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1.1 Overview
This chapter contains information about the product and this manual.

1.2 Information on the product

1.2.1 Demo software for demonstration of the device functions
ND 7000 Demo is a software application you can install on a computer independently of the device. ND 7000 Demo helps you to become familiar with, try out or present the functions of the device.

1.2.2 Demo software features
Because of the missing hardware environment the range of features of the demo software does not correspond to the complete functional range of the device. However, you can use the descriptions to familiarize yourself with the most important functions and the user interface.

1.3 Intended use
The products of the ND 7000 series are advanced digital readouts for use on manually operated machine tools. In combination with linear and angle encoders, digital readouts of this series return the position of the tool in more than one axis and provide further functions for operating the machine tool.
ND 7000 Demo is a software product for demonstration of the basic features of the ND 7000 series products. ND 7000 Demo may be used only for presentation, training or testing purposes.

1.4 Improper use
ND 7000 Demo is not intended for any use other than the intended use. Any use for other purposes is prohibited, specifically:
- For productive purposes in production systems
- As part of production systems

1.5 Notes on reading the documentation
Have you found any errors or would you like to suggest changes?
We continuously strive to improve our documentation for you. Please help us by sending your suggestions to the following e-mail address:
userdoc@heidenhain.de
### 1.6 Symbols and fonts used for marking text

In these instructions the following symbols and fonts are used for marking text:

<table>
<thead>
<tr>
<th>Depiction</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>▶ ...</td>
<td>Identifies an action and the result of this action</td>
</tr>
<tr>
<td>&gt; ...</td>
<td>Example:</td>
</tr>
<tr>
<td></td>
<td>▶ Tap <strong>OK</strong></td>
</tr>
<tr>
<td></td>
<td>▶ The message is closed</td>
</tr>
<tr>
<td>■ ...</td>
<td>Identifies an item of a list</td>
</tr>
<tr>
<td>■ ...</td>
<td>Example:</td>
</tr>
<tr>
<td></td>
<td>■ TTL interface</td>
</tr>
<tr>
<td></td>
<td>■ EnDat interface</td>
</tr>
<tr>
<td></td>
<td>■ ...</td>
</tr>
<tr>
<td><strong>Bold</strong></td>
<td>Identifies menus, displays and buttons</td>
</tr>
<tr>
<td></td>
<td>Example:</td>
</tr>
<tr>
<td></td>
<td>▶ Tap <strong>Shut down</strong></td>
</tr>
<tr>
<td></td>
<td>▶ The operating system shuts down</td>
</tr>
<tr>
<td></td>
<td>▶ Turn the power switch off</td>
</tr>
</tbody>
</table>
2.1 Overview

This chapter provides all of the information needed for downloading and properly installing ND 7000 Demo on a computer.

2.2 Downloading the installation file

Before you can install the demo software on a computer, you need to download an installation file from the HEIDENHAIN Portal.

To download the installation file from the HEIDENHAIN Portal, you need access rights to the Software portal folder in the directory of the appropriate product.

If you do not have access rights to the Portal’s Software folder, you can request the access rights from your HEIDENHAIN contact person.

- Download the latest version of ND 7000 Demo here: www.heidenhain.de
- Select the download folder of your browser
- Unpack the downloaded file with the extension .zip into a temporary storage folder
- The following files will be unpacked into the temporary storage folder:
  - Installation file with the extension .exe
  - File DemoBackup.mcc

2.3 System requirements

If you want to install ND 7000 Demo on a computer, the computer system must meet the following requirements:

- Microsoft Windows 7 or higher
- Screen resolution of at least 1280 x 800 recommended
2.4 Installing ND 7000 Demo in Microsoft Windows

- Select the temporary storage folder into which you unpacked the downloaded file with the `.zip` extension
  
  **Further information:** "Downloading the installation file", Page 12
- Run the installation file with the extension `.exe`
- The installation wizard is opened:

![Screenshot of Installation Wizard](image)

Figure 1: **Installation wizard**

- Click **Next**
- In the **License Agreement** installation step, accept the terms of the license
- Click **Next**

> **In the Select Destination Location installation step, the installation wizard suggests a storage location. We recommend retaining the suggested storage location.**

- In the **Select Destination Location** installation step, select the storage location to which you want to save ND 7000 Demo
- Click **Next**

> **In the Select Components installation step, the ScreenshotClient program is also installed by default. ScreenshotClient enables you to take screenshots of the active screen.**

  If you want to install ScreenshotClient:
  - In the **Select Components** installation step, leave the default settings unchanged

  **Further information:** "ScreenshotClient", Page 61

- In the **Select Components** installation step:
  - Select the type of installation
  - Activate or deactivate the option **Screenshot Utility**
Figure 2: Installation wizard with activated options Demo software and Screenshot Utility

- Click Next
- In the Select Start Menu Folder installation step, select the storage location at which you want to create the start menu folder
- Click Next
- In the Select Additional Tasks installation step, select or deselect Desktop icon
- Click Next
- Click Install
- Installation starts—the status of installation is shown in the progress bar
- After installation has been completed successfully, use Finish to close the installation wizard
- The program has been successfully installed on your computer
### 2.5 Uninstalling ND 7000 Demo

- Select the following in succession in Microsoft Windows:
  - **Start**
  - **All programs**
  - **HEIDENHAIN**
  - **ND 7000 Demo**
- Click **Uninstall**
- The uninstallation wizard opens
- To confirm uninstalling, click **Yes**
- Uninstallation starts, and the progress bar indicates the status of the uninstallation process
- After uninstallation has been completed successfully, close the uninstallation wizard with **OK**
- The program has been successfully removed from your computer
Basic operation
3.1 Overview
This chapter describes the user interface, operating elements, and basic functions of ND 7000 Demo.

3.2 Using the touchscreen and input devices

3.2.1 Touchscreen and input devices
The operating elements on the user interface from ND 7000 Demo are operated via a touchscreen or a connected mouse.
To enter data, you can use the screen keyboard of the touchscreen or a connected keyboard.

