

# SIEMENS

## SINUMERIK

### Motion Control Information System MCIS TDI - Tool Data Information

Operating Manual

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Valid for:

SINUMERIK 840D sl / 840DE sl control system

Software  
MCIS TDI

Version  
2.4.1

From SINUMERIK Operate

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## Legal information

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 <b>DANGER</b>
indicates that death or severe personal injury <b>will</b> result if proper precautions are not taken.
 <b>WARNING</b>
indicates that death or severe personal injury <b>may</b> result if proper precautions are not taken.
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with a safety alert symbol, indicates that minor personal injury can result if proper precautions are not taken.
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We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

# Preface

## SINUMERIK documentation

The SINUMERIK documentation is organized in the following categories:

- General documentation
- User documentation
- Manufacturer/service documentation

## Additional information

You can find information on the following topics at [www.siemens.com/motioncontrol/docu](http://www.siemens.com/motioncontrol/docu):

- Ordering documentation/overview of documentation
- Additional links to download documents
- Using documentation online (find and search in manuals/information)

Please send any questions about the technical documentation (e.g. suggestions for improvement, corrections) to the following address:

[docu.motioncontrol@siemens.com](mailto:docu.motioncontrol@siemens.com)

## My Documentation Manager (MDM)

Under the following link you will find information to individually compile OEM-specific machine documentation based on the Siemens content:

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- [www.siemens.com/sitrain](http://www.siemens.com/sitrain)  
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## FAQs

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## **SINUMERIK**

You can find information on SINUMERIK under the following link:

[www.siemens.com/sinumerik](http://www.siemens.com/sinumerik)

## **Target group**

The operating manual is aimed at all machine tool users. The document describes all the facts the user needs to know.

## **Benefits**

The operating manual allows the target group to get familiar with the software user interface. Based on the manual, the target group is capable of responding to problems and to take corrective action.

## **Standard scope**

This documentation describes the functionality of the standard scope. Extensions or changes made by the machine manufacturer are documented by the machine manufacturer.

Other functions not described in this documentation might be executable in the control. This does not, however, represent an obligation to supply such functions with a new controller or when servicing.

Furthermore, for the sake of clarity, this documentation does not contain all detailed information about all types of the product and cannot cover every conceivable case of installation, operation or maintenance.

## **Technical Support**

You will find telephone numbers for other countries for technical support in the Internet under <http://www.siemens.com/automation/service&support>

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# Introduction

## 1.1 Product overview

### Product Information

**TDI**(Tool Data Information) is a function block of the Motion Control Information System (MCIS) for visualization of the tool stock and timely provision of the necessary tools at the machine.

From MCIS TDI V2.4 and higher it is now also possible to connect controls equipped with SINUMERIK Operate to a TDI server.

## 1.2 Calling TDI

### Procedure



1. The control system has booted and the operating areas are displayed.
2. Press the "TDI" softkey.

The last window used by the user in TDI is displayed.

If no TDI window has been selected, an overview of the available magazines and containers is displayed.





## Prerequisite

### Activate ePS Network Services

To be able to use TDI, the "ePS Network Services" software must be activated.

### References

Information regarding the activation of the software is available in the "MCIS TDI" Software Installation Manual.

### Connect machine/server

For the machine/server connection, the machines and users must have been created in Access.

### References

The corresponding procedure is described in the "ePS Network Services" Function Manual, in the chapter: Management.



## Overview of tool data

### Overview of tool data

An overview of the tool configuration is shown in the "Tool actual data" window.

The existing directories with all magazines and containers are shown in the left hand area of the window.

The contents of the directories selected at the left are displayed in the right-hand window area.

The content is sorted alphanumerically in ascending or descending order.

