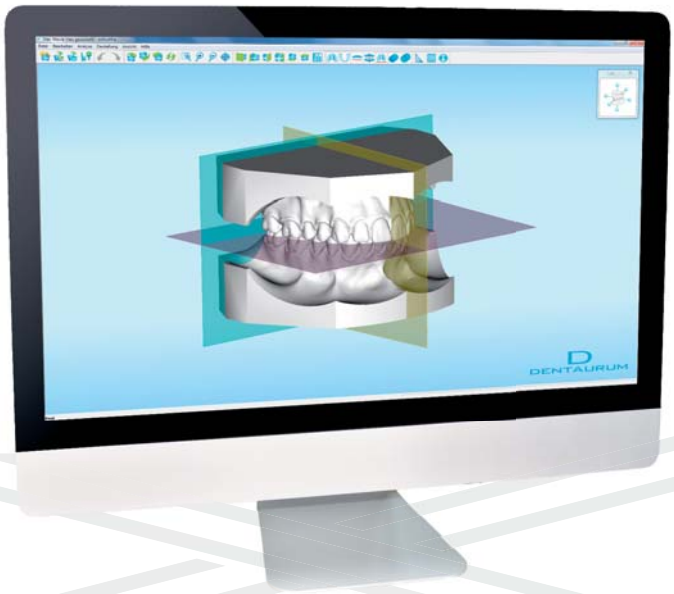
EN

orthoX® file

Instructions for use

Software orthoX® file.



DENTAURUM

Contents

Dear customer,

Thank you for choosing a quality product from Dentaurum.

In order to achieve the best results with this product, it is important to carefully study and follow these Instructions for use. Instructions for use cannot describe every eventuality and possible application. In case of questions or ideas, please contact your local representative.

As our products are regularly upgraded, we recommend that you always carefully read the current instructions for use stored in the internet at www.dentaurum.com, even though you may frequently use the same product.

1 General information

Identification

Type: Software (REF 075-001-00)
Manufacturer: Dentaurum GmbH & Co. KG I Turnstr. 31 I 75228 Ispringen I Germany

Read the GREY boxes for useful tips.

Read the BLUE boxes to avoid common errors and find safety information.

2 Product description

The orthoX® file software together with the Dentaurum 3D model scanner orthoX® scan is a system designed to digitize orthodontic models.

2.1 Area of application

orthoX® file is a database software for orthodontists. It is used to digitize and archive orthodontic models, as well as to create model data for other applications (aligners, indirect bonding etc.).

2.2 System requirements

Make sure your computer meets the following system requirements:

Operating system	Windows® 7*, 64 Bit
Processor	Intel® Core™ i5**
Hard disk	500 GB
RAM	8 GB RAM
Graphics card	NVIDIA® GeForce® GT***
Screen resolution	1280 x 1024 or 1600 x 900
Network compatible	yes
Ports	2 x USB 2.0
Internet connection	yes (for Activation and Support)
Hardware	mouse with wheel

* Windows® is a registered trademark of the Microsoft Corporation, USA I ** Intel® Core™ i5 is a registered trademark of the Intel Corporation, USA
*** NVIDIA® GeForce® GT is a registered trademark of the NVIDIA Corporation, USA

3 Installation

Run the orthoX® file setup program to install the software; follow separate Installation instructions.

3.1 Control of the orthoX® scan model scanner

The orthoX® scan scanner software must be installed on your computer for correct control of the 3D model scanner orthoX® scan.

4 Features and controls

When you start orthoX® file, the following program interface appears:

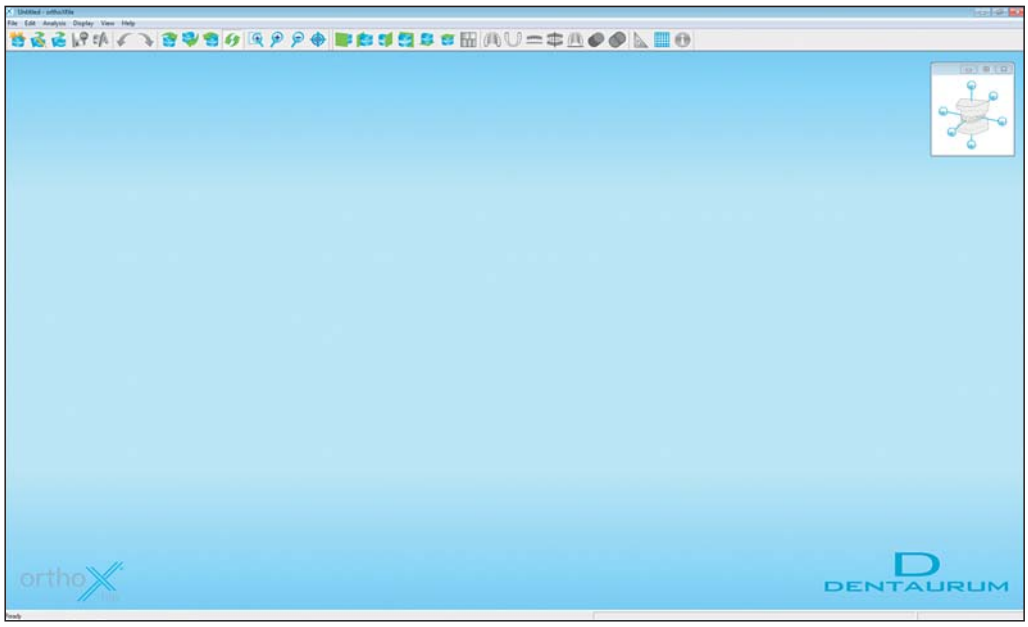


Fig. 1: orthoX® file program interface

4.1 Mouse buttons

- Press and hold left mouse button in order to rotate the model
- Press and hold right mouse button in order to move the model
- Turn mouse wheel to zoom in/zoom out

4.2 Menu bar and tool bar

You can find all commands in the drop-down menus of the menu bar. The most important commands are also displayed as icons in the tool bar.