3.2.2 Gestures and mouse actions
To activate, switch or move the operating elements of the user interface, you can use ND 7000 Demo’s touchscreen or a mouse. Gestures are used to operate the touchscreen and the mouse.

The gestures for operating the touchscreen may differ from the gestures for operating the mouse.
If the gestures for operating the touchscreen differ from those for operating the mouse, then these instructions describe both operating options as alternative actions.
The alternative actions for operating the touchscreen or the mouse are identified by the following symbols:

- Operation using the touchscreen
- Operation using the mouse

The following overview describes the different gestures for operating the touchscreen or the mouse:

**Tapping**
- Means touching the screen briefly with your fingertip
- Means pressing the left mouse button once
**Basic operation | Using the touchscreen and input devices**

**The actions initiated by tapping include**
- Selection of menus, features or parameters
- Entering characters with the screen keyboard
- Closing dialogs

**Holding (long press)**
- Means touching the screen and holding your finger(s) on it for a few seconds

**The actions initiated by holding are**
- Quickly changing the values in input fields with plus and minus buttons

**Dragging**
- Is a combination of long press and then swipe, moving a finger over the touchscreen when at least the starting point of motion is defined

**The actions initiated by dragging include**
- Scrolling through lists and texts
3.3 General operating elements and functions

The operating elements described below are available for configuration and operating the product via the touchscreen or input devices.

Screen keyboard
With the screen keyboard, you can enter text into the input fields of the user interface. Depending on the input field, a numeric or alphanumeric screen keyboard is shown.

- To enter values, tap an input field
- The input field is highlighted
- The screen keyboard is displayed
- Enter text or numbers
- The correctness of the entry in the input field is shown with a green check mark
- If the entry is incomplete or incorrect, a red exclamation mark is displayed. In this case, the entry cannot be completed
- To apply the values, confirm the entry with RET
- The values are displayed
- The screen keyboard disappears

Input fields with plus and minus buttons
To adjust a numerical value, use the + (plus) and - (minus) buttons to the left and right of the numerical value.

- Tap + or - until the desired value is displayed
- Long-press + or - to scroll through the values more quickly
- The selected value is displayed

Toggle switch
Use the toggle switch to switch between functions.

- Tap the desired function
- The active function is shown in green
- The inactive function is shown in light gray

Slide switch
With the sliding switch, you can activate or deactivate a function.

- Drag the slider to the desired position
- Tap the slider
- The function is activated or deactivated

Drop-down list
Buttons that open drop-down lists are indicated by a triangle pointing down.

- Tap the button
- The drop-down list opens
- The active entry is highlighted in green
- Tap the desired entry
- The selected entry is applied
**Undo**
With this button, you can undo the last action. Processes that have already been concluded cannot be undone.

- Tap **Undo**
- The last action is undone

**Add**

- To add a feature, tap **Add**
- The new feature is added

**Close**

- Tap **Close** to close a dialog

**Confirm**

- Tap **Confirm** to conclude an activity

**Back**

- Tap **Back** to return to the higher level in the menu structure
3.4 ND 7000 Demo – startup and shut-down

3.4.1 Starting the ND 7000 Demo

Before using ND 7000 Demo, you need to perform the steps for configuring the software.

- Tap ND 7000 Demo on the Microsoft Windows desktop or
- Open the following in sequence in Microsoft Windows:
  - Start
  - All programs
  - HEIDENHAIN
  - ND 7000 Demo

Two executable files with different modes of appearance are available:
- ND 7000 Demo: starts within a Microsoft Windows window
- ND 7000 Demo (full screen): starts in full-screen mode

- Tap ND 7000 Demo or ND 7000 Demo (full screen)
- ND 7000 Demo starts an output window in the background. The output window is not relevant for operation and is closed again when the ND 7000 Demo is shut down
- ND 7000 Demo starts the user interface with the User login menu

Figure 3: User login menu
3.4.2 Shutting down the ND 7000 Demo

- Tap **Switch off** in the main menu

- Tap **Shut down**
  - ND 7000 Demo is shut down

To shut down ND 7000 Demo in the Microsoft Windows window, also use the **Switch-off** menu.
If you use **Close** to close the Microsoft Windows window, all settings will be lost.

3.5 User login and logout

In the **User login** menu, you can log in and out of the product as a user. Only one user can be logged in to the product at a time. The logged-in user is displayed. Before a new user can log in, the logged-in user has to log out.

The product provides various authorization levels that grant the user full or restricted access to management and operation functionality.

3.5.1 User login

- Tap **User login** in the main menu
- In the drop-down list, select the **OEM** user
- Tap the **Password** input field
- Enter the ‘**oem**’ password of the **OEM** user
- Confirm entry with **RET**
- Tap **Log in**
  - The user is logged in and the is displayed

3.5.2 User logout

- Tap **User login** in the main menu

- Tap **Log out**
  - The user is logged out
  - All functions of the main menu are inactive, except for **Switch off**
  - The product can only be used again after a user has logged in
3.6 Setting the language

The user interface language is English. You can change to another language, if desired.

- Tap **Settings** in the main menu
- Tap **User**
- The logged-in user is indicated by a check mark
- Select the logged-in user
- The language selected for the user is indicated by a national flag in the **Language** drop-down list
- Select the flag for the desired language from the **Language** drop-down list
- The user interface is displayed in the selected language

3.7 User interface

The unit is available in different versions, which are variously equipped. The user interface and available functions may vary depending on the version.

3.7.1 User interface after Startup

**User interface after startup**

If automatic user login is activated, and the last user who logged in was of the **Operator** type, then the product displays the **Manual operation** menu after starting up.

If automatic user login is not activated, then the product opens the **User login** menu.

