DOF

Camera Moving Model Scanner

FREEDOM X5

USER MANUAL

CONTENTS _

■ Installation Precautions

· When installing the product, avoid direct sunlight.
  if the projector is exposed to direct sunlight, it will degrade the quality of scanned data.

· After powering the scanner, it needs to warm up for about 10 seconds
  before you can start using the Scan Program.

· To obtain the best scan data, avoid using the scanner and wireless USB devices
  together. If you use the scanner with a wireless USB device such as a USB wireless LAN
  card, scanning might fail.

· We recommend that you perform calibration once a month.
  Additionally, you must perform calibration when physically relocating the scanner to
 another place.

■ Safety Precautions

· Do not look directly into the projector light during scanning operations.
  The light emitted from the projector may be harmful to your eyes.

FREEDOM **X5**

COMPONENTS —

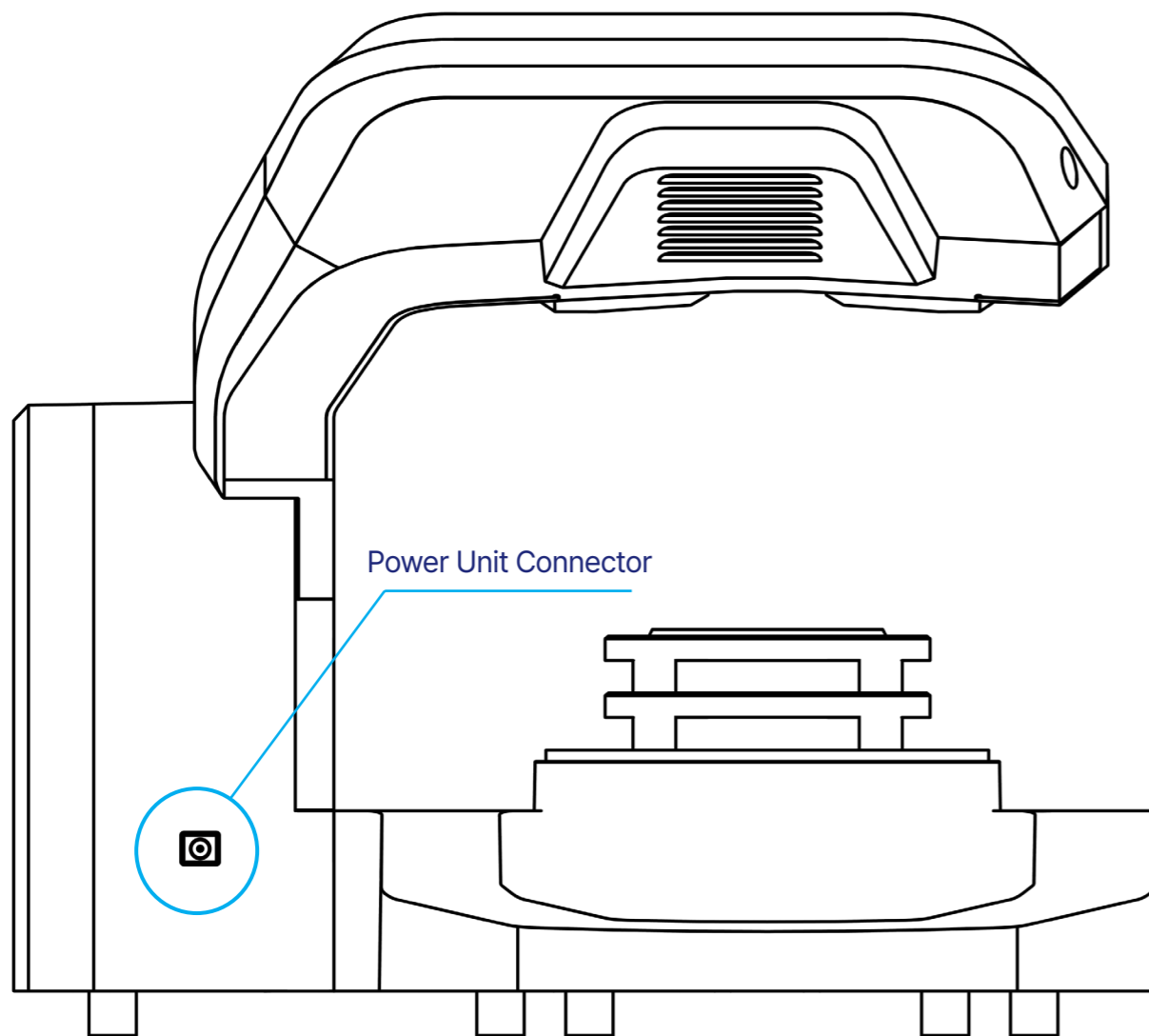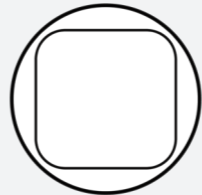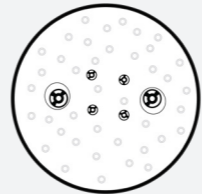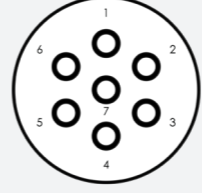|	
	FREEDOM X Scanner
	Basic Accessories Plates Base plate (2ea), Calibration Plate (1ea), Multi-die plate (1ea)
	Power Unit AC Adapter (1ea)
	Accessories Blu Tack (1ea), Anti-slip Mesh Mat (2ea), Scan Target (5ea)

PRODUCT DETAILS —

■ **Front Side**

Camera   Projector   Camera

Power & Scan Button   Base Table
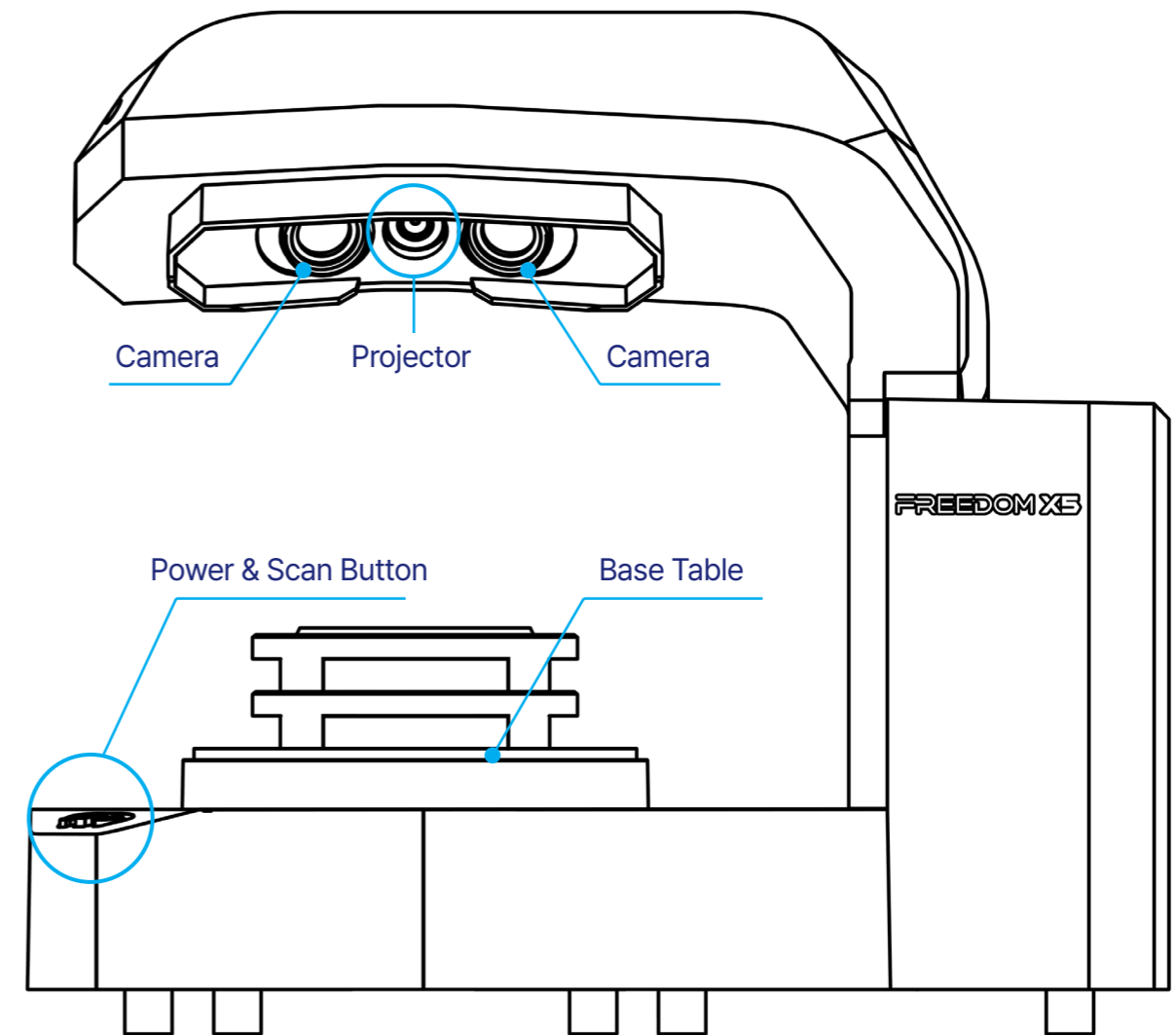
PRODUCT DETAILS —

▪ **Back Side**

Power Unit Connector
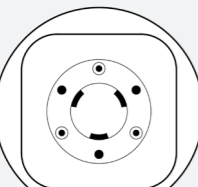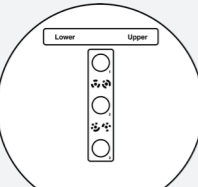
PLATE —

▪ **Basic Plate Accessories**

	Base Plate	Height Adjustment
	Calibration Plate	Scanner Calibration
	Multi-die Plate	7 Unit Prep-die Scan

Optional Purchase Plates

Transfer Plate A

Artex Articulator

Transfer Plate S

KAVO, SAM Articulator

Transfer Plate B

Bio-Art Articulator

Transfer Plate D

Denar Articulator

All-in-One Plate

Upper, Lower, Die Scan at Once

SCANNER INSTALLATION —

❶ Connect the power cable without swiching on the scanner.

❷ Connect the scanner's USB cable to the 3.0 USB PORT on the back of the PC.

⚠ Do not use a USB wireless LAN card.
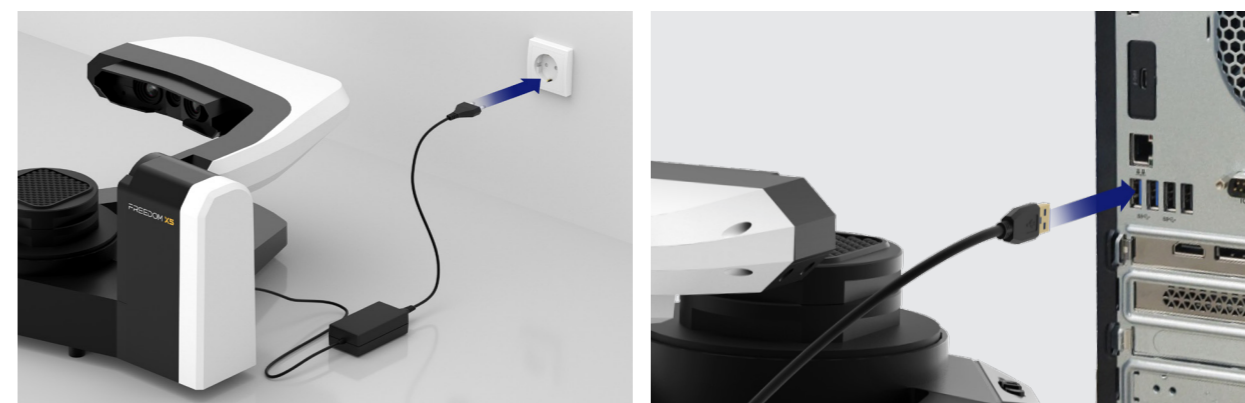
PC REQUIREMENTS —

• **O/S**	Windows 10, 11 (64-Bit)
• **RAM**	32GB Above
• **VGA**	8GB Above (NVIDIA GeForce RTX3070 Above)
• **HDD / SSD**	500GB or above / 128GB or above
• **CPU**	i9-11900 (above Intel 11th Gen)
	⚠ AMD CPU NOT COMPATIBLE
• **USB Port**	USB 3.0

* Compatibility issues may arise for assembled PCs and DOF is not responsible for any problems resulting from this. We recommend using an HP PC provided by DOF headquarters.

SOFTWARE

■ Software Installation

❶ Install ScanApp that is included in the DOF USB.

(You can also download it from the DOF website.

Support > Software > ScanApp 3.0 for FREEDOM X5)

If help support arise, please contact the local supplier you made purchase

with this product.

❷ Proceed with installation by referring to the installation wizard.

⚠ Recommended to restart the PC after installation.

