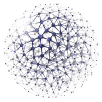
Surgical manual

CSR

sweden & martina

CSR



Clinical indications for resorting to implantoprosthetic therapies

When assessing the patient, in addition to his/her eligibility with regards to implant-prosthetic rehabilitation, it is usually necessary to consider the contraindications that apply to oral surgery procedures in general. These include:

- clotting disorders, anticoagulant therapy;
- healing or bone regeneration disorders;
- decompensated diabetes mellitus;
- metabolic or systemic diseases that compromise tissue regeneration with a particular influence on healing and bone regeneration;
- alcohol abuse, smoking and use of drugs;
- immunosuppressive therapy, such as: chemotherapy and radiotherapy;
- infections and inflammations, such as periodontitis and gingivitis;
- poor oral hygiene;
- inadequate motivation;
- occlusion and/or articulation disorders as well as inadequate interocclusal space;
- inadequate alveolar process.

It is contraindicated to fit implants and implant restorations in patients with poor general or oral health, those who are unable to monitor their general conditions properly or those who have had organ transplants. Psychologically unstable patients, alcohol or drug abusers, and poorly motivated or uncooperative patients should also be considered unsuitable for this kind of treatment. Patients with poor periodontal health should first be treated and allowed to recover. In the presence of a lack of bone substance or poor quality of the receiving bone, such as to compromise the stability of the implant, suitable guided tissue regeneration must be performed prior to implant treatment.

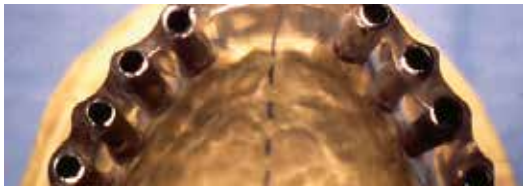
Contraindications also include: bruxism, allergy to titanium (extremely rare), acute or chronic infectious diseases, sub-acute chronic maxillary osteitis, systemic diseases, endocrine disorders, diseases resulting in microvascular disorders, pregnancy, breastfeeding, previous exposure to radiation, haemophilia, neutropenia, steroid use, diabetes mellitus, kidney failure and fibrous dysplasia. The normal contraindications common to all oral surgery must also be observed. Surgery is not recommended for patients on anti-coagulant, anticonvulsant and immunosuppressant therapies, with active inflammatory-infective processes of the oral cavity, and patients with BUN and creatinine values outside the norm. Patients with cardiovascular disease, hypertension, thyroid or parathyroid diseases, malignant tumours found in the 5 years preceding the operation, or nodular swellings must also be rejected.

Chemotherapies reduce or eliminate the ability of osseointegration, therefore patients undergoing these treatments must be carefully screened before being rehabilitated with oral implantoprostheses. Numerous cases of bisphosphonate-associated periimplant osteonecrosis of the mandible have been reported in the literature.
This problem particularly applies to patients treated intravenously.
As a post-operative precaution, the patient must avoid any kind of strenuous physical activity.

Side and secondary effects

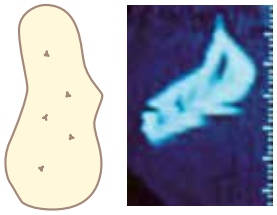
Situations that may occur after surgical procedures include temporary local swelling, edema, hematoma, temporary sensitivity alterations, temporary masticatory limitations, post-surgical micro-hemorrhages in the following 12-24 hours. The patient may also experience pain, speech problems, gingivitis, loss of bone crest, permanent paresthesia, dysesthesia, local or systemic infections, exfoliation, hyperplasia, and oronasal and oroantral fistulas, perforation of the labial or lingual plate, perforation of the Schneidarian membrane, bone fractures, implant fractures, fractures of the over-structures, aesthetic problems, unnoticed perforation of the nasal sinus, nerve injuries, impairment of natural dentition. The following pathophysiological problems can increase the risks: cardiovascular failure, coronary disease, arrhythmia, pulmonary or chronic respiratory disease, gastrointestinal disease, hepatitis, inflammatory bowel disease, chronic kidney failure and disorders of the urinary system, endocrine disorders, diabetes, thyroid diseases, hematologic disorders, anaemia, leukaemia, coagulation problems, osteoporosis or musculoskeletal arthritis, stroke, neurological disorders, mental retardation, paralysis.

Before proceeding, it is important to perform a careful pre-operative analysis of the patient's medical history to verify his or her suitability for the implant treatment. It is also recommended to collect and file all the clinical, radiological and radiographic records. After making models of the two arches, the best position and orientation of the chosen implants will be evaluated based on the occlusal plane and on a correct distribution of the forces. In this phase, a surgical stent may be created to guide the specialist to correctly position the implants during the operation. Depending on the specific case, a decision will be made on whether to use a single or double phase surgical procedure, using titanium cylinders (code DIM) to make the radiological/surgical stent.

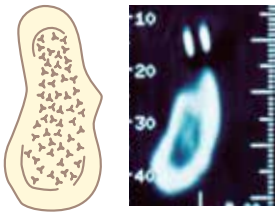


A radiological and surgical stent can be made by using the special cylinders in titanium (code DIM), which can be used to obtain an ideal positioning of the implants in terms of biomechanics and aesthetics.

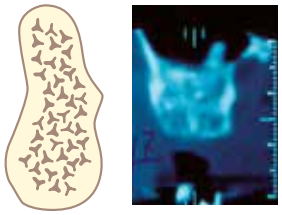
In addition to an oral examination, both clinical and with x-rays, it is recommended to take a CT scan of the interested area; once the x-rays and scans have been obtained, the specialist can identify the most suitable implant with the help of convenient transparent radiographic guides. The pre-operative study of the Dentalscan allows the identification of the type of bone present in the insertion point of the implant. The choice of the surgical procedure must take into consideration the type of bone present. The bone is normally classified into 4 types according to the density. The classification (according to Carl Misch) is the following:



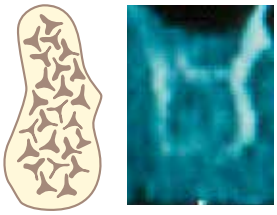
BONE D1: all cortical bone.



BONE D2: a core of bone marrow enclosed in a shell of cortical bone.



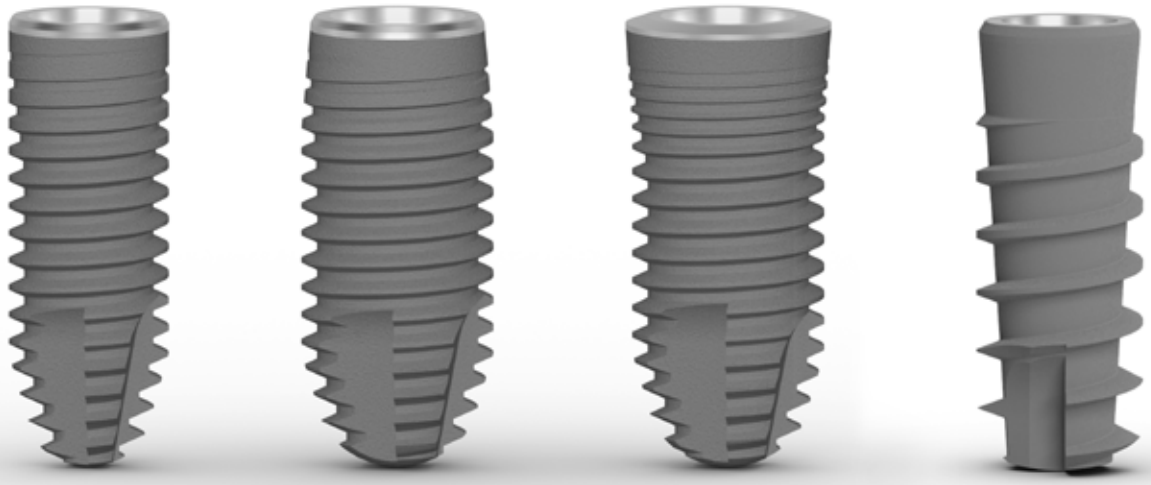
BONE D3: all bone marrow without cortical crest.



Dentalscan images courtesy of Dr. Marco Csonka - Catania

General indications

CSR implant fixtures are long-term implantable medical devices. All the fixtures are sold in single-use sterile packs. The function of the fixtures is to replace missing dental roots.
The fixtures have a connection in the crown part for receiving an implant post aimed at supporting a dental prosthesis. In implant-prosthetic rehabilitation with CSR implants, only original prosthetic components by Sweden & Martina must be used.
Use of non-original components limits the responsibility of Sweden & Martina S.p.A. and renders the product warranty void.
The implants have a hybrid morphology, they are screw-shaped with an external thread and have a conical internal connection for connecting the prosthetic components.
CSR implants can be inserted in both edentulous and post-extraction sites, either immediate (insertion of the implant at the same time as the removal of the tooth or root), or deferred (normally about 3 weeks between extraction and insertion of the implant fixture).
All the fixtures are sold complete with the respective surgical cover screw. Surgical cover screws are also medical devices that can be implanted surgically, designed to remain in the oral cavity for even more than 30 days. The surgical cover screws can also be sold individually.



Method of use

The methods of use can be divided into two main surgical techniques:
- **Two stages**: an initial "submerged" stage, with implant insertion, covering of the connection with a surgical cover screw, suturation and subsequent reopening of the mucous membrane 2–6 months later, followed by prosthesis insertion;
- **One stage**: implant insertion and closure of the connection with a healing abutment instead of a surgical cover screw. Alternatively, in the presence of suitable therapeutic indications, it can be loaded immediately with an appropriate temporary or permanent dental post, depending on the case.

Implants are inserted in the bone following surgical protocols that must be considered according to the quantity and quality of the receiving bone, the implant and the possible need for regenerative therapies. A site is created in the patient's bone at the position of the new tooth to be replaced or inserted, using a series of calibrated bone drills or other suitable instruments, such as bone expanders, bone profilers or similar.
The necessary conditions for the success of the implant are:
- the presence of a certain quantity of bone;
- good periodontal (gingival) support;
- the absence of bruxism (tooth grinding) and serious malocclusions;
- the presence of good occlusal balance (correct masticatory occlusal plane).

CSR implants have been tested in a wide range of clinical situations:
- standard operating procedures;
- immediate and early loading;
- post-extraction situations, even combined with immediate loading.

Generally, masticatory loading with a fixed prosthesis occurs at a second stage, after 2 to 3 months for the mandible and after 4 to 6 months for the upper jaw. In some cases, but not all, immediate loading of the implants is possible; to do this it requires good primary stability, with no mobility or movement limited to a few microns. The bone-implant interface must therefore be of the order of a few millimicrons, otherwise there is the risk of fibrous integration.
The clinical indication for choosing the CSR implant depends on the site in which the implant is to be inserted, on the anatomy of the receiving bone and on the technique chosen from among those mentioned above. The choice must be made exclusively by the doctor, who must have the suitable training and experience and must plan the prosthetic rehabilitations beforehand.
Sweden & Martina has conducted 5,000,000-cycle fatigue resistance tests on CSR implants. The implants passed the test. Fatigue tests are conducted according to the standards and evaluated further with finite element calculations.

Key to CSR implant codes

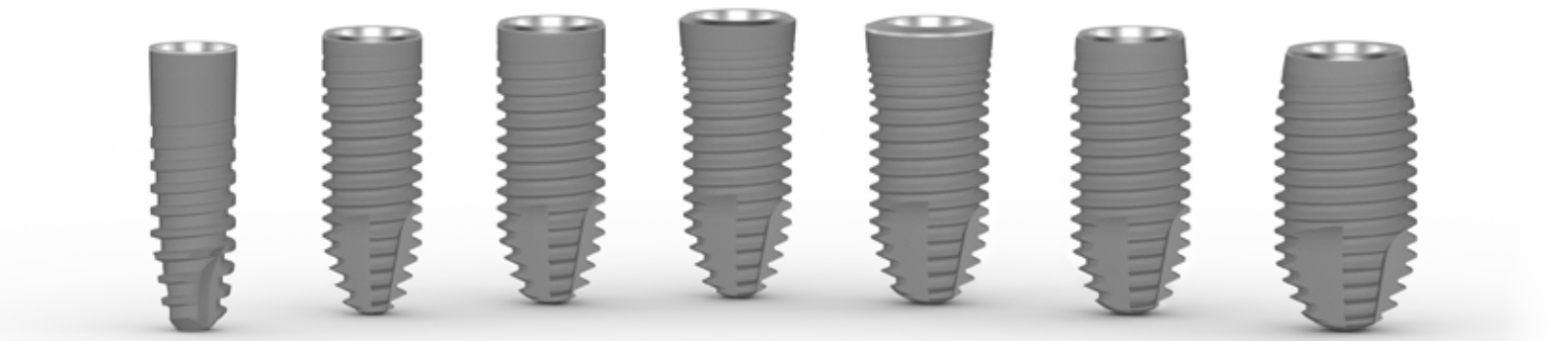
The implant codes are so-called "mnemonic" codes, i.e. they allow easy identification of the piece. Below is a table showing how the mnemonic codes work using **VSR-ZT-420RN-115** as an example:

implant type	surface	diameter	neck morphology	length
VSR	ZT	420	RN	115
VSR: CSR implant **VS**: CSR RF SL implant	**ZT:** ZirTi surface	**300**: 3.00 mm **350**: 3.50 mm **380**: 3.80 mm **420**: 4.20 mm **500**: 5.00 mm *It is the measure of the **endosseous diameter** of the implant taken in the middle third*	**ST**: Straight Neck **RN**: Reduced Neck Wide Neck* **SL**: conical morphology and wide thread. Always associated with implants which code begin with VS, not VSR.	**065**: 6.50 mm **085**: 8.50 mm **100**: 10.00 mm **115**: 11.50 mm **130**: 13.00 mm **150**: 15.00 mm **180**: 18.00 mm *Nominal length which expresses the endosseous length of the implant*

** Wide Neck CSR implants are not identified by a neck morphology code (e.g., VSR-ZT-380-100).*

CSR: the range

All implants of the CSR implant range have a **cylindrical morphology and full treated ZirTi surface**, with a **bevel in the most coronal portion**. CSR implants are available with **three different neck morphologies**, Wide Neck, Straight Neck and Reduced Neck, to meet different clinical needs.