Further information: "User login menu", Page 34
### 3.7.2 Main menu of the user interface

User interface (in Manual operation mode)

![User interface diagram]

1. Message display area, displays the time and the number of unclosed messages
2. Main menu with operating elements

#### Main menu operating elements

<table>
<thead>
<tr>
<th>Control</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Message icon]</td>
<td><strong>Message</strong>&lt;br&gt;Display of an overview of all messages as well as the number of messages that have not been closed</td>
</tr>
<tr>
<td>![Manual icon]</td>
<td><strong>Manual operation</strong>&lt;br&gt;Manual positioning of machine axes&lt;br&gt;&lt;br&gt;<strong>Further information:</strong> &quot;Manual operation menu&quot;, Page 27</td>
</tr>
<tr>
<td>![MDI icon]</td>
<td><strong>MDI mode</strong>&lt;br&gt;Direct input of the desired axis movements (Manual Data Input); the distance to go is calculated and displayed&lt;br&gt;&lt;br&gt;<strong>Further information:</strong> &quot;MDI menu&quot;, Page 28</td>
</tr>
<tr>
<td>![Program run icon]</td>
<td><strong>Program run</strong> (software option)&lt;br&gt;Execution of a previously created program with user interface&lt;br&gt;&lt;br&gt;<strong>Further information:</strong> &quot;Program run menu (software option)&quot;, Page 30</td>
</tr>
<tr>
<td>![Programming icon]</td>
<td><strong>Programming</strong> (software option)&lt;br&gt;Creation and management of individual programs&lt;br&gt;&lt;br&gt;<strong>Further information:</strong> &quot;Programming menu (software option)&quot;, Page 31</td>
</tr>
<tr>
<td>![File management icon]</td>
<td><strong>File management</strong>&lt;br&gt;Management of the files that are available on the product&lt;br&gt;&lt;br&gt;<strong>Further information:</strong> &quot;File management menu&quot;, Page 33</td>
</tr>
</tbody>
</table>
Control | Function
--- | ---
User login | Login and logout of the user  
*Further information:* "User login menu", Page 34

- If a user with additional permissions (Setup or OEM user type) is logged in, then the gear symbols appear.

Settings | Settings of the product, such as setting up users, configuring sensors, or updating the firmware  
*Further information:* "Settings menu", Page 35

Switch-off | Shutdown of the operating system or activation of power-saving mode  
*Further information:* "Switch-off menu", Page 36

Selecting grouped operating elements
When *Software-Option ND 7000 PGM* is activated, the following operating elements are grouped in the main menu:
- MDI mode
- Program run
- Programming

- You can identify grouped operating elements by an arrow.

- To select an operating element from the group, tap the operating element with the arrow (e.g., tap MDI mode)
- The operating element is shown as active
- Tap the operating element again
- The group opens
- Select the desired operating element
- The selected operating element is shown as active
3.7.3 Manual operation menu

Activation

- Tap **Manual operation** in the main menu
- The user interface for manual operation is displayed

![Manual operation menu](image)

**Figure 4:** **Manual operation** menu

1. Axis key
2. Reference
3. Position display
4. Status bar
5. Spindle speed (machine tool)

In the **Manual operation** menu, the workspace shows the position values measured at the machine axes.
The status bar provides auxiliary functions.
3.7.4 MDI menu

Activation

- Tap MDI in the main menu

The operating element can belong to a group (based on the configuration).

**Further information:** “Selecting grouped operating elements”, Page 26

- The user interface for MDI mode is displayed

Figure 5: MDI menu

1. Axis key
2. Actual position
3. Coupled axes
4. Distance-to-go
5. Status bar
6. Spindle speed (machine tool)
**MDI block dialog box**

- Tap **MDI** in the main menu

The operating element can belong to a group (based on the configuration).

**Further information:** “Selecting grouped operating elements”, Page 26

- Tap **Create** on the status bar
- The user interface for MDI mode is displayed

![MDI block dialog box](image)

**Figure 6: MDI block dialog box**

1. View bar
2. Block parameters
3. MDI block
4. Status bar
5. Block tools

The **MDI** (Manual Data Input) menu enables you to enter the desired axis movements directly. You specify the distance to the target point, and the distance to go is then calculated and displayed.

The status bar provides additional measured values and functions.
3.7.5 Program run menu (software option)

Calling up

- Tap Program run in the main menu

The operating element belongs to a group.

**Further information:** “Selecting grouped operating elements”, Page 26

- The user interface for Program Run is displayed

---

**Figure 7:** Program run menu

1. View bar
2. Status bar
3. Program control
4. Spindle speed (machine tool)
5. Program management

The **Program run** menu makes it possible to execute a program that has previously been created in the Programming operating mode. During execution, a wizard will guide you through the individual program steps.

In the **Program run** menu, you can display a simulation window that visualizes the selected block.

The status bar provides additional measured values and functions.
3.7.6 Programming menu (software option)

Calling up

- Tap **Programming** in the main menu

The operating element belongs to a group.

**Further information:** "Selecting grouped operating elements", Page 26

- The user interface for programming is displayed

The status bar and the optional OEM bar are not available in the **Programming** menu.

You can see a visualization of the selected block in the optional simulation window.

![Programming menu](image)

**Figure 8:** **Programming** menu

1. View bar
2. Toolbar
3. Program management
In the **Programming** menu, you can create and manage programs. You define individual machining steps or machining patterns as blocks. A sequence of blocks then forms a program.

Figure 9: **Programming** menu with opened simulation window

1. View bar
2. Simulation window (optional)
3. Toolbar
4. Program blocks
5. Program management
3.7.7 File management menu

Calling up

- Tap **File management** in the main menu
- The file management user interface is displayed

Short description

![File management menu diagram]

Figure 10: **File management** menu

1 List of available storage locations
2 List of folders in the selected storage location

The **File management** menu shows an overview of the files stored in the g133product’s memory.
3.7.8 User login menu

Calling up

- Tap User login in the main menu
- The user interface for user login and logout is displayed

Short description

Figure 11: User login menu

1. Display of the logged-in user
2. User login

The User login menu shows the logged-in user in the column on the left. The login of a new user is displayed in the right-hand column.

