For the oral rehabilitation
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### For superstructures

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Introduction

This manual explains handling methods, operation procedures and cautions of PLATON IMPLANT SYSTEM. For your full understanding of PLATON SYSTEM, please read this manual carefully before using. This manual should be retained for future reference.

On this manual, anchor parts such as "head, cylinder and the rest" described name generically "abutment".

For using PLATON SYSTEM

- Before using PLATON SYSTEM, you need fully understanding of surgical operative procedures and operation methods.
- PLATON SYSTEM has been developed for recovering functions and esthetic in the case of edentia.
- After the patient's general medical and health condition diagnosis, and advisability of treatment, choose a time to start using PLATON SYSTEM.
- Before surgery, enough check the bone quantity, bone quality, mucous thickness, occlusal condition and so on.
- Use our PLATON SYSTEM tools in the case of surgery.
- PLATON IMPLANT is sterilized medical treatments. Open them immediately before the operation.
- When these implants touch un-clean area, scrap them and use new implants.
- Judge the healing time after implantation based on patient's condition, surgery situation or objective evaluation standard like Periotest and Osstell. Healing period is about 3 to 6 month only as a guide.
- Before using drills or system tools, make sure to clean and sterilize them.
- Do not leave drills and system tools adhesion of blood, bone chips and water. This may cause discoloration and degradation of them. Make sure to remove blood, bone chips and water completely, after using them. Clean and dry up them, and keep them on the clean area. Drills and system tools keep in the clean area.
Chapter 1  Overview of prosthetic modes

1. Prosthetic modes of the PLATON system

Prosthetic mode of the PLATON system is a cement-retained type.

... Cement-retained

— Cement-retained abutments
  • Directly or temporarily cementing this type of the PLATON system to the abutment heads with cement.
  • Margin setting can be adaptive to the range of approx. 1.5mm-2mm from supragingival to subgingival in consideration of cement removal and a fit-confirming area.

2. Factors involved in prosthetic design

1) Classification according to the margin setting of superstructures

• **Implant margin**
  The margin of superstructures is placed on implant bodies.

• **Abutment margin**
  The margin of superstructures is placed at the margin setting part of abutments.

Implant margin
The margin location should be decided during implant placement because it is determined by the depth of the placed implant.

Abutment margin
The margin location should be decided during or after the second surgery or during abutment selection because it is determined on the basis of mucosal thickness (1) and width (2).
2) Classification according to the thickness of peri-implant mucosa

The abutments should be selected based on mucosal thickness. The length of abutment flare and the implant depth accommodate a mucosal thickness of approximately 1.2 to 6.2mm. The corresponding mucosal thickness should be approximately 1.5 to 2mm subgingivally for easy cement removal and a fit-confi

In the thinner mucosa, the margin of superstructures should be placed in the mechanically polished part of implants.

In the thicker mucosa, the abutment length should be altered to place the margin of superstructures.

In the thickest mucosa, the margin of superstructures should be placed with the abutment length maximized and the mechanically polished part not placed in the bone.

<table>
<thead>
<tr>
<th>Mucosal Thickness</th>
<th>1.2mm</th>
<th>1.5mm</th>
<th>2.0mm</th>
<th>3.0mm</th>
<th>4.2mm</th>
<th>3.2mm</th>
<th>3.5mm</th>
<th>4.0mm</th>
<th>5.0mm</th>
<th>6.2mm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
3) Classification according to impression methods

The two impression taking methods are the transfer system and direct impression. The direct impression method can’t accommodate to the fixed superstructures.
4) Clearance with the opposite tooth and classification of the final superstructures according to the coronal length

The depth of the implant and the preparation amount of the abutment are determined to some extent by the clearance with the opposite tooth or the coronal length of the final superstructure.

5) Classification according to diameters at the superstructure margin (abutment thickness)

The types of implants and abutments are determined by the diameter at the superstructure margin: anterior teeth, premolars or molars.
Chapter 2  Cement-retained type

1. Procedures for cement-retained type

1) Direct impression technique

--- Flow chart for direct impression technique ---

**Points to consider**

- Head, Extended head or Two-piece head
- Insertion of abutment
- Preparation into mouth
- Direct impression
- Temporary restoration
- Direct impression (final impression)
- Final restoration
- Cementation

**Points to consider**

- Clearance with the opposite tooth
- Mucosal thickness
- Margin location
- Consistency between the implant axis and the coronal axis
- Coronal width

- Abutment preparation design
- Rotating speed and rotating direction of preparing bars
- Retention and antirotation form for the superstructure
- Margin position

- Active and static functional restoration
- Preparation of the transmucosal part
- Reconstruction of the interdental papilla
- Check of cleaning ability
- Providing the peri-margin gingival margin form
- Verification of pronunciation and tongue sensation

- Assessment of the temporary restoration
- Adequate contact with adjacent teeth
- Providing adequate occlusion

- Removal of the cap
- Cleaning the inside of implant
- Torque control

- Accurate reproduction of the margin and gingival retraction
- Accurate reproduction of the margin and impression taking of the prepared mucosal form
- Check adaptation
- Removal of excessive cement
2) Transfer system