ø 3.00 mm	ø 3.50 mm	ø 3.80 mm	ø 3.80 mm	ø 4.20 mm	ø 4.20 mm	ø 5.00mm
STRAIGHT NECK			WIDE NECK		REDUCED NECK	

Range of heights

implant ø	heights
ø 3.00 Straight Neck	8.50, 10.00, 11.50, 13.00, 15.00 mm
ø 3.50 Straight Neck	6.50, 8.50, 10.00, 11.50, 13.00, 15.00, 18.00 mm
ø 3.80 Straight Neck	6.50, 8.50, 10.00, 11.50, 13.00, 15.00, 18.00 mm
ø 3.80 Wide Neck	6.50, 8.50, 10.00, 11.50, 13.00, 15.00, 18.00 mm
ø 4.20 Wide Neck	6.50, 8.50, 10.00, 11.50, 13.00, 15.00, 18.00 mm
ø 4.20 Reduced Neck	6.50, 8.50, 10.00, 11.50, 13.00, 15.00, 18.00 mm
ø 5.00 Reduced Neck	6.50, 8.50, 10.00, 11.50, 13.00 mm

CSR RF SL: the range

CSR RF SL implants have a **conical morphology** and the thread has a pitch of 1.50 mm. The depth varies along the body of the implant, but with a constant maximum external profile. The result is a very pronounced and sharp thread.

ø 3.80 mm	ø 4.25 mm	ø 5.00 mm

ROOT FORM WIDE THREAD

Range of heights

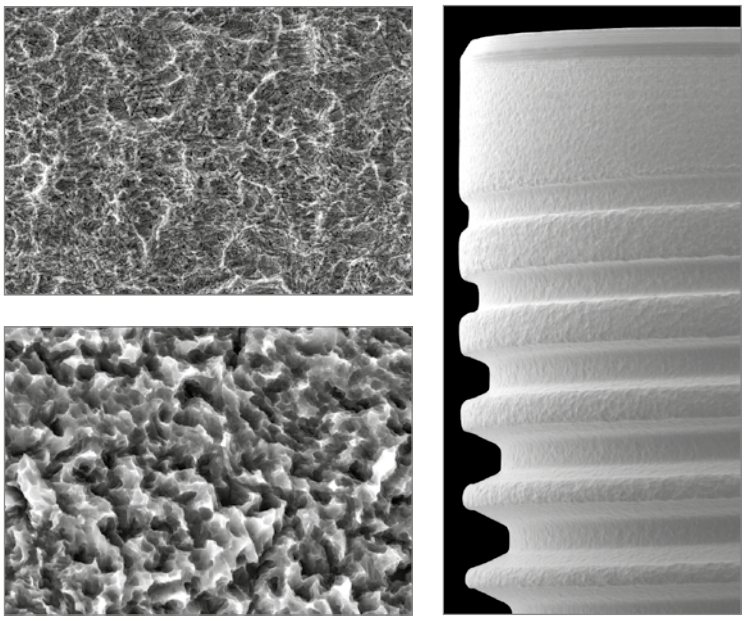
implant ø	heights
ø 3.80	8.50, 10.00, 11.50, 13.00, 15.00 mm
ø 4.25	8.50, 10.00, 11.50, 13.00, 15.00 mm
ø 5.00	8.50, 10.00, 11.50, 13.00, 15.00 mm

***Please note**: to prepare the surgical site, use the ZCSRRF-INT surgical kit or the ZCSRUNI-INTsurgical kit.*

ZirTi surface

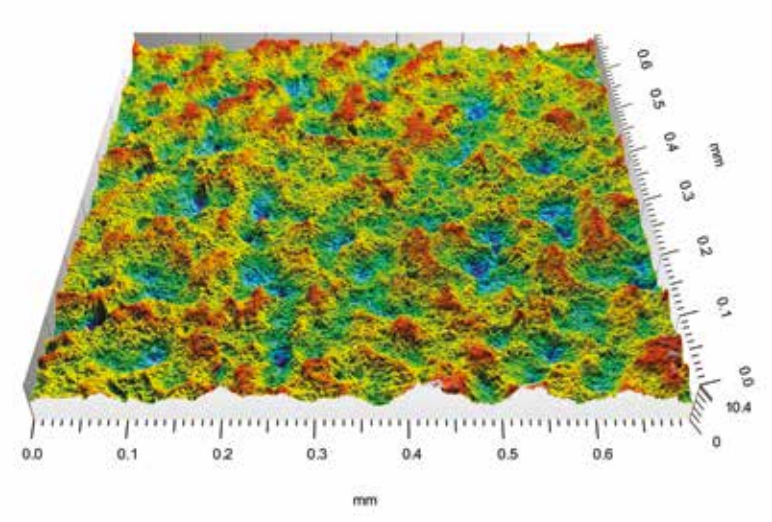
CSR implants are available with **full ZirTi treatment**.

Sand-blasting with zirconium oxide and etching with mineral acids give surfaces a characteristic micromorphology **capable of significantly increasing the bone-to-implant contact area and promoting osseointegration.**

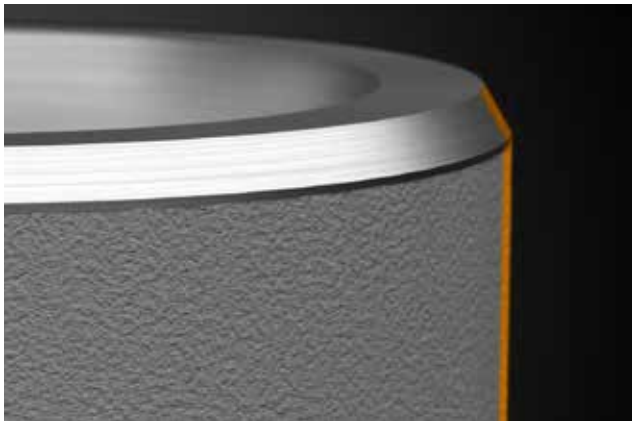


ZirTi surface magnified 2,000 and 10,000 times under scanning electron microscope.

Image of a portion of ZirTi surface obtained using a confocal microscope: the **micromorphology of the surface and the regularity of the picks** obtained with sand-blasting and acid-etching can be noted.

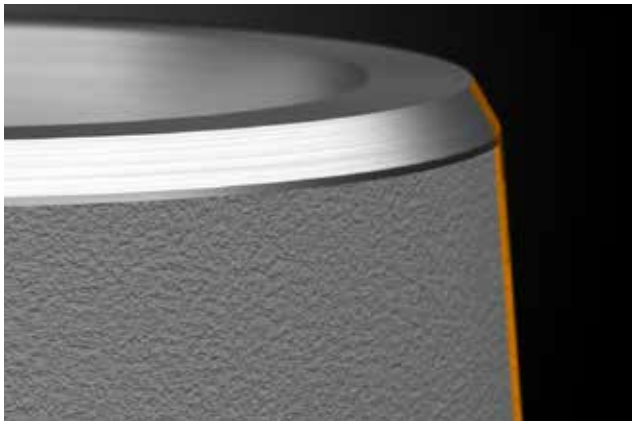


Neck morphology



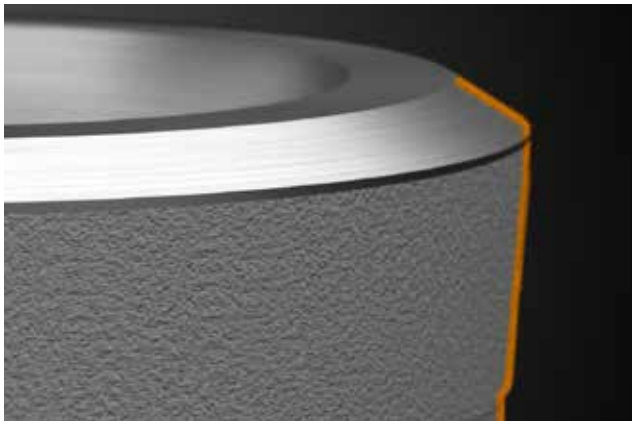
Straight Neck

Straight Neck implants have a straight, constant morphology throughout the entire body of the implant.



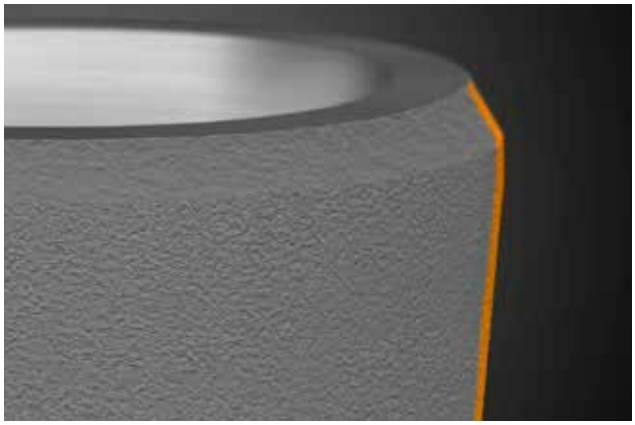
Reduced Neck

The convergent neck of the Reduced Neck implants provides more space at the crestal level, thus promoting bone growth.



Wide Neck

The divergence at coronal level ensures stability at the coronal level even in low-density bone.



RF SL Neck

The CSR RF SL implant neck is slightly divergent to ensure stability in bone poorly mineralized.

DAT conical connection

The **DAT** (Double Action Tight) **connection** is the most innovative feature of the CSR implant: **a double internal conical contact interface between the post and the implant and between the screw and post** ensures excellent seal against bacterial infiltration, protecting the bone from the risk of peri-implant infections that could affect a correct osseointegration and the consequent implant survival.

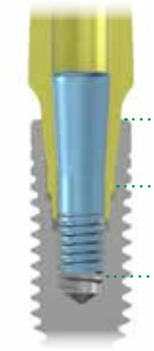
DAT-N CONNECTION

Connection diameter: **2.70 mm**

Hexagon: **2.00 mm**

Thread: **M1.6**

DAT CONNECTION

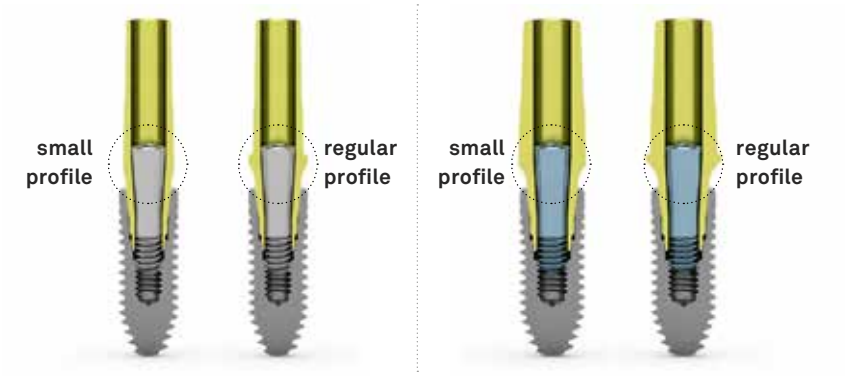


Connection diameter: **3.00 mm**

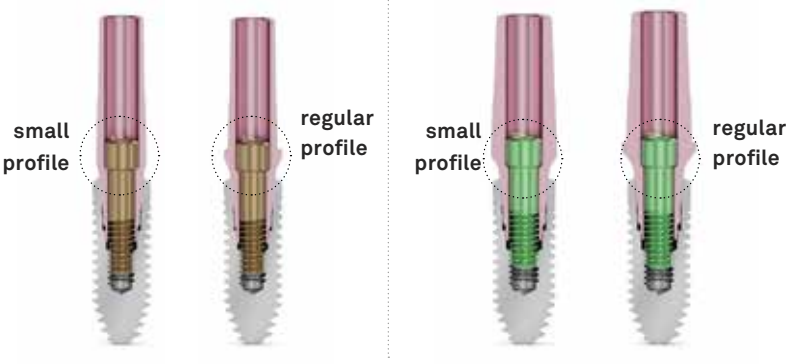
Hexagon: **2.30 mm**

Thread: **M1.8**

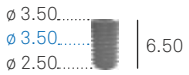
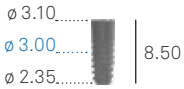
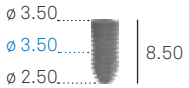
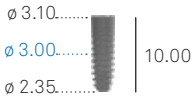
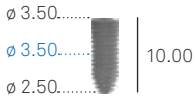
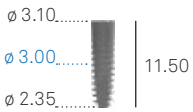
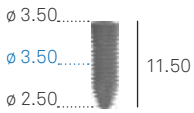
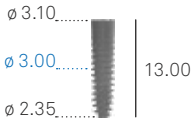
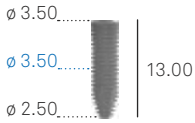
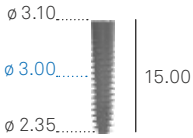
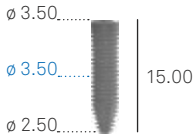
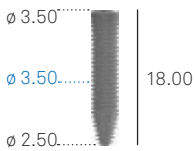
PROSTHESIS WITH CONICAL SCREW DAT



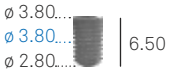
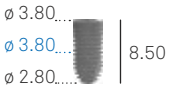
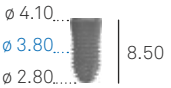
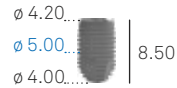
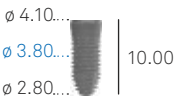
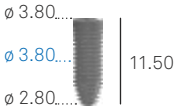
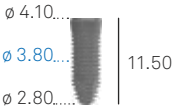
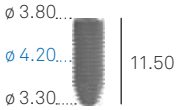
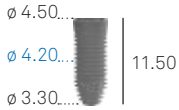
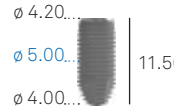
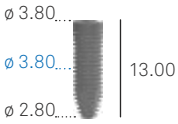
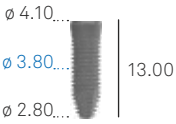
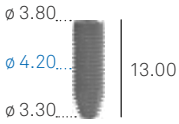
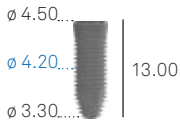
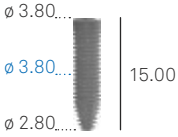
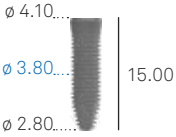
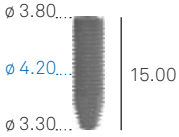
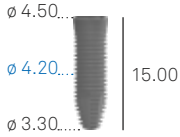
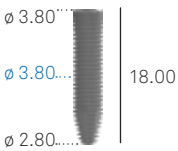
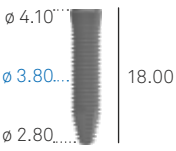
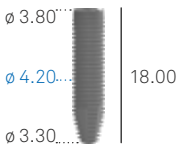
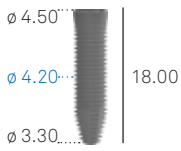
PROSTHESIS WITH SCREW Q120 - WITH SUPPORT AT 120°



