Only for Education

SAVE RIDGE KIT

User Manual Ver. 01



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I Clinical Video I

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DENTIS

SAVE RIDGE KIT
User Manual

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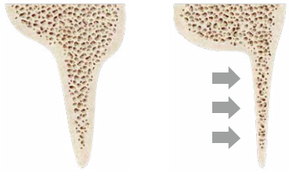
1) Ridge Split & Expansion with Bone Graft
2) Ridge Expansion without Bone Graft
3) Ridge Split without Bone Graft



I. Overview

1. Absorption of Alveolar bone after Extraction

When tooth is lost, horizontal and vertical absorption of alveolar bone may reduce available bone volume for successful implant placement.



▲ Horizontal absorption of alveolar bone



▲ Vertical absorption of alveolar bone

2. Types of Augmentation Returns

Alveolar bone augmentation is used to have suitable height and width to narrowed alveolar area with bone absorption. In alveolar bone augmentation, there are two fundamental techniques. One is bone graft technique using autogenous, allogeneic, xenogeneic, and synthetic bone. The other is to expanding bone width using viscosity of bone.
Specifically, there are Block Bone Graft, Guided Bone Regeneration (GBR), Distraction Osteogenesis, Ridge Split Technique, Ridge Expansion Technique and Ridge Split & Expansion technique as alveolar bone augmentation.

Type	Weakness	Strength
Block Bone Graft	· Possibility of additional surgery · Long revascularization time with blocking shape · Difficult to replace with healthy bone when graft material is not properly fused with existing bone. · Fast absorption of graft material	· Superior intensity of bone graft
Guided Bone Regeneration	· Implant placement should be delayed for early absorption of membrane, bone maturation and to avoid infection	· Less invasive than bone block graft · High success rate
Ridge Split & Expansion Technique	· Hard to have initial fixation	· Short bone adhesion time · Operation is possible without using additional consumable materials · Elaborate operation is possible for narrow-bone width case by using proper equipment · Minimum bone graft is possible

1) Ridge Split Technique

Technique expanding narrowed alveolar bone with osteotomy in order to facilitate implant placement.

2) Ridge Expansion Technique

Technique gradually expanding narrowed alveolar bone by pressing narrow side of cortical bone with viscoelastic properties of alveolar bone.

3) Ridge Split & Expansion Technique

Operation technique using Ridge Split & Expansion technique for successful implant placement

3. Strength and Weakness of Ridge Split & Expansion

1) Strength

① Implant placement is possible while expanding cortical bone wall.
② Shape restoration is possible with expansion of buccal cortical plate by alveolar bone absorption.
③ Bone regeneration. (self space making defect)
④ Less possibility of GBR, additional surgery and infection.
⑤ Cost saving and short chair time.

2) Weakness

① Possibility of buccal fracture and tough incision for narrow ridge, splitting control for hard bone.
② Need clear understanding about this technique and controlling proper direction of implant placement.
③ Possibility of buccal and lingual alveolar bone resorption, weak initial stability, insufficient blood supply and osteogenesis.

4. Application of Ridge Split & Expansion

1) When is a Ridge Split & Expansion Needed?

① When alveolar bone is high enough but narrow.
② When adjusting inclination of placed implant.
③ When placing an implant with wide diameter.

2) When is a Ridge Split & Expansion Not Applicable?

① When there are lesions or tumors at implant placement position and surrounding area.
② Patients with severe endocrine diseases which is not controllable, circulatory system, respiratory, blood diseases and immunity.

5. Complication of Ridge Split & Expansion

Complication on operation	Post-op Complication (Initial)	Post-op Complication
① Fracture of residual ridge ② Bleeding ③ Damage on adjacent teeth	① Wound dehiscence ② Infection ③ Failed implant	① Failed implant ②Chronic headaches

II. Product Overview

1. Product Features

SAVE RIDGE KIT is an all-around kit for simple and stable implant placement in cases with a narrow ridge by using the Ridge Split and Ridge Expansion technique.
It is also possible to place an implant without additional drilling by using the specially designed Expander Drill.
RIDGE KIT gives confidence to handle any case.

