SuperLine® & Implantium®
Surgical / Prosthesis Manual

DentiumUSA
Developed by Clinicians for Clinicians
SURGICAL MANUAL

Surgical Drill Sequence  04
Drilling Depth Guide    06
Fixture Connection      08
Installation Procedure & Warnings  09
Surgical Kit Maintenance  09
Surgical Drill Sequence

Drilling Sequence Guide

<table>
<thead>
<tr>
<th>Platform: Ø</th>
<th>Body: Ø</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.6</td>
<td>3.4</td>
</tr>
<tr>
<td>4.0</td>
<td>3.8</td>
</tr>
<tr>
<td>4.5</td>
<td>4.3</td>
</tr>
<tr>
<td>5.0</td>
<td>4.8</td>
</tr>
<tr>
<td>6.0</td>
<td>4.8</td>
</tr>
<tr>
<td>7.0</td>
<td>5.8</td>
</tr>
</tbody>
</table>

Unit: mm
During fixture insertion, 30 ~ 45N·cm torque at 20rpm is recommended.
• Countersink Drill is used in cases with dense cortical bone.

**Determination of Fixture Top Level**

- It is recommended that the top level of the fixture be located 0.5mm below the crestal bone.

**Depth Indication**

- Use the Depth Gauge after First Drill / Lindemann First Drill to check depth of drilling
- Place the Depth Gauge against the wall of the osteotomy
Drilling Depth Guide

Countersink Depth Guide

- Drilling depth of the Countersink Drill depends on the patient’s bone density.
- If the bone density is D1~D2, it is recommended to drill up to the top line (I) of laser mark on the Countersink Drill.
- If the bone density is D3~D4, it is recommended to drill up to the bottom line (II) of laser mark on the Countersink Drill.
Platform: Ø5.0 / Body: Ø4.8 (1000rpm / 30–45N-cm)

Lindemann Guide Drill
Lindemann First Drill
Final Drill 3.6
Final Drill 4.0
Final Drill 4.5
Final Drill 5.0
Countersink Drill 5.0

FX platform Ø
0.5mm
10mm
Y-Dimension 0.5mm

Platform: Ø6.0 / Body: Ø4.8 (1000rpm / 30–45N-cm)

Lindemann Guide Drill
Lindemann First Drill
Final Drill 3.6
Final Drill 4.0
Final Drill 4.5
Final Drill 5.0
Countersink Drill 6.0

FX platform Ø
0.5mm
10mm
Y-Dimension 0.5mm

Platform: Ø7.0 / Body: Ø5.8 (1000rpm / 30–45N-cm)

Lindemann Guide Drill
Lindemann First Drill
Final Drill 3.6
Final Drill 4.0
Final Drill 4.5
Final Drill 5.0
Countersink Drill 5.0

FX platform Ø
0.5mm
10mm
Y-Dimension 0.5mm

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*Note: Instead of Lindemann Guide Drill, Guide Drill may be used.
Instead of Lindemann First Drill, First & Pilot Drill may be used.
*Do not use Pilot Drill when placing 3.6 platform/3.4 body fixture.
Refer to Product Catalog (page 46), for drill information.
**Fixture Connection**

Caution: When opening the fixture pack, hold the fixture container upward and engage the adapter into the fixture.

**Directions Using the Hand-piece / Ratchet Adapter**

The Hand-piece Adapter / Ratchet Adapter must be connected firmly together with the internal hex inside the fixture.
Installation Procedure

Surgical Kit Maintenance

Manual Cleaning and Sterilization Procedure

It is important to use protective clothing and face shield while cleaning contaminated instruments. Always wear protective glasses, mask, gloves, etc. for your safety.

- Please follow legal regulations, as well as hygienic guidelines to prevent contamination and infection through prevention.
- Please remember that you are responsible for the maintenance and sterility of your medical/dental products/device. It is important to use and follow proper cleaning, disinfection and sterilization procedures.
- It is also important to follow the manufacturer’s recommendation on the usage of drills. Please keep a log as to how many times the drills are used.
- Drills are used per implant placed not per patient. Bone density determines the life of the drills.
- Replace white and red o-rings on adapters and hex drivers, if worn and dried.
- Drills should be considered for replacement around 40 uses based on bone density.

Cleaning

01 Rinse instruments immediately after use under running tap water (<40°C) for a minimum of one (1) minute to remove all debris including extraneous body fluids, bone debris and tissue.

02 Soak all instruments immediately after rinsing in an enzymatic cleaning solution* for 10 to 20 minutes (Do not soak overnight).

* Follow manufacturer’s instructions and observe recommended cleaning solution concentrations (enzymatic detergent with a pH level between 7-10 and temperature not to exceed 40°C). Do not use incompatible cleaning solutions to clean instruments.

03 For internal irrigation drills, use a 1mL syringe and a 25 gauge needle to clean the drill irrigation hole with a minimum of 0.2 mL of the prepared cleaning solution. Repeat this step two (2) more times for a total of three (3) rinses.

04 Scrub with a soft brush for a minimum of 1 (one) minute to remove any debris inside the drill irrigation hole.

05 Rinse the instruments under running tap water (<40°C) for a minimum of 1 minute. Use a 1mL syringe and a 25 gauge needle with a minimum of 0.2 mL of tap water to forcefully flush inside the drill irrigation hole. Repeat flushing of drill irrigation hole two (2) more times for a total of three (3) flushings.

06 Place instruments into an ultrasonic cleaner with neutral detergent**. Keep instruments inside the ultrasonic bath for 15 minutes using a frequency of 25-50 kHz. Ensure multiple instruments placed within the bath remain separated.

