CONNEST®

HIGH PRECISION

Solid Solutions Through Technology

CONNEST®
HIGH PRECISION

SIMPLICITY AND SHAPE

INNOVATION

PRECISION

RELIABILITY

IMPLANTATION SYSTEM

PROSTHETIC PROCEDURE

Connest High Precision® Dental Implant Device is an implantation system with innovative characteristics.
It is distinguished by high fixture precision and the range of prosthetic components.

Patent Pending
Connest High Precision®
Nest-Shape®

CONNEST® HIGH PRECISION

NEST-SHAPE®

The **Connest High Precision®** range is manufactured with the intention of offering sound prosthetic solutions while giving maximum aesthetic results.

Simplicity, innovation, precision and reliability are the parameters demanded of a high quality implant system.

Connest High Precision® implants are manufactured and packaged in compliance with international standards **ISO-9001: 2008** and **UNI EN ISO-13485: 2004.**
They are CE certified and authorised by the Italian Ministry of Health. They are packaged in sterile ampoules following sterilisation by beta radiation.

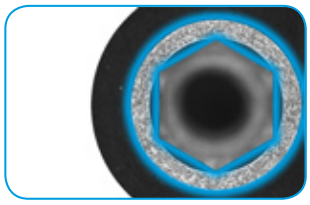
SIMPLICITY

Connest High Precision® devices owe their **Simplicity** to the creation of a single platform for implantation diameters, a reduced number of prosthetic components and a simple engagement process; this all helps make the task of the odontologist more straight-forward, efficient and ergonomic.

INNOVATION

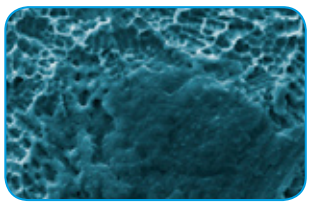
Connest High Precision® innovation. Thorough research into the various implant morphologies has lead to the development of the **Nest-Shape®** coil.

PRECISION



The precision of the implant-stump connection ensures better chewing force distribution and significantly reduced bacterial infiltration inside the fixture.

RELIABILITY



The reliability is the result of rigorous testing, conducted on the entire **Connest High Precision®** range. The guaranteed cleanliness of the surfaces, with **Bioburden** values close to 0, even in the preliminary wash stages, is fundamental. After treatment of the surfaces, the implants are decontaminated by plasma treatment.

IMPLANTATION SYSTEM

The **Connest High Precision®** implantation system: Simple and intuitive.

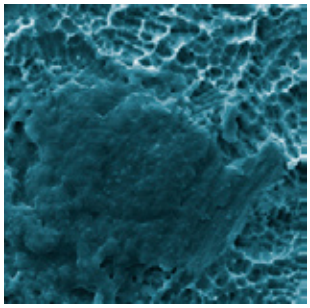
SHAPES

Connest High Precision® products are a range of implantation devices built on sound applied bio-mechanical concepts.
All implantable devices are shaped to allow their application with simplicity and with safe actions.
Connest High Precision® implants have hexagonal interiors, onto which Platform Switching concepts may be applied.
The first three millimetres of the implant has conometry of 6°, three milled groves and three milled device supports in order to improve secondary stability effects. Thanks to the **Nest-Shape®** coil, preparation of the alveolus does not require pre-tapping.
The surface is prepared by **Ti DAE** dual acid etching.

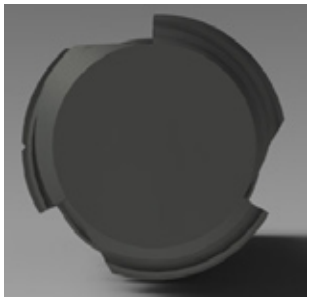
3,5 mm ∅

4 mm ∅

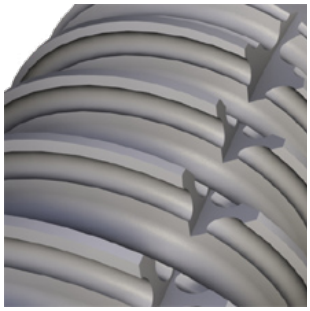
All **Connest High Precision®** implants have Ti DAE dual acid etched surfaces. “TiDAE” treatment significantly increases the “% area increase” value, which represents the contact surface between the implant and the bone. The “TiDAE” surface is reliable and has been used for many years with great success. Following “TiDAE” treatment, all devices undergo 100% checking and subsequent plasma decontamination.



