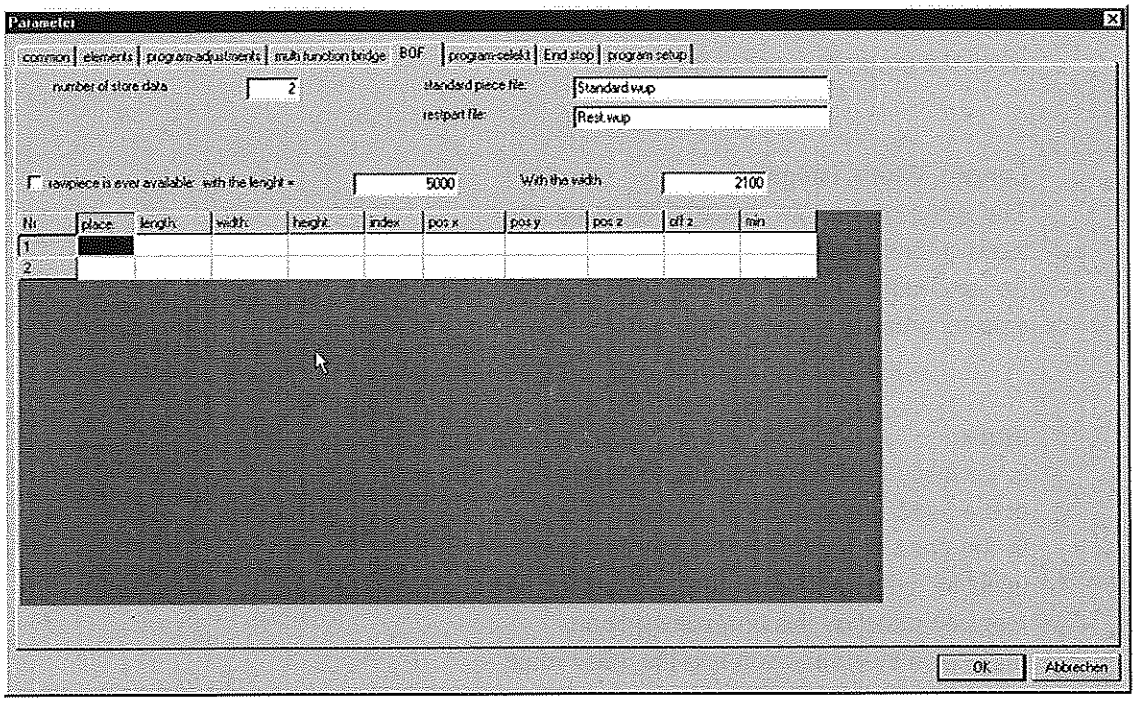
The active remote diagnosis is stopped by selecting this menu item. The connection is terminated, and the computer returns to normal machine operation





This list is used to optimize the joint management of panels and lumber and to output incoming panels or lumber to the next processing center or supply them automatically from materials storage.
The positions of the individual storage bins must be entered for items in materials storage.

Unmachined parts list



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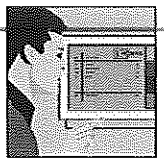
The various parameter menus of the machine are accessed via **Parameters** and **Parameter input**.

All material dimensions that are available and in materials storage must be entered on the **Cut panels to size** or **Unmachined parts** tabs before they can be used.

Note:
See examples for the corresponding machines.

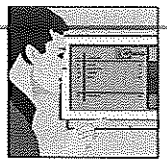


Parameters for the unmachined parts list

Place:
The **Position** number is populated is a material dimension is available.
If a material dimension is currently not available, or if it is not to be used for cutting to size or supplying the part, a **"0"** is entered in the **Position** - then it will no longer be used when the program is generated.

Length, Width, Height:
The sizes of the raw material must be entered in these fields.
(in accordance with the dimensions in the data records)

Index:
Is normally entered according to the values of the panel index in the WUP file.
In the case of index 99, this raw material is used for cutting to size all parts whose dimension matches this unmachined part
(otherwise the dimension and the index must match).



POS X, Y, Z, Off Z, min:
These parameters have been prepared for automatic material supply with the corresponding storage.

Number of storage data items:
The number of different material dimensions or storage bins is entered here.

Standard parts file:
Name of the WUP file containing all standard parts that are released during normal processing. Path: C:\machine1\A1\WUP\

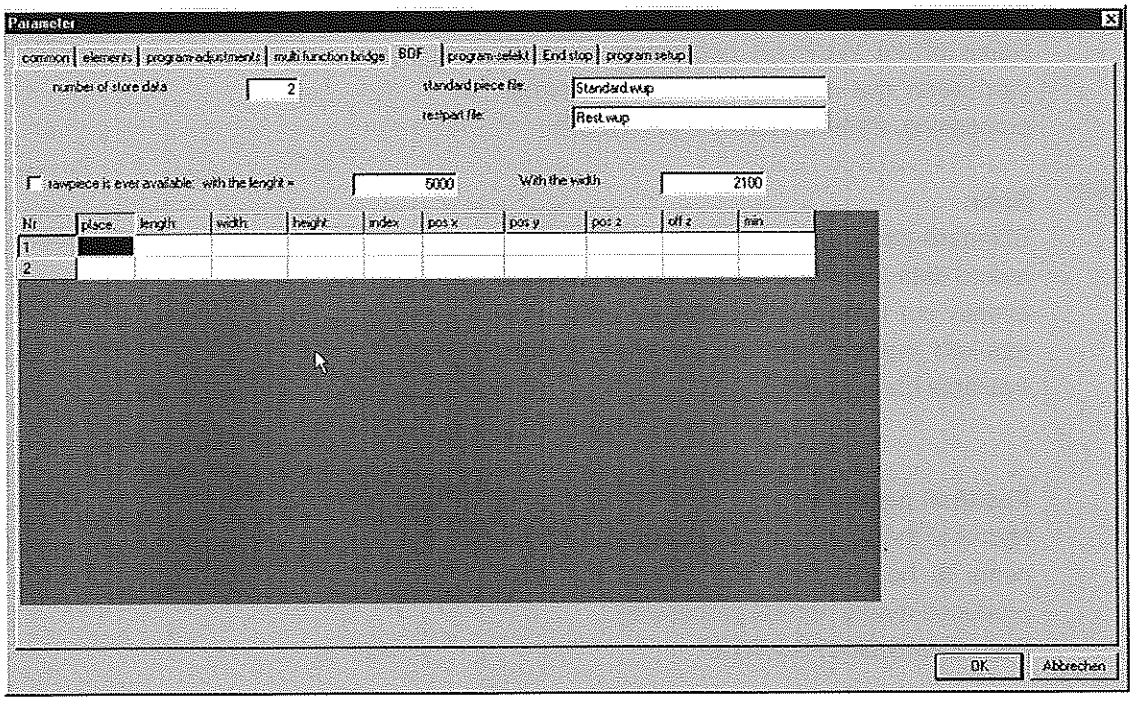
Note:
Standard parts are components in the data record data that, for example, can be bought already cut to the correct size, or which are required regularly and are therefore always available from stock.

Residual parts file:
Name of the WUP file containing all components to be cut from any offcuts that are produced during normal processing.
Path: C:\machine1\A1\WUP\

Examples of different unmachined parts lists:

Unmachined parts lists can include varying amounts of information depending on the type and nature of the machine.
To illustrate this, unmachined parts lists for the different machines are shown as examples:

Unmachined parts list WMS Panel cut-to-size



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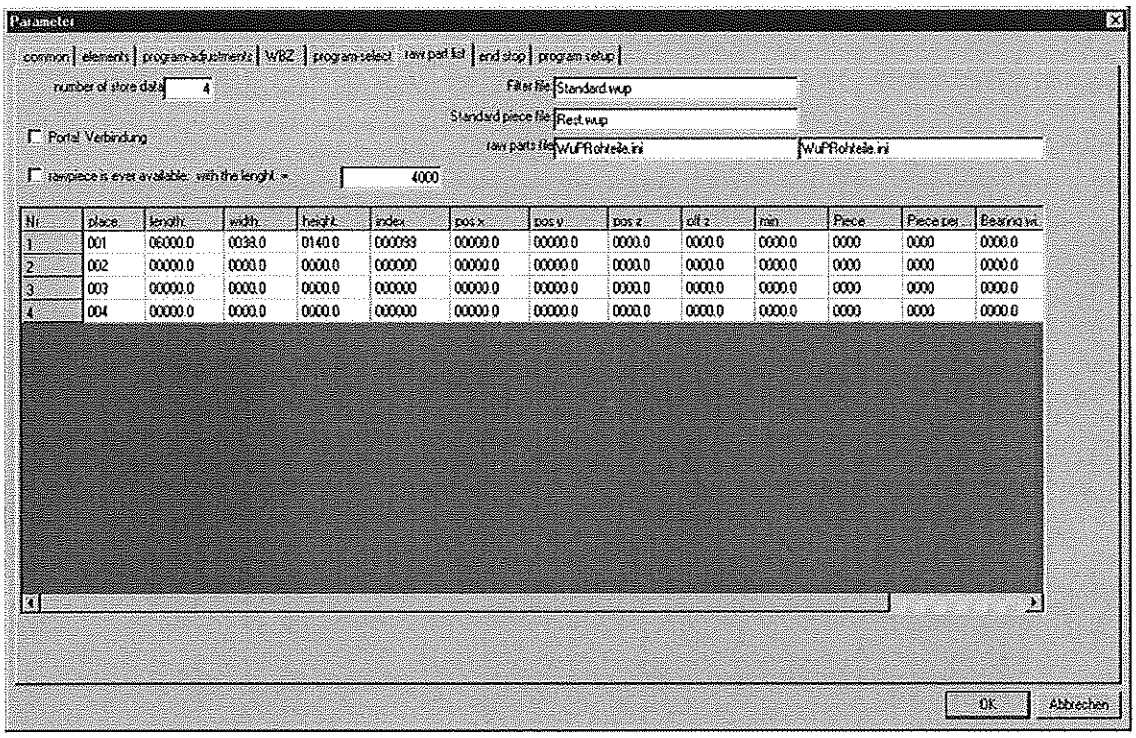
- Little storage data, because panel materials seldom change
- Unmachined panels are transported to the cutting table by hand or automatically
- Index 99: Unmachined panel is to be used for all cut-to-size operations – depending on the material thickness (height)
- "Position" is used merely as a sequential number together with the indication "available" or "unavailable"
- Standard and Residual parts files are used

