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Aidite A-IS pro scanner
User Manual

A-IS pro scanner is specially designed to provide solution for dentistry with expertise, developed by Aidite (Qinhuangdao) Technology Co. Ltd independently. The process of calibration and scan are fully automatic. Scanner brings precise 3D scanning and effective order management, providing the customers with a simple and intuitive workflow to improve the efficiency of production

The manual describes Scanner consisting of following parts

1. The Use of Fixture
2. Create Order
3. Scan Operate
4. Scan Type
5. Occlusion
6. Calibration
7. System Test
8. Remote mode
9. Notes
10. Safety Notices
11. Contact Us

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Disclaimer

This user manual is an instruction for installation, operation, and maintenance, but not product warranty. All efforts have been made to ensure the accuracy and completeness of the information in this manual. However, Aidite (Qinhuangdao) Technology Co., Ltd. accepts no responsibility for any errors or an omission contained in the documentation and reserves the right to explain and revise the publishing and fault of this manual. The information in this manual is subject to change without notice.

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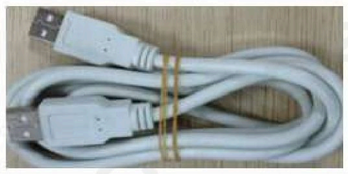
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1. The Use of Fixture

The fixtures will be used to fix model, models in occlusion and die(s), etc. The details of fixture are as follows.

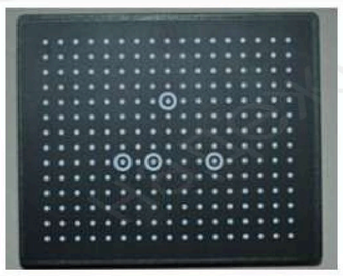
1. The fixture of Calibration plate
2. Model fixing fixture
3. The fixture of die
4. Height adapter
5. Fixing of articulation transfer fixture
6. The fixture of dental model
7. Fixing targets fixture

Accessories

Items	quantity	Picture	Usage	available in
USB cable	2/1		To connect scanner and computer	A-IS Pro
Power supply	1		To provide power	A-IS pro
Hexagonal tool	1		To maintain device	A-IS pro
Dongle	1		To run software	A-IS pro

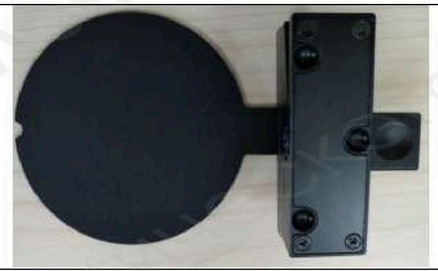
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Calibrate plate	1		To calibrate scanner	A-IS pro
Die plate	1		To scan die(s)	A-IS pro
	1		To scan upper and lower quarter jaws and dies	A-IS pro
Model Fixture	1		To scan arch (use blue-tack fix arch on it)	A-IS pro
	1		To scan occlusion (see below for how to place models)	A-IS pro
	1		To scan articulator-mounted	A-IS pro

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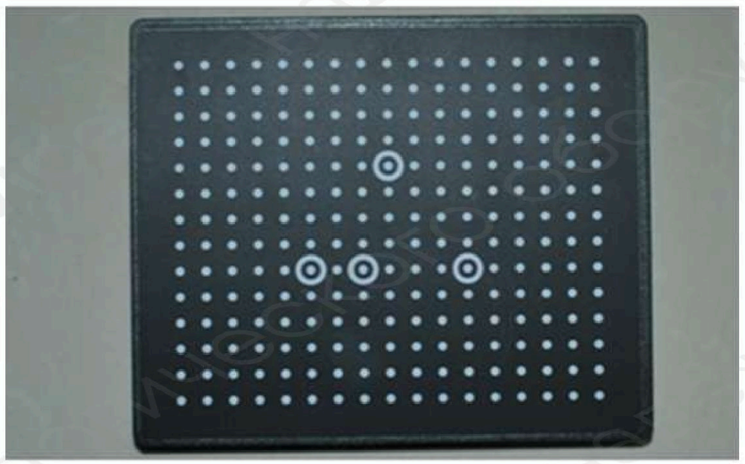
	1		To scan articulator-mounted	A-IS pro
	2		To scan dental arch	A-IS pro
	1		To scan impression	A-IS pro
Height Adapter	1		For calibration, die(s) scanning and dental arch scanning. Placed directly on the scanner’s rotation base	A-IS pro
	1		For articulator scanning	A-IS pro
	1		Pad for dynamic articulator scan	A-IS pro

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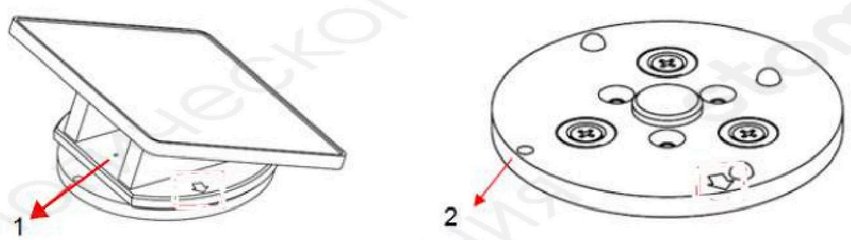
White board	1		To calibrate white balance	A-S2/S3

1.1. The fixture of Calibration Plate



Calibration Plate

The fixture of calibration plate: align the No. 1 hole at the base of calibration plate with the No.2 hole on the rotating table.



1.2. Model fixing fixture

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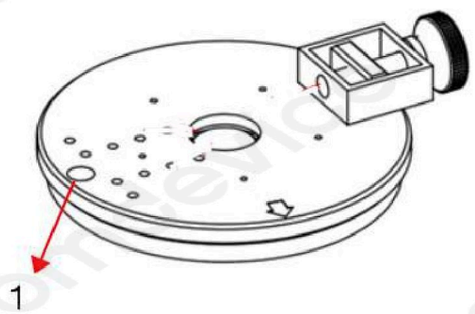
Front side

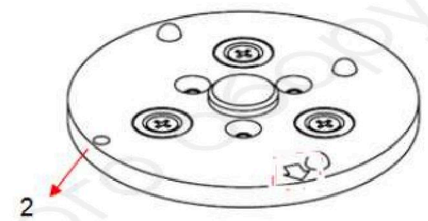


back side



Model fixture fixing: Align the No.1 hole on the fixture with the No.2 hole on the rotating table.





Fixture of :

(1)Following the direction of the red arrow, push the plaster model to the edge until it is fully inserted





(2)Take Amann Girrbach plaster model for example, it shall be fine when the transfer plate and the plaster model are overlapped at the circled area as below.

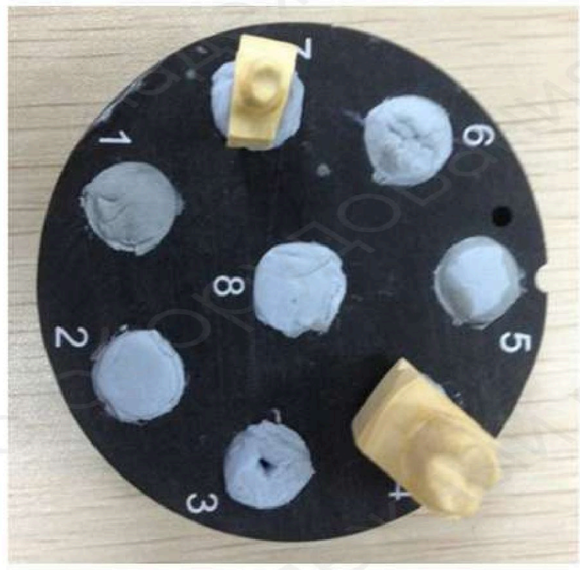




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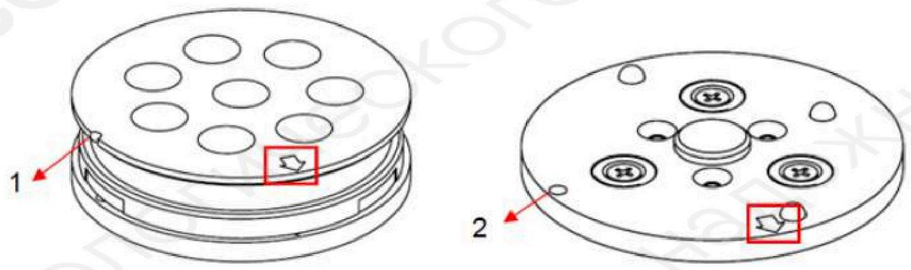
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1.3. **The fixture of Die**



Tooth clamping

(1) **The fixture of tooth die:** Align two arrows on the die tray and rotating table, as well as hole 1 and hole 2.



1.4. height adapter

height adapter: it can be applied in following processes(calibration, die scanning, upper jaw and lower jaw scanning of non-articulation transfer order)



Static articulator scan jaw: use it during static tooth scan. See Articulator below for an example.

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Place the articulator onto the scanner as below picture:



Front view



Bird’ s eye view

Dynamic articulator scan pad: available for A-IS pro scanner only;it is used for dynamic articulator scan process, see Corident articulator below as an example:



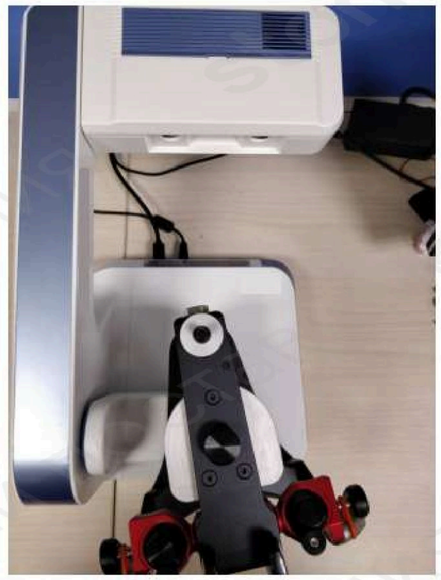
Place the articulator onto the scanner as below picture:

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Front view



Bird’s eyes view

1.5. The fixture of dental model

(1) **The fixture of dental full arch:** Place full arch model on the plate, fixing by rubber band, blue-tack or screw depends on dental models and model fixing fixture came with the scanner, shown as the images below.





The model fixing fixture came with the scanner, shown as the images below.





(2) **the fixture of the quadrant arch :** Fix the quadrant jaw with blue-tack, shown as the figure below.

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(3) **The fixture of occlusion:** Use rubber band or wax to fix upper arch and lower arch in occlusion, and fix them by using blue-tack or screw on the plate, please see images below






(4) Impression Fixture

4.1 Fix the fixture

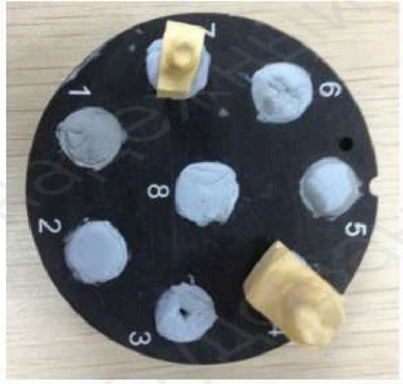
The impression fixing fixture came with the scanner, shown as the images below.



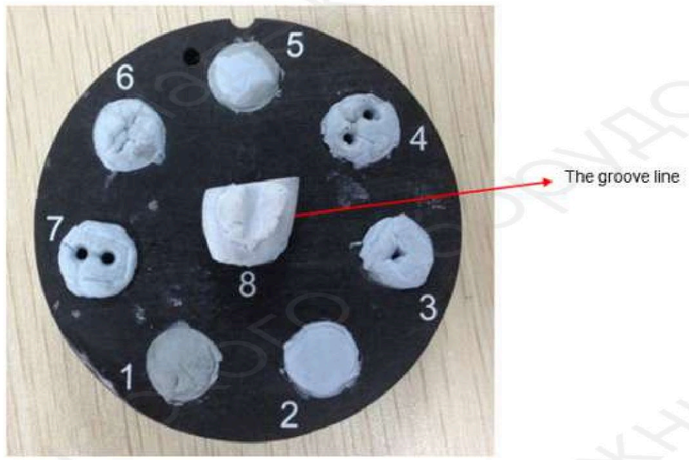
(5) **Die Fixture:** insert the teeth into the hole of blue-tack.

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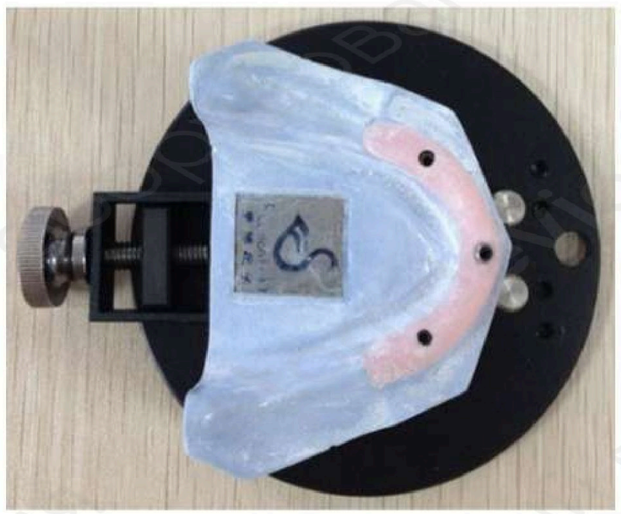
(6) **Inlay fixture:** in order to scan the inlay completely, when make sure the groove line on the inserted inlay is in line with the straight line between hole 5 and hole 8.



(7) **Implant model fixture**: it includes fixing the teeth model with scan pole and fixing teeth model with gum.



Clamping tooth model with scan pole



Clamping tooth model with gum

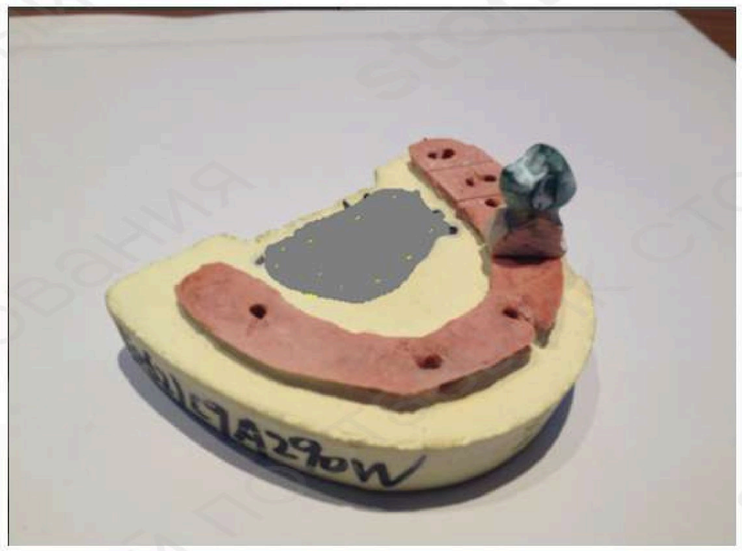
(8) **waxup fixture**

8.1Partial arch

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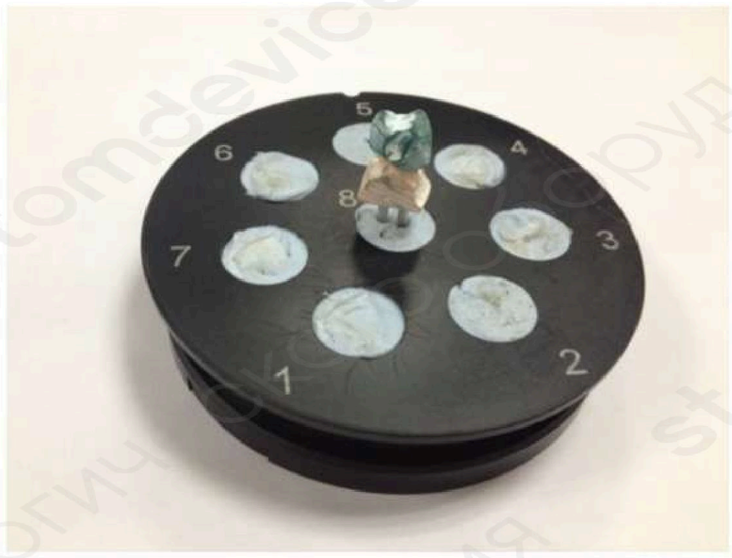




8.2Full arch



8.3Die with waxup



2. Create Order

User have to calibrate the scanner before perform any scanning, otherwise message will pop-up.

To launch calibration, user could open DentalScan.exe software and click icon [illegible], or Click "Start" of Windows, locate DentalScan, Calibration. Please refer to chapter "Calibration" for more information.

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AutoScan offers three methods to create new order, the scanning process is the same yet no matter how the order is created.

1. Create order from DentalManager.exe
2. Create order from exocad DentalDB

2.1. DentalManager

DentalManager is consist of two parts:1. Order Information 2. Settings

User could open DentalManager by clicking icon 

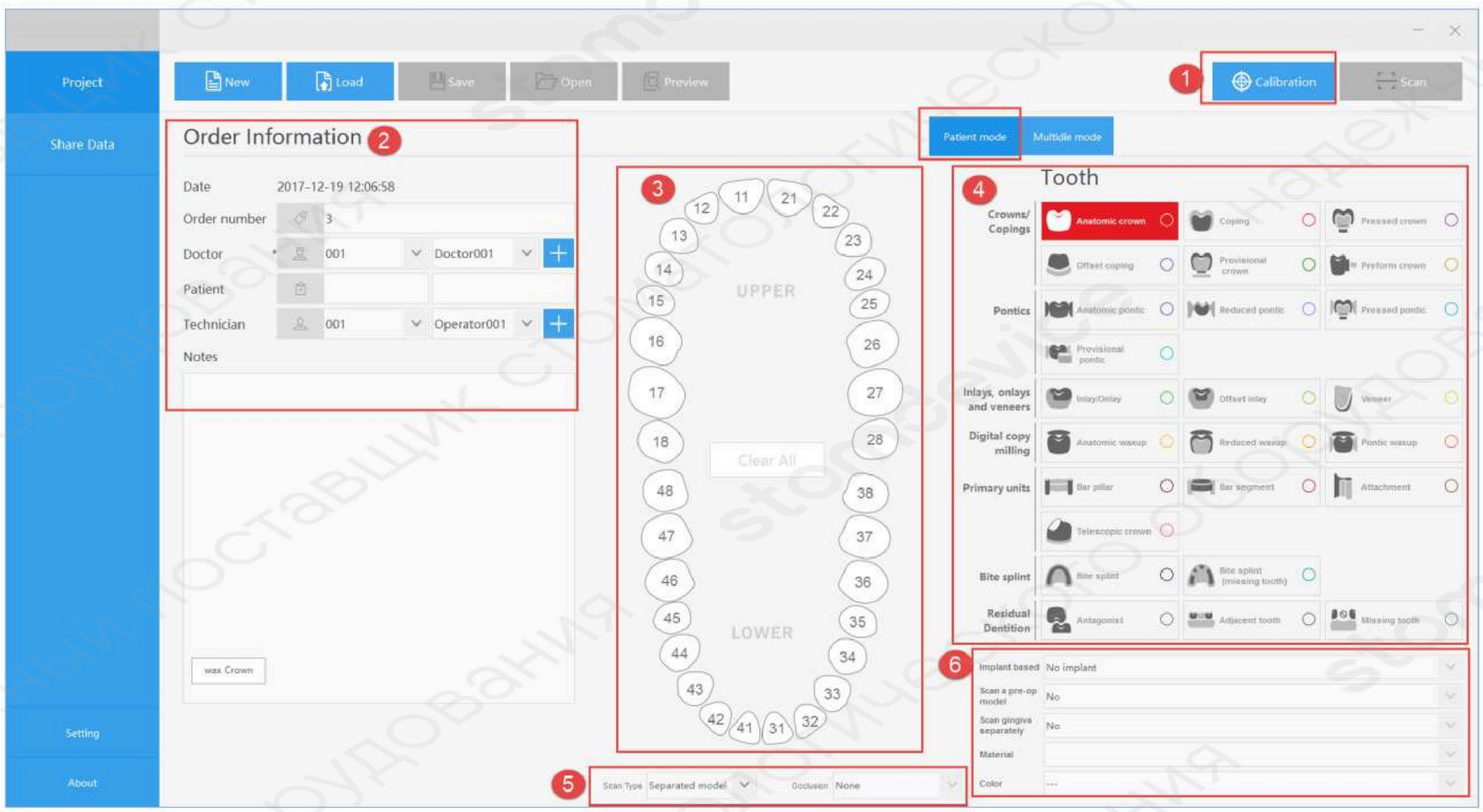
on desktop or from "Start" of Windows> DentalScan >DentalManager

2.1.1. Order information

The order is divided into three modes according to different user requirements:Patient mode,Multidie mode,Clinic mode.

2.1.1.1. Patient mode

Select "patient mode" as shown in the picture below.



① Calibration:calibration software

② Order Information: for user to edit order number and fill in information such as doctor, patient, technician, notes, etc.

③ Tooth Notation

④ Restoration Type

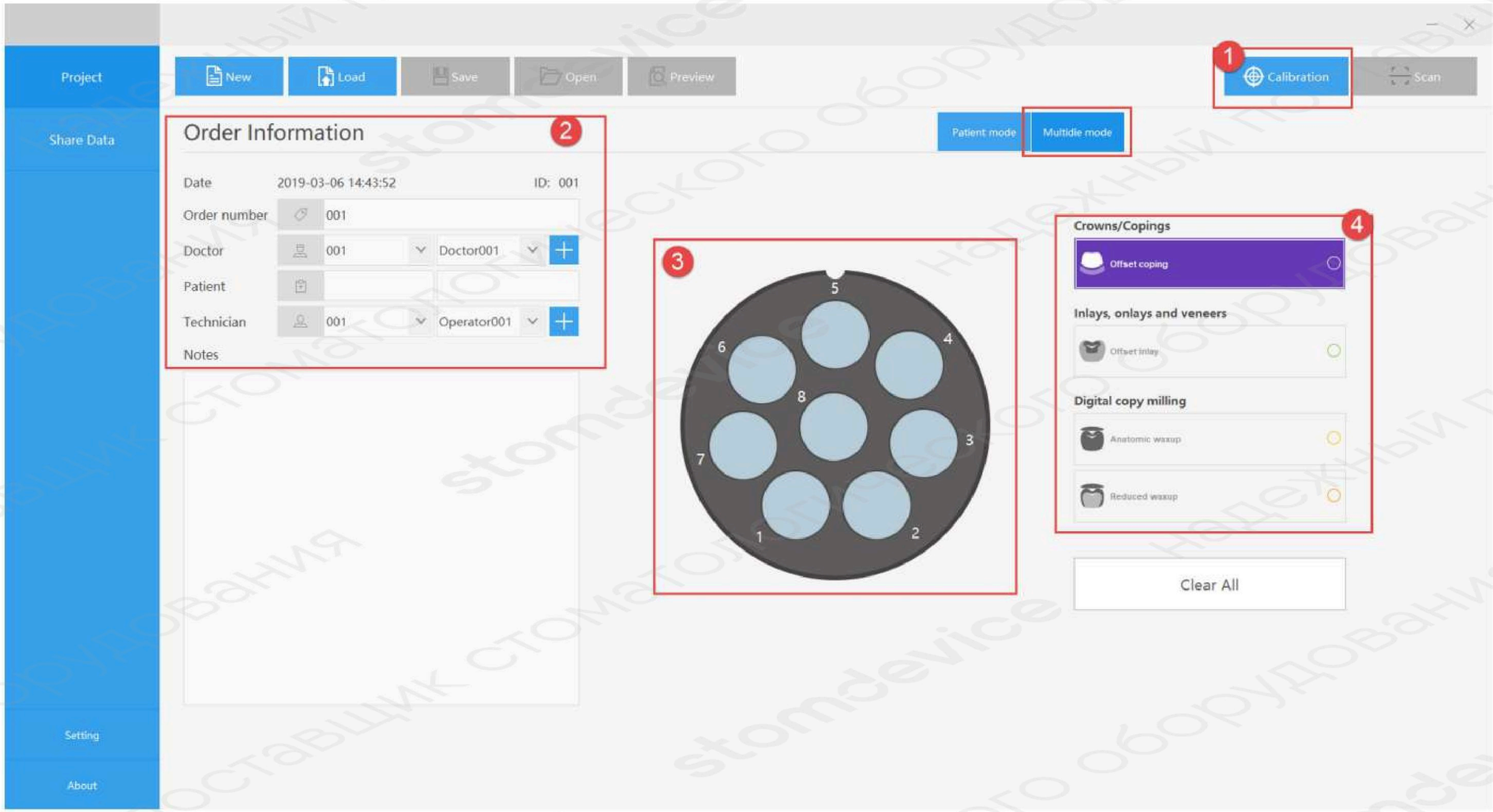
⑤ Scan Type and Occlusion Type

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⑥ Tooth Material and Parameter

2.1.1.2. Multidie Mode

Select "multidie mode" as shown in the picture below.



① Calibration:calibration software

② Order Information: for user to edit order number and fill in information such as doctor, patient, technician, notes, etc.

③ Die Plate

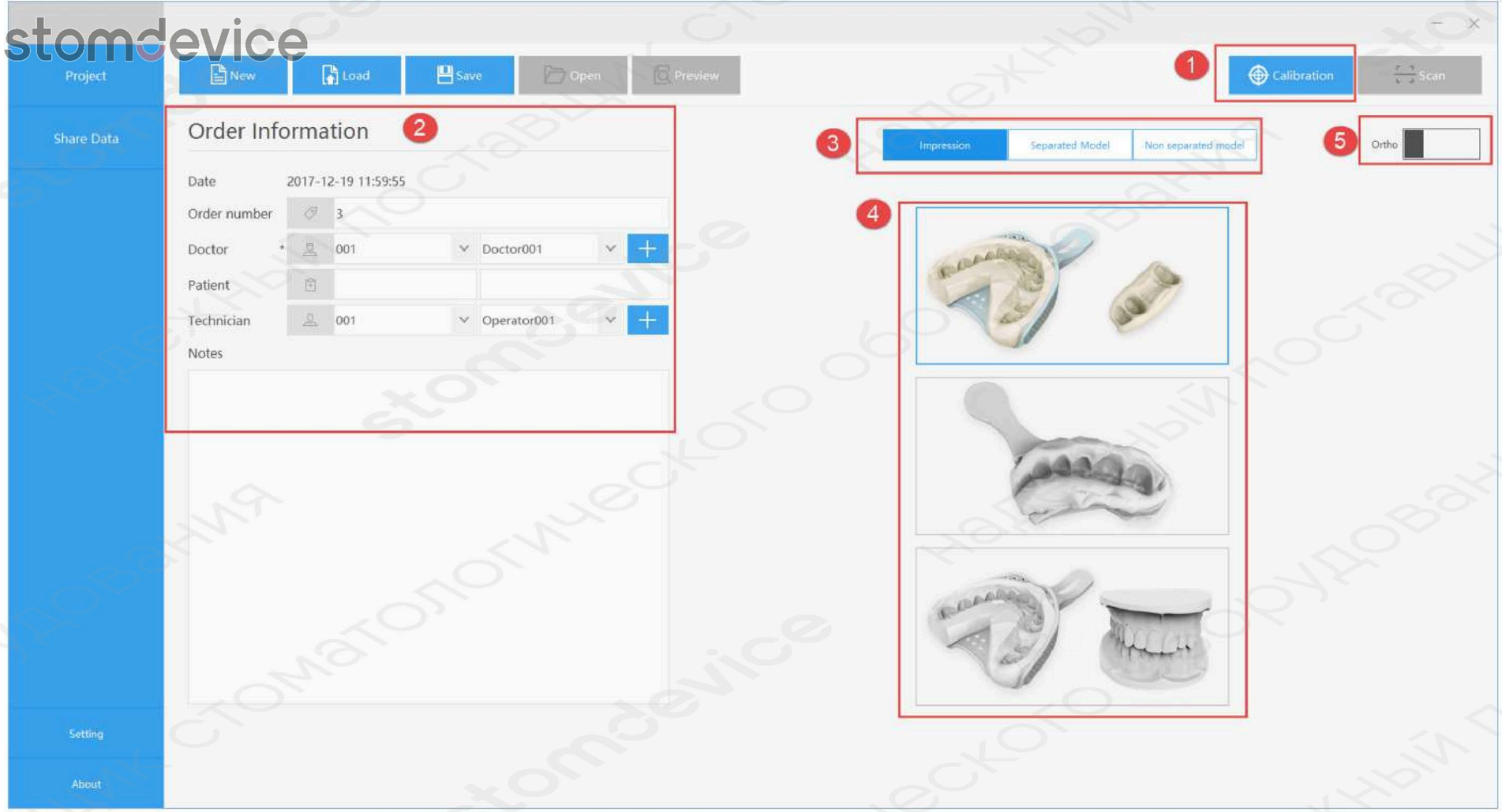
④ Tooth Type: crows/copings, inlays, onlays, veneers, waxup.

2.1.1.3. Clinic mode

Find "device type" when starting milling, select "clinic" mode, and the following interface pops up.

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① Calibration:calibration software

② Order Information: for user to edit order number and fill in information such as doctor, patient, technician, notes, etc.

③ Scan Type:impression, separated model and non-separated model

④ Impression Scan Type:Single-sided impression with waxup bite, triple tray impression, single-sided impression with gypsum bite.

⑤ Ortho Option: slide it to the right to highlight, then the scanned data can be directly imported into the orthodontic software.

Notes:

How to check tooth definition: Right click on tooth to check tooth definition

How to copy a defined tooth information: Choose a defined tooth first, press Ctrl and click another tooth you want to apply the same settings

After user create a new order, fill order information, define teeth and click Save, the Scan button will be available, now user can perform scanning by clicking Scan.

2.1.2. Order data share

User can share order data to another specific user through Share Data, Support public clouds, private clouds and lan sharing.

2.1.2.1. Private Cloud

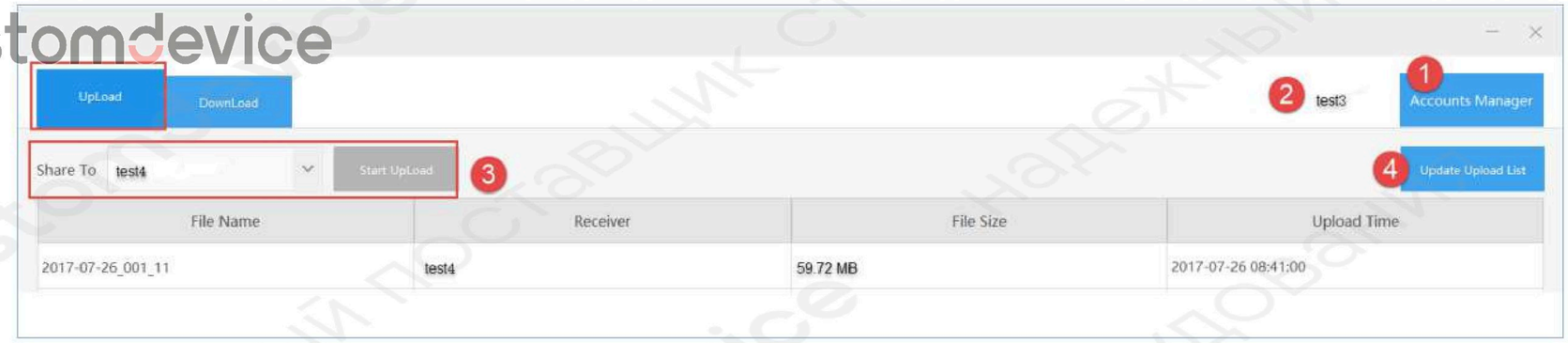
Users shall build the data sharing environment in local area network according to user needs. If in need, users can contact Shining 3D technician for assistance.

