Procedure
Manual

DIEM® 2

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Table of Contents

Introduction	4
Treatment Planning Considerations	6
Low Profile Abutment Selection	7
DIEM 2 Surgical Flowchart	8
DIEM 2 Guidelines - Restorative Procedure for Denture Conversion	10
DIEM 2 Guidelines - Restorative Procedure for Definitive Prosthesis	18
DIEM 2 Ordering Information	22
References	23

Introduction

DIEM 2

DIEM, the Latin word for day, was chosen as the name for an immediate full-arch rehabilitation solution of the edentulous mandible.

Now, this solution has been expanded with the DIEM 2 Guidelines – a solution for rehabilitation in both arches, utilizing innovative products to deliver full-arch fixed provisional prostheses in as little as one day.*

In the 1960s, loading dental implants with functional occlusal forces immediately after implant placement frequently resulted in fibrous encapsulation of implants in alveolar bone. This led to relative degrees of implant mobility and ultimately the loss of implants with the potential loss of the prostheses.[1]

In the 1970s, Brånemark et al.[2] described surgical and prosthetic protocols that included unloaded healing periods of approximately four months for mandibular implants and six months for maxillary implants.[3]

Throughout the last three decades, the use of dental implants has grown significantly throughout the world and under certain specific clinical circumstances, IOL (Immediate Occlusal Loading) of endosseous implants was found to be as efficacious as the results clinicians obtained with previously reported unloaded healing protocols.[4-10]

Two of the primary benefits of IOL Protocols include reduction in the number of surgical procedures and the amount of time required for insertion of immediate, fixed, provisional prostheses. This is especially true for patients with debilitated dentitions who no longer have to go through prolonged healing periods, which include wearing complete dentures. In order for clinicians and patients to select an IOL Protocol, the protocols must provide at least similar implant survival rates as compared to the Cumulative Survival Rates (CSRs) associated with unloaded healing protocols.

Years of evidence-based research drove the development of clinical guidelines for each type of immediate loading procedure: Immediate Occlusal Loading in the edentulous mandible and Immediate Occlusal Loading in the edentulous maxillae.

* Not all patients are candidates for immediate load procedures.

Immediate Occlusal Loading in the Edentulous Mandible

Authors have reported favorable results for Immediate Occlusal Loading in edentulous jaws. In 1997, Tarnow† et al. reported 98% Cumulative Survival Rates (CSR; six mandibular, four maxillary jaws) 1-6 years post implant placement (patients in study = 10).[6] In 2002, Cooper et al. reported 98% CSR 18 months post implant placement (patients in study = 15).[7] In 2003, Testori† et al. reported one failure due to infection, in a study involving 92 Osseotite® Implants that were immediately loaded with fixed prostheses in edentulous mandibles. Testori et al. reported a 98.9% CSR for Osseotite Implants up to 48 months post implant placement.

More recently in 2009, Pieri et al. reported a 98.6% CSR in which 144 implants in 23 patients were restored with full-arch restorations immediately post implant placement. Pieri et al suggested that implants placed immediately after multiple extractions is a viable treatment option for edentulous arches when implants are stable at the time of placement and rigidly splinted with screw-retained titanium-resin prostheses.[11]

Immediate Occlusal Loading in the Edentulous Maxillae

Edentulous maxillary jaws are, in general, remarkably different from edentulous mandibles at macroscopic and microscopic levels. This is especially true when comparing the anterior, inter-foraminal portion of edentulous mandibles to anterior maxillary segments; maxillary bone is much more trabecular and, therefore, less dense.[12,13] Therefore, in some cases, it is much more difficult to achieve high levels of implant stability at implant placement (primary stability) for maxillary implants. Primary implant stability is considered to be one of the most important factors for achieving successful osseointegration of dental implants.[13,14]

In soft bone, undersizing implant osteotomies at the time of surgery, and selecting implants with differing shapes, lengths and diameters may help to overcome some of these anatomic limitations and allow implants to be placed with high primary stability.[15,16] Implant insertion torques of at least 40 Ncm have been suggested as the minimum value acceptable for Immediate Occlusal Loading,[16] although there is some debate on this subject, specifically as it pertains to multiple, splinted implants versus single, un-splinted implant s .[17, 18]

In the last several years, a number of reports have addressed the treatment of edentulous maxillary jaws with implant-supported prostheses utilizing both straight and tilted implant placement protocols using four or more implants.[19-25] In a literature review of maxillary Immediate Occlusal Loading studies in 2006, Del Fabbro et al.[18] found a wide variety of studies in terms of the number of implants placed by clinicians for maxillary Immediate Occlusal Loading protocols, as well as differing surgical and prosthetic protocols. These studies reported that the mean number of maxillary implants placed for Immediate Occlusal Loading was eight.[17]

In 2009, Romanos and Nentwig reported the results of a prospective clinical trial regarding Immediate Occlusal Loading for maxillary implants.[26] Ninety implants were placed (six in each maxillary arch) in 15 patients. Immediately after surgery, the implants were loaded with provisional acrylic resin prostheses (Immediate Occlusal Loading). The provisional prostheses remained in function for six to eight weeks; a soft/liquid diet was recommended for this time period. Definitive fixed restorations were fabricated and delivered approximately 6-8 months post implant placement. Romanos and Nentwig reported three implant failures after a mean loading period of 42.4 (±19.15) months (CSR 96.7%). Romanos and Nentwig concluded that immediately loaded splinted maxillary implants can be used successfully when implant primary stability, cross-arch stabilization and soft diets for the initial stages of healing have been prescribed and followed.

