

Edition 02 / 2012

Taper Implant System

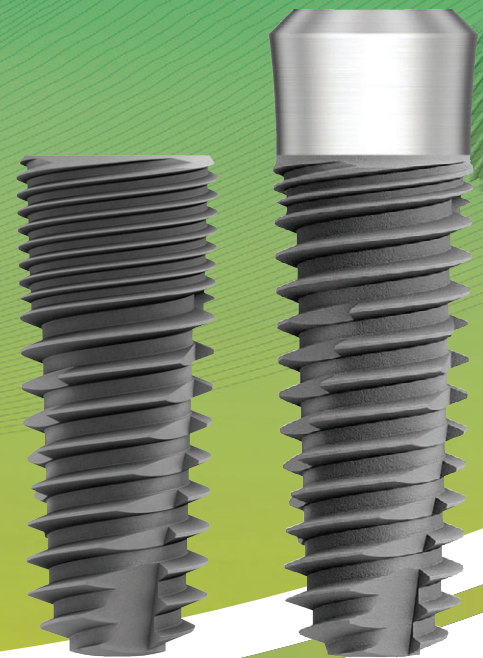
(GS III Implant & SS III Implant)

Catalog & Manual

Taper Implant System

(GS III Implant & SS III Implant)

Catalog & Manual



OSSTEM[®]
IMPLANT

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Taper Implant System

(GS III Implant & SS III Implant)

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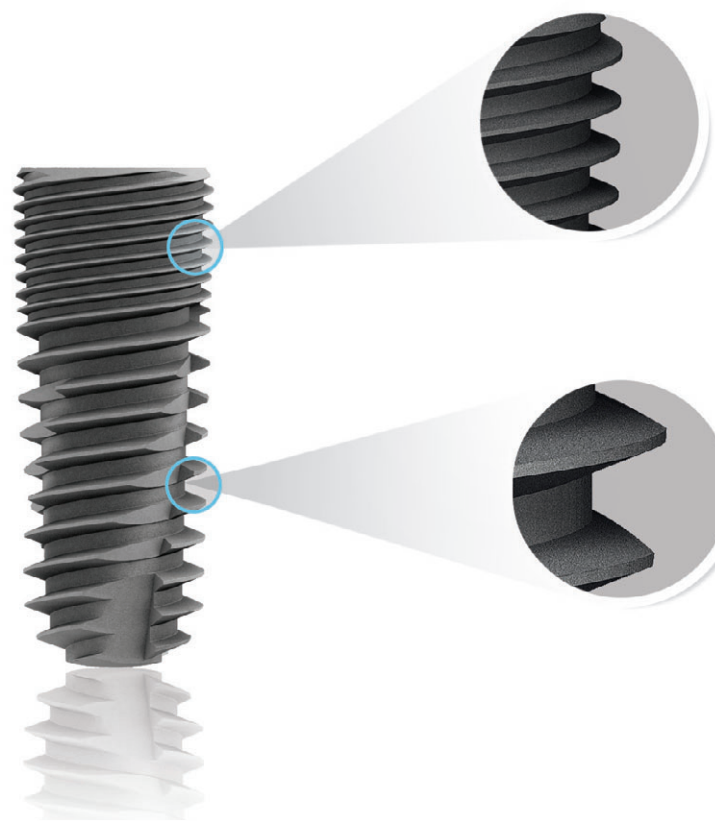
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Taper Implant Features

GS/SSIII implants are designs based on accumulated research and development by Osstem Implant Co., Ltd. Superior initial stability, insertion feel and surgical convenience are some of the features engineered into these implants.

GSIII Implant



- Micro Thread**
 - 0.4p x 0.25d x fourfold thread
 - distributes bone stress
 - stimulates bone evenly
 - increased cell response
 - reinforces fixture strength
- Corkscrew Thread**
 - 0.8p x 0.5d x double thread
 - powerful self threading
 - change path easily
 - increases insertion torque in soft bone
 - increased initial stability in soft bone
 - decrease dependency on drill size

Taper Implant Features

Experience *secure initial stability for immediate & early loading*
effortless fixture implantation
convenient implant surgery

SSIII Implant



- Gingival Height**
 - Smooth surface for soft tissue
 - Regular Platform ; 1.8/2.8
 - Wide Platform ; 2.0
- Micro Thread**
 - Sufficient torque ability for final insertion
- Thread & Cutting Edge**
 - 0.8p x 0.5d x double thread
 - Powerful self threading
 - Helix-shaped cutting edge
- Apex**
 - Self drilling ability
 - Higher initial stability in fresh extracted sockets

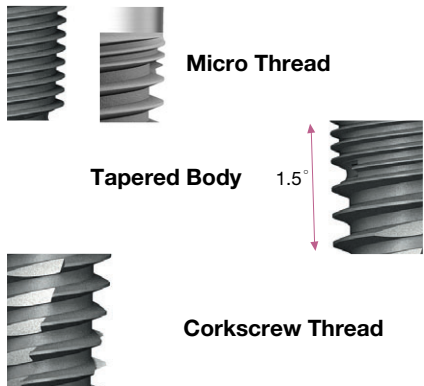
Taper Implant Features

Secure initial stability for immediate & early loading

Successful immediate and early loading is dependent on a fixture having sufficient and secure initial stability. GS/SS III fixture designs are optimal for immediate and early loading, they have been evaluated for initial stability via rigorous testing of insertion torque, RFA, push-pull indices. Results show GS/SSIII have the necessary features that will guarantee successful immediate and early loading procedures.

Optimal design for immediate and early loading

- **Microthread:** Microthreads of the fixture maximizes contact between the fixture and D3 bone with a thin cortical layer.
- **Tapered body:** GS/SSIII fixtures have a 1.5 tapered body which allows for an appropriate amount of insertion torque for a smooth transition into the bone. This taper angle was determined by looking for the lowest interference between drilling hole and fixture and insertion torque pattern.
- **Screw thread (number & depth):** GS/SSIII fixtures have fourfold threads on the upper portion and double threads on the lower, this configuration enables quick insertions and secure attachment to the bone. The lower portion has a thread depth of 0.5mm, this prevents excessive torque but provides an appropriate amount even when using a small drill.



Insertion Torque

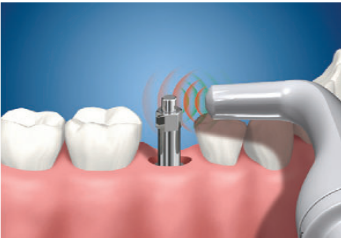
- Insertion torque lets the operator determine the quality of initial stability and serves as an index for deciding on immediate & early loading. Generally, insertion torque of 30 - 40 Ncm is acceptable for immediate loading.
- GS/SSIII fixtures and it's surgical procedures are specifically designed for insertions using over 30 Ncm even in soft bone (D3). Following the GS/SS III placement procedures will result in sufficient initial stability for immediate and early loading (except in cases where bone quality or bone volume is poor).

Taper Implant Features

Secure initial stability for immediate & early loading

RFA Test

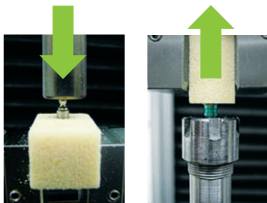
- Resonance Frequency Analysis (RFA) measures initial stability of a fixture using resonance frequency; an accepted method of obtaining objective data on initial stability.
- RFA testing will output an Implant Stability Quotient (ISQ) value of the fixture's stability; the Osstell Mentor (Osstell AB) can be used to measure this very easily.
- ISQ values sufficient for immediate loading varies from literature to literature, but generally a value of over 65 is considered acceptable.
- Tests using the GS/SSIII fixtures averaged an ISQ value of over 65 in D3 bone. But note that short fixtures (7 to 8.5mm), had ISQ values that were not acceptable, therefore immediate or early loading is not recommended.



Osstell Mentor

Push-pull test

- External forces acting upon a fixture's stability can be evaluated using a push-pull test.
- When push or pull forces are applied to an implanted fixture, a stable and secure fixture will have minimal displacement.
- GS/SSIII showed resilient resistance to external push-pull forces when compared to other products of similar type and quality.



Push-Pull Test

Taper Implant Features

Effortless fixture implantation

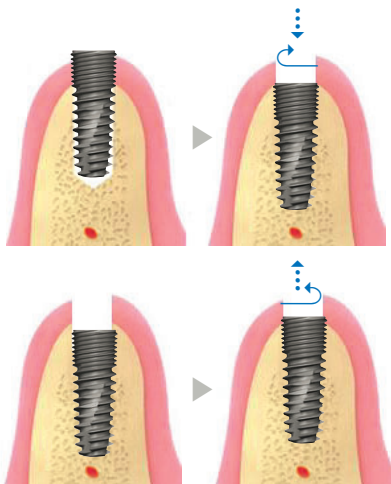
Implantation is a process where the fixture stabilizes itself via the fixture threading into the alveolar bone. This threading action is usually met by insertion resistance called insertion torque. Reducing insertion torquing can be accomplished by designing optimal torque patterns and final torque levels. GS/SSIII fixtures incorporate specific torque patterns, levels and depth control giving the operator effortless implant procedures.

Optimal insertion torque pattern and final torque level

- Insertion torque is the resistance that occurs during fixture insertion. Minimizing resistance at the cutting edge and maintaining appropriate torque levels produces ideal insertion torque patterns.
- Standard torque range for insertions is 30 ~ 40 Ncm, naturally slight variations occur due to bone quality and drill diameter. Excessive torque (>55Ncm) has shown to cause alveolar bone necrosis and results in poor bone integration.
- GS/SSIII fixtures have enhanced self-tapping abilities which ensure smooth and controlled insertions; it's been designed to reach a final torque level of 30 ~ 40Ncm.

Simple insertion depth control

- Insertion depth control refers to the ability of the operator to easily adjust the depth position of the fixture. If a deeper position is required or if the fixture has been placed too deep, simple turns of the fixture must be possible without compromising stability.
- GS/SS III fixture are designed with excellent self-tapping ability and flawless synchronization of macro and micro threads, ideal for shallow and deep insertions.