Connest High Precision® implants are manufactured with three milled grooves. During device insertion, the milled grooves receive portions of bone while excess bone is compressed against the implant alveolar walls. The three grooves also have an antirotation function and allow venting of excess blood clots.



Connest High Precision® implants are manufactured with three support grooves. In the first surgical stage, the three small grooves help allow excess blood clots to flow out of the alveolus, while in the second surgical stage, the three incisions give optimal support to secondary stability.



4,5 mm ∅

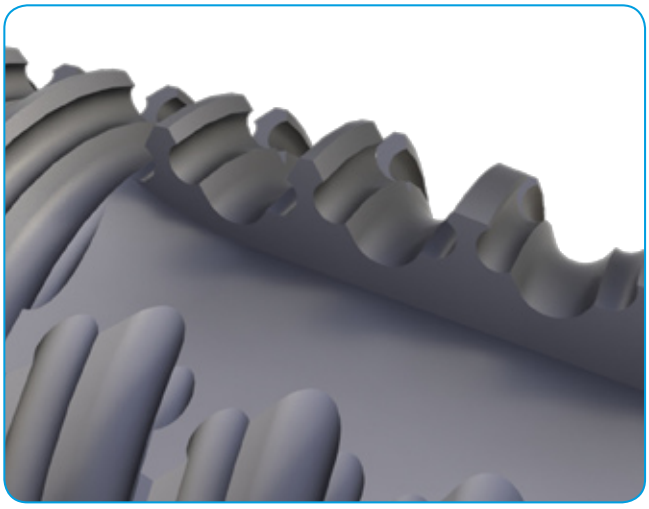
5 mm ∅

THE COIL

One of the principal characteristics of the **Connest High Precision®** implant is the geometry of the new morphology **Nest-Shape®** coil, which intrinsically includes both biological functions and significant bio-mechanical functions.
Coil geometry is important in the bone-healing phase: the dual 25 micron concavities (Red and Blue in the figure) over the entire coil and on the implant body (Green) significantly extend the bone contact surface and influence the primary distribution of newly formed bone itself.
Indeed, the first osteoblasts, vessels and bone trabeculae primarily concentrate in the coil concavities and only after 30 days is uniform distribution observed over the implant surface.
Osteoblast differentiation and proliferation is promoted in the concavities, where increased alkaline phosphatase activity is observed along with the presence of PGE2 and TGF-beta

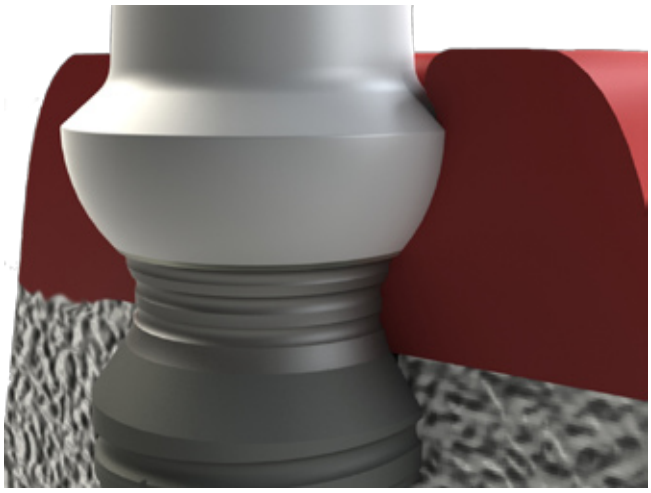
section of the gingiva

NEST-SHAPE®



Particular coil Nest-Shape

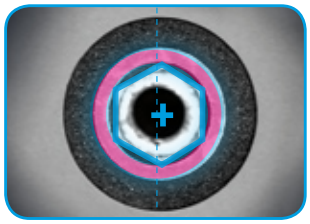
- 25 MICRON CONCAVITY
- BONE CONTACT SURFACE
- OSTEOBLAST DIFFERENTIATION
- OSTEOBLAST PROLIFERATION
- ALKALINE PHOSPHATASE
- PGE2 AND TGF-BETA



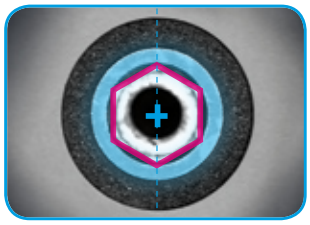
Particular coil Nest-Shape

The particular geometry of the multiple concavity coil allows the implant itself and the bone to be locked mechanically, allowing three-dimensional interdigitation of the bone, contributing towards the creation of a bond that is resistant to compression and shear, and the rupture of the interface.
These characteristics indicate the **Connest High Precision®** implant to be ideal for D4 bone and regenerated bone, for short and immediate load implants.

