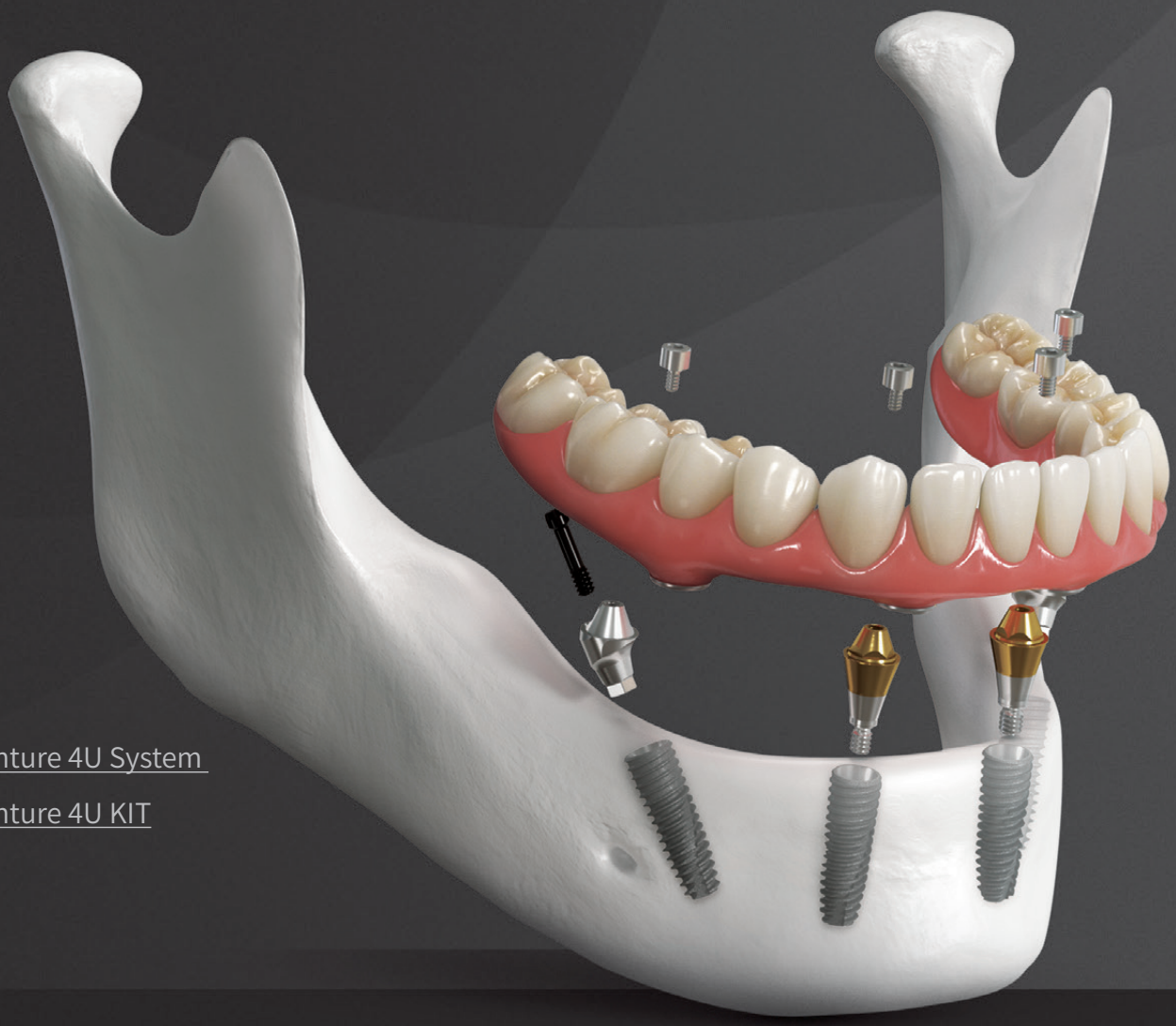


Denture 4U System

Denture 4U KIT

Denture 4U Kit

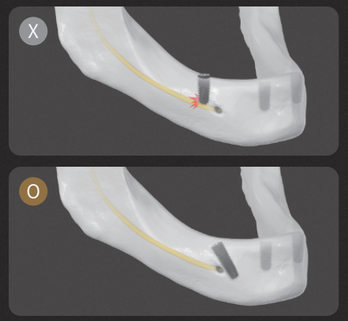
HIOSSEN'S FIXED DENTURE KIT

USER MANUAL

HIOSSEN IMPLANT

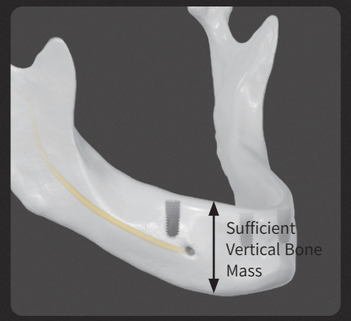
Denture 4U Kit

- Accurate Surgery with Precision Guide Positioning
- Safe Surgery without Nerve Damage



Perform Denture 4U Treatment

When there is vertical bone loss due to alveolar bone resorption



Denture 4U KIT 0° Posterior Guide can be used to treat patients

who do not lack of vertical bone mass

Up to 6 implants can be placed by using the Denture 4U KIT

to acquire high fixation power on the maxillary bone with soft osseous tissue

Place 4~6 Implants in tilted manner

- Avoid inferior alveolar nerve and gain stability by placing 4~6 implants in a tilted manner in cases where the patient lacks of bone volume.
- In cases where the implant are tilted, the cantilever length can be reduced, which disperses the load efficiently on just 4 implants and thus making denture treatment possible.

※ It is advised to place 6 implants in the maxilla to secure stability.

Semi-Permanent use owned to Fixed Full-Denture

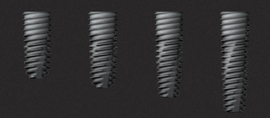
- No need for re-lining which is usually needed due to gum recession.
- Unlike removable dentures, there is no need to replace abutment components.

Excellent Aesthetics Compared to Conventional Dentures

- Denture 4U enables placement of 4 implants in a way that they can properly disperse the pressure from masticatory movements, and therefore prevents alveolar bone resorption and involution.
- Maintains shape and volume of the jawbone, which results into better esthetics than conventional dentures.

