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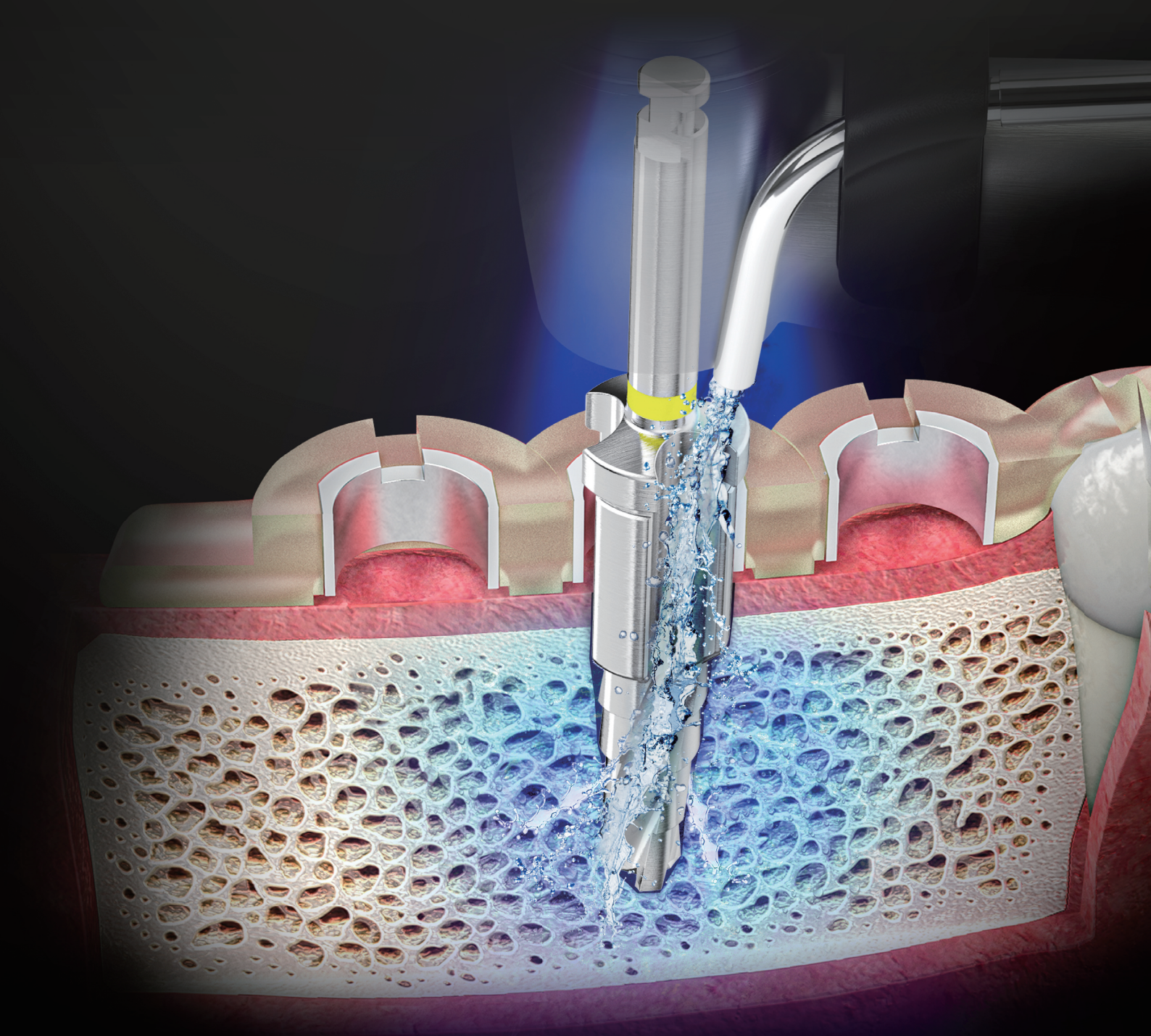
D-C-SGM-V3-202208-ENG

For education

SQ GUIDE

User Manual Ver.03



DENTIS


Ø2.2
Fix. Ø3.5
Fix. Ø4.0
Fix. Ø4.5
Fix. Ø5.0
Fix. Ø5.5
Spare
Anchor
8mm
10mm
12mm
14mm
16mm
C'sink
Drill
Screw
Profiler 3.5
Profiler 4.0
Hex Driver
M/D-S
M/D-L
R/D-S
R/D-L
M/D-S
M/D-L
R/D-S
R/D-L
1.25-S
1.25-L
Spare
SQ GUIDE
DENTIS

CONTENTS

Ⅰ. Introduction

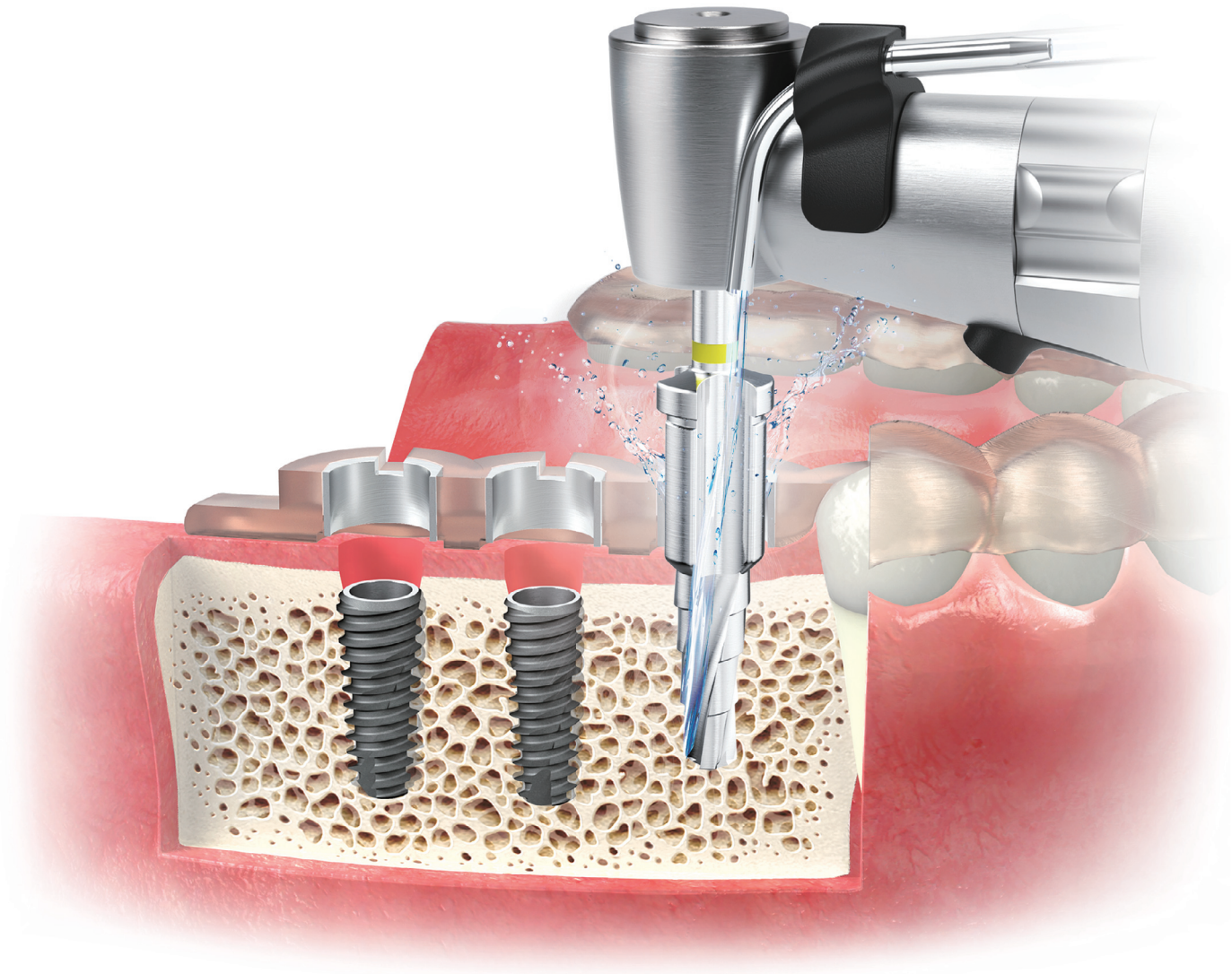
What is SQ GUIDE System?

Why is SQ GUIDE Special?

Work Flow & Material

What is SQ GUIDE System?

For faster, safer and more accurate surgery, the latest Chair-Side Guide System for SQ Implant System



✚ Virtually place the implant on the software and make a customized surgical stent prior to actual operation. Your surgery will be faster, safer and even more accurate.

SQ GUIDE PR Video

Drill only 3 times regardless of bone quality

Drill without worrying about bone heating

Titanium sleeves ensure a safe and accurate procedure

Manufacture a surgical guide the same day in your clinic

Why is SQ GUIDE Special?

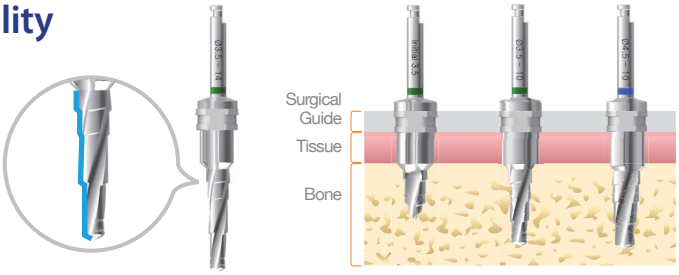
SQ GUIDE
PR Video

SQ Fixture-specific Guide System

- SQ Fixture is optimized for installation torque.
- A 30 step cleaning process makes SQ one of the cleanest implants in the world

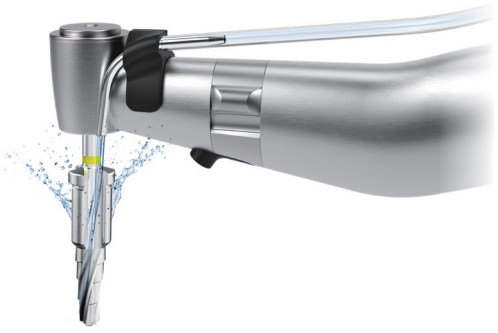
Drill only 3 times regardless of bone quality

- Fortified multi–step and side–cutting functions
- Implant placement with only 3 drillings regardless of bone quality: initial drilling x 1 + step drilling x 2
- Initial Drill – Ø 3.5 Step Drill – Final Step Drill
  (EX) Φ4.5 x 10mm SQ Fixture Drilling System :
  Φ3.5 initial Drill → Φ3.5 Step Drill → Φ4.5 Step Drill)



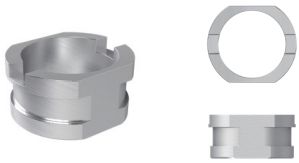
Drill without worrying about bone heating

- Decreased bone heating due to influx of external irrigation through irrigation groove, regardless of implant hand piece



Titanium sleeves ensure a safe and accurate procedure

- Enables more precise procedure with sleeve specific to SQ drill barrel diameter.
- No concern for bone adhesion failure due to resin–induced fixture surface contamination, with the use of bio–compatible titanium sleeve



A more convenient open S/W that allows pre-manufacturing of the prosthodontics

- Surgical guide stent can be designed since the library is registered with Dentiq Guide (3DII) and Implant Studio (3Shape)

Manufacture the guide in your own clinic with ZENITH

- Surgical guide stent can be manufactured fast and easily in as your clinic with the ZENITH 3D Printer

Work-flow

Material

CBCT Data

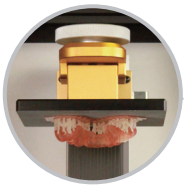
CT

Scanning

Intraoral or Model scanner

Planning

PC & S/W



3D Printing

ZENITH 3D Printer

Surgery

SQ GUIDE KIT

Temporary

ZENITH 3D Printer

II. Advance Preparation

Step1. CT Scan

Step2. Scanning

Step3. Cases with many metallic restorations, edentulous or numerous missing teeth

Step 1. CT Scan

✚ Material

Essential Material	CT, Cotton roll
Recommended Resolution	Slice interval 〈 0.25 mm Thickness 〈 0.25 mm Resolution 〈 0.25 mm x 0.25 mm
Recommended FOV Size	10X8.5 or higher (When it is below that level, it is impossible to fabricate the guide up to full arch.)

✚ Method

1. CT Scan

① Remove any metallic objects in the head and neck region such as earrings, and glasses.

② Assure jaw separation during scan by biting over a cotton roll or similar object (Fig.1, 2, 3).

Fig.1 Open bite

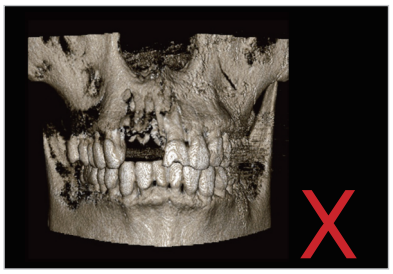


Fig.2 Closed bite

Fig.3 Cotton roll

Notice If the patient moves during CT taking and the CT image is thus shaken, or CT FOV size is small (10 × 8.5 and over is recommended), or CT is cut out, or there are many prosthesis, it may be difficult to fabricate the guide.

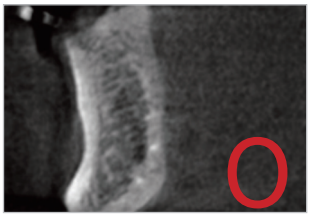


Fig.4 Correct CT data

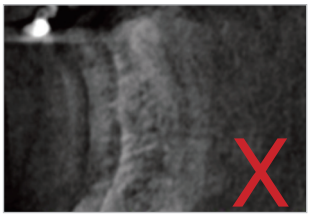


Fig.5 Shacked CT data

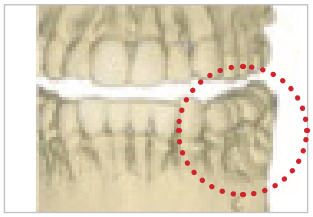


Fig.6 Unenough CT Information

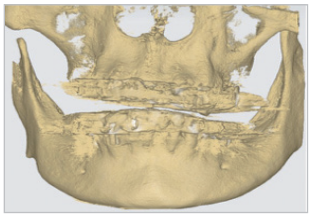


Fig.7 Many Metallic Restorations Cases

2. Extract CT File (DICOM file)

Notice Method for file extraction may differ depending on the products.For detailed method, check on each manufacturers or inquire additionally.

