Elements

Training Workbook & Resources

PLANMECA
UNIVERSITY
E4D TECHNOLOGIES

Table of Contents

PLANMECA UNIVERSITY
E4D TECHNOLOGIES

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TEACHING STYLE

At Planmeca University we incorporate the Tell, Show, Do teaching style.

- **Tell** - Listen to the instructor giving detailed instructions on the upcoming material.
- **Show** - Watch the instructor demonstrate the proper technique.
- **Do** - Perform the action and ask questions.

HOW TO USE THIS WORKBOOK

This section covers equipment & guidelines

This section covers scanning & scanning techniques

This section is all about design

This section is for milling and materials

This section has resources and information for your success

This workbook is yours to keep; don't be scared to write in it! Words in **BOLD** are icons or choices within the software. You'll also find quick tips and time savers throughout. Hover over icons in the software to reveal their names.

PlanScan System & Equipment Overview

PlanScan Laptop

1. Powering ON and OFF the laptop
2. Windows 8 - Tiles and accessing the desktop
3. Care and general maintenance

Connecting the Thunderbolt™ Adapter

Properly connecting and disconnecting the scanner prevents damage to your devices.

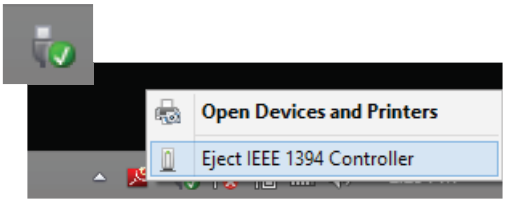
1. Insert the Thunderbolt adapter into the adapter slot on the side of the laptop. (The adapter should remain attached, even when not in use.)
2. After opening the PlanCAD software, connect the red FireWire connector of the scanner into the white Thunderbolt adapter.

The laptop gives an audible signal to confirm that the connection is fully seated.

To remove the scanner, hold the red end with one hand and with the other hand grasp the Thunderbolt adapter. Gently pull apart to disconnect. Leave the white Thunderbolt adapter attached to the computer.

Disconnecting the Thunderbolt Adapter

If you wish to remove the adapter from the laptop:



1. Disconnect the scanner and exit Romexis to the Windows desktop.
2. Navigate to the Eject Media icon in the lower left corner of the desktop.
3. Click the icon and choose **Eject IEEE 1394 Controller.**
4. Remove the Thunderbolt adapter from the laptop.

Failure to follow the Thunderbolt Adapter procedure may result in an inoperable scanner. For additional questions or concerns please contact Customer Support at 800.537.6070.

PlanScan Scanner

1. Scanning Tips
2. Cradle
3. Scanner Cable; connecting and disconnecting the scanner are in a later section.

Connecting the Scanning Tip

(If scanning intraorally, disinfect the tip before connecting it to the base. See the User Manual for full instructions or the insert that is inside the scanning tip box.)

1. Grasp the body of the scanner with one hand.
2. Use the other hand to press the scanning tip onto the scanner as shown. A locking click is heard once the tip is fully seated.


Disconnecting the Scanning Tip

1. Grasp the body of the scanner with one hand.
2. With your other hand depress the green button on the underside of the scanner. Gently pull the tip from the scanner.

When the scanner is not in use, place the non-functional protective scanner tip on the scanner. *(Included with the scanner during shipping.)*

Failure to follow this procedure may result in damage to the scanner and scanning tip. Always follow the manufacturer's instructions for disinfection.

PlanMill 40

Maintenance of the PlanMill 40 is covered in the Elements course and in the User Manual.

- Each week or every 3 hours of milling, the mill fluids need to be replaced.
- Every other week or every 10 hours of milling, the Collets and Spindle Caps require maintenance.

For Celebration customers - If your mill is inoperative when you return to your office, check the back of your Job Server for a dongle that is taped to the back. Plug the dongle into the back of your Job Server to enable the communications between the machines.

Exercise 1 - Premolar Crown with Buccal Bite

Tooth #5 (1-4 ISO)

Romexis

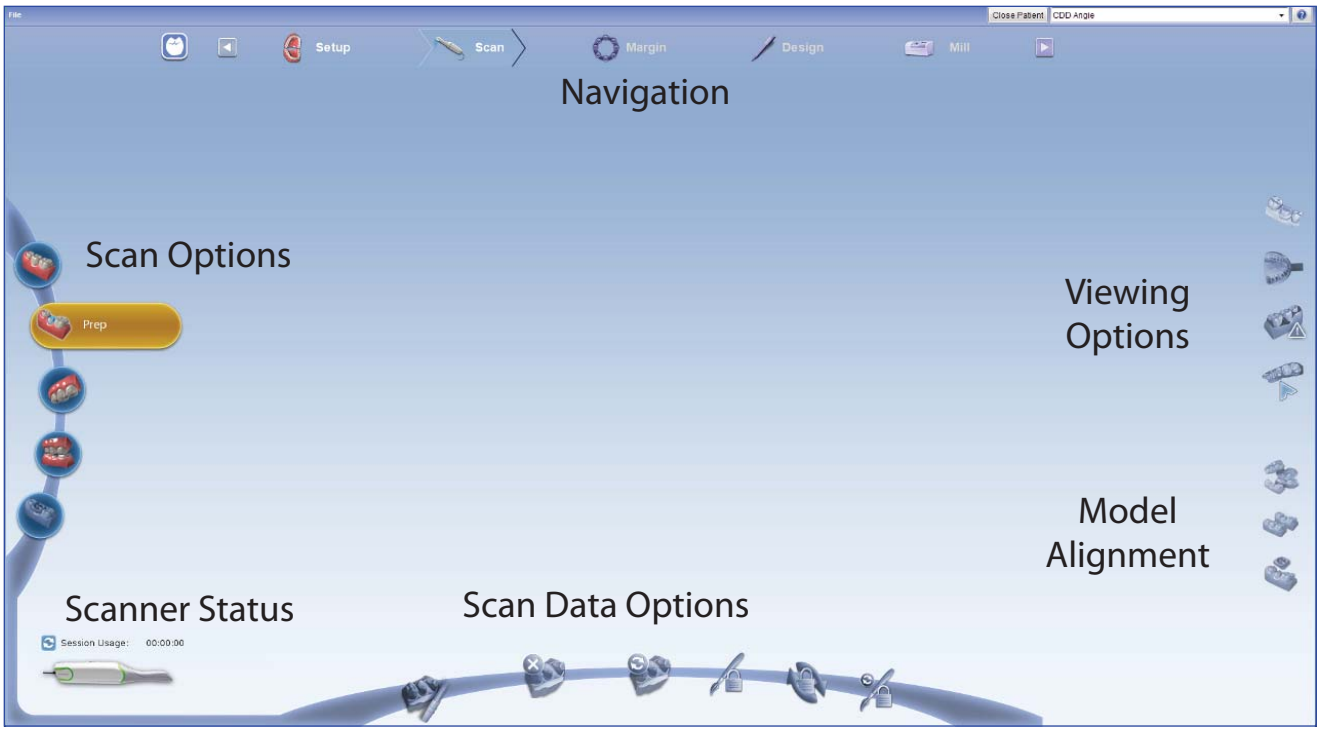
1. On the main screen of Romexis, click **Add Patient.**
2. Add your name in the patient demographics screen, complete the options in bold.
3. Click **Save Patient** at the bottom of the screen.
4. Click **CAD/CAM** in Romexis options to the left of the screen.
5. Under **Scan & Design New Restoration** click **New Scan and Design.** This will take you to the Setup Tab.

Setup Tab

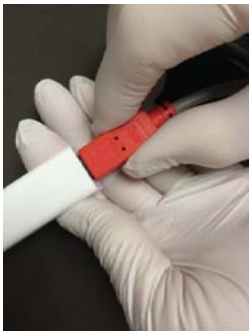
Enter the setup information for this case, then proceed to the Scan Tab.

1. Select **Tooth 5 (1-4 ISO)**; the tooth will highlight and turn orange as you move the cursor away.
2. Choose the restoration type **Crown.**
3. Select the bite option **Buccal/Opposing.**
4. Choose **Library A.**
5. Pick the material **Empress CAD LT.**
6. Select shade **A1.**

Scan Tab Overview



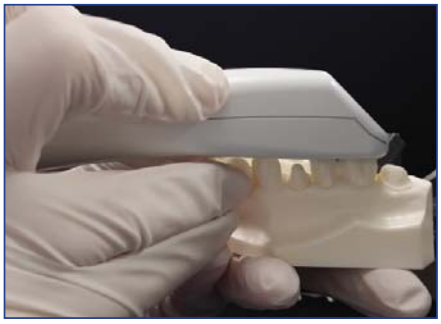
Connecting the PlanScan Scanner

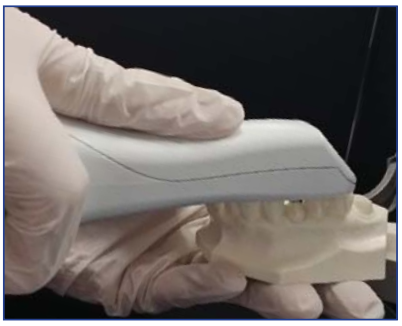


1. After opening the PlanCAD software, connect the red FireWire connector of the scanner into the white Thunderbolt adapter.
2. Verify the scanner status in the Scan Tab; wait until the scanner tip is warming before attempting to scan intraorally.
3. Activate the scanner with the Space Bar of the laptop or the Power button on top of the Scanner.
4. Disconnect the scanner (red firewire connector) after moving to the Margin Tab

Holding the PlanScan Scanner

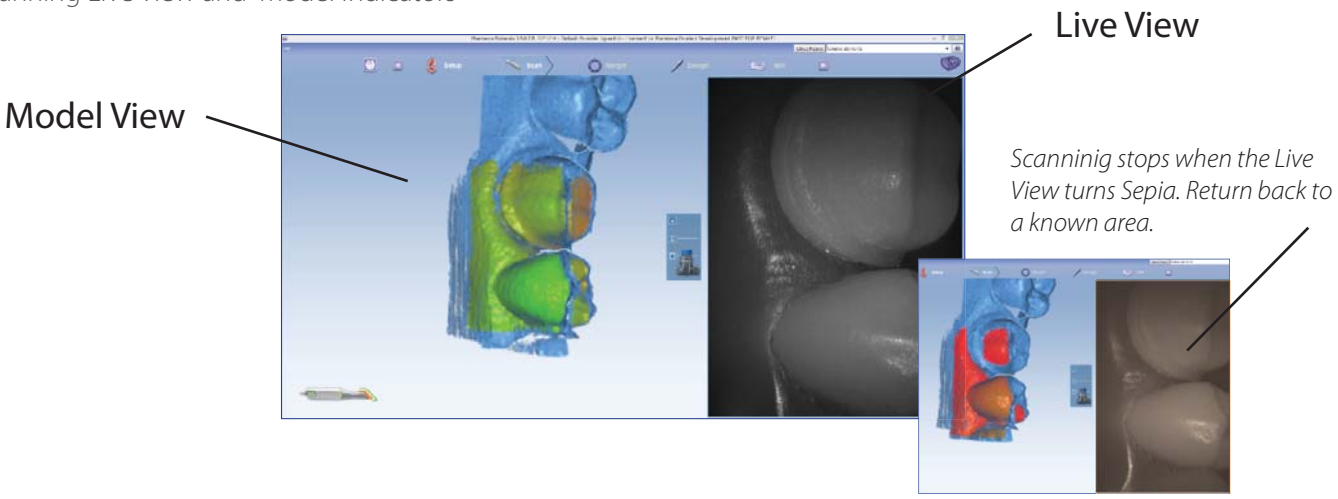
Hold the scanner close to the tip like a handpiece or overhanded. Rest the neck of the scanner on the adjacent teeth.

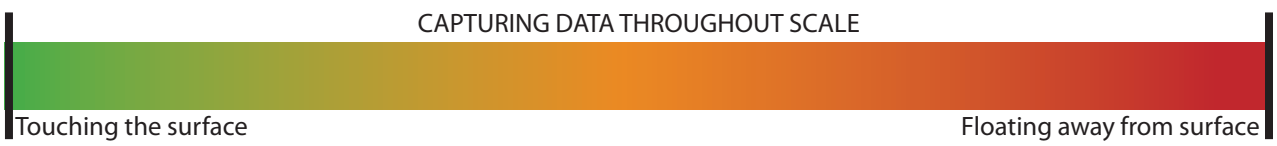




The tip of the scanner must point toward the distal of the preparation. If you scan in the incorrect orientation, you will need to delete those scans and start over.

Scanning Live View and Model Indicators

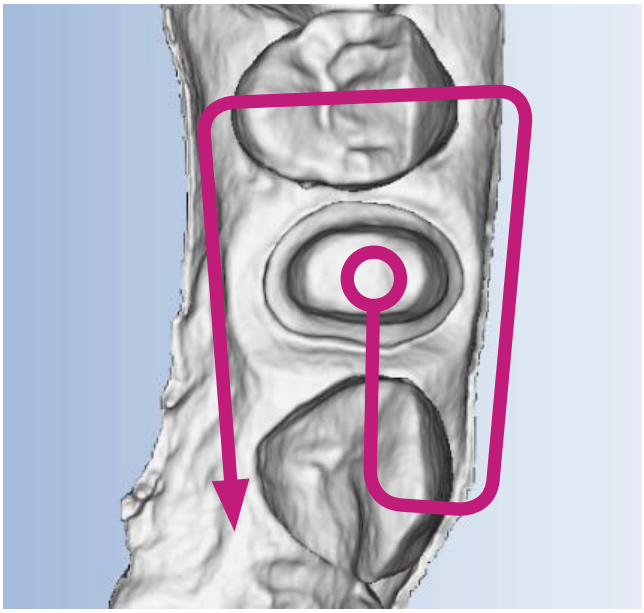


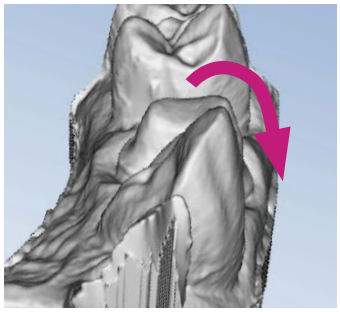


Exercise 1 - Premolar Crown with Buccal Bite

Basic Scanning Pattern

Begin scanning directly over the occlusal surface of the preparation. Move in a gradual, continuous motion toward the mesial neighbor. Transition from the occlusal, cusp, axial wall, to gingival surfaces. The scanner should be held close to 90° while scanning parallel to the buccal surface.





Goals of Prep Scanning

100% of the prep

Interproximal contact point

90% of the adjacent teeth

Good axial data for design

2-3 mm gingival tissue on buccal and lingual

Keep your eyes on the screen and use the model and live view to track your progress and current position.

Evaluate the model

1. Click **Generate Model** or press **M** on the keyboard to finish building the model.
2. Use the mouse to rotate, move, and zoom in and out to evaluate the model.

Left Click

Select - position the cursor on an item and click the left button to select.

Right Click

Rotate Model - press and hold the right button while dragging the mouse on the desktop.

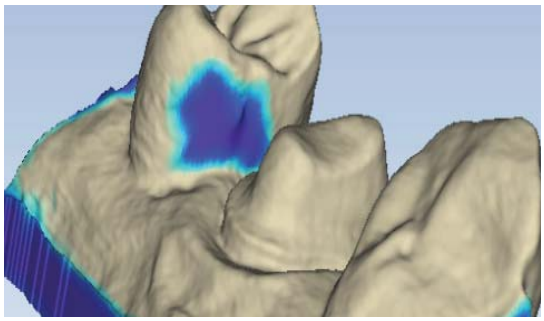
Scroll Wheel

Zoom - rotate the scroll wheel to change the size of the model.

Move - press and hold the wheel to move the model.

It's important to practice using the mouse. Ensure you are comfortable moving the model and zooming in/out.

3. Click **Data Density View** and evaluate the models.

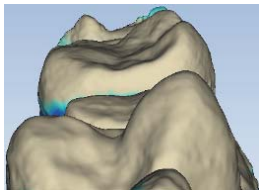


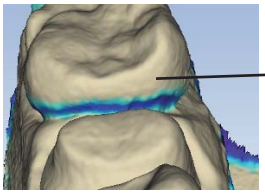
4. Fill in any required missing data by activating the scanner. Use the fill in techniques.