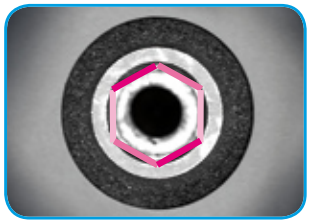
Concentricity of the diameters



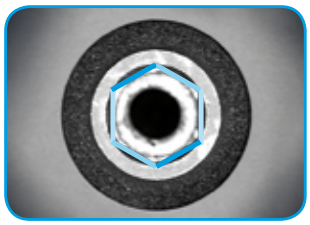
The concentricities of the critical parameters are checked in 100% of the manufactured items. The tolerance ranges of **Connest High Precision®** products are less than 0.02 hundredths of a millimetre, and tests conducted on all product batches are traceable.
The instrument used for checking is an optical measuring device with an error margin equal to 2.2 thousandths of a millimetre.

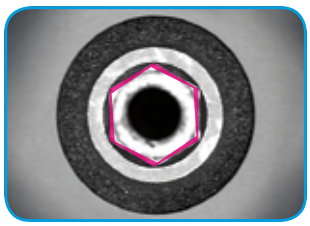


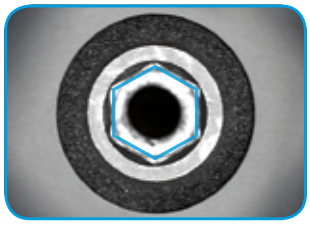
Disparallelism



One of the parameters of greatest interest is the parallelism of the planes involved in the device's internal connections, which can also give rise to connection discrepancies between the implant and the stump. Tests conducted on **Connest High Precision®** devices certify that (statistical calculation) defects are restricted to a value of between 0.0030 and 0.0037 mm, data once more highlighting the efficacy of the operators and the equipment used in the manufacturing process.

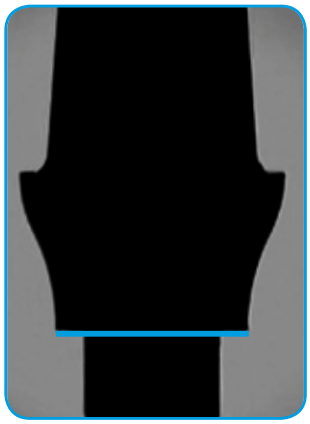






Discrepancies

Implant-stump connection precision is very important, and **Connest High Precision®** products are manufactured with precision values within 6 thousandths of a mm. This is very important since the greater the connection discrepancy value the greater the angle of rotation of the stump with respect to the axis of the implant. This parameter is checked on all **Connest High Precision®** implantable devices



Fit

The manufacturing and inspection technology used for **Connest High Precision®** devices allows the attainment of air-tight seals on connection planes. The MITUTOYO optical device, with magnification factors of 480x and 900x, may be used to highlight the absence of light infiltration in the connection between the implant and the stump: this certifies extreme precision, making the transfer of bacteria to the inside of the fixture unlikely.

THE SURFACE

The Ti DAE surface

The surface treatment process envisages dual acid etching, followed by thorough cleaning steps.
The process is finished with a plasma decontamination step, which removes all contaminants and allows full exploitation of the surface topography. The latter is characterised by very dense rugosity, with interpeak distances in the order of microns. This is much less than the dimensions of cells and ensures that the surface behaves like a “sponge” with regard to clots. This results in an increased concentration of growth factors released from platelets, and optimal clot-surface adhesion, facilitating the migration of cells to the implant surface. (Figs. 1-2).