Convenient implant surgery

There are always limitations to implanting fixtures such as incorrect drilling direction, angles, and depth due to anatomy morphology and quality. A fixture must be able to be placed under any circumstance and the GS/SSIII is designed with features enabling insertions in any situation.

Guiding insertion path

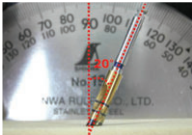
- Unfortunately there are cases where drill directions take a wrong turn and corrective action needs to be taken while implanting.
- GS/SSIII tapered bodies are designed with a cutting edge incorporated into the macro-threads. These cutting edges reduce resistance and facilitate with path correction during insertion.

Stable insertion even at shallow depths

- Exact drilling depth can be difficult when the bucco-lingual and mesio-distal heights of alveolar bone are different. In cases like this, insertion depth control is necessary, the fixture must be able to tap in when drilling is shallow.
- If immediate placement is planned right after an extraction, insertion should be done on the lateral wall and floor of the extraction socket. A fixture needs easily tap into the socket.
- GS/SSIII has three line of cutting edges at the apex, enabling the fixture to tap into the extraction socket floor and wall. Even with shallow drilling, GS/SSIII are securely fixed.

Insertions in small diameter drill hole

- Difficult cases involving the maxillary posterior region that have poor bone quality or narrow bucco-lingual bone width will usually require a small diameter drill. For these cases, the drill holes are smaller than required for normal fixtures. But a change in drill hole sizes should not affect the insertion torque.
- Threads with 40 angulation and 0.5mm depth, the GS/SSIII have a sharper cutting edge compared to most traditional products. This means that even if the drill hole is smaller than the fixture, the GS/SSIII insertion torque won't increase significantly.



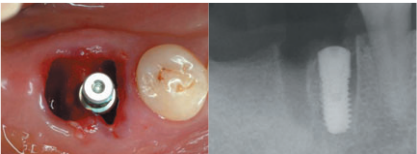
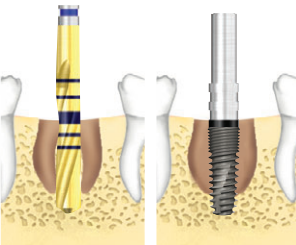
20° tilted drilling



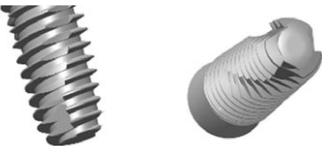
20° tilted implantation coincidently with drilling direction (Initial insertion depth 9.5mm)



20° tilted implantation oppositely with drilling direction



Example of GSIII Fixture placed in an extraction socket



Thread & Apex

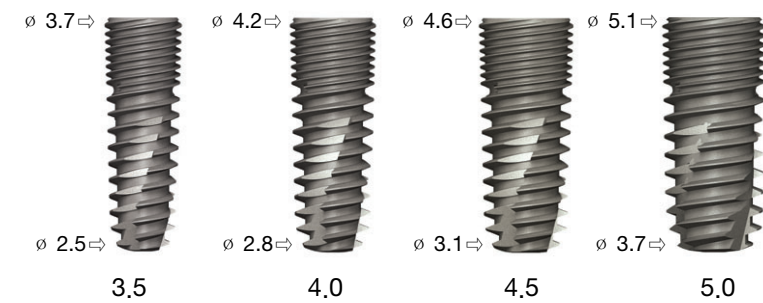
GSIII Implant Specifications

GSIII Implant Specifications

GSIII Fixture Line Up

GSIII fixtures have four different diameters (3.5, 4.0, 4.5 and 5.0mm) and comes in pre-mount (fixture+mount+cover screw) or no-mount (fixture only) configurations. All GSIII are surfaced treated with Resorbable Blasted Media (RBM).

NoMount Fixture
Fixture : Product Code (ex:GS3S4011R)



※ Actual dimension is bigger than labeled dimension.

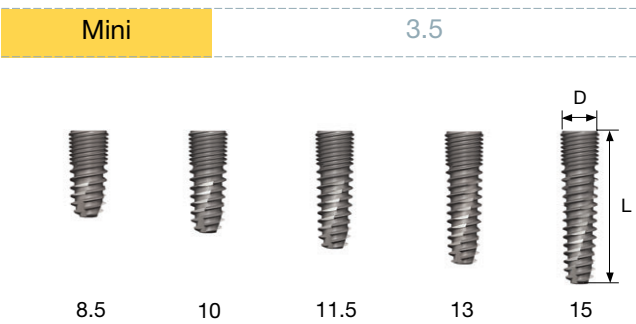
Pre-mounted Fixture (Simple Mount)
Fixture + Mount + Cover Screw : B + Product Code (ex:BGS3S4011R)



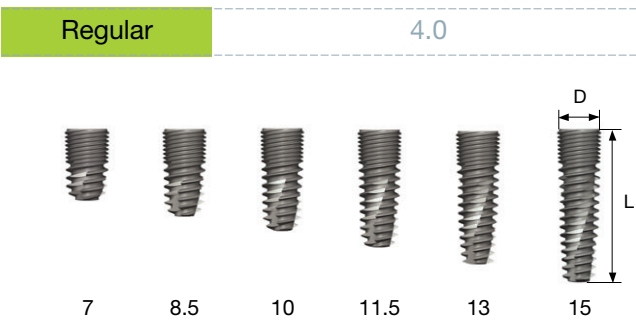
GSIII Products Spec.

M S Connection

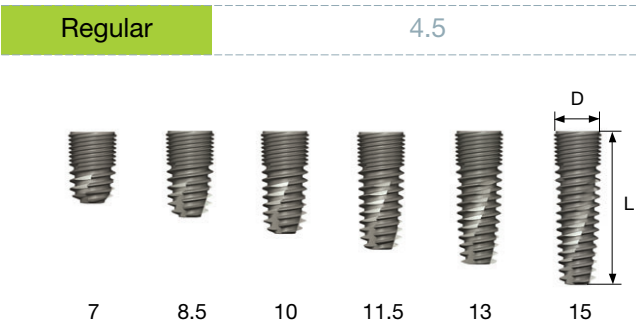
* Labeled dimensions maybe differ slight from actual product.



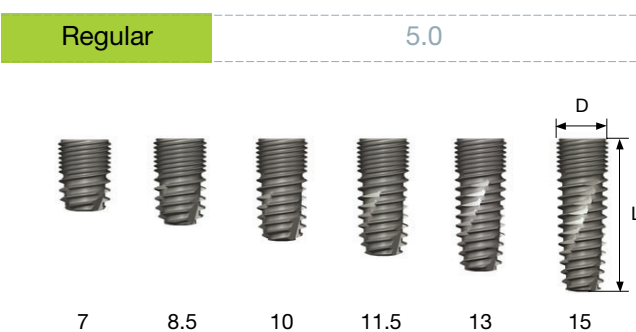
Connection	Mini
L \ D	ø 3.5
7	-
8.5	GS3M3508R
10	GS3M3510R
11.5	GS3M3511R
13	GS3M3513R
15	GS3M3515R



Connection	Regular
L \ D	ø 4.0
7	GS3S4007R
8.5	GS3S4008R
10	GS3S4010R
11.5	GS3S4011R
13	GS3S4013R
15	GS3S4015R



Connection	Regular
L \ D	ø 4.5
7	GS3S4507R
8.5	GS3S4508R
10	GS3S4510R
11.5	GS3S4511R
13	GS3S4513R
15	GS3S4515R



Connection	Regular
L \ D	ø 5.0
7	GS3S5007R
8.5	GS3S5008R
10	GS3S5010R
11.5	GS3S5011R
13	GS3S5013R
15	GS3S5015R

SSIII Implant Specifications

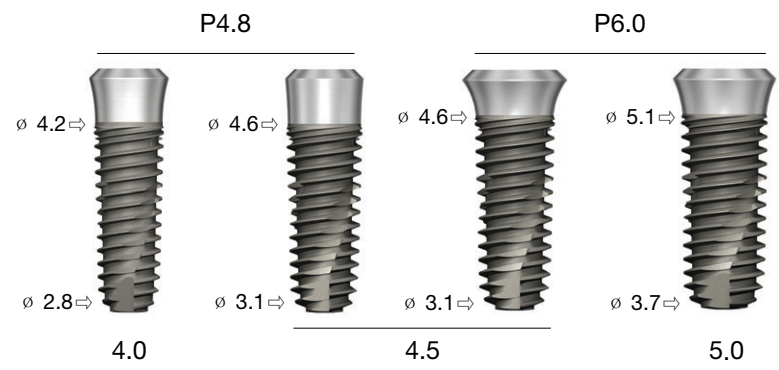
SSIII Implant Specifications

SSIII Fixture Line Up

SSIII fixtures have three different body diameters (4.0, 4.5 and 5.0mm) with two different platform diameters (4.8 and 6.0) and comes in pre-mount (fixture+mount+cover screw) or no-mount (fixture only) configurations. All SSIII are surfaced treated with Resorbable Blasted Media (RBM).