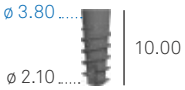
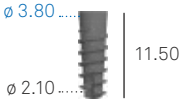
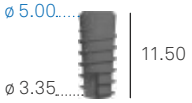
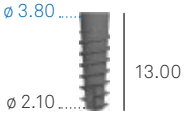
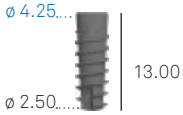
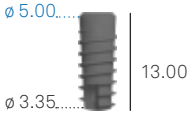
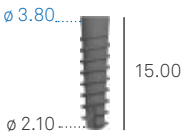
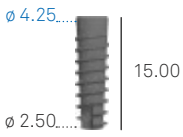
DAT-N connection		DAT connection							
ø 3.00 mm	ø 3.50 mm	ø 3.80 mm	ø 3.80 mm	ø 4.20 mm	ø 4.20 mm	ø 5.00 mm	ø 3.80 mm	ø 4.25 mm	ø 5.00 mm
									
Straight Neck	Straight Neck	Straight Neck	Wide Neck	Wide Neck	Reduced Neck	Reduced Neck	RF SL	RF SL	RF SL

DAT-N connection		
implant ø	3.00 mm	3.50 mm
neck	straight	straight
H 6.50 mm	-	**VSR-ZT-350ST-065** 
H 8.50 mm	**VSR-ZT-300ST-085** 	**VSR-ZT-350ST-085** 
H 10.00 mm	**VSR-ZT-300ST-100** 	**VSR-ZT-350ST-100** 
H 11.50 mm	**VSR-ZT-300ST-115** 	**VSR-ZT-350ST-115** 
H 13.00 mm	**VSR-ZT-300ST-130** 	**VSR-ZT-350ST-130** 
H 15.00 mm	**VSR-ZT-300ST-150** 	**VSR-ZT-350ST-150** 
H 18.00 mm	-	**VSR-ZT-350ST-180** 
Surgical cover screws	**VSR-VT-N** 	**VSR-VT-N** 

Each implant is sold with its own surgical cover screw.
Surgical cover screws are also available individually in sterile packs, and must be tightened to 8–10 Ncm.

DAT connection					
implant ø	3.80 mm		4.20 mm		5.00 mm
neck	straight	wide	reduced	wide	reduced
H 6.50 mm	**VSR-ZT-380ST-065**	**VSR-ZT-380-065**	**VSR-ZT-420RN-065**	**VSR-ZT-420-065**	**VSR-ZT-500RN-065**
					
H 8.50 mm	**VSR-ZT-380ST-085**	**VSR-ZT-380-085**	**VSR-ZT-420RN-085**	**VSR-ZT-420-085**	**VSR-ZT-500RN-085**
					
H 10.00 mm	**VSR-ZT-380ST-100**	**VSR-ZT-380-100**	**VSR-ZT-420RN-100**	**VSR-ZT-420-100**	**VSR-ZT-500RN-100**
					
H 11.50 mm	**VSR-ZT-380ST-115**	**VSR-ZT-380-115**	**VSR-ZT-420RN-115**	**VSR-ZT-420-115**	**VSR-ZT-500RN-115**
					
H 13.00 mm	**VSR-ZT-380ST-130**	**VSR-ZT-380-130**	**VSR-ZT-420RN-130**	**VSR-ZT-420-130**	**VSR-ZT-500RN-130**
					
H 15.00 mm	**VSR-ZT-380ST-150**	**VSR-ZT-380-150**	**VSR-ZT-420RN-150**	**VSR-ZT-420-150**	-
					
H 18.00 mm	**VSR-ZT-380ST-180**	**VSR-ZT-380-180**	**VSR-ZT-420RN-180**	**VSR-ZT-420-180**	-
					
Surgical cover screws	**VSR-VT**	**VSR-VT**	**VSR-VT**	**VSR-VT**	**VSR-VT**
					

Each implant is sold with its own surgical cover screw.
Surgical cover screws are also available individually in sterile packs, and must be tightened to 8–10 Ncm.

DAT connection			
implant ø	3.80 mm	4.25 mm	5.00 mm
H 6.50 mm	-	-	-
H 8.50 mm	**VS-ZT-380SL-085** 	**VS-ZT-425SL-085** 	**VS-ZT-500SL-085** 
H 10.00 mm	**VS-ZT-380SL-100** 	**VS-ZT-425SL-100** 	**VS-ZT-500SL-100** 
H 11.50 mm	**VS-ZT-380SL-115** 	**VS-ZT-425SL-115** 	**VS-ZT-500SL-115** 
H 13.00 mm	**VS-ZT-380SL-130** 	**VS-ZT-425SL-130** 	**VS-ZT-500SL-130** 
H 15.00 mm	**VS-ZT-380SL-150** 	**VS-ZT-425SL-150** 	**VS-ZT-500SL-150** 
H 18.00 mm	-	-	-
Surgical cover screws	**VSR-VT** 	**VSR-VT** 	**VSR-VT** 

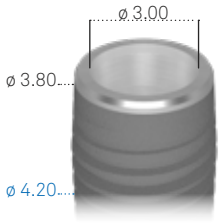
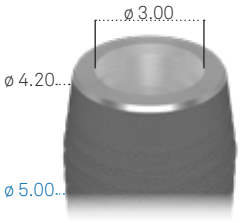
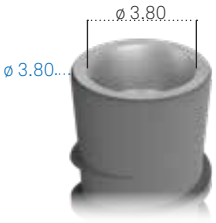
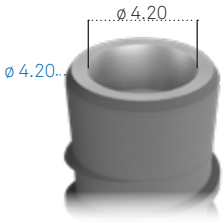
Each implant is sold with its own surgical cover screw.
Surgical cover screws are also available individually in sterile packs, and must be tightened to 8–10 Ncm.

Summary table

A colour code system placed on the implant pack has been defined for the CSR implant system to identify the endosseous diameter and the neck morphology.

implant ø	ø 3.00 mm Straight Neck	ø 3.50 mm Straight Neck	ø 3.80 mm Straight Neck	ø 3.80 mm Wide Neck	ø 4.20 mm Wide Neck
colour code on the pack	ST	ST	ST		
Connection platform ø main dimensions	ø 2.70 ø 3.10 ø 3.00	ø 2.70 ø 3.50 ø 3.50	ø 3.00 ø 3.80 ø 3.80	ø 3.00 ø 4.10 ø 3.80	ø 3.00 ø 4.50 ø 4.20
final drill					
neck preparation drill		 *	 **		
Easy Insert driver					
connection	DAT-N	DAT-N	DAT	DAT	DAT
connection screw colour code	 M 1.6	 M 1.6	 M 1.8	 M 1.8	 M 1.8
transfer and implant analog colour code					

** The following drill is only included in the ZCSRUNI-INT surgical kit. The drill is available individually under code CSR-FC-350ST.*
***This drill is only included in the ZCSRUNI-INT surgical kit. The drill is available individually under code CSR-FC-380ST.*

ø 4.20 mm Reduced Neck	ø 5.00 mm Reduced Neck	ø 3.80 mm	ø 4.25 mm	ø 5.00 mm
RN	RN	RF SL	RF SL	RF SL
				
				
 ***	-	-	-	-
				
DAT	DAT	DAT	DAT	DAT
 M 1.8	 M 1.8	 M 1.8	 M 1.8	 M 1.8
				

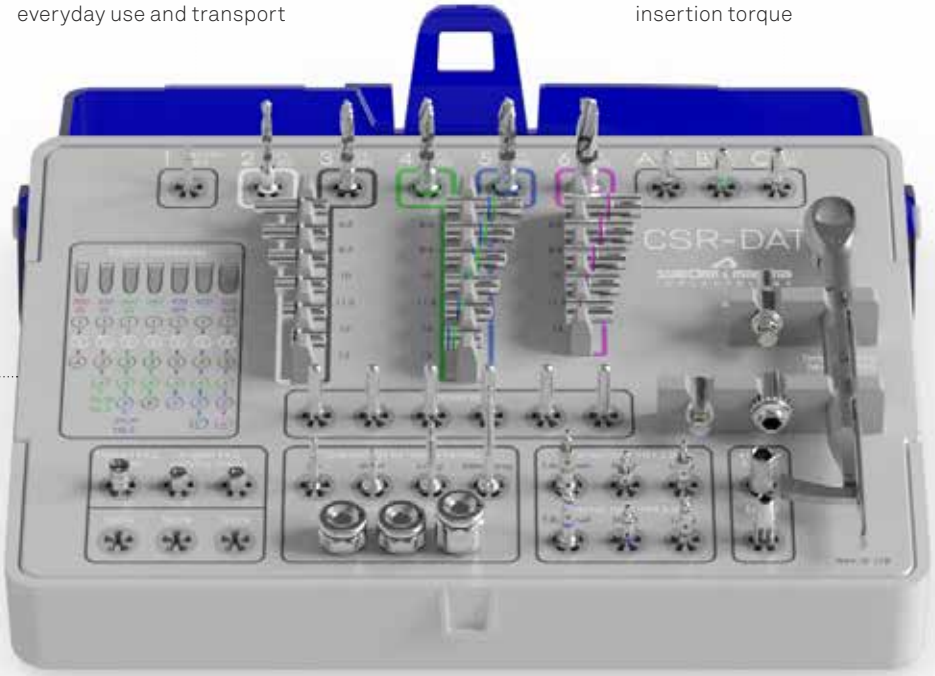
****This drill is only included in the ZCSRUNI-INT surgical kit. The drill is available individually under code CSR-FC-420RN.*

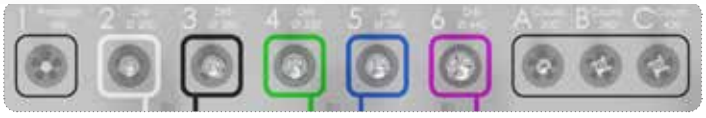
CSR surgical kit

The CSR surgical kit is designed for maximum simplicity of use and immediacy for the correct sequence of the instruments required. The instruments, all made of surgical stainless steel, have their descriptions screen-printed on the tray to allow the user to identify each instrument more easily and to put it back after the cleansing and cleaning phases, with the aid of a system of colour codes, numbers and letters that trace the suitable surgical procedures for the various implant diameters.
The surgical kits are supplied with X-ray templates for the graphic representation of all the CSR implant system measurements to allow choosing the most suitable implant diameters and lengths by means of radiographic or tomographic methods.

The compact dimensions of the case make it very practical for everyday use and transport

The kit contains a manual torque wrench for checking the implant insertion torque





The surgical sequences for the insertion of CSR implants are illustrated on the tray in a summary scheme consisting of:

- image of the implant to be inserted,
- reference colour code of the implant diameter,
- acronym identifying the morphology of the implant neck,
- number and reference colour of the drills to be used,
- letter of the countersink drill to be used if needed or any drill assembled with stop.

description	code
grommetless surgical kit containing the instruments necessary for CSR implants	**ZCSR-INT** 
Radel instrument grommetless tray for CSR instruments	**CSR-TRAY-INT**

Important warning
The surgical kit also contains a non-sterile test implant that must not be used clinically, and can be easily recognized because it is entirely anodized in blue; it is recommended to use this implant for trials on models before starting to use implants clinically, so as to become familiar with the implant system and its respective instruments.

1 **Precision drill**
FS-230

2 **Pilot drill**
CSR-FP-200 ○

3 **Intermediate conical drill** ●
CSR-FI-280

4 **Final drill ø 3.20**
CSR-FF-320 ●

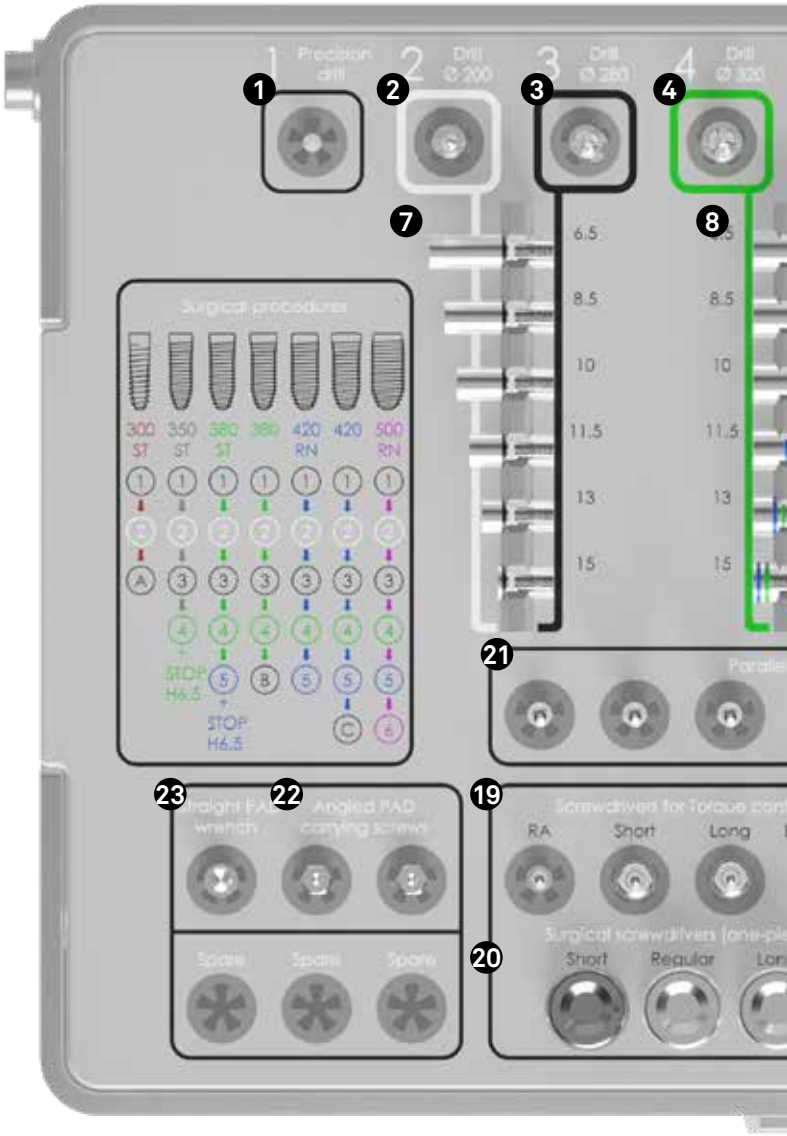
5 **Final drill ø 3.60**
CSR-FF-360 ●

23 **Screwdriver for straight P.A.D. abutments**
AVV2-ABUT

22 **P.A.D. transfer screw with manual tightening**
PAD-VTRAL-140-MAN

21 **Parallelism pins**
PP-2/28

20 **Digital surgical screwdrivers**
HSMXS-20-DG HSM-20-DG HSML-20-DG



19 **Prosthesic screwdrivers**
HSM-20-CA HSM-20-EX HSML-20-EX HSMXL-20-EX

18 **Easy Insert Driver Hex. 2.30 mm**
EASY4-EX230-EX EASYC4-EX230-CA EASYL4-EX230-CA