* Not all patients are candidates for immediate load procedures.

Treatment Planning Considerations

General Information

The DIEM 2 Guidelines have been designed to serve as a reference for dental practitioners utilizing Biomet 3i components and instrumentation for the Immediate Occlusal Loading of the edentulous mandible or maxilla.

This document is not intended for use as a substitute for professional training and experience or to replace or supersede sound medical judgment. ZimVie Dental does not provide medical advice. The clinician should use medically sound treatment planning and procedures for predictable results.

Pre-Treatment Diagnostic Considerations

Surgeon, RestorativeDentist and Laboratory Technician:

- Review medical history/medical consultation as needed
- Clinical and radiographic evaluations

Clinical Evaluation Considerations

ExtraoralFactors:

- Skeletal/dental malocclusion
- Temporomandibular joint health/disease
- Mandibular range of motion

Intraoral Factors:

- Condition of the remaining teeth
- Soft-tissue contours, type and thickness
- Condition of the alveolar bone

Prosthetic Factors:

- Pre-prosthetic determination of the vertical dimension of occlusion, lip support, incisal display at rest, speaking, smiling, lip mobility and resulting transition zone
- Interarch distance
- Condition of pre-existing dentures; need and design considerations for provisional restorations

Radiograph Options:

- CT scans
- Periapical radiographs
- Panoramic radiographs

Treatment Indications for Immediate Implant Prostheses

Dense (Type I) | Medium (TypeII) | Medium (TypeIII) | Soft (Type IV)

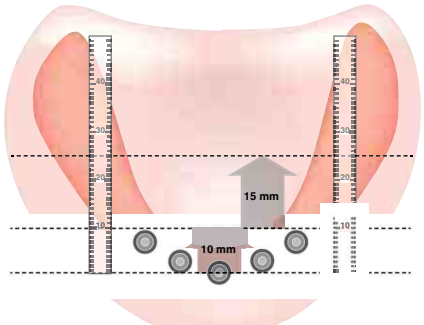
- Adequate bone quality equal to or greater than Type III
- Adequate bone volume for implant placement
- Adequate restorative volume that provides space for implant restorative components and prostheses
- Adequate A/P spread (curvature of the arch) for optimal positioning of implants and to decrease the extent of cantilevers.

Patients With the Following Are Not Considered to be Optimal Candidates for Immediate Occlusal Loading:

- Systemicdiseases:
  - Bleeding disorder
  - Uncontrolled metabolic disease (Diabetes)
  - Uncontrolled cardiovascular disease
  - Uncontrolled hypertension
  - Compromised immune system (autoimmune diseases, HIV)
- Parafunctional habits
- Poor bone quality - Type IV (implants unable to achieve primary stability)
- Lack of bone quantity
- Limited arch curvature (poor A/P spread)

A/P Spread Defined

The A/P, or anterior/posterior spread is a formula used to calculate the maximum cantilever length distal to the most posterior implants for fixed restorations. It is calculated by measuring the distance between two parallel lines; one drawn across the distal most posterior implants and one drawn through the center of the most anterior implant. A line perpendicular to these lines is drawn; this number is multiplied by 1.5.27 This length represents the maximum lengths for cantilevered segments within the framework/prosthesis. The number should be decreased for immediate all-acrylic resin restorations and for patients diagnosed with parafunctional habits including bruxism and clenching.



10 mm A/P Spread x 1.5 = 15 mm Cantilever

10 mm implant A/P Spread allows for 15 mm cantilever
No greater than 1.5 A/P Spread recommended for cantilever length

Low Profile Abutment Selection

Low Profile Abutments

Indications:

- Single and multiple-unit screw-retained restorations
- Adequate interarch distance to accept a hybrid restoration
- Minimum soft-tissue height of 1.0 mm
- Angle correction up to 30°
- External hex connection 3.4 mmD

Low Profile Abutments are limited for use in anterior segments only

Low Profile One-Piece Abutments

Designedforuse withmultiple-unit restorations. These do not have anti-rotation features at the base of the restorative platform and do not engage the hex of the implant. Non-hexed restorative components are used with these abutments.

Low Profile Angled Abutments

Designed for use with single and multiple-unit restorations; are available in 17 and 30 degree angles. These abutments have hexed configurations at the base of the restorative platforms for anti-rotation and to engage the hex of the implant. Hexed and non-hexed restorative components can be used with these abutments.

Abutment Selection

Abutment selection should be discussed by the implant team as part of the treatment planning process. With the advent of CT scans and three dimensional treatment planning, definitive abutment selection can be accomplished prior to surgery. In the event that implants are not placed vertically, the use of angled abutments may be required.