Column	Meaning
Configuration	Configured system
Node	Unique node name within the system
Magazine	Name of the machine magazine
Location	Location number
Tool identifier	Tool identifier
Duplo	Duplo number
Status	Status display
Cutting edges	Cutting edge number

### Tool data management

The following functions are available for you to manage tool data:

- Importing/exporting tool data (Page 23)
- Configuring filters (Page 15)
- Showing properties (Page 19)

- Lock/unlock tool (Page 21)
- Changing the tool life (Page 21)

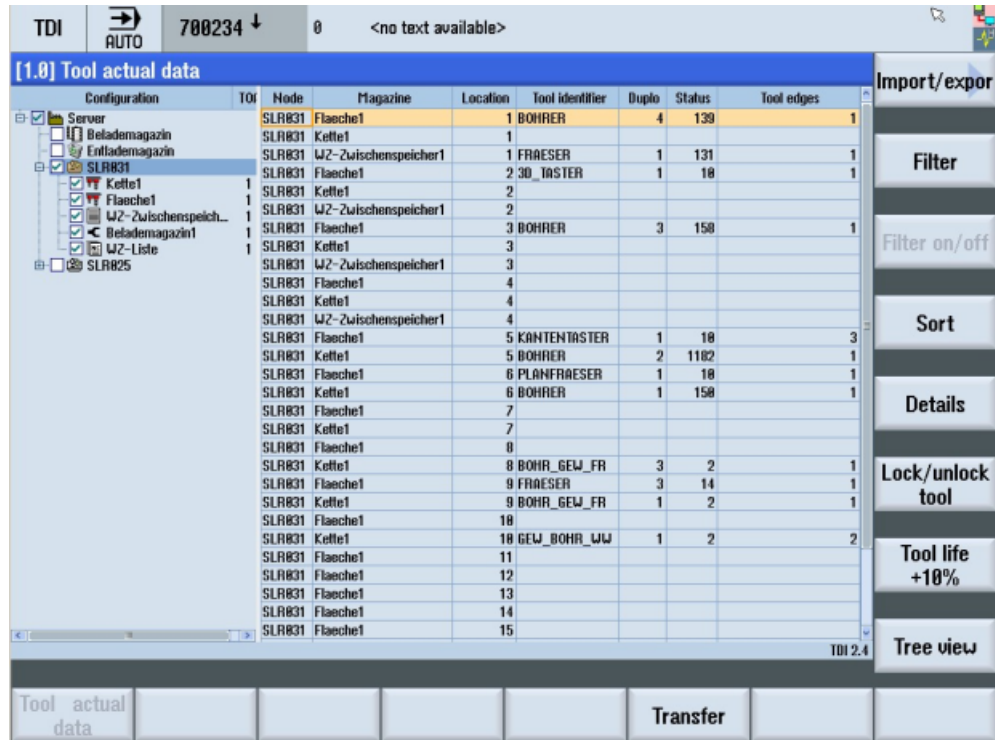


Figure 3-1 "Tool actual data" window

### Display/update view



Press the softkey "Tree view", to toggle between the view of the tool actual data with and without directory structure of the configuration.

## 3.1 Switching filter on/off

You have the option of influencing the tool display by applying filter conditions therefore restricting the selection of visible tools.

### Precondition

Filter settings have already been defined.

### See Chapter:

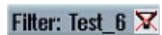
Filter settings (Page 15)

Save filter (Page 16)

Edit filters (Page 18)

### Procedure

1. The "Tool actual data" window is open.  
The filter name and a filter symbol are displayed in the status display.
2. Press the softkey "Filter on/off", to activate or deactivate the selected filter.  
If, for example, the filter is deactivated, then a filter symbol with a slash through it is displayed.



### 3.2 Sort tool data

You have the option to display the tool data sorted individually. The criteria for sorting can be defined via the user interface.

#### Criteria

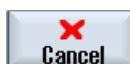
- Up to three sorting criteria can be defined.
- The criteria are selected via a drop-down list box. The drop-down lists contain the column designations of the tool data.
- The priority of the sorting order is from the upper, to the medium and to the bottom criterion.
- Via an option field you select whether sorting shall be in ascending or descending order.

#### Procedure

1. Position the cursor on the desired directory of the tool data.
2. Press the ">>" softkey.  
Additional softkeys are displayed on the vertical bar
3. Press the "Sort" softkey.  
The "Sorting settings" window opens.



4. Select the desired sorting criteria according to which you want the tool data to be displayed.
  5. Press the "OK" softkey.  
The tool data will be displayed, sorted according to the specified criteria.
- OR -
- Press the "Cancel" softkey if you want to make no sorting. the window is closed.



## 3.3 Configuring filters

### 3.3.1 Filter settings

You have the option to use each column in the list of tool actual data that is displayed as filter criterion.