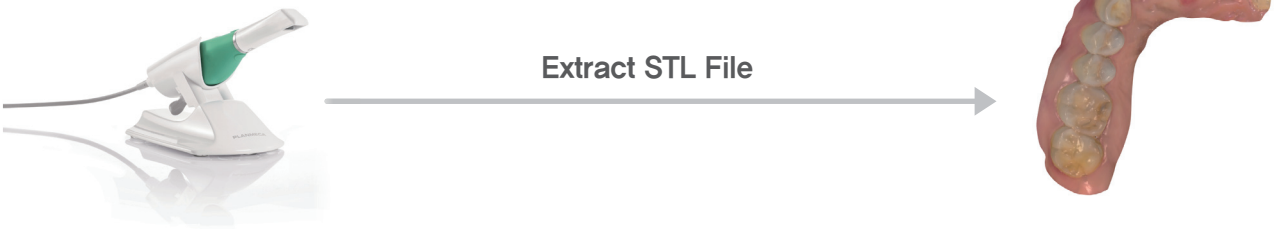
Step 2. Scanning

✚ Material

Essential Material	(Option1) Intra-oral scanner
	(Option2) Stone model or model scanner

✚ Method

1. Intra-oral Scan Data



Notice According to patient's oral condition, technique of workers or scanner performance, output of scan file have differences is possible.

2. Model Scan Data

Step 3. Cases with many metallic restorations, edentulous or numerous missing teeth

✚ Cases with many metallic restorations many missing teeth

1. Outline

- Marker production for alignment is necessary in case of multiple missing teeth or metal prosthodontics, as alignment of CT DICOM file in S/W and oral scan STL is difficult
- Intra-oral radio-opaque marker can be produced using 7th generation bonder and resin to aid with alignment.
- If data are aligned without this step, alignment error may occur and compromise the accuracy of the guide.

2. Work-flow

Intraoral opaque marker production

CT Scan

Oral scanner

Guide Stent Design

Tissue Support Guide

Step 3. Cases with many metallic restorations, edentulous or numerous missing teeth

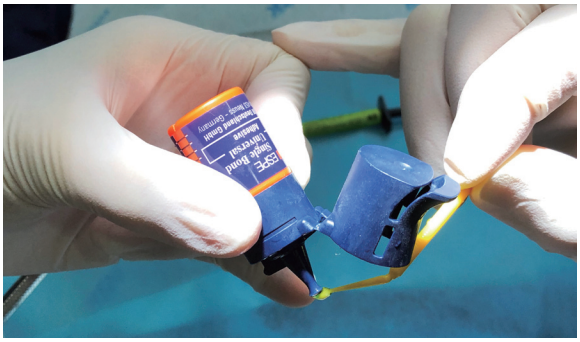
3. Scan Appliance Fabrication

1) Material

Essential Material	Patient's used denture, 7th generation universal bond, brush, light curing unit, scan powder

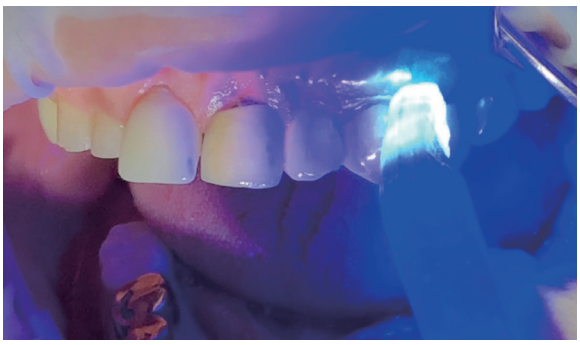
2) Method

① Apply universal bond to the brush



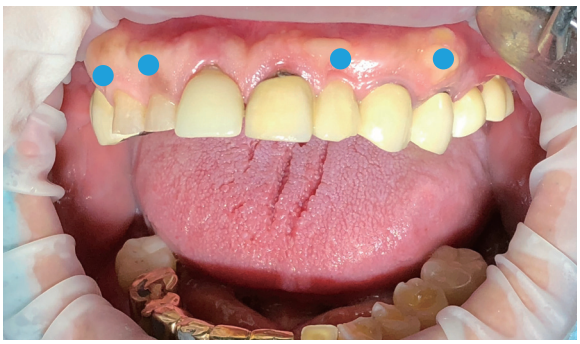
② 1~1.5mm bonding on the gingiva

③ Curing for 1 min.



④ Make marker by applying flow resin on top of bonding

⑤ Repeat to complete 4 markers



⑥ Apply scan powder including resin marker

Tip

- For edentulous patient or patient with multiple missing teeth, anchor screw hole must be made at time of implant planning, and anchor screw must be fixed to the hole, before surgery.
- T-shaped markers, rather than ball-shaped markers, are better for alignment.

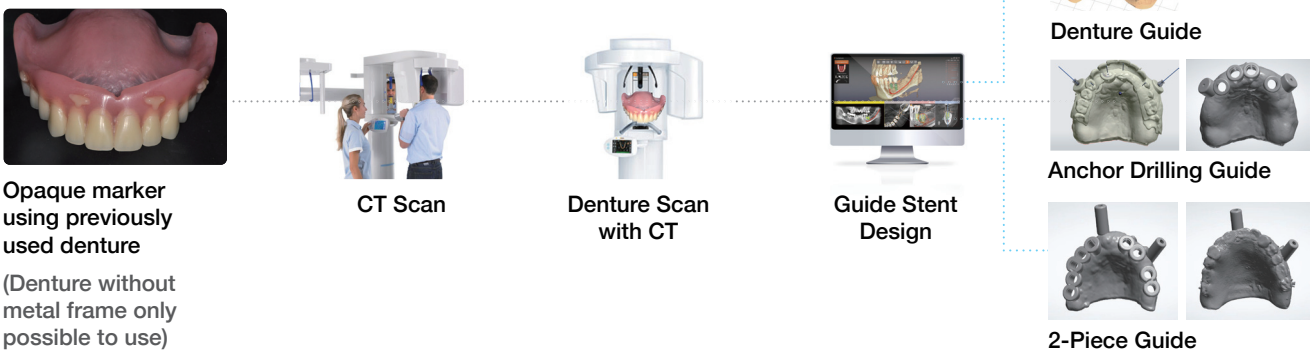
Step 3. Cases with many metallic restorations, edentulous or numerous missing teeth

✚ Edentulous Case

1. Outline

- Data alignment in S/W is difficult for edentulous patients and additional steps are needed for alignment data
- A previously used denture can be used or duplicated for this purpose
- Intraoral radiopaque marker can be made using 7th generation universal bond on denture or duplicate denture.
- Without this step, accuracy of guide can be compromised

2. Work-flow



Step 3. Cases with many metallic restorations, edentulous or numerous missing teeth

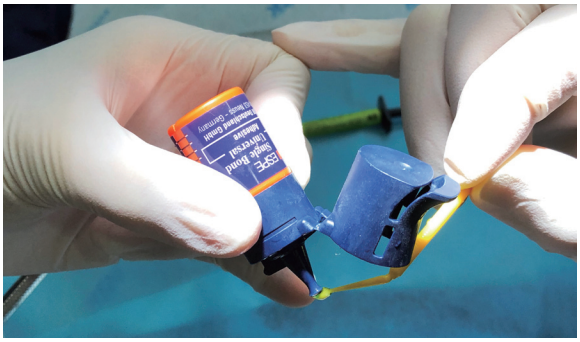
3. Scan Appliance Fabrication

1) Material

Essential Material	Patient's used denture (Denture without metal frame only possible to use), 7th generation universal bond, brush, light curing system, scan powder

2) Method

① Apply universal bond to brush



② 1~1.5 mm bonding on the pink gingival area of the previously used denture

③ Curing for 1 min.

④ Make marker by applying flow resin on top of bonding

⑤ Repeat to make 4 markers

⑥ Curing for 1 min.

Tip

- For edentulous patient or patient with multiple missing teeth, anchor screw hole must be made at time of implant planning, and anchor screw must be fixed to the hole, before surgery.
- T-shaped markers, rather than ball-shaped markers, are better for alignment.

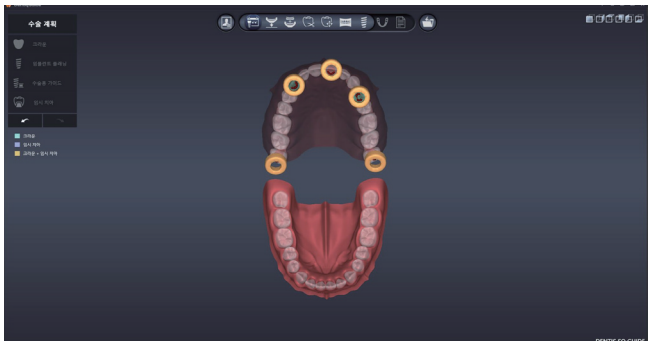
Step 3. Cases with many metallic restorations, edentulous or numerous missing teeth

4. Anchor Screw Hole Guide S/W Planning

· For an edentulous patient or patient with multiple missing teeth, anchor screw hole must be made at the time of implant planning and the anchor screw must be fixed to the hole before surgery. (Refer to 43p.)

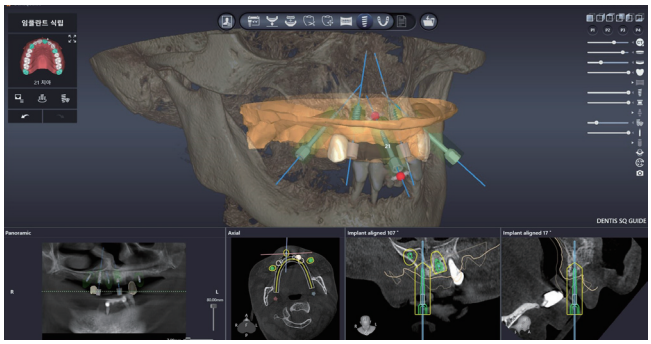
1) How to make Anchor Screw Hole in Dentiq Guide S/W

① Open Implant planning screen

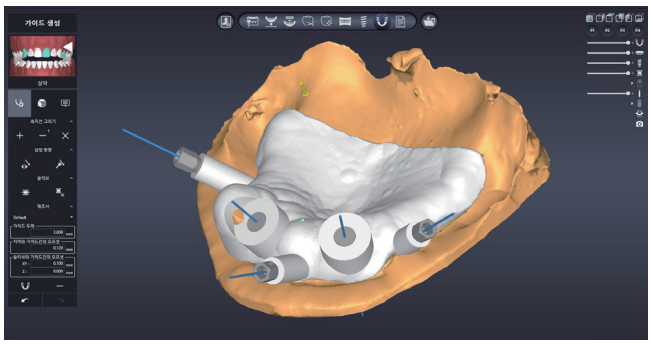


Tip Anchor is generally placed on the 8th tooth

② Select DENTIS anchor and form anchor screw hole at desired position



③ Complete surgical guide stent including anchor screw hole



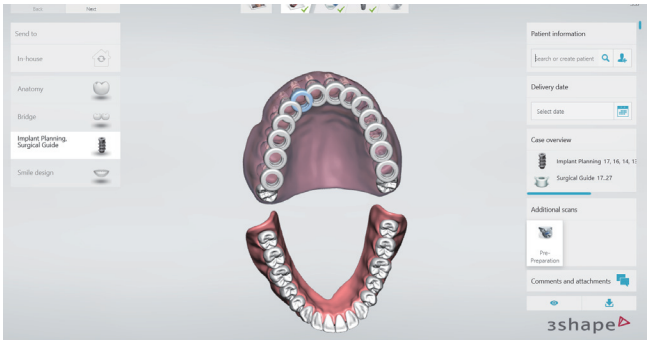
Notice Method for file extraction may differ depending on the products.
For detailed method, check on each manufacturers or inquire additionally.

Step 3. Cases with many metallic restorations, edentulous or numerous missing teeth

2) How to make anchor screw hole in 3shape Implant Studio S/W

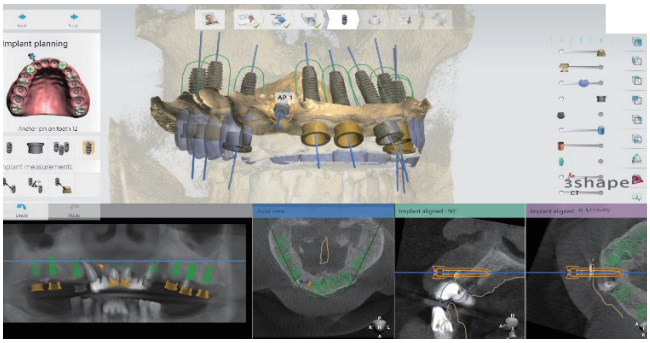
· Add implant planning on the area where anchor screw would be used in Case set up, During implant planning. select and position anchor screw specific to SQ GUIDE

① Open Implant planning screen

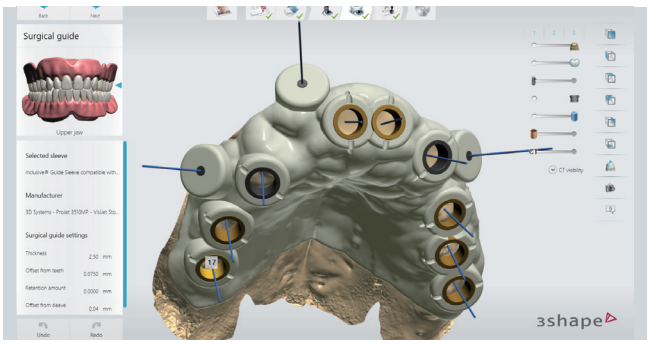


Tip Anchor is generally placed on the 8th tooth

② Select DENTIS as manufacturer, then make anchor screw hole at desired position by selecting SQ GUIDE Anchor Screw



③ Complete surgical guide stent including anchor screw hole



Notice Method for file extraction may differ depending on the products.
For detailed method, check on each manufacturers or inquire additionally.