6

Final drill ø 4.40
CSR-FF-440 ●

7

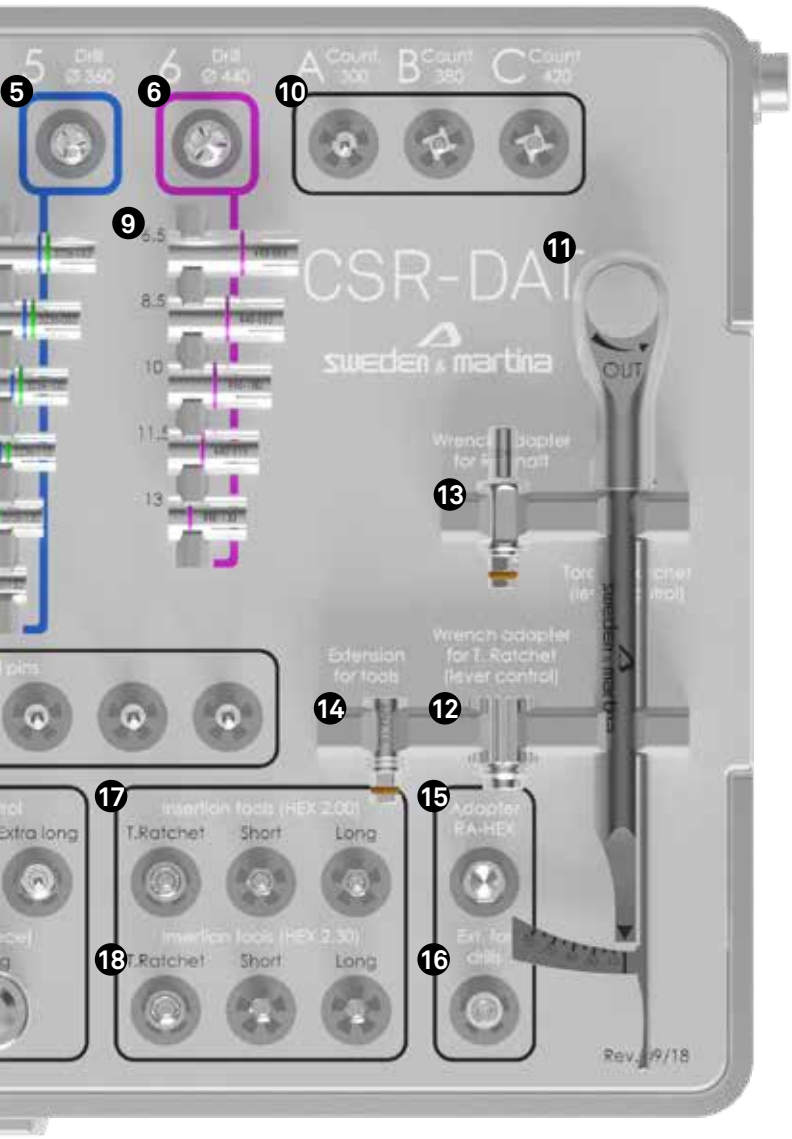
Stops for intermediate conical drill
CSR-STOP-2028-065 ○●
CSR-STOP-2028-085 ○●
CSR-STOP-2028-100 ○●
CSR-STOP-2028-115 ○●
CSR-STOP-2028-130 ○●
CSR-STOP-2028-150 ○●

8

Stops for final drill ø 3.20 and ø 3.60 mm
CSR-STOP-3236-065 ●●
CSR-STOP-3236-085 ●●
CSR-STOP-3236-100 ●●
CSR-STOP-3236-115 ●●
CSR-STOP-3236-130 ●●
CSR-STOP-3236-150 ●●

9

Stops for final drill ø 4.40
CSR-STOP-440-065 ●
CSR-STOP-440-085 ●
CSR-STOP-440-100 ●
CSR-STOP-440-115 ●
CSR-STOP-440-130 ●



10

Countersink drills
FGS-200/300
CSR-FC-380
CSR-FC-420

11

Torque wrench
TWL

12

Torque wrench Adapter
TWL-AVV-EX

13

Adapter
AVV-CA-DG-EX

14

Extension
BPM-15

17

Easy Insert Driver Hex. 2.00 mm
EASY4-EX200-EX EASYC4-EX200-CA EASYL4-EX200-CA

16

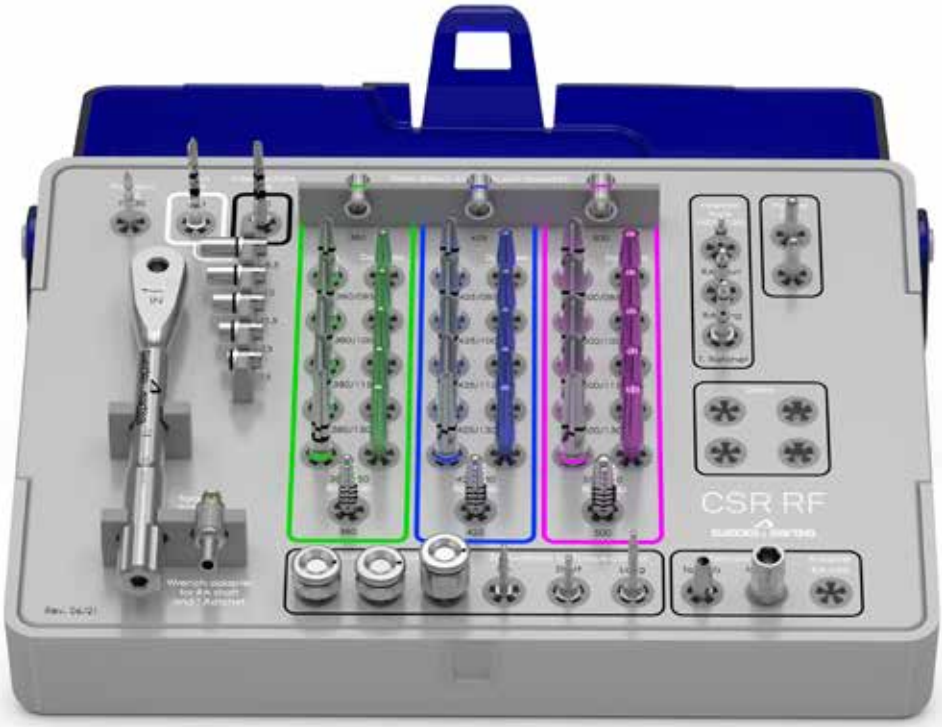
Extension for surgical drill
PROF-CAL3

15

Adapter
B-AVV-CA3

CSR RF SL surgical kit

The CSR RF SL surgical kit is dedicated only to the positioning of the CSR RF SL implants, then it contains only the surgical instruments for the positioning of the CSR root form wide thread. This kit, like the basic one, contains descriptions screen-printed on the tray to allow the user to identify each instrument more easily and to put it back after the cleansing and cleaning phases. X-ray template included.



description	code
grommetless surgical kit containing the instruments necessary for CSR RF SL implants	**ZCSRRF-INT** 
Radel instrument grommetless tray for CSR RF SL instruments	**CSRRF-TRAY-INT**

Important warning
The surgical kit also contains a non-sterile test implant that must not be used clinically, and can be easily recognized because it is entirely anodized in blue; it is recommended to use this implant for trials on models before starting to use implants clinically, so as to become familiar with the implant system and its respective instruments.

1

Precision drill
FS-230

2

Pilot drill
CSR-FP-200

3

Intermediate conical drill ø 2.50
SE-FK250

4

Stops for intermediate conical drill
CSR-STOP-2028-085
CSR-STOP-2028-100
CSR-STOP-2028-115
CSR-STOP-2028-130
CSR-STOP-2028-150

19

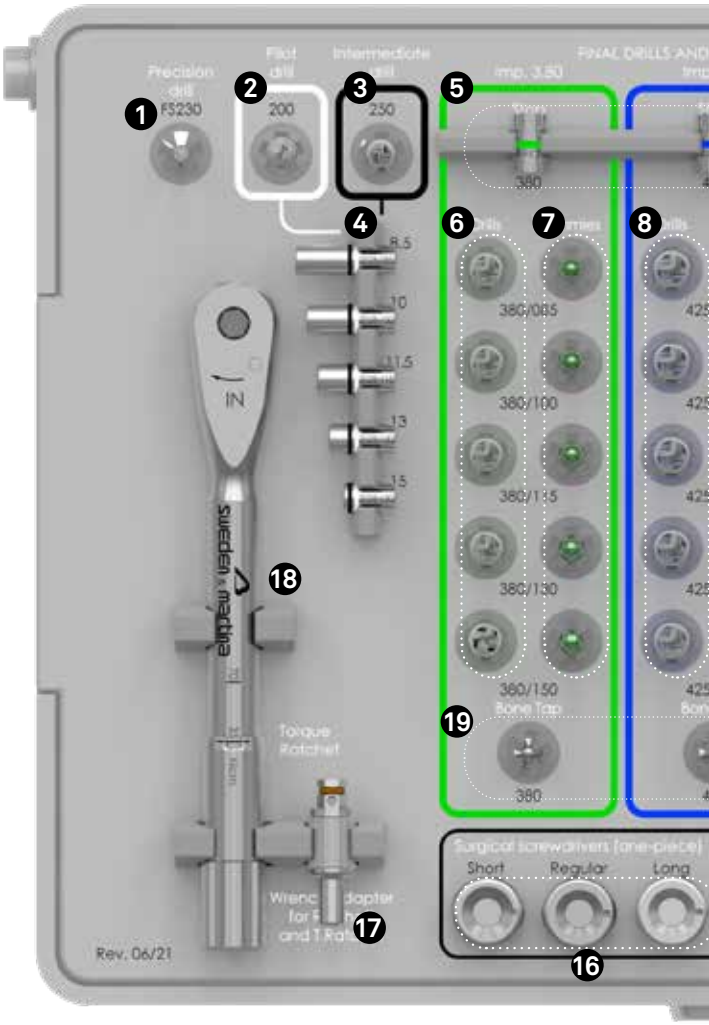
Bone tapers
SH-MS-380-CA
SH-MS-425-CA
SH-MS-500-CA

18

Torque control ratchet
CRI5-KIT

17

Adapter
AVV-CA-DG-EX



16

Digital surgical screwdrivers

HSMXS-20-DG

HSM-20-DG

HSML-20-DG

15

Prosthesic screwdrivers

HSM-20-CA

HSM-20-EX

HSML-20-EX

5

Stops for final conical drill
SH-STOP4-FK380 ●
SH-STOP4-FK425 ●
SH-STOP4-FK500 ●

6

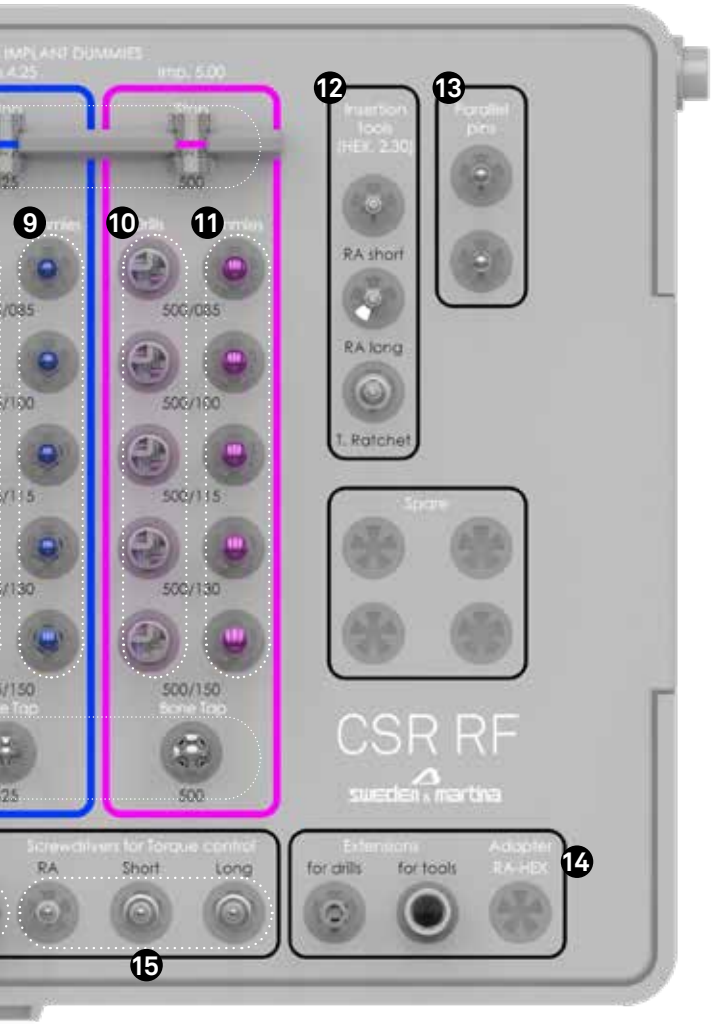
Conical drills
SH-FK380-085 ●
SH-FK380-100 ●
SH-FK380-115 ●
SH-FK380-130 ●
SH-FK380-150 ●