The following is listed depending on column type:

- Selecting or deselecting using a check box
- Detailed information

#### Filter criteria

Since the individual columns of the tool actual data are automatically listed as filter criterion, the subsequent filter criteria are only shown as an example:

Filter criterion	Description
Locked tools	Selection between locked or unlocked tools: <ul style="list-style-type: none"> <li>• locked</li> <li>• Not locked</li> </ul>
Prewarning limit	Selection between tools which have reached the prewarning limit or which have not yet reached the prewarning limit: <ul style="list-style-type: none"> <li>• reached</li> <li>• not reached</li> </ul>
Unload identifier	Selection of tools with or without unload identifier: <ul style="list-style-type: none"> <li>• set</li> <li>• Not set</li> </ul>
Load identifier	Selection of tools with or without load identifier: <ul style="list-style-type: none"> <li>• set</li> <li>• Not set</li> </ul>
Tool identifier	Input of partial text with placeholder
Duplo No.	Input of partial text/number with placeholders
Locations	Selection of the tool locations: <ul style="list-style-type: none"> <li>• All locations</li> <li>• Any location</li> <li>• Only free locations</li> <li>• Only locked locations</li> </ul>
Remaining unit quantity	Limit the remaining unit quantity with input "from" / "to".
Remaining tool life	Limit the tool life in minutes, with the input "from" / "to".

---

**Note**

**Several filter criteria selected**

If you activate the following filters in parallel, then only the tools that meet one or the other criterion are displayed:

- "Locked tools"
  - "Prewarning limit"
  - "Remaining unit quantity (parts) from ... to ... "
  - "Remaining tool life (minutes) from ... to ... "
- 

**See also**

Save filter (Page 16)

Edit filters (Page 18)

**3.3.2 Save filter**

You can save any individually set filter.

**Save filter**

Display	Description	
Filter name	Any filter name with a maximum 40 characters.	
Comment	Freely selectable text as a comment to a filter setting.	
Application	Global	Filter can be used in the entire DNC system.
	Local	A filter can only be used at the machine, for which the filter was originally created.
	User defined	A filter can only be used by the technician who created it.

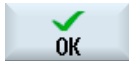
**Procedure**



1. You have selected the filter criteria and wish to save these settings.
2. Press the "Save filter" softkey.  
The "Save filter" window is opened.



3. Enter the filter name into the entry field "Filter name".  
You obtain a confirmation prompt if you use an existing name.  
Acknowledge the query,
  - as to whether the name should be overwritten
  - OR -
  - whether it should be canceled in order to change the name.Enter the new name and optionally a comment in the entry field.
4. Press the "OK" softkey to save the filter.



- OR -



Press the "Cancel" softkey to reject the settings.

---

**Note**

The change is not made in the saved filter, but is only used as temporary filter.

---

**See also**

Filter settings (Page 15)

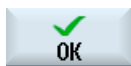
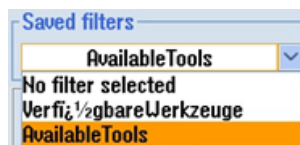
### 3.3.3 Edit filters

You have the option of reloading filter settings that have already been saved to activate them as filter or to edit the filter settings.

#### Filter download

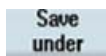


1. The "Saved filters" window area is displayed.
2. Press the "Load filter" softkey.  
The selection box with the saved filters is activated. In the selection box, you can display the existing filters in alphabetical order.

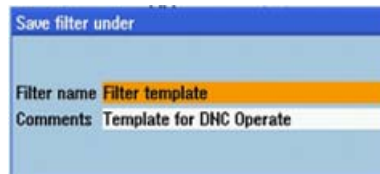


3. Select the desired filter using the cursor and click the "OK" softkey.  
The filter settings are displayed.

#### Saving the filter under a different name



1. If you changed the settings of a filter that has been saved, then you can save the filter under a different name.  
Press the "Save as" softkey.  
The "Save filter as" window is opened.



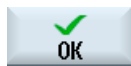
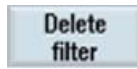
2. Enter the new filter name and optionally a new comment.
3. Press the "OK" softkey to confirm your entry.  
The filter settings are applied and activated as a temporary filter.

#### Reset filter



1. Press the softkey "Reset filter", to reset the filter criteria that were individually set.  
If you saved the filter that was reset under the same name, then the conditions are retained.