⚠ Before installing the scan program, it is recommeded to udpate the operating system.
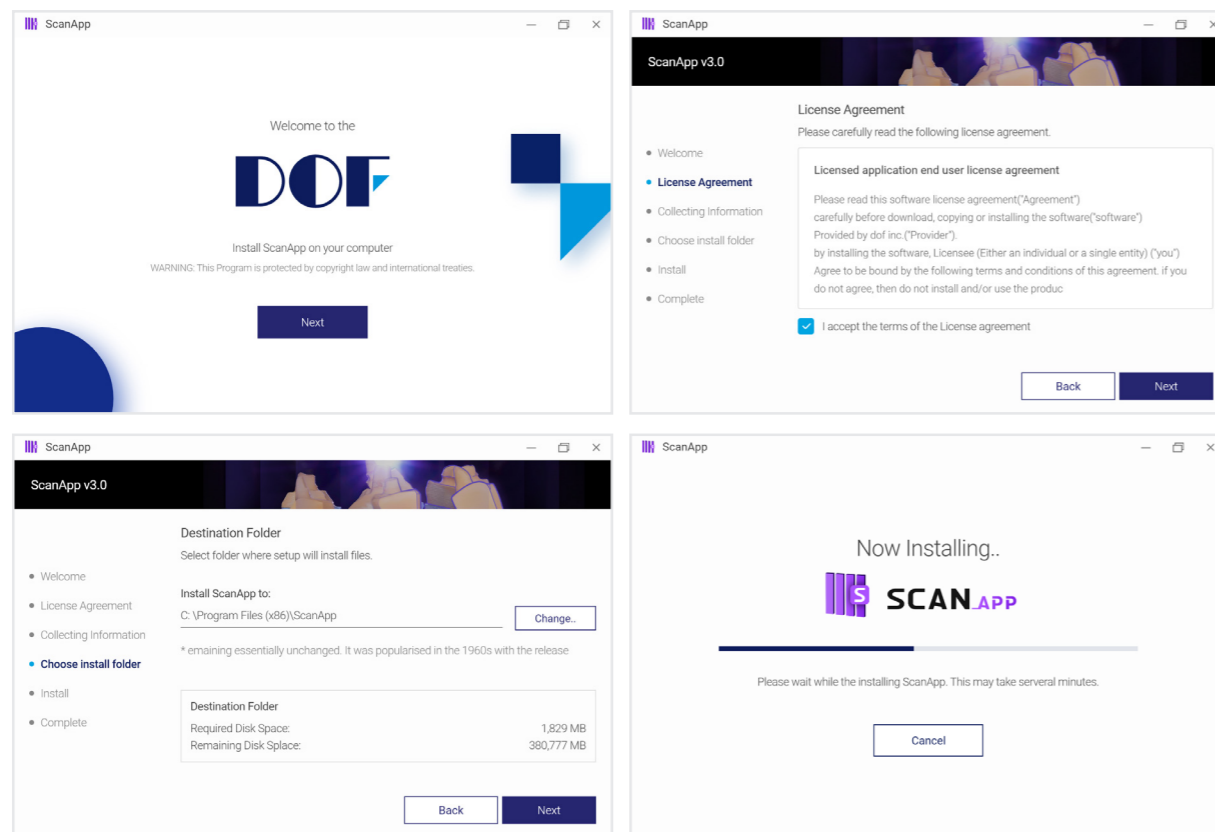
■ Start ScanApp

After installing ScanApp scanning software, integrate with DOF SYNC.

❶ Check that the two softwares have been installed.
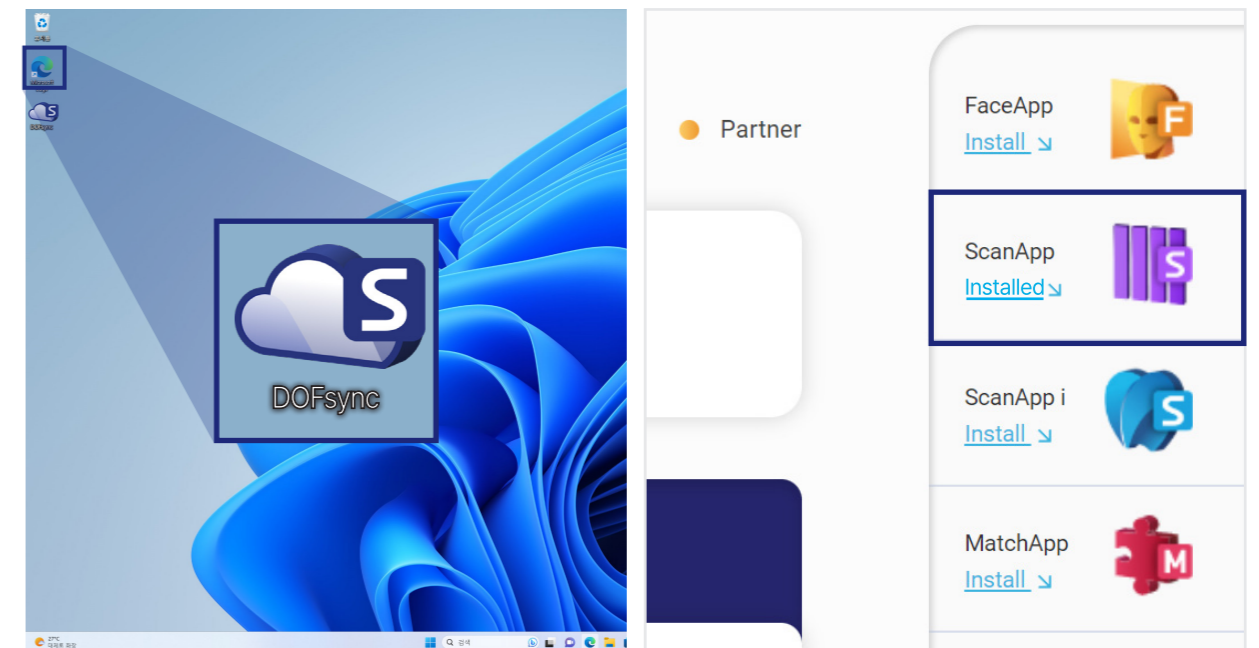
❷ Run DOF SYNC first.

❸ Click on the profile icon.

❹ Scroll down to the Settings Tab and select Software button.
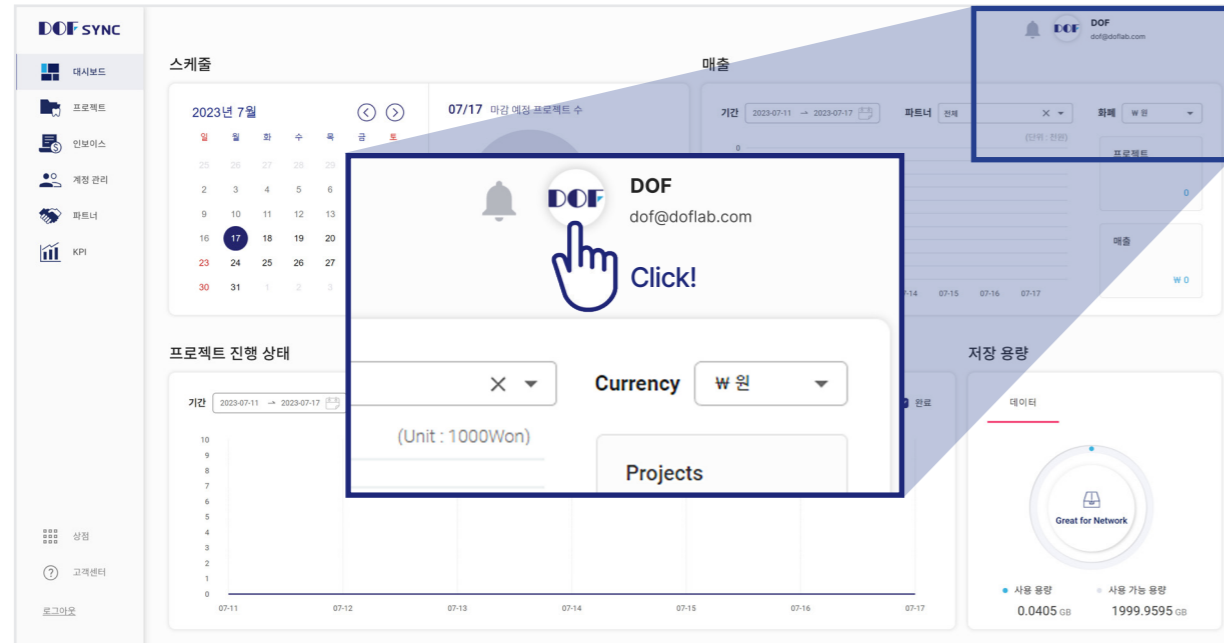
❺ When the Software Settings window pops up, select ScanApp.
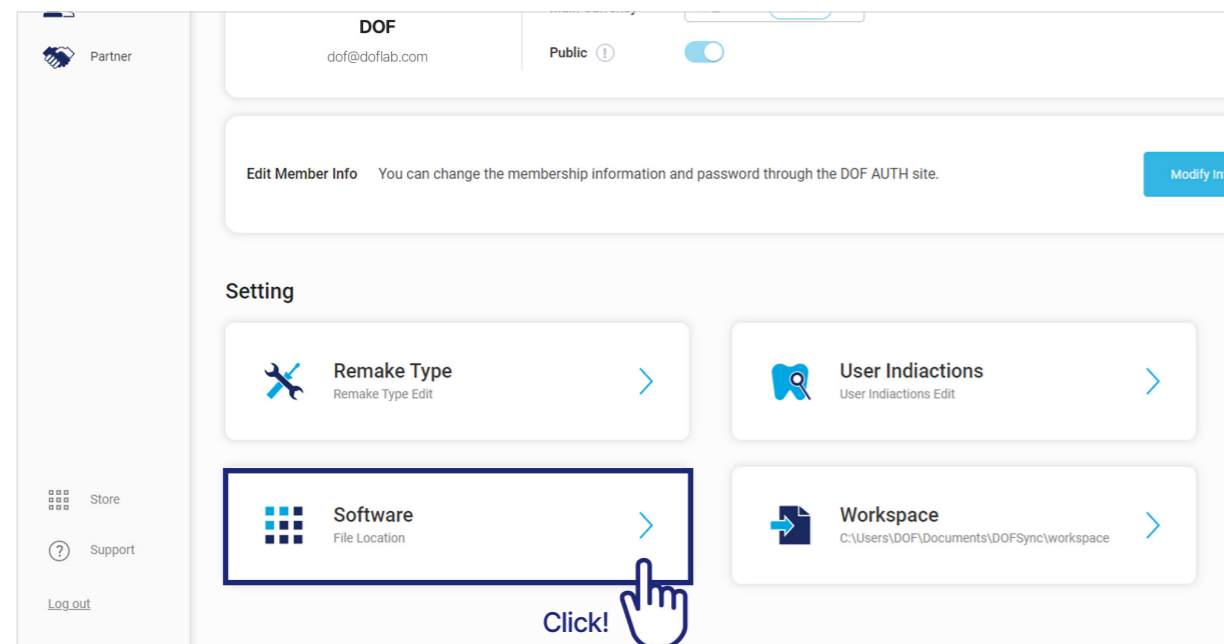
❻ Find and select ScanApp.exe.

(ScanApp.exe can be found in C:\Program Files\DOFLab\ScanApp.)

FREEDOM **X5**
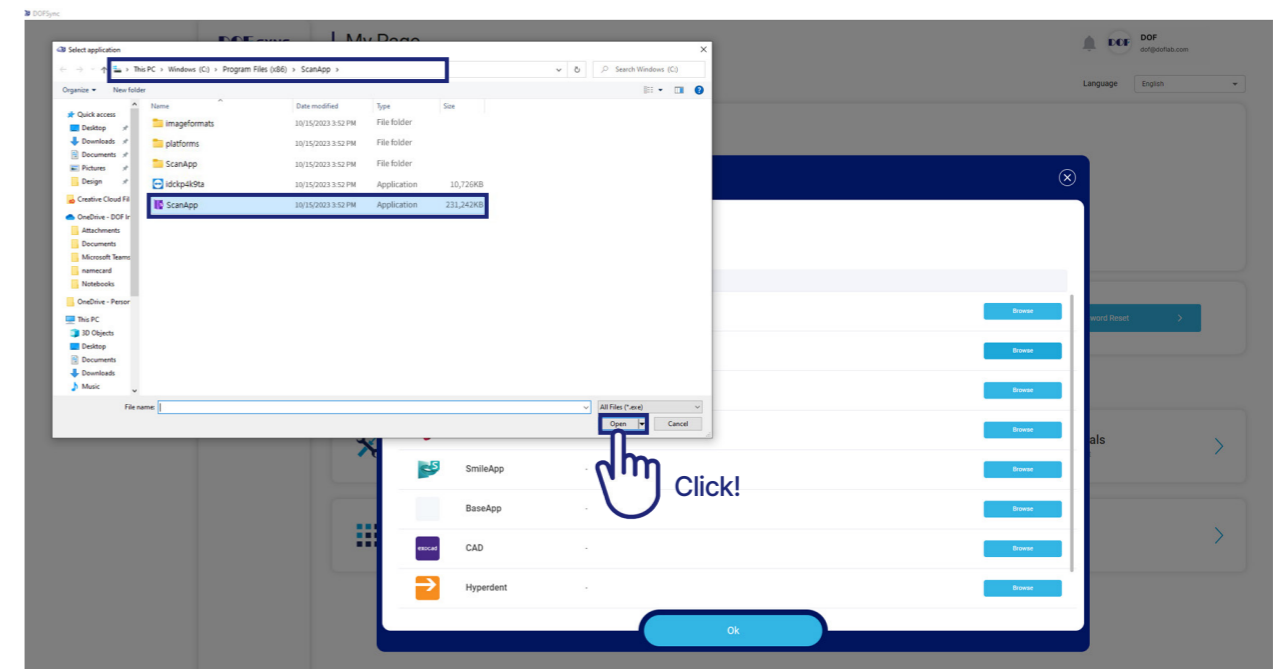
LANGUAGE SETTINGS —

❶ Run ScanApp.