7

Replies
SH-380-085-RP ●
SH-380-100-RP ●
SH-380-115-RP ●
SH-380-130-RP ●
SH-380-150-RP ●

8

Conical drills
SH-FK425-085 ●
SH-FK425-100 ●
SH-FK425-115 ●
SH-FK425-130 ●
SH-FK425-150 ●



9

Replies
SH-425-085-RP ●
SH-425-100-RP ●
SH-425-115-RP ●
SH-425-130-RP ●
SH-425-150-RP ●

10

Conical drills
SH-FK500-085 ●
SH-FK500-100 ●
SH-FK500-115 ●
SH-FK500-130 ●
SH-FK500-150 ●

11

Replies
SH-500-085-RP ●
SH-500-100-RP ●
SH-500-115-RP ●
SH-500-130-RP ●
SH-500-150-RP ●

14

Extensions
PROF-CAL3 BPM-15

13

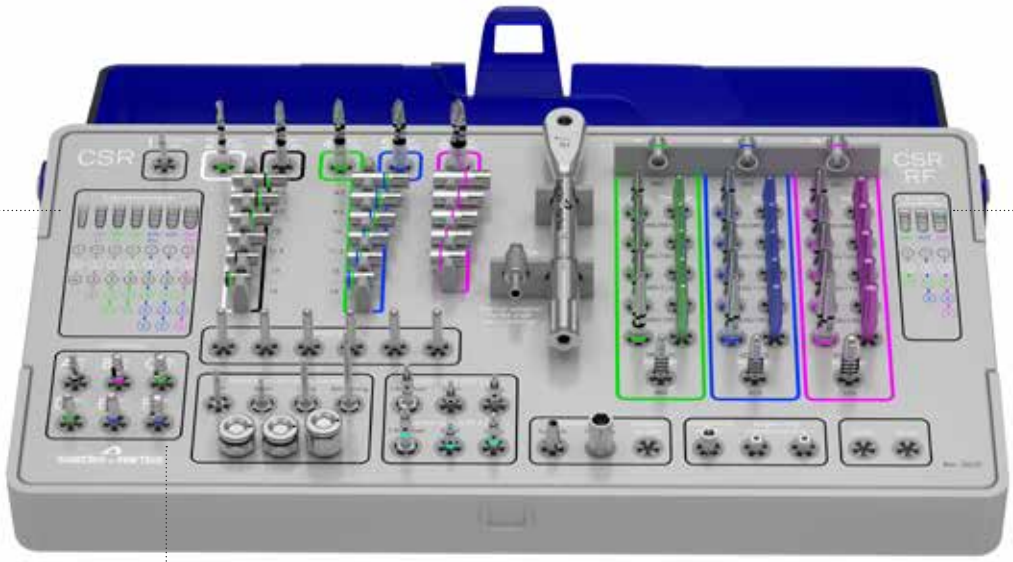
Parallelism pins
PPTL-2-28

12

Easy Insert Driver Hex. 2.30 mm
EASYC4-EX230-CA EASYL4-EX230-CA EASY4-EX230-EX

Combined surgical kit for all CSR morphologies

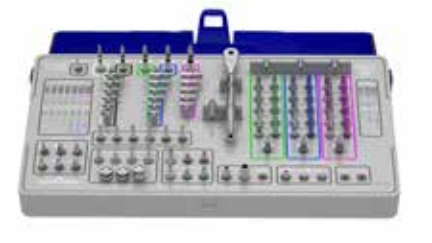
The following kit combines the CSR and CSR RF SL surgical kits, so it's complete with all the surgical instruments for the positioning of the cylindrical and conical implants.
This kit include three additional countersink drills (CSR-FC-350ST, CSR-FC-380ST, CSR-FC-420RN) that are not included in the ZCSR-INT base kit.



Countersink drills are included and allow the preparation of the site for CSR ST and CSR RN implants, in case of dense cortical bone.

The surgical sequences for the insertion of CSR implants are illustrated on the tray in a summary scheme consisting of:

- image of the implant to be inserted,
- reference colour code of the implant diameter,
- acronym identifying the morphology of the implant neck,
- number and reference colour of the drills to be used,
- letter of the countersink drill to be used if needed or any drill assembled with stop.

description	code
grommetless surgical kit containing the instruments necessary for CSR implants	**ZCSRUNI-INT** 
Radel instrument grommetless tray for CSR instruments	**CSRUNI-TRAY-INT**

Important warning
The surgical kit also contains a non-sterile test implant that must not be used clinically, and can be easily recognized because it is entirely anodized in blue; it is recommended to use this implant for trials on models before starting to use implants clinically, so as to become familiar with the implant system and its respective instruments.

1 **Precision drill**
FS-230

2 **Pilot drill**
CSR-FP-200 ○

3 **Intermediate drill**
CSR-FI-280 ●

4 **Final drill ø 3.20**
CSR-FF-320 ●

5 **Final drill ø 3.60**
CSR-FF-360 ●

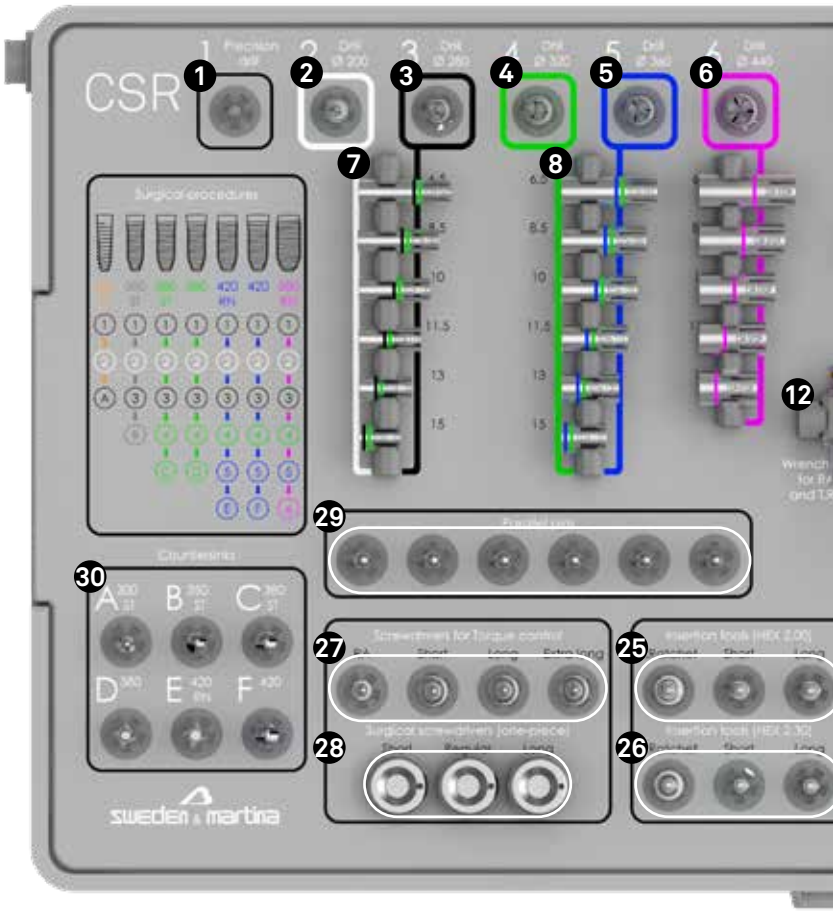
6 **Final drill ø 4.40**
CSR-FF-440 ●

30 **Countersink drills**
FGS-200/300
CSR-FC-350ST
CSR-FC-380
CSR-FC-380ST
CSR-FC-420
CSR-FC-420RN

29 **Parallelism pins**
PP-2/28

28 **Digital surgical screwdrivers**
HSMXS-20-DG
HSM-20-DG
HSML-20-DG

27 **Prosthesic screwdrivers**
HSM-20-CA
HSM-20-EX
HSML-20-EX
HSMXL-20-EX



26 **Easy Insert Driver Hex. 2.30 mm**
EASY4-EX230-EX
EASYC4-EX230-CA
EASYL4-EX230-CA

25 **Easy Insert Driver Hex. 2.00 mm**
EASY4-EX200-EX
EASYC4-EX200-CA
EASYL4-EX200-CA

24 **Extension for drills**
PROF-CAL3

23 **Extension**
BPM-15

22 **Adapter**
B-AVV-CA3

7

Stops for intermediate conical drill
CSR-STOP-2028-065 ○●
CSR-STOP-2028-085 ○●
CSR-STOP-2028-100 ○●
CSR-STOP-2028-115 ○●
CSR-STOP-2028-130 ○●
CSR-STOP-2028-150 ○●

8

Stops for final drill ø 3.20 and ø 3.60 mm
CSR-STOP-3236-065 ●●
CSR-STOP-3236-085 ●●
CSR-STOP-3236-100 ●●
CSR-STOP-3236-115 ●●
CSR-STOP-3236-130 ●●
CSR-STOP-3236-150 ●●

9

Stops for final drill ø 4.40
CSR-STOP-440-065 ●
CSR-STOP-440-085 ●
CSR-STOP-440-100 ●
CSR-STOP-440-115 ●
CSR-STOP-440-130 ●

10

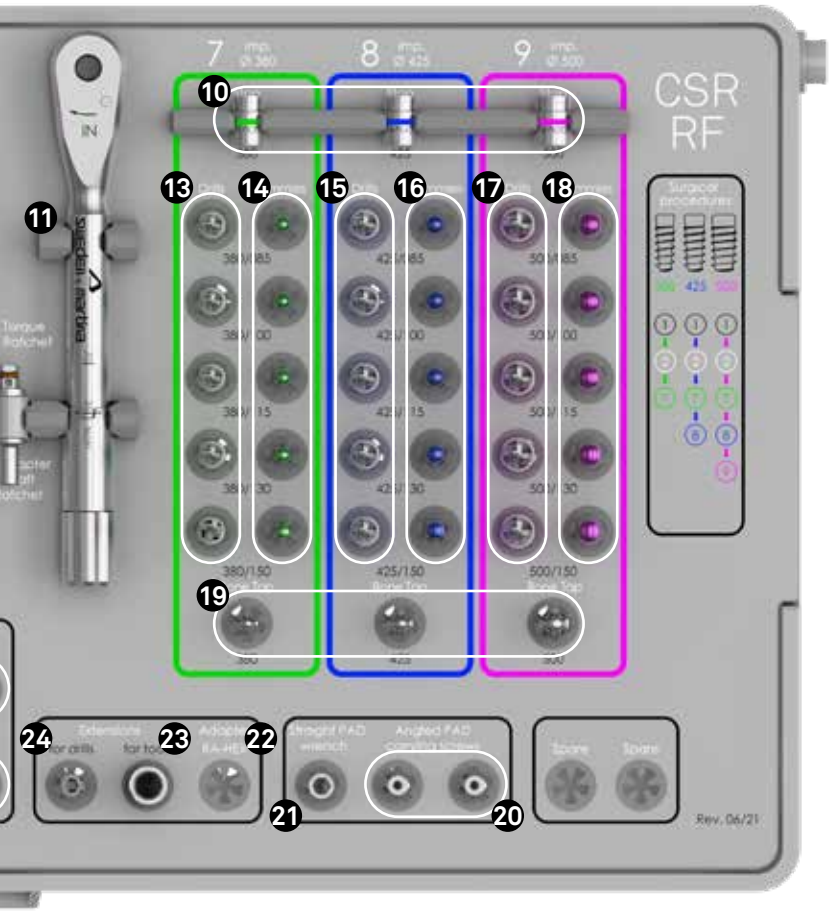
Stops for final conical drill
SH-STOP4-FK380 ●
SH-STOP4-FK425 ●
SH-STOP4-FK500 ●

11

Torque control ratchet
CRI5-KIT

12

Adapter
AVV-CA-DG-EX



13

Conical drills
SH-FK380-085 ●
SH-FK380-100 ●
SH-FK380-115 ●
SH-FK380-130 ●
SH-FK380-150 ●

14

Replies
SH-380-085-RP ●
SH-380-100-RP ●
SH-380-115-RP ●
SH-380-130-RP ●
SH-380-150-RP ●

15

Conical drills
SH-FK425-085 ●
SH-FK425-100 ●
SH-FK425-115 ●
SH-FK425-130 ●
SH-FK425-150 ●

16

Replies
SH-425-085-RP ●
SH-425-100-RP ●
SH-425-115-RP ●
SH-425-130-RP ●
SH-425-150-RP ●

21

Screwdriver for straight P.A.D. abutment
AVV2-ABUT

20

Screw for P.A.D for Pick-up transfer, for manual screwing
PAD-VTRAL-140-MAN

19

Bone tapers
SH-MS-380-CA ●
SH-MS-425-CA ●
SH-MS-500-CA ●

18

Replies
SH-500-085-RP ●
SH-500-100-RP ●
SH-500-115-RP ●
SH-500-130-RP ●
SH-500-150-RP ●

17

Conical drills
SH-FK500-085 ●
SH-FK500-100 ●
SH-FK500-115 ●
SH-FK500-130 ●
SH-FK500-150 ●

General indications

The surgical instruments designed for use with the implant systems manufactured by Sweden & Martina are reusable medical devices intended for temporary use in the oral cavity (no more than 60 minutes), re-usable. The functions of the surgical instruments are to prepare sites for Sweden & Martina implants, to insert the implants in the sites, to tighten and unscrew all the connecting screws (surgical cover screws, healing abutments, screws for posts, abutments, prosthesic screws, transfer screws, etc.).