Ⅲ. Method for chair-side fabrication

Step1. Implant Planning

Step2. Surgical Guide Stent 3D Printing

Step3. Surgical Guide Stent Fabrication

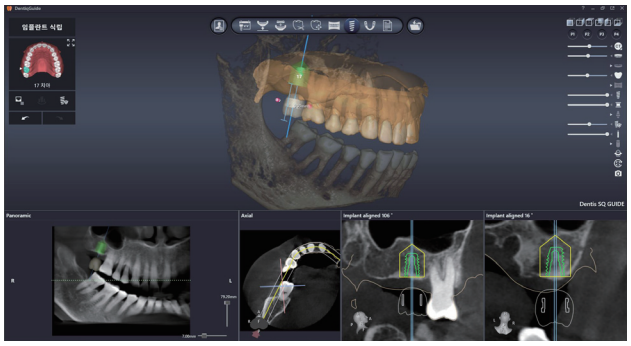
Step 1. Implant Planning

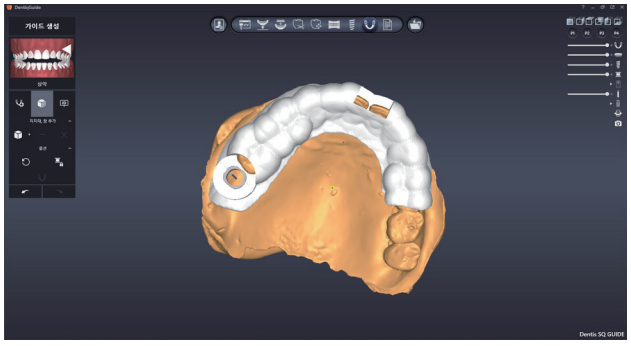
✚ Outline

- Guide planning S/W is a pre-operative planning software used to plan the placement of one or more implants based on CT and 3D scan data.
- The implant library that includes authenticated implants are supported.
- User can export the aligned implant and scan data as STL file.
- The use of this software requires having the necessary expertise in implant dentistry.

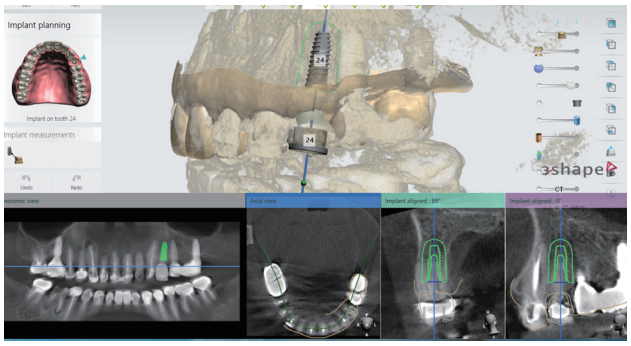
✚ Recommended Guide Planning S/W

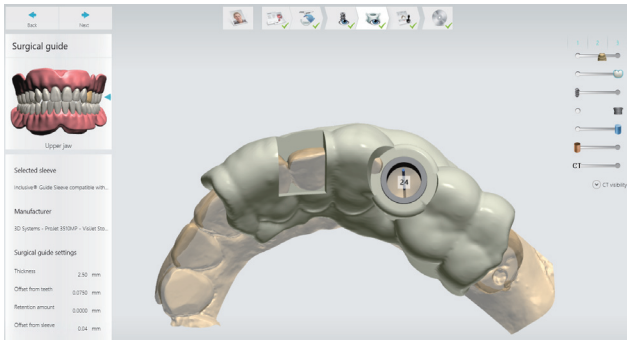
– Dentiq Guide





– Implant Studio





Notice Method for file extraction may differ depending on the products.For detailed method, check on each manufacturers or inquire additionally.

Step 1. Implant Planning

✚ Material

Essential Material	PC, S/W

1. System Requirements

Category	Minimum System Requirements	Recommended
OS	Windows 7, 8, 10 (64bit)	Windows 7, 8, 10 (64bit)
RAM	16GB	16GB or higher
Graphics Card	Graphics card compatible with DirectX 11	High end graphic card compatible with DirectX 11 or higher GPU-dedicated memory 1GB
CPU	Intel i3 Dual Core	Intel i5 Quad Core or higher
HDD	2GB free space	2GB free space

* Minimum system requirements are only available when the S/W to be in sole occupancy.

✚ Work-flow

Ref. : DentiqGuide

Step 1. Implant Planning

✚ Sleeve Offset Settings

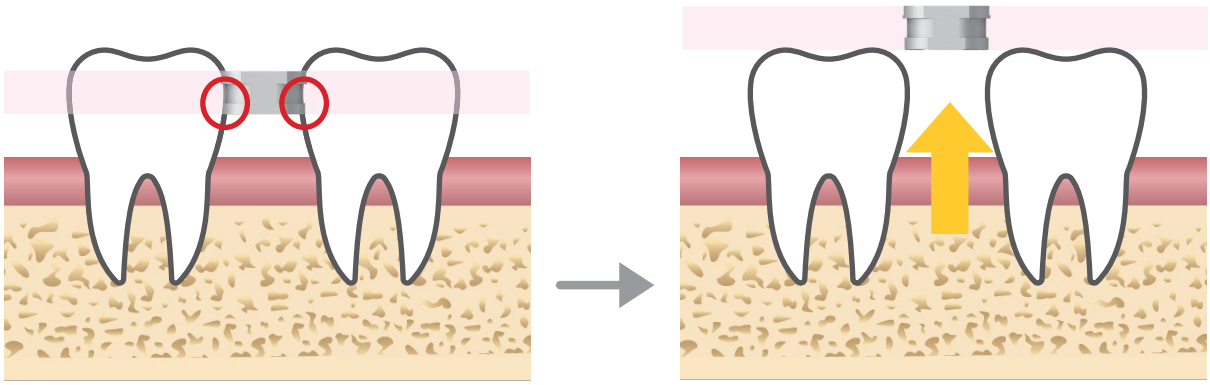
1. Definition of Sleeve Offset

- Distance between top of fixture to top of sleeve
- Sleeve Offset(height) is an important factor to be considered during surgical guide stent design as it is associated with fixture placement length
- Surgery customized to teeth interference and gingival height is possible by controlling Offset

2. Indications for Sleeve Offset

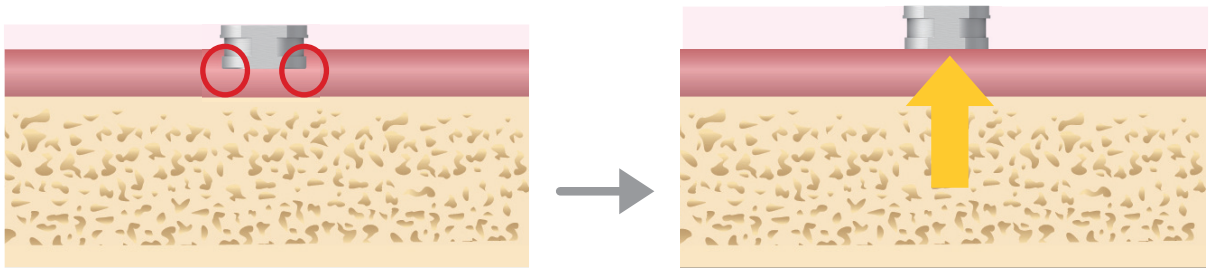
1) Narrow Installation Space

- Adjust sleeve to the top of occlusal surface to maintain a stable drill gap



2) Thick Gingival Tissue

- Set offset value with consideration of gingival height so that gingival tissue is not compressed by the sleeve



Step 1. Implant Planning

3. Sleeve Offset Setting Method

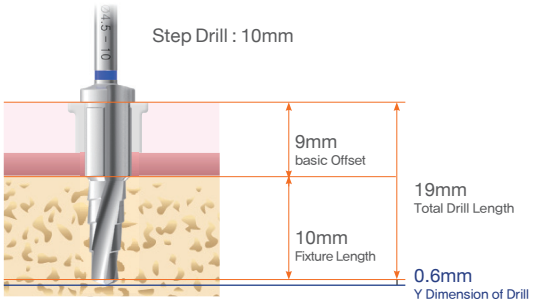
· Range of application for offset : 9 (base) / 11 (+2) / 13 (+4)

· Calculate total drilling length: Total drill length = offset + fixture length

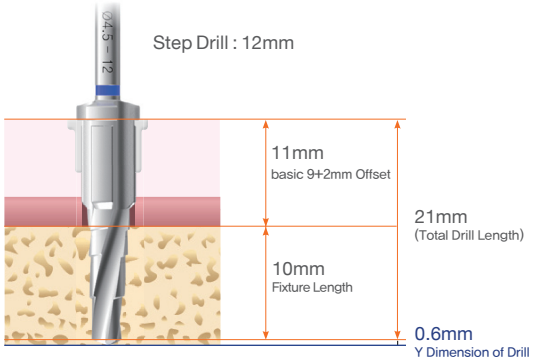
· User can change the offset length from 9mm basic setting up to 13mm, in 1mm increments

10mm Fixture Installation Plan

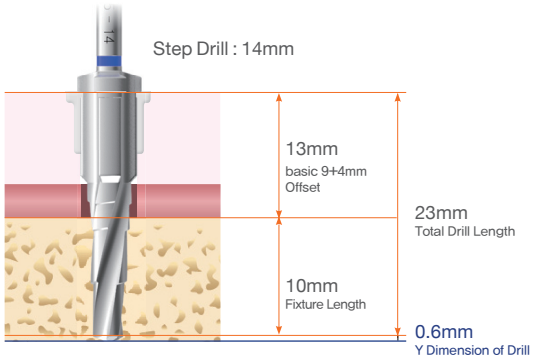
1) Basic Offset



2) 11mm Offset

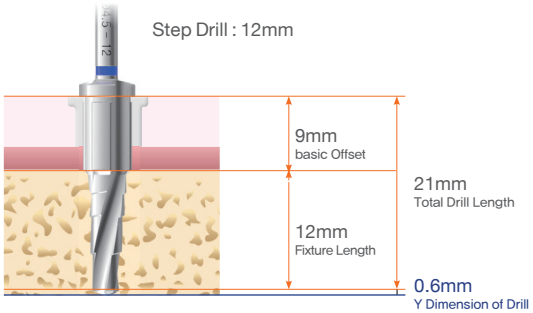


3) 13mm Offset

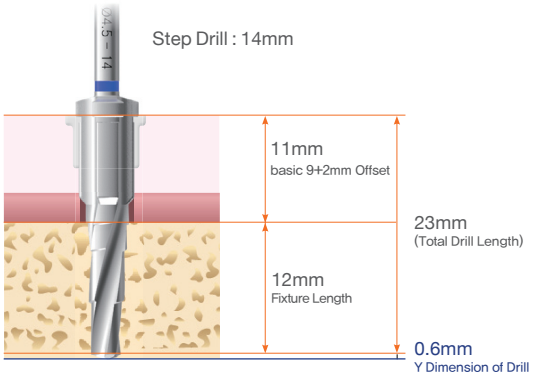


12mm Fixture Installation Plan

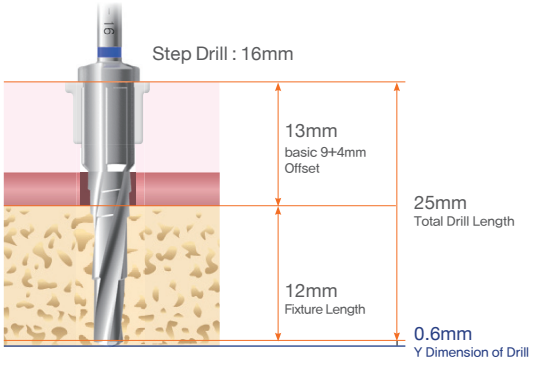
1) Basic Offset



2) 11mm Offset



3) 13mm Offset



Step 2. 3D Print the Surgical Guide Stent

✚ Material

Essential Material	3D Printer, Guide Resin

1. ZENITH D

- Popular 3D printer designed specifically to print models and guides
- DLP method 3D printer that is cost effective

Technology	DLP(Digital Light Processing)
Build Size	128 x 80 x 150 mm
Machine Size X/Y/Z	340 x 460 x 430 mm
weight	15 kg
XY Resolution	100㎛
Interface	USB, Wi-Fi
Layer Thickness	50㎛, 100㎛
Light Source	405㎛ LED
Software	Zenith D Slicer
OS	Windows 7,8,10 / Mac 10.10 higher
Input file format	Standard STL file
Power supply	INPUT : AC 100V-240V / 50-60 Hz 2A max OUTPUT : 24V 5A
Material Properties	Photopolymer Resin

2. ZENITH L2

- Fast & Resaonable

Technology	Mono LCD
Build Size	116 x 64 x 150 mm
Machine Size X/Y/Z	340 x 460 x 430 mm
weight	12 kg
Interface	USB, Wi-Fi
Layer Thickness	50㎛, 100㎛
Light Source	405㎚ LED
Software	Zenith Slicer
OS	Windows 7,8,10
Input file format	Standard STL file
Power supply	Input : AC 100V-240V / 50-60 Hz 2.5A max Output : 24V 3.75A (90W)
Material Properties	Photopolymer Resin

Dental model	30min	**Inlay**	5~10min
Surgical guide	30min	**Denturebase**	1hour
Temporary	10~20min		

Notice Specifications of the product may change depending on the circumstances of the company.

Step2. 3D Print the Surgical Guide Stent

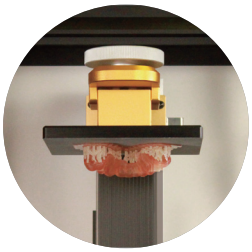
✚ Method

1. 3D Printer S/W

① Import STL file by using 3D printer software
② Determine the output location. Design the strut and floor surface strut
③ Transfer data by using 3D printer (Automatic start-up)

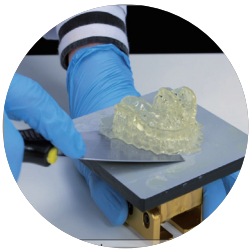
2. Printing

① 3D Printer



② Removal of output board

③ Separation of output



Notice For 3D printer manual, refer ZENITH D software manual and user manual.

ZENITH D
PR Video

Step3. Surgical Guide Stent Fabrication

✚ Material

Essential Material	Post processing	Cleaning Vessel, Brush, Alcohol, Ultrasonic Cleaner, UV Curing
	Sleeve occlusal	Sleeve, Bond, Curing
	Disinfection	Chlorohexidine

✚ Method

1. Post-treatment

① Cleaning

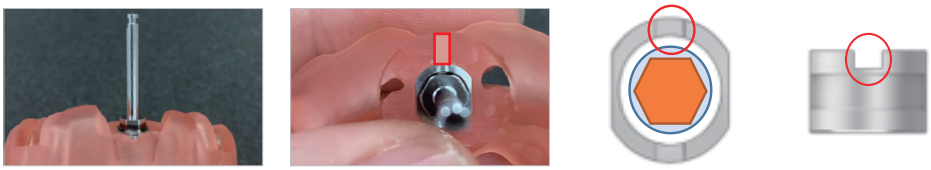
② Separation of the strut

③ Cure after complete drying

2. Sleeve Occlusal

① Apply resin cement to metal sleeve hole
② Attach sleeve to guide stent
③ Photopolymerization for 1 minute

Notice When applying sleeve, do so on the appropriate position on Hex surface



3. Prior to Surgery, Disinfect with Chlorohexidine

Prior to surgery, immerse the surgical stent in chlorohexidine for 5 – 10 minutes for disinfection.

