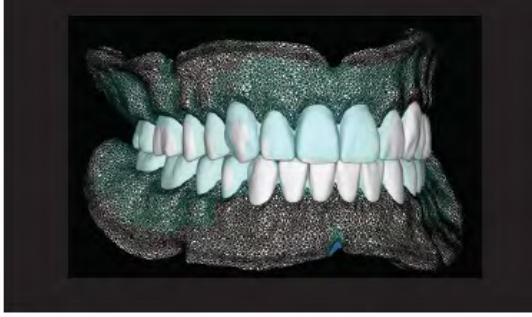
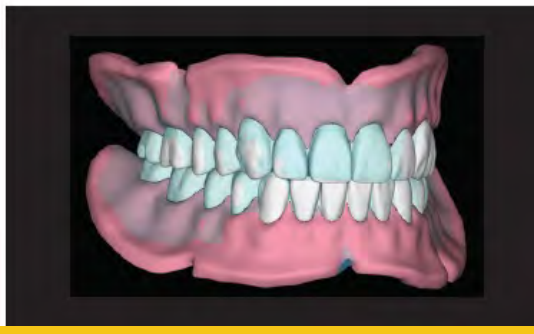






PRECISION
DENTAL ARTS

CLINICAL EDITION

Digital Dentures

A 4-visit workflow: conventional records + CAD/CAM fabrication

For dentists and clinical teams

STABILITY
Resists shifting in function

SUPPORT
Carries load without sore spots

RETENTION
Resists lifting from the ridge

INTRODUCTION

Digital fabrication starts with reliable clinical records

Does a digital denture have to start digitally?

Not necessarily. In a basic 4-visit digital denture workflow, impressions and jaw relation records are taken conventionally, using custom trays and wax rims. We then digitize those records for CAD design and CAM fabrication by milling or 3D printing.

The tools change, but the fundamentals don't. A digital denture is only as good as the clinical records it's built from.

Analog data collection → **Digitization** → **CAD/CAM fabrication**

✓ **Stability**
The denture resists moving sideways and forward during function.

✓ **Support**
The tissues carry chewing forces without sore spots or sinking.

✓ **Retention**
The denture resists lifting away from the ridge.

Inside this guide

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Every step matters

Conventional impressions and wax rims capture the essential clinical information. Digital design and manufacturing turn it into a precise, repeatable denture.

OVERVIEW

The 4-visit digital denture workflow

Four patient visits combine conventional clinical records with CAD/CAM design and fabrication. Here's what happens at the chair and in our lab at each stage.

	1 Visit 1	2 Visit 2	3 Visit 3	4 Visit 4
	DATA COLLECTION	DATA COLLECTION	DESIGN	MANUFACTURE
At the chair	Preliminary impressions	Border molding Wax rim adjustment Final impression (closed mouth) CR registration	Try-in of the printed prototype	Tissue surface adjustment Delivery Review appointment
In the lab	Initial casts Custom trays + wax rims	Digitize the data (scan) Digital design Printed prototype	CAM: milled or 3D printed	Clinical remount & occlusal refinement



Wax rim records with the CR registration in place, ready to digitize.

Why start with conventional records?

Border-molded impressions and adjusted wax rims capture tissue, muscle and jaw relationships that are still hard to record reliably with a scanner alone.

Once we have them, everything after is digital: the design, the prototype and the final denture. The design is saved, so a spare or replacement can be made without starting over.

VISIT 1 · DATA COLLECTION

Preliminary impressions

The first visit gives us what we need to build accurate custom trays and wax rims for the records appointment.



Border-molded final impression in a custom tray.

At the chair

Take preliminary impressions of both arches in stock trays. Capture the full denture-bearing area: the tuberosities and hamular notches on the maxilla, and the retromolar pads and lingual sulcus on the mandible.

In the lab

We pour **initial casts** and fabricate **custom trays** and **wax rims** built to the average dimensions in our *Occlusal Rims at the Chair* guide.

Tips for this visit

1. **Full coverage**
   Extended borders in the preliminary impression mean a better-fitting custom tray.

2. **Relieve, don't stretch**
   Avoid over-seating stock trays, which distorts the borders.

3. **Send both arches**
   Include any existing dentures if they're useful as a reference.

VISIT 2 · DATA COLLECTION

Records appointment

This is the most important visit in the workflow. Everything the lab designs comes from the records you take here.

1 Border molding

Mold the custom tray borders to the functional depth and width of the vestibules, frena and posterior seal areas.

2 Wax rim adjustment

Set lip support, incisal length, the occlusal plane and VDO, and scribe the midline, canine lines and smile line.

3 Final impression (closed mouth)

With the rims together, the patient closes and functions while the final impression material sets, recording the borders under closing pressure.

4 CR registration

Record centric relation at the established VDO and index the rims together so they can't shift.

Wax rims carry the design

Lip support, tooth length, the occlusal plane and the bite height all come from your rim adjustments. Our **Occlusal Rims at the Chair** guide walks through each step, with target dimensions and chairside checks.

Before the case leaves your office

- □ Rims are keyed together and seated on the final impressions.
- □ Midline, canine lines and smile line are scribed on the maxillary rim.
- □ Tooth mold, shade and any esthetic requests are on the Rx.
- □ A full-face smile photo with the rims in place, if possible.

IN THE LAB · DESIGN

Digitize and design

After the records visit, the work moves into our digital workflow. From here on, the denture exists as a design file.

1 Digitize the data

We scan the final impressions and the rims in their CR relationship, using a lab scanner or an intraoral scanner, and articulate them virtually.