Data Upload

Users input the user name and password to log in the system, select item, the interface is shown as below:

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① Accounts Manager: input the user name and password to log in account

② Displays the current account with a successful login

③ Select whom to be shared to, click the "start upload" button, then the current order will be shared to him/her.

④ Update Upload List: Click this button to list all upload lists for the current account

Data Download

The user who is being shared shall log in according to the registered user name and password. After login, the interface is shown as below:



① Accounts manager: input the user name and password to log in account

② Displays the current account with a successful login

③ Select the sharer, etc., click the "Update Download List" button to list the download list

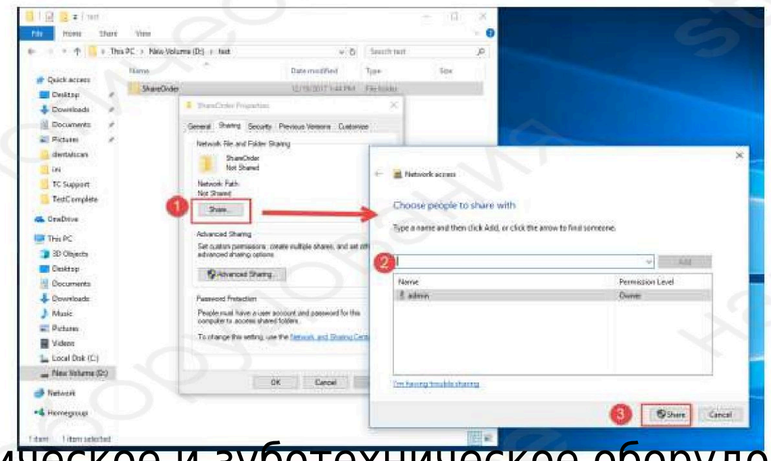
④ Download the order data required

2.1.2.2. LAN Sharing

1. Creation of Shared file folder

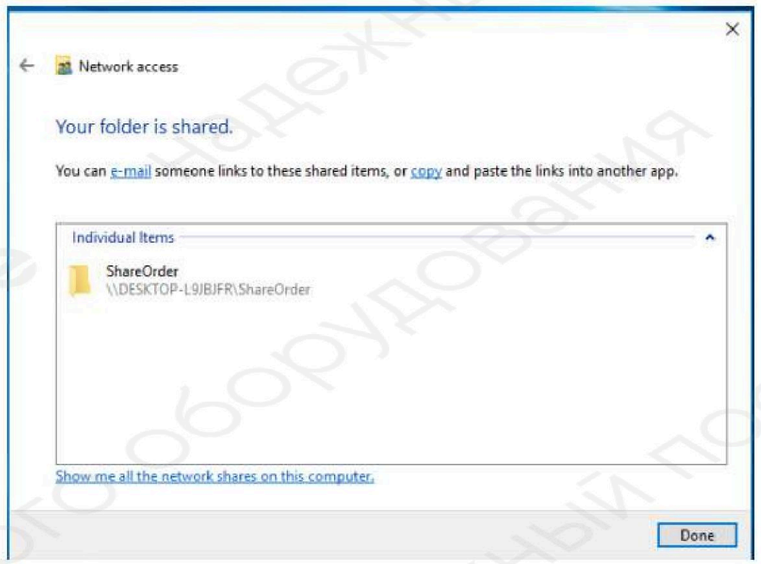
Choose one computer to store shared file folder;

create one file folder in the computer and name it like "ShareOrder", right click on the file folder and click on "Properties"; go to "Sharing" and click on "Share" to choose account to share with.



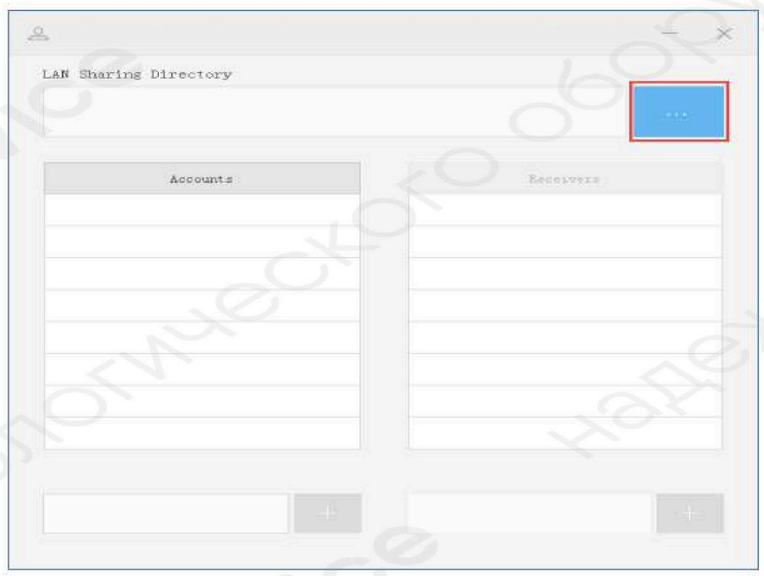
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Click on “Done” to finish and record the shared folder path: \\ADMIN-PC\ShareOrder

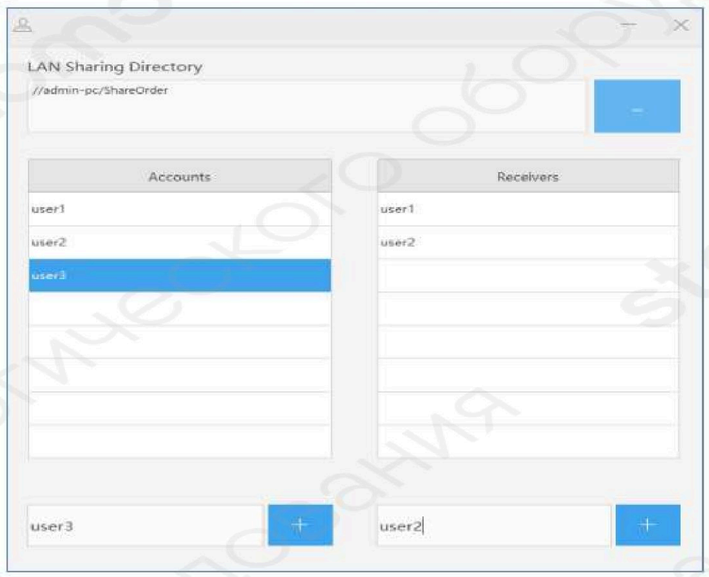


2. User Creation

Run C:\Shining3D\DentalManager\LANSharingAccounts.exe, click on the right button to choose the path of shared folder, input like (\\ADMIN-PC\ShareOrder)



Create user file folder and receiver: you can add user below “Accounts”, click on the created user and create receiver below “Receivers”. (both user and receiver should be typed in English)

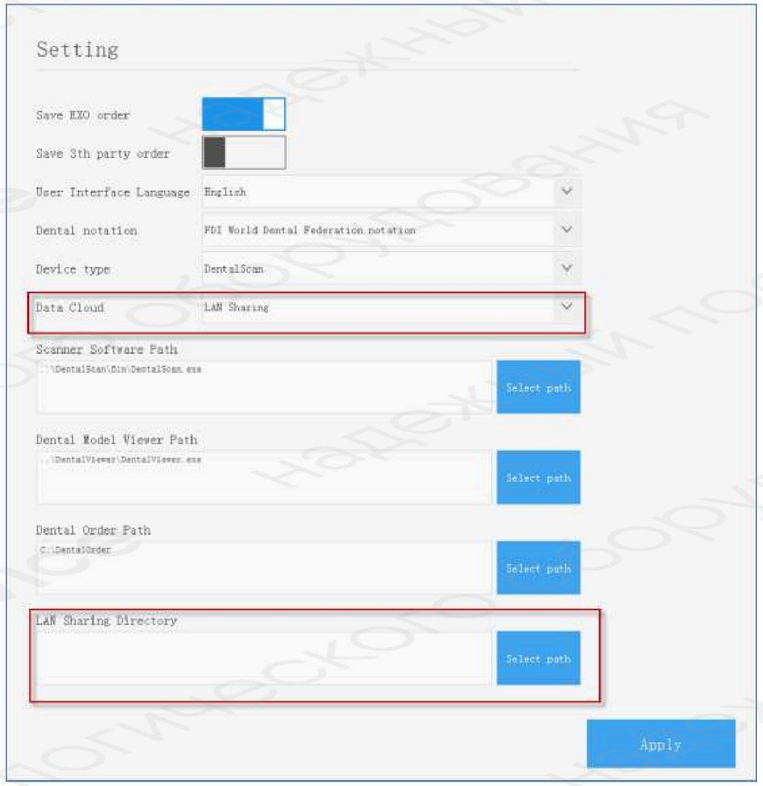


3. DentalManager Configuration

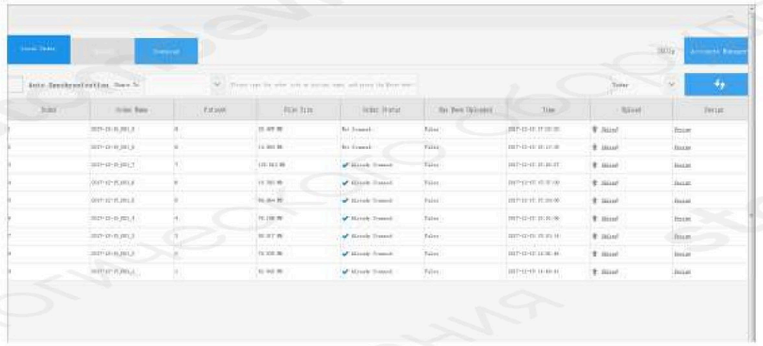
Run DentalManager.exe on Desktop, at the bottom right corner click LAN Sharing Set, click on the right button to choose the shared folder (\\ADMIN-PC\ShareOrder) on Admin.

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After login-in at data sharing interface, you can choose certain order to upload and download.

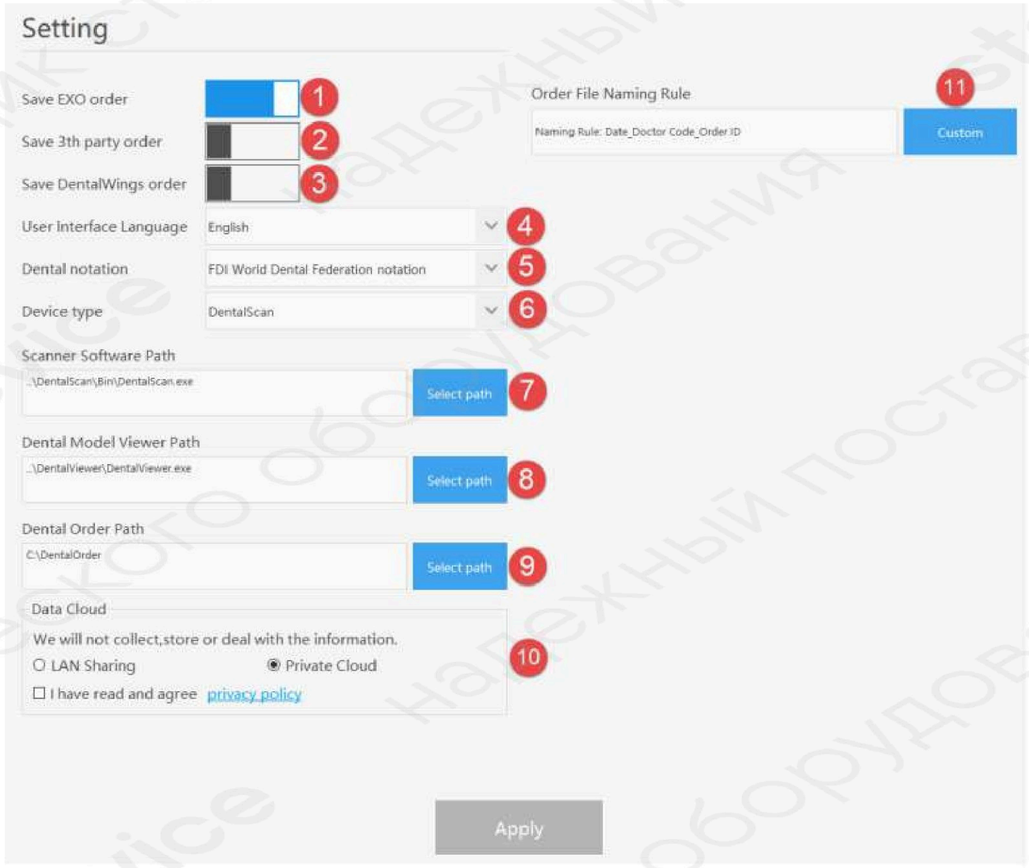


2.1.3. Settings

User can check or configure settings by accessing Settings button.

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① If enable this option, exocad dentalDB can import the order directly, The default setting is active.

② If enable this option, 3rd party software can import 3D data with preferred orientation. The default setting is inactive.

③ Save DentalWings order: If enable this option, DentalWings software can import 3D data for design directly. Currently only support crown and bridge indications. The default setting is inactive.

④ User interface language: user can modify the interface language and default language is decided when users install the software.

⑤ Dental notation: FDI world dental federation notation and universal numbering system.

⑥ Device type: Clinic, DentalScan, IntraOralScan. The default is DentalScan.

⑦ Scanner software path: users can set the software path.

⑧ Model preview software path: users can set the software path.

⑨ Configure order output directory.

⑩ Data Cloud: Public Cloud, Private Cloud。The default is Private Cloud.

⑪ Order file naming rule: users can name the order file folder with their own preference.

Note: To save and make setting change takes effect, please click 'Apply' button after configuration.

2.2. EXO

The activate tool are only used to bundle with Exocad, users don't have Exocad software don't need to bundle.

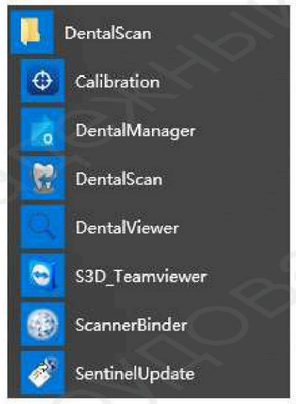
There are three steps: start activation tool, select bundle files and then bundle successfully.

① Start activation tool

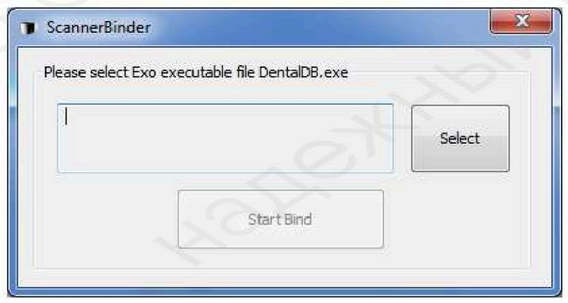
After install Dental DB, please start Activation Tool first, Start by the program Exocad SoftwareBundle

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Click 'start activation tools'; see the photo as below, click button of 'select'

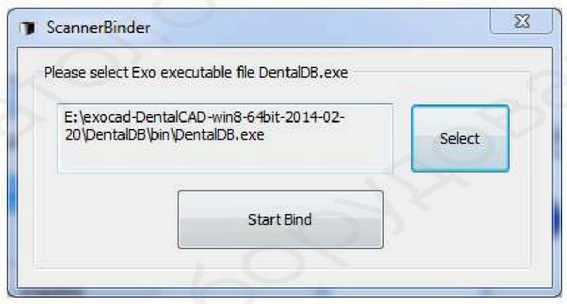


② Select the folder for bundled file

Find the path for DentalDB.exe; choose DentalDB and then bundle with the software.

③ Binding successful

Click 'start binding' to bundle with the Exocad, if it is successful, there will be a reminding show as below.



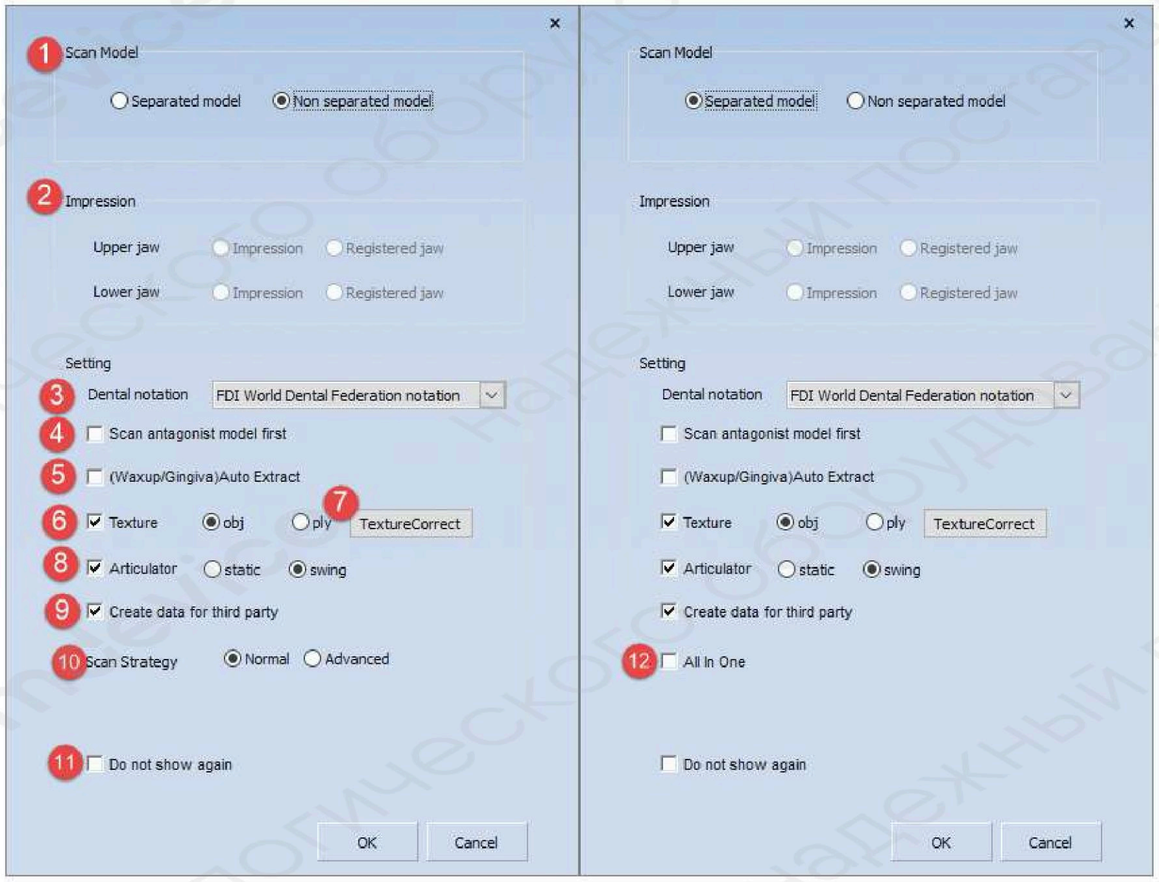


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3. Scan Operate

The following function buttons will be used during scanning, they can made the scanning process more convenient.

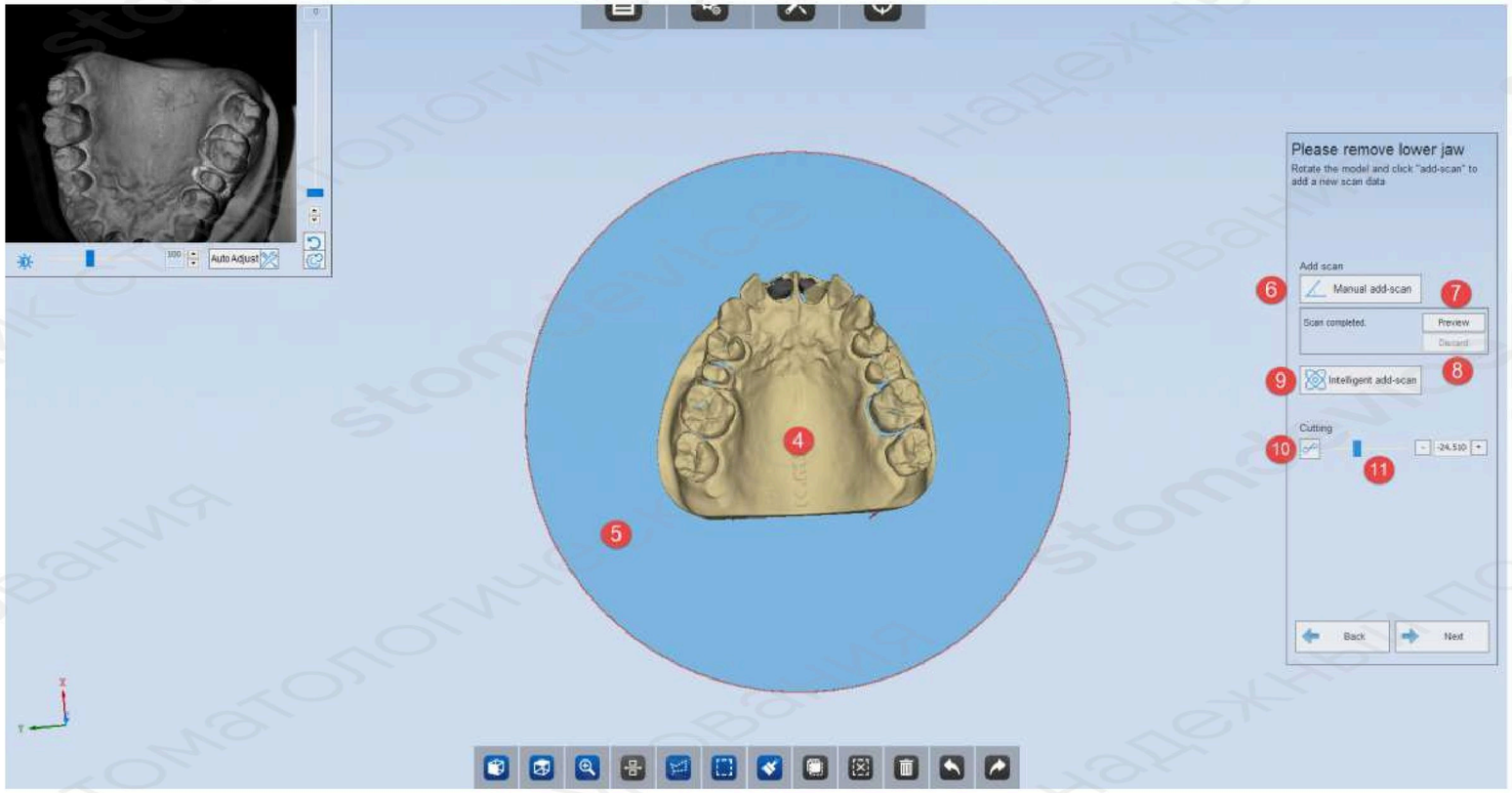


① **Scan Model:** Change between separate model and non-separate model scan mode.
② **Impression**：Users can choose upper jaw and lower jaw to be impression or registered jaw(gypsum model)
③ **Dental notation**:"FDI World Dental Federation notation"and "Universal numbering system"to choose
④ **Scan antagonist model first:** Once checked, software will choose to scan antagonist model first during the scan workflow.
⑤ **(Waxup/Gingiva)Auto Extract:** Once checked, waxup and gingiva data will automatically delete overlapped data with jaw data.
⑥ **Texture:** Once checked, software will capture texture; supports colored texture;A-IS proand A-IS pro(S) support black and white texture.
⑦ **TextureCorrect:** this function is activated only if you choose Texture scanning function; white balance adjustment is recommended before using Texture scanning function for the first time, so that better data visual effect can be delivered Operation: wrap a white board outside calibration board and click white balance adjustment to start automatic adjustment; once this process is done, a tip will pop out.
⑧ **Articulator:** Static mode is available for , A-IS pro , A-IS pro(S), swing(dynamic scan) mode is only available for A-IS pro(S)
⑨ **Create data for third party:** Once checked, software can export 3D data compatible with 3shape design software; default setting is inactive.
⑩ **Scan Strategy:** When users scan unseparate model, they can choose normal or advanced mode; advanced mode provides more scan positions, longer time but better scan result.
⑪ **Do not show again:** Once checked, pre-set window will not pop out next time. If needed, users can click on the "+" on the upper right corner.
⑫ **All in one:** For scan orders of separate quarter models with indications of crown/coping/veneer/inlay/onlay no more than 4 units, this function is suitable.

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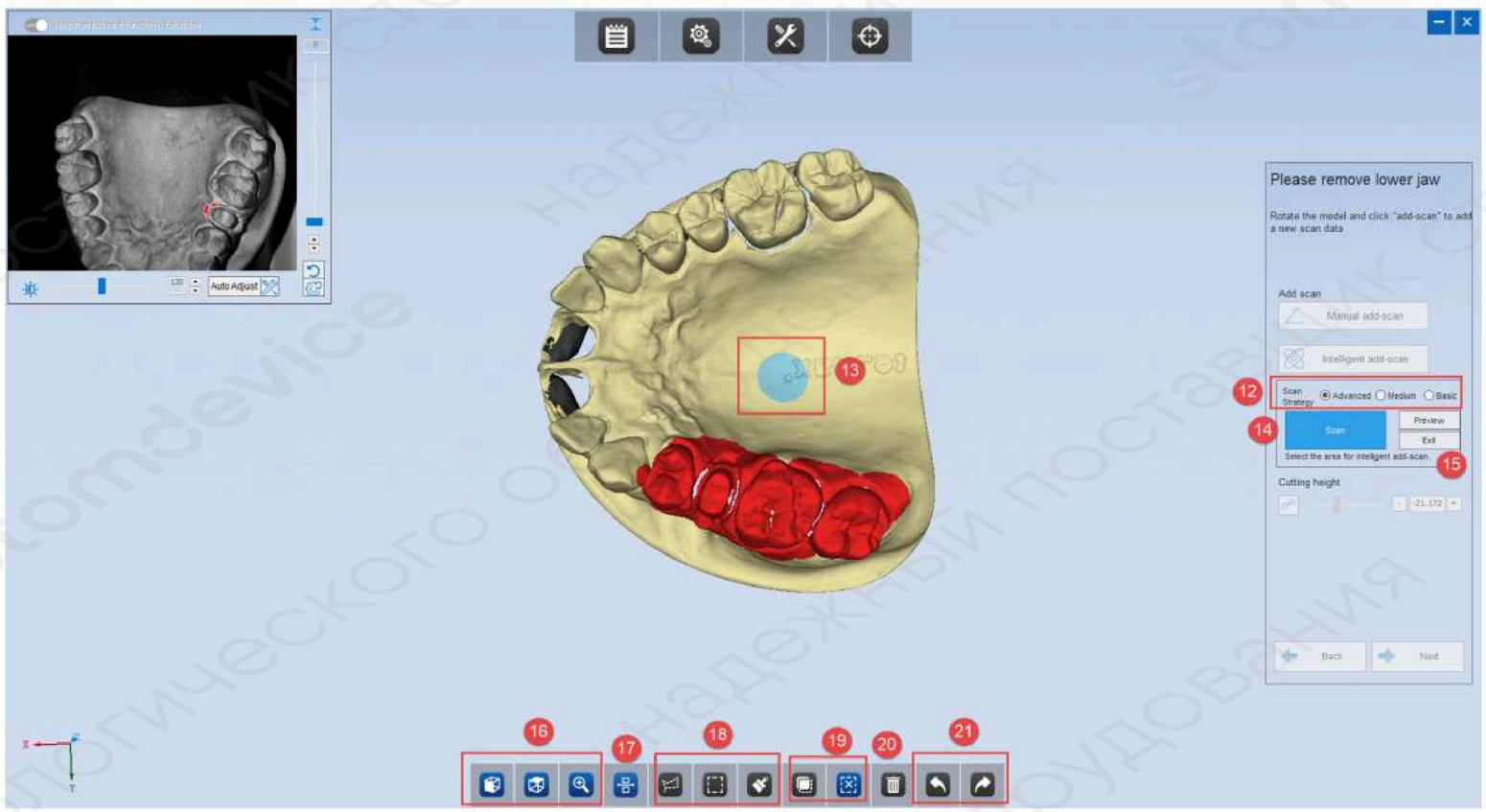
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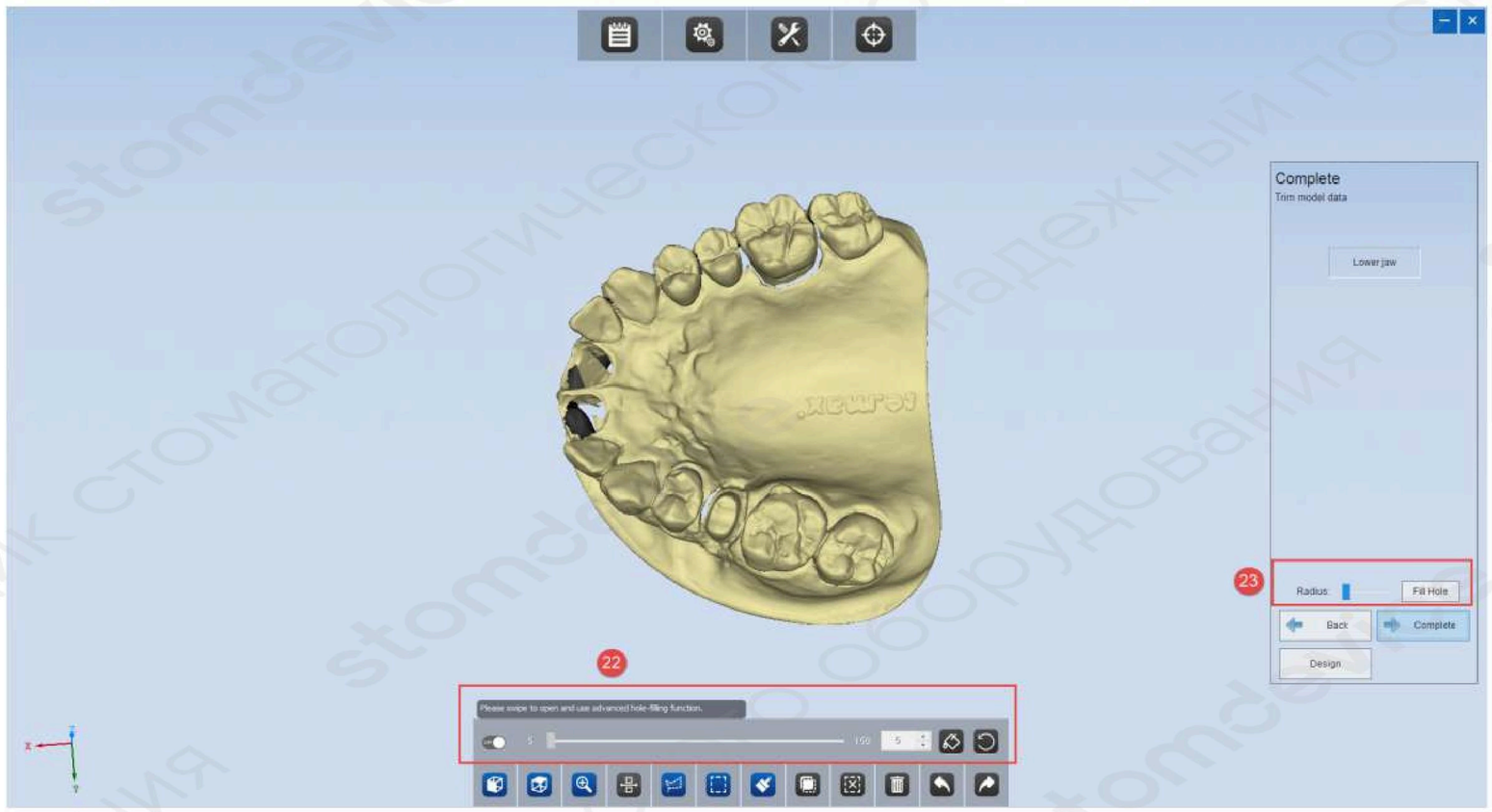




Click "intelligent add-scan" to enter automatic add-scan

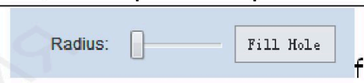
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① **auto adjust windows:** click the "auto adjust" button, the program will adjust the brightness based on the color of the dental model automatically and this is benefit to scanning process.
② **z-axis height adjustment:** users can drag the bar or click on the arrow buttons to adjust the Z-axis height to make sure the cameras have better view of the scan object; this function is only available for A-IS pro(S) scanner.
③ **data display preference:** users can choose preferred data height to display by activating this function.
④ **model:** This is real-time display of scanning movement and after scanning process.