### Delete filter



1. Using the cursor, in the filter list select the filter that you want to delete.
2. Press the "Delete filter" softkey.  
A confirmation prompt appears.
3. Press the "OK" softkey to remove the filter settings from the filter list.

### See also

Filter settings (Page 15)

## 3.4 Showing properties

### Use

Additional information is displayed for a tool selected in the list. In addition to the standard properties of the tool management, all supplementary management data, such as creator, creation date and the date of the last change are also displayed.

With the appropriate authorization, you also have the option of changing some data.

You can individually set-up the view of the properties in a configuration file. To do this, contact your local Siemens sales representative.

### Example of a view

#### General tool data

Properties	Meaning
Node	File/tool name
Magazine	File/tool type
Location	Location number
Identifier	Tool name
Duplo No.	Duplo number
Tool type	Number of the tool type
Number of cutting edges	Specifies the number of cutting-edges
Size in half locations	Half location size: Left, right, top and bottom
Tool status	Status of the tool
Monitoring	Specification of the monitoring

**Cutting edge data**

The following data can be displayed and in some cases changed for each cutting-edge:

Properties	Meaning
Compensation	Tool length compensation – can be changed.
Geometry	Geometry data - cannot be changed.
Wear	Wear data - can be changed.
Monitoring	Monitoring data (unit quantity/tool life) - can be changed. Remaining value Setpoint Prewarning limit

**Procedure**

1. Position the cursor on the file or directory whose properties you wish to display or change.
2. Press the "Details" softkey.
 

A scroll bar may appear depending on the number of items of data. The "Tool actual data - tool data details" window opens and you obtain additional information on the tool data - or you can change some of the data.
3. Press the "Tool +" softkey, to switch directly to the next tool.
 

- OR -

Press the "Tool -" softkey, to switch directly to the previous tool.
4. Press the "Cutting edge +" softkey, to switch to the next cutting edge.
 

- OR -

Press the "Cutting edge -" softkey, to switch to the previous cutting edge.
5. Press the "Change tool type" softkey.
 

A selection of all tool types will be displayed.
6. Press the "Change state" softkey.
 

All states will be displayed for selection in a window.
7. Press the "OK" softkey to save changes.
 

- OR -

Press the "Cancel" softkey to reject any changes that you have made and to return to the overview of the tool data.

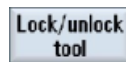
## 3.5 Lock/unlock tool

You have the option to lock a tool so that it cannot be used anymore - and also to unlock it again.

### Precondition

- Check the tool before you lock it or unlock it.
- You require the access rights: Protection level 1 (password: machine manufacturer).

### Procedure



1. Position the cursor on the tool to be locked or unlocked.
2. Press the "Tool (un)lock" softkey.  
You obtain a confirmation prompt whether you really wish to lock or unlock the tool.
3. Press the "Tool (un)lock" softkey again if you wish to use the tool again.

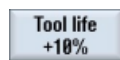
## 3.6 Changing the tool life

You have the option to increase the life of a tool selected in the list by a certain percentage.

### Precondition

Check the tool before you increase its tool life.

### Procedure



1. Position the cursor on the tool in the tool list.
2. Press the "Tool life +10%" softkey.  
The tool life is increased by 10% each time the softkey is pressed up to a maximum of 100%.  
You can also customize the percentage of increase for the tool lifetime.  
To do this, contact your local Siemens sales representative.



## Importing/exporting tool data

### 4.1 Setting import and export properties

In the "Import / export settings" window, enter specific default settings, which become automatically effective for import or export.

#### Import

Setting	Meaning
Default directory	Define an import directory, so that for each import you do not have to search in the directories for an import directory. Enter the complete path in the correct syntax.  Note: It is possible to select any directory, also when specifying a preselected directory.
Forcing a Duplo No.	When importing tools a duplo number is automatically added. Starting from 1, the next available duplo number is automatically assigned.  Note: Older tools can also have a higher duplo number When importing, the already defined duplo number is transferred into the import tool data set. An error message is output if this already exists for the tool.
Forcing a T number	Each tool requires a tool name for identification purposes. In the tool management, in addition a locally unique T number is allocated.  During import the T number that has already been defined is accepted in the import - tool data set. An error message is output if this already exists for a tool.