In order to accomplish accurate abutment selection, clinicians need to be aware of the following six charac teristics: [28]

1. Implant/abutment connection
2. Diameter of the implant restorative platform
3. Emergence profile of the healing abutment
4. Peri-implant soft-tissue depths
5. Implant angulation
6. Interarch distance

Surgical Materials Required

- T3 orCertain Tapered Implants in lengths of 10 mm or greater, determined during treatment planning
- Surgical kit

Restorative Materials Required

- Low Profile Abutments
- Low Profile Components:
  - Low Profile Polishing Protectors
  - Gold-Tite® or Titanium Retaining Screws
  - Waxing Screws
  - Non-Hexed Temporary Cylinders

Other Materials Required

- Light/mediumrubberdamand punch
- Impression material adhesive
- Vinyl Polysiloxane (VPS) occlusal registration material (quick set)
- Heavy body VPS impression material
- Equipment for polishing acrylic resin
- Syringe for acrylic resin
- Dappen dishes
- Small paint brushes
- Cross-cut carbide bur for titanium cylinders
- Acrylic resin (auto-polymerizing or light cure)
- Acrylic trimming burs
- Articulating paper

- Instruments needed:
  - Abutment Driver (PAD00)
  - Abutment Driver Tip (RASA3)
  - Large Hex Driver (PHD02N or PHD03N)
  - Large Hex Driver Tip (RASH3N or RASH8N)
  - Low Torque Indicating Ratchet Wrench (L-TIRW)

DIEM 2 Surgical Flowchart

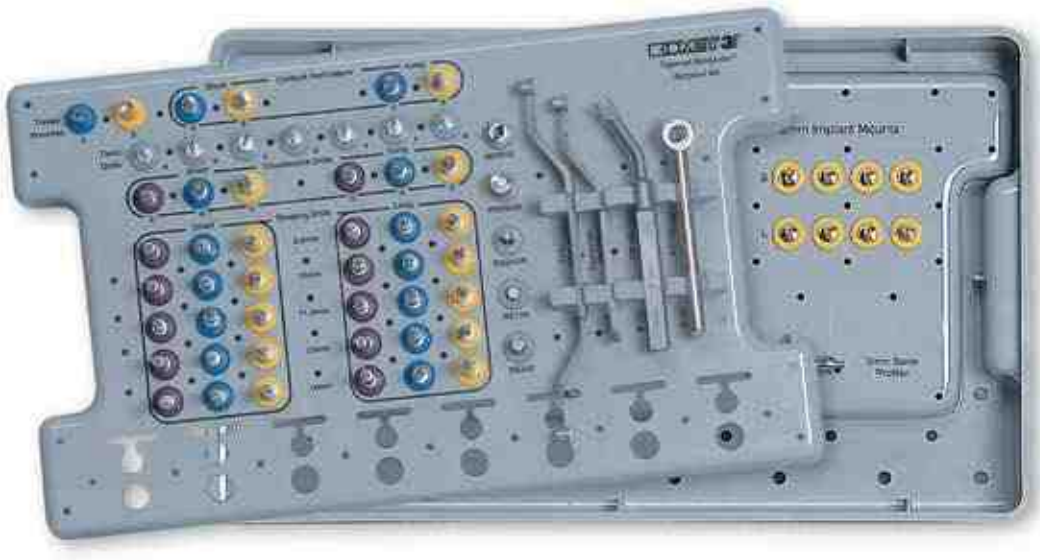
Surgical Guide

For a more predictable outcome, the use of a surgical guide is recommended. Based on clinical preference and experience, a guide fabricated with CT planning software or a guide fabricated from the existing denture can be used.

The Tapered Navigator® System for Guided Surgery

The Tapered Navigator System for Guided Surgery allows clinicians to place and provisionalize Biomet 3i Implants. Because the system is open architecture, it is compatible with a variety of CT planning software and surgical guide providers.

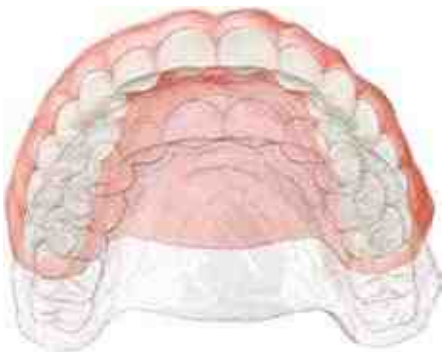
For more information on our guided surgery solution, please reference the Certain Tapered Navigator System for Guided Surgery Manual (ZVINST0084).



Clear Acrylic Resin Surgical Guide

If you do not wish to use CT planning software for the surgical guide, fabricate a provisional denture or use an existing denture to duplicate the surgical guide in clear acrylic resin.

Fabricate the provisional denture or use an existing denture.