Fig. 2: Menu bar and tool bar

4.2.1 Menu bar tabs in menu bar

Menu bar tabs	Sub tabs	Functions
File	Model Wizard	Start the model wizard to add or scan new models
	Open Temporary Storage	Open temporarily stored models to finish editing the scans
	Database Query	Open models saved to the database
	Export Views	The maxilla, mandible, front, left and right are each stored in one bitmap
	Export Portable Model Viewer	STL export of models displayed including the orthoX® file Viewer program. An executable file is created.
	Export Portable Model	Models displayed are exported in DDM format (Dentaurum Data Media)
	Import STL	If STL files are available, they can be opened in orthoX® file. orthoX® file works like an STL viewer.
	Export STL	Export STL files. Software exports two separate STL files: first upper model and then lower model.
	FTP Upload	Upload data to an FTP-Server
	Print Preview	Show print preview
	Print	Print active view
	Print Setup	Change settings of the printer
	Recent File	Open the last models stored
	Clear All	Close all open files
	Exit	Exit application
Edit	Undo	Undo the last step
	Redo	Redo the last step
	Engrave model	Add an engraving to the model
	Snap Screen	Make a snapshot of the entire screen and add it to the Windows® clipboard
Analysis	Object Info	Information on the object (patient ID, patient name, etc.)
	Point Distance 3D	Measure distance between two points
	Draw Grid	Hide/Show grid
Display	Rotation	Rotate X-axis. All other rotation axes are deactivated.
		Rotate Y-axis. All other rotation axes are deactivated.
		Rotate Z-axis. All other rotation axes are deactivated.
		Rotate free (around all axes)

Menu bar tabs	Sub tabs	Functions
Display	Predefined views	Change to front view
		Change to right view
		Change to left view
		Change to rear view
		Bottom view
		Top View
		Change to gallery view
	Rectangular Zoom	Select rectangle to be zoomed in on
		Zoom in
		Zoom out
	Center View	Center View
	Object Color	Change color of jaws
	Meshes	Mosaic: Coloring the maxilla and the mandible in different colors
		Points: Draw point mesh
		Triangles: Draw STL triangles
		Gouraud shading: Shows opaque surface
		Transparent: Jaw surface is transparent
		Highlight Original Scan: Show original scan data in white, added data in grey
View	Tool bars	Hide/Show respective tool bars
	Status Bar	Hide/Show status bar
	Smart Control	Hide/Show Smart Control
	Settings	Open options
Help	Contents	Open specific content in help
	Index	Open help index
	Search	Search help
	Online Support	Start TeamViewer session
	About ortho X® file	Show information on application

4.2.2 Icons in tool bar

 Model Wizard

 Open Temporary Storage

 Open models saved to the database

 Export STL files (software exports two separate STL files: first upper model and then lower model)

 Add an engraving to the model

 Undo the last step

 Redo the last step

 Rotate X-axis. All other rotation axes are deactivated.

 Rotate Y-axis. All other rotation axes are deactivated.

 Rotate Z-axis. All other rotation axes are deactivated.

 Rotate free (around all axes)

 Select rectangle to be zoomed in on

 Zoom in

 Zoom out

 Center View

 Change to front view

 Change to right view

 Change to left view

 Change to rear view

 Bottom view

 Top View

 Change to gallery view

 Hide/Show Maxilla

 Hide/Show Mandible

 Hide/Show Occlusal Plane (only possible with based models)

 Hide/Show Raphe Median Plane (only possible with based models)

 Hide/Show Tuber Plane (only possible with based models)

 Gouraud Shading

 Transparent

 Measure distance between two points

 Hide/Show grid

 Information on the object (patient ID, patient name, etc.)

4.2.3 Smart Control

Smart Control is the quick view window in the upper right corner of the program interface. Use it to intuitively navigate through the different views.

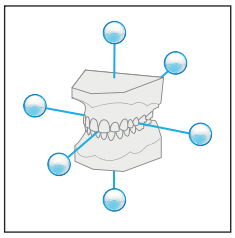


Fig. 3: Smart Control icon

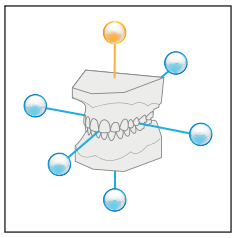
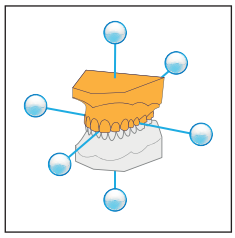


Fig. 4: Select view using viewer points



Hide/show jaws by direct selection

Change between the six viewing angles by clicking on the different viewer points. Hide/show the maxilla or the mandible by clicking on the respective jaw in the window.

5 Placing model in the 3D model scanner orthoX® scan

The model should be placed in the orthoX® scan with the model holder. The model holder is removable and is secured in position in the unit by a magnet. The model is fixed securely in position on the removable model holder by a clamping mechanism with the aid of a sure-grip screw.

5.1 Securing model on model holder

Place the model in the model holder with the anterior teeth facing towards the sure-grip screw. Secure the model on the model holder by tightening the sure-grip screw. First, scan the maxilla. Then, scan the mandible (see Fig. 6).