To log in another user, the logged-in user must first log out.

Further information: "User login and logout", Page 23
3.7.9 **Settings menu**

**Calling up**

- Tap **Settings** in the main menu
- The user interface for the product settings is displayed

**Short description**

![Settings menu diagram](image)

Figure 12: *Settings* menu

1 List of setting options
2 List of setting parameters

The *Settings* menu shows all of the options for configuring the product. With the setting parameters, you can adapt the product to on-site requirements.

The product provides various authorization levels that grant the user full or restricted access to management and operation functionality.
### 3.7.10 Switch-off menu

#### Activation

- Tap **Switch off** in the main menu
- The operating elements for shutting down the operating system, for activating the energy-saving mode and for activating the cleaning mode are displayed

#### Short description

The **Switch off** menu provides the following options:

<table>
<thead>
<tr>
<th>Operating element</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="icon" alt="Shut down" /></td>
<td>Shut down&lt;br&gt;Shuts down ND 7000 Demo</td>
</tr>
<tr>
<td><img src="icon" alt="Energy saving mode" /></td>
<td>Energy saving mode&lt;br&gt;Switches the screen off and puts the operating system into energy-saving mode</td>
</tr>
<tr>
<td><img src="icon" alt="Cleaning mode" /></td>
<td>Cleaning mode&lt;br&gt;Switches the screen off; the operating system continues unchanged</td>
</tr>
</tbody>
</table>

**Further information:** *“ND 7000 Demo – startup and shut-down”, Page 22*

### 3.8 Position display

The unit’s position display shows the axis positions and additional information about the configured axes (if applicable).

You can also couple the display of axes and have access to the spindle functions.

#### 3.8.1 Operating elements of the position display

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="icon" alt="X" /></td>
<td>Axis key&lt;br&gt;<strong>Axis key functions:</strong>&lt;br&gt;  - Tapping the axis key: opens the input field for position value (Manual operation) or dialog box <strong>MDI block</strong> (MDI mode)&lt;br&gt;  - Holding down the axis key: sets the current position as zero point&lt;br&gt;  - Dragging the axis key to the right: opens menu if functions are available for the axis</td>
</tr>
<tr>
<td><img src="icon" alt="XØ" /></td>
<td>In the turning application mode: The position display shows the diameter of the radial machining axis <strong>X</strong></td>
</tr>
<tr>
<td><img src="icon" alt="K" /></td>
<td>Reference mark search performed successfully</td>
</tr>
<tr>
<td><img src="icon" alt="Ø" /></td>
<td>Reference mark search not performed or no reference mark detected</td>
</tr>
</tbody>
</table>
### Basic operation | Position display

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="" alt="Zo symbol" /></td>
<td>Zo axis is coupled with the Z axis. Position display shows the sum of both position values.</td>
</tr>
<tr>
<td><strong>Further information:</strong> “Coupling axes”, Page 37</td>
<td></td>
</tr>
<tr>
<td><img src="" alt="Z symbol" /></td>
<td>Z axis is coupled with the Zo axis. Position display shows the sum of both position values.</td>
</tr>
<tr>
<td><img src="" alt="Icon symbol" /></td>
<td>Selected gear stage of the gear spindle</td>
</tr>
<tr>
<td><strong>Further information:</strong> “Setting the gear stage for gear spindles”, Page 38</td>
<td></td>
</tr>
<tr>
<td><img src="" alt="Icon symbol" /></td>
<td>Spindle speed cannot be achieved with selected gear stage</td>
</tr>
<tr>
<td>▶ Select a higher gear stage</td>
<td></td>
</tr>
<tr>
<td><img src="" alt="Icon symbol" /></td>
<td>Spindle speed cannot be achieved with selected gear stage</td>
</tr>
<tr>
<td>▶ Select a lower gear stage</td>
<td></td>
</tr>
<tr>
<td><img src="" alt="Icon symbol" /></td>
<td>The CSS (constant surface speed) spindle mode is activated</td>
</tr>
<tr>
<td><strong>Further information:</strong> “Setting the spindle mode”, Page 39</td>
<td></td>
</tr>
<tr>
<td>If the icon is flashing, then the calculated spindle speed lies outside of the defined speed range. The desired surface speed cannot be attained. The spindle will continue to turn at the maximum or minimum speed</td>
<td></td>
</tr>
<tr>
<td><img src="" alt="Icon symbol" /></td>
<td>In MDI mode and Program Run, a scaling factor is applied to the axis</td>
</tr>
</tbody>
</table>

### 3.8.2 Position display functions

#### Coupling axes

You can alternatingly couple the display of the axes Z and Zo. For coupled axes, the position display shows the sum of the position values of both axes.

- If the Z axis and the Zo axis have been coupled, the Program run operating mode is disabled.
- Coupling is identical for the Z axis and Zo axis. The following describes only the coupling of the Z axis.

**Coupling axes**

- In the working space, drag the **Z axis key** to the right
- Tap **Couple**
- The Zo axis is now coupled with the Z axis
- The icon for the coupled axes is shown next to the Z axis key
- The position value for the coupled axes is shown as a sum
### Decoupling axes

- In the working space, drag the Z axis key to the right
- Tap Decouple
- The position value of both axes are shown independently of each other

### Setting the spindle speed

The following information applies only to units with ID number 1089179-xx.

You can control the spindle speed depending on the configuration of the connected machine tool.

- Tap or long-press + or - to set the spindle speed to the desired value
- Tap the Spindle speed input field, enter the value and tap RET to confirm
- The product applies the entered spindle speed as the nominal value and controls the spindle of the machine tool accordingly

### Setting the gear stage for gear spindles

The following information applies only to units with ID number 1089179-xx.

If your machine tool uses a gear spindle, then you can select the gear stage used.

The selection of the gear stages can also be controlled via an external signal.