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⑤ **cut surface:** when the scanning process is done, users can cut and delete the unnecessary data; users can drag the cut surface by left clicking mouse key to adjust the cut height .
⑥ **manual add-scan:** when the digital model is incomplete with holes, rotate the incomplete side of our digital model to the visible angle in our computer, then click "Add scan" button and the scanner will scan the incomplete side again to add data automatically. While entering the next interface, you need to go back to the interface of "Insert the model" and scan the model again if you want to add scan to the model.
⑦ **Apply:** click the button "apply" when the scan process is completed, then software will register the scan data and form a STL digital model and saved the STL in the "Scandata" folder; the button "Next"can also register the scan data and form a STL digital model
⑧ **discard:** if the latest mended data is not suitable, click this button to discard the latest mended data.
⑨ **intelligent add-scan:** if the scan data is incomplete, users can choose certain areas for add-scan, chosen areas will turn red; then add-scan automatically starts by clicking "Scan"; different levels of intelligent add-scan modes are available to choose.
⑩ **Reset:** the digital model will rotate to a preset angle.
⑪ **cutoff set:** click the "+,-" button or move the slider or click the slider and roll mouse wheel to adjust the cutoff height.
⑫ **scan strategy:** advanced (12 scan positions) , medium (9 scan positions) , basic (6 scan positions) .
⑬ **ball selection:** left click mouse to select hole filling areas; selected areas will turn red; users can cancel the selection by pressing both "shift"and left mouse key to choose; users can adjust the ball size by pressing both "shift" and scrolling mouse wheel.
⑭ **Scan:** start intelligent add-scan.
⑮ **Exit:** exit from intelligent add-scan.
⑯ **view:** front view, top view, fit view.
⑰ **Reset:** during intelligent add-scan process, users can click it to exit from add-scan and display data with cut plane
⑱ **edit button:** click Free Edit or Rect Edit and Brush Edit, press the "shift" key and press left button, select unneeded region then delete.
⑲ **Reverse selection\cancel selection:** reverse the selected region or clear the selected region.
⑳ Delete**:** delete the selected region.
㉑ **undo\redo:** undo the latest delete operation or redo the delete operation.
㉒ **Manual hole-filling:** at the final complete step, users can swipe open the function and manually fill up the holes, default setting is 5 mm in circumference; more options are provided for hole filling; click the kettle-like button to apply.
㉓ **Fill hole:**  fill three levels of radius 2/4/6 after the order was completed.
㉔ **Move:** users can press left and right mouse keys at the same time to move the data.
㉕ **Rotate:** users can rotate the data by right clicking the mouse key.

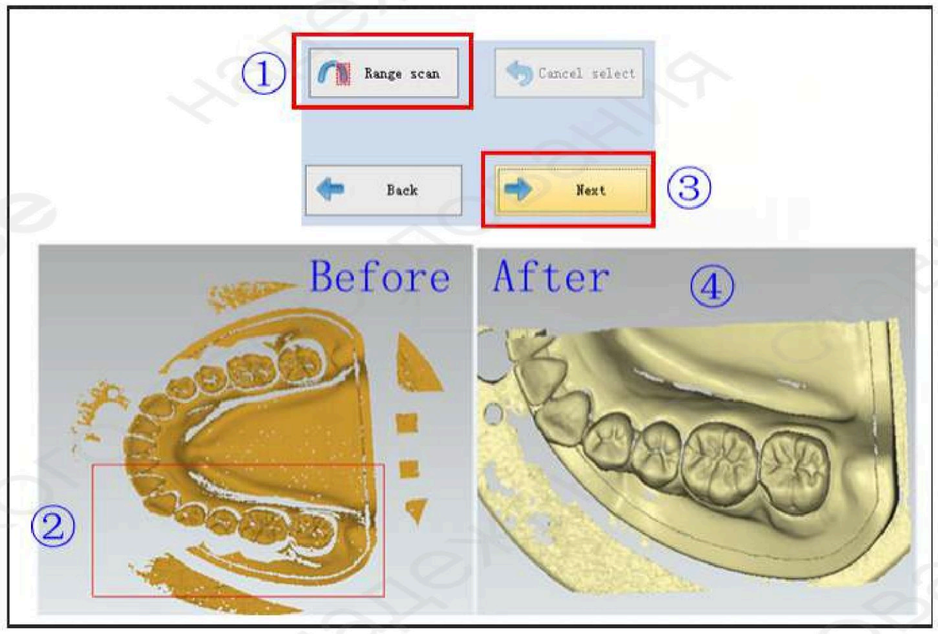
3.1.1. Range scan



Steps: put in the model, click button of "Range Scan", press "shift" and the left mouse button to select the model, and then click NEXT to start range scanning.

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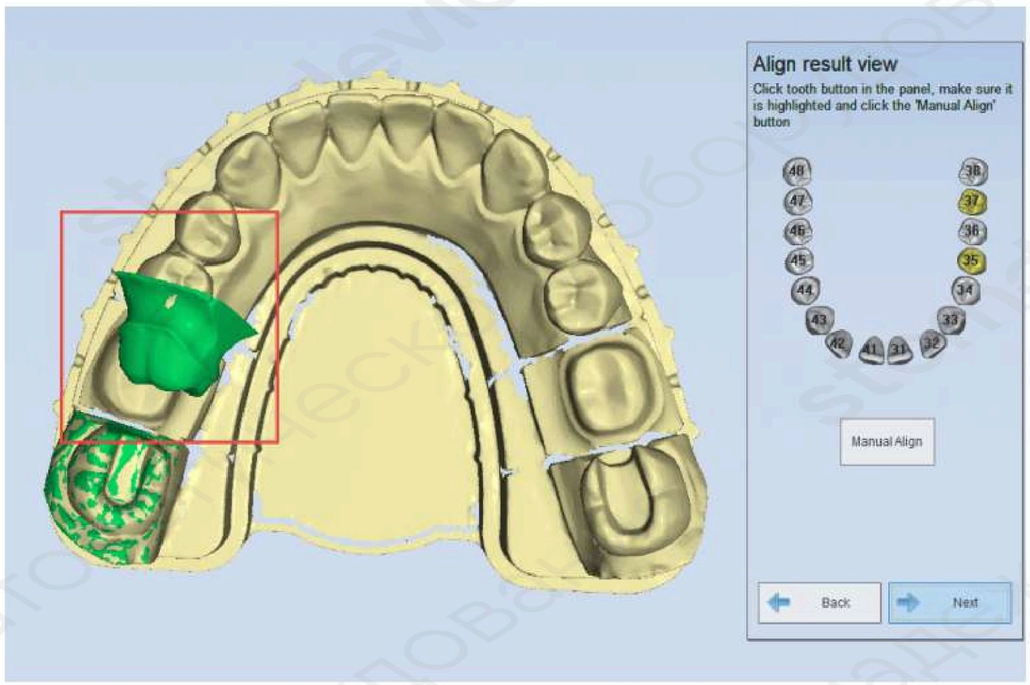
Select the scanning area: press 'shift' and the left mouse button to select the scanning area, users can select several areas for one model, the system will scan the latest selected area.

Cancel select: cancel the selected area. Click the button of 'cancel select', the selected area will be canceled, users can reselect the scanning area or click 'next' to start scanning the whole model.

3.1.2. Manual alignment

Manual alignment is designed especially for the condition that the auto alignment of tooth and jaws fails. Take the tooth manual alignment for example. (the manual alignment of combination jaws is the same as that of tooth)

As shown in the figure below, the auto alignment of the tooth 35 and 37 fails.



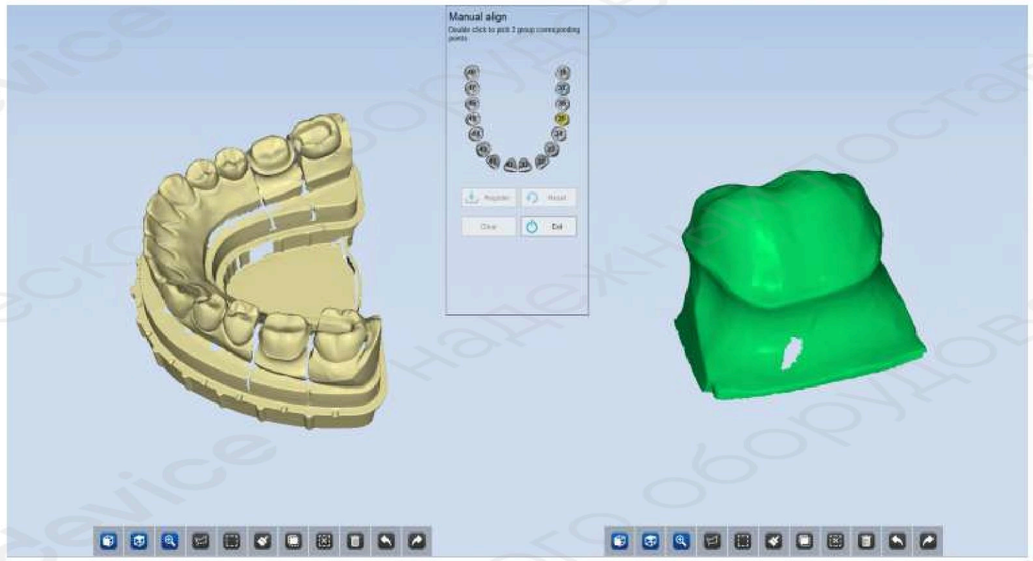
Note: If you have checked the tooth number in the window "Align result view", then click "Manual Align", the tooth will not be displayed, you have to exit and enter again.

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Click “Manual Align” to enter the alignment interface, the operation is as follows.

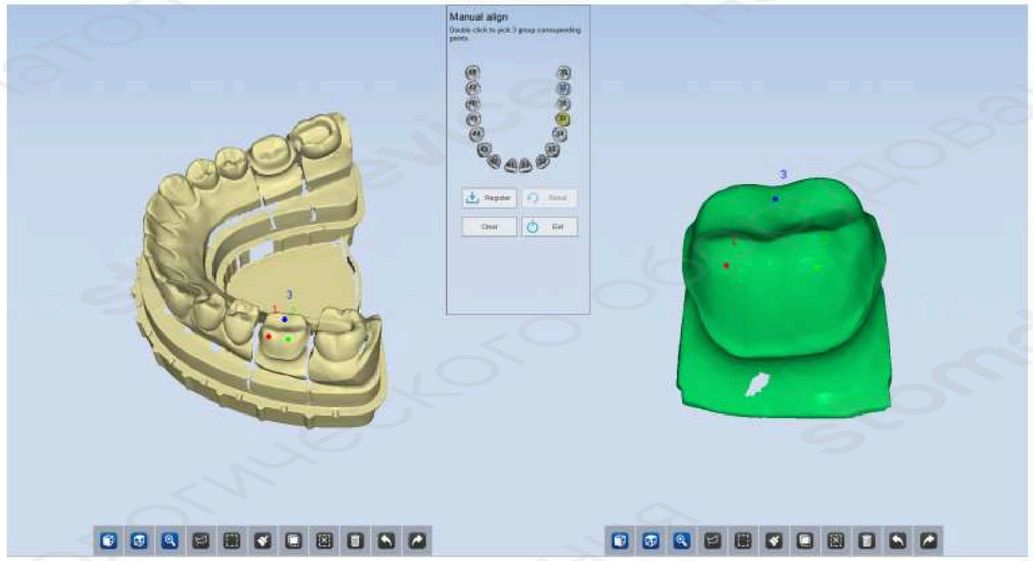
1) choose the tooth 35

Choose the tooth 37 to begin the manual alignment.



2) click 3 groups of corresponding points

Operate according to the prompts to double click the corresponding tooth to select it, shown as the figure below. Double click 3 groups of points respectively on the tooth 35 and the model on the right.

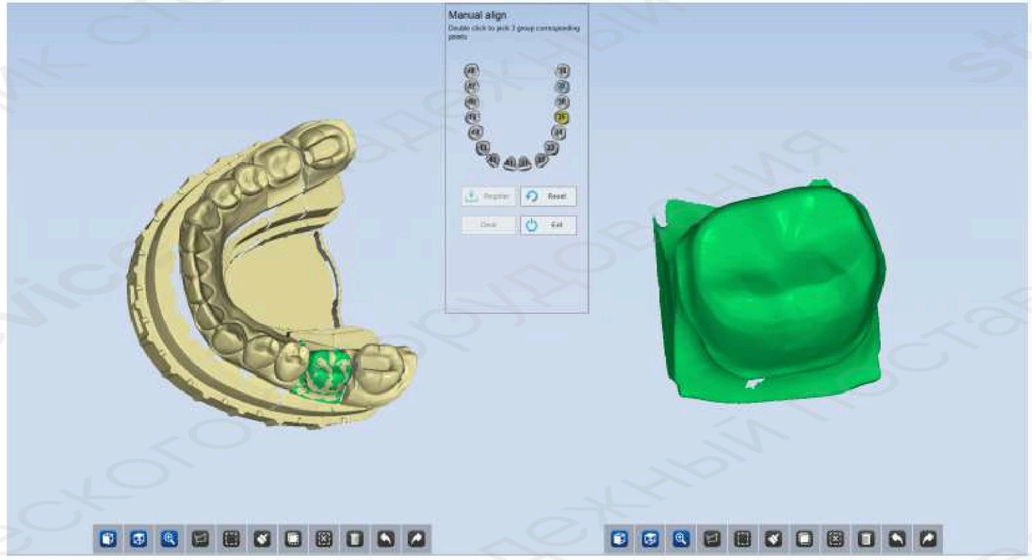


3) click “Select”

After selecting the 3 groups of points, click “Select” to complete the alignment, the result is shown as the figure below.

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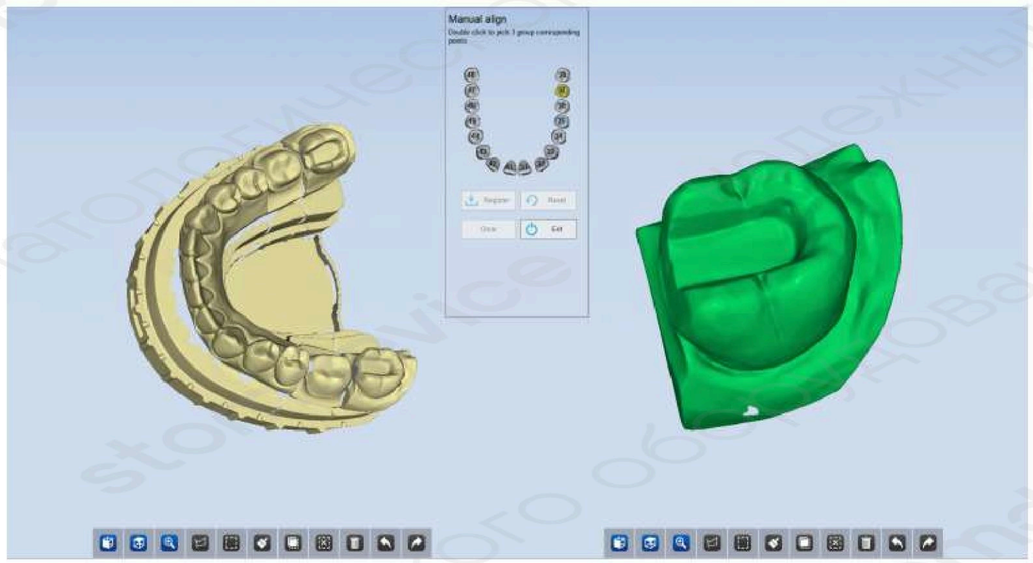
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4) choose the tooth 37

After completing the alignment of the tooth 35, you can click "Exit" to view the alignment result, or you can choose the tooth 35 to continue the alignment.

Choose the tooth 35, and the tooth 37 will be hidden, shown as the figure below.

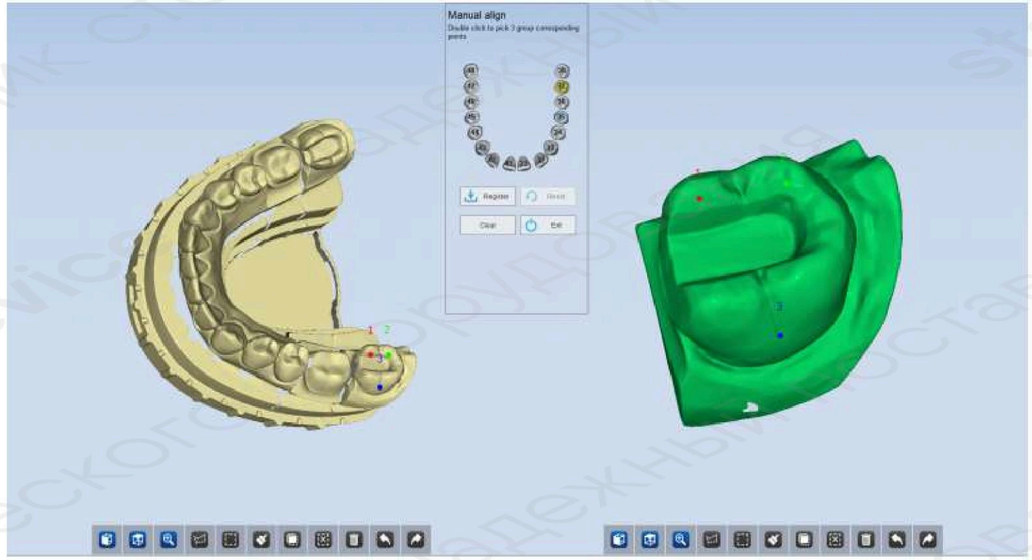


5) click 3 groups of corresponding points

Operate according to the prompts to double click the corresponding tooth to select it, shown as the figure below. Double click 3 groups of points respectively on the tooth 37 and the model on the right.

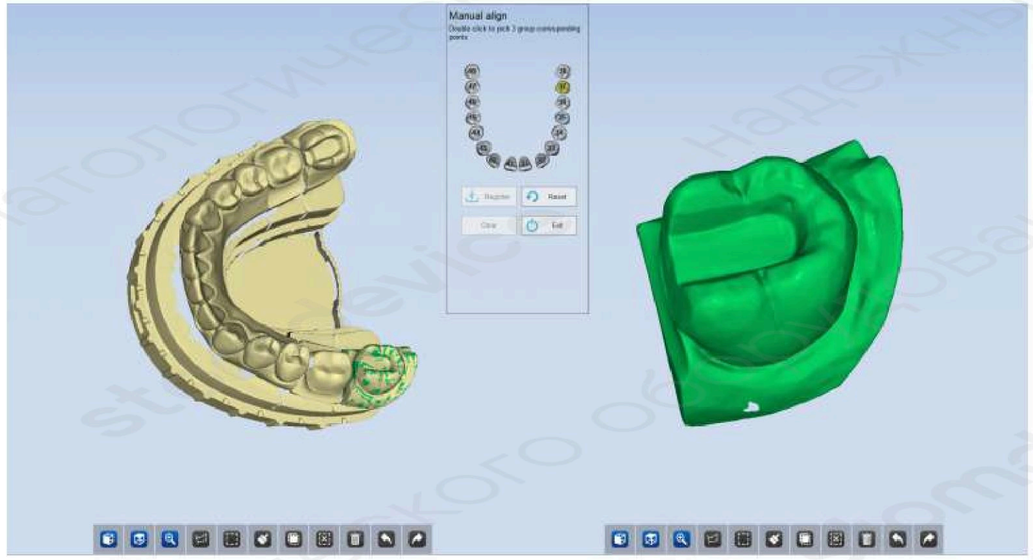
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6) click “Select”

After selecting the 4 groups of points, click “Select” to complete the alignment, the result is shown as the figure below.



7) Reset&Clear

Reset: users can click ‘reset’ to go back to the data before alignment if you are not satisfied with the result.

Clear: users can click ‘clear’ or click the right mouse button to clear the selected points if you are not satisfied with the selected position.

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8) Exit

If the alignment result is right and satisfactory, click “Exit”, it will display the alignment result, shown as the following figure.



Note:

1. You can cancel the selected points by right clicking the mouse.
2. After completing the alignment of the first tooth manually, if you click “Exit” or choose another tooth, the alignment of the first tooth will be saved and the “reset” is invalid.
3. When clicking the 4 groups of corresponding points, you’d better choose the area with obvious features. Please don’t choose the points at the same plane.
4. When scan more than one teeth on the die, the alignment of a few teeth may fail, you need to align the teeth manually.
5. If the teeth for alignment is the existing model, you go back to the last interface after alignment, it will display the alignment result when you need to align the teeth manually

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4. Scan Type

The scan type contains “Separated model”, “ Non separated model”, “Impression” and “Die”.Following orders are all created through DntalManager.exe. The following examples of scan type are all based on the condition that the “Occlusion” type is “None”.

Note:

1.After a model is scanned, you can “Add scan”and “Edit”it. If you go to the next interface and click “Back”to return, you will not be able to “add scan”to the model, but you can still edit it. If you need to add scan to this model, you must go back to the interface of “please insert the model”step to scan again.

2. Under the interface of “please insert the model”and click “Next”, you can not “add scan” to the model if you use the existing model, but you can edit it.

3. When the number of crown and veneer is no more than 8, you can scan these models at a time. If the number is more than 8, you need to scan these models more than one time.

4. You can scan only one inlay each time. If there are several inlays in an order, you should scan several times correspondingly.

4.1.1. Separated Model

The“Separated Model” is designed especially for the separated model, which contains scan types as follows: single crown, inlay, veneer, wax crown, wax inlay, combination and so on.

You need to clamp the model during scanning, please refer the following links for the reference.

1. The clamping of crown: please refer to the clamping of a jaw

2. The clamping of tooth: please refer to Tooth clamping

3. The clamping of inlay: please refer to Inlay clamping

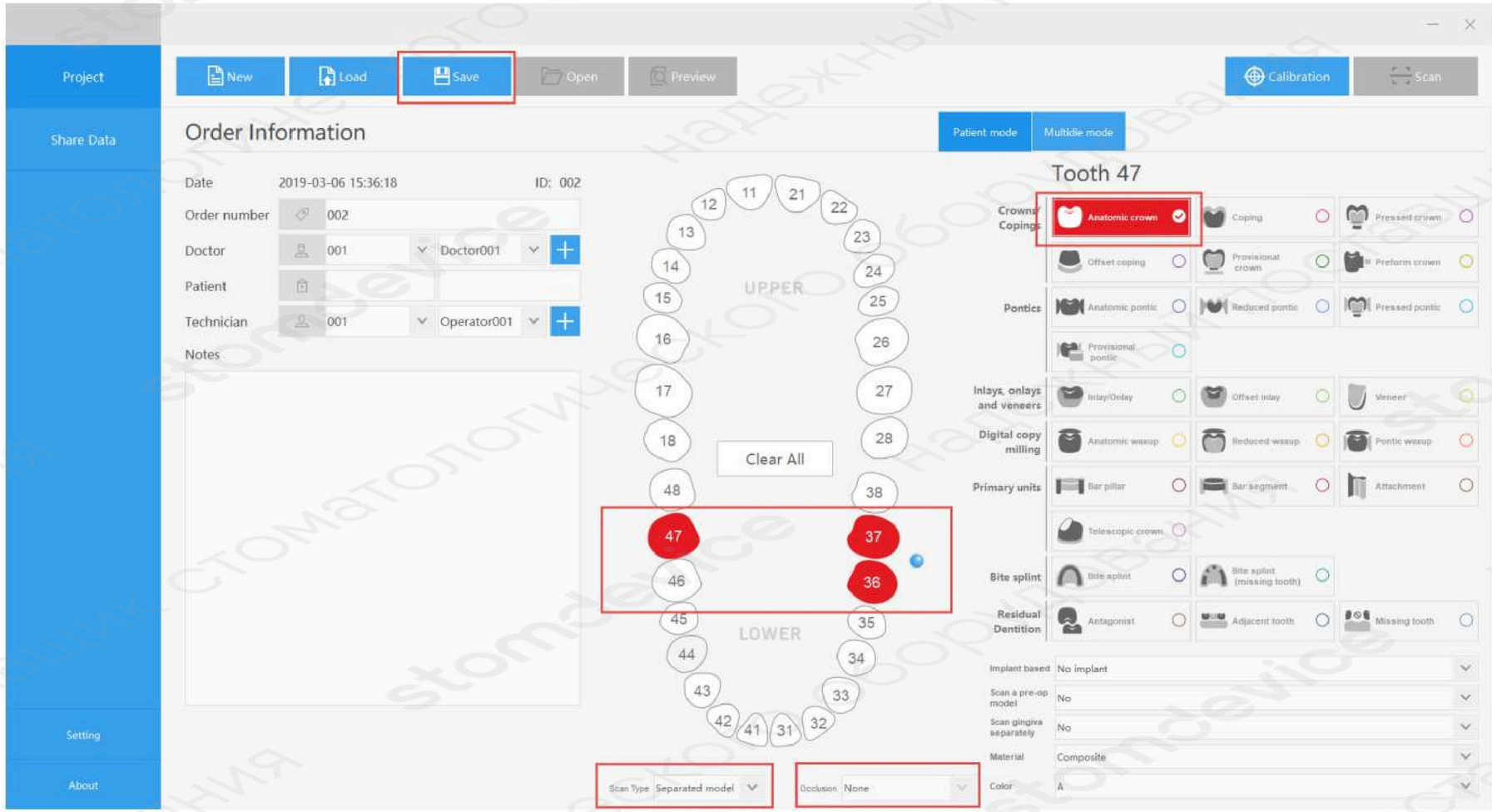
4. The clamping of implant: please refer to Implant clamping

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4.1.1.1. Crown

(1) Create Order

You can choose "Single Crown" in the "Crown", then choose the tooth to be scanned (you can choose one or several teeth at a time); the "Scan type" is "Separated Model" and the "Occlusion" type is "None", shown as the figure below.



(2) Scan Jaw

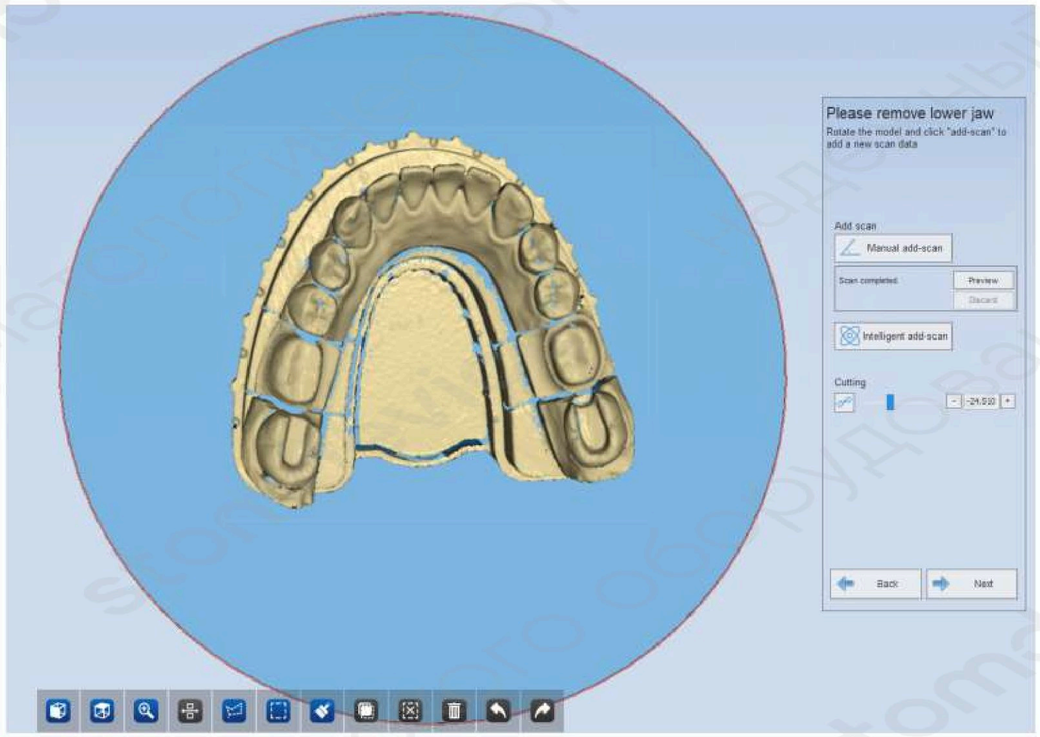
After creating the order, click "Scan", the following interface will pop up. According to the tips on the interface, insert upper/lower jaw, and click "Next".

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After automatic scanning, you can click “Add Scan” to have better scanning result if need be. Then you can click “Apply” for data optimization as below.



Note: After a model is scanned, you can “add scan” and “Edit” it. If you enter the next interface and click “Back” to return, you will not be able to “add scan” to the model, but you can still edit it.

(3) Scan Tooth

After scanning the jaw, click “Next”, it will enter the scan interface, shown as the figure below. Then insert the tooth according to the tips.