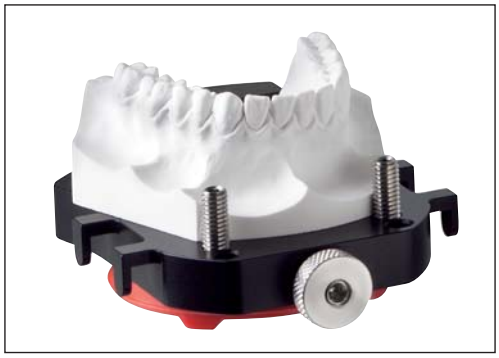


Fig. 6: Model holder with lower jaw model

5.2 Placing the upper and the lower model in occlusion in the model holder

After scanning the upper and the lower model, both models have to be scanned in occlusion (= vestibular scan). Leave lower model in the model holder and align upper model in occlusion on lower model. Once both are correctly positioned, fix the set of models on the model holder using rubber bands (please cross bands over to secure). Use the lateral hooks on the model holder to secure the rubber bands.

> ! Fix models tightly! Loose models can lead to unusable scan results. If necessary, insert a wax bite to position models correctly. The wax bite can stay on the model during scanning.

Fig. 7: Model holder with upper and lower jaw model in occlusion

5.3 Placing model holder in the orthoX® scan model scanner

The model holder will only fit on the magnet retention plate in the scanner if you insert it in the correct position. The anterior teeth of the model on the holder must always face the camera on the inside of the scanner.

> If the holder is inserted incorrectly, the holder is loose and allows a slight tipping movement.

Fig. 8: Lower jaw model with model holder in the orthoX® scan

6 Adding a new model to the database

To add a new model to the orthoX® file database, open orthoX® file via the orthoX® file program icon. Start process by clicking on Model Wizard. The Model Wizard will guide you through the process.

6.1 Entering patient data (step 1 / 7)

Enter the patient data in the boxes. Click on ***Next*** to proceed to the next step.

> You can temporarily save the current state of the new model at any time and finish it later (see Section 7).

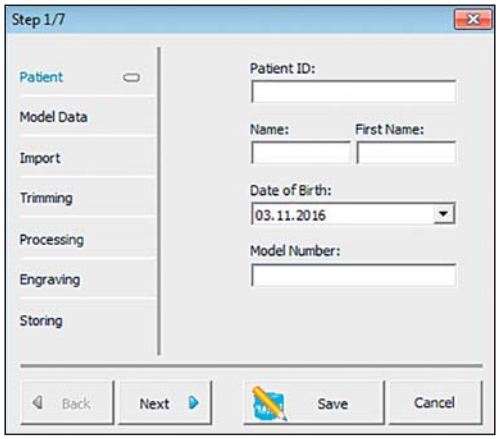


Fig. 9: Input window for patient data

6.2 Entering model data (step 2 / 7)

Enter detailed information on the model in the model data input window, e.g.:

- Date of Impression
- State of Model
- Operator

Click on ***Next*** to proceed to the next step.

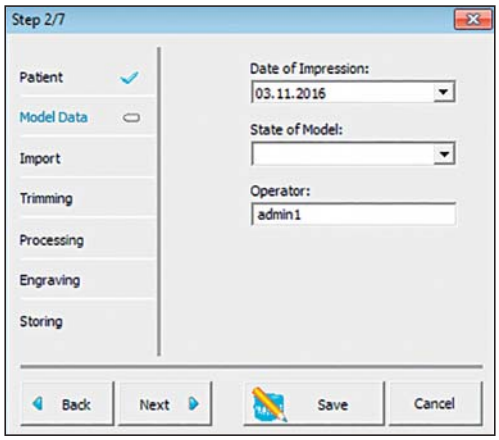


Fig. 10: Input window for model data

6.3 Scanning models or importing existing STL data (step 3 / 7)

During ***Import*** you can scan a new model/set of models using orthoX® scan. When scanning, you can choose either ***Scan Model*** or ***Scan Single Jaw***. It is also possible to import existing STL data in orthoX® file.

Continue with one of the 3 processing options by clicking on the corresponding box.

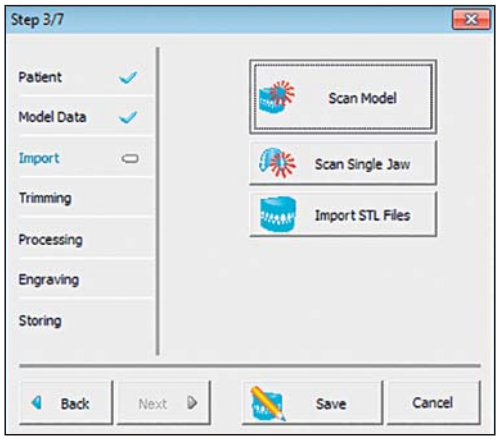


Fig. 11: Input window for importing existing STL data or scanning a model/set of models

6.3.1 Importing existing STL data

If STL data of the models already exists and if the data is aligned in occlusion, import the maxilla to orthoX® file using ***Import Maxilla***. Select the STL data from the directory in the selection window. Import the model by double-clicking on the STL file.

Import the mandible in the same way.

