

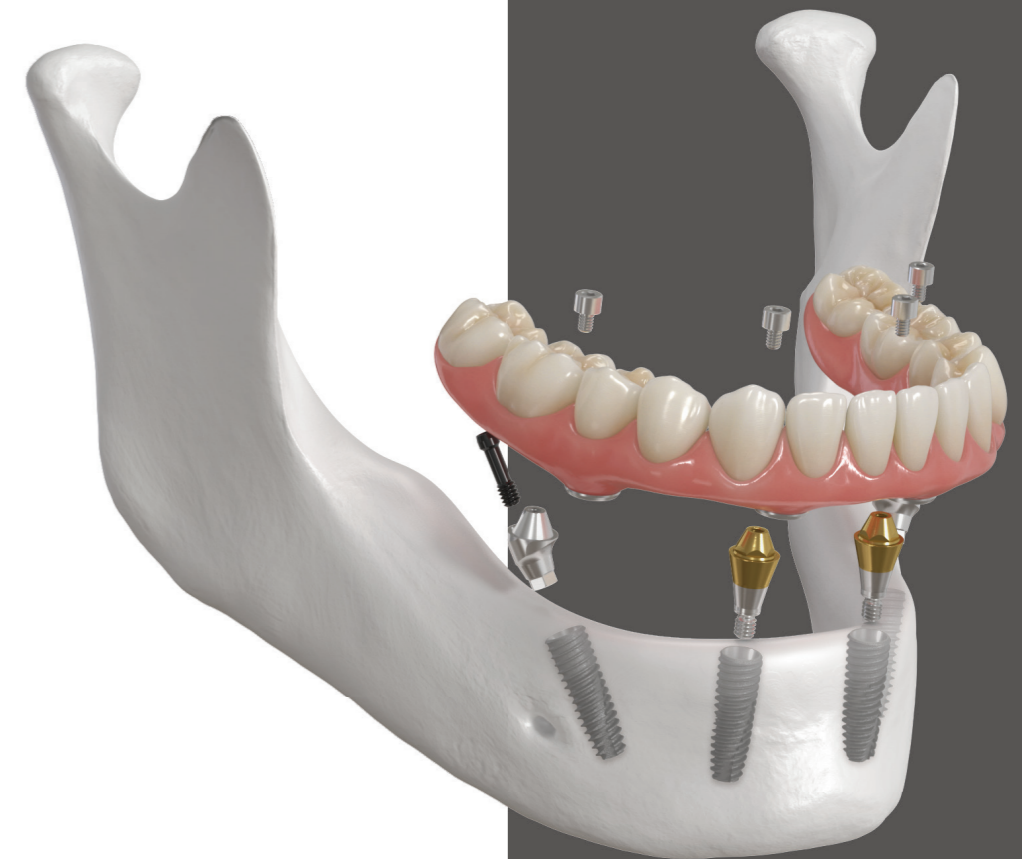
Denture 4U System

OSSTEM'S
FIXED DENTURE SYSTEM
USER MANUAL

Denture 4U System

Denture 4U KIT

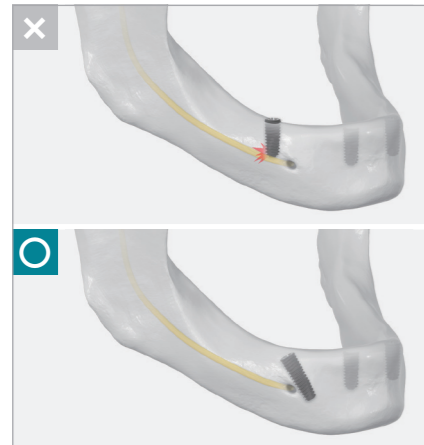
OSSTEM[®]
IMPLANT



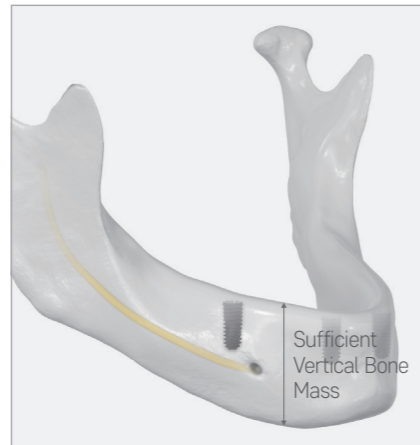
OSSTEM[®]
IMPLANT

Denture 4U System

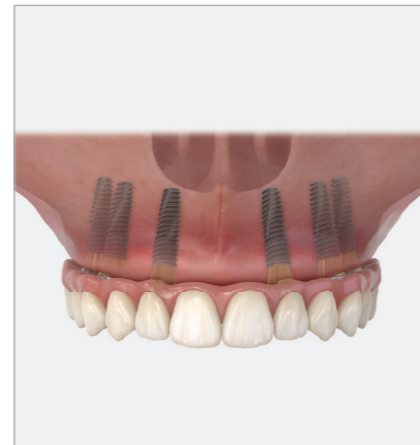
Osstem's Fixed Denture Solution allows recovery of stable masticatory force with only 4 fixtures