Distal Tip - Rest the end of the scanner tip on the distal neighbor; rock the scanner to point the blue laser into the mesial interproximal area.

Mesial Tip - Rest the neck of the scanner tip on the mesial neighbor, rock the scanner to point the blue laser into the distal interproximal area.

Ensure your model has 100% of the preparation, the interproximal contact areas, and at least 90% of the adjacent teeth and full cusps.



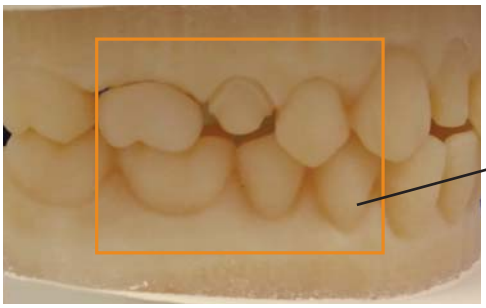


Focus on the contact zone, not the gingival contours.

5. Erase any interfering data such as extra teeth, tongue, cheek, and cotton rolls.

Buccal Bite and Opposing

The opposing teeth are scanned to acquire bite information for the proposal. The buccal bite is scanned to align the preparation model with the opposing model. Scan the teeth that are opposing the teeth in the preparation scan.

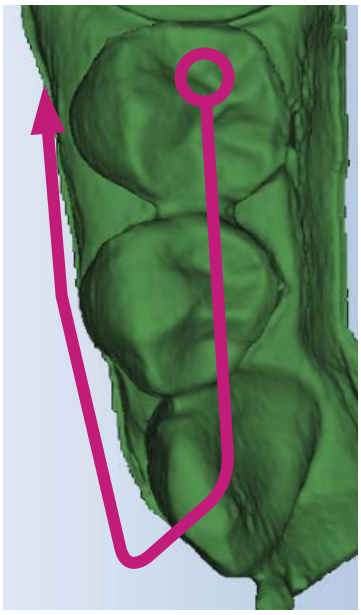


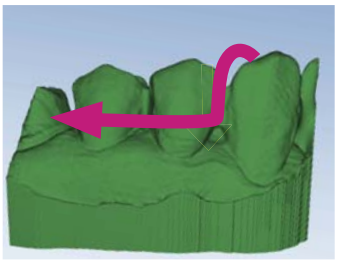
Identify the three teeth directly opposing those in the prep scan.

Note: Many clinical operators scan the Opposing while the patient is being anesthetized.

Scan Opposing

1. Click **Opposing** in the scan options on the left of the screen.
2. Starting with the distal tooth, scan the occlusal data.
3. Transition to the buccal and scan the buccal surface. Include 2-3 mm of gingival data. (Cusp tip, axial wall, gingival) Lingual data is not necessary.





Goals of Opposing Scans

100% of the occlusal and buccal surfaces

2-3 mm gingival tissue on the buccal surface

Lingual data not necessary

4. Erase interfering data such as tongue, cheek, and cotton rolls.

Scan Buccal

1. Click **Buccal** in the scan options on the left of the screen.
2. Close the articulated model gently. If it shifts during the scanning, the alignment may be incorrect.
3. Scan the buccal surfaces of the teeth that were captured in the preparation and opposing models. Ensure some gingival data is captured.

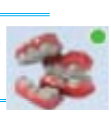
Goals of Buccal Bite

Capture the buccal surface of the dentition in the prep and opposing

2-3 mm gingival data

No rotations necessary

Note: Be sure to verify the status of the buccal alignment.

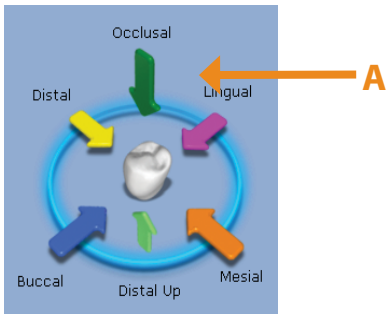


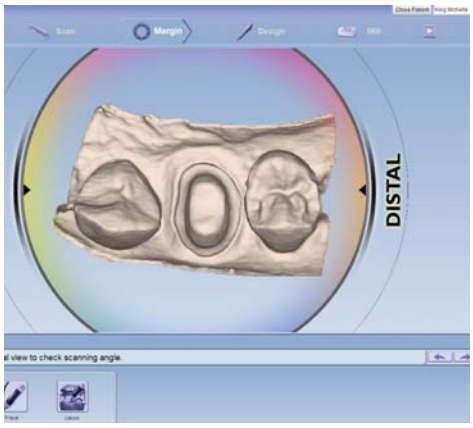
In most cases, alignment is done automatically by the software. A green dot in the Buccal icon indicates a successful alignment. Always verify the alignment before continuing with the next step.

Evaluate and Adjust the Orientation

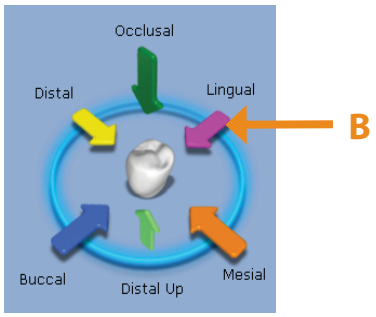
1. Click the **Margin** tab.
2. Evaluate and adjust the Orientation using **View Controls** to change the point of view.

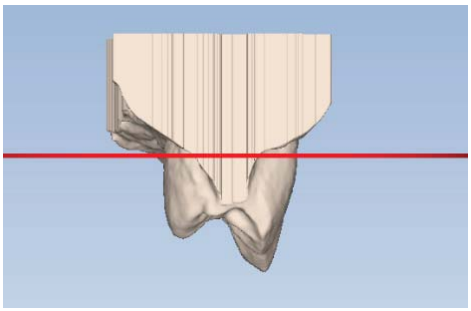
   A. In the Occlusal View, balance the model from buccal to lingual.



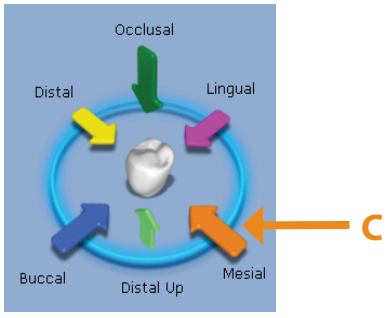


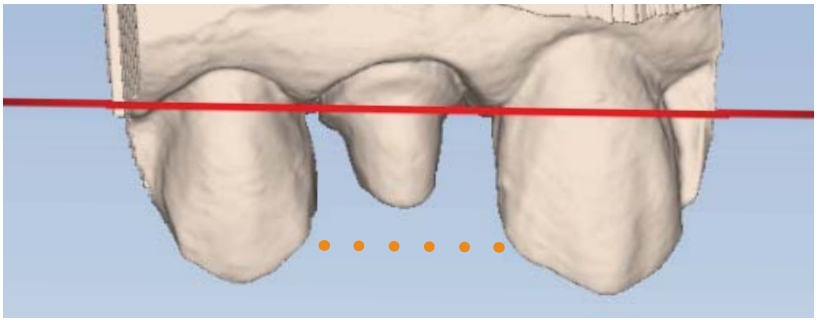
   B. In the Distal View, align the buccal cusps of the neighbors.





   C. In the Buccal View, evaluate marginal ridge alignment.

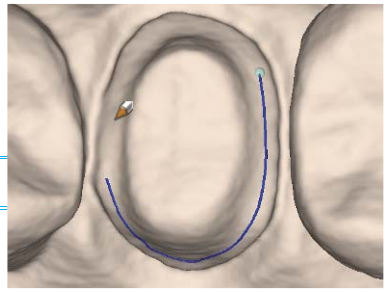




3. Click the **Orientation** icon to accept the current position. 

Exercise 1 - Premolar Crown with Buccal Bite

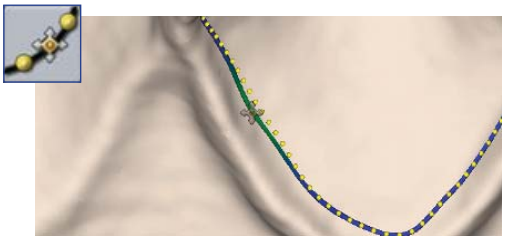
Mark the Margin



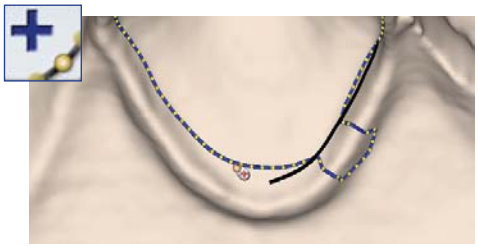
1. Use the scroll wheel to zoom in on the preparation.
2. Click **Trace** and click on the inside of the margin.
3. Moving in small increments, click as you move around the preparation.

> Don't worry if you make a mistake while drawing the margin.

4. The margin is finished when the original point (blue dot) is clicked to finish the circle.
5. Practice adjusting the margin with both **Move Margin** and **Add Segments**.



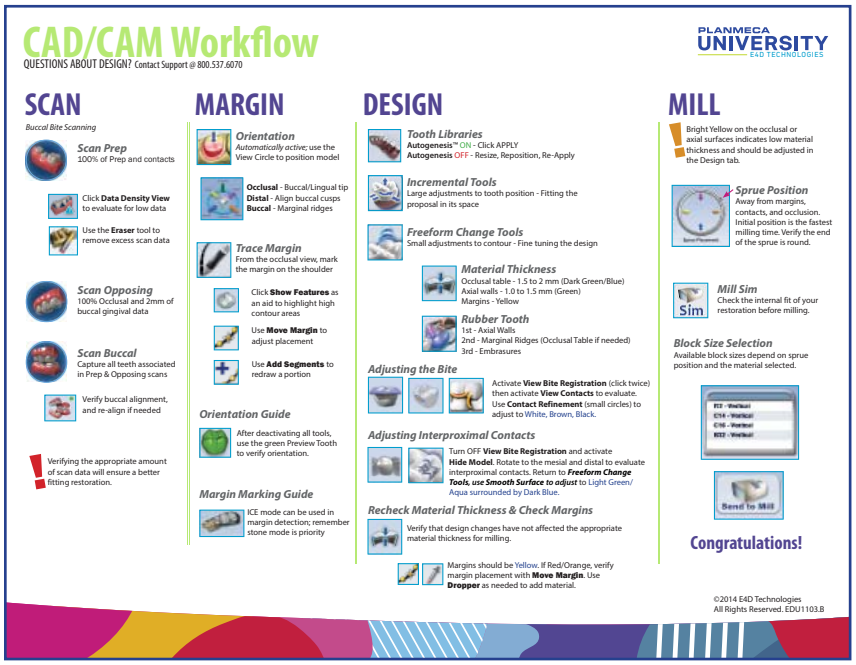
Move Margin *is used for minor adjustments.*



Add Segments *is used to redraw a section of the margin.*

Design

Please reference the CAD/CAM workflow for design. We will use this form throughout the design process.



CAD/CAM Workflow

QUESTIONS ABOUT DESIGN? Contact Support @ 800.537.6070

PLANMECA UNIVERSITY E4D TECHNOLOGIES

SCAN

Buccal Bite Scanning

Scan Prep
100% of Prep and contacts

Click **Data Density View** to evaluate for low data

Use the **Eraser** tool to remove excess scan data

Scan Opposing
100% Occlusal and 2mm of buccal gingival data

Scan Buccal
Capture all teeth associated in Prep & Opposing scans

Verify buccal alignment, and re-align if needed

Verifying the appropriate amount of scan data will ensure a better fitting restoration.

MARGIN

Orientation
Automatically active; use the View Circle to position model

Occlusal - Buccal/Lingual tip
Distal - Align buccal cusps
Buccal - Marginal ridges

Trace Margin
From the occlusal view, mark the margin on the shoulder

Click **Show Features** as an aid to highlight high contour areas

Use **Move Margin** to adjust placement

Use **Add Segments** to redraw a portion

Orientation Guide

After deactivating all tools, use the green Preview Tooth to verify orientation.

Margin Marking Guide

ICE mode can be used in margin detection; remember stone mode is priority

DESIGN

Tooth Libraries
Autogenesis™ ON - Click APPLY
Autogenesis OFF - Resize, Reposition, Re-Apply

Incremental Tools
Large adjustments to tooth position - Fitting the proposal in its space

Freeform Change Tools
Small adjustments to contour - Fine tuning the design

Material Thickness
Occlusal table - 1.5 to 2 mm (Dark Green/Blue)
Axial walls - 1.0 to 1.5 mm (Green)
Margins - Yellow

Rubber Tooth
1st - Axial Walls
2nd - Marginal Ridges (Occlusal Table if needed)
3rd - Embrasures

Adjusting the Bite

Activate **View Bite Registration** (click twice) then activate **View Contacts** to evaluate. Use **Contact Refinement** (small circles) to adjust to White, Brown, Black.

Adjusting Interproximal Contacts

Turn OFF **View Bite Registration** and activate **Hide Model**. Rotate to the mesial and distal to evaluate interproximal contacts. Return to ***Freeform Change Tools, use Smooth Surface to adjust*** to Light Green/Aqua surrounded by Dark Blue.

Recheck Material Thickness & Check Margins

Verify that design changes have not affected the appropriate material thickness for milling.

Margins should be Yellow. If Red/Orange, verify margin placement with **Move Margin**. Use **Dropper** as needed to add material.

MILL

Bright Yellow on the occlusal or axial surfaces indicates low material thickness and should be adjusted in the Design tab.

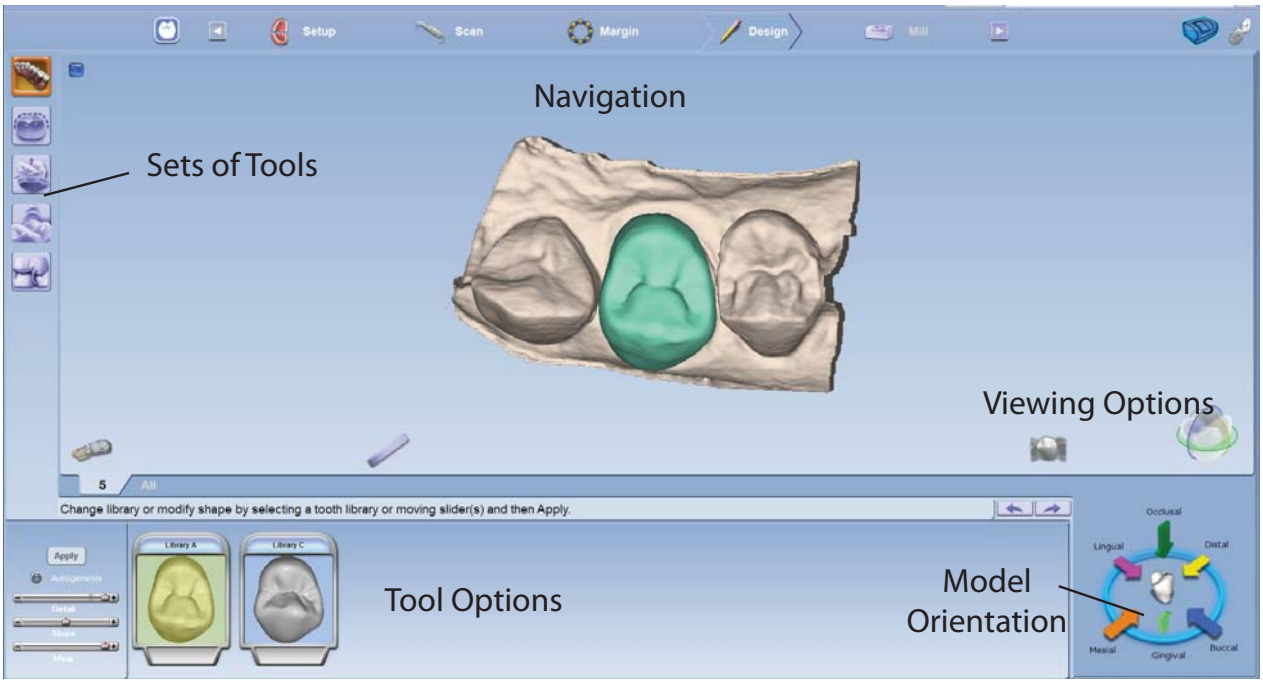
Sprue Position
Away from margins, contacts, and occlusion. Initial position is the fastest milling time. Verify the end of the sprue is round.