Notice Autoclave cannot be used for sterilization

Ⅳ. Surgical Procedure

SQ GUIDE KIT

Drilling Sequence

Surgical Procedure

SQ GUIDE KIT

DSQGS35
DSQGS45

Metal Sleeve
(separately sold product)

DSQGFD

DSQGTP

DSQGSTD2208 DSQGSTD3508 DSQGSTD4008 DSQGSTD4508 DSQGSTD5008 DSQGSTD5508
DSQGSTD2210 DSQGSTD3510 DSQGSTD4010 DSQGSTD4510 DSQGSTD5010 DSQGSTD5510
DSQGSTD2212 DSQGSTD3512 DSQGSTD4012 DSQGSTD4512 DSQGSTD5012 DSQGSTD5512
DSQGSTD2214 DSQGSTD3514 DSQGSTD4014 DSQGSTD4514 DSQGSTD5014 DSQGSTD5514
DSQGSTD2216 DSQGSTD3516 DSQGSTD4016 DSQGSTD4516 DSQGSTD5016 DSQGSTD5516

DSQGCS55

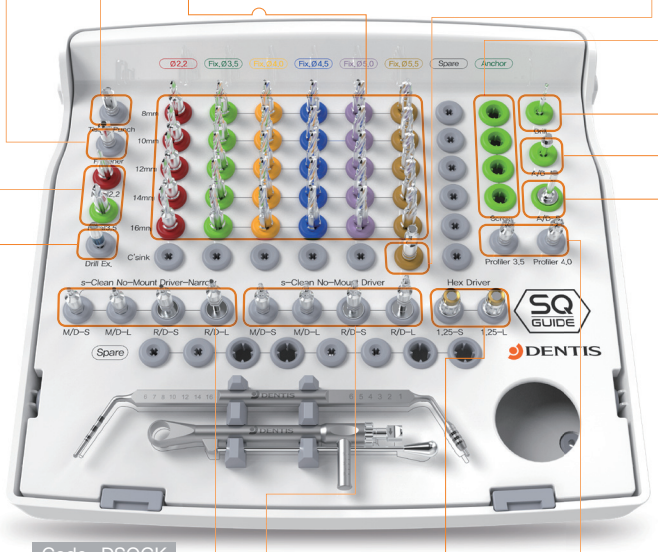
DGAS18

DGATD

Flattener	Tissue Punch	Step Drill	Ø5.0 Counter Sink	Anchor Screw (separately sold product)	Anchor Drill

Depth Gauge

DPDG



Code - DSQGK

Torque Ratchet

DTR

Initial Drill	Drill Extension	Mini Driver	No-Mount Driver (Regular)	Hex Driver	Profiler Drill	Anchor Driver (Ratchet)	Anchor Driver (Machined)

DSQGID22
DSQGID35

DDE

DSQGNDMMS
DSQGNDMML
DSQGNDMRS
DSQGNDMRL

DSQGNDRMS
DSQGNDRML
DSQGNDRRS
DSQGNDRRL

DRHDS125
DRHDL125

DSQGPD35
DSQGPD40

DRHDL24

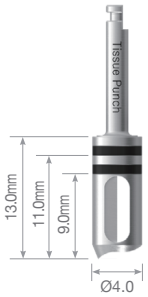
DRHDL24

2. COMPONENT

Tissue Punch

- Used for circular removal of gingiva in the area of implant placement
- Internal blade allows for clean removal
- Drill up to laser marking according to offset length
- Recommended RPM : 800–1,200

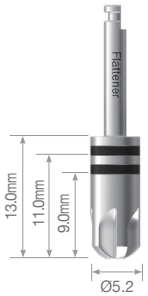
Code
DSQGTP



Flattener Drill

- Used to flatten the top of alveolar crest
- Drill up to laser marking according to offset length
- Recommended RPM : 800–1,200

Code
DSQGFD



Drill Extension

- Used for length extension if drill bit is too short

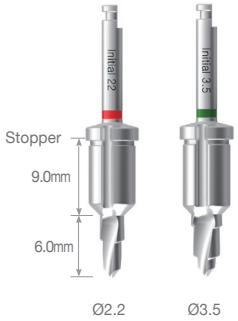
Code
DDE

SQ GUIDE KIT

Initial Drill

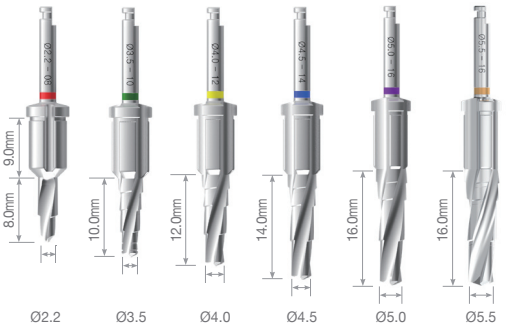
- Used to make holes that ensure accurate direction in the early stage
- Diameter : Ø2.2, Ø3.5. Basic setting is Ø3.5
- When installing Ø3.5 implant, Ø2.2 is used for early fixation in soft bone
- Irrigation prevents bone heating
- Recommended RPM : 800–1,200
- Use up to 50 times before replacing

Diameter	Code
Ø2.2	DSQGID22
Ø3.5	DSQGID35



STEP Drill

- Used for establishing diameter and length for fixture placement
- Improved cutting ability and slip prevention through multistep structure and side cutting design
- Color painting for each of 25 diameters
- Prevents bone heating with drill bit irrigation
- Drill composition enables SQ fixture installation without SQ Surgical KIT
- Recommended RPM : 800–1,200



Color	Red	Green	Yellow	Blue	Purple	Gold
	2.2	3.5	4.0	4.5	5.0	5.5
8.0mm	DSQGSTD2208	DSQGSTD3508	DSQGSTD4008	DSQGSTD4508	DSQGSTD5008	DSQGSTD5508
10.0mm	DSQGSTD2210	DSQGSTD3510	DSQGSTD4010	DSQGSTD4510	DSQGSTD5010	DSQGSTD5510
12.0mm	DSQGSTD2212	DSQGSTD3512	DSQGSTD4012	DSQGSTD4512	DSQGSTD5012	DSQGSTD5512
14.0mm	DSQGSTD2214	DSQGSTD3514	DSQGSTD4014	DSQGSTD4514	DSQGSTD5014	DSQGSTD5514
16.0mm	DSQGSTD2216	DSQGSTD3516	DSQGSTD4016	DSQGSTD4516	DSQGSTD5016	DSQGSTD5516

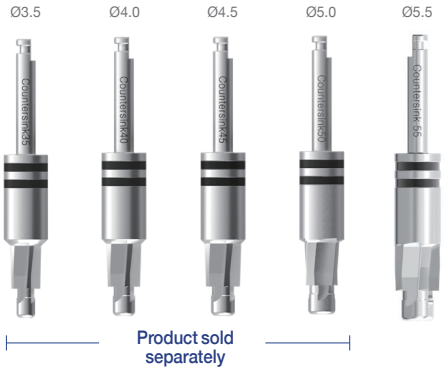
▶ Step Drill Design

▶ Irrigation Design

Countersink(Sold separately)

- Prevents excessive installation torque when widening cortical bone (especially when the offset is 13mm)
- Diameter : Ø5.0, Ø3.5~Ø4.5 sold separately
- Drill up to laser marking according to Product sold separately
- Recommended RPM : 800–1,200

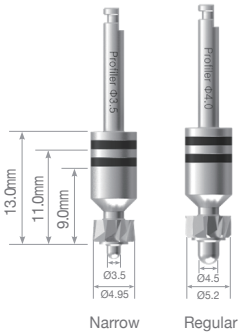
Diameter	Code
Ø3.5	DSQGCS35
Ø4.0	DSQGCS40
Ø4.5	DSQGCS45
Ø5.0	DSQGCS50
Ø5.5	DSQGCS55



Profiler Drill

- Remnant bone removing drill for smooth application of healing abutment or conventional abutment after implant placement
- Diameter : Ø3.5 Narrow, Ø4.5 Regular
  – Narrow : trimming up to Ø4.95
  – Regular : trimming up to Ø5.2
- Laser marking can be used to check depth
- Recommended RPM : 100

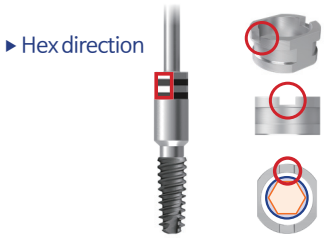
Diameter	Code
Ø3.5	DSQGPD35
Ø4.5	DSQGPD40



No Mount Driver (Including narrow)

- For installation or removal of fixture using Handpiece
- Eight types of no mount drivers, including narrow, regular, machine and rachet
- Allows for pre–production of temporary crown if sleeve groove corresponds to hex direction and surface agreement of fixture driver
- Drilling up to laser marking according to offset length
- Recommended RPM : 50
- Recommended Torque Value : 30–40 Ncm

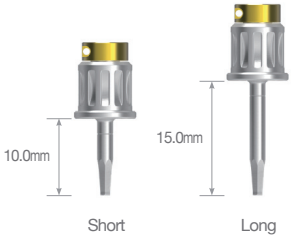
Type / Length	Narrow		Regular	
	Machine	Ratchet	Machine	Ratchet
Short	DSQGNDNMS	DSQGNDNRS	DSQGNDRMS	DSQGNDRRS
long	DSQGNDNML	DSQGNDNRL	DSQGNDRML	DSQGNDRRL



Hex Driver

- It is used when connecting cover screw or abutment screw
- Diameter : Ø1.25

Length	Code
Short	DRHDS125
long	DRHDL125

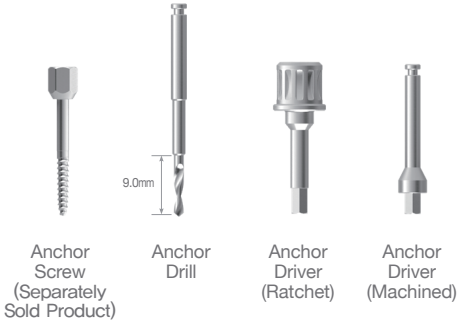


SQ GUIDE KIT

Anchor Screw, Drill, Driver

- Use for surgical guide stent in edentulous cases or cases with multiple missing areas
  - – Anchor drill : A Ø1.35 drill used for inserting the screw for fixation of surgical stent
  - – Anchor screw : A tool used for fixation of surgical stent
  - – Anchor driver : A tool used for fixation of anchor screw. Two different types for machine and for ratchet
- Recommended RPM : Drilling 800 – 1,200 / screw placement 50 – 100

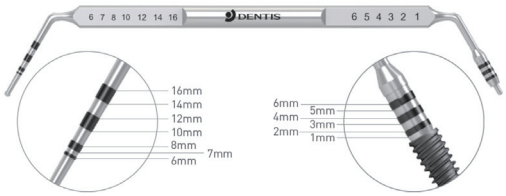
Name	CODE
Anchor Screw	DGAS18
Anchor Drill	DGATD
Anchor Driver(Ratchet)	DRHDL24
Anchor Driver(Machine)	DMHD24



Depth Gauge

- Use for installation hold depth and tissue height measurement

CODE
DPDG



Torque Ratchet

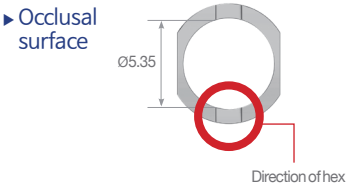
- Use by attaching ratchet driver when installing fixture

CODE
DTR

SQ GUIDE Sleeve (Product Sold Separately)

- Disposable titanium sleeve
- Inner diameter Ø5.35
- 3.5mm, 4.5mm lengths available
  - – 3.5mm : for patients with thick gingival or posterior region
  - – 4.5mm : For patients with thin gingiva or anterior region
- Attach using bonding ingredient (resin cement etc.)

Length	CODE
Short	DSQGS35
Long	DSQGS45



4. Method for Storage and Management of the KIT

1) Cleaning and Disinfection

① Thoroughly pre-rinse blood stain or foreign body on the instruments after using the kit by using a cleaning brush on the surface in distilled water or 30 ~ 40℃ running water for 20 seconds.

② Pre-rinse it by immersing it in disinfectant liquid for 10 minutes.

③ Clean additionally by using ultrasonic cleaner.

④ After cleansing it by using detergent and cleaning brush, wash it in running water thoroughly.

⑤ Either air-dry the cleansed instruments or use a clean cloth.

⑥ Reposition the dried instruments according to the mark on the base plate of the kit.

⑦ Wrap the kit with sterilization wrap.

⑧ Mark the sterilization date after attaching sterilization tape on sterilization wrap.

⑨ Place the wrapped kit into the sterilization device and continue sterilization.

2) Method for Storage

① Store at room temperature in an uncontaminated area.

② Check the marked sterilization date, and if it has not been used within 3 ~ 4 days, re-sterilize it before using it for surgery.