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 vertical bone mass



Up to 6 fixtures can be planted by using Denture 4U KIT
to acquire high fixation power on the maxillary bone with soft osseous tissue

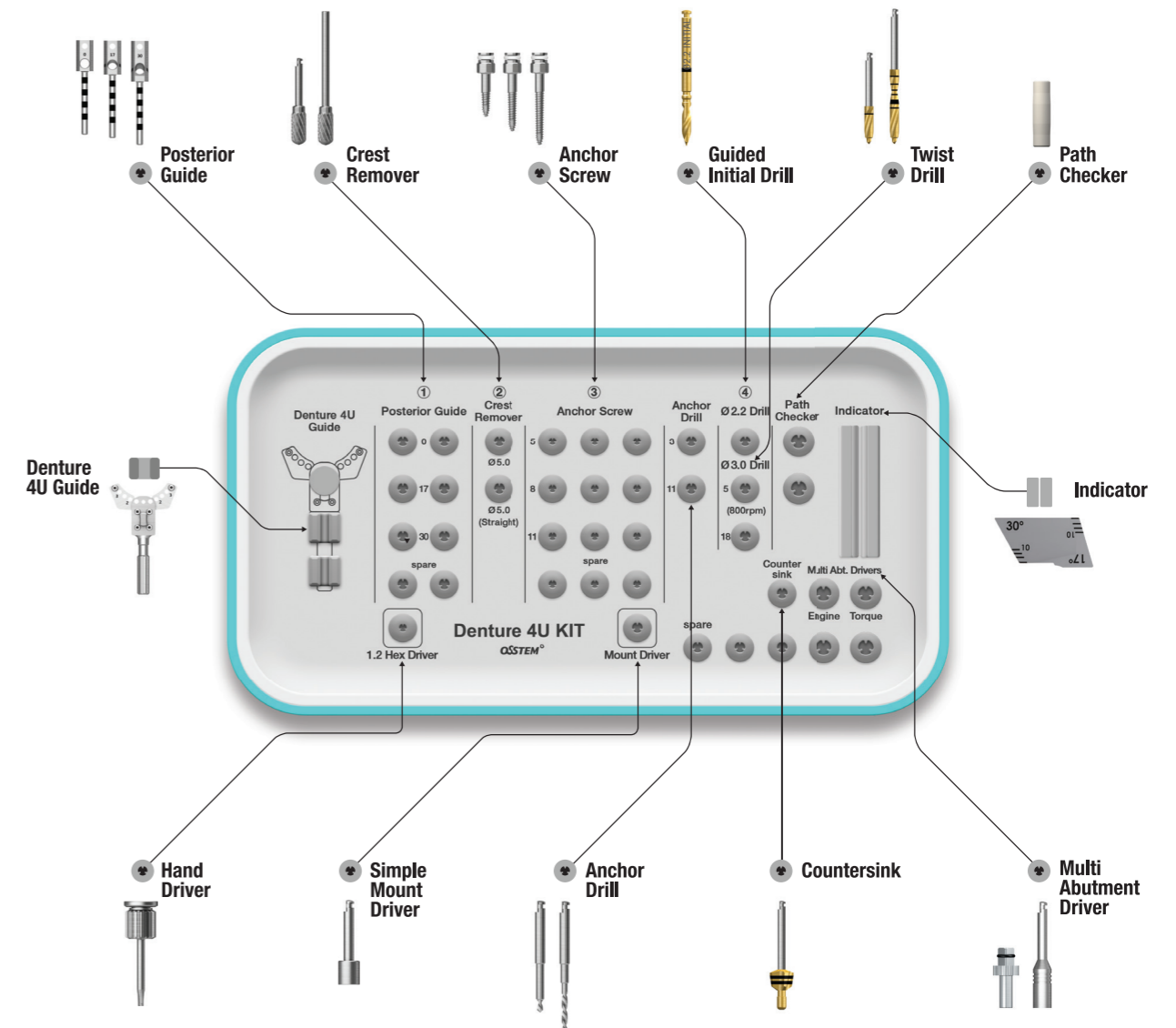
Place 4~6 Fixtures in tilted manner	Semi-Permanent Use thanks to Fixed Full-Denture	Excellent Aesthetics Compared to Conventional Dentures
<ul style="list-style-type: none"> Avoid inferior alveolar nerve and gain stability by placing 4~6 fixtures in a tilted manner in case the patient lacks of sufficient bone volume. In case the fixtures are tilted, the cantilever length can be reduced, which disperses the load efficiently on just 4 fixtures and thus making denture treatment possible. <p>※ It is advised to place 6 fixtures in the maxilla for securing stability.</p>	<ul style="list-style-type: none"> No need for re-lining which is usually needed due to gum recession. Unlike removable dentures, there is no need to replace abutment components. 	<ul style="list-style-type: none"> Denture 4U enables placement of 4 fixtures 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 System Line-up