Denture 4U Kit Line-up

Implant



10mm 11.5mm 13mm 15mm
ET

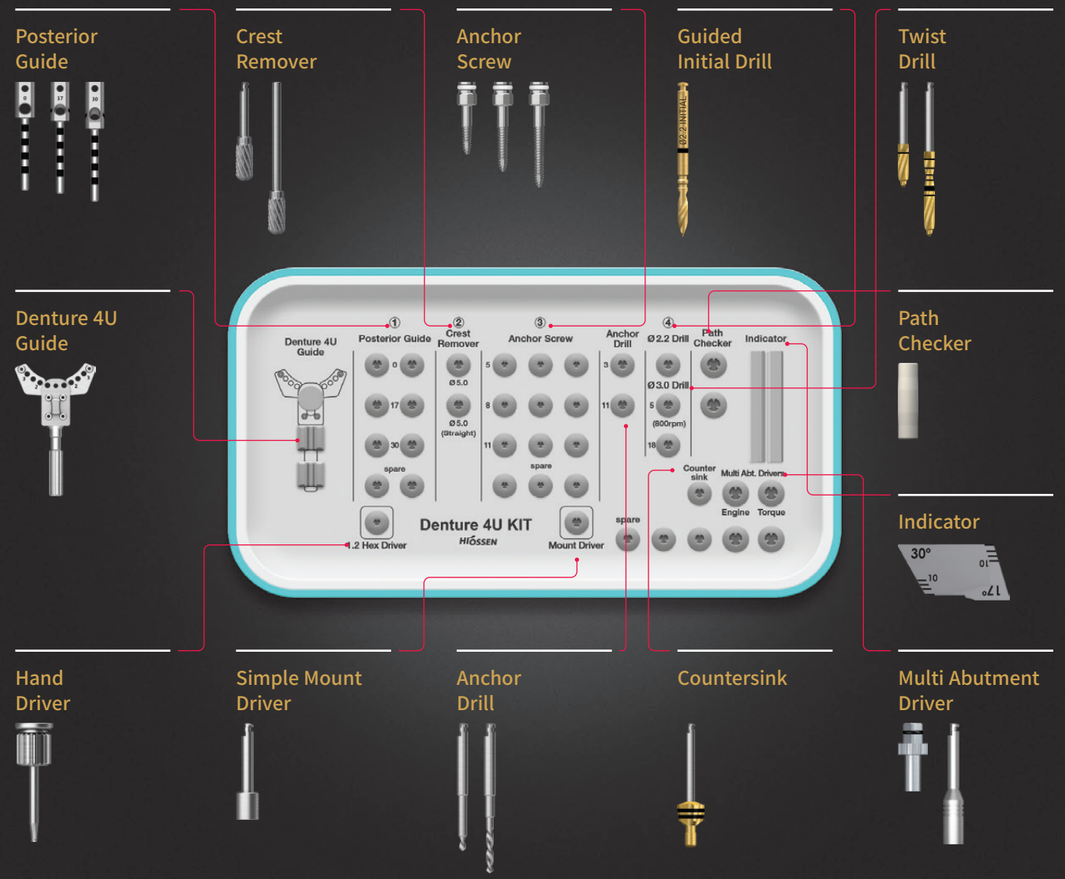
Prosthetic

Multi ABT | Multi Angled ABT | Esthetic- low Cylinder | Multi Ti- Base

Denture 4U KIT

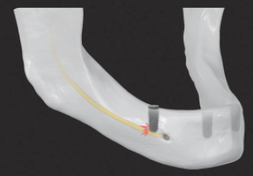
Denture 4U KIT

KIT for Denture 4U Surgery : Enables accurate and safe Drilling



Why is Denture 4U Kit Essential

- Most edentulous patients lack of vertical bone volume due to alveolar bone resorption.



Denture 4U Treatment

- Placing long implants is possible in order to gain stability.
- Place Implants in tilted manner in order to reduce cantilever length.

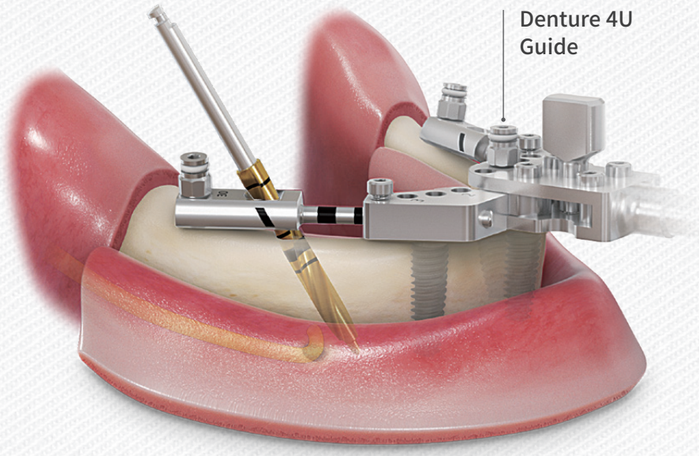
Beware of the alveolaris inferior nerve since the long implants are inserted with an inclined angle.

Denture 4U KIT

- Guides the placement site of the 4~6 implants in edentulous cases.
- Adjusts the angle and distance between implants.

Implant placement is safe while avoiding the inferior alveolar nerve.

Denture 4U KIT SURGICAL SEQUENCE

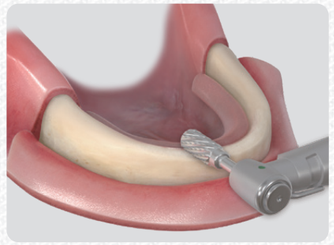


STEP 1 | Preparation

※ Before the procedure, check the location and shape of inferior alveolar nerve, and involution of alveolar bone.

1 Bone Flattening

- Flatten the bone with the crest remover in order to set the conditions for Guide Positioning

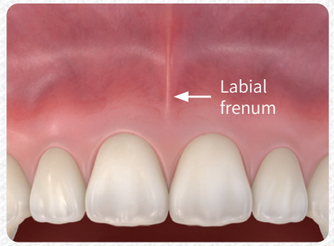


Crest remover
- Diameter : Ø5.0
- Recommended speed
  - Angled type : 1,200~1,500rpm
  - Straight type : 15,000~30,000rpm

2 Check the median line

- Find and set the median line by checking the labial frenum or the mid line of the nose and chin.