** Follow manufacturer’s instructions and observe recommended neutral detergent solution concentrations (neutral detergent with a pH level between 7-10 and temperature not to exceed 40°C). Do not use incompatible neutral detergent solutions to clean instruments.

07 Rinse instruments thoroughly with running tap water (<40°C) for a minimum of 1 (one) minute until all traces of neutral detergent solution are removed. Rinse inside drill irrigation hole using a 1mL syringe and a 25 gauge needle with a minimum of 0.2 mL of tap water. Repeat rinsing drill irrigation hole two (2) more times for a total of three (3) rinses.
08 Gently wipe instruments with a soft lint-free cloth or place the instruments in a drying cabinet (60°C for less than 10 hours) until fully dry. Blow residual water from drill irrigation hole using a 1mL syringe and a 25 gauge needle. Visually inspect instruments in a well-lit area to ensure they are clean, dry and free of residue.

09 Clean instrument trays with a germicidal cleaner prior to returning instruments into Kit.

10 Always check for damage or corrosive after rinsing and drying.

**Sterilization**

Dentium USA recommends either the Pre-vacuum or Gravity autoclave methods for sterilization under the conditions described below. However, autoclave performance can affect the efficacy of this process. Healthcare facilities should validate their sterilization processes employing the actual equipment and operators that routinely sterilize instruments.

All autoclaves/sterilizers should be regularly validated, maintained and checked in accordance with EN 285/EN 13060, EN ISO 17665, ANSI AAMI ST79 to ensure compliance with these and related standards. Make sure packaging is suitable for steam sterilization.

**Recommended Sterilization Parameters**

<table>
<thead>
<tr>
<th>Method-Moist Heat Sterilization</th>
<th>Pre-vacuum</th>
<th>Gravity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set Point Temperature</td>
<td>132 °C</td>
<td>132 °C</td>
</tr>
<tr>
<td>Exposure time</td>
<td>4 minutes</td>
<td>30 minutes</td>
</tr>
<tr>
<td>Drying time</td>
<td>20 minutes</td>
<td>40 minutes</td>
</tr>
</tbody>
</table>

**Maintenance Period for Surgical Drills**

All surgical drills shall be replaced after approximately 40 uses based on bone density.
**Prosthetic Introduction**

- Understanding the Implant and Prosthesis
- Types of Abutment
- Dual Abutment
- Combi Abutment
- Dual Milling / Angled / Temporary / Direct-Casting / Metal-Casting Abutment
- Screw Abutment
- Points to Consider in Abutment Selection
- Abutment Minimum Height Requirement

**Impression Technique and Restoration**

- **Abutment Level Impression**
  - Dual Abutment
  - Combi Abutment

- **Fixture Level Impression**
  - [Pick-up Type]- Dual Abutment
  - [Transfer Type]- Dual Abutment
  - [Transfer Type]- Dual Milling Abutment
  - [Pick-up Type]- Angled Abutment
  - Direct-Casting Abutment
  - Metal-Casting Abutment
  - Temporary Abutment

- **Abutment Level Impression**
  - Screw Abutment

- **Cementation Repair Method**
  - Screw & Cement Retained Prosthesis (SCRP)

- **Overdenture Procedure**
  - Ball Attachment
Understanding the Implant and Prosthesis

- If a cement retained restoration requires retrieval, making a hole in the occlusal surface will allow access to the Abutment Screw to remove final prosthesis.

- For proper abutment positioning, a radiograph is required after impression taking and abutment seating.

- For Non-hex abutment positioning, a positioning jig is required.

**Internal Connection**

- The tapered conical hex connection between implant and abutment interface provides hermetic seal.

- The biologic connection distributes load to the fixture evenly. Therefore it helps minimize micro-movement and marginal bone loss.

- Implant fixtures with various diameters share the same internal hex. One abutment screw fits all abutments and fixtures.

### Recommended Torque

<table>
<thead>
<tr>
<th>Type of Product</th>
<th>Figure</th>
<th>Torque [unit: N-cm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cover Screw</td>
<td><img src="image1.png" alt="Cover Screw" /></td>
<td>5~10</td>
</tr>
<tr>
<td>Healing Abutment</td>
<td><img src="image2.png" alt="Healing Abutment" /></td>
<td></td>
</tr>
<tr>
<td>Abutment Screw</td>
<td><img src="image3.png" alt="Abutment Screw" /></td>
<td>25~30</td>
</tr>
<tr>
<td>For Dual Abutment</td>
<td><img src="image4.png" alt="Dual Abutment" /></td>
<td></td>
</tr>
<tr>
<td>Dual Milling Abutment</td>
<td><img src="image5.png" alt="Dual Milling Abutment" /></td>
<td></td>
</tr>
<tr>
<td>Angled Abutment</td>
<td><img src="image6.png" alt="Angled Abutment" /></td>
<td></td>
</tr>
<tr>
<td>Direct-Casting Abutment</td>
<td><img src="image7.png" alt="Direct-Casting Abutment" /></td>
<td></td>
</tr>
<tr>
<td>Metal-Casting Abutment</td>
<td><img src="image8.png" alt="Metal-Casting Abutment" /></td>
<td></td>
</tr>
<tr>
<td>Combi Abutment</td>
<td><img src="image9.png" alt="Combi Abutment" /></td>
<td></td>
</tr>
<tr>
<td>Ball Abutment</td>
<td><img src="image10.png" alt="Ball Abutment" /></td>
<td></td>
</tr>
<tr>
<td>Screw Abutment</td>
<td><img src="image11.png" alt="Screw Abutment" /></td>
<td></td>
</tr>
<tr>
<td>Ti-Retaining Screw</td>
<td><img src="image12.png" alt="Ti-Retaining Screw" /></td>
<td>10</td>
</tr>
<tr>
<td>For Cylinder</td>
<td><img src="image13.png" alt="For Cylinder" /></td>
<td></td>
</tr>
<tr>
<td>Abutment Screw</td>
<td><img src="image14.png" alt="Abutment Screw" /></td>
<td>15~20</td>
</tr>
<tr>
<td>For Temporary Abutment</td>
<td><img src="image15.png" alt="For Temporary Abutment" /></td>
<td></td>
</tr>
</tbody>
</table>
Types of Abutment