Fixture 10mm 11.5mm 13mm 15mm 18mm KS / TS / US / ET	Prosthetic Multi ABT Multi Angled ABT Esthetic-low Cylinder	Denture 4U KIT
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Denture 4U KIT

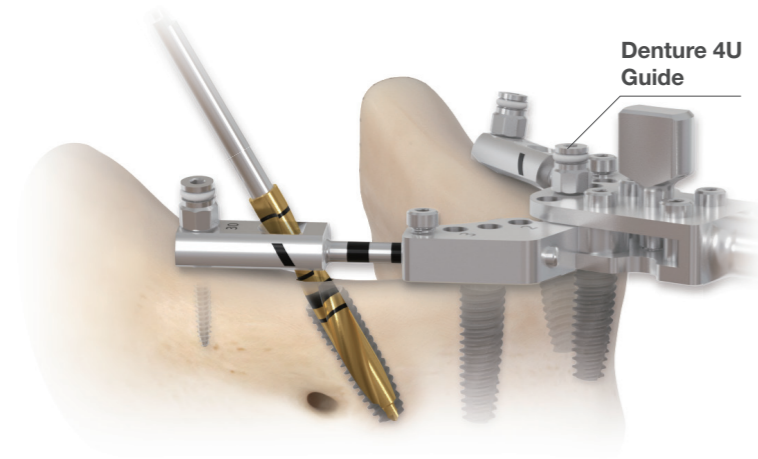
KIT for Denture 4U Surgery : Enables accurate and safe Drilling



Why Denture 4U KIT is Essential

<ul style="list-style-type: none"> Most edentulous patients lack vertical bone volume due to alveolar bone resorption. 	Denture 4U Treatment <ul style="list-style-type: none"> Makes placing long fixtures possible in order to gain stability. Can place Implants in tilted manner in order to reduce cantilever length. <p>Be careful of the alveolar inferior nerve since the long fixtures are inserted inclined.</p>	Denture 4U KIT <ul style="list-style-type: none"> Guides the placement site of the 4~6 fixtures in edentulous cases. Adjusts the angle and distance between fixtures. <p>Fixture placement is safe while avoiding the inferior alveolar nerve.</p>
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Denture 4U KIT SURGICAL SEQUENCE



- STEP 1 | Preparation
- STEP 2 | 1-point Fixation (refer to p.5)
- STEP 3 | 2-point Fixation (refer to p.8)
- STEP 4 | Drilling (refer to p.8)
- STEP 5 | Reaming (refer to p.10)

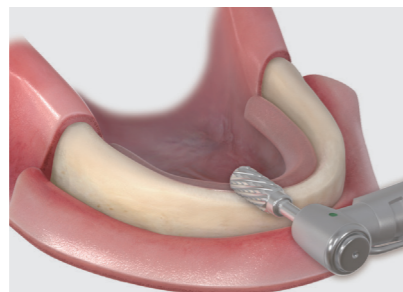
STEP 1 | Preparation

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

01

Bone Flattening

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

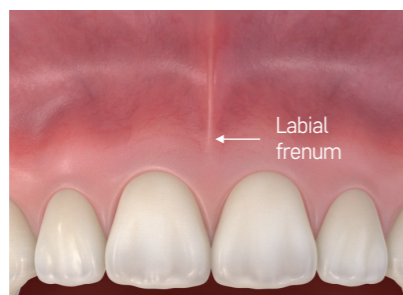


02

Check the median line

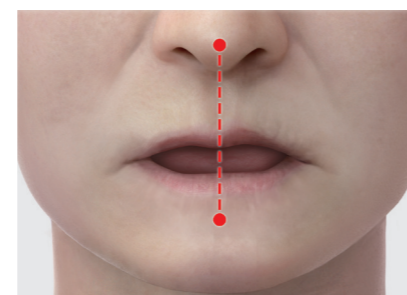
- Find and set the median line by checking the labial frenum or the mid line of the nose and chin.

Guide 1 | Check labial frenum



Set the median line by checking the labial frenum.

Guide 2 | Check the midline of the nose and chin



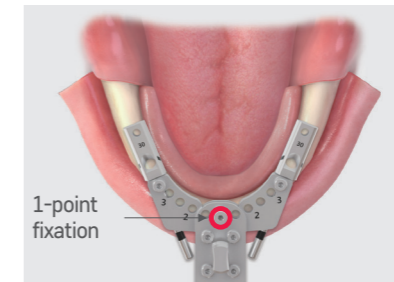
Connect the midline of the nose and chin. The line will run over the alveolar bone, which will be the median line.