Flow chart for transfer system

### Points to consider

- Fabrication of the open tray
- Removal of the cap
- Cleaning the inside of implant
- Check the interlocking end subgingivally
- Connect the copings in the multiple tooth case

- Active and static functional restoration
- Preparation of the transmucosal part
- Reconstruction of the interdental papilla
- Check of cleaning ability
- Providing the peri-margin gingival margin form
- Verification of pronunciation and tongue sensation

- Assessment of the temporary restoration
- Adequate contact with adjacent teeth
- Providing adequate occlusion

- Check adaptation
- Removal of excessive cement

### Abutment selection

- Transfer head (Non-engaging),
- Transfer head (d=4.2: d=5.5),
- Angled head, Preparation head,
- Gold cylinder, or Temporary cylinder

### Preparation for impression

- Insertion of transfer coping

### Impression taking

- Transfer (open tray)

### Preparation

- Recheck/preparation of abutment on the model

### TEK

- Temporary restoration

### Final impression taking

- Transfer (open tray)

### Superstructure

- Final restoration

### Preparation for insertion

- Insertion of abutment

### Insertion

- Cementation

### Points to consider

- Clearance with the opposite tooth
- Mucosal thickness
- Margin location
- Consistency between the implant axis and the coronal axis
- Coronal width

- Abutment preparation design
- Retention and antirotation form for the superstructure
- Margin position

- Impression of the prepared mucosal form

- Fabrication of the index
- Cleaning the inside of implant
- Torque control

- Impression of the prepared mucosal form
2. Different varieties of abutments for the cement-retained type

The abutments are classified according to the margin set position (the margin set at the platform on the implant side or the margin set on the abutment side) or whether the implant is to be adaptive to the transfer system (Table 1).

<table>
<thead>
<tr>
<th>Cementing abutments</th>
<th>Margin set</th>
<th>Whether or not to be adaptive to the transfer system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>Implant side</td>
<td>×</td>
</tr>
<tr>
<td>Extended Head</td>
<td>Abutment side</td>
<td>×</td>
</tr>
<tr>
<td>Transfer head (Non-engaging)</td>
<td>Implant side</td>
<td>×</td>
</tr>
<tr>
<td>Angled head (Non-engaging)</td>
<td>Implant side</td>
<td>×</td>
</tr>
<tr>
<td>Two-piece head</td>
<td>Abutment side</td>
<td>×</td>
</tr>
<tr>
<td>Preparation head</td>
<td>Abutment side</td>
<td></td>
</tr>
<tr>
<td>Transfer head φ4.2</td>
<td>Abutment side</td>
<td></td>
</tr>
<tr>
<td>Transfer head φ5.5</td>
<td>Abutment side</td>
<td></td>
</tr>
<tr>
<td>Angled head (Engaging)</td>
<td>Abutment side</td>
<td></td>
</tr>
<tr>
<td>Preparation head</td>
<td>Abutment side</td>
<td></td>
</tr>
<tr>
<td>Gold cylinder</td>
<td>Abutment side</td>
<td></td>
</tr>
<tr>
<td>Temporary cylinder</td>
<td>Abutment side</td>
<td></td>
</tr>
</tbody>
</table>

Table 1
**Head**

Used as abutments for single standing. The structure of the screw-built-in, one-piece- allows the same prosthetic operation as natural teeth through the following procedures: preparation into the mouth, direct impression, working plaster model, and fabrication of the superstructure.

**Tools for insertion:** Head holder (S, M, and L)

Taper angle of the abutment part: 6°

<table>
<thead>
<tr>
<th>Abutment length (height)</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>4.0mm</td>
</tr>
<tr>
<td>M</td>
<td>5.5mm</td>
</tr>
<tr>
<td>L</td>
<td>7.0mm</td>
</tr>
</tbody>
</table>

**Extended Head**

These abutments are an integration of the abutment part and the transmucosal part. The structure of the screw-built-in one-piece- allows the same prosthetic operation as natural teeth through the following procedures: preparation into the mouth, direct impression, working plaster model, and fabrication of the superstructure. The transmucosal part can be customized and the margin can be set freely.

**Tools for insertion:** Hex driver

Taper angle of the abutment part: 6°

Diameter: 4.0 mm

<table>
<thead>
<tr>
<th>Abutment length (height)/Transmucosal part (G)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
</tr>
<tr>
<td>L</td>
</tr>
</tbody>
</table>
Two-piece head

This abutment is an integration of the abutment part and the transmucosal part. The structure of the screw - built-in, one-piece - allows the same prosthetic operation as with natural teeth through the following procedures: preparation into the mouth, direct impression, working plaster model, and fabrication of the superstructure. The transmucosal part can be customized and the margin can be set freely.

