

This manual organizes the surgical procedure from drilling to Healing abutment connection for the operator with OSSTEM implants.
This manual also serves as the guidelines for OSSTEM implant procedures.

OSSTEM Surgical Manual



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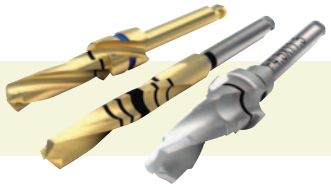
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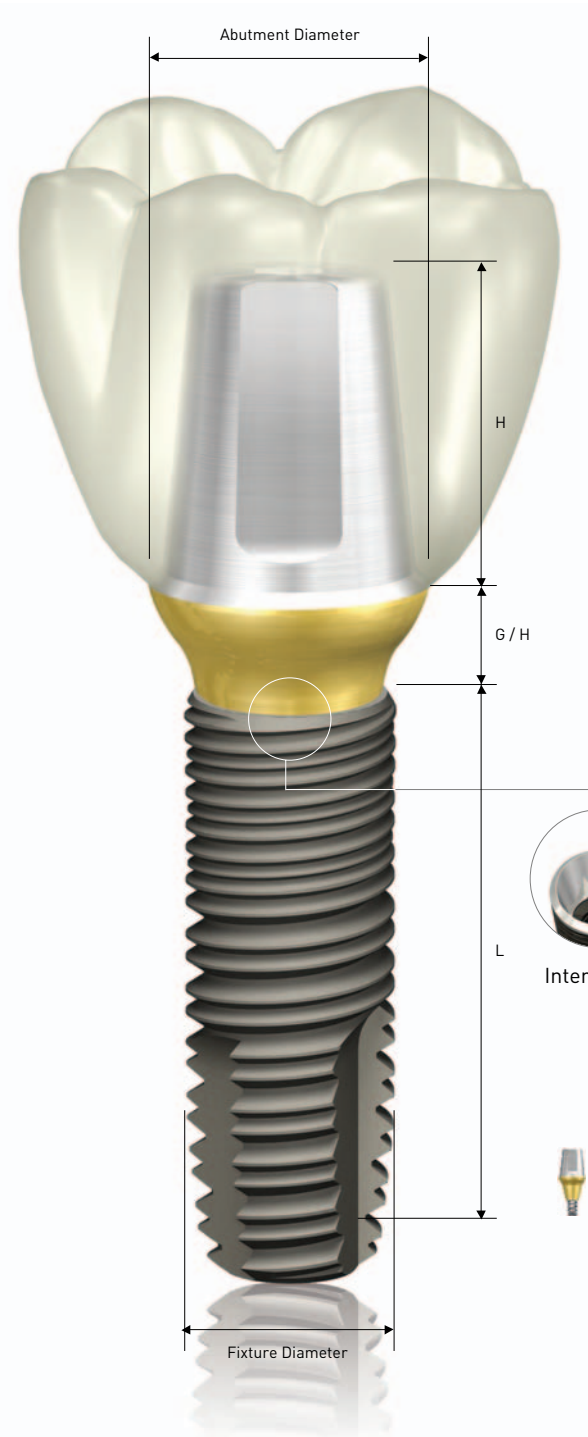
CHARACTERISTIC of OSSTEM IMPLANT SYSTEM

Reliable implant that has acquired various international quality certifications (FDA, CE, ISO9001, etc.)

Various product lines that can be optimized according to the oral cavity and surgical situation

Best-quality implant based on advanced developmental skills and production technologies

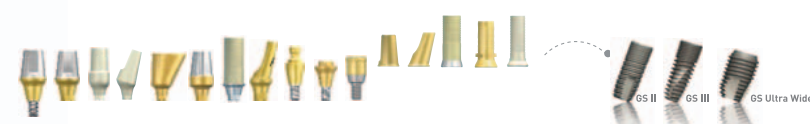
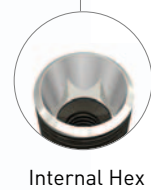
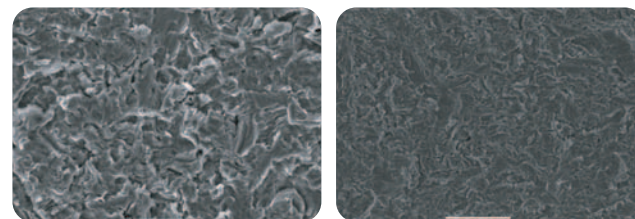
Implant used in the most domestic clinical surgery cases



GS System

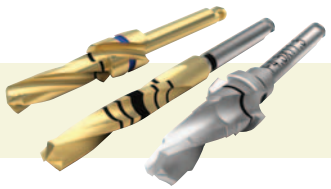
- Submerged Type implant with an Internal Hex & 11° Morse taper Connection structure
- Dual Thread of Micro + Macro for minimizing Bone Resorption and optimal stress distribution
- Body design with superior initial bonding stability, facilitating placement depth adjustment
- Product line: GSII, GSIII, GS Ultra Wide®

RBM



OSSTEM Implant System Flow

GS II	GS III	GS Ultra Wide®
<ul style="list-style-type: none"> • Bone level fixture of internal connection • Harmonious macro & micro threads taking cortical bones and cancellous bones into consideration • Expanded thread that helps have excellent initial stability • Stable connection of the upper part based on Rigid Motion Connection • Straight body with the implant depth adjusted easily • Implement the cutting edge with excellent self tapping capacity • Realize the convenient operation by making it possible to implant into various osseins 	<ul style="list-style-type: none"> • The initial stability for immediate & early loading • The good feeling of fixture implantation • The convenience of implant surgery • Bone level fixture of internal connection • Stable connection of the upper part based on Rigid Motion Connection • Realize the convenient operation by making it possible to implant into various osseins 	<ul style="list-style-type: none"> • Submerged type wide diameter fixture with 11° internal connection • Compatible with GS standard abutment • Indication of GS Ultra-Wide® system <ul style="list-style-type: none"> - Immediate placement at the extract socket - Immediate replacement of the failed implant - Delayed placement in the healed mature bone <p>* The actual length is L-0.5mm. (Except for length 7mm)</p>
<p>L: 8.5 10 11.5 13 15</p>	<p>L: 8.5 10 11.5 13 15</p>	
<p>L: 7 8.5 10 11.5 13 15</p>	<p>L: 7 8.5 10 11.5 13 15</p>	
<p>L: 7 8.5 10 11.5 13 15</p>	<p>L: 7 8.5 10 11.5 13 15</p>	<p>L: 7 8.5 10 11.5 13</p>



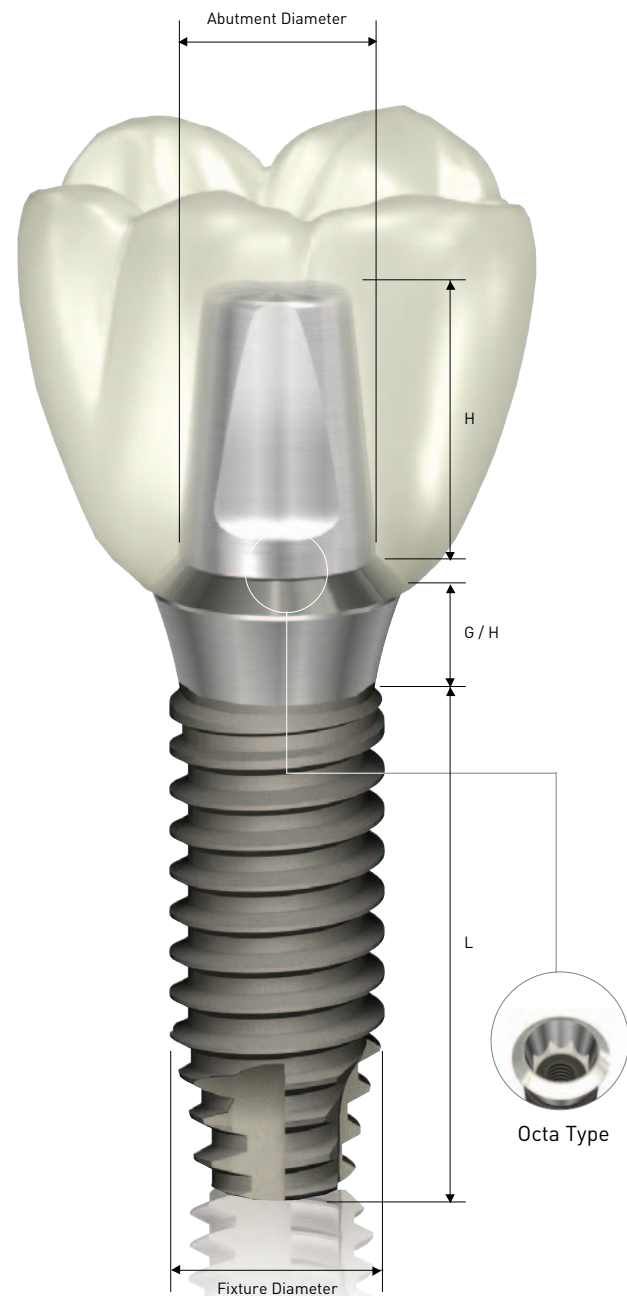
CHARACTERISTIC of OSSTEM IMPLANT SYSTEM

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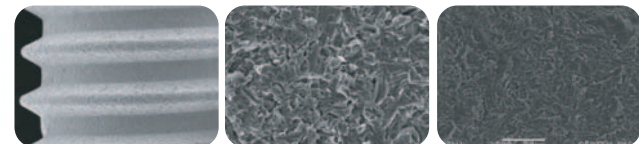
Implant used in the most domestic clinical surgery cases



SS System

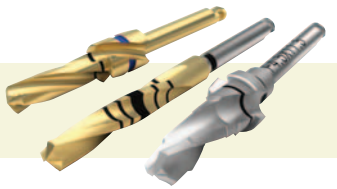
- Non-submerged type implant based on a one-stage surgery procedure
- Stable connection structure of internal octa and morse taper method
- Can facilitate placement applicable to various bone quality and obtain superior bonding stability
- Product line : SSII, SSIII, SS Ultra Wide®

RBM



OSSTEM Implant System Flow

SS II	SS III	SS Ultra Wide®
<p>Composed of triangular threads with internal octagon connection straight body of gingival level, based on single stage surgery. Easy to secure early stabilization and control implanted bone depth. Especially good for loading immediately.</p>	<p>The initial stability for immediate & early loading The good feeling of fixture implantation The convenience of implant surgery</p>	<p>Composed of triangular threads with internal octagon connection straight body of gingival level, based on single stage surgery. Easy to secure early stabilization and control implanted bone depth.</p> <ul style="list-style-type: none"> • Indication of SS Ultra-Wide® system <ul style="list-style-type: none"> - Immediate placement at the extract socket - Immediate replacement of the failed implant - Delayed placement in the healed mature bone
<p>L : 8.5 10 11.5 13 15</p>		
<p>L : 7 8.5 10 11.5 13 15</p>	<p>L : 7 8.5 10 11.5 13 15</p>	
<p>L : 7 8.5 10 11.5 13 15</p>	<p>L : 8.5 10 11.5 13 15</p>	<p>L : 7 8.5 10 11.5 13</p>



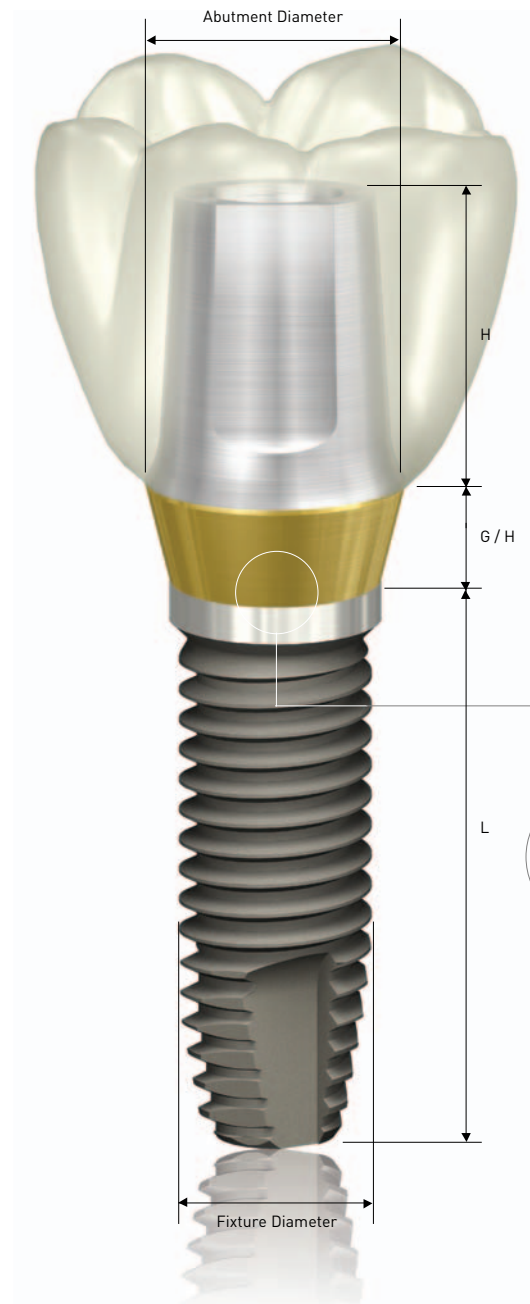
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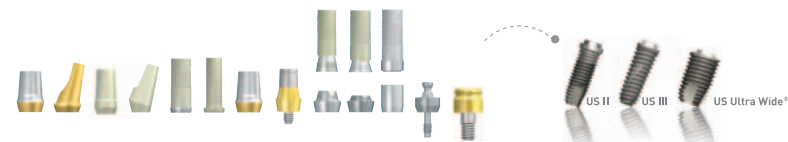
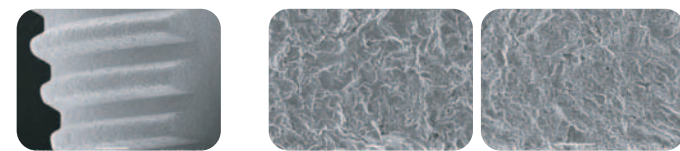
Implant used in the most domestic clinical surgery cases



US System

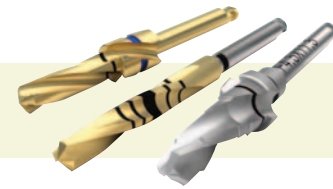
- Submerged type implant with an external hex connection structure
- All RBM surface treatment improves compatibility between bone and soft tissue
- Can facilitate placement applicable to various bone quality and obtain superior bonding stability
- Product line: USII, USIII, US Ultra Wide®

RBM



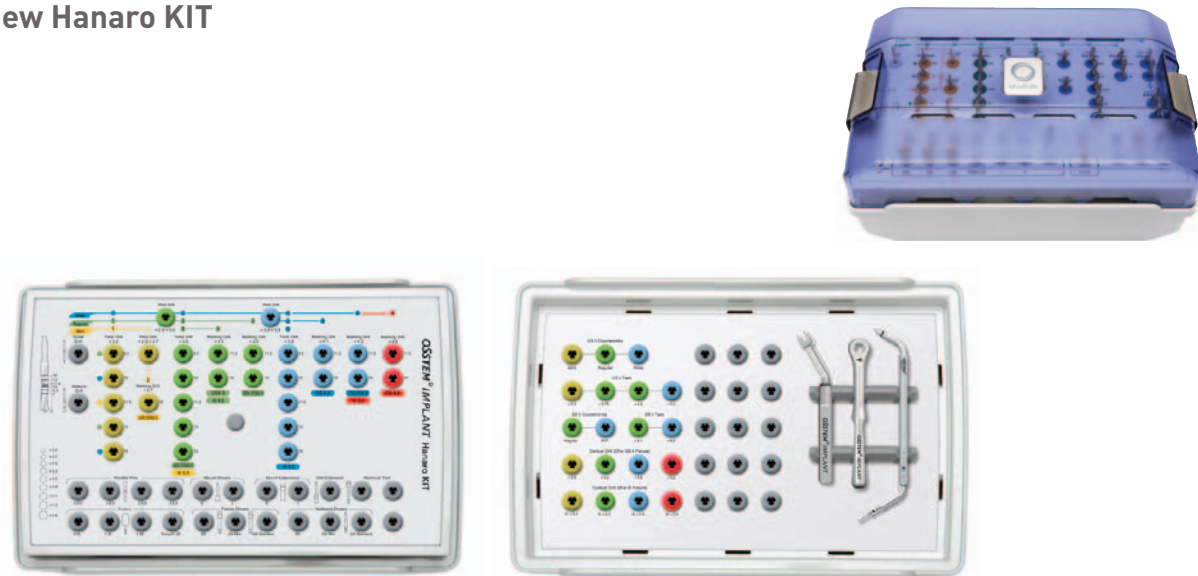
OSSTEM Implant System Flow

US II	US III	US Ultra Wide®
<ul style="list-style-type: none"> • Increased osseointegration in the cortical bone • Expanded contact area with the bone • Decreased marginal bone loss • RBM surface treated for excellent biocompatibility 	<ul style="list-style-type: none"> • The initial stability for immediate & early loading • The good feeling of fixture implantation • The convenience of implant surgery 	<ul style="list-style-type: none"> • Hex 3.4mm external connection • Compatible with US wide abutment • Wide diameter fixture • Indication of US Ultra-Wide® system <ul style="list-style-type: none"> - Immediate placement at the extract socket - Immediate replacement of the failed implant - Delayed placement in the healed mature bone
L: 8.5 10 11.5 13 15	L: 8.5 10 11.5 13 15	
L: 8.5 10 11.5 13 15	L: 8.5 10 11.5 13 15	
L: 8.5 10 11.5 13 15	L: 8.5 10 11.5 13 15	L: 7 8.5 10 11.5 13



Surgical KITS

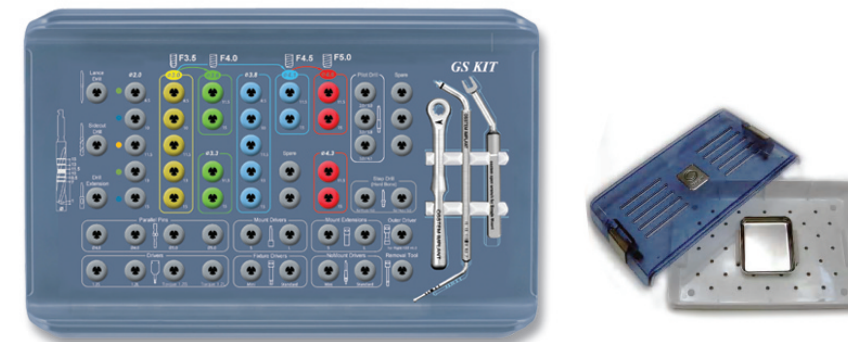
● New Hanaro KIT



HKA2

- Integration surgical KIT for fixtures of all system
- Upper Case : Semi-transparent design facilitates internal observation
- Middle Case (upper structure) : Color line and color rubber enable the easy selection of tools for fixture grafting
- Middle Case (lower structure) : Enables connection to the bottom box ; comes with a handle to facilitate movement
- Lower Case : Comes with a steel box for storing the tools used for surgery

● GS KIT



OGSK2

- GS II Fixture Surgical KIT
- Has all the tools needed for the GS system procedure
- Drill with a stopper helping a beginner perform surgery conveniently
- The color line is designed for the different diameters of GS fixtures and bone conditions, thereby facilitating the selection of the desired tool for surgery
- The new Sidecut drill and NoMount driver make implant treatment easy
- Heat- and shock-resistant engineering plastic material

● Simple KIT



OSPK

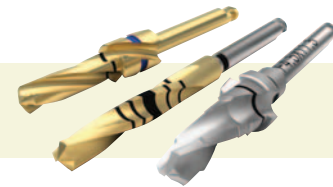
- Affordable expert surgical KIT
- Tools designed for the grafting of all Osstem implant fixtures
- 15mm no stopper drill

● GS II Mini KIT



OIKGM

- GS II Fixture Surgical KIT
- Has minimum tools needed for the GS II System
- Consists of I-Drill(Type I/II) for surgery conveniently
- The color line is designed for the different diameters of GS II fixtures, thereby facilitating the selection of the desired tool for surgery.



● Taper KIT



OTSK

- GS III & NEW SS III Fixture Surgical Tool
- The KIT consists of Taper Drill similar to Fixture shape
- The line enables the easy surgery for fixture with bone condition
- The new Sidecut drill and NoMount driver make implant treatment easy
- Stopper of Straight drill consists of short stopper

● MS KIT



OMSK

- Drills : 5 types
- Drivers : 4 types
- Gauge : 3 types

● Taper Mini KIT



OGS3MK

- GS III & NEW SS III Fixture Surgical KIT
- The KIT consists of Straight Drill similar to Fixture shape
- 15mm Long Drill and Cortical Drill
- Has minimum tools enable the easy surgery
- The new Sidecut drill and NoMount driver make implant treatment easy

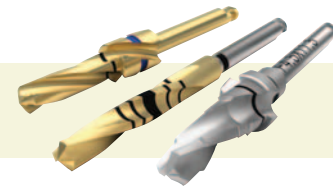
● Ultra KIT



OUK

- Ultra-Wide® fixture surgical KIT
- KIT Components

<p>Drills (6 types)</p> <ul style="list-style-type: none"> - ø 4.6 Three Cutter Twist Drill - ø 5.2 Direct Drill - ø 5.5 Direct Drill - ø 6.2 Direct Drill - ø 6.5 Direct Drill - ø 2.0 SideCut Drill <p>Cortical Drills (2 types)</p> <ul style="list-style-type: none"> - F6.0 Cortical Drill - F7.0 Cortical Drill <p>Trephine Drills (2 types)</p> <ul style="list-style-type: none"> - ø 4.2 / ø 5.0 Trephine Drill - ø 5.2 / ø 6.0 Trephine Drill 	<p>Trial pins (4 type)</p> <ul style="list-style-type: none"> - ø 5.2 Trial Pin - ø 5.5 Trial Pin - ø 6.2 Trial Pin - ø 6.5 Trial Pin <p>Etc (3 types)</p> <ul style="list-style-type: none"> - Simple Mount Driver - 1.2 Hex Hand Driver - Open Wrench
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● Ortho KIT



OOKS

- Orthodontic Treatment KIT
- Comes with a disinfectable tray for storing orthodontic screws
- Drills (2 types)
 1. \varnothing 1.3 Drill
 2. \varnothing 1.5 Drill
- Drivers (4 types)
 1. Driver Tip (Hex Type)
 2. Driver Tip (Cross Type)
 3. Machine Driver (Hex Type)
 4. Hand Driver (Hex Type)
- Handles (2 types)
 1. Universal Handle
 2. Driver Handle

● Custom KIT



OCTK

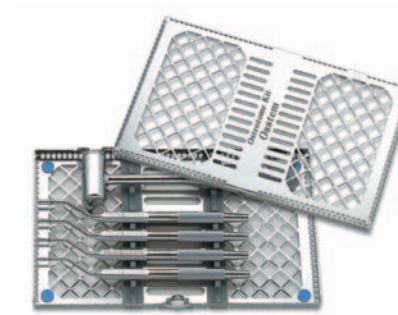
- Use for partial kits, along with sterilization an organization of additional tools
- Composition of additional rubber (small, middle, large)
- Use for autoclave (132°C, 15min)

● Osteo KIT



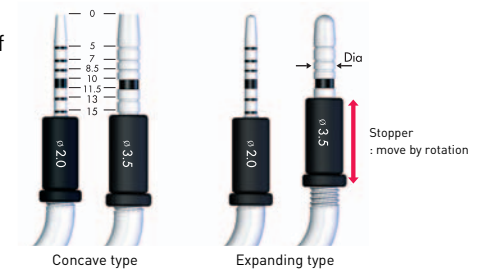
OSTK

- Concave Osteotome : Use for maxillary sinus elevation for the vertical expansion of the volume of alveolar bone available in the maxillary posterior
- Expanding Osteotome : Without cutting low-quality bone, the preservation of the bone densifies the bone trabeculato enhance the initial bonding of implants
- Stopper for the adjustment of surgical depth
- ※ **Components**
 2.0, 2.5, 3.0, 3.5, 4.0 Concave Osteotome / 2.0, 2.5, 3.0, 3.5, 4.0 Expanding Osteotome / New Mallet
 Osteotome : OST20CA, OST25CA, OST30CA, OST35CA, OST40CA, OST20EA, OST25EA, OST30EA, OST35EA, OST40EA
 New Mallet : OSTMP / New Osteotome set: OSTK