Guide 1 | Check labial frenum



Set the median line by checking the labial frenum.

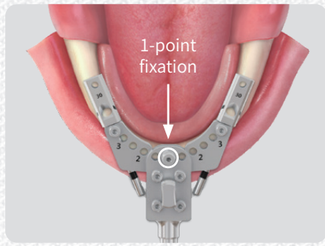
Guide 2 | Check the midline of the nose and chin

Connect the midline of the nose and chin. The line will run over the alveolar bone, which will be the median line.

STEP 2 | 1-point Fixation

1 1-point fixation in Anterior region

- Use an Anchor Screw to firmly fix the guide on the bone.



Anchor Screw
- Length : 5, 8, 11mm
- Recommended rpm : 50rpm

Anchor Drill
- Length : 3, 11mm
- Recommended rpm : 800rpm

User Guide TIP

- First, try to fix the guide with an Anchor Screw . If the Anchor Screw can not be inserted because the bone quality is hard, use the Anchor Drill before placing the Anchor Screw.
  - Soft Bone : Possible to fix guide with Anchor Screw.
  - Normal/Hard Bone : Fix the guide with Anchor Screw after drilling a hole with the Anchor Drill.

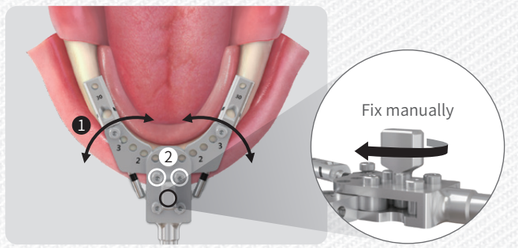
※ Stop the engine when the mount driver reaches the guide in order to prevent tickover of the Anchor Screw.

Select specifications for Anchor Screw
- Perform drilling with the 3mm Anchor Drill first, before drilling with 11mm Anchor Drill.

※ There is no contact between the drill and the guide, if the surgeon performs the initial drill with the 11mm Anchor Drill.

2 Guide Positioning in Anterior region (adjust Anterior Guide)

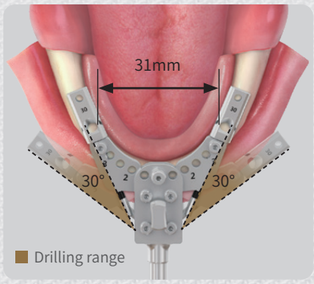
- Position the guide according to the patient's dental arch.



- Position the guide and manually adjust ❶ according to the patient's dental arch
- In order to fix position ❶, tighten ❷ with hand driver.

User Guide TIP

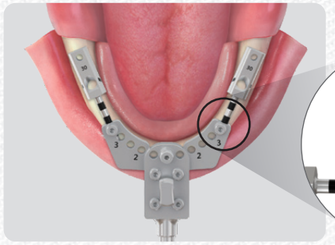
- Based on first premolar, the most narrow space is 31mm, and from that point on, the angle can be widened up to 30°
- Guide can be correctly positioned even on asymmetric dental arches, because each left & right side, anterior & posterior region can be adjusted separately.

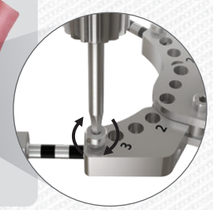


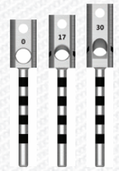
Denture 4U KIT SURGICAL SEQUENCE

3 Guide Positioning in Posterior region (adjust Posterior Guide)

- Adjust and fix the Posterior Guide according to the patient's dental arch.







Posterior Guide

· Option : 0°, 17°, 30°

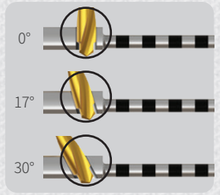
※ The Posterior Guide enables adjustment of the Implant's placement angle, distance between Implants and the buccal/lingual angle. The surgeon can therefore place the Implants in the desired way without damaging the alveolar nerves.

Usage Guide TIP

- Adjust placement angle, distance between implants and buccal/lingual angle, and then tighten screw with hand driver to fix the adjustments.