Tools for insertion: Head holder
Taper angle of the abutment part: 6°
Diameter: 5.5mm

<table>
<thead>
<tr>
<th>Abutment length (height)</th>
<th>Transmucosal part (G)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height: 4.0mm / 5.5mm / 7.0mm</td>
<td></td>
</tr>
<tr>
<td>G: 2.0mm / 3.0mm</td>
<td></td>
</tr>
</tbody>
</table>

Angled head (Non-engaging)

These are used to adjust the tooth axis to the direction of the placed implant. The structure is fixed with the set screw. The impression may be taken using either the transfer system or direct impression. Use of the transfer system allows for systematically proceedings from impression taking to the fabrication of superstructure.

Tools for insertion: Hex driver
Abutment form: 15-degree angle or 23-degree angle
Accessory: Set screw for the angle head (1.5mm)

<table>
<thead>
<tr>
<th>Abutment length (height)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-degree S: 7.7mm</td>
</tr>
<tr>
<td>23-degree S: 7.7mm</td>
</tr>
</tbody>
</table>
**Angled head (Engaging)**

The operative procedure used is the same as with angled heads (non-engaging), and the internal hex (hexagonal structure) is designed as a lock mechanism at the interface with implants. The customizable transmucosal part and free margin setting facilitate reproduction of the anatomy.

**Tools for insertion:** Hex driver
**Abutment form:** 15-degree angle or 23-degree angle
**Diameter:** 5.0mm
**Accessory:** Set screw H2 (2mm)

---

**Abutment length (height)/Transmucosal part (G)**

15-degree
- Height: 7.0mm
- G: 2.0mm / 4.0mm

23-degree
- Height: 7.0mm
- G: 2.0mm / 4.0mm

---

**Transfer head (Non-engaging)**

These are normal-type abutments adaptive to the transfer system. The structure is fixed with the set screw and the transfer system can be used to systematically proceed from impression taking to the fabrication of superstructure.

**Tools for insertion:** Hex driver
**Taper angle of the abutment part:** 6°
**Accessory:** Set screw H2 (2mm)

---

**Abutment length (height)**

**S**
- 4.0mm

**M**
- 5.5mm

**L**
- 7.0mm

---

**Transfer system:** Adaptive
**Margin:** Abutment margin
**Healing abutment:** φ 5.5
**Material:** Titanium
**Transfer head φ 4.2**

The intended purpose is the same as transfer heads (non-engaging), and the internal hex (hexagonal structure) is designed as a lock mechanism at the interface with implants. This is a single-unit construction of the abutment part and the transmucosal part, and is fixed with a set screw. The transmucosal part can be customized and the margin can be freely set.

**Tools for insertion:** Hex driver
- Taper angle of the abutment part: 6°
- Diameter: 4.2mm
- Accessory: Set screw H2 (2mm) and H4 (4mm)

<table>
<thead>
<tr>
<th>Abutment length (height)/Transmucosal part (G)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height : 4.0mm / 5.5mm / 7.0mm</td>
</tr>
<tr>
<td>G : 1.5mm / 2.0mm / 3.0mm</td>
</tr>
</tbody>
</table>

**Transfer head φ 5.5**

The intended purpose is the same as transfer heads (non-engaging), and the internal hex (hexagonal structure) is designed as a lock mechanism at the interface with implants. This is a single-unit construction of the abutment part and the transmucosal part, and is fixed with a set screw. The transmucosal part can be customized and the margin can be freely set.

**Tools for insertion:** Hex driver
- Taper angle of the abutment part: 6°
- Diameter: 5.5mm
- Accessory: Set screw H2 (2mm) and H4 (4mm)

<table>
<thead>
<tr>
<th>Abutment length (height)/Transmucosal part (G)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height : 4.0mm / 5.5mm / 7.0mm</td>
</tr>
<tr>
<td>G : 1.5mm / 2.0mm / 3.0mm</td>
</tr>
</tbody>
</table>
**Preparation head**

This is the abutment used for grinding preparation adaptive to the transfer system. The structure is fixed with the set screw and can be prepared from an arbitrary form on the laboratory side. Use of the transfer system allows for systematically proceedings from impression taking to the fabrication of superstructure. The large-diameter abutment, customizable transmucosal part, and free margin setting facilitate reproduction of the anatomy.

The internal hex (hexagonal structure) is designed at the interface with implants as a lock mechanism.

- **Tools for insertion**: Hex driver
- **Abutment form**: Straight
- **Diameter**: 5.0mm
- **Accessory**: Set screw H2 (2mm)

<table>
<thead>
<tr>
<th>Abutment length (height)</th>
<th>Transmucosal part (G)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>G</td>
</tr>
<tr>
<td>Height 7.0mm</td>
<td>G 1.5mm</td>
</tr>
</tbody>
</table>

**Temporary cylinder**

This is an abutment used as the interior of temporary restorations. The cylinder surface allows retention to resin. The internal hex (hexagonal structure) is designed as a lock mechanism at the interface with implants. As with other applications, this is more effective for fabricating custom healing abutments.