#### Export

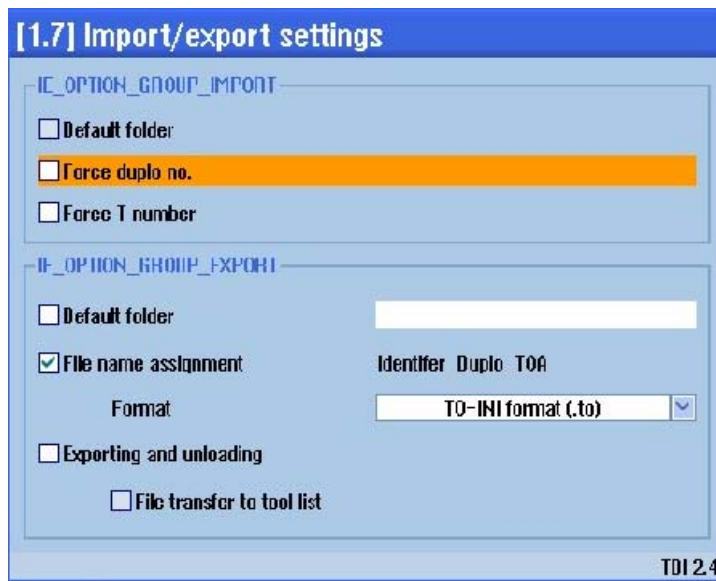
Setting	Meaning
Default directory	Define an export directory, so that for each export you do not have to search in the directories for an export directory. Enter the complete path in the correct syntax.  Note: It is possible to select any directory, also when specifying a preselected directory.
Allocating a file name	The file name is assigned automatically and displayed if no individual file name for the exported tool data is entered.

Setting	Meaning
Format	Select a tool data format from a selection window. <ul style="list-style-type: none"> <li>• to-ini format (.to)</li> <li>• xml format (.xml)</li> <li>• json format (.json)</li> </ul>
Exporting and unloading	Copy tool data and simultaneously remove from the source directory.
File transfer into the tool list	Select file transfer into the tool list if the check box "Exporting and unloading" is selected. The tool data lose their magazine location reference; however they can still be used.

**Procedure**



1. The "Tool actual data" window is open.  
Press the "Settings" softkey.  
The "Import / export settings" window is opened.



2. Select the corresponding check box to activate the desired default setting.
3. Press the "OK" softkey to save the setting.





## 4.2 Importing tool data

From the user interface, you have the option of importing tool data from a drive directory into the central TDI database.

### Precondition

Only formats are imported that are supported by MCIS.

### Procedure

1. The "Tool actual data" window is opened and the overview of the tool data is displayed.



2. Press the "Import/export" softkey.

The window for the import or export of tool data is opened.

3. In the overview, using the cursor, select a magazine or container directory into which the data are to be imported.



4. Press the "Import from file" softkey.

The "File selection for tool import" window is opened and lists all of the configured directories.

#### Note

In order to read in the files into TDI, the data must correspond to defined MCIS formats.

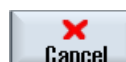
See: Operating manual, Tool Data Information System

5. Select the drive and position the cursor in the directory in which the files are located.



6. Press the "OK" softkey to start the import.

- OR -



Press the "Cancel" softkey to close the selection window. No import is started and the selection of the target directories is rejected.



7. Press the "<<" softkey in order to return to the overview of the tool data.

### 4.3 Exporting tool data

From the user interface, you can export tool data from the central TDI database to a drive directory.

#### Precondition

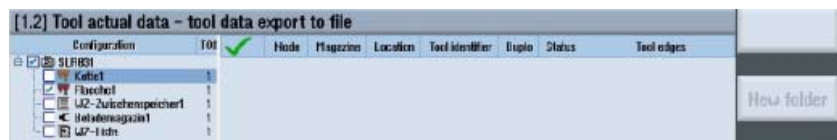
Only formats can be imported that are supported by MCIS.