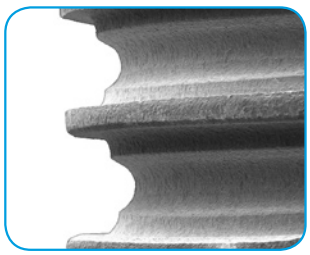


Fig. 1

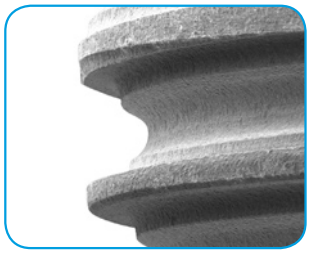


Fig. 2

Cytotoxicity testing

Cytotoxicity testing has been conducted in accordance with the protocols described in **EN ISO 10993-5:199**. The results obtained from cytotoxicity tests have highlighted the absence of any negative phenomena. As expected, **L-929 cells** grown in contact with the sample, by definition free from cytotoxic effects (negative control), show a complete absence of toxic effects affecting the cell monolayer, as the general appearance and density of the monolayer demonstrate. (Fig. 3)

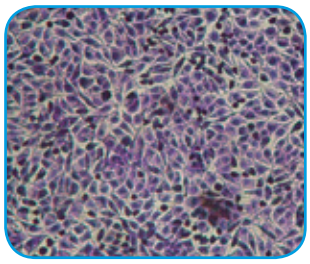


Fig. 3

PARAMETER	Ti MACHINED	Ti DAE
Ra	0.39/0.21	0.69/0.43
Rq	0.49/0.27	0.86/0.56
Rz	2.61/1.97	5.69/3.05
Rp	1.42/0.84	2.98/1.00
Rv	1.34/0.98	3.10/1.66
Rc	1.38/0.96	2.53/1.63
RSm	16.08/13.64	16.77/12.13
% area increase	24.32/20.32	98.68/86.12

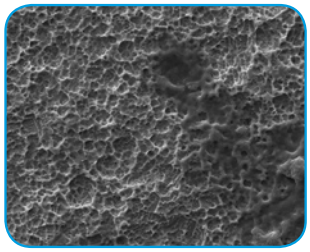


Fig. 4

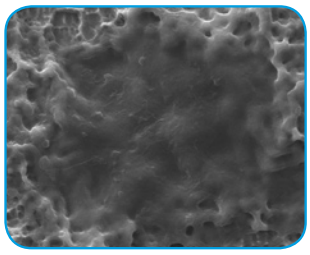


Fig. 5

Qualitative aspects of surface topography

Rugosity has been evaluated in accordance with **ISO 4287**, giving all the parameters defined in the standard.
The data reported in the table to the side have been deduced from evaluation of the important **"Percentage Increase in Area"** parameter, defined as the percentage increase in effective surface area with respect to the geometric area. Namely, the area that would be obtained if the surface was completely flat.
The results obtained are expressed in microns, except for the value of the % area increase, which corresponds to the mean of three measurements.

Cell growth as assessed by SEM observation

In this test, **SaOS2** osteoblast cells have been placed in contact with surfaces manufactured in accordance with the **Ti DAE** protocol and evaluated by observation using an electron microscope after 24 hours, 72 hours and 7 days. Cell adhesion tests have been conducted in accordance with protocols described in the International bibliography.
The experiment confirms the remarkable effect of **Ti DAE** surface topography on cell behaviour. (Figs. 4-5)