- **Tools for insertion**: Hex driver
- **Cylinder form**: Straight (knurling processing: mechanical retention)
- **Diameter**: 3.0mm
- **Accessory**: Set screw H2 (2mm)

<table>
<thead>
<tr>
<th>Abutment length (height)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
</tr>
<tr>
<td>Height 9.0mm</td>
</tr>
</tbody>
</table>
**Gold cylinder**

This is a cast-type gold abutment, which is waxed up to fabricate an abutment through cast joint. The internal hex (hexagonal structure) is designed as a lock mechanism at the interface with implants. The transmucosal part and abutment for can be customized and the margin can be freely set. Therefore, this can be used for single defects and partial defects from edentulism.

**Tools for insertion:** Hex driver
- Cylinder form: Straight
- Diameter: 4.0mm
- Accessory: Set screw H2 (2mm)

**Abutment length (height):** 10mm

Transfer system: Adaptive
Margin: Abutment margin
Healing abutment: Custom
Material: Non-oxidation alloy
Polyoxymethylene resin (cylinder part)
3. Insertion procedures and torque control of different abutments

1) Tools required for inserting abutment

The following tools are used for inserting abutments. Take note that tools differ according to the abutment of choice.

**Head holder**

This is used for insertion of different heads (S, M, L), extended heads, and a two-piece head. Each head is inserted into the implant with the round driver, ratchet, and torque ratchet while bracing the abutment part of each head with the head holder.

![Head holder](image)

**Hex driver**

These are used for insertion of set-screw fixed abutments. The driver is inserted into the hex (hexagonal structure) provided at the top of abutment or set screw to carry into the mouth. Each abutment is then inserted into the implant with the round driver, ratchet, and torque ratchet.

![Hex driver](image)
**Round driver**

These are hand drivers used for insertion of each holder. They are used when manual tightening of screws or components is necessary. When the tightening torque is determined, they are used as drivers for pre-tightening before using a torque ratchet. Two types of sizes, by diameter, are provided corresponding to the insufficient space between the implant and adjacent tooth.

![Round driver images](image)

**Diameter : 17mm**  
**Diameter : 10mm**

**Torque ratchet**

This is used to control a torque during insertion of each abutment and has an easy-to-use ratchet mechanism.

![Torque ratchet image](image)

**Length : 111mm**

**Extension**

When tools cannot be inserted due to the narrow space between the implant and the adjacent tooth, these are used to extend the vertical dimension of the implant holders or head holders.

![Extension image](image)

**S (length : 15mm)**  
**L (length : 22mm)**

**Material : Stainless steel**
2) Insertion procedures of different abutments
Head / Extended head / Two-piece head

After verification of osseointegration, the cap is removed with a hex driver. The interior of the cap removed implant is cleaned and dried to prevent any foreign matter from getting inside prior to insertion of each abutment.

The abutment is inserted into a head holder to carry it into the mouth. The use of rubber dam is recommended to avoid misdeglutition.

The round driver or torque ratchet is fitted on the head holder, and is rotated until the turning of the abutment stops.

Torque control is performed with a torque ratchet. The recommended tightening torque is in the range of 25 to 30N.
Angled head

• Where the superstructure was fabricated through the transfer system, the abutment is replaced to the intraoral accurate positional relationship from the model with the transfer index.

After verification of osseointegration, the cap is removed with a hex driver. The interior of the cap removed implant is cleaned and dried to prevent any foreign matter from getting inside prior to insertion of each abutment.

The abutment is inserted into the implant, taking care with the axial surface and angle.

After verification of the direction of the abutment, the round driver or torque ratchet is mounted on a hex driver while bracing the abutment with a plier. It is then rotated until the turning of the set screw stops.

Torque control is performed with a torque ratchet. The recommended tightening torque is in the range of 25 to 30N.

• The recommendation is to fill the screw hole with pledget and resin.
Cement-retained type

- The recommendation is to fill the screw hole with pledget and resin.

Torque control is performed with a torque ratchet. The recommended tightening torque is in the range of 25 to 30N.

After verification of osseointegration, the cap is removed with a hex driver. The interior of the cap removed implant is cleaned and dried to prevent any foreign matter from getting inside prior to insertion of each abutment.

Transfer head (Non-Engaging) / Transfer head φ 4.2 • φ 5.5

Preparation head

After verification of osseointegration, the cap is removed with a hex driver. The interior of the cap removed implant is cleaned and dried to prevent any foreign matter from getting inside prior to insertion of each abutment.

The abutment is inserted into the implant, taking care with the axial surface and angle.

• Where the superstructure was fabricated through the transfer system, the abutment must be replaced to the intraoral accurate positional relationship from the model with the transfer index.

After verification of the direction of the abutment, the round driver or torque ratchet is mounted on a hex driver while bracing the abutment with a plier. It is then rotated until the turning of the set screw stops.

Torque control is performed with a torque ratchet. The recommended tightening torque is in the range of 25 to 30N.

• The recommendation is to fill the screw hole with pledget and resin.
Temporary cylinder / Gold cylinder

After verification of osseointegration, the cap is removed with a hex driver. The interior of the cap removed implant is cleaned and dried to prevent any foreign matter from getting inside prior to insertion of each abutment.