#### Procedure

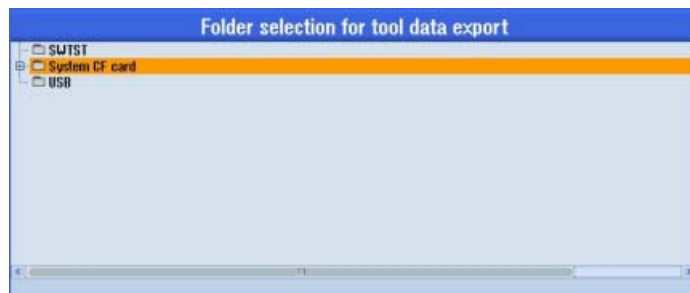
1. The "Tool actual data" window is opened and the overview of the tool data is displayed.
2. Press the "Import/export" softkey.  
The window for the import or export of tool data is opened.
3. Use the cursor to select a magazine or container directory, whereby a multiple selection is also possible.



4. Press the "Export in file" softkey.  
The "Tool actual data – tool export in file" window is opened
5. Now select the required data sets, in which the selected tool data are saved as file.



6. Press the "Export" softkey.  
The "Directory selection for tool export" window is opened and lists all of the configured directories.



7. Select the desired location for archiving and position the cursor in the directory in which you wish to export the files.

- OR -



Select the required location for archiving and press the "New directory" softkey to create a suitable subdirectory.

The "New directory" window opens.



Enter the required name and press the "OK" softkey.

The directory is created below the selected folder.



8. Press the "OK" softkey to start the export.

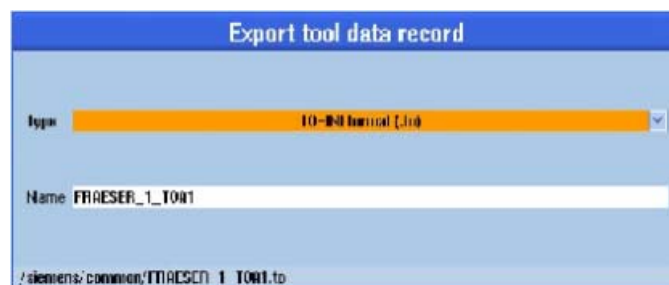
If the target directory does not exist, then it will be created.

If the target file already exists, then you obtain the following messages:

- Overwrite file

- OR -

- Save the file under a different name
  - From the "Type" selection field, select the required format, for example to-ini
  - Enter the new name in the "Name" field.



9. Press the "OK" softkey to start the export.

- OR -



Press the "Cancel" softkey to close the selection window. No imports are started and the selection of the target directories is rejected.



10. Press the "<<" softkey in order to return to the overview of the tool data.



## Transferring tool data

### 5.1 Preparing tool data for transfer

In the "Transfer" window you obtain an accurate overview of the tools to be moved.

The window is split into two parts:

In one window area, select the tools that are to be transferred, and in the other window area, you can simultaneously identify the actual tool requirement.

- All of the higher-level tool magazines of all of the local components (operating/installation location) are displayed within the system hierarchy in the upper window area.
- The local system components are shown in the lower window area.

#### Procedure



1. The "Tool actual data" window is opened and the overview of the tool data is displayed.

2. Press the "Transfer" softkey.  
The "transfer" window appears.

3. As the source, select any magazines and containers.  
Multiple selection is also possible.

In order to obtain a better overview, the data can be displayed sorted and filtered.

See Chapter: Switching filter on/off (Page 13)

4. Only enter one directory folder as target (magazine/container). You can also display its file contents individually filtered and sorted.



5. For each selection of the tool data sets, press the "Accept" softkey.

The selected tool data are added to the transfer list.

See Chapter: Editing the transfer list (Page 30)

## 5.2 Setting the transfer properties

### Transfer settings

In the "Transfer settings" window, enter the default settings that become automatically active for the transfer.



1. Press the "Settings" softkey to define the basic functions for the transfer. The "Transfer settings" window opens.



2. Select the check box to automatically allocate duplo numbers. Starting from 1, the next available duplo number is automatically used.
3. Press the "OK" softkey to confirm your selection.  
- OR -  
Press the "Cancel" softkey to reject the selection and close the window.

## 5.3 Editing the transfer list

In the "transfer list" window, organize the tool data and then start the transfer.


### Precondition


The "Transfer" window is open and you have already added tool data to the transfer list.