- Straight abutments are Dual Abutment and Combi Abutment.
- Depending on the insertion angle and position of the fixture, the Angled Abutment or Direct / Metal Casting Abutment may be used.
- The Screw Abutment can be used when prosthetic retrieval is anticipated.

Selection Guideline
Ideal emergence profile for each tooth
Dual Abutment

- It is possible to take an impression at both fixture level and abutment level. (A Dual Abutment may be interchanged with a Combi Abutment.)
- For abutment level impressions, the same prosthetic procedures are applied to both Dual and Combi Abutments.
- For fixture level impressions, the abutment selection takes place on the master model.
- For fixture level impressions, a precise positioning jig for abutment may be required.
- Either hex or non-hex abutments may be used, according to operator’s preference.

### Dual Abutment (Hex / Non-hex) Line up

<table>
<thead>
<tr>
<th>Diameter</th>
<th>G/H</th>
<th>Vertical Angle (A°)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø4.5</td>
<td>1.0mm, 1.5mm, 2.5mm, 3.5mm, 4.5mm, 5.5mm</td>
<td>5°</td>
</tr>
<tr>
<td>Ø5.5</td>
<td>1.5mm, 2.5mm, 3.5mm, 4.5mm, 5.5mm</td>
<td>6°</td>
</tr>
<tr>
<td>Ø6.5</td>
<td>1.5mm, 2.5mm, 3.5mm, 4.5mm, 5.5mm</td>
<td>7°</td>
</tr>
</tbody>
</table>
Combi Abutment

- The Combi Abutment can be used when the implant position is optimal.

- If the abutment selection is made in the mouth, gauge the thickness of mucosa with the Depth Gauge to measure the gingival height to select an appropriate abutment.

- The Impression is taken using an Impression Coping.

- When using the Combi Abutment, it remains in the mouth after the impression is taken. (DO NOT REMOVE OR CHANGE THE ABUTMENT POSITION).

- Tighten abutment screw to 25 - 30 N·cm (retighten again before seating final prosthesis).

* Short Combi Abutment is also available for cases with insufficient occlusal space.

### Combi Abutment Line Up

<table>
<thead>
<tr>
<th>Diameter</th>
<th>G/H</th>
<th>Vertical Angle (A°)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø4.5</td>
<td>1.0mm, 1.5mm, 2.5mm, 3.5mm, 4.5mm, 5.5mm</td>
<td>5°</td>
</tr>
<tr>
<td>Ø5.5</td>
<td>1.5mm, 2.5mm, 3.5mm, 4.5mm, 5.5mm</td>
<td>6°</td>
</tr>
<tr>
<td>Ø6.5</td>
<td>1.5mm, 2.5mm, 3.5mm, 4.5mm, 5.5mm</td>
<td>7°</td>
</tr>
</tbody>
</table>
Dual Milling / Angled / Temporary / Direct-Casting / Metal-Casting Abutment

Dual Milling Abutment
- Impression is taken at fixture level.
- A precise positioning jig for abutment may be required.
- Either hex or non-hex abutments may be used, according to operator’s preference.

Angled Abutment
- The Angled Abutment is recommended when the restoration path of insertion is unfavorable in either anterior or posterior sites.
- Based on the situation of the patient, milling can be done in Lab or Chair.
- A precise positioning jig for abutment may be required.

Direct-Casting Abutment
- Excellent for either single or for bridgework.
- Used as an esthetic custom made abutment.
- Used when restoration insertion path is not ideal and/or a standard abutment cannot be used.
- Used when there is inadequate interarch distance between upper and lower jaw, and a prefabricated abutment is not ideal.
- Used when a final prosthesis is needed to support the soft tissue contours.
- A precise positioning jig for abutment may be required.
### Temporary Abutment

- Temporary Abutment can be used for temporary purposes before final prosthesis.

### Abutment (Hex / Non-hex) Line up

<table>
<thead>
<tr>
<th>Abutment</th>
<th>Diameter</th>
<th>G/H</th>
<th>Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dual Milling Grade 2</td>
<td>Ø4.0</td>
<td>1.0mm</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Ø4.5</td>
<td>1.5mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ø5.5</td>
<td>1.5 / 2.5mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ø6.5</td>
<td>1.5 / 2.5 / 3.5mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ø7.5</td>
<td>2.5 / 3.5mm</td>
<td></td>
</tr>
<tr>
<td>Dual Milling Grade 4</td>
<td>Ø4.0</td>
<td>1.0mm</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Ø4.5</td>
<td>1.5mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ø5.5</td>
<td>1.5 / 2.5mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ø6.5</td>
<td>1.5 / 2.5 / 3.5mm</td>
<td></td>
</tr>
<tr>
<td>Angled Grade 2</td>
<td>Ø4.5</td>
<td>1.5mm</td>
<td>15° / 25°</td>
</tr>
<tr>
<td></td>
<td>Ø5.5</td>
<td>2.5mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.5mm</td>
<td></td>
</tr>
<tr>
<td>Angled Grade 4</td>
<td>Ø4.5</td>
<td>1.5mm</td>
<td>15° / 25°</td>
</tr>
<tr>
<td></td>
<td>Ø5.5</td>
<td>2.5mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.5mm</td>
<td></td>
</tr>
<tr>
<td>Direct-Casting Abutment</td>
<td>Ø4.5</td>
<td>1.0mm</td>
<td>X</td>
</tr>
<tr>
<td>Metal-Casting Abutment</td>
<td>Ø4.5</td>
<td>1.0mm</td>
<td>X</td>
</tr>
<tr>
<td>Ti-Temporary</td>
<td>Ø4.5</td>
<td>1.0mm</td>
<td>X</td>
</tr>
<tr>
<td>Plastic Temporary</td>
<td>Ø4.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ø5.5</td>
<td>2.0mm</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Ø6.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Screw Abutment