IMPLANT COMPONENTS

3,5 mm Ø	
Lenght	Code
8mm	IMCO358
10mm	IMCO3510
12mm	IMCO3512
14mm	IMCO3514

4 mm Ø	
Lenght	Code
8mm	IMCO48
10mm	IMCO410
12mm	IMCO412
14mm	IMCO414

4,5 mm Ø	
Lenght	Code
8mm	IMCO58
10mm	IMCO510
12mm	IMCO512
14mm	IMCO514

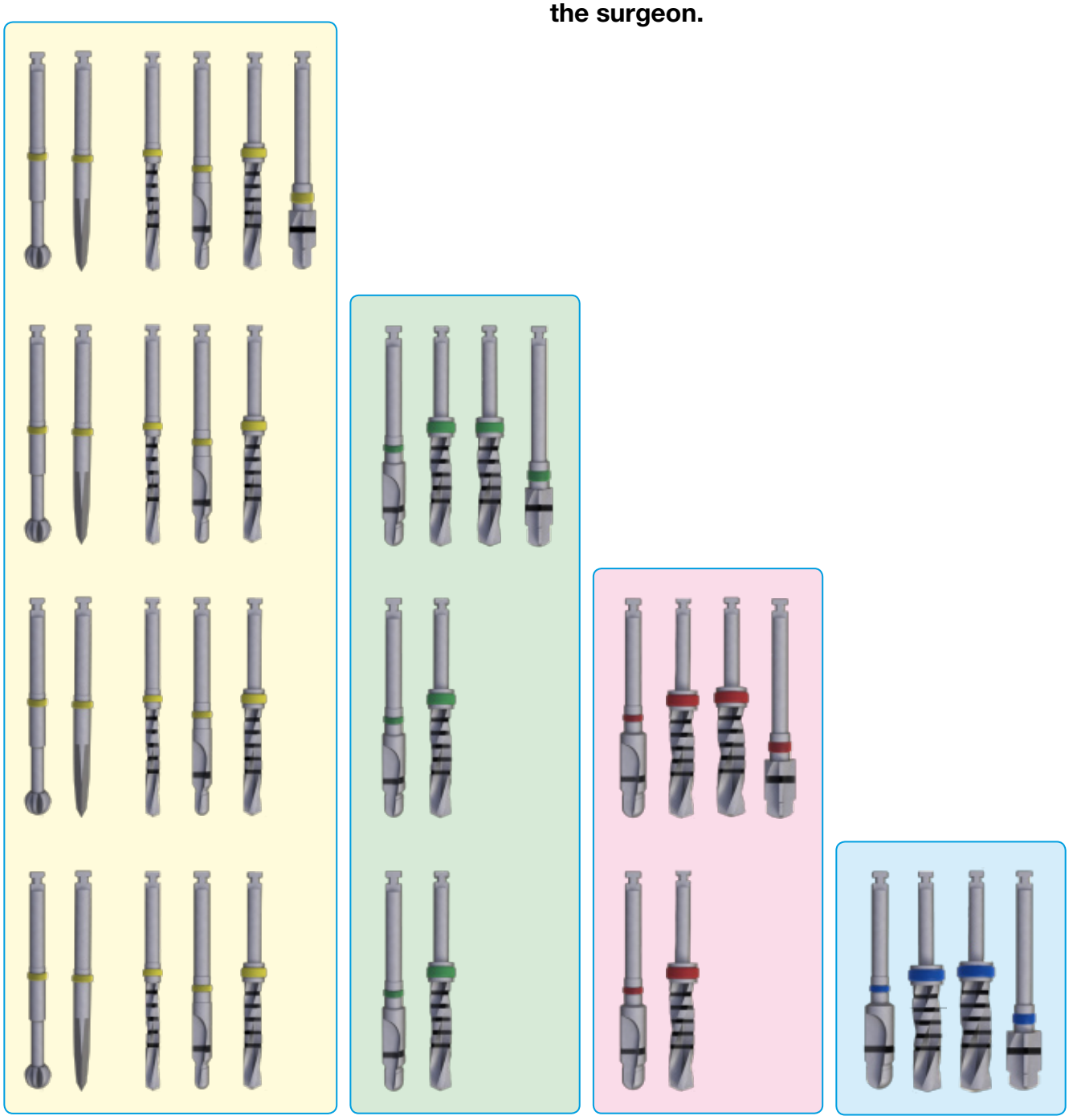
5 mm Ø	
Lenght	Code
8mm	IMCO458
10mm	IMCO4510
12mm	IMCO4512
14mm	IMCO4514

SURGICAL CUTTERS

Good surgical results always depend on the experience and intuitive capacity of the surgeon, who must adapt the available resources to suit the patient's condition. **Connest High Precision®** has revealed itself to be an optimal support for sustaining and helping the implantologist, even with the most difficult of operations. The surgical kit has an ergonomic design and the surgical protocol is simple, intuitive and fast.**Connest High Precision®** offers cutters made using the best quality medical steels, subjected to tempering and surface finishing treatments. **Connest High Precision®** cutters are **CE** certified, and show the identification codes and the manufacturing batch number. The cutting reliability of the standard cutter is guaranteed for 25 implants, while for "carbon coated" cutters, the number of treatable alveoli is increased to 35 units. The **Connest High Precision®** range has cutters calibrated to the length of the implants; hence, this solution envisages the use of stops only for those 16 mm in length.