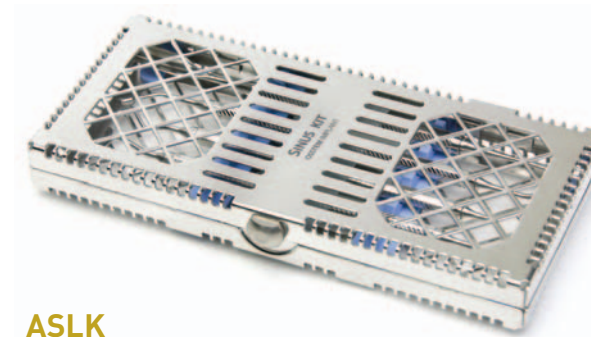


AOST

- Use for maxillary sinus elevation for the vertical expansion of the volume of alveolar bone available in the maxillary posterior
- Includes only the concave type
- ※ **Components**
 2.5, 3.0, 3.5, 4.0 Osteotome, Mallet
 Osteotome : OST25, OST30, OST35, OST40
 Osteotome Mallet : OSTM
 Osteotome set: AOST

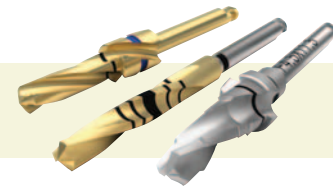


● Sinus KIT



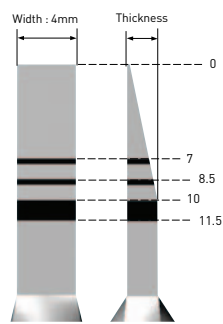
ASLK

- Compact design
- Various types of tools (5) used for the sinus procedure
- ※ **5 components**
 Freer Elevator : OFE
 Bone Graft Carrier : OBGC
 Membrane Separator (Circle type) : OMSC
 Sinus Curette : Short - OSCS
 Sinus Curette : Long - OSCL



Ridge Split KIT - straight/offset

- Chisel : Use for alveolar bone expansion
- Blade Holder : enables malletting for soft bone
- Straight type (ORSSK)
- Offset type (ORSOK)

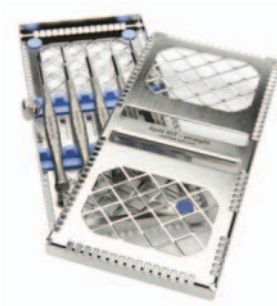


		[Unit : mm]			
Code	Spec.	Tip length			
		7	8.5	10	11.5
ORSS15	Thickness	1.1	1.27	1.5	1.5
ORSO15	Width	4	4	4	4
ORSS20	Thickness	1.45	1.7	2.0	2.0
ORSO20	Width	4	4	4	4
ORSS25	Thickness	1.8	2.15	2.5	2.5
ORSO25	Width	4	4	4	4
ORSS30	Thickness	2.15	2.5	3.0	3.0
ORSO30	Width	4	4	4	4



ORSOK

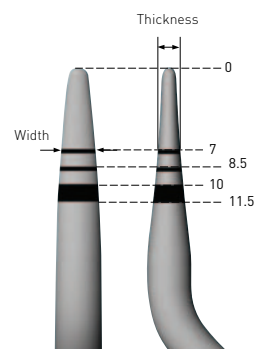
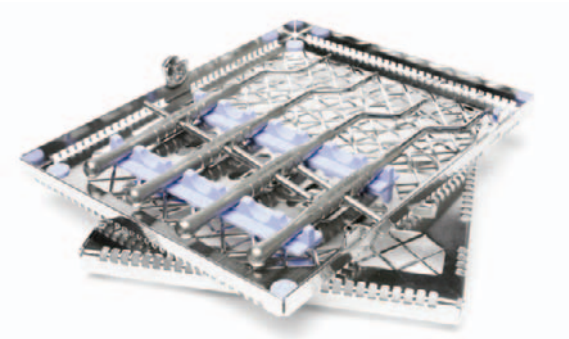
- ※ Components
- Ridge Split Chisel : ORS015, ORS020, ORS025, ORS030
- Blade Holder : ORSBH



ORSSK

- ※ Components
- Ridge Split Chisel : ORSS15, ORSS20, ORSS25, ORSS30
- Blade Holder : ORSBH

Bone Spreader KIT



		[Unit : mm]			
Code	Spec.	Tip length			
		7	8.5	10	11.5
OBS022F	Thickness	1.15	1.3	1.45	1.6
	Width	2.1	2.2	2.2	2.2
OBS028F	Thickness	1.15	1.3	1.45	1.6
	Width	2.65	2.8	2.8	2.8
OBS035F	Thickness	1.3	1.45	1.6	1.8
	Width	3.3	3.5	3.5	3.5
OBS035R (Round Type)	Thickness	1.85	2.1	2.3	2.55
	Width	3.3	3.5	3.5	3.5

OBSOK

- Use for alveolar bone expansion
- Offset type for easy operation
- ※ Components
- OBS022F, OBS028F, OBS035F, OBS035R

Prosthetic KITs

Prosthetic KIT



OPK

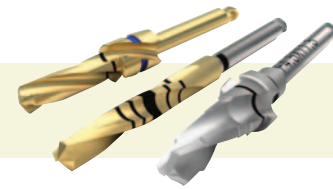
- Prosthetic treatment KIT
- ※ Components
- Drivers(15 types)
 1. 1.2 HexTorque Driver(Short/Long)
 2. 1.2 Hex Machine Driver(Short/Long)
 3. 1.2 Hex Hand Driver(Short/Long)
 4. 0.9 Hex Hand Driver(Long)
 5. O-ring/Octa/Solid/Excellent Solid Abutment Driver
 6. Rigid Driver(φ 4.0, φ 4.5, φ 5.0, φ 6.0)
- Others(3 types)
 1. Torque Handle
 2. Torque Wrench
 3. Stainless Steel Bowl

GS Prosthetic KIT



GSPK

- GS Prosthetic treatment KIT
- Drivers(10 types)
 1. 1.2 Hex Torque Driver(Short/Long)
 2. 1.2 Hex Hand Driver(Short/Long)
 3. O-ring/Octa Driver
 4. Rigid Driver(φ 4.0, φ 4.5, φ 5.0, φ 5.5)
- Others(4 types)
 1. Torque Handle
 2. Torque Wrench
 3. Stainless Steel Bowl
 4. GS Path Probe(Mini, Standard)

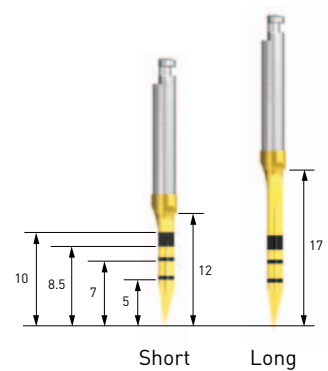


2. Surgical Tool for OSSTEM IMPLANT SYSTEM

2-1. Standard Tools

Guide Drills

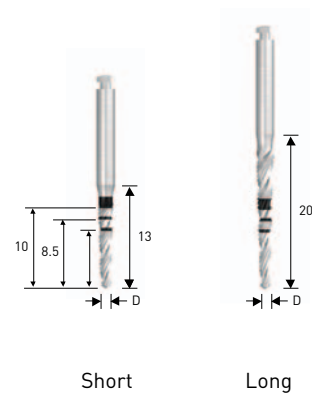
Lance Drill



Type	Code
Lance Drill	Short AGDSC
	Long AGDLC

- Lance Drill : - Forms holes in the bone to facilitate initial drilling
- Bone density can be determined through drilling
- TiN coating improves anti-corrosion and wear resistance

Sidecut Drill

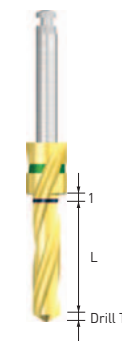


Type	D	Code
Short	∅ 1.5	OSLMDS
	∅ 2.0	OSLMD20S
Long	∅ 1.5	OSLMDL
	∅ 2.0	OSLMD20L

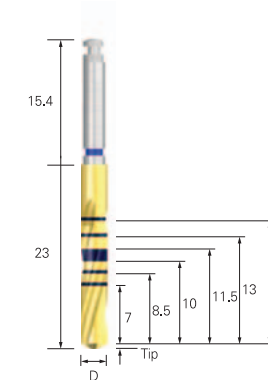
- Enables the bodily change of drilling direction
- Used to cut the ridge of the extracted socket
- Facilitates site preparation in the extracted socket

Three Cutter Twist Drills

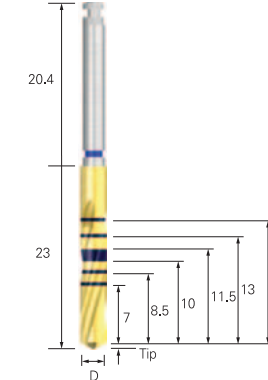
Long Stopper Drill



No Stopper Drill



Extra Long Drill



Long Stopper Drill

L \ D	∅ 2.0	∅ 3.0	∅ 3.3	∅ 3.6	∅ 3.8	∅ 4.1	∅ 4.3	∅ 4.6
7	TDE2007LC	3D3007LC01	-	-	3D3807LC01	-	-	-
8.5	TDE2008LC	3D3008LC01	-	-	3D3808LC01	-	-	-
10	TDE2010LC	3D3010LC01	-	-	3D3810LC01	-	-	-
11.5	TDE2011LC	3D3011LC01	3D3311LC01	3D3611LC01	3D3811LC01	3D4111LC01	3D4311LC01	3D4611LC01
13	TDE2013LC	3D3013LC01	-	-	3D3813LC01	-	-	-

- Long stopper (6 mm) : Posterior surgery may be performed even without drill extension
- The color coding on the stopper indicates the drill length
- The tip length of a 2.0 twist drill is 0.6 mm, and the other tip length of drills, 0.8mm~1mm

No Stopper Drill

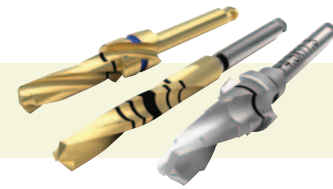
L \ D	∅ 2.0	∅ 2.7	∅ 3.0	∅ 3.15	∅ 3.3	∅ 3.6	∅ 3.8	∅ 4.1	∅ 4.3	∅ 4.6
15	TDE2015FNLC	3D2715FNLC01	3D3015FNLC01	3D3115FNLC01	3D3315FNLC01	3D3615FNLC01	3D3815FNLC01	3D4115FNLC01	3D4315FNLC01	3D4615FNLC01

- Cuts the stopper of a 15 mm drill to facilitate depth adjustment in the ridge
- The laser marking indicates the length, thereby enabling all drilling lengths (7-15 mm) using one drill
- Handles are color-coded to indicate drill length

Extra Long Drill

L \ D	∅ 2.0	∅ 2.7	∅ 3.0	∅ 3.15	∅ 3.3	∅ 3.6	∅ 3.8	∅ 4.1	∅ 4.3	∅ 4.6
15	TDE2015FNEC	3D2715FNEC	3D3015FNEC	3D3115FNEC	3D3315FNEC	3D3615FNEC	3D3815FNEC	3D4115FNEC	3D4315FNEC	3D4615FNEC

- For sufficient intermaxillary gap as in the anterior part, drilling may be performed even without drill extension
- The laser marking indicates the length, thereby enabling all drilling lengths (7-15 mm) using one drill
- Handles are color-coded to indicate drill length



**Cortical Drill 3
for GSIII / New SSIII**



Spec.	φ 3.5	φ 4.0	φ 4.5	φ 5.0
Code	CD4C35	CD4C40	CD4C45	CD4C50

- Cortical bone expansion Drill after using Straight Drill
- Using drill with final hole more than normal bone
- Processing exclusive use Drill for fixture diameter
- The lowest marking line is normal bone and the highest marking line is hard bone
- It is recommend that drilling will performed up to marking line

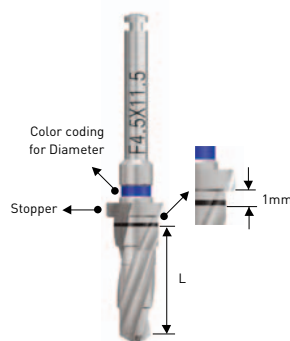
**Taper Cortical Drill
for GSIII / New SSIII**



Spec.	φ 3.5	φ 4.0	φ 4.5	φ 5.0
Code	TCD4C35	TCD4C40	TCD4C45	TCD4C50

- Cortical bone expansion Drill after using Taper Drill
- Using drill with final hole more than normal bone
- Processing exclusive use Drill for fixture diameter
- It is recommend that drilling will performed up to marking line

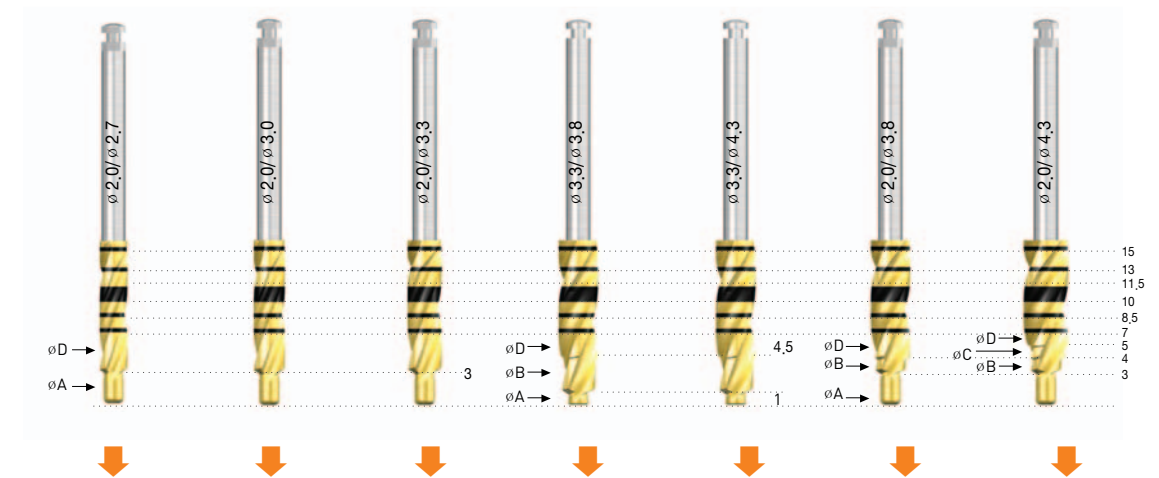
Taper Drill



L	Spec.	φ 3.5	φ 4.0	φ 4.5	φ 5.0
7	TPD3C3507	TPD3C4007	TPD3C4507	TPD3C5007	
8.5	TPD3C3508	TPD3C4008	TPD3C4508	TPD3C5008	
10	TPD3C3510	TPD3C4010	TPD3C4510	TPD3C5010	
11.5	TPD3C3511	TPD3C4011	TPD3C4511	TPD3C5011	
13	TPD3C3513	TPD3C4013	TPD3C4513	TPD3C5013	
15	TPD3C3515	TPD3C4015	TPD3C4515	TPD3C5015	

- Processing exclusive use of Taper Drill for III type fixture diameter and length
- Stopper drill with 1mm margin
- Color coding on the shank indicates the drill diameter (φ 3.5:Yellow, φ 4.0:Green, φ 4.5:Blue, φ 5.0:Red)
- The tip length is 0.8mm~1.0mm

I-Drill



(Unit : mm)

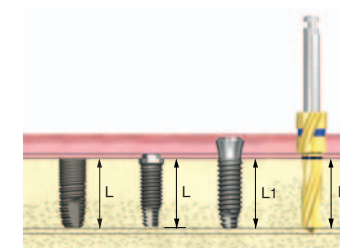
Spec.	I-drill 1					I-drill 2	
	φ 2.0/φ 2.7	φ 2.0/φ 3.0	φ 2.0/φ 3.3	φ 3.3/φ 3.8	φ 3.3/φ 4.3	φ 2.0/φ 3.8	φ 2.0/φ 4.3
Code	OID2027C*	OID2030C*	OID2033C*	OID3338C*	OID3343C*	OID2038C**	OID2043C**
φ A	2.0	2.0	2.0	2.0	2.0	2.0	2.0
φ B	-	-	-	3.3	3.3	3.0	3.0
φ C	-	-	-	-	-	-	3.8
φ D	2.7	3.0	3.3	3.8	4.3	3.8	4.3

*: I-drill 1 **: I-drill 2

- To embody concurrently both Pilot Drill and Twist Drill
- To minimize bone heating during drilling
- Protection for membrane with round shape guide during maxillary sinus surgery
- Refer to GS II Mini KIT(OIKGM) for exclusive using I-Drill

Length of Drill and Osstem Fixture

Normal Length	*Actual Length of External Fixture	**Actual Length of Internal Fixture	***Actual Length of Twist Drill
7	6.6mm		8.0mm
8.5	8.1mm	8.5mm	9.5mm
10	9.6mm	10.0mm	11.0mm
11.5	11.1mm	11.5mm	12.5mm
13	12.6mm	13.0mm	14.0mm
15	14.6mm	15.0mm	16.0mm

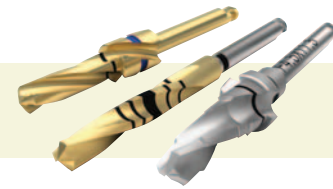


Osstem Drill Tip

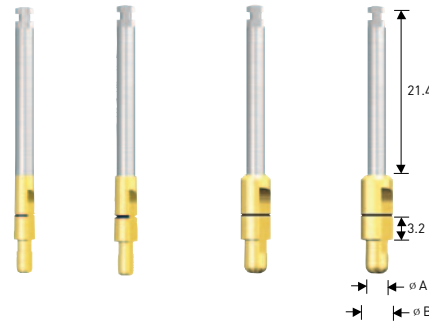
The size of drill tip is determined by the drill diameter.

Measurement of Drill Tip	
Drill Diameter	Drill Tip Measurement
2.0mm	0.6mm
2.7mm	0.8mm
3.0mm	0.9mm
3.15mm	0.9mm
3.3mm	1.0mm
3.6mm	1.0mm
3.8mm	1.0mm
4.1mm	1.0mm
4.3mm	1.0mm
4.6mm	1.0mm





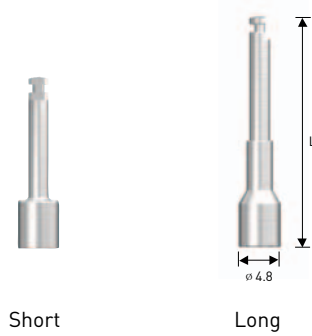
Long Shank Pilot Drill



φ A	φ B	Mini	Regular	Wide
2.0	2.7	APD270C	-	-
2.0	3.0	-	APD300C	-
3.0	3.8	-	-	APD380C
3.0	4.1	-	-	APD410C

- Used for the path adjustment of a drilling hole
- When using the next size drill, the guide hole enables precise cutting
- TiN coating improves anti-corrosion and wear resistance

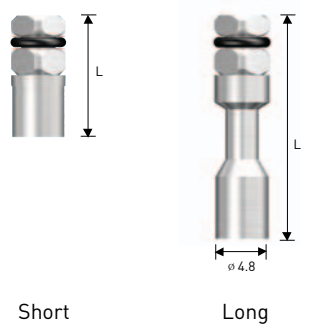
Simple Mount Driver



Length	L	Code
Short	20.1	ASMDS
Long	26.5	ASMDL

- Use for fixture grafting by connecting to a simple mount
- Compact design, internal holding function

Simple Mount Extension



Length	L	Code
Short	11.2	ASMES
Long	20.5	ASMEL

- Use for the extension of fixture mount length by connecting to a torque wrench

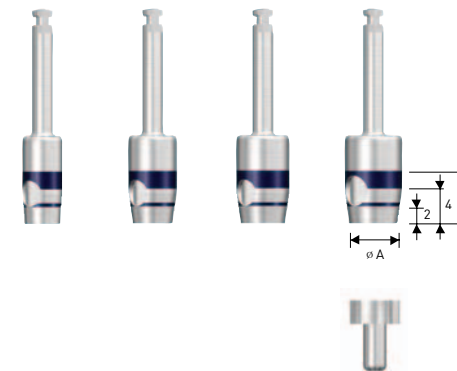
Simple Open Wrench



Code	ASOW
------	------

- For weak bone, use to separate the simple mount
- 30° neck angle enhances convenience of insertion in the oral cavity

Tissue Punch



φ A(mm)	Code	Application
3.8	OSTP38	US Mini, GS φ 3.5
4.3	OSTP43	US Regular, SS Regular, GS φ 4.0
4.8	OSTP48	GS φ 4.5
5.3	OSTP53	US Wide, SS Wide, GS φ 5.0

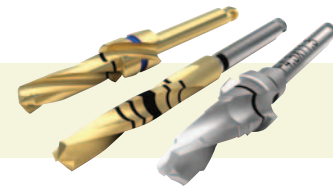
- Used by connecting to the engine; enables manual gingival cutting if necessary by connecting with the handle
- Tool to be used for flapless surgery
- The laser marking at 2-mm intervals enables the measurement of gingival height
- With SS Wide fixtures, a surgeon may choose between OSTP48 and OSTP53
- Packing unit : Tissue Punch + Guide Pin

Tissue Punch Drill Guide

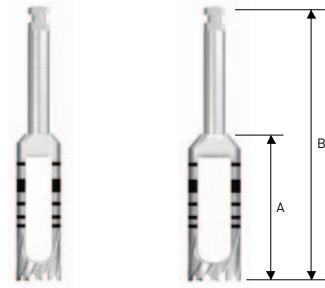


Code	OSIDG
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- Used as a guide for drill path during initial drilling



Trephine Drill



Code	Inner Dia.(ϕ)	Outer Dia.(ϕ)	Length(mm)	
			A	B
TD37S	3.7	4.5	16.6	31
TD42S	4.2	5.0	16.6	31
TD47S	4.7	5.5	16.6	31
TD52S	5.2	6.0	16.6	31
TD62S	6.2	7.0	16.6	31
TD37	3.7	4.5	22	36.4
TD42	4.2	5.0	22	36.4
TD47	4.7	5.5	22	36.4
TD52	5.2	6.0	22	36.4
TD62	6.2	7.0	22	36.4

- Use for the collection of bone or removal of damaged or failed fixtures
- Use after connecting the guide screws to the fixtures
- Packing unit : Trephine Drill

Trephine Guide



Code	D	Application
GT37	ϕ 3.5	For US ϕ 3.3 Fixture
GT37G	ϕ 3.5	For GS ϕ 3.5 Fixture
GT42	ϕ 4.1	For US ϕ 3.75 / ϕ 4.0 Fixture GS ϕ 4.0 Fixture
GT47G	ϕ 4.5	For GS ϕ 4.5 Fixture
GT52	ϕ 5.1	For US ϕ 5.0 Fixture
GT52G	ϕ 5.1	For GS ϕ 5.0 Fixture

- User guide for Trephine Guide
 - GT37 or GT37G : TD37 or TD37S
 - GT42 : TD42 or TD42S
 - GT47 or GT47G : TD47 or TD47S
 - GT52 or GT52G : TD52 or TD52S

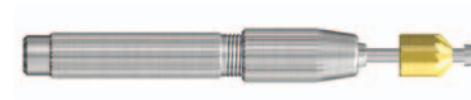
Ratchet Wrench



Code	CITQW-1185A
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- Only surgical unlimited wrench (Not adjustable torque value)

Finishing Reamer Set



Code	FRSC
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- Use to remove the lip inside the casting body upon the casting of plastic copings

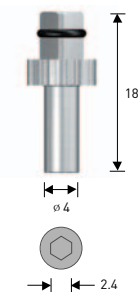
Reamer Bite



Code	FRBC
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- TiN coating improves anti-corrosion and wear resistance

O-ring Abutment Driver



Code	AORD
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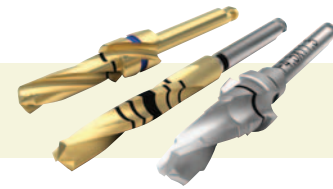
- Special-purpose driver for the O-ring abutment