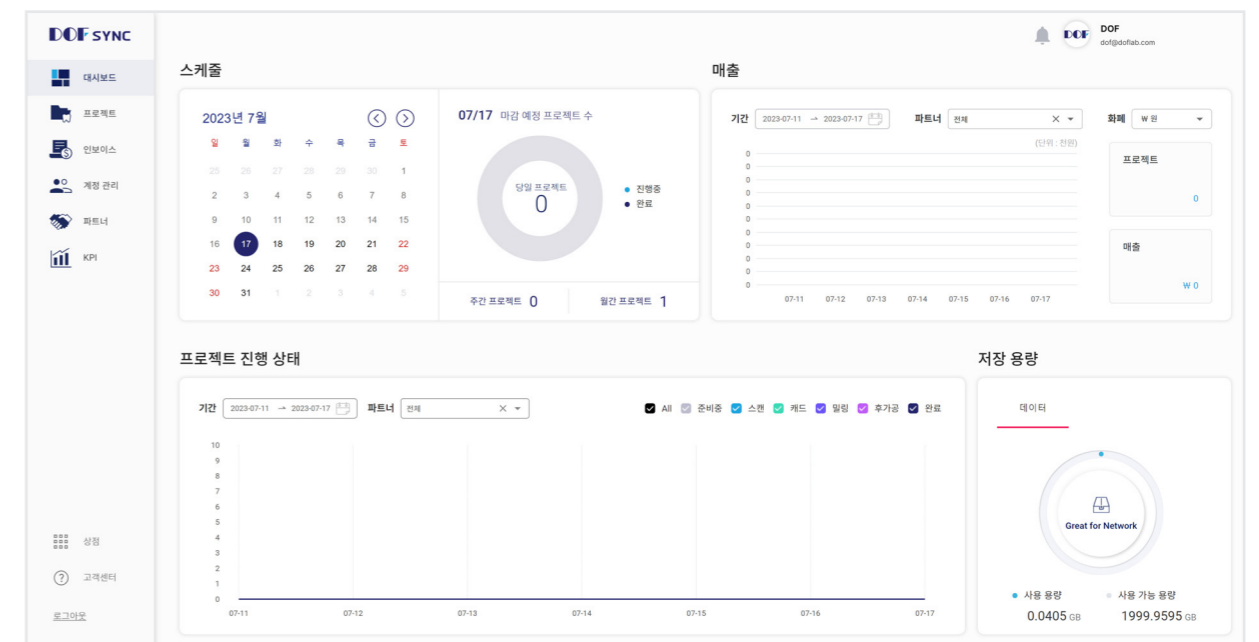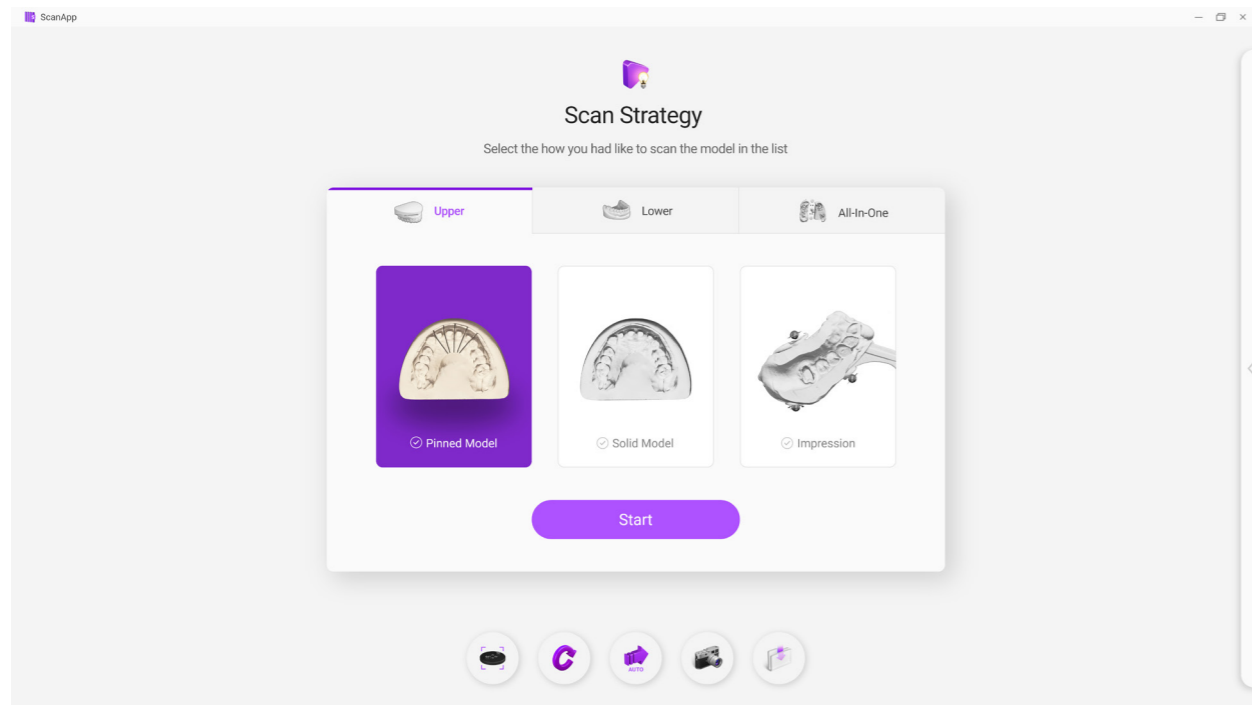
❷ Select the arrow tab on the right side to open the options.
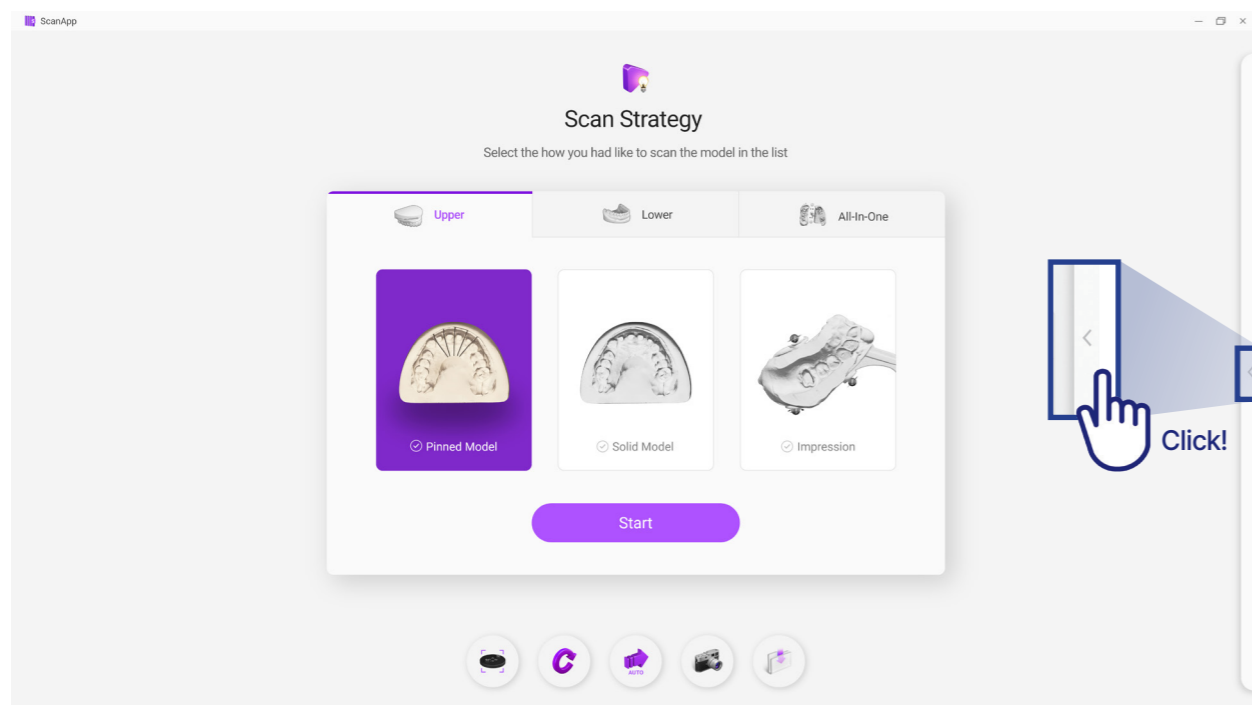
❸ Select the desired language from the Language Settings.
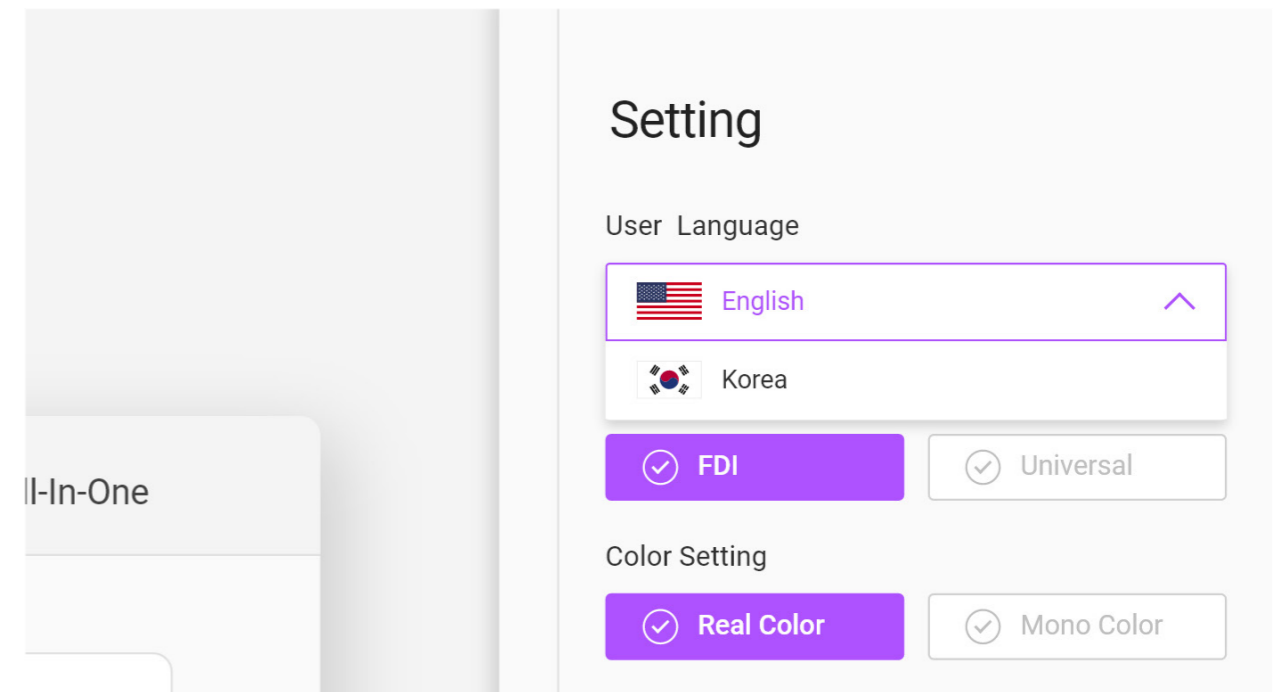
❹ Close and Relaunch ScanApp for the new language to takes effect.

CALIBRATION ▬

❶ Press On to start the scanner.