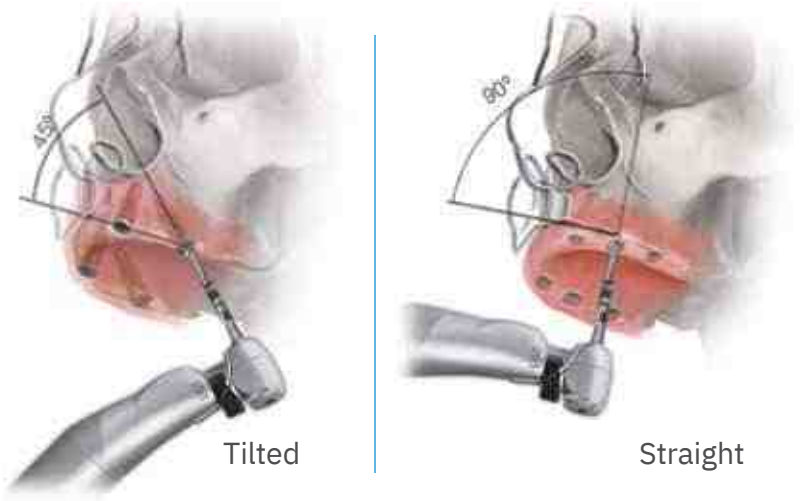


Duplicate the denture and fabricate the surgical guide.

Implant Placement

1. Tilted implant placement with four or more implants. The posterior-most implants must be tilted at 45° or less.

2. Straight implant placement with six or more implants. Sinus grafting may be necessary.

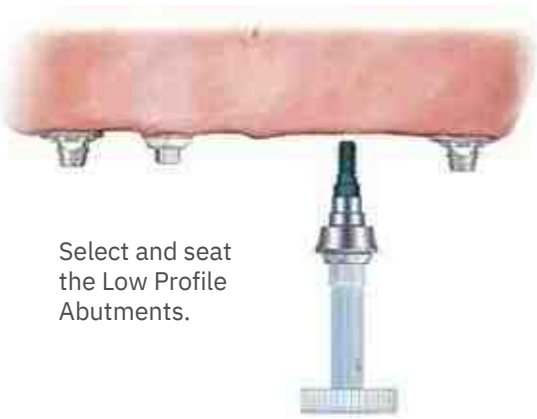


Tilted

Straight

Low Profile Abutment Selection

Selectthe appropriate height foreach Low Profile Abutment. The abutment height should be 1-2.0 mm supragingival, keeping the abutment platforms as level as possible. Low Profile Abutments should be selected so that the prosthetic access openings emerge through the occlusal surfaces of the posterior teeth and in the region of the cingulums of the anterior teeth.



Select and seat the Low Profile Abutments.

DIEM 2 Guidelines

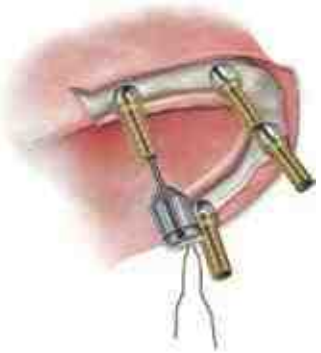
Restorative Procedure for Denture Conversion

1. Fill the interior portion of the provisional denture with quick set occlusal registration material.

2. Seat the denture into the mouth. If working on the maxilla, use the palatal portion of the maxillary prosthesis to accurately and completely seat the prosthesis. Make sure the dental midline is consistent with the facial midline. Have the patient close into centric occlusion. Let the quick set occlusal registration material set in the intaglio surface of the prosthesis.

3. Remove the denture. The locations of the Low Profile Abutments have been recorded in the impression. Through the impression material, drill holes into the denture at the abutment locations identified. Drill each hole slightly larger than the diameters of the Low Profile Abutments.

4. Identify the locations of the Low Profile Abutments on a piece of rubber dam; the entire sheet does not have to be used (trim as needed). Punch or cut holes at the abutment locations and trim the rubber dam to follow the curvature of the arch.

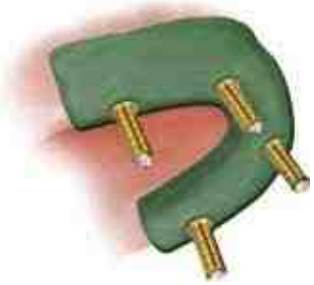


5. Place Non-Hexed Temporary Cylinders [LPCTC2] onto the Low Profile Abutments and secure them with a Gold-Tite or Titanium Retaining Screw [LPCGSH or LPCTSH] using the Large Hex Driver [PHD02N or PHD03N] until finger-tight. Make sure all of the cylinders are completely seated onto the abutments. Try-in the denture to make sure that none of the cylinders interfere with seating the denture into its correct position. Evaluate the occlusion to verify that there is no interference from any of the cylinders with the denture fully seated.

6. At this time, if one or more of the Non-Hexed Temporary Cylinders [LPCTC2] interfere with seating, reduce its height only enough to clear the opposing occlusion. Do not prepare the cylinders flushed with the occlusal surface of the denture unless the occlusion requires it. Generally, the heights of the posterior cylinders need to be trimmed so as to not interfere with the occlusal relationships.

7. Block out the screw heads with cotton or another suitable material inside the Non-Hexed Temporary Cylinders [LPCTC2] to prevent acrylic resin from entering the access openings during the pick-up procedure.

8. Remove the denture from the mouth and fit the rubber dam over the Non-Hexed Temporary Cylinders [LPCTC2]. The apical portions of these cylinders have been machined with concavities to retain the rubber dam. This will separate the surgical and prosthetic fields.