3) Precautions

① This product is a medical device and must be used according to its original purpose and indication

② Return product if there is any external defect before removing packaging

③ Handle with care to prevent damage or deformity of product

④ Handle drill bits with care to prevent damage, since they are minute and sharp

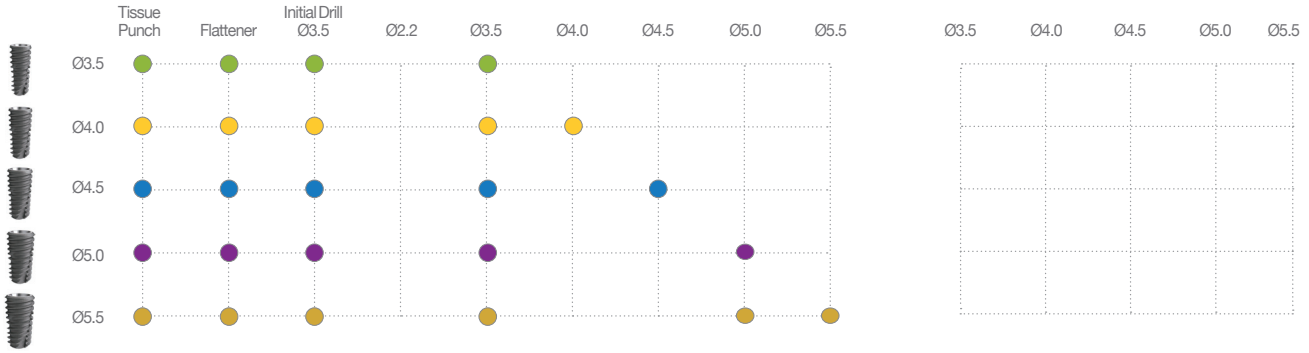
⑤ Sterilize before use

⑥ Learn usage instruction for each tool before use

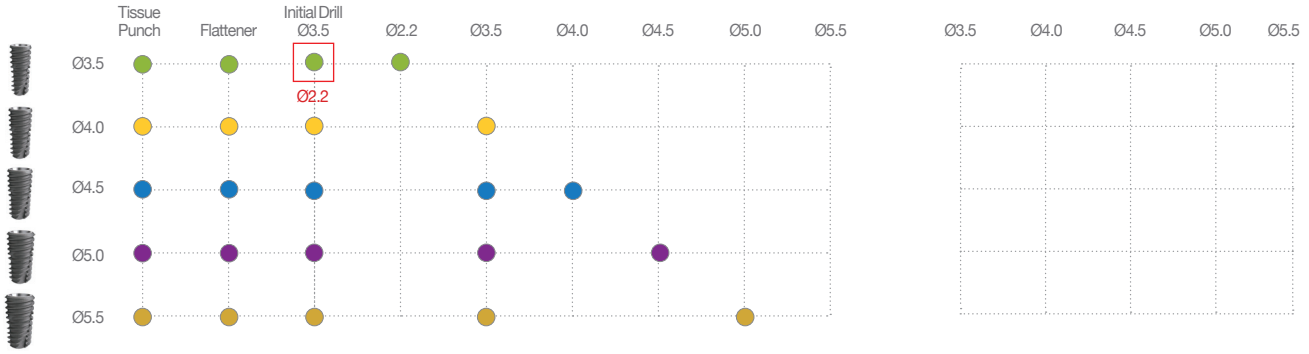
Drilling Sequence

1. SQ Implant Drilling Sequence

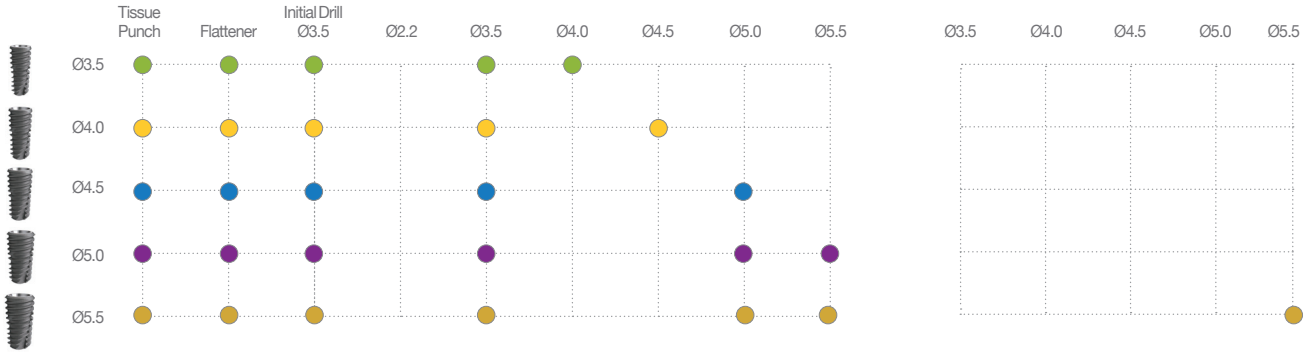
* Drilling Protocol(Normal Bone), D2



* Drilling Protocol(Soft Bone), D3 & D4



* Drilling Protocol(Hard Bone), D1



Notice Over drill or under drill according to the patient's bone quality

2. Drilling Sequence by SQ Implant Diameter

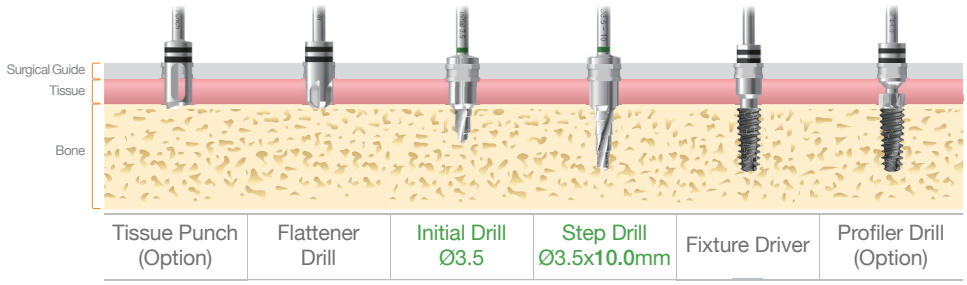
1) SQ Ø3.5 x 10.0mm

▶Option ▶Must ▶Installation

Bone Quality	Tissue Punch	Flattener	Initial Drill		Step Drill			Fixture	Bone Profile
			Ø 2.2	Ø 3.5	Ø2.2	Ø3.5	Ø4.0	Ø 3.5 X 10mm	
Soft (D3,4)	▶	▶	▶		▶			▶	▶
Normal (D2)	▶	▶		▶		▶		▶	▶
Hard (D1)	▶	▶		▶		▶	▶	▶	▶
RPM	800 ~ 1,200							50	100

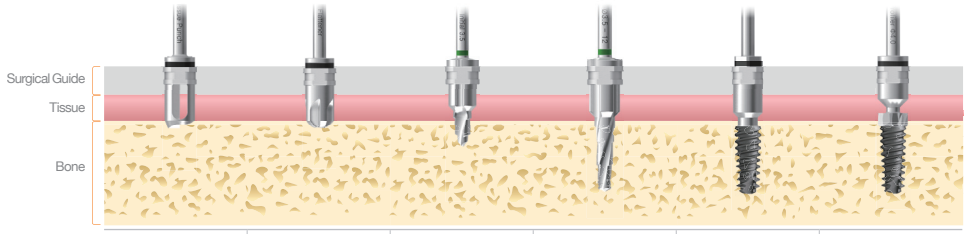
Normal Bone Standard

Offset 9.0mm



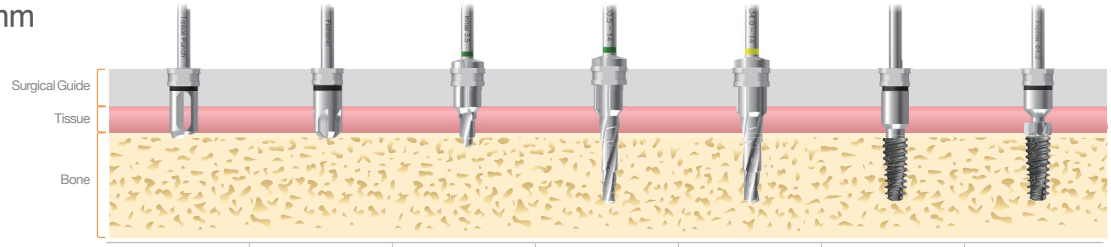
Tissue Punch (Option)	Flattener Drill	Initial Drill Ø3.5	Step Drill Ø3.5x10.0mm	Fixture Driver	Profiler Drill (Option)

Offset 11.0mm



Tissue Punch (Option)	Flattener Drill	Initial Drill Ø3.5	Step Drill Ø3.5x12.0mm	Fixture Driver	Profiler Drill (Option)

Offset 13.0mm



Tissue Punch (Option)	Flattener Drill	Initial Drill Ø3.5	Step Drill Ø3.5x14.0mm	Step Drill Ø4.0x14.0mm	Fixture Driver	Profiler Drill (Option)

Notice

- Soft Bone : Under drilling using Step Drill up to Ø2.2
- Hard Bone : Over drilling using Ø4.0 Step Drill or Ø3.5 Step Drill and Ø3.5 Countersink
- If the offet is 13mm, It needs additional drilling using Step Drill or Countersink with one size up.
- Refer to 24p for definition and setting for offset.
- Refer to 47p for drilling system

Drilling Sequence

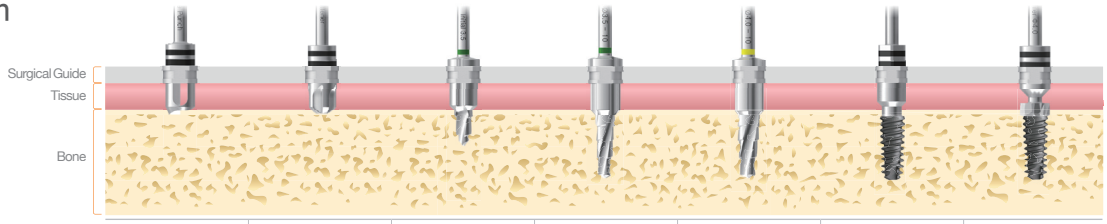
2) SQ Ø4.0 x 10.0mm

▶Option ▶Must ▶Installation

Bone Quality	Tissue Punch	Flattener	Initial Drill	Step Drill			Fixture	Bone Profile
			Ø3.5	Ø 3.5	Ø 4.0	Ø 4.5	Ø 4.0 X 10mm	
Soft (D3,4)	▶	▶	▶	▶			▶	▶
Normal (D2)	▶	▶	▶	▶	▶		▶	▶
Hard (D1)	▶	▶	▶	▶		▶	▶	▶
RPM	800 ~ 1,200						50	100

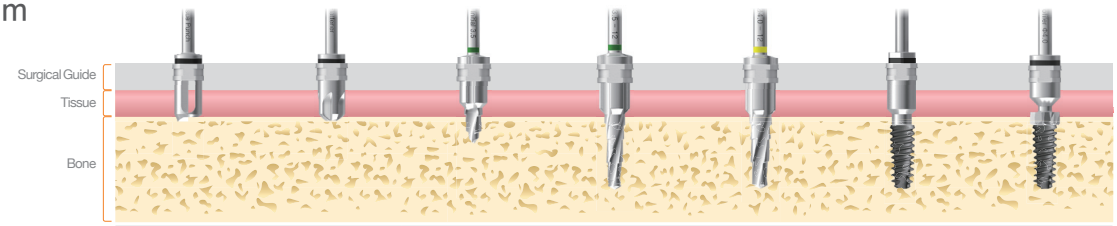
Normal Bone Standard

Offset 9.0mm



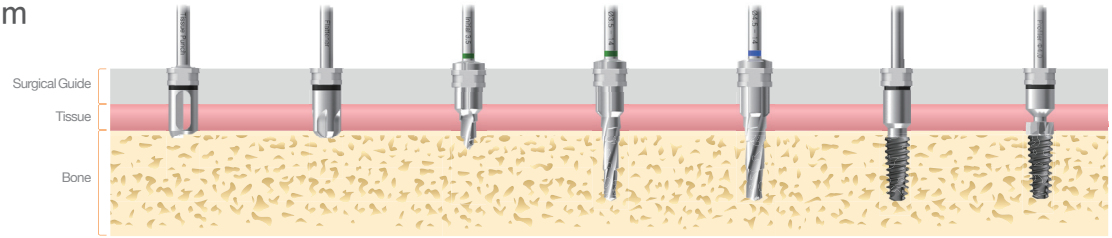
Tissue Punch (Option)	Flattener Drill	Initial Drill Ø3.5	Step Drill Ø3.5x10.0mm	Step Drill Ø4.0x10.0mm	Fixture Driver	Profiler Drill (Option)

Offset 11.0mm



Tissue Punch (Option)	Flattener Drill	Initial Drill Ø3.5	Step Drill Ø3.5x12.0mm	Step Drill Ø4.0x12.0mm	Fixture Driver	Profiler Drill (Option)

Offset 13.0mm



Tissue Punch (Option)	Flattener Drill	Initial Drill Ø3.5	Step Drill Ø3.5x14.0mm	Step Drill Ø4.5x14.0mm	Fixture Driver	Profiler Drill (Option)

Notice

- Soft Bone : Under drilling using Step Drill up to Ø3.5
- Hard Bone : Over drilling using Ø4.5 Step Drill or Ø4.0 Step Drill and Ø4.0 Countersink
- If the offet is 13mm, It needs additional drilling using Step Drill or Countersink with one size up.
- Refer to 24p for definition and setting for offset .
- Refer to 47p for drilling system.

