



USER MANUAL

Simplified Cast

Measure 3D study models: tooth widths, arch form, space and occlusion analyses, with a printable report. Every screen, button and field explained in plain words.



Simplified Orthodontics Studio
by Simplified Orthodontics Academy
simplifiedortho.pages.dev

Illustrated guide to every screen,
button and field
Edition: September 2026

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1 What Simplified Cast does

Simplified Cast is a tool for **study model analysis**. A study model (or study cast) is the copy of the patient's teeth, today usually a 3D scan from an intraoral scanner. You open the upper and lower scan, click on the teeth, and the tool measures tooth widths, arch widths, arch length, available space and the bite. It then runs the classic orthodontic model analyses for you and prints a report.

- Opens 3D scans saved as STL, PLY or OBJ files, in millimetres.
- No scan? You can type caliper measurements by hand in the Teeth tab and the analyses still run.
- More than twenty analyses: Bolton, arch perimeter and Carey, Tanaka-Johnston and Moyers, Pont and Korkhaus, Ashley Howes, Little, curve of Spee, Peck and Peck, symmetry, Lundström, supporting zones, discrepancy calculation and more.
- Runs in your browser. The scans stay on your device. Works offline after the first visit.
- Your work is kept automatically in the browser; you can also save a session file.

Words you will meet in this manual

WORD	PLAIN MEANING
Study model / cast	A copy of the teeth and gums, in plaster or as a 3D scan.
STL, PLY, OBJ	Three common file types for 3D shapes. Every intraoral scanner can export at least one of them.
Upper / lower arch	The row of upper teeth (maxillary arch) and the row of lower teeth (mandibular arch).
FDI tooth number	Two digits. The first is the quarter of the mouth: 1 upper right, 2 upper left, 3 lower left, 4 lower right (patient's own right and left). The second counts from the midline: 1 central incisor to 8 wisdom tooth. So 16 is the upper right first molar.
Mesial / distal	The side of a tooth facing the midline / facing away from the midline along the arch. Tooth width is measured from the mesial to the distal contact point.
Buccal, labial / lingual, palatal	Cheek or lip side / tongue or palate side.
Cusp	A pointed tip on the chewing surface.
Occlusal plane	The flat surface on which the upper and lower teeth meet.
Arch perimeter	The length of the curve along the arch where the teeth should fit, measured from first molar to first molar.
Overjet / overbite	How far the upper incisors lie in front of / overlap vertically the lower incisors.
Curve of Spee	The front-to-back curve of the lower chewing surfaces.
Landmark	A named point you click on the model.
Caliper	A hand tool that measures distances in millimetres.
Session file (JSON)	A small file ending in .json that stores all clicked points and typed values of one case.
CSV	A table file that opens in Excel.
PNG	A picture file.
Wireframe	Shows the 3D surface as its triangle mesh.
Cross-section	Cuts the model open along a plane so you can see its profile.

2 Opening the tool and loading the models

- 1 Open simplifiedortho.pages.dev/cast/, or choose Simplified Cast on the Studio home screen. The first time on each device you are asked once for your email.
- 2 Press **Open upper model** and pick the upper scan file. Then press **Open lower model** for the lower scan. You can also drag the files from a folder and drop them on the dark 3D area.
- 3 A message confirms each model with its number of triangles and size in millimetres. If the size looks wrong (for example 0.07 instead of 70), correct **Model unit scale** in the Case tab.

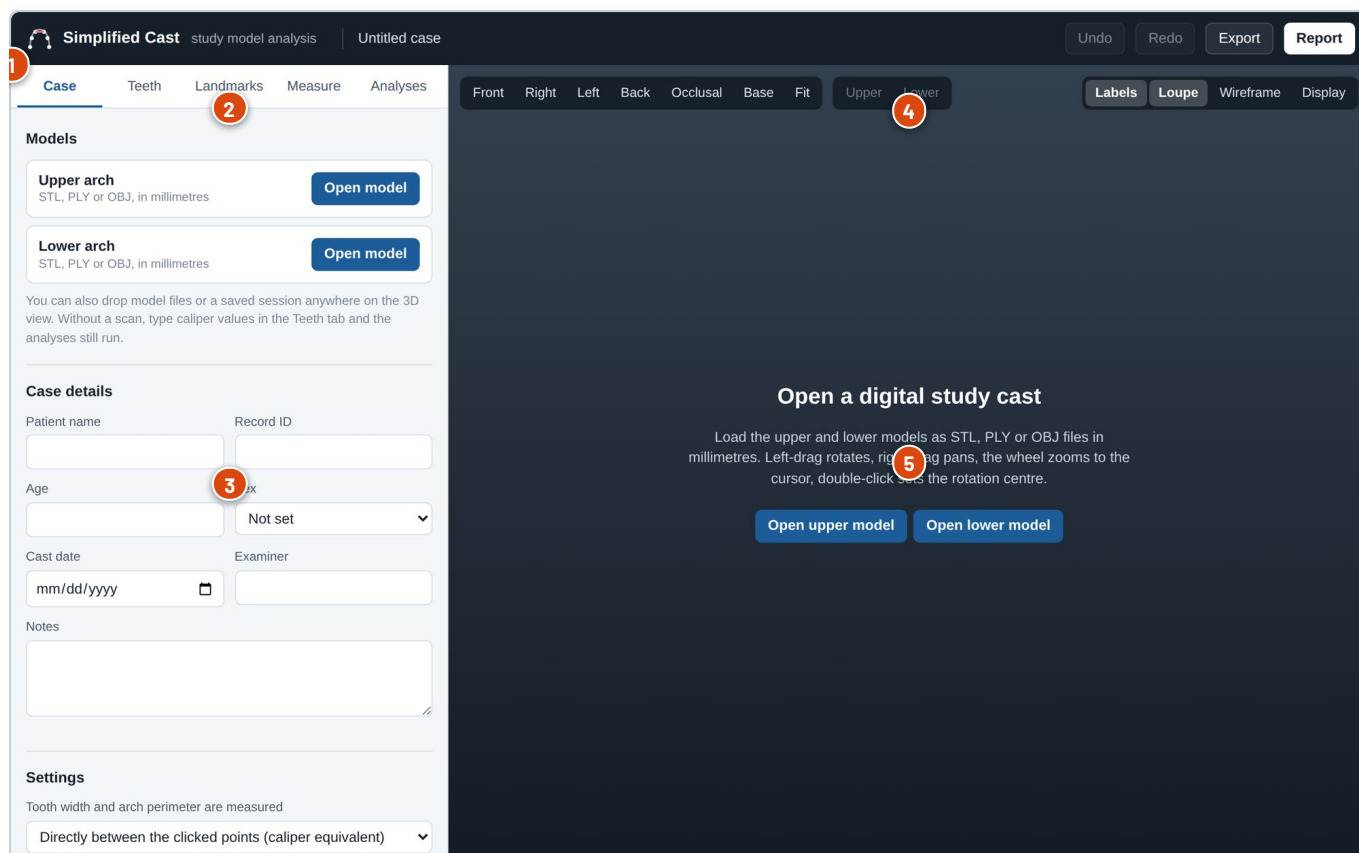


Figure 1. The empty start screen. 1 top bar, 2 the five workflow tabs, 3 the panel of the open tab, 4 the view bar, 5 the 3D area.

