**Osseodensification**

Facilitated Densah® Lift Protocol I’

*Minimum residual bone height ≥ 6 mm. Minimum alveolar width needed = 4mm*

Overview: Use Densah® Burs in full step increments. For example: 2.0mm, 3.0mm, 4.0mm, 5.0mm.

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**Step 1:**
Measure bone height to the sinus floor.
Flap the soft tissue using instruments and technique normally used.

**Step 2:**
Pilot drill 1 mm below the sinus floor.
In cases where posterior residual alveolar ridge height is ≥ 6.0mm, and additional vertical depth is desired, drill to the depth determined within an approximate safety zone of 1.0mm from the sinus floor using a pilot drill (clockwise drill speed 800-1500 rpm with copious irrigation). Confirm pilot drill position with a radiograph.

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Densifying crust in osseodensification mode due to compaction autografting

Compaction autografting in the apex of the osteotomy facilitates sinus grafting
Step 3: 
**Densah® Bur (2.0) OD mode to sinus floor.**
Depending upon the implant type and diameter selected for the site, begin with the narrowest Densah® Bur (2.0). Change the drill motor to reverse-Densifying Mode (counterclockwise drill speed 800-1500 rpm with copious irrigation). Begin running the bur into the osteotomy. When feeling the haptic feedback of the bur reaching the dense sinus floor, stop and confirm the first Densah® Bur vertical position with a radiograph.

Step 4: 
**Enter with Densah® Bur (3.0) OD mode up to 3mm past the sinus floor.** Use the next wider Densah® Bur (3.0) in densifying-mode (counterclockwise drill speed 800-1500 with copious irrigation) and advance it into the previously created osteotomy with modulating pressure and a pumping motion. When feeling the haptic feedback of the bur reaching the dense sinus floor, modulate pressure with a gentle pumping motion to advance past the sinus floor in 1 mm increments. **Maximum possible advancement past the sinus floor at any stage must not exceed 3 mm.** As the next wider Densah® Bur advances in the osteotomy, additional autogenous bone will be pushed toward the apical end to achieve additional vertical depth and a maximum membrane lift of 3.0 mm. Confirm the bur vertical position with a radiograph.

Step 5: 
**Place Implant.**
Place the implant into the osteotomy. If using the drill motor to tap the implant into place, the unit may stop when reaching the placement torque maximum. Finish placing the implant to depth with a torque indication ratchet wrench.

*Clinician experience and judgement should be used in conjunction with this suggested use protocol.*
Osseodensification
Facilitated Densah® Lift Protocol II®

Minimum residual bone height 4-5 mm. Minimum alveolar width needed = 5 mm

Overview: Use Densah® Burs in full step increments. For example: 2.0mm, 3.0mm, 4.0mm, 5.0mm.

- MEASURE BONE HEIGHT TO SINUS FLOOR
- AVOID USING A PILOT DRILL
- DENSAH® BUR (2.0) OD MODE TO SINUS FLOOR
- ENTER WITH DENSAH® BUR (3.0) OD MODE UP TO 3MM PAST THE SINUS FLOOR
- DENSAH® BUR (4.0), (5.0) OD MODE UP TO 3MM PAST THE SINUS FLOOR TO FURTHER EXPAND THE OSTEOTOMY
- USE DENSAH® BURS IN FULL STEP INCREMENTS FOR EXAMPLE: 2.0MM, 3.0MM, 4.0MM, 5.0MM
- USE THE LAST DENSAH® BUR IN LOW SPEED TO GENTLY PROPEL WELL HYDRATED ALLOGRAFT

Step 1:
Measure bone height to sinus floor.
Flap the soft tissue using instruments and technique normally used.

Step 2:
Densah Bur (2.0) OD Mode to sinus floor. Avoid using a pilot drill. Depending upon the implant type and diameter selected for the site, begin with the narrowest Densah® Bur (2.0). Change the drill motor to reverse (counterclockwise drill speed 800-1500 rpm—Densifying Mode with copious irrigation). Begin running the bur into the osteotomy until reaching the dense sinus floor. Confirm Bur position with a radiograph.