✪ RIDGE KIT with confidence in any case!

Enough expansion
with Bone Chisel



Easy expansion
with Expander Drill



Excellent stability
of Implant



2. Product Advantages

Safe	• Ridge Kit is designed to prevent fracture in the narrow and atrophied alveolar crest.
VERSATILE	• You can perform a ridge split, a ridge expansion or a combination of both.
Practical	• An inexpensive and practical solution.
Convenient	• Place fixtures without additional drilling by using the expander drill.

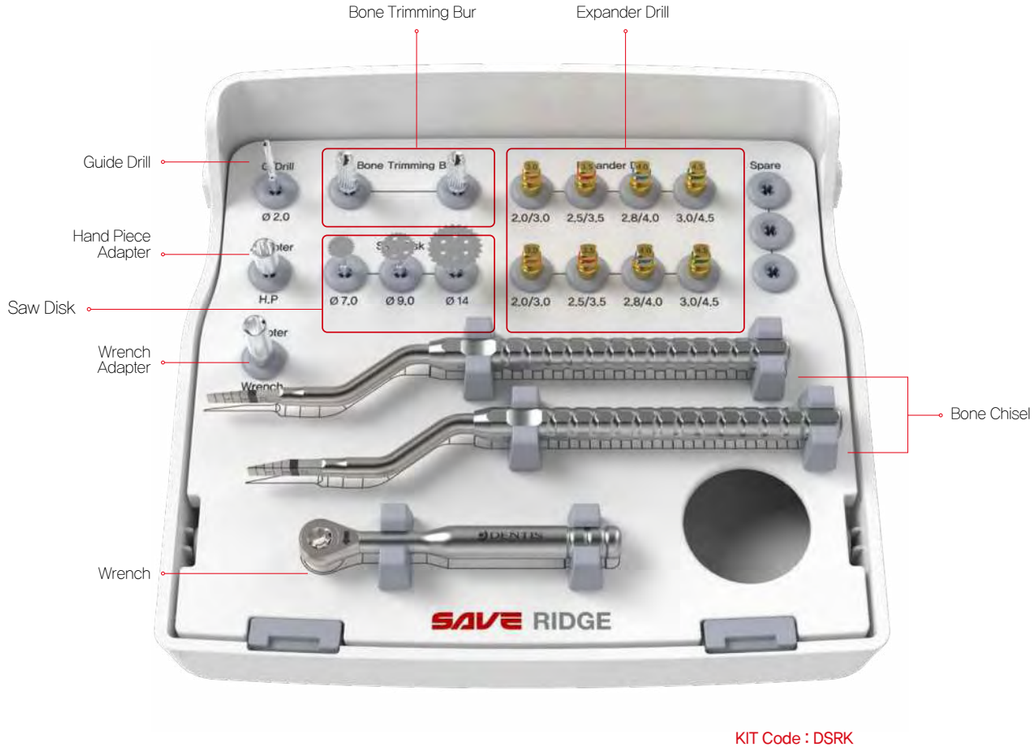
3. Precautions

① This product is a medical device and should be used for it's intended purpose
② Products with apparent defects must be returned before unpacking
③ Handle with care to prevent damage or deformation of the product
④ Drill blades are sharp and must be handled with care
⑤ Must be sterilized before using
⑥ Know how to use each tool properly before use

SAVE RIDGE KIT



MSTSGD0301	MSTSGD0302	MSTSGD0303	MSTSGD0010	MSTSGD0011	MSTSGD0299	MSTSGD0285	MSTSGD0287	MSTSGD0317	MSTSGD0318	MSTSGD0319	MSTSGD0320
Guide Drill	Adapter		Saw Disk			Bone Trimming Bur		Expander Drill			



