

Lintec Dual Scan Protocol

Term	Definition
Dual Scan	A dual scan is the only way to fabricate a tissue-supported edentulous, and in some cases partially edentulous, Pin Guide or surgical guide.
Scan Appliance	A scan appliance is usually the patient's existing denture or a duplicate of the denture. There are do's and don'ts below, but to say that if you have a denture, and it fits (intimate with all tissues), and it is close to what the patient likes, and there's no soft liner, then you have a scan appliance – just add the markers.
Markers	Markers are radiopaque beads or gutta percha that are added to the scan appliance for registration. If there are no markers, then you do not have a scan appliance. The markers are placed on the scan appliance randomly on the pink or tooth area, labial or lingual, and even palatially – not on occlusal or intaglio. They must not move from their positions between the two/dual scans.
Scan Process	The scan process is to scan the patient wearing the denture/scan-appliance with the markers, just like they always wear their denture, with their chin on the chin rest. This is the first scan. The second scan is of the scan appliance by itself, on a piece of foam or a special scan table, not touching any metal or plastic. Be sure the scan captures 100% of the appliance.

Dual Scan Material Requirements:

1. Patient's well-fitting existing denture or an acrylic duplicate scan appliance. The denture must contain zero metal.
2. Radiolucent bite registration material – Green Mousse
3. Reline material (only needed if the existing prosthesis is mobile)
4. Radiopaque stickers or gutta-percha material fiducial markers.
5. Styrofoam or foam block

Dual Scan Technique: Step-by-Step Guide

1. Check the patient's denture to ensure any metal substructure does NOT reinforce it. This will cause issues in the CBCT.
2. Ensure that the existing denture fits well. Perform hard reline or use Green Mousse to simulate relined intaglio surface. If there is space between the intaglio surface and the soft tissue, will lead to an incorrect denture position.
3. Place four to six radiopaque markers along the denture flange approx. 5mm from the gingival margin, in various positions.
4. If using gutta-percha material, create a 1-mm-deep hole with a round bur and pack the hole with gutta-percha material. Ensure the material is flush with the denture's or scan appliance's surface.
5. Single edentulous – records
 - Scan denture in the mouth (not in occlusion)
 - Scan denture on foam (teeth down)
 - Take pictures (profile, relaxed, and maximum smile)
 - Bite registration
 - Opposing model or IOS Scan
6. Double edentulous – records
 - Scan both dentures in the mouth, (not in occlusion)
 - Individually scan both dentures resting on the foam (teeth down)
 - Take pictures (profile, relaxed, and maximum smile)
7. Scan appliances must be placed on a foam block in the CBCT scanner or the provided scan table. This will prevent the denture scan from merging with the base it sits upon. Ensure all surfaces of the denture are captured.
8. When scanning the patient, ensure that the radiopaque markers' positions remain the same as the previous scan. These markers act as constants across scans.
9. Perform a second scan of the patient wearing the denture in open occlusion.
10. Export all DICOM data from your CBCT and submit it to the Lintec website.
@ <https://www.lintecdental.com/send-case/upload-file/>

Dual Scan Technique: Typical Errors:

1. Poor-fitting dentures, or any denture movement during the scan, may result in incorrect adjustments in the surgical template.
2. Radiopaque markers were removed/moved before both scans were taken. This makes it impossible to merge scan images and integrate data.
3. The denture during the scan in the mouth did not have markers. It's not possible to use this data.

Dual Scan Technique: Do's and Don'ts

Do's

1. Verify your scans before sending the patient home. It's better to rescan vs reschedule with the patient.
2. Look for black voids between the tissue and the scan appliance. If there are gaps re-evaluate the methods and the fit.
3. Ensure the denture is ideal for the patient and that it fits.
4. Make sure that the patient is not wearing jewelry (may cause scatter) and stays very still through the scanning.
5. Use scan markers. Cases without markers will not work.
6. Capture a bite and opposing cast or IOS on single edentulous cases.
7. Set Gantry tilt to none/0 degrees.
8. Set slice thickness $\leq 0.4\text{mm}$.

Don'ts

1. Scan soft liners. They must be replaced with a hard reline or Green Mousse.
2. Scan the appliance on plastic in the CBCT.
3. Add scan markers on the occlusion or intaglio.
4. Send any edentulous arch tissue records (the dual scan is the only record of the edentulous arch).