






# Dyna Helix Implant Manual

combining the successful features in implantology



your comfort is our goal!

Implants	
Instruments	
Prosthetic components	
Digital/ CAD/CAM	
Additional products	

Dutch quality is a choice



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# Dyna Helix Implant

## Introduction

Implantology today is scientifically proven to be an excellent addition to the range of dental treatment options. We rely on data and the fact is that implant systems respecting biological and physiological considerations of the oral cavity and state-of-the-art technology guarantee longterm success rate. Patients expect to be presented with the solution that represents the best quality and value. In the last years time has become an important factor influencing a patients' decision. Overall the equation is simple:

## Reward Comes with a Smile!

The Dyna Helix® implant is a milestone in developing a versatile implant system fulfilling demands of contemporary implantology. More than 30 years of experience in implant dentistry gave us the confidence to re-define our philosophy and bring this unique implant system to the market.

Prosthetic components of the Helix® implant system are compatible with Dyna Octalock® implants.



Dyna Helix® rounded lower edge

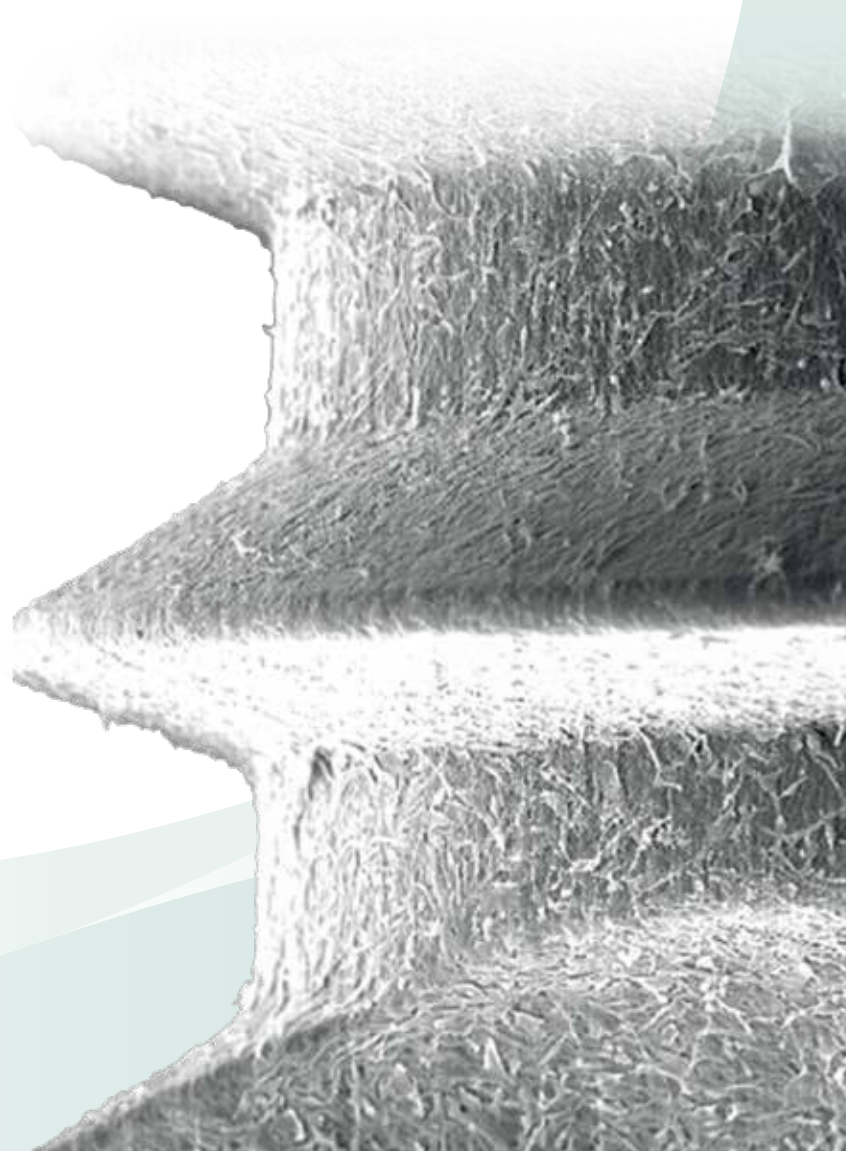
Dyna Helix® ST and TM  
sharp cutting lower edge

## Philosophy

Dyna Dental Engineering b.v. has always been on the spearhead of innovative solutions in dentistry. More than 40 years ago we developed a magnetic attachment system and were able to promote it with huge success. Great ideas often come unexpectedly. Having seen the response to our product we asked ourselves if we could translate the formula to implantology. And so we entered the world of implants in 1985 with the narrowest implant at that time.

Our success is the success of our clients. We introduced unique individual adjustable abutments by means of memory metal properties, extended our implant system and proposed completely new prosthetic options, the press fit Dyna Octalock® connection and the Instant Adjusting Bar system. This was only possible with active support from dentists and dental technicians who use our products all over the world. We want to mean more to our client than be just a supplier.

Today we know: Dyna's concept of simplified implantation technique leads to excellent and predictable results. Our systems combine flexibility, simplicity and reliability. We grew to understand biologic principles of implantology and learned to combine theoretical and practical knowledge. We waited a long time to introduce a screw type implant to prevent regular changes as many implant systems had to do over the years. In 2005 our experience made it possible to propose an implant system expanding the range of indications to improve single tooth prosthetics and allow, when indicated, early loading of implants. Cooperation with universities and private practitioners give us the confidence to verify our system in series of clinical tests that proved our concept to be an excellent alternative to nowadays implantology.



# Concept

## Bone Changes

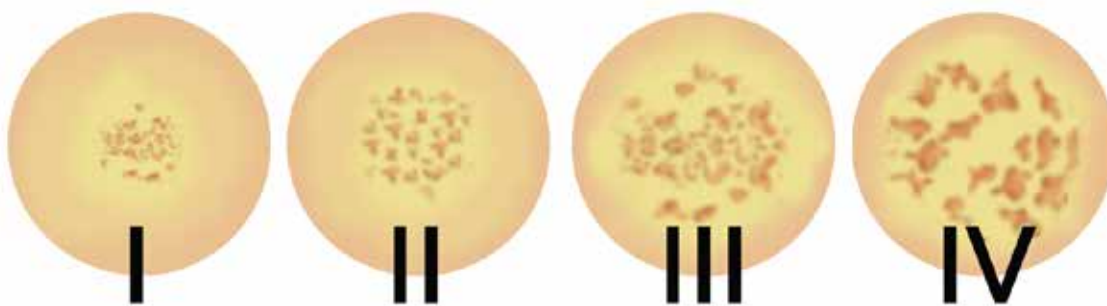
Osseointegration of implants depends on available time and the local bone conditions: quality and quantity. Load transfer in dentulous situation stimulates support of the surrounding alveolar bone. The situation changes dramatically with the loss of teeth. Gradual and progressing bone involution results not only in bone quantity changes but influences bone quality and general anatomical configuration of the jaws as well.

In order to overcome problems associated with bone changes, one has to use different procedures to place an implant. Dyna Helix® Implant system was designed to combine versatility of only one implant type with requirements proposed by various clinical situations.

Dyna Helix® implant system enables successful implant treatment even in difficult clinical situations, enabling optimal exploitation of the available bone. It can be used in combination with different surgical techniques e.g. bone splitting or osteotomy.

A longterm stable implant/bone interface is a significant clinical issue. It can be maintained only through dynamic modelling and remodelling processes of bone. These processes allow withstanding the errors inherent in clinical procedures while creating a biological interface capable of supporting clinical loads over long periods of time. High implant survival rates are observed for various anatomic regions of the oral cavity, provided that immediate stability can be ensured. In the posterior maxilla, in contrast, there is often a very thin cortex and sparse cancellous bone characterized by Lekholm and Zarb (1985) as “type IV bone”. In such bone dental implants tend to have a lower survival rate especially in the posterior Maxilla.

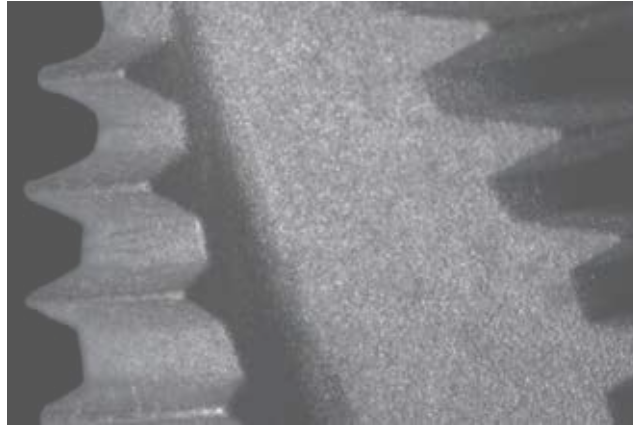
To ensure sufficient primary stability Dyna Helix® implants are placed using different preparation technique depending on bone quality. The Dyna Helix system is also ideal to compact spongy bone during the implant placement, changing unfavourable conditions. The effect of our work is a versatile implant system that can be used in a very predictable way in majority of clinical situations.



Bone qualities as defined by Lekholm and Zarb. Type I consist of primarily cortical bone; type II is characterized by thick cortical bone and differently sized cancellous region; type III as thin cortical part and dense cancellous portion; type IV is primarily cancellous bone of reduced density.



Dyna Helix® Implant magnification x5



Dyna Helix® DC



Dyna Helix® ST



Dyna Helix® TM



# Dyna Helix® DC Implant

## The design

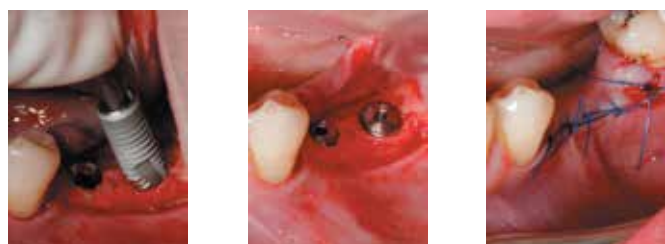
The Dyna Helix® DC implant is a tripartite, modified Acid-etched Roughened Titanium (ART), cylinder screw designed to give secure mechanical fixation and load distribution in all clinical situations. It is a two-stage, screw type implant that can be used in one-stage surgery under special conditions. It allows achieving exceptional primary stability in class IV bone whereas in class I, dense cortical bone it guarantees safe and a-traumatic insertion. Dyna Helix® DC implant is based on root form titanium Dual Core with self tapping thread. The core of the implant allows for bone condensation during insertion. This adds to primary stability of implants and stimulates healing process. The rounded end of the implant makes the surgical procedures of closed sinus lift easy and atraumatic. The thread of the implant has been designed so that outer diameter of the implant remains the same whereas provides optimal cutting action. The use of the cortical reamer and pre tapping is necessary when, especially in the cortical bone, there exists the risk of overheating or creating too much stress in the surrounding bone. Based on the new principles to prevent bone resorption the implants are totally treated with the ART surface. The biological width principle is respected by means of the V-shape connection to the abutment coined as platform switching. To increase soft tissue connection this part is acid etched. The uncoated collar gives a smooth transition to the abutment. The use of several implant diameters and all-fit abutments gives an interesting combination of simplicity and reliability.

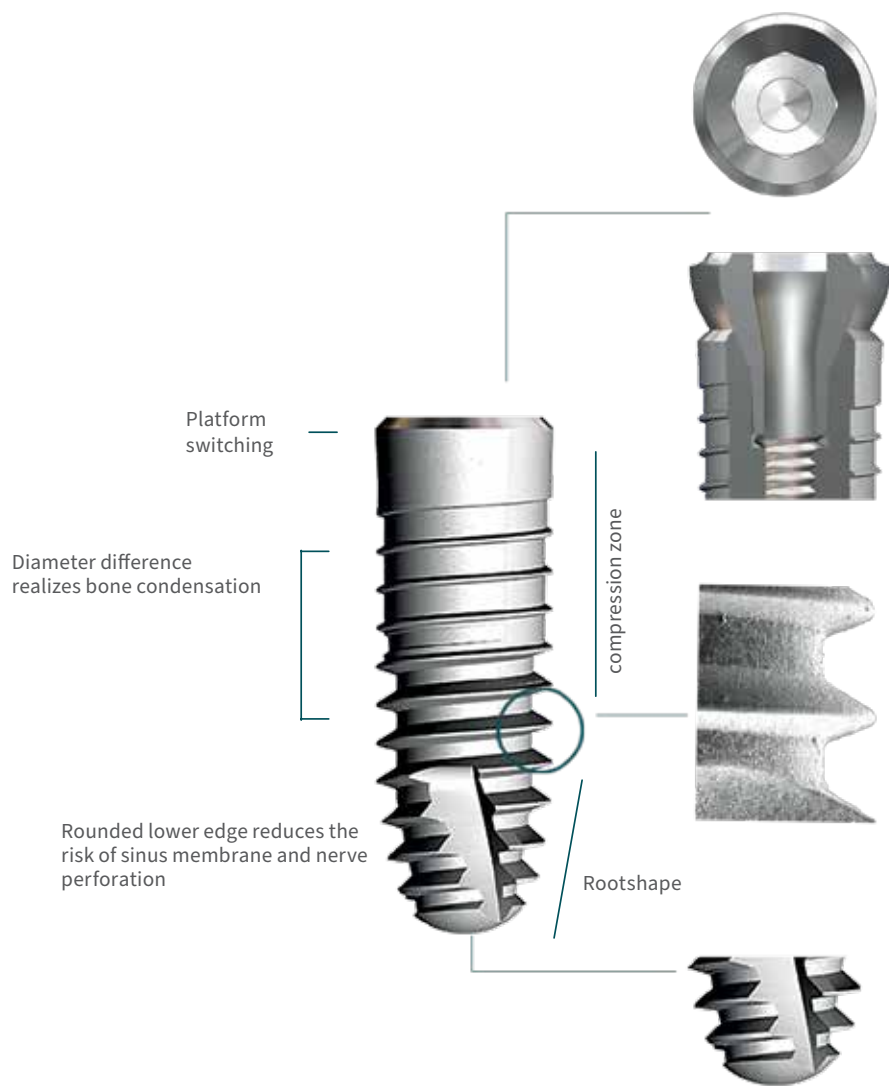
Every implant is supplied together with the cover screw in a sterile packaging that assures a five year shelf life.