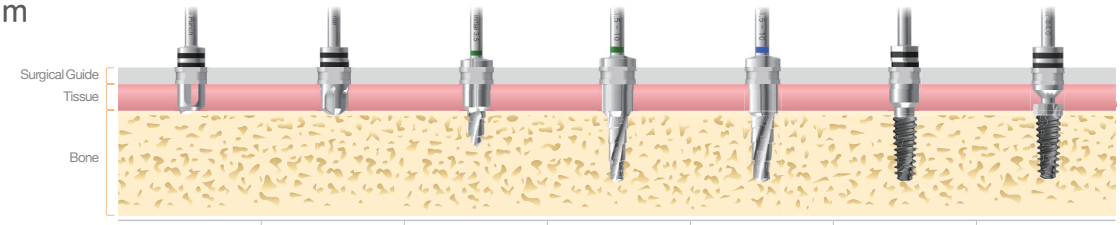
3) SQ Ø4.5x 10.0mm

▶Option ▶Must ▶Installation

Bone Quality	Tissue Punch	Flattener	Initial Drill	Step Drill				Fixture	Bone Profile
			Ø3.5	Ø 3.5	Ø 4.0	Ø 4.5	Ø 5.0	Ø 4.5 X 10mm	
Soft (D3,4)	▶	▶	▶	▶	▶			▶	▶
Normal (D2)	▶	▶	▶	▶		▶		▶	▶
Hard (D1)	▶	▶	▶	▶			▶	▶	▶
RPM	800 ~ 1,200							50	100

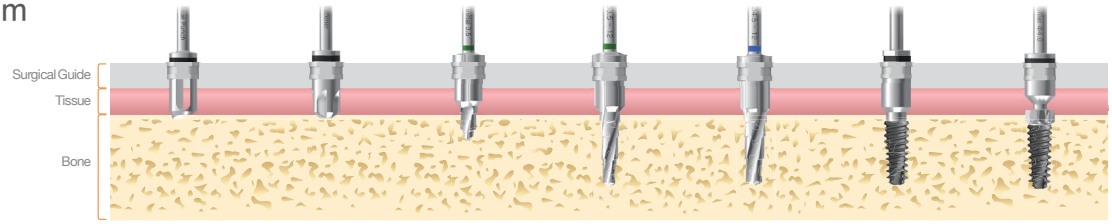
Normal Bone Standard

Offset 9.0mm



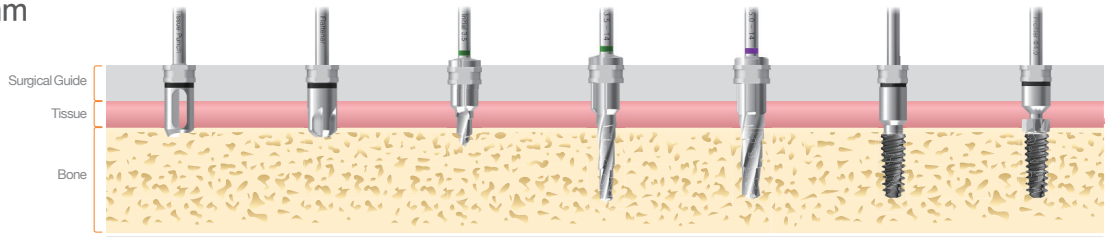
Tissue Punch (Option)	Flattener Drill	Initial Drill Ø3.5	Step Drill Ø3.5x10.0mm	Step Drill Ø4.5x10.0mm	Fixture Driver	Profiler Drill (Option)

Offset 11.0mm



Tissue Punch (Option)	Flattener Drill	Initial Drill Ø3.5	Step Drill Ø3.5x12.0mm	Step Drill Ø4.5x12.0mm	Fixture Driver	Profiler Drill (Option)

Offset 13.0mm



Tissue Punch (Option)	Flattener Drill	Initial Drill Ø3.5	Step Drill Ø3.5x14.0mm	Step Drill Ø5.0x14.0mm	Fixture Driver	Profiler Drill (Option)

Notice

- Soft Bone : Under drilling using Step Drill up to Ø4.0
- Hard Bone : Over drilling using Ø5.0 Step Drill or Ø4.5 Step Drill and Ø4.5 Countersink
- If the offet is 13mm, It needs additional drilling using Step Drill or Countersink with one size up.
- Refer to 24p for definition and setting for offset .
- Refer to 47p for drilling system.

Drilling Sequence

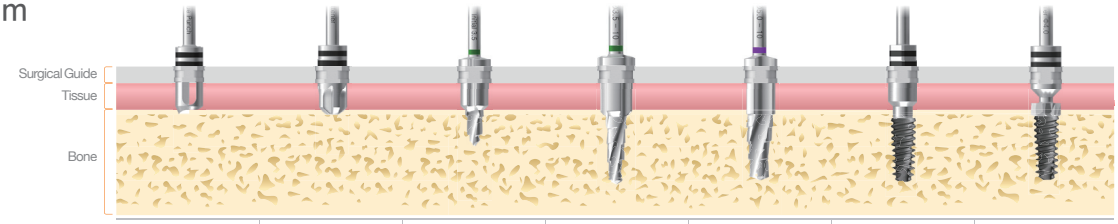
4) SQ Ø5.0 x 10.0mm

▶Option ▶Must ▶Installation

Bone Quality	Tissue Punch	Flattener	Initial Drill	Step Drill			Countersink	Fixture	Bone Profile
			Ø3.5	Ø 3.5	Ø 4.5	Ø 5.0	Ø 5.0	Ø 5.0 X 10mm	
Soft (D3,4)	▶	▶	▶	▶	▶			▶	▶
Normal (D2)	▶	▶	▶	▶		▶		▶	▶
Hard (D1)	▶	▶	▶	▶		▶	▶	▶	▶
RPM	800 ~ 1,200							50	100

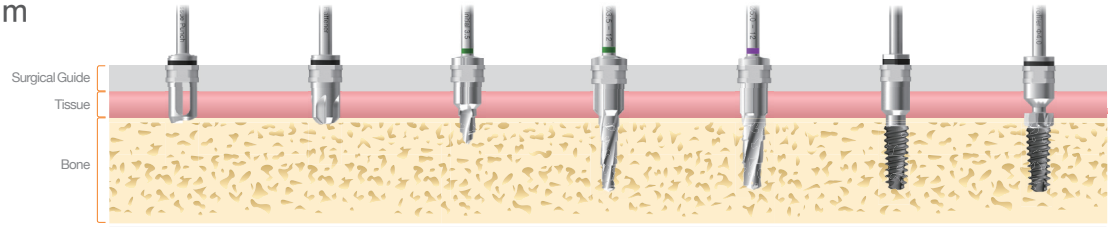
Normal Bone Standard

Offset 9.0mm



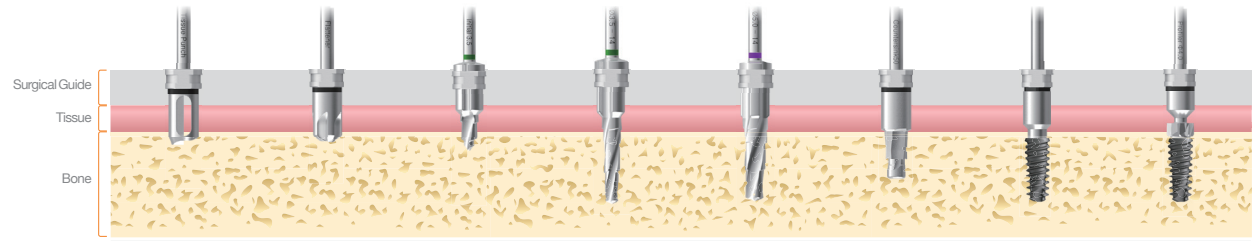
Tissue Punch (Option)	Flattener Drill	Initial Drill Ø3.5	Step Drill Ø3.5x10.0mm	Step Drill Ø5.0x10.0mm	Fixture Driver	Profiler Drill (Option)

Offset 11.0mm



Tissue Punch (Option)	Flattener Drill	Initial Drill Ø3.5	Step Drill Ø3.5x12.0mm	Step Drill Ø5.0x12.0mm	Fixture Driver	Profiler Drill (Option)

Offset 13.0mm



Tissue Punch (Option)	Flattener Drill	Initial Drill Ø3.5	Step Drill Ø3.5x14.0mm	Step Drill Ø5.0x14.0mm	Countersink (Ø5.0)	Fixture Driver	Profiler Drill (Option)

Notice

- Soft Bone : Under drilling using Step Drill up to Ø5.0
- Hard Bone : Over drilling using Ø5.5 Step Drill or Ø5.0 Step Drill and Ø5.0 Countersink
- If the offet is 13mm, It needs additional drilling using Step Drill or Countersink with one size up.
- Refer to 24p for definition and setting for offset.
- Refer to 47p for drilling system.

Drilling Sequence

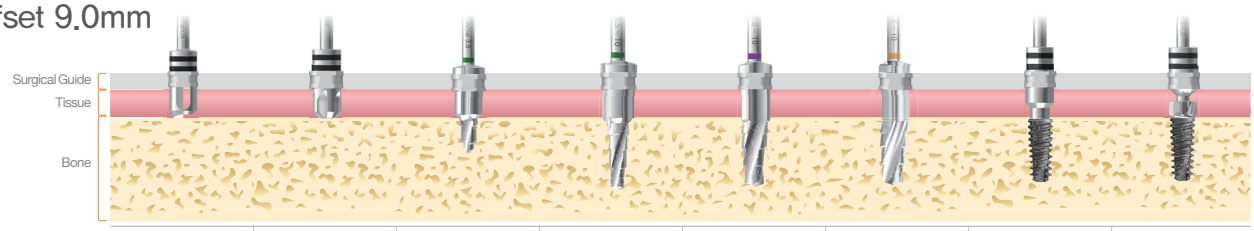
5) SQ 5.5 x 10.0mm

▶Option ▶Must ▶Installation

Bone Quality	Tissue Punch	Flattener	Initial Drill	Step Drill				Countersink	Fixture	Bone Profile
			Ø3.5	Ø 3.5	Ø 4.5	Ø 5.0	Ø 5.5	Ø 5.5	Ø 5.5 x 10 mm	
Soft (D3,4)	▶	▶	▶	▶	▶				▶	▶
Normal (D2)	▶	▶	▶	▶		▶	▶		▶	▶
Hard (D1)	▶	▶	▶	▶		▶	▶	▶	▶	▶
RPM	800 ~ 1,200								50	100

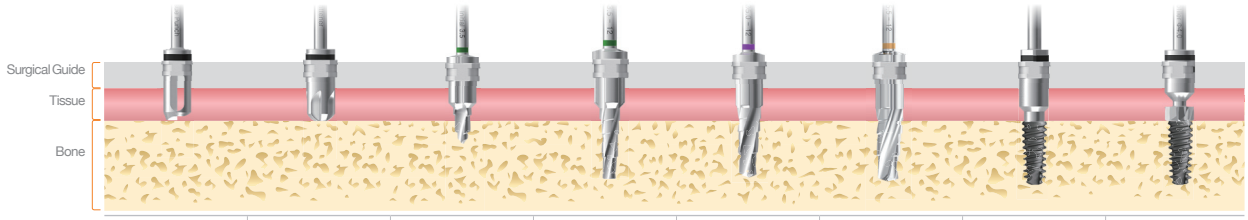
Normal Bone Standard

Offset 9.0mm



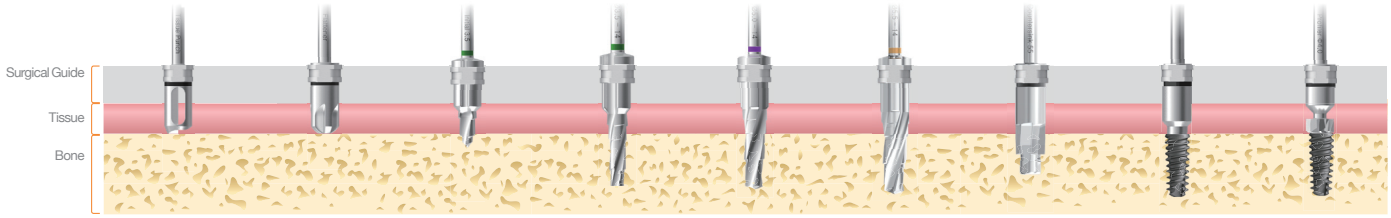
Tissue Punch (Option)	Flattener Drill	Initial Drill Ø3.5	Step Drill Ø3.5x10.0mm	Step Drill Ø5.0x10.0mm	Step Drill Ø5.5x10.0mm	Fixture Driver	Profiler Drill (Option)

Offset 11.0mm



Tissue Punch (Option)	Flattener Drill	Initial Drill Ø3.5	Step Drill Ø3.5x12.0mm	Step Drill Ø5.0x12.0mm	Step Drill Ø5.5x12.0mm	Fixture Driver	Profiler Drill (Option)

Offset 13.0mm



Tissue Punch (Option)	Flattener Drill	Initial Drill Ø3.5	Step Drill Ø3.5x14.0mm	Step Drill Ø5.0x14.0mm	Step Drill Ø5.5x14.0mm	Countersink (Ø5.5)	Fixture Driver	Profiler Drill (Option)

Notice

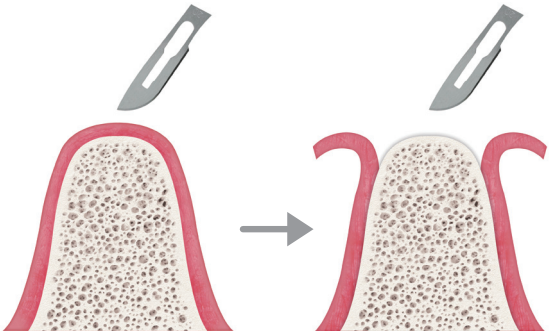
- Soft Bone : Under drilling using Step Drill up to Ø5.0
- Hard Bone : Essential drilling using Ø5.5 Countersink
- If the offet is 13mm, It needs additional drilling using Step Drill or Countersink with one size up.
- Refer to 24p for definition and setting for offset .
- Refer to 47p for drilling system.

Surgical Procedure

1. Remove Soft Tissue

1) (Flap Surgery) Remove Soft Tissue

① Incision & flap elevation



When performing flap surgery, make an incision in the gingiva and separate the periosteum by using a periosteal elevator or a similar instrument.

Notice Flapless surgery requires Tissue Punch.

② Surgical Guide Stent Installation

Surgical Guide Stent

Install the fabricated surgical stent

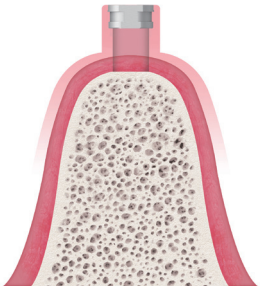
Tip
- Installation is done in planned direction on guide S/W image design.
- After installation, check whether there is an opening by pressing bilateral ends of the stent through the open window and place it in the mouth.

Surgical Procedure

2) (Flapless Surgery) Remove Soft Tissue

① Surgical Guide Stent Installation

Surgical Guide Stent



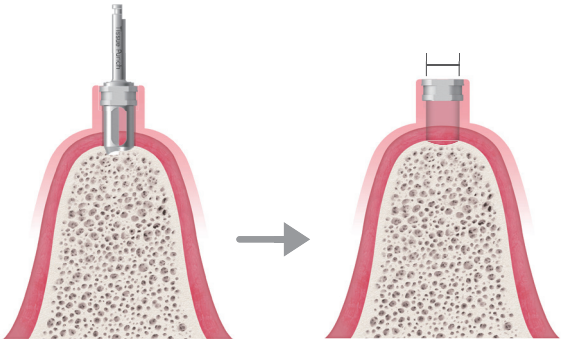
Installation of the patient's surgical stent that has been fabricated.

Tip

- Installation is done in planned direction on guide S/W image design.
- After installation, check whether there is an opening by pressing bilateral ends of the stent through the open window and place it in the mouth.