Mill Sim
Check the internal fit of your restoration before milling.

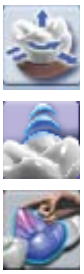
Block Size Selection
Available block sizes depend on sprue position and the material selected.

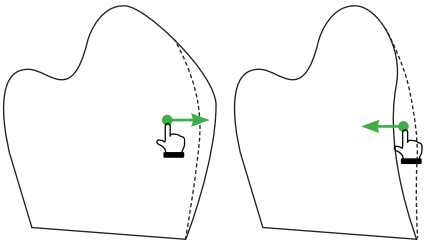
Send To Mill

Congratulations!

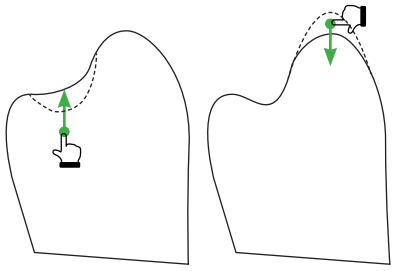


1. Click the **Design** tab. The **Tooth Libraries** tools automatically appear.
2. Click **Apply** to have **Autogenesis** generate the proposal.
3. Click **Incremental Change Tools** to evaluate the proposal for large adjustments. Use the tool options to make changes where needed. Click **Apply** before continuing.
4. Click **Freeform Change Tools** and **Material Thickness** (in view options) to evaluate the proposal. The proposal should be blue/green with a yellow margin.
5. Click **Rubber Tooth** and adjust the axial walls, marginal ridges, and embrasures.

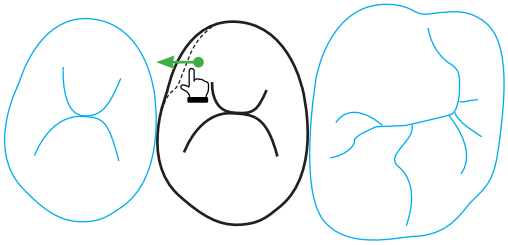




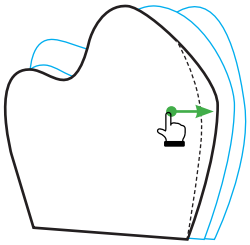
Adjust axial wall contours by pulling material away from or toward the preparation.



Adjust central grooves and cusps by pulling material up or down.



From the occlusal view, adjust the embrasure shapes.



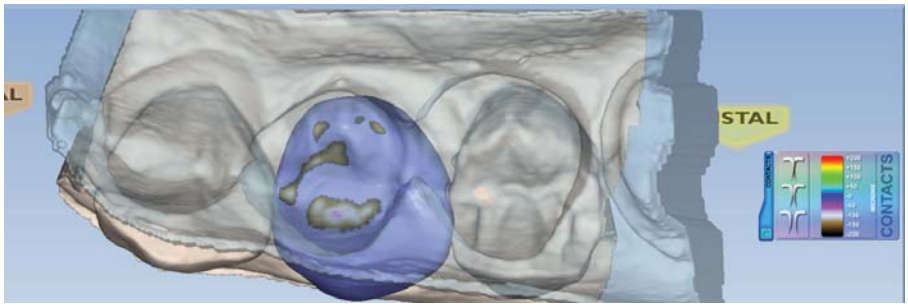
Check the emergence profile and adjust.

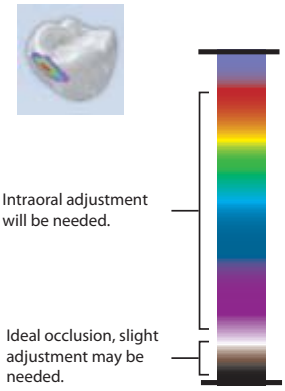
Note: Rotate the model to adjust circumferentially.

Exercise 1 - Premolar Crown with Buccal Bite

6. Click **View Bite Registration** to see the opposing dentition model above the proposal. Click **View Bite Registration** a second time to make the template transparent.

7. Click **View Contacts.** Use **Contact Refinement** to adjust to White, Brown, Black.

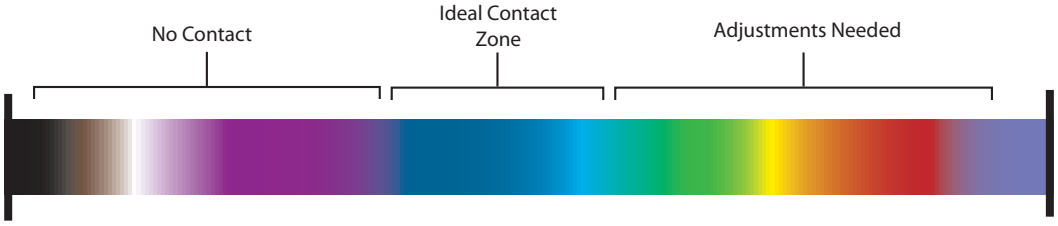




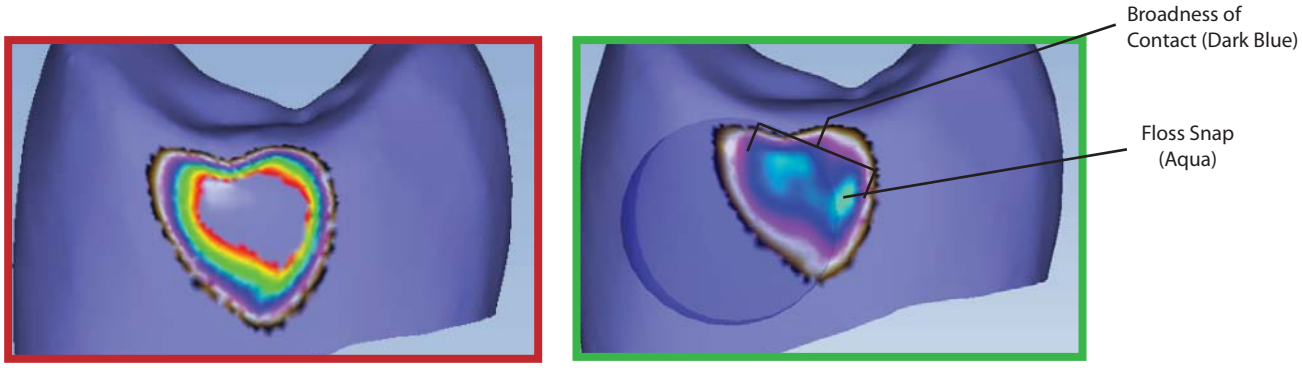
8. Click **View Bite Registration** again to deactivate the template.

9. Click **Hide Model** to remove the model from view.

10. Rotate the proposal to view the interproximal contacts. Adjust interproximal contacts as needed with **Smooth Surface** in **Freeform Change Tools**.



The goal is dark blue with a hint of aqua.



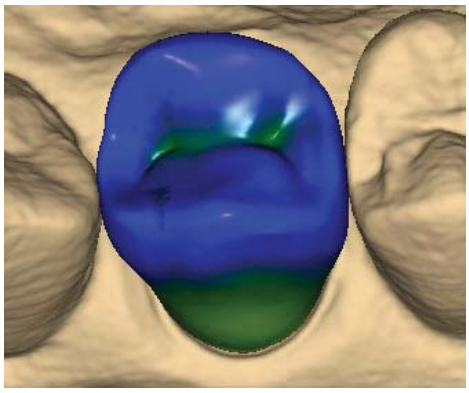
Before Goal

11. Deactivate **Hide Model.**

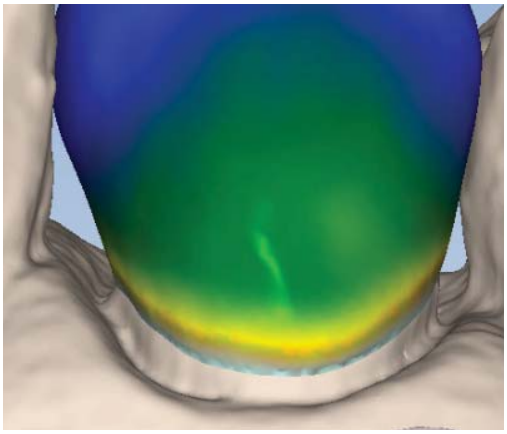
12. Deactivate **View Contacts.**

13. Click **Material Thickness.**

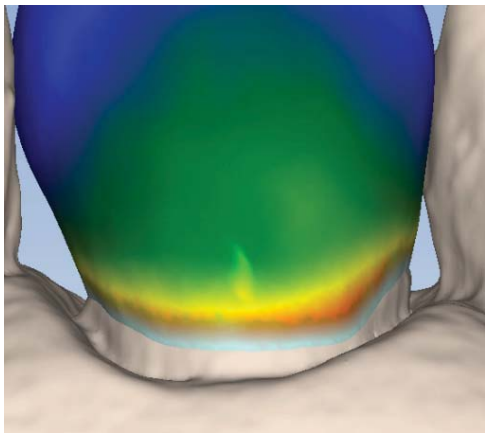
The desired material thickness is based on the block manufacturer's recommended thickness for your restoration type. The desired material thickness for a crown is 1-1.5 mm along the axial walls and 1.5-2 mm on the occlusal table.



14. Evaluate the margin. The material thickness should be yellow around the margin with no red or orange.



Good example - yellow margin



Poor example - Red or orange along the margin

15. If there is red or orange around the margin, click **Move Margin** to evaluate the margin for accurate placement. Adjust the margin, if needed.

Going back to the Margin tab and making changes to the margin will result in losing your design.

16. If the margin is placed accurately and is still red/orange, use the **Dropper** tool to add material thickness.

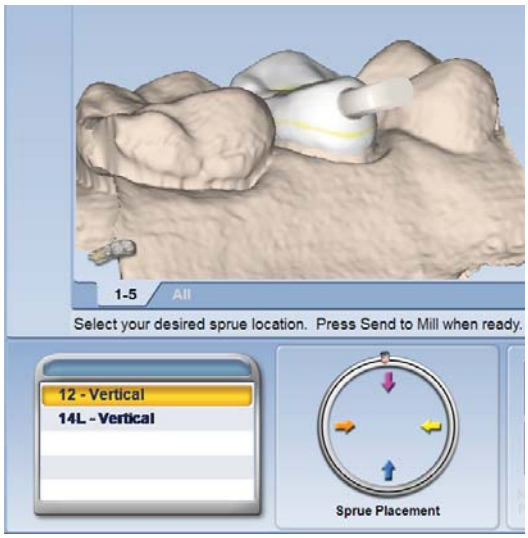
Congratulations on your first design with the PlanScan system!

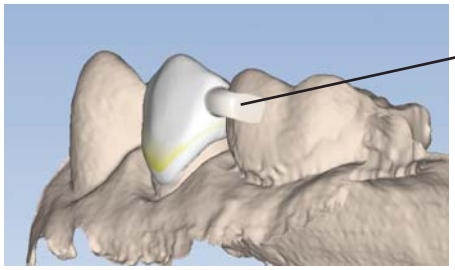
Review the CAD/CAM Workflow before continuing to the Mill tab.

Exercise 1 - Premolar Crown with Buccal Bite

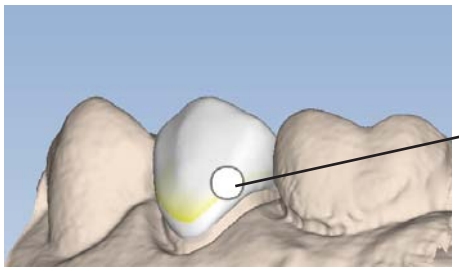
Milling

1. Click the **Mill** tab
2. Evaluate your design and review the material thickness indicators.
3. Check the sprue position and use the **Sprue Placement** wheel to adjust when needed.
4. Select the block size (also based on sprue positioning)





High, away from margin and contact areas.



Too close to the margin

5. Click **Mill Sim.**
6. Evaluate the simulation.
7. Click **Send to Mill**, click **OK**

The system defaults to the setting for the restoration type.

Standard - Full Coverage Crowns

Detailed - Inlay, Onlay, and Veneers

Exercise 2 - Molar Crown with Buccal Bite

Tooth #30 (4-6 ISO) with bite registration

> Some images in this exercise may vary from the physical model. The same work flow will be used.

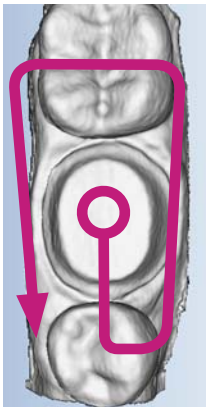
Setup

Enter the setup information for this case:

- **Tooth 30 (4-6 ISO)**
- **Crown**
- **Buccal/Opposing**
- **Library A**
- **IPS e.max CAD LT**
- **Select shade B1**

Scan Prep

Scan prep using the basic scan method for a single unit posterior case.



Goals of Prep Scanning

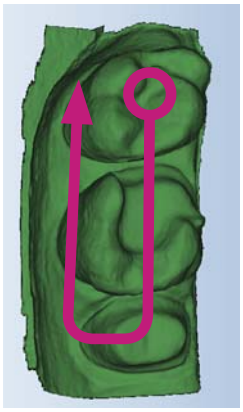
100% of the prep and Interproximal contact point

90% of the adjacent teeth and good axial data for design

2-3 mm gingival tissue on buccal and lingual

Scan Opposing

1. Click **Opposing.**



Goals of Opposing Scanning

100% of the occlusal and buccal surfaces

2-3 mm gingival tissue on the buccal surface

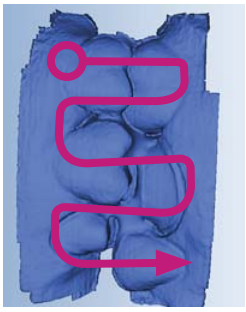
Lingual data not necessary

2. Erase any interfering data such as tongue, cheek, and cotton rolls.

Exercise 2 - Molar Crown with Buccal Bite

Scan Buccal

1. Click **Scan Buccal.**
2. Scan the buccal surfaces of the teeth that were captured in the preparation and opposing models. Ensure some gingival data is captured. Use the same scanner orientation as the other two scans.



Goals of Buccal Bite Scanning

Capture the buccal surface of the dentition in the prep and opposing

2-3 mm gingival data

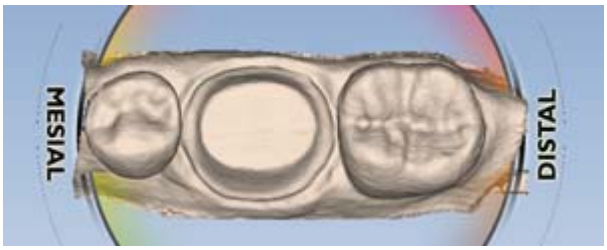
No rotations necessary

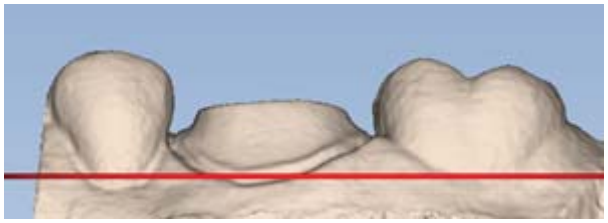
Note: Be sure to verify the status of the buccal alignment.

In most cases, alignment is done automatically by the software. A green dot in the Buccal icon indicates a successful alignment. Always verify the alignment before continuing with the next step.

Evaluate and Adjust the Orientation

1. Click the **Margin** tab.
2. Evaluate and adjust the Orientation using **View Controls** to change the point of view.





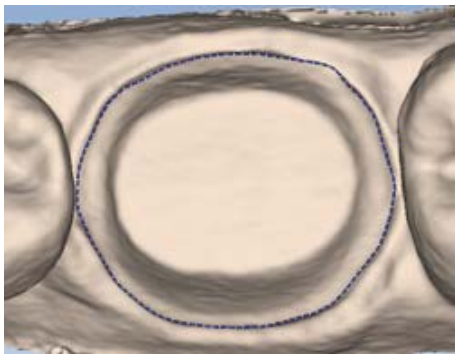
3. Click the **Orientation** icon to accept the current position.

Mark the Margin

1. Use the scroll wheel to zoom in on the preparation.
2. Click **Trace** and click on the inside of the margin.
3. Moving in small increments, click as you move around the preparation.

Don't worry if you make a mistake while drawing the margin.