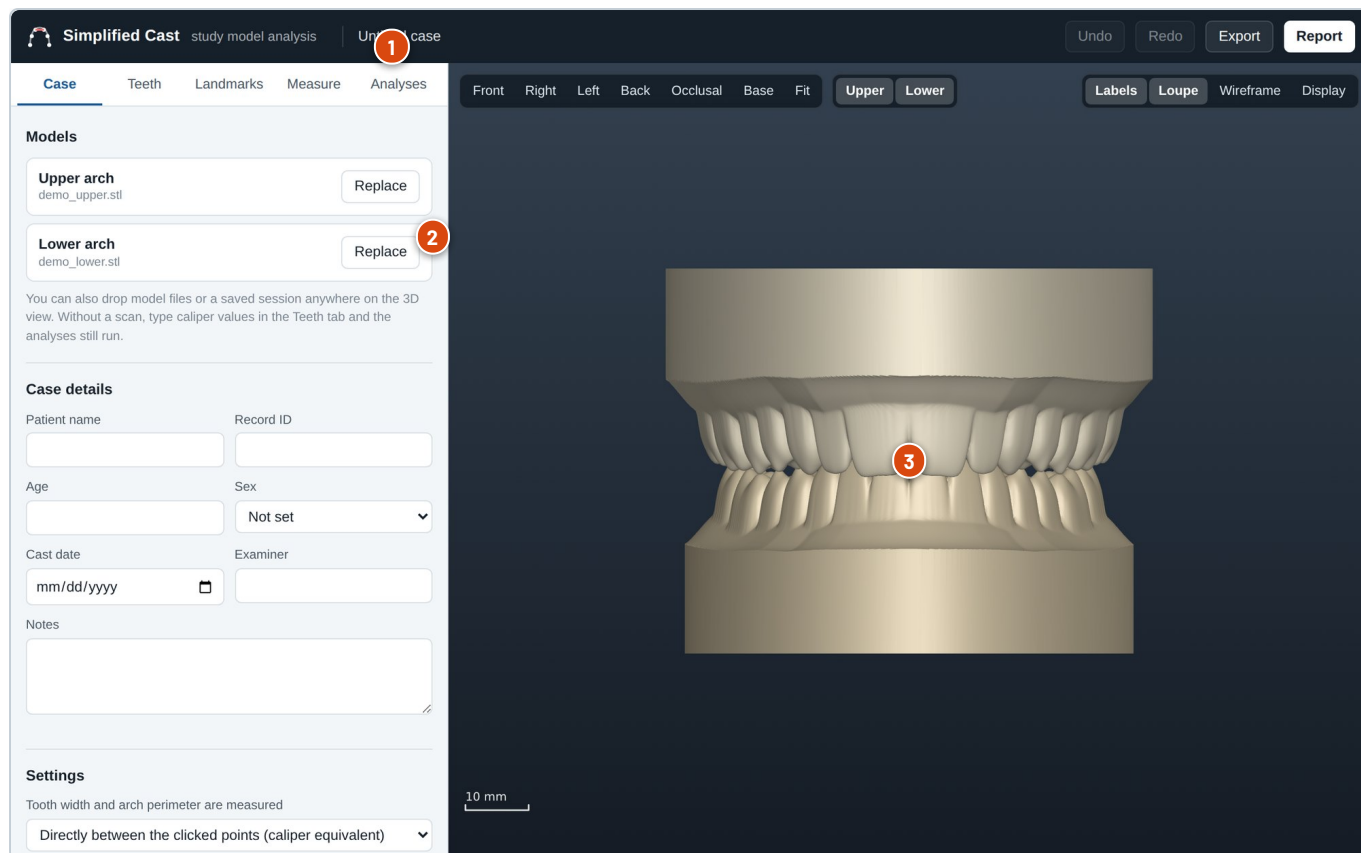


Figure 2. Both models loaded. **1** case title (the patient name once entered), **2** the Models section now shows the file names and a Replace button, **3** the models in the 3D area with a 10 mm scale bar at the lower left.

Moving the models with mouse or fingers

ACTION	MOUSE	TOUCH SCREEN
Rotate	Drag with the left button	Drag with one finger
Move sideways (pan)	Drag with the right button	Drag with two fingers
Zoom	Mouse wheel; zooms toward the pointer	Pinch
Set the rotation centre	Double-click a spot on the model	Double-tap

3 The top bar and the Export menu

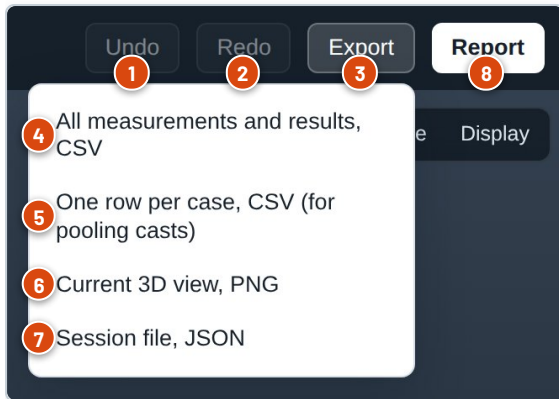


Figure 3. Right side of the top bar with the Export menu open.

NAME		WHAT IT DOES AND HOW TO USE IT
1	Undo	Takes back the last change. Shortcut Ctrl + Z .
2	Redo	Repeats what you undid. Shortcut Ctrl + Y .
3	Export	Opens the menu below.
4	All measurements and results, CSV	One long table with every measurement and every analysis result of this case.
5	One row per case, CSV	The whole case in a single row. Useful for research: paste many cases under each other in one sheet.
6	Current 3D view, PNG	Saves a picture of what the 3D area shows right now.
7	Session file, JSON	Saves the case to a file. Same as Save session . Shortcut Ctrl + S .
8	Report	Opens the printable report (chapter 10).

4 The view bar

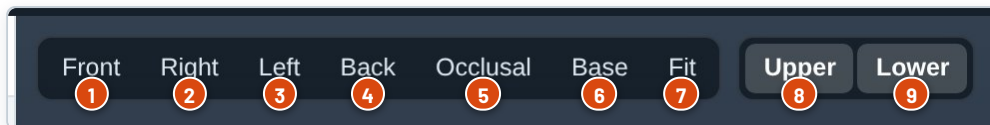


Figure 4. Left side of the view bar.

NAME	WHAT IT DOES AND HOW TO USE IT
1 Front	Look at the models from the front.
2 Right	From the patient's right side.
3 Left	From the patient's left side.
4 Back	From behind.
5 Occlusal	Look straight onto the chewing surfaces of the arch you are working on. Shortcut O . Best view for measuring tooth widths.
6 Base	Look at the underside (base) of the model.
7 Fit	Centre and resize so everything is visible. Shortcut F .
8 Upper	Show or hide the upper model. Hide it to work on the lower teeth without obstruction.
9 Lower	Show or hide the lower model.

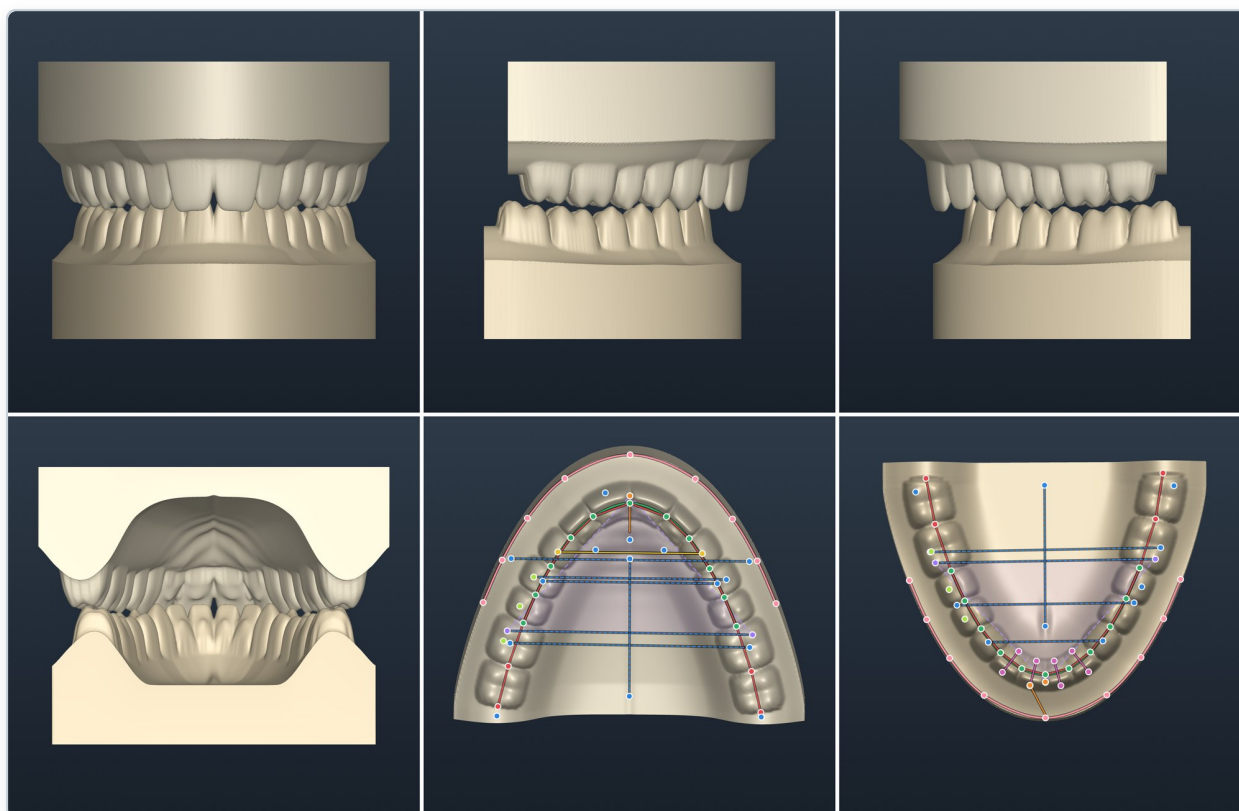


Figure 5. The preset views: Front, Right, Left (top row) and Back, Occlusal upper, Occlusal lower (bottom row).