KIT Code : DSRK

Wrench	Bone Chisel	
MSTSGD0300	MSTSGD0297	MSTSGD0298



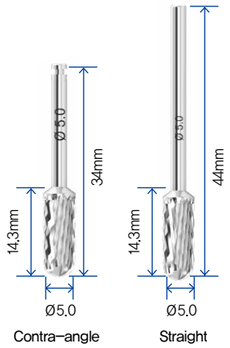
III. Product Specification

1. Components

Bone Trimming Bur

- Used to trim sharp and narrow alveolar bones or to remove granulation tissue
- Blade function on edge-, allowing vertical or horizontal use
- Straight, Contra-angle type
- Recommended RPM : Straight handpiece 30,000 ~ 40,000 RPM
  Contra-angle handpiece 1,500 RPM

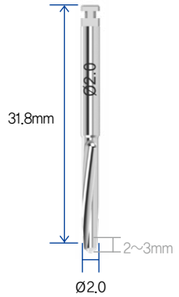
Diameter	Type	Code
Ø5.0	Straight	MSTSGD0285
	Contra-angle	MSTSGD0287



Guide Drill

- 2~3mm marking hole in cortical bone before bone expansion
- Drill Diameter : Ø2.0
- Recommended RPM : 1,200 ~ 1,500 RPM

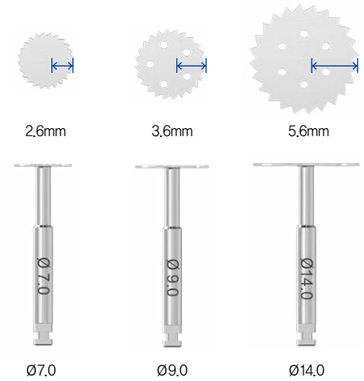
Diameter / Length	Code
Ø2.0 / 14.5mm	MSTSGD0301



Saw Disk

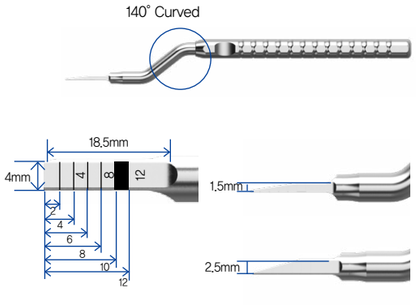
- For ridge splitting and cutting (Mesiodistal incision → Both buccilin-gual incision)
- Non-tilting design for safe cutting
- Recommended RPM : 1,200 ~ 1,500 RPM

Diameter	Side Length	Code
Ø7.0	2.6mm	MSTSGD0010
Ø9.0	3.6mm	MSTSGD0011
Ø14.0	5.6mm	MSTSGD0299



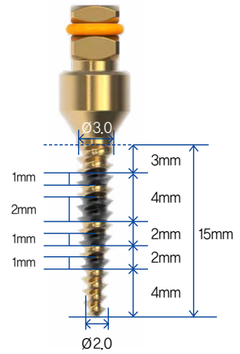
Bone Chisel

- For initial bone expansion after using the saw disk
- Inserting between gap after using Saw Disk for initial expansion
- Two thickness specifications to compensate for stable bone expansion. (1.5, 2.5mm)
- 140 ° curved for easy access to the posterior teeth



Expander Drill

- Sequential expansion of holes formed by Guide Drill
- Drill Diameter (Maxillary / Mandibular) : Orange Ø2.0/3.0, Red Ø2.5/3.5, Blue Ø2.8/4.0, Green Ø3.0/4.5
- Laser marking
- Recommended to expand Ø0.5 less than the fixture size
- 2 Products for each size
- Recommended RPM : 35-45 RPM



CODE	MSTSGD0317	MSTSGD0318	MSTSGD0319	MSTSGD0320
Color	Orange	Red	Blue	Green
Diameter	Ø2.0/3.0	Ø2.5/3.5	Ø2.8/4.0	Ø3.0/4.5
Expander Drill				

Adapter

- Expander Drill : Using for Length extension
- To extension for 15.4mm without interference
- Hand piece / , Wrench (2 options)

Connection	Code
H/P	MSTSGD0302
Wrench	MSTSGD0303

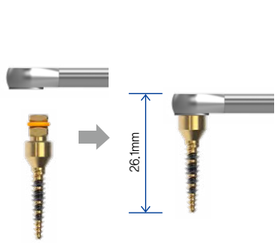


Wrench

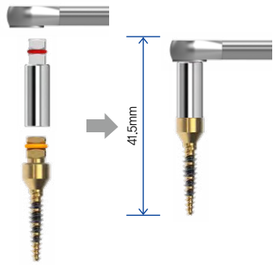
- To use it connect with Expander Drill
- if it is necessary to extend drill, can be used adapter