Unmachined parts lists WBZ Beam processing



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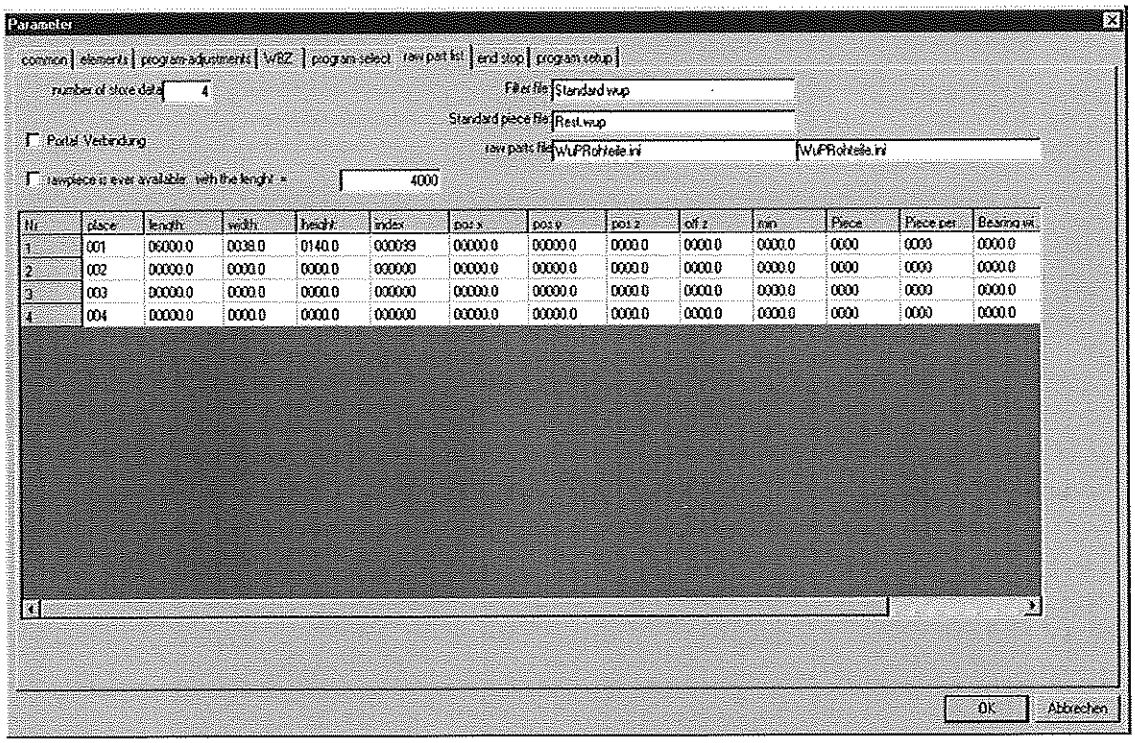
- A a lot of storage data, because this machine type is used to process a wide variety of different rough dimensions
- Various input lengths
- Unmachined timber is transported to the machine by hand or automatically
- Index 99: The unmachined dimensions are to be used for all processing operations, depending on the material dimension in the data record
- "Position" is used merely as a one-up number and to indicate whether the panel is "available" or "unavailable"
- Standard and Residual parts files are used

Unmachined parts list WHP Transport crane



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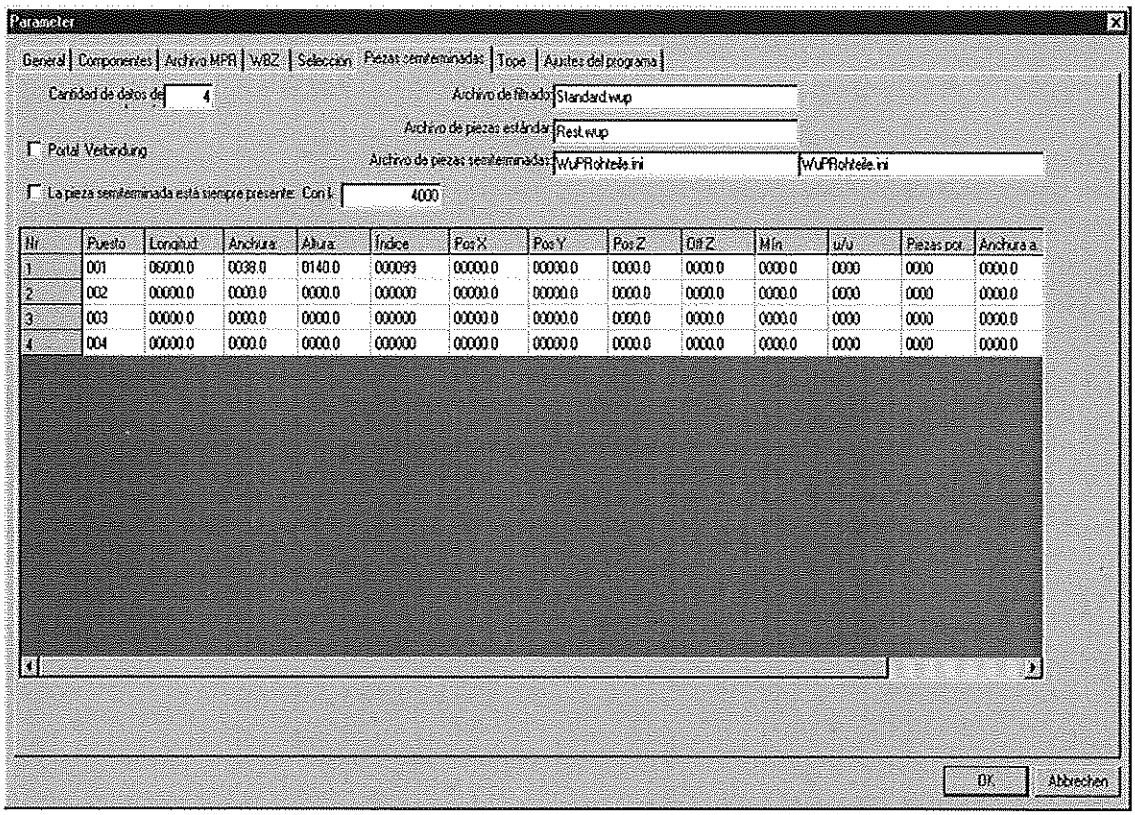
- Amount of storage data reflects the number of storage positions in materials storage
- Unmachined panels are transported from the respective storage position to the processing center automatically by the transport crane
- Panels are selected from storage using the dimension and the materials index
- "Position" is used to specify an actual storage position together with the indication "available" or "unavailable"
- Standard and Residual parts files are not used

Unmachined parts list WHPB Board supply



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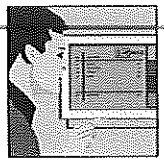
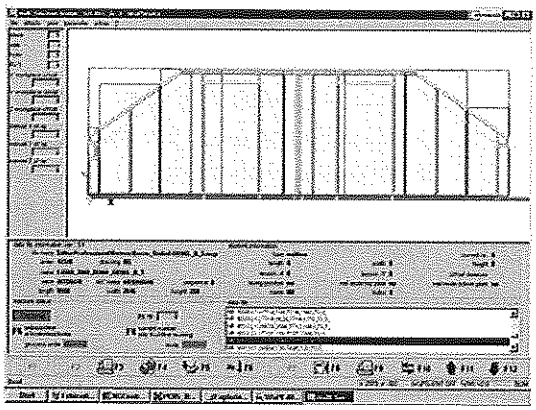
- Amount of storage data reflects the number of storage positions in materials storage
- Boards are automatically transported from the respective storage position to the board processing station by the transport crane
- Beams are selected from storage using the dimension and the materials index
- "Position" is used to specify an actual storage position together with the indication "available" or "unavailable"
- Standard and Residual parts files are not used



The program package WUPWorks serves for activation of different machining centres and for transferring data records generated by CAD in connection with timber frame construction.

Features	Values
Version	3.x
Operating system	MS-Windows NT
Control unit	Homatic PC83 and higher
Activation/ Machine types	WMS multi-function bridge WBZ beam processing station WBM framing station WHP handling portal WTD NC- axis table



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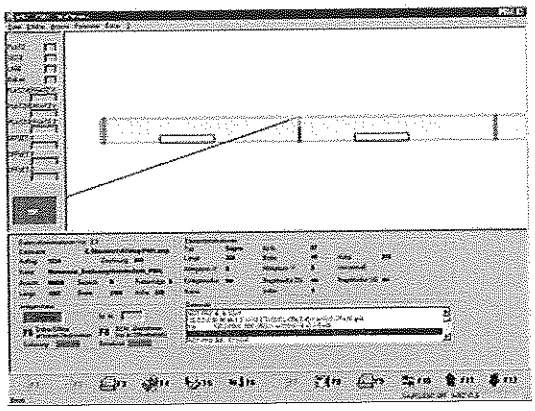
1 Functions / cycles

WUPWorks is a program package specially tailored to the automatic element and component processing and to automatic material feeding in the field of timber construction or wood processing.
WUPWorks serves for calling up a data record for element or component processing (data transfer from CAD) and for graphic displaying of the complete element or the processing progress at the machine.
After calling up the WUP file and selecting the machining options a time and path optimized NC program based on DIN code 66025 is automatically generated by means of a postprocessor. The machine is then controlled by this NC program.



