OSSTEM IMPLANT

Surgical Manual

Implant Selection Guide

Introduction

Welcome,

and thank you for choosing Osstem Implant products. This catalogue is designed to support dental professionals with product information, clinical workflows, and practical guidance for daily use. It is important to inform patients about the option of dental implant treatment and the potential benefits it may provide. For further information, please contact your local Osstem representative.

Important Notice

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Electronic IFU (per (EU) 2021/2226)

- Surgical Drill & KIT System is eligible for provision of electronic instructions for use (e-IFU) under Regulation (EU) 2021/2226 for professional users.
- e-IFUs are available at [website URL: ifu.osstem.com] in the official languages required by the Member State(s) where the device is placed on the market.
- The e-IFU content is consistent with the paper version; all updates are promptly reflected in both versions.
- If requested, a paper copy of the IFU will be supplied free of charge, within 7 calendar days.
- The e-IFU website maintains historical versions for traceability of all previously applicable instructions.
- Labeling on the product/package indicates the provision of e-IFU and how to access it online.

Surgical Manual | English Edition

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158 00 Prague, Czech Republic

Note: *This brochure is based on the global 2021 Osstem Surgical Manual and has been visually revised and adapted for the European market. Product availability and specifications may vary by country and are subject to change without notice. Images are for illustrative purposes only. For professional use only.*

Implant Selection Guide

Step 1

Select implant system

· Select system depending on whether 1stage or 2stage surgery is performed
· Select system depending on surgical site

Step 2

Select implant body type

· Select system depending on surgical site
· Select Body type by taking bone quality and its expected bone interference into consideration

Step 3

Select implant diameter

· Select diamater depending on the size of the original tooth where the implant should be placed.

Step 4

Select implant length

· Sufficient bone height
· Insufficient bone height

Step 5

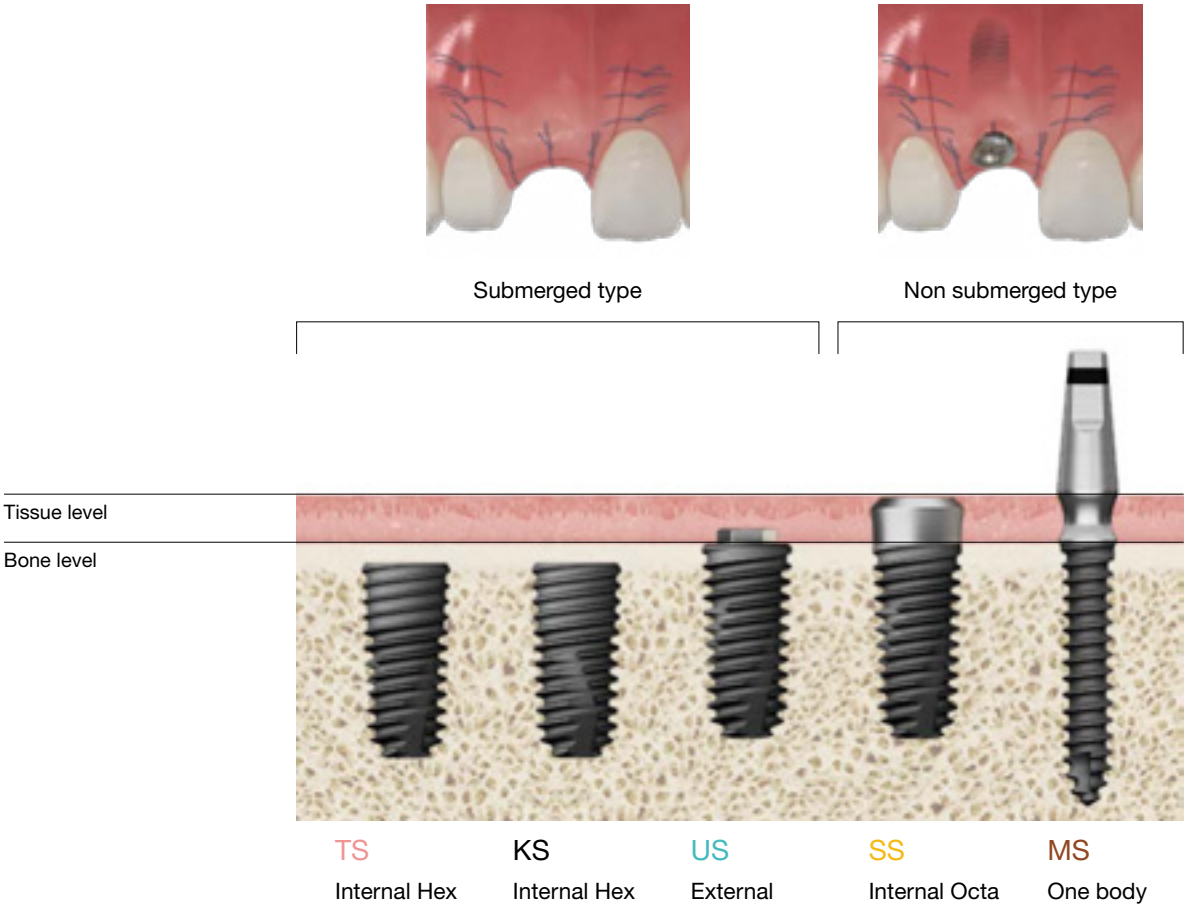
Select implant surface

SA, CA, BA, SOI

1 Select system

A Select system depending on whether 1stage or 2stage surgery is performed

· Select submerged type implants (TS, KS, US) in case primary closure is necessary and therefore 2stage surgery needs to be performed.
· Select non-submerged type implants (SS, MS) or place healing abutment after placing submerged type implants (TS, KS, US) in case primary closure is unnecessary and therefore 1stage surgery is possible.



2-stage surgery vs. 1-stage surgery

· Implant surgery can be divided into 1stage and 2stage surgery depending on the number of gingival incisions.
· In case primary stability is sufficient, perform a 1stage surgery by placing healing abutment after implant surgery.
· In case initial stability is insufficient, perform a 2stage surgery by placing cover screw after implant surgery.