At this time you can try-in the denture once more after it has been adjusted, over the cylinders. If needed, continue to relieve the acrylic resin at the cylinder locations. Ensure that the denture seats completely and that it does not contact any of the restorative components.

9. Load a monojet syringe or hand mix of autopolymerizing acrylic resin and inject or spread the material around the base of the Non-Hexed Low Profile Temporary Cylinders [LPCTC2].

DIEM 2 Guidelines

Restorative Procedure for Denture Conversion

10. Inject or spread resin into the intaglio surface of the denture and seat the denture over the Non-Hexed Temporary Cylinders [LPCTC2]. Have the patient close lightly into centric occlusion. Make sure that the denture is positioned properly – midline, occlusion, anterior-to-posterior, horizontal and vertical dimensions can be seen. Let the acrylic resin polymerize completely.

11. Remove all access opening fillers from the Non-Hexed Temporary Cylinders [LPCTC2]. Unscrew the Gold-Tite or Titanium Retaining Screws [LPCGSH or LPCTSH] using the Large Hex Driver [PHD02N or PHD03N] and remove the denture from the Low Profile Abutments. Remove the rubber dam.

    At this time, you may choose to place the Low Profile Healing Caps [LPCHC] on the Low Profile Abutments to aid in maintaining tissue contours while the provisional prosthesis is being finished. Secure the healing caps with the Large Hex Driver [PHD02N or PHD03N] until finger-tight.

12. Attach the Low Profile Polishing Protectors [LPCPP] using the Large Hex Driver [PHD02N or PHD03N] to the cylinders embedded in the denture until finger-tight. Visually confirm that the Polishing Protectors are fully seated on the Temporary Cylinders. Fill any voids around the Polishing Protectors with autopolymerizing acrylic resin. Allow the resin to polymerize. Remove flanges, excess resin and minimize the length of the cantilevers.

13. Finish and polish the provisional prosthesis and remove the polishing protectors. Final provisional prosthesis contours should provide the patient with access for oral hygiene.

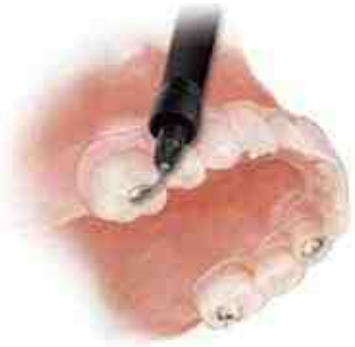
14. While the prosthesis is being finished, suture the flaps to achieve primary closure.

15. Place the provisional prosthesis onto the Low Profile Abutments and attach it using the Gold-Tite or Titanium Retaining Screws [LPCGSH or LPCTSH]. Torque the screws to 10 Ncm using the Large Hex Driver Tip [RASH3N or RASH8N] and the Low Torque Indicating Ratchet Wrench [L-TIRW]. To prevent accidental swallowing, thread floss through the spinner hole on the driver.

Clinical Tip:

For mandibular prostheses, place the Gold-Tite or Titanium Retaining Screws [LPCGSH or LPCTSH] into the screw access openings of the prosthesis, then place the provisional prosthesis onto the abutments. This minimizes the risk of dropping a retaining screw. For maxillary prostheses, place the provisional prosthesis onto the abutments and then place the retaining screws one by one onto the abutments.

Adjust the occlusion using articulating paper if needed, allowing for multiple contacts in centric occlusion. Right and left working movements should be adjusted for group function.



16. Cover the screw heads with cotton or another suitable material. Restore the access openings with composite resin and polish. Re-evaluate and adjust the occlusion as necessary.

The provisional prosthesis should not be removed or loosened for at least eight weeks. Give the patient appropriate post-operative instructions and schedule the follow-up appointment.

17. Clinicians should wait at least eight weeks prior to making definitive impressions.

DIEM 2 Guidelines

Restorative Procedure for Definitive Prosthesis

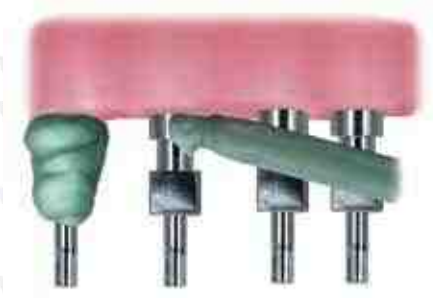
First Restorative Appointment – Abutment-Level Impression

1. Remove the screw access opening restorations, unscrew and remove the provisional prosthesis from the mouth using the Large Hex Driver [PHD02N or PHD03N]. Do not remove the Low Profile Abutments. To prevent accidental swallowing, thread floss through the spinner hole on the driver.

2. Select the proper Low Profile Impression Copings [LPCPIC2] and place them onto the Low Profile Abutments. Tighten the screw using the Large Hex Driver [PHD02N or PHD03N] until finger-tight.

   Radiograph the interface to verify complete seating of the coping on the abutment.

3. A custom or stock open impression tray is used for the Pick-Up Impression Technique. Make small holes in the impression tray to allow access to the Impression coping screw head.



4. A medium or heavy body material is recommended for the impression material in the impression tray. Use light-body impression material and syringe around the entire Low Profile Pick-Up Impression Coping [LPCPIC2].