4. The margin is finished when the original point (blue dot) is clicked to finish the circle.



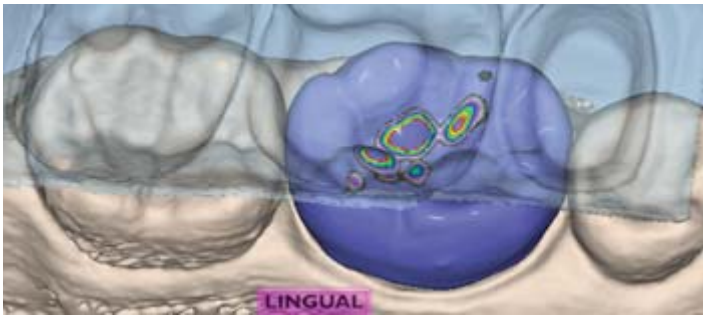
Design

Please reference the CAD/CAM workflow for design. We will use this form throughout the design process.

1. Click the **Design** tab. The **Tooth Libraries** tools automatically appear.
2. Turn **Autogenesis OFF** and click **Apply** to generate the proposal.
3. Click **Incremental Change Tools** to evaluate the proposal for large adjustments. Use the tool options to make changes where needed. Click **Apply** before continuing.
4. Click **Freeform Change Tools** and **Material Thickness** (in view options) to evaluate the proposal. The proposal should be blue/green with a yellow margin.
5. Click **Rubber Tooth** and adjust the axial walls, marginal ridges, and embrasures.
6. Click **View Bite Registration** to see the opposing dentition model above the proposal. Click **View Bite Registration** a second time to make the template transparent.

Adjust the translucency of the opposing model.

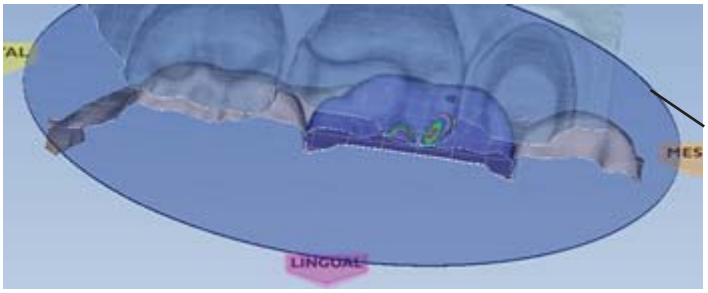
7. Click **View Contacts.**



8. Click **Slice Plane.**

Slice icon changes to show the slice direction and the grid measurement.

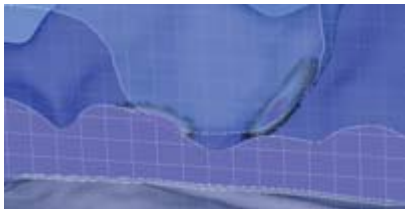
Click multiple times to change the slice orientation.

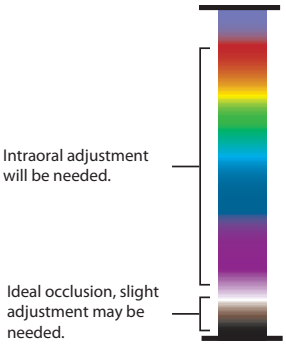


Click and drag the edge of the slice circle if you want to change its position.

Exercise 2 - Molar Crown with Buccal Bite

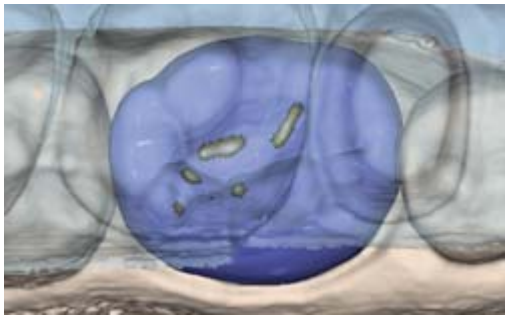
9. Zoom in and use **Rubber Tooth** to adjust the contacts points.





10. Move the Slice Plane as needed to adjust the occlusion.

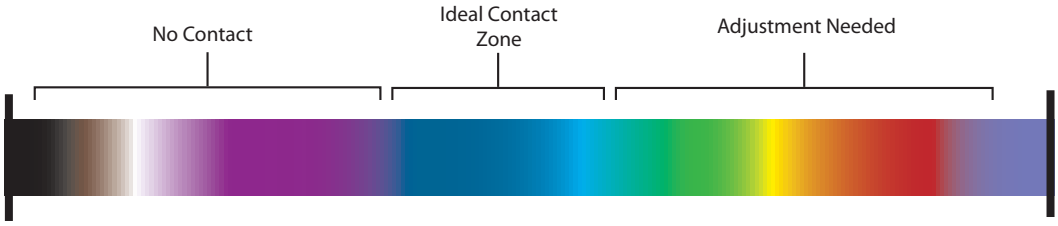
11. Click **Slice Plane** multiple times to change the slice orientation and/or deactivate it.

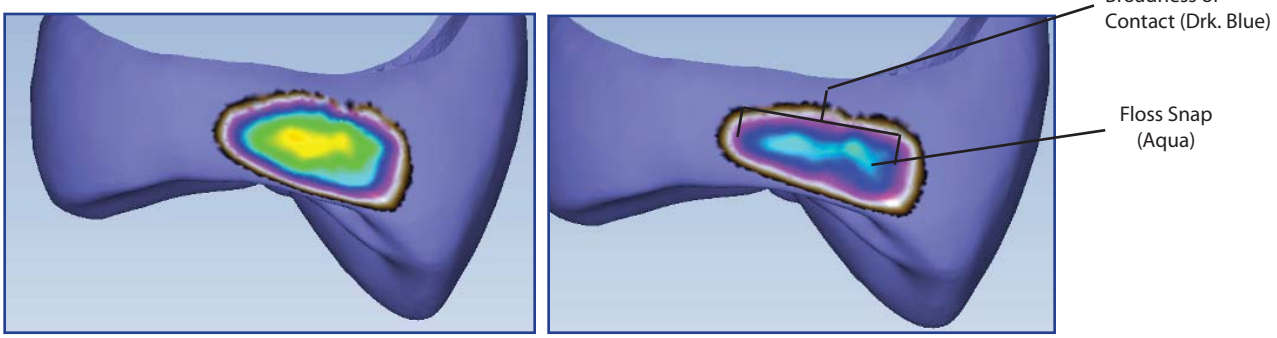


12. Click **View Bite Registration** again to deactivate the template.

13. Click **Hide Model** to remove the model from view.

14. Rotate the proposal to view the interproximal contacts. Adjust interproximal contacts as needed with **Smooth Surface** in **Freeform Change Tools**. The goal is dark blue with a hint of aqua.



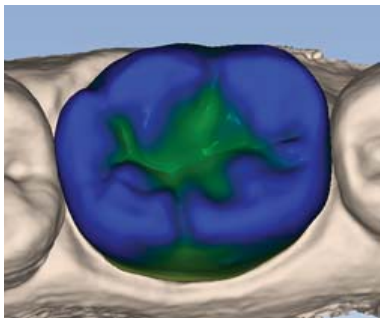


15. Deactivate **Hide Model.**

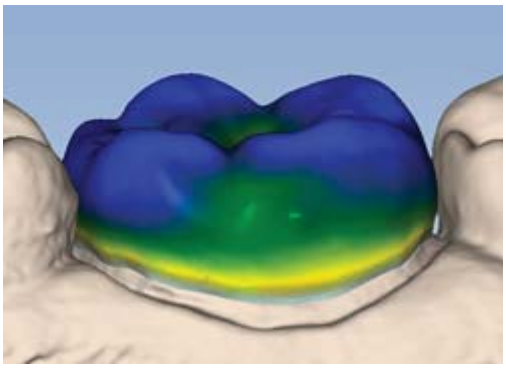
16. Deactivate **View Contacts.**

17. Click **Material Thickness.**

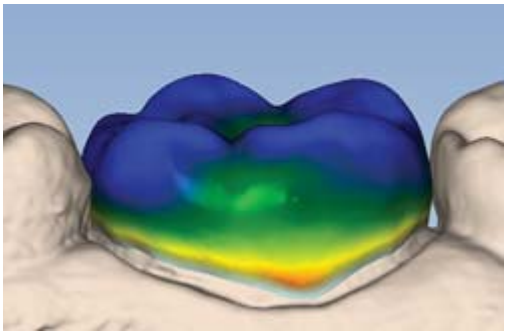
The desired material thickness is based on the block manufacturer's recommended thickness for your restoration type. The desired material thickness for a crown is 1-1.5 mm along the axial walls and 1.5-2 mm on the occlusal table.



18. Evaluate the margin. The material thickness should be yellow around the margin with no red or orange.



Good example - yellow margin



Poor example - Red or orange along the margin

19. If there is red around the margin, click **Move Margin** to evaluate the margin for accurate placement. Adjust the margin if needed.

Going back to the Margin tab to make changes will result in losing your design.

If the margin is placed accurately and is still red/orange, use the **Dropper** tool to add material thickness.

Congratulations on your molar crown with the PlanScan system!

Review the CAD/CAM Workflow before continuing to the Mill tab.

Milling

1. Click the **Mill** tab

2. Evaluate your design and review the material thickness indicators.

3. Check the sprue position and use the **Sprue Placement** wheel to adjust when needed.

4. Select the block size (also based on sprue positioning)

5. Click **Mill Sim.**

6. Evaluate the simulation.

7. Click **Send to Mill,** click **OK**

Exercise 3 - Onlay Restoration

Onlay Tooth #14 (2-6 ISO)

Setup

Enter the setup information for this case:

- **Tooth 14 (2-6 ISO)**
- **Onlay**
- **Buccal/Opposing**
- **Library A**
- **Lava Ultimate LT**
- **Select shade A1**

Scan Prep

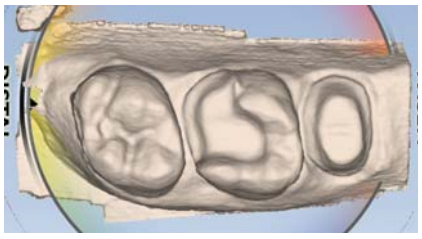
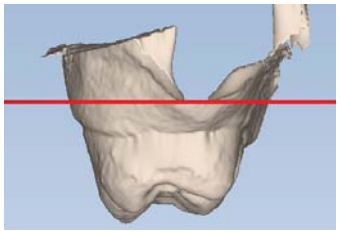
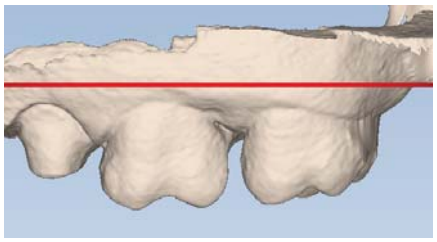
1. Click the **Scan** tab.
2. Follow the basic scan pattern.
3. Evaluate the preparation model. The same basic scan pattern is used for partial restorations.

> Tooth 13 (2-5 ISO) is also a preparation , but we are not designing it at this time. The opposing dentition is a preparation, so we are not going to scan the buccal and opposing.

Orientation

> The pictures for this case are of a different onlay. The procedure is the same.

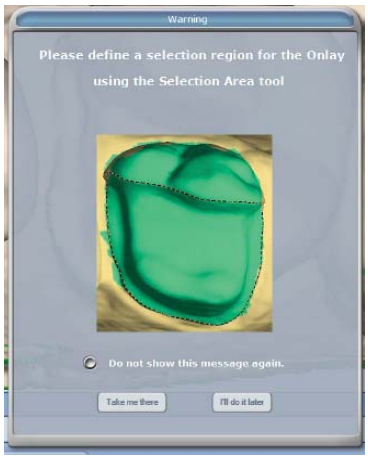
1. Click the **Margin** tab.
2. Set the **Orientation** for the onlay. Use the remaining anatomy of the prepped tooth to aid your orientation.

Mark the Margin

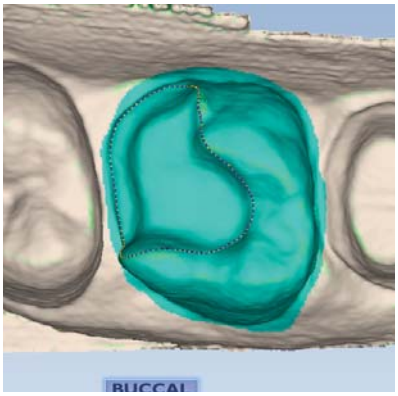
1. Use the scroll wheel to zoom in on the preparation.
2. Click **Trace** and click on the inside of the margin.
3. Moving in small increments, click as you move around the preparation.
4. The margin is finished when the original point (blue dot) is clicked to finish the circle.

Once the margin is drawn for an inlay or onlay, a notification screen appears.

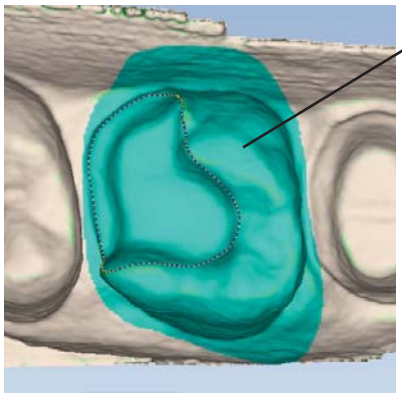


Note: If this screen doesn't appear, click **Selection Area.**

5. Click **Take Me There** to go to the Selection Area screen.
6. Click **Add to Selection** and circle Tooth 14 (2-6 ISO).

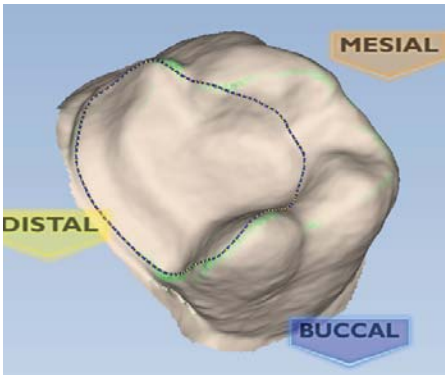


Good Selection


Poor Selection

Using Selection Area will define the area of the tooth structure for design. Over selection an area will cause a poor proposal.

7. Complete the Selection Area and return to the **Margin Tool** screen.
8. Click **Hide Model** to isolate the preparation and to evaluate and adjust the margin with **Move Margin** and **Add Segments** as needed.



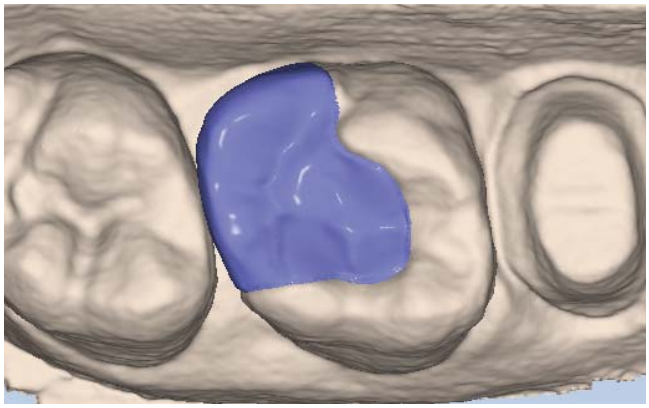
Please reference the CAD/CAM workflow for design. We will use this form throughout the design process.

Exercise 3 - Onlay Restoration

Design

1. Click the **Design** tab.
2. Ensure Autogenesis is **ON** and click **Apply.**

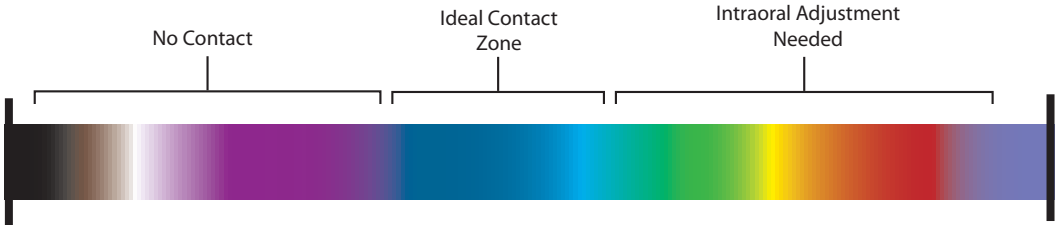
Autogenesis creates a proposal based on the Selection Area designated.