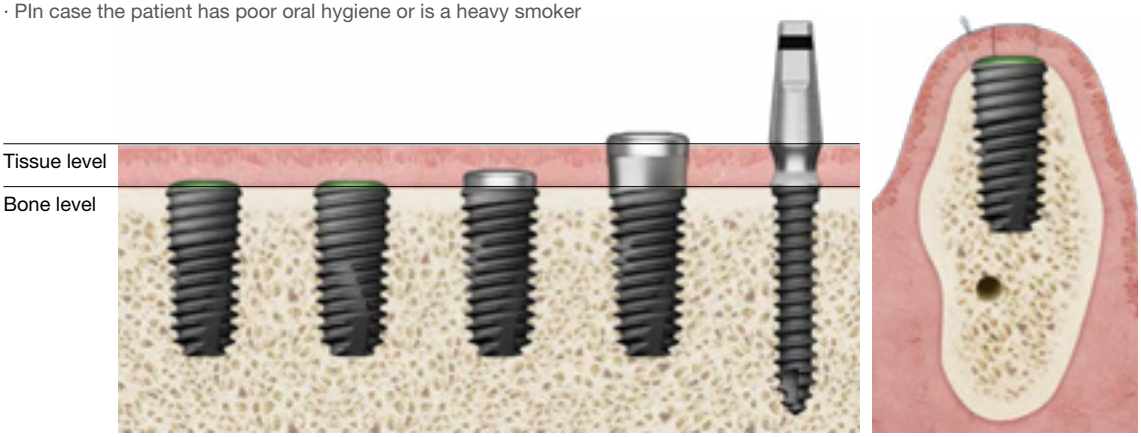
	Number of gingival incisions	Indications	Treatment period	Initial stability	Epithelial Tissue Ingrowth	Risk of infection	Loss of attached gingiva	Post operative implant prognosis	Risk of failure due to mastication
2-stage surgery	2-stage, additional surgery required	· Bad bone density · Bad initial stability	3~5 months	Stable	Prevention	Relatively low	Relatively high	Difficult	Low
1-stage surgery	1-stage, no additional surgery required (less inconvenience for surgeon/patient)	· Good bone density · Good initial stability	2~4 months (shorter)	Unstable	Possible	Relatively high	Relatively low	Easy	High

① 2-stage surgery

· Select a submerged-type implant system: TS, KS, SS system

Indications

· In case primary stability is low (<15Ncm)
· If a denture needs to be seated during the healing period
· In case primary closure is required due to wide-ranging GBR
· PIn case the patient has poor oral hygiene or is a heavy smoker



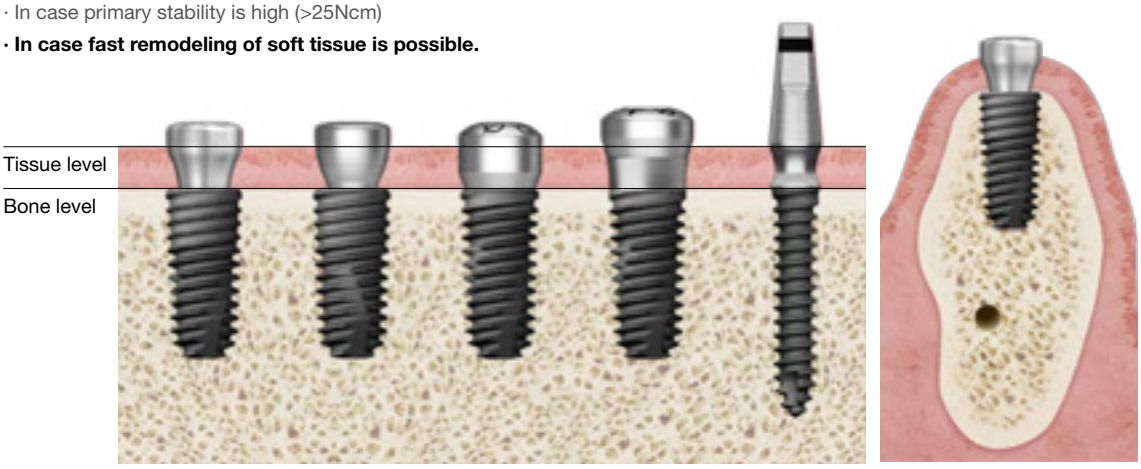
	TS	KS	US	SS	MS
Applicable Systems	O	O	O	×	×

② 1-stage surgery

· Select a non-submerged-type implant system: SS, MS system
· Select a submerged-type (TS, KS, US) implant system: 1-stage surgery is possible when healing abutments are seated after implantation.

Indications

· In case primary stability is high (>25Ncm)
· **In case fast remodeling of soft tissue is possible.**



	TS	KS	US	SS	MS
Applicable Systems	O	O	O	O	O

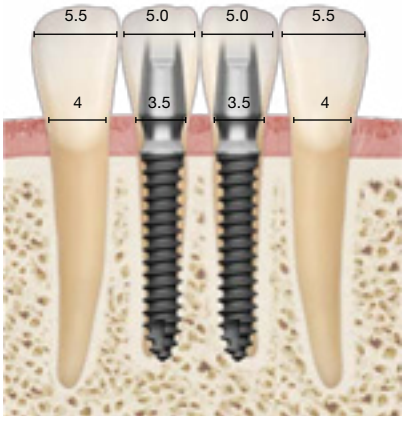
B Select according to placement position

① Anterior region

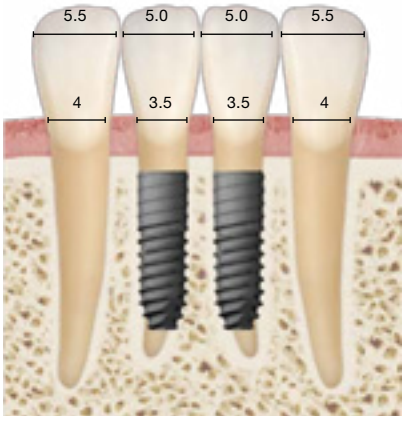
· Importance lies in aesthetic function : select submerged type systems such as TS and KS system.

· Mandibular anterior region with narrow bone width : select implant systems specially designed for narrow bone width such as MS system or the TS III Ø3.0 (mini) implant.