The abutment is inserted into the implant, taking care with the axial surface and angle.

* Where the superstructure was fabricated through the transfer system, the abutment must be replaced to the intraoral accurate positional relationship from the model with the transfer index.

After verification of the direction of the abutment, the round driver or torque ratchet is mounted on a hex driver while bracing the abutment with a plier. It is then rotated until the turning of the set screw stops.

Torque control is performed with a torque ratchet. The recommended tightening torque is in the range of 25 to 30N.

* The recommendation is to fill the screw hole with pledget and resin.
## 4. Cautions in cementing

Cementing superstructures may use the same cements as in prosthetic restoration of natural teeth. However, since changes in the peri-implant environment are most significant during a certain period of time from insertion of superstructures, the simplicity of maintenance including a minor adjustment of the occlusal change and form, and observation of the surrounding tissue is required. Therefore, temporary cement should be used during cementation. Be careful about the items described on the right.

- Thoroughly remove excessive cement.
- If necessary, a spill hole may be provided for prosthesis (resin cement).
- Check adaptation and retention of prosthesis at an adequate recall.

## 5. Impression taking for cement-retained type

Impression taking methods for the Platon implant system include two techniques of direct impression and the transfer system. The direct impression is a method that impression of the intraoral abutment is taken directly into the mouth as natural teeth. The superstructure is fabricated on the working plaster model without special components as a conventional prosthesis. The transfer system is a method that the impression is taken through pick-up impression copings to reproduce the positional relationship at the intraoral implant or abutment level on the model and fabricate the superstructure. Take note that impression copings differ according to the abutment of choice.

### 1) Impression taking methods for Platon system

<table>
<thead>
<tr>
<th>Impression method</th>
<th>Impression coping</th>
<th>abutment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transfer system</td>
<td>Transfer coping</td>
<td>Angled head (Non-Engaging)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Angled head (Engaging)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Transfer head (Non-Engaging)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Transfer head ø4.2 · ø5.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Preparation head</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Temporary cylinder</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gold cylinder</td>
</tr>
<tr>
<td>Direct impression</td>
<td></td>
<td>Head</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Extended head</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Two-piece head</td>
</tr>
</tbody>
</table>

When setting the emerging profile of the superstructure directly from the implant body (implant margin), select a replica with the same diameter as the implant without any modification. The choice of abutment at the time should be limited to abutment types that can set the margin on the implant body.
2) Direct impression

The direct impression is a technique that the impression of the pre-
pared abutment is taken with a ready made tray to fabricate the super-
structure on the working plaster model.

Preparation is performed, if necessary, after insertion of the abutment. Prepare the
abutment under a large volume of irrigation in consideration of antirotation of the super-
structure in simple restorations and parallel-
ism in multiunit bridges.

Silicone impression materials are used. The
periphery of the abutment should be covered
with a flowable silicone impression material
to accurately reproduce around the margin.
This allows for reproducing the clear margin
line.

Plaster is poured, paying attention not to
entrap air around the abutment. Remove the
plaster model from the impression, being
careful not to damage the abutment part. The
completed plaster model is transported to the
laboratory.
3) Transfer system

The transfer system can be used to systematically proceed from impression taking to the fabrication of superstructure. Use of the system allows transport of the implant to the model, the detail consideration of the abutment length based on the clearance with the opposite tooth, and preparation of the abutment on the model. The impression methods include the close tray technique using a ready-made tray and the open tray technique using an individual tray.

3-1) impression components

Transfer coping

These are screw-retained impression parts that are secured to the implant with each set screw, and, the internal hex (hexagonal structure) is provided. Because an individual tray (open tray) is used while taking impression, it is necessary to prepare it before taking the impression. The use of titanium alloy allows repeated use.

Tools for insertion : Hex driver
Accessory : (S) Set screw H12 (12mm)  
(L) Set screw H15 (15mm)

Height/Transmucosal part (G)  
Height : 6.0mm  
G : 3.0mm

Height : 9.0mm  
G : 6.0mm

If there should be any problem, including the range of mouth opening, make the shift to either set screw H10 or H7.
Set screw H10 : (S) Protruding length 4.0mm  
(L) Protruding length 1.0mm
Set screw H7 : (S) Protruding length 1.0mm

Impression tray : Individual tray (open tray)
Material : Titanium alloy
**Transfer replica**

These are model dummy implants. They are for cases where abutments are used, or the margin is set on implants. The use of titanium alloy allows repeated use.

<table>
<thead>
<tr>
<th>Size (diameter)</th>
</tr>
</thead>
</table>
| PF φ 4.1  
Diameter : 4.1mm |
| PF φ 5.0  
Diameter : 5.0mm |

**Set screw**

These are used to fix transfer coping or each replica.