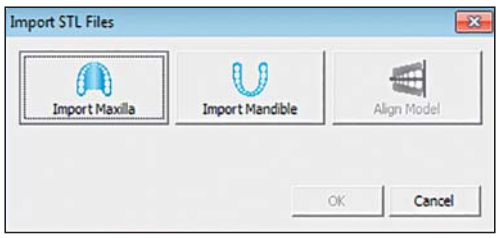


Fig. 12: Opening existing STL data

6.3.2 Scanning single jaw models

Fix the model in position on the model holder and place the model holder in the correct position in the orthoX® scan (see Section 5). Close the cover and start the scanning process by clicking on ***Scan Maxilla*** or ***Scan Mandible***. There is no alignment in occlusion.

The ***Scan Maxilla*** or ***Scan Mandible*** button changes during scanning and a status bar appears, which displays the progress of the scan procedure (see Fig. 16).

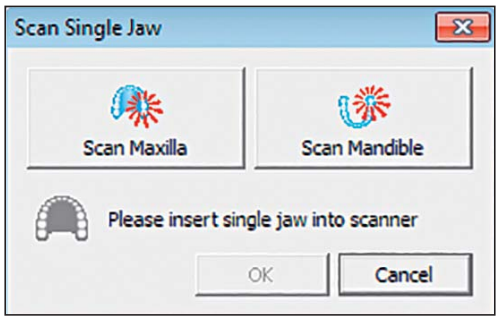


Fig. 13: Scanning of single jaw models

Once scanning is completed, a green tick appears. Click on ***OK*** to close the scanning procedure and proceed to the next step.

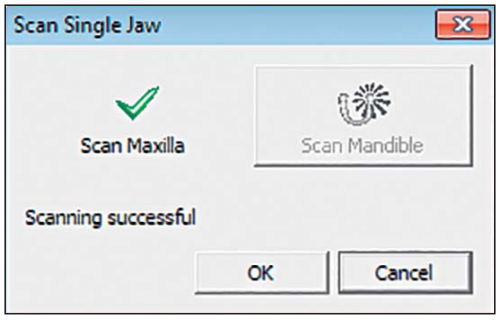


Fig. 14: Individual jaw successfully scanned

6.3.3 Scanning sets of models

Fix the upper model on the model holder and place the model holder in the correct position in the 3D model scanner orthoX® scan (see Section 5). Close the cover and start the procedure by clicking on ***Scan Maxilla***.

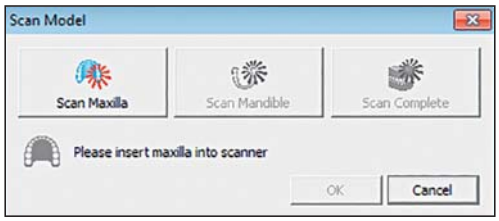


Fig. 15: Scanning sets of models – scanning the upper model

The ***Scan Maxilla*** button changes during scanning and a status bar appears, which displays the progress of the scan procedure.

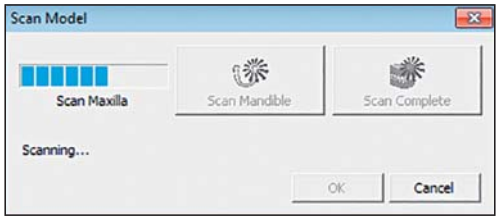


Fig. 16: Scan procedure of the upper model

Once scanning is completed, a green tick appears on the ***Scan Maxilla*** button. A prompt will be displayed to place the mandible in the scanner. Remove the maxilla from the model holder and place the mandible in position. Start scanning the lower model by clicking on ***Scan Mandible***.

The ***Scan Mandible*** button changes during scanning and a status bar appears, which displays the progress of the scan procedure.

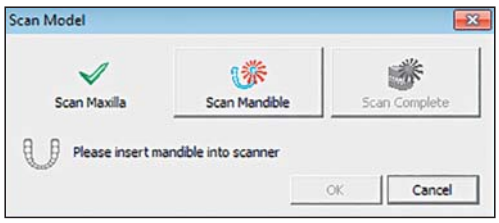


Fig. 17: Scanning the lower model

Once scanning is completed, a green tick appears on the ***Scan Mandible*** button. Next step is the vestibular scan. Fix the upper model in occlusion with the lower model on the model holder. Place the model holder in the correct position in the 3D model scanner orthoX® scan (see Section 5). Close the cover and start the procedure by clicking on ***Scan Complete***.

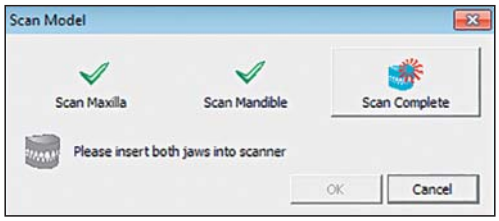


Fig. 18: Scanning of the set of models in occlusion (vestibular scan)

The ***Scan Complete*** button changes during scanning and a status bar appears, which displays the progress of the scan procedure. Once scanning is completed, a green tick appears.

Click on ***OK*** to close the scanning procedure and proceed to the next step.

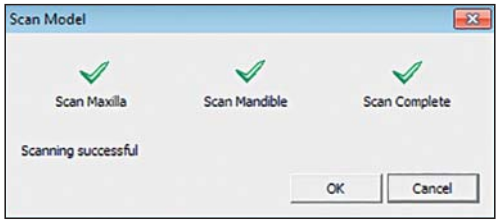


Fig. 19: Scanned set of models

6.4 Trimming (step 4 / 7)

After scanning, you can trim the model (= cutting). To skip trimming, click on ***Next***. To open the selection for trimming, click on ***Trim Model***.