(mm)



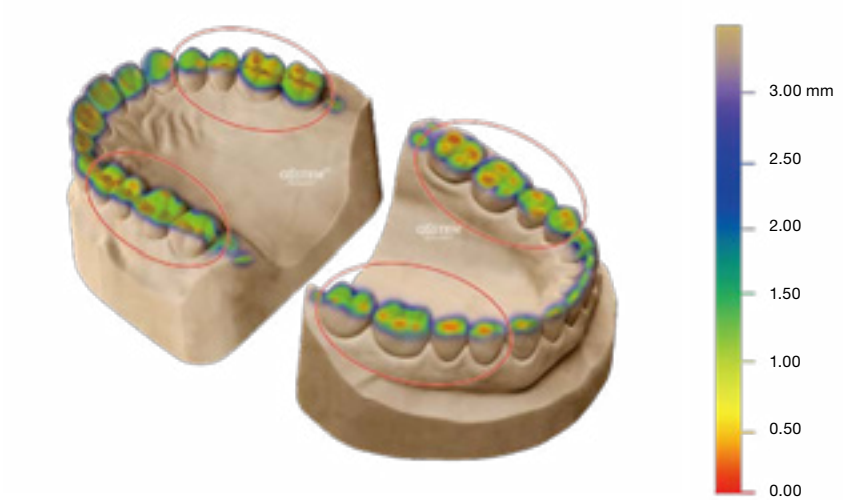
MS Narrow ridge



TS III Ø3.0 (mini)

② Posterior region

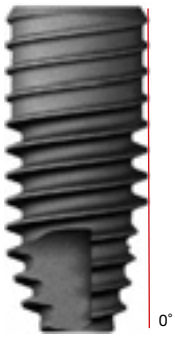
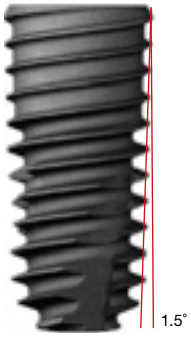
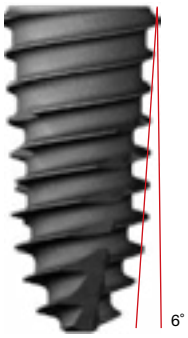
· Posterior region has to bear mechanically strong mastication force, and the risk of overload due to occlusal interference is high : select implant systems with strong structural stability such as TS, KS, SS and US system.



2 Select body type

Implant body type

· Categorized by taper

		
II Type	**III Type**	**IV Type**
· Taper angle: 0˚ · Straight type · Straight body allows easy adjustment of placement depth · Less affected by bone quality and drill diameter · Suitable for hard bone, normal bone	· Taper angle: 1.5˚ · Taper type · 1.5˚ taper body is favorable for securing primary stability · Suitable for immediate and early loading · Suitable for normal bone, soft bone	· Taper angle: 6˚ · Taper type · Able to obtain bone compaction even in weak bone able to obtain high primary stability · For Sinus surgery cases and soft bone cases

Bone quality

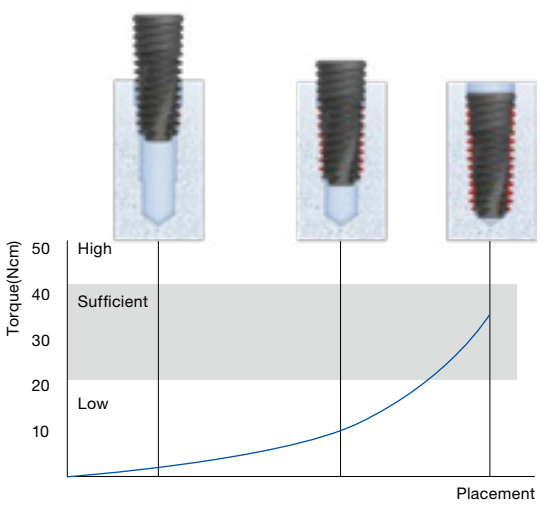
· Stands for the bone strength
· Classified to soft bone, normal bone, hard bone
· Healing period and loading time can be different depending on bone quality.
· Bone quality changes according to the patient's condition and cannot be controlled by the surgeon

		
Soft Bone	**Normal Bone**	**Hard Bone**
· D4: 150~350HU · Poor primary implant stability · Found in Maxillary posterior region region of long term edentulous patients	· D3/D2: 850~1,250HU · Good primary implant stability · Has good bone healing ability thanks to abundant blood supply · Found in the mandibular posterior region and partially in Maxillary anterior region region.	· D1: 1,250HU~ · The abundant amount of cortical bone in the alveolar crest is favorable for dispersion of occlusal force, but a lot of heat is generated when placing implants. · Good primary stability when placing implants. · Found relatively more in the mandibular anterior region

Primary stability

Primary stability depending on torque value

· Lower than 20Ncm : low primary stability
(2-stage surgery recommended)
· 20~40Ncm : Sufficient Primary stability
(1-stage surgery possible)
· 40Ncm~: High Primary stability
(recommended for immediate loading)

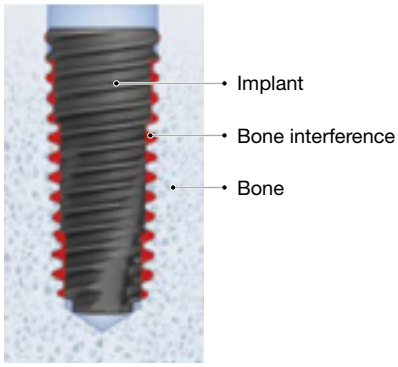


Adjust Primary stability

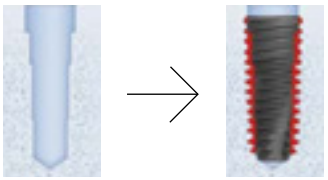
· Torque value changes depending on bone quality and bone interference
. Since the bone quality at the placement site cannot be controlled, it is advised to secure primary stability by adjusting the amount of bone interference.

Bone interference

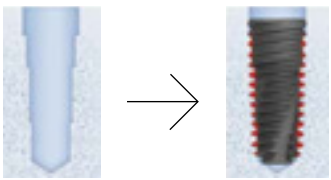
· Part where the implant and bone overlap once the implant is placed
· The larger the interference, the higher the primary stability Bone interference can be



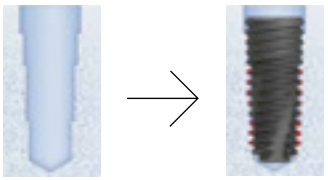
Ex. In case of placing TSIII Ø4.5 (based on placement in normal bone)



One size smaller drill than the nominal drill (F4.0) — High bone interference — **Initial stability: High**



Nominal drill (F4.5) — Medium bone interference — **Initial stability: Medium**



One size smaller drill than the nominal drill (F5.0) — Low bone — **Initial stability: Low**