Whenever using Dyna Helix® implants in one stage protocol, use specially designed Healing Calyx abutment octa. We advise to apply the lowest possible abutment to prevent leverage and burdening of the implant during the healing period.

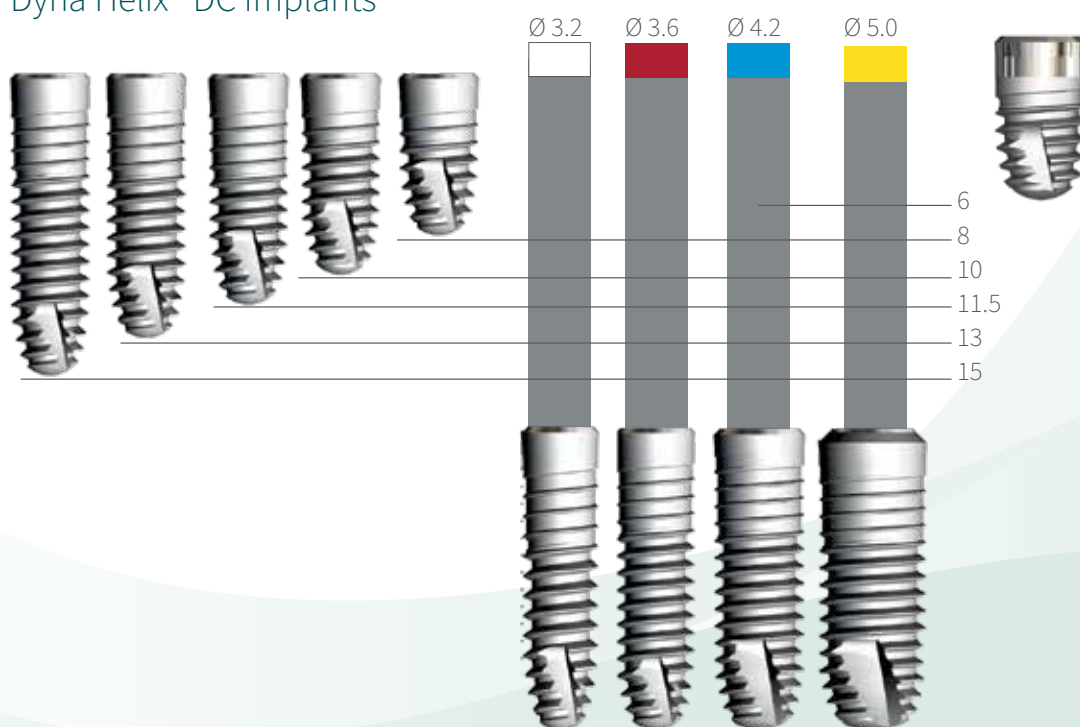
The appropriate implant length and diameter are essential for successful outcome of the treatment. Each patient is individual. Dyna Helix® DC implants have been designed to accommodate different clinical situations. Narrow implants are ideal in replacing incisors or when the space between teeth has been restricted. Wide diameter implants offer possibility of achieving proper emergency profile and marginal aesthetics for molars and premolars. The array of sizes allows choosing the best suitable implant for particular clinical situation. Only use the Dyna Helix® DC implant 6mm for support in combination with several long implants.

Dyna Helix® DC implants are available in diameters 3.2mm - 3.6mm – 4.2mm - 5.0mm and lengths 8mm – 10mm - 11.5mm - 13mm - 15mm. Dyna Helix® DC implant diameter 4.2mm is also available in length 6mm. The choice of lengths and diameters is intended to cover the majority of clinical situations, but most of all to be reliable and user-friendly in removable and fixed prosthodontics. The implant length mentioned (also on the packaging) is the full body length.





## Dyna Helix® DC Implants



# Dyna Helix® ST Implant

## The design

The Dyna Helix® ST implant is a modified Acid-etched Roughened Titanium (ART) cylinder screw type designed to give secure mechanical fixation and load distribution in most clinical situations. It is a two-stage, screw type implant that can be used in one-stage surgery under special conditions. It allows achieving sufficient primary stability and guarantees safe and atraumatic insertion. The Dyna Helix® ST implant is based on a root shaped titanium core with self tapping thread up to the neck of the implant. Because of the sharp end of the implant the positioning in height during insertion is easier to manipulate. The thread of the implant has been designed so that outer diameter of the implant remains the same whereas provides optimal cutting action. Pre-tapping is necessary when, especially in the cortical bone, there exists the risk of overheating or creating too much stress in the surrounding bone. The absence of the compression zone at the upper part of the implant facilitates surgery for type 1 or 2 bone (as defined by Lekholm and Zarb<sup>25</sup>).

Based on the new principles to prevent bone resorption the implants are totally treated with the ART surface. The biological width principle is respected by means of the V-shape connection to the abutment coined as platform switching. To increase soft tissue adherence this part is acid-etched. The uncoated collar gives a smooth transition to the abutment. The use of several implant diameters and all-fit abutments gives an interesting combination of simplicity and reliability.

Every implant is supplied together with the cover screw in a sterile packaging that assures a five year shelf life.

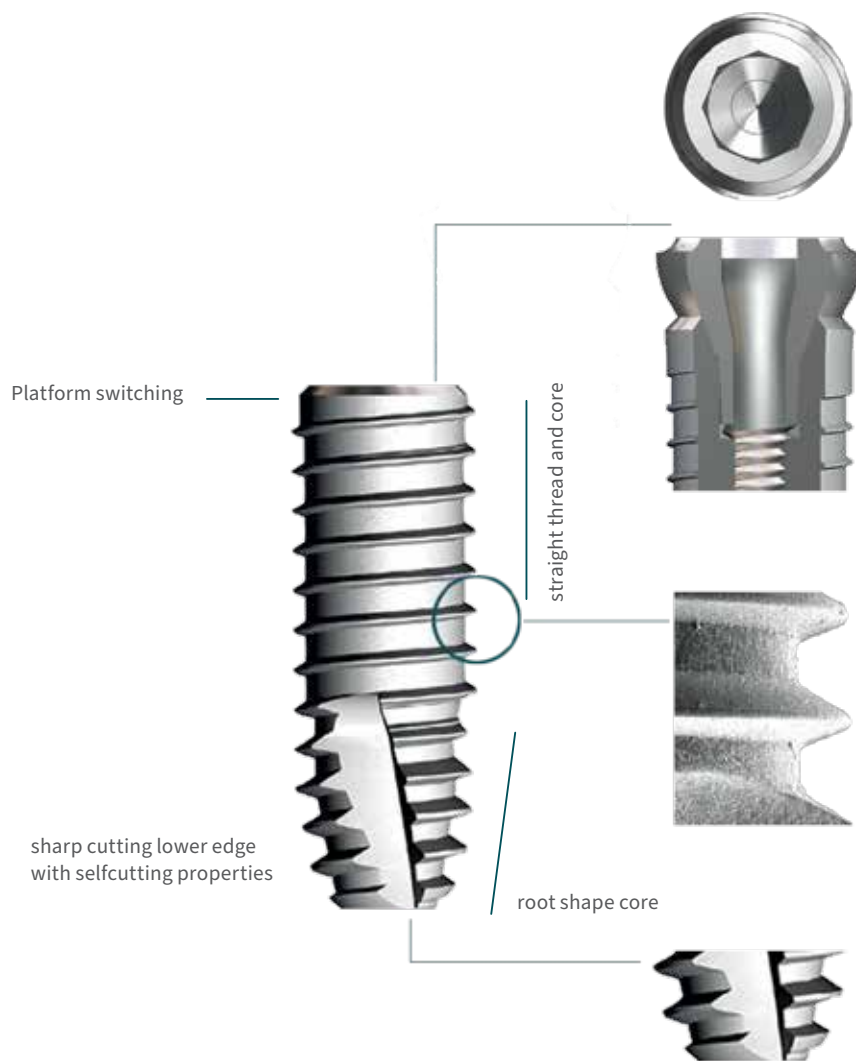
Whenever using Dyna Helix® ST implants in one-stage protocol, use specially designed Healing Calyx abutment octa (art.no. 83HE35/45/55). We advise to apply the lowest possible abutment to prevent leverage and burdening of the implant during the healing period.

The appropriate implant length and diameter are essential for successful outcome of the treatment. Each patient is individual. Dyna Helix® implants have been designed to accommodate different clinical situations. Narrow implants are ideal in replacing incisors or when the space between teeth has been restricted. Wide diameter implants offer possibility of achieving proper emergency profile and marginal aesthetics for molars and premolars. The array of sizes allows choosing the best suitable implant for particular clinical situation.

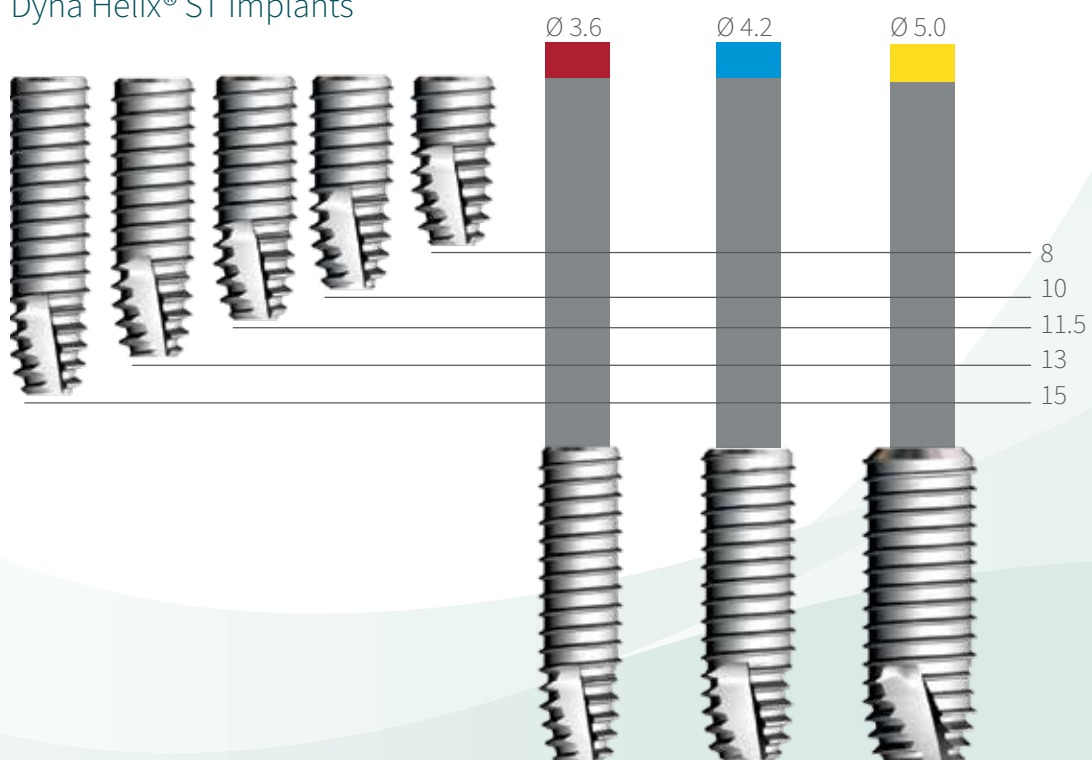
Dyna Helix® ST implants are available in diameters 3.6mm – 4.2mm - 5.0mm and lengths 8mm– 10mm - 11.5mm - 13mm - 15mm. The choice of lengths and diameters is intended to cover the majority of clinical situations, but most of all to be reliable and user-friendly in removable and fixed prosthodontics.

The implant length mentioned (also on the packaging) is the full body length.





## Dyna Helix® ST Implants



# Dyna Helix® TM Implant

## The design

Investigations carried out by numerous scientific centres all over the world, backed by histological findings have proved that in certain indications single phase implant placement is a reliable treatment option. It is clear now that osseointegration does not always depend on submerging the implant. Open transmucosal systems have, in aspect of time, a microgap and certain prosthetic treatment advantages over closed mucosal systems.

The Dyna Helix® TM (Trans Mucosal) implant is based on a root form core with selftapping thread up to the bone level area of the modified Acid-etched Roughened Titanium (ART) implant. Rough subtractive ART surface creates an optimal micromorphological formation favouring direct bone apposition, whereas, smooth transmucosal part allows using one stage protocol. Because of the sharp self cutting lower edge of the implant, the positioning in height during insertion is easier to manipulate.

Current concept of Dyna Helix® TM implant is based on solid, straight screw cylinder with an uncoated collar (2.8mm) extending through the soft tissue. The basic design of the Dyna Helix® TM implant corresponds with the Dyna Helix® ST implant. It facilitates surgery for type 1 or 2 bone (as defined by Lekholm and Zarb).