**Tools for insertion** : Hex driver

<table>
<thead>
<tr>
<th>Length (height)</th>
</tr>
</thead>
</table>
| H0.5  
0.5mm |
| H2    
2.0mm |
| H4    
4.0mm |
| H7    
7.0mm |
| H10   
10mm |
| H15   
15mm |

**Material** : Stainless steel

If difficulty is experienced inserting the transfer coping, due to a smaller range of the mouth opening, make an exchange to a shorter set screw. The recommendation is to prepare different sizes of set screws.
3-2) Procedures for the transfer system

CHAIR SIDE

First surgery / Second surgery

Snap impression

Placement of transfer coping

Silicone impression

Insertion of cap or healing abutment
Placement of temporary crown

Insertion of abutment
(model → into the mouth)

Set of superstructure

LABORATORY SIDE

Fabrication of individual tray (open tray)
※ A through-hole for a set screw at the site to be transferred should be prepared.

Placement of transfer coping

Fabrication of working model

Consideration of abutment length and transmucosal length (G) (on model)

Preparation of abutment (on model)

Fabrication of provisional restoration
Fabrication of final restoration
Impression procedures for transfer coping (individual tray)

- A snap impression is needed so that the implant position and direction can be determined. This allows fabrication of an accurate open tray and impression taking with stable accuracy.

- After verification of osseointegration, a snap impression is taken to fabricate an individual tray prior to impression taking. On the individual tray, a through-hole for the set screw should be prepared with the transfer coping.

- In the case of patient’s limited jaw range, the set screw is replaced with a shorter one or a hex driver SS is used.

- When multiple teeth are transferred, the transfer copings should be connected to each other with pattern resin.

- The implants utilize the internal hex. The transfer coping should be fitted on the implant to match the internal hex. In invisibly subgingival cases, verify the fit between the transfer coping and the implant on the X-ray.

- In cases of more than 6 mm subgingivally, two fins of the transfer coping should be ground and adjusted; however, extreme grinding may cause the impression to move.
A pick-up impression is taken with a harder silicone impression material to reproduce the accurate positional relationship on the model. After verification of the set screw matching the through-hole on the individual tray, the periphery of the transfer coping should be covered with the impression material to avoid movement. A conventional impression is then taken, and the set screw is loosened to remove the impression from the mouth.

• The transfer coping should be set in the tray, and the set screw should protrude from the tray.
• The undercuts into the mouth should be relieved before the impression is taken.
• The impression is removed following removal of the set screw.

The taken impression is sent to the laboratory with the transfer replica.

• When the abutment to be used is predetermined, the transfer replica should be sent to the laboratory with the impression.
• When setting the emerging profile of the superstructure directly from the implant body (implant margin), select a replica with the same diameter as the implant without any modification.

When the superstructure is set, the abutment on the model is first inserted into the mouth with the transfer index, and the final insertion should be made during torque control. The superstructure is cemented, and excessive cement should be thoroughly removed.

• With regarding torque control, see page 14: 3. Insertion procedures and torque control of different abutments.
• With regarding cautions during cementation, see page 20: 4. Cautions in cementing.
3-3) Cautions for use of the transfer system

Preoperative examination, diagnosis, and adaptation
• The transfer system cannot always be used by the circumstances including clearance with the opposite tooth, the range of mouth opening, and the occlusal condition of remaining teeth. Adequate examination and diagnosis can determine the transfer system placement position and direction.

Healing Period
• The healing period varies depending on the bone quality, age of patient, and site of placement. Before using the transfer system, examine implant mobility, check the presence or absence of transmission image on X-ray, and check the peri-implant's mucosal condition.

Oral care
• Occlusal contact and adaptive condition of superstructures may cause bone resorption, screw loosening and fracture. Perform regular maintenance to check for loosening of screws and occlusal condition.

Transfer system
• The system is adaptable to the transfer head, preparation head, angled head, gold cylinder, and temporary cylinder.
• Use requires verifying the size of the implant to be placed into the mouth. The platform (PF) diameter varies according to implant size, so use the system that matches the PF diameter.
• The system cannot be used when preparing the mechanically-polished part of the implant.
• When preparing the mechanically-polished part of implant, the system cannot be used.
• When setting the emerging profile of superstructure directly from the implant body (implant margin), select a replica with the same diameter as the implant without any modification.
3-4) Selection kit for transfer system

Selection of abutments should be made, if possible, through inserting the real thing into the mouth or on the model. Since the selection kit includes abutments usable in the transfer system, the optimal part can be selected through trials on the model.

Consideration/verification of the optimal abutment length and mucosal level

Consideration/verification of angulation of abutment

(1) Transfer heads (S, M, and L)
(2) Preparation heads (one-stage technique and two-stage technique)
(3) Angled heads (15°S, 23°S, 15°L)
(4) Set screws (H0.5 and H2)
6. Laboratory techniques for the cement-retained type

Laboratory techniques for the PLATON implant system include the following two methods:

The first method fabricates the superstructure on the removable plaster die (abutment) with the margin, just like the fabrication of prostheses for natural teeth.