Press and hold 2 to 3 seconds
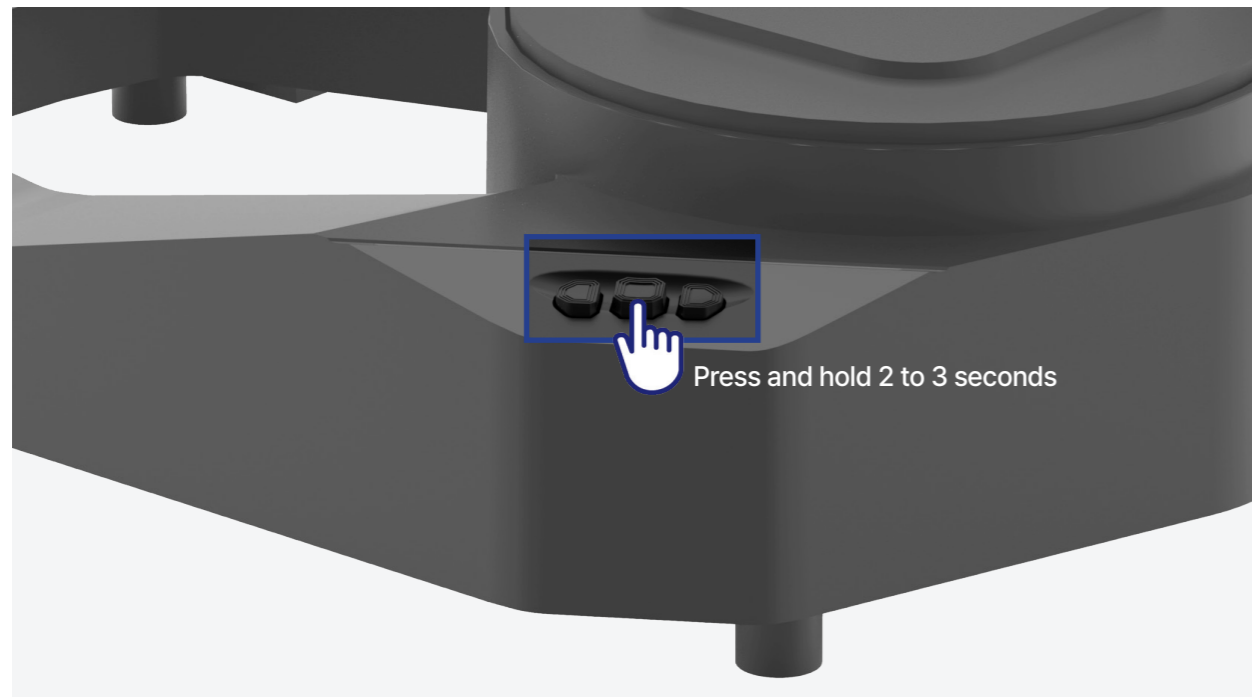
❷ After launching ScanApp, please select the Caliration icon.

Scan Strategy

Select the how you had like to scan the model in the list

Start

Click!
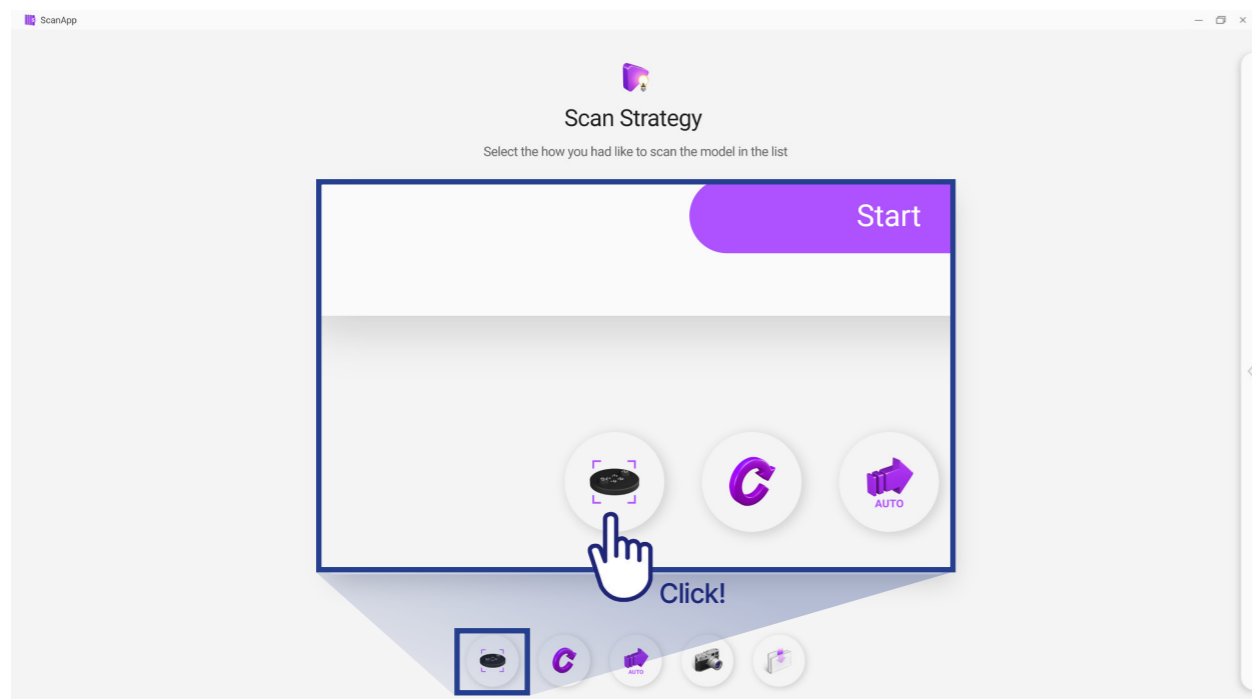
❸ Please stack the two base plates on the scanner, and stack calibration plate on top of them.

❹ Press the Calibration button to start calibration.

Calibration

캘리브레이션 플레이트를 연결 해주세요.

Close   Calibrate   Complete

Click!
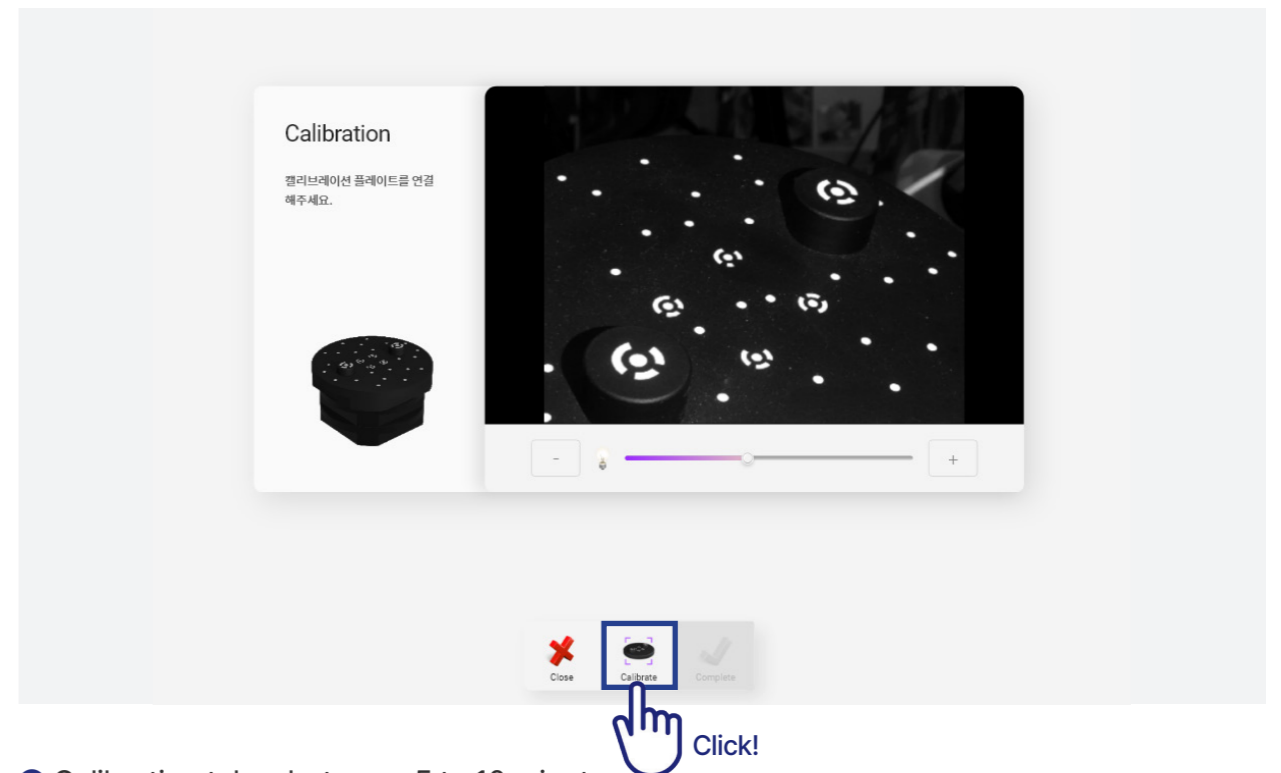
❺ Calibration takes between 5 to 10 minutes.

⚠ It is recommended to calibrate the scanner once per month.

⚠ Calibration is recommended for scanner if physically moved to another location.

MOUSE SETTINGS —

Mouse Button	Action	Explanation
Left	Click	Select
	Hold & Drag	Rescan current data
Right	Hold & Drag	View Rotation
Both	Hold & Drag	View Movement
Wheel	Scroll Up	Maximize
	Scroll Down	Minimize
	Hold & Drag	View Movement

DESCRIPTION OF ICONS —

■ Main Tool

❶ **Calibration**   Scanner Calibration
❷ **Reload**   When order form needs to be changed, modify the project in SYNC, Pressing the Reload button will add or delete the required scanning processes.
❸ **Auto mode**   The scanning steps are moved automatically.
❹ **Camera**   You can turn the live view screen off or on.
❺ **Save**   Saving all the raw scan data as back up project, all the work done before clicking the Save button will be saved.

Close   STL Import   Auto Light   Scan

❶ **Close**   Cancel the scanning step and return to previous task.
❷ **STL Import**   If you already have a scanned file, load the STL file.
❸ **Auto Light**   Automatically adjusts the projector light brightness.
❹ **Scan**   Start scanning.

▪ Scan Edit Tool

❶ Close	❷ Rescan	❸ Home View	❹ Preview

❺ Additional Scan	❻ Smart Scan	❼ Trim	❽ STL Export	❾ Complete
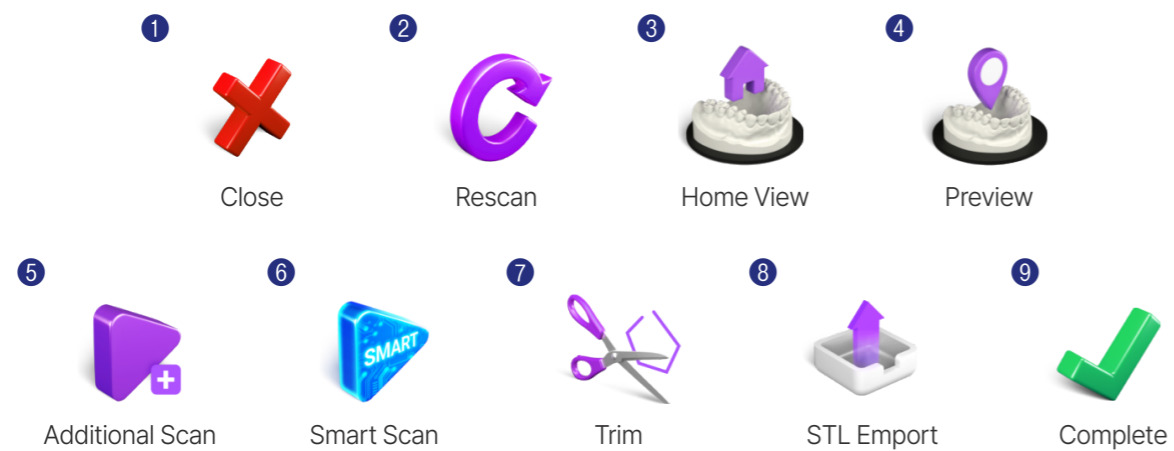
❶ Close	Cancel the scanning step and return to previous task.
❷ Rescan	Clear the scanned data and proceed with scanning again.
❸ Home View	Move the scanner to the home position.
❹ Preview	The scanner's base table and arm move to the angle shown on the screen.
❺ Additional Scan	Additional scans are made of areas that were not scanned.
❻ Smart Scan	Additional scans of other models can be combined into one data.
❼ Trim	Delete unnecessary data.
❽ STL Export	Outputs the current scan data as an STL file.
❾ Complete	Complete the scanning steps.

▪ Smart Scan Tool

❶ Close	❷ Quick Scan	❸ Buccal Interproximal	❹ Lingual Interproximal

| ❺ Impression	❻ Stone Model	❼ Stone Model Separated Data	❽ Impression Scanbody	❾ Inner Waxup

❶ Close	Cancel the scanning step.
❷ Quick Scan	Quickly and simply scan your model and merge it with existing data.
❸ Buccal Interproximal	The buccal interproximal area is scanned and merged with existing data.
❹ Lingual Interproximal	The lingual interproximal area is scanned and merged with existing data.
❺ Impression	Impressions are scanned, inverted and merged with existing data.
❻ Stone Model	The stone model is scanned and merged with the impression scan data.
❼ Stone Model Separated Data	Scanning the stone model and the impression scan by merging or separate the save data.
❽ Impression Scanbody	Simultaneously scan the impression and scan body. Merge with existing impression data.
❾ Inner Waxup	Scan the inside of the waxup and merge it with tha data on the outside of the waxup.