If prosthesis repair is anticipated, a Screw Abutment retained prosthesis enables easy retrieval.

- Useful for connecting multiple units or if there is a preference for a screw retained prosthesis.
- Useful when respective long axes of implants differ. Each side tapers by 30% and this permits up to 60° angle divergence between two abutments.
- Useful if the prognosis of an adjacent restoration is not ideal thus permitting easy retrieval and modification of the restoration.

Ti-Retaining Screw (1.8mm - body diameter)

- Helps to minimize screw loosening due to increased occlusal contact space.
- Can endure various kinds of masticatory force.
- 10 N-cm of torque is recommended for Ti-Retaining Screw.

Screw Abutment Line up

<table>
<thead>
<tr>
<th>Diameter</th>
<th>G/H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø4.5</td>
<td>1.0mm, 1.5mm, 2.5mm, 3.5mm, 4.5mm, 5.5mm</td>
</tr>
<tr>
<td>Ø5.5</td>
<td>1.5mm, 2.5mm, 3.5mm, 4.5mm, 5.5mm</td>
</tr>
</tbody>
</table>
Points to Consider in Abutment Selection

Considerations in Selecting an Abutment
- Esthetic requirement
- Implant angulation
- Implant location
- Fixture installation depth (Gingival height)
- Interarch distance
- Prosthesis type
- Dentist & Dental technician’s preference

Impression of Implant
- According to the case the impression can be taken at abutment or fixture level.

<table>
<thead>
<tr>
<th>Fixture Level</th>
<th>Abutment Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Dual Abutment</td>
<td>1. Dual Abutment</td>
</tr>
<tr>
<td>2. Dual Milling Abutment</td>
<td>2. Combi Abutment</td>
</tr>
<tr>
<td>3. Angled Abutment (15° / 25°)</td>
<td>3. Screw Abutment</td>
</tr>
<tr>
<td>4. Direct-Casting Abutment</td>
<td></td>
</tr>
<tr>
<td>5. Metal-Casting Abutment</td>
<td></td>
</tr>
<tr>
<td>6. Temporary Abutment (Plastic &amp; Titanium)</td>
<td></td>
</tr>
</tbody>
</table>

Connection verification using an x-ray

Incorrect Engagement
Correct Engagement

- It is recommended that an X-ray should be taken before taking the impression and again after the final crown restoration to verify the abutment is seated properly. There should be no visible gap at the implant-abutment interface of the internal conical connection as indicated in the images above.

- Additionally, the gap at the bottom of the Abutment Screw should not be greater than two fixture threads. A gap of three or more fixture threads may indicate incorrect engagement.
Abutment Minimum Height Requirement

Diagram above indicates the minimum height required for prosthetic abutment
The minimum height specified is to ensure the abutment or abutment screw will not be damaged

Maximum Reduction Amount for Adjustment

Combi Abutment
• Eliminate 3.0mm from the top level Combi abutment (laser marking: 1.5mm)
Caution: Damage may be caused to the abutment screw if the abutment is reduced to less than 2.5mm above the gingival height.

Dual Abutment
• Preparation of the abutment top is possible as follows.

<table>
<thead>
<tr>
<th>Gingival Height</th>
<th>Preparable Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5mm</td>
<td>2.0</td>
</tr>
<tr>
<td>2.5mm</td>
<td>3.0</td>
</tr>
<tr>
<td>3.5mm</td>
<td>4.0</td>
</tr>
<tr>
<td>4.5mm</td>
<td>5.0</td>
</tr>
<tr>
<td>5.5mm</td>
<td>6.0</td>
</tr>
</tbody>
</table>

Angled Abutment & Dual Milling Abutment
• Required minimum abutment height: at least 5.0mm above the Fixture top.

Direct-Casting Abutment & Metal-Casting Abutment
• Required minimum abutment height: at least 5.5mm above the Fixture top.

Screw Abutment
• The Screw abutment cannot be modified. However, the cylinder height may be reduced or eliminated based on various interarch distances, but the height of the Ti-Retaining screw should be considered in advance.
Impression Technique and Restoration Selection

Abutment Level Impression

Dual / Combi Abutment
- Closed Tray Technique

Combi Abutment
Ø4.5 / Ø5.5 / Ø6.5

Dual Abutment
Hex / Non-hex Ø4.5 / Ø5.5 / Ø6.5

Impression Coping
Transfer (Snap on) Ø4.5 / Ø5.5 / Ø6.5

Analog
- Long Ø4.5 / Ø5.5 / Ø6.5

Analog
- Short Ø4.5 / Ø5.5 / Ø6.5

Burn-out Cylinder

Bridge
Rotational
Ø4.5 / Ø5.5 / Ø6.5

Single
Non-rotational
Ø4.5 / Ø5.5 / Ø6.5

Modification

Cemented Restoration
## Abutment Level Impression

- **Dual Abutment**

### Clinical Procedure

<table>
<thead>
<tr>
<th>Cover Screw</th>
<th>Healing Abutment</th>
<th>Dual Abutment</th>
<th>Comfort Cap</th>
<th>Temporary Restoration or Comfort Cap</th>
<th>Abutment Level Impression</th>
</tr>
</thead>
</table>