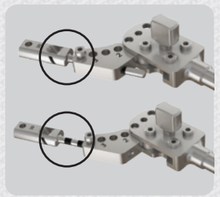
1 I **Adjust Placement Angle**

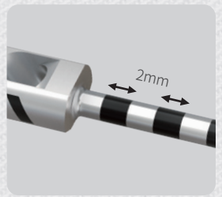
Posterior guide can be changed during the surgery, but it is advised to select appropriate specification with CT image before the surgery.



2 I **Adjust Distance between Implants**

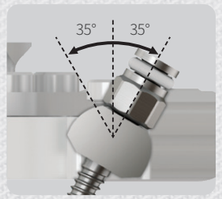
Adjust the distance with the help of the laser markings that come in 2mm units.





3 I **Adjust the Buccal/Lingual Angle**

Buccal/lingual angle can be adjusted up to ±35°

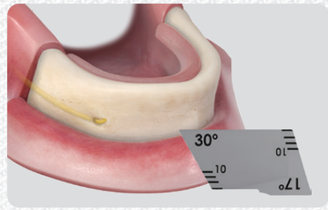


4 Check Surgery Safety (check alveolar nerve)

※ Needs to be checked before drilling stage.

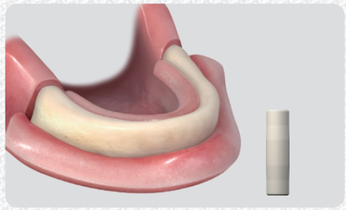
- Before the drilling stage, the location of the alveolar nerve needs to be checked after positioning the guide.
- Denture 4U Guide knobs can be removed. (Better Panorama images can be acquired with CT checker, when knobs are removed.)

Guide 1 I Check with Indicator



Perform a full flap surgery in order to spot the mental foramen with naked eye. Safety can be checked with the indicator.

Guide 2 I Check with Path Checker

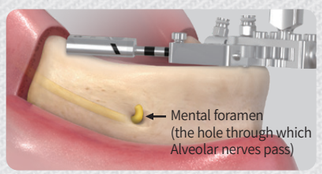


In case the mental foramen is not visible with the naked eye, place Path Checker and check location of the nerve with a CT image.

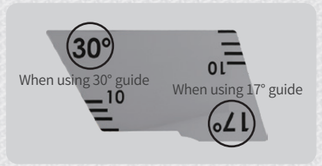
Usage Guide TIP

Guide 1 I Locate with indicator

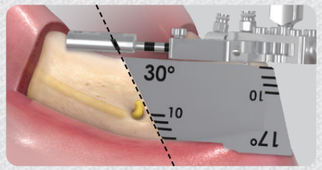
Case for visual confirmation of the mental foramen (Hold the indicator with instruments such as hemostat or needle holder.)



The alveolar nerves goes through the mental foramen, and therefore the drilling path should be more in the mesial direction.



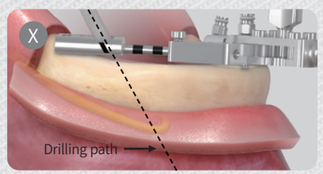
Check drilling path by placing the indicator in correct direction depending on the guide that will be used.



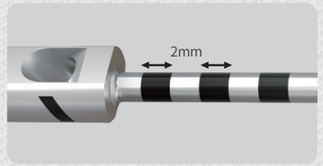
Check the drilling path with naked eye and adjust distance between implants.

Guide 2 I Locate with path checker

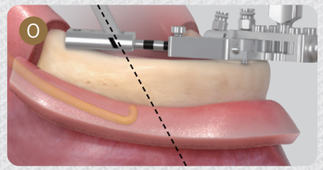
Case for ordinary flap surgery



Place path checker inside the drilling hole and check drilling path on panorama or CT image.



Readjust the guide in case the drilling path passes through the alveolar nerve. (Laser markings come in 2mm units)



Posterior Guide adjustment is completed so that drilling path does not pass over alveolar nerves.

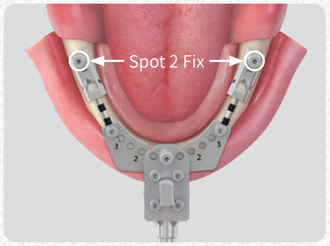
Denture 4U KIT SURGICAL SEQUENCE

STEP 3 | 2-point Fixation

1 2-point Fixation in Posterior region

- After placing the Guide positioning taking into consideration the alveolar nerve, the guide needs to be fixed on 2 points fixation in order to prevent movements of the guide.