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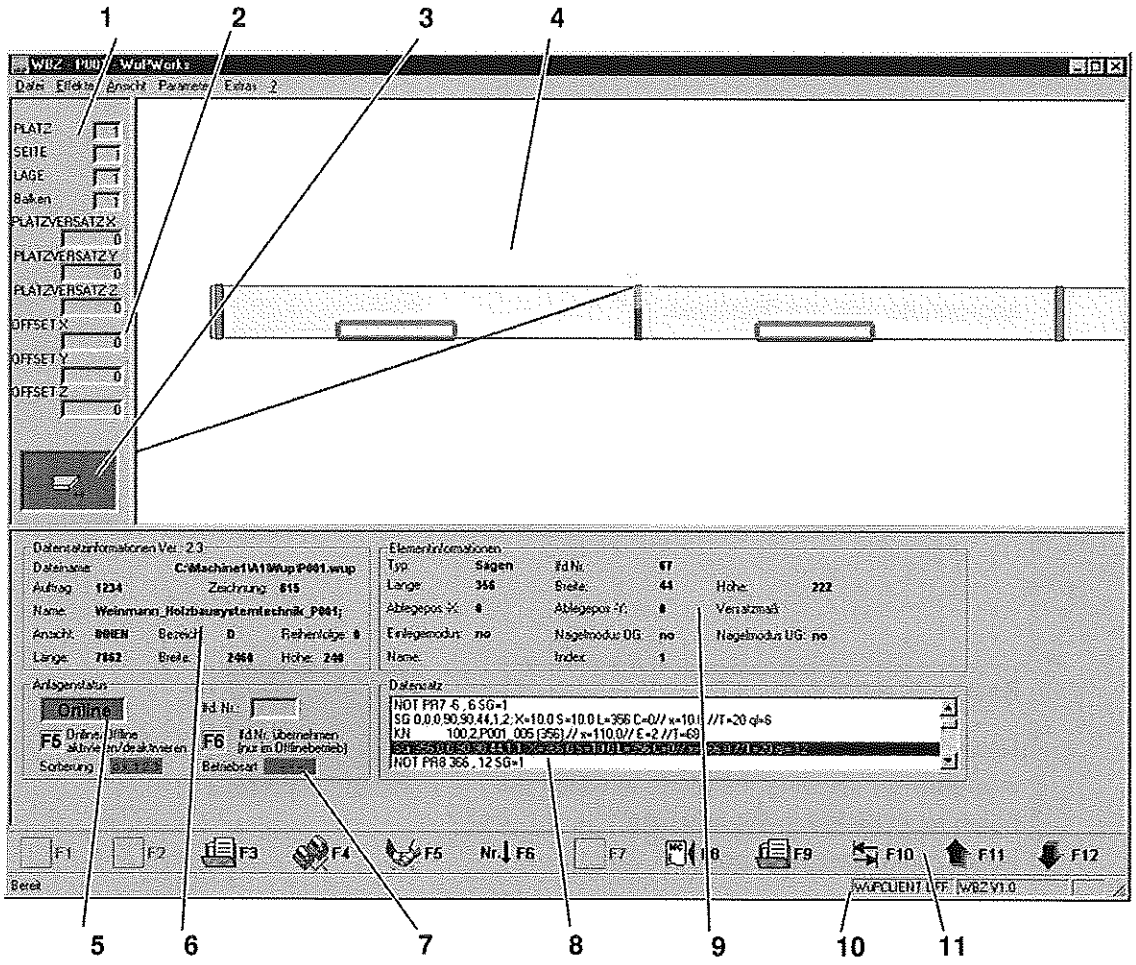
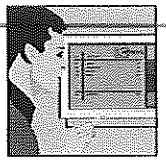
1.1 Screen layout

The screen layout comprises the following areas:

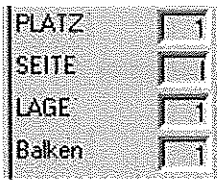


1	Display of the table and/or pocket options
2	Offset or pocket offset display
3	Beam introduction plane
4	Elementary display
5	Machine status
6	Data record head parameter
7	Machine operating mode
8	Data record display
9	Element information
10	Status bar
11	Function key bar



Display of the table and/or pocket options **1**

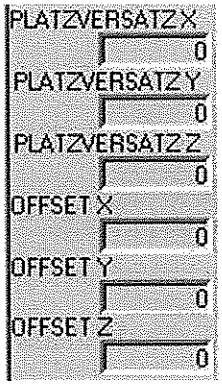
Display showing on which pocket, position, side and with which variant the element is being machined.



Offset or pocket offset display **2**

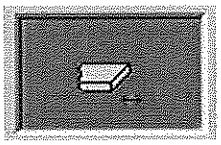
The calculated board protrusion or recess on the basis of the stop configuration and any offset entered by hand for the appropriate axis are displayed.

Position offset X/Y/Z	Was calculated automatically
Offset X/Y/Z	Was entered manually



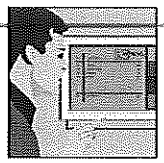
Beam introduction plane **3**

Here the beam to be machined is displayed in a graphic, showing the plane in which the beam must be fed to the machine.
In horizontal or upright position.

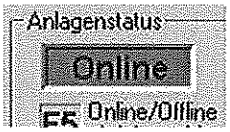


Display of the element **4**

Here the element or component to be machined and the corresponding machining steps are displayed in a graphic, which can be changed to 3D.



Machine status **5**

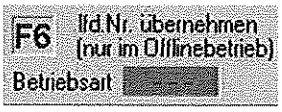


Status display of the communication with the machine control unit. Must always be on **Online** when processing takes place.

Display of data record head parameter **6**

Key data from the WUP file being processed (*.wup), that was generated by the CAD.

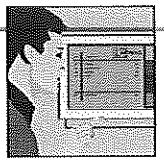
Display of the machine operating mode **7**



This display indicates whether the selection switch has been set to the manual or automatic mode.
For processing, always set to **Auto**.

Data record display **8**

Display of the processing order of the data record already generated by the postprocessor in the parameter format of the WUP file.
The current machining step is highlighted and displayed in parallel to the on-going machining with a current number.



Element information **9**

Detailed information on the current machining step, likewise in parallel to on-going machining.

Status bar **10**

Status display of the communication with programs optionally connected in series, e.g. WUPClient

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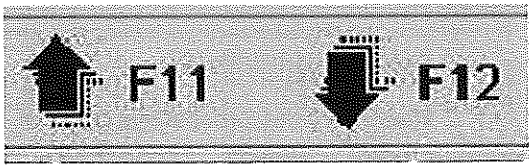
WUPClient OFF	Connection to WUPClient not switched on or interrupted
WUPClient ON	Connection to WUPClient is active

Function key bar **11**

The function keys used to initiate a direct function are shown.
If the mouse pointer is placed on one of the selectable (not gray) function keys, a quick info is shown that briefly describes the function of the key.



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2 Operation

2.1 Function keys in WUPWorks

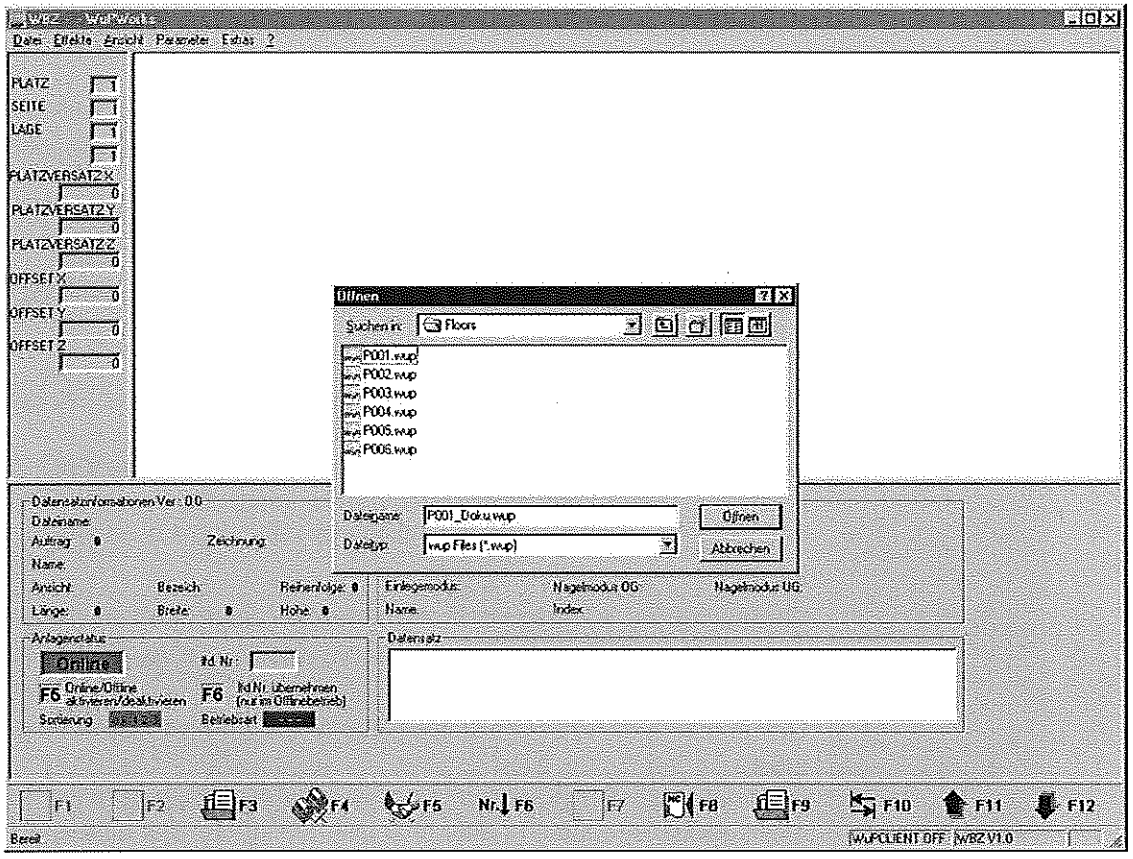
Input	Meaning
Page Up / Page Down	If cursor in data record display (7): Selection key for scrolling 1 page forwards/backwards in machining operations or components.
↑ F11 / ↓ F12	If cursor in data record display (7): Selection key for scrolling 1 page forwards/backwards line-by-line in processing operations or components.
F3	Open file or in case of linkage to cyclic control: Request order.
F4	Interrupting or reestablishing connection to the program WUPClient optionally connected in series. Only in connection with a cyclic control.
F5	Interrupting or reestablishing connection to machine control unit (switching between off-line / on-line). Function necessary to resume interrupted processing operations.
F6	Accepting the current processing step or blank (current number) in the data record display window to continue by resuming it or to restart. Prior to that F5.
F8	Generating an NC program from currently called-up WUP file using the previously selected parameters (place, position, side, offset, etc.) if a selection is possible. Option: For generation of a single piece processing (see **Options program start**).
F9	Generating an NC program from the currently called-up WUP file using new selections (option) or after changing the current file, for example using the WUPEditor.
F10	Changing to the program WUPClient optionally connected in series. Only in connection with a cyclic control.