Dalbo Plus Screw Driver

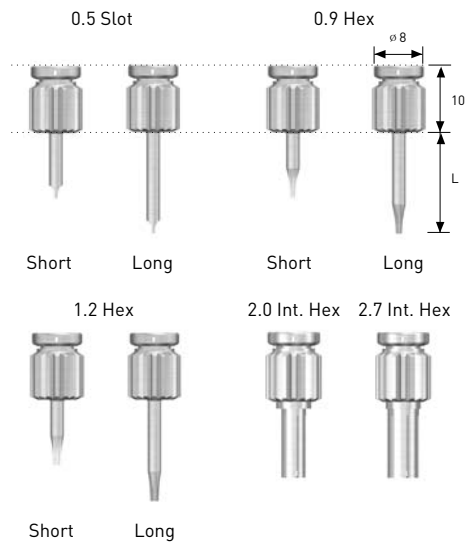


Code	ODSD
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- Use for the adjustment of retention force of a Dalbo plus attachment



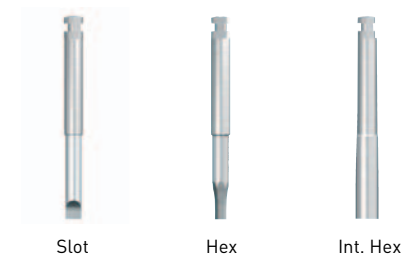
Hand Driver



Type	Length(mm)		Application
	Short	Long	
0.5Slot	ASD05SH	ASD05LH	Cylinder Screw
0.9Hex	AHD09SH	AHD09LH	Cover Screw
1.2Hex	AHD12SH	AHD12LH	Healing Abutment, UCLA, Cemented Abutment Screw, Mount Screw
2.0 Int. Hex	IHD20H		Esthetic Abutment Screw Regular Esthetic-low Abutment Screw, Standard
2.7 Int. Hex	IHD27H		Wide Esthetic-low Abutment Screw

- Manual driver
- Tip holding function (note: excluding Int. Hex Type)

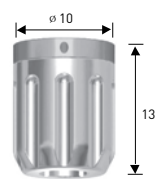
Machine Screw Driver



Type	Length(mm)			Application
	Short	Long	Extra Long	
0.5Slot	AMSD05S	AMSD05L		Cylinder Screw
0.9Hex	AMSD09S	AMSD09L		Cover Screw
1.2Hex	AMSD12S	AMSD12L	AMSD12E	Healing Abutment, UCLA, Cemented Abutment Screw, Mount Screw
2.0Int. Hex	EIHD20			Esthetic Abutment Screw Regular Esthetic-low Abutment Screw, Standard
2.7Int. Hex	EIHD27			Wide Esthetic-low Abutment Screw

- Machine screw driver
- No tip holding function

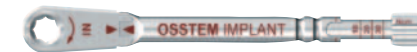
Driver Handle



Code	TIDHC
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- Use by connecting with a torque driver

Torque Wrench



Code	TWMW
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- Use for fixture grafting or screw tightening
- Single tool for 10, 15, 20, 25, and 30 Ncm and unlimited torque
- Too much force beyond the allowable level bends the neck
- The laser marking on the handle denotes the torque figures (10, 15, 20, 25, and 30 Ncm)
- For the application of unlimited torque, grip the body and pull outward prior to using the tool. Afterward, rotate at 90° to secure
- After use, be sure to separate, clean, and sterilize the tools completely

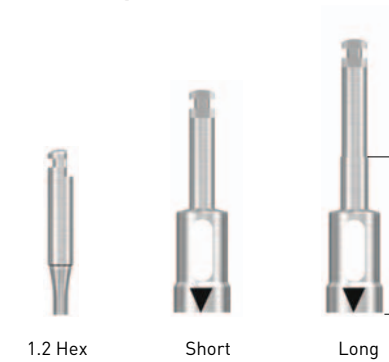
Torque Driver for Torque Wrench



Type	Length(mm)			Application
	Short	Long	Extra Long	
0.5Slot	TRSD05S	TRSD05L	TRSD05E	Cylinder Screw
0.9Hex	TRHD09S	TRHD09L	-	Cover Screw
1.2Hex	TRHD12S	TRHD12L	TRHD12E	Healing Abutment, UCLA, Cemented Abutment Screw, Mount Screw
2.0Int. Hex	TIHD20S	TIHD20L	-	Standard/ Esthetic Abutment Screw, Regular Esthetic-low Abutment Screw
2.7Int. Hex	TIHD27			Wide Esthetic-low Abutment Screw

- Driver for torque wrench connection
- No tip holding function

OSSTEM Torque Driver



Type	Short	Long
L	10	15
1.2 Hex	OTH12S	-
Rigid ø 4.0	OTR40S	OTR40L
Rigid ø 4.5	OTR45S	OTR45L
Rigid ø 5.0	OTR50S	OTR50L
Rigid ø 6.0	OTR60S	OTR60L
Solid	OTS48S	OTS48L
Excellent Solid	OTE48S	OTE48L

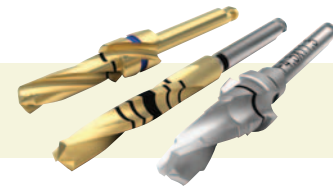
- Processing private Driver for OSSTEM Torque
- The triangle mark is used by aligning with the abutment groove
- Tightening torque : 30Ncm(except 1.2 Hex Type)
- Processing private Solid/Excellent Solid Driver Only ø 4.8 type
- Non connection with hand piece

Removal Tool for Fixture Mount

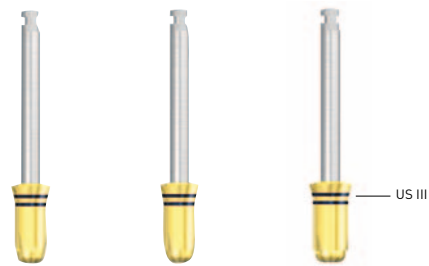


Code	Application
ERFM	US Mini, GS Mini
HRFR	US Regular, SS Regular/Wide, GS Standard
ERFW	US Wide

- When a fixture and the fixture mount are stuck, use after removing the fixture mount screw
- Use after the connection to a driver handle and a torque wrench
- Insert vertically and rotate clockwise



Tapered Fixture Counter Drill



Fixture	Regular	Wide	
Code	TFCD400	TFCD500	TFCD550

- Special-purpose tool for US III fixture
- Use the upper laser marking line for US III; the baseline for the laser marking line may be found at the bottom

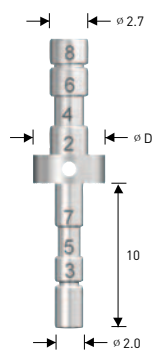
Tapered Fixture Tap



Fixture	Regular	Wide	
Code	OTST40C	OTST50C	OTST55C

- Special-purpose tap for US III fixture
- Use the upper laser marking line for US III; the baseline for the laser marking line may be found at the bottom.

Parallel Pin



Diameter[ϕ]	Code
$\phi 4.0$	APP400
$\phi 5.0$	APP500
$\phi 6.0$	APP600
Full Set	APPS

- Use for checking the direction and location for bone preparation
- Predicts the diameter of an abutment to be secured
- Packing unit: Individual and general set packing

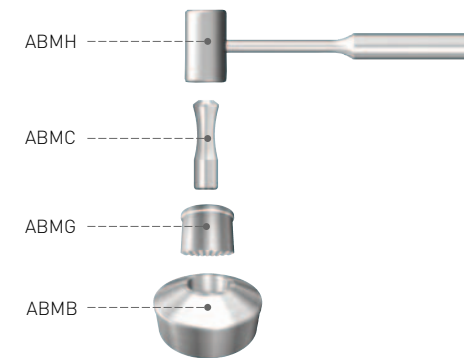
Depth Gauge



Code	ADG

- A : Measurement of drilling length (7-15 mm)
- B : Measurement of gingival height following external fixture grafting

Bone Mill



Code	ABM

Set : ABMH+ABMC+ABMG+ABMB

- Forms particulate bone using the collected autogenous bone
- Packing unit : Bone mill (1 set)/components

Reverse Drill



Drill	Mini	Regular
Code	ARVDMC	ARVDRC

- Use to remove broken or damaged screws at the fixtures.
- Drilling speed : 30-50 rpm
- Do not apply too much force when using a reverse drill.
- Mode : Reverse rotation mode
- Packing unit : Reverse drill

Reverse Tap



Type	Code
For 0.9 Hex	ART09C
For 1.2 Hex	ART12C

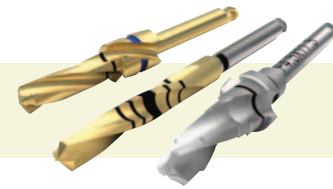
- Use to remove a screw if the hex hole of its head is worn
- Torque : 50 Ncm
- Mode : Reverse rotation mode
- Packing unit : individual and general set packing

Positioning Guide



Width[mm]	Code
2.5	APG201
6	APG202
11	APG203

- Indicates the distance between fixtures
- Use after the first drilling (2.0)



2-2. Surgical Tool for GS

Cortical Drill 3 for GSIII / SSIII / USIII



Spec.	φ 3.5	φ 4.0	φ 4.5	φ 5.0
Code	CD2C35	CD2C40	CD2C45	CD2C50

- Using after making for final drill hole
- Processing exclusive use Drill for fixture diameter
- It is recommend that drilling performs up to under marking line

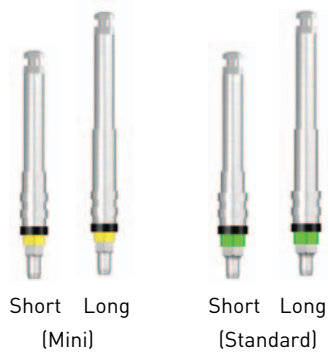
Surgical Dual Tap



Abutment D (φ)		Mini	Standard		
Type	D	φ 3.5	φ 4.0	φ 4.5	φ 5.0
Short	-	OGST40SC	OGST45SC	OGST50SC	
Long		OGST35LC	OGST40LC	-	-

- Use for dense bone and form screw thread-shaped fixtures
- Use a torque wrench after connecting to the engine or mount extension
- TiN coating improves anti-corrosion and wear resistance

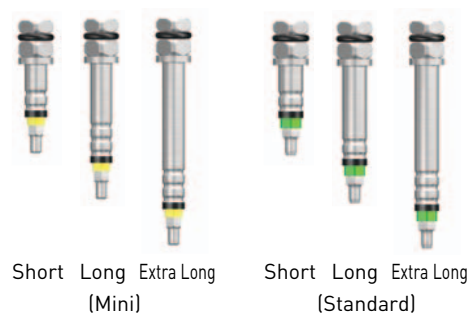
NoMount Driver



	Mini	Standard
Short	GSNMD32S	GSNMD35S
Long	GSNMD32L	GSNMD35L

- To enable the simultaneous measurement of gingival height upon treatment, grooves and laser markings are indicated at 1-mm (1-6 mm) intervals
- Stopper designed for the prevention of fracture of the holding part and occurrence of foreign matter such as blood stain during the surgery

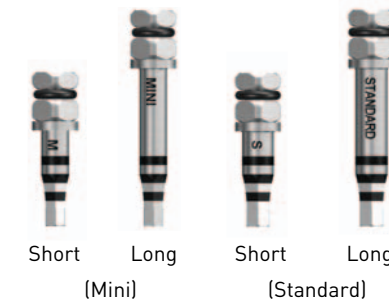
NoMount Torque Driver



Type	Mini	Standard
Short	GSNMT32S	GSNMT35S
Long	GSNMT32L	GSNMT35L
Extra Long	GSNMT32E	GSNMT35E

- To enable the simultaneous measurement of gingival height upon treatment, grooves and laser markings are indicated at 1-mm (1-6 mm) intervals
- Stopper designed for the prevention of fracture of the holding part and occurrence of foreign matter such as blood stain during the surgery

Fixture Driver



	Mini	Standard
Short	GSMFDS	GSRFDS
Long	GSMFDL	GSRFDL
Extra Long	GSMFDE	GSRFDE

- Fixture connection
- Use to place or remove a fixture after the separation of the mount
- Enables 150 Ncm torque or more
- GS II Mini Fixture Driver : TiN Coating
- GS II Standard Fixture Driver : WCC Coating

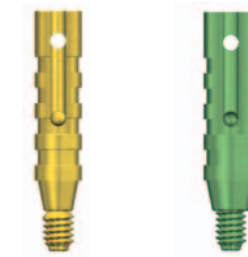
GS Tissue Height Gauge



Code	GTHGS
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- Measurement gingival height for selecting optimal abutment
- Non gloss treatment for improving identification

Path probe



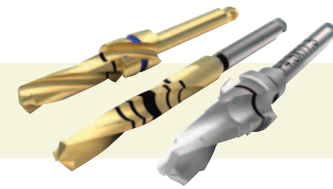
	Mini	Standard
Short	GIPAP-3016A	GIPAP-3516A

- After GS NoMount driver, confirmation path and measurement gingival height
- For mini : yellow color
- For standard : green color

GS Bone Profiler

Connection	Healing Abutment Diameter	Bone Profiler 사양		Guide Screw	
		Image	Code	Image	Code
Mini & Standard	φ 4.5		GSBP45	Mini Connection	
	φ 5.5		GSBP55		
	φ 6.5		GSBP75	Standard Connection	
	φ 7.5				

- Use to remove the bone around the fixture during the first or second surgery
- The guide screw protects the morse taper of the fixtures
- Packing Unit : Bone Profiler + Guide Screw



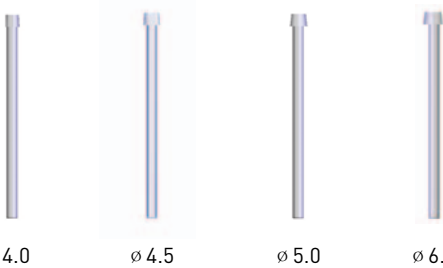
Rigid Outer Driver



Spec.	Mini	Standard			
Abutment D(φ)	φ 4.0	φ 4.0	φ 4.5	φ 5.0	φ 6.0
Short	ORDMS	ORD45S	ORDRS	ORDWS	
Long	ORDML	ORD45L	ORDRL	ORDWL	

- Special-purpose driver for rigid abutment
- Torque : 30Ncm

Reamer Tip



Abutment D (φ)	φ 4.0	φ 4.5	φ 5.0	φ 6.0
Code	GSRFRT400	GSRFRT450	GSRFRT500	GSRFRT600

- When fabricating the prosthesis using a Rigid plastic coping, it is used for margin contact adjustment.

Transfer Abutment Separate Tool

Driver



Body

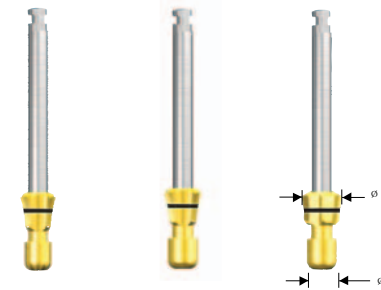


Type	Code
Driver	TASD
Body	TASB
Set	TAST

- Use to remove a non-Hex transfer abutment stuck in fixtures due to morse taper contact
- Mini-types are intended for the body tip ; standard types are commonly used by inserting into a double-layer groove
- After removing the abutment screws, insert the separated tool body into the internal hole of the abutment and tighten the driver clockwise. Once the body and the abutment are aligned, they can be separated easily
In case separation is difficult, try after the connection of a torque wrench to the driver

2-3. Surgical Tool for SS

Long Shank Countersink



φ A	φ B	Regular	Wide	Wide Platform
3.5	4.8	ASCD350C	-	-
4.2	4.8	-	ASCD420C	-
4.2	6.0	-	-	ASCDW420C

- Form fixture platform
- Cut down to the bottom of the laser marking

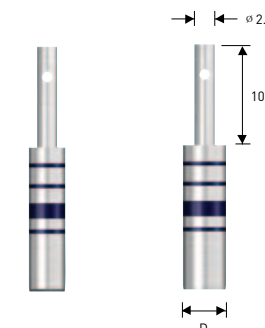
Surgical Tap for SS II



Platform	φ 4.8	φ 4.8	φ 6.0
Type D	φ 4.1	φ 4.8	
Short	OSST41SC	OSST48SC	
Long	OSST41LC	OSST48LC	

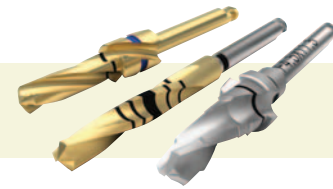
- Use for dense bone and form screw thread-shaped fixtures
- Use a torque wrench after connecting to the engine or mount extension
- TiN coating improves anti-corrosion and wear resistance

Depth Gauge Pin for SS II



Diameter(φ)	φ 3.6	φ 4.3
Code	ASDG360	ASDG430

- Measure the depth after the final drilling



NoMount Driver



Length	Type	Regular	Wide
Short		SSNMD39RS	
Long		SSNMD39RL	

- To enable the simultaneous measurement of gingival height upon treatment, grooves and laser markings are indicated at 1-mm intervals (1-2 mm)
- Since the shape is similar to that of the internal fixture driver, even a high torque does not change the inside of the fixture
- Stopper designed for the prevention of fracture of the holding part and occurrence of foreign matter such as blood stain during surgery

NoMount Torque Driver



Type	Regular	Wide
Short	SSNMT39S	
Long	SSNMT39L	

- To enable the simultaneous measurement of gingival height upon treatment, grooves and laser markings are indicated at 1-mm intervals (1-2 mm)
- Stopper designed for the prevention of fracture of the holding part and occurrence of foreign matter such as blood stain during surgery

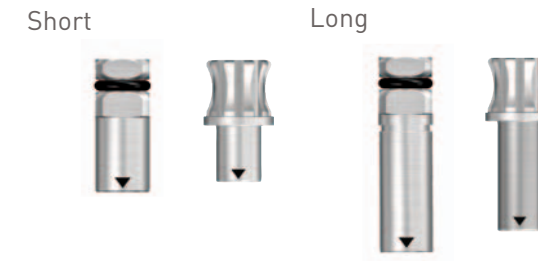
Fixture Driver



Platform(φ)	Regular	Wide
Short	SSRFDS	
Long	SSRFDL	

- The laser marking is designed for checking during the connection of a fixture
- Use for removal following fixture grafting and mount separation
- 150 Ncm torque is applicable

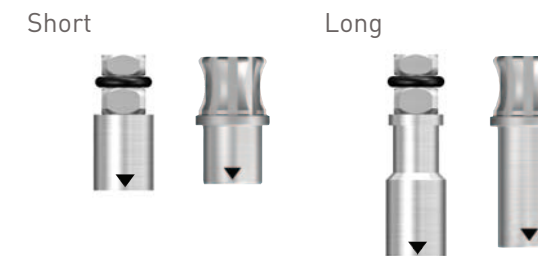
Solid Abutment Driver



Length	Type	Square	Round
Short		SDSS	SDRS
Long		SDSL	SDRL

- Solid abutment private driver
- The triangle mark is used by aligning with the abutment groove
- Tightening torque : 30Ncm

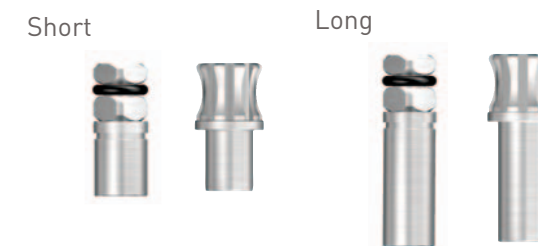
Excellent Solid Abutment Driver



Length	Type	Square	Round
Short		ESDSS	ESDRS
Long		ESDSL	ESDRL

- Excellent solid abutment private driver
- The triangle mark is used by aligning with the abutment groove
- Tightening torque : 30Ncm

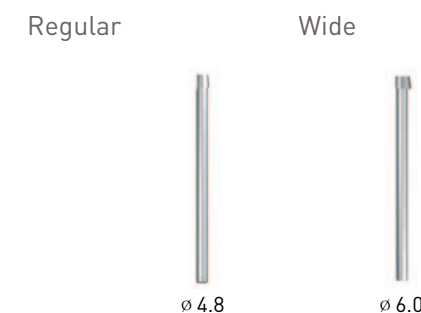
Octa Abutment Driver



Length	Type	Square	Round
Short		ODSS	ODRS
Long		ODSL	ODRL

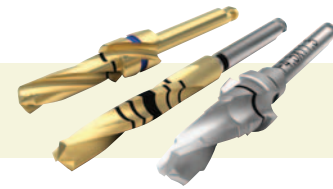
- Octa abutment private driver
- Tightening torque : 30Ncm

Reamer Tip



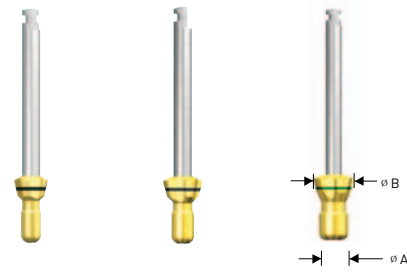
Abutment D (φ)	φ 4.8	φ 6.0
Solid	FRTS480	FRTE480
Excellent Solid	FRTE480	FRTE600

- Combined use of Solid φ 6.0 and Excellent Solid φ 4.8



2-4. Surgical Tool for US

Long Shank Countersink



ø A	ø B	Mini	Regular	Wide
2.6	3.5	ACD330C	-	-
2.9	4.1	-	ACD375C	-
4.2	5.1	-	-	ACD500C

- Forms space for the fixture flange
- Cut down to the bottom of the laser marking

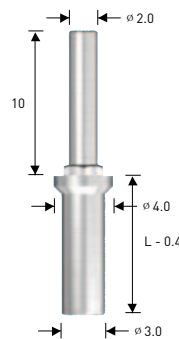
Straight Surgical Tap



Type	ø	3.3	3.75	4.0	5.0
Short		-	OUST37SC	OUST40SC	OUST50SC
Long		OUST33LC	OUST37LC	OUST40LC	-

- Use for dense bone and form screw thread-shaped fixtures
- Use as a torque after connecting to the engine or a simple mount extension
- TiN coating improves anti-corrosion and wear resistance

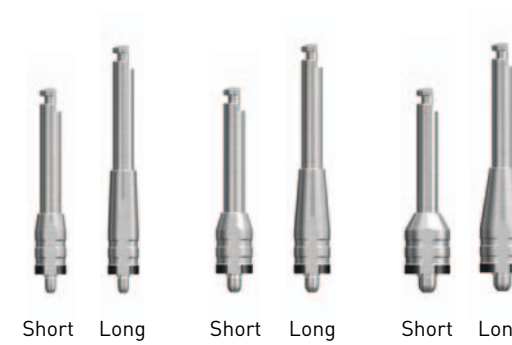
Depth Gauge Pin



Length(mm)	Code
7	ADP607
8.5	ADP608
10	ADP610
11.5	ADP611
13	ADP613
15	ADP615
Full Set	ADP600

- Convenient top design facilitates depth drilling
- Packing unit : Individual and general set packing

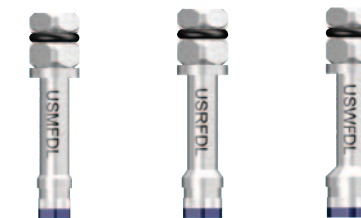
NoMount Driver



Length	Type	Mini	Regular	Wide
Short		USNMD35MS	USNMD41RS	USNMD51WS
Long		USNMD35ML	USNMD41RL	USNMD51WL

- To enable the simultaneous measurement of gingival height upon treatment, grooves and laser markings are indicated at 1-mm (1-6 mm) intervals
- Stopper designed for the prevention of fracture of the holding part and occurrence of foreign matter such as blood stain during the surgery

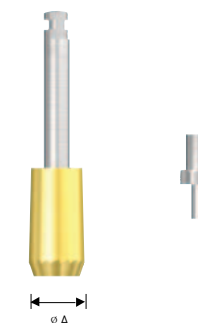
Fixture Driver



Platform(ø)	Mini	Regular	Wide
Code	USMFDL	USRFDL	USWFDL

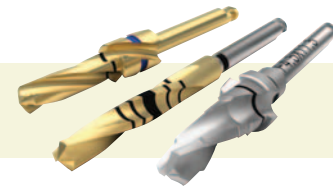
- The laser marking is designed for easy identification during the connection of fixtures
- Use for removal following fixture grafting and mount separation