※ Use Anchor Screws to fix Posterior Guide on 2 points. (The guide is then firmly fixed on 3 points, including the fixation in the Anterior region, and therefore drilling can be performed in a stable manner.)



Anchor Screw
- Length : 5, 8, 11mm
- Recommended rpm : 50rpm

Anchor Drill
- Length : 3, 11mm
- Recommended rpm : 800rpm

User Guide TIP

- First, try to fix the guide with an Anchor Screw. If the Anchor Screw can not be inserted because the bone quality is hard, use the Anchor Drill before placing the Anchor Screw.
  - Soft Bone : Possible to fix guide with Anchor Screw.
  - Normal/Hard Bone : Fix the guide with Anchor Screw after drilling a hole with the Anchor Drill.

※ Stop the engine when the mount driver reaches the guide in order to prevent tickover of the Anchor Screw.

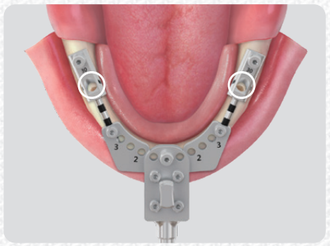
Choosing Anchor Screw Specification
- When 2-point fixing guide in Posterior region choose the appropriate Anchor Screw, depending on the severity of the bone resorption. (11mm Anchor Screws are available, in order to provide stable fixation in regions with severe bone resorption).
- Perform drilling with the 3mm Anchor Drill first, before drilling with 11mm Anchor Drill.

※ If the surgeon performs the initial drill with the 11mm Anchor Drill, there is no contact between the Drill and the Guide.

STEP 4 | Drilling

1 Drilling in Posterior region (Ø3.0)

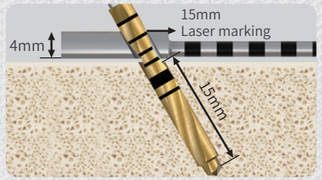
- Perform Drilling in Posterior region with Ø3.0 Twist Drill.

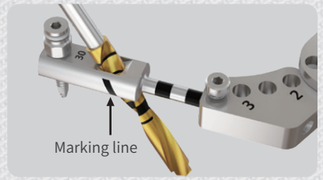


Ø3.0 Twist Drill
- Length : 5, 8mm
- Recommended rpm : 800rpm

Usage Guide TIP

- Place the drill carefully into the guide hole by referring to the marking line which is marked in the lateral side of the guide.
- Control the drilling depth by referring to the drill's marking line in the mesial direction. Use the 5mm drill first and then the 18mm dril in case the surgeon uses a 0° Guide or experiences interference from occluding teeth.





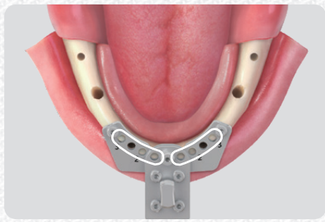
Check mesial direction when referring to the markings.

Tips for Preventing jumps of the drills

Set angle of the drill by taking the guide angle into consideration, and press the pedal as you advance carefully with the drill. (If your hand is relaxed and the drill angle matches with the guide hole angle, the drill will glide into the hole and drill as planned.)

2 Drilling in Anterior region (Ø2.2)

- Perform drilling in Anterior region with Ø2.2 Twist Drill.

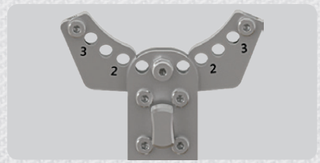


Ø2.2 Twist Drill
- Recommended rpm : 800rpm

Checklist Before Anterior Drilling TIP

① Check whether the Dental arch's curve is the same in the Anterior and Posterior region.
→ In case the Guide does not fit due to the curve difference, re-position the guide before performing drilling in the Anterior region.
② Check whether the Posterior Guide is blocking the guide hole for the Anterior region.
→ In case it's blocked, remove the Posterior Guide first, and then perform drilling in Anterior region.

Posterior Guide is blocking the guide hole for Anterior region.



Perform drilling after removal of Posterior Guides.