NoMount Fixture

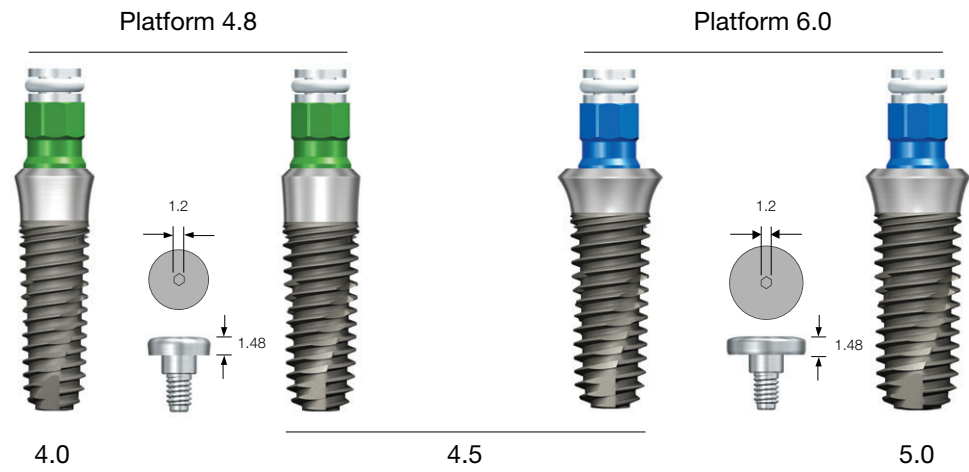
Fixture : Product code (ex:SS3R4011R18)



※ Actual dimensions are bigger than labeled dimensions.

Pre-mounted Fixture

Fixture + Mount + Cover Screw : A + Product code (ex:ASS3R4011R18)



SSIII Products Spec.

R W Fixture Platform

*Labeled dimensions maybe differ slight from actual product.

Regular Platform $\varnothing$ 4.8 Diameter $\varnothing$ 4.0

P	$\varnothing$ 4.8	
D	$\varnothing$ 4.0	
L	G/H	
7	1.8	2.8
8.5	SS3R4007R18	-
10	SS3R4008R18	SS3R4008R28
11.5	SS3R4010R18	SS3R4010R28
13	SS3R4011R18	SS3R4011R28
15	SS3R4013R18	SS3R4013R28
15	SS3R4015R18	SS3R4015R28

Regular Platform $\varnothing$ 4.8 Diameter $\varnothing$ 4.5

P	$\varnothing$ 4.8	
D	$\varnothing$ 4.5	
L	G/H	
7	1.8	2.8
7	SS3R4507R18	-
8.5	SS3R4508R18	SS3R4508R28
10	SS3R4510R18	SS3R4510R28
11.5	SS3R4511R18	SS3R4511R28
13	SS3R4513R18	SS3R4513R28
15	SS3R4515R18	SS3R4515R28

Wide Platform $\varnothing$ 6.0 Diameter $\varnothing$ 4.5

P	$\varnothing$ 6.0	
D	$\varnothing$ 4.5	
L	G/H	
7	2.0	
7	SS3W4507R20	
8.5	SS3W4508R20	
10	SS3W4510R20	
11.5	SS3W4511R20	
13	SS3W4513R20	
15	SS3W4515R20	

Wide Platform $\varnothing$ 6.0 Diameter $\varnothing$ 5.0

P	$\varnothing$ 6.0	
D	$\varnothing$ 5.0	
L	G/H	
7	2.0	
7	SS3W5007R20	
8.5	SS3W5008R20	
10	SS3W5010R20	
11.5	SS3W5011R20	
13	SS3W5013R20	
15	SS3W5015R20	

Surgical Procedure - Taper Drill

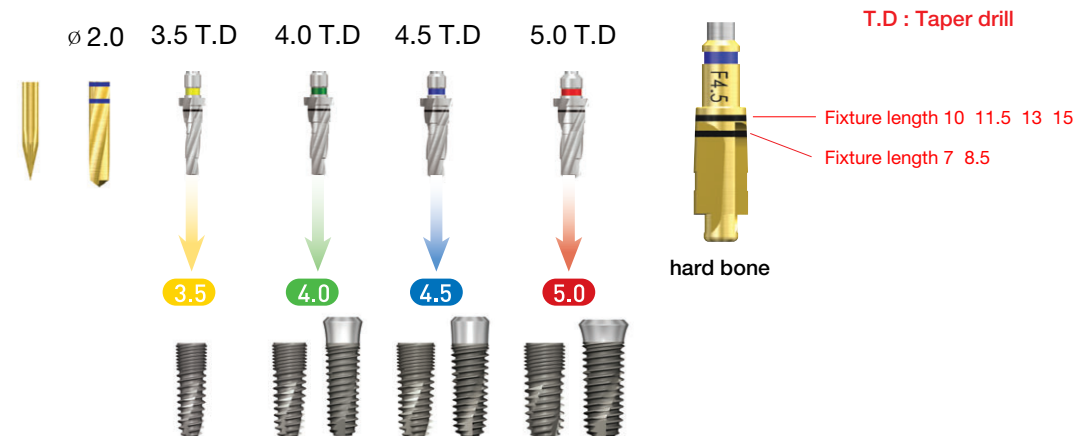
Taper Implant Surgical Procedure - Taper Drill

Place GS/SSIII fixtures using the correct taper drill sequence (check for correct length and diameter).

Note that when placing in soft bone, the final drill should be one size smaller than the fixture and in hard bone be sure to use the taper cortical as the final drill before placing the fixture.

- **Soft Bone** → Final drill: One size smaller than the fixture (Use $\varnothing 3.0$ drill for $\varnothing 3.5$ fixture)

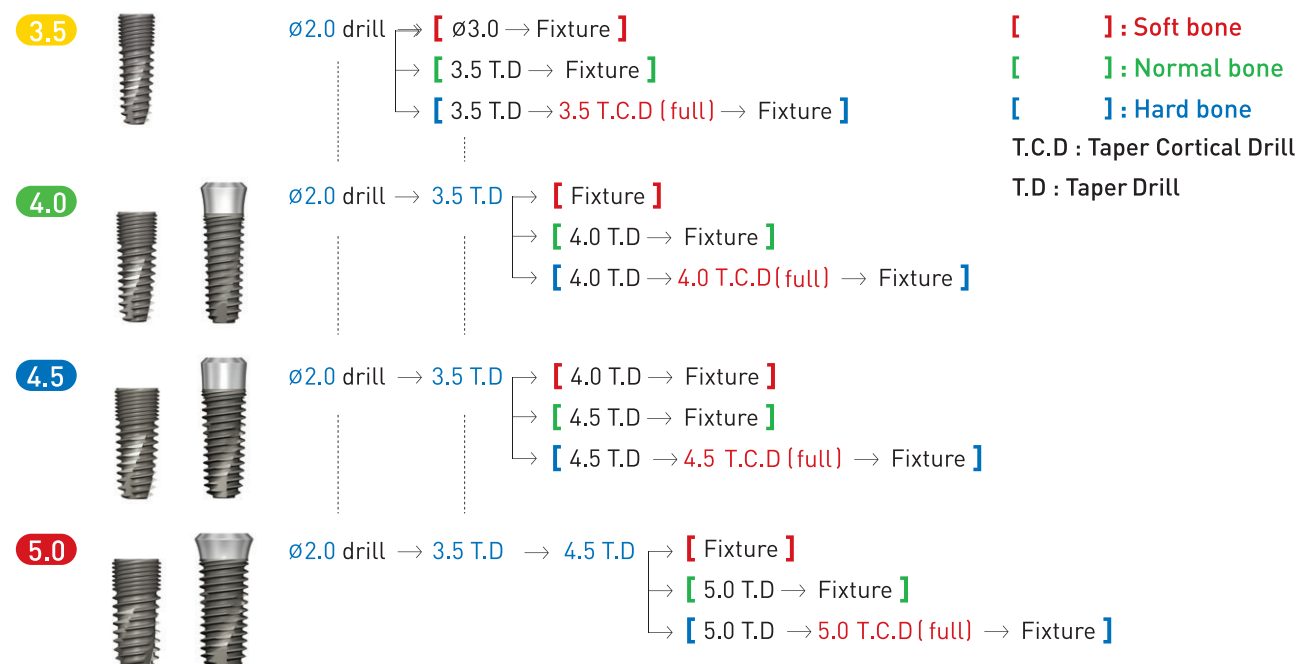
- **Normal bone** →



- **Hard bone** → Final drill use the Taper Cortical at full depth

Drilling sequence for 4.0 and 4.5 fixtures use the 3.5 taper drill before final drilling.

For 5.0 fixtures, use both the 3.5 and 4.5 taper drills.

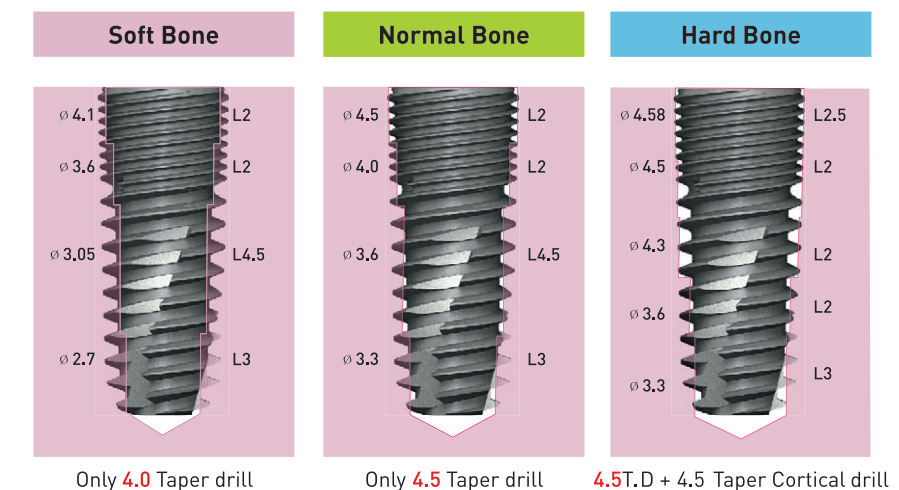


Surgical Procedure - Taper Drill

Taper Implant Surgical Procedure - Taper Drill

Taper drills are designed to mirror GS/SSIII fixtures. Contact between fixture and bone are maximized by eliminating the gap between drilled bone and fixture body, which boosts initial stability. The taper design of both drill and fixture removes the need for pilot drilling, therefore the number of steps are reduced.

There are 24 different taper drills, varying in diameter and length. Grouped by diameter, they are color coded for easy identification. As an Osstem standard, taper drills have a built in safety feature (stopper) which means you can drill the full length with confidence, naturally the patient's bone quality and intraoral environment must be taken into consideration.