■ Smart Scan Tool

① F Bite

② Build Opt

③ Hole Fill

④ VA Setup

⑤ Fitting

⑥ Save

⑦ Save & Open
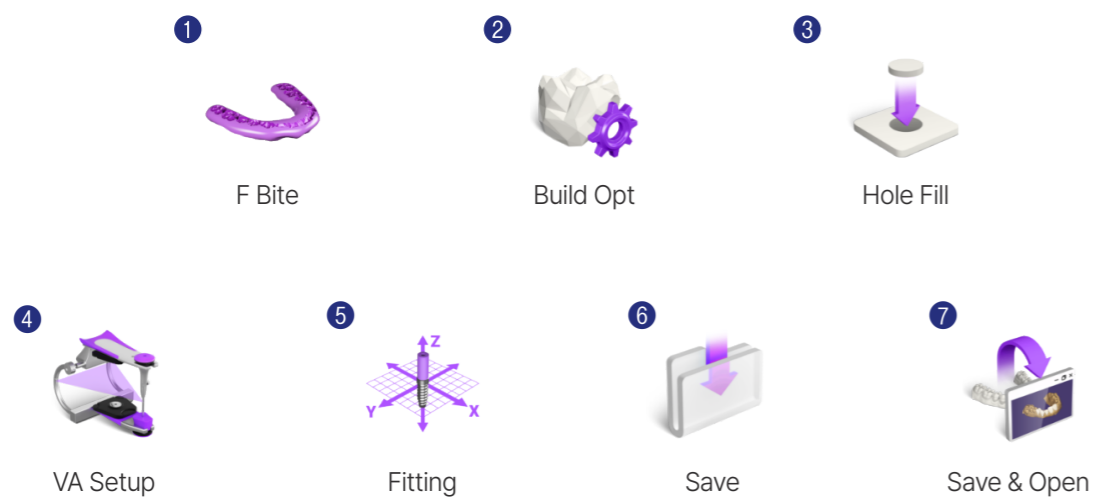
① F Bite　　　　　　　Scan the Face Scan Bite.

② Build Option　　　　You can modify the build resolution of scan data.

③ Hole Fill　　　　　　You can fill in blank spaces in scanned data.

④ VA Setup　　　　　If the adjustable articulator option is selected,

　　　　　　　　　　　scan data align with virtual articulator position.

⑤ Scanbody Fitting　　Define the position of the scan body and output the value.

⑥ Save　　　　　　　Save completed scan data.

**⑦** Save & Open　　　After saving the scanned data, run the CAD program.

■ Scan Parts

① Upper model

② Lower model

③ Prep die

④ Preop

⑤ Wax up

⑥ Scanbody

⑦ Multi die

⑧ Gingiva

⑨ Bite scan

⑩ Bite rim

⑪ Articulator

⑫ Upper impression

⑬ Lower impression

⑭ All-in-one

⑮ Face Alignment Bite

⑯ F Bite

① Upper model　　　Upper model scan

② Lower model　　　Lower model scan

③ Prep die　　　　　Prep die scan

④ Preop　　　　　　Preop scan

⑤ Wax up　　　　　Outside of wax up scan

⑥ Scanbody　　　　Scanbody scan

⑦ Multi die　　　　Multi die scan

⑧ Gingiva　　　　　Gingiva scan

⑨ Bite scan　　　　Bite scan

⑩ Bite rim　　　　　Bite rim scan

⑪ Articulator　　　　Articulator scan

⑫ Upper impression　Upper impression scan

⑬ Lower impression　Lower impression scan

⑭ All-in-one　　　　All-in-one scan

⑮ Face Alignment Bite　Face alignment bite scan (Old)
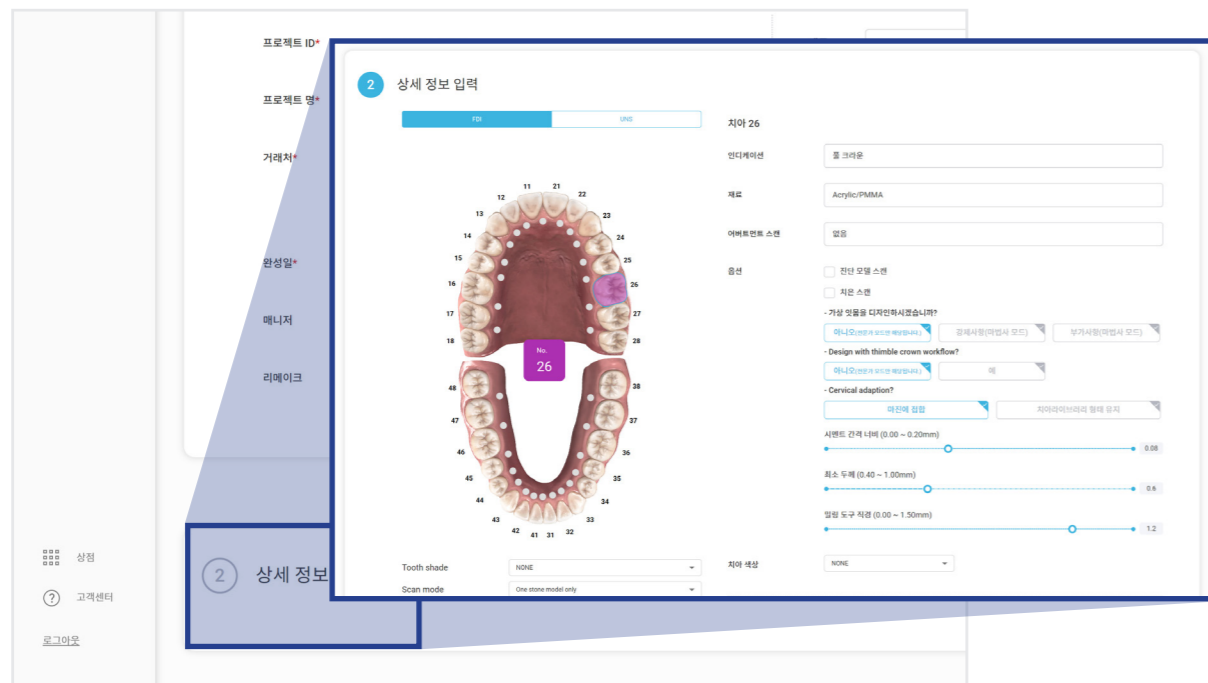
⑯ F Bite　　　　　　Face alignment bite scan (New)
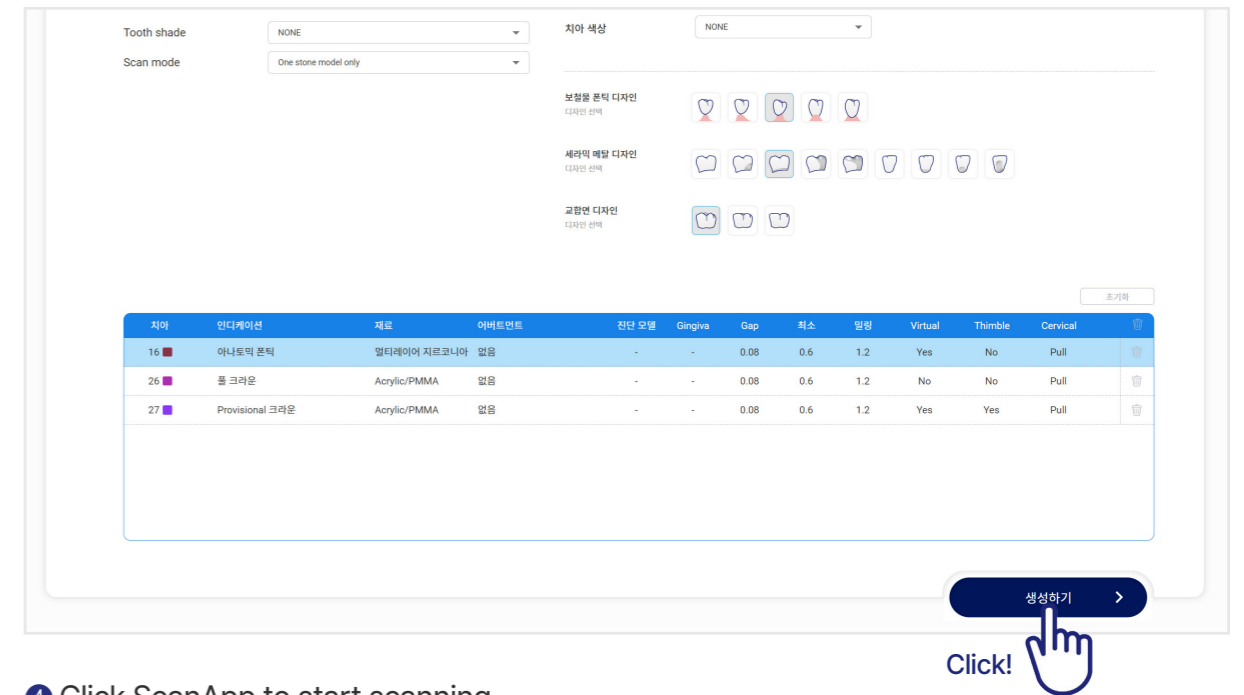
SCANNING INSTRUCTIONS —

1 Start SYNC

❶ Please enter the business partner, patient name, and staff information and click the next button.
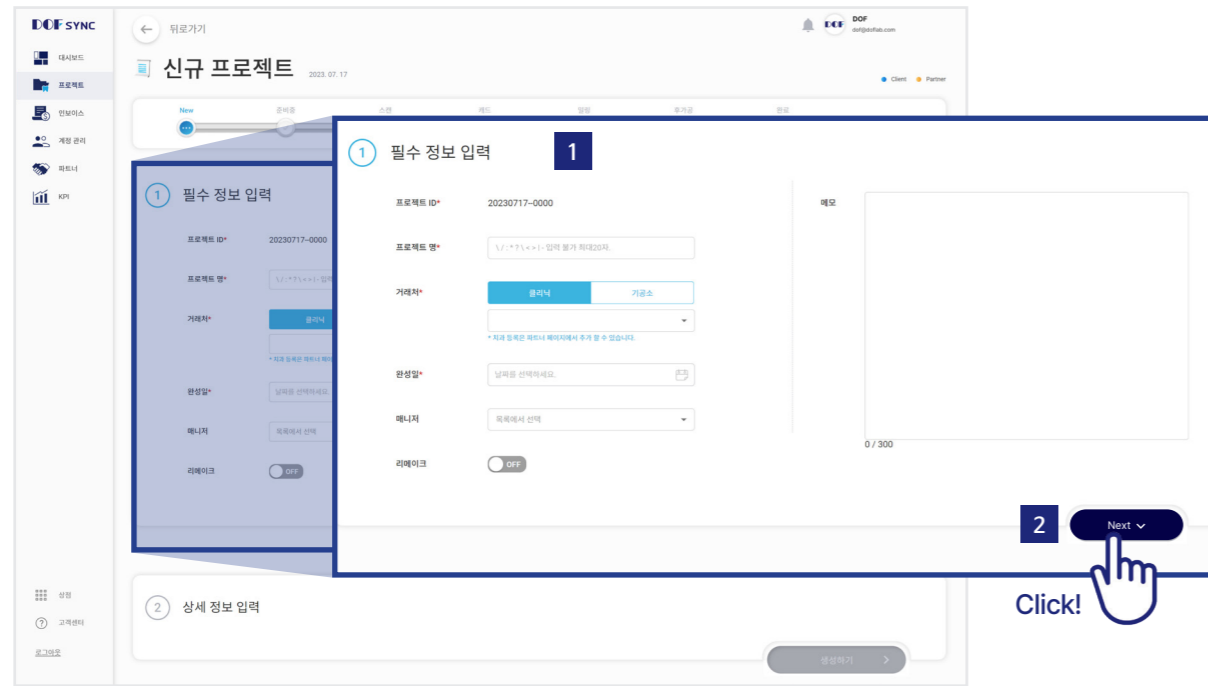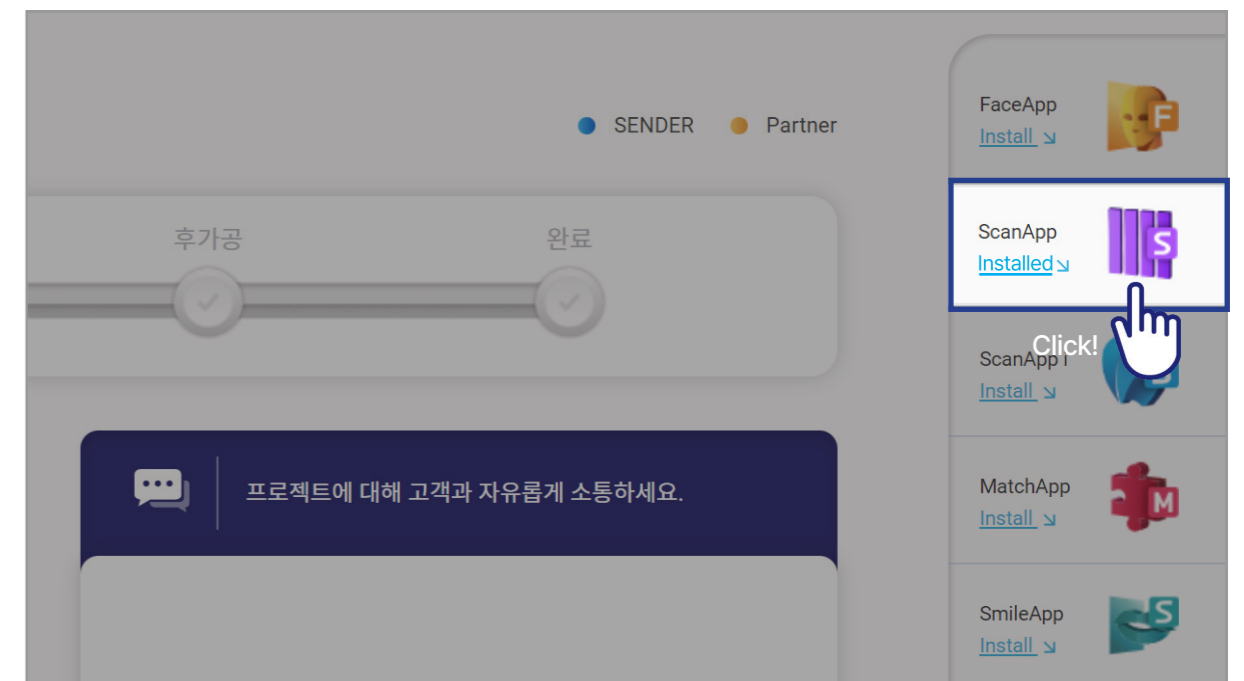

Click!