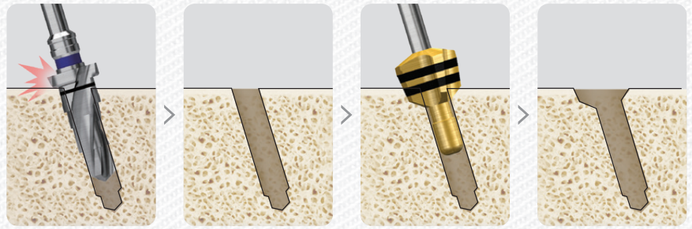
→ Since the Posterior Guides need to be removed in the 2 cases above, firmly hold the Guide, which has then only 1-point fixation, and perform drilling.

Denture 4U KIT SURGICAL SEQUENCE

STEP 5 | Reaming

1 Countersink Drilling (to prevent interference from Stoppers and Prostheses)

- Remove Denture 4U Guide and perform Countersink Drilling in order to prevent interference from Taper Drill Stoppers and Prostheses.

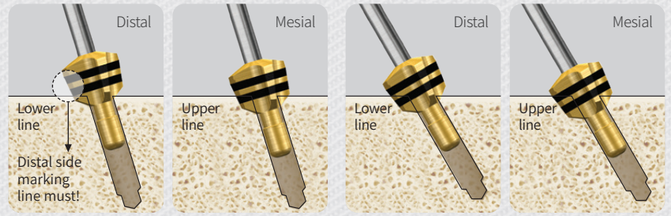


Interference from Stoppers and Prostheses
When implants need to be placed in a tilted way, there will be interference from the drill's stopper and prostheses.

Initiate drilling performed with Denture 4U Guide.

Countersink drilling In order to prevent interferences.

Placement Guide for Marking Line TIP



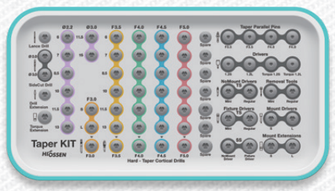
Bone level Implantation | 1mm subcrestal Implantation | Bone level Implantation | 1mm subcrestal Implantation

When using 17° Guide **When using 30° Guide**

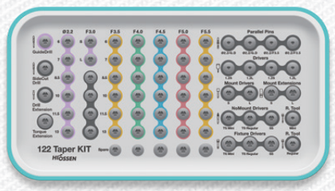
※ Refer to the lower line in the distal direction when Implant needs to be placed at bone level.
Refer to the upper line in the distal direction when Implant needs to be placed 1mm subcrestal.

2 Drill hole expansion with Taper Drills

- Perform additional drilling with Taper KIT or 122 Taper KIT in order to have appropriate drill holes for the implant.



Taper KIT
The tapered drills form optimal drill holes for tapered implants that gain good initial stability in the alveolar bone.



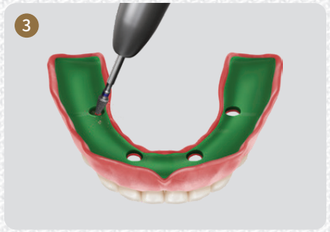
122 Taper KIT
A Kit with simple drill protocol :
1 drilling in soft bone, and 2 drillings in normal and hard bone.

Denture 4U Prosthetic PROCESS

Temporary Denture

1 Abutment Placement

2 Impression Taking & Try in

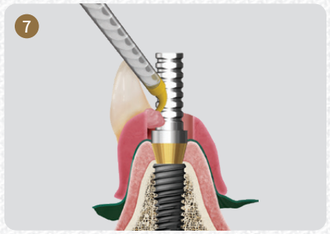


3 Create through holes

4 Check Abutment Location

5 Place Temporary Cylinder

6 Seat Temporary Denture



7 Inject Resin to attach

8 Cut out excessive part of the Cylinder

9 Cut excessive parts of the Temporary Denture

10 Final seating and finishing

※ Please refer to ET Prosthetics Manual for detailed fabrication protocol.