The Dyna Helix® TM implants are used in combination with all existing instruments of the Dyna Helix® implant system. So during operation it is possible to choose the type of implant without opening other instrument cassettes. Because of the Dyna Octalock® design all abutments used in combination with push-in Dyna Octalock®, and Dyna Helix® implants also fit the Dyna Helix® TM implants.

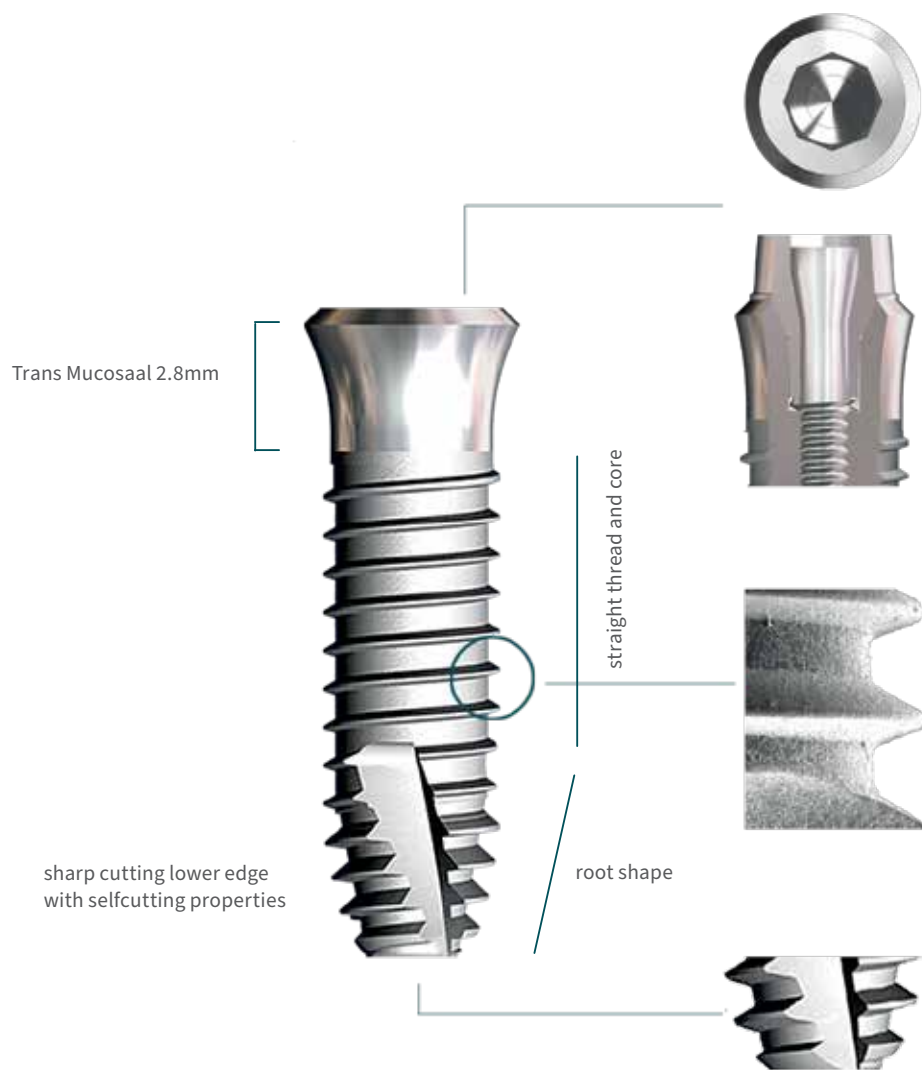
Every implant is supplied together with a 1mm cover screw (84TM1) in a sterile packaging that assures a five year shelf life. Other cover screws for the Dyna Helix® TM implants are available in three different heights 0, 2 and 3mm.

The significant difference between subgingival Dyna Helix® (ST) and Dyna Helix® TM implants is the limited application possibility of the latter, in cases where aesthetics is the primary goal. Therefore the range of the implant lengths and diameters has been optimized to meet its potential indication.

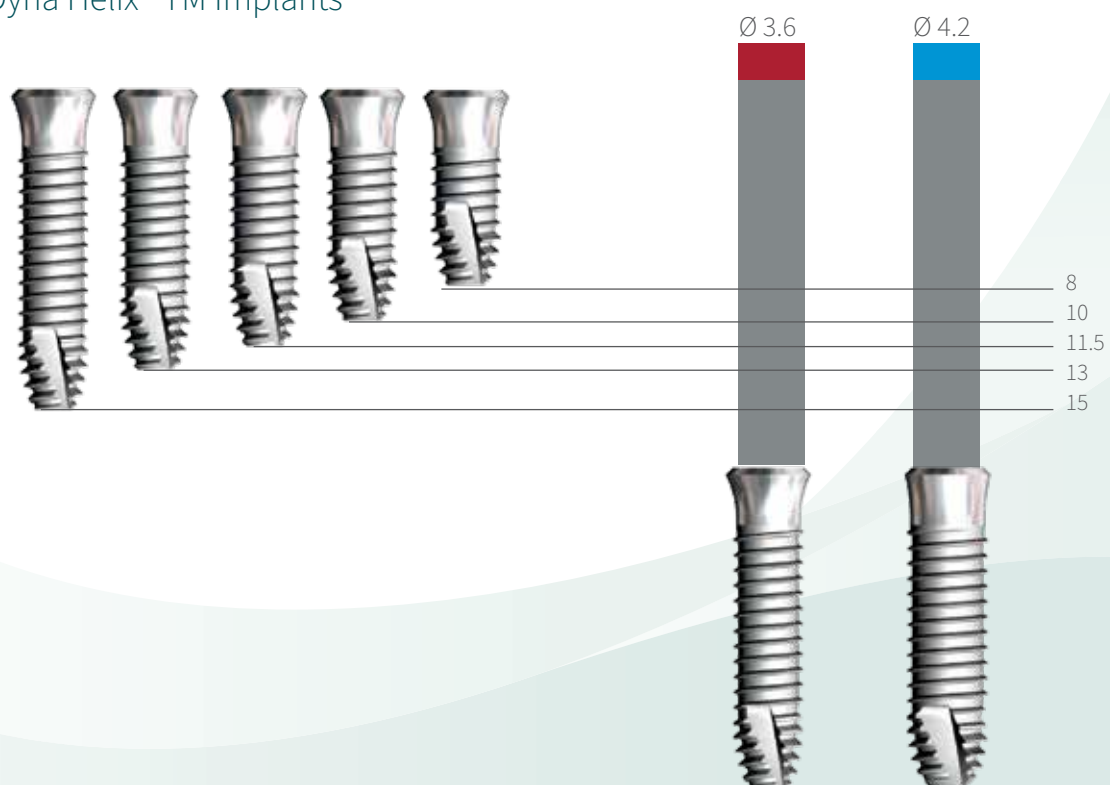
Dyna Helix® TM implants are available in diameters 3.6mm – 4.2mm and lengths 8mm – 10mm - 11.5mm - 13mm - 15mm.

The implant length mentioned (also on the packaging) is the part until the polished collar, so the ART treated part. The collar is 2.8mm.





## Dyna Helix® TM Implants

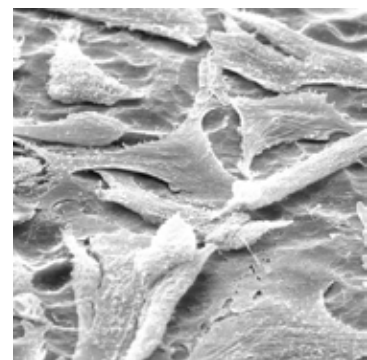
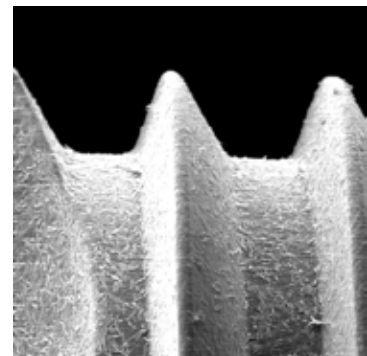
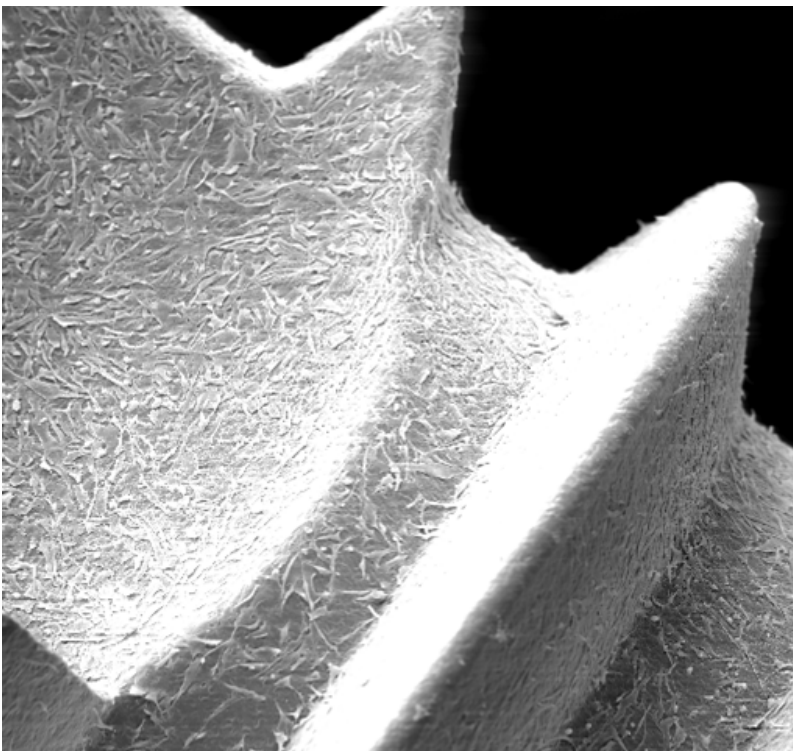




# Surface

## Research

Although very good clinical results have been reported with the use of osseointegrated implants the long term success of implants may be influenced by many factors. The insertion of an implant is always associated with an inflammatory response produced by surgical trauma. Whether this reaction will decrease or persist depends on different features such as the material selected, implant site, the loads put on it. The prerequisite for a solid implant-bone interface and developing an equilibrium between biological tissues and a fixture, after its insertion, is the surface of the implant. Surface properties influence biological responses at different level of resolution and sophistication. Titanium surface alone can be regarded merely as a permissive surface for gradual bone mineralization, but not as a bone-inducing surface. It has been well established that surface properties such as topography and roughness, microstructure and impurity levels may influence the biologic response to the inserted fixture.

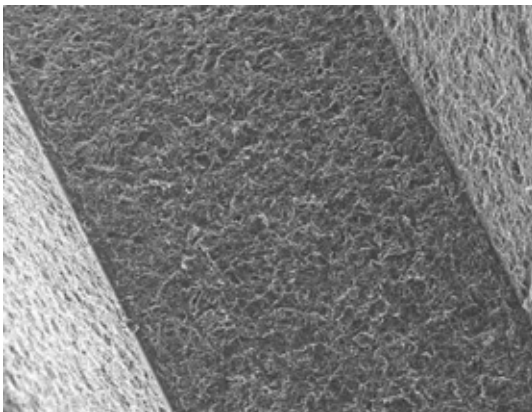




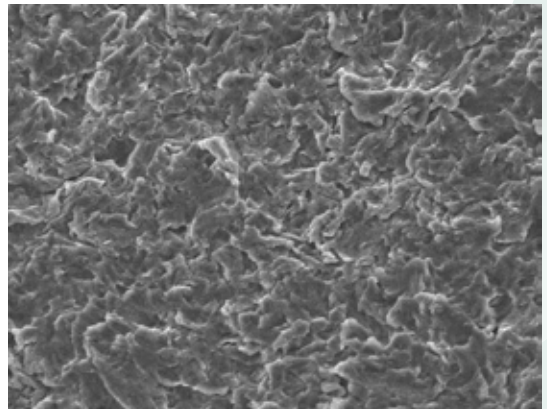
Porous and rough surfaces proved to be superior to smooth surfaces. They enhance secretion of specific bone growth factors and provide synthesis of a more bone-specific matrix. Biomechanical measurements of the interfacial strength of an implant following healing are dependent on surface roughness. Pull-out strength is correlated with two-dimensional measurements (Ra) of surface roughness. Surface roughness must be, therefore, optimized and the implant architectural design incorporate biomechanically defined macroscopic and microscopic features.

Research shows that best results are realized with a micro/macro roughness by having a Ra value between 1 and 1.5. Dyna Helix® ART implants comply to the above mentioned characteristics by having a Ra value between 1 and 1.4. These characteristics are realized by means of a blasting process with different sizes HA particles. An acid etched washing process ensures a clean surface with an optimal morphology.

Dyna Helix® Implant magnification x500



Dyna Helix® Implant magnification x2000



# Implant-Abutment Connection

## Dyna Octalock for all Dyna Helix Implants

The Dyna Octalock® connection has been designed to achieve 0 degree rotation in the clinical use, as well as to enable easy transfer of the situation in the patients mouth to the lab model. The use of the octagon and conical connection has been carefully chosen. Any antirotation is of no use when a significant freedom of movement exists between an abutment and an implant. Most of the systems present on the market, nowadays, have a rotational freedom of 4 to 12 degrees<sup>31</sup>. This may influence clinical performance of any prosthetic construction and prevents an accurate transfer of the implant position intra orally to the model. Only a 0 degree rotational freedom can guarantee the best results, as only then the implant analogue position in the model will be the same as in the mouth. Dyna Octalock® connection has been designed to make the transfer procedure as accurate as possible.