The surgical instruments manufactured by Sweden & Martina are designed for use with dental implants manufactured by Sweden & Martina. Use of surgical instruments for operations with other implants than those manufactured by Sweden & Martina limits the responsibility of Sweden & Martina and renders the product warranty void. Sweden & Martina declines all responsibility for use of any non-original instruments. Sweden & Martina surgical instruments are sold in NON-STERILE packs.
Before use, they must be cleaned, disinfected and sterilized according to the instructions reported below. Failure to follow these warnings may expose the patient to infections.
The materials used for manufacturing the surgical instruments manufactured by Sweden & Martina were selected based on the properties indicated for their intended use according to European Regulation 2017/745.
Each packaging indicates the code, description of the contents and batch number. These same details, which are also indicated on the labels inside the packs, must always be provided by the practitioner in any relevant correspondence.

All the devices are identified by an instrument code, which is laser marked onto the body of each instrument. If there is not enough space to include the full code, the elements for unequivocally identifying the device (e.g. diameter or length) are provided. When handling the devices, both during use and during cleaning and sterilization procedures, it is recommended to use surgical gloves for personal protection from bacterial contaminations. Failure to follow these instructions may cause cross-infection.

Key to the implant codes: surgical instruments

The surgical instrument codes are so-called “mnemonic” codes that allows easy identification of the piece. Below is a table showing how the mnemonic codes work using various types of instruments as examples.

examples	component type and implant type	diameter	length
The range of instruments is vast, we indicate some examples of the main families of instruments.	The code CSR stands for the CSR implant system.	Normally it is the diameter of the implant or of the preparation for which the instrument should be used.	This measurement is normally linked to the height of the component, or to other important measurements that characterise it, or it is a code which defines the instrument shank.
CSR-FF-320	CSR-FF: final drill	3.20: for the preparation of the fixture with ø 3.80 mm	-
CSR-STOP-3236-065	CSR-STOP: stops for final drill	3236: for use with CSR-FF-320 and CSR-FF-360 drills	065: for implant with H 6.50 mm
PP-2/28	PP: parallelism pin	2/28: from 2.00 mm to 2.80 mm	-

Drills

All Sweden & Martina drills are made of **surgical steel** with **high resistance to corrosion and wear**. They are intended for mechanical use, i.e. they have a shank with a right angle attachment and must be used with a suitable micromotor. The extreme accuracy of design and production allows use **completely free from vibrations and oscillations**. However, incorrect insertion of the instruments in the handpiece will cause instrument vibration, eccentric rotation, early wear and shaft buckling. Suitable surgical micromotors only should be used. Micromotors should be checked regularly by their manufacturers, according to the indications given by the manufacturers, to prevent potential malfunctions (e.g. axle shifts for transmission shafts, worn or faulty forceps, etc.).

Failure to follow the instructions provided may cause surgical complications and consequent damage to the patient's health. It is recommended to use the rotation speeds indicated in the procedures on page 57 and following to prevent the development of bone necrosis. Lever movements increase the risk of instrument breakage and should therefore be avoided. Changes in speed should be avoided in general. Never apply pressure such as to force the instrument to stop rotating. This could lead to an excessive increase in heat in the tissues being drilled, with consequent bone necrosis, and damage both the instrument and the appliance used (micromotor). This could also lead to breakage of the instrument. Using an intermittent approach, with a back and forth movement in a vertical direction, prevents overheating and wear of the working part and an undesirable increase in the temperature in the tissues being cut. Suitable coolant should be used. Inadequate irrigation can lead to bone necrosis. Drill wear depends to a large extent on the type and density of the drilled bone: harder bone leads to greater instrument wear.
For greater safety and caution, given the device's capacity for resistance to wear, drills should not be used for more than 20 work cycles and should be replaced earlier if the instruments lose their cutting ability. These recommended **20 cycles** should be considered a rough guide. Always check the instrument's residual cutting capacity after each procedure. Sweden & Martina declines all responsibility in cases of excessively intense use. Never sharpen drills before use. Never use damaged, buckled or worn instruments.

Precision drill FS-230

The precision drill is made of surgical stainless steel. It is used to cut the cortical bone, so it is very sharp and pointed. The design of the blades ensures efficient cutting with both the tip and the edge. It has a maximum diameter of 2.30 mm. The laser marking at 4.80 mm indicates the maximum depth of insertion of the drill to obtain an adequate guide hole for subsequent drills.

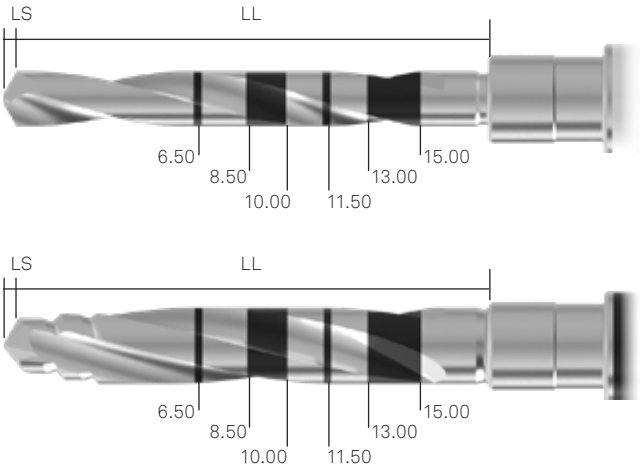
Important warning
The Precision drill is supplied with a protective silicone sheath to protect it during transport, and it must be removed before the first use. Since this drill is extremely sharp, special caution is required during handling.

Pilot and intermediate drill

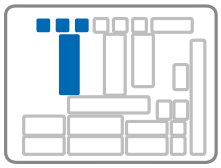
The pilot drill is cylindrical and has a diameter of 2.00 mm. It is designed for the preparation of the hole that will receive the implant and to serve as final drill when inserting CSR implants with a diameter of 3.00 mm. The pilot drill is easy to identify, thanks to the presence of a white ring and a laser-etched code on the drill shank. It has laser-etched depth marks and a spiral shape with two cutting edges. It must be used with abundant external irrigation.

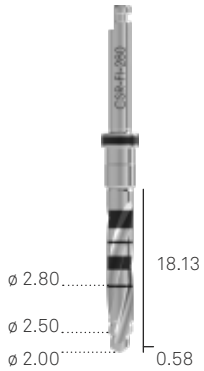
The intermediate drill is a drill with three cutting edges suitable for progressively widening the preparations in relation to the diameter of the drills to be used in succession.

LL: Total length of the working part, including the tip.
LS: Length of the tip. This measurement must be calculated in addition to the length of the preparation hole.



Pilot and intermediate drills are always included in the kits.
***Please note**: the drills always make a hole that is longer than the implant to be inserted.*
The oversizing (LS) is equal to the difference between the length of the working part of the drill and the nominal height of the implant.



pilot drill	intermediate drill
CSR-FP-200 	**CSR-FI-280** 

Pilot drill and intermediate drill stops

Stops are devices to be fitted in tip → shank direction on drills suited to receive them. They make it possible to restrict the working length of a drill to a pre-set height.
The same stop set is common to the pilot and intermediate drills, since the two share the same attachment: for this reason, the stops have a white and a black ring, referring to the two drills to use them with.

pilot drill and intermediate drill stops					
CSR-STOP-2028-065 stop 6.50 mm	**CSR-STOP-2028-085** stop 8.50 mm	**CSR-STOP-2028-100** stop 10.00 mm	**CSR-STOP-2028-115** stop 11.50 mm	**CSR-STOP-2028-130** stop 13.00 mm	**CSR-STOP-2028-150** stop 15.00 mm
					

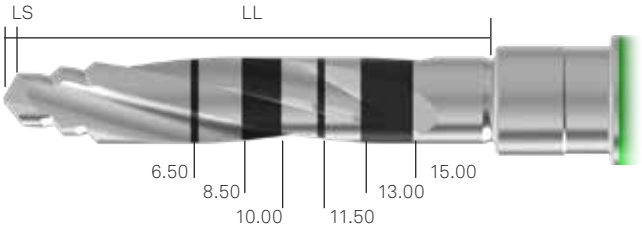
It is recommended always to check that the stop is inserted at the desired height. Incomplete insertion may reduce the preparation height. Any insertion difficulties can be solved by loosening the stop tabs slightly, using forceps. It is also recommended to check the retention exerted by the stop, as if retention is too weak the instrument will fall off the drill during operation.
In the event of reduced retention capacity, simply tighten the tabs by hand or using forceps.

Final drills and stops described on pages 34 and 35 are included in the ZCSR-INT and ZCSRUNI-INT kits.
For more information about final drills included in the ZCSRRF-INT kit, please refer to page 46.

Final drills and related stops

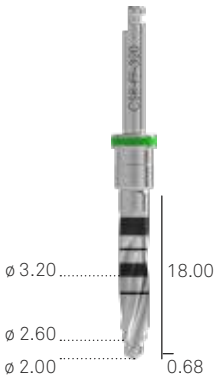
Made of stainless steel with high resistance to corrosion and wear, CSR final drills present a number of cutting edges proportional to the hole diameter, so as to allow a continuous and homogeneous cutting movement and better stability of the instrument during the surgical phases. All this allows to obtain high-precision implant preparations, with consequent easiness in inserting the implant. It is recommended to use these drills with the related depth stops, also included in the surgical kit.

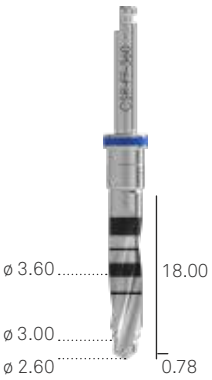
LL: Total length of the working part, including the tip.
LS: Length of the tip. This measurement must be calculated in addition to the length of the preparation hole.

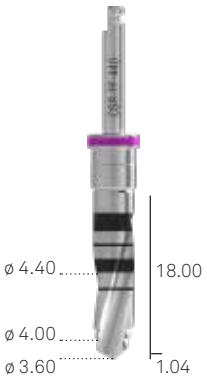


***Please note**: the drills always make a hole that is longer than the implant to be inserted. The oversizing (LS) is equal to the difference between the length of the working part of the drill and the nominal height of the implant.*

implant ø	3.50 mm Straight Neck 3.80 mm Wide Neck	3.80 mm Straight Neck 4.20 mm Wide Neck 4.20 mm Reduced Neck	5.00 mm Reduced Neck
final drills	**CSR-FF-320**	**CSR-FF-360**	**CSR-FF-440**







drill code	CSR-FF-320	CSR-FF-360	CSR-FF-440
stop for preparations H 6.50 mm	**CSR-STOP-3236-065** 	Use CSR-STOP-3236-065	**CSR-STOP-440-065** 
stop for preparations H 8.50 mm	**CSR-STOP-3236-085** 	Use CSR-STOP-3236-085	**CSR-STOP-440-085** 
stop for preparations H 10.00 mm	**CSR-STOP-3236-100** 	Use CSR-STOP-3236-100	**CSR-STOP-440-100** 
stop for preparations H 11.50 mm	**CSR-STOP-3236-115** 	Use CSR-STOP-3236-115	**CSR-STOP-440-115** 
stop for preparations H 13.00 mm	**CSR-STOP-3236-130** 	Use CSR-STOP-3236-130	**CSR-STOP-440-130** 
stop for preparations H 15.00 mm	**CSR-STOP-3236-150** 	Use CSR-STOP-3236-150	-

It is recommended always to check that the stop is inserted at the desired height. Incomplete insertion may reduce the preparation height. Any insertion difficulties can be solved by loosening the stop tabs slightly, using forceps.
It is also recommended to check the retention exerted by the stop, as if retention is too weak the instrument will fall off the drill during operation. If the retention capacity of the stops is reduced, simply tighten the tabs by hand or using forceps.

***Important note**: the CSR-FP-200 pilot drill is used for the insertion of ø 3.00 mm CSR implants, see previous pages*

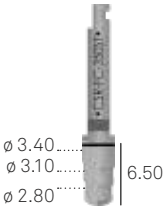
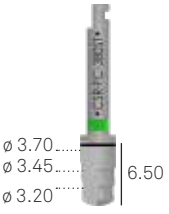
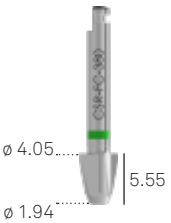
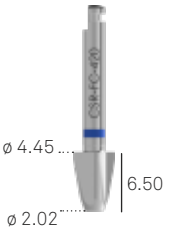
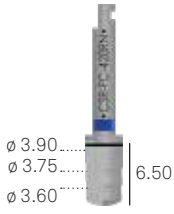
Countersink drills

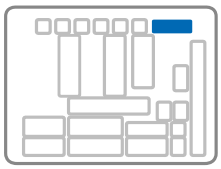
The kit contains countersink drills that allow preparing the site for the neck of CSR implants in the presence of a very thick cortical bone. Countersink drills have a different morphology depending on the diameter and type of the neck to prepare. Each drill has to be used only for the implant of reference indicated in the table.

The ZCSRUNI-INT kit includes the following countersink drills: FGS-200/300; CSR-FC-380; CSR-FC-420; CSR-FC-350ST; CSR-FC-380ST; CSR-FC-420RN.

Coloured rings make it simple to recognize the instruments for each implant diameter

Drill FGS-200/300: dedicated to ø 3.00 mm implants

implant ø	3.00 mm Straight Neck	3.50 mm Straight Neck	3.80 mm Straight Neck	3.80 mm Wide Neck	4.20 mm Wide Neck	4.20 mm Reduced Neck
countersink drills for CSR implants	**FGS-200/300**	**CSR-FC-350ST**	**CSR-FC-380ST**	**CSR-FC-380**	**CSR-FC-420**	**CSR-FC-420RN**
	 ø 3.00 ø 2.00 ø 2.50	 ø 3.40 ø 3.10 ø 2.80 6.50	 ø 3.70 ø 3.45 ø 3.20 6.50	 ø 4.05 ø 1.94 5.55	 ø 4.45 ø 2.02 6.50	 ø 3.90 ø 3.75 ø 3.60 6.50



The countersink drills, as shown in the image below, are used for ø 3.00 mm, ø 3.50 mm and ø 3.80 mm Straight Neck CSR implants; for ø 3.80 mm and ø 4.20 mm Wide Neck CSR implants and for the neck preparation of ø 4.20 mm CSR Reduced Neck implants.

ø 3.00 mm Straight Neck	ø 3.50 mm Straight Neck	ø 3.80 mm Straight Neck	ø 3.80 mm Wide Neck	ø 4.20 mm Wide Neck	ø 4.20 mm Reduced Neck

For the preparation of the implant site ø 3.50 ST and 3.80 ST, in absence of the dedicated countersink drills included only in the ZCSR-INT kit, it is possible to use the drills included in the ZCSR-INT base kit. The countersink drills are also available individually.