Step 3:
Enter with Densah® Bur (3.0) OD mode up to 3mm past the sinus floor. Use the next wider Densah® Bur (3.0) and advance it into the previously created osteotomy with modulating pressure and a pumping motion. When feeling the haptic feedback of the bur reaching the dense sinus floor, modulate pressure with a pumping motion to advance past the sinus floor in 1 mm increments, up to 3mm. Maximum bur advancement past the sinus floor, at any stage, must not exceed 3 mm. Bone will be pushed toward the apical end and will begin to gently lift the membrane and autograft compacted bone up to 3mm. Confirm the bur vertical position with a radiograph.
Step 4: **Densah Bur (4.0), (5.0) OD mode up to 3mm past the sinus floor.**

Use the sequential wider Densah® Burs in Densifying Mode (Counterclockwise drill speed 800-1500 rpm) with copious irrigation with pumping motion to achieve additional width with maximum membrane lift of 3 mm (in 1 mm increments) to reach final desired width for implant placement. **Densah® Burs must not advance more than 3 mm past the sinus floor** at all times regardless of the Densah® Bur diameter.

Step 5: **Propel allograft.**

After achieving the final planned osteotomy diameter, fill the osteotomy with a well hydrated, mainly cancellous, allograft. Use the last Densah® Bur used in step 4 in Densifying Mode (Counterclockwise) with low speed **150-200 rpm with no irrigation** to propel the allograft into the sinus. The Densah® Bur must only facilitate the allograft material compaction to further lift the sinus membrane, and not to advance beyond the sinus floor more than 2-3 mm. Repeat the graft propelling step to facilitate additional membrane lift as needed according to implant length.

Step 6: **Place implant.**

Place the implant into the osteotomy. If using the drill motor to tap the implant into place, the unit may stop when reaching the placement torque maximum. Finish placing the implant to depth with a torque indicating wrench.

Clinician experience and judgement should be used in conjunction with this suggested use protocol.
III. Osseodensification May Facilitate Lateral Ridge Expansion

A. Ridge Expansion Procedure

Osseodensification will not create the tissue, it may only optimize and preserve what already exists.

There is a need for ≥ 2 mm of trabecular-bone core and ≥ 1/1 trabecular/cortical bone ratio to achieve a predictable plastic expansion. The more cortical bone there is, the more trabecular core is needed to facilitate predictable expansion. The ideal minimum ridge to expand is 4 mm (2 mm trabecular core + 1 mm cortex on each side).

This protocol is indicated to expand a ridge with a narrow crest and wider base. It is not indicated in resorbed ridge with a narrow base.

In ridge expansion cases, please oversize your osteotomy and make sure that the osteotomy crestal diameter is equal or larger than the implant major diameter.

1. **Diagnose and assess the amount of trabecular bone available using a CBCT** to evaluate bone composition needed to perform a predictable plastic expansion.

2. Flap the soft tissue using the technique indicated for the implant position.

3. Depending upon the implant type and diameter selected for the site, after a narrow pilot osteotomy, begin with the narrowest Densah® Bur. Set the drill motor to reverse—**Densifying Mode** (Counterclockwise drill speed 800-1500 rpm with copious irrigation). Begin running the bur into the osteotomy. When feeling the haptic feedback of the bur lift off pressure and reapply, repeatedly lift off and reapply pressure with a pumping motion until reaching the desired depth.
4. **Use the Densah® Burs in small increments.** As the bur diameter increases, the bone may gradually expand to the final diameter. The osteotomy may be expanded with minimal bone dehiscence, which may allow for total implant length placement in autogenous bone without thread exposure. Mandibular osteotomies need to be planned and performed to 1 mm deeper than the implant length.

5. **Place an implant with a diameter that is equal or slightly larger than the initial ridge width** (up to 0.7 mm larger). If using the drill motor to tap the implant into place, the unit may stop when reaching the placement torque maximum. Finish placing the implant to depth with a torque indicating wrench. The proper diameter implants should be included in the treatment plan and on hand at the surgical appointment.

6. If < 1.5-2.0 mm of buccal bone thickness has resulted after osseodensification, perform hard and soft tissue veneer contour-graft to augment around the implant to develop tissue thickness that may enhance long term stability. Complete implant coverage may be considered for 2-stage healing protocol.