A Select system depending on surgical site

① Maxillary posterior region

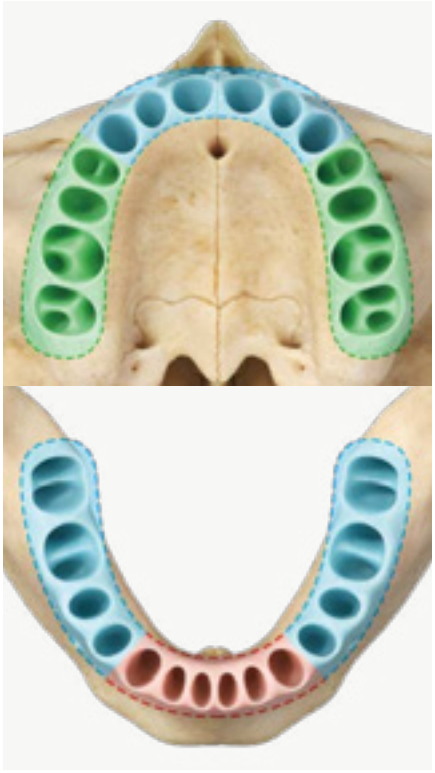
· Mainly soft bone
· Low density bone : Body type III, IV implants are recommended

② Maxillary anterior region, mandibular posterior

· Mainly normal bone
· Good primary stability can be obtained : Body type II, III, IV implants are recommended

③ Mandibular anterior

· Mainly hard bone
· Favorable for obtaining implant stability thanks to bone's hardness : Body type II, III implants are recommended

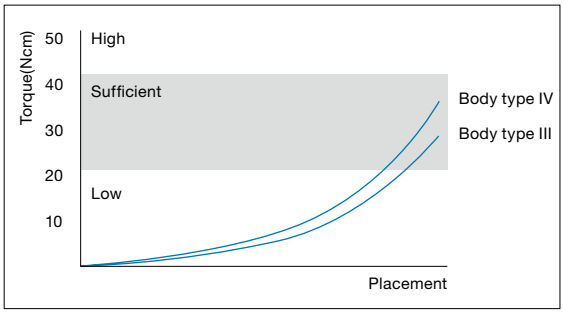


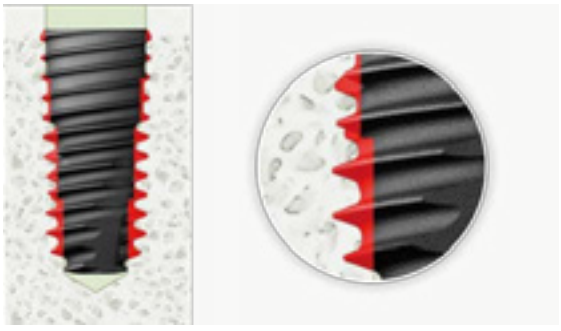
Soft bone Normal bone Hard bone

B Select Body type by taking bone quality and its expected bone interference into consideration

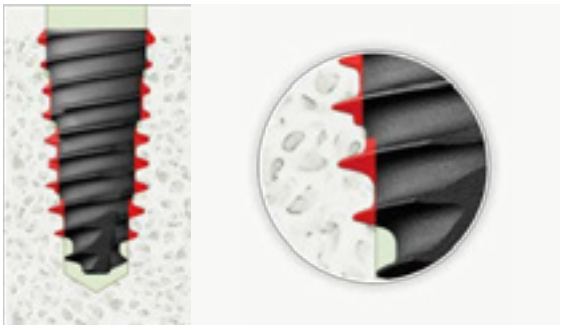
① Soft bone

· Very thin or nearly absent compact bone layer and low bone density
· Poor primary implant stability : it is recommended to select body type III or IV implants and to use one size smaller drill than the nominal final drill in order to secure primary stability by means of bone compaction.





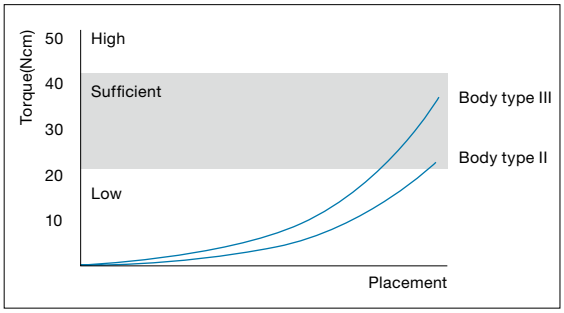
Body type III
One size smaller drill than the nominal final drill

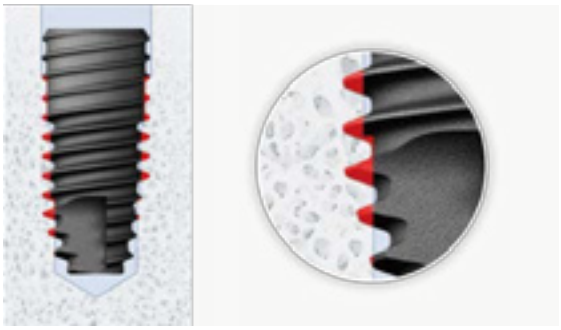


Body type IV
One size smaller drill than the nominal final drill

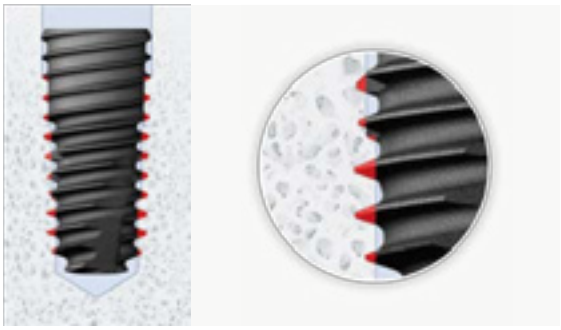
② Normal bone

· Normal bone is made of compact bone and canceloous bone
· Good primary implant stability of the implant: it is recommended to select body type II or III implants and to use nominal final drill in order to secure appropriate primery stability.





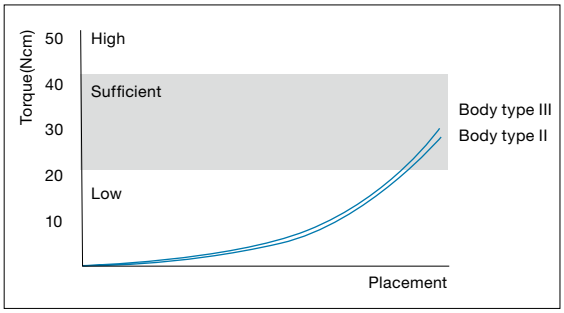
Body type II
Nominal drill

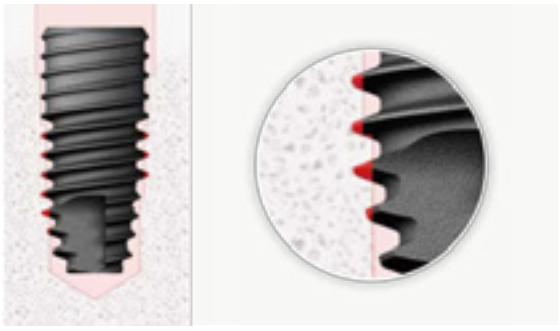


Body type III
Nominal drill

③ Hard bone

· Little cancellous bone. Likely to create heat during the implant placement.
· Good primary implant stability when placing implant: it is recommended to select body type II or III implants and to use one size larger drill than the nominal final drill in order to obtain appropriate primary stability by cutting out more cortical bone.