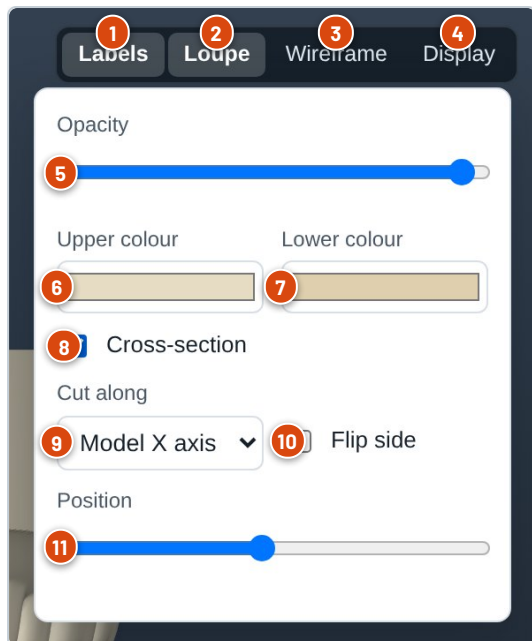


Figure 6. Right side of the view bar with the Display menu open.

NAME	WHAT IT DOES AND HOW TO USE IT
1 Labels	Show or hide the text labels of points and measurements on the model.
2 Loupe	A 4× magnifier that appears while you place points. Leave it on for accuracy.
3 Wireframe	Shows the triangle mesh of the scan instead of a smooth surface.
4 Display	Opens the panel below.
5 Opacity	Makes the models see-through, so you can see points behind a surface.
6 Upper colour	Colour of the upper model.
7 Lower colour	Colour of the lower model.
8 Cross-section	Tick to cut the models open.
9 Cut along	Direction of the cut: the model X, Y or Z axis, or the current view direction.
10 Flip side	Shows the other half.
11 Position	Slides the cutting plane through the model.

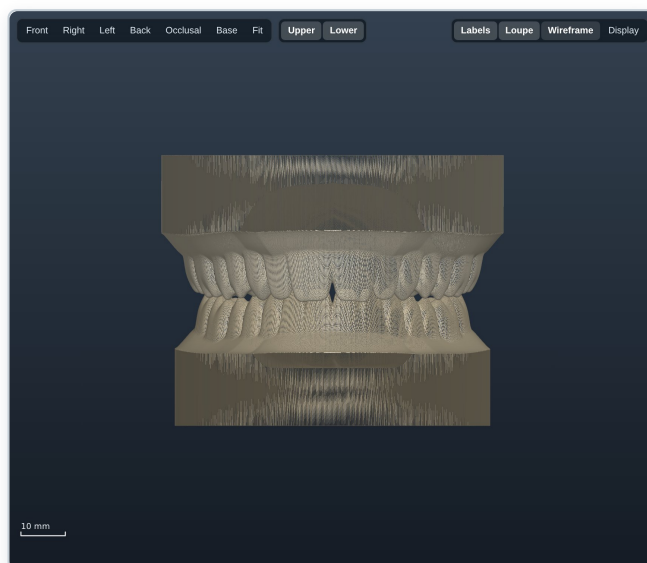
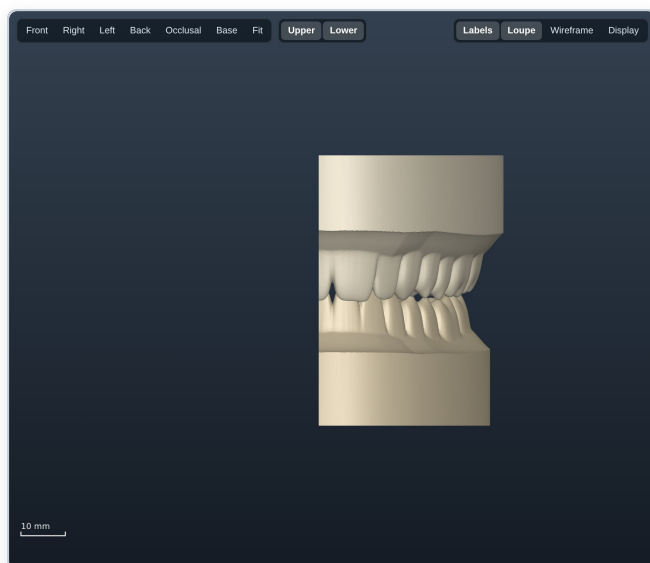
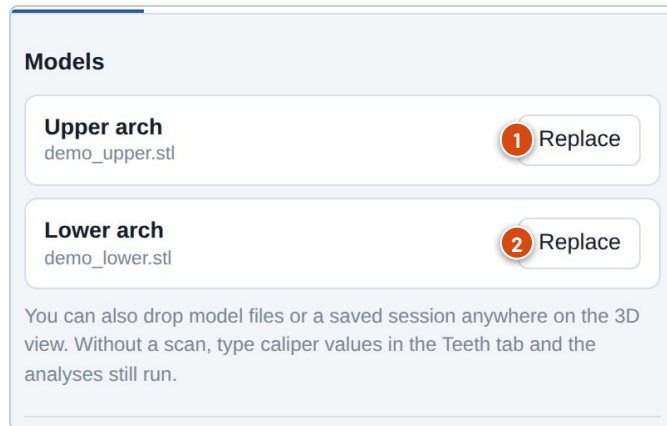


Figure 7. Left: a cross-section through the molars. Right: wireframe display.

5 Case tab

The Case tab holds everything about the patient and the settings that control how values are calculated.



Models

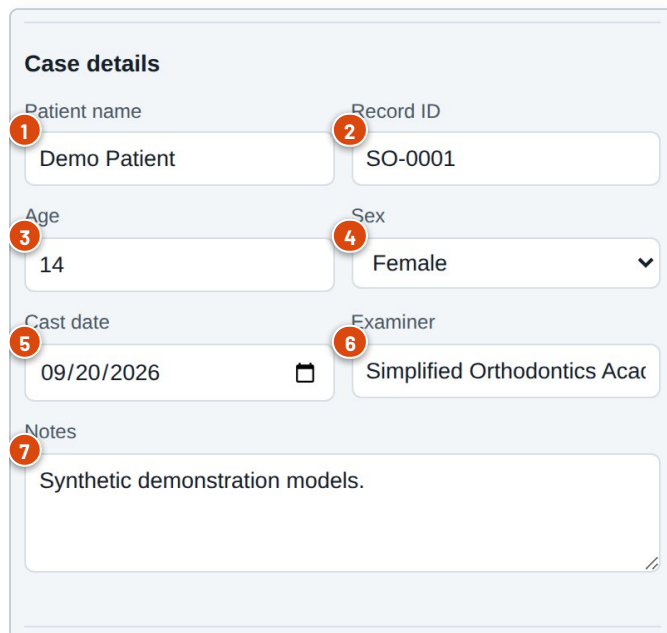
Upper arch
demo_upper.stl 1 Replace

Lower arch
demo_lower.stl 2 Replace

You can also drop model files or a saved session anywhere on the 3D view. Without a scan, type caliper values in the Teeth tab and the analyses still run.

Figure 8. Models.

NAME	WHAT IT DOES AND HOW TO USE IT
1 Open model / Replace (upper)	Choose the upper scan. After loading, the button becomes Replace and the file name is shown.
2 Open model / Replace (lower)	Choose the lower scan.



Case details

1 Patient name: Demo Patient 2 Record ID: SO-0001

3 Age: 14 4 Sex: Female

5 Cast date: 09/20/2026 6 Examiner: Simplified Orthodontics Acar

7 Notes: Synthetic demonstration models.

Figure 9. Case details.

NAME	WHAT IT DOES AND HOW TO USE IT
1 Patient name	Also shown as the case title in the top bar and on the report.
2 Record ID	Your file number.
3 Age	Used on the report.
4 Sex	Selects the male or female prediction tables (Moyers).
5 Cast date	Date of the scan or impression.
6 Examiner	Your name; printed on the report.
7 Notes	Free text for the report.