Code
MSTSGD0300





▲ How to use Expander Drill



▲ How to use Expander Drill with extended length by connecting adapter

Ⅳ. How to use

1. Surgical Procedure

1) Incision



Incise gingiva in the horizontal, vertical and sulcular direction using blade

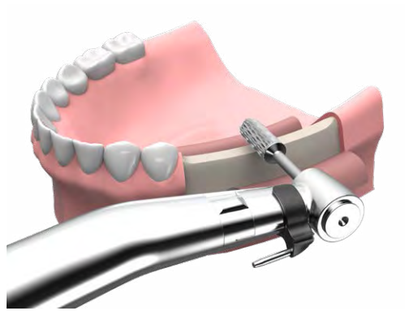
Tip Incision needs to be made 1.5mm from the sulcus to prevent gingival retraction.

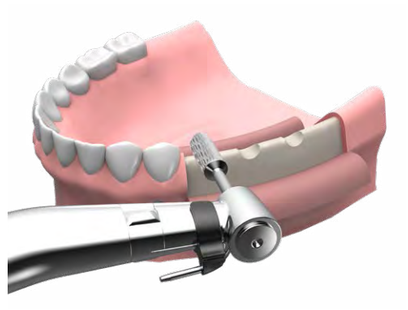
2) Flap Elevation



Gingival flap to be elevated using periosteal elevator tools

3) Bone Trimming & Flattening







Bone Trimming Bur

Trim the bone on the narrow and inclined alveolar bone with handpiece. However, in the case of a narrow ridge of 4mm or less, the ridge will need to be trimmed flat.

Tip
- Before horizontal osteotomy process can be used for proper width of the alveolar bone
- Depending on the situation, use vertical or side of the bur



4) Guide Drilling

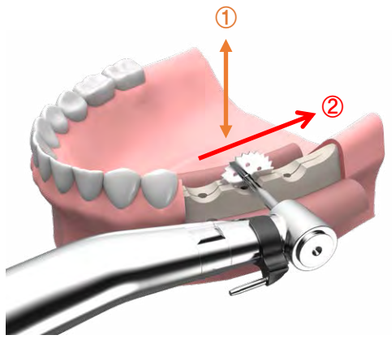


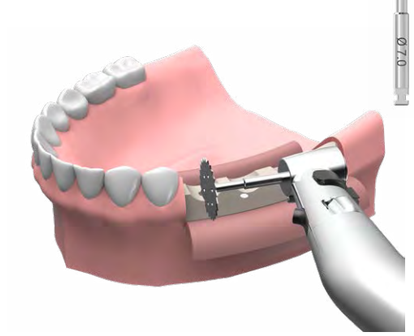


Guide Drill

Mark the guide hole before expanding the alveolar bone by using the Guide Drill or Linderman Drill. Drill at 1,200–1,500rpm

5) Sawing







Saw Disk

After selecting proper size Saw Disk, cut the middle part of the narrow ridge.

Notice After initial cutting in the vertical direction (up & down) then follow horizontal direction (mesiodistal) to prevent slipping or bouncing

Tip For efficient expansion on horizontal osteotomy should be completely cut by using the saw disk to get sufficient depth

6) Initial Expansion



Bone Chisel



Insert the Bone Chisel's bevel face toward the outside and extend the alveolar bone using a mallet

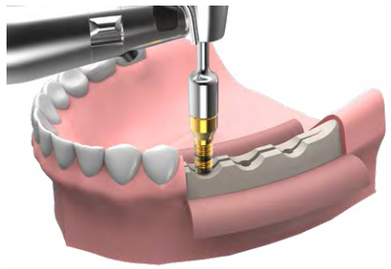
Tip To prevent the bone chisel from slipping, the operator holds the buccal and palatal side of the alveolar with one hand and the assistant holds the Bone Chisel. The operator chisels with the other hand.