CUTTING GUIDE

Please note! **The surgical procedure recommended by Connest Hp does not replace the judgement and experience of the surgeon.**



Diametri	Velocita delle frese
START	2000 giri/min.
2 Ø	1200 giri/min.
P. DRILL 2.8 Ø	500 giri/min.
2.8 Ø	1200 giri/min.
C. SINK 3.5 Ø	500 giri/min.
P. DRILL 3.3 Ø	500 giri/min.
3.3 Ø	1200 giri/min.
bone D4 3.6 Ø	1200 giri/min..
C. SINK 4 Ø	500 giri/min.
P. DRILL 3.8 Ø	500 giri/min.
3.8 Ø	1200 giri/min.
bone D4 4 Ø	1200 giri/min.
C. SINK 4.5 Ø	500 giri/min.
P. DRILL 4.2 Ø	500 giri/min.
4.2 Ø	1200 giri/min.
bone D4 4.5 Ø	1200 giri/min.
C. SINK 5 Ø	500 giri/min.

PROCEDURE PROTESICHE

IMPLANT	COVER SCREW	HEALING SYSTEM	PROVISIONAL	SUPPORT SYSTEM
 3,5 mm Ø	 VTCO357	 **HEALING ABUTMENT** H 2mm TSCO5352 H 3mm TSCO5353 H 4mm TSCO5354 H 6mm TSCO5356  **FORM GINGIVA PEEK** Ø 5,5 mm GECO55 Ø 6,5 mm GECO65 Ø 7,5 mm GECO75  **SCREW** VSCO18108  **CAP PEEK** Ø 5,5 TAPCO5535 screw VSCON1810  **CAP TITANIUM** Ø 5,5 TTSCO5535 Ø 6,5 TTSCO6535 Ø 7,5 TTSCO7535 **SCREW** VSCON10 	 **ABUTMENT TITANIUM** Ø 5,5mm MOCO35559 Ø 6,5mm MOCO35659 Ø 7,5mm MOCO35759  **ABUTMENT PEEK** Ø 5,5mm MOPCO35559 Ø 6,5mm MOPCO35659 Ø 7,5mm MOPCO35759  **SCREW** VSCO18108	 **ABUTMENT WITH BALL** H 2mm SFCO5352 H 3mm SFCO5353 H 4mm SFCO5354 H 6mm SFCO5356  **CONNECTOR TITANIUM 20°** H 0.5mm BSTOCO32005 H 3mm BSTOCO3203 H 4mm BSTOCO3204 H 6mm BSTOCO3206 **CONNECTOR TITANIUM 45°** H 0.5mm BSTOCO34505 H 3mm BSTOCO3453 H 4mm BSTOCO3454 H 6mm BSTOCO3456
 4 mm Ø  4,5 mm Ø  5 mm Ø	 VTCO547	 **HEALING ABUTMENT** H 2mm TSCO542 H 3mm TSCO543 H 4mm TSCO544 H 6mm TSCO546  **FORM GINGIVA PEEK** Ø 5,5 mm GECO55 Ø 6,5 mm GECO65 Ø 7,5 mm GECO75  **SCREW** VSCO2108  **CAP PEEK** Ø 5,5 TAPCO5545 **SCREW** VSCON210  **CAP TITANIUM** Ø 5,5 TTSCO5545 Ø 6,5 TTSCO6545 Ø 7,5 TTSCO7545 **SCREW** VSCON10 	 **ABUTMENT TITANIUM** Ø 5,5mm MOCO559 Ø 6,5mm MOCO659 Ø 7,5mm MOCO759  **ABUTMENT PEEK** Ø 5,5mm MOPCO559 Ø 6,5mm MOPCO659 Ø 7,5mm MOPCO759  **SCREW** VSCO2108	 **ABUTMENT WITH BALL** H 2mm SFCO452 H 3mm SFCO453 H 4mm SFCO454 H 6mm SFCO456  **CONNECTOR TITANIUM 20°** H 0.5mm BSTOCO2005 H 3mm BSTOCO203 H 4mm BSTOCO204 H 6mm BSTOCO206 **CONNECTOR TITANIUM 45°** H 0.5mm BSTOCO4505 H 3mm BSTOCO453 H 4mm BSTOCO454 H 6mm BSTOCO456