### Laboratory Procedure

<table>
<thead>
<tr>
<th>Lab Analog Connection</th>
<th>Burn-out Cylinder</th>
<th>Crown Wax-up</th>
<th>Final Restoration</th>
</tr>
</thead>
</table>

- Gold Crown
- Porcelain Crown
Abutment Level Impression

Dual Abutment

Chairside

1. The soft tissue is formed around Healing Abutment
2. Dual Abutment (Hex/ Non-hex)
3. Select Dual Abutment by diameter and gingival height
4. Tighten it to 25–30N-cm. and re-tighten after 15 minutes

An x-ray should be taken before taking the impression and again after the final crown restoration to verify the abutment is seated properly (See Page 19)

Select and insert the Impression Coping over abutment firmly [Snap-on Mechanism]

Inject impression material around the copings

Take the impression

Labside

1. Impression Coping will come off with the impression material
2. Fabricate provisional restoration, or use the Comfort Cap
3. Insert Lab Analog into the Impression Coping
4. Make sure Lab Analog seats securely into the Impression Coping [match flat side of both analog and coping]

Fabricate Soft tissue model

Fabricate the master cast

Seat the Burn-out Cylinder securely into the Lab Analog

Based on the interocclusal distance, modify the Burn-out Cylinder to its proper height

Fabricate Burn-out Cylinder and plastic bar in preparation for wax-up

Wax-up

Fabricate metal framework

Trim extended margin with rubber wheel

An x-ray should be taken before taking the impression and again after the final crown restoration to verify the abutment is seated properly (See Page 19)
Abutment Level Impression

- Dual Abutment

**Metal framework and reamer**

Eliminate the Lip remnant caused by ‘snap-on’ mechanism using reamer

**Metal framework after removal of the Lip remnant**

**Metal framework**

**Porcelain build-up**

Final prosthesis

**SCRP:** Once an access hole has been created, it can be converted to a SCRP (Screw & Cemented Retained Prosthesis).

**Access hole is made when Burn-out Cylinder is used to do the wax up.**

There will be extended margin around metal framework due to snap on mechanism.

Trim extended margin by rubber wheel

**Metal framework and reamer**

Eliminate the Lip remnant caused by ‘snap-on’ mechanism using reamer

**Metal framework after removal of the Lip remnant**

**Metal framework**

**Final prosthesis**
**Abutment Level Impression**

- **Combi Abutment**

**Chairside**

- Remove Cover Screw [in case of second stage surgery] and attach Healing Abutment
- The soft tissue is formed around Healing Abutment
- Select suitable Combi Abutment, then tighten it to 25~30N-cm. and re-tighten after 15 minutes
- An x-ray should be taken before taking the impression and again after the final crown restoration to verify the abutment is seated properly (See Page 13)

**Labside**

- Select Impression Coping for Combi Abutment
- Insert the Impression Coping over Combi Abutment firmly [Snap-on Mechanism]
- Inject impression material around the copings
- Take the impression

- The Impression Coping will come off with the impression material
- Fabricate provisional restoration, or use the Comfort Cap
- Insert Lab Analog into the Impression Coping
- Make sure Lab Analog seats securely

- Fabricate soft tissue model
- Fabricate the master cast
- Seat the Burn-out Cylinder securely into the Lab Analog on the master cast
- Based on the interocclusal distance, modify the Burn-out Cylinder to its proper height

- Fabricate Burn-out Cylinder and plastic bar in preparation for wax-up
- Wax-up
- Fabricate metal framework
- Trim extended margin with rubber wheel

**Fabricate soft tissue model**

**Fabricate the master cast**

**Seat the Burn-out Cylinder securely into the Lab Analog on the master cast**

**Based on the interocclusal distance, modify the Burn-out Cylinder to its proper height**

**Trim extended margin with rubber wheel**

**Fabricate metal framework**

**Wax-up**

**Fabricate Burn-out Cylinder and plastic bar in preparation for wax-up**

**Based on the interocclusal distance, modify the Burn-out Cylinder to its proper height**

**Trim extended margin with rubber wheel**
Abutment Level Impression

- Combi Abutment

Metal framework and reamer

Eliminate the Lip remnant caused by “snap-on” mechanism using reamer

Metal framework after removal of the Lip remnant

Metal framework

Final prosthesis

Chairside

If the Lab Analog is trimmed due to limited inter-occlusal space by the lab, a reduction jig is necessary. A slight modification of the abutment in the oral cavity may be necessary to reduce the height of the abutment

Seat final prosthesis in the patient’s mouth and adjust the occlusion
Impression Technique and Restoration Selection

Fixture Level Impression

Dual / Dual Milling / Angled / Direct-Casting / Metal-Casting / Temporary (Plastic & Ti) Abutment

- Impression Coping Pick-up
  - Open tray technique (Complicated case)
  - Ø4.0 / Ø4.5 / Ø5.5 / Ø6.5

- Impression Coping Transfer
  - Closed tray technique (Simple case)
  - Ø4.0 / Ø4.5 / Ø5.5 / Ø6.5