Only 4.0 Taper drill Only 4.5 Taper drill 4.5T.D + 4.5 Taper Cortical drill

Interference volume of Taper Drill and Fixture (Based on F4.5, L11.5)

Product	3.5 Drill	4.0 Drill	4.5 Drill	5.0 Drill
Design				
Length	7, 8.5, 10, 11.5, 13, 15			
Code(〃 : Length)	TPD3C35〃	TPD3C40〃	TPD3C45〃	TPD3C50〃

※ Recommended Drilling RPM : D1~D2 → 1200rpm, D3~D4 → 800rpm

Surgical Procedure - Taper Drill

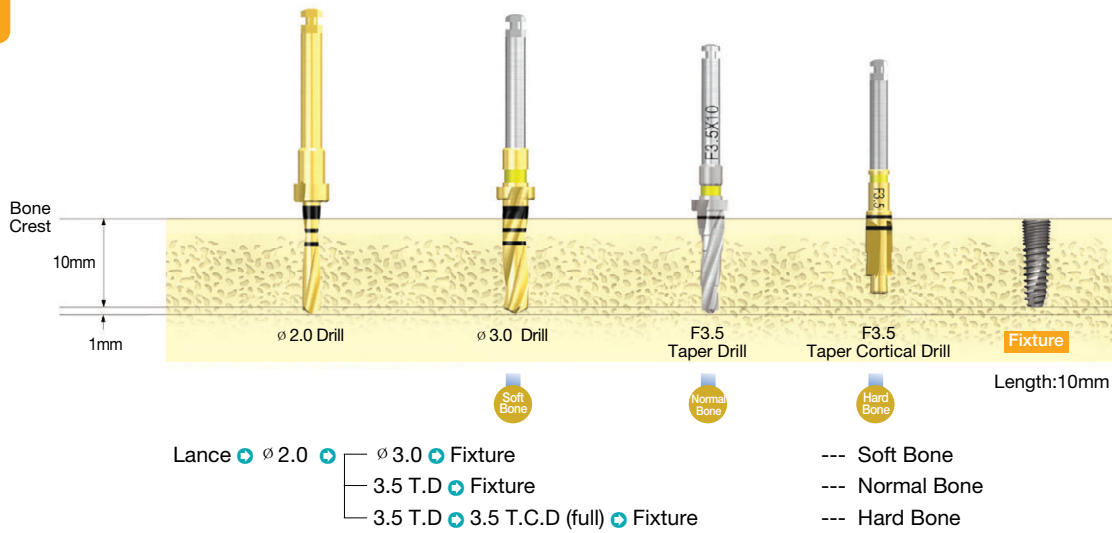
Surgical Procedure - Taper Drill

Taper Implant Surgical Procedure Diagram - Taper Drill

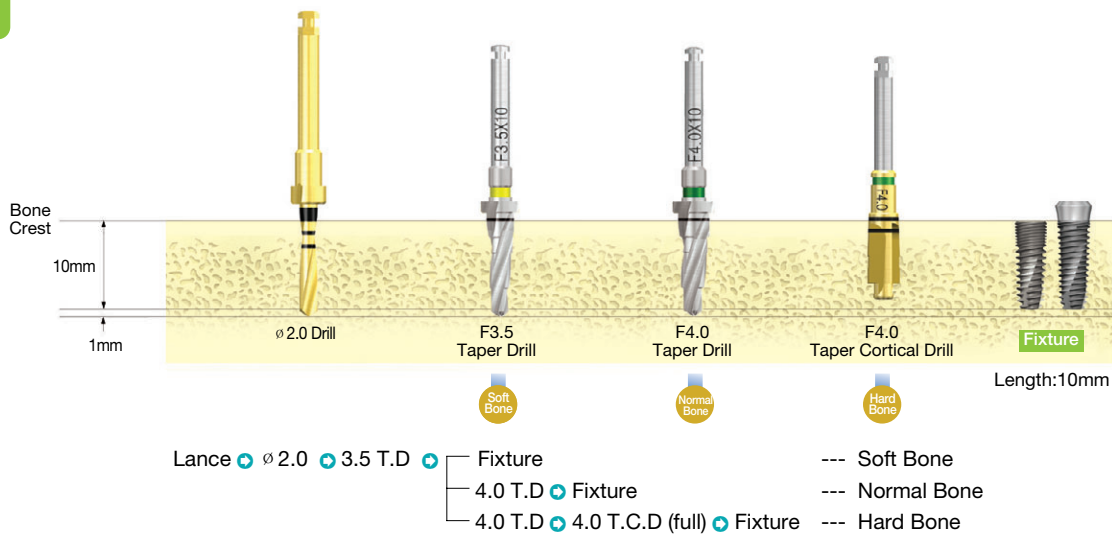
Taper Implant Surgical Procedure Diagram - Taper Drill

Drilling sequence for each fixture is illustrated here. Final drill selection is in accordance to the diameter and length of the fixture and bone type. For soft bone, use one diameter smaller than the fixture being placed, this will ensure a tight and secure placement. Hard bone use the taper cortical after the final drill for smooth insertion and reduces the need for excessive torque, causing pressure on the surrounding bone which could result in bone loss.