Optional surgical cover screw for CSR implant

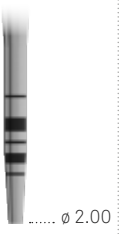
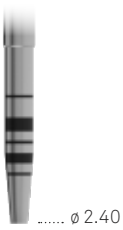
Optionally are available the VSR-TPN-N surgical cover screw for CSR DAT-N connection and VSR-VTP surgical cover screw for CSR DAT connection, both sold with the dedicated removal instrument. The value added of this screw is given by the fact that it is engaged and held by the dedicated removal system. This system allows to overcome any difficulty of removal of the cover screw, especially in case of large amounts of soft tissue, in which sometimes is not easy remove the screw.

description	code
surgical cover screw for CSR implant ø 3.70 mm, platf. close, DAT	**VSR-VTP** 
surgical cover screw for CSR implant ø 3.20 mm, platf. close, DAT-N	**VSR-VTP-N** 
removal instrument for CSR surgical cover screw	**RIM-20-EX** 

The following items are sold in non-sterile packaging.

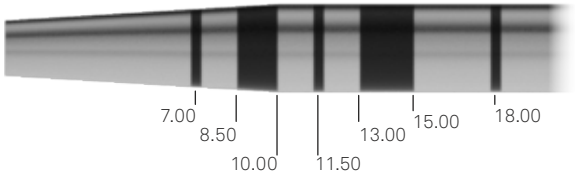
Osteotomes

A complete set of osteotomes, optionally available, has been designed for expansion protocols. The laser-etched codes on the handles indicate the osteotome diameter, to make it easier to recognize the correct surgical sequence. The laser marking on the point mark all the available heights. A practical universal instrument case for storing and organizing them is available.

description	Osteotome ø 0.20 flat tip	Osteotome ø 0.90 flat tip	Osteotome ø 1.60 concave tip	Osteotome ø 2.00 concave tip	Osteotome ø 2.40 concave tip
code	**E-OS-020-PP**	**E-OS-090-PP**	**E-OS-160-PC**	**E-OS-200-PC**	**E-OS-240-PC**
					

Osteotomes are optional instruments not included in the surgical kit, and can be ordered singularly for separate.

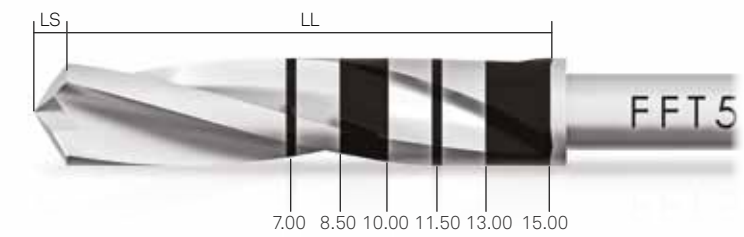
description	code
universal case in Radel for osteotomes can hold up to 12 instruments	**OS-TRAY**



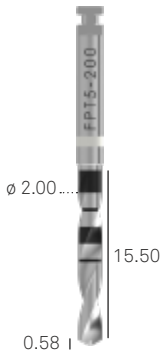
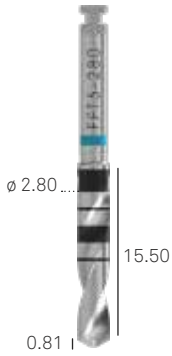
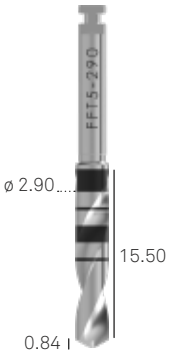
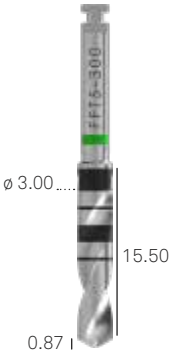
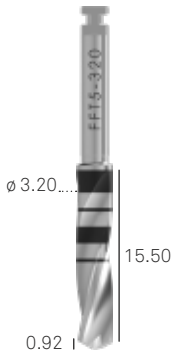
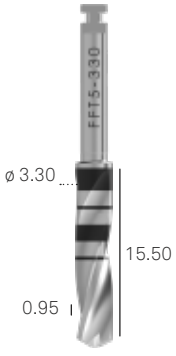
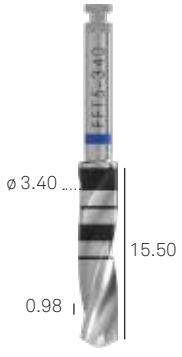
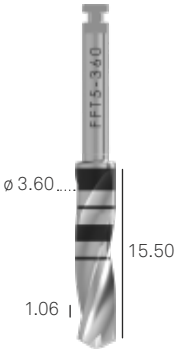
Drills for distal sectors

As an option, shorter drills are available that are very practical in distal sectors with limited oral opening. They come in a wide range of diameters and are also useful for preparations in extremely compact bone where, in the most coronal portion, it is desired to widen the preparation diameter by 0.10 mm with respect to the size of the standard drills to facilitate the insertion of the implants. On the other hand, in low-density bone they can be used to under-prepare the implant site so as to obtain optimum primary stability.

LL: Total length of the working part, including the tip.
LS: Length of the tip. This measurement must be calculated in addition to the length of the preparation hole.



***Important note**: The drills always make a hole that is longer than the implant to be inserted. The oversizing (LS) is equal to the height of the tip of the drill that is being used. See drawing on the side.*

drill ø	2.00	2.80	2.90	3.00	3.20
drills for distal sectors	**FPT5-200-LXS**	**FFT5-280-LXS**	**FFT5-290-LXS**	**FFT5-300-LXS**	**FFT5-320-LXS**
					
drill ø	**3.30**	**3.40**	**3.60**	**4.25**	**4.45**
drills for distal sectors	**FFT5-330-LXS**	**FFT5-340-LXS**	**FFT5-360-LXS**	**FFT5-425-LXS**	**FFT5-445-LXS**
					

** The drills for distal sectors are not included in any surgical kit and must be purchased separately. They cannot be used with depth stops.*

Easy Insert driver

CSR implants do not require a mounter device because they can be engaged directly inside the connection by practical **Easy Insert drivers**, designed **to guarantee a safe grip, to prevent deformations** to the corners of the connections and at the same time **to allow easy removal from the internal part of the implant connection**. The use of these drivers makes the surgical procedure of insertion extremely predictable.

Easy Insert for DAT-N connection

Easy orientation inside the connection thanks to the hexagonal visual indicator corresponding to the hexagon of the prosthesis and to black laser-etched dots on three faces

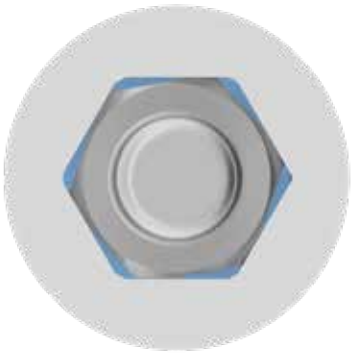
The whole is extremely **safe and reliable with the use of a special titanium o-ring that engages inside the connection**

The presence of a wide hexagon allows engaging the patented Easy Insert drivers **easily and safely for insertion of the implants** into the relative sites

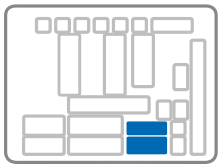
Easy Insert for DAT connection

The special patented design of Easy Insert drivers ensures that the faces (and not the corners) of the instrument make contact with the faces of the implant hexagon.

The dodecagonal design of the drivers **prevents deformations to the implant connection, thus guaranteeing extremely high prosthetic stability and precision**.



Peñarrocha-Oltra D., Rossetti P.H.O., Covani U., Galluccio F., Canullo L.,
Microbial leakage at the implant-abutment connection due to implant insertion maneuvers: cross-sectional study
Journal of Oral Implantology, 2015, 61(6);e292-e296, DOI 10.1563/aaid.joi.D.14.00235



When using the Easy Insert driver with the torque wrench with control lever or ratchet, as when using any other instrument for inserting implants with a dynanometric key, it is likewise advisable to take care to keep the working axis as perpendicular as possible. It is also fundamental for the movement performed with the ratchet during tightening to be slow and uniform, avoiding brusque movements as much as possible. If the precautions of use are not followed and the maximum torque is exceeded, the instrument could be broken: for this reason there is a default breaking point located over the dots, to allow the operator to remove the driver from the implant without any difficulties.
It is recommended to grip the ratchet in the part closest to the connection and to maintain a light and constant pressure with one finger, to allow greater stability during tightening.

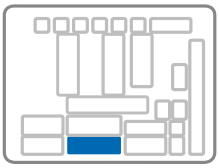
description	code	implant ø	included in the kit
short driver with right angle shank for DAT-N connection	**EASYC4-EX200-CA** 	**3.00 - 3.50 mm**	**CSR**
long driver with right angle shank for DAT-N connection	**EASYL4-EX200-CA** 	**3.00 - 3.50 mm**	**CSR**
driver with dynamometric key connector for DAT-N connection	**EASY4-EX200-EX** 	**3.00 - 3.50 mm**	**CSR**
short driver with right angle shank for DAT connection	**EASYC4-EX230-CA** 	**3.80 - 4.20 - 5.00 mm**	**CSR**
long driver with right angle shank for DAT connection	**EASYL4-EX230-CA** 	**3.80 - 4.20 - 5.00 mm**	**CSR**
driver with dynamometric key connector for DAT connection	**EASY4-EX230-EX** 	**3.80 - 4.20 - 5.00 mm**	**CSR**

Maintenance and care of Easy Insert drivers

The Easy Insert drivers are supplied prefitted with specific titanium O-rings. Since they are mechanical components, the retainer rings are subject to wear over time and can lose their elasticity and functionality.
The O-rings cannot be replaced, but it is necessary to replace the instrument.
The Easy Inserts were tested to be good for 40 uses in the worst conditions of use. This limit may however be subject to variations, depending on conditions of use. It is however always recommended to check the correct functionality of Easy Insert drivers every time they are cleaned and sterilized.
For this reason, and to allow the practitioner to become familiar with the use of Easy Insert drivers, the surgical kit contains an untreated non-sterile “test implant”, which can be easily recognized because it is entirely anodized in blue.

Important warning
It is recommended to use the Easy Insert drivers with a torque between 50 Ncm and 70 Ncm.
Thanks to tests performed on models, it has been observed that from 70 Ncm to 100 Ncm slight frictions between the instrument and the implant connection are possible, they can be avoided with a slight shaking movement of the Easy Insert in the connection. It is recommended not to exceed 80 Ncm for Easy Insert drivers with 2.00 mm hexagon and 140 Ncm for Easy Insert drivers with 2.30 mm hexagon. The implant insertion phase must be carried out with torque wrench with control lever TWL.

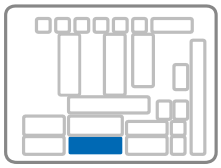
Drivers for fixation screws and extraction tools



The surgical kit contains several useful instruments for screwing and unscrewing the surgical cover screws, the transfer screws for posts, the abutments and more generally all the screws of the CSR system: the slightly conical coupling between the driver and the screw allows an appropriate retention when carrying the screw in the oral cavity. All the screwdrivers are made of stainless steel for surgical use.

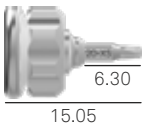
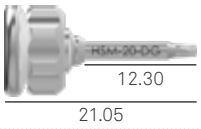
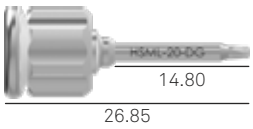
Important warning
Excessive torques can damage the internal threads of the fixation screws and the edges of the drivers and make it impossible to unscrew the conical screws, causing also severe intra-surgical and prosthetic complications. The recommended torque for the tightening of the different components are summarized in the following chart:

description	recommended torque
Surgical cover screws, healing abutments	8-10 Ncm
All prosthetic screws	20-25 Ncm
All prosthetic components screwed directly onto an implant	25-30 Ncm
Transfer fixation screws	8-10 Ncm



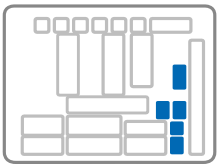
Surgical screwdrivers

Their design makes them very practical in the surgical phases for the screwing of the surgical connecting screws and for the phases of uncovering and management of the healing abutments. They must not be used when working with definitive prostheses, as they do not allow tightening torque to be controlled.

description	code	included in the kit
screwdriver for surgical cover screws and fixation screws, digital, extra-short	**HSMXS-20-DG** 	**CSR**
screwdriver for surgical cover screws and fixation screws, digital, short	**HSM-20-DG** 	**CSR**
screwdriver for surgical cover screws and fixation screws, digital, long	**HSML-20-DG** 	**CSR**

Important warning
It is recommended to pass a thread through the hole on the top of the digital screwdriver to prevent it from falling.

Important warning
Lever movements should be avoided as they increase the risk of breakage. Before tightening, make sure the hex socket screw head on the driver tip is correctly inserted into the screws to be tightened. Incorrect insertion is likely to pare off the hexagonal connection of the screwdriver or the screw to be tightened.
Drivers have a slightly conical profile, able to guarantee the hexagonal connection on the tip of the driver grips inside the hexagonal connection on the head of the screws, making it possible to carry the screw to the patient's mouth correctly, without dropping it.
Replace drivers regularly to reduce the risk of wear to the hex connection.