STEP 2 | 1-point Fixation

01

1-point fixation in Anterior region

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



TIP User Guide

- Try to fix the guide with an Anchor Screw first. 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 tick-over of the Anchor Screw.

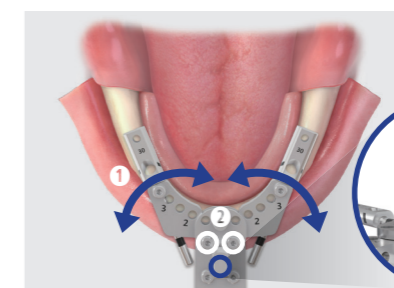
Select specifications for Anchor Screw

- 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.

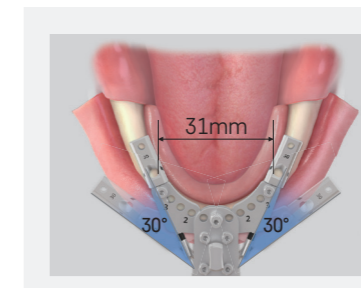
02

Guide Positioning in Anterior region (adjust Anterior Guide)

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



- Position the guide and manually adjust ① according to the patient's dental arch
- In order to fix position ①, tighten ② with hand driver.



TIP User Guide

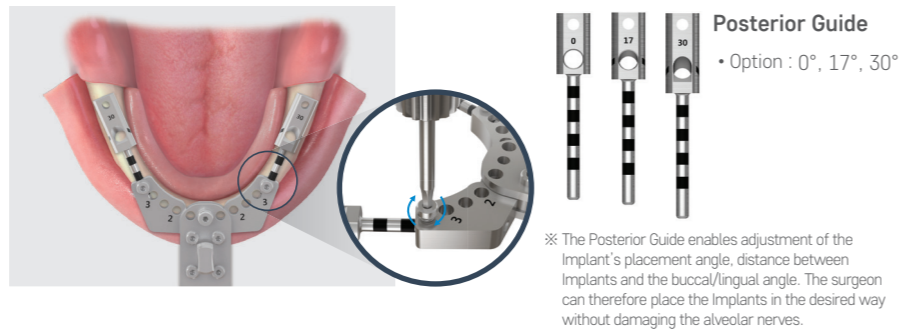
- Based on first premolar, the most narrow space is 31mm, and from that point on, the angle can be widened for 30°.
- Guide can be well positioned even on asymmetric dental arches, because each left & right side, anterior & posterior region can be adjusted separately.

Denture 4U KIT SURGICAL SEQUENCE

03

Guide Positioning in Posterior region (adjust Posterior Guide)

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



TIP Usage Guide

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

01

Adjust Placement Angle

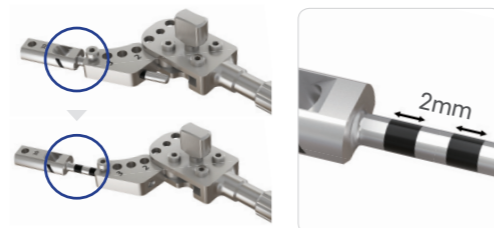
Posterior guide can be change during the surgery, but it is advised to select appropriate specification with CT image before the surgery.



02

Adjust Distance between Implants

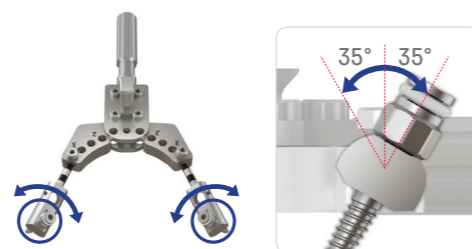
Adjust the distance with the help of the laser markings that come in 2mm units.



03

Adjust the Buccal/Lingual Angle

Buccal/lingual angle can be adjusted up to $\pm 35^\circ$.



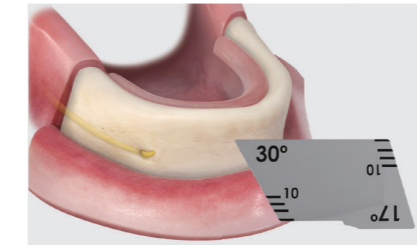
04

Check Surgery Safety (check alveolar nerve)

※ Needs to be checked before drilling stage.

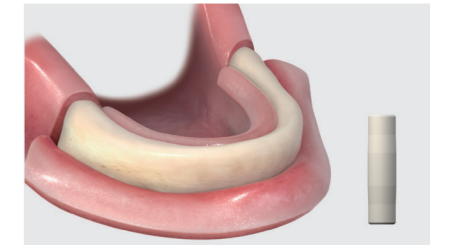
- The location of the alveolar nerve needs to be checked after positioning the guide but before the drilling stage.
- Denture 4U Guide knobs can be removed. (better Panorama images can be acquired with CT checker, when knobs are removed.)