Body type II
One size larger drill than the nominal final drill

Body type III
One size larger drill than the nominal final drill

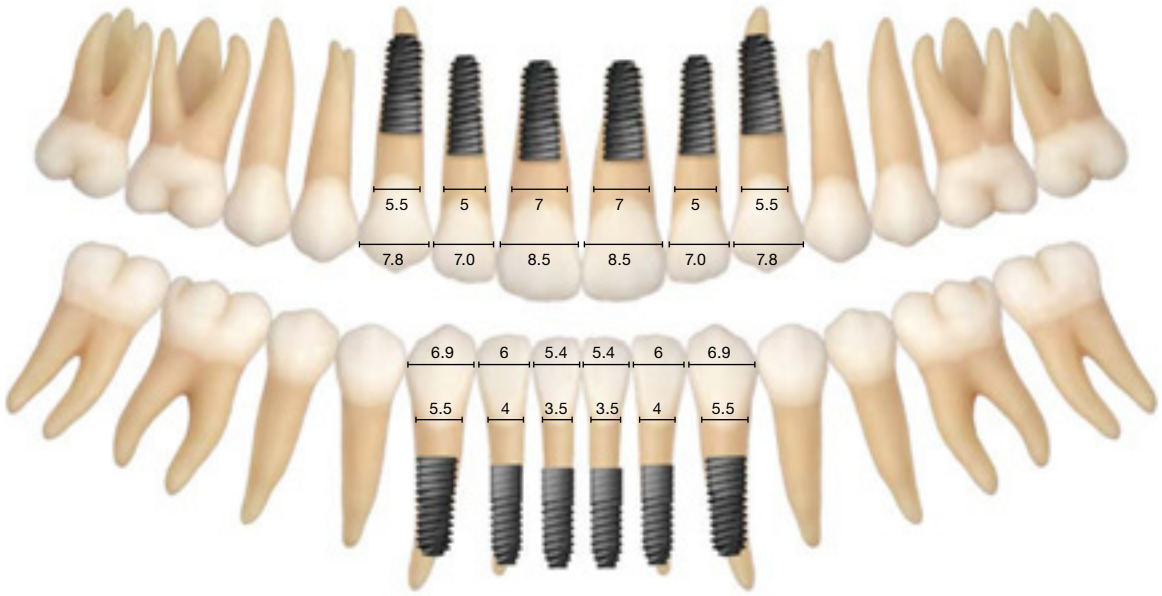
3 Select diameter

Select implant diameter depending on the natural tooth size of the implant site.

Maxillary anterior region

D / system	Ø2.5	Ø3.0	Ø3.5	Ø4.0	Ø4.5
TS		o	o	o	o
KS		o	o	o	o
SS			o	o	o
US			o	o	o
MS	o	o			

III Type (mm)



II or III Type

Mandibular anterior

D / system	Ø2.5	Ø3.0	Ø3.5	Ø4.0	Ø4.5
TS			o	o	o
KS			o	o	o
SS				o	o
US				o	o
MS	o	o	o		

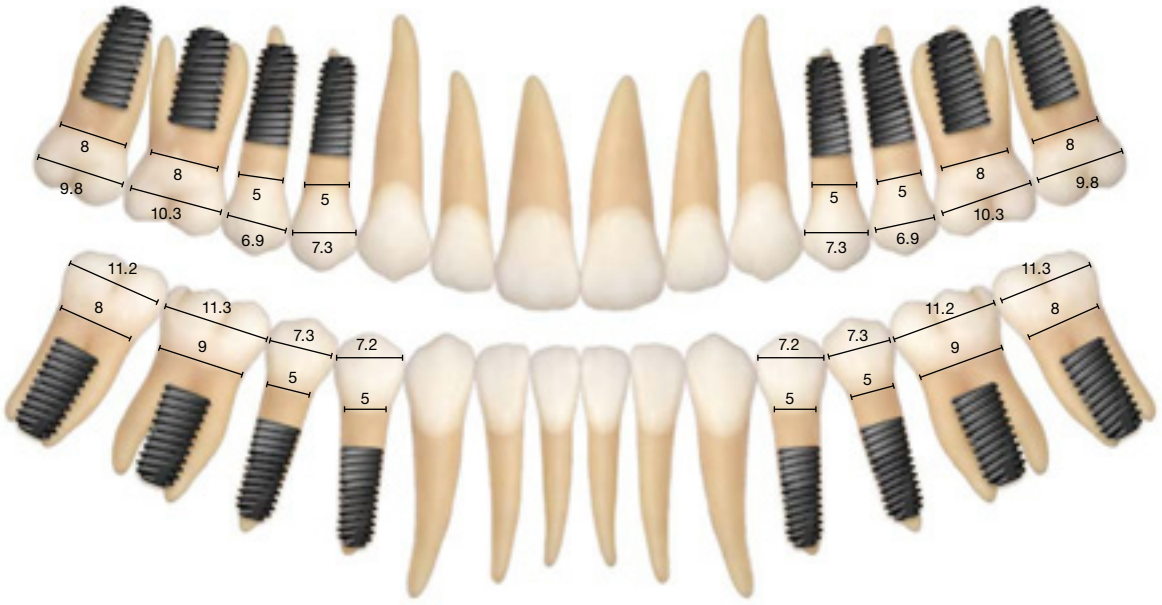
Maxillary posterior region

system \ D	Ø4.0	Ø4.5	Ø5.0	Ø5.5	Ø6.0	Ø7.0
TS	o	o	o	o	o	o
KS	o	o	o	o	o	o
SS	o	o	o		o	o
US	o	o	o		o	o
MS						

III or IV Type

III or IV Type

(mm)