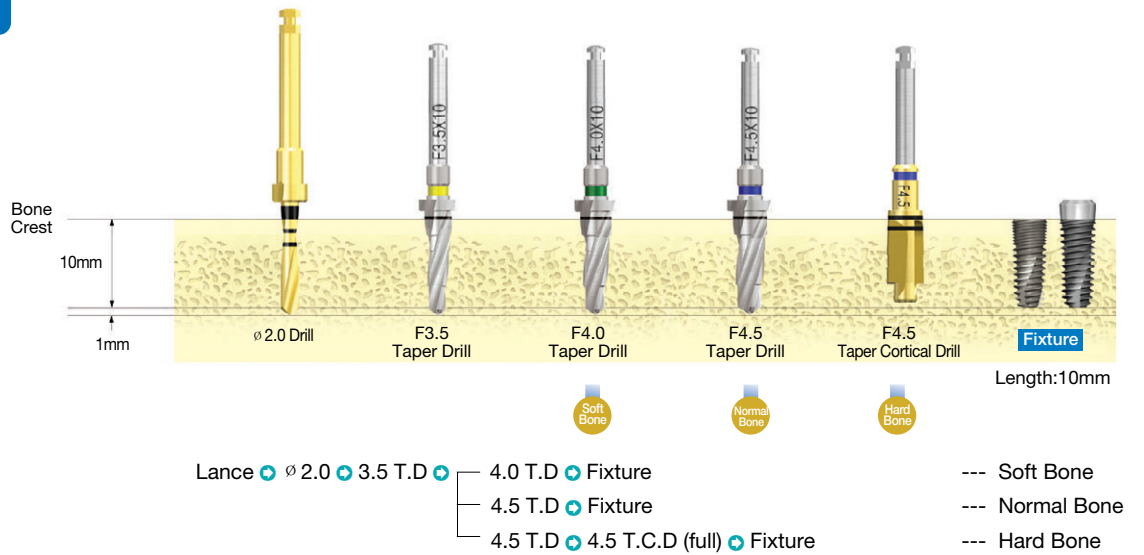
Fixture 3.5



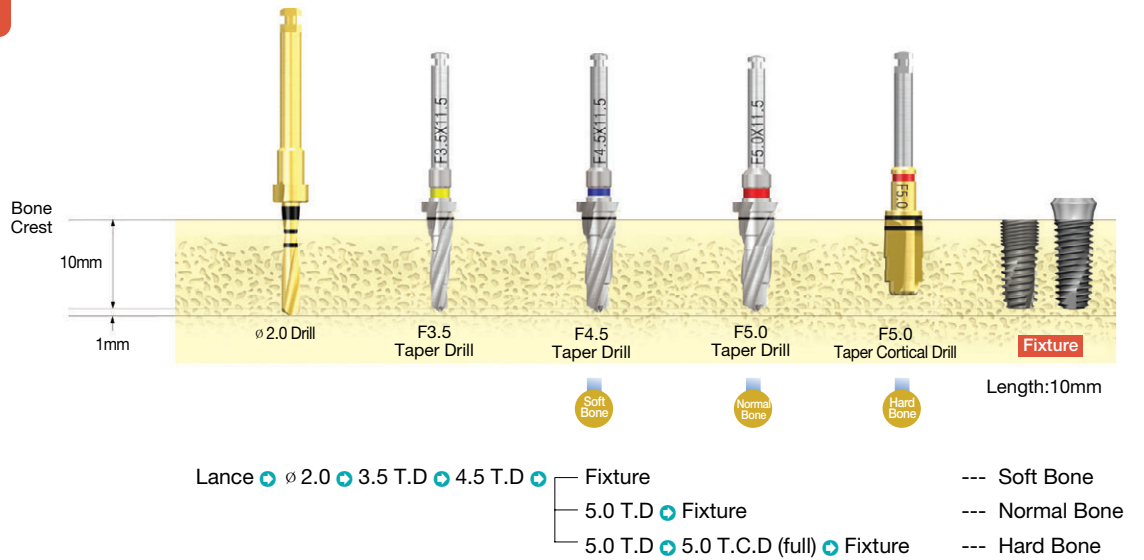
Fixture 4.0



Fixture 4.5



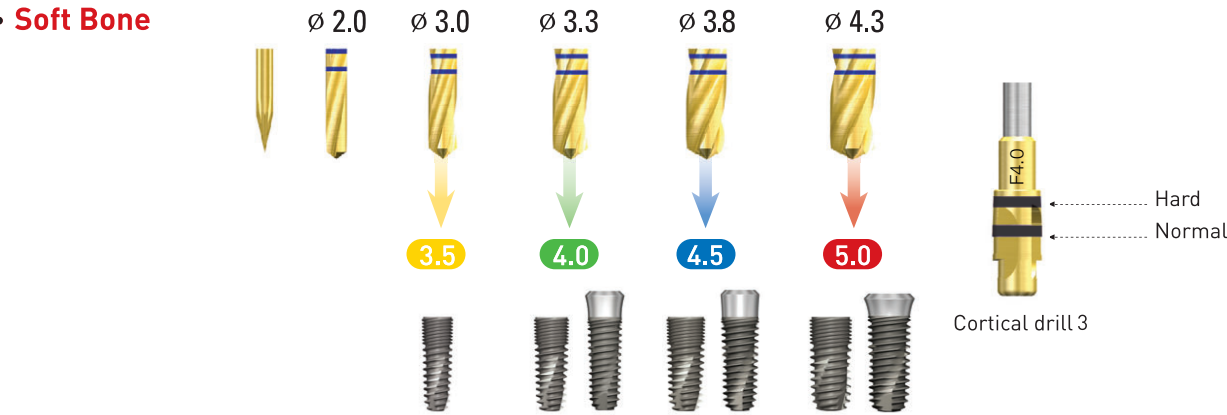
Fixture 5.0



Surgical Procedure - Straight Drill

Taper Implant Surgical Procedure - Straight Drill

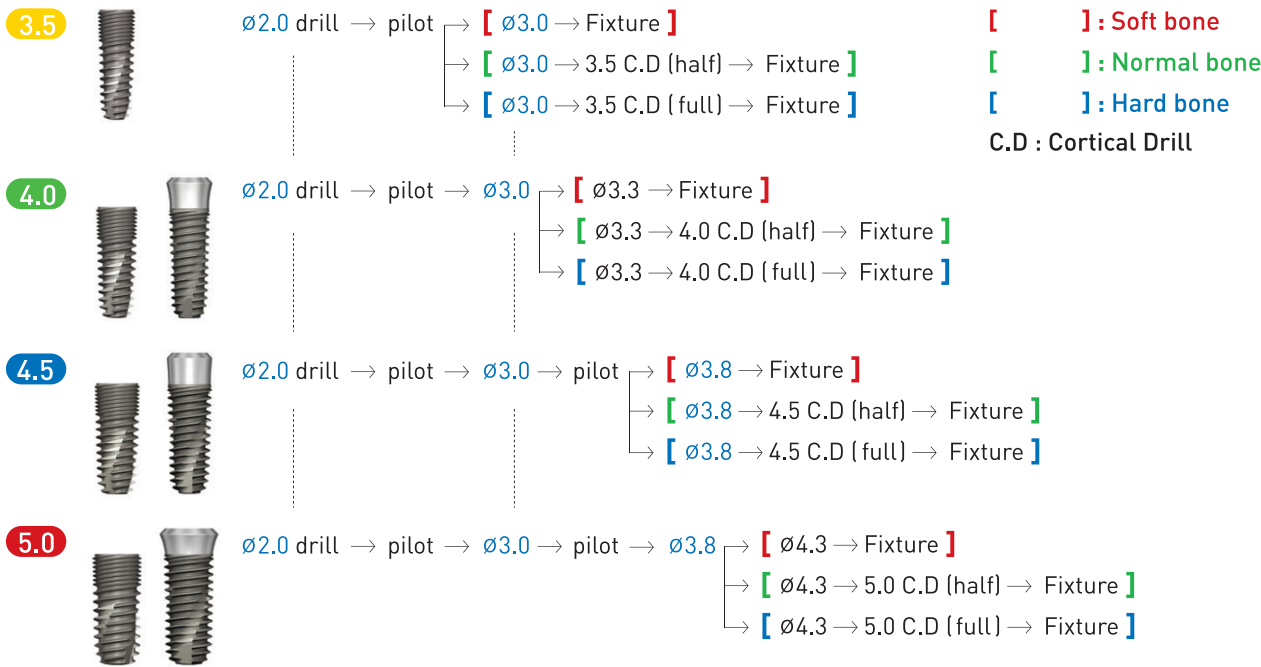
If taper drills are not available, GS/SS III fixtures can also be placed using normal straight drills. Drilling sequence for normal and hard bones, use the cortical drills before placement.



• **Normal bone** $\rightarrow$ Use the cortical drill, drilling half the length

• **Hard bone** $\rightarrow$ Use the cortical drill, drilling the full length

Drilling sequence for straight drills

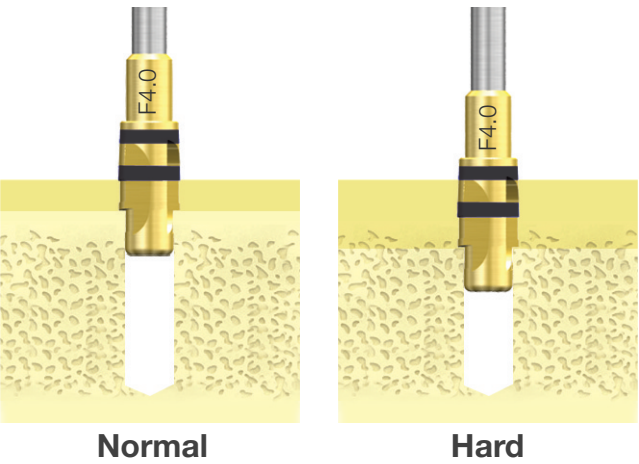


Surgical Procedure - Straight Drill

Taper Implant Surgical Procedure - Straight Drill

Cortical Drill 3 is used to open up the cortical bone for normal and hard bone when drilling with straight drills for tapered fixtures. Opening up the cortical bone prevents excessive torque placed on the bone when placing tapered fixtures.

Cortical drills are specifically used for normal and hard bones. They come in 4 different diameters and each has 2 markers, the center band is for normal bones and upper band is for hard bone. The markers are depth guides but consider the actual alveolar bone and cortical thickness for final depth drilling.



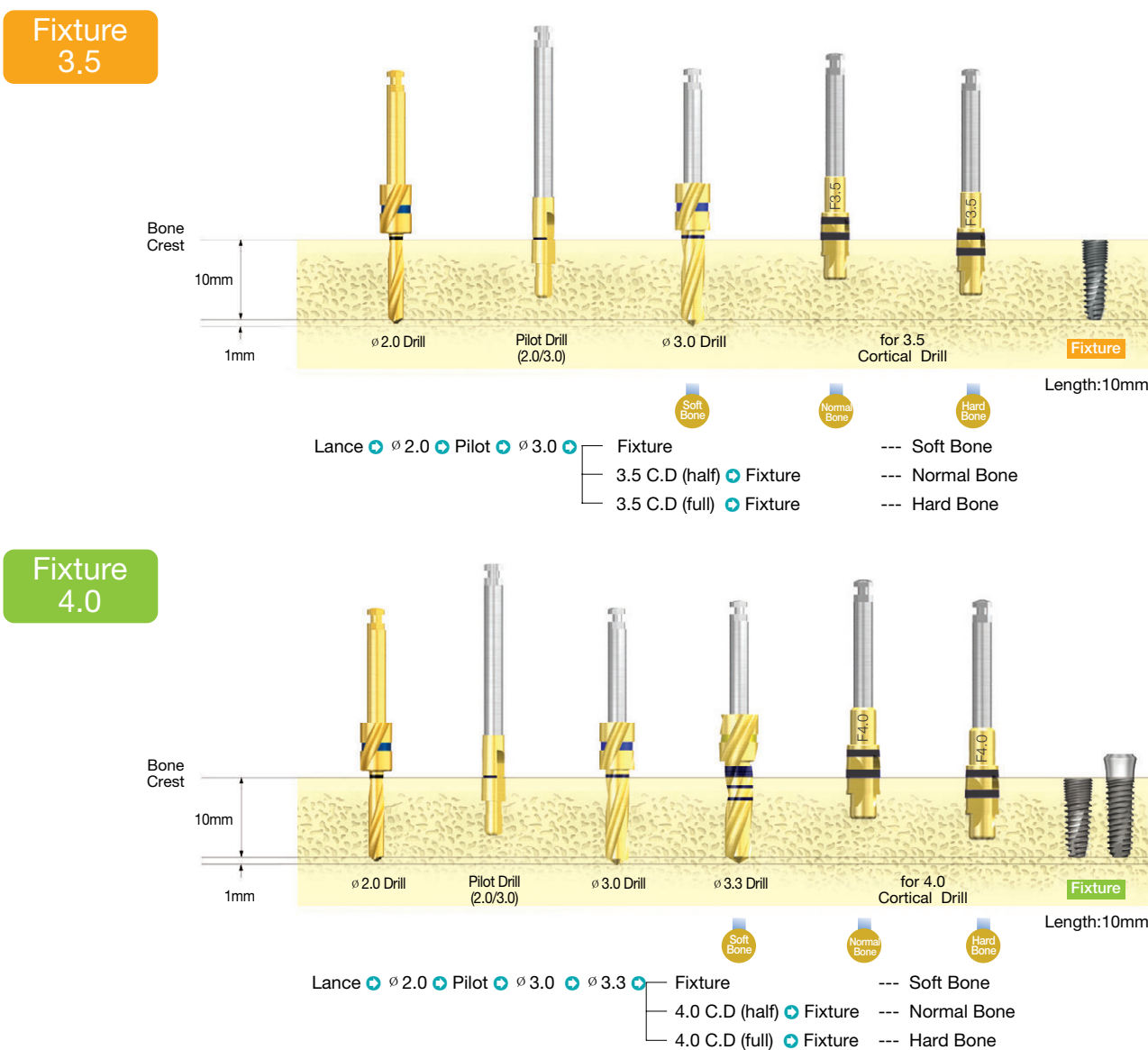
Diameter	3.5 Drill	4.0 Drill	4.5 Drill	5.0 Drill
Design				
Code	CD4C35	CD4C40	CD4C45	CD4C50

※ Recommended Drilling RPM : D1~D2 $\rightarrow$ 1200rpm, D3~D4 $\rightarrow$ 800rpm