The second method uses the transfer system, allowing systematic performance of impression taking, fabrication of the working model, choice/preparation of the abutment to be used, and fabrication of the superstructure. The later transfer system can use the optimal abutment for the superstructure to be fabricated, because transfer of the implant on the working model allows detailed consideration of the abutment type and its length according to clearance with the opposite tooth and preparation of the abutment on the model. Also, the system gives full play to the dental technician’s abilities.

1) Direct impression

With regarding the detail impression taking technique, see page 21: 2) Direct impression.

The working model is fabricated in the usual manner, carefully trimming the margins with a knife or a round bar.

• The working model should be fabricated as a soft gum cast to allow verification of the peri-implant mucosal form.
2) Transfer system

Technical procedures for transfer coping

With regarding the detail impression taking technique, see page 25 to 26: Impression taking procedures for transfer coping Pro.

- When multiple teeth are transferred, the transfer replicas should be connected to each other with pattern resin.
- When the transfer replica is inserted into the transfer coping, the set screw should be tighten while holding the replica.

The transfer replica is inserted into the transfer coping in the impression, fixing it with the set screw using a hex driver.

The working model should be fabricated, paying attention not to entrap air.
3) Use procedures for different abutments

The abutments of the PLATON system include the following two types:

The first type uses the same technique as prosthesis for natural teeth through intraoral abutment preparation, direct impression, and fabrication of superstructure on the plaster model (one-piece type of abutment and screw combined).

The other type allows systematic use through fabrication of the plaster model with insertion of the metal implant replica in accordance with the transfer system and abutment choice/preparation, and fabrication of the superstructure on the laboratory side (two piece type of abutment and set screw).

The two-piece types of abutments responding to the transfer system are described here.

Angled head

- For the subgingival margin or the margin along the periphery, the gum model should be fabricated to check peri-implant mucosal form.
- Be aware that the different angle heads may not correspond to the type of replicas.
- When setting the emerging profile of the superstructure directly from the implant body (implant margin), select a replica with the same diameter as the implant without any modification.

<table>
<thead>
<tr>
<th>Model replica</th>
<th>Margin setting</th>
<th>Criterion for selecting abutment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transfer replica</td>
<td>Implant side</td>
<td>Angled head (Non-Engaging)</td>
</tr>
<tr>
<td></td>
<td>Abutment side</td>
<td>Angled head (Engaging)</td>
</tr>
</tbody>
</table>

The selected different angle head is fixed on the transfer replica into the model with the supplied set screw.
The different angled heads should be prepared, taking parallelism, the path of insertion of the superstructure, the mucosal form, the final prosthetic form, and interproximal undercuts into consideration. If necessary, a measuring rod from a milling machine or a dental surveyor should be used.

- Replacement with the alternative transfer replica facilitates preparation of different angle heads. Because an intense heat may be generated during preparation, preparing should be made while cooling.
- Because the different angle heads are made with titanium, porcelain cannot be fused directly on their surface.

The transfer index should be fabricated with pattern resin to ensure replacement of different angle heads into the mouth.

- The transfer index should be fabricated in order to avoid deformation by torque and to keep the transfer head from moving.

Torque control is performed with a torque ratchet. The recommended tightening torque is in the range of 25 to 30N.

- After insertion of different angle heads, the recommendation is to fill the screw hole with pledget and resin.
- Sandblasting the surface of different angle heads is recommended to increase retention of cement.
Transfer head (Non-Engaging)/ Transfer head φ4.2 • φ5.5

The selected transfer head is fixed on the transfer replica into the model with the supplied set screw.

- For the subgingival margin or the margin along the periphery, the gum model should be fabricated to check peri-implant mucosal form.
- When setting the emerging profile of the superstructure directly from the implant body (implant margin), select a replica with the same diameter as the implant without any modification.

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</tr>
</tbody>
</table>

The transfer head should be prepared, taking parallelism, the path of insertion of the superstructure, the mucosal form, the final prosthetic form, and interproximal undercuts into consideration. If necessary, a measuring rod from a milling machine or a dental surveyor should be used.

- Replacement with the alternative transfer replica facilitates preparation of the transfer head. Because an intense heat may be generated during preparation, preparing should be made while cooling.
- Because the transfer head is made with titanium, porcelain cannot be fused directly on its surface.
• After insertion of the transfer head, the recommendation is to fill the screw hole with pledget and resin.
• Sandblasting the surface of the transfer head is recommended to increase retention of cement.

The transfer index should be fabricated to avoid deformation by torque and to keep the transfer head from moving.

Torque control is performed with a torque ratchet. The recommended tightening torque is in the range of 25 to 30N.
Preparation head

The preparation head should be prepared, taking parallelism, the path of insertion of the superstructure, the mucosal form, the final prosthetic form, and interproximal undercuts into consideration. If necessary, a measuring rod from a milling machine or a dental surveyor should be used.

- For the subgingival margin or the margin along the periphery, the gum model should be fabricated to check peri-implant mucosal form.
- When setting the emerging profile of the superstructure directly from the implant body (implant margin), select a replica with the same diameter as the implant without any modification.

The selected preparation head is fixed on the transfer replica into the model with the supplied set screw.