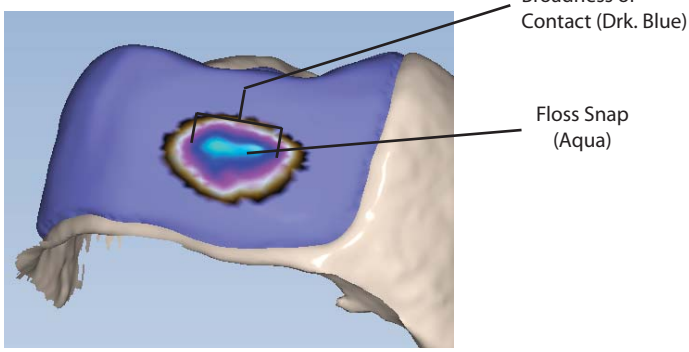


3. Click **Incremental Change Tools** to evaluate the proposal for large adjustments. Use the tool options to make changes where needed. Click **Apply** before continuing.
4. Click **Freeform Change Tools** and **Material Thickness** (in view options) to evaluate the proposal. The proposal should be blue/green with a yellow margin.
5. Click **Rubber Tooth** and adjust the axial walls, ridges, and embrasures. Activate **Move Feature** to adjust surfaces incrementally.
6. Click **View Contacts.**

Since this case does not have any occlusal contact information, we will skip to the interproximal contact.

7. Rotate the proposal to view the interproximal contacts. Adjust interproximal contacts as needed with **Smooth Surface** in **Freeform Change Tools**. The goal is dark blue with a hint of aqua.

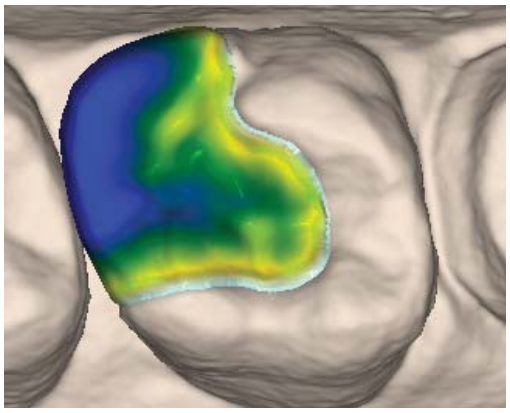




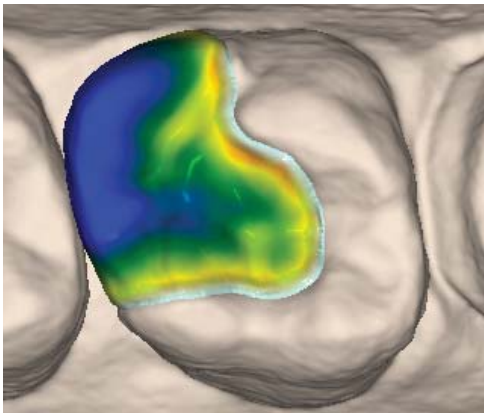
8. Deactivate **Hide Model.**
9. Deactivate **View Contacts.**

10. Click **Material Thickness.**

11. Evaluate the margin. The material thickness should be yellow around the margin with no red or orange.



Good example - yellow margin



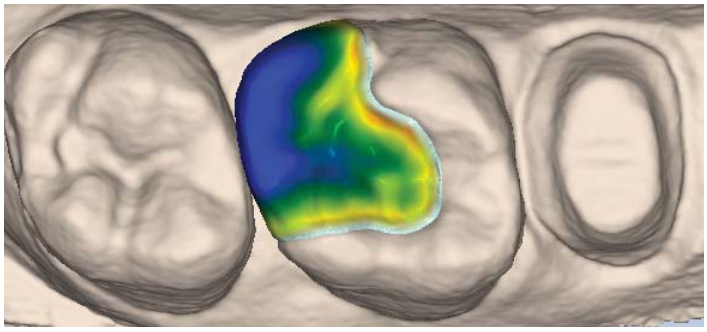
Poor example - Red or orange along the margin

12. If there is red around the margin, click **Move Margin** to evaluate the margin for accurate placement. Adjust the margin if needed.

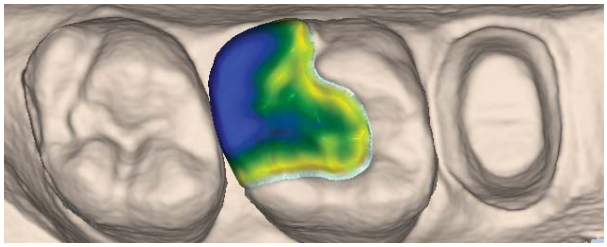
Going back to the Margin tab to make changes will result in losing your design.

13. If the margin placement is accurate, use the **Dropper** tool to add material thickness.

In some situations, it will be difficult to attain ideal occlusal contact strength and reach minimum material thickness. In the example below, the red material thickness around the margin indicates the margin is too thin.



14. Click **Dropper** and add material thickness. This will result in adequate material thickness strength but may create a strong contact with the opposing dentition. This can be corrected intraorally.



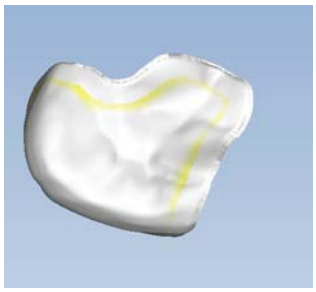
Congratulations on your first partial restoration with the PlanScan system!

Review the CAD/CAM Workflow before continuing to the Mill tab.

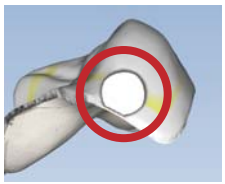
Exercise 3 - Onlay Restoration

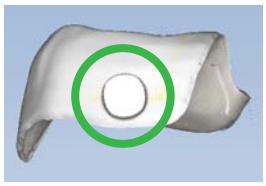
Mill

1. Click the **Mill** tab.
2. Evaluate your design and review the material thickness indicators.
3. Click **Hide Model** and check the sprue position and use the **Sprue Placement** wheel to adjust when needed.
4. If no sprue is visible, the sprue is positioned on the internal aspect of the restoration. Move the sprue to an external position.



5. Ensure the total circumference of the sprue is visible.





6. Select the block size (also based on sprue positioning).
7. Click **Mill Sim.**
8. Evaluate the simulation.
9. Click **Send to Mill,** click **OK.**

The system defaults to the setting for the restoration type.

Standard - Full Coverage Crowns

Detailed - Inlay, Onlay, and Veneers

Exercise 4 - Pre-op Crown

Pre-op Crown Tooth #30 (4-6 ISO)

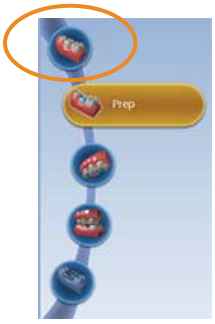
Setup

Enter the setup information for this case:

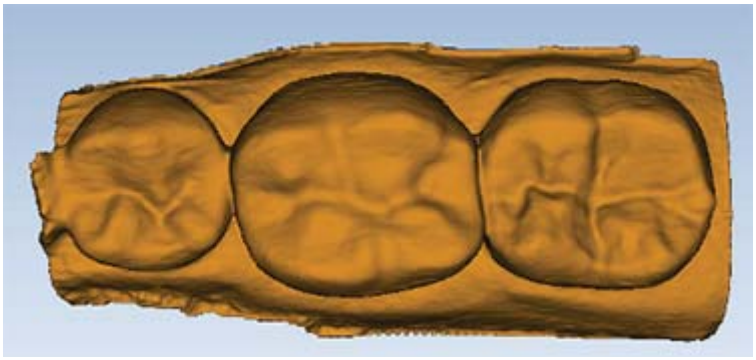
- **Tooth 30 (4-6 ISO)**
- **Crown**
- **Buccal/Opposing**
- **Pre-op**
- **IPS e.max**
- **Select shade A1**

Scan Prep

1. Click the **Scan** tab.
2. Click **Preop.**



3. Follow the basic scan pattern.
4. Evaluate the pre-op model.



Goals of Pre-Op Scanning

100% of the pre-op tooth

90% of the adjacent teeth

Good axial data for design

2-3 mm gingival tissue on buccal and lingual

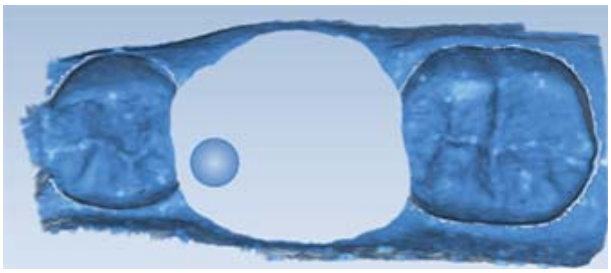
5. Click **Prep.**

6. A Time Saver prompt appears. Click **Yes.**

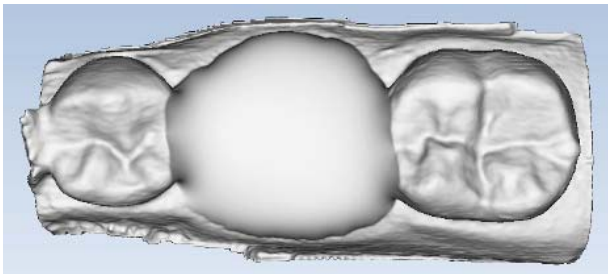
The pre-op model is duplicated as the preparation model.

7. Click **Erase.** 

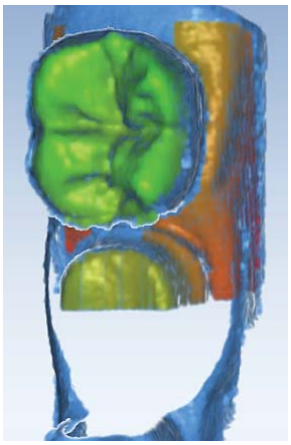
8. Erase the pre-op tooth and the marginal ridges of the neighboring teeth.



9. Click the **Erase** tool again to accept the changes.

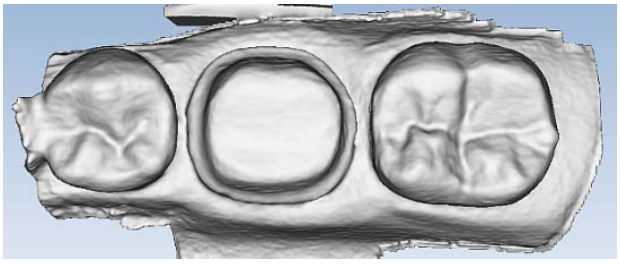


10. Press the button on the scanner and start scanning over one of the neighboring teeth. When the system recognizes the same data on your prep model, it will begin scanning. Move over the preparation and the system will fill in the areas that you erased.



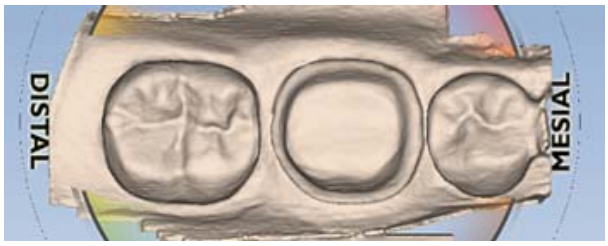
11. Fill in the preparation data and the interproximal areas.

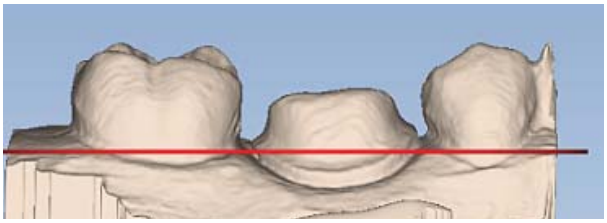
12. Generate the model and evaluate for any missing data.

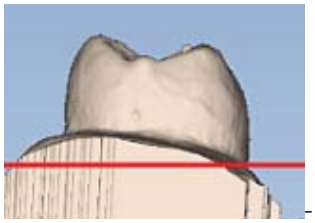


Orientation

1. Click the **Margin** tab.
2. Evaluate and adjust the Orientation using **View Controls** to change the point of view.







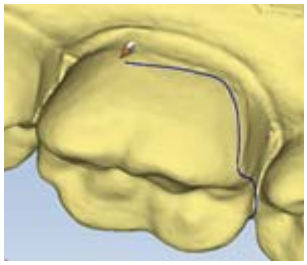
3. Click the **Orientation** icon to accept the current position.

Mark the Margin

1. Use the scroll wheel to zoom in on the preparation.
2. Click **Trace** and click on the inside of the margin.
3. Moving in small increments, click as you move around the preparation.
4. The margin is finished when the original point (blue dot) is clicked to finish the circle.

Edit the Pre-op

1. Click **Pre-Op Editing.** 
2. Use the **Trace** tool to designate the area of the model that you want to use as the Pre-op library surface. Stay away from rough areas and the margin.



3. Click on the blue dot to finish the pre-op area.
4. Use **Move Curve** and **Add Segments** to edit the Pre-op if needed.

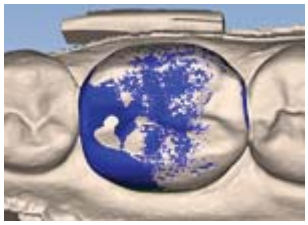
Exercise 4 - Pre-op Crown

Design

1. Click the **Design** tab.

Note that the Library at the bottom of the screen now includes Pre-op.

2. Click **Apply.** Autogenesis creates a proposal based on the Pre-op area that you designated and Library A.
3. Follow the normal design workflow.
4. Click **View Pre-op**  to see the combination of the pre-op model and the prep model. Speckled areas are where the pre-op is in close proximity to the proposal. Solid stone color shows where the pre-op is above the proposal. Solid proposal color is where the proposal is above the pre-op.



Click **View Pre-op** a second time to make the pre-op model translucent.

5. Use **Slice Plane** and **Rubber Tooth** to make adustments if needed.

Milling

1. Click the **Mill** tab
2. Evaluate your design and review the material thickness indicators.
3. Check the sprue position and use the **Sprue Placement** wheel to adjust when needed.
4. Select the block size (also based on sprue positioning).
5. Click **Mill Sim.**
6. Evaluate the simulation.
7. Click **Send to Mill,** click **OK**

Optional Exercise - Anterior Crown with Buccal Bite

Tooth #9 (2-1 ISO) with bite registration

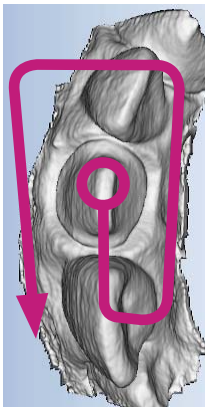
Setup

Enter the setup information for this case:

- **Tooth 9 (2-1 ISO)**
- **Crown**
- **Buccal/Opposing**
- **Library A2**
- **Empress CAD Multi**
- **Select shade A1**

Scan Prep

Scan prep using the basic scan method for a single unit anterior case. The tip of the wand should face the highest tooth number.



Begin scanning directly over the occlusal surface of the preparation. Move in a gradual, continuous motion toward the neighbor. Transition from the incisal, axial wall, and to the gingival surfaces. The scanner should be held at close to 90° while scanning parallel to the axial surface.

Watch as your model builds to see any areas that might require a different rotation or angle.

Goals of Prep Scanning

100% of the prep and interproximal contact point

90% of the adjacent teeth and good axial data for design

2-3 mm gingival tissue on buccal and lingual

Scan Opposing

1. Click **Opposing.**
2. Starting in the same scanner orientation as the prep scan, scan the incisal data and rotate to the buccal.

Goals

100% of the occlusal and buccal surfaces

2-3 mm gingival tissue on the buccal surface

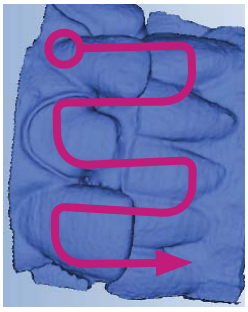
Lingual data not necessary

3. Erase any interfering data such as tongue, cheek, and cotton rolls.

Optional Exercise - Anterior Crown with Buccal Bite

Scan Buccal

1. Click **Buccal.**
2. Scan the buccal surfaces of the teeth that were captured in the preparation and opposing models. Ensure some gingival data is captured. Use the same scanner orientation as the other two scans.