2.2 Automatic mode

➢ Set the selector switch **[Manual/-Automatic]** on the operating panel to **Automatic**.

2.3 Select element

➢ The element selection is opened by pressing F3.



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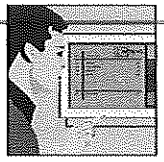
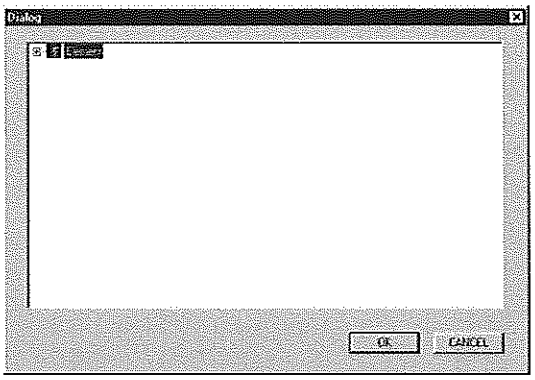
➢ Take over the element designation directly into "**File name**" from the CAD drawing or
➢ call it up by selecting the corresponding construction project directory in the machine or in the company´s internal network.

Note:
Standard path for WUP files on the machine:
C:\Machine1\A1\Wup



2.4 Selection dialogue

After selecting the corresponding WUP file the dialogue for selection of the machining process opens.



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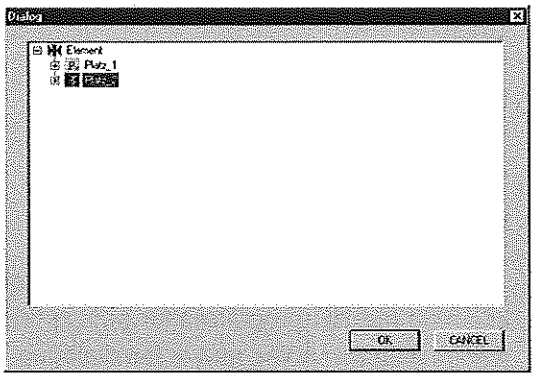
In this dialogue the processing cycle is selected using the cursor keys

or the mouse.

Note:
The selection options depend on the respective machine configuration!

Example:

➢ Selection of the machining station



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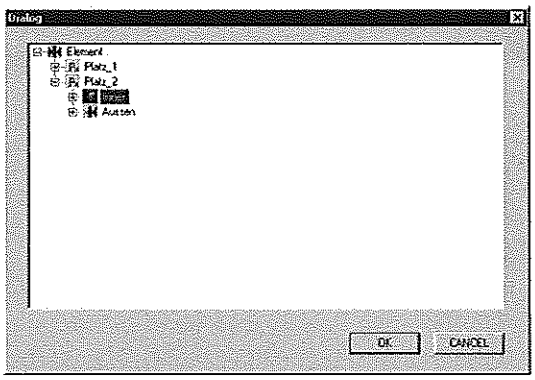
➢ Selection of the side of the element



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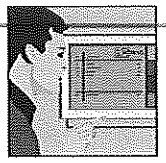
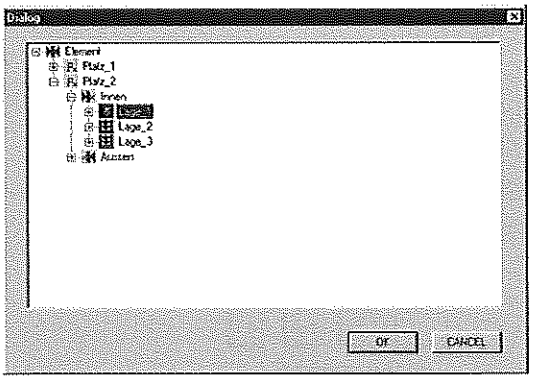
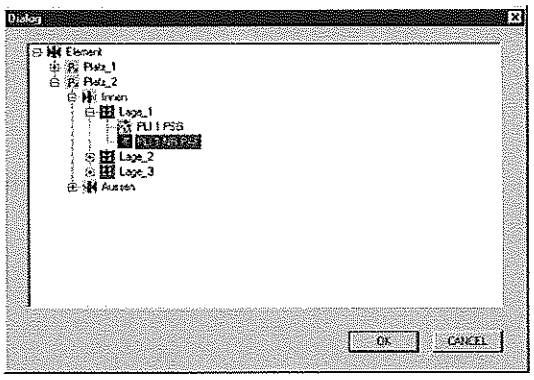


➢ Selection of the position / layer



*T:\\8482\\472030\\D00009TD.

➢ Selection of the machining process



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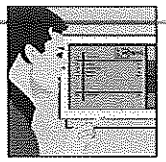
The set options are automatically generated in the NC program after having finished the selection at the end of the dialogue.

Note:
As soon as **[Cycle start]** flashes, the machine is ready for machining.



2.5 Start element machining

➢ Start machining by pressing the button **[Cycle start]**.

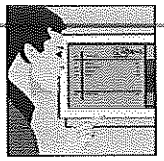
The machine starts the machining of the components or the elements.

Note:
During machining **[Cycle start]** is permanently lighted.

Caution:
When starting a machining operation, no malfunction may be active!!

This means that none of the malfunction lamps may be lighted or flash.

Eliminate any fault before starting a machining process!

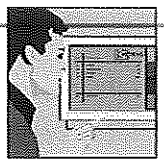


2.6 Cancel/abort element machining process

- By pressing the **[Cycle stop]** button once, the current machining operation is interrupted or stopped.
- To continue the machining operation, press the **[Cycle start]** button.
- Pressing the **[Cycle stop]** button again will abort the machining operation.

- Move the machine to home position.

Note:
By moving the selection switch **[Manual/Automatic]** to **Manual**, the machining process is aborted as well.



2.7 Resuming the element machining process

After a machining process abort or in case of a fault without the possibility to continue, it might be necessary resuming the machining process at a certain point.
For this purpose the simple **resuming function** exists in WUPWorks.

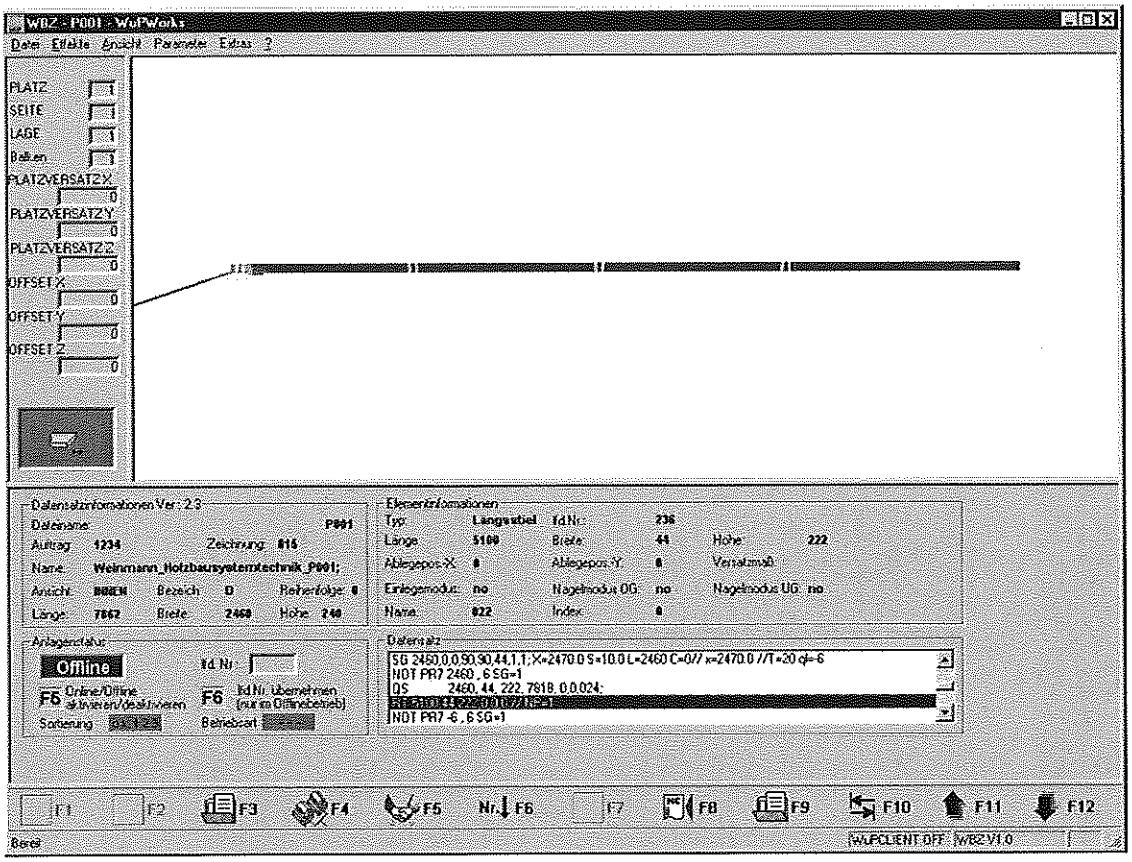
Note:
In case of machines that use or process unmachined pieces (beams, crude sheathing material, ...), a resume is only possible at the unmachined piece called up last!