❷ Fill in Enter Details, select the crown you want to work on.

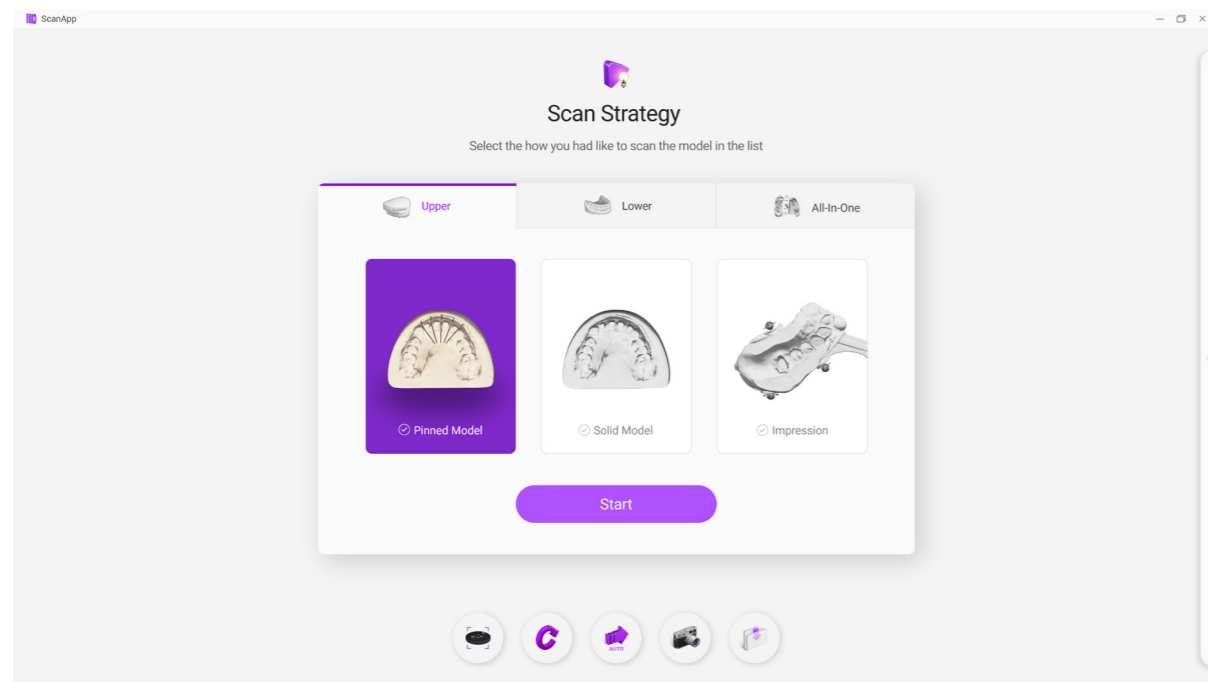❸ After completing the information, click the Create button.

Click!

❹ Click ScanApp to start scanning.

Click!

2 Start ScanApp

Scanning strategy guides you through the scanning process.

Customized strategies are provided depending on the prosthesis type and model type.

3 Put the model on the scanner

❶ Use a mesh mat to prevent your model from slipping.

Position the model so that its labial side faces the projector.

❷ You can check the model's position in live view.

Position the model so that it does not extend out of the live view.

❸ Adjusts the amount of projector light. The more red dots you see, the brighter the projector light. When scanning, please set the red dot to be very subtle on the abutment area. It is more convenient to use the Auto Light function, but recommended to manually adjust the brightness depending on the model characteristics. When you deselect the Auto Light icon, it changes to manual mode.
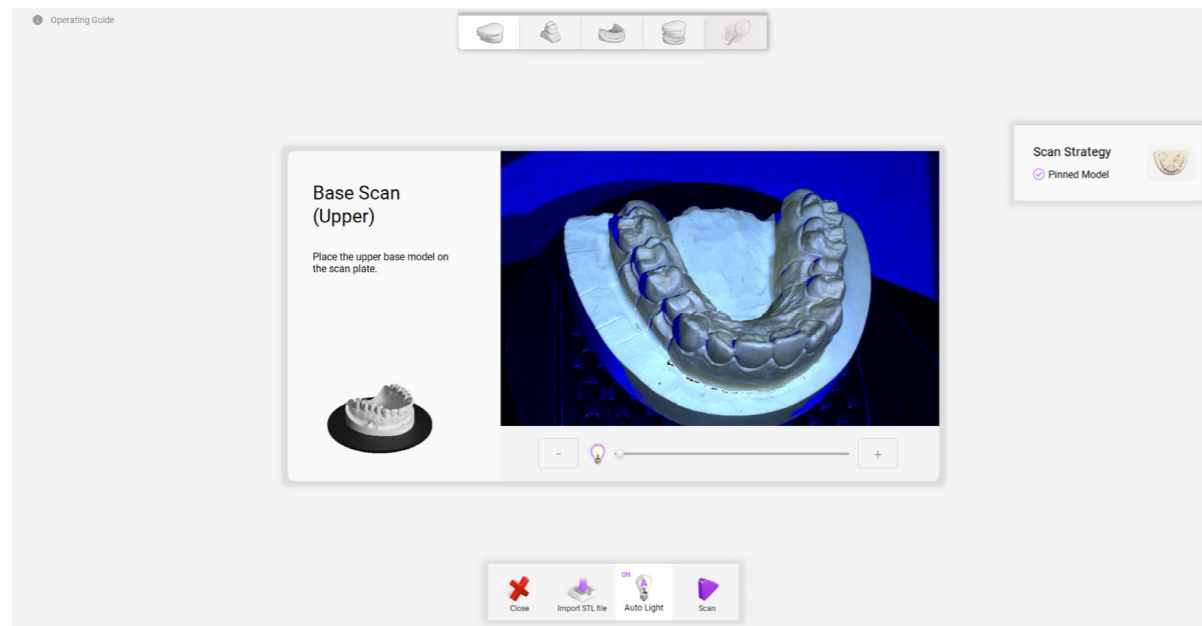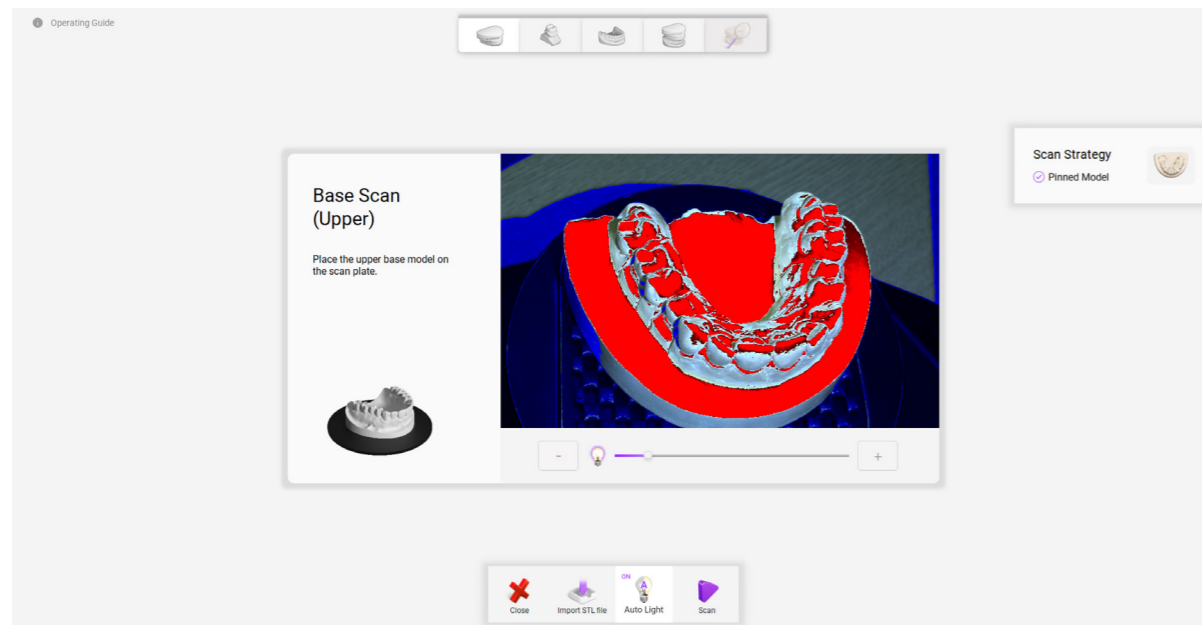

4 Base Model Scan

❶ Position the model correctly on the scanner and proceed with scanning.

❷ Click the scan button to start scanning.
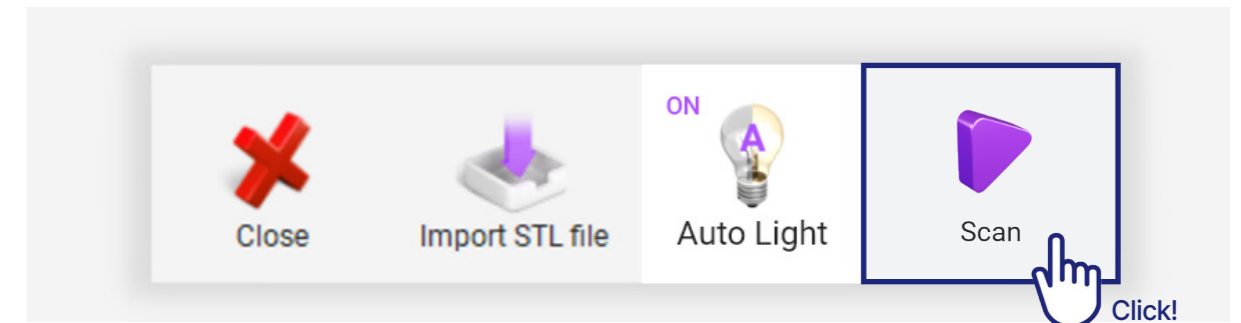
❸ During Base Scan Stage, the teeth surrounding the abutment teeth are scanned. The abutment scan is performed after the base scan is completed.

The base scan is used to distinguish the adjacent teeth from the abutment teeth after scanning the abutment teeth.

❹ In the Base Scan Stage, check whether the adjacent tooth contact surface has been scanned properly, If insufficient, please perform additional scans.
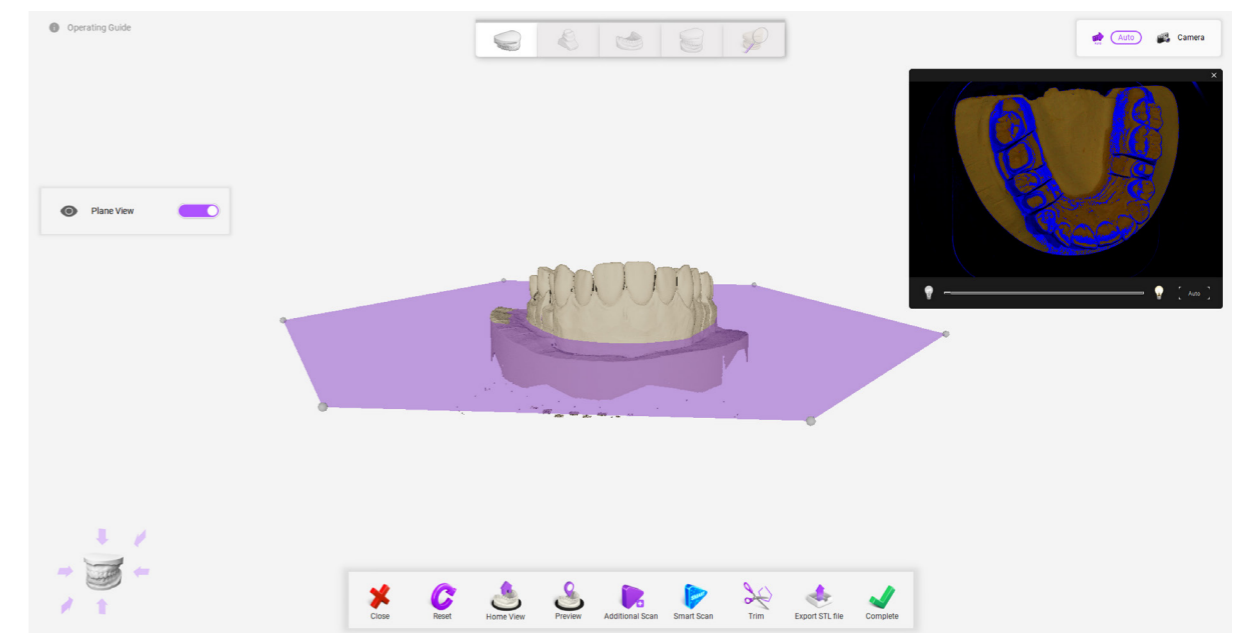
5 Additional Scans and Edit

❶ After completing the base scan, move the 3D data shown on the screen for additional scan in the unscanned area.