Guide 1 | 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 | Check with Path Checker

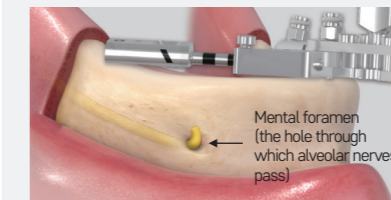


In case the mental foramen is not visible with the naked eye, place Path Checker and check location of the nerve with CT image.

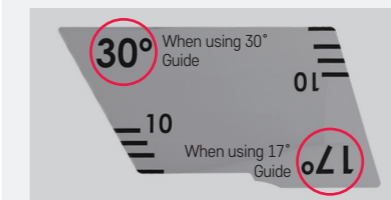
TIP Usage Guide

Guide 1 | Locate with indicator

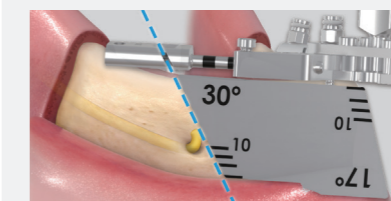
Case for visual confirmation of the mental foramen (Hold the indicator with instruments such as hemostat or needle holder.)



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



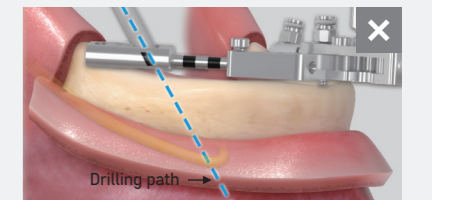
Check drilling path by placing the indicator in correct direction depending on the guide that will be used.



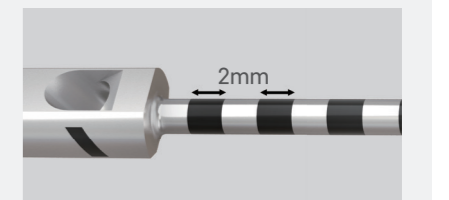
Check the drilling path with naked eye and adjust distance between implants.

Guide 2 | Locate with path checker

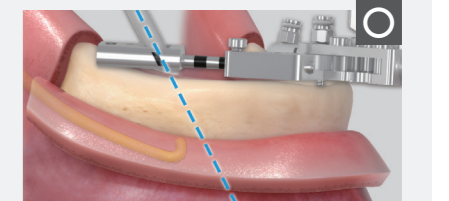
Case for ordinary flap surgery



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.

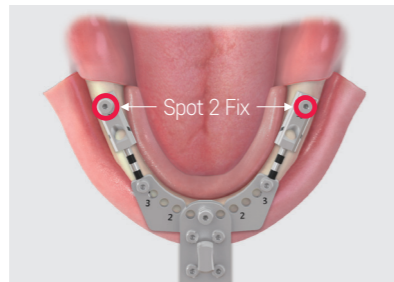
Denture 4U KIT SURGICAL SEQUENCE

STEP 3 | 2-point Fixation

01

2-point Fixation in Posterior region

- When Guide Positioning is finished by taking the location of the alveolar nerve into consideration, the guide needs to be fixed on 2 points 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.)



TIP User Guide

- Try to fix the Guide with an Anchor Screw first. 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

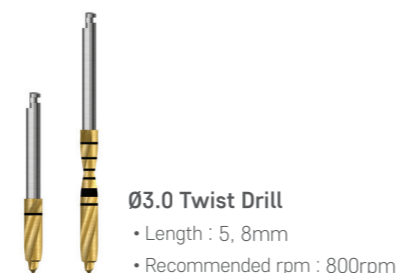
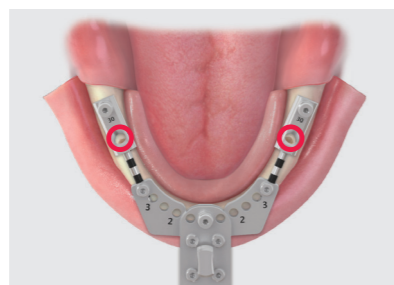
- When 2-point fixing guide in Posterior region, choose appropriate Anchor Screw, depending on the severity of the bone resorption. (11mm Anchor Screws are available, in order to provide stable fixation in regions with severe bone resorption.)
- Perform drilling with the 3mm Anchor Drill first, before drilling with 11mm Anchor Drill.
 - ※ There is no contact between the Drill and the Guide, if the surgeon performs the initial drill with the 11mm Anchor Drill.

STEP 4 | Drilling

01

Drilling in Posterior region (Ø3.0)

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



TIP Usage Guide

- 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 drill, in case the surgeon uses a 0° Guide or experiences interference from occluding teeth.