In case of machines for elements manufacturing or machining, a resume is possible at any processing cycle.

Procedure

- Move the machine to home position, if necessary
- Set the selector switch **[Manual/ Automatic]** to **Automatic**
- Select element
  ➔ (see **3.1 Element selection**)

- To switch from ***On-line*** mode to ***Off-line*** mode, press the function key F5



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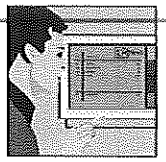


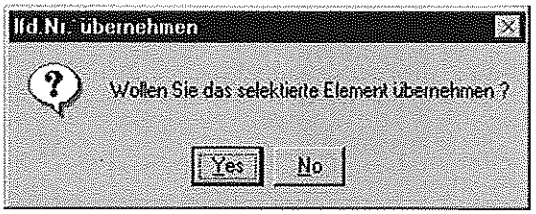
➢ Move the cursor to the data record window using the mouse

➢ To select the machining step or the last unmachined piece to resume operation, press the keys ↓ and ↑

⇨ Cursor or selection is highlighted red

➢ Accept selection by pressing F6

➢ Confirm accepting prompt (Yes / No) by pressing ↵



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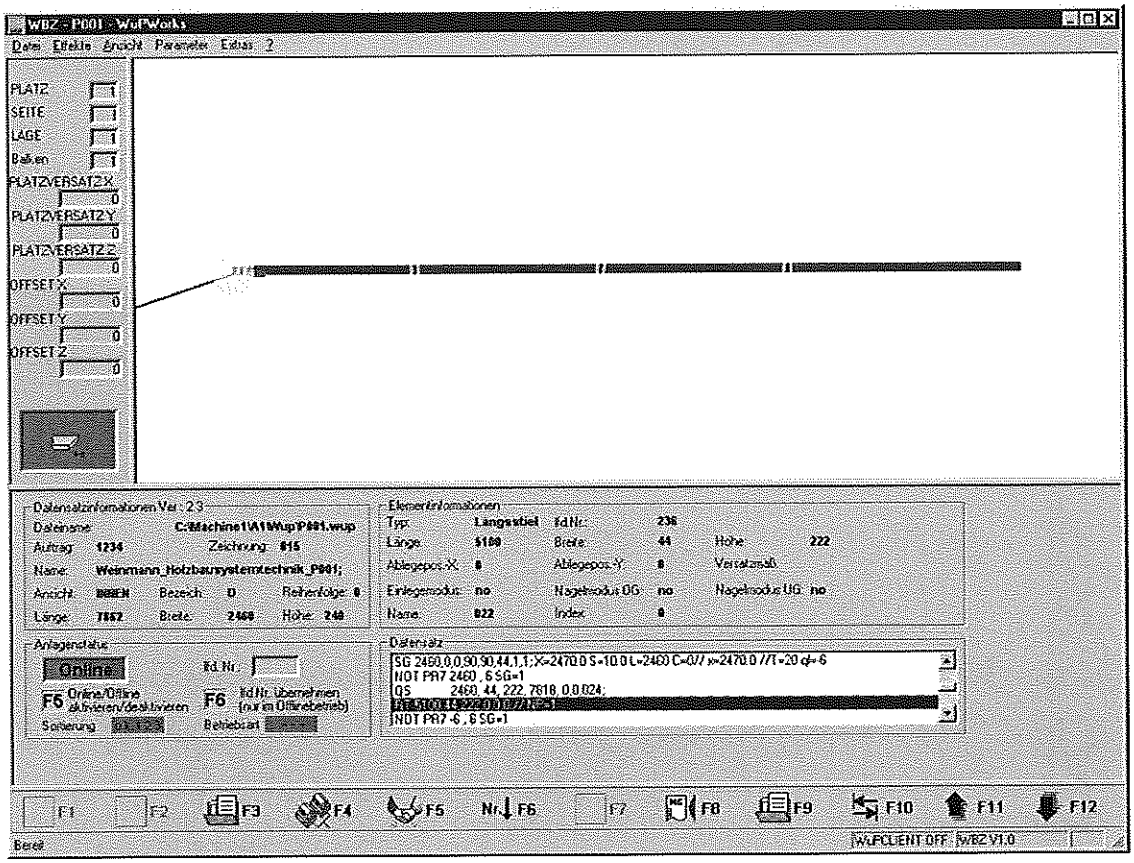
Note:
The control unit will switch back itself to the **On-line** mode.



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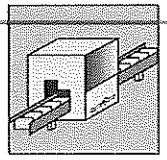
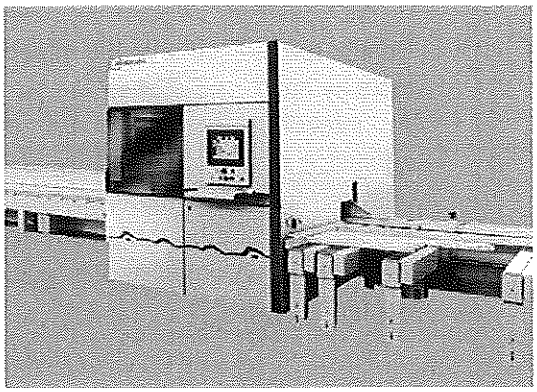
➢ To continue the machining process with the previously selected step, press the **[Cycle start]** button



With the processing center, custom sizes are automatically created for beams, boards and top and bottom booms.

Features	Values
Type WBZ 100, 120, 150	
Line voltage	400 V
Frequency	50 Hz
Control voltage	230 VAC
	24 VDC
Abutting cross-section	VDE as for group 2
Pneumatic pressure	8 bar
Quality	DIN ISO 8473-1 class 2
Air consumption approx.	3000 Nl/min
Weight approx.	4200 kg



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Note:
If FI is used – universal safety switches with 300 mA breaking current must be used

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2.3 Compressed air maintenance unit 4
2.4 Safety mechanism 5

3 Routine maintenance / care 6

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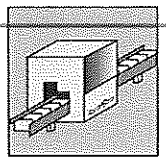
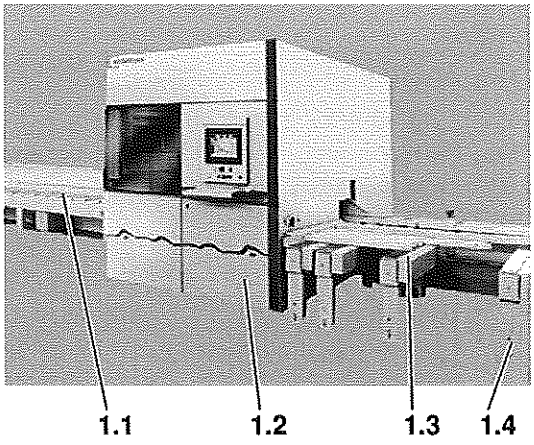


1 Functions / Sequences

Feeding in

- Beams are pushed onto the infeed roller table by hand
- At infeeding, the beam is pushed against a stop and seized by a locking unit
- During processing, the beam remains clamped at all times and is guided by the feed unit



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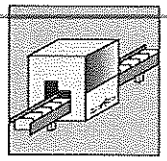
1.1	Infeed roller table
1.2	Processing center
1.3	Outfeed roller table
1.4	Support trestles

Processing

Longitudinal and transverse cuts, mitered and rafter assembly member cuts as well as trimming and drilling operations are performed depending on the variant.

Outfeeding

After processing, the beam is automatically transported out and to one side.
Support trestles are positioned at the outfeed, and the timbers are pushed onto these

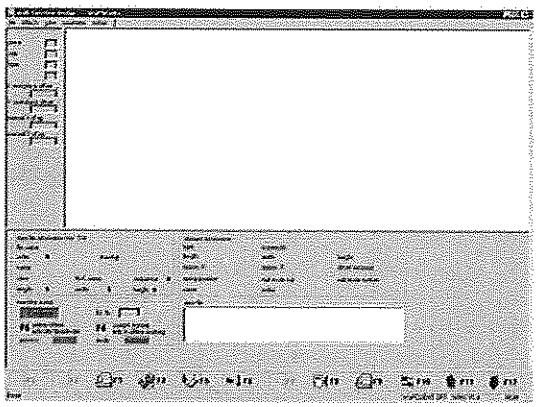


2 Operation

The work steps to be performed are carried out by the machine program

2.1 Automatic mode

- ➢ Creating a data record in CAD or with the WUPEditor
- ⇨ The element is processed automatically in accordance with the data record



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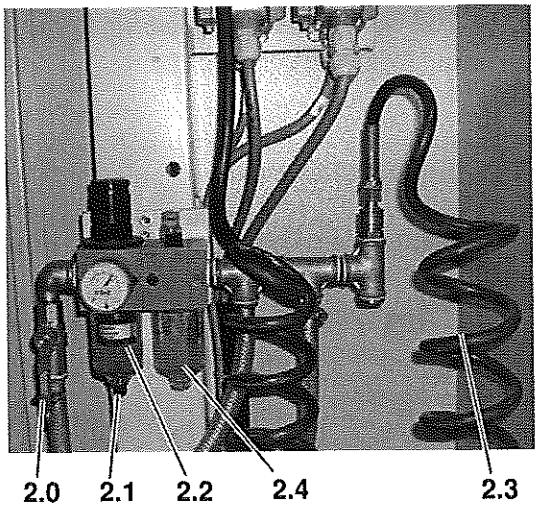
2.2 Manual mode

All movements made by the machine controls are governed by the M - functions.