*Clinician experience and judgement should be used in conjunction with this suggested use protocol.*
Step 1:
Separate molar roots at the furcation without compromising the integrity of the septum. Perform atraumatic mesial and distal root extraction. Degranulate tissue to expose septum area.

Step 2:
Use a pilot drill that is 1.3 mm -1.5 mm, in clockwise mode, in the center of the septum to a depth that is 1mm deeper than the planned implant length.

Step 3:
Depending upon the implant type and diameter, follow the corresponding Densifying Reference Guide starting with the smallest Densah® Bur to 1mm deeper than the intended implant length. Run the Densah® Burs in OD mode (counterclockwise, drill speed 800-1500 rpm with copious irrigation). Use the subsequent Densah® Burs in smaller increments to increase bone plasticity and to expand the osteotomy. For example, use Densah® Bur (2.0) after the pilot then expand with Densah Bur® (2.3) then move to Densah® Bur (2.5) before introducing the Densah Bur (3.0). As it is in ridge expansion cases with Osseodensification, you may over-expand the osteotomy so the last Densah® Bur diameter is slightly larger than the planned implant major diameter. As the bur diameter increases, the bone expands to reach the final osteotomy diameter.
Step 4: 
**Implant placement should be either at the crest level or sub-crest level** depending on its connection type.

Step 5: 
**Fill the gap with a bone graft material if needed; preferably an allograft with a 70/30 cancellous/cortical ratio.** Seal the gap with biologics or a collagen plug and a large healing abutment and possibly place interrupted suture on top.

Step 6: 
**Assess healing and soft tissue closure 6-8 weeks post placement.**

Case courtesy of Dr. Samvel Bleyan
I. Universal Keyless Guided Surgery System Overview

The Versah C-Guide™ System is an innovative Universal Guided Surgery System. Its C-shape allows the clinician better irrigation, as well as full access to see and manage the osteotomy expansion with complete freedom to the modulation (in and out bouncing) preparation need for the Densah® Bur Technology. The open slots of the TeleStop™ key allow adequate irrigation. The Versah® TeleStop™ gauge provides a telescopic keyless guided surgery operation with the ability to manage multiple sites with different preparation depths with precision and ease.

*Not compatible with Nouvag, Saeyang Handpieces
II. TeleStop™ Sizes & Its Compatibility

<table>
<thead>
<tr>
<th>Size</th>
<th>For Placement</th>
<th>Implant Diameter</th>
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<tbody>
<tr>
<td>S</td>
<td>Up to 3.25mm</td>
<td>VT152S (2.0)</td>
</tr>
<tr>
<td>M</td>
<td>Up to 4.3mm</td>
<td>VT1828 (2.3)</td>
</tr>
<tr>
<td>L</td>
<td>Up to 5.3mm</td>
<td>VS2228 (2.5)</td>
</tr>
<tr>
<td>XL</td>
<td>Up to 6.2mm</td>
<td>VT2535 (3.0)</td>
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<tr>
<td></td>
<td></td>
<td>VT2838 (3.3)</td>
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<td></td>
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<td>VS3238 (3.5)</td>
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<td></td>
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<td>VT3545 (4.0)</td>
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<td></td>
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<td>VS5258 (5.5)</td>
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III. TeleStop™ Gauge & Key Assembly

TeleStop™ Gauge Disassembly

Assembly Track

Teeth aligned with Assembly Track.

TeleStop™ Key & Vertical Gauge in locked position

Prongs of TeleStop™ Gauge Removal Tool in slots of TeleStop™ Gauge to relieve tension.
IV. Size Chart

**TeleStop™ Vertical Gauge**
- Small
- Medium
- Large
- X-Large

**TeleStop™ Key**
- Small
- Medium
- Large
- X-Large

**Engaged in locked position**
- Small
- Medium
- Large
- X-Large

**C-Guide™**
- For placement up to 3.25mm Implant
- For placement up to 4.3mm Implant
- For placement up to 5.3mm Implant
- For placement up to 6.2mm Implant

Compatible with Cerec® size M
Compatible with Cerec® size L