- Analog
  - DAN 34 / DAN 38

- Dual Abutment
  - Hex / Non-hex
  - Ø4.5 / Ø5.5 / Ø6.5

- Dual Milling Abutment
  - Hex / Non-hex
  - Ø4.0 / Ø4.5
  - Ø5.5 / Ø6.5 / Ø7.5

- Angled Abutment
  - Hex / Non-hex
  - 15° / 25°
  - Ø4.5 / Ø5.5

- Direct-Casting Abutment
  - Hex / Non-hex
  - Ø4.5

- Metal-Casting Abutment
  - Hex / Non-hex
  - Ø4.5

- Temporary Abutment
  - Hex / Non-hex
  - Ø4.5 / Ø5.5 / Ø6.5
  - (Ti-Temporary Abutment only available in Ø4.5)

Modification

Cemented Restoration or Screw-Retained Restoration
Clinical Procedure

- Healing Abutment
- Impression Coping Pick-up Type
- Fixture Level Impression Open Tray

Laboratory Procedure

- Lab Analog Connection
- Height Modification of Dual Abutment
- Burn Out Cylinder
- Crown Wax-up
- Final Restoration
**Fixture Level Impression [Pick-up Type]**

**Dual Abutment**

**Chairside**

- Pick-up Impression Coping
- Select & seat Impression Coping which has same diameter as Healing Abutment
- After connection of Impression Coping
- An x-ray should be taken before taking the impression and again after the final crown restoration to verify the abutment is seated properly (See Page 19)

- Apply adhesive on opened impression tray (Individual tray)
- Inject impression material
- Inject Impression material on the impression tray
- Take impression (individual tray with holes)

**Labside**

- Unscrew the Impression Coping
- Screw before removing the impression tray
- Inner surface of impression. [Impression Coping comes off with tray]
- Connect Impression Coping with analog firmly
- Fabricate soft tissue model

- Fabricate master cast
- Select abutment with proper diameter and gingival height
- Verify the selected abutment by surveying (preparation is possible if necessary)
- Fabricate positioning jig

- Fabricate cap with pattern resin
- Wax-up
- Metal framework
- Final prosthesis
**Fixture Level Impression [Pick-up Type]**

**Dual Abutment**

**Chairside**

Use positioning jig to transfer the abutment in model to oral cavity then tighten it to 25~30N-cm, and re-tighten after 15 minutes.

An x-ray should be taken before taking the impression and again after the final crown restoration to verify the abutment is seated properly (See Page 19).

Seat the final prosthesis and adjust occlusion. Place wax into opening site of abutment to protect screw head and then cement.

* In the process of seating the prosthesis, the prosthesis can be rebounded by gingival tissue. In this case it is advised to apply occlusal load on the prosthesis for 10~15 minutes.

**SCRP- Labside**

Make access hole in the resin cap by using a long impression coping transfer screw.

Wax-up

Metal framework

Final prosthesis

**SCRP- Chairside**

Use positioning jig to transfer the abutment in model to oral cavity then tighten it to 25~30N-cm. Re-tighten after 15 minutes.

An x-ray should be taken before taking the impression and again after the final crown restoration to verify the abutment is seated properly (See Page 19).

Seat the final prosthesis and adjust occlusion. Place lab wax into opening site of abutment prior to sealing with composite.

* In the process of seating the prosthesis, the prosthesis can be rebounded by gingival tissue. In this case it is advised to apply occlusal load on the prosthesis for 10~15 minutes.
Fixture Level Impression [Transfer Type]
- Dual Abutment

Clinical Procedure

Healing Abutment | Impression Coping Transfer Type | Fixture Level Impression Closed Tray

Laboratory Procedure

Lab Analog Connection | Height Modification of Dual Abutment | Burn-out Cylinder | Crown Wax-up | Final Restoration
**Fixture Level Imression [Transfer Type]**

**Dual Abutment**

**Chairside**

- Remove Cover Screw [in case of second stage surgery] and attach Healing Abutment
- The soft tissue is formed around the Healing Abutment
- Transfer type Impression Coping
- Seat Impression Coping which has same diameter as Healing Abutment
- An x-ray should be taken before taking the impression and again after the final crown restoration to verify the abutment is seated properly (See Page 19)
- After connection of Impression Coping
- Inject impression material
- Take Impression

**Labside**

- Fabricate master cast
- Soft tissue condition after the removal of Impression Coping
- Measure gingival height with depth gauge
- Select Dual Abutment with proper diameter and gingival height
- Fabricate Soft tissue model
- Inner surface of the impression material
- Remove the Impression Coping from oral cavity and connect it with Analog firmly
- Attach the Impression Coping to the Analog and insert into the impression
- Fabricate positioning jig
- Fabricate cap with pattern resin
- Wax-up
- Verify by surveying the selected abutment (preparation is possible if necessary)
Use positioning jig to transfer the abutment in model to oral cavity then tighten it to 25~30N-cm, and re-tighten after 15 minutes.

* In the process of seating the prosthesis, the prosthesis can be rebounded by gingival tissue. In this case it is advised to apply occlusal load on the prosthesis for 10~15 minutes.
**Fixture Level Impression** [Transfer Type]
- **Dual Milling Abutment**

### Clinical Procedure

- Healing Abutment
- Impression Coping [Transfer Type]
- Fixture Level Impression

### Laboratory Procedure

- Lab Analog Connection
- Dual Milling Abutment Connection
- Modification
- Crown Wax-up
- Final Restoration
**Fixture Level Impression [Transfer Type]**

**Dual Milling Abutment**

**Chairside**
- The Soft tissue is formed around the Healing Abutment Seat Impression Coping which has same diameter as Healing Abutment
- An x-ray should be taken before taking the impression and again after the final crown restoration to verify the abutment is seated properly (See Page 19)