Goals

Capture the buccal surface of the dentition in the prep and opposing

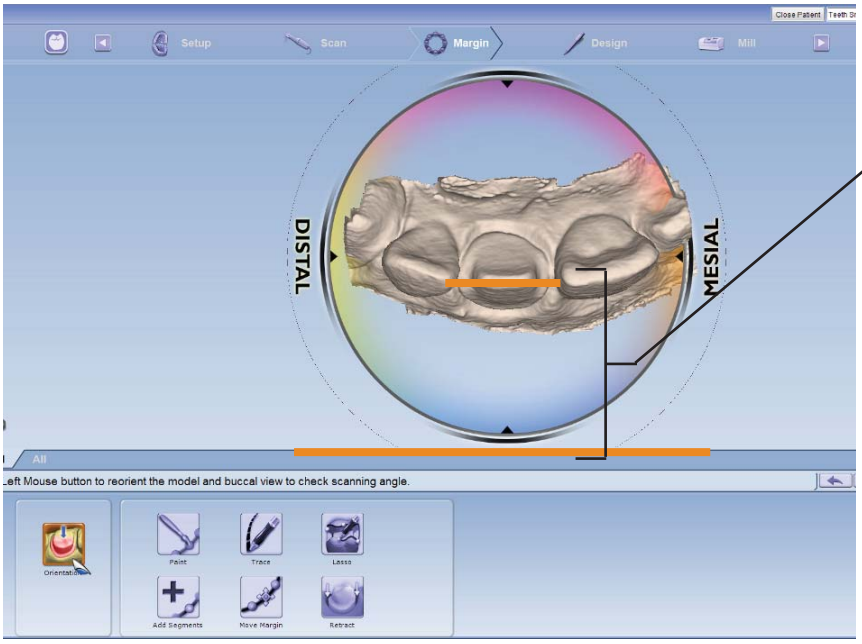
2-3 mm gingival data

No rotations necessary

Note: Be sure to verify the status of the buccal alignment.

Margin

1. Click the **Margin** tab.
2. Evaluate and adjust the Orientation. Orientation may have to be adjusted a second time after marking the margin.

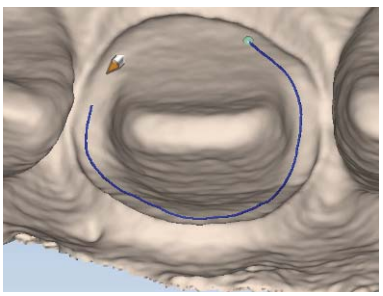


Align the incisal edge with the bottom of the design screen

3. Click **Orientation** to accept the current position.

Mark the Margin

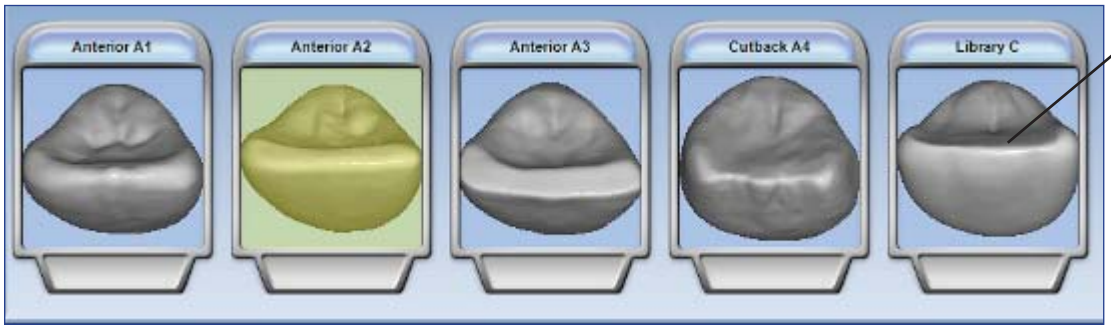
1. Use the scroll wheel to zoom in on the preparation.
2. Click **Trace** and click on the inside of the margin.
3. Moving in small increments, click as you move around the preparation.
4. The margin is finished when the original point (blue dot) is clicked to finish the circle.
5. Adjust with **Move Margin** and **Add Segments** as needed.



Design

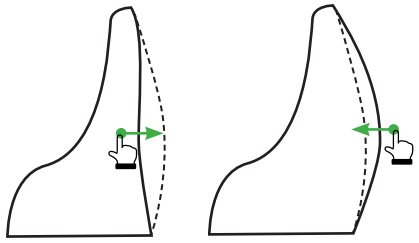
Please reference the CAD/CAM workflow for design. We will use this form throughout the design process.

1. Click the **Design** tab, the **Tooth Libraries** tools automatically appear. Review the available libraries for best fit.



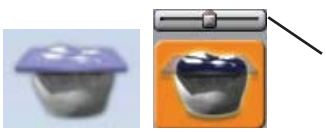
Available tooth libraries for design. Yellow highlight indicates current selection.

2. If the library tooth is not a good size in relation to the neighbors, use the **ALT + (Up or Down) Arrows** on the keyboard to resize the library tooth.
3. If the library tooth needs to be moved, left click and drag the green tooth to ideal position.
4. Turn OFF **Autogenesis** and click **Apply.**
5. Click **Incremental Change Tools** to evaluate the proposal for large adjustments. Use the tool options to make changes where needed. Click **Apply** before continuing.
6. Click **Freeform Change Tools** and **Material Thickness** (in view options) to evaluate the proposal. The proposal should be blue/green with a yellow margin.
7. Click **Rubber Tooth** and adjust the axial walls, ridges, and embrasures. Activate **Move Feature** to adjust surfaces incrementally.



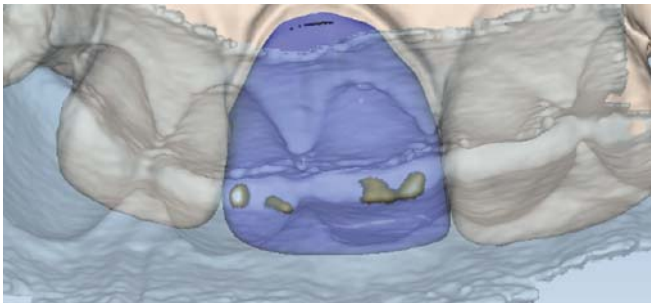
Adjust axial wall contours by pulling material away from or toward the preparation.

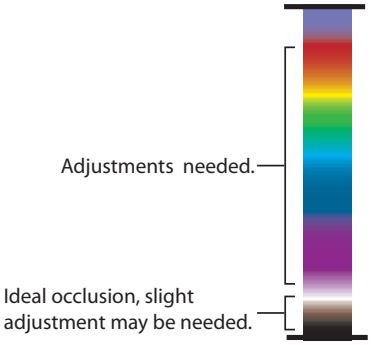
8. Click **View Bite Registration** to see the opposing dentition model above the proposal. Click **View Bite Registration** a second time to make the template transparent.



Adjust the translucency of the opposing model.

9. Click **View Contacts.** Use **Contact Refinement** to adjust to White, Brown, Black.

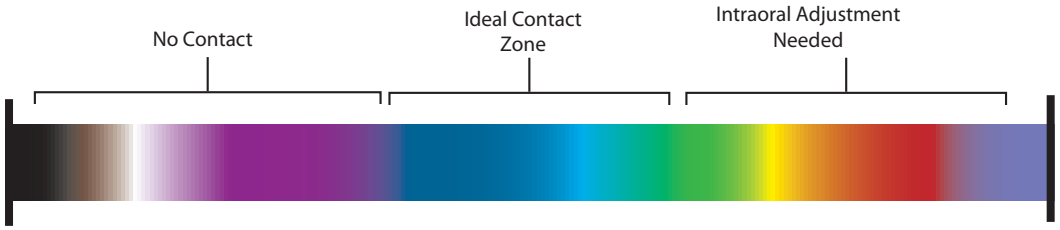


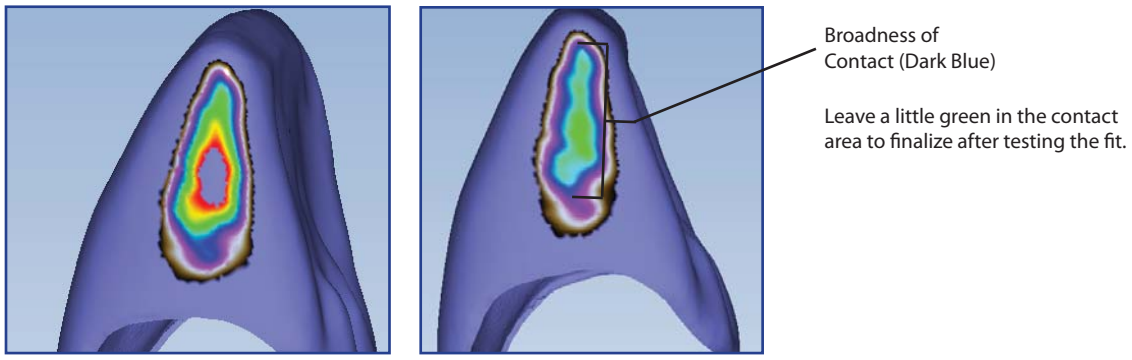


10. Click **View Bite Registration** again to deactivate the template.

11. Click **Hide Model** to remove the model from view.

12. Rotate the proposal to view the interproximal contacts. Adjust interproximal contacts as needed with **Smooth Surface** in **Freeform Change Tools**. The goal is dark blue with some green. Final adjustments will be made after the restoration is milled.



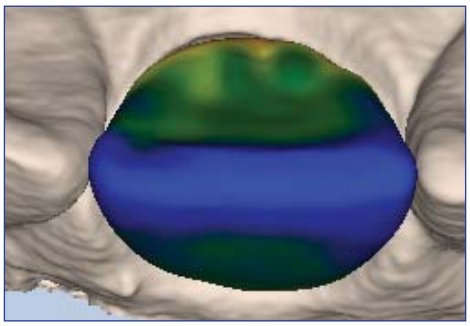


13. Deactivate **Hide Model.**

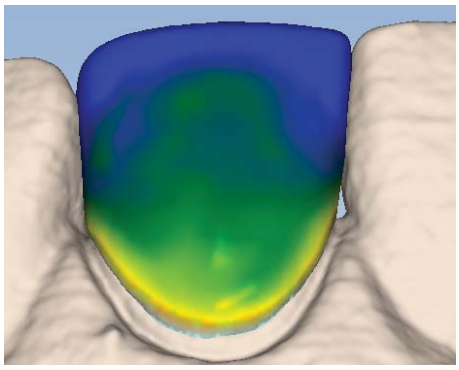
14. Deactivate **View Contacts.**

15. Click **Material Thickness.**

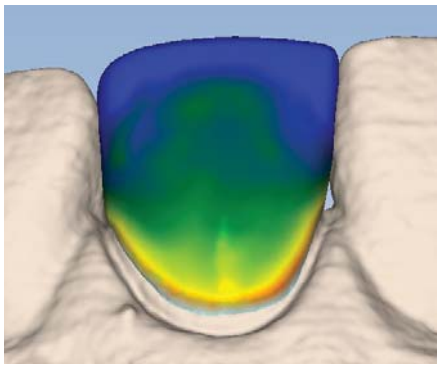
The desired material thickness is based on the block manufacturer's recommended thickness for your restoration type. The desired material thickness for a crown is 1-1.5 mm along the axial walls (bright green - dark green) and 1.5-2 mm on the incisal (dark green - blue).



16. Evaluate the margin. The material thickness should be yellow around the margin with no red or orange.



Good example - yellow margin



Poor example - Red or orange along the margin

17. If there is red around the margin, click **Move Margin** to evaluate the margin for accurate placement. Adjust the margin if needed.

Going back to the Margin tab to make changes will result in losing your design.

If the margin is placed accurately and is still red/orange, use the **Dropper** tool to add material thickness.

Congratulations on your second design with the PlanScan system!

Review the CAD/CAM Workflow before continuing to the Mill tab.

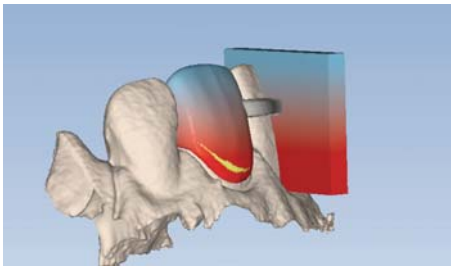
Milling

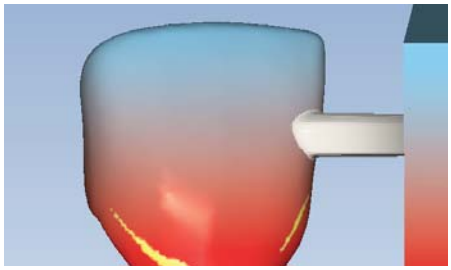
1. Click the **Mill** tab

2. Evaluate your design and review the material thickness indicators.

3. Check the sprue position and adjust when needed.

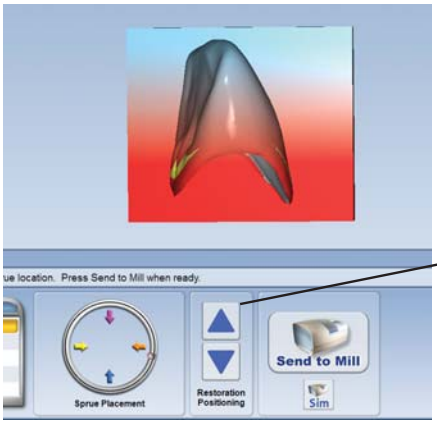
4. Select the block size (also based on sprue positioning)



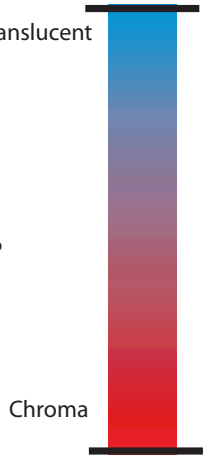


Optional Exercise - Anterior Crown with Buccal Bite

5. For this exercise, IPS Empress Multiblock was selected as the material. The amount of chroma and translucency can be adjusted. Use the **Restoration Positioning** arrows to move the restoration up or down to change its value.



Use **Restoration Positioning** to move the proposal up or down within the block.



6. Click **Mill Sim.**
7. Evaluate the simulation.
8. Click **Send to Mill**, click **OK**

The system defaults to the setting for the restoration type.

Standard - Full Coverage Crowns

Detailed - Inlay, Onlay, and Veneers

Scan Lock

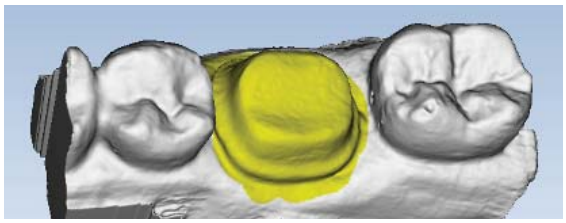
Scan Lock can be used to lock captured data by allowing you to choose areas of the completed scan to prevent additional data to be added. This can be used when you are trying to capture a difficult interproximal area.

1. Click **Scan Lock.**

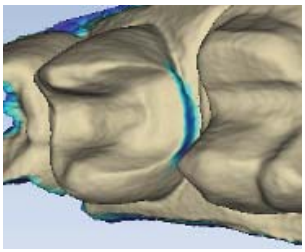
2. There are several ways to designate the area you want to lock.

You can lock more than one area of the model at a time, if desired.

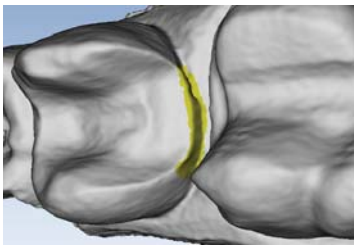
- To lock small areas - Use the cursor to paint the area that you want to lock.



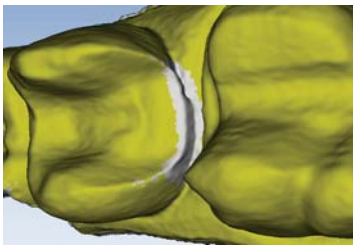
- Target a specific area for more scans - Use **Scan Lock** to highlight the area you are trying to capture and click **Invert Scan Lock.** This button reverses your selection so that the highlighted area is now unlocked and the rest of the model is locked. This is usually used when trying to capture a specific area like an interproximal contact area.