III or IV Type

III or IV Type

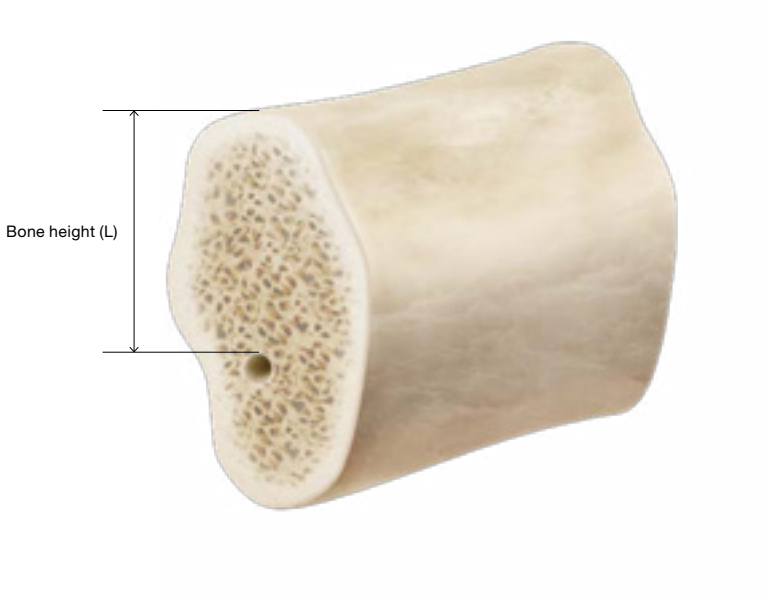
Mandibular posterior

system \ D	Ø4.0	Ø4.5	Ø5.0	Ø5.5	Ø6.0	Ø7.0
TS	o	o	o	o	o	o
KS	o	o	o	o	o	o
SS	o	o	o		o	o
US	o	o	o		o	o
MS						

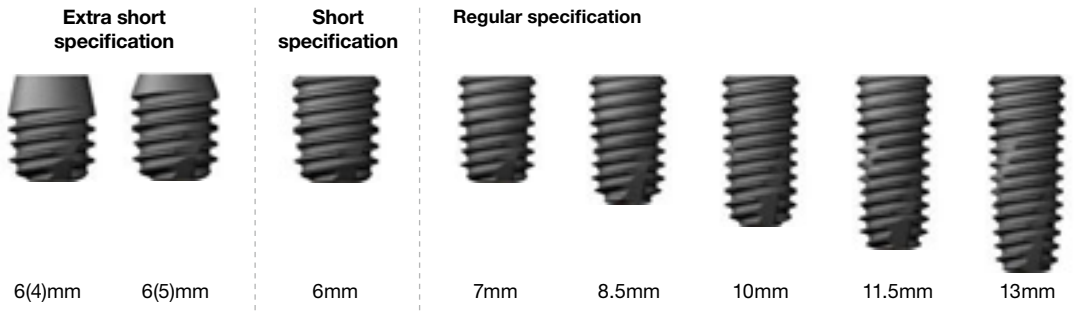
4 Select length

A In case bone height is sufficient

· Choose appropriate implant by taking the bone height and width into consideration
· Generally 10mm implants are placed
· In case obtaining primary stability is difficult, choose 11.5mm or 13mm implants.

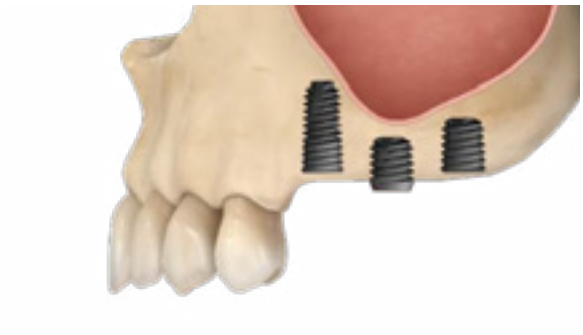


OSSTEM system length specification

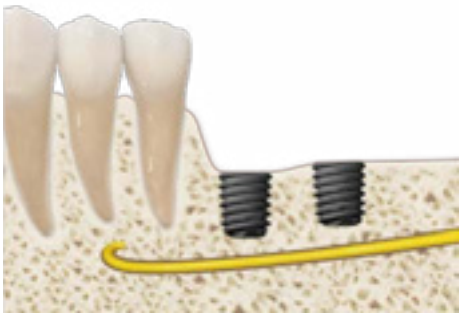


B In case bone height is insufficient

· Place short implants : placing short implants is recommended when implants are too close to crucial anatomical structures.



Close to maxillary sinus

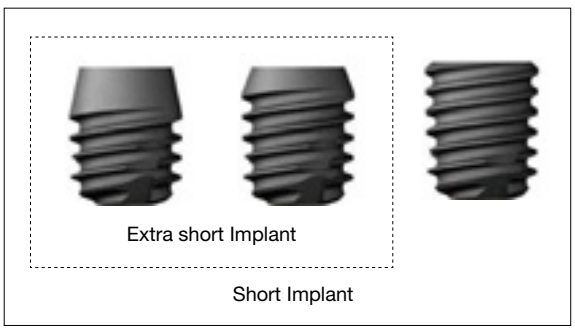


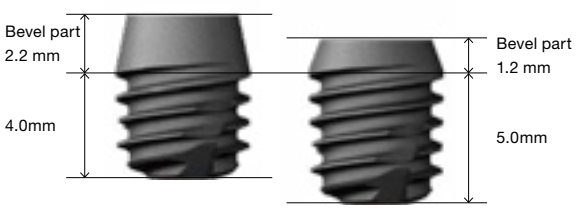
Close to inferior alveolar nerve

System	D \ L	Extra Short (Excluding bevel)		Short
	Ø4.0		7(6)mm	
	Ø4.5		7(6)mm	
	Ø5.0	6(4)mm	6(5)mm	6mm
	Ø5.5			6mm
	Ø4.0		7(6)mm	
	Ø4.5		7(6)mm	
	Ø5.0	6(4)mm (Wide specification)	6(5)mm (Wide specification)	6mm
	Ø4.0			
	Ø4.5			
	Ø5.0			6mm

* Ø6.0, Ø7.0: Same as the Ø5.0 specification of each system

· Short implant : implants that have threads up to 6mm
· Extra short implant : short implants with large bevelsbevel
· The placement depth of the bevel section can be adjusted by the surgeon depending on the purpose of the surgery.





5 Surface type

A SA surface

· Optimal surface shape is realized with acid etching process.
· Ra 2~3㎛ surface roughness (However, 0.5mm of the upper part has roughness of 0.5~0.6㎛).
· Uniform micro-pits in size of 1~3㎛.
· 46% increase in surface roughness compared to RBM surface.