Bone Profiler



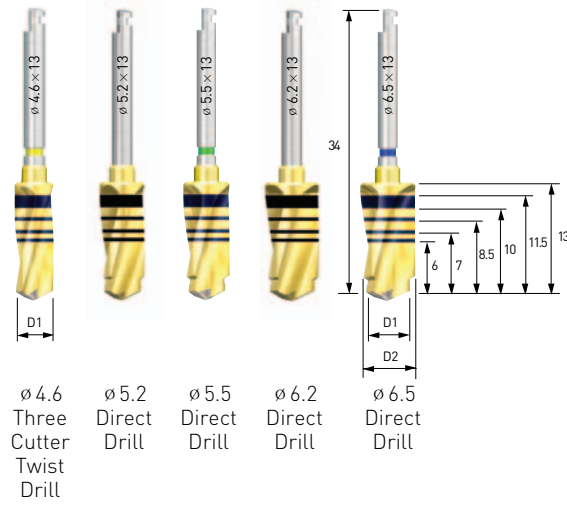
ø A	Platform(ø)			
	Mini	Regular	Wide	T-type
4	ABPM400C	-	-	-
5	ABPM500C	ABPR500C	-	-
6	-	ABPR600C	ABPW600C	TBPW600C
7	-	-	ABPW700C	-

- Use to remove the bone generated around the cover screws during the second surgery
- After removing the cover screws, connect the guide screw to the fixtures and use for the angle compensation of the healing abutments
- The guide screw protects the hex of the fixtures
- TiN coating improves anti-corrosion and wear resistance



2-5. Surgical Tool for Ultra-wide

Drill



Name	D1	D2	Code
∅ 4.6 Three Cutter Drill	∅ 4.6	-	3D4613FNLC
∅ 5.2 Direct Drill	∅ 4.6	∅ 5.2	3D5213FNLC
∅ 5.5 Direct Drill	∅ 4.6	∅ 5.5	3D5513FNLC
∅ 6.2 Direct Drill	∅ 5.5	∅ 6.2	3D6213FNLC
∅ 6.5 Direct Drill	∅ 5.5	∅ 6.5	3D6513FNLC

- Direct drill: 2-stepped drill equipped with both pilot and twist drill function
 1. Enables final drilling without pilot drilling
 2. Enhancement of initial fixation in the extract socket by decreasing the dead space at the apex area

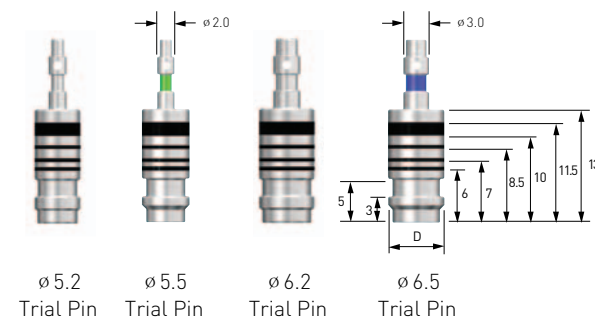
Cortical Drill



Name	Code
F6.0 Cortical Drill	CD4C60
F7.0 Cortical Drill	CD4C70

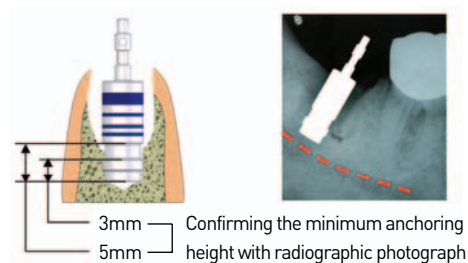
- Use after forming a final drill hole in hard bone
- It is recommend that drilling performs up to marking line

Trial Pin

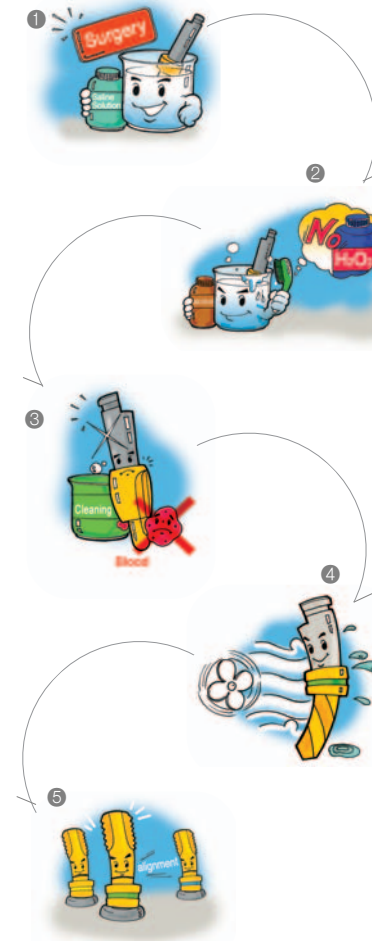


Diameter(D)	∅ 5.2	∅ 5.5	∅ 6.2	∅ 6.5
Code	UWFTP52	UWFTP55	UWFTP62	UWFTP65

- Used to verify the depth and width of the extraction socket and check the drilling depth after the final drilling
- Verify the diameter of the interior of the failed implant socket.
- Used to verify the drilling path



3. How to maintain KIT



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

② After the surgery, wash all tools used in the surgery in alcohol. **Caution** : Do NOT use hydrogen peroxide. Exposure to hydrogen peroxide may cause discoloration of the laser marking and/or TiN coating.

③ Wash the tool with distilled water or under running water until all blood stains and/or foreign objects are removed.

④ Remove moisture completely with dry cloth or a warm fan.

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

⑥ After drying the Kit in the autoclave for 15 minutes at 132°C, store the Kit at room temperature.

Precautions) Separate, wash and store all tools used immediately after the surgery. It is advised to disinfect the Hanaro Kit again prior to the surgery (at 132°C for 15 minutes). Although the Hanaro Kit is covered under the product warranty for one year after opening the Kit, all drills and drivers may be used up to 50 times only.

4. Surgical Procedure

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

Conditions of the Patient

- Proper bone substance and amount prior to treatment
- Detailed health status
- Amount of smoking and/or drinking
- Masticatory pattern and habit
- Status of oral hygiene
- Psychological state
- Patient's knowledge of implant surgery

Treatment Plan

Explain the patient's problems in detail that are learned through the dental check-up and X-ray examination, and explain the treatment plan. If there are several treatment choices, explain and discuss each treatment procedure and its pros and cons before determining the treatment plan.

Medical Diagnosis

The medical diagnosis for an implant treatment is almost identical to that for a general extraction procedure or dental surgery. It is imperative for the surgeon to check the patient's medical record. The patient sometimes is not aware of his or her own disease; therefore, even a slight suspicion must be followed up by necessary clinical tests, and any abnormal sign must be consulted with a physician.

Pay Particular Attention to the Following during an Implant Procedure

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

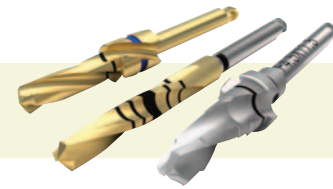


III. Surgical procedure

1. GS/SS/US III Fixture

- Use for Taper Drill
- Use for Straight Drill

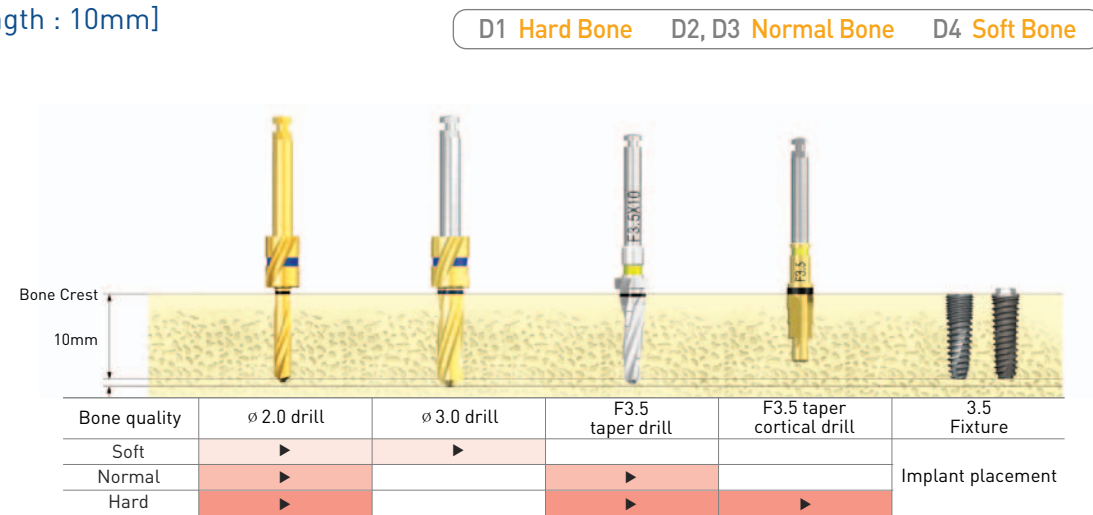




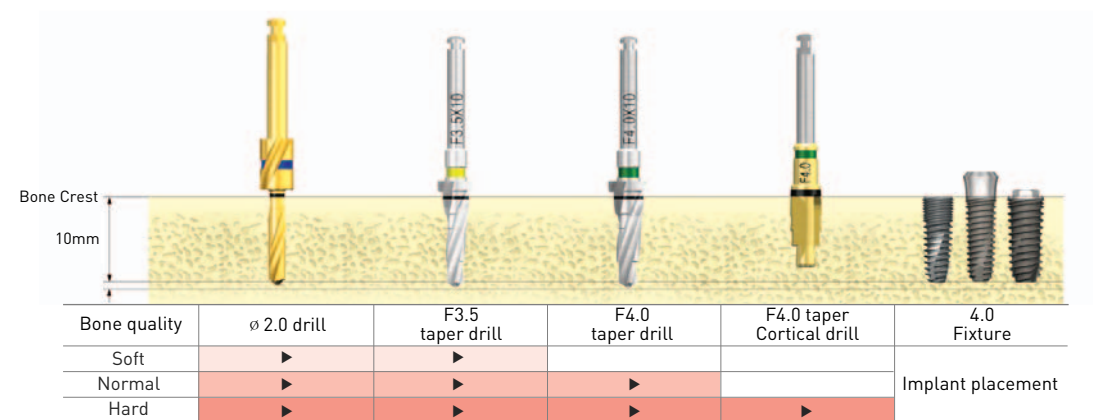
1. GS/SS/US III Fixture

- Use for Taper Drill

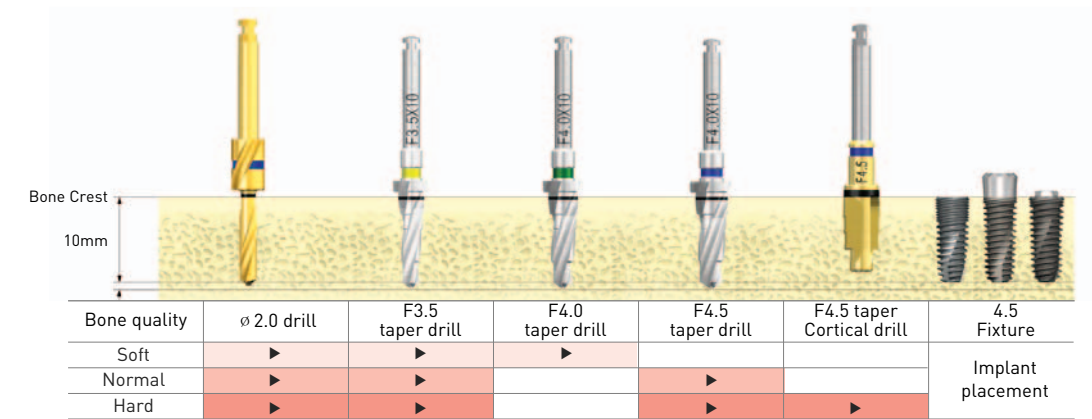
∅ 3.5 fixture [Length : 10mm]



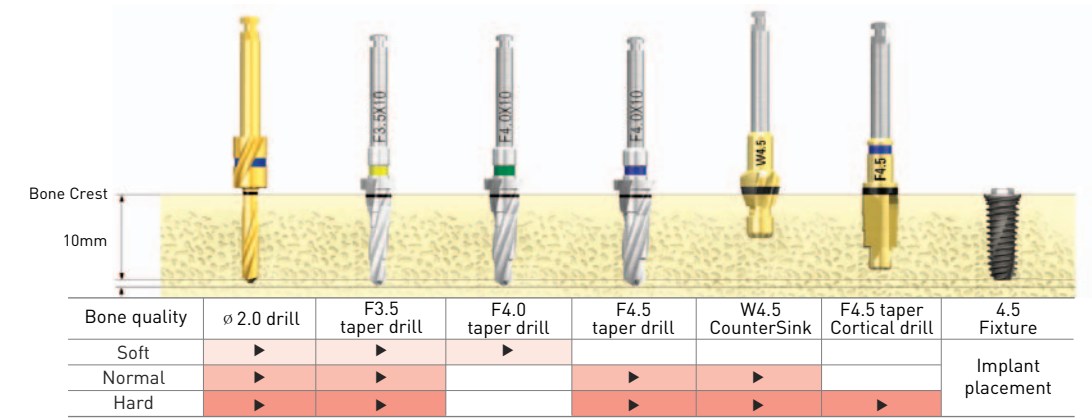
∅ 4.0 fixture [length : 10mm]



∅ 4.5 fixture [length : 10mm]

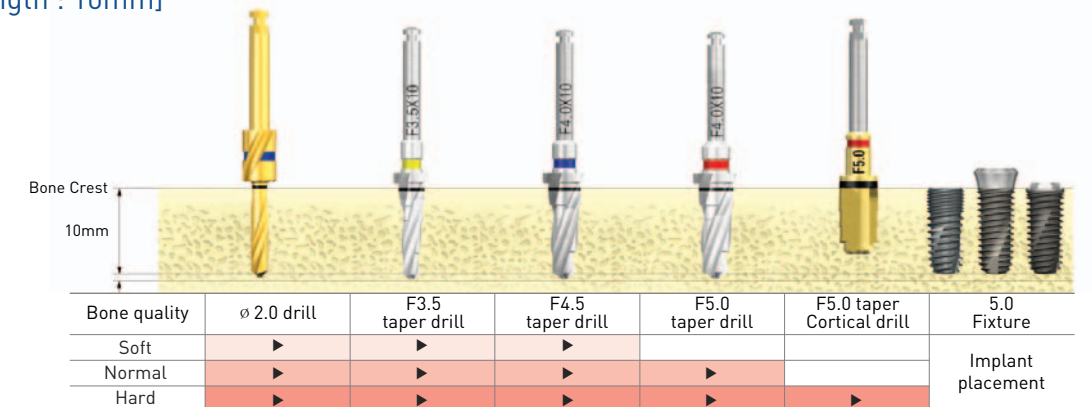


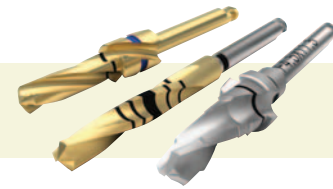
∅ 4.5 USIII fixture-Wide PS [length : 10mm]



* CounterSink Code: USSCS45W, Drilling Speed - Hard Bone : 800rpm, Normal Bone : 300rpm

∅ 5.0 fixture [length : 10mm]





∅ 4.0mm GS III Surgical Procedure (for Taper KIT user)

The following illustrates how to insert 10mm fixtures (GS III ∅ 4.0mm) into hard bones.

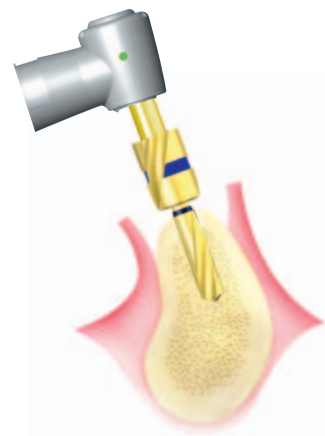
For safe and successful fixture placement, read carefully and follow this guide.

1. Guide drill



- Using a lance drill at 1500rpm, pierce the cortical bone and determine the fixture position.
- The thickness and density of the cortical bone can be estimated during drilling.

2. ∅ 2.0mm twist drill



- Use the same length drill as the fixture code.
- Drill to the bottom of the laser marking. If proximal teeth are in the way, use the drill extension.
- If a long stopper drill is used in the posterior, a drill extension may not be necessary. In the case of edentulous jaw or no proximal teeth, a short stopper drill will be useful.
- Set the drill speed at 1,500rpm. Accompany the drilling with irrigation and pumping in order to keep the heat down from friction. Be aware that faster drill speeds will produce more heat.
- In case the drill is stuck in the bone during the procedure, reverse the engine rotation to take the drill out and try drilling again.

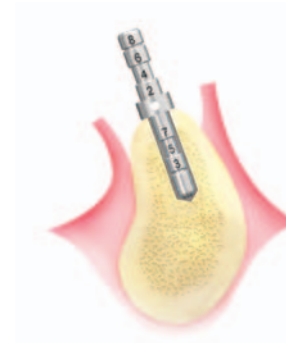
3. Depth gauge



- Check the drill depth and floor condition after ∅ 2.0mm drilling.

※ The lower outline serves as the baseline of the laser marking. To distinguish the lengths clearly, the 10mm and 11.5mm levels are marked in bold line.

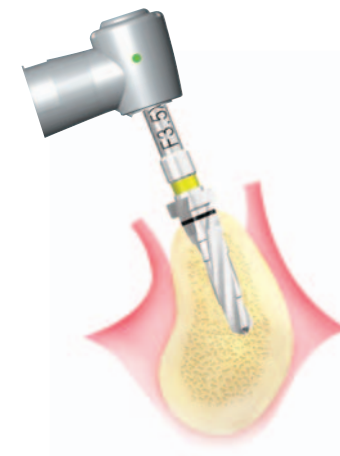
4. Parallel pin



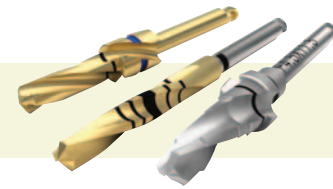
- Check orientation.
- If applicable, take a radiograph to verify correct direction.
- In the middle part, the diameters become ∅4, ∅5, and ∅6. Therefore, the insertion distance of the fixture and collar diameter of the abutment to be connected can be estimated.

※ Note: Insert dental floss into the hole in the middle part to prevent the patient from swallowing the pin.

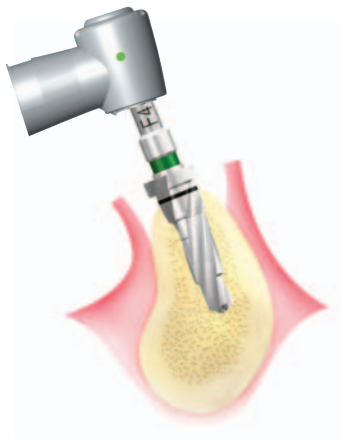
5. F3.5X10mm taper drill



- Use the same length and diameter drill as the fixture code.
- Drill to the bottom of the laser marking. If proximal teeth are in the way, use the drill extension.
- Set the drill speed at between 800rpm and 1,200rpm, depending on the bone substance. (Recommended : 800rpm)
- Accompany the drilling with irrigation in order to keep the heat down from friction.



6. F4.0X10mm taper drill



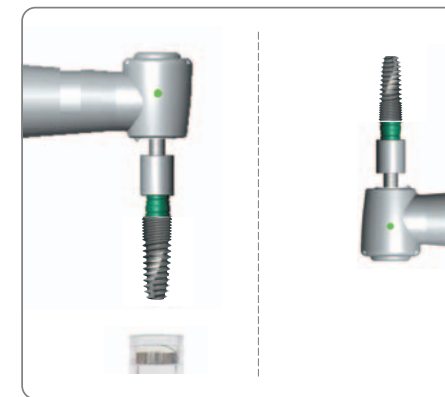
- Use the same length and diameter drill as the fixture code.
- Drill to the bottom of the laser marking. If proximal teeth are in the way, use the drill extension.
- Set the drill speed at between 800rpm and 1,200rpm, depending on the bone substance. (Recommended : 800rpm)
- Accompany the drilling with irrigation in order to keep the heat down from friction.

7. F4.0 taper cortical drill



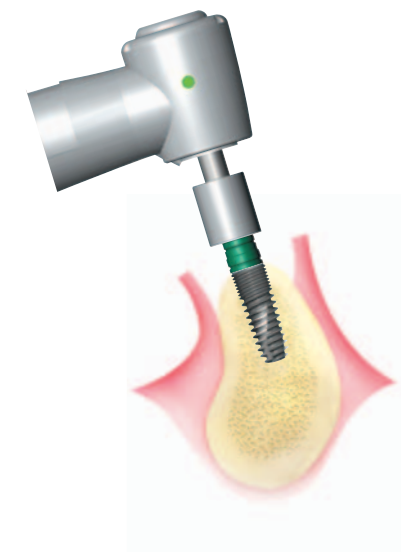
- Use the same application drill as the fixture code.
- Drill to the bottom of the laser marking. If proximal teeth are in the way, use the drill extension.
Set the drill speed at 800rpm.
- It is used only for very hard bone (D1).
- Accompany the drilling with irrigation in order to keep the heat down from friction.

8. Pick up the fixture from the ampoule



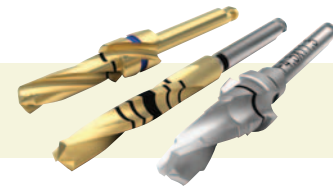
- For the case of Pre-mounted fixture package, connect the mount driver to the fixture mount and pick up the fixture.
- To avoid dropping position the fixture upward when moving to the oral cavity.

9. Ø 4.0 Fixture placement

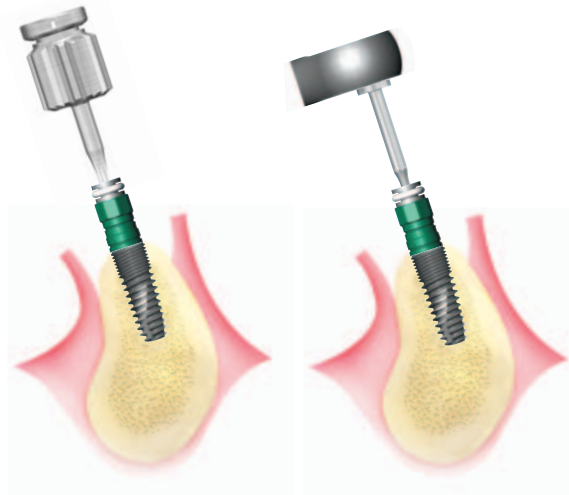


- After setting the maximum torque of engine to 40Ncm, start inserting the fixture. If the engine is stopped, connect the fixture mount to the Mount extension and place fixture to final depth using the Ratchet wrench.
- Do not to apply too much torque when inserting the fixture with the Ratchet wrench. If a squeaking noise is heard from the bone while inserting the fixture, take the fixture out and try inserting again.

Caution: If the insertion torque of 50Ncm or more is applied, bone necrosis may occur, or the mount may not separate, due to too much pressure. Never use the hand piece as the Ratchet wrench after the hand piece is stopped.



10. Separating the Simple mount



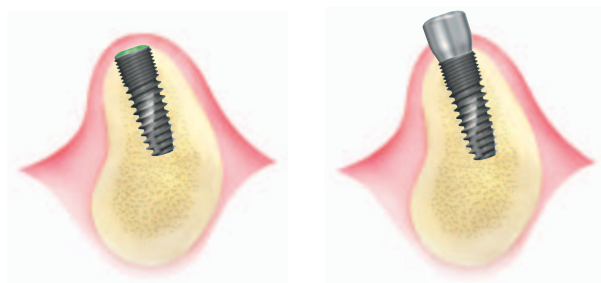
- First, use the 1.2 Hex hand driver to loosen the mount screw. If the screw is undetachable, use the 1.2 Hex torque driver with the Ratchet wrench or the 1.2 Hex machine driver with a hand piece.
- When the primary stability of the fixture is poor and it tends to rotate back, hold the mount octa with an open wrench and loosen the mount screw.
- If the mount cannot be detached after the mount screw is separated, use the Removal tool.

11. Connecting the Cover screw



- Pick up the Cover screw on the bottom of the fixture ampoule with the 1.2 Hex hand driver. In this case, applying ophthalmic ointment to the driver can improve its holding strength.
- Make sure that the Cover screw is positioned upward to prevent it from falling and move to the oral cavity. Take caution to prevent the patient from swallowing the Cover screw.
- Fix the Cover screw with a force of 5~8Ncm.