Low data area on the prep

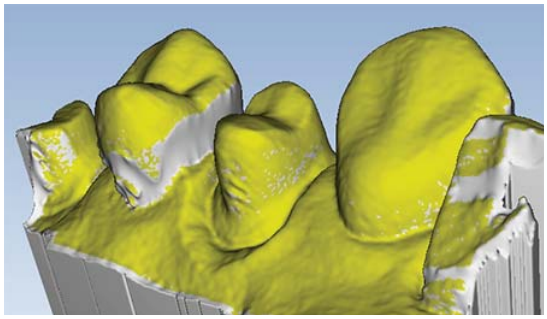


Highlight the area we want to capture



Invert Scan Lock reverses the highlighted area

- Lock all captured data - Skip the scan lock step and simply click **Invert Scan Lock.** All areas of high density are locked and the low density areas are available for scanning.



3. Activate the scanner and scan the desired area.

4. Scan Lock remains active until **Reset Scan Lock** is clicked to remove the locked area(s).

INFORMATION RESOURCES

There are many resources available for gathering information.

The Learning Tools page on our website **(www.e4d.com/learning_tools)** includes:

- Documentation available for download. Printed copies are available for $25 each and can be ordered by emailing educationgroup@e4d.com.
- Chairside Chats (recorded webinars)

Education Tab

- Intermediate and advanced course descriptions
- Course planner and calendar
- Links to online registration

Visit CadCamCan.com for additional videos and resources

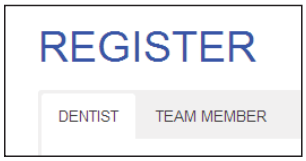
> Please note that cadcamcan.com is a separate site. To post on their forums, you will need to Create an Account on the cadcamcan.com website. The registration invitation code is **PlanScan** (case sensitive).

Newsletters, Chairside Chat, update information, and more is usually communicated via email. When you create your ECO Member account in class, you are automatically added to our email list. You may unsubscribe at any time.

E4D.com Registration

To register, go to **www.e4d.com/register**. This is usually done while you are at the Elements class in Dallas.

1. **Doctor** is the default selection. If you are not a dentist, click **Team Member.** It is important that you fill out your information under the correct tab.



2. Fill out the information. The fields are different for Dentists and Team Members.
3. At the bottom of the registration are several checkboxes. You can edit these at a later date if needed.
   - Weekly Video Tutorials
   - Send me Product Updates
   - Dentist Finder (on the Dentist registration only)
   - CDD Registration (on the Team Member registration only)
4. Click **Submit.**

Sign in to the website as a customer with the login you created in class. The Member Resources page includes:

- Create/Edit your Dentist Finder information - Dentist Finder is a tool on the website that enables the general public and potential patients in your area to locate you.
- Resources page - Download Patient Marketing materials

CUSTOMER SUPPORT INFORMATION

PlanScan System support

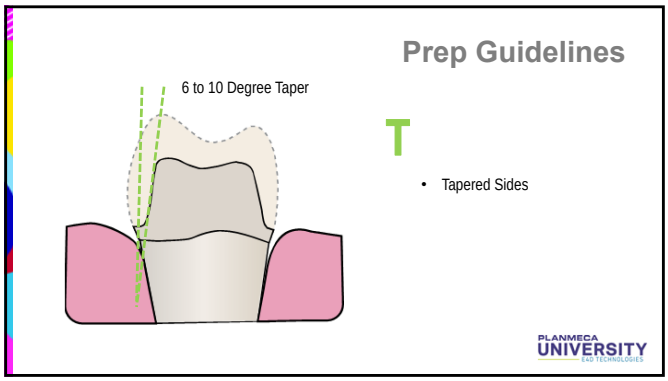
E4D Customer Support
1.800.537.6070
866.361.1333 corporate phone
972.234.3557 corporate fax

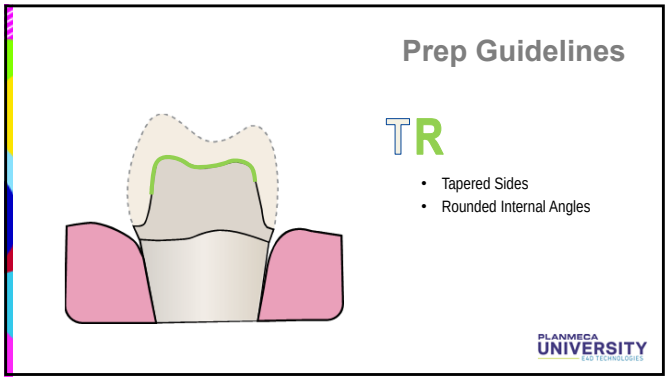
customersupport@e4d.com
7am-7pm Central Time Mon-Thurs
7am-6pm Central Time Friday

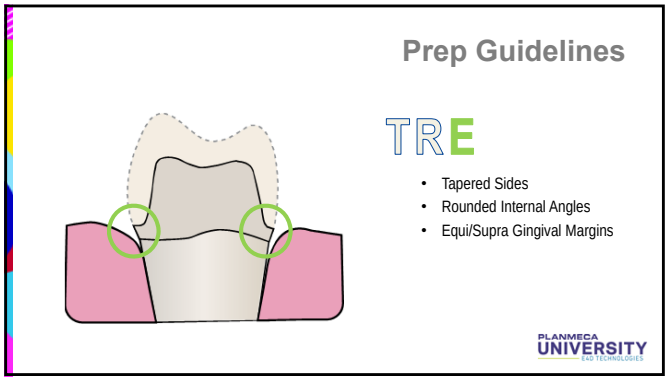
CDD PROGRAM

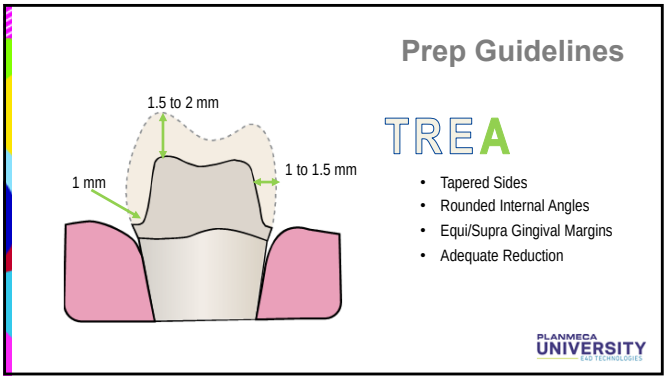
The self-paced Certified in Digital Dentistry Program (CDD) provides motivated operators with the opportunity to gain professional recognition and establish credibility in proficiency with the latest dental CAD/CAM technology.

Go to **e4d.com/cdd** to learn more.

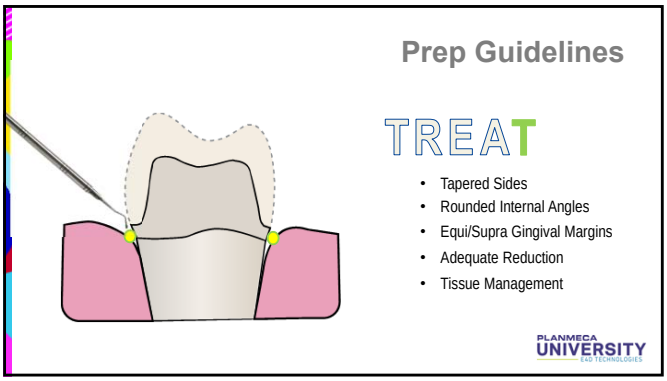


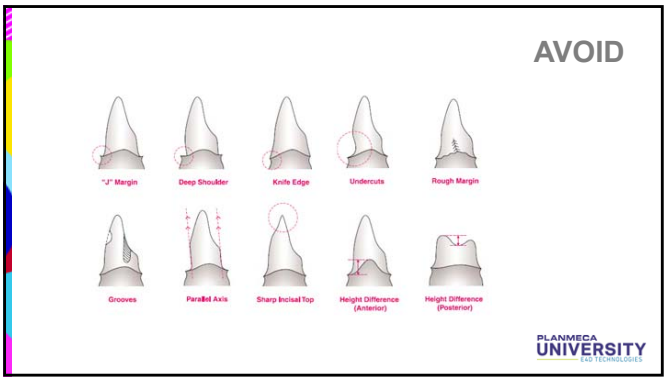






Material Selection





- A copy is provided for each practice in your blue take away bag and included in the User Manual
- Electronic versions are available online

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PLANMECA UNIVERSITY E4D TECHNOLOGIES



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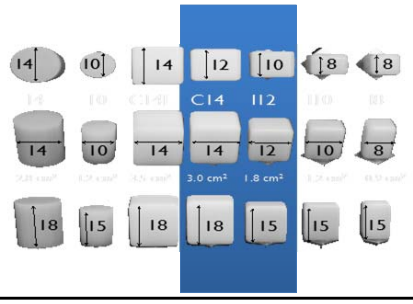
Block Size Selection



- Materials come in a variety of sizes.
- The size of the designed restoration and sprue position will determine the available size to mill.

PLANMECA UNIVERSITY E4D TECHNOLOGIES

IPS Empress CAD
by Ivoclar Vivadent

Beautiful Esthetics

IPS Empress CAD offers over 100 combinations of block size, shades, and translucencies.

Multi Shade & Translucency

- Cut back and layer esthetics in a monolithic block
- Multiple translucencies create the most natural looking, esthetic restoration
- Control incisal translucency and gingival color

PLANMECA UNIVERSITY E4D TECHNOLOGIES

IPS Empress CAD
by Ivoclar Vivadent

High Translucency

- Excellent chameleon effect
- Blends easily with existing tooth structure
- Inlays virtually "disappear"
- 20% more translucent than the Low Translucency Block

Low Translucency

- Higher value
- "Block out" capability. Higher opacity level

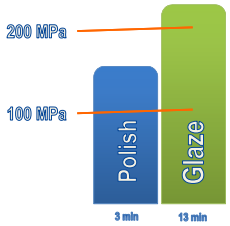
PLANMECA UNIVERSITY E4D TECHNOLOGIES

IPS Empress CAD
by Ivoclar Vivadent

Efficient

IPS Empress CAD offers the option to simply mill and polish for maximum efficiency or glaze fire for up to a 50% increase in strength*.

*Clinician's Report – October 2009, Volume 2 Issue 10



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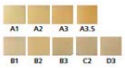
IPS Empress CAD
by Ivoclar Vivadent

Multi
- A1, A2, A3, A3.5, B1
- BL1, BL3



HT (High Translucency)
- A1, A2, A3, A3.5, B1, B2, B3, C2, D3

LT (Low Translucency)
- A1, A2, A3, A3.5, B1, B2, B3, C2, D3
- BL1, BL2, BL3, BL4

PLANMECA UNIVERSITY E4D TECHNOLOGIES

IPS e.max CAD
by Ivoclar Vivadent

Beautiful Esthetics
- IPS e.max CAD offers a wide range of shades, sizes, and translucencies to allow the dental professional to provide beautiful esthetics and the durability to ensure clinical success for all indications

The Highlights
- True-to-nature shade behavior for highly esthetic solutions
- Versatile use and comprehensive range of indications
- Lifelike esthetics, irrespective of the shade of the preparation

PLANMECA UNIVERSITY E4D TECHNOLOGIES

IPS e.max CAD
by Ivoclar Vivadent

Benefits
- Durable restorations due to the high strength
- Adhesive, self-adhesive or conventional cementation depending on the indication

New Materials
- C16
  - Ideal for longer dentition and large restorations
- B32
  - Up to three-unit bridges up to the second premolar as the abutment tooth

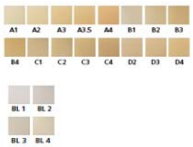
PLANMECA UNIVERSITY E4D TECHNOLOGIES

IPS e.max CAD
by Ivoclar Vivadent

HT (High Translucency)
- A1, A2, A3, A3.5, A4, B1, B2, B3, B4, C1, C2, C3, C4, D2, D3, D4
- BL1, BL2, BL3, BL4

LT (Low Translucency)
- A1, A2, A3, A3.5, A4, B1, B2, B3, B4, C1, C2, C3, C4, D2, D3, D4
- BL1, BL2, BL3, BL4

C16 & B32 Blocks
- A1, A2, A3, A3.5, B1, B2, C1, C2, D2
- BL1



PLANMECA UNIVERSITY E4D TECHNOLOGIES

IPS e.max CAD Impulse
by Ivoclar Vivadent

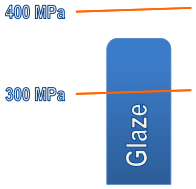
Value blocks – various brightness values
The Value blocks feature different brightness values: 1 is the lowest and 3 the highest.

Opal blocks – lifelike opalescence effect
- The Opal blocks exhibit a decreasing opalescence and increasing brightness value from 1 to 2.
- The Opal blocks can be used as an "enamel replacement" material.
- Aesthetic and minimally invasive restorations – thin veneers in particular.

PLANMECA UNIVERSITY E4D TECHNOLOGIES

IPS e.max CAD Impulse
by Ivoclar Vivadent

Advantages
- Lithium disilicate glass-ceramic (LS2) with a strength of 360 MPa
- Opal blocks for highly esthetic, minimally invasive veneers with a minimum thickness of 0.4 mm
- Value blocks for lifelike brightness value in crowns



PLANMECA UNIVERSITY E4D TECHNOLOGIES

Telio CAD
by Ivoclar Vivadent

Strength and Endurance
- Long term temporary bridge material (12 mo.).
- Flexural strength of 130 MPa

Esthetic

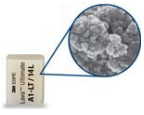
Polyacrylate material technology allows for beautiful esthetic results simply by polishing or with the option to apply stains and glaze for a customized appearance.

Shades
- A1, A2, A3, A3.5, B1
- BL3

PLANMECA UNIVERSITY E4D TECHNOLOGIES

Lava Ultimate
by 3M

Nano Technology
- High flexural strength (200 MPa) adds durability to posterior restoration
- Excellent wear resistance
- Brilliant and long-lasting polish
- Excellent stain resistance for color stability



Shades
- A1, A2, A3, A3.5, B1, C2, D2
- BL

PLANMECA UNIVERSITY E4D TECHNOLOGIES

Paradigm MZ100
by 3M

Versatile and Easy

- Enamel-like wear characteristics are superior to that of ceramic blocks
- Easy to finish and polish
- Easy to repair intraorally

Shades

- A1, A2, A3, A3.5, B3
- Enamel

PLANMECA UNIVERSITY E4D TECHNOLOGIES

Zirlux FC2
by Zahn Dental

Advantages of Full Contour Zirconia

- Flexural strength of 1100 MPa
- Simple stain and glaze technique
- High translucency pre-shaded zirconia
- Predictable aesthetic outcome
- Excellent alternative to PFM's
- Low wear on opposing dentition

To prevent contamination it is required to perform maintenance between milling different materials. A sintering oven is required for Zirlux FC2.

PLANMECA UNIVERSITY E4D TECHNOLOGIES

Burn out Block (BOB)
by E4D Technologies

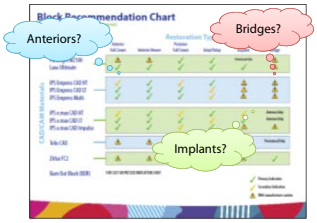
Advantages

Ideal for the lost wax technique allowing the optimal design of the restoration to be used for lost-wax casting or pressing techniques for additional material and restoration utilization

PLANMECA UNIVERSITY E4D TECHNOLOGIES

Options to think about…

- Choose the best option for your patient
- Call your manufacturer representative for more details
- View manufacturer websites for more specific indications and uses



PLANMECA UNIVERSITY

Remember to always follow the manufacturer instructions provided with each type of material.

For additional information regarding the content in this presentation. Please contact the manufacturer for the product in question.