Bone response performance (in-vitro and in-vivo)

· 20% improvement in osteoblast differentiation and ossification capacity compared to RBM
· 48% improvement in primary stability (RT measured, 4 weeks) compared to RBM surface 20% improvement of new bone formation ability (BIC measured, 4 weeks) improved by 20% compared to the RBM surface

Treatment period (prosthesis seating)

· Prosthesis loading is possible in 6~8 weeks from surgery (Treatment time may vary depending on bone mass and periodontal condition)

10 minutes after immersing in blood

B CA surface

· Activation of surface is maximized (super hydrophilicity) by immersing the implant in calcium ($CaCl_2$) solution
· Same optimal surface shape as SA is preserved.
· Increased area for new bone formation thanks to excellent blood wettability
· Improved early bone response performance compared to SA surface

Bone response performance (in-vitro and in-vivo)

· 3 times increase in protein and cell adhesion ability compared to SA
· 19% inprovement in early cell differentiation ability (7 days) compared to SA surface
· 34% increase in primary stability (RT measured, 4 weeks) compared to SA surface
· 26% increase in new bone formation ability (BIC, 4 weeks) compared to SA surface

Treatment period (prosthesis seating)

· Prosthesis loading is possible in 4~6 weeks from surgery (Treatment time may vary depending on bone mass and periodontal condition)

Immediately upon immersing in blood

C BA surface

· Low crystalline nano-HA coated surface on SA surface
· World's first dry hydrophilic surface
· Ultra-thin hydroxyapatite coating under 10nm (Ra 2~3㎛)
· The dual function of Titanium and hydroxyapatite :
Hydroxyapatite is naturally removed during new bone formation

Bone response performance (in-vitro and in-vivo)

· Merging the advantages of SA surface and existing HA surface SA
(SA advantages: Optimal surface shape / HA advantages: Excellent initial bone formation ability in weak bone quality)
· New bone formation (BIC) improved by 40% compared to the SA surface
· Can be used in any bone matrix compared to HA surface

Treatment period (prosthesis seating)

· Prosthesis loading possible from 4~5 weeks (Treatment time may vary depending on bone mass and periodontal condition)

SA

BA

D SOI surface

· Next-generation surface coated with special material (K material)
· Activates blood clot formation
· Prevents carbon adsorption from the air
· Coating of K material on the surface of SA (Ra 2~3㎛)
· Super-hydrophilic surface for excellent blood wetting

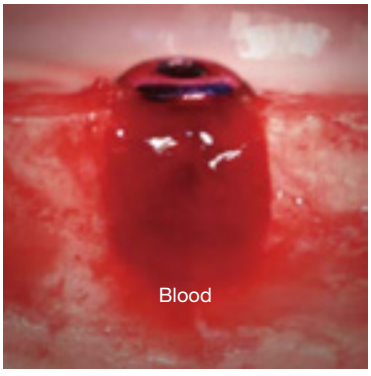
Bone response performance (in-vitro and in-vivo)

· 130 times increase in protein and cell adhesion compared to SA
· 57% improvement in initial fixation force (RT, 4 weeks) compared to SA surface
· Surface with the shortest treatment period

Treatment period (prosthesis seating)

· Prosthesis loading possible from 4~5 weeks (Treatment time may vary depending on bone mass and periodontal condition)

Immediately upon immersing in blood



20 minutes after immersing in blood

Important Information and Legal Notices 2026.03 ver.1.1

1. IMPORTANT NOTICE

This catalogue is intended solely as an informational and educational guide for trained dental professionals. It does not replace the applicable Instructions for Use (IFU), product labelling, formal clinical training, treatment planning, or independent professional judgment.

All clinical protocols, drilling sequences, cleaning instructions, sterilization requirements, torque recommendations, indications, contraindications, warnings, and procedural steps must be verified against the current product-specific IFU and the applicable product label for the relevant REF/ product code prior to use.

In the event of any discrepancy between this catalogue and the applicable IFU, product labelling, or other official Osstem documentation, the IFU, labelling, and official product documentation shall prevail.

2. PRODUCT INFORMATION, CHANGES, AND AVAILABILITY

All products, specifications, protocols, recommendations, illustrations, and other information contained in this catalogue are subject to change without prior notice.

Not all products may be approved, cleared, released, licensed, or otherwise available in all markets. Product availability, indications, and regulatory status may vary by country. For information on the current product portfolio, approved indications, and local availability, please contact your local Osstem representative or Customer Service and consult the current official Osstem documentation.

3. PROFESSIONAL USE ONLY

Osstem Implant products are intended for use by appropriately trained dental professionals only. Dental implant treatment involves complex professional procedures and requires appropriate education, clinical training, patient selection, treatment planning, and radiographic as well as clinical evaluation.

The suitability of any procedure must be assessed individually for each patient, taking into account anatomy, bone quality and quantity, occlusion, systemic conditions, oral hygiene, compliance, and any other relevant clinical factors.

4. PRODUCT DESCRIPTION AND COMPATIBILITY

Osstem Implant offers implant fixtures, prosthetic components, surgical instruments, and related materials for dental implant treatment. Product codes, specifications, lot numbers, dates of manufacture, and expiration dates, where applicable, must be checked on the product label before use.

Unless expressly stated otherwise in the applicable product documentation, Osstem Implant abutments, prosthetic components, instruments, and related accessories are intended to be used only with compatible Osstem Implant fixtures and components. Use in combination with components or instruments from other manufacturers may result in improper fit, incomplete locking, loosening, fracture, reduced performance, or other clinical complications.

5. STERILITY, CLEANING, REPROCESSING, AND STORAGE

Sterile products supplied in sterile packaging must be used only if the packaging is intact and the expiration date has not passed. If sterile packaging has been opened, damaged, or has expired, the product must not be used.

Single-use products must not be reused, reprocessed, or resterilized.

Reusable instruments must be cleaned, disinfected, inspected, maintained, and sterilized strictly in accordance with the applicable Osstem IFU before reuse.

Products must be stored in accordance with the applicable labelled storage conditions and protected from moisture, contamination, direct sunlight, and other adverse environmental conditions.

6. CLINICAL PROTOCOLS AND PROCEDURAL GUIDANCE

Any surgical, prosthetic, drilling, insertion, loading, cleaning, maintenance, or other procedural guidance shown in this catalogue is provided for general informational purposes only and must be adapted to the individual patient, the specific product, and the current approved IFU.