Settings

Tooth width and arch perimeter are measured

1 Directly between the clicked points (caliper equivalent) ▼

Arch perimeter follows

2 A smooth curve through the points (brass wire) ▼

Moyers probability level 75% ▼

Model unit scale (1 = mm) 1

4

Dentition Permanent ▼

5

Sum of upper incisors (SI) Measured; Tonn if incomple| ▼

6

Sagittal discrepancy is taken against Nearest limit of the N-Pog ▼

7

8 Casts scanned in occlusion Yes, shared coordinates ▼

Dentition selects the anterior width points (first premolars or first deciduous molars) and the space analysis used in the discrepancy calculation. With casts scanned in occlusion, the midpalatal raphe can stand in for the mandibular midline.

Figure 10. Settings.

NAME	WHAT IT DOES AND HOW TO USE IT
1 Tooth width and arch perimeter are measured	Directly between the clicked points gives the same value a caliper would. Projected onto the occlusal plane ignores height differences; it needs an occlusal plane (Teeth tab).
2 Arch perimeter follows	A smooth curve behaves like a brass wire laid along the arch. Straight segments joins your clicks with straight lines.
3 Moyers probability level	50 %, 75 % or 95 %. 75 % is the usual clinical choice for predicting unerupted canines and premolars.
4 Model unit scale (1 = mm)	Leave 1 when the scan is in millimetres. Type 1000 if it was saved in metres, 10 for centimetres, 25.4 for inches.
5 Dentition	Permanent, or Mixed. Mixed switches on the supporting-zone space analysis and changes which teeth carry the anterior width points.
6 Sum of upper incisors (SI)	SI feeds Pont and Korkhaus. Measured; or estimated from the lower incisors by the Tonn formula when upper incisors are incomplete; or always Tonn.
7 Sagittal discrepancy is taken against	The nearest limit, or the middle, of the normal incisor-to-N-Pog range.
8 Casts scanned in occlusion	Choose Yes when upper and lower scans share one coordinate system (scanned biting together). Then overjet, overbite and molar relations can be measured between the models.

▼ Diagnosis and treatment plan

Comprehensive diagnostic assessment

Maxilla

Mandible

Occlusion

Treatment stage	Extractions	Treatment measures
1.		
2.		
3.		
4.		

Changes

Figure 11. Diagnosis and treatment plan (click the title to open it).

Session

Save session

Open session

New case

Work is kept automatically in this browser. Save a session file to move a case or archive it with the thesis data.

Figure 12. Session.

NAME	WHAT IT DOES AND HOW TO USE IT
1 Comprehensive diagnostic assessment	Your overall diagnosis.
2 Maxilla	Findings for the upper jaw.
3 Mandible	Findings for the lower jaw.
4 Occlusion	Findings for the bite.
5 Treatment stages table	Up to four stages, each with extractions and treatment measures.
6 Changes	Changes made to the plan during treatment.
7 Prognostic assessment	Expected outcome.
8 Final critical assessment	Your evaluation at the end. All of this prints in the report.

NAME	WHAT IT DOES AND HOW TO USE IT
1 Save session	Downloads a .json file with all points and typed values. The 3D scans are not inside it; keep them next to it.
2 Open session	Loads a saved session. Then open the same model files again to see the points on them.
3 New case	Clears everything for the next patient.

NOTE

Work is kept automatically in this browser. If you close and reopen the page, the last session is restored and a message asks you to open its model files again.

6 Teeth tab: tooth widths, occlusal plane and arch perimeter

Simplified Cast study model analysis | Demo Patient

Undo Redo Export Report

Case **Teeth** Landmarks Measure Analyses

Front Right Left Back Occlusal Base Fit **Upper** Lower

Labels Loupe Wireframe Display

Tooth widths

1

17	16	15	14	13	12	11	21	22	23	24	25	26	27
10.27	10.14	6.75	7.12	7.67	6.83	8.56	8.56	6.97	7.98	7.11	6.89	10.55	10.05

Patient right Patient left

47	46	45	44	43	42	41	31	32	33	34	35	36	37
10.27	10.87	7.25	7.11	6.79	5.84	5.35	5.35	5.95	7.07	7.10	7.39	11.31	10.33

2

11 Upper right central incisor measured

Width, mm

8.56 **Measure again**

Swap mesial / distal Mark as missing Clear

Vertical position
cusp tip or incisal edge against the occlusal plane not marked plane **Mark**

Dental status **c a z f x m s**

Occlusal plane and arch perimeter

Upper

Occlusal plane **defined** Redefine Best fit ×

Arch perimeter, mm 74.73 Redraw ×

Lower

Occlusal plane **defined** Redefine Best fit ×

Arch perimeter, mm 65.37 Redraw ×

3

10 mm

Figure 13. The Teeth tab. 1 tooth chart, 2 editor of the selected tooth, 3 the measured widths drawn on the model.

Figure 14. Tooth chart and editor.

NAME	WHAT IT DOES AND HOW TO USE IT
1 Tooth button	FDI number on top, measured width in mm below. A dot means not measured, "..." means only one point clicked, "x" means marked as missing.
2 Selected tooth	Outlined. Click any tooth to select it.
3 Patient right / left	The chart is drawn as you look at the patient: the patient's right is on your left.
4 Tooth title	Number, full name and state (measured, manual, missing or not measured).
5 Width, mm	Filled by measuring. You may also type a caliper value; a typed value overrides the clicked points until you clear the field.
6 Measure on model / Measure again	Starts measuring: click the mesial, then the distal contact point. The next tooth starts by itself.
7 Swap mesial / distal	Use it if you clicked the two points in the wrong order.
8 Mark as missing / present	For a missing tooth. It is then left out of the sums.
9 Clear	Deletes the measurement of this tooth.
10 Vertical position: Mark / Move	Click the cusp tip or incisal edge. The tool reports how far it lies above (+) or below (-) the occlusal plane. Shows "needs plane" until a plane is defined.
11 Dental status	One-letter flags printed in the report: c carious, a nonvital, z not to be maintained, f large restoration, x extracted, m malformation, s wear facets.

Measuring a tooth width step by step

- 1 Hide the other arch with **Upper** or **Lower** in the view bar and press **Occlusal**.
- 2 Click the first tooth in the chart, then **Measure on model**.
- 3 A bar at the bottom tells you what to click. Click the **mesial** contact point, then the **distal** one. The magnifier helps you hit the exact spot.
- 4 The width appears in the chart and the next tooth starts automatically. Continue around the arch.
- 5 Press **Stop** or **Esc** to end. **Backspace** removes the last clicked point.

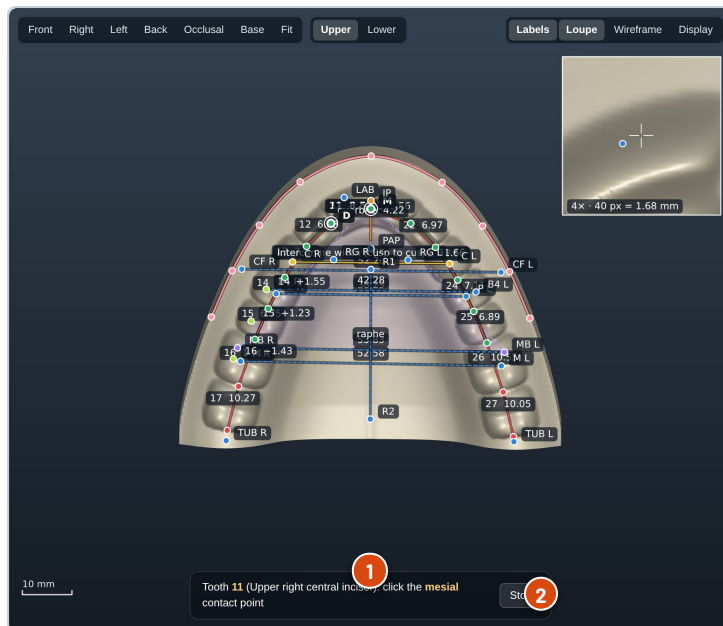


Figure 15. While a measuring tool is running.

TIP

Any placed point can be dragged on the model to refine it. While a tool is running, press **Esc** first, or hold **Shift** while dragging.

Occlusal plane and arch perimeter

Upper

Occlusal plane

defined

Redefine

Best fit

×

Arch perimeter, mm

74.73

Redraw

×

Lower

Occlusal plane

defined

Redefine

Best fit

×

Arch perimeter, mm

65.37

Redraw

×

Three points: mesiobuccal cusps of both first molars and an incisal edge. Best fit: cusp tips of the first molars and premolars only, the plane to use for the vertical analysis. Perimeter runs from the mesial contact of one first molar, over the contact points and incisal edges, to the mesial contact of the other first molar.