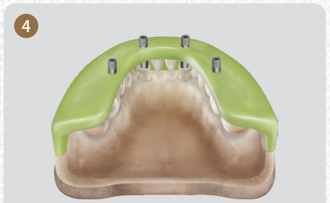
Denture 4U Prosthetic PROCESS

Final Denture

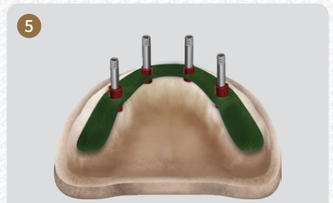
Impression Taking and Fabrication of Model

Align artificial teeth on Wax Rim

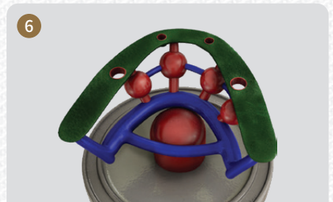
Index Taking and Wax Wash



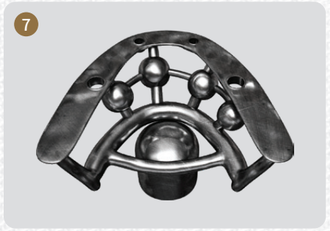
Select and place Cylinder



Framework Wax-up

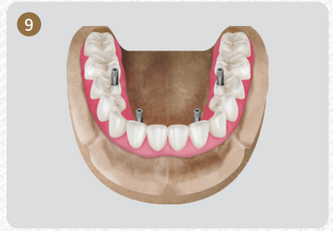


Framework cast



Framework Casting and Polishing

Fabricate Wax Denture on Frame



Fabricate Resin Denture

Finishing and seating

※ Please refer to ET Prosthetics Manual for detailed fabrication protocol.

Denture 4U KIT ORDER CODE

Denture 4U KIT | OD4UK

Denture 4U Guide

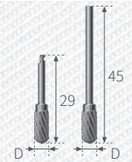
D4UG

Posterior Guide

Degree	
0°	D4UPG0
17°	D4UPG17
30°	D4UPG30

Crest Remover

L	D Ø5.0
29	CERM50A
45	CERM50S



Anchor Screw

L	D Ø1.65
5	D4UAS5
8	D4UAS8
11	D4UAS11

Anchor Drill

L	D Ø1.65
3	D4UAD3
11	D4UAD11

Guided Initial Drill

L	D Ø2.2
5	GD2208NC

Twist Drill

L	D Ø3.0
5	D4U2D3005
18	D4U2D3018

Countersink

D4UCS

Indicator

D4UI

Path Checker

D4UPC

Simple Mount Driver

L	
Short	ASMDS

Multi Abutment Machine Driver

MAMD

Multi Abutment Outer Driver

MAOD

Denture 4U KIT ORDER CODE

Prosthetic | ET

Multi Abutment | Multi Angled Abutment | Multi Abutment NP-Cast Cylinder | Esthetic-low Plastic Cylinder | Esthetic-low Temporary Cylinder | Multi Ti-Base

Multi Abutment

G/H	1.0	2.0	3.0	4.0	5.0
M	ETMT**A501M**	ETMT**A502M**	ETMT**A503M**	ETMT**A504M**	ETMT**A505M**
R	ETMT**A501R**	ETMT**A502R**	ETMT**A503R**	ETMT**A504R**	ETMT**A505R**

Multi Angled Abutment

17°	G/H 2.5	3.0	4.0	5.0
M	ETMA**217MHW**	ETMA**317MHW**	ETMA**417MHW**	-
R	ETMA**217SHW**	ETMA**317SHW**	ETMA**417SHW**	-
30°	**G/H 3.5**	**4.0**	**5.0**	
M	ETMA330MHW	ETMA430MHW	ETMA530MHW	
R	ETMA330SHW	ETMA430SHW	ETMA530SHW	

Multi Ti-Base

H	5°	10°
4	TSMTB**0405GTH**	TSMTB**0410GTH**
6	TSMTB**0605GTH**	MGW**100**

Multi Ti-Base

TSMSBC	

Esthetic-low Temporary Cylinder

Hex	Non-hex
MTR**200**	MTR**100**

※ Regular Non-hex

Esthetic-low Temporary Cylinder (Narrow type)

Hex	Non-hex
NMTR**200**	NMTR**200**

※ Regular Non-hex

※ Please refer to the Product Catalog for information on ET & EK system.

Multi Abutment NP-Cast Cylinder

Hex	Non-hex
TSMN**500**	TSMN**500N**

Esthetic-low Plastic Cylinder

Hex	Non-hex
MGR**200**	MGR**100**

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