The Dyna Octalock® press-fit connection has a 0 degree rotation. This is realized by slightly tapered walls of the external abutment octagon. Due to this modification by means of micro deformation, abutments are prevented from any rotation once seated and screwed in the implant with a torque of 35Ncm. This 0 degree rotational freedom results in a perfect, trouble-free transfer from mouth to the model and vice versa. This means in terms of practical usage, no more problems with taking impressions. The fixed prosthesis is made in the lab by using a titanium analogue on the same abutment as the one placed later in the mouth of the patient. Therefore, it will always have a perfect fit.



The conical octagon in combination with the conical upper part realizes a press-fit connection with a perfect seal to the outside environment. Choosing two different angulations always results in an almost 100% closed connection between the implant and the abutment. At the same time this conical connection provides a stable fit in the implant, which makes the whole construction very solid and generates the ideal distribution of the applied forces. Dynamique loading tests according to EN ISO14801:2016 show appropriate levels of fatigue strength. The conical shape of the universal fixation screw prevents it from loosening and fracturing if tightened with 35 Ncm before the final prosthetic treatment. This provides high stability and makes the whole system self-centering. Due to friction forces, only a small amount of the applied torque will be transferred to the thread of the screw resulting in a considerable tension relaxation. This, in combination with the conical connection, makes it almost impossible to overload, and break the screw during normal physiological use.

The internal octagon has been introduced for several reasons:

- Increase of the implant wall strength (comparing with the hexagon design) – allowing for the same diameter of the fixing screw and the hexagon/octagon wall, the minimal thickness of the implant wall for the hexagon design is about 20-25% thinner than for the analogue situation with an octagon design.



Internal octagon



Internal hexagon

- Simplicity - each abutment fits all implant diameters using just one universal fixation screw.
- Improved aesthetics – the octa has been chosen to be internal instead of external so that no space is lost from the connection upwards. In this way it is possible to use a very low abutment in all those situations where the gingiva thickness is insufficient, so that no compromise in aesthetics has to be made.
- Security – the connection joins the best features of the other renowned implants systems in one, giving the security of equal force distribution, break protection and the best aesthetics.
- Function - in case an angled abutment is indicated, the position of the implant can be adjusted per 45°. Using a hexagon this is 60° and with a triangle just 120°. This can affect the esthetics concerning the height of the position of the implant (CEG).

# Packaging

## Features, labelling and handling

The Dyna packaging has been specifically designed to efficiently handle a safe use of the Dyna Helix Implant System. A titanium cylinder with a sealing cap and glass tube in a blister with Tyvek® seal provides a very secure and sterile barrier (sterile for at least 5 years). The titanium cylinder has been specifically designed to provide secure, easy and safe removal of the implant from the packaging and delivery to the preparation site. By using a Dyna octa driver the implants can easily be taken out of the packaging and placed into the implant site either with contra-angle or manually with the Octa driver TW, in combination with a torq wrench. The Dyna packaging meets all applicable international standards and regulations concerning medical devices. All our products carry a CE-mark, approved by our notified body DEKRA. The implant packaging is gamma sterilized and has clear markings of diameter (colour codes on outer labels and caps inside the blister), length and type.

The packaging is colour coded:

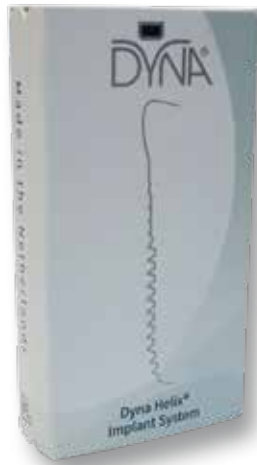
white	→	Ø 3.2mm
red	→	Ø 3.6mm
blue	→	Ø 4.2mm
yellow	→	Ø 5.0mm

Important features of the Dyna Helix implant packaging:

- gamma sterilized, Tyvek® sterile barrier.
- clear marking of type, length and diameter on the label
- two extra labels for documentation
- sterile for 5 years
- no mounting device
- placing the implant by contra angle or manually



Labelling colour code Ø3.2, 3.6, 4.2 and 5.0 on outer labels, blister labels and caps inside the blister. Labelling on 3 sides so information is always visible, no matter which way the packaging is stored.



Open the side 2 ways along the perforation



The box opens



Blister with tyvek is visible . Remove blister from packaging



Take the IFU and 2 extra labels via the address side of the box  
Read the IFU carefully and use the labels for documentation and the Product registration & Guarantee card



Product registration & Guarantee card



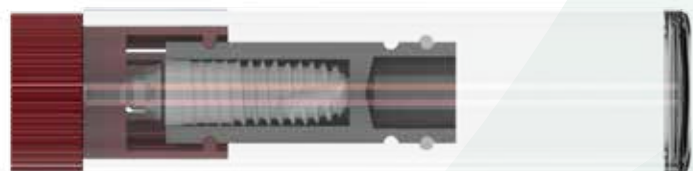
Open the blister at the opening corner and take out the glass tube



Take the titanium cylinder with the cap from the glass tube. The closing screw is seated in the cap.

Take out the closing screw with the Dyna Hex driver.

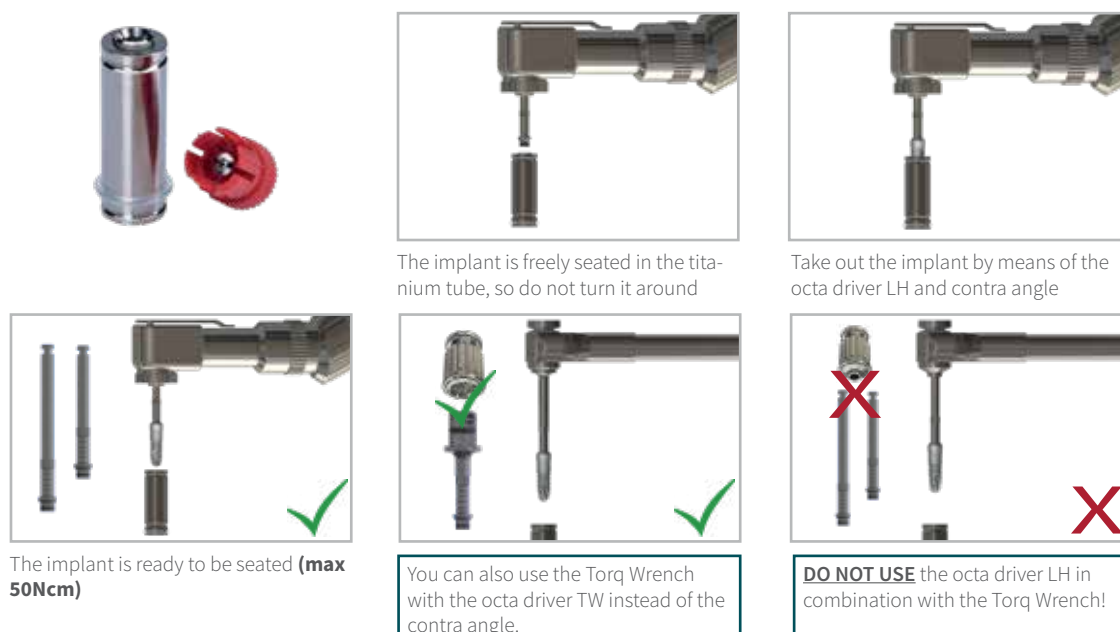
The implant is freely seated in the titanium cylinder, so do not turn it around or the implant falls out.



\* DuPont™ Tyvek® for medical and pharmaceutical packaging provides the tear resistance, durability, breathability and superior microbial barrier to keep medical equipment and pharmaceuticals sterile throughout their lifecycle.

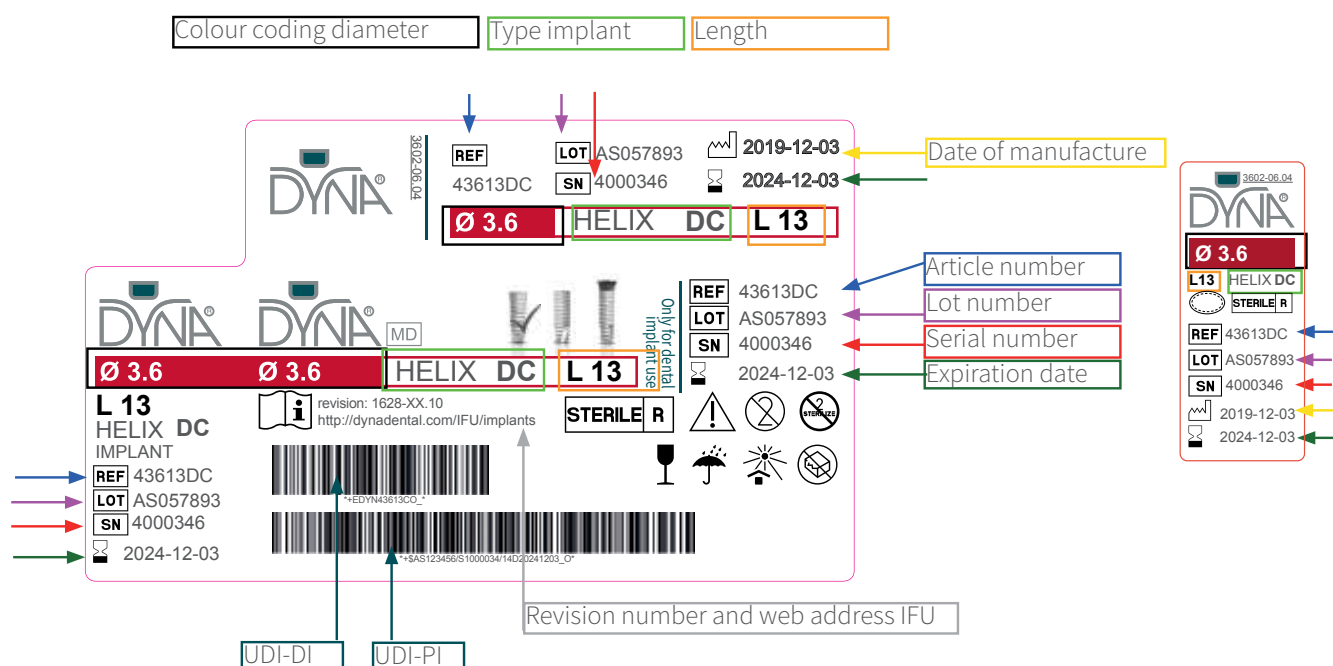
Unlike medical-grade papers and films, Tyvek® is compatible with all of the most commonly used sterilization methods. Tyvek® has been a trusted choice for medical device and pharmaceutical manufacturers as well as specialized sterile packaging suppliers worldwide for decades. Because Tyvek® is produced according to ISO 14001, it can also be recycled, according to local regulations.

## Removal and seating of the Dyna Helix® Implant



## Dyna Helix® Implant labelling

The Dyna Helix label shows all information necessary for identification of the implant before and after implant surgery. On the inner tube the colour coding is used for identification of the diameter. The inner tube shows the type of the implant and length. In the packaging 2 extra labels are added for documentation in the clinic and on the Implant Card for the patient. Use these for your files and to inform the patient. This information is necessary for prosthetics and future replacements.



Dentists who plan to restore their patients with dental implants should always take into consideration all factors that influence the final result. Successful implant treatment requires the coordinated efforts of several dental professionals:

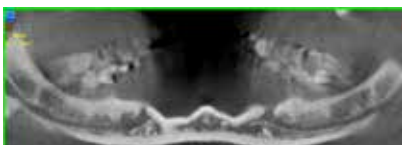
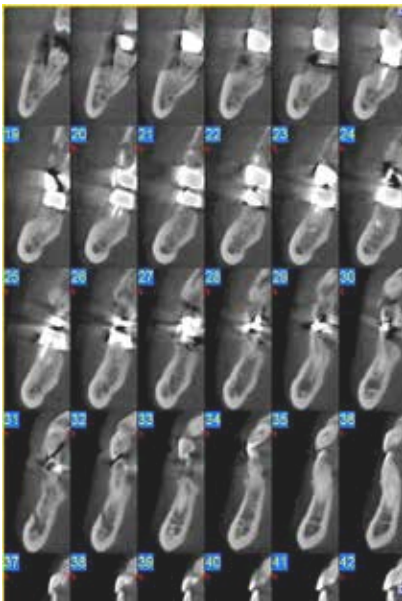
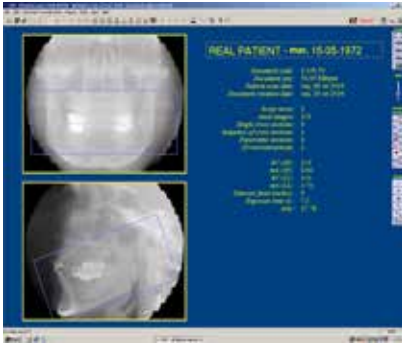
- the restorative dentist
- the surgeon/periodontist
- the denturist
- the dental technician
- the dental hygienist

By cooperating with one another, these professionals are able to develop an appropriate treatment plan, most suitable for the particular patient. This provides equilibrium between different aspects of implant rehabilitation. In addition, the team approach ensures that the treatment is completed, guarding against omission any important technical/clinical considerations.





# Planning



## An Important factor

Planning is one of the most important factors in successful rehabilitation of edentulous or partially edentulous patients with dental implants. Full success depends on a balanced judgement of patient's expectations on the one hand, and surgical and prosthetic possibilities on the other.