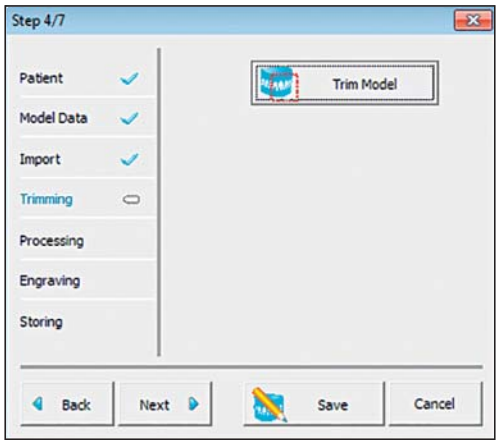
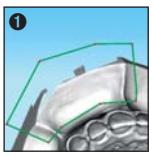
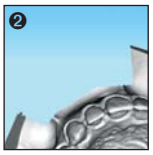


Fig. 20: Select trimming or continue in the procedure

Trimming Maxilla:

First, click on ***Trim Maxilla*** to trim the upper model. Remove the excess areas of the model scan and trim the dental arch to the optimal size by clicking on ***Select Region***.





Select the area you want to delete using several left-clicks ❶. Delete the content of the area with a right-click ❷. If the selected area contains parts of the model that are not connected, only the part closest to you will be deleted. The rest of the model parts must be selected and deleted again.

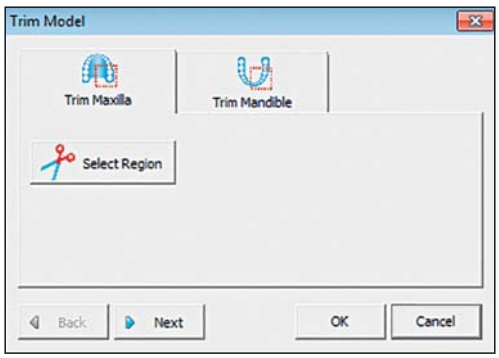


Fig. 21: Trimming the upper model

Trimming Mandible:

Next, trim the lower model. Trim the lower model in the same way as the upper model by clicking on ***Trim Mandible***. Confirm with ***OK***.

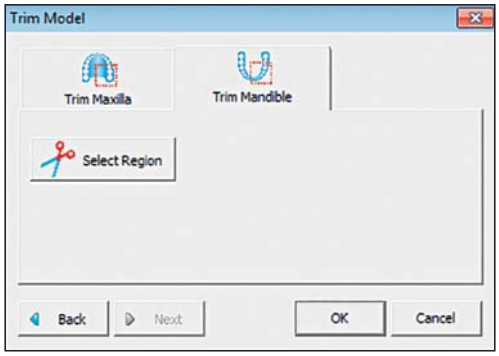


Fig. 22: Trimming the lower model

6.5 Processing the model (step 5 / 7)

You can close the untrimmed models by clicking on ***Complete Model***. You can create a base and align the trimmed models three-dimensionally according to orthodontic planes using ***Create Base***.

6.5.1 Completing the model

When you have finished processing the model, close the untrimmed models by clicking on ***Complete Model*** (see Fig. 23). The program proceeds to the next step ***Engrave Model*** (see Section 6.6).

Click on ***Next*** (see Fig. 23) to skip the ***Complete Model*** step and proceed directly to the next processing step ***Engrave Model*** (see Section 6.6).

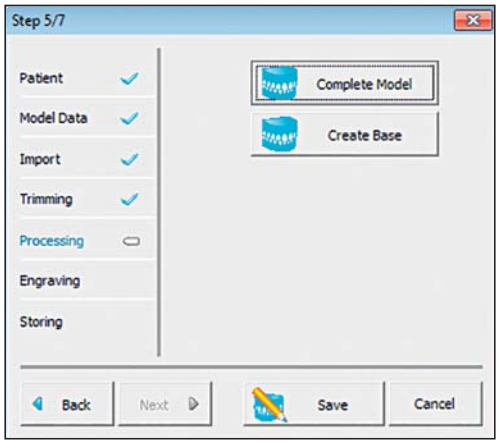


Fig. 23: Completing model or creating a base

6.5.2 Creating a base

If you chose ***Create Base***, you can start aligning the models three-dimensionally according to orthodontic planes (occlusal, median and tuber plane). Start with the ***Occlusal Plane***.

Determine the occlusal plane using 3-point contact. The program provides 3 virtual contact points that can be moved individually using the mouse ❸.

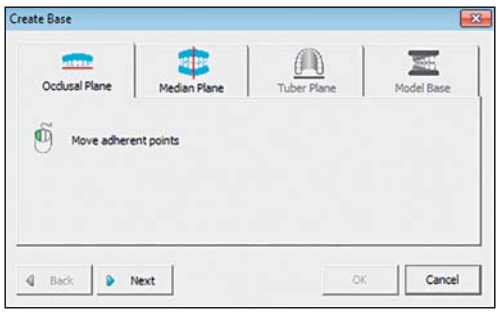


Fig. 24: Defining the occlusal plane

Click on ***Median Plane*** or ***Next*** to proceed to the next step. To define the front/back raphe of the ***Median Plane*** on the upper model press and hold ***Shift*** and left-click ❹.

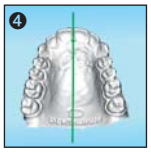
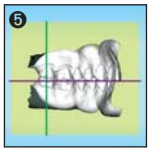


Fig. 25: Defining the median plane

Click on ***Tuber Plane*** or ***Next*** to proceed to the next step. Define the tuber plane by turning the mouse wheel ❺. To zoom in, press and hold ***Shift*** and turn the mouse wheel.