Figure 16. Occlusal plane and arch perimeter.

NAME

WHAT IT DOES AND HOW TO USE IT

- | | | |
|---|------------------------|---|
| 1 | Instruction bar | Says which tooth and which point to click next. |
| 2 | Stop | Ends the tool. Same as Esc . |

NAME

WHAT IT DOES AND HOW TO USE IT

- | | | |
|---|------------------------------------|--|
| 1 | Define, 3 points / Redefine | Click three points: the mesiobuccal cusps of both first molars and an incisal edge. |
| 2 | Best fit | Click the mesiobuccal cusp tips of both first molars (right first, then left) and the buccal cusp tips of the premolars; finish with Enter or a double-click. Gives a balanced plane; use it for the vertical analysis. |
| 3 | × | Removes the plane. |
| 4 | Arch perimeter, mm | Type a value measured by hand, or let the tool measure it. |
| 5 | Draw on model / Redraw | Click along the arch from the mesial contact of one first molar, over the contact points and incisal edges, to the mesial contact of the other first molar. At least three clicks; finish with Enter or a double-click. |
| 6 | × | Removes the perimeter. |

Sums

Upper 6 anterior	46.57 mm
Upper 5-5	74.44 mm
Upper 6-6	95.13 mm
Lower 6 anterior	36.35 mm
Lower 5-5	65.19 mm
Lower 6-6	87.38 mm

Figure 17. Sums.

NAME

WHAT IT DOES AND HOW TO USE IT

1

Sums table

Totals used by the analyses: upper and lower 6 anterior teeth, 5-5(second premolar to second premolar) and 6-6(first molar to first molar). Until all teeth of a group are measured it shows how many are done.

7 Landmarks tab

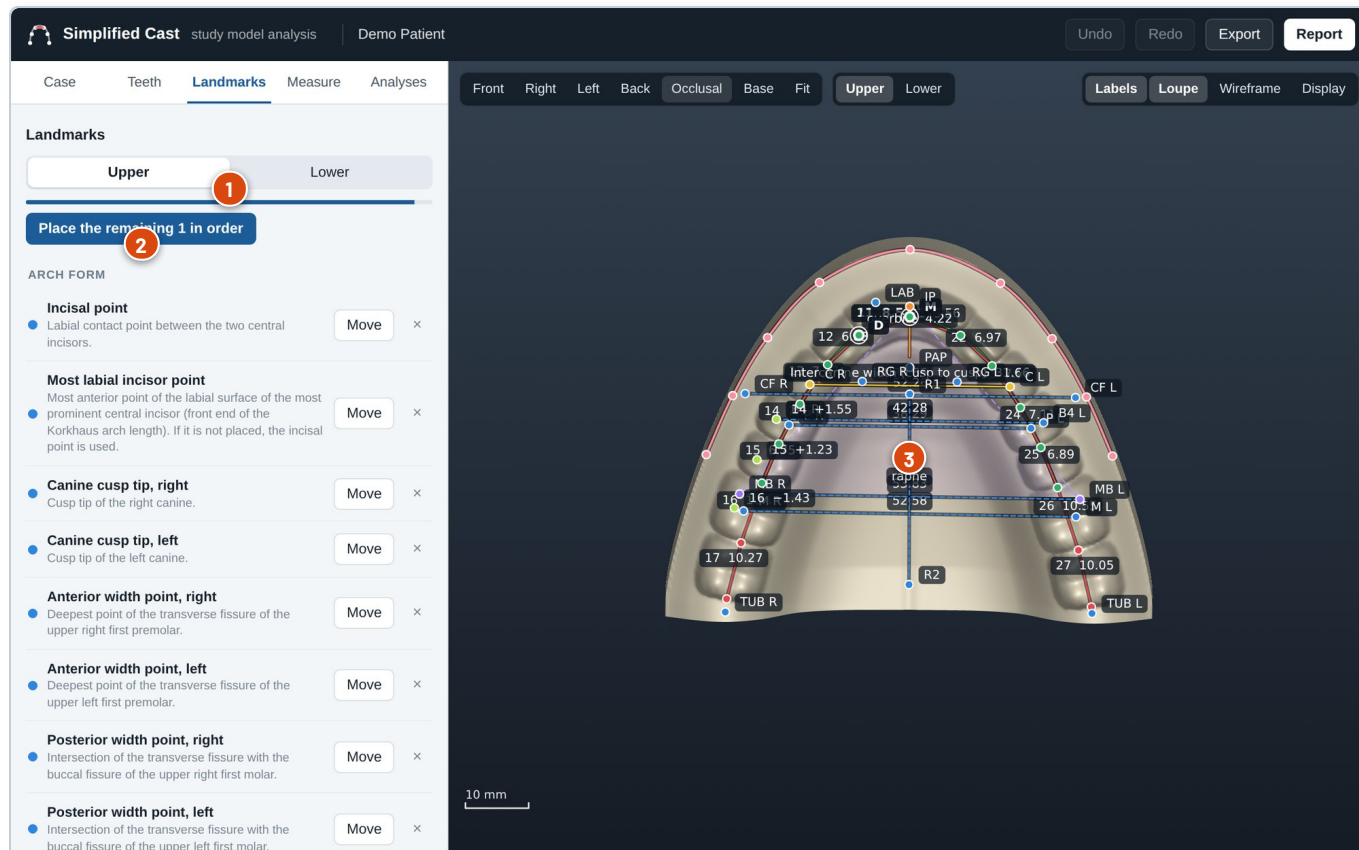


Figure 18. The Landmarks tab. 1 arch switch, 2 place the rest in order, 3 placed landmarks and the lines built from them.

Landmarks

1 Upper

2 Lower

3

4 Place the remaining 1 in order

ARCH FORM

6 Incisal point

Labial contact point between the two central incisors.

7 Move

8

Most labial incisor point

Most anterior point of the labial surface of the most prominent central incisor (front end of the Korkhaus arch length). If it is not placed, the incisal point is used.

Move

×

Canine cusp tip, right

Cusp tip of the right canine.

Move

×

Canine cusp tip, left

Cusp tip of the left canine.

Move

×

Anterior width point, right

Deepest point of the transverse fissure of the upper right first premolar.

Move

×

Anterior width point, left

Deepest point of the transverse fissure of the upper left first premolar.

Move

×

Posterior width point, right

Intersection of the transverse fissure with the buccal fissure of the upper right first molar.

Move

×

Posterior width point, left

Intersection of the transverse fissure with the buccal fissure of the upper left first molar.

Move

×

Molar mesiobuccal cusp, right

Mesiobuccal cusp tip of the right first molar.

Move

×

Molar mesiobuccal cusp, left

Mesiobuccal cusp tip of the left first molar.

Move

×

Palatal vault point

Point of the palate on the midline, straight above the line joining the posterior width points (Korkhaus palatal height). It can be found automatically.

9 Find

10 Place

MIDLINE AND SYMMETRY

Raphe point, anterior

Crossing of the second palatine ruga with the midpalatal raphe.

Move

×

Raphe point, posterior

Midpalatal raphe at the border of the hard and soft palate, midway between the foveae palatinae.

Move

×

Tuberosity, right

Most distal point of the right maxillary tuberosity.

Move

×

Tuberosity, left

Most distal point of the left maxillary tuberosity.

Move

×

Incisive papilla, posterior point

Posterior end of the incisive papilla (papilla transverse line of Schmueth).

Move

×

First palatine ruga, right end

Lateral end of the first palatine ruga on the right side (Hausser).

Move

×

First palatine ruga, left end

Lateral end of the first palatine ruga on the left side (Hausser).

Move

×

APICAL BASE (HOWES)

Premolar buccal cusp, right

Buccal cusp tip of the upper right first premolar.

Move

×

Premolar buccal cusp, left

Buccal cusp tip of the upper left first premolar.

Move

×

Canine fossa, right

Deepest point of the apical base concavity above the right first premolar, distal to the canine eminence.

Move

×

NAME	WHAT IT DOES AND HOW TO USE IT
1 Upper	List the landmarks of the upper model.
2 Lower	List the landmarks of the lower model. "(no model)" appears when that scan is not loaded.
3 Progress bar	Share of landmarks already placed.
4 Place the remaining ... in order	Walks you through all missing landmarks one after the other. Fastest way to work.
5 Group title	Arch form; Midline and symmetry; Apical base (Howes); Curve of Spee (lower).
6 Status dot	Filled when the landmark is placed.
7 Place / Move	Place one landmark, or move it if it exists. The definition under each name tells you exactly where to click.
8 ×	Removes that landmark.
9 Auto	Only for the palatal vault point: the tool finds it by dropping a perpendicular from the middle of the posterior width line onto the palate.
10 Place	The palatal vault point can also be placed by hand.