Check mesial direction when referring to the markings.

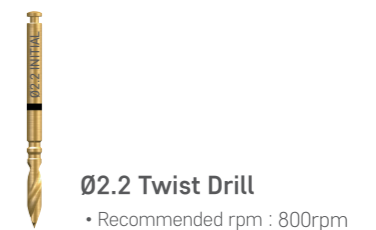
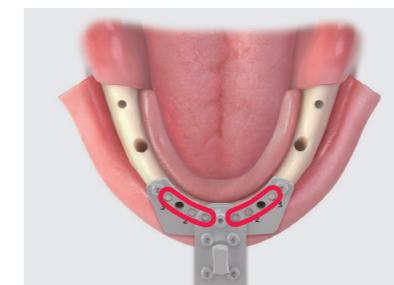
Tips for Preventing jumps of the drills

- Set angle of the drill by taking the guide angle into consideration, and press the pedal as you advance carefully with the drill. (In case 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.)

02

Drilling in Anterior region (Ø2.2)

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



TIP Checklist Before Anterior Drilling

- 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.

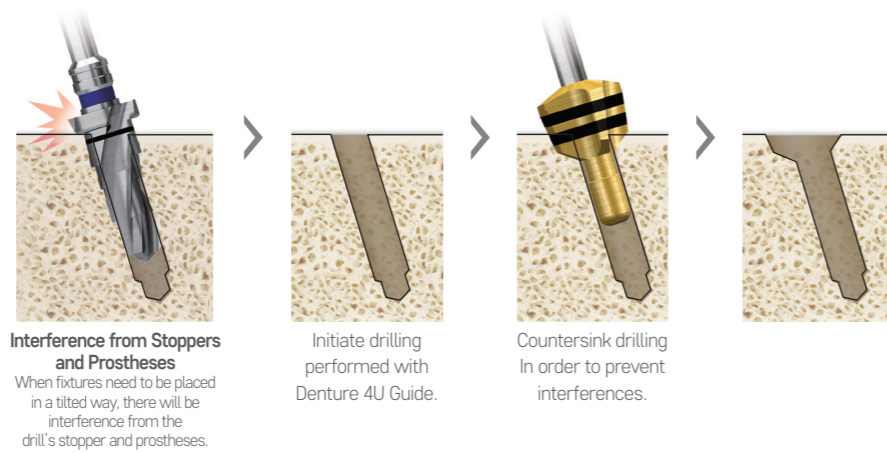
Denture 4U KIT SURGICAL SEQUENCE

STEP 5 | Reaming

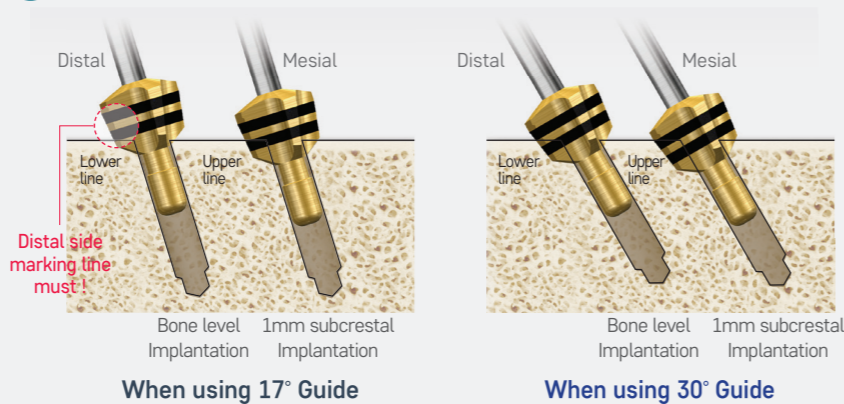
01

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.



TIP Placement Guide for Marking Line

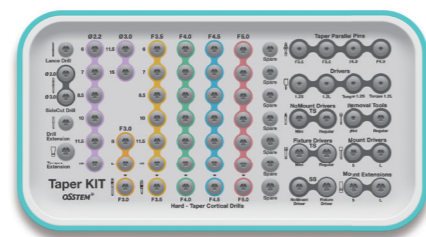


※ Refer to the lower line in the distal direction when Implant needs to be placed at bone level. Refer to the upper line in the distal direction when Implant needs to be placed 1mm subcrestal.