Surgical Procedure - Straight Drill

Taper Implant Surgical Procedure Diagram - Straight Drill

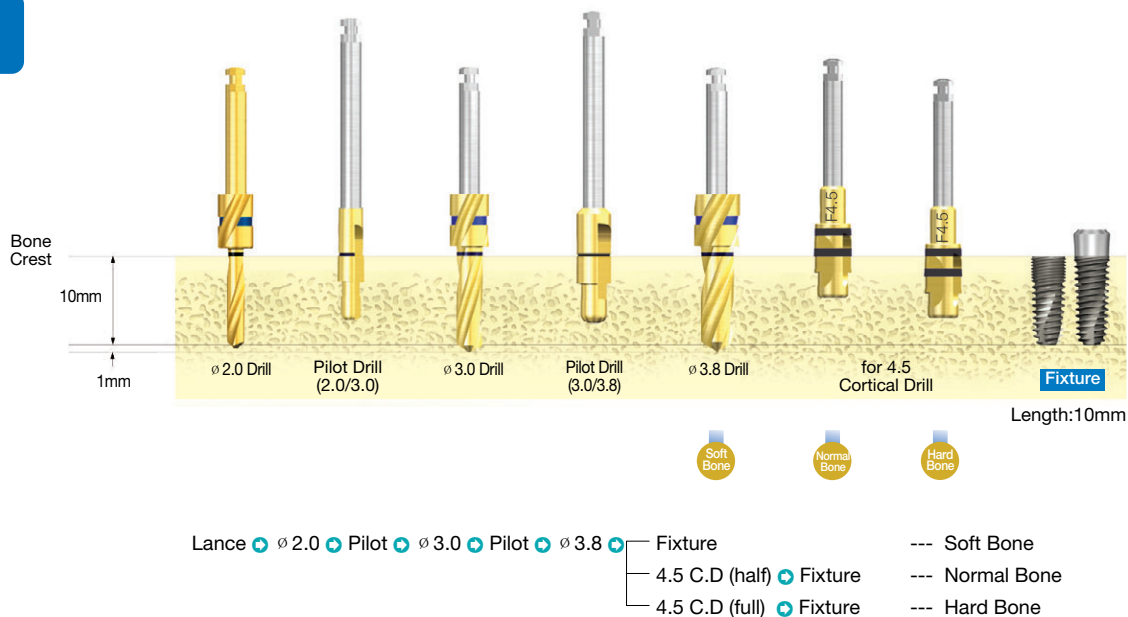
Drilling sequence for each fixture is illustrated here. Be sure to use the cortical drill for both normal and hard bones before fixture placement. Excessive torque when placing fixtures can result in too much pressure being applied to the surrounding bone and could result in bone loss around the fixture.