COPYING SYSTEM	IMPLANT ANALOG	PLASTIC CYLINDER	ABUTMENT
 **TRANSFER** H 8mm TNCO548 H 11mm TNCO5411 H 14mm TNCO5414  **SCREW** VSCON1818	 ANCO53510  **SCREW** VSCO18108	 **PLASTIC CYLINDER WITH TITANIUM BASE** H 0.5mm CACO3505 H 2mm CACO352 H 3mm CACO353 H 4mm CACO354  **SCREW** H 0.5mm VSCO1805 H 2mm VSCO182 H 3mm VSCO183 H 4mm VSCO184	 **ABUTMENT TITANIUM** Ø 5,5mm MOCO35511 Ø 6,5mm MOCO35611 Ø 7,5mm MOCO35711 **SCREW** VSCO18108  **ANGLED ABUTMENT TITANIUM** 15° MOCO3515 25° MOCO3525 Vite VSCO18108  **OVERTURNED CONE** MOCOCN35 **SCREW** VSCO18108
	 ANCOSF		 GOCO01  ORCO01
 **TRANSFER CONNECTOR 20°** H 11mm TNCOT20 **TRANSFER CONNECTOR 45°** H 11mm TNCOT45  **SCREW** VSCO1865	 **ANALOG CONNECTOR 20°** ANCOT20 **ANALOG CONNECTOR 45°** ANCOT45  **SCREW** VSCO1865	 **PLASTIC CYLINDER 20°** H 11mm CACOT20 **PLASTIC CYLINDER 45°** H 11mm CACOT45  **SCREW** VSCO1865	 **CAP CONNECTOR 20°** H 11mm CAPCOT20 **CAP CONNECTOR 45°** H 11mm CAPCOT45  **SCREW** VSCCO185
 **TRANSFER** H 8mm TNCO548 H 11mm TNCO5411 H 14mm TNCO5414  **SCREW** VSCON218	 ANCO5410  **SCREW** VSCO2108	 **PLASTIC CYLINDER WITH TITANIUM BASE** H 0.5mm CACO4505 H 2mm CACO452 H 3mm CACO453 H 4mm CACO454  **SCREW** H 0.5mm VSCO205 H 2mm VSCO22 H 3mm VSCO23 H 4mm VSCO24	 **ABUTMENT TITANIUM** Ø 5,5mm MOCO5511 Ø 6,5mm MOCO6511 Ø 7,5mm MOCO7511 **SCREW** VSCO2108  **ANGLED ABUTMENT TITANIUM** 15° MOCO15 25° MOCO25 **SCREW** VSCO2108  **OVERTURNED CONE** Cono Rovesco MOCOCN55 **SCREW** VSCO2108
	 ANCOSF		 GOCO01  ORCO01
 **TRANSFER CONNECTOR 20°** H 11mm TNCOT20 **TRANSFER CONNECTOR 45°** H 11mm TNCOT45  **SCREW** VSCO1865	 **ANALOG CONNECTOR 20°** ANCOT20 **ANALOG CONNECTOR 45°** ANCOT45  **SCREW** VSCO1865	 **PLASTIC CYLINDER 20°** H 11mm CACOT20 **PLASTIC CYLINDER 45°** H 11mm CACOT45  **SCREW** VSCO1865	 **CAP CONNECTOR 20°** H 11mm CAPCOT20 **CAP CONNECTOR 45°** H 11mm CAPCOT45  **SCREW** VSCCO185

PACKAGING

The **Connest High Precision** ® package .

The pack contains a blister pack, the instructions for use and two patient labels.
The large pit of the blister pack contains a glass ampoule, and the small pit contains a healing cap. The ampoule is sealed hermetically by two medical silicone caps, and the closing screw cap is positioned on the outer cap. A protective cylinder (titanium) containing the implant is located inside the ampoule. The healing cap is made from medical PEEK (EN ISO 10993-1 Biological Evaluation of Medical Device) allowing it to be used in contact with human tissues for a period of 180 days.
The packaging exterior has a colour code identifying the diameter and length of the device.

KIT01

The KITCO01 cutter tray includes all the instruments necessary for the application of all Connest High Precision® implantable devices.
The twist drills are 16 mm in length and have laser etched depth markers.

KIT02

The KITCO02 surgical kit is supplied complete, and has three extractable trays inside: two for the cutters and the third for the ratchet drivers.
The two cutter trays differ from one another: one is dedicated to the Twist drills in surgical sequence; the other, to the twist drill calibrated according to implant length.

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