7) Sequential Bone Expanding


Expander Drill

Adapter

Wrench





Connect the Expander Drill with the handpiece or wrench and insert it into the incised alveolar bone. Then, expand the bone at low speed (35–45rpm). The Expander Drill is used sequentially from Ø2.0/3.0 to the diameter of the implant to be placed. Use the laser marking to match depth of the implant.

Tip
- Use the adapter if there is interference or if you need longer Expander Drills.
- It's possible to place the fixture without additional drilling because it could drill up to 4.5mm

Expander Drill System				
				
Diameter	Ø2.0 / 3.0	Ø2.5 / 3.5	Ø2.8 / 4.0	Ø3.0 / 4.5
 Ø3.5	●			
 Ø4.0	●	●		
 Ø4.5	●	●	●	
 Ø5.0	●	●	●	●

8) Implant Placement

(Machined)
No–Mount Driver


(Ratchet)
No–Mount Driver


SQ Fixture



Place the fixture by using the fixture driver of surgical kit.

9) Cover Screw & Healing Abutment


Cover
Screw


Healing
abutment


Hex Driver



Connect the cover screw or Healing abutment to the fixture by using the hex driver.

10) Bone Graft Application (Optional)





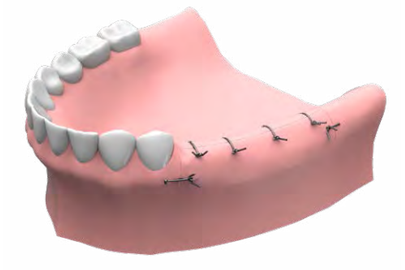


Ovis Bone Graft

Bone grafts are performed as needed

Ovis ALLO	Ovis XENO	Ovis XENO–XP	Ovis XENO–P	Ovis Bone BCP
Allogenic Material	Xenogenic Material	Xenogenic Material	Xenogenic Material	Alloplastic Material
• Excellent bone conduction And bone–derived allograft • Use material that passed FDA and KF–DA's Strict guidelines • Priority Use of Do–mestic Donors • Prevention of cross infection For each single donor • Cortical + Cancel–Lous' Ideal Combi–nation • Syringe Type – easy to use	• Obtained natural bone mineral, through strict manufacturing process • No immune rejection • Biocompatible and out–standing Bioactivity • Easy to re–vascularize bone grafting. • Similar form with human spongy bone A giant and micro pore structure	• Most similar to human bones porosity and high vitality compatibility • Microstructure with rough surface with well–at–tached skeletal cells • Excellent hydrophilicity and operability • With excellent blood affinity • Helps generate new bones • Safe from mad cow diseases	• Safety from mad cow dis–ease or Creutzfeldt–Jakob disease • Most similar porosity with human bones • Excellent hydrophilicity and permeability • Bio fitness and outstand–ing bone regeneration ability • Maintain the surface and pore shape of natural bones with special pro–cessing technology	• With high β–TCP content Excellent one bone con–duction synthetic bone Implant • Powerful hydration • Easy operation • Bio fitness and outstand–ing Bioactivity • Radiation impermeability • Great and fine pore structure Porosity: 70%
				

11) Suture



Finish the surgery by suturing

V. Product Storage & Maintenance

1. KIT Cleaning and Disinfecting

① The components of the kit need to be washed, especially the surface, by using a brush with distilled water or running water at 30–40℃ (86–104F) for 20 seconds after use.

② Start by soaking in disinfectant solution for 10 minutes

③ Additional cleaning using ultrasonic cleaner

④ After washing with detergent and cleaning brush, rinse thoroughly with running water

⑤ Washed utensils are completely air–dried or directly removed with a clean cloth.