① Tissue Punch

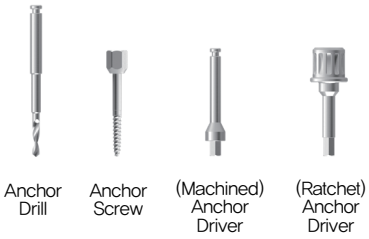
Tissue Punch

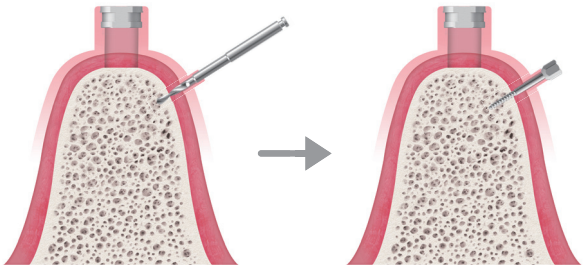


Connect tissue punch to handpiece and remove soft tissue at 800–1,200 rpm

Tip A Tissue Punch allows for faster healing than flap surgery due to a smaller wound

2. Anchor Screw Installation (If edentulous or multiple missing teeth)



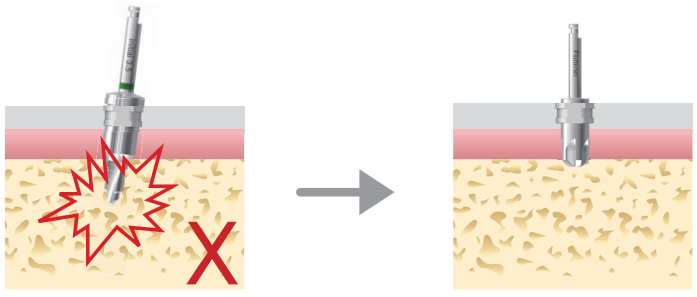


Drill with Anchor Drill at 800–1000 rpm on the pre–designed and pre–made anchor hole. Then, fix guide stent by installing Anchor Screw with anchor driver at 50–100 rpm.

Tip Make Anchor screw hole at implant planning stage (refer to 18-19p).

Notice After implant installation, remove Anchor Screw and remove from oral cavity.

3. Bone Flattening (Option)



Use flattener drill to flatten the surface of alveorlar crest, since slanted or uneven surface can cause error during drilling

Tip Flattener Drill is also useful for removing alveolar bone

Surgical Procedure

Anchor Screw Drilling System

1) Component

Anchor Drill

Anchor Screw

(Machined)
Anchor Driver

(Ratchet)
Anchor Driver

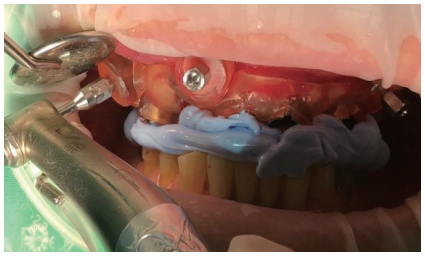
2) How to Use

① Drill into anchor screw hole in the guide stent

Attach Anchor Drill to handpiece

② Install screw in anchor screw hole

Method 1〉 Attach machine type Anchor Driver to handpiece, then attach Anchor Screw



Method 2〉 Attach Anchor Screw on Ratchet type Anchor Driver

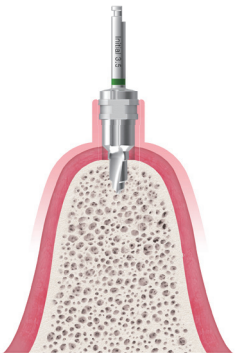
③ Remove anchor screw after surgery

Attach Anchor Screw on Ratchet type Anchor Driver, then remove Anchor Screw in the direction opposite to installation

4. Drilling

1) Initial Drill Drilling

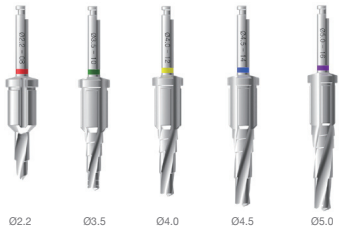
Initial Drill



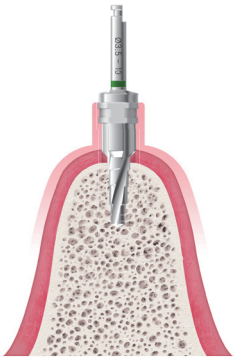
Form hole accurately through Initial Drilling of 800– at 1,200 rpm

Tip When installing Ø3.5 SQ Fixture, use Ø2.2 Initial Drill for soft bone, and Ø3.5 Initial Drill for all others

2) Step Drill Drilling



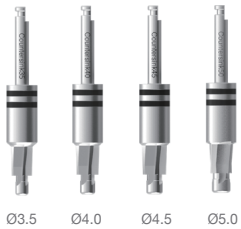
Step Drill



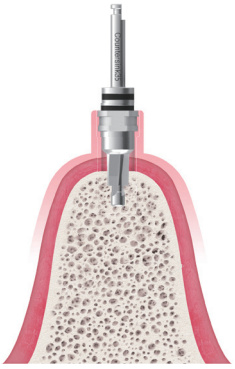
Enlarge hole through step drilling with fixture installation at 800–1,200 rpm

Surgical Procedure

5. Countersink Drilling (Optional)



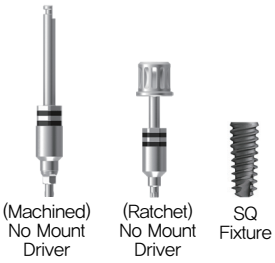
Countersink

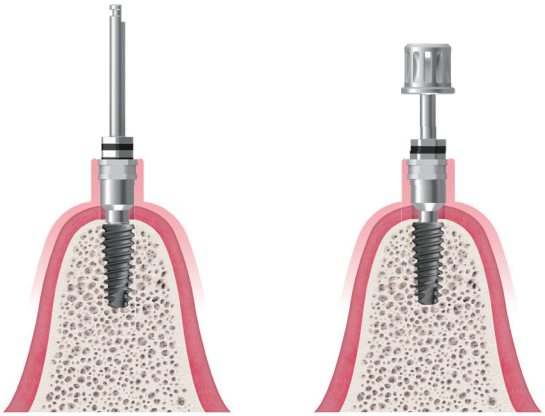


Use countersink for Hard bone and drill at 800–1,200 rpm to prevent excessive installation torque

Notice Ø5.0 provided with the kit, Ø3.5~Ø4.5 sold separately

6. Installation

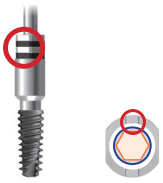




Install fixture using No Mount Driver. Attach No Mount Driver to handpiece and install at 25–50 rpm until 1–2 grooves are showing. Attach No mount Driver to Rachet for final installation

Notice

- For immediate loading after prosthodontics pre-production with Hexa type abutment, join the hex surface and sleeve groove of No Mount Driver to attach.
- Installation depth can be adjusted by drilling at 1.1 mm depth below SQ Fixture (SQ GUIDE Step Drill drills approximately 0.5mm deeper than Fixture.)

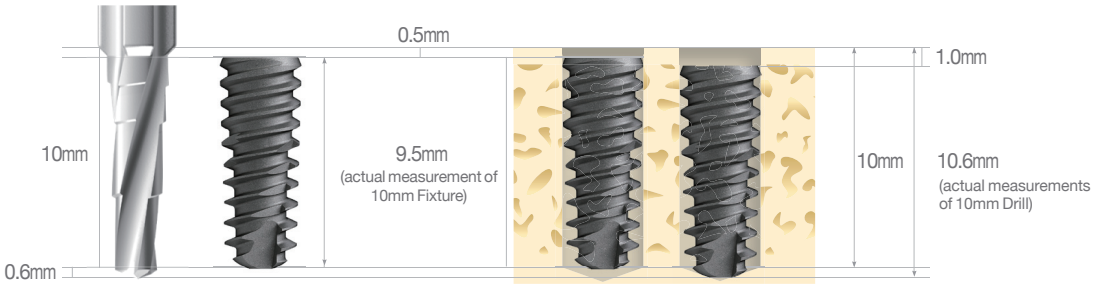


Drilling System

1) Drilling Apex Design

– Installed up to 1.1mm–0.5mm deeper according to drill bit 3–stage apex design(+0.6mm) and actual measurement of SQ fixture (–0.5mm)

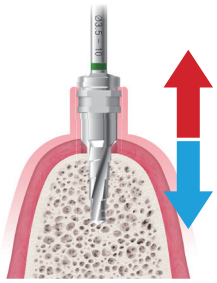
– Position of installation can be pre–planned by adjusting offset length at planning.



(Y dimension of Drill)

2) Drilling Method

– Drill is designed with channels for external irrigation when using initial drill and Step Drill to mini–mize bone heating



3) Drill According to Bone Quality (refer to 36–40p Drilling Sequence)

– Soft Bone : 1stage under drilling

– Normal Bone : drilling by diameter

– Hard Bone : 1 stage over drilling or countersink use

– Perform 3–step drilling sequence by using Initial, Step Drill

4) Drill Offset

– Offset 9mm : Use Step Drill equal to length of fixture

– Offset 11mm : Overdrilling with Step Drill that is a stage longer(2mm)than Fixture length

– Offset 13mm : Overdrilling with Step Drill that is 2 stages longer(4mm)than Fixture length

– When installing SQ Φ5.0 with Offset 13mm, drilling additionally up to Countersink

Surgical Procedure

7. Profile Drill (Optional)

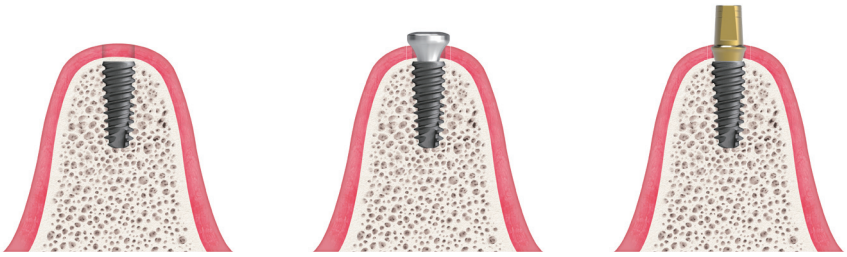
Ø3.5 Ø4.5

Profile Drill

If upper prosthodontics does not occlude due to presence of bone, remove bone around the area using profile drill at 100 rpm

8. Connect upper prophetic part

Cover Screw | Healing Abutment | Abutment | Hex Driver



Cover Screw | Healing | Abutment

Choose between cover screw and healing abutment, and connect upper prophetic part.

Ⅴ. Clinical Case

Case1. Maxillary posterior implant placement: Avoid sinus with SQ GUIDE KIT

Case2. Narrow maxillary premolar: Immediate implant placement with SQ GUIDE KIT

Case.1

Maxillary posterior implant placement: Avoid sinus with SQ GUIDE KIT

Dr. Sangjin Suh | Yein Dental Clinic

Patient Information

Placement Implant Area	7 6	**Sex / Age**	Male / 57Y
C.C.	Chronic periodontitis on missing area, #16, 17. Vertical height of the remaining bone is insufficient.		
Treatment Plan	#16, #17 implants placement avoid sinus using SQ GUIDE KIT.		
Materials and Methods	1. Implant placement simulation and guide stent design by 3shape implant studio S/W. 2. Surgical guide stent printed by Zenith 3D printer. 3. Place guide stent and drill 3 times with SQ GUIDE KIT. 4. #16 (Φ5.0 X 10mm, #17 Φ4.5 X 10.0mm) SQ implants placement. 5. Remove guide stent and connect healing abutments.		

Pre-operation

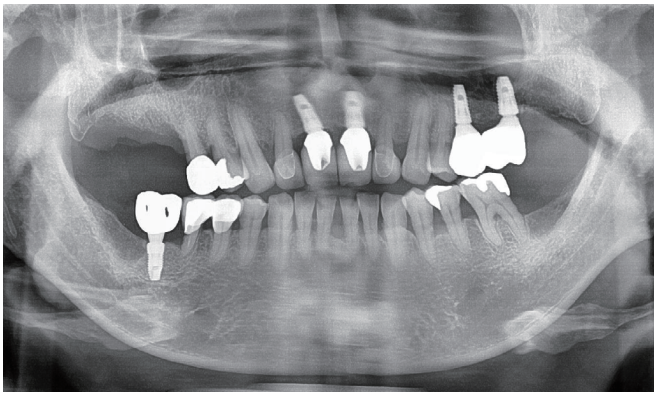


Fig.1 Pre-op panorama

Fig.2 Pre-op clinical view

Guide Stent Fabrication Procedure

Software Planning

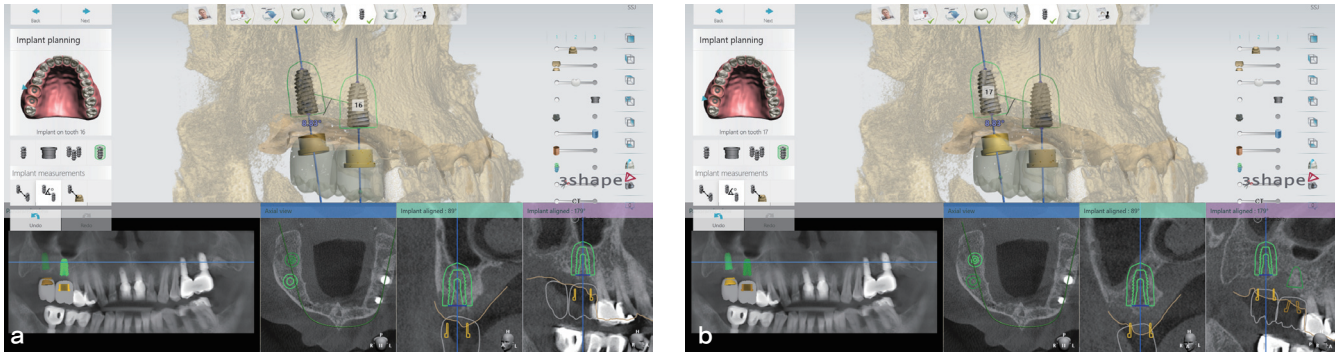


Fig.3a-b Implant placement simulation was planned with 3shape implant studio software. a. #16 was planned using general method while b. #17 was planned without grafting in order to avoid the sinus.

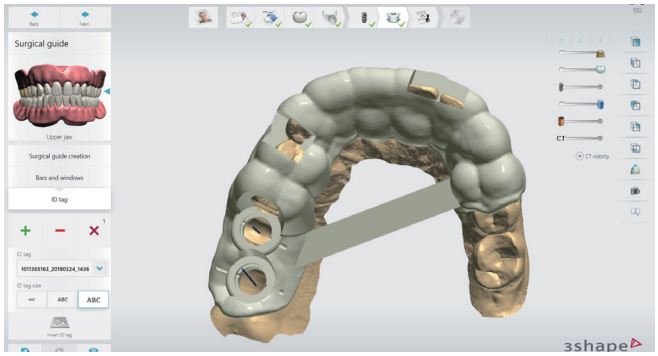


Fig.4 Guide stent was designed using 3shape implant studio software.