7. Load the impression tray and seat it in the mouth. Remove impression material from the top of the screw access hole before it sets. Allow the impression material to set per the manufacturer's instruction.

8. After the impression material has set, unscrew and remove the screws from the mouth using the Large Hex Driver [PHD02N or PHD03N]. Remove the impression from the mouth.

9. Verify that the impression material has completely adapted around each impression coping and that there is no impression material on the coping's restorative platform. If impression material is visible on the coping's restorative platform, this means the impression coping was not completely seated; a new impression will need to be made.

10. Place the provisional prosthesis back into the mouth and attach it by using the Gold-Tite or Titanium Retaining Screws [LPCGSH or LPCTSH]. Torque the screws to 10 Ncm using the Large Hex Driver Tip [RASH3N or RASH8N] and the Low Torque Indicating Ratchet Wrench [L-TIRW]. Cover the screw heads with cotton or another suitable material. Restore the access openings with composite resin. Re-evaluate and adjust the occlusion as necessary. Send the impression to the laboratory for the fabrication of a master cast.

DIEM 2 Guidelines

Restorative Procedure for Definitive Prosthesis

L aborator y

1. Fabricate a soft-tissue master cast using new, unused Laboratory Analogs [LPCLA]. To fabricate the master cast, place the Laboratory Analogs for Low Profile Abutments [LPCLA] onto the impression copings [LPCPIC2]. There will not be hex engagement as the impression copings are not hexed. Hold the analog in place while tightening the screws with the Large Hex Driver [PHD02N or PHD03N] until finger-tight. Verify that the impression copings are completely seated on the analogs.

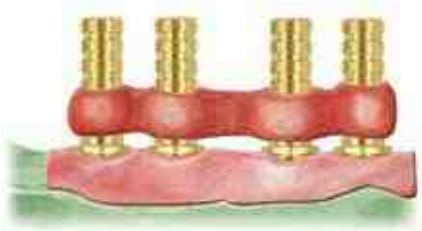
   The use of old, damaged or loose fitting analogs can interfere with the scanning and design process and may prevent proper seating of the bar or framework. Cases received with damaged or insufficiently anchored analogs will be returned to the laboratory. If the clinician is sending the impression to a commercial laboratory to pour the impression, do not attach the analog. The dental laboratory will place the analogs.

   The soft-tissue material on the master cast must be applied approximately 2.0 mm down from the analog restorative interface. It must also be easily removable for the scanning and design process to ensure a proper fit.

2. Place the Non-Hexed Low Profile Temporary Cylinders [LPCTC2] onto the abutment analogs and finger-tighten into place with waxing screws [LPCWS] using the Large Hex Driver [PHD02N or PHD03N]. Fabricate a rigid verification index by luting the cylinders together using a light cure composite resin or autopolymerizing acrylic resin. Also, fabricate a record base with a wax occlusion rim. Ship the verification index intact to the clinician for try-in along with the wax occlusion rim for interocclusal records.

Second Restorative Appointment – Verification Index Try-In

1. Remove the screw access opening restorations, unscrew and remove the provisional prosthesis from the mouth using the Large Hex Driver [PHD02N or PHD03N]. Do not remove the Low Profile Abutments. To prevent accidental swallowing, thread floss through the spinner hole on the driver.



2. Place the wax occlusion rim into the mouth and make the interocclusal records. Place the verification index onto the Low Profile Abutments intraorally. Finger-tighten a Low Profile Waxing Screw [LPCWS] using the Large Hex Driver [PHD02N or PHD03N] into the posterior-most cylinder of the verification index. Visually, verify a passive fit on all interfaces. Remove the waxing screw and place it into the opposite posterior-most cylinder and repeat. If a fit discrepancy is found, section the index and reassemble it intraorally by luting it with resin material. Remove the index.

3. Place the provisional prosthesis back into the mouth and attach it by using the Gold-Tite or Titanium Retaining Screws [LPCGSH or LPCTSH]. Torque the screws to 10 Ncm using the Large Hex Driver Tip [RASH3N or RASH8N] and the Low Torque Indicating Ratchet Wrench [L-TIRW]. Cover the screw heads with cotton or another suitable material. Restore the access openings with composite resin. Re-evaluate and adjust the occlusion as necessary.

DIEM 2 Guidelines

Restorative Procedure for Definitive Prosthesis

L aborator y

1. Verify that the master cast is accurate using the verification index. If a fit discrepancy is found, remove the inaccurately positioned analogs and replace them in the cast using the corrected verification index. Articulate the casts using the interocclusal record. Set the overdenture teeth on the record base and return the denture wax-up for try-in. If the analogs are not accurate in the master cast, remove the analogs from the cast, re-attach them to the verification index and re-seat the index onto the accurate analogs. Inject dental stone around the analog(s) and allow it to set. The cast is now considered to be accurate. Set the overdenture teeth on the record base and return it for the wax try-in.

Third Restorative Appointment – Verification Index Try-In

1. Remove the screw access opening restorations, unscrew and remove the provisional prosthesis from the mouth using the Large Hex Driver [PHD02N or PHD03N]. Do not remove the Low Profile Abutments. To prevent accidental swallowing, thread floss through the spinner hole on the driver.