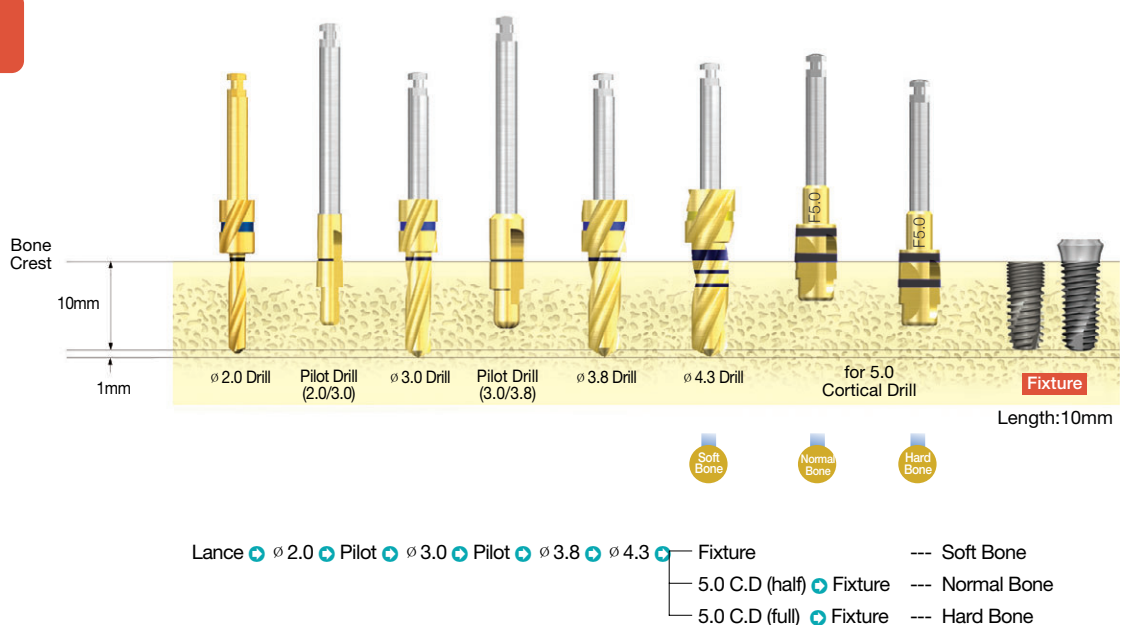
Surgical Procedure - Straight Drill

Taper Implant Surgical Procedure Diagram - Straight Drill

Fixture 4.5



Fixture 5.0

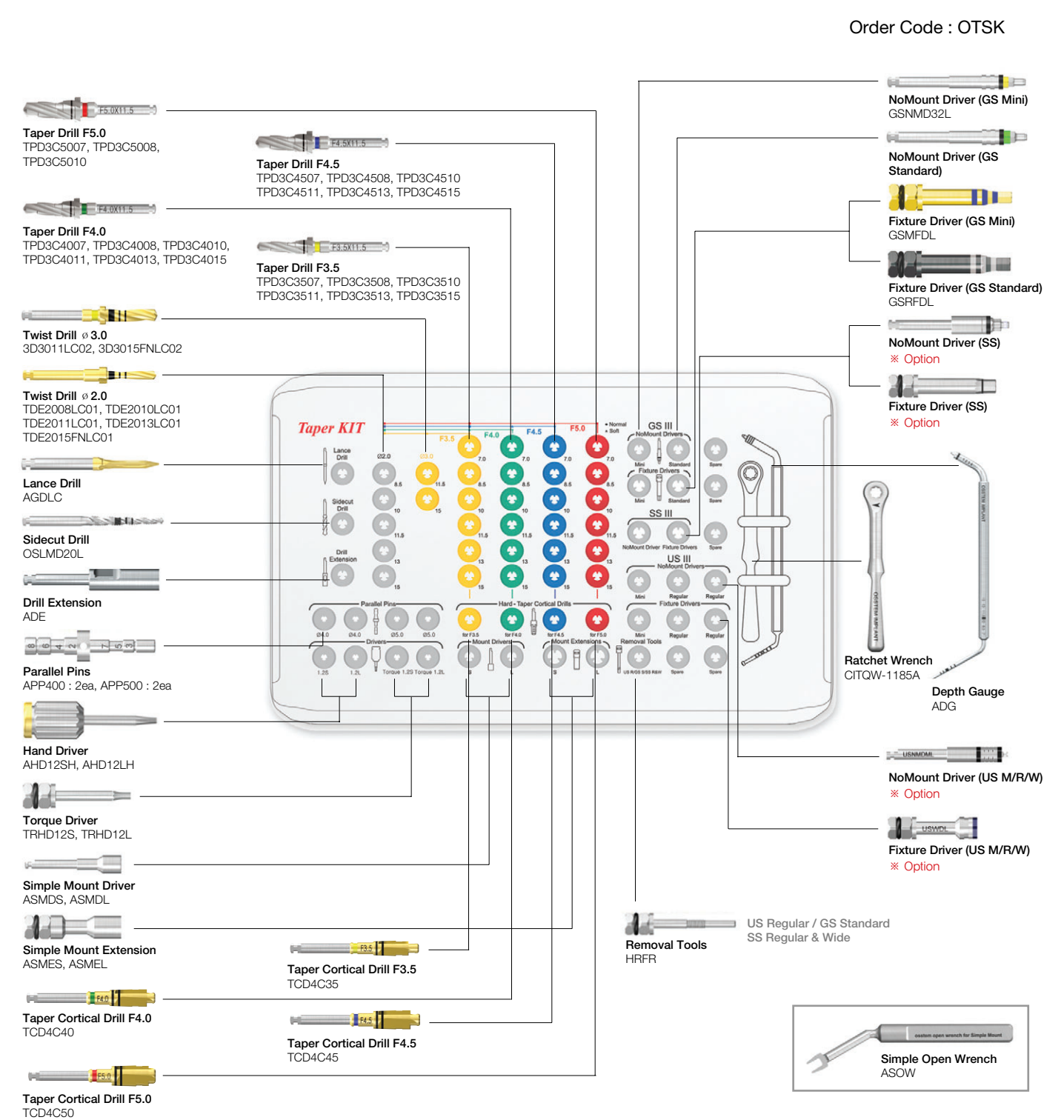


Taper KIT - Taper Drill

Taper Mini KIT - Straight Drill

Taper KIT

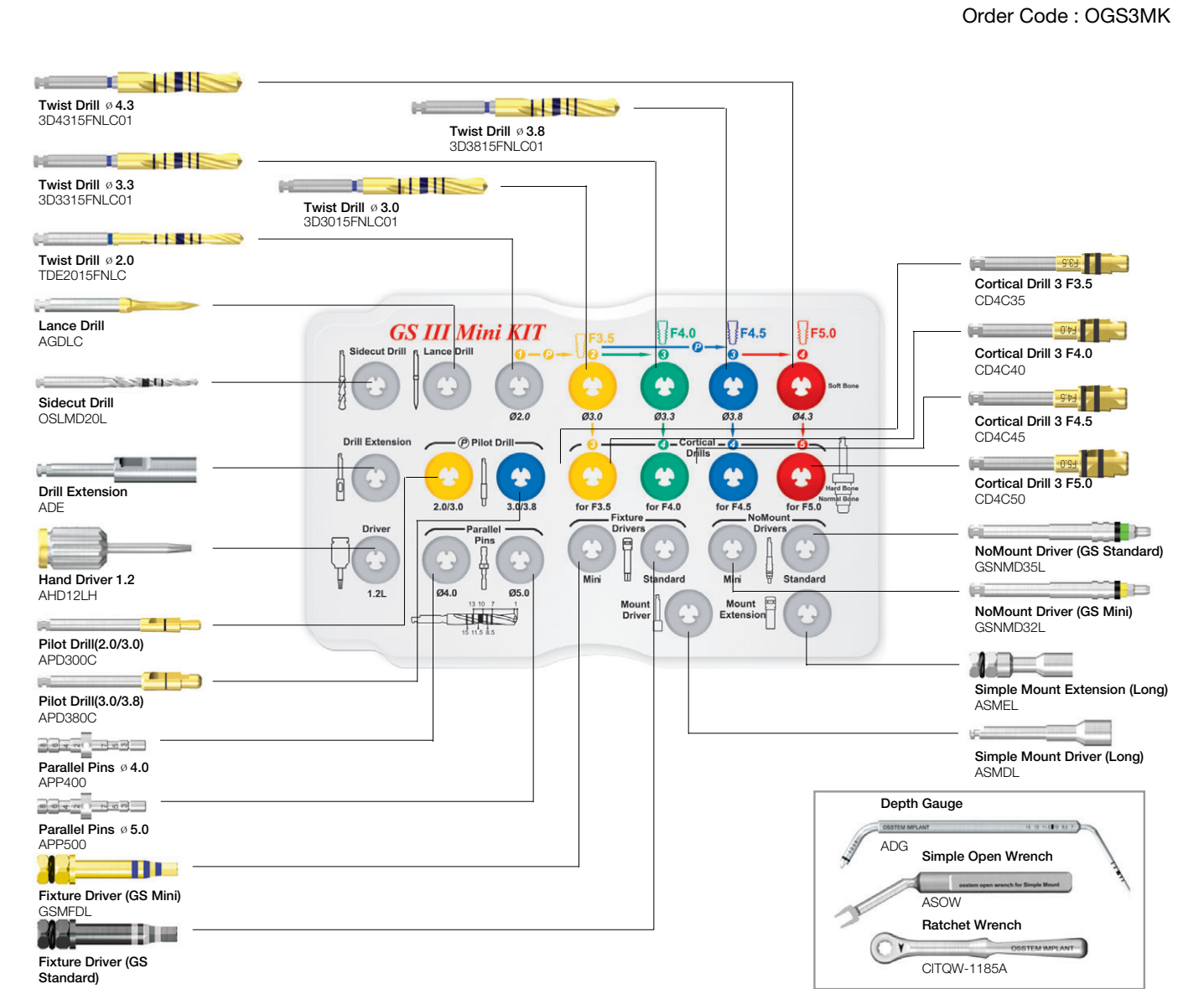
Diagram of the Taper Drill Kit



Taper Mini KIT (GS III Mini KIT) & Cortical Drill 3

Taper Mini KIT (GS III Mini KIT)

Diagram of the Taper MINI Kit: Includes 15mm marked drill for soft bone and four cortical drills



Current Osstem KIT (Hanaro and GS KIT) Users

These kits can still be utilized for GS/SS III fixtures, just add four cortical drills (sold separately)



Order Code : CD4C35, CD4C40, CD4C45,

Clinical Indications

GS/SS III fixtures were designed to perform in various clinical situations, especially for the following cases:

1.Sinus bone graft

→ GS/SS III are easily placed and has high initial stability even in poor bone quality

2. Ridge splitting & expansion

→ Ridge splitting cases require smaller diameter drilling, GS/SS III fixtures are securely placed due to their tapered body design.

3. Maxillar anterior labial concave

→ Maxillar anterior labial concave cases are prone to perforation of the lateral wall of the alveolar bone. GS/SS III fixtures reduces the risk of perforation since their tapered bodies allow for placement in smaller drill holes.

4. Immediate & early loading

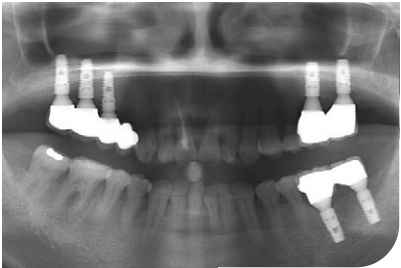
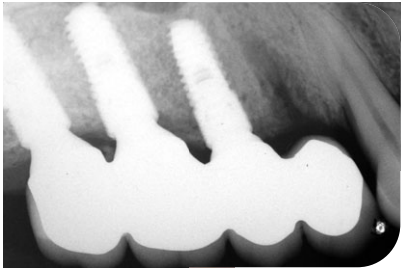
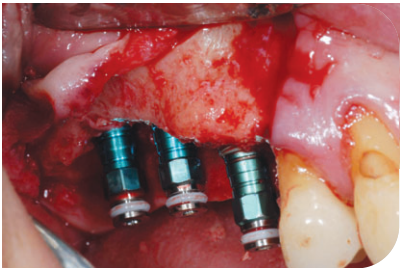
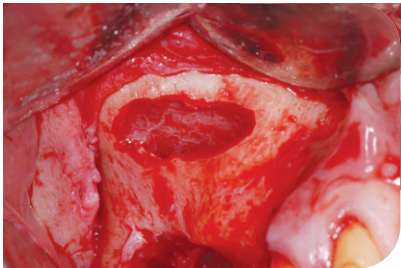
→ When immediate and early loading is required, insertion torque and initial stability (ISQ value) are crucial for success. GS/SS III fixtures have consistant insertion torque, high ISQ values and excellent resistance to external forces which makes it the ideal choice for immediate and early loading.

5. Immediate placement after extraction

→ GS/SS III fixtures are perfect for immediate placement after extraction cases due to outstanding self-tapping capabilities and high initial stability.

GS III Fixture Clinical Case

Case 1 : Maxillary Posterior Sinus (F/47 #15, #16, #17)



Clinical Indications & Case

Clinical Indications & Case

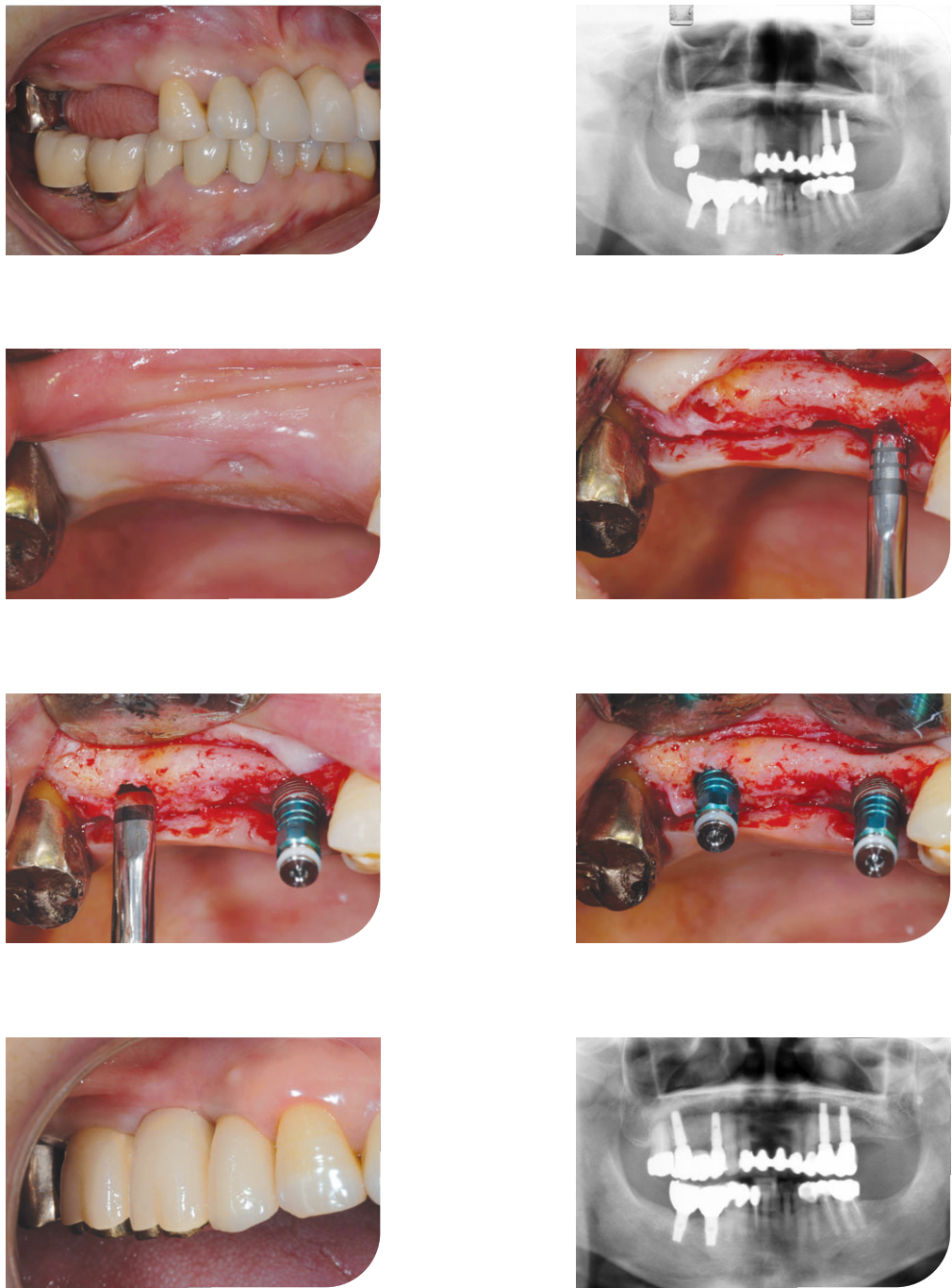
GS III Fixture Clinical Case

Case 2 : Immediate Placement (M/57 #33, #41, #43)