- In the working space, drag the S axis key to the right
- Tap Gear stage
- The Set gear stage dialog appears
- Tap the desired gear stage
- Tap Confirm
- The selected gear stage is now adopted as the new value
- Drag the S axis key to the left
- The icon for the selected gear stage appears next to the S axis key

If the desired spindle speed cannot be attained with the selected gear stage, then the gear stage icon will flash with an upward pointing arrow (higher gear stage) or with a downward pointing arrow (lower gear stage).
Setting the spindle mode

The following information applies only to units with ID number 1089179-xx.

For spindle mode, you can decide whether the product uses the standard speed mode or CSS (constant surface speed).

In the CSS spindle mode, the unit calculates the spindle speed such that the surface speed of the turning tool remains constant regardless of the workpiece geometry.

Activating the CSS spindle mode

- In the working space, drag the S axis key to the right
- Tap CSS mode
- The Activate CSS dialog box appears
- Enter the value for Maximum spindle speed
- Tap Confirm
- The CSS spindle mode is activated
- The spindle speed is shown in the unit of measure m/min
- Drag the S axis key to the left
- The icon for the CSS spindle mode appears next to the S axis key

Activating the speed mode

- In the working space, drag the S axis key to the right
- Tap Speed mode
- The Activate speed mode dialog box appears
- Enter the value for Maximum spindle speed
- Tap Confirm
- The speed mode is activated
- The spindle speed is shown in the unit of measure rpm
- Drag the S axis key to the left

3.9 Status bar

The status bar and the optional OEM bar are not available in the Programming menu.

In the status bar, the product shows the feed rate and traversing speed. The operating elements of the status bar also give you direct access to the preset table and tool table, as well as to the stopwatch and calculator features.
### 3.9.1 Operating elements of the status bar

The status bar provides the following operating elements:

<table>
<thead>
<tr>
<th>Operating element</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quick access menu</strong></td>
<td>Setting of the units for linear values and angular values, configuration of a scaling factor, configuration of the position display for radial machining axes; tapping opens the quick access menu</td>
</tr>
<tr>
<td><strong>Preset table</strong></td>
<td>Display of the current preset; tapping opens the preset table</td>
</tr>
<tr>
<td><strong>Tool table</strong></td>
<td>Display of the current tool; tapping opens the tool table</td>
</tr>
<tr>
<td><strong>Stopwatch</strong></td>
<td>Time display with Start / Stop function in h:mm:ss format</td>
</tr>
<tr>
<td><strong>Calculator</strong></td>
<td>Calculator with the most important mathematical functions, speed calculator and taper calculator</td>
</tr>
<tr>
<td><strong>Feed rate</strong></td>
<td>Display of the actual feed rate of the currently fastest axis</td>
</tr>
<tr>
<td><strong>Auxiliary functions</strong></td>
<td>Auxiliary functions in Manual operation mode, depending on the configured application mode</td>
</tr>
<tr>
<td><strong>MDI block</strong></td>
<td>For creating machining blocks in MDI mode</td>
</tr>
</tbody>
</table>
3.9.2 Additional functions in Manual operation mode

To call the additional functions, tap Additional functions in the status bar.

The following operating elements are available:

<table>
<thead>
<tr>
<th>Operating element</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reference marks</td>
</tr>
<tr>
<td></td>
<td>For starting the reference mark search</td>
</tr>
<tr>
<td></td>
<td>Presets</td>
</tr>
<tr>
<td></td>
<td>Setting presets</td>
</tr>
<tr>
<td></td>
<td>Tool data</td>
</tr>
<tr>
<td></td>
<td>For tool setting (touch-off)</td>
</tr>
</tbody>
</table>

3.10 OEM bar

The status bar and the optional OEM bar are not available in the Programming menu.

The optional OEM bar allows you to control the configuration of the functions of the connected machine tool, independently of its configuration.

3.10.1 Operating elements of the OEM bar

The operating elements that are available on the OEM bar depend on the configuration of the device and of the connected machine tool.

The following operating elements are typically available in the OEM bar:

<table>
<thead>
<tr>
<th>Operating element</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tapping the tab shows or hides the OEM bar</td>
</tr>
<tr>
<td></td>
<td>Logo</td>
</tr>
<tr>
<td></td>
<td>Displays the configured OEM logo</td>
</tr>
<tr>
<td></td>
<td>Spindle speed</td>
</tr>
<tr>
<td></td>
<td>Shows one or more default values for the spindle speed</td>
</tr>
</tbody>
</table>
4 Software configuration
4.1 Overview

Make sure that you have read and understood the "Basic operation" chapter before carrying out the actions described below.

Further information: "Basic operation", Page 17

Before you can use ND 7000 Demo correctly after successful installation, you need to configure ND 7000 Demo. This chapter describes how to perform the following settings:

- Setting the language
- Activating software options
- Selecting the product version (optional)
- Selecting the Application
- Copying the configuration file
- Uploading the configuration data

4.2 Setting the language

The user interface language is English. You can change to another language, if desired.

▸ Tap Settings in the main menu

▸ Tap User
▸ The logged-in user is indicated by a check mark
▸ Select the logged-in user
▸ The language selected for the user is indicated by a national flag in the Language drop-down list
▸ Select the flag for the desired language from the Language drop-down list
▸ The user interface is displayed in the selected language
4.3 **Activating software options**

With ND 7000 Demo, you can also simulate characteristics and functions that are dependent on a software option. To do so, you must enable the software option with a license key. The required license key is stored in a license file in the ND 7000 Demo folder structure.

You must read in the license file in order to enable the available software options.