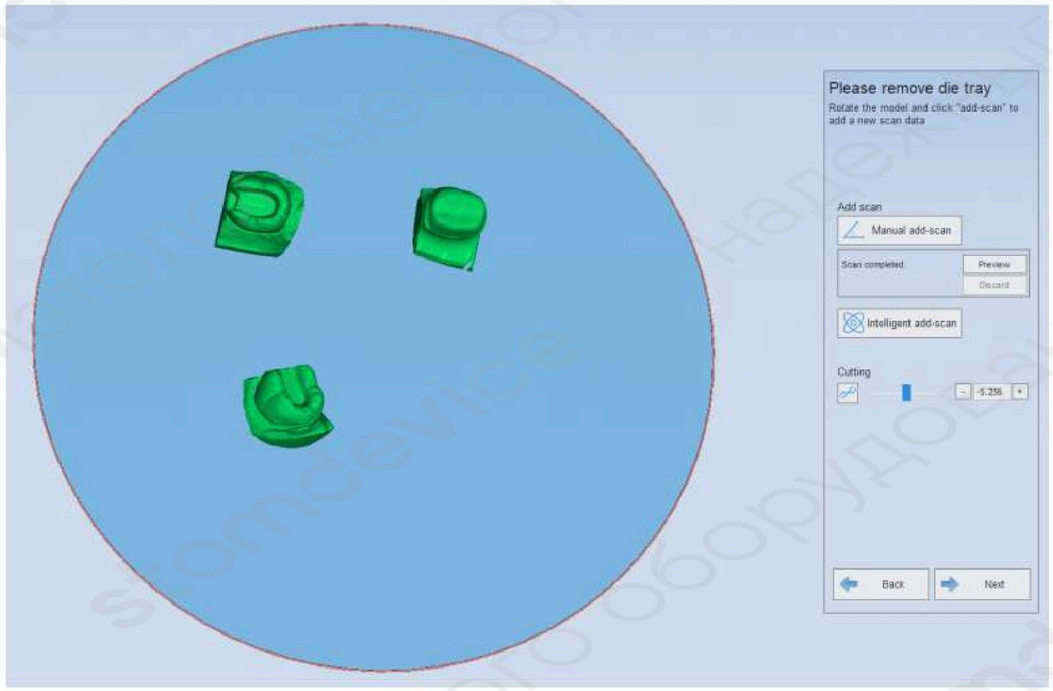
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Note: When the number of crown and veneer is no more than 8, you can scan these models at a time. If the number is more than 8, you need to scan these models more than one time.

After automatic scanning, you can click "Add Scan" to have better scanning result if need be. Then you can click "Apply" for data optimization as below.



Note: After the model is scanned, you can "add scan" and "Edit" it. If you enter the next interface and click "Back", you will can not "add scan" the model, but you can edit it only.

(4) Auto Alignment

After completing the die scan, click "Next" to enter the auto alignment interface, shown as the figure below.

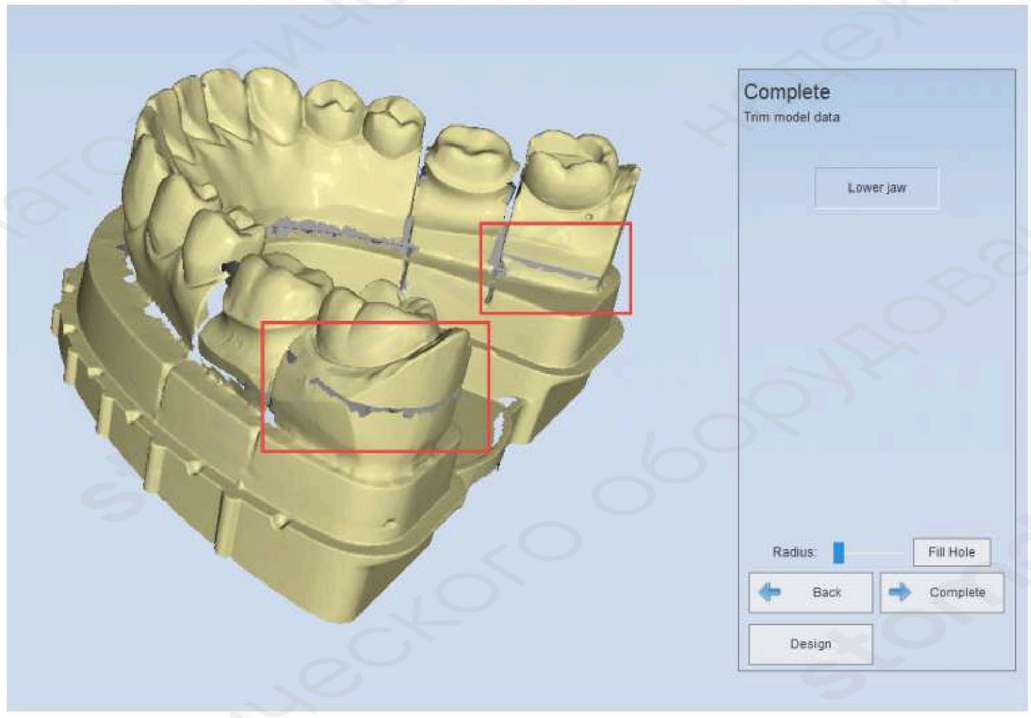
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Note: After the alignment fails, you can align the model manually.

(5) **Completing scan**

After the alignment is completed, click “Next”, the interface will pop up, shown as the figure below. Click “complete”, the whole order is completed.

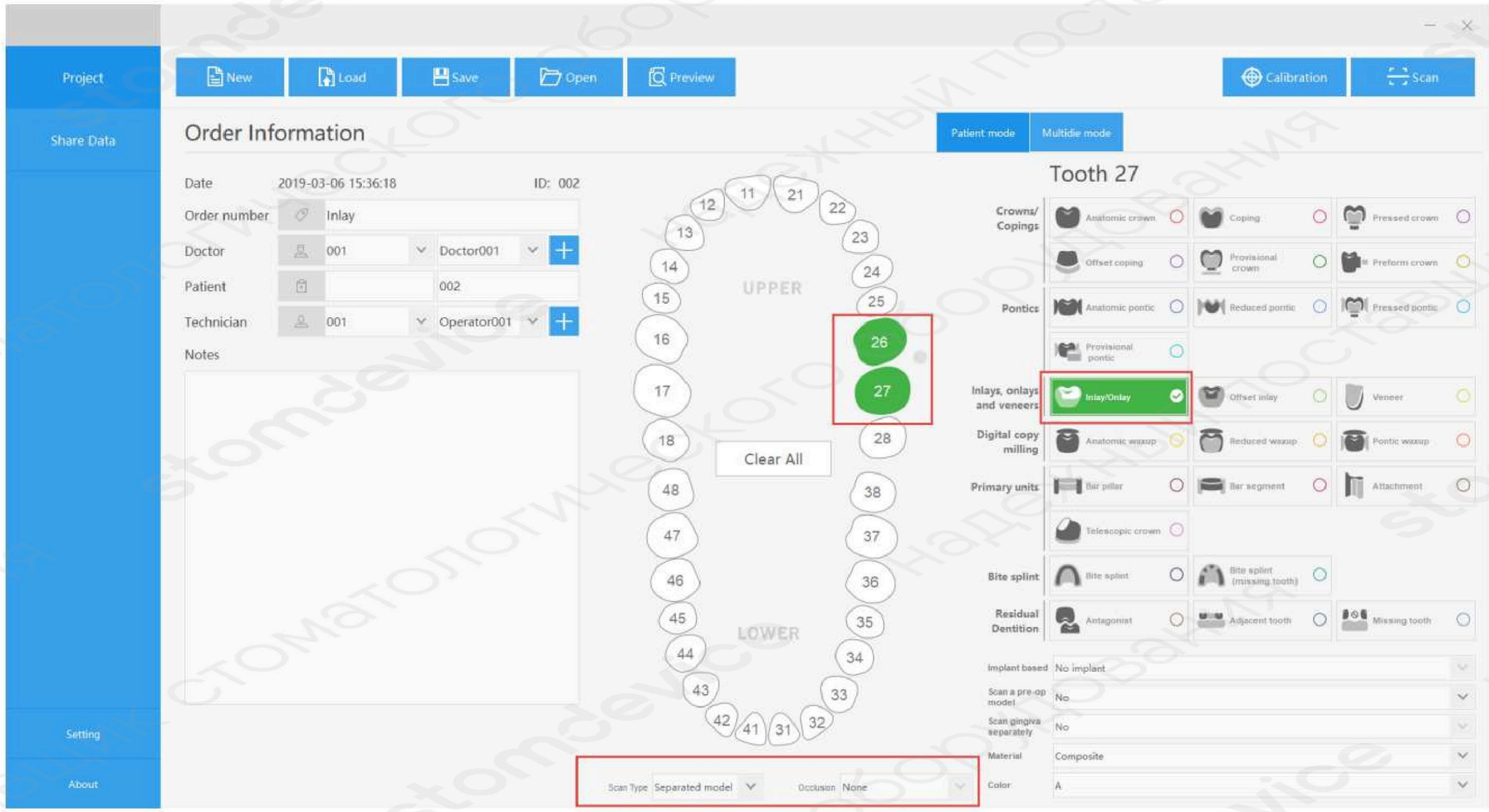


Rotate the jaw to observe that there are parting line between the aligned tooth and jaw, shown as the figure below.

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(1) Create order

You can choose “Single inlay” in the “Inlay/Onlay”, then choose the tooth to be scanned (26 and 27), the “Scan type” is “Separated model” and the “Occlusion” type is “None”, shown as the figure below.



(2) Scan Crown

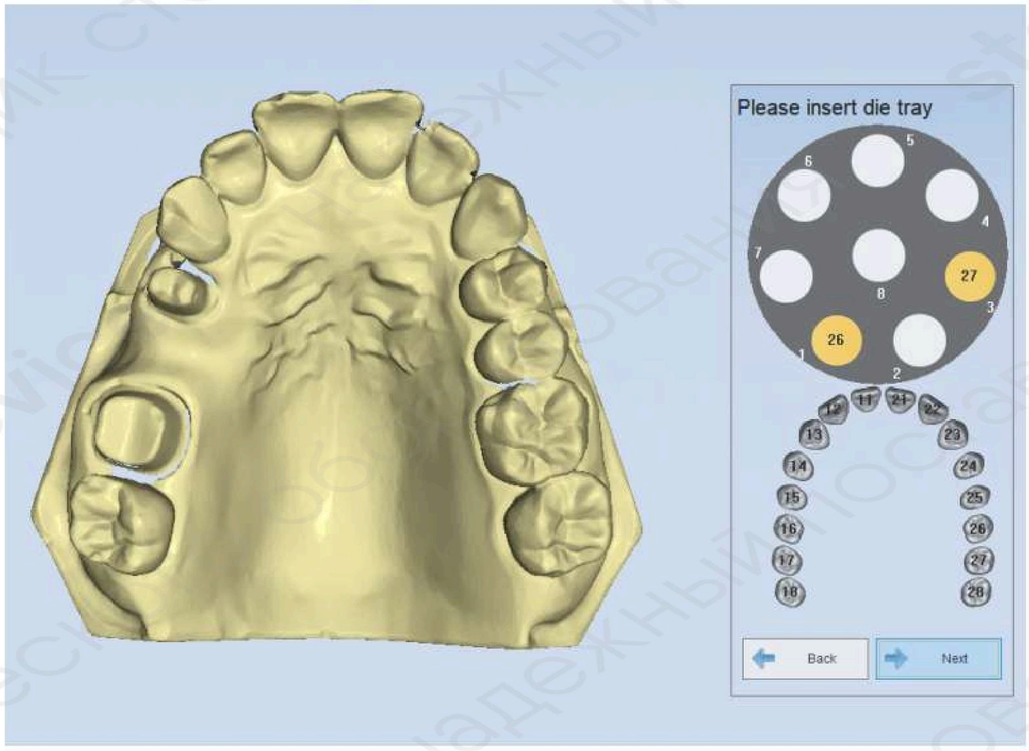
The scan operation is the same with the “Single jaw” in the “Separated model”, refer to the Crown for the operation.

(3) Scan the first tooth

Insert the tooth “26、27” into the die according to the prompts, then begin to scan, refer to Scan Tooth.

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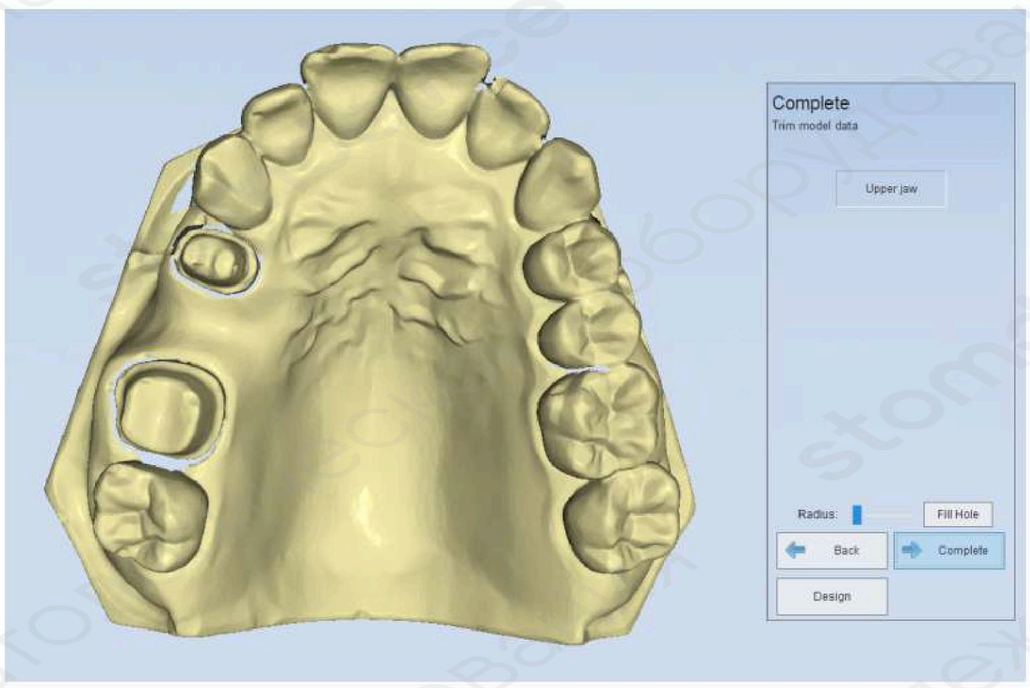


(4) Auto alignment

After the scan of the tooth "26、27" is completed, it will enter to auto alignment. Refer to Auto Alignment for operation.

(5) Completing scan

After the alignment is completed, click "Next", the interface will pop up, shown as the figure below. Click "complete", the whole order is completed.



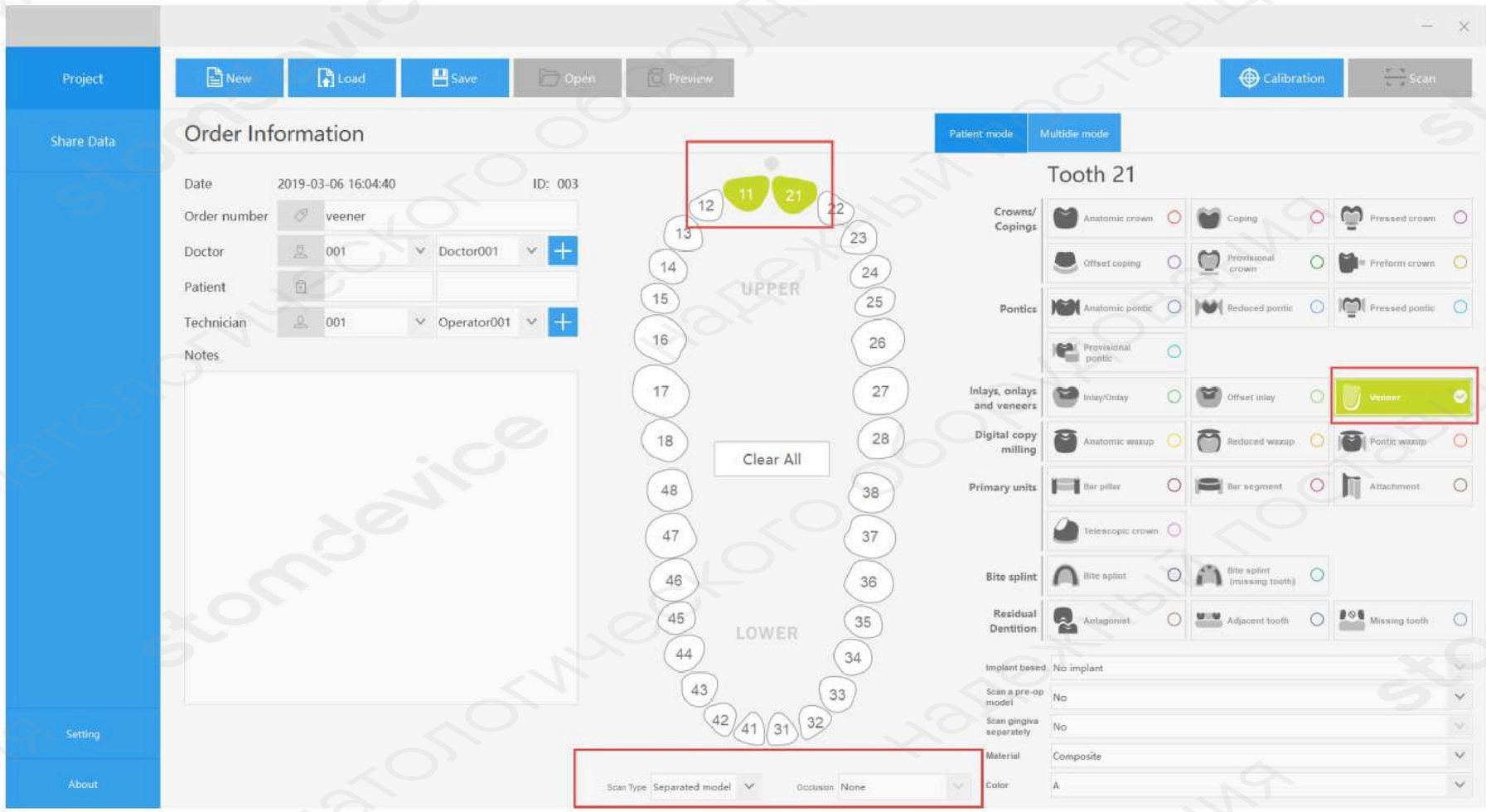
Note: You can scan only one inlay at each time. If there are several inlays in a order, you should scan several times.

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4.1.1.3. Veneer

(1) Create order

You can choose "Veneer" in the "Inlay/Onlay", then choose the tooth to be scanned, the "Scan type" is "Separated model" and the "Occlusion" type is "None", shown as the figure below.



(2) Scan Crown

The scan operation is the same with the "Single jaw" in the "Separated model", refer to the Crown for the operation.

4.1.1.4. Implant

There are four types of restoration for implant as follows

implant

abutment

implant wax

abutment wax

Note:

During the implant scanning process, either upper jaw or lower jaw can be scanned with implant. If there are implant on both upper and lower jaws, it will lead to scanning and design error.

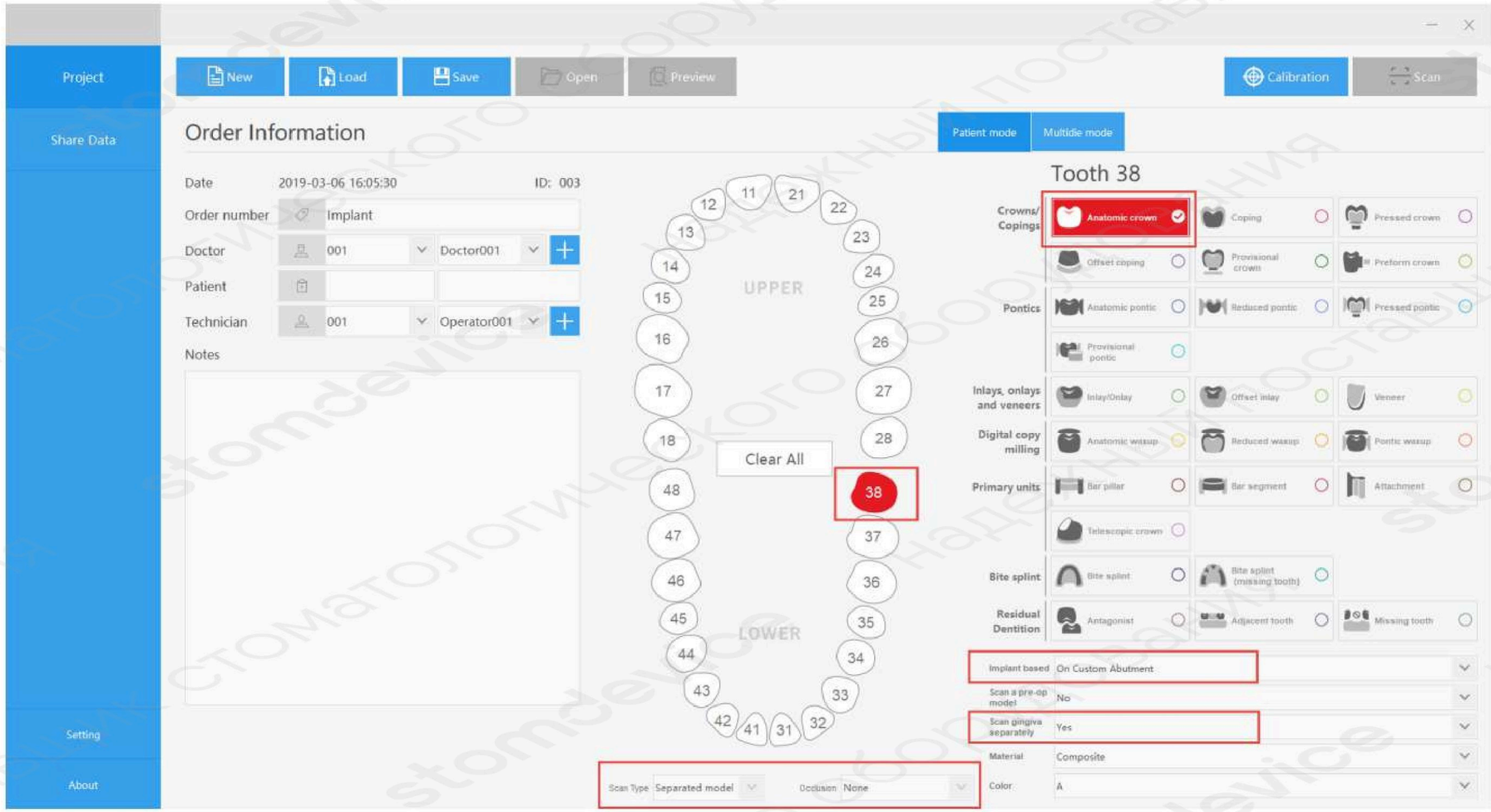
4.1.1.4.1. Implant

Implant includes: select model, scan bite, scan gingiva, scan occlusion, finish the implant.

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(1) Create order

Choose “Implant” in the interface, then choose the tooth location of the implant, shown as the figure below. The “Scan type” is “Separated Model” and the “Occlusion” type is “None”.



Note: the scan type of implant can only be “Separated model”. It is set by default and can not be modified.

(2) Scan gingiva

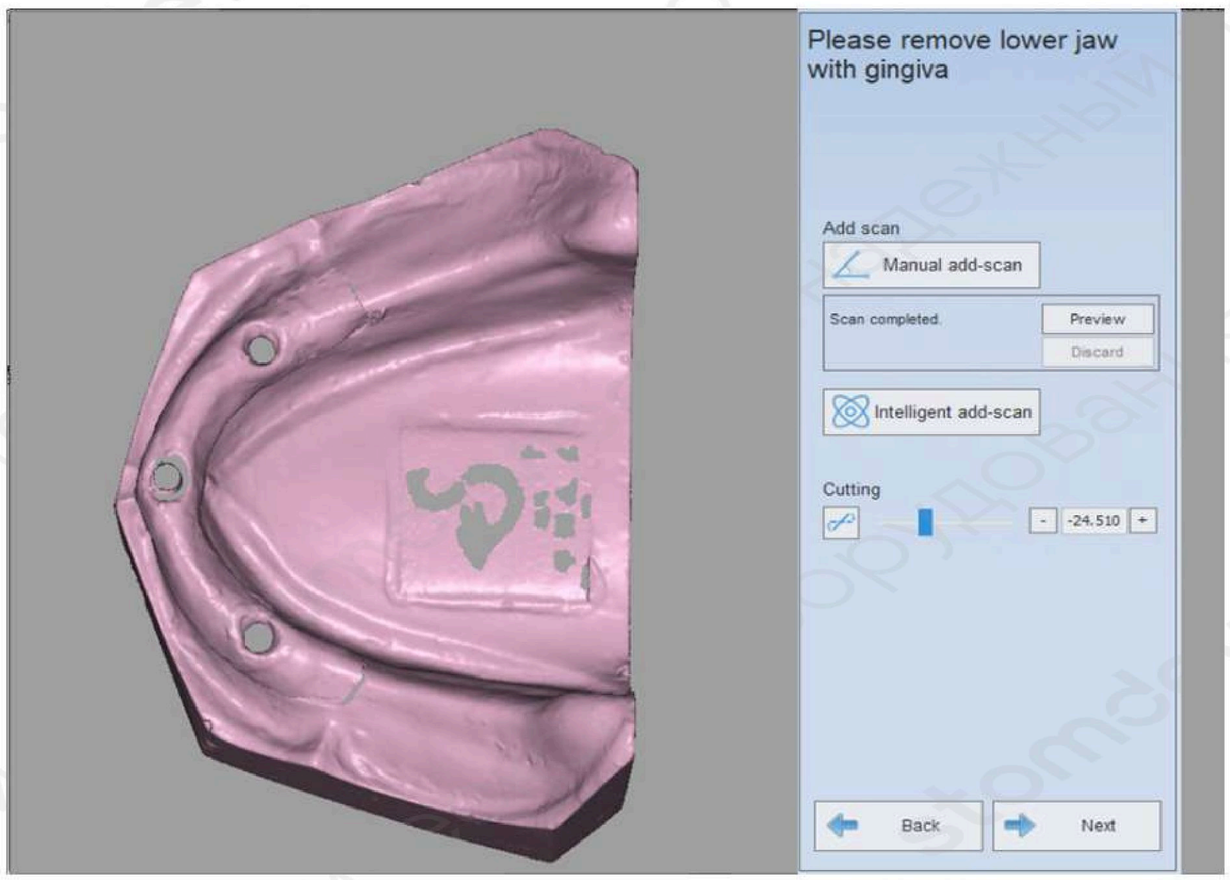
After creating the order, click “Scan”, the interface will pop up. Insert the up/lower jaw with gingiva (Gingiva Clamping)

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After automatic scanning, you can click "Add Scan" to have better scanning result if need be. Then you can click "Apply" for data optimization as below.



(3) Scan bar of implant

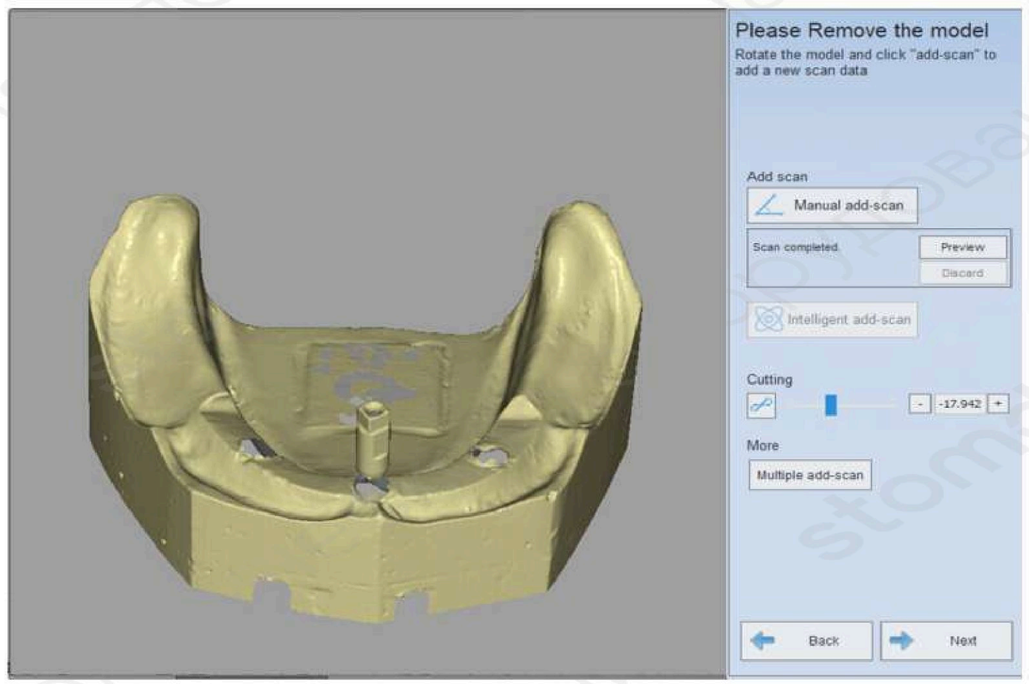
After scanning the gingiva, click "Next" and enter the interface shown as the following figure. Then Insert lower jaw with scan body (Bar Clamping) according to the prompts.

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After automatic scanning, you can click "Add Scan" to have better scanning result if need be. Then you can click "Apply" for data optimization as below.