The evaluation of a patient as a suitable candidate for implants should follow the same basic format as the standard patient evaluation, although some areas require additional emphasis and attention. In particular, the patient's medical history, which may reveal a number of conditions that complicate or even contra-indicate implant therapy. The following aspects are relevant when examining a patient as a prospective recipient of dental implants:

1. initial consultation
2. medical examination
3. local conditions evaluation
4. general aspects
5. psychic status

Before selecting the most suitable type of implant restoration, the practitioner should review and be guided by the patient's previous dental history. It is also vital to evaluate the patient's chief complaint, as it may have an equal bearing on treatment outcome. The following should be looked upon:



### 1 surgical criteria

- Intraoral inspection
- X-ray examination

### 2 prosthetic criteria

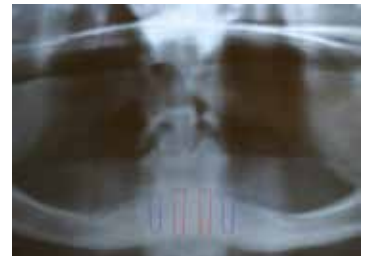
- Models analysing
- Diagnostic set-up in wax

The result of the pre-operative planning, for each case, should be a clear treatment concept including number and type of implant to be used, type of prosthetic construction, schedule of treatment visits and costs draft.

Long-term success of an implant treatment can be directly related to oral hygiene. Potential implant candidates should establish an adequate oral hygiene regimen prior to any implant surgery. Patient should be instructed on effective tools and techniques used to ensure long-term maintenance of the implants. The patient must also be advised about the necessity of periodical visits for professional cleanings and evaluation.

#### PLEASE NOTE:

For more detailed description of contra/indications and planning of the implant treatment see the IFU which can be downloaded from our website [www.dynadental.com/IFU](http://www.dynadental.com/IFU)  
Improper planning, faults in professional judgement, infection can contribute to implant failure and/or bone loss; hard tissues must be treated with care.

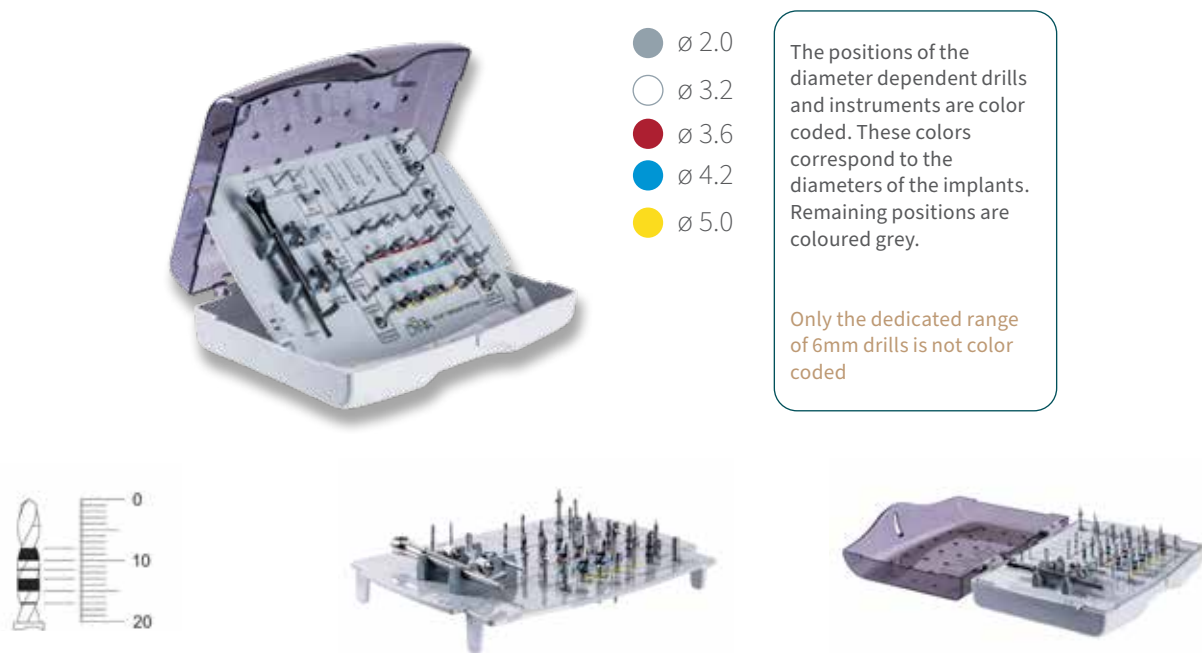


Drilling guides are in most cases a necessity

# Instruments

## Dyna Surgical Tray

Instruments manufactured by Dyna Dental Engineering b.v. are designed to be simple and universal. Only a limited number of instruments are sufficient to perform surgery and prosthetics. The surgical instruments for all Dyna Helix® implant systems are logically organized in a sequence oriented tray. Several instruments have indicative depth markings (Parallel / depth gauges, drills, octa drivers, tapers, reamers and the cassette). A selection of drills corresponding with the diameters and lengths of implants enables a smooth and precise preparation of the implant bed in a time-saving and possibly atraumatic manner.



Diameter dependent drills and instruments are marked. For verification of the length on the drills there is also a lasermarking on the inside of the cover. Also the positions of the products are shown there for comfort of the assistants.

The Dyna Helix tool cassette has a small size with length 19,5cm, width 15cm and height of 5,5cm which makes it extremely storage-effective. The tray is made out of polyphenylsulfone (PPSU) and fits in almost all autoclaves. The cover of the cassette can easily be removed or put flat so more space on the operation table can be created.

PPSU has an excellent high heat resistance and excellent hydrolytic stability what makes it an excellent choice for medical devices requiring repeated steam sterilisation.

There is a direct correlation between the precision of an implant system and the long-term results. Therefore tolerances of connections between instruments (eg drills and implants, implants and abutments, Hex screwdriver and fixation screws) are adjusted to realize a perfect fit. The use of original drills and instruments is a must.

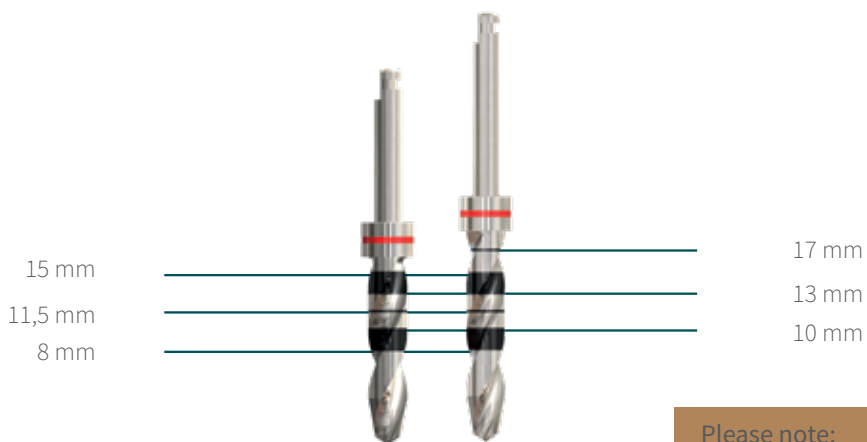
All instruments are held securely in place providing user-friendly unit during manipulation, transport and sterilization.

All instruments must be regularly checked by the user to see that they are working properly. In case of doubt replace instruments immediately.

# Preparation

## Drills

Bone preparation is one of the most important factors determining successful implantation. It must be done precisely and atraumatically. Implant site determines implant position and its angulation, therefore, defines the final, prosthetic outcome of the treatment. Successful rehabilitation of edentulous or partially edentulous patients relies on the ability to place implants both in the prosthodontically and surgically favourable position.



### Please note:

Instruments have a limited number of reprocessing cycles. Discard defective instruments (faded depth marking, blunt/chipped blades, bent/fractured working parts, corroded surfaces).

The implant site must be prepared beginning with the pilot drill to the final spiral drill, following standardized sequence of drillings and sufficient cooling. Depending on the situation longer (anterior) or shorter (posterior) drills may be used. All drills are marked by laser for easier identification of the preparation depth.

The markings correspond with the following lengths of implants:

6 (only on the pilot drill), 8, 10, 11.5, 13, and 15mm. The top marking of the long spiral drills represents a length of 17mm. Additionally all spiral drills, on their shafts, have numeric markings of the drill diameter. The Dyna drills are externally irrigated, manufactured from surgical stainless steel. They are tapered and have two cutting edges for effective preparation of the implant site.

Dyna rotary instruments have been designed to achieve optimal cutting efficiency and ensure atraumatic and exact preparation.

# Preparation



## Bone preparation

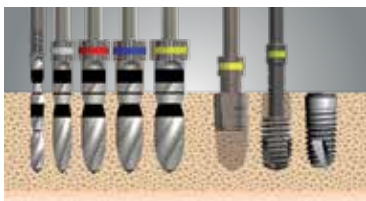
After reflecting mucosal flaps and periosteum the shape of the bone can be properly judged, eventual sharp ridges are removed.

Bone preparation begins with marking the implant site with the round bone cutter. Using the drilling guide (recommended), initial preparation is made with the pilot drill. The initial preparation establishes the axial alignment of the implant.

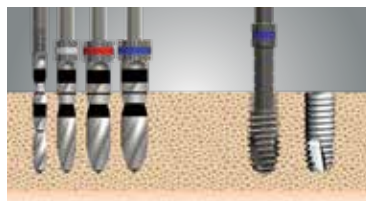
The depth of the preparation should be determined before operation but it is possible and advisable to change it if the existing situation allows for, or demands using a longer or shorter implant. To facilitate insertion and guiding of the next larger drill the Lindeman fraise can be used to widen the cortical bone and if required slightly change the alignment of the preparation.



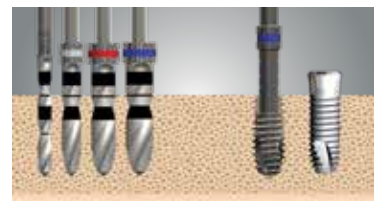
Preparation overview Dyna Helix DC



Preparation overview Dyna Helix ST



Preparation overview Dyna Helix TM



Preparation overview Dyna Helix DC  
Ø 4.2mm L 6mm



**Do not use the cortical reamer when there is lack of high density cortical bone and for the Dyna Helix DC Ø 4.2 L 6mm, the Dyna Helix ST and TM implants!**

Enlarging of the site depends on the diameter of the implant to be inserted. Drills are used in the standardized sequence until desired diameter is reached. The markings on drills allow to prepare the site to the exact depth corresponding with the implants' length (markings must be fully covered beneath the bone). All preparations should be done under excessive cooling (preventing possible thermal trauma) with sterile saline solution that additionally may be cooled before operation. To facilitate bone chip removal preparations should be done in a pump-up-and-down movement with moderate pressure force.

The recommended speed for the implant site preparation with Dyna drills and cortical reamers is 800 rpm as, otherwise, there is a risk of overheating the bone. It is however recommended to decrease the preparation speed by 150/200rpm each time the drill is changed to a wider one.

We recommend using bone collector in case autogenous bone was needed to augment or fill any bone deficiencies.

2.0/2.3 mm	800 rpm
3.2 mm	600-650 rpm
3.6 mm	400-500 rpm
4.2 mm	200-350 rpm
5.0 mm	200 rpm

The minimum buccal-lingual thickness of osseous tissue, required to successfully place an implant, is 5.0 mm. Often in order to achieve demanded 5.0 mm “flat” base, either the anterior ridge crest peak must be removed (which effectively lowers the level at which the implants are placed), or a bone graft must be considered.

Prior to selecting implant sites, the osseous tissues should be evaluated with appropriate radiographic studies such as panoramic x-rays, or CT scans.

When using particular implants the minimal transversal thickness of the bone after removing inappropriate structures should be as follows:

Implant diameter	Transversal thickness
3.2 mm	>5.2 mm
3.6 mm	>5.6 mm
4.2 mm	>6.2 mm
5.0 mm	>7.0 mm









In cases where the bone is of very low density, instead of enlarging the initial preparation with drills, it is recommendable to compact with osteotomes. (please see Dyna courses plan to know more about this technique).