2.3 Compressed air maintenance unit

This unit filters out all water, oil and dirt particles from the incoming compressed air. The precipitated condensate (water) is drained by operating manual drain valve **2.1**.



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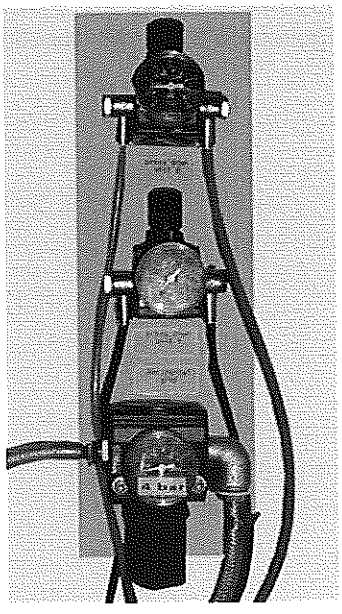
2.0	Main stopcock
2.1	Manual drain valve
2.2	Water separator
2.3	Pressurized air hose
2.4	Container for mist oils

Caution:
Oil must not be added to container 2.4, otherwise smooth functioning cannot be guaranteed and the unit can be irreparably damaged!

Layout of the maintenance unit

Note:
The outgoing lines from the manifold are all fitted with pressure controller valves. The pressure set is indicated by a label.



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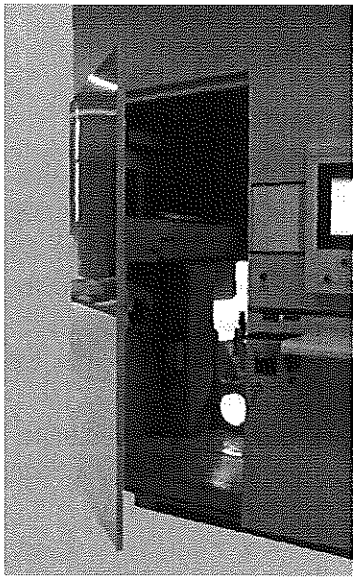
Note:
The factory-set pressure level must not be changed.
⇨ If it is, safe running of the machine is no longer guaranteed.

2.4 Safety mechanism

- In automatic mode, the door is closed! (electric locking)
- The door can only be opened if the automation is canceled or switched off.
- The automation cannot be started if the door is open



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Danger:
- During operation, do not remain inside the working area

➔ **Danger to life!**

Before maintenance and repair work:
- ➢ Turn the machine off completely
- ➢ Ensure that the machine will not be turned on unexpectedly:
  - Lock the master switch, remove the key
  - Place a warning shield on the main switch

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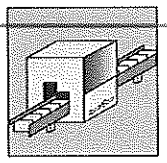


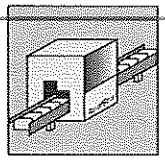
3 Routine maintenance / care

➔ no maintenance instructions necessary

3.1 Daily maintenance tasks

- Machine table: Remove the leftover pieces after every processing step.
- Blow off the entire machine (X-, Y-, Z-axes, X-, Y-, Z –drives and guides) at the end of each shift
- Wipe off the cones on the tools (HSK flange) with clean cloths
- Clean light switches on the units
- Daily inspection of central lubrication

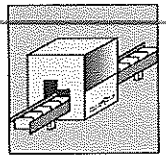
Note:
The machine operator is obligated to keep the safety equipment in proper condition and to verify proper function at regular intervals.

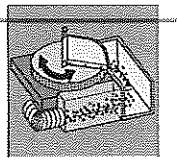


4 Troubleshooting

The following table describes remedies for common faults
When a fault occurs, the electricity and compressed air supplies must be checked in all cases

	Error description / situation	Possible causes	Remedy
1.0	**Emergency stop malfunction**		
1.1		• Emergency stop pushbutton has been actuated	➢ Release the emergency stop pushbutton and switch the pushbutton control on
2.0	**Motor safety malfunction**		
2.1		• The motor is overloaded or jammed	➢ Check unit ➢ Check motor air cooling ➢ Check setting on motor safety switch ➢ Switch on the motor safety switch
3.0	**Thermal contact malfunction**		
3.1		• The motor is overloaded	➢ Check unit ➢ Is the motor "frozen" ➢ Check input
4.0	**Braking module malfunction**		
4.1		• Braking module is overloaded	➢ Check motor air cooling or braking module ➢ Check input
5.0	**The machine does not start up**		
5.1		• Override potentiometer is set to 0%	➢ Turn up the override potentiometer



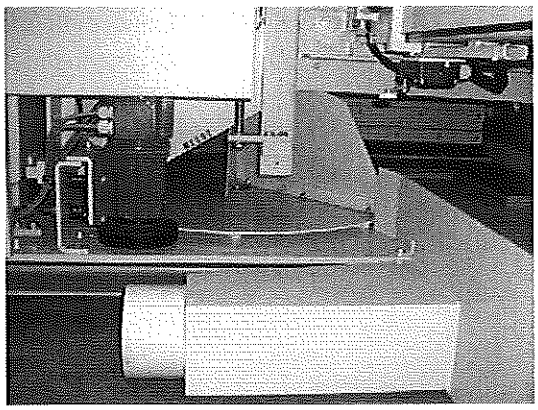


5.1.3

LANARK HOMES LT PROFI WBZ150/12 0-390-01-0049

For moving wood shavings and chips away from the machine.

Features	Values
Power	0.37 kW
Motor rotating speed	154 1/min



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2 Operation 3

2.1 Automatic mode 3

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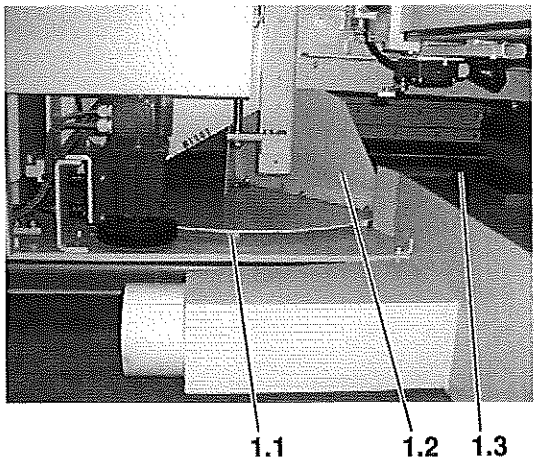
4 Troubleshooting 4

1 Functions / Sequences

The chip collector **1.1** and deflection panel **1.2** move falling wood shavings and chips aside into the path of ejector **1.3.**



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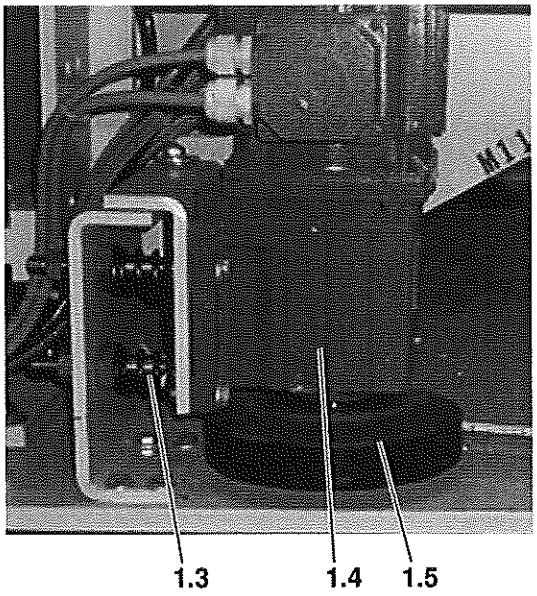
1.1	Chip collector
1.2	Deflection panel
1.3	Ejector

The chip collector **1.1** is driven by drive unit **1.4** via friction wheel **1.5**.
Friction wheel **1.5** is pressed against chip collector **1.1** by the force of spring **1.3**.



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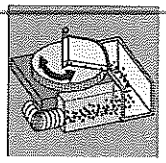
1.3	Helical spring
1.4	Drive unit
1.5	Friction wheel



2 Operation

2.1 Automatic mode

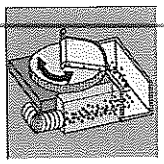
The work steps to be performed are carried out by the machine program

3 Routine maintenance / care

➔ no maintenance instructions necessary

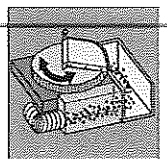
Clean motor

- Blow the motor off every day
- Clean chip collector **1.1**and ejector **1.2** every day

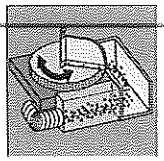


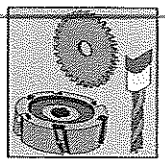
4 Troubleshooting

	Error description / situation	Possible causes	Remedy
1.0	**Chip collector is not turning**		
1.1		• Piece of wood stuck under the ejector panel and the chip collector	➢ Remove the wood
1.2		• Helical spring broken	➢ Replace the helical spring
2.0	**Motor protection Suction**		
2.1		• The motor is over-loaded or jammed	➢ Check air cooling unit/ Remove blockage ➢ Switch on the motor safety switch
3.0	**Motor protection Stationary suction**		
3.1		• The motor is over-loaded or jammed	➢ Check air cooling unit/ Remove blockage ➢ Switch on the motor safety switch
4.0	**Thermal contact Stationary suction**		
4.1		• The temperature of the motor is too high	➢ Check air cooling unit and correct any reason for faulty running ➢ Wait until the motor has cooled down
5.0	**Motor protection Chip removal Rotary table**		
5.1		• The motor is over-loaded or jammed	➢ Check air cooling unit/ Remove blockage ➢ Switch on the motor safety switch
6.0	**Thermal contact Chip removal Rotary table**		
6.1		• The temperature of the motor is too high	➢ Check air cooling unit and correct any reason for faulty running ➢ Wait until the motor has cooled down