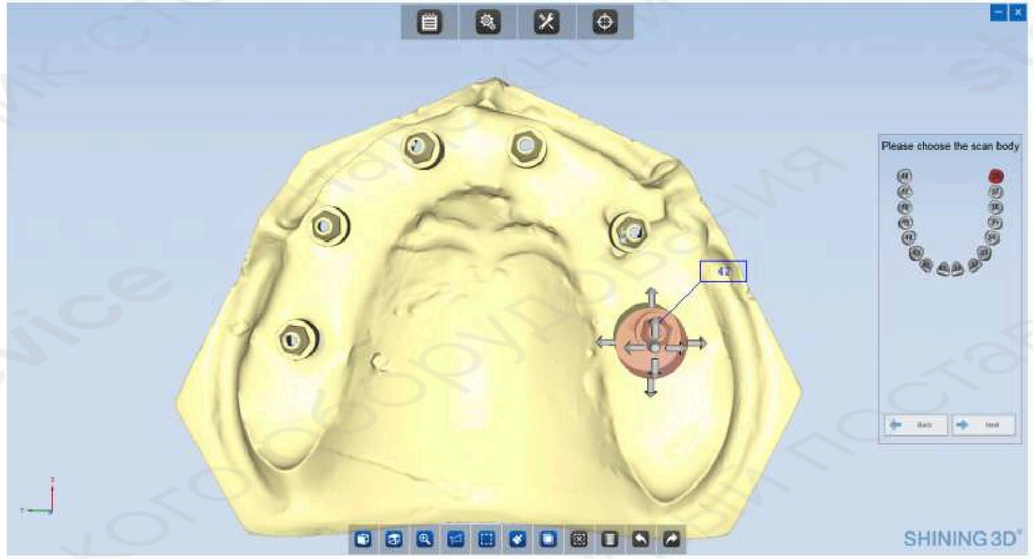


(4) extract the implant bar

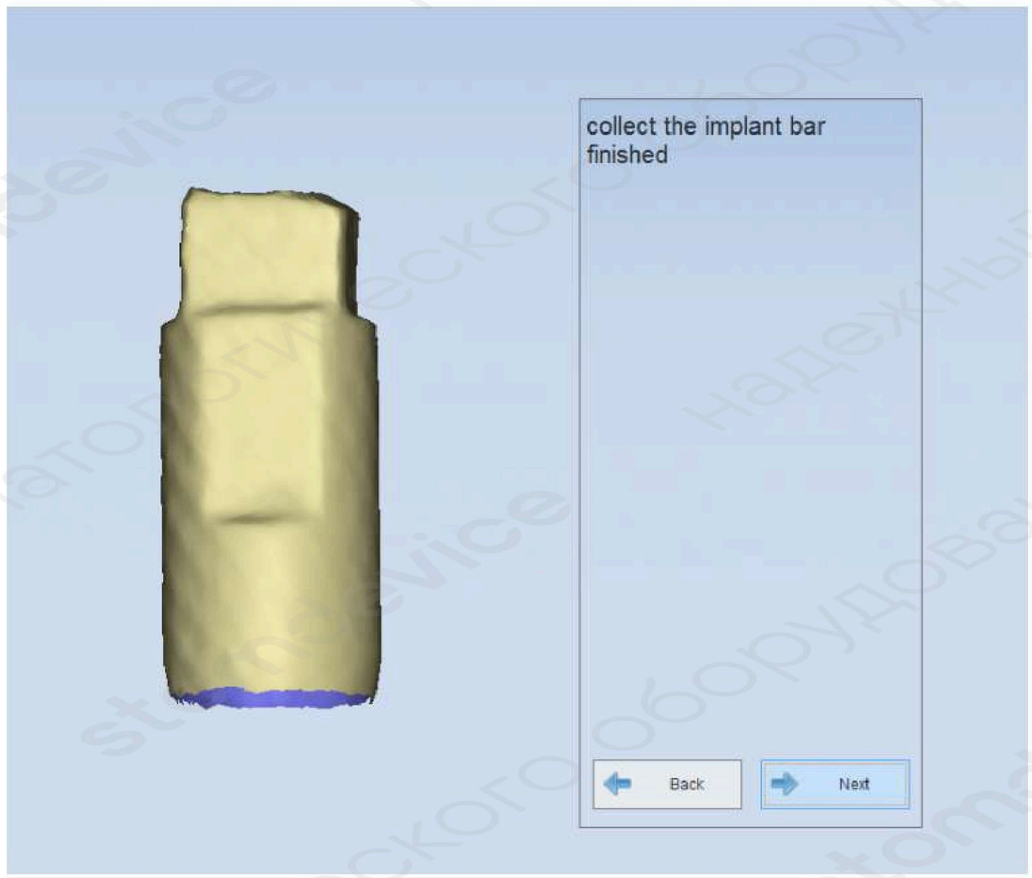
After scanning the Scan body, click "Next", it will enter "extract the implant bar" interface . then select tooth number and click corresponding implant bar. Thus the software will generate bounding volume automatically, shown as the figure below.

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click “Next”, it will enter the extract the implant bar finished interface, shown as the figure below.

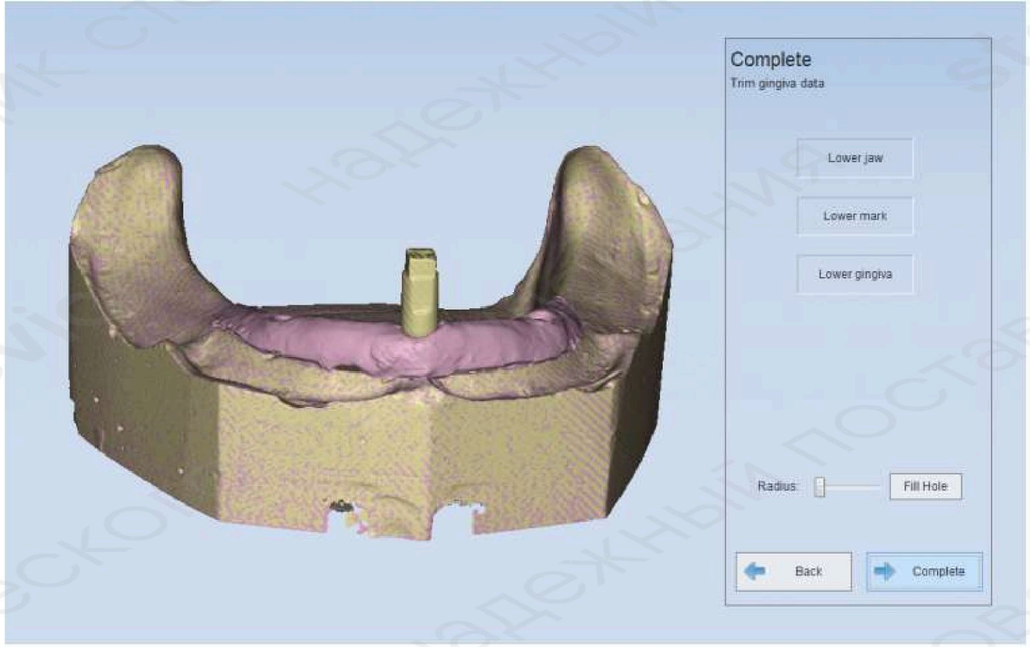


(5) Completing scan

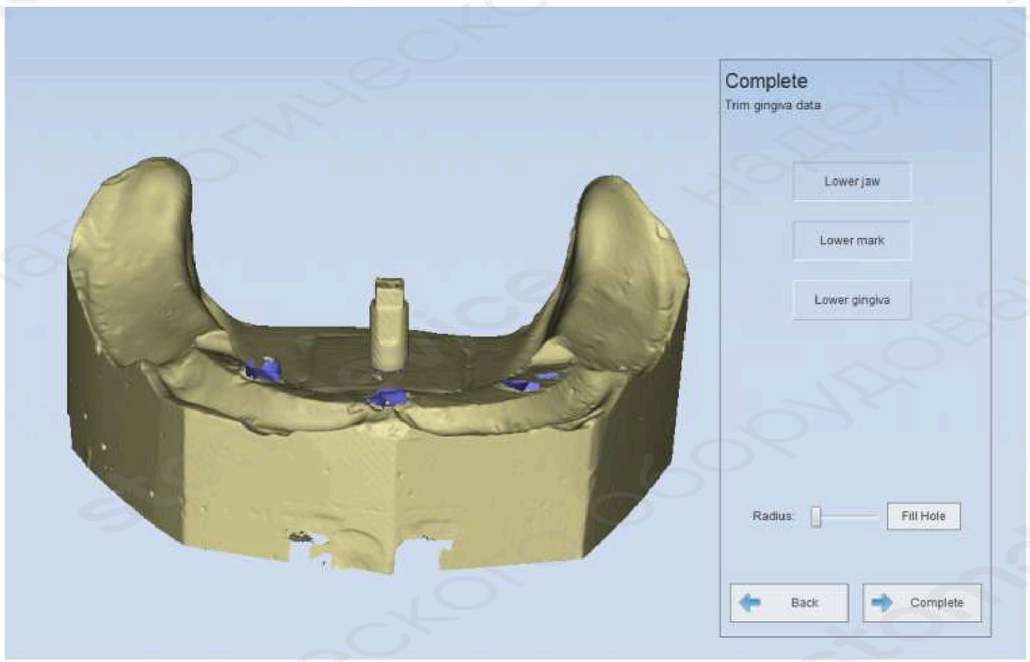
After the collect the implant bar is completed, click “Next”, the window will pop up, shown as the figure below.

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If you want to edit “Lower jaw” only, you can uncheck “Lower gingiva”. Or else, you should uncheck “Lower jaw”. If you check the two options, the two options will be edited simultaneously. After edit is completed, click “complete” to complete the whole order.



4.1.1.4.2. Abutment

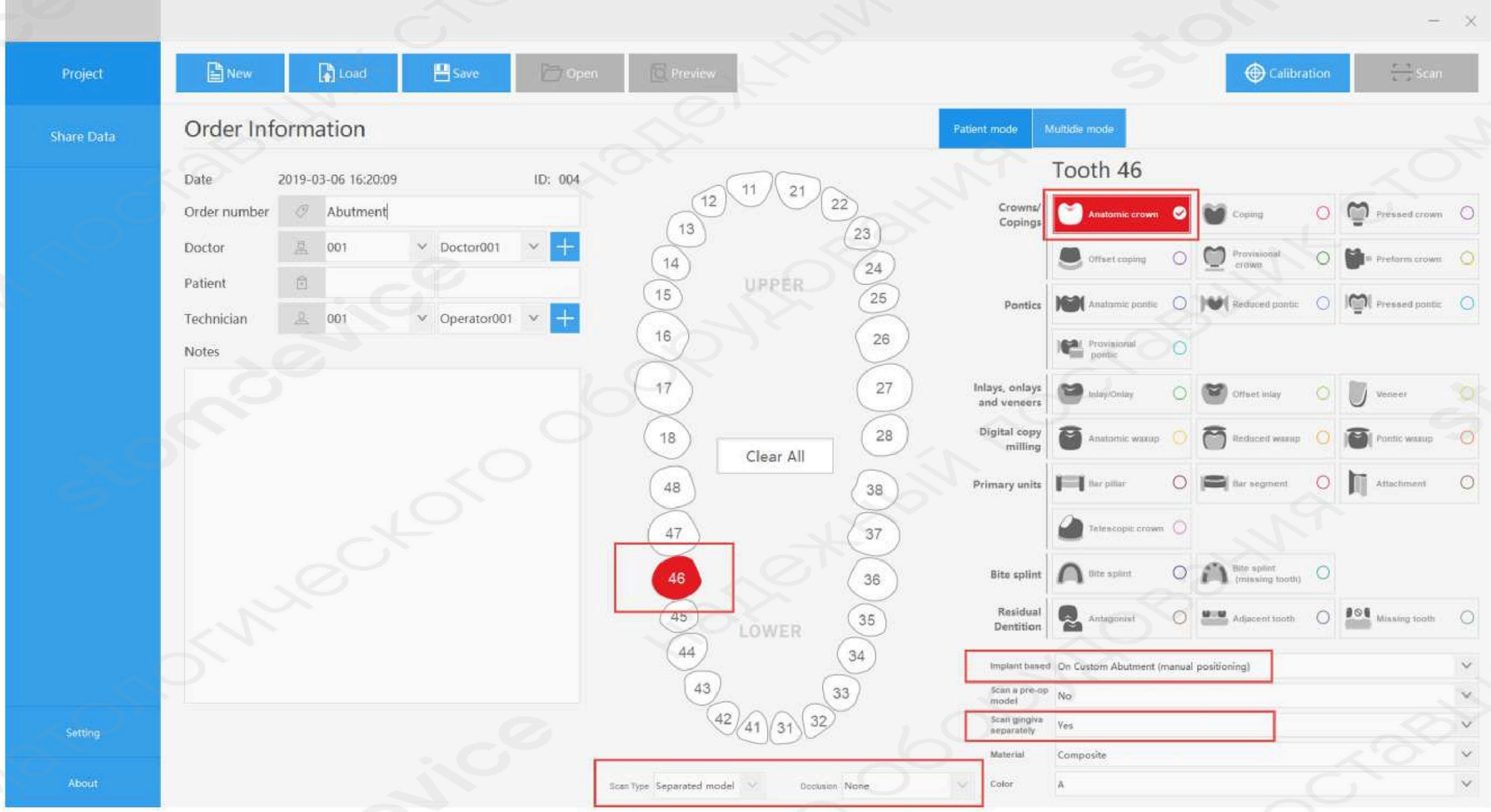
Abutment scanning includes 5 steps: Create order, Scan Gingiva, Scan abutment, Scan die, Complete

1) Create order

Choose “Abutment” in the “Implant” area; then choose the tooth location(single or multi tooth); “Separated Model” for Scan type and “None” for Occlusion. See the following picture for reference.

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2) Scan gingiva

Gingiva scanning is the same as implant' s gingiva scanning, please refer to Implant' s gingiva scanning

3) Scan abutment

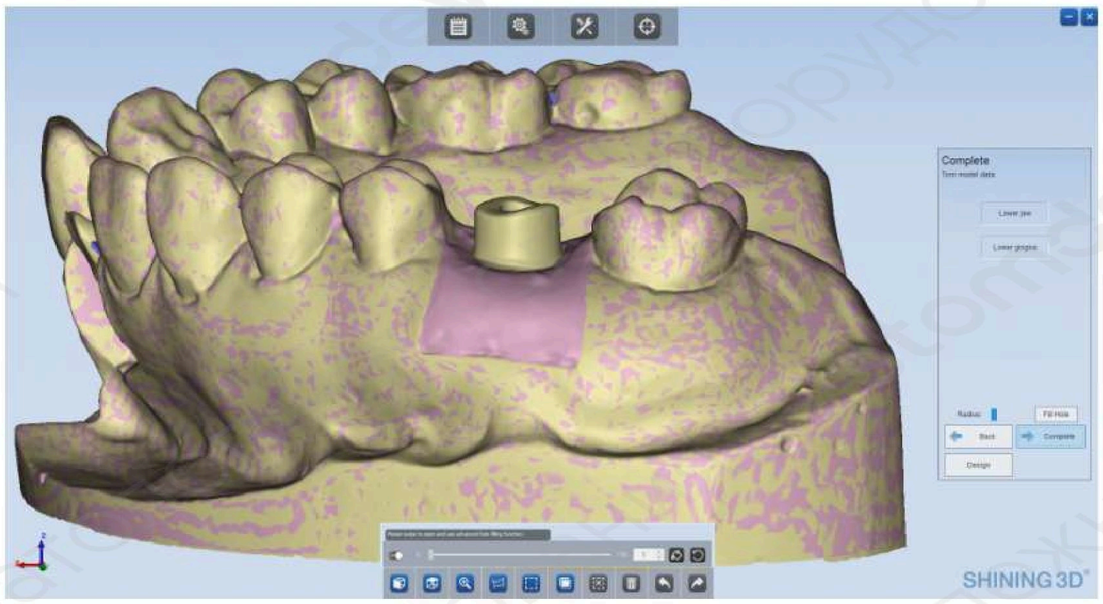
Scan bar scanning is the same as implant' s scan bar scanning, please refer to implant' s scan bar scanning

4) Scan die

Die scanning is the same as crown' s scanning, please refer to Crown' s tooth scanning and auto-alignment

5) Complete

After scanning, click "Next" to enter the "Complete" interface. You can choose the model with the right column for edition



4.1.1.4.3. Implant wax

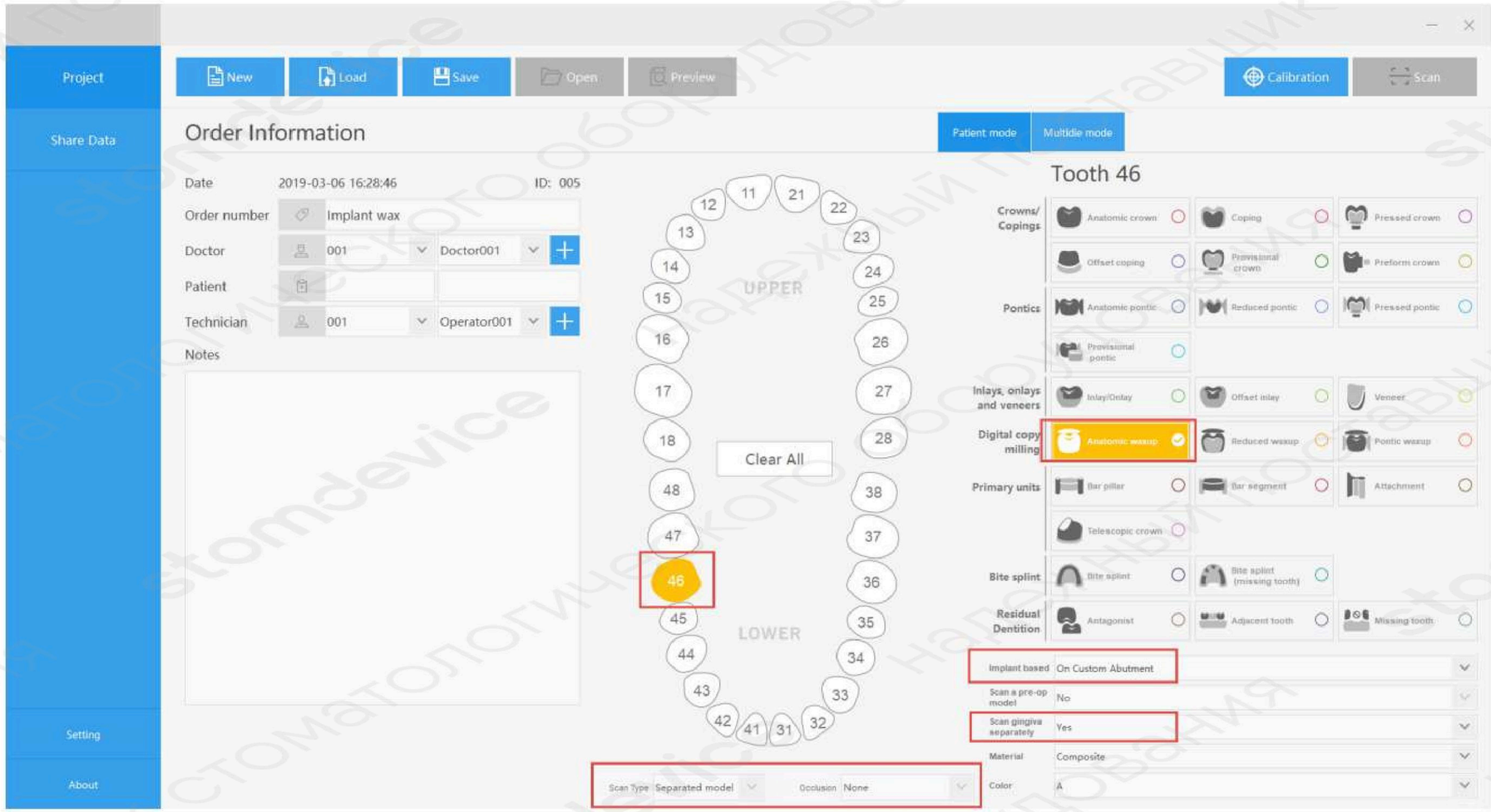
wax scanning includes 6 steps: Create order, Scan bridge wax, Scan gingiva, Scan scan bar, extract the implant bar. Complete.

There is "Bridge wax" added

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1) Create order

Choose “Implant wax” from “Implant” area;then choose tooth location(single or multi tooth);“Separated Model” for Scan type and “None” for Occlusion.See the following picture for reference.



2) Scan bridge wax

Please refer to single bridge wax’ s Scan wax crown

3) Scan gingiva

Please refer to implant’ s scan gingiva

4) Scan scan bar

Please refer to implant’ s scan scan bar

5) Collect the implant bar

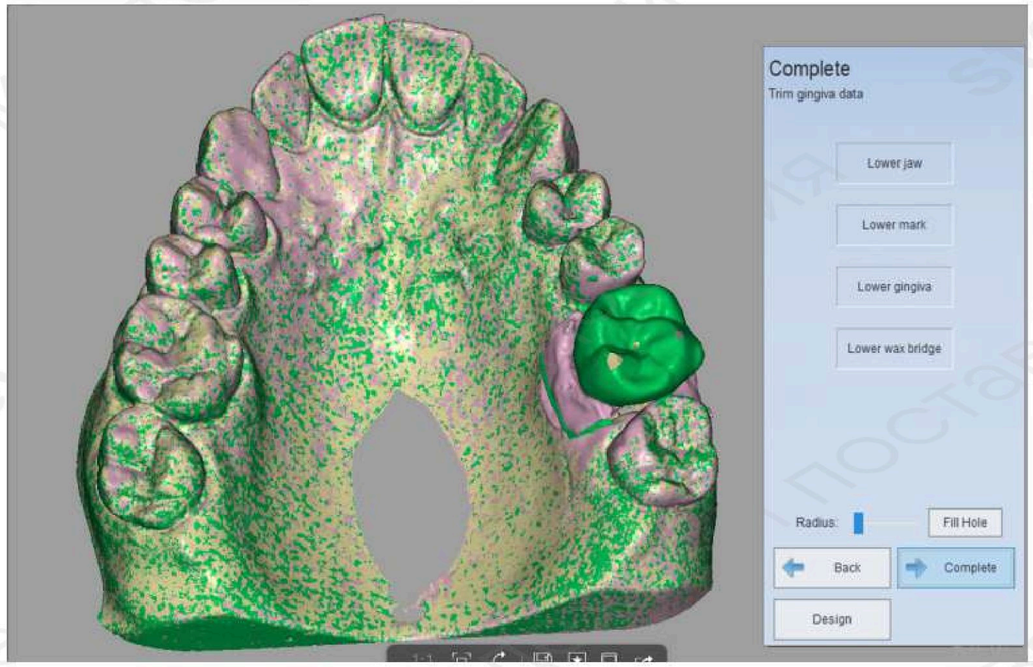
6) Please refer to implant’ s extract the implant bar

7) Complete

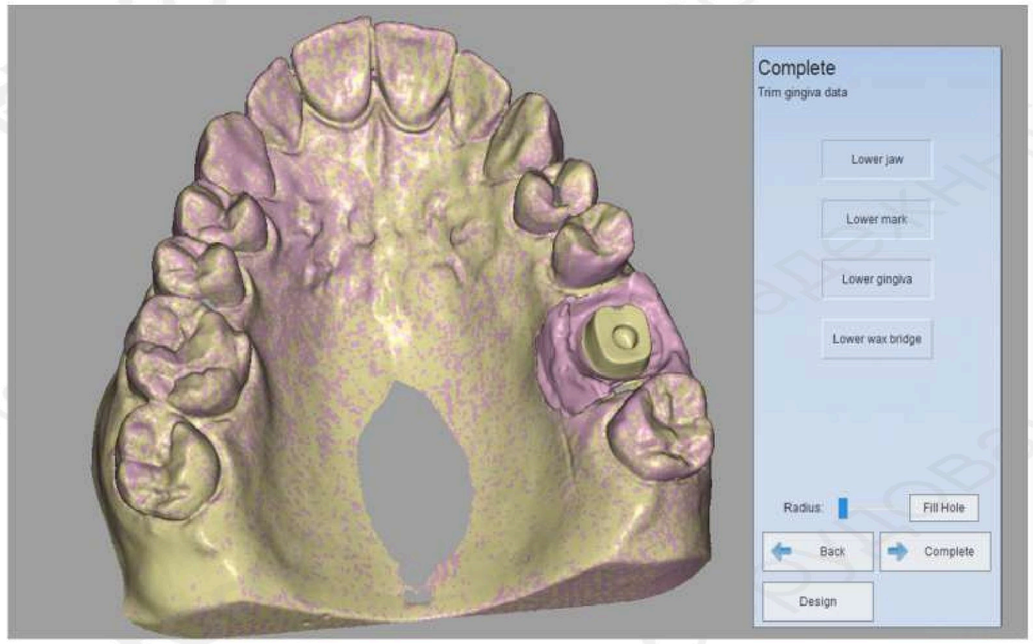
You can choose the model from the right column for waitou

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If you don't want to edit the lower jaw bridge wax, you can uncheck it, same for other options. After edition, click "Complete" to finish scanning.



4.1.1.4.4. Scan abutment wax

Abutment wax scan includes 6 steps: Create order, Scan gingiva, Scan abutment, Scan die, Scan bridge wax, Complete.

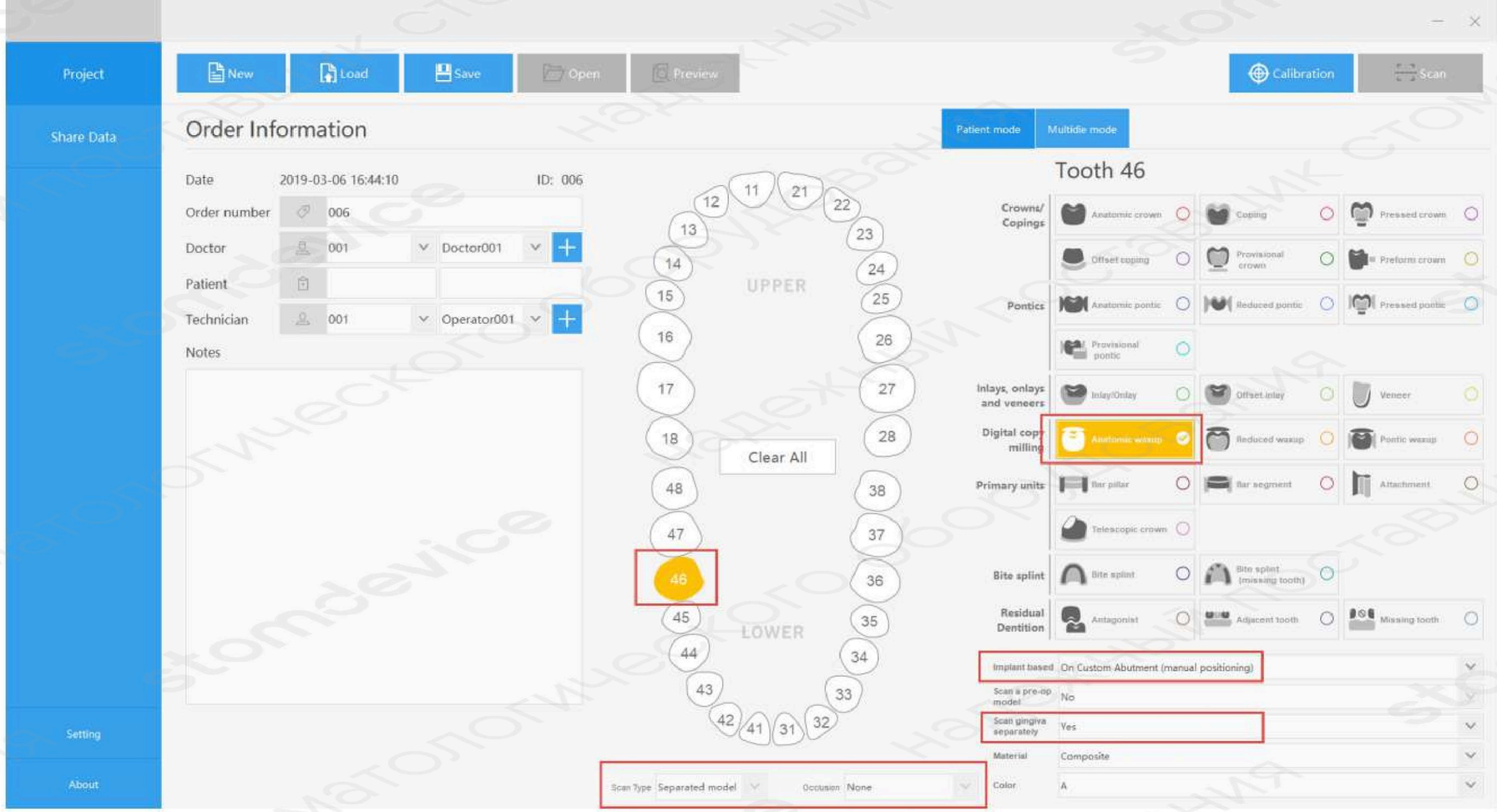
There is "Bridge wax" added.

1) Create order

Choose "Implant wax" from "Implant" area;then choose tooth location(single or multi tooth); "Separated Model" for Scan type and "None" for Occlusion. See the following picture for reference.

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2) Scan bridge wax

Please refer to single bridge wax' s Scan wax crown

3) Scan gingiva

Please refer to implant' s scan gingiva

4) Scan abutment

Please refer to implant' s scan scan bar

5) Scan die

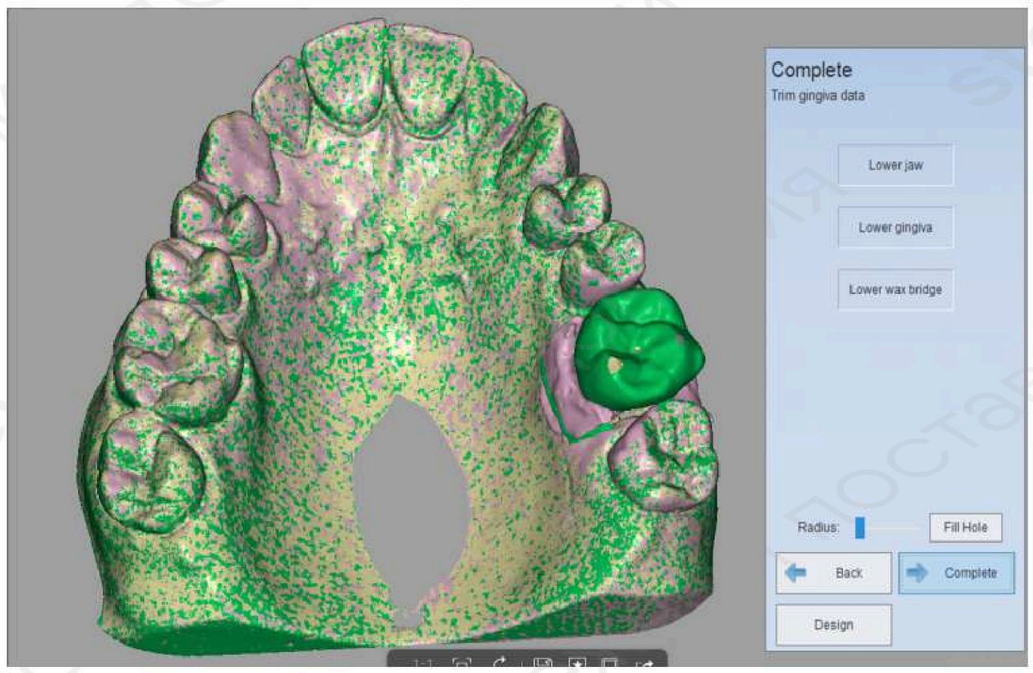
Please refer to crown' s tooth scan and auto-alignment

6) Complete

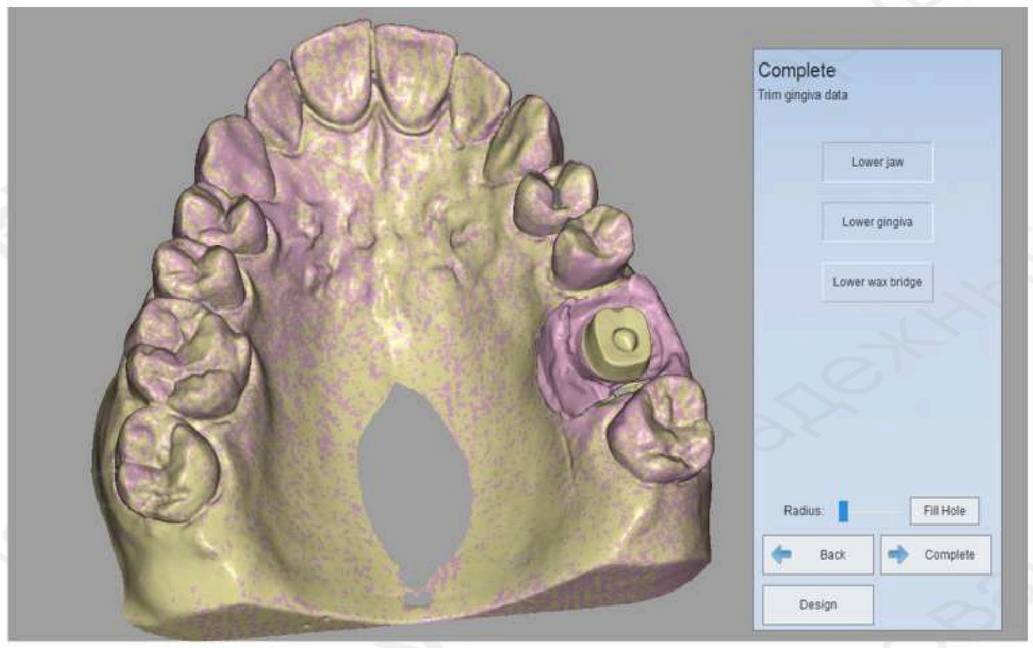
You can choose the model with the right column for edition

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If you don’ t want to edit the lower jaw bridge wax, you can uncheck it, same for other options. After edition, click “Complete” to finish scanning.