Figure 19. The landmark list (upper arch).

NOTE

Right and left always mean the **patient's** right and left.

All landmarks

LANDMARK	ARCH	WHERE TO CLICK
Incisal point	Both	Labial contact point between the two central incisors.
Most labial incisor point	Both	Most anterior point of the most prominent central incisor. If not placed, the incisal point is used.
Canine cusp tip, right / left	Both	Tip of each canine.
Anterior width point, right / left	Both	Upper: deepest point of the transverse fissure of the first premolar. Lower: facial contact point between first and second premolar. (Mixed dentition: on the first deciduous molars.)
Posterior width point, right / left	Both	Upper: where the transverse fissure meets the buccal fissure of the first molar. Lower: tip of the middle buccal cusp of the first molar.
Molar mesiobuccal cusp, right / left	Both	Mesiobuccal cusp tip of each first molar.
Palatal vault point	Upper	Midline of the palate straight above the line joining the posterior width points. Can be found automatically.
Raphe point, anterior / posterior	Upper	Where the second palatine ruga crosses the midpalatal raphe / the raphe at the border of hard and soft palate.
Tuberosity, right / left	Upper	Most distal point of each maxillary tuberosity.
Incisive papilla, posterior point	Upper	Back end of the incisive papilla.
First palatine ruga, right / left end	Upper	Outer end of the first ruga on each side.
Premolar buccal cusp, right / left	Upper	Buccal cusp tip of each first premolar (Howes).
Canine fossa, right / left	Upper	Deepest point of the hollow above each first premolar (Howes).
Mandibular midline, anterior / posterior	Lower	Insertion of the lingual frenum / a posterior midline point below the end of the raphe.
Spee anterior point	Lower	Midpoint of the incisal edges of the lower central incisors.
Spee posterior point, right / left	Lower	Distobuccal cusp tip of the last erupted molar.
Spee deepest point, right / left	Lower	The buccal cusp tip lying deepest below the reference line.

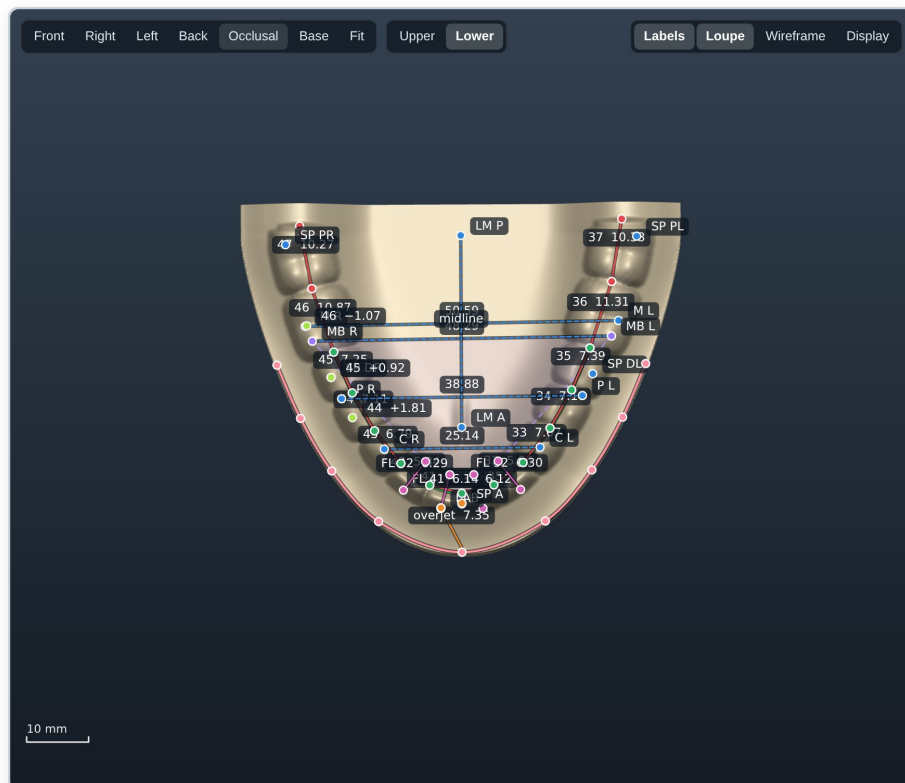


Figure 20. Lower arch landmarks in the occlusal view.

8 Measure tab

This tab collects everything that is not a tooth width or a landmark. Every value can be **typed** or **measured on the model**; a small × removes it.

Occlusion

With both models open in occlusion, overjet is taken parallel to the occlusal plane, overbite and open bite perpendicular to it. Without a plane the straight distance is used.

Overjet, mm
labial of lower incisor to incisal edge of upper incisor **Measure** ×

Overbite, mm
upper incisal edge to lower incisal edge **Measure** ×

Open bite, mm
vertical gap between the incisal edges **Measure**

Midline shift, mm
upper midline to lower midline **Measure** ×

Deep bite
Not recorded

Cross-bite
None

Nonocclusion
Not recorded

Jaw relationship after reconstruction
Neutral (Class I)

Molar and canine relations: choose the finding by inspection, or measure the sagittal offset with both casts in occlusion (upper cusp tip, then lower groove or embrasure). Positive is distal, negative mesial.

Molar relation, right
Neutroclusion **Measure**

Molar relation, left
Neutroclusion **Measure**

Canine relation, right
Class I **Measure**

Canine relation, left
Class I **Measure**

Upper midline diastema, mm

Lower midline diastema, mm

Occlusion notes

Figure 21. Occlusion.

NAME	WHAT IT DOES AND HOW TO USE IT
1 Overjet, overbite, open bite, midline shift (mm)	Type the value or use Measure. With both models in occlusion, overjet is taken parallel to the occlusal plane and overbite perpendicular to it.
2 Measure	Click the two points named under the label, for example the labial surface of the lower incisor, then the edge of the upper incisor.
3 ×	Removes the measurement.
4 Selection lists	Direction of the midline shift, open bite region, deep bite type, cross-bite, nonocclusion, and jaw relationship.
5 Molar / canine relation	Choose the finding by eye: neutroclusion (Class I), or distal / mesial by 1/4, 1/2, 3/4 or 1 premolar width.
6 Offset in mm	Or type the sagittal offset: + distal, – mesial.
7 Measure	With both casts in occlusion: click the upper cusp tip, then the lower groove or embrasure.
8 Midline diastema	Gap between the central incisors, upper and lower.
9 Occlusion notes	Free text.

Supporting zones

Distal of the lateral incisor to mesial of the first molar, each quadrant.
Taken from the tooth-width contact points when nothing is typed or measured. With crowded incisors, start from the mark where the lateral incisor would end after alignment.

Upper right, mm	21.46	Measure
Upper left, mm	21.90	Measure
Lower right, mm	21.03	Measure
Lower left, mm	21.45	Measure

▼ Segmental analysis (Lundström): space available

Six segments of two teeth each, first molar to first molar. The space available is taken between the contacts with the neighbouring teeth when the widths were clicked on the model; type or measure a value to override.

Upper

S1 (16 + 15), mm	16.86	Measure
S2 (14 + 13), mm	14.75	Measure
S3 (12 + 11), mm	15.05	Measure
S4 (21 + 22), mm	15.17	Measure

Figure 22. Supporting zones (distal of the lateral incisor to mesial of the first molar, each quarter) and the segmental analysis after Lundström (six segments of two teeth). Values are taken from the tooth-width contact points unless you type or measure them.

Apical base (Rees)

Upper apical base, mm	97.06	Redraw	×
Lower apical base, mm	90.03	Redraw	×

From the mesial of one first molar over the incisor contact to the other, 8–10 mm apical to the gingival margin. It is compared with the arch perimeter of the Teeth tab.

Figure 23. Apical base (Rees).

	NAME	WHAT IT DOES AND HOW TO USE IT
1	Apical base, mm	Type, or draw on the model.
2	Draw on model / Redraw	Click along the gum 8–10 mm above the gum line, from above the mesial of one first molar, past the midline, to the other first molar. Finish with Enter .
3	×	Removes it.

Discrepancy calculation

Upper incisor edge to N-Pog, mm	Lower incisor edge to N-Pog, mm
3	1
Upper curve, right, mm	Upper curve, left, mm
Curve of Spee, lower right, mm	Curve of Spee, lower left, mm
landmarks: 0.27	landmarks: 0.14

N-Pog values come from the lateral cephalogram; in front of the line is positive. The lower curve of Spee is read from the landmarks unless a value is typed.