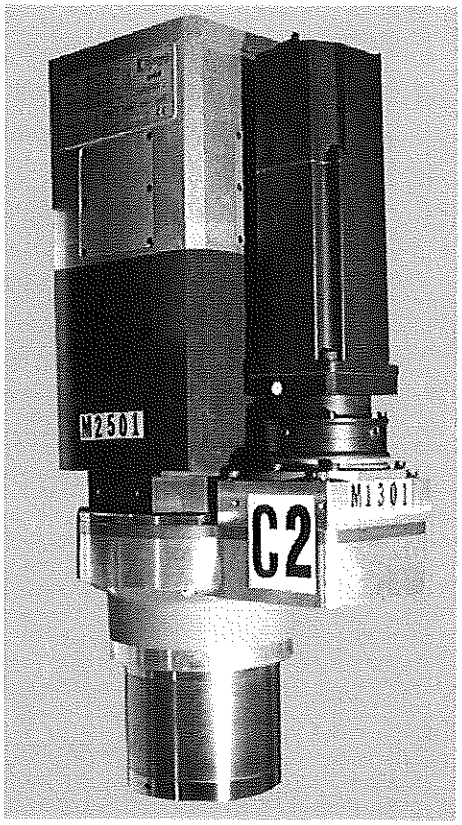
	Error description / situation	Possible causes	Remedy
7.0	**Motor protection Chip conveyor belt**		
	Error description / situation	Possible causes	Remedy
7.1		• The motor is over-loaded or jammed	➢ Check air cooling unit/ Remove blockage ➢ Switch on the motor safety switch
8.0	**Thermal contact Chip conveyor belt**		
8.1		• The temperature of the motor is too high	➢ Check air cooling unit and correct any reason for faulty running ➢ Wait until the motor has cooled down





The main spindle serves as tool holding fixture. In combination with the C axis slewing-motion actuator it is used as a driving unit for machining units that rotate around the Z axis.

Features	Values				
Power max. (according to main spindle rating plate)	7,5 [S6]	14,5	12	21	kW
Infinitely variable speed	0 - 18000		750 - 18000	0 - 30000	rpm
Tool clamper				11000	N
Voltage max.			380	520	V
Direction of rotation	Right and left				
Cooling of motor and bearings	Water cooling system				
Front sealing	Labyrinth sealing				
Filter grade				8	µm
Coolant temperature				15...45	° C



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2.2 Emergency Stop situation 4
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2.6 Dimensions of drill 11
3 Service / maintenance 12
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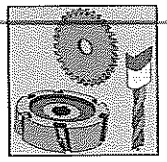
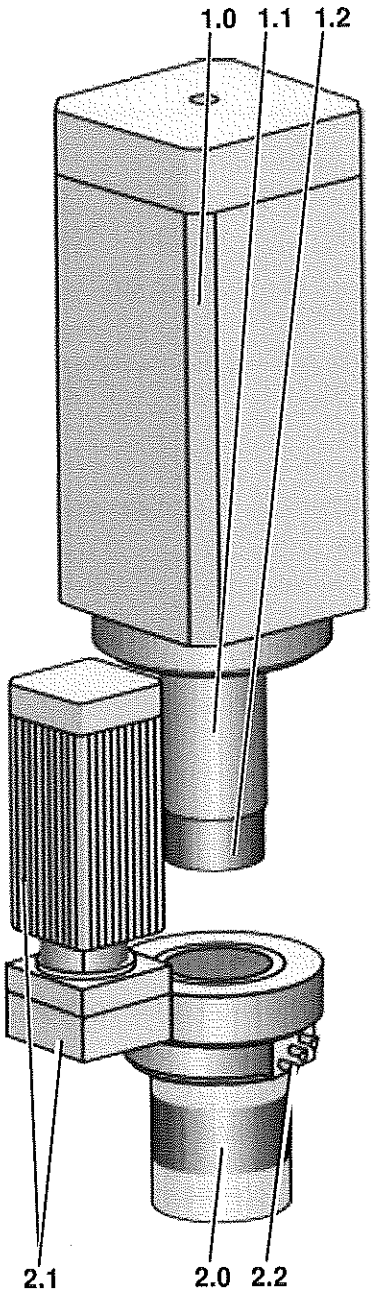


1 Functions / cycles

1.1 Design of the spindle

1.0	Main spindle with drive motor
1.1	Contact surface to hold the C axis
1.2	Automatic tool clamper for fixing tools or units
2.0	C axis with 3 ring systems for compressed air or fluids supply to the working area of the main spindle
2.1	Servo-motor with gear: Moves the rotor in both directions infinitely by 360°
2.2	Connections for compressed air or fluids



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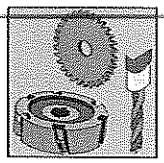
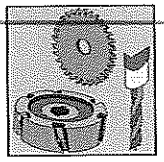


2 Operation

Danger:
The main spindle rotates at very high speed. There is a risk of mortal injury by workpieces, parts of workpieces or machine parts hurled out of the machine if the safety instructions are not observed.

The following rules must be strictly adhered to:

- Do not use the main spindle without a tool
- Only change the tools or units while the main spindle has stopped
- Only use tools and tool holding fixtures which comply with DIN 8085 and which are balanced according to standard 2060 or ISO 1940 (see tool data for balance grade)
- Correctly fix the tools in the tool holding fixture
- Observe the prescribed maintenance intervals
- Only use the machine for processing wood and plastic material
- Do not manipulate the main spindle
- Do not use the main spindle as
  - fan drive
  - other drive or
  - under water
- Instantly stop the main spindle in case of
  - any visible damage
  - strong vibrations or knocking noises
  - cooling unit or compressed air not ready



2.1 Spindle operation

Danger:
Before switching on the production equipment and beginning production, ensure that no-one will be endangered by operation of the equipment.
➔ **Danger to life!**

Startup

- Switch on the main switch on the switch cabinet.
- Check if coolant tank is filled

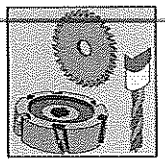
Caution:
- Do not put the spindle into operation if coolant supply is not guaranteed

Shut down

- Stop the spindle
- Remove tool from the spindle
- Switch off the main switch

2.2 Emergency Stop situation

Eliminate the cause of the **Emergency Stop** situation.



2.3 Machining tools

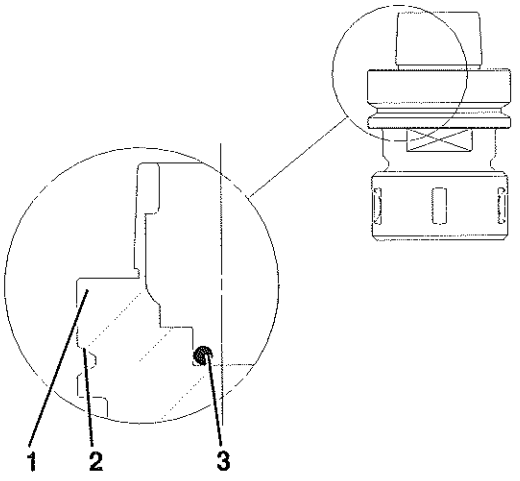
Tool holding fixture (HSK-F63)

Observe the following details when using them in tool changers:

- There must be no balancing holes at the circumference **1** and in the location groove **2**
- The surface of the location groove **2** must be ground (Rz3). The location groove **2** must be chamfered on the transition points to circumference **1**
- There must be no O-ring in hollow shaft **3**

Note:
Use for high machining capacities:

- Hydraulic expanding chuck or
- tools with firmly connected HSK-F63 shank



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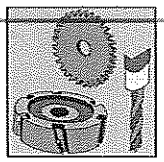
1	Circumference
2	Location groove
3	Hollow shaft

Tool data

Speed range		...24000 1/min	24000...30000 1/min
Tool diameter	max.	150 mm	30 mm
Tool weight	max.	5 kg	5 kg
Tool length (incl. holding fixture)	max.	200 mm	50 mm
Balance quality Tool holding fixture incl. clamp (dynamically balanced according to ISO 1940)		G 6,3	G 3,5
Direction of rotation		Left / right	Left / right
Radial runout	max.	0,02 mm	0,02 mm

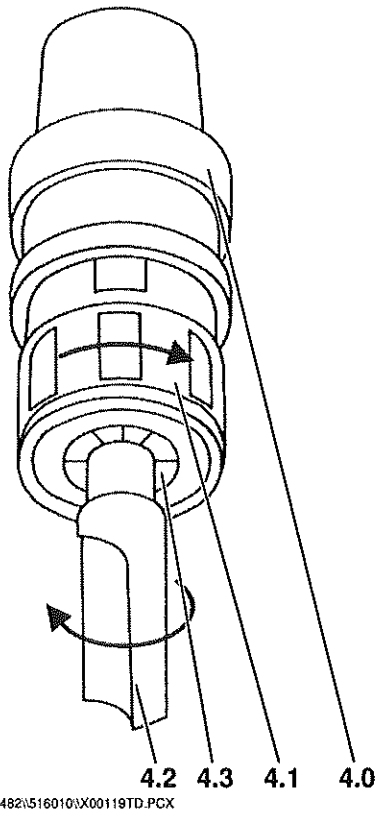
Note:
In case of speeds > 24000 tool and holding fixture must be balanced together (also after a tool service). They must not be separated afterwards.