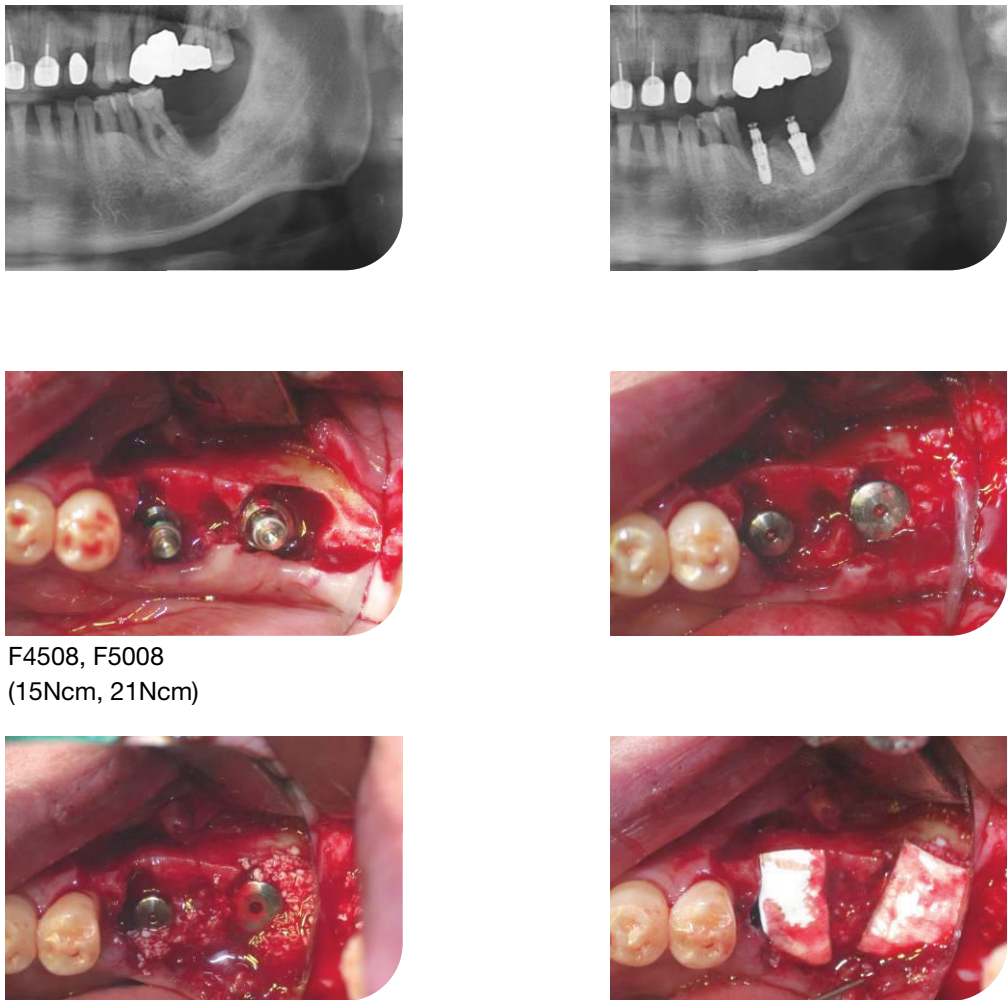
GS III Fixture Clinical Case

Case 3 : Ridge Expansion (F/68 #14, #16)



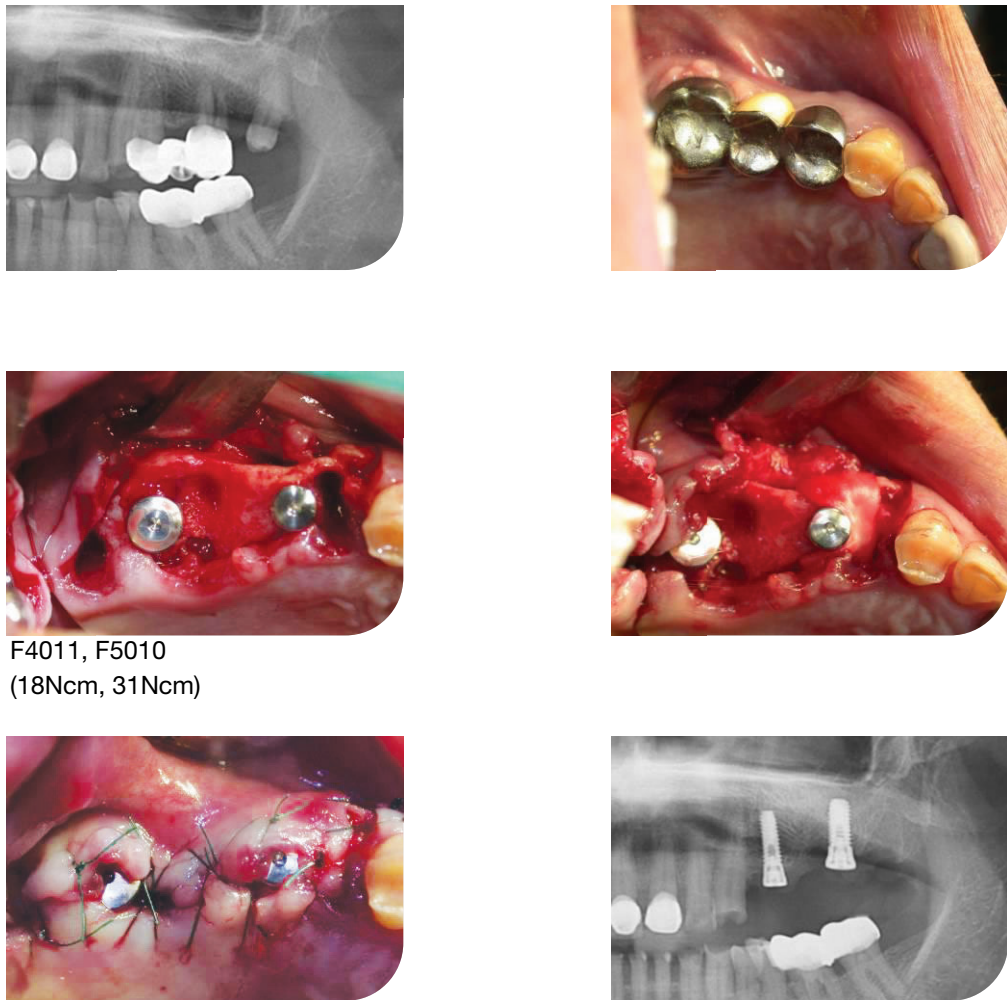
SS III Fixture Clinical Case

Case 1 : Immediate Placement with GBR (M/49, Normal, #36, #37)



SS III Fixture Clinical Case

Case 2: Immediate Placement (M/81, Soft Bone, #24, #26)



Surgical Procedure

The operator must check the following items before starting the surgery.

Patient's condition

- Sufficient bone volume and quality prior to treatment
 - Smoking and/or drinking habits
 - Status of oral hygiene
 - Patient's understanding of implant surgery
- Detailed health status
 - Masticatory pattern and habit
 - Psychological state

Treatment Plan

Discuss treatment options with your patient. Include the pros and cons of each treatment as well as the procedure involved.

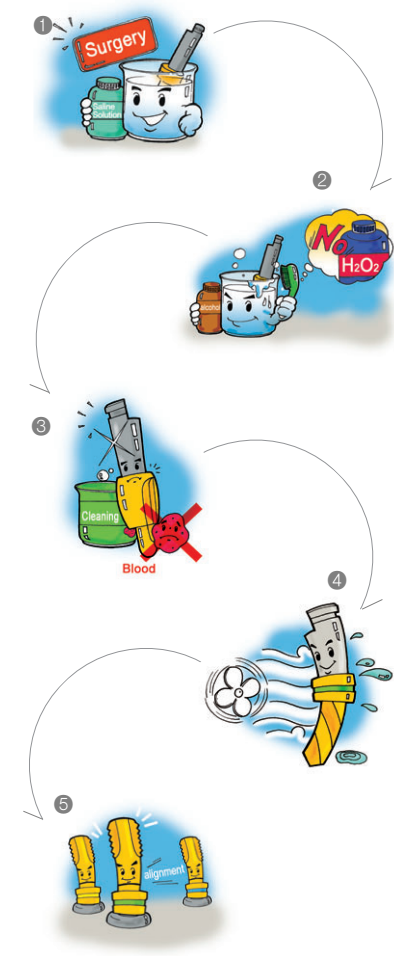
Medical Diagnosis

Check the patient's health history before implant surgery. Discuss the treatment plan and health history with the patient's primary care physician before performing surgery.

Pay Particular Attention to the Following during an Implant Procedure

- Improper upper/lower posterior height
 - Extremely poor bone quality
 - Ischemic heart patient (angina, myocardial infarction)
 - Patient s distrust of implant treatment
- Improper lower anterior width
 - Congenital or acquired heart conditions
 - High blood pressure

How to Maintain Surgical KIT



- ① During surgery, be sure to keep used tools in saline or distilled water.

② Rinse tools with distilled or running water to remove all blood and debris.

③ Alcohol wash all tools used in surgery
Caution: Do NOT use hydrogen peroxide
*Exposure to hydrogen peroxide may cause discoloration to laser markings and/or TiN coating

④ Remove all moisture with a dry cloth or warming fan

⑤ Replace dried tools into the Kit case
(Refer to the color-coding for easy placement.)

⑥ Autoclave Kit for 15 minutes at 132, then store at room temperature.

Precautions

Immediately after surgery separate, wash and store all tools.

Re-sterilize Kits prior to surgery (132 for 15 minutes)

Hanaro Kits have a 1 year product warranty (after opening); all drills and drivers are recommended for up to 50 uses.