- Replacement with the alternative transfer replica facilitates preparation of the preparation head. Because an intense heat may be generated during preparation, preparing should be made while cooling.
- Because the preparation head is made with titanium, porcelain cannot be fused directly on its surface.
The transfer index should be fabricated with pattern resin to ensure replacement of the preparation head into the mouth.

- The transfer index should be fabricated to avoid deformation by torque and to keep the preparation head from moving.

Torque control is performed with a torque ratchet. The recommended tightening torque is in the range of 25 to 30N.

- After insertion of the preparation head, the recommendation is to fill the screw hole with pledget and resin.
- Sandblasting the surface of the preparation head is recommended to increase retention of cement.
Temporary cylinder

The temporary cylinder is fixed on the transfer replica into the model with the supplied set screw.

- For the subgingival margin or the margin along the periphery, the gum model should be fabricated to check peri-implant mucosal form.
- When setting the emerging profile of the superstructure directly from the implant body (implant margin), select a replica with the same diameter as the implant without any modification.

The temporary cylinder should be prepared up to the required length to wax up, taking parallelism, the path of insertion, the mucosal form, and the final prosthetic form into consideration.

- Replacement with the alternative transfer replica Pro facilitates preparation of the temporary cylinder. Because an intense heat may be generated during preparation, preparing should be made while cooling.
- Because the temporary cylinder is made with titanium, porcelain cannot be fused directly on its surface.
**Cement-retained type**

- Torque control is performed with a torque ratchet. The recommended tightening torque is in the range of 25 to 30N.

- After insertion of the temporary restoration into the mouth, the recommendation is to fill the screw hole with pledget and resin.

- Sandblasting the surface of the retention surface is recommended to increase retention of cement.

- Be careful not to fill in the access hole while packing resin.

- The core should be taken with a commercial silicone impression material to pack resin.
Gold cylinder

- For the subgingival margin or the margin along the periphery, the gum model should be fabricated to check peri-implant mucosal form.
- When setting the emerging profile of the superstructure directly from the implant body (implant margin), select a replica with the same diameter as the implant without any modification.

The plastic part is prepared up to the required length to wax up, taking parallelism, the path of insertion, the mucosal form, and the final prosthetic form consideration. Wax-up should be made with due attention to clearance with the opposite tooth, securement of the access hole, and attachment of wax to the interface part.

- Replacement with the alternative transfer replica facilitates preparation and wax-up of the plastic part. Because an intense heat may be generated during preparation, preparing should be made while cooling.
- The gold cylinder Pro is made with plastic and non-oxygenated high-temperature molten alloy. Wax-up should be directly made on the cylinder to cast-joint.
- Fusion of non-oxygenated alloy and casting metal after casting completes the abutment. Because the non-oxygenated alloy part interfaces with the implant, preparation or adjustment may have an effect on the interlocking accuracy.
- Be aware that porcelain cannot be bonded directly on the surface of gold cylinder. When porcelain is fused, a commercial porcelain-fused alloy should be cast-jointed.

The Gold cylinder is fixed on the transfer replica into the model with the supplied set screw.
Cement-retained type

After wax-up, the access hole and interface should be carefully cleaned under a microscope. The recommendation is to sprue so that the access hole turns up to avoid air entrapment in the screw access hole during investment. The investment must be suitable to cast-joint. The heating schedule for the ring should be increased to slower than usual to obtain a better joint between the gold cylinder and the alloy. Also, a longer preheating time is recommended. After cast-joint, the cast ring should be slowly cooled to excavate the casting. Residual investment attached to the interface of the gold cylinder should be carefully excavated to avoid the damage to the interface.

To select the optimal alloy for cast-joint, the following points should be considered:
- An alloy to be used for cast-joint requires a high percentage of gold (more than 75%).
- The melting temperature of the alloy must not melt the gold cylinder.
  (Melting temperature of gold cylinder : 1400 to 1490°C)
  (Melting temperature of alloy suitable to cast joint: lower than 1250°C)
- The gold cylinder should be sufficiently heated prior to cast joint.
- Once the alloy is melted, casting should be made quickly.

The casting is excavated from the investment to microscopically check for air entrapment at the interface and the access hole. If necessary, adaptation of the casting should be verified. When adaptation of the superstructure to the connected units is not improved, measures such as soldering should be taken after cutting because the framework may deform.

- Because any damage to the interface by sandblasting or instrument use may cause improper fitting, do not touch the interface part.
- Do not touch the interface during polishing. Replacement with the alternative transfer replica facilitates polishing.
• The transfer index should be fabricated to avoid deformation by torque and to keep the abutment from moving.

• After insertion of the abutment into the mouth, the recommendation is to fill the screw hole with pledget and resin.

• Sandblasting the surface of the abutment is recommended to increase retention of cement.

The transfer index should be fabricated with pattern resin to ensure replacement of the abutment by cast joint into the mouth.

Torque control is performed with a torque ratchet. The recommended tightening torque is in the range of 25 to 30N.