Drills are available in a short and long version, except for the dedicated 6mm drills





# Preparation

## Drills

The Dyna drills are externally irrigated and manufactured from surgical stainless steel. They are tapered and have two cutting edges for effective preparation of the implant site. All drills are marked by laser for easier identification of the preparation depth. The markings correspond with the following lengths of implants

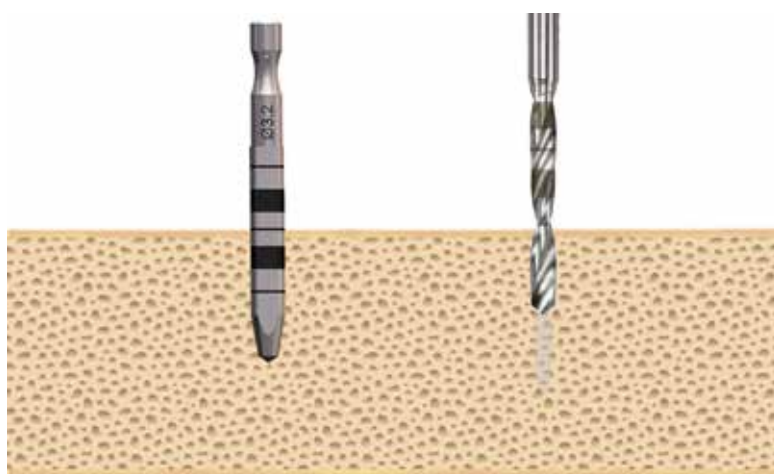
Helix surgical instruments		
Helix drill	Description	Art. no.
	Ø 2.0 Pilot drill short	12PS20
	Ø 2.0 Pilot drill long	12PL20
	Ø3.2 Spiral drill short	12DS32
	Ø3.2 Spiral drill long	12DL32
	Ø 3.6 Spiral drill short	12DS36
	Ø 3.6 Spiral drill long	12DL36
	Ø 4.2 Spiral drill short	12DS42
	Ø 4.2 Spiral drill long	12DL42
	Ø 5.0 Spiral drill short	12DS50
	Ø 5.0 Spiral drill long	12DL50

## Dyna Helix drills dedicated for 6mm implants

Helix surgical instruments		
Helix drill	Description	Art. no.
	Ø 2.3 Implant Drill 6mm	12ID6-23
	Ø 3.2 Implant Drill 6mm	12ID6-32
	Ø 3.6 Implant Drill 6mm	12ID6-36
	Ø 4.2 Implant Drill 6mm	12ID6-42

## Intraoperative aids

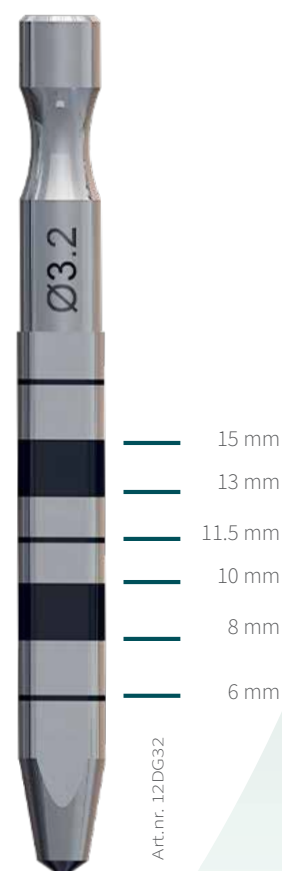
The presurgical evaluation of implant patients is the first step to avoid interferences between prospective positions of implants, optimize the ideal fixture position and distribute the implants so that they are optimally arranged. However, it is often seen intraoperatively that anatomical situation is different than expected. Dyna parallel/depth gauge instruments enable simple and quick verification of the prepared site. They should be used, similarly to surgical templates, to verify the position and angulation of osteotomies so that the coronal extension would fit within the chosen prosthetic window.





Dyna parallel/depth gauge instruments are made of titanium and are available in diameters 2.0 and 3.2,mm. They have been provided with depth markings complementing all implants lengths (6mm, 8mm, 10mm, 11.5mm, 13mm, 15mm). The 17mm marking is made only for the event that it could be possible to introduce a 17mm implant in the future.

In order to be handled easily Dyna parallel/depth gauge instruments have been provided with 11mm handle. The osteotomy part has the same length for all instruments. Dyna parallel/depth gauge instruments give excellent orientation during implant placement. Additionally, they can also be used as try-in implants when assessing the extraction socket and/or soft tissues during immediate placement.

All instruments have been provided with laser markings for easy identification of length and diameter.



### Helix surgical instruments

Dyna parallel / depth gauge	Description	Art. no.
	Dyna Parallel / Depth Gauge Ø2.0	12DG20
	Dyna Parallel / Depth Gauge Ø3.2	12DG32

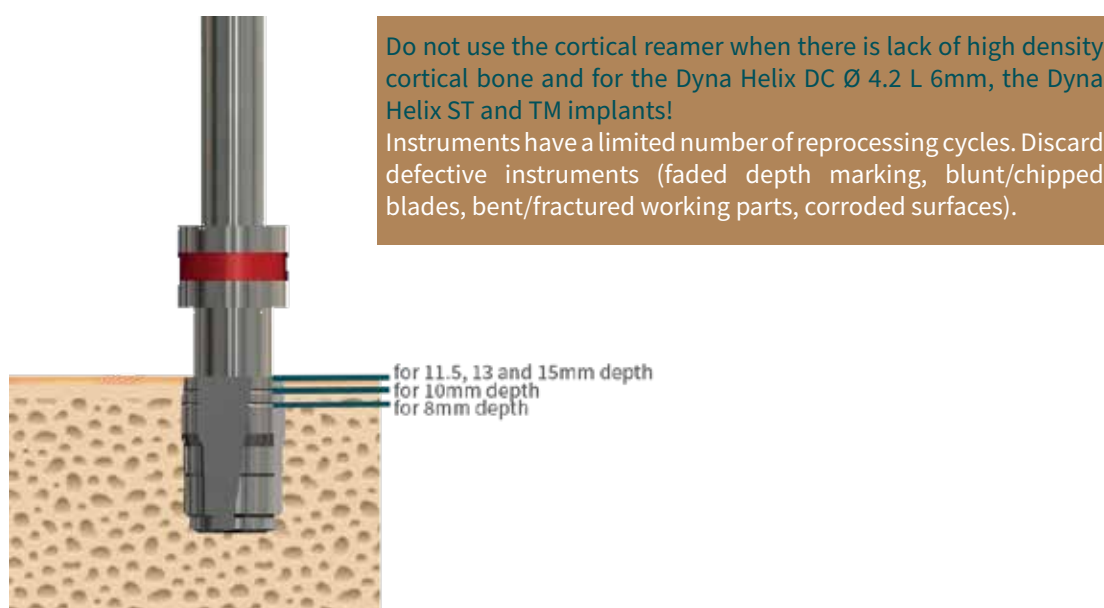


# Osteotomy





## Cortical Reamer

Once the implant site has been widened to the desired diameter its cortical part has to be modified by the cortical reamer to achieve correct insertion of the Dyna Helix® implant.

The cortical modification enables atraumatic insertion of the implant without exerting too high forces on the marginal tissues but allows achieving satisfactory primary stability in various bone types.



Use the markings on the cortical reamer depending on the implant length. There is a marking for 8mm implants, 10mm implants and implants  $\geq 11.5$ mm.

Helix surgical instruments		
Helix cortical reamer	Description	Art. no.
	Helix Cortical Reamer Ø3.2	12CS32
	Helix Cortical Reamer Ø3.6	12CS36
	Helix Cortical Reamer Ø 4.2	12CS42
	Helix Cortical Reamer Ø 5.0	12CS50




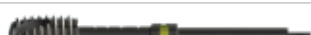


# Tapping

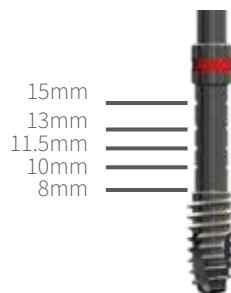
## High Density bone

Although Dyna Helix® implants are self-tapping implants in some situations of high density bone it is recommendable to tap the implant site before introducing the implant. In cases with low density bone, it is not required. In order to tap the implant site select the tapping instrument corresponding with the final diameter of the implant. Mount it onto the surgical handpiece or the torque wrench and prepare, under cooling, the thread for Helix implants. The recommended speed for the implant site preparation is maximum 30 rpm. The instrument should reach the bottom of the implant site\*. All preparations should be done under excessive cooling (preventing possible thermal trauma) with sterile saline solution that additionally may be cooled before operation.

\*This is not performed in case of a sinus floor elevation

Helix surgical instruments		
Helix taper short	Description	Art. no.
	Helix Taper short Ø3.2	12TS32
	Helix Taper short Ø3.6	12TS36
	Helix Taper short Ø 4.2	12TS42
	Helix Taper short Ø 5.0	12TS50

Height markings on each taper



**Do not use the taper for the Dyna Helix DC Ø 4.2 L 6mm!**

Instruments have a limited number of reprocessing cycles. Discard defective instruments (faded depth marking, blunt/chipped blades, bent/fractured working parts, corroded surfaces).



During implant bed preparation/insertion, the only surgical instrument the Rotor-Bit Latch-Head (ISO1797) may be used with is the Dyna Helix Taper

# Seating

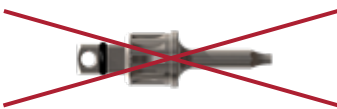


## Seating all Dyna Helix implants

Once the implant site has been prepared it is ready to receive implants. The Dyna parallel and depth instruments are used to control the preparation. To remove any debris the implant site must be carefully cleaned with sterile saline solution. The entrance of the preparation is controlled and adjusted if necessary.







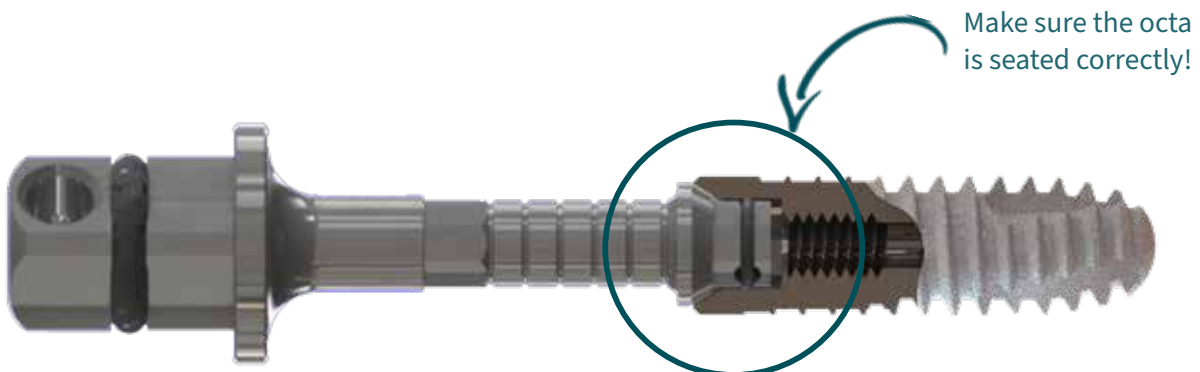
The packaging clearly indicates the type of implant, diameter and length. After the closing cap is removed from the tube the Octa driver is inserted into the implant with a slight pressure. Watch out, the implant is freely seated in the tube!. This connection removes the need for a special mounting device resulting in better visual control during implant insertion.

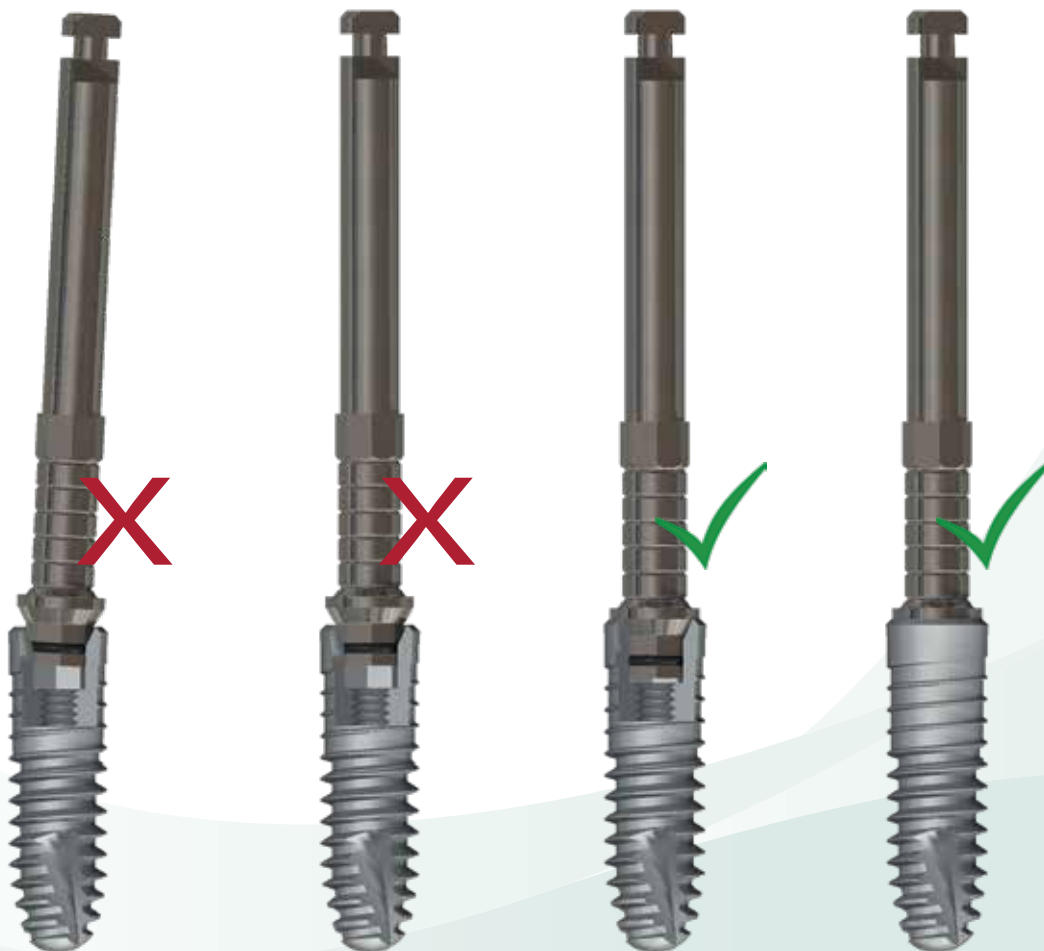
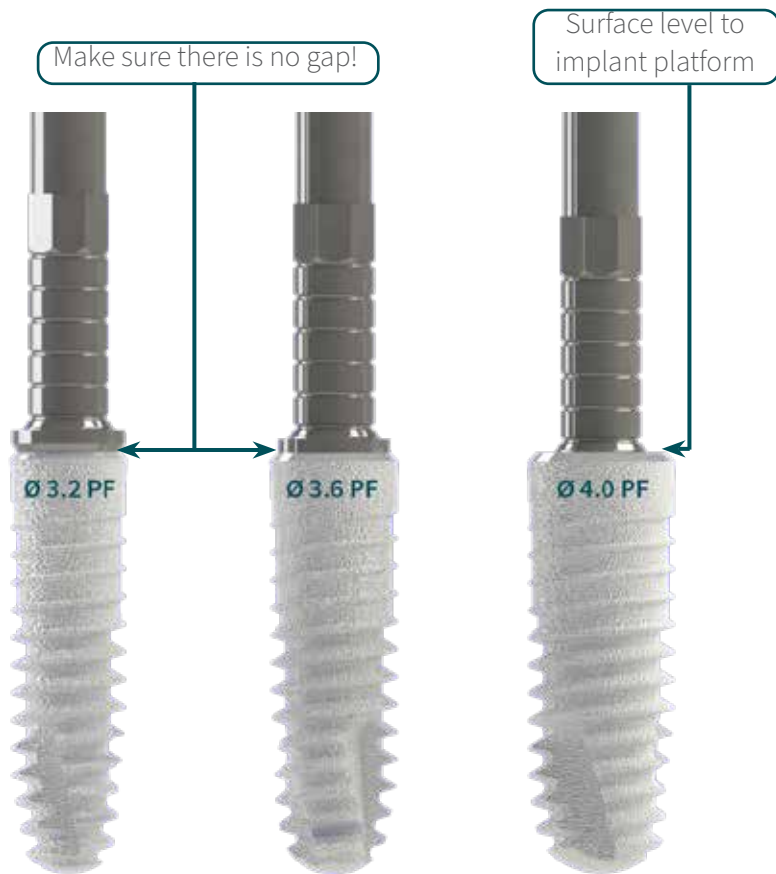