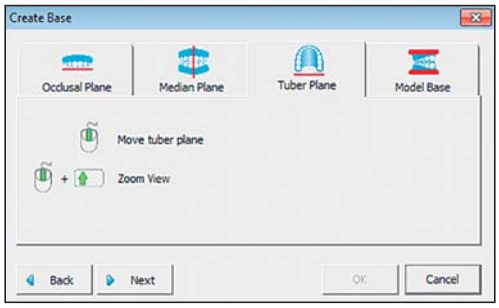
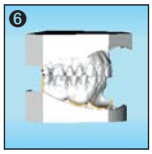


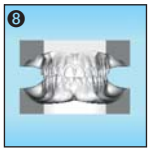
Fig. 26: Defining the tuber plane

Click on ***Model Base*** or ***Next*** to proceed to the next step. Select the optimum size of the base form according to the size of the model via the drop-down selection. The set of models is automatically fitted in the selected base.

To move the model sagittally, turn the mouse wheel. To zoom in, press and hold ***Shift*** and turn the mouse wheel. To move the trimming lines, use the ***up/down arrow keys*** ❻. Correct any point on the trimming lines individually or add new points with the left mouse button ❼.

Click on ***Create Base*** to fill in the missing parts (trimming lines and base margins) and complete the basing process. Click on ***OK*** to proceed to the next step.





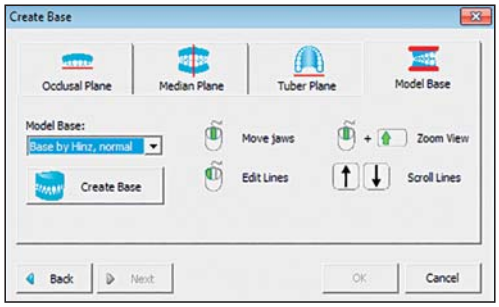


Fig. 27: Selecting the base form

6.6 Engraving the model (step 6 / 7)

For reliable identification the model can be engraved permanently. Click on *Engrave Model* to label the respective jaw.

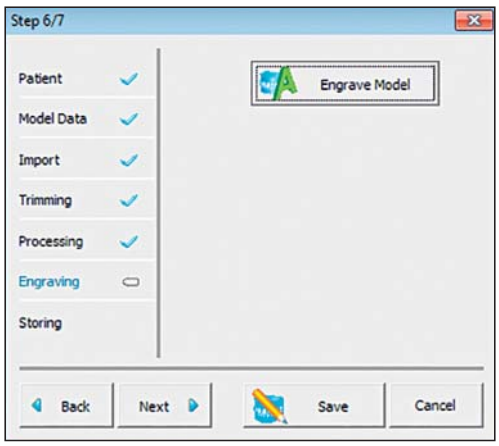


Fig. 28: Engraving model

Enter the desired text in the ***Label*** box. If you want to set a standard text, go to ***Options*** (see Section 9.4). Click on ***Select Region*** to define position and size. Use the left mouse button to rotate the text, the right mouse button to move the text, and the mouse wheel to make the text larger or smaller. Click on ***OK*** to complete the process and proceed to the last step, *Save to Database*.

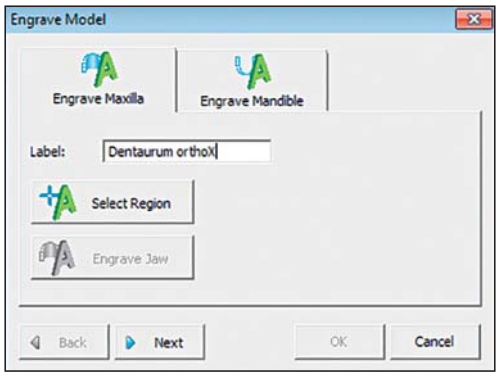


Fig. 29: Defining and positioning label for the upper model

The mandible is engraved in the same way as the maxilla, if required.

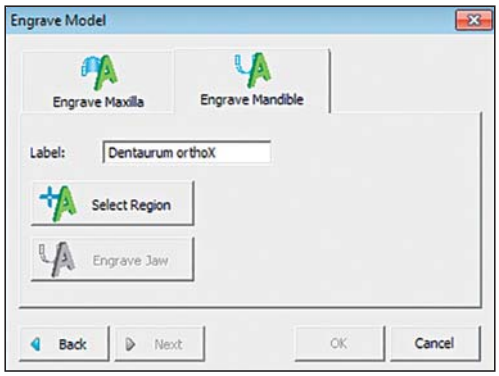


Fig. 30: Defining and positioning labeling for the lower model

6.7 Storing the model (step 7 / 7)

Click on ***Save to Database*** to complete the digitization of the model. Once the model is saved to the database, it cannot be altered anymore. The engraving can also no longer be altered or deleted.

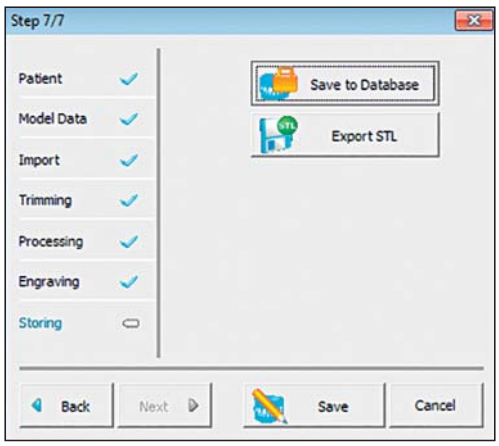


Fig. 31: Saving the model scan to the database

You can store the model in STL format by clicking on ***Export STL***. Chose where the file should be stored and confirm with ***Save***.