⑥ Dried instruments are repositioned according to the marking on the base plate of the KIT

⑦ Pack the KIT in a disinfecting cloth

⑧ Attach the sterilizing tape to the disinfectant cloth and write the sterilization date

⑨ Put the packaged KIT in a sterilizer and sterilize

2. KIT storage method

① Store at room temperature without contamination

② Check the sterilization date and if it is not used within 3–4 days, use it after re–sterilization before surgery

Ⅵ. Clinical Cases

CASE1. SQ IMPLANT PLACEMENT WITH SAVE RIDGE KIT

Dr. Kim, Yongjin l Ilsan Apsun Dental Clinic

Patient Information

Placement Implant Area	6 7	**Sex / Age**	Female / 57
C.C.	Pain and mobility on lower posterior old bridge		
Treatment Plan	Implant placement with ridge splitting		
Materials and Methods	1. Ridge splitting with SAVE RIDGE KIT 2. #36 Ø 4.5 X 10 mm, #37 Ø 5.0 X 10 mm SQ implant placement 3. Connect healing abutments 4. Graft autogenous bone 5. Suture 6. Connect Louis Button ll		

Pre-operation



Fig.1 Pre-op panorama.

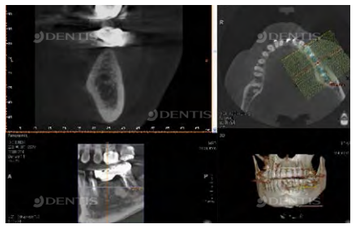


Fig.2 Pre-op CT.



Fig.3 Pre-op clinical view.

Treatment

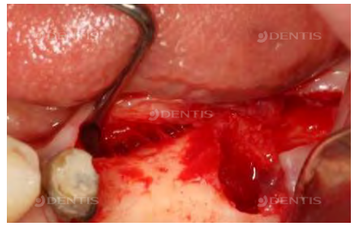


Fig.4 Incision and flap elevation were done.

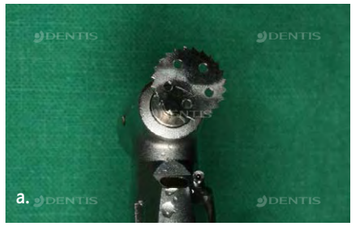


Fig.5a-b Horizontal and vertical osteotomies(b) were made with Saw Disk(a).



Fig.6 Bone Chisel was used to made ridge split.



Fig.7a-b Sequential bone expanding with Expander Drills.



Fig.8 Ø4.5 x 10mm, Ø5.0 x 10mm SQ implants were placed on #36, 37.



Fig.9a-b Harvest autogenous bone(a) with Bone Chip Drill in ramus area(b).

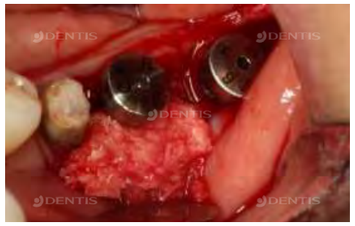


Fig.10 Healing abutments were connected and autogenous bone was placed.



Fig.11 Suture was done and Louis Button ll were connected to increase keratinized gingiva.

Post-operation

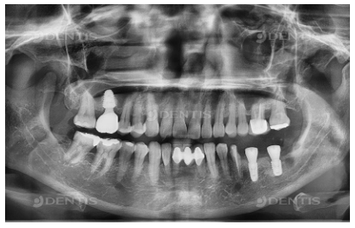


Fig.12 Post-op panorama.

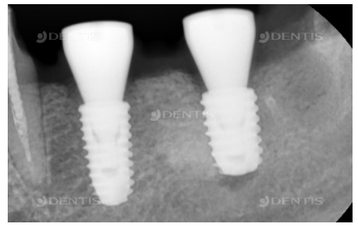


Fig.13 Post-op P.A.

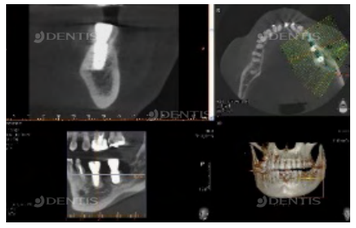


Fig.14 Post-op CT of #36.

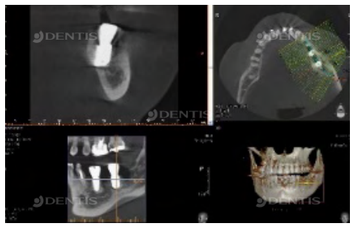


Fig.15 Post-op CT of #37.