2 Digital design

Our technicians design the denture base and set the teeth in CAD software to your rim landmarks, VDO and occlusal plane.

3 Printed prototype

We 3D print a try-in prototype of the design so you and the patient can evaluate it before final fabrication.



Try-in prototype fabricated from the digital design.

What the design follows

- Your scribed midline, canine lines and smile line set the anterior tooth position and size.
- The rim's labial contour sets lip support, and its length sets incisal display.
- The occlusal plane and VDO come straight from your adjusted rims and CR record.

VISIT 3 · DESIGN

Prototype try-in

The printed prototype is a true preview of the final denture. Because the final is made from the same design file, what the patient approves at try-in is what they get.

What to evaluate

1. **Esthetics**
   Midline, tooth length and display, smile line, lip support and the buccal corridor.
2. **Phonetics**
   “F/V” and “S” sounds, and overall speech comfort.
3. **VDO**
   Freeway space at rest; the patient's face looks natural, not over-closed or strained.
4. **Occlusion**
   Even bilateral contact in CR with no slides or rocking.
5. **Fit & borders**
   Prototype seats fully without lifting at the frena or posterior borders.
6. **Patient approval**
   The patient sees and approves the smile before final fabrication.

If it's right

Note your approval on the Rx and send the prototype back. We'll move straight to manufacturing from the approved design.

If it needs changes

Mark tooth position or midline changes directly on the prototype, take a new bite if the jaw relation is off, and describe esthetic changes on the Rx. We'll update the design and, if needed, print a second try-in.

IN THE LAB · MANUFACTURE

CAM fabrication: milled or printed

Once you approve the try-in, we manufacture the final denture from the same design file using one of two methods.

	Subtractive (milled)	Additive (3D printed)
How it's made	Carved from pre-polymerized acrylic pucks	Built layer by layer in denture base and tooth resins
Strengths	Dense, strong material with low residual monomer; excellent polish	Efficient and fast; well suited to prototypes, immediates and interim dentures
Watch for	Fine detail is limited by bur size	Strength and esthetics depend on the resin and proper post-curing



Mandibular denture milled from a monolithic disc.

Which method we use

We choose milled or printed based on the case: the material you prescribe, the esthetics needed and whether the denture is final, immediate or interim. Tell us your preference on the Rx, or call and we'll talk it through.

Either way, the design is stored, so a spare or replacement can be made from the same file.

VISIT 4 · MANUFACTURE

Delivery and review

The final visit fits and refines the finished denture.

1. **Tissue surface adjustment**
   Seat each denture with pressure-indicating paste and relieve any pressure spots on the intaglio surface.

2. **Clinical remount**
   Take a remount record and refine the occlusion on the articulator for even, balanced contact.

3. **Delivery**
   Check retention, stability, esthetics and phonetics. Review home care and wearing instructions with the patient.

4. **Review**
   Schedule a follow-up within the first days to relieve sore spots and recheck the occlusion.

Common findings at delivery

Finding	Likely cause	What to do
Sore spot or redness	Pressure on the intaglio surface or an overextended border	Relieve with pressure-indicating paste or disclosing wax
Denture lifts when talking	Overextended border at a frenum or the posterior seal	Adjust the border; recheck the frenum relief
Uneven bite	Small occlusal discrepancy after fabrication	Refine on the articulator with a clinical remount
Clicking teeth	VDO slightly open	Recheck freeway space; call us before adjusting

Patient instructions at delivery

- Expect a few weeks to adapt to chewing and speaking.
- Remove the dentures at night and clean them daily with a soft brush.
- Call if a sore spot lasts more than a day or two. Don't adjust the denture at home.

WEIGHING IT UP

Advantages and limitations

Digital technology changes how a denture is made, not what makes it succeed. Here's how it compares.

Advantages

- **Saved design:** spares and replacements can be made from the stored file without new impressions.
- **Accurate preview:** the printed try-in matches the final denture.
- **Consistent materials:** milled pucks are dense and pre-polymerized, so there's no processing shrinkage.
- **Predictable fit:** fewer processing variables than conventional flasking.
- **Easy communication:** design files can be shared and reviewed digitally.

Limitations

- **Still depends on records:** poor border molding or a wrong bite carries straight into the design.
- **Scanning limits:** deep borders and undercuts can be hard to capture without conventional impressions.
- **Fewer custom touches:** gingival characterization and fine tooth customization can be more limited.
- **Adjustments are subtractive:** adding to a milled base requires a reline or repair.
- **Equipment and cost:** scanners, design software and milling or printing all add investment.

Same fundamentals

Analog data collection. Digital design and fabrication. Stability, support and retention still come from accurate impressions, well-adjusted wax rims and a correct jaw relation.

QUICK REFERENCE

Digital denture case checklist

Visit	You do	Send to us
1	Preliminary impressions	Impressions of both arches and the Rx
2	Border molding, rim adjustment, closed-mouth final impression, CR record	Final impressions with rims keyed in CR; tooth mold and shade; smile photo if possible
3	Prototype try-in	Approved prototype, or marked changes and a new bite if needed
4	Tissue adjustment, remount record, delivery	Remount record if refining occlusion in the lab

On every Rx

- □ Patient name, due date and the visit the case is for.
- □ Tooth mold and shade, plus any esthetic requests.
- □ Milled or printed preference, if you have one.
- □ Notes on any changes to VDO, midline or incisal length.

Send cases digitally

Upload your files and digital Rx at **www.3dprecisiondigital.com**, or call 800-574-0721 to schedule a pickup.

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