2.4 Tool change

Clamp fixture

- ➢ Remove the tool from the tool changer
- ➢ Firmly clamp the tool holding fixture (e.g. vice with PVC – soft jaws)
- ➢ Open union nut **4.1**
- ➢ Remove tool **4.2**
- ➢ Cleaning:
  - Clamp **4.3**
  - Thread of the union nut
- ➢ Correctly insert the new tool in the holding fixture
- ➢ Tighten the union nut
- ➢ Pick up the tool data and enter them in the tool database
- ➢ Insert the tool at the unloading station of the tool changer



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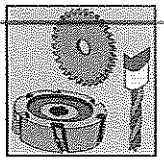
4.0	Clamp fixture
4.1	Union nut
4.2	Tool
4.3	Clamp

Danger:

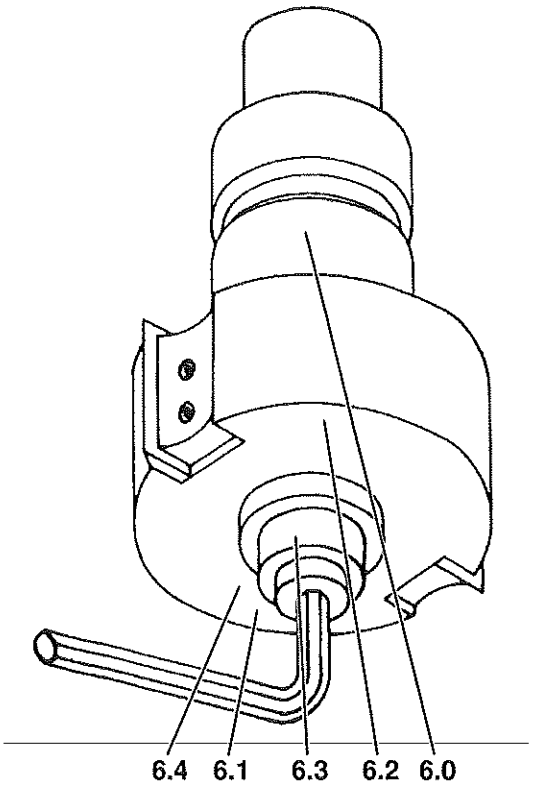
- Clamp **4.3** must have engaged in the union nut **4.1** before using the new tool
- Only use adapted clamps and holding fixtures
- Clamp fixtures are delivered with right-hand or left-hand thread of the union nut
  - Right-hand cutting tool
    Right-hand thread of the union nut
    (see drawing)
  - Left-hand cutting tool
    = Left-hand thread of the union nut



Cutter arbor

- Remove the tool from the tool changer
- Firmly clamp the tool holding fixture **6.0** (e.g. vice with PVC – soft jaws)
- Loosen hexagon socket screw **6.1** and remove the tool **6.2**
- Clean cutter arbor
- Insert tool
- Adapt cutter arbor length to hub length of the tool by means of the intermediate ring **6.3**
- Put on the conical spring washer **6.4** and tighten screw **6.1**
- Pick up the tool data and enter them in the tool database
- Deposit the tool on the tool changer position where it was unloaded

Note:
Cutter arbor length must correspond to the hub length of the tool.



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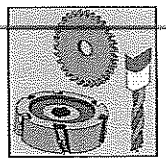
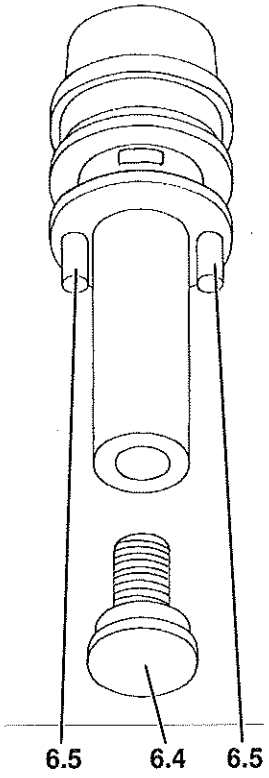
6.0	Tool holding fixture
6.1	Hexagon socket screw
6.2	Tool
6.3	Intermediate ring
6.4	Conical spring washer



Danger:
The tool is secured against twisting by means of 2 pins **6.5**

Only use tools with 2 adjacent holes.
Pitch circle for
- Cutting arbor Ø 20 mm = 32 mm
- Cutting arbor Ø 30 mm = 48 mm



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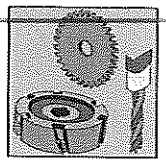
6.4	Conical spring washer
6.5	Pin

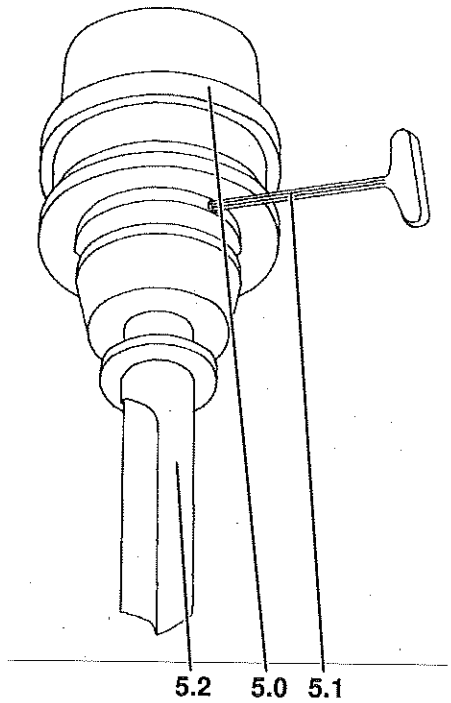


Hydraulic expanding chuck

- Remove the tool from the tool changer
- Firmly clamp the tool holding fixture **5.0** (e.g. vice with PVC – soft jaws)
- Loosen clamping screw **5.1** and remove the tool **5.2**
- Clean expanding chuck
- Check shank diameter of the new tool (25^{H7})
- Insert tool in the holding fixture as far as possible
- Tighten clamping screw **5.1**
- Pick up the tool data and enter them in the database
- Deposit the tool on the tool changer position where it was unloaded

Caution:
Wear safety gloves when changing tools ➔ **risk of injury** !

Note:
When changing tools, it is recommended to use mounting aids
(Reference: Tool manufacturer).



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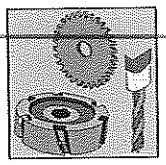
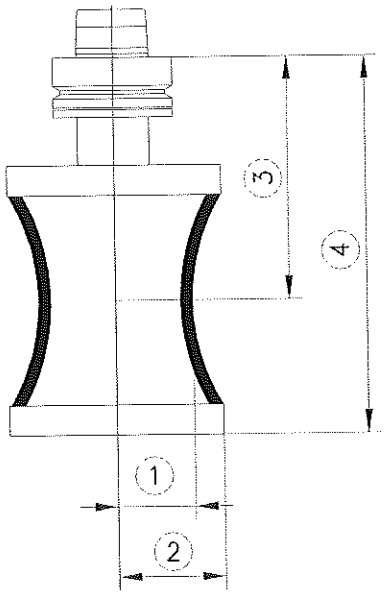
5.0	Tool holding fixture
5.1	Clamping screw
5.2	Tool

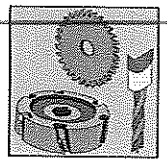


2.5 Tool measurement

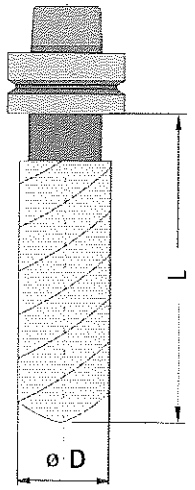
When loading new or resharpened tools, the tools must be measured again and the measured values must be entered in the tool database.

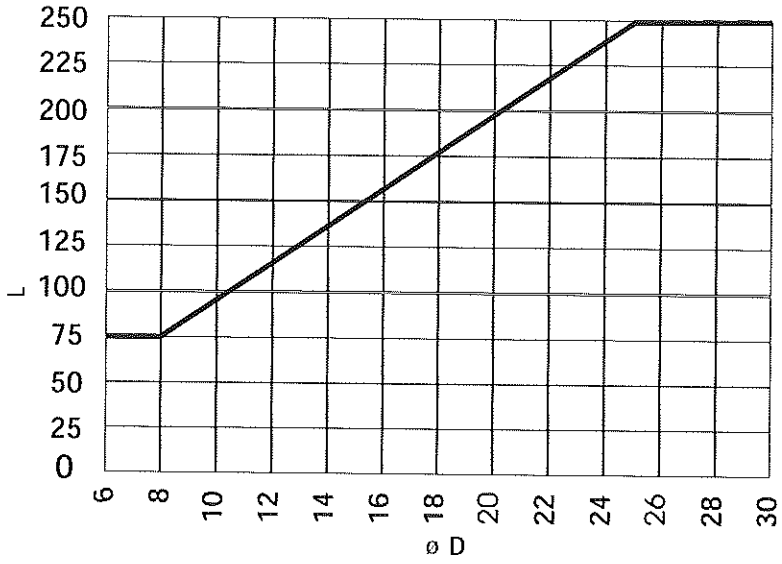


1	Smallest reference radius
2	Largest radius
3	Tool reference radius
4	Total length



2.6 Dimensions of drill





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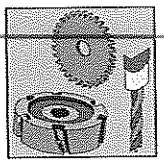
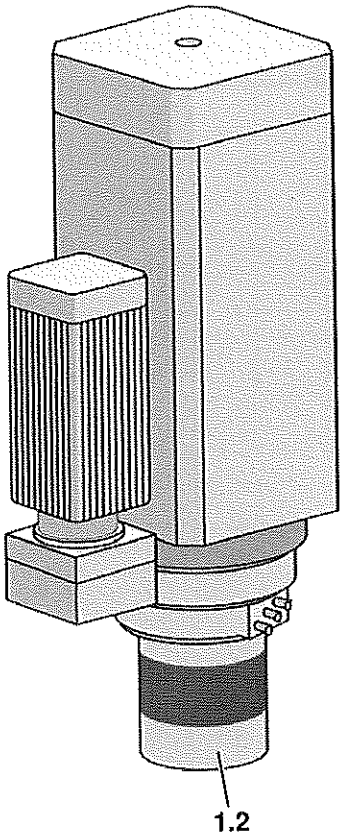


3 Service / maintenance

➔ **see service instructions !**

3.1 Cleaning the spindle cone

Daily clean the spindle cone on the automatic tool changer **1.2** with a clean cloth



1.2 Tool clamper