2. Place the wax denture/record base intraorally. Verify occlusion, aesthetics and phonetics. Make any necessary adjustments. If major adjustments are necessary, make a new interocclusal record and return the denture wax-up to the laboratory for remounting of the casts, a new set-up and a second wax try-in.

3. Place the provisional prosthesis back into the mouth and attach it by using the Gold-Tite or Titanium Retaining Screws [LPCGSH or LPCTSH]. Torque the screws to 10 Ncm using the Large Hex Driver Tip [RASH3N or RASH8N] and the Low Torque Indicating Ratchet Wrench [L-TIRW]. Cover the screw heads with cotton or another suitable material. Restore the access openings with composite resin. Re-evaluate and adjust the occlusion as necessary.

Laboratory

1. Place the verified denture wax-up on the cast and make a silicone or plaster matrix of the tooth positions. Do not remove the teeth from the denture wax-up. Do not ship the matrix to the ZimVie Milling Centre.

2. Log on to the ZimVie Milling Centre Portal (production.zimvie.eu) and complete your bar Order Form.

ZimVie Milling Centre

1. The soft-tissue master cast and the verified denture wax-up are scanned and transferred into the CAD software. The bar is designed in CAD according to the ZimVie Order Form.

2. Once the design has been approved, the design file is transferred to a milling machine for fabrication and milling. After milling is complete the bar is finished and polished as per the Order Form. The bar, any requested components and case materials will be returned to the laboratory.

   The laboratory may send the bar or framework to the restorative dentists for intraoral try-in or to set the teeth directly onto the bar. The clinician may do the framework try-in alone or combine the framework try-in with the denture teeth try-in to save one appointment. Once the try-in is completed and the framework fit and aesthetics are verified, the prosthesis may be processed in a conventional manner.

DIEM 2 Guidelines

Restorative Procedure for Definitive Prosthesis

Fourth Restorative Appointment (Optional) – Framework and Denture Teeth Try-In

1. Remove the screw access opening restorations, unscrew and remove the provisional prosthesis from the mouth using the Large Hex Driver [PHD02N or PHD03N]. Do not remove the Low Profile Abutments. To prevent accidental swallowing, thread floss through the spinner hole on the driver.

2. Fit the bar onto the Low Profile Abutments intraorally. Thread a Low Profile Waxing Screw [LPCWS] using the Large Hex Driver [PHD02N or PHD03N] into the posterior-most access opening until finger-tight. Visually verify a passive fit on all interfaces. There should be no space between the bar and the abutments. Remove the screw and place it into the opposite posterior-most access opening of the bar and repeat.

   NOTE: *If a fit discrepancy is detected during bar try-in, one of the following corrective measures may be used:*

   a. The bar may be sectioned and reassembled in the patient replica. Then the analog(s) in the master cast will be repositioned by the laboratory and a new bar will be fabricated.

   b. A new impression can be made and a new master cast can be poured. Then, the verification steps should be repeated and a new bar will be fabricated.

3. Place the provisional prosthesis back into the mouth and attach it by using the Gold-Tite or Titanium Retaining Screws [LPCGSH or LPCTSH]. Torque the screws to 10 Ncm using the Large Hex Driver Tip [RASH3N or RASH8N] and the Low Torque Indicating Ratchet Wrench [L-TIRW]. Cover the screw heads with cotton or another suitable material. Restore the access openings with composite resin. Re-evaluate and adjust the occlusion as necessary.

Laboratory – Fixed Hybrid Restoration

1. Place the denture wax-up and matrix on the cast. Remove the overdenture teeth and reset the teeth into the matrix. Attach the bar onto the analogs with the use of the Low Profile Waxing Screws [LPCWS] and finger-tighten using the Large Hex Driver [PHD02N or PHD03N]. Place the matrix with the overdenture teeth onto the cast and attach the overdenture teeth to the bar. Finish waxing the fixed hybrid restoration. Flask the denture wax-up. Boil out the denture flask. Separate the flask and remove all wax remnants. Pack, finish and polish.

Fifth Restorative Appointment – Delivery of Definitive Prosthesis

1. Remove the screw access opening restorations, unscrew and remove the provisional prosthesis from the mouth using the Large Hex Driver [PHD02N or PHD03N]. Do not remove the Low Profile Abutments.
   In order to prevent accidental swallowing, thread floss through the spinner hole on the driver.

2. Place the fixed-hybrid prosthesis onto the Low Profile Abutments intraorally and thread the Gold-Tite or Titanium Retaining Screws [LPCGSH or LPCTSH] into the abutments using the Large Hex Driver [PHD02N or PHD03N] until finger-tight. Verify a passive fit on all interfaces. Adjust the denture base as needed. Adjust the occlusion regarding centric, lateral and balancing contacts. Remove the prosthesis, finish and polish only if the prosthesis was adjusted.

   * The use of new Gold-Tite Retaining Screws [LPCGSH] is recommended when placing the final prosthesis.

3. Torque the Gold-Tite Screws [LPCGSH] to 10 Ncm using the Large Hex Driver Tip [RASH3N or RASH8N] and the Low Torque Indicating Ratchet Wrench [L-TIRW]. Place protective material over the screw heads inside the access openings. Restore the access openings with composite resin and polish.