4.1.1.5. missing tooth（Pontic）

You can refer to “Scan combination” for the operation of scanning missing tooth.

Note:

the missing tooth can not be scanned alone, it should be scanned with crown, inlay or veneer together. The missing tooth is not an individual, and it can be ignored.

4.1.1.6. wax

wax contains many scan types. The main types are as follows.

wax Crown

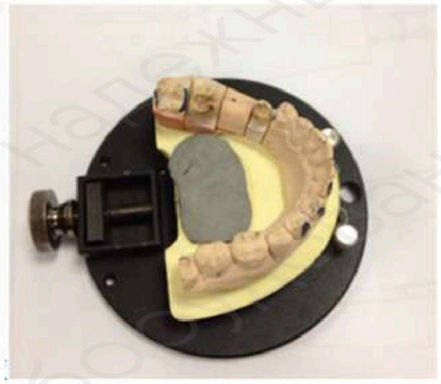
You need to insert the following words during scanning.

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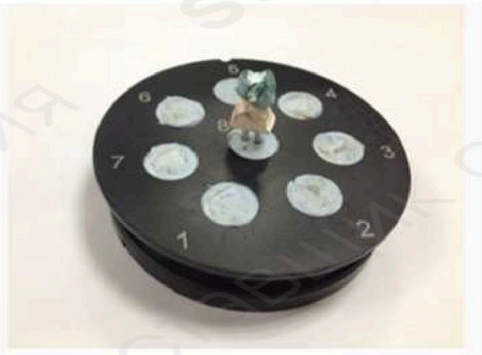
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Part of the model



Whole jaw

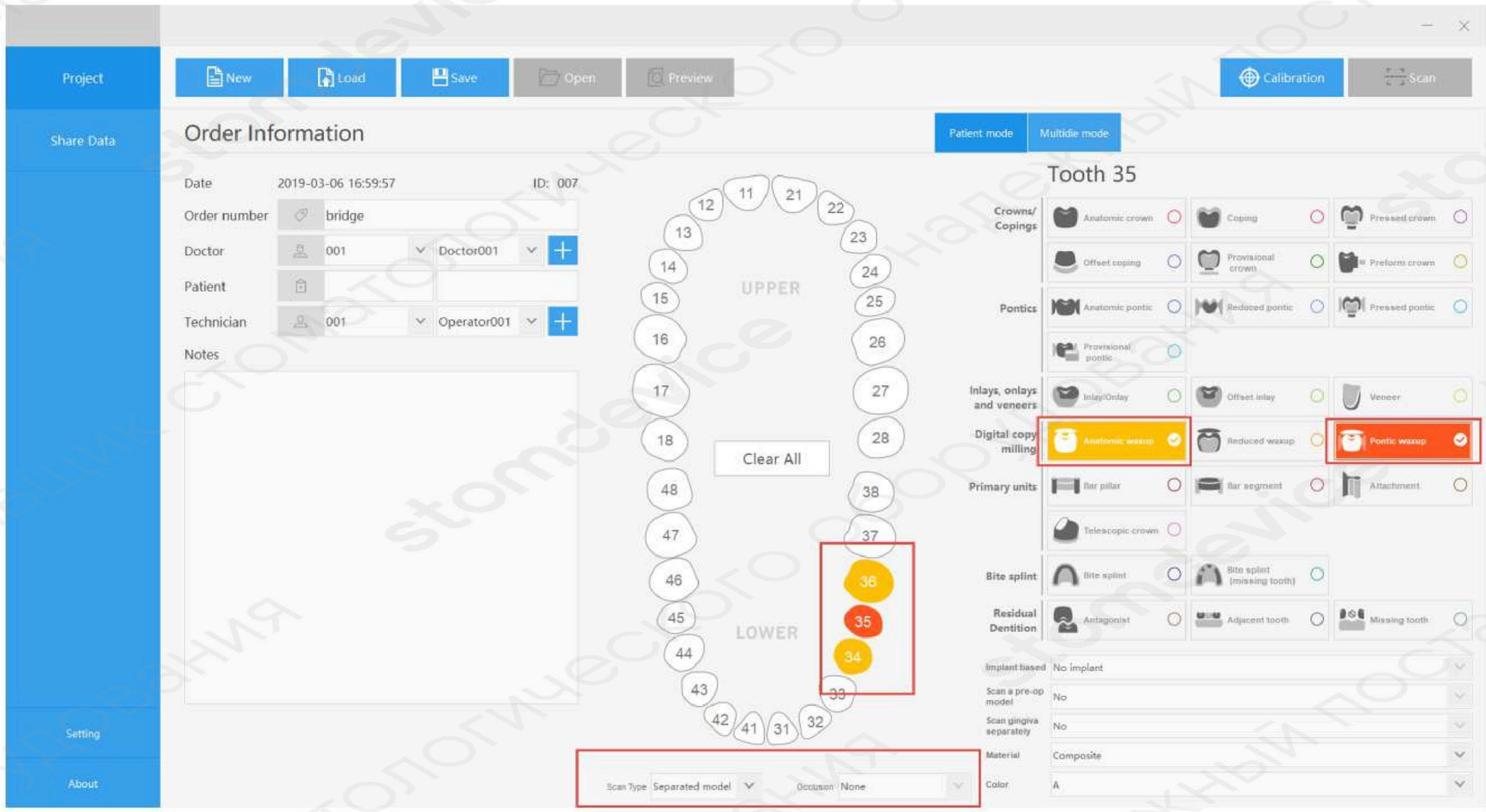


insert tooth with wax into the die

4.1.1.6.1. wax Crown

(1) Create order

Choose "Pontic Wax" in the interface, then choose the tooth location(37 and 35), choose the "missing tooth wax", then choose the tooth(36), shown as the figure below. The "Scan type" is "Separated model" and the "Occlusion" type is "None".



(1) Scan wax crown

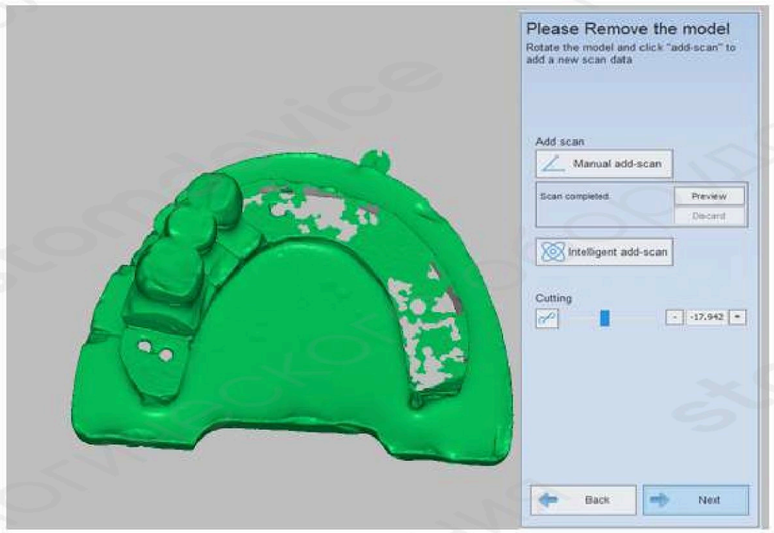
insert the partial lower crown model with wax, click "Next" to begin to scan.

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After automatic scanning, you can click "Add Scan" to have better scanning result if need be. Then you can click "Apply" for data optimization as below.



(2) Scan crown

After creating order, click "Scan" to enter the following interface. Insert the lower crown according to the prompts, refer to the Crown for the operation.

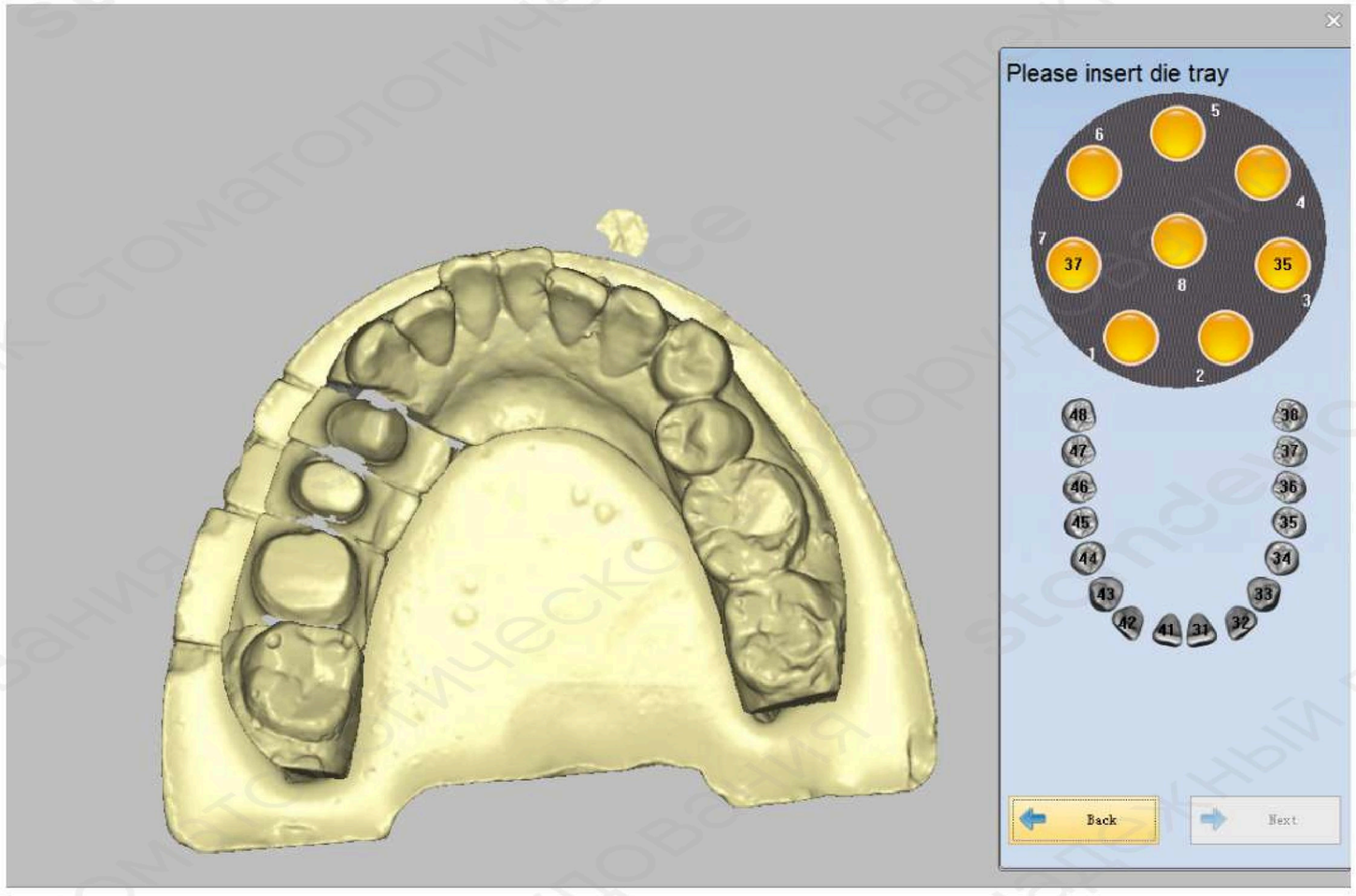
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(3) Scan tooth

After scanning the crown, click "Next", it will enter the scan interface, shown as the figure below. Insert the model according to the prompts, refer to the Scan Tooth for the operation.



(4) Auto alignment

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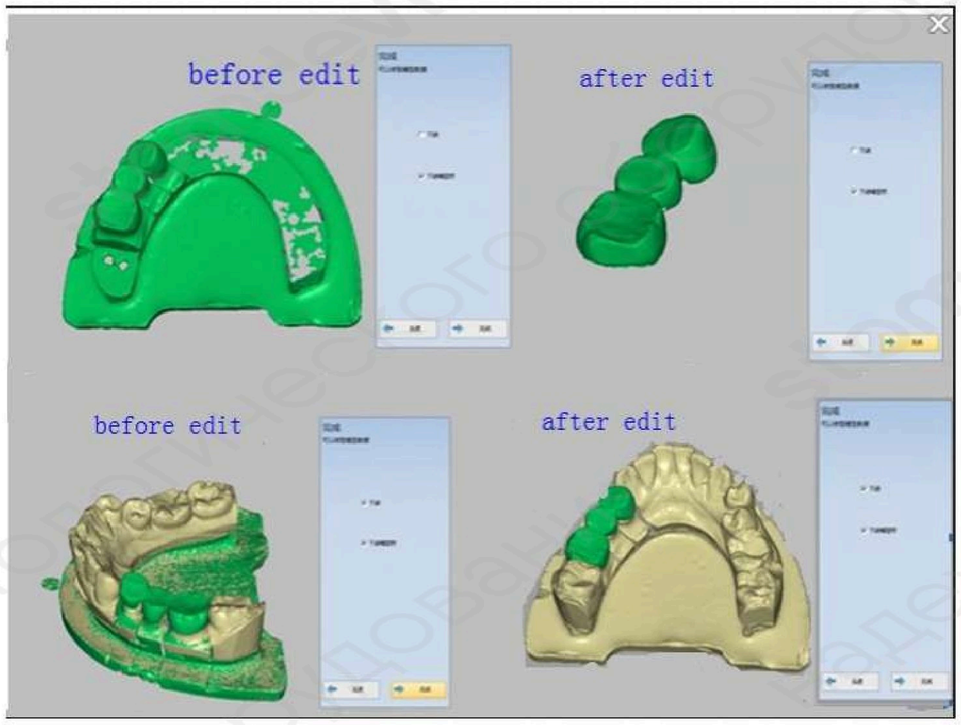
After scanning the tooth, click “Next”, it will enter the auto alignment interface, shown as the figure below.



Note: it displays the alignment result between tooth and crown in the interface, the wax is not displayed in the interface.

(5) Completing scan

After the alignment is completed, click “Next”, the interface will pop up, shown as the figure below. You can view or edit the model, click “Complete” to save the model.



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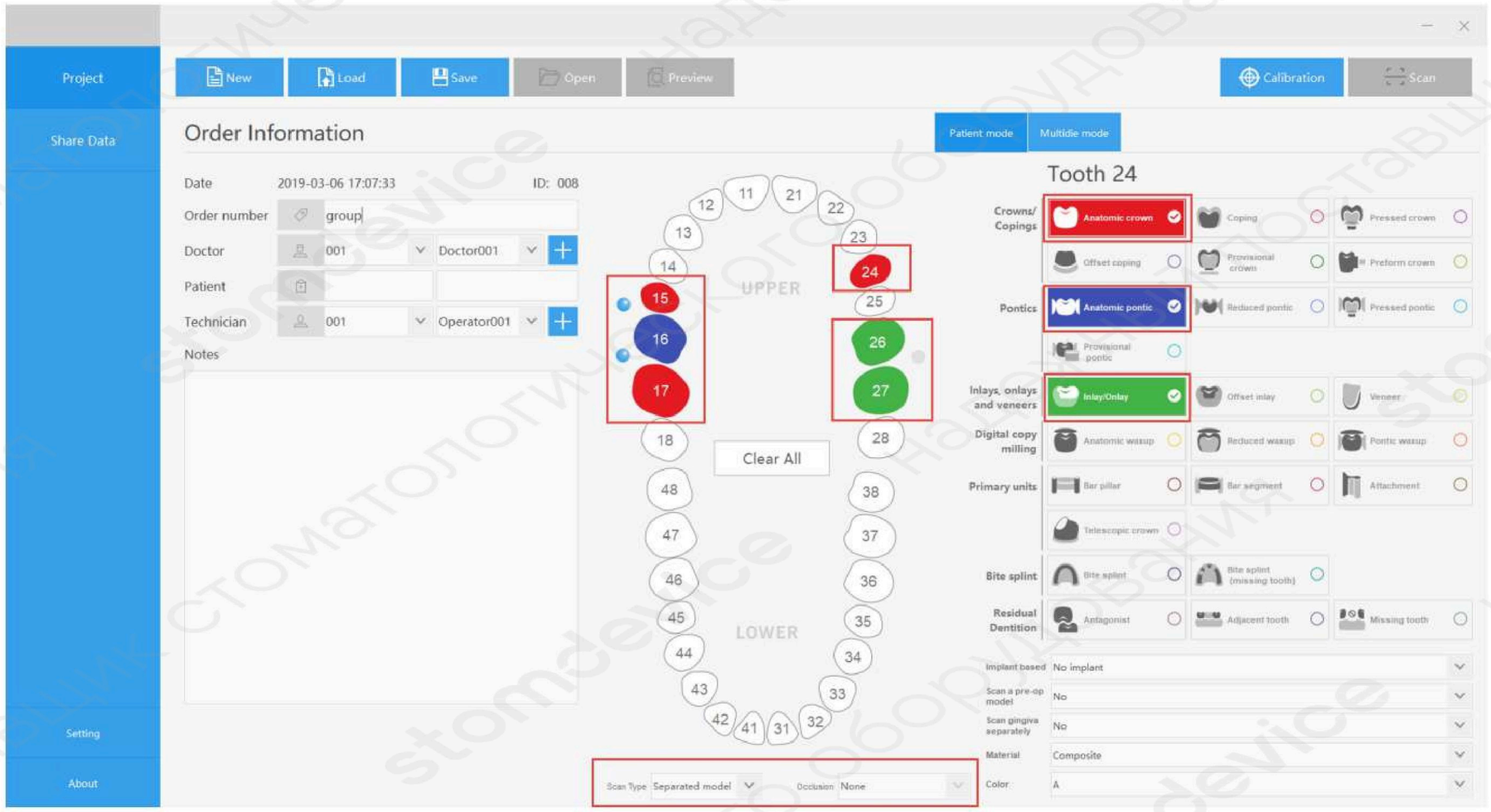
Note: you can design the wax after editing the data in the interface.

4.1.1.7. Scan combination

There can be different types of teeth in a order, you can operate according to the selected scan type and tooth type. If scan a order of single jaw, a inlay, veneer and missing tooth, the steps are as the follows.

(1) Create order

Choose the tooth type of a pontic (the tooth 15 and 17, the missing tooth 16), the tooth 24 and two inlay (26 and 27) in the crown, shown as the figure below. The "Scan type" is "Separated model" and the "Occlusion" type is "None".



Note: the missing tooth can not be scanned alone, and generally it's scanned with the crown.

(2) Scan crown

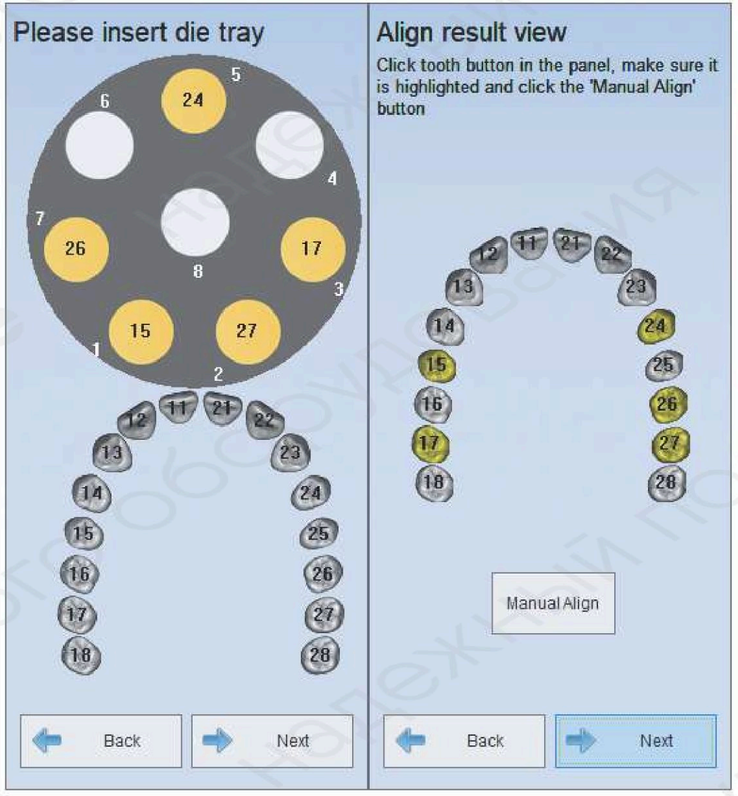
After creating order, click "next" to enter the interface of scanning crown. The scan operation is the same with the "Single jaw" in the "Separated model", refer to the Single Crown for the operation.

(3) Scan tooth

After scanning the crown, click "Next", it will enter the interface of scanning tooth, shown as the figure below. Scan the die at first. After scanning the die, it will enter the auto alignment interface. Refer to "Scan tooth" and "Auto alignment".

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Note:

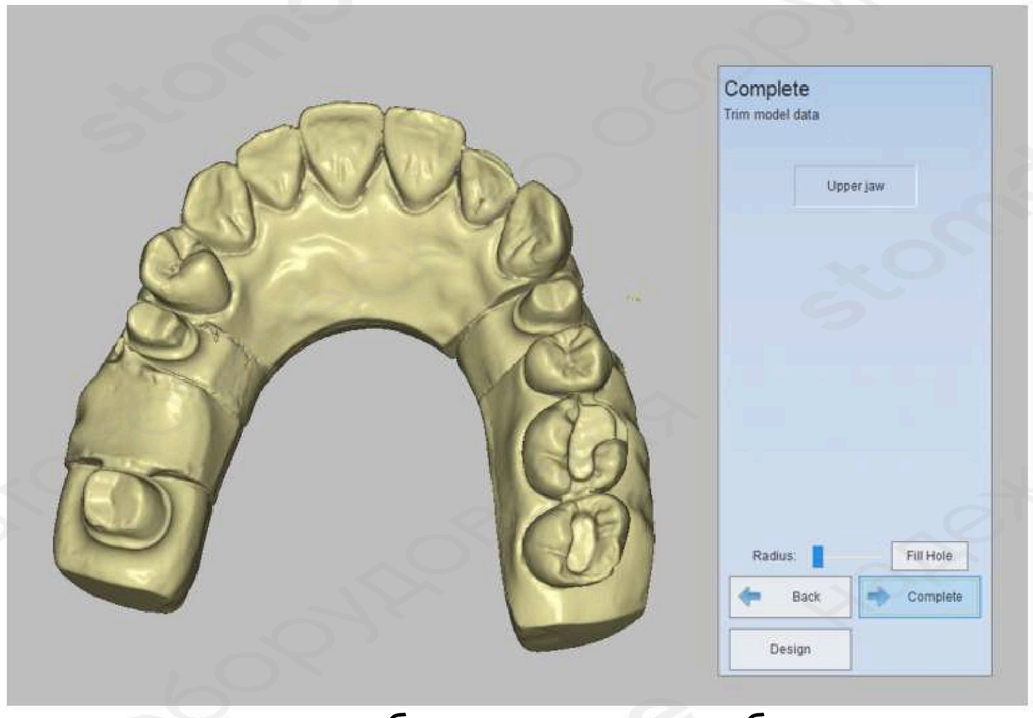
1) After scanning the tooth on the die tray, it will enter the interface of auto alignment.

2) when scan the teeth of inlay, crown and veneer at a time. When the number of crown and veneer is no more than 8, you can scan these model all at a time. If the number is more than 8, you should scan these model more than once.

3) Pontic tooth will not be scanned like the die.

(4) Completing scan

After the alignment is completed, click "Next", the interface will pop up, shown as the figure below. You can edit the model in the interface. After editing the model, click "Complete" to save the model.



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4.1.2. Non separated Model

The “Non separated model” is designed specially for scanning jaw in the Non separated model, which contains single crown, inlay and veneer.

You need to clamp the model during scanning, please refer to the clamping of a jaw or the fixture of the half jaw

Note:

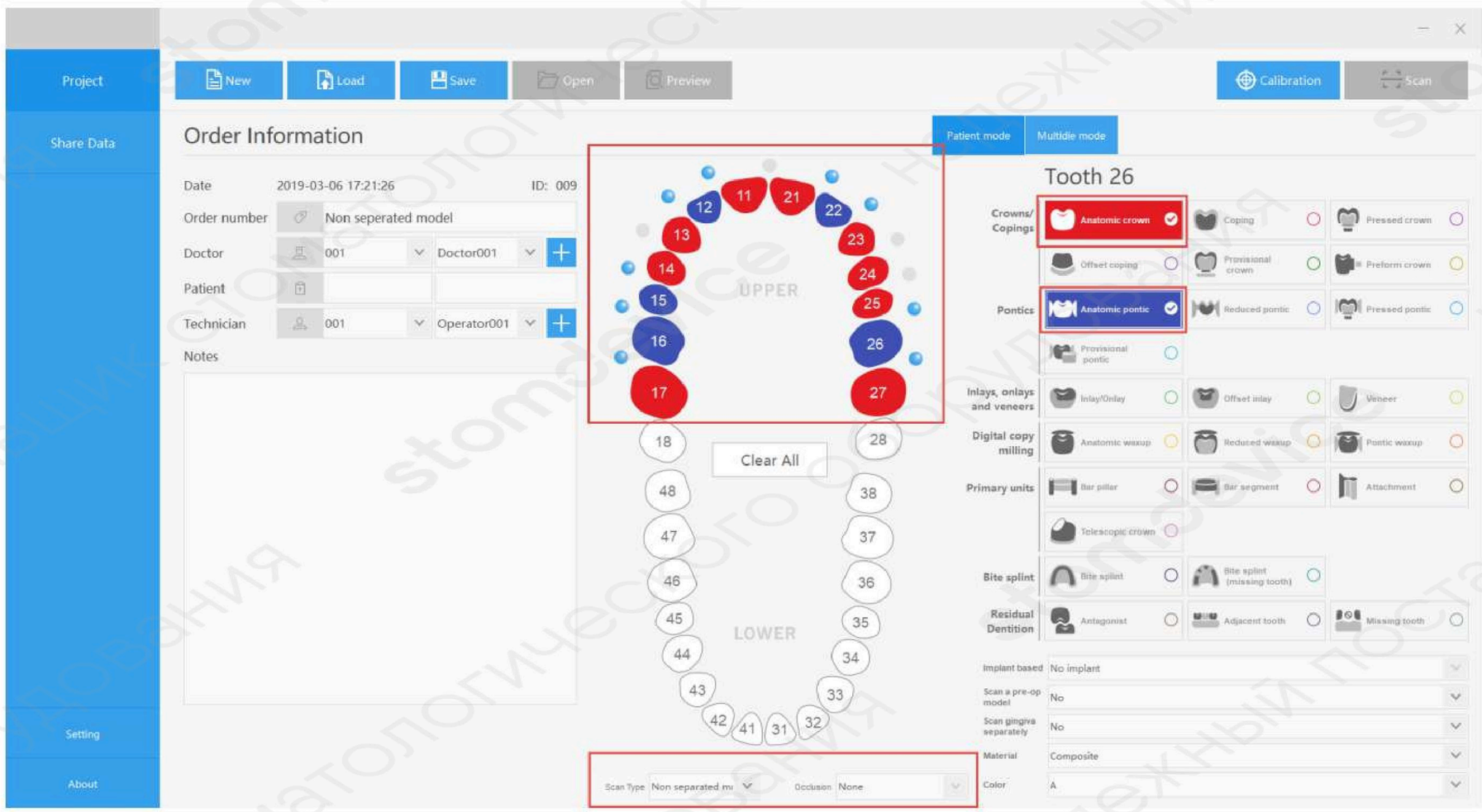
1. If there are different types of teeth or more than one tooth in an order under the “Non separated model”, you need to scan it once only.

2. the missing tooth can not be scanned alone.

4.1.2.1. Single Crown

1. Create order

Choose the scan type of “Non separated model” and the “Occlusion” type is “None”. Choose “Crown” in the “Crown”, then choose the tooth location(one or more disjunct teeth), shown as the figure below.



2. Scan crown

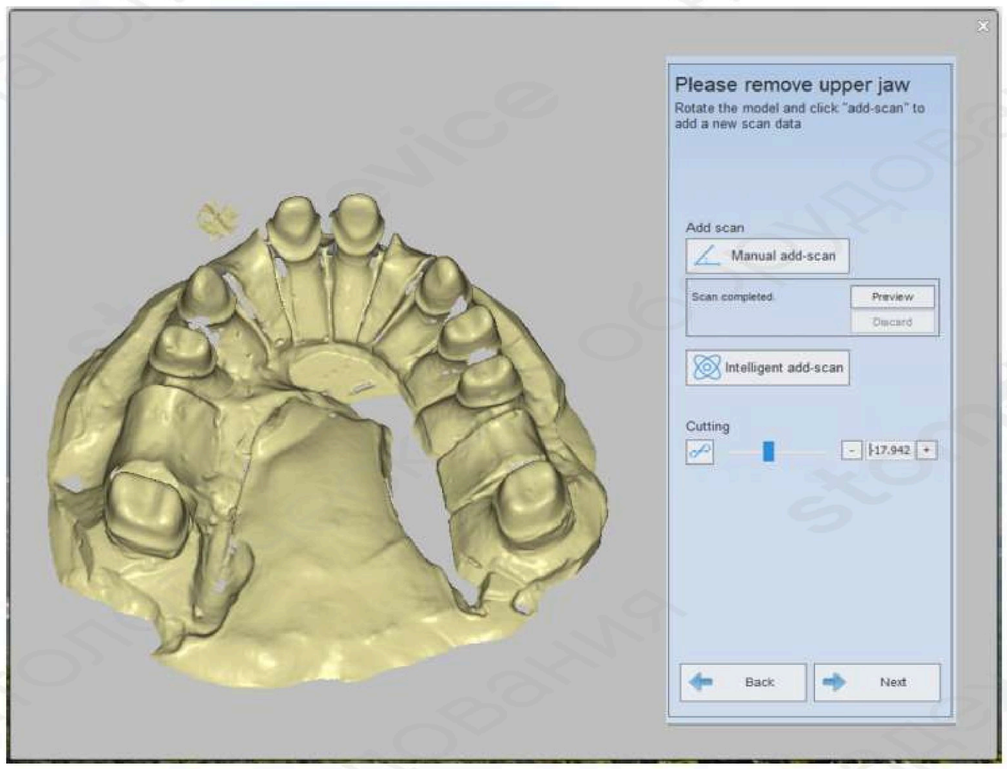
After creating order, click “Scan”, the interface will pop up, shown as the figure below. Insert the jaw according to the prompts.