12. Suturing

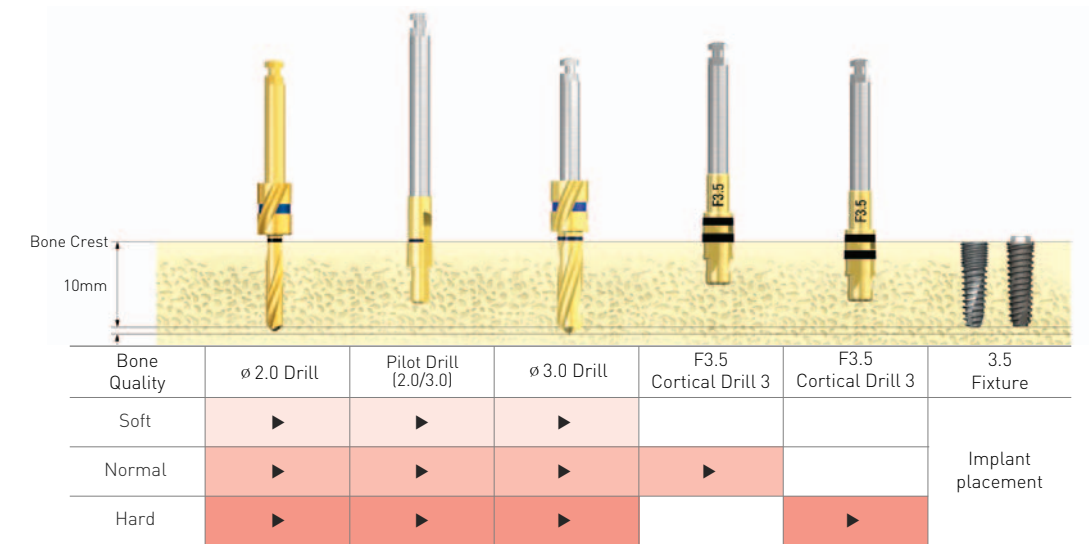


- After fastening the Cover screw, suture the gingiva.
- For the one-stage surgery, connect the healing abutment before suturing the gingiva.

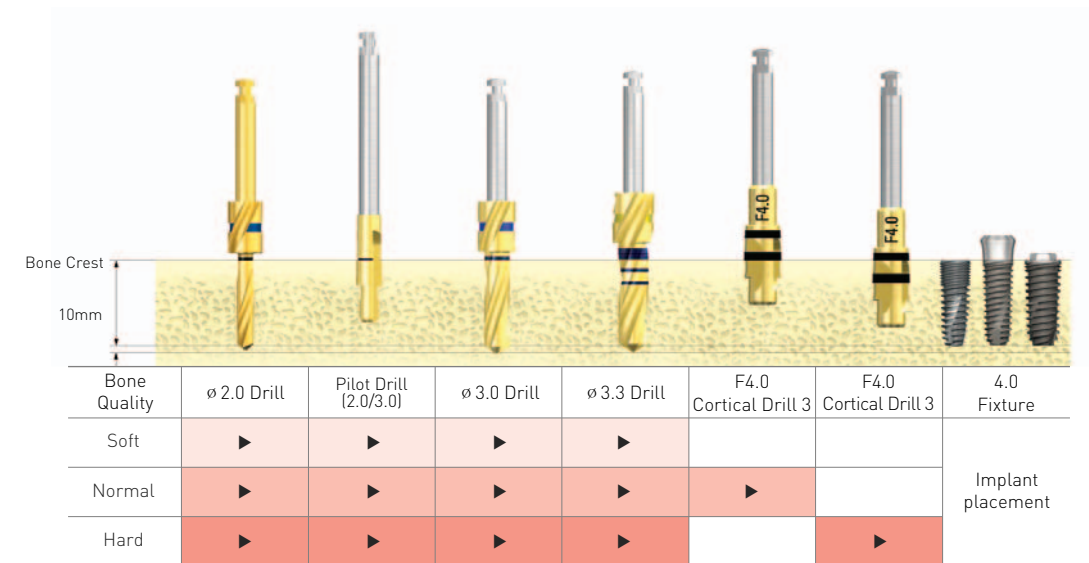
- Use for Straight Drill

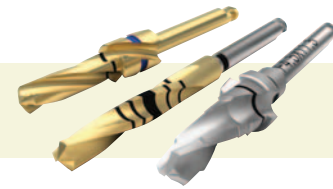
∅ 3.5 fixture [Length : 10mm]

D1 Hard Bone D2, D3 Normal Bone D4 Soft Bone



∅ 4.0 fixture [length : 10mm]





∅ 4.5 fixture [length : 10mm]

Bone Quality	∅ 2.0 Drill	Pilot Drill (2.0/3.0)	∅ 3.0 Drill	Pilot Drill (3.0/3.8)	∅ 3.8 Drill	F4.5 Cortical Drill 3	F4.5 Cortical Drill 3	4.5 Fixture
Soft	▶	▶	▶	▶	▶			Implant placement
Normal	▶	▶	▶	▶	▶	▶		
Hard	▶	▶	▶	▶	▶		▶	

∅ 4.5 USIII fixture-Wide PS [length : 10mm]

Bone Quality	∅ 2.0 Drill	Pilot Drill (2.0/3.0)	∅ 3.0 Drill	Pilot Drill (3.0/3.8)	∅ 3.8 Drill	W4.5 CounterSink	F4.5 Cortical Drill 3	F4.5 Cortical Drill 3	4.5 Fixture
Soft	▶	▶	▶	▶	▶				Implant placement
Normal	▶	▶	▶	▶	▶	▶	▶		
Hard	▶	▶	▶	▶	▶	▶		▶	

※ CounterSink Code: USSCS45W, Drilling Speed - Hard Bone : 800rpm, Normal Bone : 300rpm

∅ 5.0 fixture [length : 10mm]

Bone Quality	∅ 2.0 Drill	Pilot Drill (2.0/3.0)	∅ 3.0 Drill	Pilot Drill (3.0/3.8)	∅ 3.8 Drill	∅ 4.3 Drill	F5.0 Cortical Drill 3	F5.0 Cortical Drill 3	5.0 Fixture
Soft	▶	▶	▶	▶	▶	▶			Implant placement
Normal	▶	▶	▶	▶	▶	▶	▶		
Hard	▶	▶	▶	▶	▶	▶		▶	

∅ 4.0mm GS III Surgical Procedure (for Standard KIT & Taper mini KIT user)

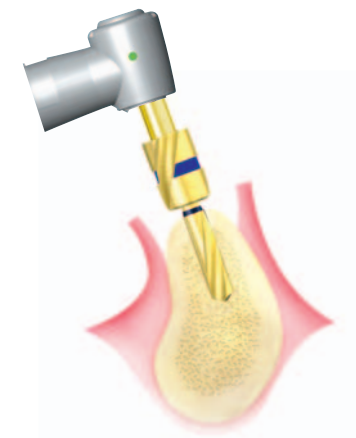
The following illustrates how to insert 10mm fixture (GS III ∅ 4.0mm) into hard bones. For safe and successful placement, read carefully and follow this guide.

1. Guide drill

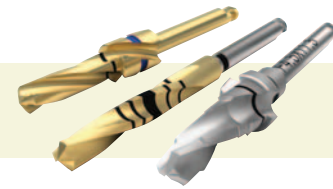


- Using a lance drill at 1500rpm, pierce the cortical bone and determine the fixture position.
- The thickness and density of the cortical bone can be estimated during drilling.

2. ∅ 2.0mm twist drill



- Use the same length drill as the fixture code.
- Drill to the bottom of the laser marking. If proximal teeth are in the way, use the drill extension.
- If a long stopper drill is used in the posterior, a drill extension may not be necessary. In the case of edentulous jaw or no proximal teeth, a short stopper drill will be useful.
- Set the drill speed at 1,500rpm. Accompany the drilling with irrigation and pumping in order to keep the heat down from friction. Be aware that faster drill speeds will produce more heat.
- In case the drill is stuck in the bone during the procedure, reverse the engine rotation to take the drill out and try drilling again.



3. Depth gauge



- Check the drill depth and floor condition after \varnothing 2.0mm drilling.
- ※ The lower outline serves as the baseline of the laser marking.
To distinguish the lengths clearly, the 10mm and 11.5mm levels are marked in bold line.

4. Parallel pin



- Check orientation.
- If applicable, take a radiograph to verify correct direction.
- In the middle part, the diameters become \varnothing 4, \varnothing 5, and \varnothing 6. Therefore, the insertion distance of the fixture and collar diameter of the abutment to be connected can be estimated.
- ※ Note: Insert dental floss into the hole in the middle part to prevent the patient from swallowing the pin.

5. \varnothing 2.0/ \varnothing 3.0 pilot drill



- Use \varnothing 2.0/ \varnothing 3.0 Pilot drill at 800rpm.
- The Pilot drill is used to change the path of the hole made by previous drilling or create the path of the next drilling by expanding the cortical bone.
- Drill up to the laser marking line.

6. \varnothing 3.0 twist drill



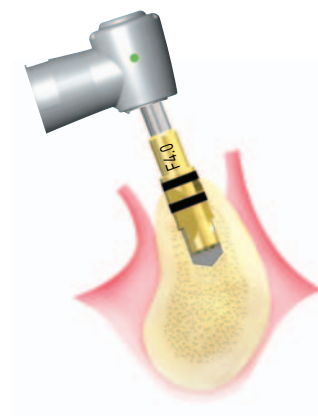
- The \varnothing 3.0 drill is used for drilling in the intermediate step.
- The lengths of the drill, drilling depth, rotating speed, irrigation and pumping motion are identical to those for the \varnothing 2.0 drilling.

7. \varnothing 3.3 marking drill

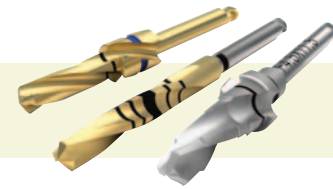


- Drill up to the lower outline of the thick laser marking line.
- Since the final drills in the Standard KIT consist of marking drills (L: 11.5 mm, 15 mm), comply with the marking line that matches the length of the fixture.
- The lengths of the drill, drilling depth, rotating speed, irrigation and pumping motion are identical to those for the \varnothing 2.0 drilling.

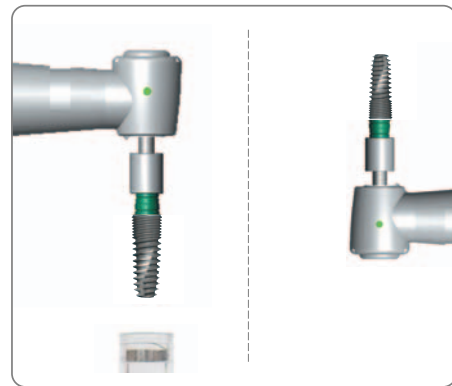
8. Cortical drill 3



- Use Cortical Drill 3 at 800rpm.
- Use the same application drill as the fixture code.
- Use after forming a final straight drill hole like picture on in hard bone.
- Under line is used on the normal bone, upper line is used on the hard bone.

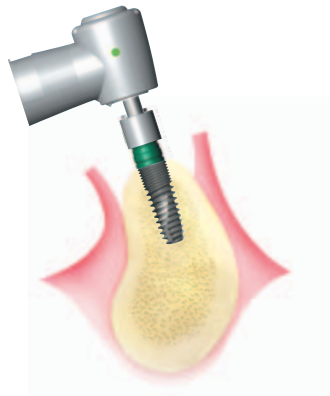


9. Pick up the fixture from the ampoule



- For the case of Pre-mounted fixture package, connect the mount driver to the fixture mount and pick up the fixture.
- To avoid dropping position the fixture upward when moving to the oral cavity.

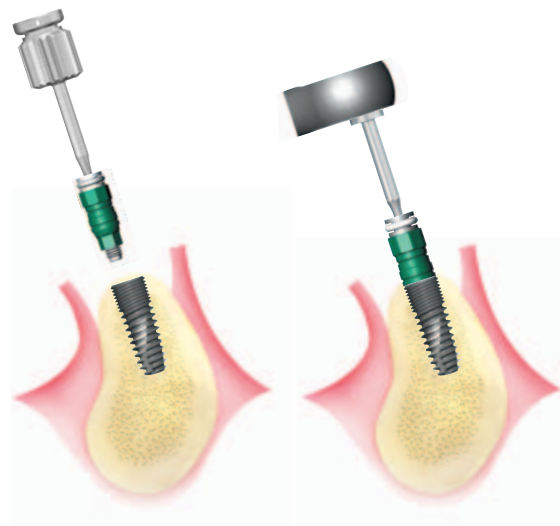
10. Ø 4.0 Fixture placement



- After setting the maximum torque of engine to 40Ncm, start inserting the fixture. If the engine is stopped, connect the fixture mount to the Mount extension and place fixture to final depth using the Ratchet wrench.
- Do not to apply too much torque when inserting the fixture with the Ratchet wrench. If a squeaking noise is heard from the bone while inserting the fixture, take the fixture out and try inserting again.

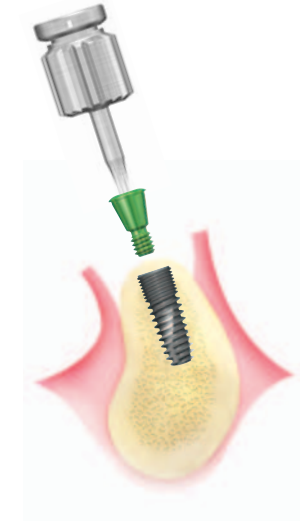
※ Note: If the insertion torque of 50Ncm or more is applied, bone necrosis may occur, or the mount may not separate, due to too much pressure. Never use the hand piece as the Ratchet wrench after the hand piece is stopped.

11. Fixture mount



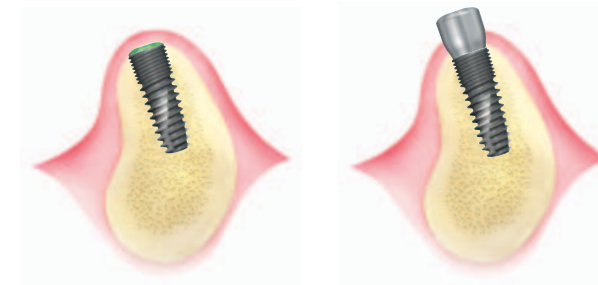
- First, use the 1.2 Hex hand driver to loosen the mount screw. If the screw is undetachable, use the 1.2 Hex torque driver with the Ratchet wrench or the 1.2 Hex machine driver with a hand piece.
- When the primary stability of the fixture is poor and it tends to rotate back, hold the mount octa with an open wrench and loosen the mount screw.
- If the mount cannot be detached after the mount screw is separated, use the Removal tool.

12. Connecting the cover screw



- Pick up the Cover screw on the bottom of the fixture ampoule with the 1.2 Hex hand driver. In this case, applying ophthalmic ointment to the driver can improve its holding strength.
- Make sure that the Cover screw is positioned upward to prevent it from falling and move to the oral cavity. Take caution to prevent the patient from swallowing the Cover screw.
- Fix the Cover screw with a force of 5-8Ncm.

13. Suturing

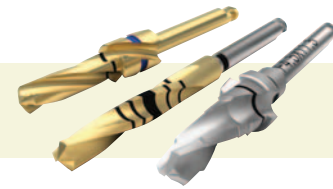
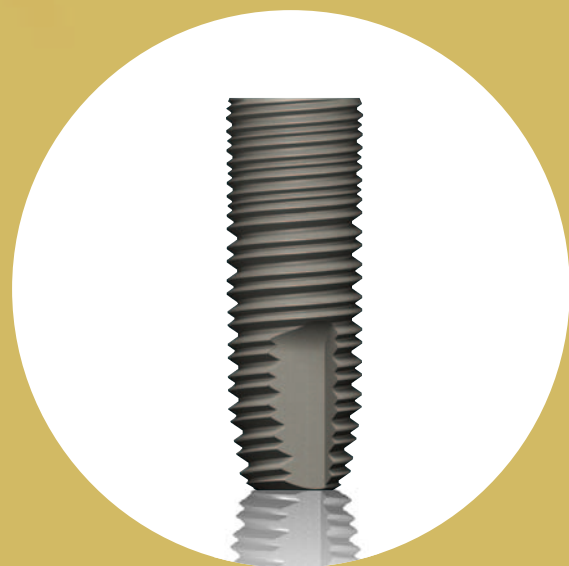


- After fastening the Cover screw, suture the gingiva.
- For the one-stage surgery, connect the healing abutment before suturing the gingiva.



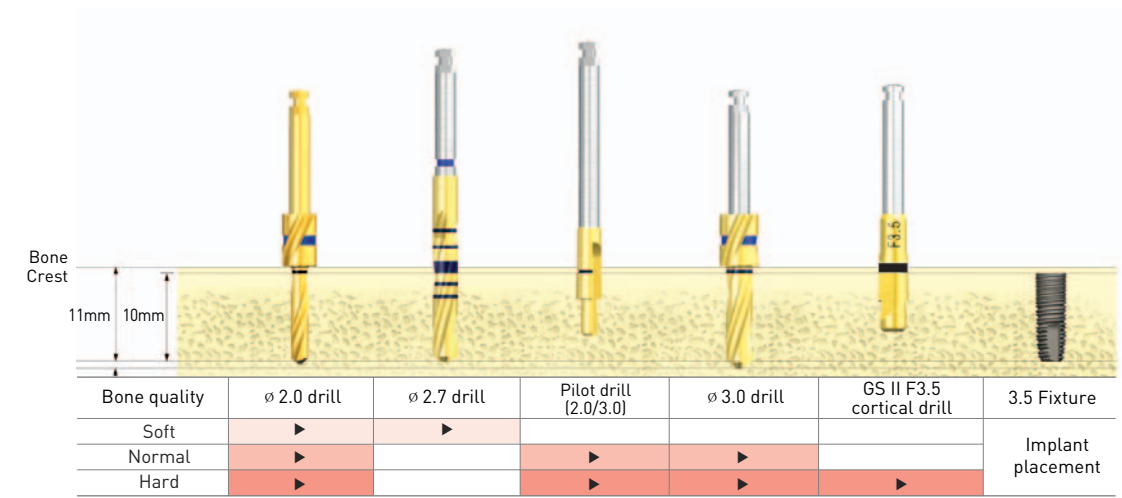
III. Surgical procedure

2. GS II Fixture

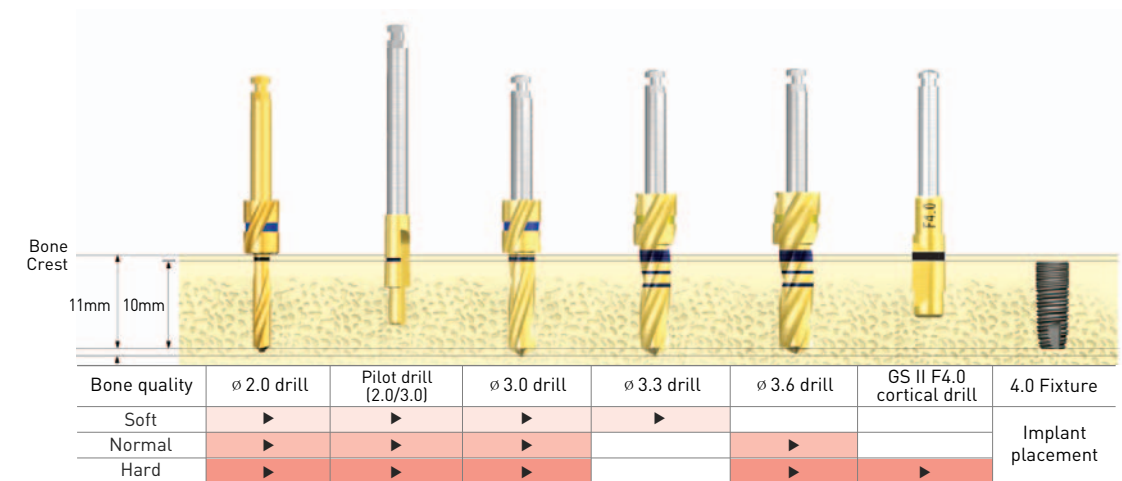


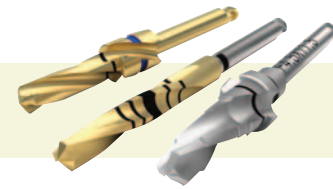
∅ 3.5 fixture [Length : 10mm]

D1 Hard Bone D2, D3 Normal Bone D4 Soft Bone



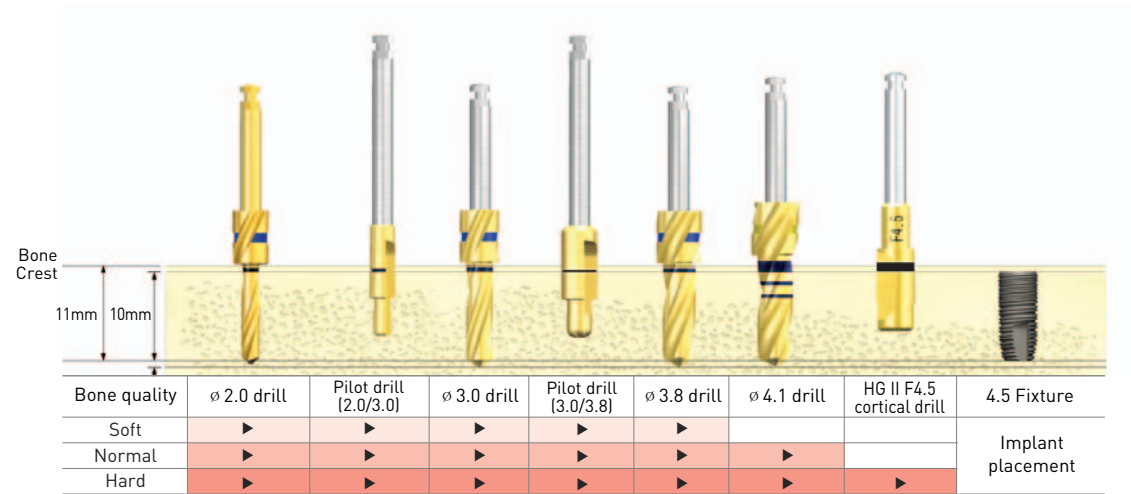
∅ 4.0 fixture [Length : 10mm]



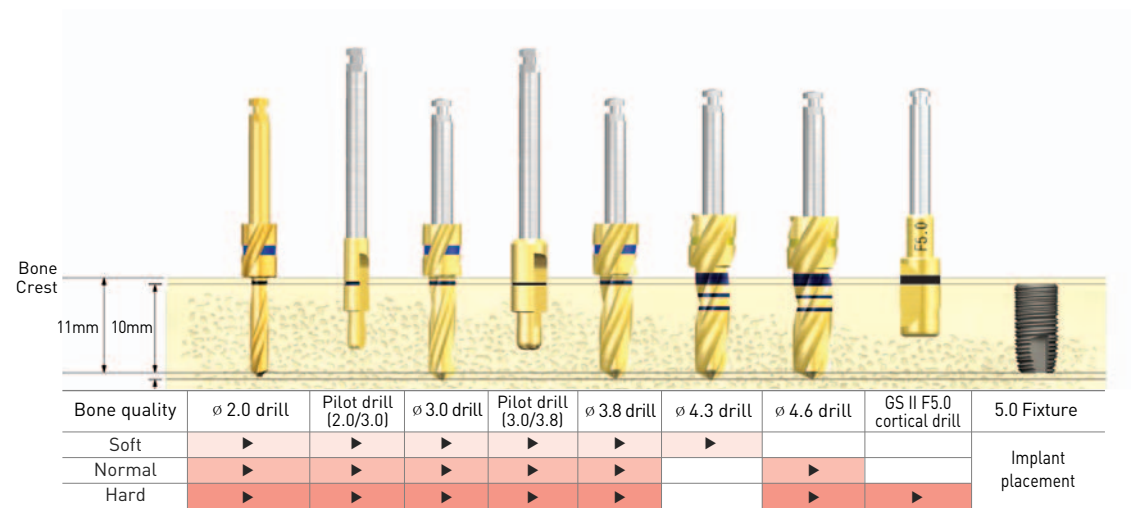


∅ 4.5 fixture [Length : 10mm]

D1 Hard Bone D2, D3 Normal Bone D4 Soft Bone



∅ 5.0 fixture [Length : 10mm]



∅ 4.0mm GS II Fixture Surgical Procedure

1. Guide drill



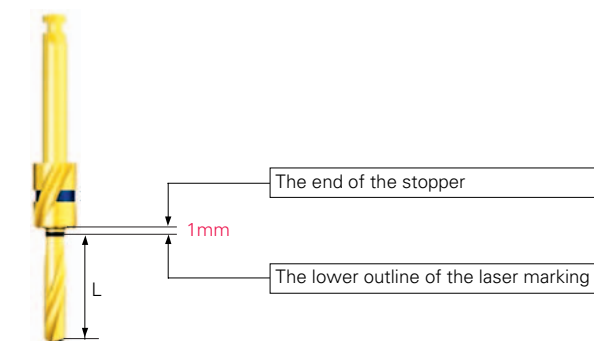
- Using a lance drill at 1500rpm, pierce the cortical bone and determine the fixture position.
- The thickness and density of the cortical bone can be estimated during drilling.