**Labside**
- Inject impression material
- Take impression
- Inner surface of the impression material
- Remove the Impression Coping from oral cavity and connect it with Lab Analog firmly

**Fabricate soft tissue model**
- Fabricate master cast
- Select Dual Milling Abutment with proper diameter
- Abutment after milling process

**Fabricate positioning jig**
- Fabricate cap with pattern resin
- Wax-up
- Metal framework

**Chairside**
- Use positioning jig to transfer the abutment in model to oral cavity then tighten it to 25~30N-cm, and re-tighten after 15 minutes.
- An x-ray should be taken before taking the impression and again after the final crown restoration to verify the abutment is seated properly (See Page 19)
- Seat final prosthesis and adjust occlusion

*In the process of seating the prosthesis, the prosthesis can be rebounded by gingival tissue. In this case it is advised to apply occlusal load on the prosthesis for 10–15 minutes.*
Fixture Level Impression [Pick-up Type]

- Angled Abutment

Clinical Procedure

<table>
<thead>
<tr>
<th>15°</th>
<th>25°</th>
</tr>
</thead>
</table>

- Angled Abutment [Hex, Non-hex]
- Impression Coping Pick-up Type
- Fixture Level Impression

Laboratory Procedure

- Lab Analog Connection
- Angled Abutment Connection
- Modification
- Crown Wax-up
- Final Restoration Cementation
**Fixture Level Impression [Pick-up Type]**

**Angled Abutment**

**Chairside**

- Pick-up type Impression Coping
- Seat the Impression Coping
- Take impression (individual tray with holes)
- Unscrew the Impression Coping screw before removing the impression tray
- Inner surface of impression
  - [Impression Coping comes off with tray]
- Fabricate soft tissue model
- UnscREW the Impression Coping Screw, separate Impression Coping from the model
- Modify Angled Abutment properly and fabricate positioning jig
- Fabricate cap with pattern resin
- Seat the Angled Abutment using the position jig then tighten it to 25–30N-cm, and re-tighten after 15 minutes.
- Final prosthesis
- An x-ray should be taken before taking the impression and again after the final crown restoration to verify the abutment is seated properly (See Page 19)

**Labside**

- Inject impression material
- Connect Impression Coping with Analog firmly
- Fabricate master cast
- Select and seat proper Angled Abutment in master cast
- Wax-up
- Metal framework
- Insert final prosthesis and adjust occlusion

**SuperLine & Implantium Surgical / Prosthesis Manual** 37
Fixture Level Impression

- Direct Casting Abutment

Laboratory Procedure

<table>
<thead>
<tr>
<th>Lab Analog Connection</th>
<th>Direct-Casting Abutment Connection</th>
<th>Modification</th>
<th>Abutment Wax-up</th>
<th>Final Restoration</th>
</tr>
</thead>
</table>

**Labside**

- Select and seat proper Direct Casting Abutment in master cast
- Complete customized abutment
- Fabricate positioning jig
- Fabricate cap with pattern resin

**Chairside**

- Seat the angled abutment using the position jig then tighten it to 25–30N-cm, and re-tighten after 15 minutes.
- An x-ray should be taken before taking the impression and again after the final crown restoration to verify the abutment is seated properly (See Page 19)
- Insert final prosthesis and adjust occlusion
**Fixture Level Impression**
- **Metal Casting Abutment**

**Laboratory Procedure**

- **Lab Analog Connection**
- **Metal-Casting Abutment Connection**
- **Modification**
- **Abutment Wax-up**
- **Final Restoration**

**Labside**

- Select and seat proper Metal Casting Abutment in master cast
- Complete customized abutment
- Fabricate positioning jig
- Fabricate cap with pattern resin
- Wax-up
- Metal framework
- Final prosthesis

**Chairside**

- Seat the angled abutment using the position jig then tighten it to 25–30N-cm, and re-tighten after 15 minutes.
- An x-ray should be taken before taking the impression and again after the final crown restoration to verify the abutment is seated properly (See Page 19)
- Insert final prosthesis and adjust occlusion

An x-ray should be taken before taking the impression and again after the final crown restoration to verify the abutment is seated properly (See Page 19)
Fixture Level Impression

- **Temporary Abutment**

Consider the opposing teeth height before seating the Temporary Abutment. Modify the abutment if needed. Seat the Temporary Abutment using the position jig then tighten it to 15~20N-cm, and re-tighten after 15 minutes. Complete the Temporary Abutment prosthesis with direct resin.
Impression Technique and Restoration Selection

Abutment Level Impression

Screw Abutment

Open Tray Technique

Impression Coping Pick-up
Bridge / Single Ø4.5 / Ø5.5

Closed Tray Technique

Impression Coping Transfer
Bridge / Single Ø4.5 / Ø5.5

Analog
Ø4.5 / Ø5.5

Burn-out Cylinder
Ø4.5 / Ø5.5
Bridge (Non-hex) Single (Hex)

Gold Cylinder
Ø4.5 / Ø5.5
Bridge (Non-hex) Single (Hex)

Metal Cylinder
Ø4.5 / Ø5.5
Bridge (Non-hex) Single (Hex)

Titanium Cylinder
Ø4.5 / Ø5.5
Bridge (Non-hex) Single (Hex)

Polishing Protector
Ø4.5 / Ø5.5

Temporary Restoration

Ti-Retaining Screw

Screw-Retained Restoration
Abutment Level Impression

- **Screw Abutment**

### Clinical Procedure

- Cover Screw
- Healing Abutment
- Screw Abutment
- Impression Coping Transfer Type
- Abutment Level Impression

### Laboratory Procedure

- Lab Analog Connection
- Cylinder Connection
- Modification
- Crown Wax-up
- Final Restoration
Abutment Level Impression

**Screw Abutment**

**Chairside**

- Screw Abutment with delivery holder
- Select and seat appropriate Screw Abutment with delivery holder.
- Tighten it to 25~30N-cm with adapter for Screw Abutment, and re-tighten after 15 minutes.
- An x-ray should be taken before taking the impression and again after the final crown restoration to verify the abutment is seated properly (See Page 19).