**Warning: Only use the Octa tools!**

The Dyna Hex driver also fits into the implant but will completely damage the internal thread.

Helix surgical instruments		
Dyna octa driver's	Description	Art. no.
	Dyna Octa Driver latch head short	12OL0
	Dyna Octa Driver latch head long	12OL1
	Dyna Octa Driver torq wrench short	12OT0
	Dyna Octa Driver torq wrench long	12OT1





# Seating

## Seating all Dyna Helix implants

The assembly can be securely removed and introduced into the receptor site. Care should be taken not to contaminate the implant. (The implant may only have contact with the bone and the blood of the patient.) Do not use cooling during implant insertion!

The implant is slowly threaded into its final position either with torque wrench or contra-angle handpiece at a maximum speed of 30 rpm. The machine polished implant collar should be positioned under the crest.

- The minimal insertion torque for secure primary stabilisation should be greater than 25Ncm.
- If the torque is higher than 50Ncm the implant should be threaded into place manually using the torque wrench in combination with an octa driver T.W. (no latch-head!).
- If the torquing force exceeds 60Ncm, there is a risk of damaging the bone (including overheating).



The implant is freely seated in the titanium tube, so do not turn it around



Take out the implant by means of the octa driver LH and contra angle



The implant is ready to be seated (**max 50Ncm**)



You can also use the Torq Wrench with the octa driver TW instead of the contra angle.



**DO NOT USE** the octa driver LH in combination with the Torq Wrench!



In case of using the angled abutment, a try-in angled abutment 0 (81AT0) or 1mm (81AT1) is available to determine the position of the octa in relation to the angulated abutment.

The seating instrument is disconnected from the implant and the cover screw threaded.

Please note:

1. Never overforce the implant into the site, it may lead to damaging the implant itself and/or bone necrosis. The torquing force must not exceed 60Ncm.
2. Always stick to the standardized site preparation protocol:
  - sequence of drills,
  - intermittent drilling technique,
  - avoidance of excessive force during preparation,
  - use of sharp drills, reamers and tapping instruments (maximum 20 times per instrument depending on bone quality)
  - excessive cooling with chilled saline
  - adequate rotational speed
3. Never touch the implant by hand. Avoid contaminating the implant with substances other than the blood and bone of the patient.
4. Never and in no way sterilize or re-sterilize the implant yourself neither with or without the packaging.
5. Prevent perforating or destroying vital anatomical structures.
6. Place the implants in the most favourable position (possibly parallel to one another and axial to bite forces). When placing more than two implants for fixed constructions do not position them in one straight line, and if this is not possible try to use different diameters. For the overdentures try placing the implants following the curvature of the alveolar ridge. Remember about the minimal distance from one another, type of prosthetic construction. The depth of placing should include consideration of biological width and possible initial bone resorption – which influences the papilla formation and the final aesthetic result.
7. Always thread and tighten the covering screw with the hex screwdriver before suturing the flap.

#### Manufacturer notice

Described techniques may be modified according to the particular situation and treatment plan. It is the user of Dyna products who is obliged to determine whether or not any product or technique are suitable for a particular clinical situation. Dyna Dental Engineering b.v. disclaims any liability, express or implied and shall not be responsible for any damages arising from or in connection with any errors in professional judgement or practice in the use of installation of Dyna products. It is the users duty to study the latest developments in dental implantology as well as Dyna (Octalock® Helix®) Implant System and its applications. When using our product intraorally take proper care to prevent them to be inhaled or ingested.

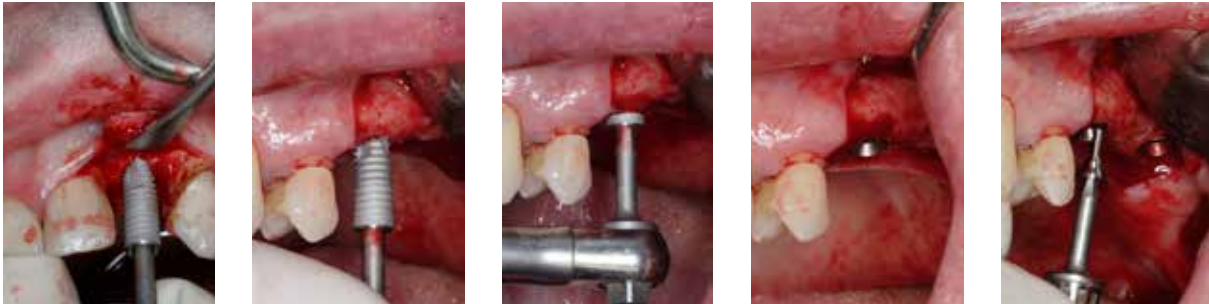
#### Note:

The large and small rubber rings in the Dyna drivers are subject to wear and tear. Please check these regularly on function and replace them if needed.

# Seating

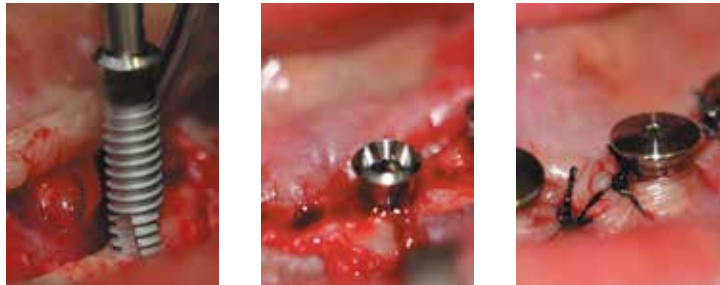
## Seating Dyna Helix DC and ST implants (see also page 36 & 37)

The Dyna Helix® cover screw is delivered sterile, together with the implant, in the cap of the inner tube. The screw head is 0.35 mm high. The cover screw should be tightened with the Dyna Hex driver with minimum 15Ncm. Helix® cover screws provide an excellent seal and cover during healing.



## Seating Dyna Helix TM implants (see also page 36 & 37)

The implant should be placed so that the uncoated collar will be positioned above the crest. However in some situations (e.g. to minimize the height above gingiva) the uncoated part of the Dyna Helix® TM implant may be placed slightly under the crest.



The seating instrument is disconnected from the implant and the standard 1mm or the 0, 2 or 3mm cover screw threaded with a minimum of 15Ncm.

The Dyna Helix® TM cover screw is delivered sterile, together with the implant, in the cap of the inner tube. The 0, 2 and 3mm cover screws are not delivered sterile!

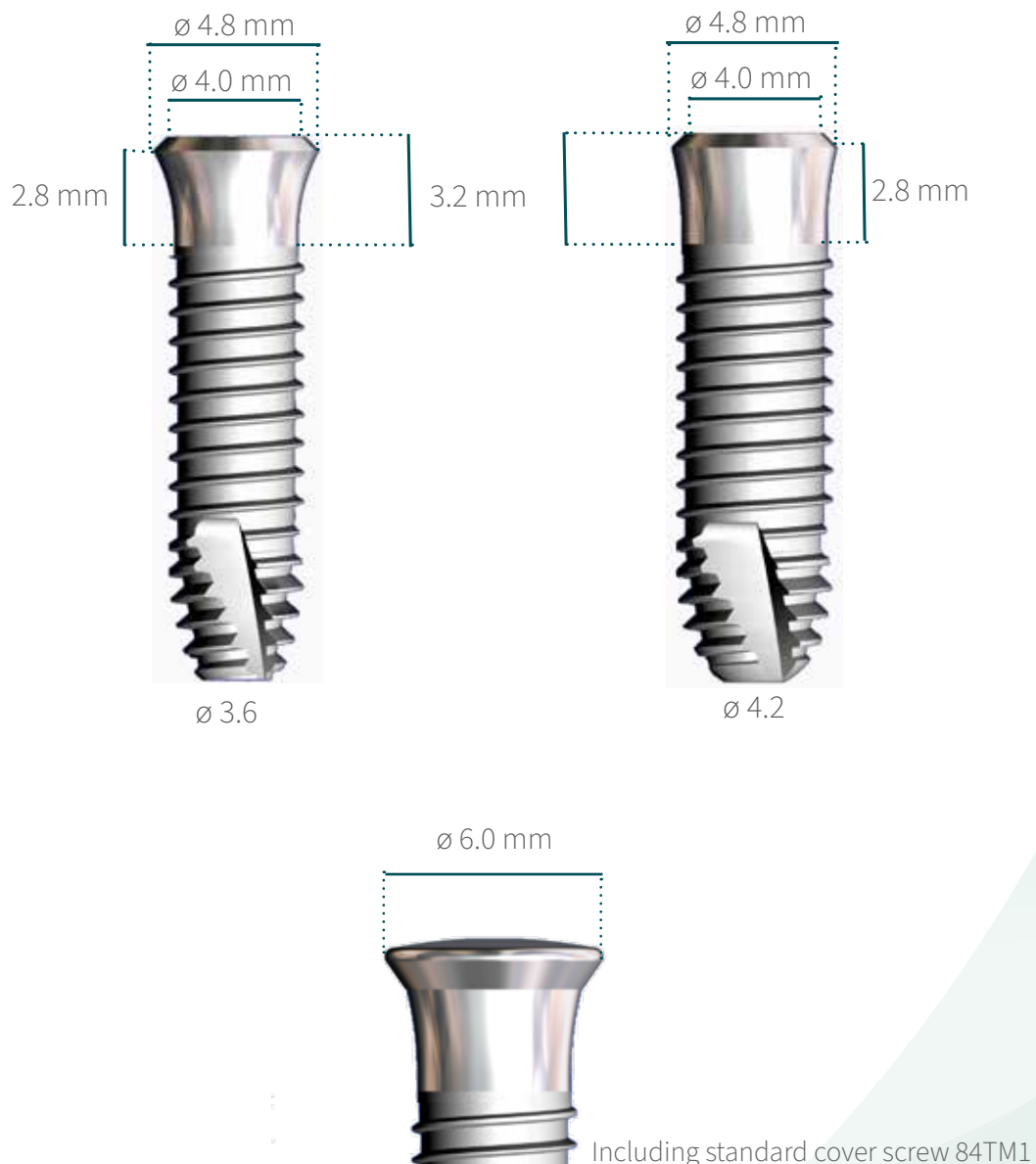
### PLEASE NOTE

When using Dyna Helix® TM implants in one-stage procedure, supracrestal incision with or without relieving incisions is the most recommended for preparing the mucoperiosteal flap. Dyna Helix® TM implants are placed with the same set of instruments used for Dyna Helix implants. The surgical placement of Dyna Helix® TM implants is carried out under local anesthesia. Long acting agent is recommended.

#### PLEASE NOTE

Trans-mucosal implants may unwillingly be (over)loaded when providing the patient with immediate restorations. This must be avoided when biomechanical criteria for immediate loading are not met.

When using the Dyna Helix® TM implants prevent loading minimally 8 to 10 weeks depending on the patients situation. If possible restrain the denture from the patient the first 14 days after implant surgery. Always create sufficient space in the denture around and above the cover screws to prevent loading



# Instruments

## Torque wrench

The torque wrench is a device for determining the torque applied to Dyna implants or prosthetic abutments, during seating. The wrench is supplied with a torque scale of max. 45Ncm and can be delivered together with 2 rotor bits. The rotor bit ISO1797/shank (art.no. C8381) is used for all drills and instruments with latch head connection. The rotor bit 4x4mm square (art.no. C8521) is used for all instruments with a T.W. connection.

The torque wrench is made of stainless steel.  
See the torque wrench IFU for further instructions.

Using the torque wrench to seat the implants gives the operator unique sense of feeling of the insertion resistance. It allows much sensitive primary stabilization assessment.