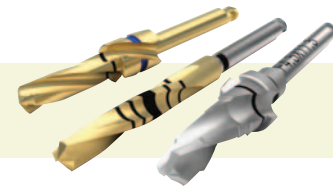
2. ∅ 2.0mm twist drill (stopper drill)



- Find the drill corresponding to the length of the fixture.
- For a deep placing of the fixture: drill up to the end of the stopper. For a shallow placing of the fixture: drill up to the lower outline of the laser marking.
- Set the rotating speed of drilling to 1200~1500rpm based on the bone density. Supply sufficient irrigation and perform pumping motion to minimize the generation of friction heat.

Note: For all succeeding drilling procedures, follow the instructions above.



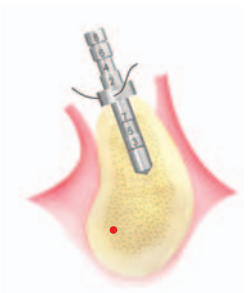


3. Depth Gauge



- After the $\varnothing 2.0$ mm drilling, check the hole depth and floor condition.
- The length should be measured at the bottom of the laser marking. The 10mm - and 13mm - markings are made with thicker lines for easier identification.

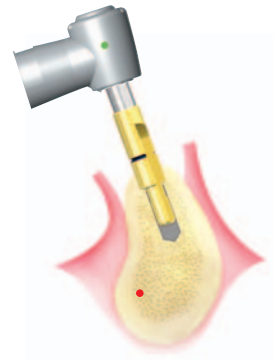
4. Parallel Pin



- Used to verify the correctness of the hole location and direction, insert the thinner side ($\varnothing 2.0$) after the $\varnothing 2.0$ mm drilling and the thicker side after the $\varnothing 3.0$ mm drilling.
- The diameter of the middle part is available in $\varnothing 4/\varnothing 5/\varnothing 6$, allowing measurement of the fixture insertion distance and the collar diameter of an abutment to be connected. $\varnothing 4$ is used for a procedure on lower central incisor or lateral incisor; $\varnothing 5$ is used for upper lateral incisor, canine and premolar and lower canine and premolar, and $\varnothing 6$ for upper central incisor and upper and lower molars.
- Some dental surgeons use the inserted parallel pin to check for the proper occlusion.

Note) Be sure to tie dental floss through the hole in the middle of the parallel pin to prevent from dropping into the patient's throat.

5. $\varnothing 2.0/\varnothing 3.0$ Pilot Drill



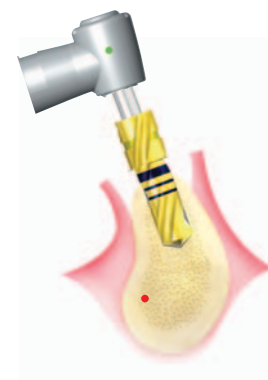
- Use $\varnothing 2.0/\varnothing 3.0$ for the pilot drill.
- Used to correct the path of a previously drilled hole or enlarge the cortical bone to form an insertion path for next drill.
- Drill no further than laser-marked depth.
- May be used without a drill extension in the posterior.
- Set the drill speed at 800rpm.

6. $\varnothing 3.0$ Twist Drill



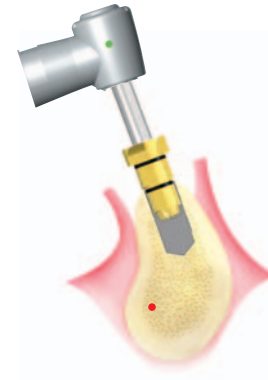
- As an intermediate drilling process, use the $\varnothing 3.0$ drill.
- Set the drilling speed at 800rpm.
- Follow the same guidelines as the $\varnothing 2.0$ drilling for the drill length, drilling depth, stopper length, use of drill extension, irrigation, pumping and remedy for drill jammed in the bone.

7. $\varnothing 3.6$ Twist Drill



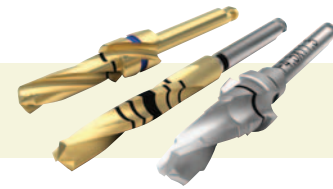
- Drill to the bottom of the thick laser marking line.
- Since the Hanaro Kit consists of marking drills (L : 11.5 mm, 15 mm), the surgeon should consider the marking line that is identical to the fixture measurement before proceeding with the drilling.
- Follow the same guidelines as the $\varnothing 2.0$ drilling for the drill length, drilling depth, stopper length, use of drill extension, irrigation, pumping and remedy for drill jammed in the bone.

8. $\varnothing 3.3 / \varnothing 3.8$ Step Drill

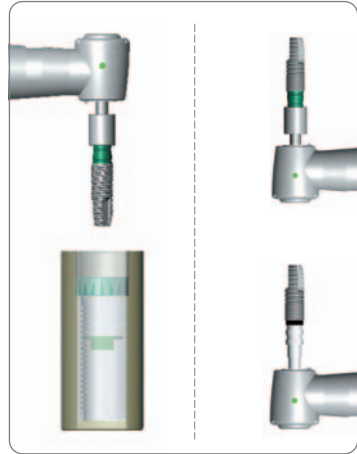


- The bottom is $\varnothing 3.3$ mm, and the top is $\varnothing 3.8$ mm. Drill to the bottom of the marking line of $\varnothing 3.8$ mm.
- May be used without a drill extension in the posterior.
- Set the drilling speed at 800rpm.

※ A drill system to prevent an excessive insertion torque during the insertion of fixture in a hard bone substance such as D1.

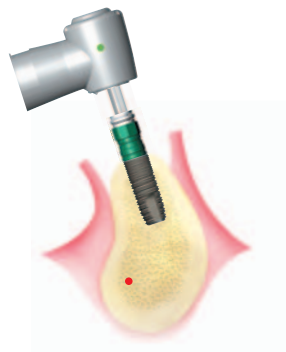


9. Pick up the Fixture



- For the case of Pre-Mount fixture package, connect the mount driver to the fixture mount and pick up the fixture. Position the fixture upward and remove the plastic grip.
- For the case of Fixture Only package, connect directly the NoMount driver to the fixture and pick up the fixture.
- To avoid dropping position the fixture upward when moving to the oral cavity.

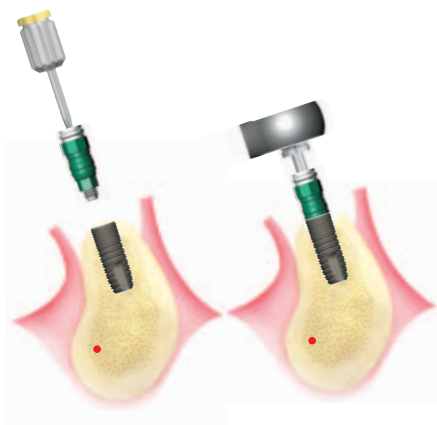
10. Fixture Placement



- After setting the maximum torque of engine to 35Ncm, start inserting the fixture. If the engine is stopped, connect the fixture mount to the mount extension and place fixture to final depth using the torque wrench.
- Do not to apply too much torque when inserting the fixture with the torque wrench. If a squeaking noise is heard from the bone while inserting the fixture, take the fixture out and try inserting again.

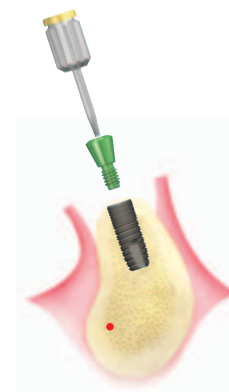
Caution : If the inserting torque of 50Ncm or more is applied, bone necrosis may occur, or the mount may not separate, due to too much pressure. Never use the hand piece on the torque wrench after the hand piece is stopped.

11. Separating the Mount



- Separate the mount screw first using the 1.2 hex hand driver. If the screw does not separate, use the 1.2 torque driver and torque wrench, or the 1.2 machine driver and hand piece.
- When separating the screw, use an open wrench to keep the torque from being delivered to the fixture, i.e., hold the hex inside the mount with the open wrench to loosen the screw.
- If the mount does not separate after removing the mount screw, use the removal tool to separate the mount.

12. Connecting the Cover Screw



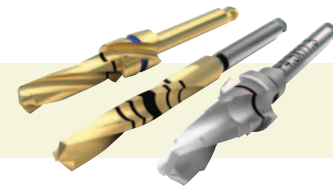
- Take out the cover screw from the fixture ampule cap using the 1.2 hex driver. Dabbing a small amount of ophthalmic ointment on the driver improves the holding power.
- Point the cover screw upward to keep it from falling, and transport it into the oral cavity. Use caution not to drop the cover screw into the patient's throat.
- Fix the cover screw with 5-8 Ncm of torque.

※ An adult male is able to apply 15-20 Ncm of torque with gloved fingers only inside the oral cavity. (Female : 10-15 Ncm)

13. Suturing



- Seal the gum after connecting the cover screw



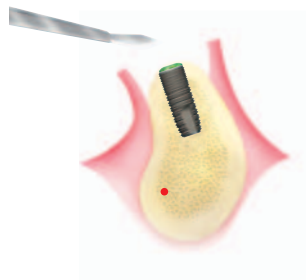
2nd Stage Surgery

Surgical Instrument and Materials

- Surgical Instrument : Mouth Mirror, Mass Holder, Periosteal Elevator, Curette(Surgical, Periodontal), Tissue Forcep, Needle Holder, Suture Material
- Implant Instrument : Tissue Punch, Bone Profiler with Guide, Driver for Cover Screw, Driver for Healing Abutment, Healing Abutment

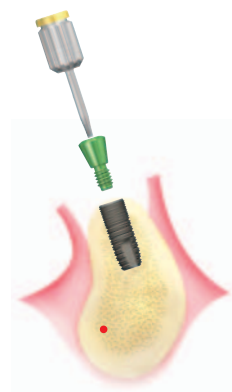
1. Incision

- Open the area in which the fixture is inserted with a mss or tissue punch to expose the cover screw



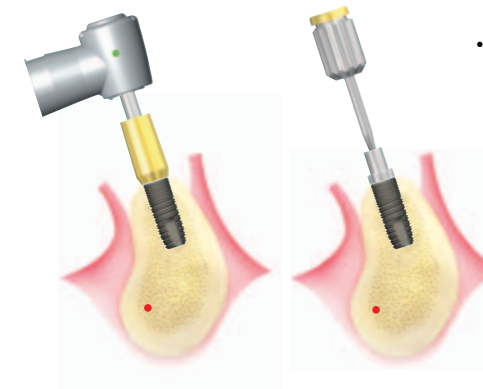
2. Removing the Cover Screw

- Remove the cover screw using the 1.2hex hand driver. If the cover screw does not separate, use the 1.2 torque driver and torque wrench or the 1.2 machine drivers and hand piece.



Note) Handle with extreme care not to drop the cover screw into the patient's throat.

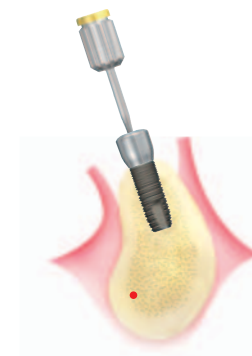
※ Bone Profiler



- Used to remove any bone growth around the fixture flange top.
- Connect the guide screw to the fixture first to protect the hex portion of the fixture.
- The use of a torque wrench is recommended, but a mount driver may be used with its engine. The irrigation should be done internally. (Recommended engine speed : 800rpm)

3. Connecting the Healing Abutment

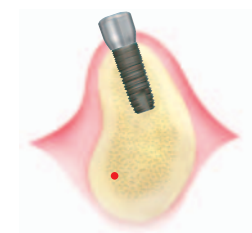
- After considering the proper abutment type first, choose the collar height and diameter of the healing abutment, which is then connected to the fixture.
- Use the 1.2 hex hand driver (5~8Ncm) to connect the healing abutment to the fixture.



※ An adult male is able to apply 15~20Ncm of torque with gloved fingers only inside the oral cavity. (female : 10~15Ncm)

4. Suturing

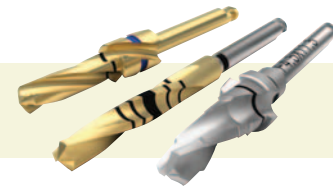
- Seal both sides of the healing abutment not to have the flap open.





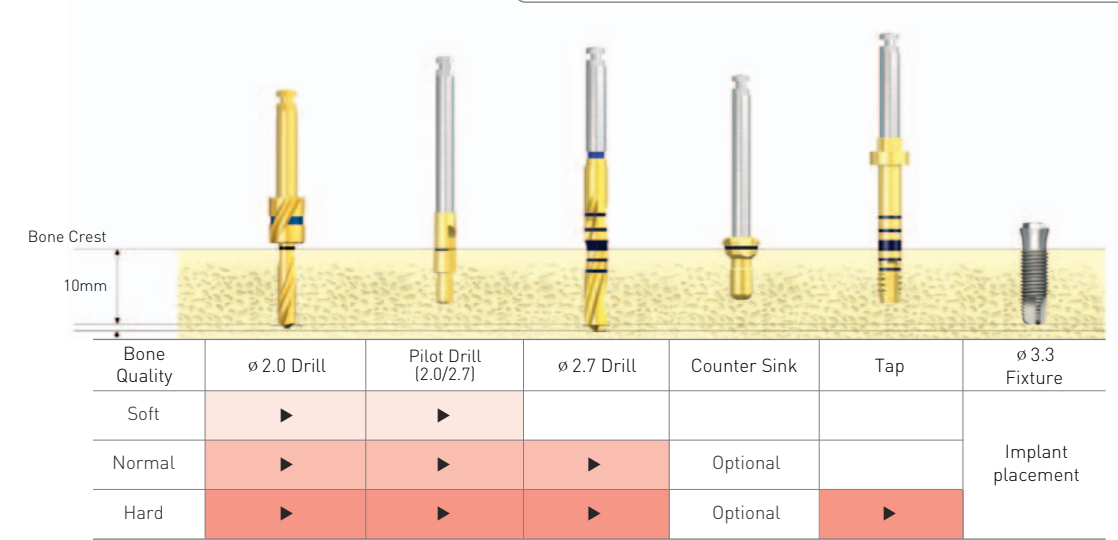
III. Surgical procedure

3. SS II Fixture

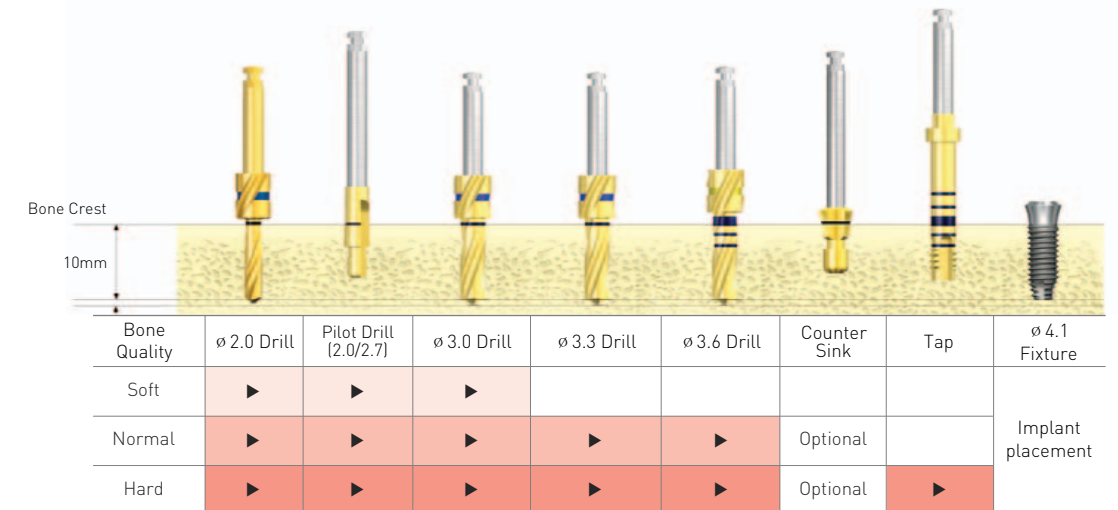


∅ 3.3 fixture [length : 10mm]

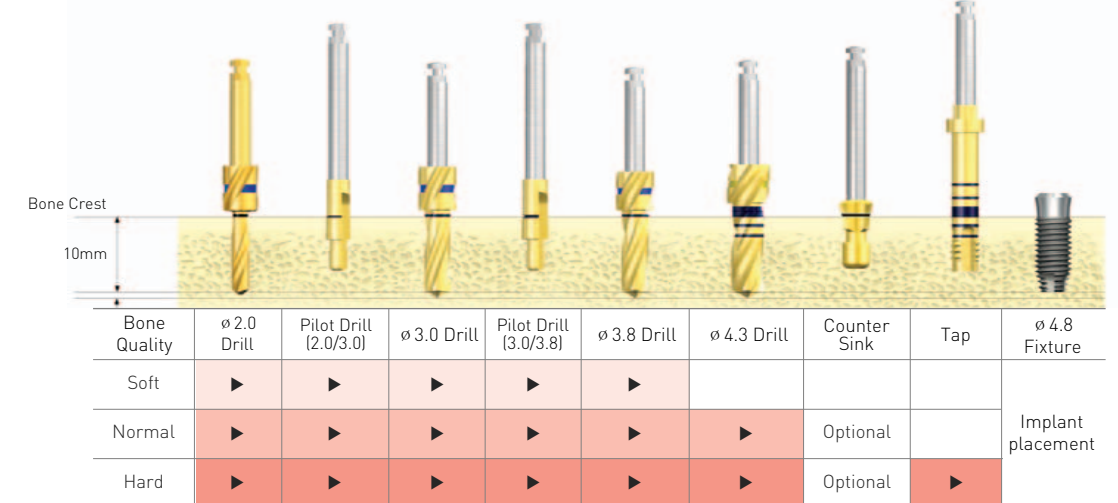
D1 **Hard Bone** D2, D3 **Normal Bone** D4 **Soft Bone**

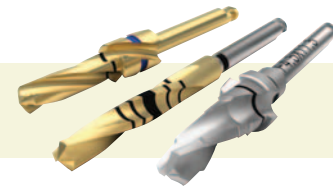


∅ 4.1 fixture [length : 10mm]



∅ 4.8 fixture [length : 10mm]





∅ 4.1mm SS II Fixture Surgical Procedure(One Stage)

The following is the graphical rendering of grafting a SS II of ∅ 4.1mm and 10mm in length on the bone density of Hard bone:

1. Guide drill

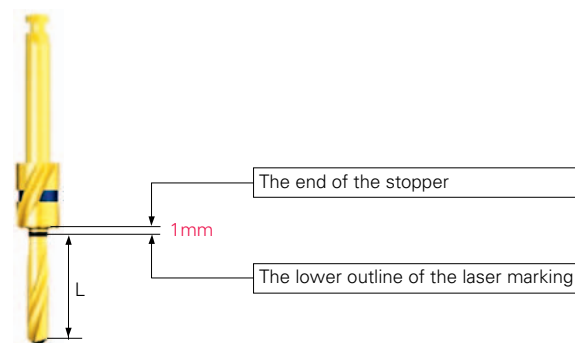
- Using a lance drill at 1500rpm, pierce the cortical bone and determine the fixture position.
- The thickness and density of the cortical bone can be estimated during drilling.



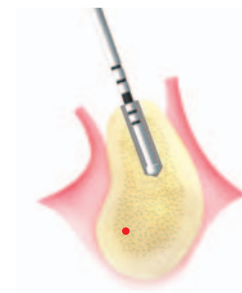
2. ∅ 2.0mm twist drill (stopper drill)

- Find the drill corresponding to the length of the fixture.
- For a deep placing of the fixture: drill up to the end of the stopper. For a shallow placing of the fixture: drill up to the lower outline of the laser marking.
- Set the rotating speed of drilling to 1200~1500rpm based on the bone density. Supply sufficient irrigation and perform pumping motion to minimize the generation of friction heat.

Note: For all succeeding drilling procedures, follow the instructions above.

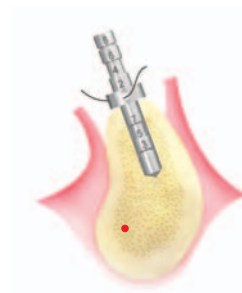


3. Depth Gauge



- After the ∅ 2.0 mm drilling, check the hole depth and floor condition.
- The length should be measured at the bottom of the laser marking. The 10-mm and 13-mm markings are made with thicker lines for easier identification.

4. Parallel Pin



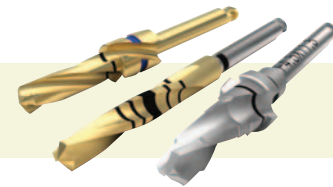
- Used to verify the correctness of the hole location and direction, insert the thinner side (∅ 2.0) after the ∅ 2.0 mm drilling and the thicker side after the ∅ 3.0 mm drilling.
- The diameter of the middle part is available in ∅ 4/∅ 5/∅ 6, allowing measurement of the fixture insertion distance and the collar diameter of an abutment to be connected. ∅ 4 is used for a procedure on lower central incisor or lateral incisor; ∅ 5 for upper lateral incisor, canine and premolar and lower canine and premolar, and ∅ 6 for upper central incisor and upper and lower molars.
- Some dental surgeons use the inserted parallel pin to check on the occlusion with opposite teeth.

Note) Be sure to tie dental floss through the hole in the middle of the parallel pin to prevent from dropping into the patient's throat.

5. ∅ 2.0/∅ 3.0 Pilot Drill



- Use ∅ 2.0/∅ 3.0 for the pilot drill.
- Used to correct the path of a previously drilled hole or enlarge the cortical bone to form an insertion path for next drill.
- Drill until the hole is the laser marking deep.
- May be used without a drill extension in the posterior.
- Set the drill speed at between 800rpm and 1,200rpm, depending on the bone substance. (Recommended : 800rpm)



6. ϕ 3.0 Twist Drill



- As an intermediate drilling process, use the ϕ 3.0 drill.
- Set the drilling speed at 800rpm
- Follow the same guidelines as the ϕ 2.0 drilling for the drill length, drilling depth, stopper length, use of drill extension, drill speed, irrigation, pumping and remedy for drill jammed in the bone.

7. ϕ 3.6 Twist Drill



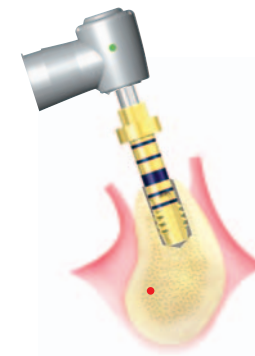
- For final drilling, drill with the ϕ 3.6 marking drill to the bottom of the thick laser marking line.
- Since the final drills in the Hanaro Kit consists of marking drills (L: 11.5 mm, 15 mm), the surgeon should consider the marking line that is identical to the fixture measurement before proceeding with the final drilling.
- The final drilling must be handled with the utmost care because it ultimately determines the size and depth of the hole. Follow the same guidelines as the ϕ 2.0 drilling for the drill length, drilling depth, stopper length, use of drill extension, drill speed, irrigation, pumping and remedy for drill jammed in the bone.

8. ϕ 3.6/ ϕ 4.8 Countersink



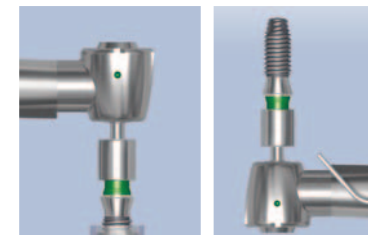
- In case of implanting the fixture deep into the bone to the smooth collar, countersink until the bottom of the laser mark. For general cases, skip this process.
- May be used without a drill extension in the posterior.
- The blade area of countersink is the same shape as the collar area of fixture.
- The recommended drill speed is 800rpm, with irrigation.