Faciolingual width of lower incisors

Needed for the Peck and Peck index.

Tooth 42, mm	6.29	Measure
Tooth 41, mm	6.14	Measure
Tooth 31, mm	6.12	Measure
Tooth 32, mm	6.30	Measure

Figure 24. Left: discrepancy calculation. The incisor edge to N-Pog values come from the lateral cephalogram (for example from Simplified Ceph); in front of the line is positive. Right: faciolingual width of the lower incisors, needed for the Peck and Peck index.

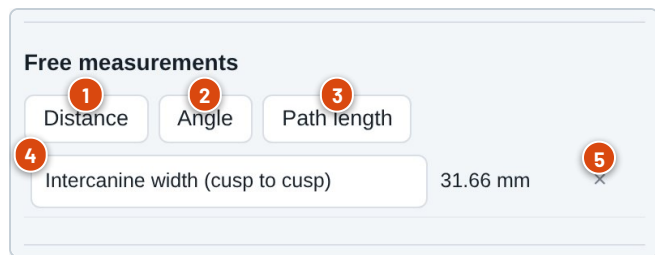


Figure 25. Free measurements.

	NAME	WHAT IT DOES AND HOW TO USE IT
1	Distance	Click two points.
2	Angle	Click three points; the second is the corner.
3	Path length	Click several points, finish with Enter or a double-click.
4	Label	Rename the measurement; it is printed in the report.
5	x	Deletes it.

▼ Radiographic widths of unerupted teeth

Hixon–Oldfather (Staley–Kerber): unerupted lower first and second premolar of one side, measured on a long-cone periapical film. The incisors of that side come from the cast.

Lower side	First premolar, film	Second premolar, film
Right		
Left		

Nance / Huckaba: each unerupted tooth as measured on the radiograph. For the magnification correction add the primary tooth measured on the same radiograph and on the cast.

Tooth	Unerupted, film	Primary, film	Primary, cast
13			
14			
15			
23			
24			
25			
43			
44			
45			
33			
34			
35			

Figure 26. Radiographic widths of unerupted teeth (mixed dentition). Upper table: Hixon–Oldfather method. Lower table: Nance / Huckaba, with the correction for X-ray enlargement when you also enter the primary tooth measured on the film and on the cast.

9 Analyses tab

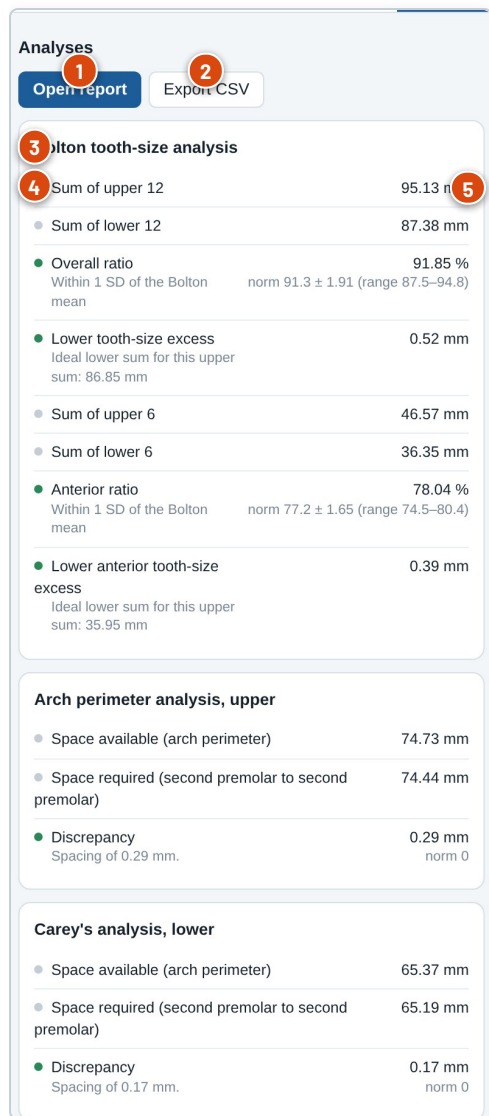


Figure 27. Results appear as cards.

NAME	WHAT IT DOES AND HOW TO USE IT
1 Open report	Opens the printable report.
2 Export CSV	Saves all results as a table.
3 Analysis card	One card per analysis, shown as soon as its measurements exist.
4 Colour chip	Green = within the norm, amber = borderline, red = clearly outside.
5 Value and norm	The result with its unit, and the norm underneath. A sentence explains the finding. "Still needed: ..." lists what is missing. Analyses that cannot start yet are listed under Waiting for measurements .

What each analysis tells you

ANALYSIS	PLAIN MEANING	NEEDS
Bolton tooth-size analysis	Do upper and lower tooth sizes match? Overall ratio (12 teeth) and anterior ratio (6 teeth), with the excess in mm.	Tooth widths
Arch perimeter analysis (upper), Carey's analysis (lower)	Space available minus space required: crowding (negative) or spacing (positive).	Widths, arch perimeter
Mixed dentition analysis (Tanaka-Johnston, Moyers)	Predicts the size of unerupted canines and premolars from the lower incisors.	Lower incisor widths, perimeter
Radiographic prediction (Nance / Huckaba)	Same question, using X-ray measurements.	Measure tab, radiographic widths
Combined method (Hixon-Oldfather, Staley-Kerber)	Prediction from X-ray premolars plus cast incisors.	Measure tab
Ashley Howes' analysis	Is the bony base wide enough for the teeth? Premolar and canine-fossa width against total tooth material.	Widths, Howes landmarks
Little's irregularity index	Sum of contact-point displacements of the six front teeth.	Anterior contact points
Arch dimensions	Inter canine, inter premolar and inter molar widths and arch depth.	Arch-form landmarks

ANALYSIS	PLAIN MEANING	NEEDS
Dental arch width (Pont, Linder-Harth, Schmuth, Ritter, Weise)	Ideal arch widths predicted from the sum of the upper incisors, compared with the measured widths.	SI, width points
Anterior arch length and palatal height (Korkhaus)	Ideal arch length and palate height against measured.	Labial point, width points, palatal vault
Transverse and anteroposterior symmetry	Are right and left equally far from the midline, and equally far forward?	Midline points, arch-form landmarks
Signs of mesial position of upper posterior teeth (Schmuth, Hausser)	Have the side teeth drifted forward?	Papilla and ruga points
Analysis of the supporting zones	Space for canine and premolars in each quarter (Moyers 75 %, Droschl, mean values).	Supporting zones
Segmental space analysis (Lundström)	Space balance in six two-tooth segments.	Widths
Discrepancy calculation	Combines crowding, curve of Spee and incisor position from the ceph into one figure per arch side.	Perimeter, widths, ceph values
Vertical tooth position	How far each marked tooth stands above or below the occlusal plane.	Plane, vertical marks
Apical base (Rees)	Apical base length against arch perimeter.	Apical base curve
Curve of Spee	Depth of the curve, right and left.	Spee landmarks
Peck and Peck index	Shape of the lower incisors (mesiodistal ÷ faciolingual width).	Lower incisor widths both ways
Tooth-size symmetry	Right tooth against its left partner.	Widths
Examination of the occlusion	Summary of overjet, overbite, midline, molar and canine relations.	Measure tab, occlusion

10 The report

Simplified Cast study model analysis Demo Patient

Export CSV 1 Print or save as PDF 2 Close 3

Case Teeth Landmark

Occlusion

With both models open in occlusion, overjet, overbite and open bite measurements are taken in the occlusal plane, overbite and open bite measurements are taken in the vertical plane the straight distance is used.

Overjet, mm
labial of lower incisor to incisal edge of upper incisor 7.35

Overbite, mm
upper incisal edge to lower incisal edge 4.22

Open bite, mm
vertical gap between the incisal edges

Midline shift, mm
upper midline to lower midline 0.5
Lower midline is shifted to the left

Deep bite
Not recorded

Nonocclusion
Not recorded

Molar and canine relations: choose the type of relation to measure the sagittal offset with both casts (upper or lower groove or embrasure). Positive values indicate overjet/overbite, negative values indicate underjet/underbite.