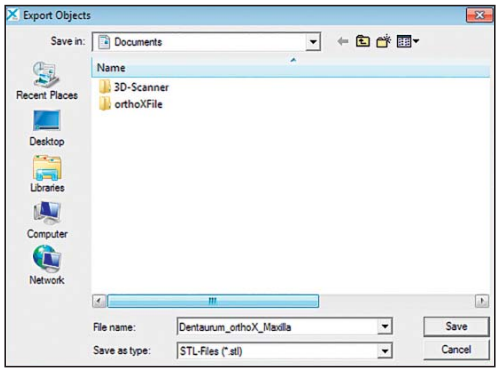


Fig. 32: Export STL

7 Temporary storage

While using the Model Wizard you can temporarily save any intermediate state of the process. The temporarily saved models can be opened via ***Open Temporary Storage*** . The model is reopened at the stage at which it was last temporarily saved. Processing can be continued from this stage.

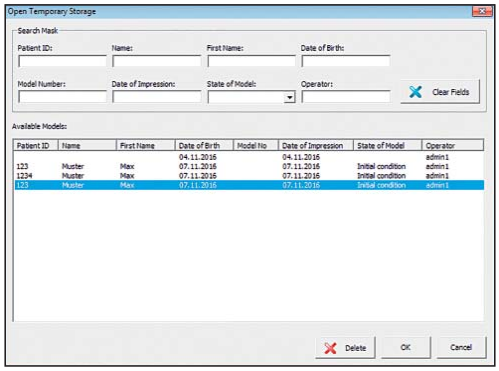


Fig. 33: Temporary storage

8 Database

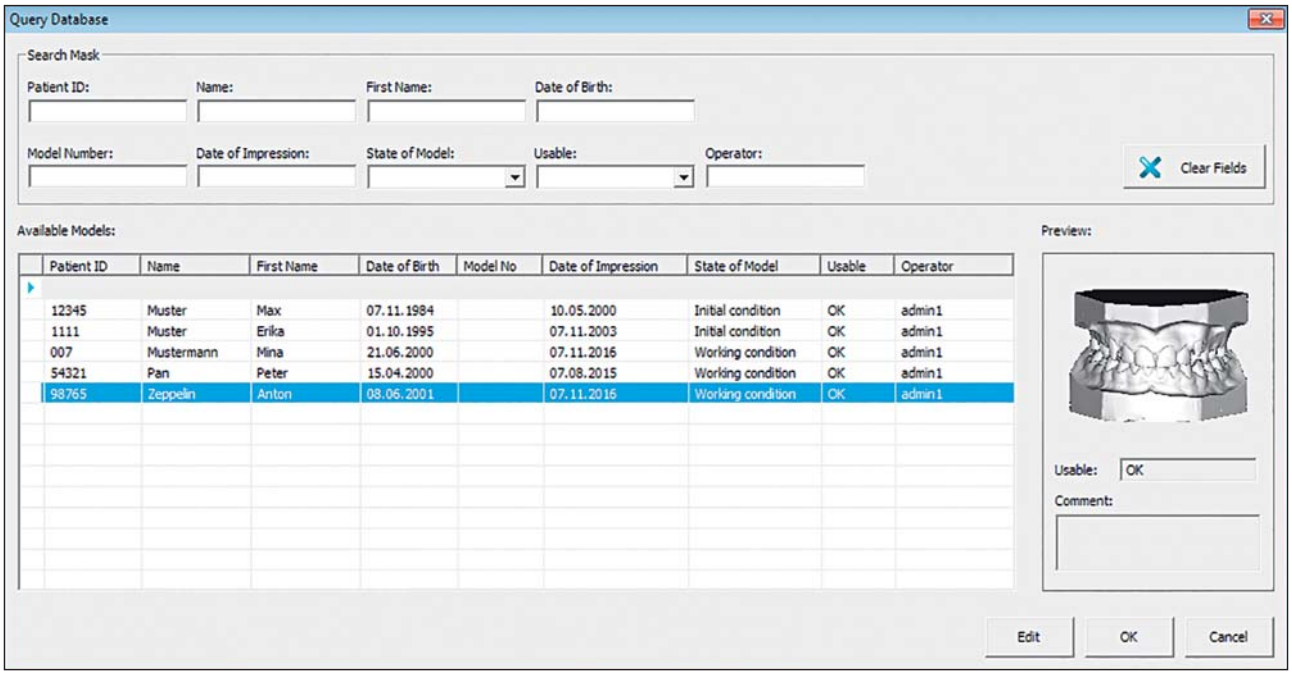


Fig. 34: orthoX® file database

The scanned data is saved as a packed and encrypted format (.ddm). This format can only be opened with orthoX® file. The data cannot be modified. After opening the data with orthoX® file, it can be exported as open STL format.

All models stored in the database can be selected in the database window. The different search fields ensure that the models can be found quickly. Comments about the respective model can be entered in the database view. You can also mark the model as unusable via ***Edit***, if the model has been stored in the database incorrectly (e.g. under the wrong name, model incorrectly based,...).

All functions of the tool bar can be used after opening a model.

9 Options

9.1 Database folder

Under *Options* (via *View* in the menu bar) you can enter the storage location of the data directory. The data directory should be backed-up to the storage location on a daily basis. We recommend keeping an additional copy of the data at a different location.

9.2 Scan quality

Use the scan quality tab to set the scan quality. This setting is transmitted to the scanner software. It is recommended to keep the default ***high scan quality***.