Integration Day

- Day starts at 7:30am and ends 3pm
- 3 Pre-prepared, Single Unit, Posteriors (premolar, molar)
- Schedule:
  - Patients at 8am, 10am, and 1pm
    - Allow 3 hours for the first appointment that may overlap the second
    - 2 hour appointments are needed for the second and third patients
  - Lunch and Learn
    - Mill maintenance
    - DDX Setup
    - Discuss how to continue with your education
- No other patients scheduled
- Focused on those who attended the Elements of Success course in Texas

PLANMECA UNIVERSITY E4D TECHNOLOGIES

Premier - Starter Kit

1 Diamond Twist Paste Kit
1 Traxodent Sample
2 Sample Prep Burs
1 Milling Tools Sample Pack
- 2 Ellipsoidal
- 2 Conical
- 2 Tapered

1 Sample Knit-Pak Cord

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Ivoclar - Starter Kit

Telio CAD:
4 Telio CAD Blocks
Telio CS Link Transparent
Telio CS Desensitizer 5g
OptraPol Test Pack

IPS e.max CAD:
4 e.max CAD Blocks
2 e.max Shades
1 e.max Stain
1 e.max Glaze Paste
1 e.max Glaze Liquid
1 e.max Crystallization Tray

IPS Empress CAD:
4 IPS Empress CAD Blocks
2 Empress Shades
1 Empress Stain
1 Empress Glaze
1 Empress Glaze Liquid

Misc. items:
2 Multilink Primer
1 Monobond Plus
1 Ceramic Etching Gel
1 Multilink Automix Trans
1 Optrastick
1 Optrafine Promo Pack
1 Object Fix Putty
Cementation Navigation DVD

PLANMECA UNIVERSITY E4D TECHNOLOGIES

3M - Starter Kit

Lava Ultimate:
5 A2 LT C14 Blocks
5 A2 HT C14 Blocks

Misc. items:
1 RelyX Ultimate Adhesive (A1)
1 Scotchbond Universal Adhesive
1 3M ESPE Retraction Capsule
1 CoJet Sand Blast Coating Agent
1 Lava Ultimate Guide

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Starter Kit

Mill Coolant
Defoaming Solution

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What's Next?

Contact your local representative today:

- Order blocks in shade values for upcoming patients
- Order mill tools:
  - 1 sleeve of each; Ellipsoidal and Tapered
- Stains and Shades for characterization
- Spray Glaze and speed tray for e.max (depending on order)
- High Level Disinfection: (choose one)
  - Deionized Water and Cidex Plus
  - Distilled Water and MaxiCide Plus
- Lens tissues (KimWipes)
- Lab handpiece and Finishing Kit
- Sand blaster (if using Lava Ultimate)
- Prep Kits (recommended, not required)

PLANMECA UNIVERSITY E4D TECHNOLOGIES

CAD/CAM SUPPLIES

The materials listed below are all items used at Planmeca University. They are grouped by item type. For new documentation, go to www.e4d.com/resources and use the Customer Log In to see customer documentation.

Documentation

Name	Vendor
User Manual	E4D Technologies
Milling Center Quick Reference	E4D Technologies

Infection Control

Name	Vendor	Item Number
Alcohol Prep Pads	Schein	1048298
MaxiCide Plus w/ Activator	Schein	102-5796 (Qt) 102-2865 (Gallon)
MetriTest Strips	Schein	602-3437
Distilled Water	Schein	395-0139
Gloves	Schein	
X-Small		5654510
Small		5658087
Medium		5657431
Large		5659481
X-Large		5651575
Allrap Cover Film 4x6 Clear	Schein	1273240
Steri-Soaker	Schein	6581402

Preparation Design

Name	Vendor	Item Number
Two Striper Full Crown Kit	Schein Premier	3780210 2013581
Two Striper Inlay/Onlay Kit	Schein Premier	3780213 2013582

Impression and Model Materials

Name	Vendor	Item Number
Earth Stone - Quick Set Stone	Schein	9662932
Orban 1/2 Perio Blade for trimming bite registration	Premier	1004751

Scanning

Name	Vendor	Item Number
Scanning Tips (Pack of 3)	Schein	6314915
Optical Wipes - Kimwipes	Schein	1017070
Ergotron Cart (smaller)	Schein	1276580
Enovate Cart (larger)	Schein	6310850

Milling Center

Name	Vendor	Item Number
Coolant	Schein	6311524
Defoaming Solution	Schein	6318999
Two Striper E4D Mill Diamonds (Burs)		
Conical	Schein Premier	3781031 2016002
Ellipsoidal	Schein Premier	3780560 2016001
Tapered	Schein Premier	3786546 2016000
Assorted	Schein Premier	3780206 2016004

Restoration Finishing

Name	Vendor	Item Number
Two Striper Finishing Kit	Schein Premier	3780201 2013553

Articulating Paper

Name	Vendor	Item Number
Accufilm I Single Sided Red Articulating Paper	Schein	1865309

Clinical materials and accessories (cements, adhesives, stains & glaze, etc.)

Ivoclar Vivadent

Rebecca Spillman, MS

Ivoclar Vivadent
175 Pineview Drive
Amherst, NY 14228
716.691.2248 phone
rebecca.spillman@ivoclarvivadent.com

3M ESPE

Bill McGlynn

3M ESPE
3M Center Bldg. 275-2SE-03
St. Paul, MN 55144-1000
651.733.9078 phone
bfmclynn@mmm.com

Premier Dental Products Company

John Bonner

Premier Dental Products Company
1710 Romano Drive
Plymouth Meeting, PA 19462
610.239.6022
888.773.6872 Ex. 1022
jbonner@premusa.com

Block Recommendation Chart

Manufacturer Specifications for Materials

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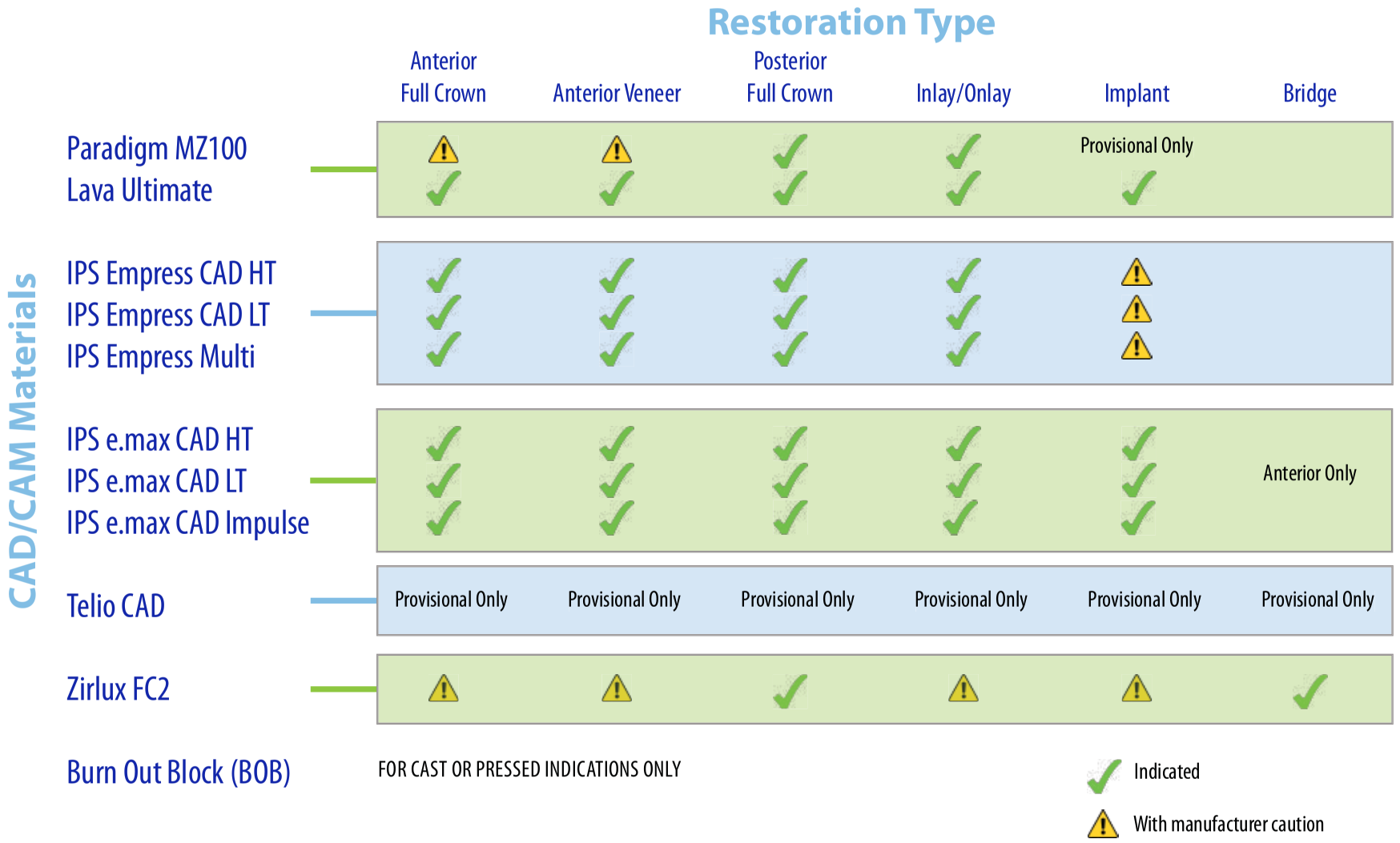


IPS e.max CAD
Characterization Process

PLANMECA UNIVERSITY
E4D TECHNOLOGIES

1
Preparing the restoration

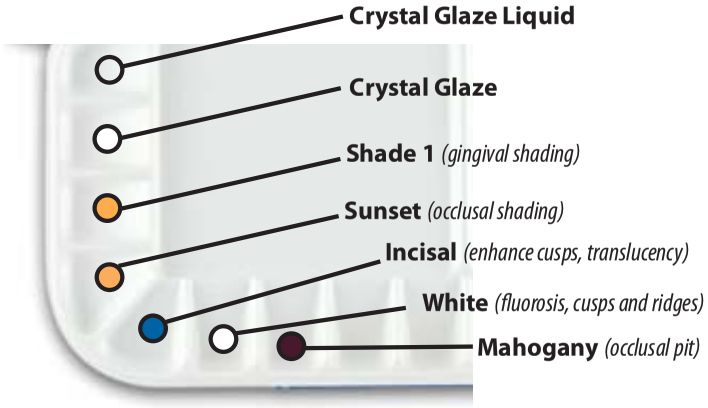
Object Fix

Flow (shown) will be used to affix the restoration to the firing pin for characterization and firing. Object Fix - Putty can also be used

Crystallization Tray

After characterization place the restoration onto the crystallization tray for firing. Note there is an additional Speed Crystallization Tray for IPS e.max

2
Characterization of IPS e.max



3
Oven program and firing

Information bar
Indicates current furnace temp and selected furnace programs

Main screen
Indicates the selected firing program, firing progress, and other menu options

Navigation bar
Browse between programs and settings

Program Information

P1 - IPS e.max

P2 - Corrective firing

P3 - Speed crys. spray

P4 - Empress

Scanning Technique
Goals & Patterns

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E4D TECHNOLOGIES

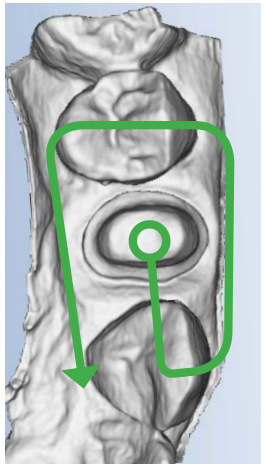
Preparation

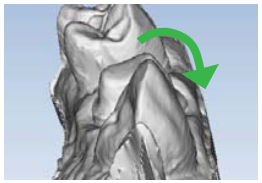
100% of the prep and interproximal contact areas

90% of the adjacent teeth

Good axial data for design

2-3 mm gingival tissue on buccal and lingual





Interproximal

To achieve 100% of the interproximal contact area, a slight rotation of the scanner will be needed

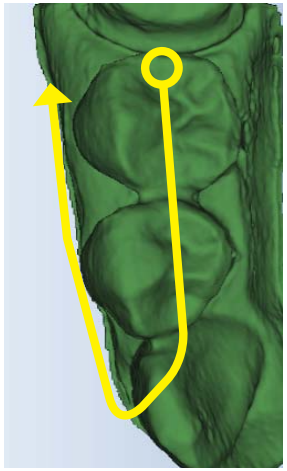
Rest the scanner on the proximal dentition and perpendicular to the arch

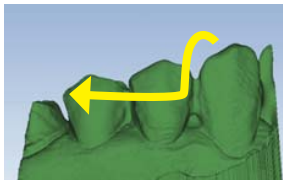
Opposing

100% of the cusps

2-3 mm gingival tissue on the buccal side

Lingual and gingival data not necessary



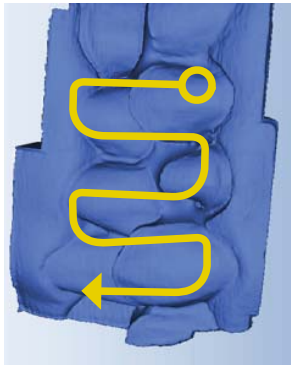


Buccal Bite

Capture the buccal surface of the dentition in the prep and opposing

2-3 mm gingival tissue

No rotations necessary



Note: Information on scanning Bite Registration material can be found in the User Manual

Impressions

100% of the prep and interproximal contact areas

90% of the adjacent teeth

Good axial data for design

2-3 mm gingival tissue on buccal and lingual

CAD/CAM Workflow

QUESTIONS ABOUT DESIGN? Contact Support @ 800.537.6070

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E4D TECHNOLOGIES

SCAN

Buccal Bite Scanning

Scan Prep
100% of Prep and contacts

Click **Data Density View** to evaluate for low data

Use the **Eraser** tool to remove excess scan data

Scan Opposing
100% Occlusal and 2mm of buccal gingival data

Scan Buccal
Capture all teeth associated in Prep & Opposing scans

Verify buccal alignment, and re-align if needed

! Verifying the appropriate amount of scan data will ensure a better fitting restoration.

MARGIN

Orientation
Automatically active; use the View Circle to position model

Occlusal - Buccal/Lingual tip
Distal - Align buccal cusps
Buccal - Marginal ridges

Trace Margin
From the occlusal view, mark the margin on the shoulder

Click **Show Features** as an aid to highlight high contour areas

Use **Move Margin** to adjust placement

Use **Add Segments** to redraw a portion

Orientation Guide

After deactivating all tools, use the green Preview Tooth to verify orientation.

Margin Marking Guide

ICE mode can be used in margin detection; remember stone mode is priority

DESIGN

Tooth Libraries
Autogenesis™ ON - Click APPLY
Autogenesis OFF - Resize, Reposition, Re-Apply

Incremental Tools
Large adjustments to tooth position - Fitting the proposal in its space

Freeform Change Tools
Small adjustments to contour - Fine tuning the design

Material Thickness
Occlusal table - 1.5 to 2 mm (Dark Green/Blue)
Axial walls - 1.0 to 1.5 mm (Green)
Margins - Yellow

Rubber Tooth
1st - Axial Walls
2nd - Marginal Ridges (Occlusal Table if needed)
3rd - Embrasures

Adjusting the Bite

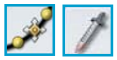
Activate **View Bite Registration** (click twice) then activate **View Contacts** to evaluate. Use **Contact Refinement** (small circles) to adjust to White, Brown, Black.

Adjusting Interproximal Contacts

Turn OFF **View Bite Registration** and activate **Hide Model**. Rotate to the mesial and distal to evaluate interproximal contacts. Return to ***Freeform Change Tools, use Smooth Surface to adjust*** to Light Green/ Aqua surrounded by Dark Blue.

Recheck Material Thickness & Check Margins

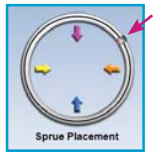
Verify that design changes have not affected the appropriate material thickness for milling.



Margins should be Yellow. If Red/Orange, verify margin placement with **Move Margin**. Use **Dropper** as needed to add material.

MILL

! Bright Yellow on the occlusal or axial surfaces indicates low material thickness and should be adjusted in the Design tab.



Sprue Position
Away from margins, contacts, and occlusion. Initial position is the fastest milling time. Verify the end of the sprue is round.

Mill Sim
Check the internal fit of your restoration before milling.

Block Size Selection
Available block sizes depend on sprue position and the material selected.

Congratulations!

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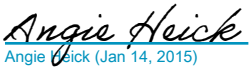
Signature: 
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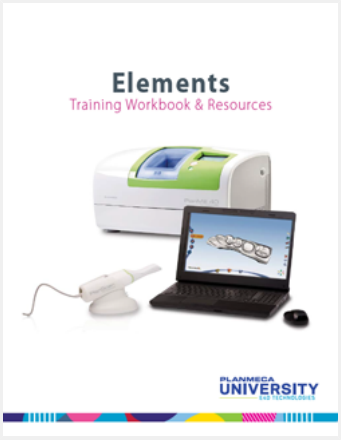

Elements - EDU1110 Rev J

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