- Tap **Settings** in the main menu
- The product settings are displayed
- Tap **Service**
- Open in sequence:
  - **Software options**
  - **Activate options**
  - Tap **Read license file**
- In the dialog box, select the storage location:
  - Select **Internal**
  - Select **User**
- Select the **PcDemoLicense.xml** license file
- Confirm your selection with **Select**
- Tap **OK**
- The license key is activated
- Tap **OK**
- You are prompted to restart the product
- Perform a restart
- The functions depending on the software options are available

4.4 **Selecting the product version (optional)**

ND 7000 is available in different versions. These versions differ in their interfaces for connectible encoders:

- The ND 7013 version
- The ND 7013 I/O version with additional inputs and outputs for switching functions

In the **Settings** menu, you can select the version that is to be simulated with ND 7000 Demo

- Tap **Settings** in the main menu

  - Tap **Service**
  - Tap **Product designation**
  - Select the desired version
  - You are now prompted to perform a restart
  - ND 7000 Demo is ready for use in the desired version
4.5 Selecting the Application

The demo software allows you to simulate the various applications that support the product.

When you change the unit’s application mode, then all of the axis settings will be reset.

- Tap **Settings** in the main menu
- Tap **Service**
- Open in the sequence
  - **OEM area**
  - **Settings**
- In the **Application** drop-down list, select the **Turning** application mode

4.6 Copying the configuration file

Before you can load the configuration data in ND 7000 Demo, you must first copy the downloaded configuration file **DemoBackup.mcc** to an area that can be accessed by ND 7000 Demo.

- Move to the temporary storage folder
- For example, copy the configuration file **DemoBackup.mcc** to the following folder: `C: \ HEIDENHAIN \ [product name] \ ProductsMGE5 \ Mom \ [product abbreviation] \ user \ User`

In order for ND 7000 Demo to access the configuration file **DemoBackup.mcc**, you must retain the following part of the path when you save the file: `\ [product name] \ ProductsMGE5 \ Mom \ [product abbreviation] \ user \ User`

- The configuration file can be accessed by ND 7000 Demo
4.7 Uploading the configuration data

Before you can upload the configuration data, you must first activate the license key.

**Further information:** “Activating software options”, Page 45

In order to configure ND 7000 Demo for use on the computer, you must upload the **DemoBackup.mcc** configuration file.

- Tap **Settings** in the main menu
- The product settings are displayed

![Image of Settings menu]

- Tap **Service**
- Open in succession:
  - **Back up and restore**
  - **Restore settings**
  - **Complete restoration**
- In the dialog, select the storage location:
  - **Internal**
  - **User**
- Select the **DemoBackup.mcc** configuration file
- Confirm your selection with **Select**
- The settings are applied
- You are prompted to close the application
- Tap **OK**
- ND 7000 Demo is closed, and the Microsoft Windows window is closed
- Restart ND 7000 Demo
- ND 7000 Demo is now ready for use
Quick Start
5.1 Overview

This chapter describes the production of an example workpiece. This chapter will guide you step by step through the unit’s various machining options as you machine the example workpiece. For successful machining of the bearing seat, you will need to perform the following machining steps:

<table>
<thead>
<tr>
<th>Machining step</th>
<th>Mode of operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setting up the lathe</td>
<td>Manual operation</td>
</tr>
<tr>
<td>Roughing the outside contour</td>
<td>Manual operation</td>
</tr>
<tr>
<td>Turning the recesses</td>
<td>Manual operation</td>
</tr>
<tr>
<td>Finishing the outside contour</td>
<td>Manual operation</td>
</tr>
</tbody>
</table>

Figure 14: Example workpiece

Make sure that you have read and understood the "Basic operation" chapter before carrying out the actions described below.

Further information: "Basic operation", Page 17

5.2 Logging in for Quick Start

User login

For Quick Start, the Operator user must log in.

- Tap User login in the main menu
- If required, log out the user who is currently logged in
- Select the Operator user
- Tap the Password input field
- Enter the password “operator”

If the password does not match the default password, ask a Setup user or OEM user for the assigned password.

If the password is no longer known, contact a HEIDENHAIN service agency.

- Confirm entry with RET
- Tap Log in
5.3 Requirements

Use a manually operated lathe to machine the bearing seat. The following dimensioned technical drawing is available for the bearing seat:

![Technical drawing of the bearing seat](image)

Figure 15: Example workpiece – technical drawing

**Lathe**
- The lathe is switched on
- A workpiece blank with Ø 24 mm is clamped into the lathe

**Product**
- The axes are referenced

**Tools**
The following tools are available:
- Roughing tool
- Finishing tool
- Recessing tool (1 mm)
- Turning chisel (45°)
Tool table
For the example it is presumed that the tools for machining are not yet defined. All of the tools to be used must be added to the tool table by you in advance.

- Tap Tools on the status bar
- The Tools dialog appears
- Tap Open table
- The Tool table dialog appears
- Tap Add
- Enter the designation Finishing tool in the Tool type input field
- Confirm your input with RET
- Enter the value \(0\) in the \(X\) input field
- Confirm your input with RET
- Enter the value \(0\) in the \(Z\) input field
- Confirm your input with RET
- The defined finishing tool is added to the tool table
- Repeat this process for the other tools
- Tap Close
- The Tool table dialog is closed
5.4 Setting up the lathe

In the initial machining step, you first need to set up the lathe. The unit requires the parameters of the individual tools for the calculation for the relative coordinate system. In order to manufacture a workpiece, you will need one of the presets you defined.

![Diagram of lathe axes](image1)

**Figure 16: Finishing tool parameters**

**Figure 17: Preset**

**Activation**

- Tap **Manual operation** in the main menu
- The user interface for manual operation is displayed

**Coupling axes**

For a lathe with a Z saddle and a Zo top slide, you have the option of coupling both the Z and Zo axes.

- In the working space, drag the **Z axis key** to the right
- Tap **Couple**
  - The Zo axis is now coupled with the Z axis
  - The icon for the coupled axes is shown next to the Z axis key
  - The position value for the coupled axes is shown as a sum
5.4.1 Measuring the reference tool

For every tool used, you must determine the position of the cutting edges (for X and/or Z) in relation to the machine coordinate system or to the workpiece preset. To do so, you must first define a tool based on which all further parameters of the other tools are calculated. In this example, the finishing tool will be used as the reference tool.