02

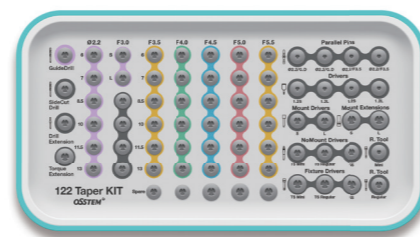
Drill hole expansion with Taper Drill

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



Taper KIT

The tapered drills form optimal drill holes for tapered fixtures 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

01



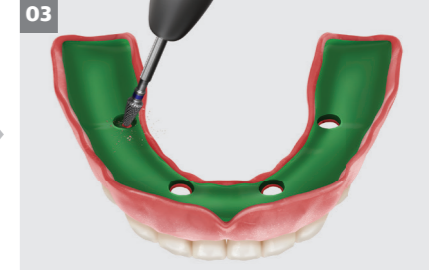
Abutment Placement

02



Impression Taking & Try in

03



Create through holes

04



Check Abutment Location

05



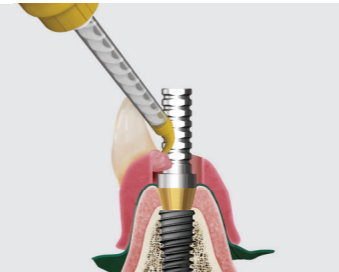
Place Temporary Cylinder

06



Seat Temporary Denture

07



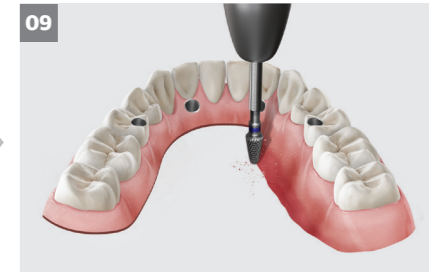
Inject Resin to attach

08



Cut out excessive part of the Cylinder

09



Cut excessive parts of the Temporary Denture

10



Final seating and finishing

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

Denture 4U Prosthetic PROCESS

Final Denture

01 Impression Taking and Fabrication of Model

02 Align artificial teeth on Wax Rim

03 Index Taking and Wax Wash

04 Select and place Cylinder

05 Framework Wax-up

06 Framework cast

07 Framework Casting and Polishing

08 Fabricate Wax Denture on Frame



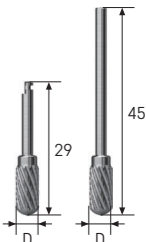










09 Fabricate Resin Denture

10 Finishing and seating

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

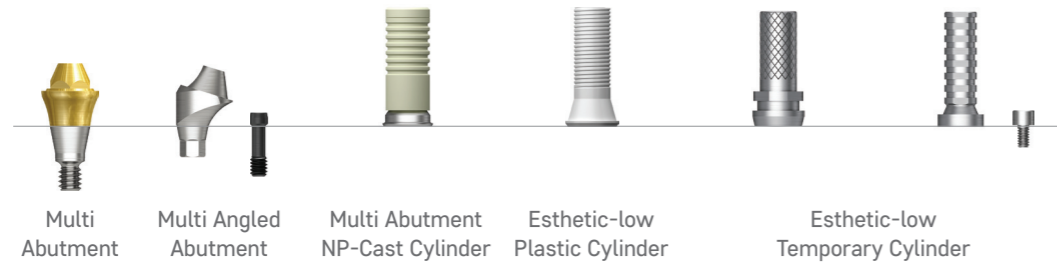
Denture 4U KIT ORDER CODE

Denture 4U KIT | OD4UK

<p>Denture 4U Guide</p> <p>D4UG</p> 	<p>Posterior Guide</p> <p>Degree</p> <table border="1"> <tr><td>0°</td><td>D4UPG0</td></tr> <tr><td>17°</td><td>D4UPG17</td></tr> <tr><td>30°</td><td>D4UPG30</td></tr> </table> 	0°	D4UPG0	17°	D4UPG17	30°	D4UPG30	<p>Crest Remover</p> <table border="1"> <tr><td>L</td><td>D</td><td>Ø5.0</td></tr> <tr><td>29</td><td></td><td>CERM50A</td></tr> <tr><td>45</td><td></td><td>CERM50S</td></tr> </table> 	L	D	Ø5.0	29		CERM50A	45		CERM50S												
0°	D4UPG0																												
17°	D4UPG17																												
30°	D4UPG30																												
L	D	Ø5.0																											
29		CERM50A																											
45		CERM50S																											
<p>Anchor Screw</p> <table border="1"> <tr><td>L</td><td>D</td><td>Ø1.65</td></tr> <tr><td>5</td><td></td><td>D4UAS5</td></tr> <tr><td>8</td><td></td><td>D4UAS8</td></tr> <tr><td>11</td><td></td><td>D4UAS11</td></tr> </table> 	L	D	Ø1.65	5		D4UAS5	8		D4UAS8	11		D4UAS11	<p>Anchor Drill</p> <table border="1"> <tr><td>L</td><td>D</td><td>Ø1.65</td></tr> <tr><td>3</td><td></td><td>D4UAD3</td></tr> <tr><td>11</td><td></td><td>D4UAD11</td></tr> </table> 	L	D	Ø1.65	3		D4UAD3	11		D4UAD11	<p>Guided Initial Drill</p> <table border="1"> <tr><td>L</td><td>D</td><td>Ø2.2</td></tr> <tr><td>5</td><td></td><td>GD2208NC</td></tr> </table> 	L	D	Ø2.2	5		GD2208NC
L	D	Ø1.65																											
5		D4UAS5																											
8		D4UAS8																											
11		D4UAS11																											
L	D	Ø1.65																											
3		D4UAD3																											
11		D4UAD11																											
L	D	Ø2.2																											
5		GD2208NC																											
<p>Twist Drill</p> <table border="1"> <tr><td>L</td><td>D</td><td>Ø3.0</td></tr> <tr><td>5</td><td></td><td>D4U2D3005</td></tr> <tr><td>18</td><td></td><td>D4U2D3018</td></tr> </table> 	L	D	Ø3.0	5		D4U2D3005	18		D4U2D3018	<p>Countersink</p> <p>D4UCS</p> 	<p>Indicator</p> <p>D4UI</p> 																		
L	D	Ø3.0																											
5		D4U2D3005																											
18		D4U2D3018																											
<p>Path Checker</p> <p>D4UPC</p> 	<p>Simple Mount Driver</p> <table border="1"> <tr><td>L</td><td></td></tr> <tr><td>Short</td><td>ASMDS</td></tr> </table> 	L		Short	ASMDS	<p>Multi Abutment Machine Driver</p> <p>MAMD</p> 																							
L																													
Short	ASMDS																												
<p>Multi Abutment Outer Driver</p> <p>MAOD</p> 																													