Column	Meaning
Tool	Tool identifier and duplo number of the source
Source	Machine and magazine/container
Location	Location number
Target	Magazine/container

Column	Meaning	
Location	Location number	
Status	Finished	Ready
	Started	Started
	Canceled	Canceled
	Creating	Creating
	Unloading	Unloading
	Loading	Loading
	Searching	Searching
	Deleting	Deleting
	Relocating	Relocating

### Organizing the transfer list


- 


1. Press the "Transfer list" softkey.  
The transfer list window is opened and displays the transferred tool data.
- 


2. To achieve the optimum order of execution, you can still move the tool data sets in the transfer list.  
Press the "Organize" softkey.  
An additional vertical softkey bar is opened.
- 

3. Select the tool data set using the cursor.

4. Press the "Up" softkey to move the selected data set one position upwards.

- OR -
- 

Press the "Down" softkey to move the selected data set one position downwards.
- 

5. If you want to delete a tool data set from the transfer list, position the cursor on the data and press the "Delete" softkey."
- 

6. If you have finished editing the transfer list, press the "<<" softkey.

## 5.4 Starting the transfer

### Precondition

The "Transfer" window is open and you have already added tool data to the transfer list.

### Starting/canceling transfer



Press the "Start transfer" softkey.

Execution of the list is started. The tool data sets are moved from the specified source to the specified target as shown in the list.



If data transfer takes too long, press the "Cancel transfer" softkey.



Press the "<<Back" softkey to return to the "Transfer" window.



## Appendix A

### A.1 List of abbreviations

<b>C</b>	
CAM	Computer-Aided Manufacturing
CF Card	CompactFlash Card: Memory card
CNC	Computerized Numerical Control: Computer-supported numerical control
CoL	Certificate of License
COM	Communication
CU	Control Unit
CP	Communication Processor
CPU	Central Processing Unit: Central processing unit

<b>D</b>	
DB	Data Block (PLC)
Dbxy	Data block (e.g. B 59)
DHCP	Dynamic Host Configuration Protocol: Dynamic assignment of an IP address and other configuration parameters on a computer in a network
DNC	Direct Numeric Control
DIR	Directory: Directory

<b>H</b>	
h	Hour
HMI	Human Machine Interface, SINUMERIK user interface
HW	Hardware

<b>I</b>	
IH	Maintenance
IIS	Microsoft Internet Information Service

<b>M</b>	
MCI	Motion Control Interface
MCIS	Motion Control Information System
MCIS MDA	MCIS Machine Data Acquisition
MCP	Machine Control Panel

Appendix A

A.1 List of abbreviations

MD	Machine data
MLFB	Machine-Readable Product Code
MPI	Multi Port Interface: Multiport Interface
MS	Microsoft
MSDE	Microsoft Data Engine
MCP	Machine Control Panel

<b>N</b>	
NC	Numerical Control: Numerical control
NCK	Numerical Control Kernel: Numeric kernel with block preparation
NCU	Numerical Control Unit: NCK hardware unit

<b>O</b>	
OB	Organization block in the PLC
ODBC	Open Database Connectivity
OEM	Original Equipment Manufacturer
OLE	Object Linking and Embedding
OP	Operator Panel: Operating equipment
OPI	Operator Panel Interface: Interface for connection to the operator panel
OPC	OLE for Process Control

<b>P</b>	
PC	Personal Computer
PCMCIA	Personal Computer Memory Card International Association
PCU	PC Unit: Computing unit
PG	Programming device
PDA	Production Data Acquisition: Production data acquisition
PLC	Programmable Logic Control: PLC
PMT	Parts Monitoring and Tracking: Parts tracking
PN	PROFINET
PO	POWER ON
ProToolPro	Configuration tool
PWS	Personal Web Server

<b>S</b>	
SK	Softkey
TSS	Tool Setting Station
SW	Software

<b>T</b>	
TDI	Tool Data Information
TLCA	Catalog Data Tool Library CA
TLCU	Tool Library Customer
TLCUA	Tool Library Customer Assemblies, complete tools

<b>W</b>	
WCS	Workpiece Coordinate System
T	Tool
TLC	Tool Length Compensation
WOP	Workshop-Oriented Programming
WPD	WorkPiece Directory: Workpiece directory
TRC	Tool Radius Compensation
T	Tool
TO	Tool Offset
TM	Tool Management
TC	Tool Change

<b>X</b>	
XML	Extensible Markup Language



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