- On the lathe, insert the finishing tool into the tool holder
- Tap **Tools** on the status bar
  - The **Tools** dialog appears
- Tap **Finishing tool**
- Tap **Confirm**
  - The finishing tool appears in the status bar
- On the lathe, set the spindle speed to 1500 rpm
- Tap **Auxiliary functions** in the status bar

- Tap **Tool data**
  - The **Set tool data** dialog opens
  - Approach the workpiece blank with the finishing tool and perform a touch-off
- When the appropriate Z value is reached, tap **Save position**
- Perform face turning with the finishing tool
- Retract the tool to a safe position
- In the **Z** input field, enter the value 0
- Approach the workpiece blank with the finishing tool
- When the appropriate X value is reached, tap **Save position**
- Turn a step on the outside diameter of the workpiece blank using the finishing tool
- Retract the tool to a safe position
- Spindle OFF
- Measure the turned outside diameter using an appropriate measuring tool
- Enter the measured value in the **X** input field
- Tap **Confirm** in the wizard
  - The **Select the tool** dialog appears
- Tap **Finishing tool**
- Tap **Confirm** in the wizard
- The parameters are added to the tool table
5.4.2 Tool measurement

You have already defined a finishing tool as the reference tool. For every additional tool, you must determine its offset from the reference tool. During measurement, the parameters of the measured tool are automatically offset from the parameters of the reference tool. The measured parameters are separate for each tool and are retained even after you have deleted the reference tool. In the example, the roughing tool is added as a tool.

- On the lathe, insert the roughing tool into the tool holder
- Tap **tools** on the status bar
- The **tools** dialog appears
- Tap **Roughing tool**
- Tap **Confirm**
- The **Roughing tool** is shown in the status bar
- On the lathe, set the spindle speed to 1500 rpm
- Tap **Auxiliary functions** in the status bar

- Tap **Tool data**
  - The **Set tool data** dialog opens
  - Slowly approach the plane surface until tiny chips occur
  - When the appropriate Z value is reached, tap **Save position**
  - Retract the tool to a safe position
  - In the Z input field, enter the value 0
  - Approach the workpiece blank with the roughing tool
  - When the appropriate X value is reached, tap **Save position**
  - Turn a step on the outside diameter of the workpiece blank using the roughing tool
  - Retract the tool to a safe position
  - Spindle OFF
  - Measure the turned outside diameter using an appropriate means of measurement
  - Enter the measured value in the X input field
  - Tap **Confirm** in the wizard
  - The **Select the tool** dialog appears
  - Tap **roughing tool**
  - Tap **Confirm** in the wizard
  - The parameters are added to the tool table
  - Repeat this process for the other tools
5.4.3 Finding the preset

To machine the bearing seat, you will need to find the preset. According to the drawing, the dimensions are referenced to the mating surface of the bearing. In the drawing, the mating surface of the bearing is highlighted in green. Based on this preset the product then calculates all values for the relative coordinate system.

![Figure 18: Example workpiece – finding the preset](image)

- On the lathe, insert the finishing tool into the tool holder
- Tap **Tools** on the status bar
- The **Tools** dialog appears
- Tap **Finishing tool**
- Tap **Confirm**
- The **Finishing tool** is shown in the status bar
- Tap **Auxiliary functions** in the status bar

- Tap **Presets** in the dialog
- The **Set preset data** dialog opens
- On the workpiece blank, move the finishing tool along **Z** in the negative direction for approx. 17 mm
- Tap **Save position**
- The current position of the tool is saved
- Retract the tool to a safe position
- In the **Z** input field, enter the value **0**
- Tap **Confirm** in the wizard
- The **Select preset** dialog appears
- Select preset **0** in the **Selected preset** input field
- Tap **Confirm** in the wizard
- The probed coordinate is loaded as preset
5.5 Roughing the outside contour

In the second machining step, you will rough the outside contour. The entire contour must be turned with a finishing allowance. A finishing allowance ensures that you will be able to produce a flawless surface using the finishing tool in the final machining step.

Figure 19: Example workpiece – roughing the outside contour

- On the lathe, insert the roughing tool into the tool holder
- Tap Tools on the status bar
- The Tools dialog appears
- Tap Roughing tool
- Tap Confirm
- The associated tool parameters are applied automatically
- The Tools dialog is closed
- On the lathe, set the spindle speed to 1500 rpm
- Move the tool to the following position on the lathe:
  - X: 25.0 mm
  - Z: 16.2 mm
- Perform the face-turning operation with the roughing tool
- Retract the tool to a safe position
- Move the tool to the following position on the lathe:
  - X: 20.2 mm
  - Z: 17.0 mm
- Move the tool to the following position on the lathe:
  - Z: 0.2 mm
- Move the tool to the following position on the lathe:
  - X: 25.0 mm
- Retract the tool to a safe position
- Spindle OFF
- You have now successfully roughed the outside contour
5.6 Turning recesses

In the third machining step, you will turn both recesses. One of the recesses serves as an undercut for the mating surface, and the second recesses will hold the securing ring.

Figure 20: Example workpiece – turning recesses

- On the lathe, insert the recessing tool into the tool holder
- Tap **Tools** on the status bar
- The **Tools** dialog appears
- Tap **Recessing tool 1 mm**
- Tap **Confirm**
- The associated tool parameters are applied automatically
- The **Tools** dialog is closed
- On the lathe, set the spindle speed to 400 rpm
- Move the tool to the following position on the lathe:
  - X: 21.0 mm
  - Z: 12.3 mm
- Move the tool to the following position on the lathe:
  - X: 18.935 mm
- Move the tool to the following position on the lathe:
  - X: 21.0 mm
- Move the tool to the following position on the lathe:
  - Z: 12.0 mm
- Move the tool to the following position on the lathe:
  - X: 18.935 mm
- Move the tool to the following position on the lathe:
  - X: 21.0 mm
- Retract the tool to a safe position
- Repeat the procedure for the second recess
- Switch off the spindle
- You have successfully machined the recesses
5.7 Finishing the outside contour

In the fourth and final machining step, you will machine the outside contour using the finishing tool.