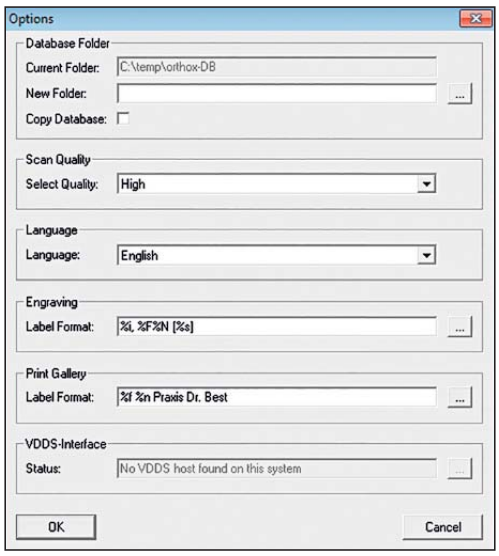


Fig. 35: Options

9.3 Language

You can select different languages for orthoX® file. To use a newly selected language, close and restart orthoX® file after you have changed the language.

9.4 Engraving

You can change the proposed engraving text. Click on ... and another window opens.

Assemble your standard engraving text in the ***Label Format*** box using the listed letters with the % sign in front as code for the patient data categories. Note on names: if you use capital letters, only the initial is shown; if you use lower case letters, all letters are written out. You can also enter free text as standard element.
The ***Resulting Label*** shows the indicated code as text example.

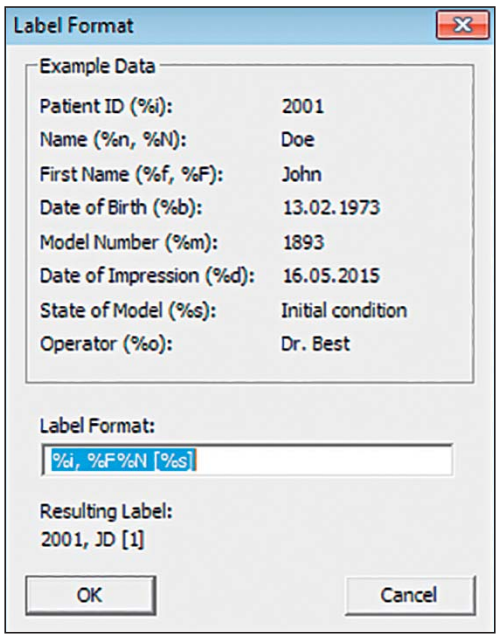


Fig. 36: Options for engraving text

10 Other functions

10.1 Point distance

By clicking on ***Point Distance*** in the tool bar, you can measure the distance between two points on the model. Press and hold ***Shift*** and left-click to select the first point. Left-click again to select the second point. The total distance, as well as the x- y- and z-direction measurements appear in the colored box on the bottom. Please note that this is a very basic measurement not recommended for model analysis.

10.2 FTP Upload

Go to ***File*** in the menu and select ***FTP Upload***. In the window that opens, select the FTP server, to which you want to upload the data. To add a new FTP server, click on ***New***. To change the data, click on ***Edit***. To delete the selected FTP server from the list, click on ***Delete***.

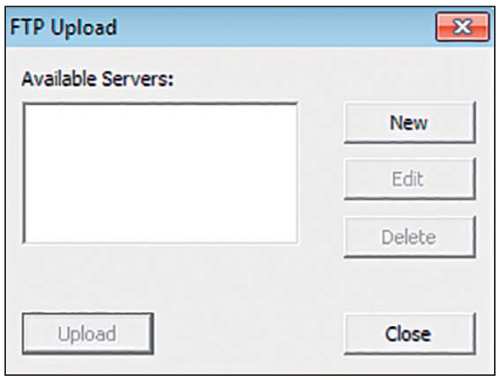


Fig. 37: Select FTP server

An additional window appears when adding a new server. Enter name, server address, your user name and a password.

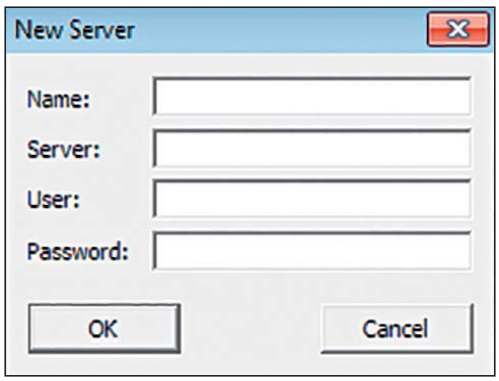


Fig. 38: Specify new server

11 Quality information

Dentaurum ensures a faultless quality of the products manufactured by us. These recommendations are based upon Dentaurum´s own experiences. The user is responsible for the processing of the products. Responsibility for failures cannot be taken, as we have no influence on the processing on site.

Should you have any questions, please contact your local representative. You can also find information on orthoX® at www.dentaurum.com.

Dentaurum Group

Germany I Benelux I España I France I Italia I Switzerland I Australia I Canada I USA
and in more than 130 countries worldwide.

DENTAURUM
QUALITY
WORLDWIDE
UNIQUE

For more information on our products and services, please visit www.dentaurum.com

Date of information: 03/17

Subject to modifications

www.dentaurum.com

Like us on Facebook!

Visit us on YouTube!

Follow us on Pinterest!

989-502-72 Printed by Dentaurum Germany 03/17/B/R1

DENTAURUM

Turnstr. 31 I 75228 Ispringen I Germany I Phone +49 72 31/803-0 I Fax +49 72 31/803-295
www.dentaurum.com I info@dentaurum.com