Art.nr. C8381



Art.nr. C8521

### Surgical instruments:

The only surgical instrument the Rotor-Bit Latch-Head (ISO1797) may be used with is the Dyna Helix Taper.

### Prosthetic instruments:

The Rotor-Bit Latch-Head can however also be used with several prosthetic instruments having a Latch-Head connection.

### Note:

1. Mechanical damage of latch-head instruments can occur above a torque of 50Ncm. Then use a T.W. instrument/driver in combination with the torque wrench in combination with the rotor bit 4x4mm square
2. Do not use Hexagonal driver 5181RL in a handpiece with motor, but only in combination with the rotor bit and torque instrument
3. The choice of the torque in particular case should include recommendations given by Dyna as well as the data from the literature and actual clinical situation.
4. Read the IFU carefully for intended use, cleaning and sterilisation process.



## Dyna Drivers






The Dyna hexagonal screwdrivers are instruments ready to be used with the torque wrench. Due to their shape, additionally it can be easily manipulated. They have been designed for screwing in and out of the particular elements of the Dyna Implant Systems.

The Dyna single slot-driver is being used for screwing in and out all types of extension abutments.

To ensure problem-free functioning, the hexdriver should be adequately disinfected, cleaned and checked before each use. The hexagonal screwdriver can be ordered in different versions (short, standard, long and latch-head). The rotor bit 4x4mm square (art.no. C8521) can be used in combination with the screwdriver to have more grip using it manually.



### Prosthetic instruments that can be used for cover screws (single slot for extension abutments)

Drivers	Description	Art. no.
	Dyna Hex driver latch head	5181RL
	Dyna Hex driver torque wrench long	5181L
	Dyna Hex driver torque wrench standard	5181S
	Dyna Hex driver torque wrench short	5181C
	Dyna Single slotdriver	5081S

#### Note (Dyna instruments)

- Clean directly after use to prevent drying of any debris on the instruments.
- Carefully remove any organic remains.
- Only use disinfectants intended for stainless steel.
- When using ultrasonic cleaners follow the instructions given by the manufacturer.
- Try to prevent direct contact with other instruments (damage) if cleaned mechanically.
- Store only dry instruments.
- Instruments have a limited number of reprocessing cycles. Discard defective instruments (faded depth marking, blunt/chipped blades, bent/fractured working parts, corroded surfaces).
- Always sterilize instruments after cleaning or disinfecting.
- Do not clean, disinfect or sterilize instruments connected with other elements. Always dismantle the parts before.
- Instruments must be disinfected and sterilized before clinical use as stated in the IFU cleaning\_sterilisation\_reprocessing available at [www.dynadental.com/IFU](http://www.dynadental.com/IFU)

# Connection Security

## Hand Sulcus Reamer T.W.

The Dyna hand sulcus reamer 18PD1 is a specially designed device for shaping the supra-implant part of the bone crest, before abutment tightening. A special shape of the cutting part matches the shape of the transmucosal part of Dyna abutments.



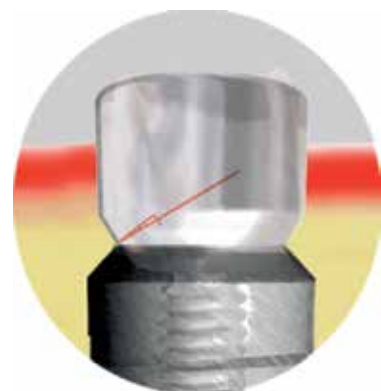
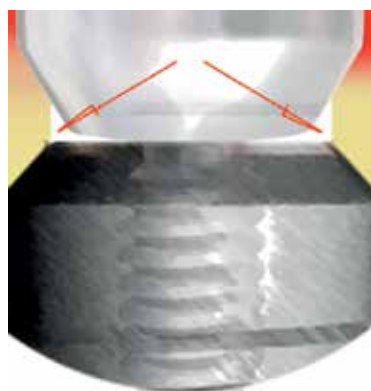
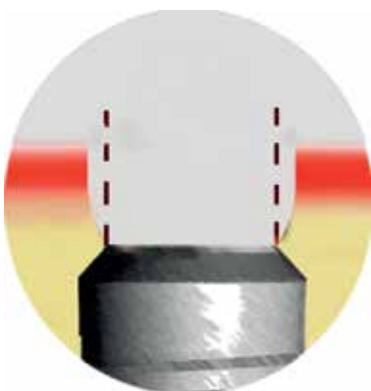
18PD1



Art.nr. C8381

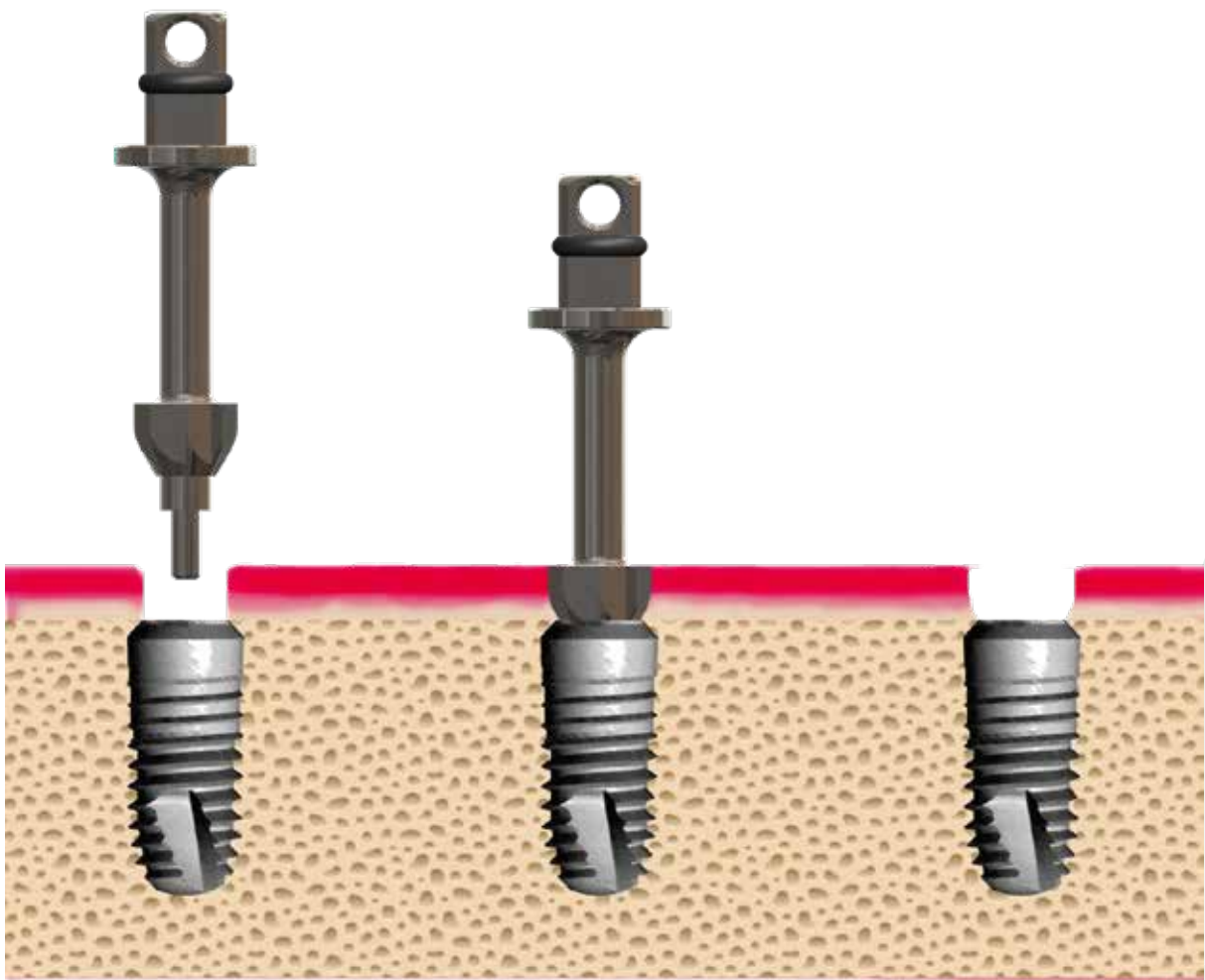
The device can only be applied manually in combination with Rotor-Bit 4 x 4mm .

It guarantees secure connection between the implant and all Dyna Octalock abutments, therefore preventing them from loosening or breaking.



It is not uncommon, especially when placing the implants subcrestally, that bone overgrows the upper part of the implant, reaching the closing screw. When unthreading the closing screw overhanging bone may prevent proper abutment connection. Using the Dyna sulcus reamer T.W. allows minimal invasive shaping the supra-implant part of the bone and proper abutment connection.

It is recommended to use the Dyna Sulcus Reamer T.W. always before connecting the abutment the first time. Especially during the second surgical stage but also when using the Dyna Helix® implant in one-stage procedure.



#### Note

Insert the guiding part of the sulcus reamer into the implant carefully in order not to damage the internal octagon

Never overforce the instrument into the implant

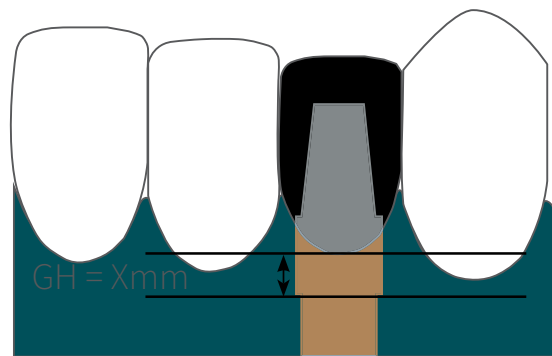
# Healing phase

## Healing abutments

Titanium healing abutments are used for shaping the mucosa during the healing proces and are for single use. Different types can be chosen depending on the type of construction to be made. By using markings the height of the definitive abutment can easily be determined.

Accurately measure the Gingiva Height (GH) after the healing period = distance between the upper side of the implant and the gingiva.

Use 15Ncm Torque for these abutments



## Standard Healing abutment

The standard healing abutment  $\varnothing$  4mm has a total height of 4 or 6mm. Both have height markings on 2mm and the larger one also has a height marking on 4mm.





## Healing Calyx abutment

Dyna Helix® DC and ST implants are, first of all, designed for two-phase surgery. Under special circumstances, when all conditions are met, these can also be used in one-phase surgery. For these situations Dyna fabricated special tulip-shaped healing abutments that make suturing of the mucosa under the abutment possible. These abutments are available in the heights 3.5mm, 4.5mm and 5.5mm. The lowest possible abutment can be chosen because suturing under the top of the abutment is possible. In this way leverage and burdening of the implant during the healing period is prevented.

Healing abutments for overdenture					
	Standard Healing abutment $\varnothing$ 4		Healing Calyx abutment		
Art. no	82HE4	82HE6	83HE35	83HE45	83HE55
					
Marking on	2	2 - 4	2	2	2 - 4
Height on PF4.0	4	6	3,5	4,5	5,5

## Healing abutment fixed constructions

The healing abutments  $\varnothing$  5mm for fixed constructions are available in the heights 2mm, 4mm and 6mm. Height markings are available at 2, 3 and 4mm. The healing abutment  $\varnothing$  6mm (81HA6) only has a marking at 3mm and is used for preparing the sulcus on using the Dyna Angled abutments.

Healing abutments for fixed constructions				
Art. no	81HE2	81HE4	81HE6	81HA6
				
Marking on		2 - 3	2 - 3 - 4	6
Height on PF4.0	2	4	6	

# Literature

## Dyna-related 1980-2000:

- 1989 H.W. Denissen et al Implantaten met plasmaspray-coatings van hydroxylapatiet  
1990 Denissen et al – Mandibular bone response to plasma-sprayed coatings of hydroxyapatite  
1993 Herman M.A.M. Keltjens et al – Distal Extension Removable Partial Dentures Supported by Implants  
1993 J.A. Jansen et al – Histologic investigation  
1993 H. Hiller et al – The safety of (Dyna) dental mini magnets in patients

## Dyna-related 2000-2023:

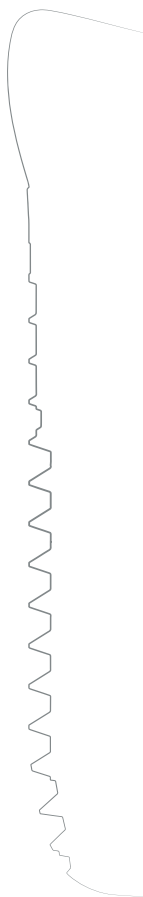
- 2021 A. Tabassum et al – Combined-effect-of-undersized-surgical-technique-and-axial-c\_2021\_The-Saudi  
2021 Shebrina F. Abdoel et al – Implant-supported mandibular overdentures: a retrospective case series study in a daily dental practice  
2021 H. Barikani et al – Survival of Dyna Implants A Retrospective Study  
2021 M. Gibreel et al Flexural Strength and Flexural Modules of Fiber-Reinforced, soft liner-retained implant overdenture  
2020 E. Canciani et al – Implant Surfaces Exposed to the Oral Cavity and Treated with Toothpaste containing Oxygen Releasing Compound  
2020 B. Albayrak et al – Three-dimensional Accuracy of conventional versus digital complete arch implant impressions  
2018 Khaled K. El-Din et al – Egyptian Dental Journal Effect of magnetic Attachment Flux  
2017 S.Z. Ülkü et al – Clinical Evaluation of Complications in Implant-Supported Dentures\_ A 4-Year Retrospective Study  
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