Molar relation, right
Neutroclusion

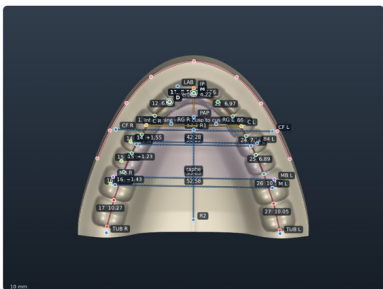
Molar relation, left
Neutroclusion

Canine relation, right

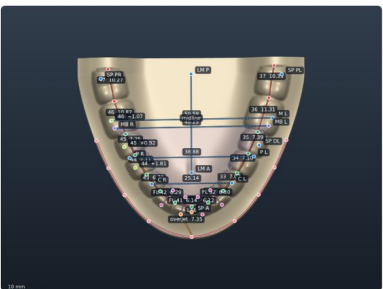
Study model analysis

Simplified Cast - Simplified Orthodontics Studio

Patient: Demo Patient
Record ID: SO-0001
Age / sex: 14 / female
Cast date: 2026-09-20
Examiner: Simplified Orthodontics Academy
Report date: 2026-09-20



Upper arch, occlusal view



Lower arch, occlusal view

Mesiodistal tooth widths, mm

17	16	15	14	13	12	11	21	22	23	24	25	26	27
10.27	10.14	6.75	7.12	7.67	6.83	8.56	8.56	6.97	7.98	7.11	6.89	10.55	10.05

47	46	45	44	43	42	41	31	32	33	34	35	36	37
10.27	10.87	7.25	7.11	6.79	5.84	5.35	5.35	5.95	7.07	7.10	7.39	11.31	10.33

* typed value. x missing tooth. Widths: direct 3D distance between contact points. Arch perimeter: smooth curve through the clicked points. Dental status: c carious, a nonvital, z not to be maintained, f large restoration, x extracted, m malformation, s wear facets.

Figure 28. The report. 1 Export CSV, 2 Print or save as PDF (choose "Save as PDF" as the printer to get a file), 3 Close (or **Esc**), 4 the report page.

The report starts with the patient details and a picture of each arch in the occlusal view with all points. It continues with the table of tooth widths, the sums, every analysis with values, norms and findings, the occlusion record, your free measurements, and the diagnosis and treatment plan from the Case tab.

Simplified Caststudy model

CaseTeethLandmark

Occlusion

With both models open in occlusion, overocclusal plane, overbite and open bite perpendicular to the straight distance is used.

Overjet, mm
labial of lower incisor to incisal edge of upper incisor7.35

Overbite, mm
upper incisal edge to lower incisal edge4.22

Open bite, mm
vertical gap between the incisal edges

Midline shift, mm
upper midline to lower midline0.5

Lower midline is shifted to the left

Deep biteNot recorded

NonocclusionNot recorded

Molar and canine relations: choose the fit measure the sagittal offset with both cast then lower groove or embrasure). Position Molar relation, rightNeutroclusion

Molar relation, leftNeutroclusion

Canine relation, rightNeutroclusion

24 : MPR19.218.2+1.0

14 : 2438.336.4+1.9

16 : MPR26.223.8+2.4

26 : MPR26.423.8+2.6

16 : 2652.647.6+5.0

Dental midline shift: 0
Diastema: –

	Actual	Standard	Diff.
44 : MPR	19.4	18.2	+1.2
34 : MPR	19.5	18.2	+1.3
44 : 34	38.9	36.4	+2.5
46 : MPR	25.2	23.8	+1.4
36 : MPR	25.4	23.8	+1.6
46 : 36	50.6	47.6	+3.0

OcclusionCross-bite: None
Nonocclusion: –
Midline shift: 0.5 mm left

right21.5

left21.9

Export CSV

Print or save as PDF

Close

Space required: 74.4 mm
Space available: 74.7 mm
Difference: +0.3 mm
Compensating curve, right / left: – / – mm

	Actual	Standard	Diff.
LI	17.8	16.0	+1.8

Supporting zones

	Actual	Standard	Diff.
right	21.0	21.9	–0.9
left	21.4	21.9	–0.4

Space required: 65.2 mm
Space available: 65.4 mm
Difference: +0.2 mm
Compensating curve, right / left: 0.3 / 0.1 mm

Supraversion45 (+0.9), 44 (+1.8)
Infraversion46 (–1.1)

Overjet: 7.4 mm
Molars, right / left: Neutroclusion / Neutroclusion
Canines, right / left: Class I / Class I
Jaw relationship: Neutral (Class I)

Overbite: 4.2 mm
Open bite: – mm
Deep bite: –

Bolton tooth-size analysis

Measurement	Value	Norm	Comment
Sum of upper 12	95.13 mm		
Sum of lower 12	87.38 mm		
Overall ratio	91.85 %	91.3 ± 1.91 (range 87.5–94.8)	Within 1 SD of the Bolton mean
Lower tooth-size excess	0.52 mm		Ideal lower sum for this upper sum: 86.85 mm
Sum of upper 6	46.57 mm		
Sum of lower 6	36.35 mm		
Anterior ratio	78.04 %	77.2 ± 1.65 (range 74.5–80.4)	Within 1 SD of the Bolton mean
Lower anterior tooth-size excess	0.39 mm		Ideal lower sum for this upper sum: 35.95 mm

11 Phone layout, shortcuts and answers

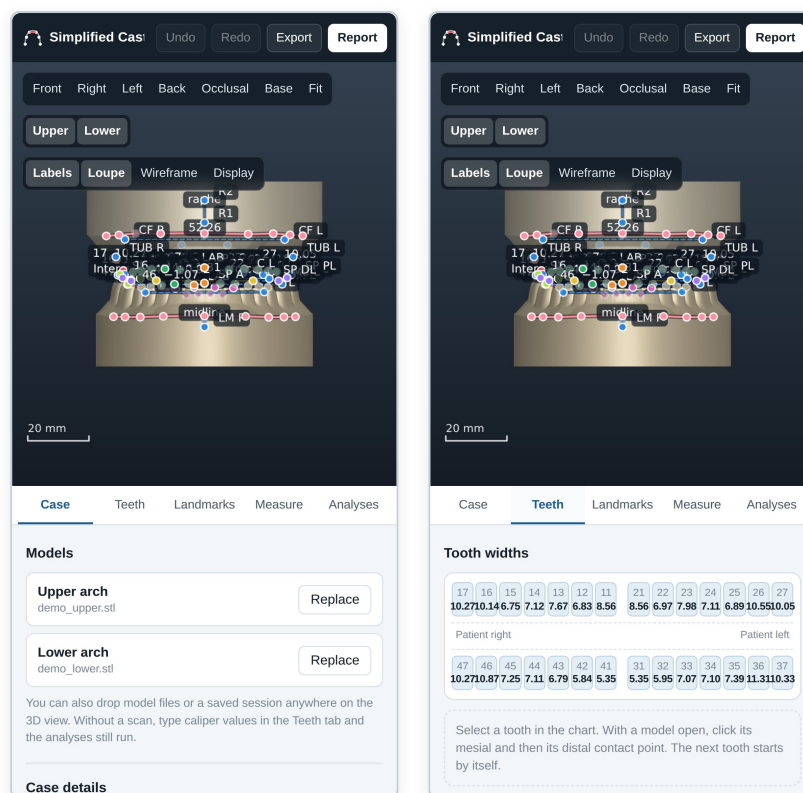


Figure 30. On a phone the tabs and panel sit above the 3D area. Everything works by touch: one finger rotates, two fingers move and zoom.

Keyboard shortcuts

ACTION	SHORTCUT
Undo / redo	Ctrl + Z / Ctrl + Y (or Ctrl + Shift + Z)
Save session file	Ctrl + S
Stop the running tool, or close the report	Esc
Finish a multi-point tool (plane best fit, perimeter, apical base, path)	Enter or double-click
Remove the last clicked point	Backspace
Fit to window	F
Occlusal view	O

Problems and answers

WHAT YOU SEE	WHAT TO DO
"That point is on the upper model. Hide it or click the lower model."	You clicked the wrong arch. Hide the other arch with Upper / Lower in the view bar.
"Last session restored. Open its model files to see the points."	Your numbers are back. Open the same scan files again to see the points on the models.
Widths are 1000 times too small or large	Set Model unit scale in Case → Settings.
"No occlusal plane is defined yet..."	You chose projected measuring. Define the plane in the Teeth tab.
An analysis stays under "Waiting for measurements"	Read its "Still needed" line and add those points or values.

WHAT YOU SEE

Overjet and overbite cannot be measured

WHAT TO DO

The two scans must share one coordinate system. Scan in occlusion, set **Casts scanned in occlusion** to Yes; otherwise type the values.

NOTE

The screenshots in this manual use computer-generated demonstration models, not patient scans. Model analyses are diagnostic aids; interpret them together with the clinical examination and radiographs.