Clinicians remain solely responsible for selecting the appropriate treatment protocol and for determining whether the intended procedure, component selection, loading protocol, and clinical application are appropriate for the individual case and within the approved indications for the relevant product.

7. WARNINGS, CONTRAINDICATIONS, AND POSSIBLE COMPLICATIONS

Improper patient selection, inadequate treatment planning, non-compliance with the applicable IFU, improper use, off-label use, product modification, poor oral hygiene, infection, insufficient bone quality or quantity, excessive occlusal loading, or other unfavorable clinical conditions may result in complications or treatment failure.

Possible complications and adverse events may include, without limitation, implant instability or failure, loosening, fracture, bone loss, infection, soft- or hard-tissue complications, prosthetic complications, delayed healing, or the need for revision or removal.

Contraindications and precautions must always be assessed in accordance with the applicable Osstem product documentation and accepted professional standards of care.

8. INTENDED PURPOSE

The OSSTEM Implant System is an artificial dental root that has been designed for use in dental implant treatment in order to recover lost teeth. The system is implanted via a surgical method in maxillary or mandibular bone to replace natural dental root. The OSSTEM Implant System is indicated for use in partially or fully edentulous mandibles and maxillae, in support of single or multiple-units restorations including; cemented retained, screw retained, or overdenture restorations, and final or temporary abutment support for fixed bridgework. It is intended for delayed loading. Products with diameter of 3.3 mm or less must be used exclusively for mandibular anterior teeth in order to prevent fracture due to excessive occlusal load. The Ultra-Wide Implants are intended to be used only to replace molar teeth and angled abutments are not to be used with the Ultra-Wide Implants. Evaluate the quantity of bone and radiographs to assess any potential anatomical contraindications to use of the Ultra-Wide Implant. The applicable product-specific IFU must always be consulted to confirm the intended purpose, indications, limitations, and approved clinical applications of the relevant product.

9. ACCURACY OF INFORMATION

Although reasonable care has been taken in preparing this catalogue, typographical, editorial, translation, printing, and formatting errors may occur. Information may also become outdated as a result of product updates, regulatory changes, technical revisions, or clinical developments.

No representation is made that this catalogue is complete, current, or error-free in every respect. Users must verify all critical information against the current IFU, product labels, and other official Osstem documentation before clinical use.

10. ILLUSTRATIONS AND EXAMPLES

Product illustrations, diagrams, radiographic examples, case images, and step-by-step demonstrations are for illustrative purposes only. Unless expressly stated otherwise, they are not shown to scale and do not guarantee any clinical outcome.

Example cases do not constitute a promise or representation of treatment success in any individual case.

11. TRADEMARKS AND COMPANY NAMES

All trademarks, trade names, product names, brand names, and company names are the property of their respective owners.

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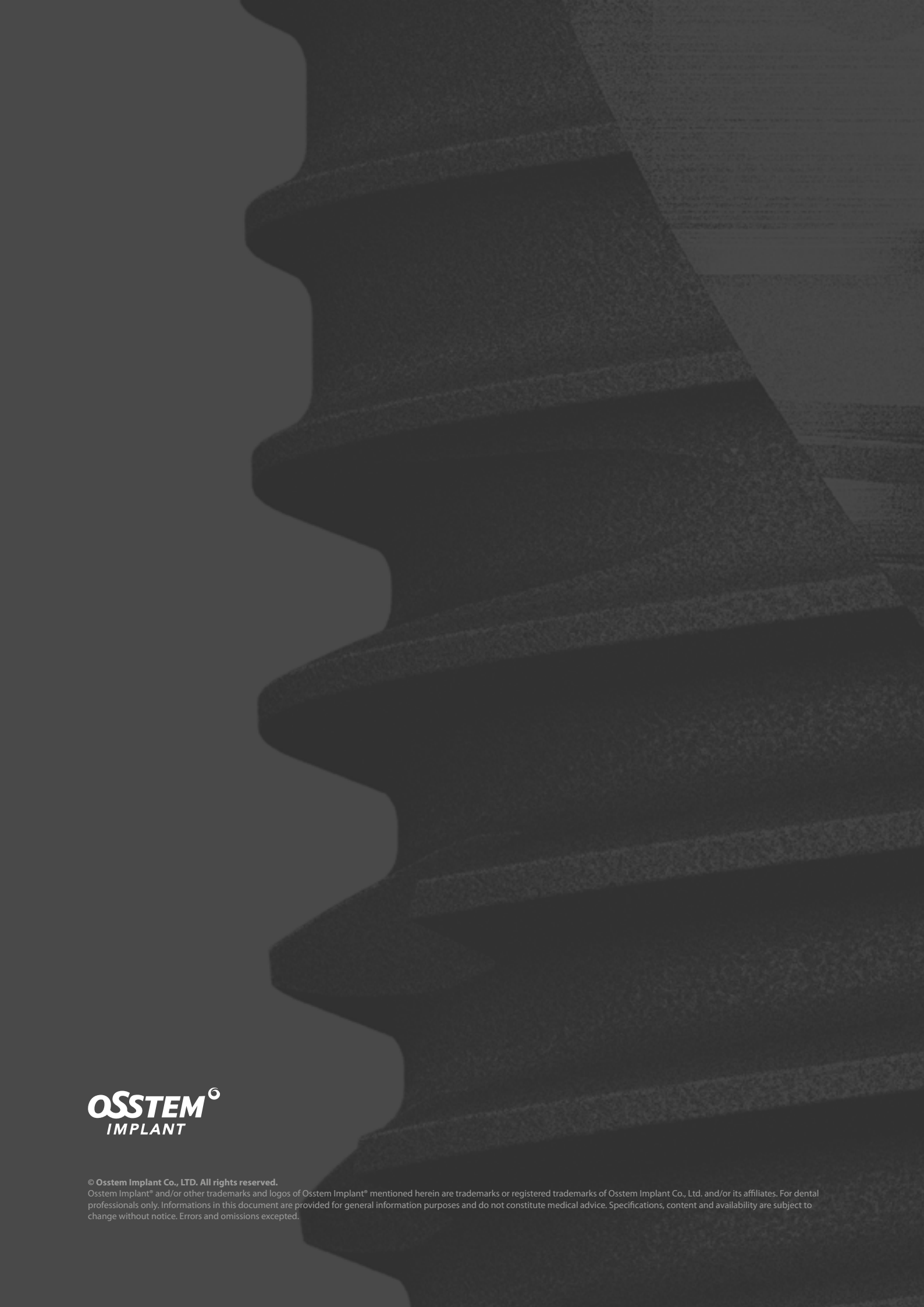

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