❷ Additional scanning methods
   · Drag while holding down the left mouse button for additional scan.
   · Click the Additional Scan button in the Edit menu for additional scan.
   · Press the 'S' button on the keyboard for additional scan.
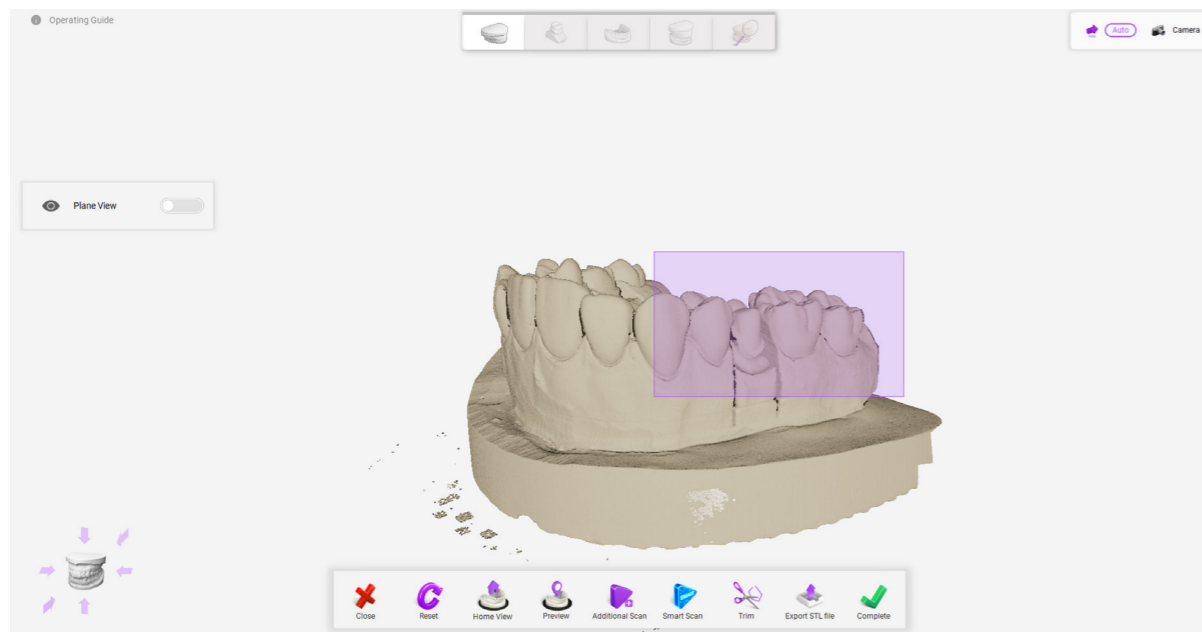
❸ You can remove unnecessary parts by pressing the Trim button in the Edit menu.
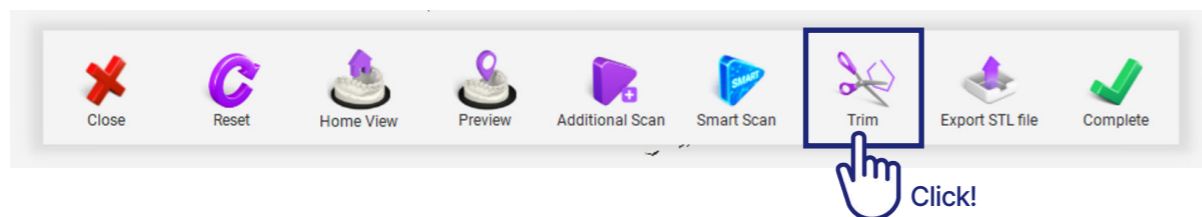
Click!

❹ Once everything is done, click the Complete button to move to the next step.

Click!
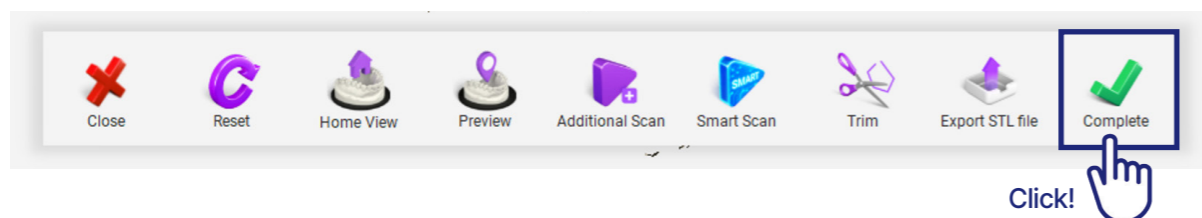
6 Prep Scan

❶ Once the base scan is completed, proceed to the prep scan step.
   Please remove adjacent teeth excluding abutment teeth.
   For bridge cases, number information about the abutment to be scanned appears on the left side of the live view. Leave the prep as per the information and remove the remaining models. Select the prep to be scanned in live view.

❷ On the live view screen, left-click to select the prep to be scanned.
   The circular border can be adjusted larger/smaller by scrolling the mouse.
   The prep must be placed within the circular border and scanning outside the circular border will not occur.

❸ Once you have finished specifying the prep scan area, press the scan button to proceed with the scan.

❹ Once the prep scan is complete, preceed to further scanning and editing steps.
   Scan additional parts you need or edit unnecessary parts.

❺ After completion, press OK button to move to the next step.
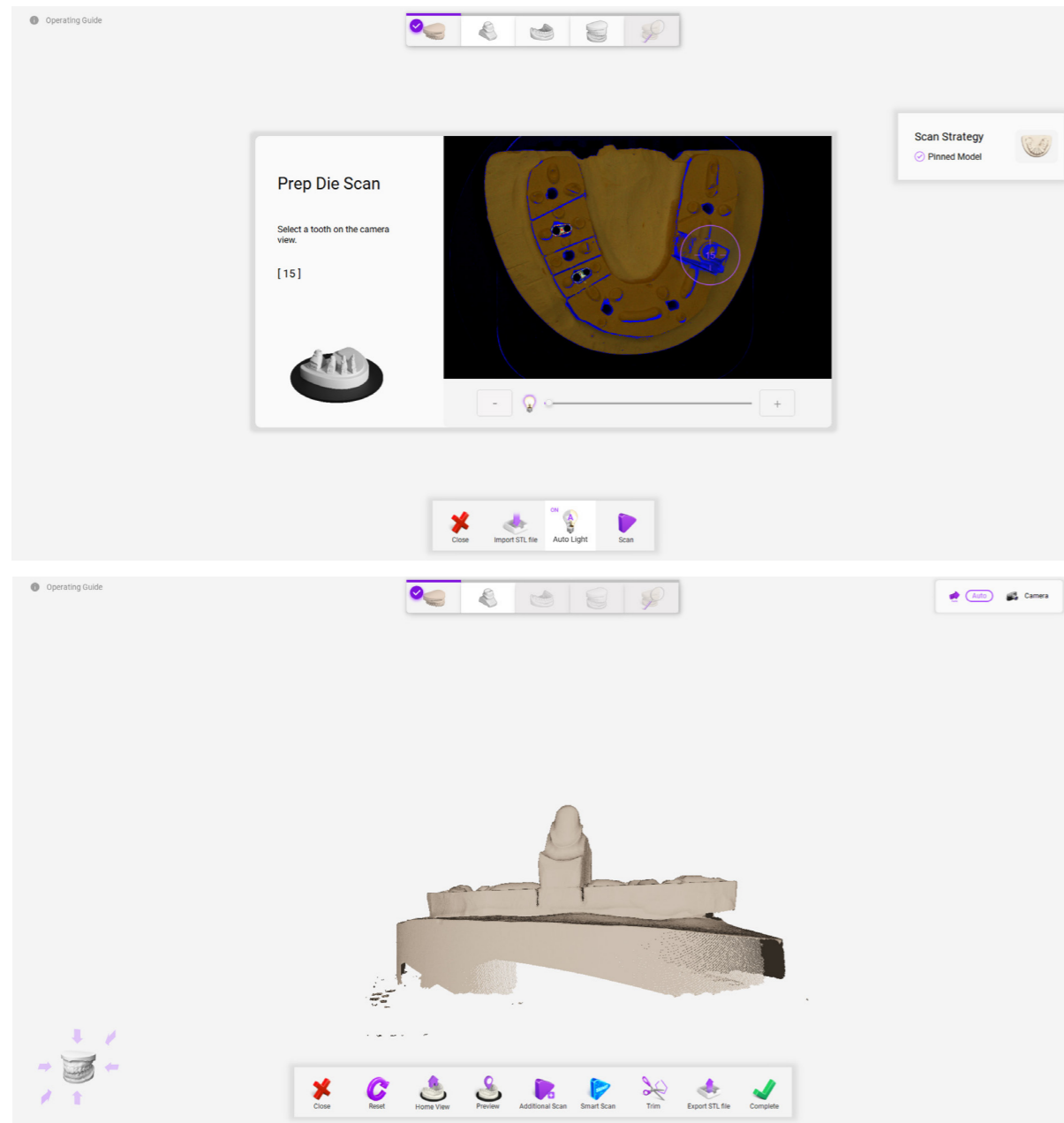
7 Antagonist Scan

❶ Place the antagonist model on the base plate and click the Scan button to scan.

❷ After checking the antagonist scan data, add and edit it.

❸ After completion, press OK button to move to the next step.
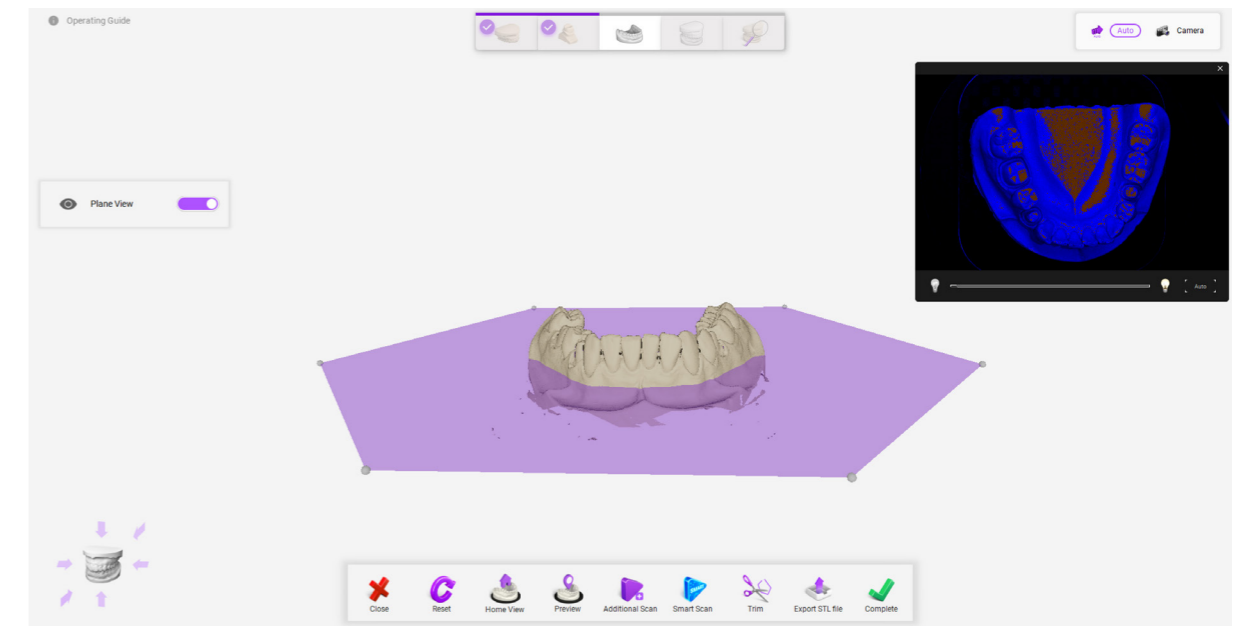
8 Occlusion Scan

❶ Place the upper and lower jaw model on the scanner and proceed with scanning.