Denture 4U KIT ORDER CODE

Prosthetic | TS



Multi Abutment Multi Angled Abutment Multi Abutment NP-Cast Cylinder Esthetic-low Plastic Cylinder Esthetic-low Temporary Cylinder



Multi Abutment

G/H	1.0	2.0	3.0	4.0	5.0
M	T SMA5010M	T SMA5020M	T SMA5030M	T SMA5040M	T SMA5050M
R	T SMA5010	T SMA5020	T SMA5030	T SMA5040	T SMA5050



Multi Angled Abutment

17°	G/H	2.5	3.0	4.0	5.0
M	GS17MAM	4820	GS17MAM4830	GS17MAM4840	-
R	GS17MAS	4820	GS17MAS4830	GS17MAS4840	GS17MAS4850
M	GS30MAM	4830	GS30MAM4840	GS30MAM4850	
R	GS30MAS	4830	GS30MAS4840	GS30MAS4850	



Multi Abutment NP-Cast Cylinder

Hex	Non-hex
TSMN500	TSMN500N



Esthetic-low Plastic Cylinder

Hex	Non-hex
MGR200	MGR100



Esthetic-low Temporary Cylinder

Hex	Non-hex
MTR200	MTR100

*Regular : Non-hex



Esthetic-low Temporary Cylinder (Narrow type)

Hex	Non-hex
NMTR200	NMTR200

*Regular : Non-hex

※ Please refer to the Product Catalog for information on KS and ET system.

Denture 4U KIT ORDER CODE

Prosthetic | US



Esthetic-low Abutment Multi Angled Abutment Esthetic-low Gold Cylinder Esthetic-low Plastic Cylinder Esthetic-low Temporary Cylinder



US Esthetic-low Abutment

G/H	1.0	2.0	3.0	4.0	5.0
M	MEM100	MEM200	MEM300	MEM400	-
R	MER100	MER200	MER300	MER400	MER500
W	MEW100	MEW200	MEW300	MEW400	-
W^{PS}	TMEW100	TMEW200	TMEW300	TMEW400	-



Multi Angled Abutment

17°	G/H	2.0	3.0	4.0
M	US17MAM	4820	US17MAM4830	-
R	US17MAR	4820	US17MAR4830	US17MAR4840
M	US30MAR	4830	US30MAR4840	US30MAR4850



Esthetic-low Gold Cylinder

Type	Hex	Non-hex
Ø4.8/Ø4.8	MGR200	MGR100
Ø5.5/Ø5.5 ^{PS}	MGW200	MGW100



Esthetic-low Plastic Cylinder

Type	Hex	Non-hex
Ø4.8/Ø4.8	MEPR200	MEPR100
Ø5.5/Ø5.5 ^{PS}	MEPW200	MEPW100



Esthetic-low Temporary Cylinder

Type	Hex	Non-hex
Ø4.8/Ø4.8	MTR200	MTR100
Ø5.5/Ø5.5 ^{PS}	MTW200	MTW100



Esthetic-low Temporary Cylinder (Narrow type)

Type	Hex	Non-hex
Ø4.8/Ø4.8	NMTR200	NMTR100
Ø5.5/Ø5.5 ^{PS}	NMTW200	NMTW100

※ Please refer to the Product Catalog for information on KS and ET system.