DIEM 2 Ordering Information

Low Profile Abutments

3.4 mm	Seating Surface						
Collar Height	One Piece (Non-Hexed)		Two Piece (Hexed)		17° (Hexed)		30° (Hexed)	
1.0 mm								
2.0 mm								
3.0 mm	ILPC341U	LPC341U	ILPC341	LPC341	–	–	–	–
4.0 mm	ILPC342U	LPC342U	ILPC342	LPC342	ILPAC3217	LPAC3217	–	–
5.0 mm	ILPC343U	LPC343U	ILPC343	LPC343	–	–	ILPAC3330	LPAC3330
	ILPC344U	LPC344U	ILPC344	LPC344	ILPAC3417	LPAC3417	–	–
	–	–	–	–	–	–	ILPAC3530	LPAC3530

4.1 mm	Seating Surface						
Collar Height	One Piece (Non-Hexed)		Two Piece (Hexed)		17° (Hexed)		30° (Hexed)	
1.0 mm	ILPC441U	LPC441U	ILPC4 41	LPC4 41	–	–	–	–
2.0 mm	ILPC442U	LPC442U	ILPC4 42	LPC4 42	ILPAC4217	LPAC4217	–	–
3.0 mm	ILPC443U	LPC443U	ILPC4 43	LPC4 43	–	–	ILPAC4330	LPAC4330
4.0 mm	ILPC444U	LPC444U	ILPC4 4 4	LPC4 4 4	ILPAC4 417	LPAC4417	–	–
5.0 mm	–	–	–	–	–	–	ILPAC4530	LPAC4530

5.0 mm	Seating Surface						
Collar Height	One Piece (Non-Hexed)		Two Piece (Hexed)		17° (Hexed)		30° (Hexed)	
1.0 mm	ILPC541U	LPC541U	ILPC541	LPC541	–	–	–	–
2.0 mm	ILPC542U	LPC542U	ILPC542	LPC542	ILPAC5217	LPAC5217	–	–
3.0 mm	ILPC543U	LPC543U	ILPC543	LPC543	–	–	ILPAC5330	LPAC5330
4.0 mm	ILPC544U	LPC544U	ILPC544	LPC544	ILPAC5417	LPAC5417	–	–
5.0 mm	–	–	–	–	–	–	ILPAC5530	LPAC5530

= Certain® Internal Connection = External Hex Connection

Abutment Compatibility

Component	Hexed Abutment	Non-Hexed Abutment
Hexed	Yes	No
Non-Hexed	Yes	Yes

Low Profile Screws

Description	Item No.
Gold-Tite Retaining Screw	LPCGSH
Titanium Retaining Screw	LPCTSH
Waxing Screw	LPC WS

Low Profile Laboratory Tools

Description	Item No.
Lapping Tool	LPC AMI
Polishing Protector	LPCPP

Low Profile Abutment Bone Profilers

Description	Item No.
Low Profile Abutment Bone Profiler, 3.4 mmD	LPCBP3
Low Profile Abutment Bone Profiler, 4.1 mmD	LPCBP4
Low Profile Abutment Bone Profiler, 5.0 mmD	LPCBP5

Low Profile Impression Copings & Analog

Description	Item No.
Pick Up Impression Coping (Hexed)	LPCPIC1
Pick Up Impression Coping (Non-Hexed)	LPCPIC2
Twist Lock™ Impression Coping (Hexed)	LPCTIC1
Twist Lock (Non-Hexed)	LPCTIC2
QuickBridge® Impression Coping	LPCRIC
Lab Analog	LPCL A

Low Profile Provisional Restoration Components

Description	Item No.
Temporary Cylinder (Hexed)	LPC TC1
Temporary Cylinder (Non-Hexed)	LPC TC2
Healing Cap	LPCHC
PreFormance® Temporary Cylinder (Hexed)	LPCPTC1
PreFormance Temporary Cylinder (Non-Hexed)	LPCPTC2
QuickBridge	LPCQB
QuickBridge Replacement Cap	LPCQBCAP
Distal Extension	LPCDE

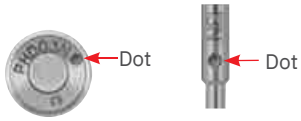
Low Profile Final Restoration Components

Description	Item No.
Gold Cylinder (Hexed)	LPCGC1
Gold Cylinder (Non-Hexed)	LPCGC2
Castable Cylinder (Hexed)	LPCCC1
Castable Cylinder (Non-Hexed)	LPCCC2
Laser Welded Cylinder	LPCTUCA

Large Hex Driver & Driver Tip

Description	Item No.
Large Hexed Driver	PHD02N, PHD03N*
Large Hexed Driver Tip	RASH3N, RASH8N*
Posterior Abutment Driver 17 mmL	PAD00
Right Angle Abutment Driver Tip Steel	RASA3
Standard Abutment Driver 24 mmL	PAD24

* Made narrower to fit with external hexed angled Low Profile Abutments. The Driver and Driver Tips can be identified by a laser marked dot after the item number as pictured below.



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† The indicated clinicians have financial relationships with ZimVie Dental resulting from speaking engagements, consulting engagements and other retained services.

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