9. ϕ 4.1 Surgical Tap



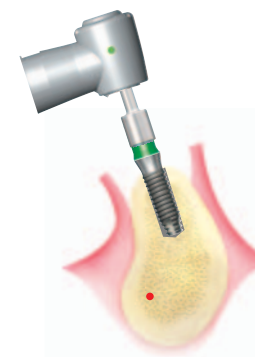
- Tapping should be carried out for a bone density of D1. The surgeon may use his or her discretion for D2. Skip the tapping for D3 or D4.
- Using a torque wrench is recommended for the tapping. A mount driver may be used as the engine, as necessary. When aided by an engine, set the tapping speed to 20rpm or below. In case the tap is stuck in the bone, reverse the engine rotation to take the tap out, and try tapping again.

10. Pick up the Fixture



- For the case of Pre-Mount fixture package, connect the mount driver to the fixture mount and pick up the fixture. Position the fixture upward and remove the plastic grip.
- For the case of Fixture Only package, connect directly the NoMount driver to the fixture and pick up the fixture.
- To avoid dropping position the fixture upward when moving to the oral cavity. (Note) Don't reuse fixture mount

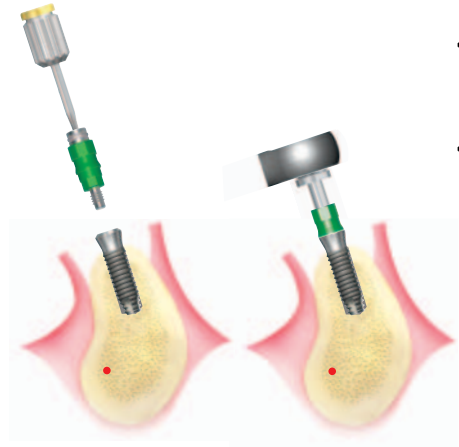
11. Fixture placement



- After setting the maximum torque of engine to 35Ncm, start inserting the fixture. If the engine is stopped, connect the fixture mount to the mount extension and place fixture to final depth using the torque wrench.
- Do not to apply too much torque when inserting the fixture with the torque wrench. If a squeaking noise is heard from the bone while inserting the fixture, take the fixture out and try inserting again.

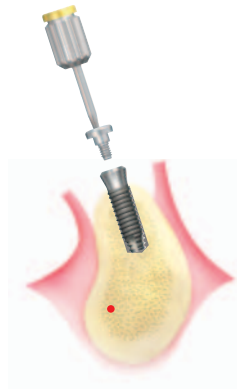
Note) If the inserting torque of 50Ncm or more is applied, bone necrosis may occur, or the mount may not separate, due to too much pressure. Never use the hand piece an the torque wrench after the hand piece is stopped.

12. Separating the Mount



- Separate the mount screw first using the 1.2 hex hand driver. If the screw does not separate, use the 1.2 torque driver and torque wrench, or the 1.2 machine driver and hand piece.
- When separating the screw, use an open wrench to keep the torque from being delivered to the fixture, i.e., hold the hex inside the mount with the open wrench to loosen the screw.
- If the mount does not separate after removing the mount screw, use the removal tool to separate the mount.

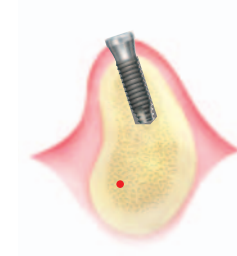
13. Connecting the cover Screw



- Take out the cover screw from the fixture ampoule cap using the 1.2 hex driver. Dabbing a small amount of ophthalmic ointment on the driver improves the holding power.
- Point the cover screw upward to keep it from falling, and transport it into the oral cavity. Use caution not to drop the cover screw into the patient's throat.
- Fix the cover screw with 5-8Ncm of torque.

※ An adult male is able to apply 15-20Ncm of torque with gloved fingers only inside the oral cavity. (Female : 10-15Ncm)

14. Suturing



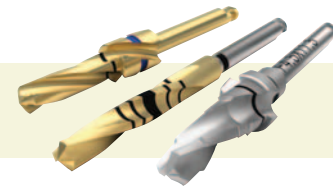
- Seal the gum after connecting the cover screw



III. Surgical procedure

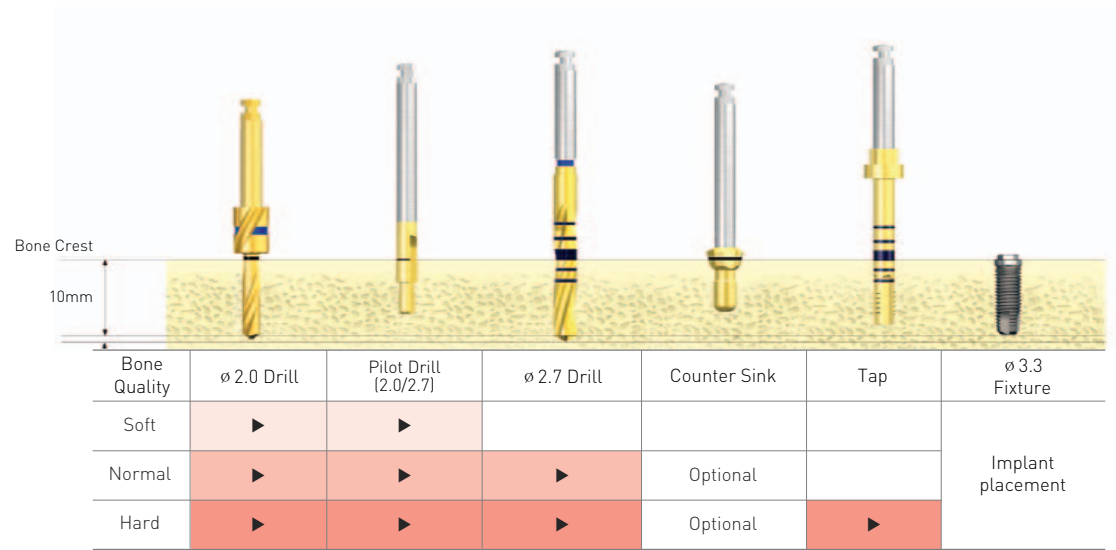
4. US II Fixture



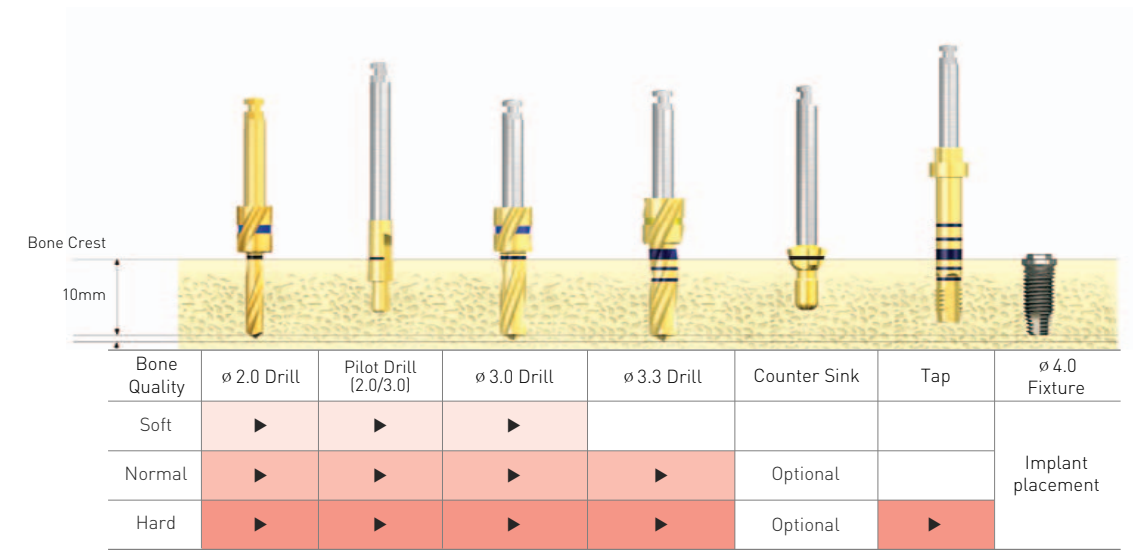


∅ 3.3 fixture [length : 10mm]

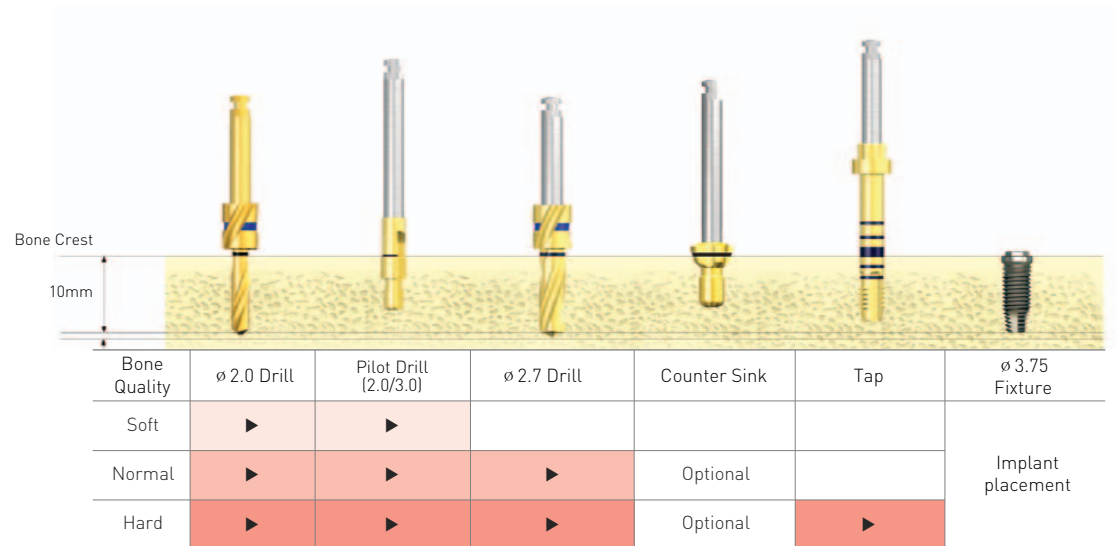
D1 **Hard Bone** D2, D3 **Normal Bone** D4 **Soft Bone**



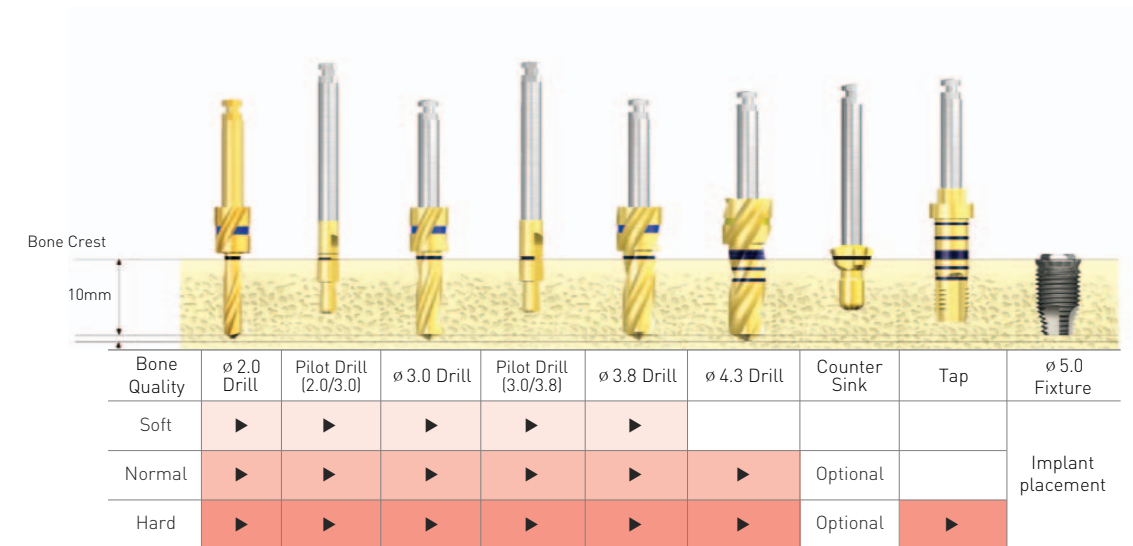
∅ 4.0 fixture [length : 10mm]

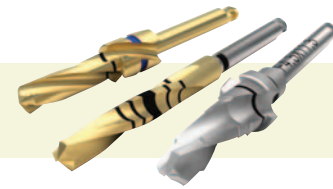


∅ 3.75 fixture [length : 10mm]



∅ 5.0 fixture [length : 10mm]





∅ 4.0mm US II Fixture Surgical Procedure(Two Stage)

The following is the graphical rendering of grafting a US II of ∅ 4.0 mm and 10 mm in length on the bone density of Hard bone:

1. Guide drill

- Using a lance drill at 1500rpm, pierce the cortical bone and determine the fixture position.
- The thickness and density of the cortical bone can be estimated during drilling.

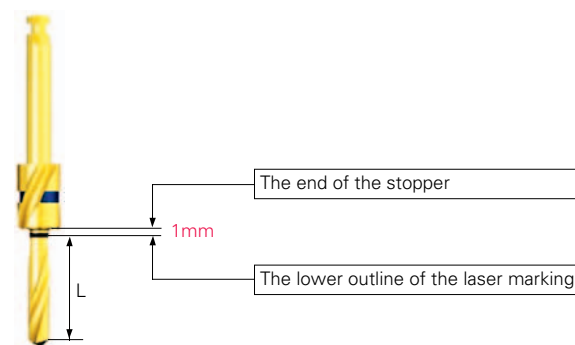


2. ∅ 2.0mm twist drill (stopper drill)

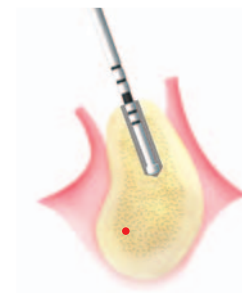
- Find the drill corresponding to the length of the fixture.
- For a deep placing of the fixture: drill up to the end of the stopper. For a shallow placing of the fixture: drill up to the lower outline of the laser marking.
- Set the rotating speed of drilling to 1200~1500rpm based on the bone density. Supply sufficient irrigation and perform pumping motion to minimize the generation of friction heat.



Note: For all succeeding drilling procedures, follow the instructions above.

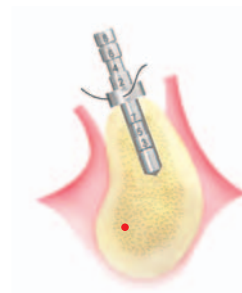


3. Depth Gauge



- After the ∅ 2.0 mm drilling, check the hole depth and floor condition.
- The length should be measured at the bottom of the laser marking. The 10-mm and 13-mm markings are made with thicker lines for easier identification.

4. Parallel Pin



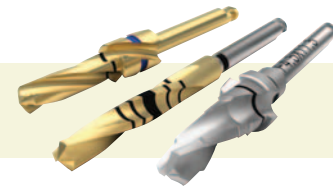
- Used to verify the correctness of the hole location and direction, insert the thinner side (∅ 2.0) after the ∅ 2.0 mm drilling and the thicker side after the ∅ 3.0 mm drilling.
- The diameter of the middle part is available in ∅ 4/∅ 5/∅ 6, allowing measurement of the fixture insertion distance and the collar diameter of an abutment to be connected. ∅ 4 is used for a procedure on lower central incisor or lateral incisor; ∅ 5 for upper lateral incisor, canine and premolar and lower canine and premolar, and ∅ 6 for upper central incisor and upper and lower molars.
- Some dental surgeons use the inserted parallel pin to check on the occlusion with opposite teeth.

Note) Be sure to tie dental floss through the hole in the middle of the parallel pin to prevent from dropping into the patient's throat.

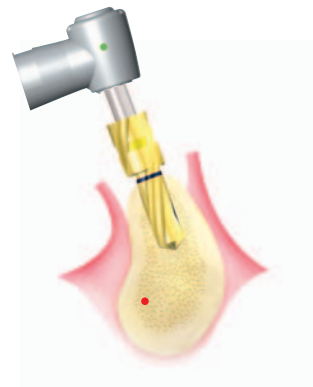
5. ∅ 2.0/∅ 3.0 Pilot Drill



- Use ∅ 2.0/∅ 3.0 for the pilot drill.
- Used to correct the path of a previously drilled hole or enlarge the cortical bone to form an insertion path for next drill.
- Drill until the hole is the laser marking deep.
- May be used without a drill extension in the posterior.
- Set the drill speed at between 800rpm and 1,200rpm, depending on the bone substance. (Recommended : 800rpm)

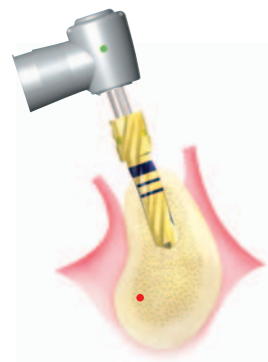


6. \varnothing 3.0 Twist Drill



- As an intermediate drilling process, use the \varnothing 3.0 drill.
- Follow the same guidelines as the \varnothing 2.0 drilling for the drill length, drilling depth, stopper length, use of drill extension, drill speed, irrigation, pumping and remedy for drill jammed in the bone.

7. \varnothing 3.3 Twist Drill



- For final drilling, drill with the \varnothing 3.3 marking drill to the bottom of the thick laser marking line.
- Since the final drills in the Hanaro Kit consists of marking drills (L : 11.5 mm, 15 mm), the surgeon should consider the marking line that is identical to the fixture measurement before proceeding with the final drilling.
- The final drilling must be handled with the utmost care because it ultimately determines the size and depth of the hole. Follow the same guidelines as the \varnothing 2.0 drilling for the drill length, drilling depth, stopper length, use of drill extension, drill speed, irrigation, pumping and remedy for drill jammed in the bone.
- The operator must take note of the drilling speed during drilling depending on the bone density. When drilling through bones with the quality of D1-D2, the drill must have high rotation speed of over 1200 rpm and 800 rpm for D3-D4, with copious watering at all times.

8. \varnothing 3.3/ \varnothing 4.1 Countersink



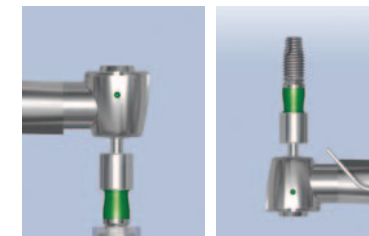
- Countersink using \varnothing 3.0 / \varnothing 4.1, as guided in the left figure.
- While it is conventional to countersink D1-D2 bones and skip the countersink for D3-D4 bones, the surgeon may use his or her discretion based on their experience.
- For a deep insertion, drill to the end of the blade, and for a shallow insertion, to the bottom of the laser marking.
- For a deep insertion, the height of countersink is for the fixture connected with the cover screw.
- The recommended drill speed is 750rpm, with irrigation.

9. \varnothing 4.0 Surgical Tap



- Tapping should be carried out for a bone density of D1. The surgeon may use his or her discretion for D2. Skip the tapping for D3 or D4.
- Using a torque wrench is recommended for the tapping. A mount driver may be used as the engine, as necessary. When aided by an engine, set the tapping speed to 20rpm or below. In case the tap is stuck in the bone, reverse the engine rotation to take the tap out, and try tapping again.

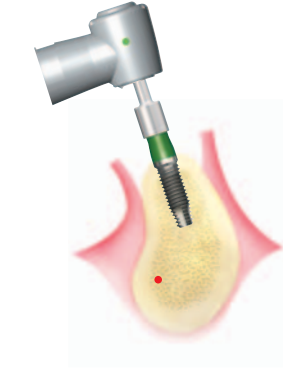
10. Pick up the Fixture



- For the case of Pre-Mount fixture package, connect the mount driver to the fixture mount and pick up the fixture. Position the fixture upward and remove the plastic grip.
- For the case of Fixture Only package, connect directly the NoMount driver to the fixture and pick up the fixture.
- To avoid dropping position the fixture upward when moving to the oral cavity.

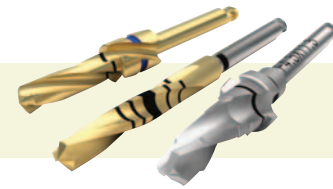
Note] Don't reuse fixture mount

11. Fixture placement

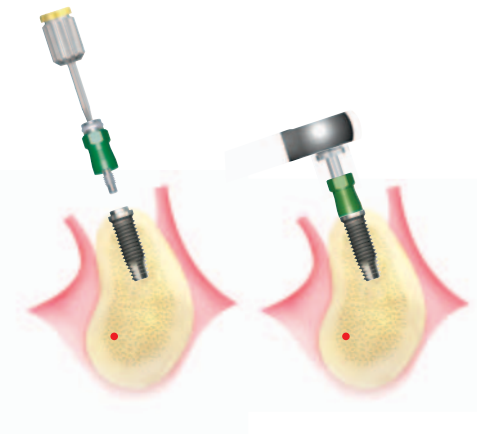


- After setting the maximum torque of engine to 35Ncm, start inserting the fixture. If the engine is stopped, connect the fixture mount to the mount extension and place fixture to final depth using the torque wrench.
- Do not to apply too much torque when inserting the fixture with the torque wrench. If a squeaking noise is heard from the bone while inserting the fixture, take the fixture out and try inserting again.

Note : If the inserting torque of 50Ncm or more is applied, bone necrosis may occur, or the mount may not separate, due to too much pressure. Never use the hand piece an the torque wrench after the hand piece is stopped.

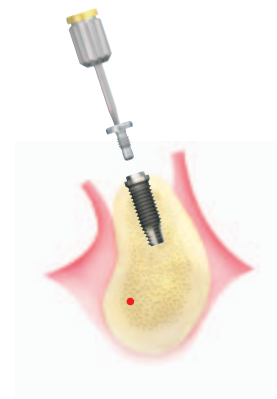


12. Separating the Mount



- Separate the mount screw first using the 1.2 hex hand driver. If the screw does not separate, use the 1.2 torque driver and torque wrench, or the 1.2 machine driver and hand piece.
- When separating the screw, use an open wrench to keep the torque from being delivered to the fixture, i.e., hold the mount octa with the open wrench to loosen the screw.
- If the mount does not separate after removing the mount screw, use the removal tool to separate the mount.

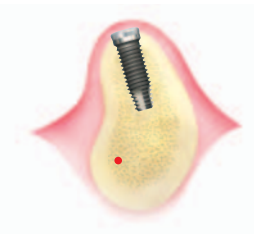
13. Connecting the cover Screw



- Take out the cover screw from the fixture ampoule cap using the 0.9 hex hand driver. Dabbing a small amount of ophthalmic ointment on the driver improves the holding power.
- Point the cover screw upward to keep it from falling, and transport it into the oral cavity. Use caution not to drop the cover screw into the patient's throat.
- Fix the cover screw with the torque of 5~8Ncm.

※ An adult male is able to apply 15~20Ncm of torque with gloved fingers only inside the oral cavity. (female : 10~15Ncm)

14. Suturing



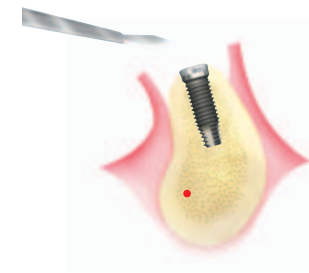
- Seal the gum after connecting the cover screw

2nd Stage Surgery

Surgical Instrument and Materials

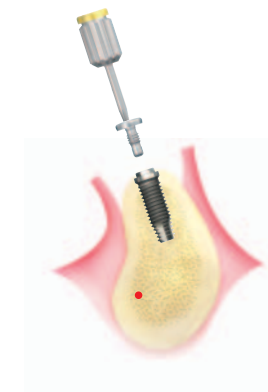
- Surgical Instrument : Mouth Mirror, Mass Holder, Periosteal Elevator, Curette(Surgical, Periodontal), Tissue Forcep, Needle Holder, Suture Material
- Implant Instrument : Tissue Punch, Bone Profiler with Guide, Driver for Cover Screw, Driver for Healing Abutment, Healing Abutment

1. Incision



- Open the area in which the fixture is inserted with a mes or tissue punch to expose the cover screw

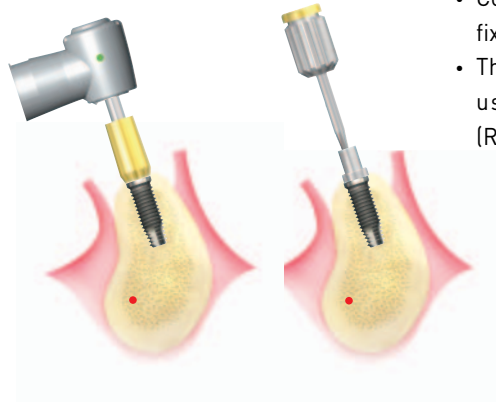
2. Removing the Cover Screw



- Remove the cover screw using the 1.2 hex hand driver. If the cover screw does not separate, use the 1.2 torque driver and torque wrench or the 1.2 machine drivers and hand piece.