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Then click “Next” to begin to scan. After the models is scanned, it will align the scanned model automatically. When alignment is completed, it will show “Complete model optimization” at the bottom, shown as the following figure.

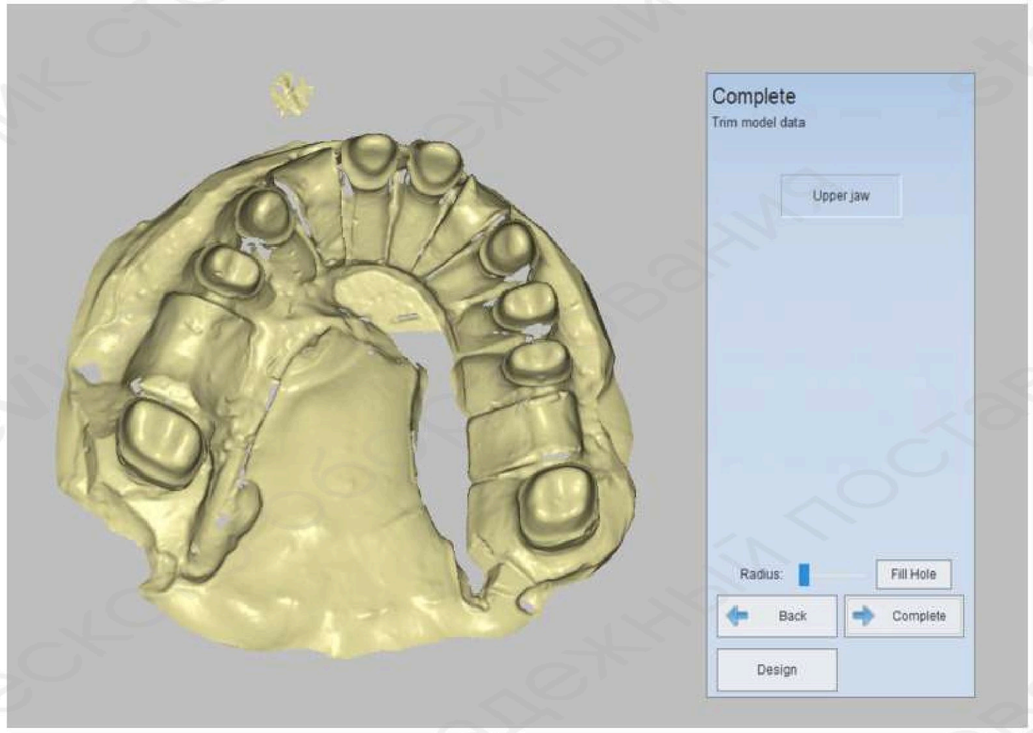


3. Complete scan

After the alignment is completed, click “Next”, the interface will pop up as shown as the figure below. Click “Complete” to complete the scan.

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Note: If there are different types of teeth or more than one tooth in an order under the "Non separated model", you need to scan it once only.

4.1.2.2. Single Inlay

The scan operation is the same with the "Single Crown" in the "Non separated Model", refer to the Single Crown for the operation.

4.1.2.3. Scan Veneer

The scan operation is the same with the "Single Crown" in the "Non separated model", refer to the Single Crown for the operation.

4.1.3. Impression

The "Impression" is designed specially for Impression models.

You need to clamp the model during scanning, please refer to Impression Fixture

.

Crown

The scan operation is the same with the "Single Crown" in the "Non separated model", refer to the Single Crown for the operation.

Note: If there are different types of teeth or more than one tooth in an order under the "Non separated model", you need to scan it once only.

4.1.4. Die

The "Die" is designed specially for a large number of simple tooth models. It is used to scan data for making the inner crown generally. Take the single crown as the example.

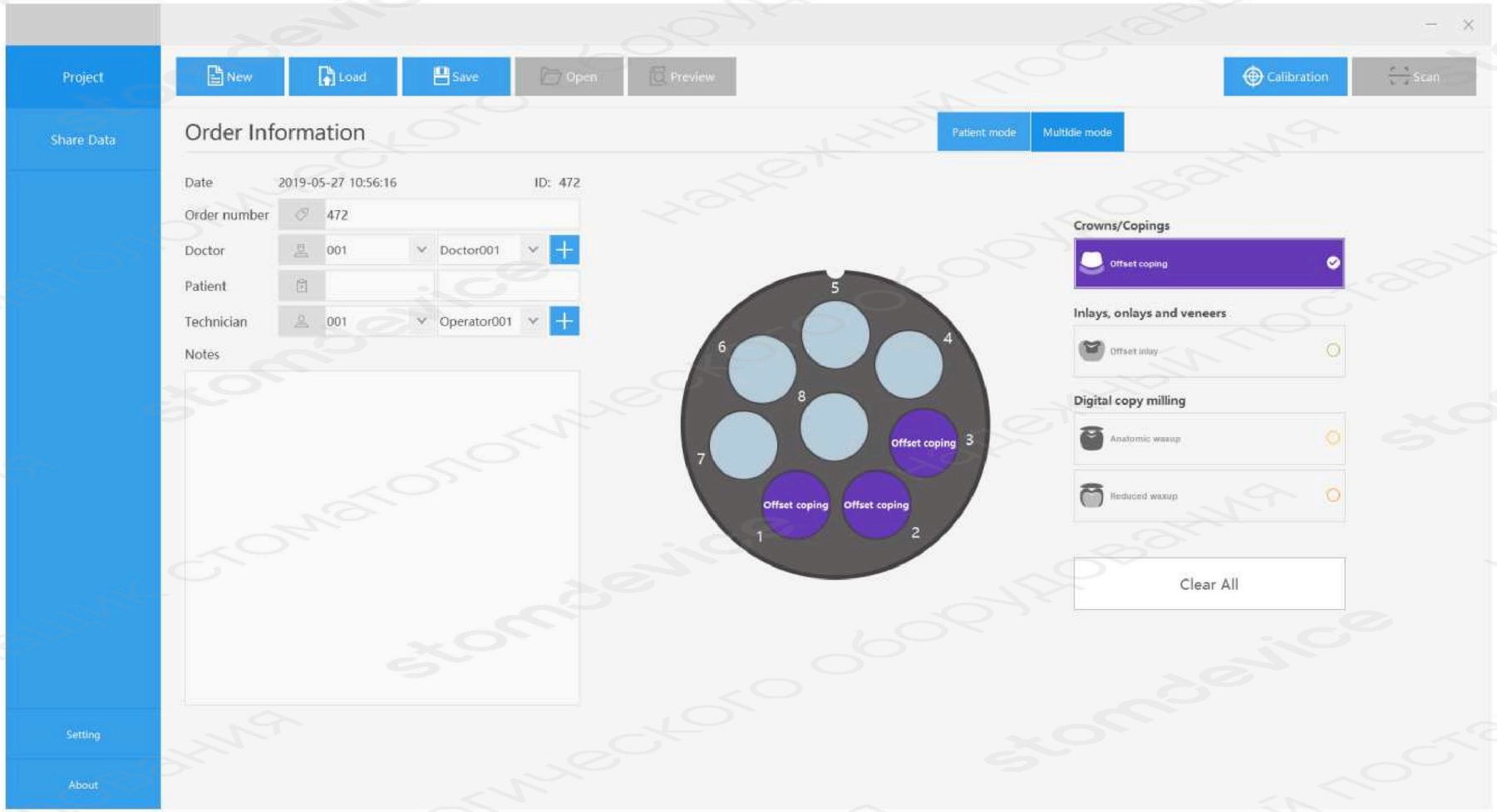
You need to clamp the model during scanning, please refer to the Clamping of tooth Die.

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Single Crown

(1) Create order

Choose the scan type of "Die" and the "Occlusion" type is "None". Choose "Crown" in the "Crown", then choose the location of the tooth to be scanned (one or more teeth), shown as the figure below.

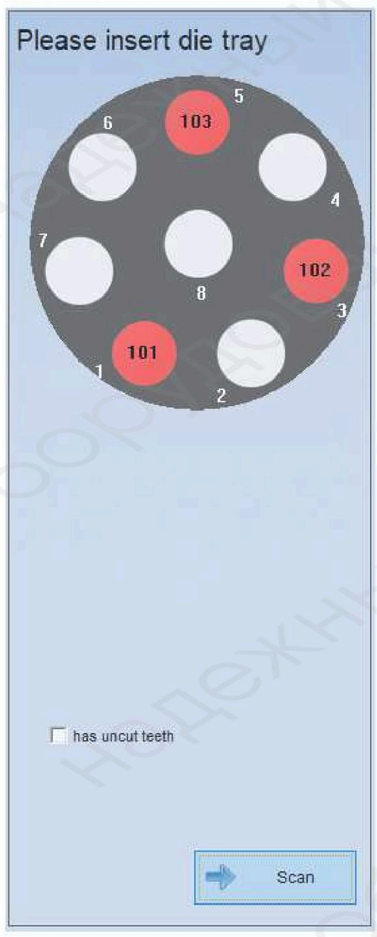


(2) Scan die

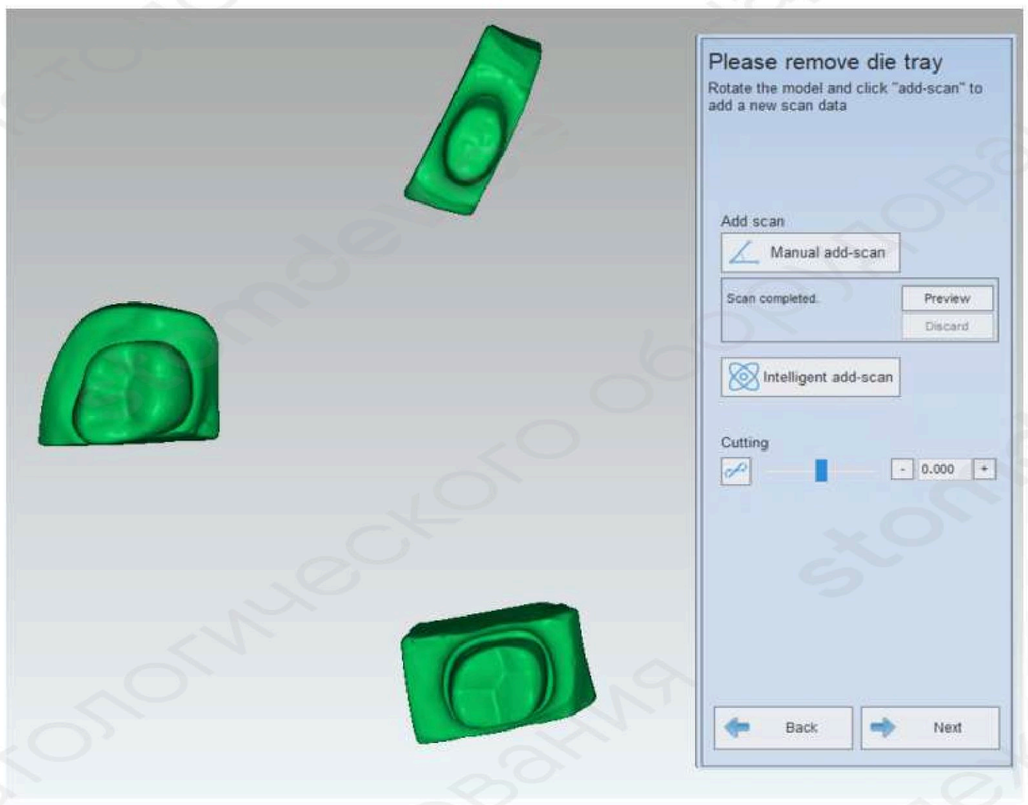
After creating order, click "Scan", the interface will pop up, shown as the figure below. Insert the die tray with teeth according to the prompts.

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Make sure that die tray are inserted with die before you click “Next” to start scanning. After scanning, you can “Add scan” to get better scan result. Then click “Apply” to optimize the scan data as below.



(3) Completing scan

After the alignment is completed, click “Next”, the interface will pop up, shown as the figure below. Click “Complete” to complete the order scan.

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Note:

1. If there are three types of teeth in an order, which are crown, inlay and veneer, you can scan crown . Inlay and veneer at a time.
2. Scanning for die of upper and lower jaw are the same. When the number of crown and veneer is no more than 8, you can scan these models all at a time. If the number is more than 8, you should scan these models more than once according to the hole location on the die tray.
3. The scan type of die cannot be wax or implant and the "Occlusion" type can only be "None".
4. The missing tooth can not be scanned alone. When choose the missing tooth in the order, the type will be ignored by default.

5. Occlusion

The "Occlusion" types contain "None" 、"Registered jaw" "Bite impression" 'Triple Tray impression'.

None: The operation of None "Occlusion" type is introduced in Separated Model, Non separated Model, Impression, Die.

The following orders are created through DentalScan.exe. In this chapter, the "Registered jaw" and "Bite impression" will be introduced.

5.1.1. Registered jaw

Choose the scan process of "Registered jaw" according to the selected tooth type and scan type. Take the single crown in the "Separated model" for example .

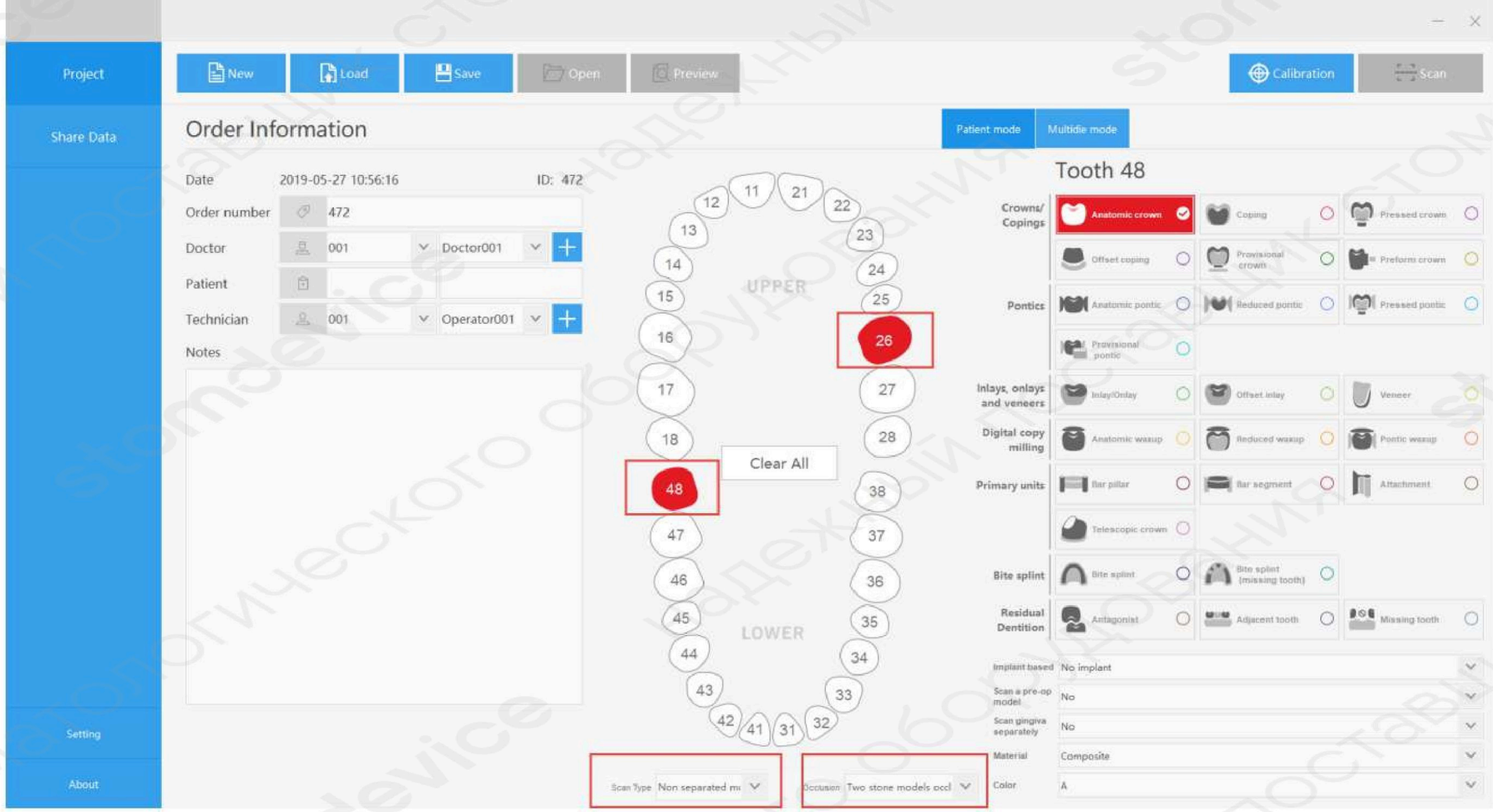
Note: While scanning the combination jaws with wax, the wax can exist only in the upper jaw or lower jaw. If both of the two crowns have wax, the scan design will be wrong.

1) Create order

Choose "Non Separated model" for the scan type and "Two stone models occlusion" for "Occlusion" type. Choose "Crown" option in the "Crown", then choose the location of the tooth to be scanned (26, 48), shown as the figure below.

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2) Scan the combination jaws

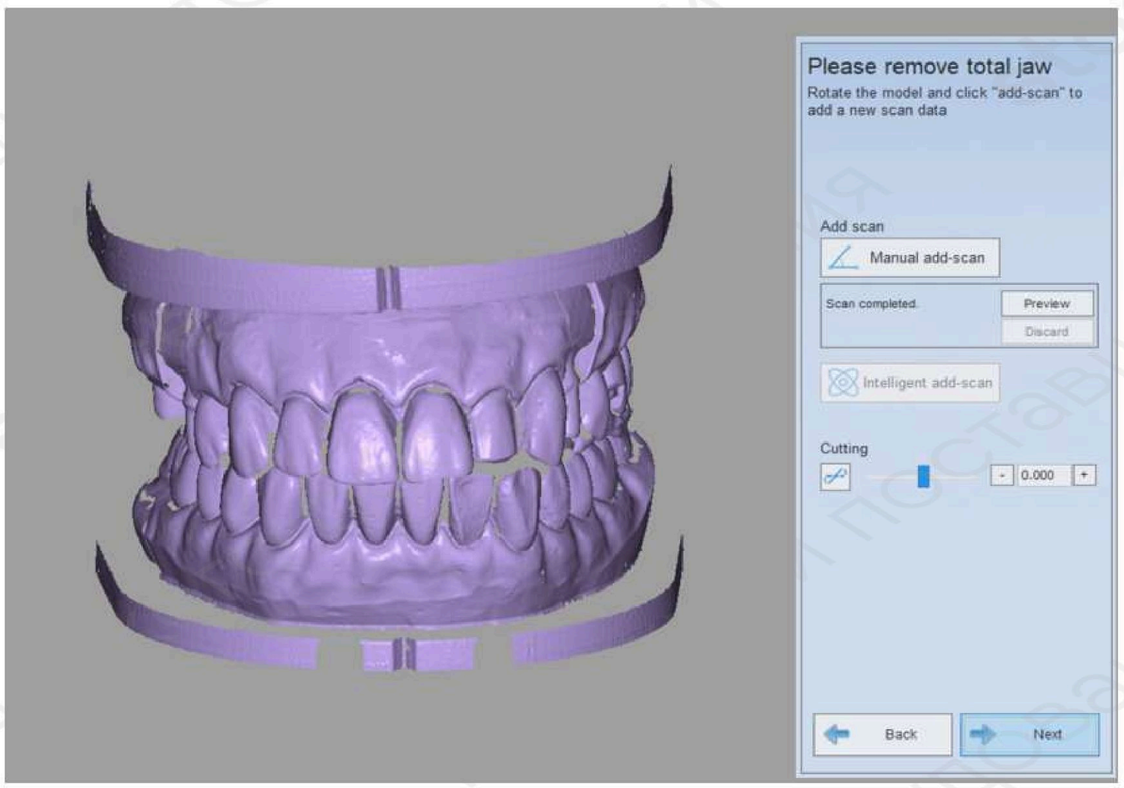
Insert the model according to the prompt, shown as the figure below, click “Next” to begin to scan.



After scanning the model ,the result is shown as the figure below.

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3) Scan the lower jaw

After scanning the totaljaw, click “Next” to enter the interface of scanning the combination jaws. Insert the lower jaw according to the prompt.



4) Scan upper jaw

After scanning the Up jaw, click “Next” to enter the interface of scanning the combination jaws. Insert the lower jaw according to the prompt.

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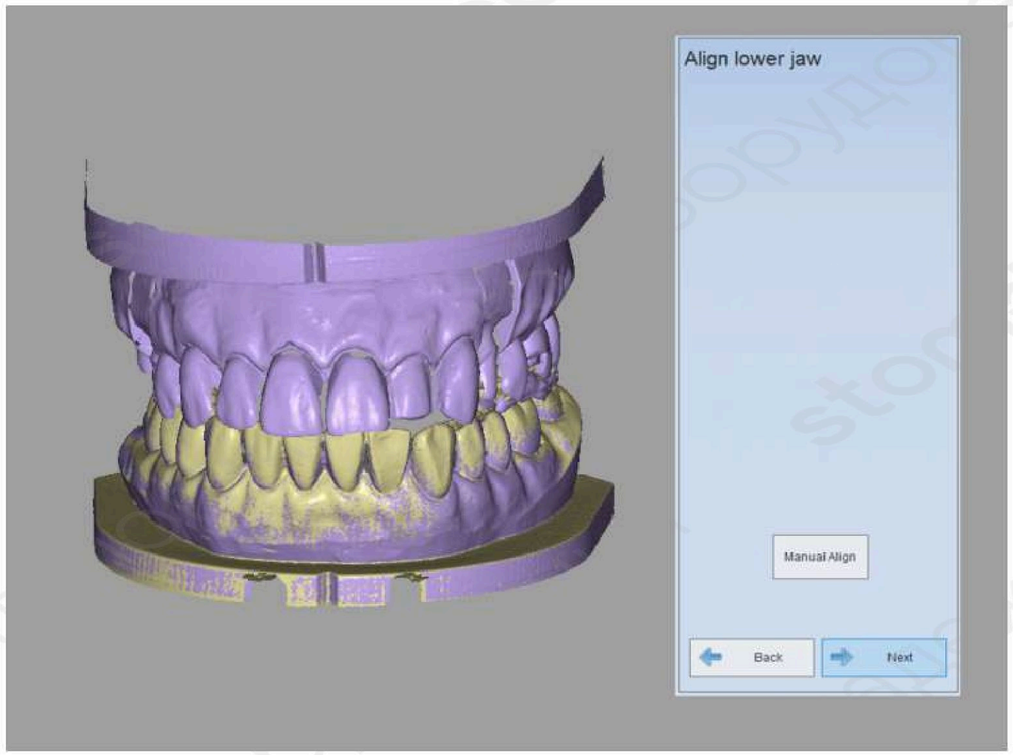
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(5) Auto alignment

Auto alignment of the lower jaw

After scanning the totaljaw、loweraw、upperjaw model,, click “Next” to enter the interface for auto alignment of lower jaw. It will align the model automatically. When alignment is completed, the model is shown as the following figure.(if the auto alignment result is not satisfactory, you can choose to align it manually)

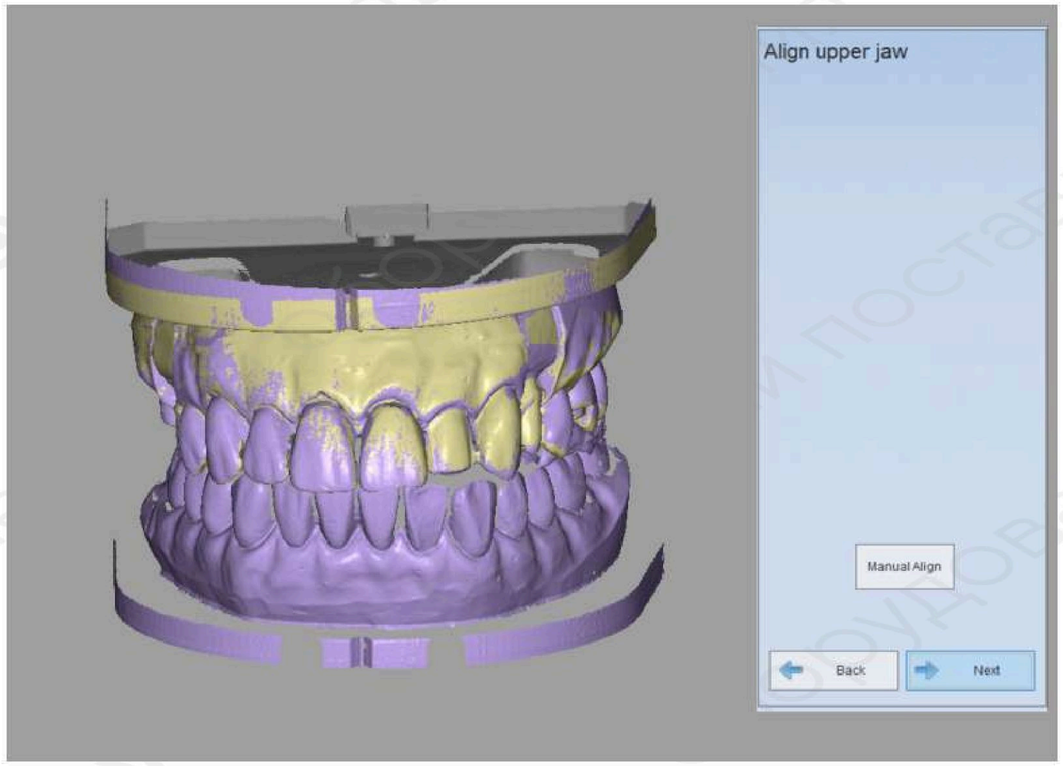


Auto alignment of upper jaw

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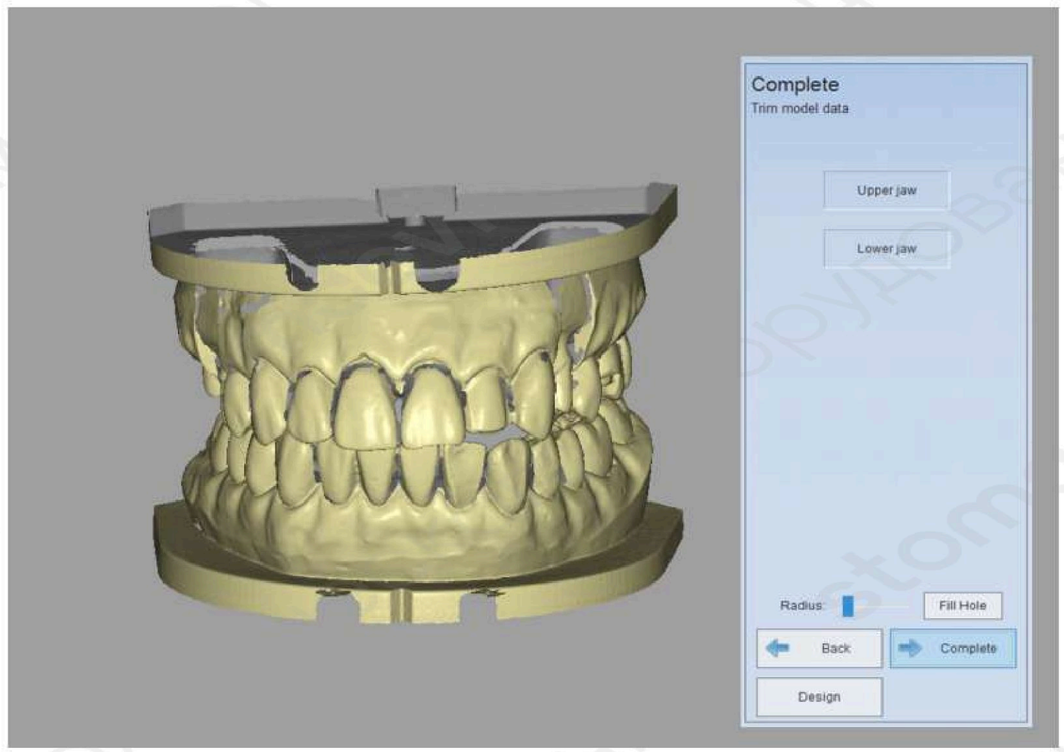
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Click “Next” to enter the auto alignment of upper jaw (you can also choose the “Manual Align”), shown as the figure below.



(6) Completing scan

After the alignment is completed, click “Next”, the following interface will pop up, shown as the figure below.



Note:

1. In the model, if the selected teeth are all in the lower jaw, please scan the lower jaw before scanning the upper jaw.

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2. While scanning the combination jaws with wax, if there is a pontic in the upper or lower jaw, operate it according to the operation of the pontic with wax.

3. While scanning the combination jaws with wax, the wax can exist only in the upper crown or lower crown. If the wax exists in both of the two crowns, the scan design will be wrong.

4. If you click "Back" during the combination jaws scanning, the auto alignment will fail, and then you need to align it manually.

5. If you use the previous model by importing order, the auto alignment will fail, and then you need to align it manually.