Prior to finishing, you should first machine the chamfer (1 x 45°) and lightly chamfer all of the other edges so as to prevent the formation of burrs.

![Figure 21: Example workpiece – finishing the outside contour](image)

- On the lathe, insert the finishing tool into the tool holder
- Tap **Tools** on the status bar
- The **Tools** dialog appears
- Tap **Finishing tool**
- Tap **Confirm**
- The associated tool parameters are applied automatically
- The **Tools** dialog is closed
- On the lathe, set the spindle speed to 1500 rpm
- Move the tool to the following position on the lathe:
  - X: 25.0 mm
  - Z: 16.0 mm
- Perform face turning with the finishing tool
- Retract the tool to a safe position
- Move the tool to the following position on the lathe:
  - X: 19.8 mm
  - Z: 17.0 mm
- Move the tool to the following position on the lathe:
  - Z: 12.5 mm
- Move the tool to the following position on the lathe:
  - X: 20.015 mm
- Move the tool to the following position on the lathe:
  - Z: 1.5 mm
- Move the tool to the following position on the lathe:
  - X: 19.5 mm
- Move the tool to the following position on the lathe:
  - Z: 0.0 mm
- Move the tool to the following position on the lathe:
  - X: 25.0 mm
Retract the tool to a safe position
Spindle OFF
You have now successfully finish turned the outside contour
6.1 Overview

The standard installation of ND 7000 Demo also contains the ScreenshotClient program. With ScreenshotClient, you can take screenshots of the demo software or the unit.

This chapter describes how ScreenshotClient is configured and used.

6.2 Information about ScreenshotClient

With ScreenshotClient, you can take screenshots of the active screen of the demo software or the unit from a computer. Before taking a screenshot, select the desired user interface language, as well as the file name and the location where you want to store the screenshots.

ScreenshotClient creates image files of the desired screen:
- In .PNG format
- With the configured name
- With the appropriate language code
- With the time information of year, month, day, hour, minute, and second

Figure 22: ScreenshotClient user interface

1 Connection status
2 File path and file name
3 Language selection
4 Status messages
6.3 Starting ScreenshotClient

- Select in succession in Microsoft Windows:
  - Start
  - All programs
  - HEIDENHAIN
  - ND 7000 Demo
  - ScreenshotClient

- ScreenshotClient is started:

![ScreenshotClient](image)

Figure 23: ScreenshotClient has been started (not connected yet)

- You can now connect ScreenshotClient with the demo software or the product

6.4 Connecting ScreenshotClient with the demo software

- Before establishing a connection with ScreenshotClient, first start the demo software or switch on the unit. Otherwise ScreenshotClient will show the status message **Connection close**, when trying to connect.

- Start the demo software if you have not already done so

- Tap **Connect**

- A connection with the demo software is established

- The status message is updated

- The **Identifier** and **Language** input fields become active
6.5 Connecting ScreenshotClient with the unit

Prerequisite: The network must be configured on the device.

For detailed information on configuring the network at the unit, please refer to the “Setup” chapter in the operating instructions of ND 7000.

Before establishing a connection with ScreenshotClient, first start the demo software or switch on the unit. Otherwise ScreenshotClient will show the status message Connection close, when trying to connect.

- Switch on the unit if you have not already done so
- Enter the IPv4 address of the interface in the Connection input field.
  You will find the address in the device settings under:
  Interfaces ► Network ► X116
- Tap Connect
- A connection with the unit is established
- The status message is updated
- The Identifier and Language input fields become active

6.6 Configuring ScreenshotClient for taking screenshots

Once you have started ScreenshotClient, you can make the following configurations:
- Location at which screenshots are stored, and what the file names are
- User interface language in which the screenshots are created

6.6.1 Configuring the storage location and file name for screenshots

By default, ScreenshotClient saves screenshots to the following storage location:
C: ► HEIDENHAIN ► [product designation] ► ProductsMGE5 ► Mom
► [product code] ► sources ► [file name]
You can define a different storage location, if necessary.
- Tap the Identifier input field
- Enter the path to the storage location and the name for the screenshots into the Identifier input field

Use the following syntax to enter the path and file name for screenshots:
[drive]:\[folder]\[file name]

- ScreenshotClient will save all screenshots to the storage location entered
6.6.2 Configuring the user interface language of screenshots

The Language input field shows all of the user interface languages available for the demo software or the unit. Once you have selected a language code, ScreenshotClient will take screenshots in the corresponding language.

The user interface language you are using in the demo software or on the unit does not have any effect on the screenshots. Screenshots are always created in the language that you have selected in ScreenshotClient.

Screenshots in the desired user interface language

To take screenshots in a desired user interface language

- Use the arrow keys to select the desired language code in the Language input field
- The selected language code is shown in red
- ScreenshotClient creates the screenshots in the desired user interface language

Screenshots of all available user interface languages

To create screenshots in all available user interface languages

- Use the arrow keys to select all in the Language input field
- The all language code is shown in red
- ScreenshotClient creates the screenshots in all available user interface languages
6.7 Creating screenshots

- In the demo software or on the unit, call the view from which you would like to take a screenshot
- Switch to ScreenshotClient
- Tap Snapshot
- The screenshot is created and saved to the configured storage location

![ScreenshotClient after screenshot has been created successfully]

The screenshot is saved in the format [file name]_[language code]_[YYYYMMDDhhmmss] (e.g. screenshot_en_20170125114100)

- The status message is updated:

6.8 Exiting ScreenshotClient

- Tap Disconnect
- The connection to the demo software or the unit is terminated
- Tap Close
- ScreenshotClient is exited
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