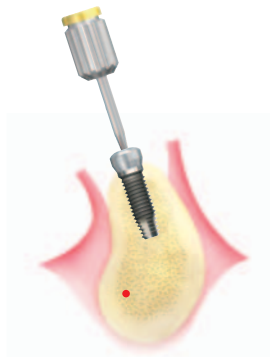
Note) Handle with extreme care not to drop the cover screw into the patient's throat.

※ \varnothing 5.0 Bone Profiler



- Used to remove any bone growth around the fixture flange top.
- Connect the guide screw to the fixture first to protect the hex portion of the fixture.
- The use of a torque wrench is recommended, but a mount driver may be used with its engine. The irrigation should be done internally. (Recommended engine speed: 800rpm)

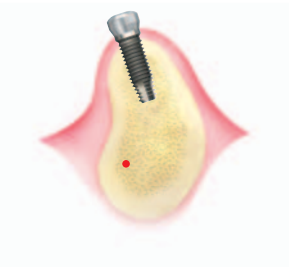
3. Connecting the Healing Abutment



- After considering the proper abutment type first, choose the collar height and diameter of the healing abutment, which is then connected to the fixture.
- Use the 1.2 hex hand driver (5~8Ncm) to connect the healing abutment to the fixture.

※ An adult male is able to apply 15~20Ncm of torque with gloved fingers only inside the oral cavity. (female : 10~15Ncm)

4. Suturing



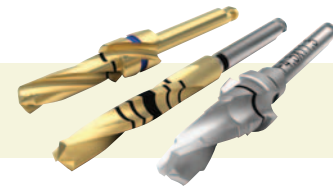
- Suture both sides of the healing abutment not to have the opened flap.



III. Surgical procedure

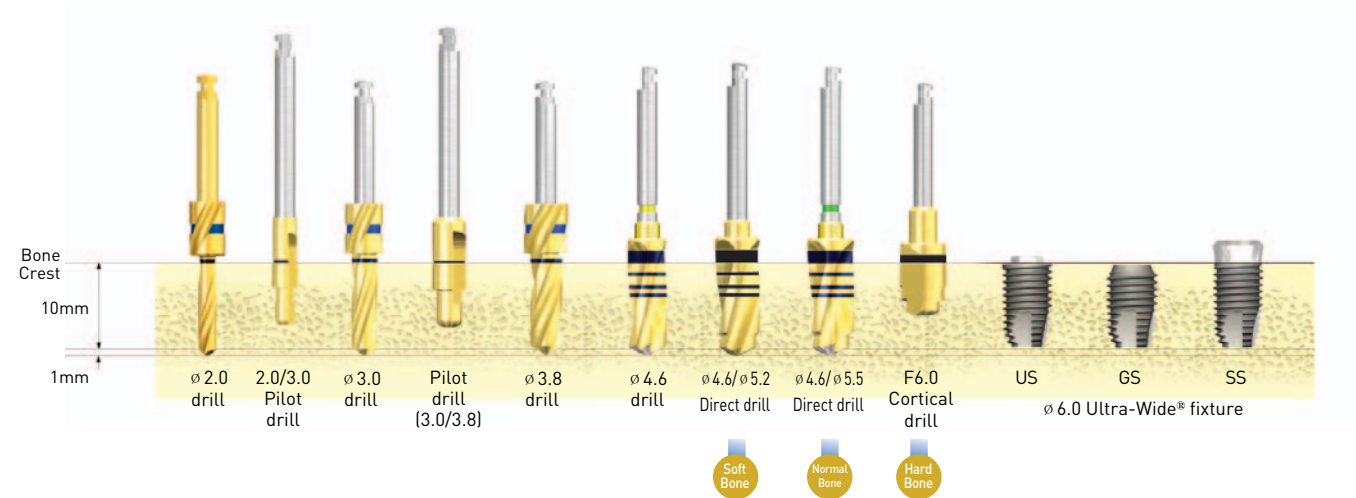
5. GS/SS/US Ultra-wide Fixture



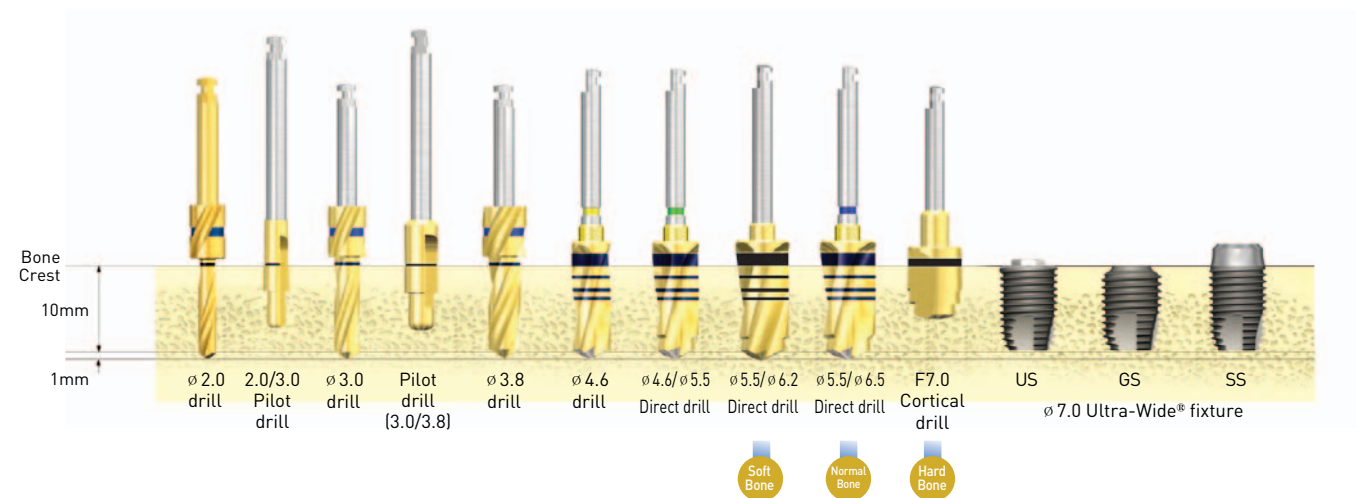


∅ 6.0 fixture [length : 10mm]

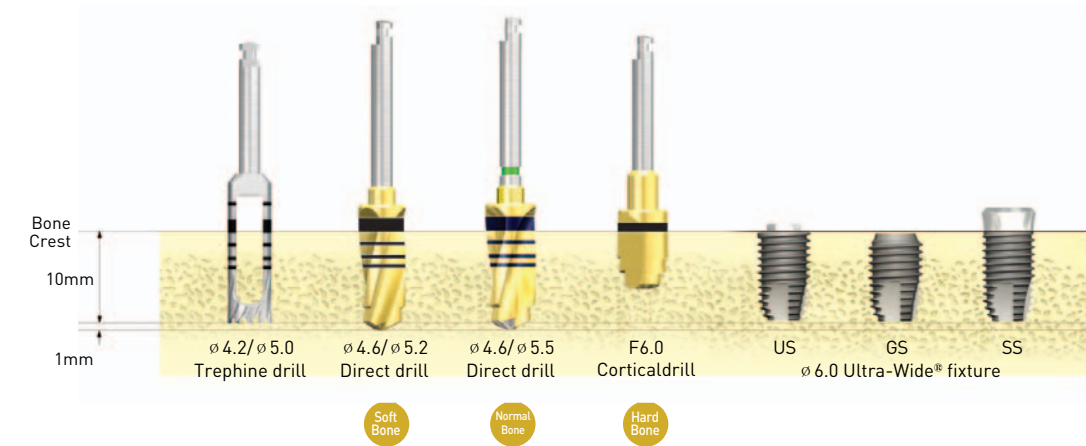
D1 Hard Bone D2, D3 Normal Bone D4 Soft Bone



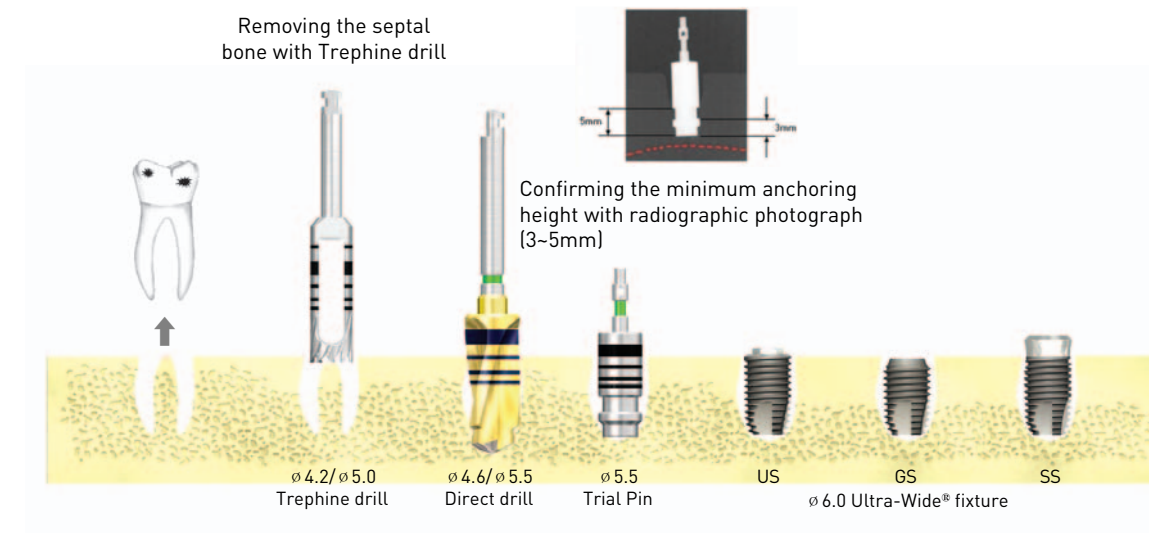
∅ 7.0 fixture [length : 10mm]



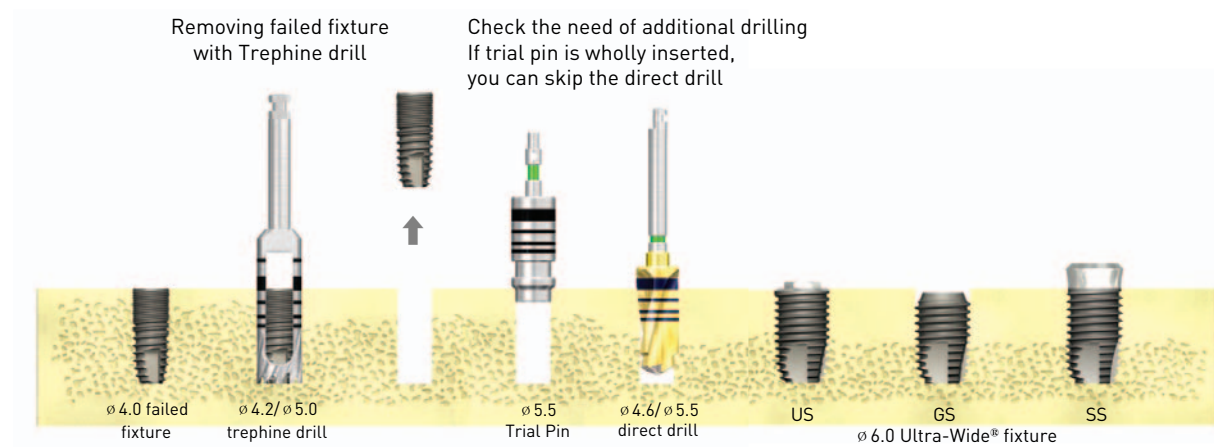
Drilling Sequence with Trepine in the healed mature bone (∅ 6.0 Ultra-Wide® fixture, Length : 10mm)

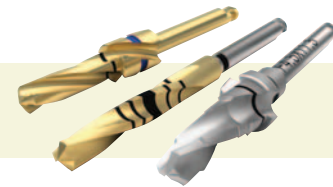


Immediate placement at the extraction socket (∅ 6.0 Ultra-Wide® fixture, Length : 10mm)



Immediate replacement of the failed implant (∅ 6.0 Ultra-Wide® fixture, Length : 10mm)





∅ 6.0mm GS Ultra-Wide Fixture Surgical Procedure

The following illustrates how to insert 10mm fixtures (GS Ultra-Wide ∅ 6.0mm) into healed bones.

When inserting GS Ultra-Wide Fixture, maintain more than 1.5mm survival alveolar bone in order to prevent bone loss.

For safe and successful fixture placement, read carefully and follow this guide.

1. Guide drill



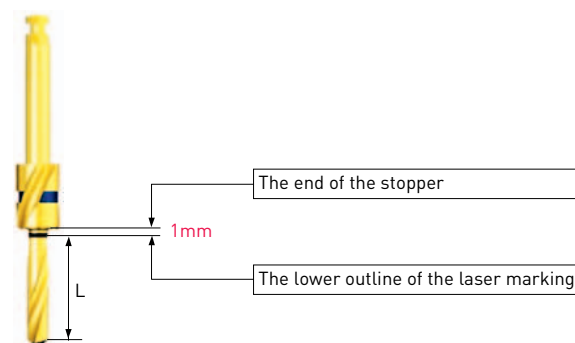
- Using a lance drill at 1500rpm, pierce the cortical bone and determine the fixture position.
- The thickness and density of the cortical bone can be estimated during drilling.

2. ∅ 2.0mm twist drill (stopper drill)



- Find the drill corresponding to the length of the fixture.
- For a deep placing of the fixture: drill up to the end of the stopper. For a shallow placing of the fixture: drill up to the lower outline of the laser marking.
- Set the rotating speed of drilling to 1200~1500rpm based on the bone density. Supply sufficient irrigation and perform pumping motion to minimize the generation of friction heat.

Caution: For all succeeding drilling procedures, follow the instructions above.



3. ∅ 2.0/∅ 3.0 pilot drill

- Use ∅ 2.0/∅ 3.0 Pilot drill at 800rpm.
- The Pilot drill is used to change the path of the hole made by previous drilling or create the path of the next drilling by expanding the cortical bone.
- Drill up to the laser marking line.

4. ∅ 3.0 twist drill

- The ∅ 3.0 drill is used for drilling in the intermediate step.
- The lengths of the drill, drilling depth, rotating speed, irrigation and pumping motion are identical to those for the ∅ 2.0 drilling.

5. ∅ 3.0/∅ 3.8 pilot drill

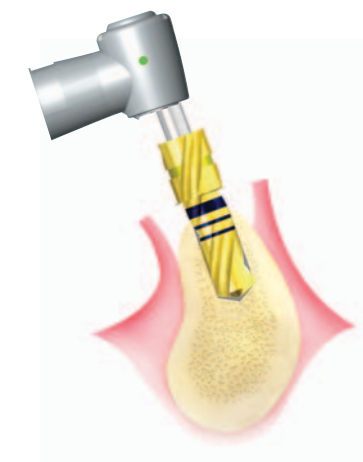
- Use ∅ 3.0/∅ 3.8 Pilot drill at 800rpm.
- The Pilot drill is used to change the path of the hole made by previous drilling or create the path of the next drilling by expanding the cortical bone.
- Drill up to the laser marking line.

6. ∅ 3.8 marking drill

- Drill up to the lower outline of the thick laser marking line.
- Since the final drills in the Standard KIT consist of marking drills (L: 11.5 mm, 15 mm), comply with the marking line that matches the length of the fixture.
- The lengths of the drill, drilling depth, rotating speed, irrigation and pumping motion are identical to those for the ∅ 2.0 drilling.

7. ∅ 4.6 marking drill

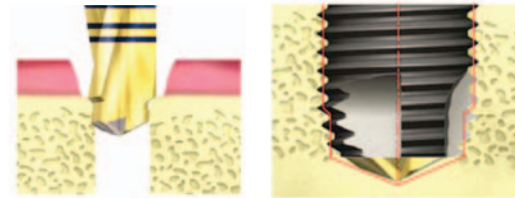
- Drill up to the lower outline of the thick laser marking line.
- Since the final drills in the Standard KIT consist of marking drills (L: 11.5 mm, 15 mm), comply with the marking line that matches the length of the fixture.
- The lengths of the drill, drilling depth, rotating speed, irrigation and pumping motion are identical to those for the ∅ 2.0 drilling.



Surgical procedure

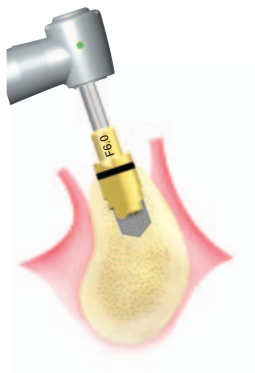
8. \varnothing 5.5 direct drill

- The \varnothing 5.5 drill is used for drilling in the final step.
- Enables final drilling directly without pilot drilling
- Enhancement of initial stability in the extract socket by decreasing the dead space at the apex area
- The lengths of the drill, drilling depth, rotating speed, irrigation and pumping motion are identical to those for the \varnothing 2.0 drilling.



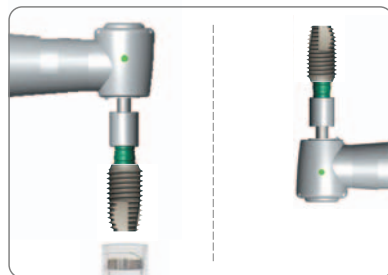
9. F6.0 Cortical drill

- Use after forming a final straight drill hole like picture on in hard bone.
- Drill up to the lower outline of the laser marking line.
- For the posterior implant, drill extension is not required.
- Set the rotating speed of drilling to 800rpm.



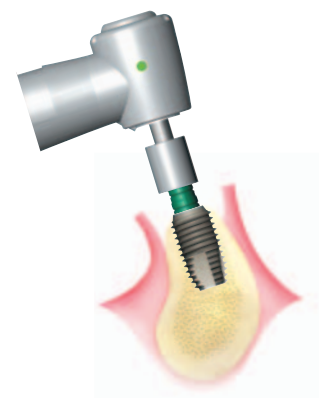
10. Pick-up the fixture from the ampoule

- For the case of Pre-mounted fixture package, connect the mount driver to the fixture mount and pick up the fixture.
- To avoid dropping position the fixture upward when moving to the oral cavity.



11. \varnothing 6.0 fixture insertion

- After setting the maximum torque of engine to 40Ncm, start inserting the fixture. If the engine is stopped, connect the fixture mount to the Mount extension and place fixture to final depth using the Ratchet wrench.
- Do not to apply too much torque when inserting the fixture with the Ratchet wrench. If a squeaking noise is heard from the bone while inserting the fixture, take the fixture out and try inserting again.



HGII Ultra-Wide fixture

Caution :

If the insertion torque of 50Ncm or more is applied, bone necrosis may occur, or the mount may not separate, due to too much pressure. Never use the hand piece as the Ratchet wrench after the hand piece is stopped.



OSSTEM Surgical Manual

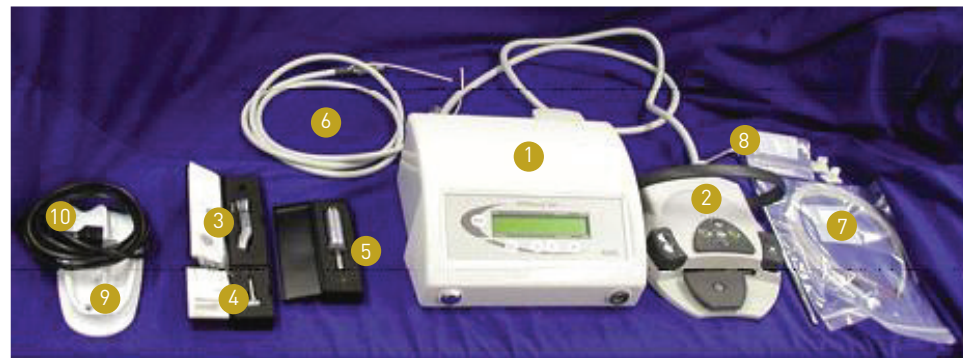
IV. How to Use KaVo Motor





This chapter provides brief description of how to use the INTRAsurg 300 Plus engine, manufactured by KaVo of Germany.

Components of INTRAsurg 300Plus

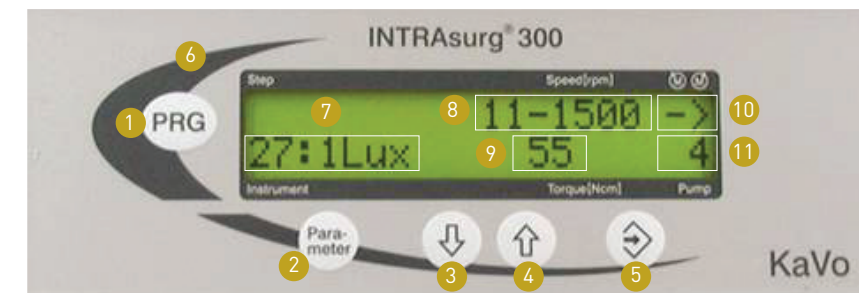


- | | | | |
|-----------------------|--------------------|--|--------------------|
| ① Main body | ② Foot pedal | ③ Shank - CL9 (9:1) | ④ Head - CL3 (3:1) |
| ⑤ Micro motor - SL550 | ⑥ Micro motor hose | ⑦ Irrigation tube | ⑧ Accessories |
| ⑨ Handpiece support | ⑩ Power cable | ⑪ Miscellaneous (Provided by Osstem): KaVo oil, Nozzle | |

Assembly and Features of the Hand Piece

- Turn the top portion of the shank completely to the left to mount the head. Do NOT press the top of the head when mounting the head.
- Release the top of the shank after mounting the head completely.
- The hand piece of INTRAsurg 300 Plus consists of CL3 (head) and CL9 (shank), which have the lux functionality. The deceleration ratio is 27:1, and the rotation speed ranges between 11rpm and 1,500rpm, which is automatically detected by the main body.

Control Panel and Display



- | | | |
|---------------------------------|------------------------|-------------------------|
| ① Program button | ② Parameter button | ③ Parameter down button |
| ④ Parameter up button | ⑤ Save button | ⑥ Display |
| ⑦ Deceleration ratio/Lux status | ⑧ Rotation speed (rpm) | ⑨ Torque |
| ⑩ Rotation direction | ⑪ Pump amount | |



Foot pedal

1. W Key : Pushing to the ↑ direction controls the engine's rotation direction.
 - 1-1 : Push to the left while drilling to toggle between the light on and off.
 - 1-2 : Push to the right to toggle between the light on and off only.
2. X Key : Changes the menu on the display
 - : Press briefly to move to the next menu.
 - : Press and hold to move to the previous menu.
3. Y Key : Push to the left or right to control the operation and speed.
4. Z Key : Press briefly to toggle between the water pump on and off.
 - : Press and hold to activate the rinse function.

How to Use KaVo Motor

To operate the program

- Tap the X key on the foot pedal to move the program from Step 1 through Step 6.
- Press the X key one more time in Step 6 and press the Save button to display the torque value for each step.

To adjust the user value

- Pressing the Parameter button each time in Step 1 allows the rpm, torque and pump values to be adjusted. An * is displayed in front of the adjustable value.
- Enter the desired value and press the Save button to finish setting.

To operate the pump

- Press the Z key to operate the pump and display the pump amount. Press the Z key again to stop the pump.
- Press and hold the Z key to activate the rinse function.

To operate Lux

- While the engine is operating, push the W key to the left to toggle the lux function on and off.
- While the engine is not operating, the light is on while pushing the W key to the right.

Default Value for Each Step

tep	Program	Max. rpm	Torque	Pump step	Rotation
1	Drilling	1,500	35 Ncm	4	↻
2	Tapping	50	35 Ncm	3	↻
3	Removing Tap	50	35 Ncm	3	↻
4	Implant	50	35 Ncm	3	↻
5	Removing Implant	50	35 Ncm	0	↻
6	Tightening Screw	50	10 Ncm	0	↻

Caution) Although it is possible to output 0-55Ncm of torque, it is recommended that the torque be set no more than 35Ncm for the insertion of fixture. Setting 55Ncm may cause the hand piece to jam. Using (rotating) the hand piece as a torque wrench after the hand piece is topped is absolutely prohibited.

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Surgical Manual

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