3D Print Surgical Guide

Fig.5 Surgical guide stent was printed by 3D Printer, ZENITH D.

Implant Installation

Fig.6 Try-on the guide stent.

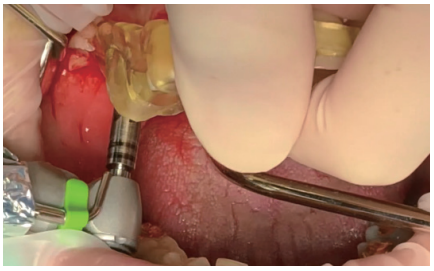


Fig.7 Bone flattening was done with flattener bur.

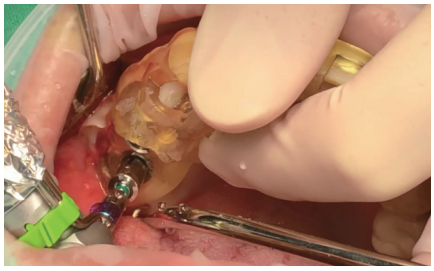


Fig.8 Drilling was done only 3 times with SQ GUIDE step drills.

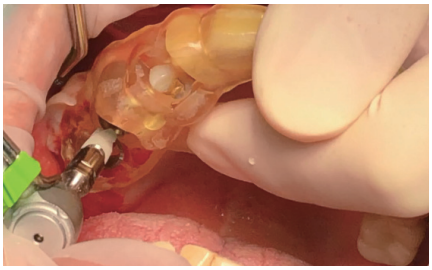


Fig.9 #16 (Φ 5.0 X 10mm, #17 Φ 4.5 X 10.0mm) SQ implants were placed.

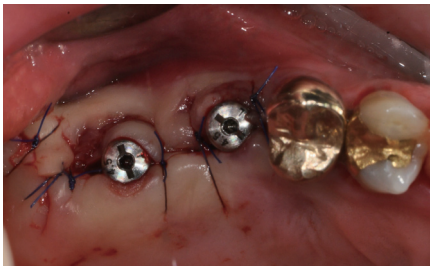


Fig.10 Healing abutments were connected and suture was done.

Post-operation

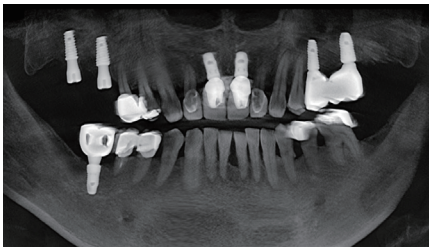


Fig.11 Post-op panorama

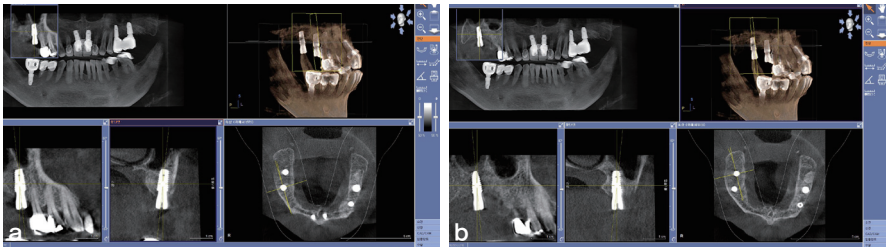


Fig.12a-b Post-op CT. a. #16 #16 was placed. b. #17 implant was placed avoid sinus.

Conclusion

On #16 and #17, the vertical height of the remaining bone was insufficient. In this case, conventional sinus elevation technique should be used. However, 10mm length implants were able to be installed without bone grafting by tilting the implant toward the area where bone quantity was sufficient. This was possible by preplanning with the SQ Guide and was thus done simply.

Case.2

Narrow maxillary premolar immediate implant placement with SQ GUIDE KIT

Dr. Sangjin Suh | Yein Dental Clinic

Patient Information

Placement Implant Area	4	**Sex / Age**	Female / 62Y
C.C.	#24 fracture		
Treatment Plan	#24 root extraction and immediate implant placement using SQ GUIDE KIT		
Materials and Methods	1. Implant placement simulation and guide stent design by 3shape implant studio S/W. 2. Surgical guide stent printed by Zenith 3D printer. 3. #24 root rest extraction. 4. . Place guide stent and drill 3 times with SQ GUIDE KIT step drills. 5. Φ4.0 X 10mm SQ implant placement. 6. Bone graft and collar-tape were inserted in extracted socket and covered with tissue adhesive. 7. Removed guide stent and connected healing abutment.		

Pre-operation

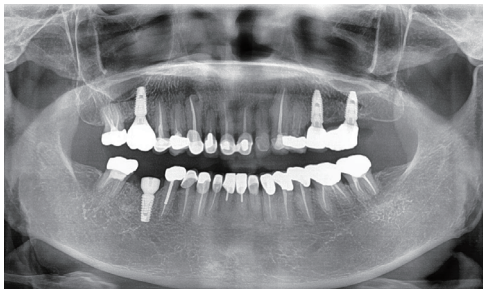


Fig.1 Pre-op panorama

Fig.2 Pre-op clinical view

Guide Stent Fabrication Procedure

Software Planning

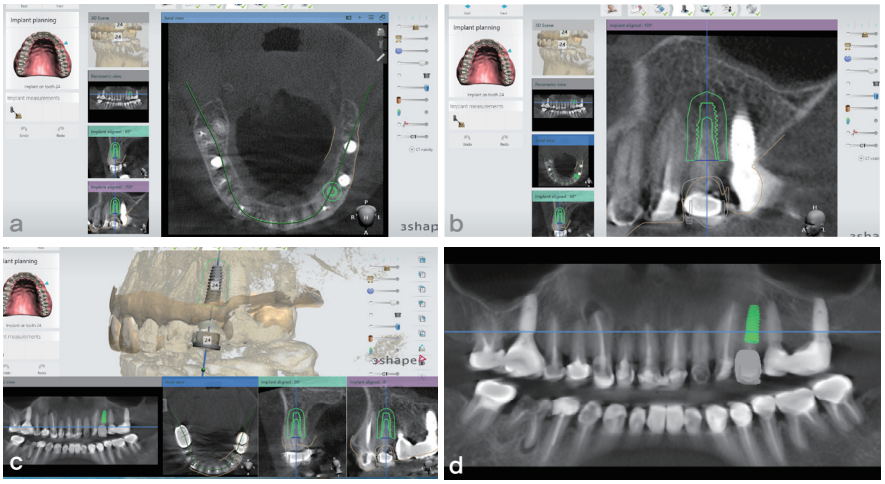


Fig.3a-d Implant placement simulation was planned by 3shape implant studio S/W. See narrow space between the adjacent #14 tooth and #16 implant.

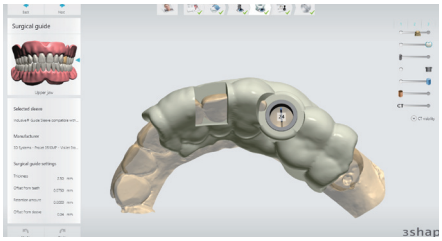


Fig.4 Guide stent was designed by 3shape implant studio S/W.

3D Print Surgical Guide

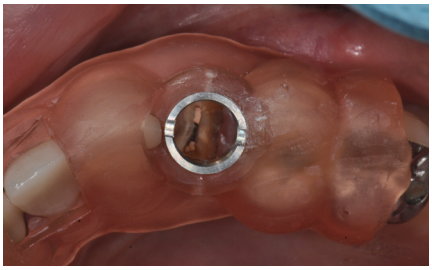


Fig.5 Try-on the guide stent.

Fig.6 Drilling was done only 2 times with SQ GUIDE Step Drills(Φ3.5 Initial drill and Φ3.5 Final drill).

Fig.7 ##24 (Φ4.0 X 10mm) SQ implant was placed. Fixture insertion torque value was more than 30N.

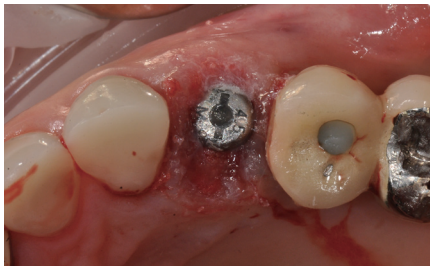


Fig.8 Bone graft and collar-tape were inserted in extracted socket and covered with tissue adhesive. Removed guide stent and connected healing abutment.

Post-operation

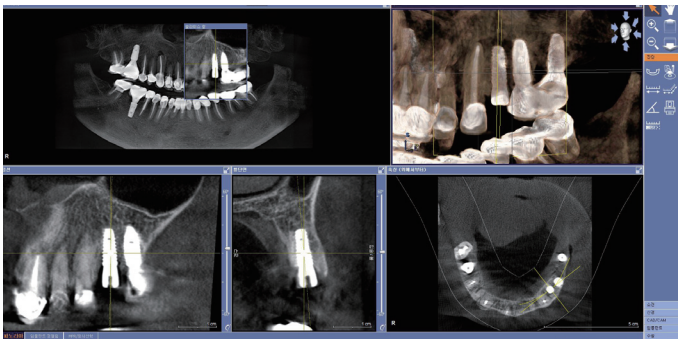


Fig.9 Post-op CT.

Conclusion

It was an immediate implantation case on the left maxillary, 1st premolar using the SQ GUIDE system. Pre-made surgical guide stent before extracting #24 root rest. Drilling only 3 times saved surgical time but also provided great stability for the implant. The SQ GUIDE is convenient for both the patient and dentist.

Ⅵ. Specifications

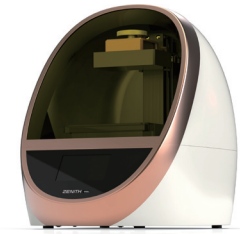
✚ DENTIS Guide KIT

SQ GUIDE KIT

· Specifically for the DENTIS SQ implant system

Type	Size	Code
SQ Digital Guide KIT	219 X 198 mm	DSQGK

✚ 3D Printer



ZENITH D

· Accurate and cost-effective DLP 3D printer

Type	Size	Code
DLP	340 X 450 X 430 mm	PP2000-02000

ZENITH L2

· 속도와 경제력과 정밀도가 결합된 LCD 방식의 3D 프린터

Type	Size	Code
LCD	116 x 64 x 150 mm	PP3000-03000

✚ UV Curing

ZENITH CURE

· Developed exclusively by DENTIS shadowless LED light Luvis research team

· Light curing system specialized in 3D prints

Type	Size	Code
UV LED Curing	225 X 247 X 275mm	PZ31J0

✚ Resin

ZMD-1000B Clear SG

For ZENITH U

- Working time (Min~Max) : 150 min. ~ 200 min. (100㎛, Standard 2 full arch)
- The number of output arrangement on the working plate (Max) : 2-3 Full arch
- Each usage (g) : About 20g (standard 1 full arch, include support)

For ZENITH D

- Working time (Min~Max) : 40 min. ~ 80 min. (100㎛, Standard 2 full arch)
- The number of output arrangement on the working plate (Max) : 2-3 Full arch
- Each usage (g) : About 20g (Standard 1 full arch, include support)

Application	Weight	Code
Surgical Guide Stent	1Kg	PP0R1Z-45122

ZMD-1000B Temporary

For ZENITH U

- Working time (Min~Max) : 150 min. ~ 200 min. (100㎛, Standard 25 single crown)
- The number of output arrangement on the working plate (Max) : 20-25 single crown (Standard temporary exclusive plate)
- Each usage (g) : About 1-1.5g (standard 3 unit bridge, include support)

For ZENITH D

- Working time (Min~Max) : 25 min. ~ 60 min. (Influenced bv crown length)
- The number of output arrangement on the working plate (Max) : 20-25 single crown (Standard temporary exclusive plate)
- Each usage (g) : About 1-1.5g (standard 3 unit bridge, include support)

Application	Weight	Code
Temporary	1Kg	PP0R3Z-45141

✚ Accessary

VAT (For ZENITH D)

- More than 20 ~ 30 times use for printing

Type	Code
Vat tank	SP2MVA-10010

Ⅶ. Q&A

✚ Preparation

I want to make SQ GUIDE Stent at my center. What do I need?

Planning S/W+ SQ GUIDE KIT + 3D printer + curing system + ultrasonic washer + CT + scanner (oral/model). (refer to 10p).

Should I check for anything before making the guide?

You need a CT of maxilla and mandible. You also need an oral scanner or, if an impression is made, you need to make a rubber impression of the area you will work on. You'll also need an alginate imprint or rubber impression of the opposing tooth. If the number of teeth to be operated on is 3 or fewer, you need to make 3 or more registration points using a separate device in order to perform guided surgery. (refer to 10p.).

How do I extract DICOM file?

Though methods vary by CT company, the large frame is the same. After CT, select patient –〉 extract file –〉 DICOM file.

Can I make guide stent even if patient has multiple prosthodontics?

Yes, but advance preparation is needed due to dispersion on CT and difficulty of registration on CT. Follow methods for scan appliance production that makes intraoral radiopaque marker. (refer to 14–15p).

The FOV size of the CT at our center is small. Can I still make it?

Unilateral CT can be used for unilateral guide making, but full CT is recommended (refer to 12p).

Can I use SQ GUIDE KIT for implant systems other than SQ Implant System?

SQ GUIDE KIT is intended for SQ Implant only. A universal solution is the SIMPLE GUIDE Plus KIT.

+ Surgical Guide Stent Fabrication

Would the oral scanner at our center be compatible with Denticq Guide S/W?

Please ask the vendor of the said scanner to convert to STL file. After conversion, no additional compatibility is necessary.

What are the specifications for Dentiq Guide S/W?

Quad Core CPU, 16GB RAM, and graphic card 1GB or more that supports DirectX 11 or above are recommended. (refer to 23p).

How long does it take to print the guide with 3D printer?

About 1 hour to 1hour 30 minutes.

How much resin is used for Guide design?

20g for full arch, 8g for partial arch.

How much of the teeth should be covered when designing guide?

It is difficult to give objective advice as each physician has his/her own criteria, but the guide should be designed to ensure good fixation, no shaking, and no risk of damage.

Does a printed Surgical Guide Stent have an expiration date?

No. However, resin shrinkage from natural light can occur, so we recommend storing in a dark place if surgery is de-layed.

Can I case immediately after tooth extraction?

Yes.

Are edentulous patients eligible?

Yes. (refer to 16-19p) preparation.