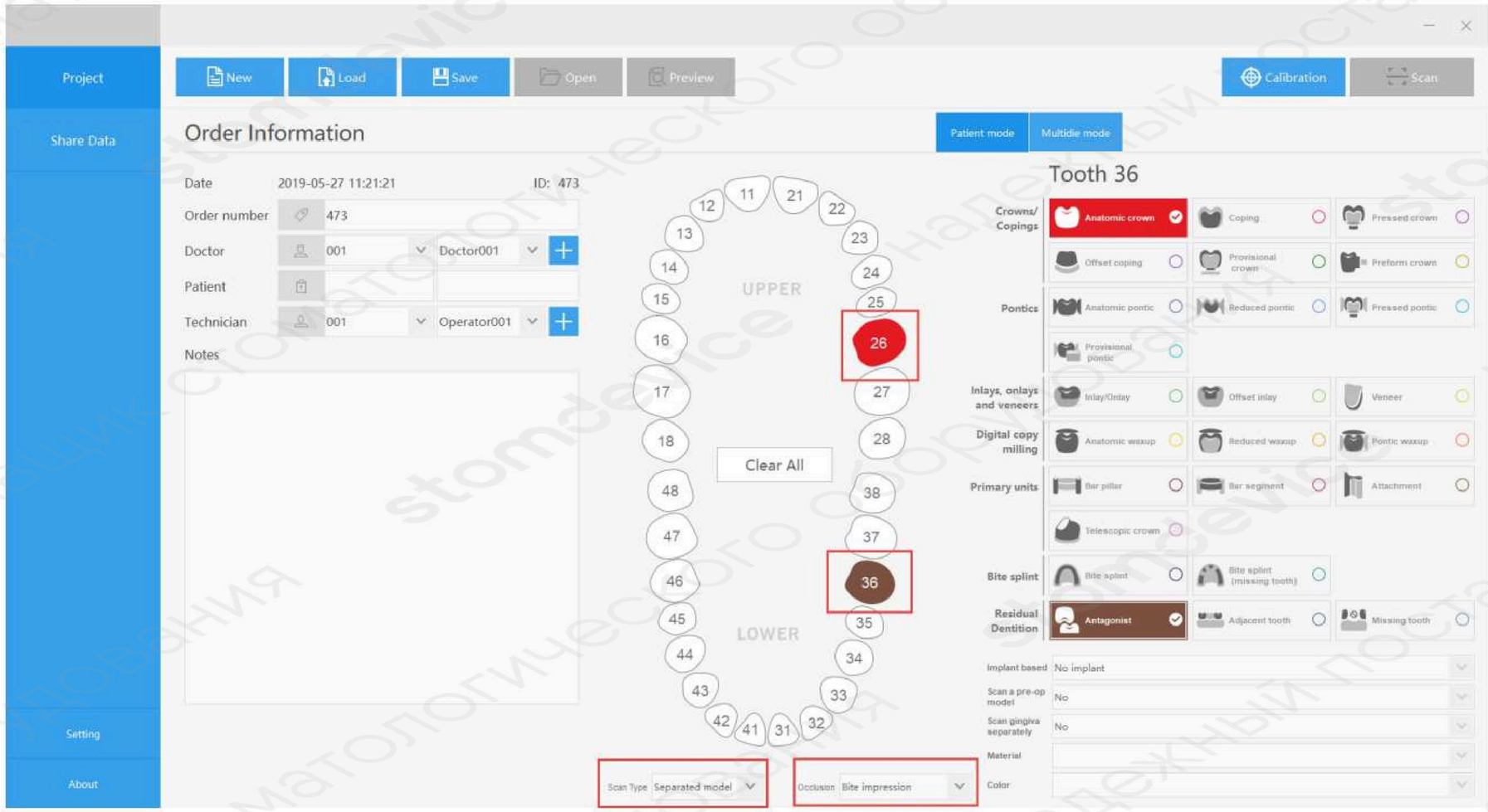
5.1.2. Bite impression

According to the selected tooth type or scan type then choose the scan process of "Bite impression".

The order which includes wax model or the order which both up and down jaws had chosen teeth is unsupported to the "Bite impression" type. Take the single crown in the "Separated model" for example

1) Create order

Choose "Separated model" for the scan type and "Bite impression" for "Occlusion" type. Choose "Crown" option in the "Crown", then choose the location of the tooth to be scanned (26), shown as the figure below.



2) Scan the mushbite

Insert the model according to the prompt shown as the figure below and click "Next" to begin to scan

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3) Scan the jaw

After scanning the mushbite click “Next” to enter the interface of scanning the jaw. Insert the lower jaw according to the prompt, the detailed process can referred to “Non separated Model”.



4) Completing scan

After the scan process is complete, click “Next” to the “complete” interface, the mushbite will align with the jaw automatically. After the alignment is completed, edit and delete the unneeded region to make the later design more easily.

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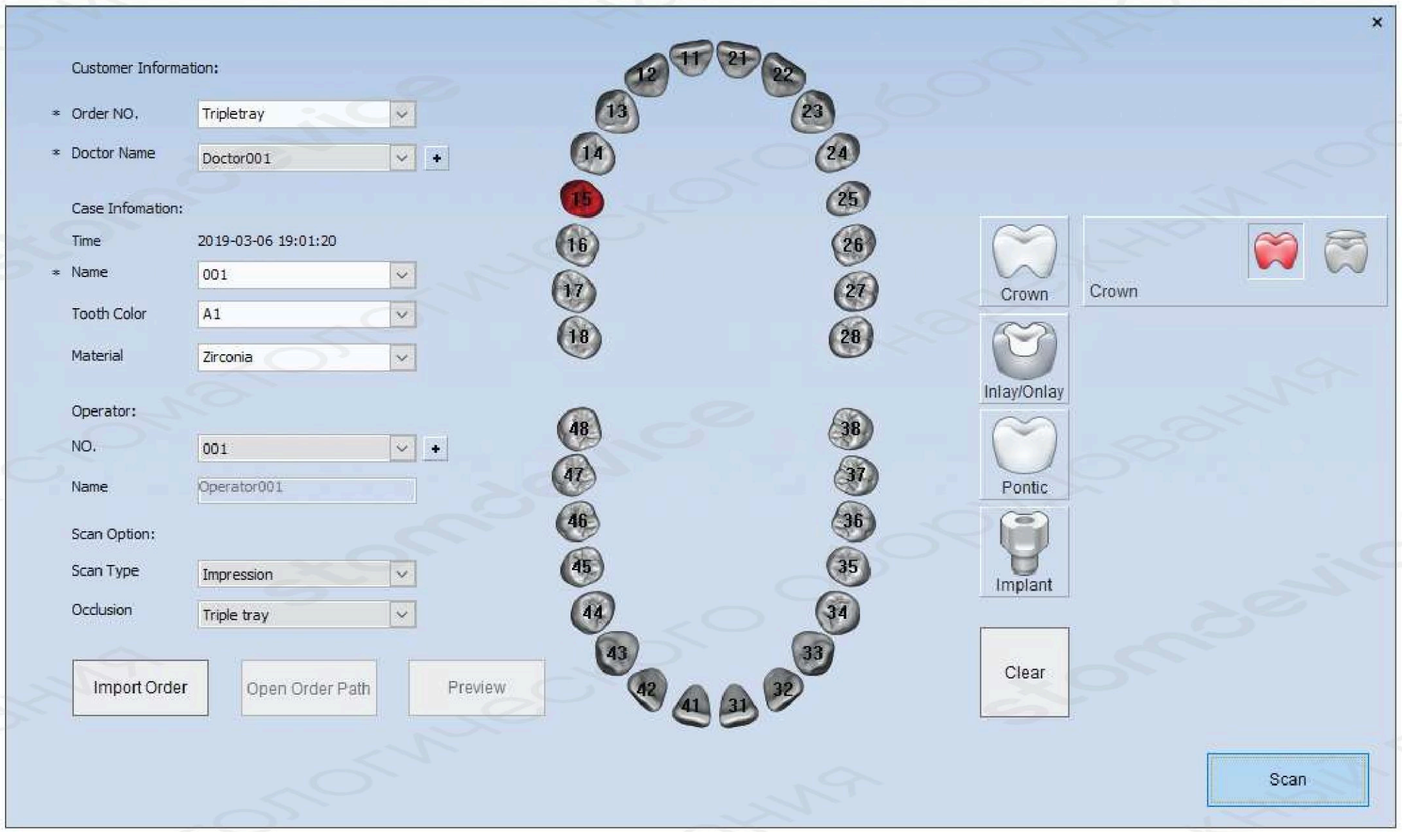
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5.2. Triple Tray

Choose “impression” when users want to scan triple tray impression

1) Create order

Choose “impression” in scan type, choose “triple tray” in occlusion, choose “anatomic crown” in crowns/copings session as below.



2) Scan lower impression

After order is saved, click scan to start scanning. Here the lower impression is required

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3) **Scan upper impression**

After lower impression scan is finished, go to next step to scan upper impression.



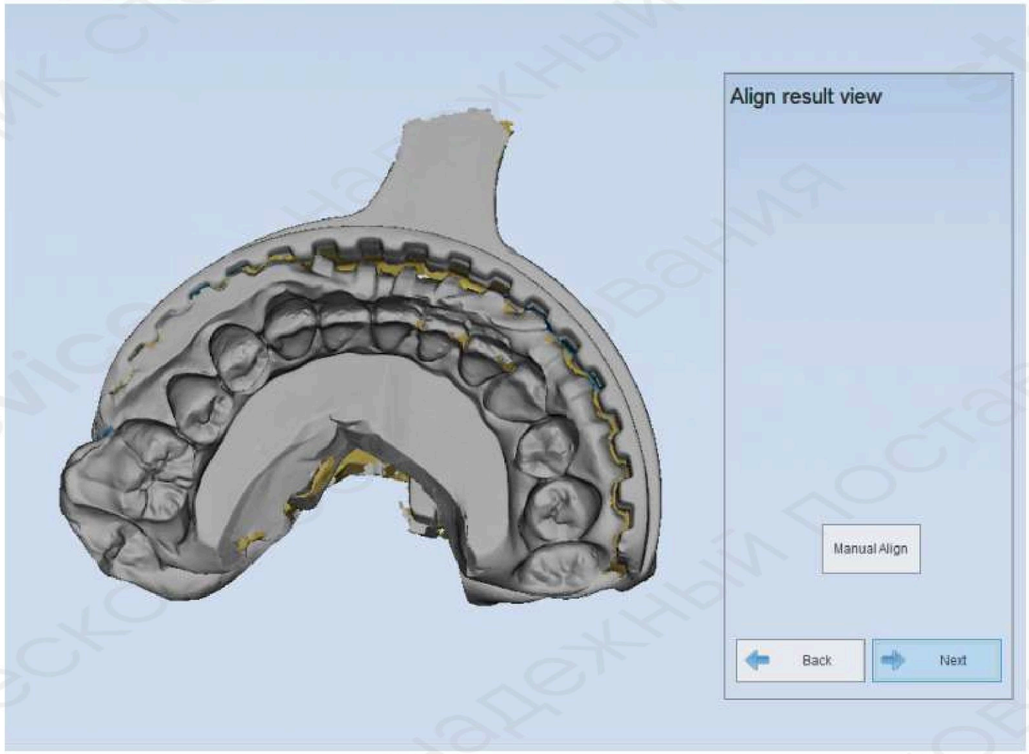
4) **Automatic alignment**

Automatic alignment between upper and lower impression.

After both upper and lower impressions are scanned, go to next step to align two impression data.

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5) Complete scan

After alignment is finished, go to next step to complete scan process.



6. Calibration

Calibration precision directly affects the scanning accuracy of system. The system requires calibration under the following conditions:

1) 3DScanner is used for the first time or it hasn't been used for a long time.

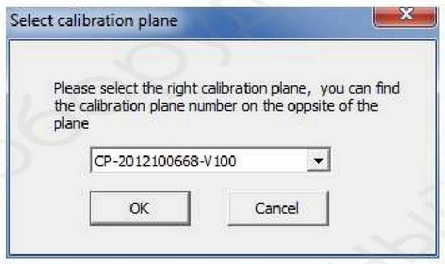
2) 3DScanner suffered from serious vibration during transportation.

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3) The scanned data is very rough surface, or problems appear such as registration error.

Operation steps:

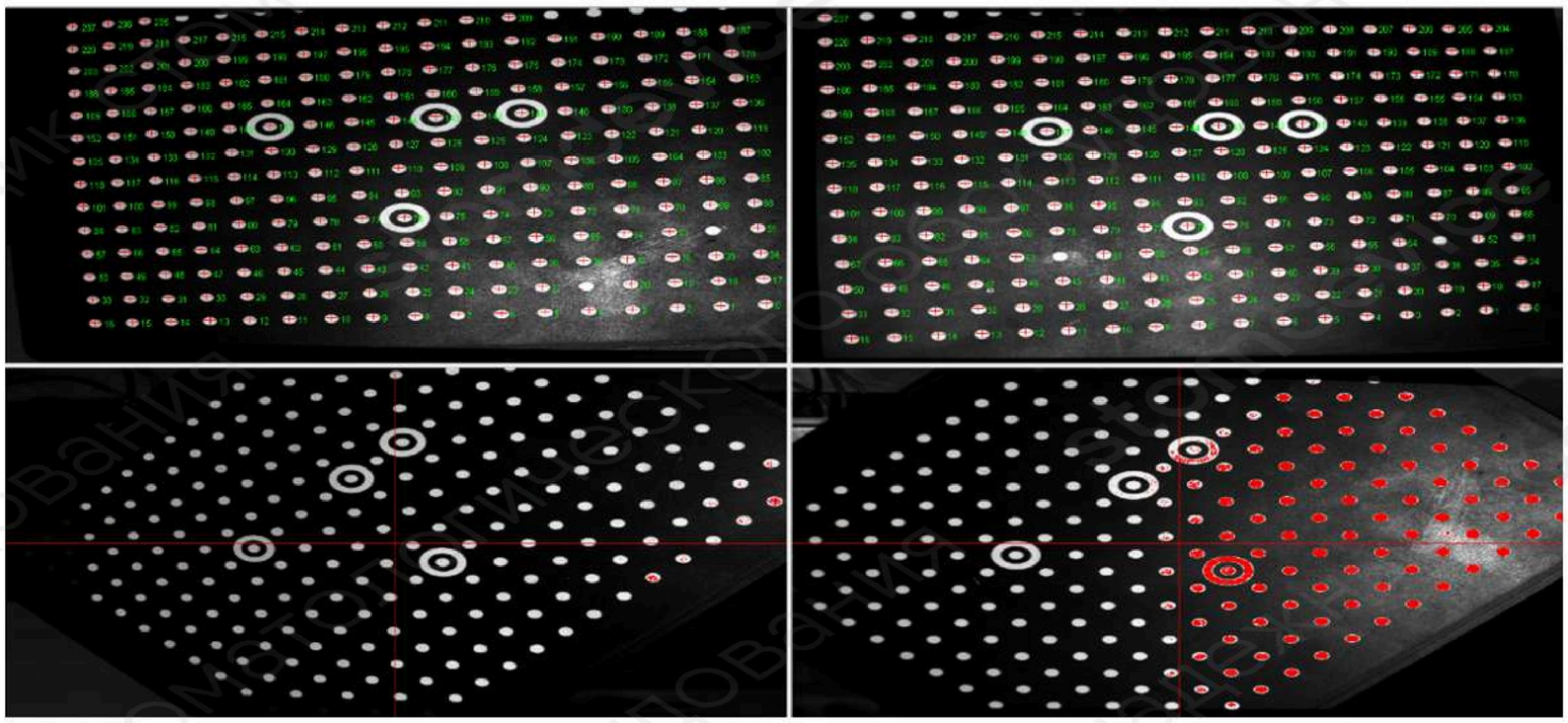
Put the calibration board on the turntable and click " Calibration" button to start. The following window will pop out for you to choose the related calibration board.



Note: please make sure the No. of the used calibration plate printed in the back (shown as the below picture) stays same as the plate number showed in the interface.



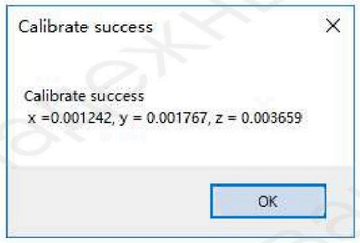
Click "Yes", the work table will rotate automatically. In addition, it shows "Scan Data" at the bottom, which means that it is collecting and calibrating. The whole process is running automatically. The interface is shown as the figure below.



It will take 7-10 minutes to complete the calibration process.。Once the calibration is completed, the calibration result will appear, shown as the figure below. It is the errors on X, Y, Z axis. Click "Finish" and the whole calibration process will be finished.

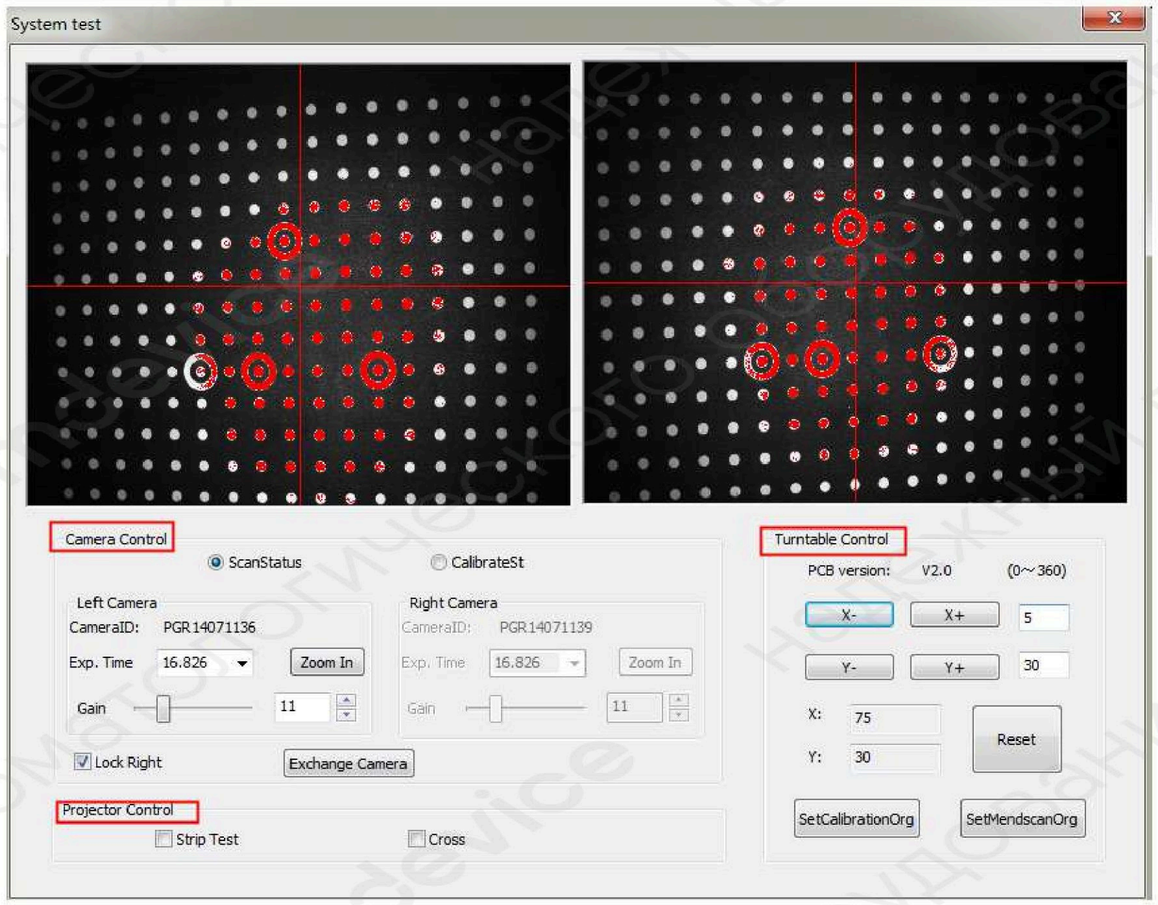
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7. System Test

"SysTest"  is used to observe the working condition of hardware and diagnose problem. Click the menu "SysTest", a dialogue will pop up, shown as the figure below. The interface contains the parts of ①camera control, ② projector control and ③turntable control.



The parameters of projector control and camera control are predefined before delivery, which is not suggested to reset. Technician checks the scanner working condition and make problem diagnosis by those setting.

As shown in the figure above, when adjust the parameters of turntable control, Click X+ or X- to increase or decrease the value of the rotary angle on X axis, or Y+ or Y- to increase or decrease the value of the rotary angle on Y axis.

Note:

The parameters of projector setting and camera setting are predefined before delivery . To avoid abnormal working condition, it is not suggested to change the setting without technician advice. If the parameters are changed by users and then the scanner can not work properly, the users should adjust the parameters according to the following chapter: "Guide for machine testing" or connect with professional technician for help.

7.1.1. Guide for machine testing

User guide includes two parts: **Scanning process** and **Calibration process**. Please set the parameters according to the following operation guide

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Notes:

- When the result of scanning or calibration is failed, we can test the scanner by setting “camera setting” and “ turntable control” parameters
- When doing calibration and scanning, there is no need to change.

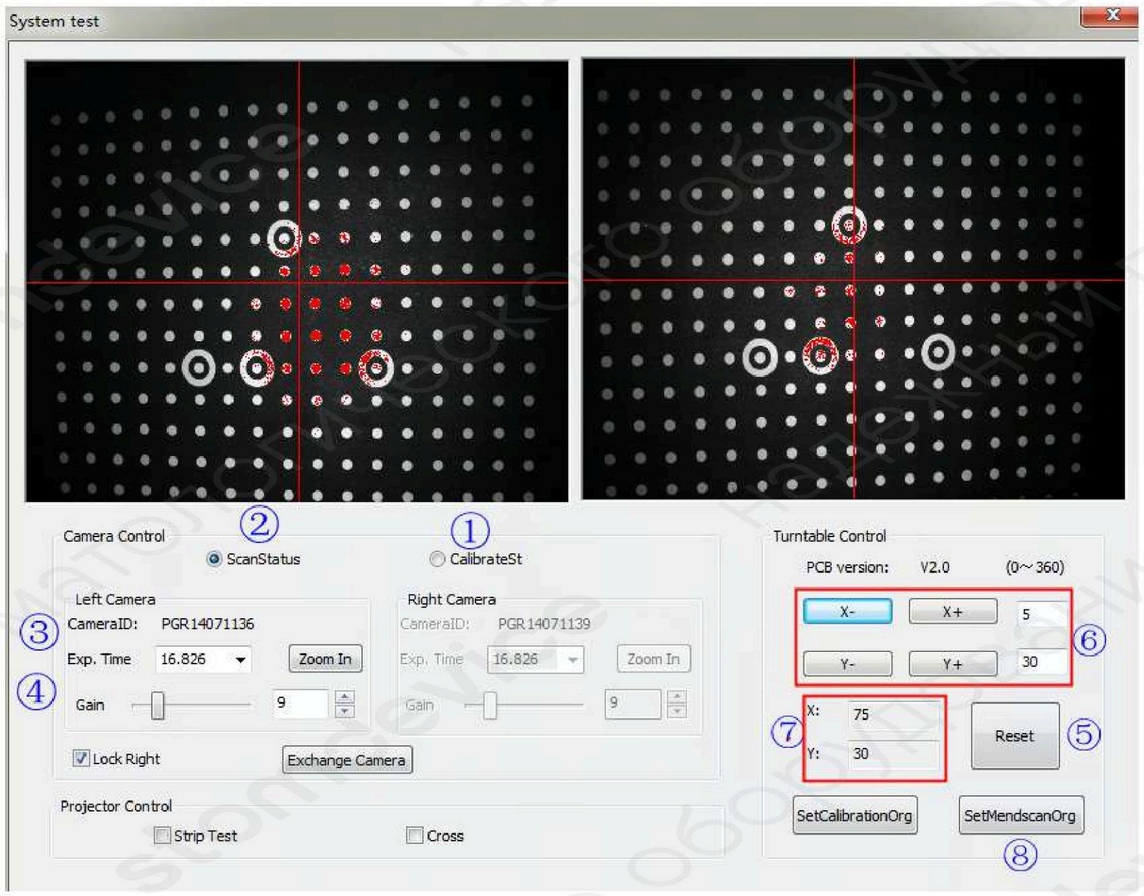
1) **Calibration process**

Check the brightness and SetCalibrationOrg before calibration.

Choose ① for calibration and put the calibration board on the turntable. Adjust ④ and ③ to modify the exposure(set the proportion of red points to white points is about 1:5)

Put the calibration board on the turntable, click ⑤ to reset. Input angle values in boxes. Click Y+, Y or X+, X- for adjustment, making sure that the calibration board is facing upfront and cross is projected on the middle of the calibration board as shown below. You can see the adjusted angle values of X and Y axes through⑦. After the two calibration boards at the two windows are in the same position, click ⑧(SetCalibrationOrg) to complete the calibration initial point setting.

Recommended angle values for AUTOSCAN_ model scanner: 80-90 for X axis and 30 for Y axis



2) **Scanning process**

Please check exposure and SetMendscanOrg before first scanning.

Choose ② for scanning and input the dental model onto the turntable. Adjust ③ to modify the model brightness(take the snapshot below for reference)

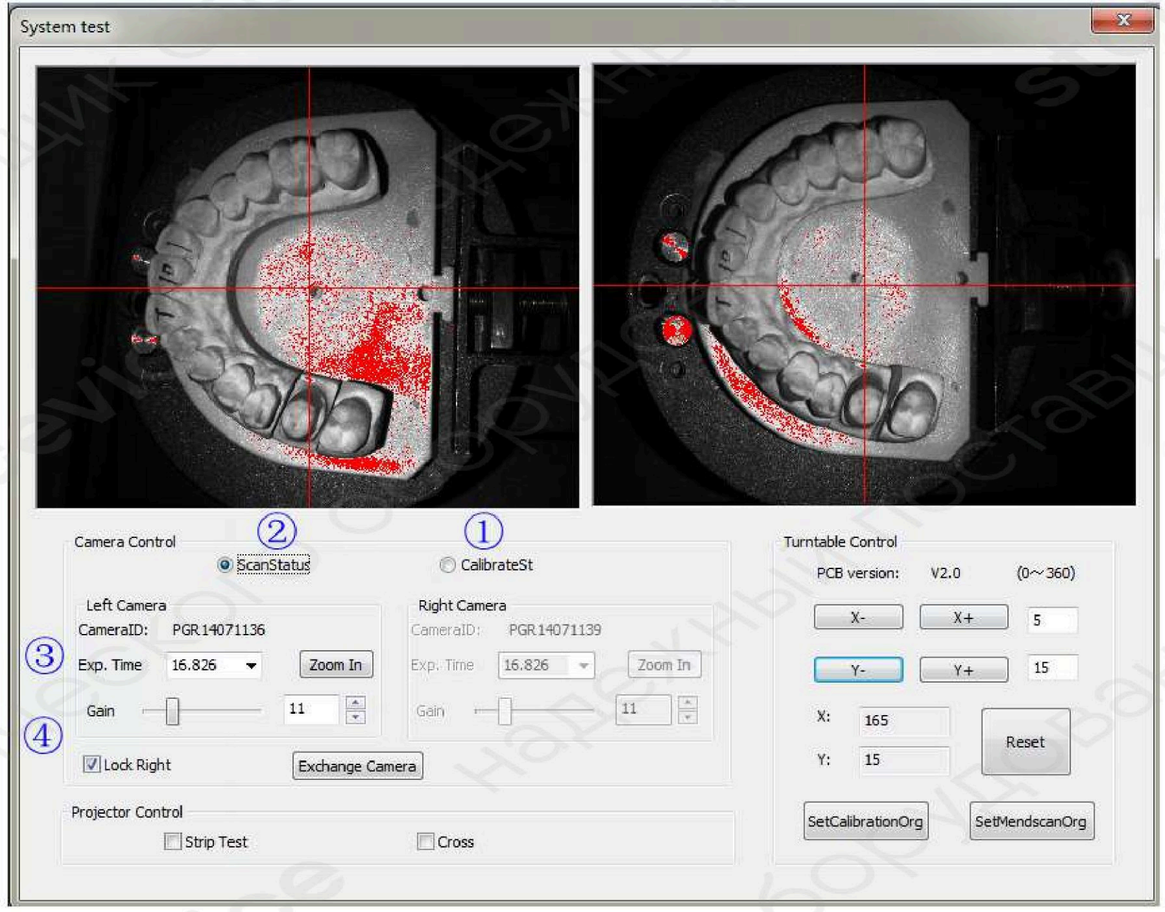
Put the dental model on the turntable, click ② to reset. Input angle values in boxes. Click Y+, Y or X+, X- for adjustment, making sure that dental model is facing upfront and the cross’s horizontal line come across the middle of the hole as shown below(circled in blue).

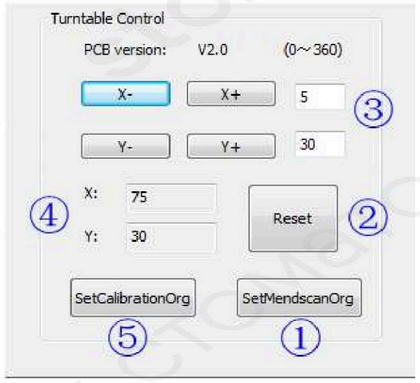
You can see the adjusted angle values of X and Y axes through ④. After the two calibration boards at the two windows are in the same position, click ⑤(SetMendscanOrg) to complete the mend scan initial point setting.

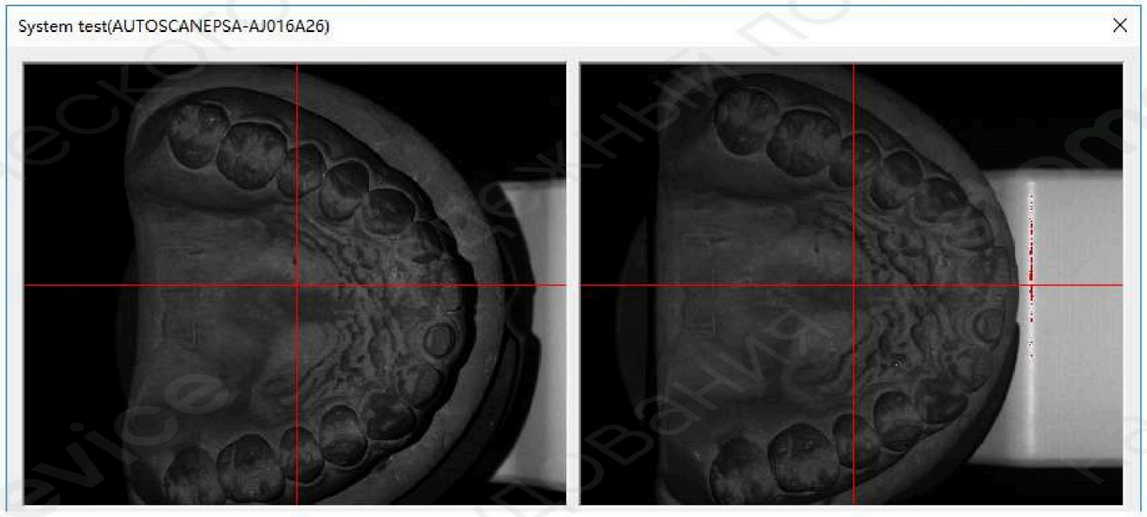
Recommended angle values for AUTOSCAN_ model scanner: 180 for X axis and 15 for Y axis

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8. Notes

1) Don’ t insert the USB data cable and softdog into the USB ports in the same area.

2) Please use the Nvidia graphics card to acquire high efficiency for scan.

3) Each software binds to a certain calibration plate; so don’ t mix up the calibration plates Number.

4) Please don’ t move the devices.

5) Please keep the scan box clean.

6) Please do not start the software in the U disk directly. You must copy the software from the U disk to the PC before using, and you must have the permissions to read/write the folder of the scan software, or else the software will not work normally.

7) If the software reminds “cannot recognize the scanner” please turn off the scanner and shutdown the software, then unplug USB data cable that connect the scanner and PC, then plug back in.

8) Users can not insert the USB wireless card.

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9. Safety Notices

1) Maintain good ventilation, keep environment temperature no higher than 30 ℃, no flammable and corrosive materials in the air.

2) Carry and place it carefully, no crushing, prepare protection from sun, rain, vibration, etc.

3) Once machine malfunctions, dismantling and repairing are allowed only by professional personnel or under their guidance.

4) Watch your hand.

5) Children are forbidden to operate this machine.

6) Once machine lifetime comes to an end, please hand it over to authorized agency to deal with it, do not randomly throw away to dustbins.

10. Contact Us

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