❷ The 'Upside down placement of articulator' function requires that the lower jaw model be placed upward depending on the situation. In this case, if you check this function and proceed with the scan, the scanned data will be in correct mandible placement. It will change automatically.

❸ Stone model and non-adjustable articulator scan : After placing the stone model and non-adjustable articulator on the scanner you can proceed with scanning. The camera moves up and down to scan the occlusal relationship.

❹ Adjustable articulator : After removing all base plates, place the entire adjustable articulator on the scanner. By removing the articulator incisor pin, you can scan for a better occlusal relationship.
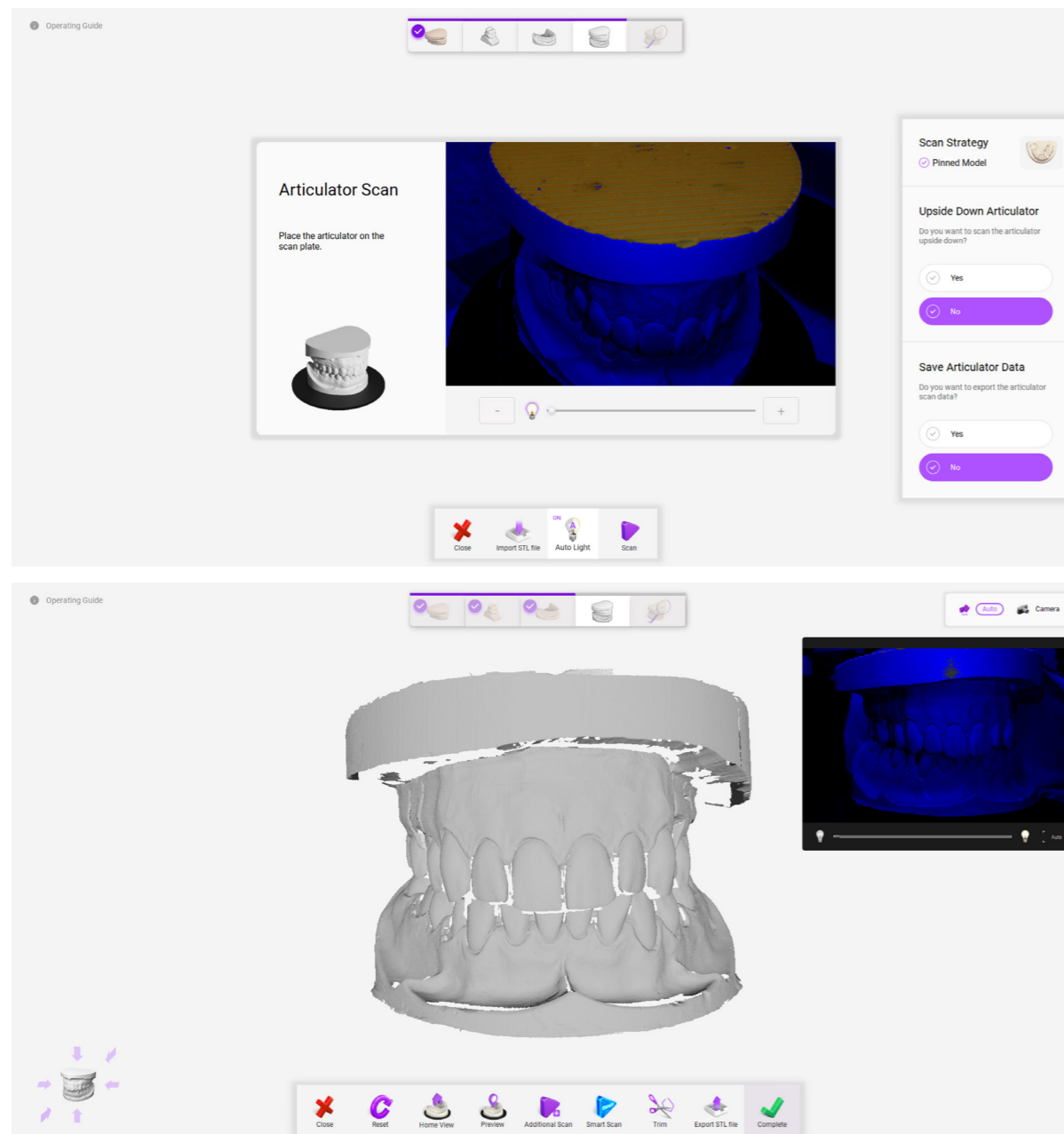

9 Sort scan data

❶ Scan data alignment occurs automatically in the background while scanning is in progress.

❷ You can check the sorted data when the scanning process for one arch is completed.

❸ For example, in a scanning process that proceeds in the order of base, abutment and wax-up, the sorted data can be checked after the wax-up scan is completed.

❹ Sorting may fail due to dissimilar data or errors. In this case, you can manually sort the data by clicking the Matching button.

❺ Sort the data by clicking Matching using 3 points in common areas. Sorting is possible with just 1 or 2 points. When sorting data, dots must be set equaliy in common areas of left and right scan data.
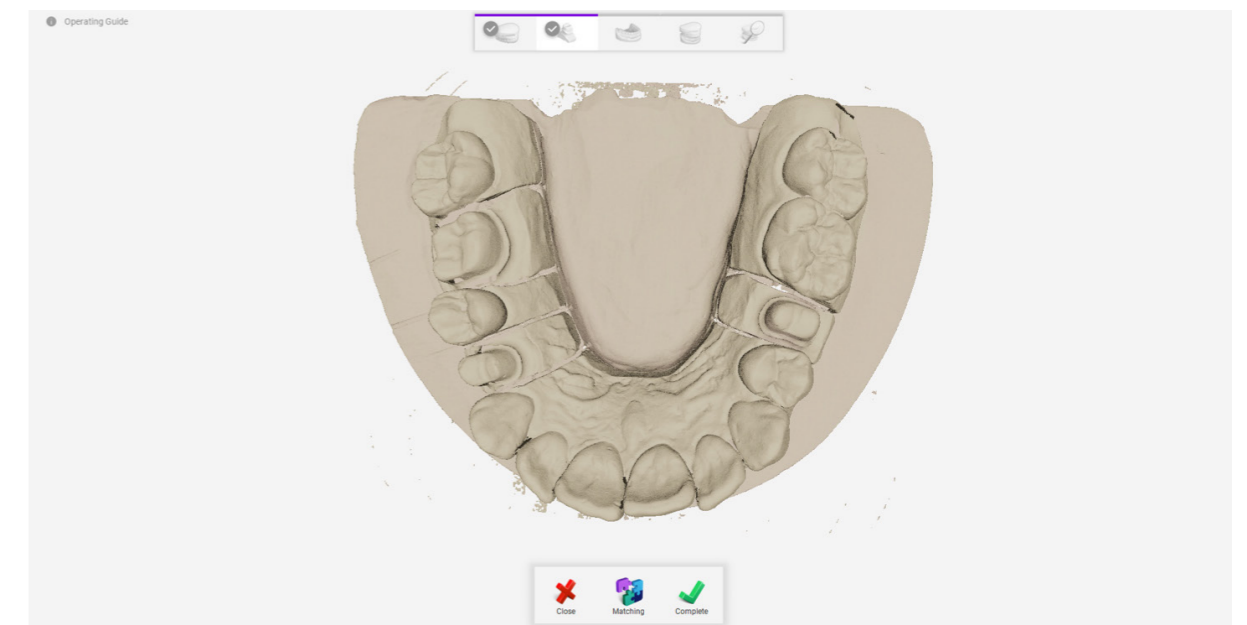
🔟 Scan Data Build and Edit

❶ Build converts 3D data made up of points into a mesh structure.

  This is the process of creating a file that can be used in CAD.

❷ The build progresses automatically in the background while scanning is in progress.

❸ Users can reduce the time it takes to build.

❹ After all scans are completed, you can check the data for which the build has been completed in the analysis stage.
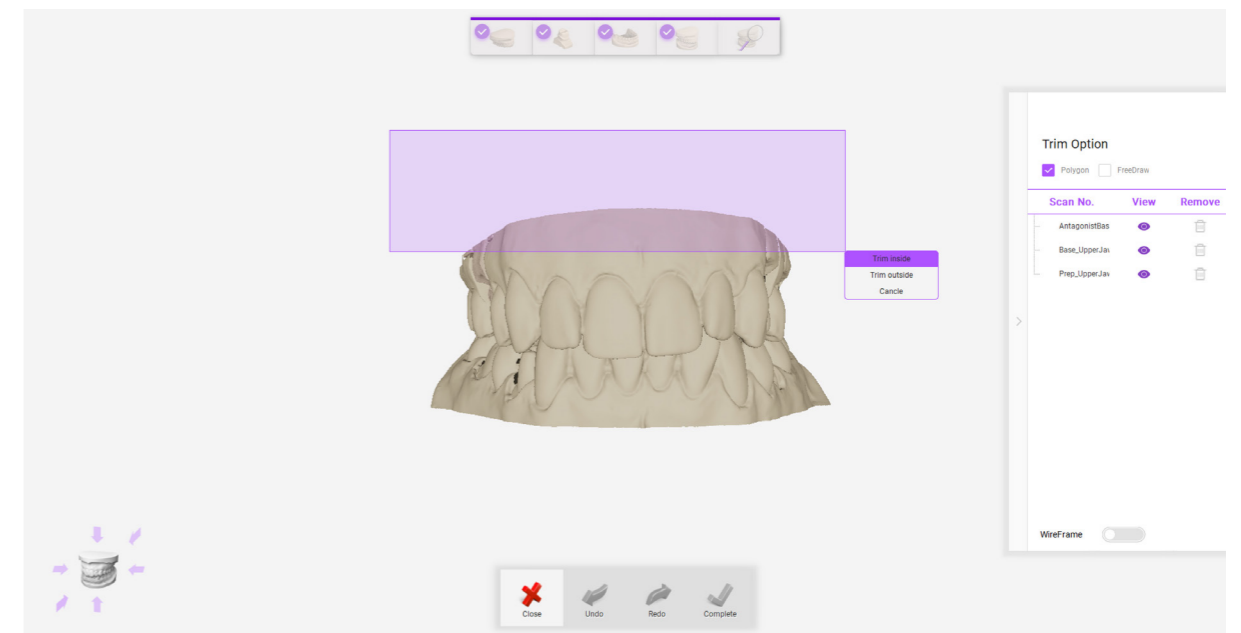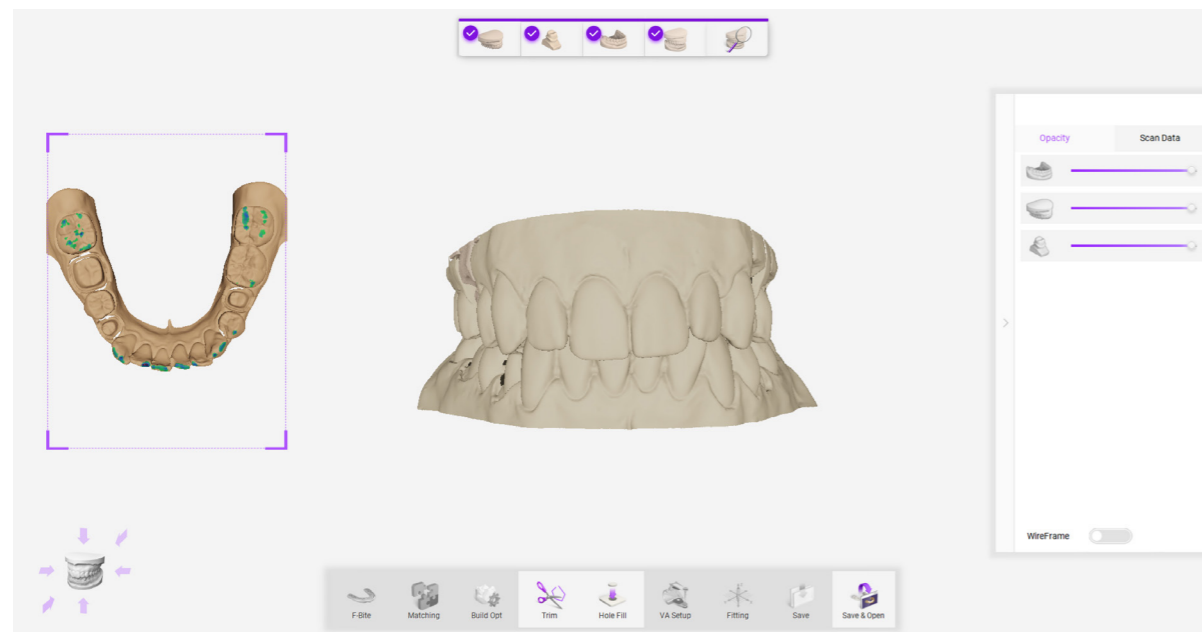
❺ The file size and resolution of scanned data can be modified in the opitons before starting scanning.

❻ After building, you can fill in the empty parts as needed.

  However, this function is not recommended for abutment teeth.

  Obtain sufficient data during the abutment scanning stage.

❼ You can edit unnecessary data even after building.

❽ Click the Save & CAD Open button to start the design.

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