- Impression Coping [transfer type]
  for Screw Abutment
- Seat Impression Coping on Screw Abutment
- An x-ray should be taken before taking the impression and again after the final crown restoration to verify the abutment is seated properly (See Page 19).
- Inject impression material

**Labside**

- Take impression
- Inner-surface of impression
- Seat Comfort Cap on the Screw Abutment
- Remove the Impression Coping from oral cavity and connect it with Analog firmly

- Attach the Impression Coping to the Analog and insert into the impression
- Fabricate soft tissue model
- Fabricate master cast
- Remove Impression Coping

- Connect the Screw Abutment cylinder then tighten it to10N-cm with Ti-Retaining screw
- Consider distance of opposing tooth, Modify cylinder to its proper height if needed
- Fabricate Burn-out Cylinder and plastic bar in preparation for wax-up
- Wax-up

An x-ray should be taken before taking the impression and again after the final crown restoration to verify the abutment is seated properly (See Page 19).
Abutment Level Impression

- Screw Abutment

**Labside**

- Fabricate metal framework
- Eliminate the Lip remnant caused by ‘snap-on’ mechanism using reamer
- Metal Framework after removal of the Lip remnant
- Complete porcelain build up

**Chairside**

- Seat final prosthesis and adjust occlusion. Tighten it to 10N-cm with Ti-Retaining Screw
- An x-ray should be taken before taking the impression and again after the final crown restoration to verify the abutment is seated properly (See Page 19)
Cementation Repair Method

- **Screw & Cement Retained Prosthesis (SCRP)**

**In light of Implant Prosthesis:**

- A screw type restoration helps to simplify the prosthesis repair, including insertion and removal of the prosthesis if necessary.
- A Dual Abutment can be cemented or screw retained.
- Combi Abutments are cement retained and no occlusal hole is necessary.

**In Case of Screw Loosening or if Prosthesis Repair is Needed**

- In case of screw loosening and/or prosthesis repair is needed, make access hole on the occlusal surface with bur.
- Unscrew, then remove the prosthesis from the oral cavity.
- Both cemented prosthesis and abutment are removed.
- Finish the repair then re-seat into the oral cavity with a new Abutment Screw.
- Tighten the prosthesis with 25~30N-cm by a screw driver.*
  *In case of Screw Abutment, Ti-Retaining Screw should be tightened to 10N-cm.
- Fill the access hole with cotton.
- Then, fill the access hole with resin.
- Final prosthesis.
Cementation Repair Method

**Screw & Cement Retained Prosthesis (SCRP)**

**Prosthesis separation from Abutment due to Cement Loss**

1. Restore the separated prosthesis to the abutment in the oral cavity.
2. Completely remove the screw using 25–30N-cm and remove prosthesis from the oral cavity.
   * In case of screw abutment separation, Ti-Retaining Screw should be unscrewed to 10N-cm.
3. Apply cement to the prosthesis.
4. Adhere the prosthesis to abutment and clean out remnant cement. Fill the access hole with cotton and resin.

**Adding to the Interproximal Contact Surface due to Prosthesis Loosening**

1. Adding to the interproximal contact due to loosening.
2. Make access hole using bur.
3. Unscrew, then remove the cemented prosthesis with abutment in the oral cavity.
4. Add resin to the contact if needed.
5. An x-ray should be taken before taking the impression and again after the final crown restoration to verify the abutment is seated properly (See Page 19).
6. Insert the prosthesis in the oral cavity and screw it in.
7. Perform light curing, then polish the contact area.
8. Final prosthesis after repair.
Impression Technique and Restoration Selection

Overdenture Procedure

Ball Attachment

Ball Abutment
Ø3.5

Abutment Level Impression

Ball Impression Coping

Ball Analog

Socket Spacer

Mini Denture Socket and O-ring

Ball and Socket Attachment for Overdenture
Overdenture Procedure

- Ball Attachment

Chairside

Connect Ball Abutment then tighten it to 25–30N-cm, and re-tighten after 15 minutes.

An x-ray should be taken before taking the impression and again after the final crown restoration to verify the abutment is seated properly (See Page 19).

Seat Impression Coping into Ball Abutment

Take Impression for the production of individual tray

Make individual tray for denture impression

Inject impression material

Take impression with individual tray

Remove the tray from the oral cavity

Labside

Inner surface of the impression material

Ball Analog

Insert Analog into the impression material securely

Fabricate master cast

Socket Spacer

Fabricate denture following standard techniques
Overdenture Procedure
- Ball Attachment

**Case 1**

- **Chairside**
  - Reduce denture inner surface to place the Female Socket
  - Connect Female Socket to the Ball Analog on the master cast
  - Apply resin with brush into the hole
  - Fabricate denture following standard techniques

  - Remove the denture from the model after initial setting of resin
  - After the resin sets, trim the remnant resin from the denture

**Case 2**

- **Chairside**
  - Connect Female Socket to the Ball Analog on the master cast
  - Examine the interference between inner surface of the holes and the Female Sockets
  - Apply the resin with brush into the hole

  - Remove the denture from the model after initial setting of resin
  - Add resin with brush around the Female Socket
  - After the resin sets, trim the remnant resin from the denture.
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