Extensions and connectors

description	code	included in the kit
extension for drivers, bone taps, screwdrivers and manual drivers, with hexagonal connector for torque wrench	**BPM-15** 	**CSR**
extension for surgical drills	**PROF-CAL3** 	**CSR**
driver for right angle and manual instruments and instruments with hexagonal connection for ratchet	**B-AVV-CA3** 	**CSR**
screwdriver for right angle and manual instruments and instruments with hexagonal connection for torque wrench	**AVV-CA-DG-EX** 	**CSR**
adaptor for control lever TWL	**TWL-AVV-EX** 	**CSR**

Drivers for intraoperative removal of implants

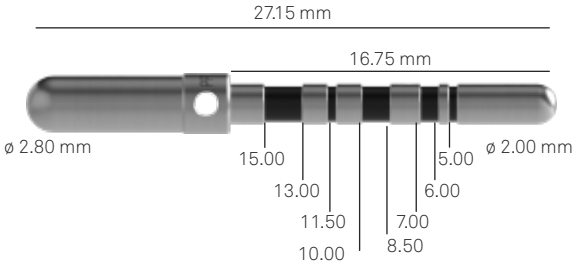
description	code	implant ø	included in the kit
short driver for DAT-N connection	**BC-EX200** 	**3.00 - 3.50 mm**	**Not included in the surgical kit, available separately**
long driver for DAT-N connection	**BC-EX200** 	**3.00 - 3.50 mm**	**Not included in the surgical kit, available separately**
short driver for DAT connection	**BC-EX230** 	**3.80 - 4.20 - 5.00 mm**	**Not included in the surgical kit, available separately**
long driver for DAT connection	**BC-EX230** 	**3.80 - 4.20 - 5.00 mm**	**Not included in the surgical kit, available separately**

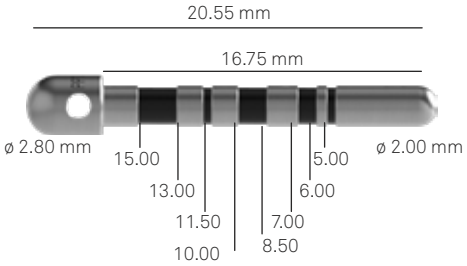
Parallelism pins

Parallelism pins can be used to check the insertion axis of the implants and the parallelism between more fixtures. They have one side with diameter ø 2.00 mm and the other ø 2.80 mm, so as to be used after the drills with the same diameter.

description	code
parallelism pin with a ø 2.00 mm side and a ø 2.80 mm	**PP-2/28** 

Parallelism pins with depth notches allow the control of the preparation height during the first surgical step, thanks to the notches provided on the side with a diameter of ø 2.00 mm. As the notches have a slightly smaller diameter than the body of the pin, they can be clearly noted on intraoperative X-rays. The other side of the pin has a diameter of 2.80 mm and it has a hole in which a safety thread can be inserted. The small version of the pin, the one with a shorter ø 2.80 side, is useful for patients with limited oral opening or for its use in distal sectors.





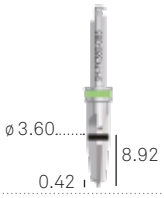
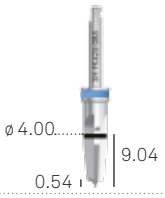
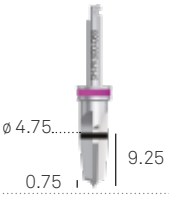
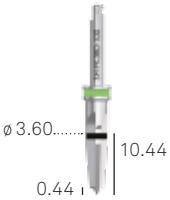
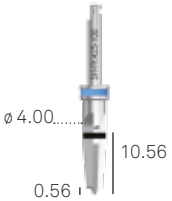
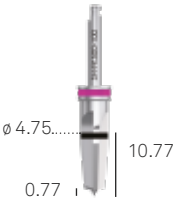
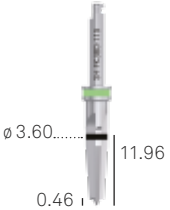
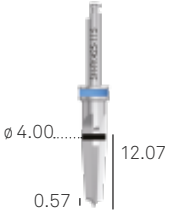
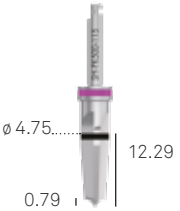
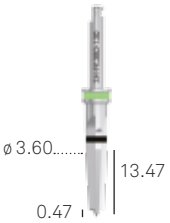
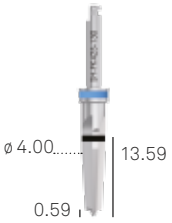
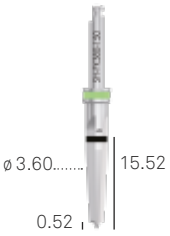
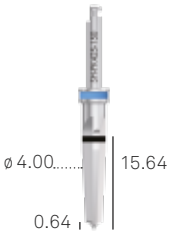
description	code
parallelism pin with depth lines, large*	**PPTL-2-28** 
parallelism pin with depth lines, small*	**PPTS-2-28** 

Important warning
It is recommended to pass a thread through the hole in the center of the pin to prevent it from falling.

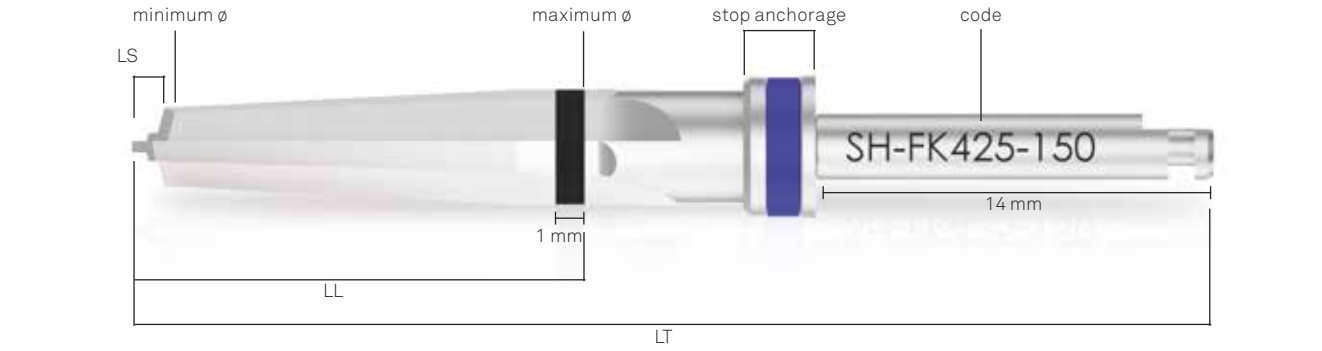
**Optional instruments, not included in the surgical kit*

Final conical drills

The conical drills are also made of steel with high resistance to corrosion and wear. They present a number of cutting edges proportional to the hole diameter, so as to allow a continuous and homogeneous cutting movement and greater instrument stability during operation. All this results in very precise implant preparations, which are the key to success of conical implants. They have a standard right angle shank 14.00 mm long. Final conical drills are 15 and are included in the ZCSRUNI-INT and ZCSRRF-INT surgical kits. The drills make the final hole for the implant with diameter and height referred to by the instrument code. Final conical drills and stops are included in the ZCSRUNI-INT and ZCSRRF-INT surgical kits.

implant ø	3.80	4.25	5.00
Conical drills for implant h. 8.50 mm	**SH-FK380-085** 	**SH-FK425-085** 	**SH-FK500-085** 
Conical drills for implant h. 10.00 mm	**SH-FK380-100** 	**SH-FK425-100** 	**SH-FK500-100** 
Conical drills for implant h. 11.50 mm	**SH-FK380-115** 	**SH-FK425-115** 	**SH-FK500-115** 
Conical drills for implant h. 13.00 mm	**SH-FK380-130** 	**SH-FK425-130** 	**SH-FK500-130** 
Conical drills for implant h. 15.00 mm	**SH-FK380-150** 	**SH-FK425-150** 	**SH-FK500-150** 
Stop for conical drills	**SH-STOP4-FK380** 	**SH-STOP4-FK425** 	**SH-STOP4-FK500** 

LT: Total length of the drill, shank included.
LL: Total length of the working part, including the tip.
LS: Length of the tip. This measurement must be calculated in addition to the length of the preparation hole.



Important warning
The drills always make a hole that is longer than the implant to be inserted.
The oversizing (LS) is equal to the difference between the length of the working part of the drill and the nominal height of the implant.

Important warning
The notch laser-etched on conical drills has a height of 1.00 mm, corresponding to the height of the smooth neck of the implant. This indication is particularly useful to allow the dentist to choose supra-crestal or sub-crestal insertion of the implant.

drill code	corresponding implant	nominal Ø	minimum Ø	maximum Ø	LT	LL	LS	colour codes
SH-FK380-085	**VS-ZT-380SL-085**	3.80	2.20	3.60	30.92	8.92	0.42	green
SH-FK380-100	**VS-ZT-380SL-100**	3.80	2.20	3.60	32.44	10.44	0.44	green
SH-FK380-115	**VS-ZT-380SL-115**	3.80	2.20	3.60	33.96	11.96	0.46	green
SH-FK380-130	**VS-ZT-380SL-130**	3.80	2.20	3.60	35.47	13.47	0.47	green
SH-FK380-150	**VS-ZT-380SL-150**	3.80	2.20	3.60	37.52	15.52	0.52	green
SH-FK425-085	**VS-ZT-425SL-085**	4.25	2.60	4.00	31.04	9.04	0.44	blue
SH-FK425-100	**VS-ZT-425SL-100**	4.25	2.60	4.00	32.56	10.56	0.56	blue
SH-FK425-115	**VS-ZT-425SL-115**	4.25	2.60	4.00	34.07	12.07	0.57	blue
SH-FK425-130	**VS-ZT-425SL-130**	4.25	2.60	4.00	35.59	13.59	0.59	blue
SH-FK425-150	**VS-ZT-425SL-150**	4.25	2.60	4.00	37.64	15.64	0.64	blue
SH-FK500-085	**VS-ZT-500SL-085**	5.00	3.35	4.75	31.26	9.25	0.75	magenta
SH-FK500-100	**VS-ZT-500SL-100**	5.00	3.35	4.75	32.77	10.77	0.77	magenta
SH-FK500-115	**VS-ZT-500SL-115**	5.00	3.35	4.75	34.29	12.29	0.79	magenta
SH-FK500-130	**VS-ZT-500SL-130**	5.00	3.35	4.75	35.80	13.80	0.80	magenta
SH-FK500-150	**VS-ZT-500SL-150**	5.00	3.35	4.75	37.85	15.85	0.85	magenta

Stops for conical drills

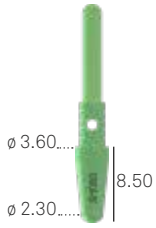
A stop for each diameter of the final conical drill is available, for inserting the drill from the tip. They are suitable for limiting the working length to predetermined heights. With the same working diameter, the same stop is compatible with all the drill lengths, as explained in the following table:

stops for conical drills	**SH-STOP4-FK380** 	**SH-STOP4-FK425** 	**SH-STOP4-FK500** 
colour codes	verde	blu	magenta
nominal ø corresponds to the implant diameter	3.80	4.25	5.00
drill for implant L.8.50 mm	SH-FK380-085	SH-FK425-085	SH-FK500-085
drill for implant L.10.00 mm	SH-FK380-100	SH-FK425-100	SH-FK500-100
drill for implant L.11.50 mm	SH-FK380-115	SH-FK425-115	SH-FK500-115
fresa para implante L.13.00 mm	SH-FK380-130	SH-FK425-130	SH-FK500-130
drill for implant L.15.00 mm	SH-FK380-150	SH-FK425-150	SH-FK500-150

As already indicated with regard to the pilot drill stops, in this case too it is recommended always to check that the stop is inserted at the desired height.
Incomplete insertion may reduce the preparation height. Any insertion difficulties can be resolved by loosening the stop tabs slightly, using forceps. It is also recommended to check the retention exerted by the stop, as if retention is too weak the instrument will fall off the drill during operation. In the event of reduced retention capacity, simply tighten the tabs by hand or using forceps. As specified in the surgical procedures on page 58, the conical drill stops define the working height corresponding to the total nominal length of the implant, determining a working depth such that the fixture is completely submerged. If you want to leave the shiny crown part in a supracrestal position, you must stop at the start of the laser-etched notch on the drill.

Reply: replies for CSR and CSR RF SL implants

The REPLY replies are made of Gr. 5 titanium and reply the morphology of the final drills of the related CS RF SL implants. They are useful to verify the depth of the preparation hole made with the final drills, and to verify the axis of the preparation made with the drill.
The REPLY replies are included in the CSR RF SL and ZCSRUNI-INT kits.

implant diameter	3.80	4.25	5.00
Reply for implant h.8.50 mm	**SH-380-085-RP** 	**SH-425-085-RP** 	**SH-500-085-RP** 
Reply for implant h.10.00 mm	**SH-380-100-RP** 	**SH-425-100-RP** 	**SH-500-100-RP** 
Reply for implant h.11.50 mm	**SH-380-115-RP** 	**SH-425-115-RP** 	**SH-500-115-RP** 
Reply for implant h.13.00 mm	**SH-380-130-RP** 	**SH-425-130-RP** 	**SH-500-130-RP** 
Reply for implant h.15.00 mm	**SH-380-150-RP** 	**SH-425-150-RP** 	**SH-500-150-RP** 

Bone taps

These are sharp instruments, made of steel for surgical use, used to prepare the bone to accommodate the threads of the implants, especially in situations where the bone is very compact or cortical, to alleviate compression and insertion torque. Sharp instruments are included in the CSR RF SL and ZCSRUNI-INT kits.

implant ø	3.80	4.25	5.00
Bone taps with right angle attachment	**SH-MS-380-CA**  ø 2.55	**SH-MS-425-CA**  ø 2.65	**SH-MS-500-CA**  ø 3.40
Bone taps with hexagonal attachment	**SH-MS-380**  ø 2.55	**SH-MS-425**  ø 2.65	**SH-MS-500**  ø 3.40

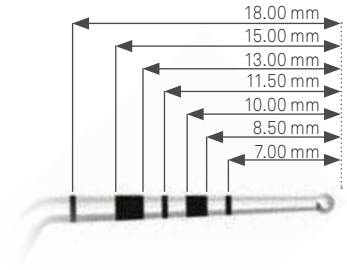
Important warning
The surgical kit includes the bone taps with right angle attachment. To use these bone taps manually, connect them to the dynamometric key by the adaptor AVV-CA-DG-EX. In this case, the torque wrench must not exceed the value of 60 Ncm. If it is necessary to use greater torque, it is recommended to use the bone taps with hexagonal attachment.

Spare O-ring

description	code	included in the kit
Kit with 5 spare o-rings for all accessories with hexagonal connection for dynamometric key	**ORING180-088** 	**Not included in the surgical kit, available separately**

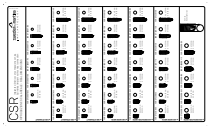
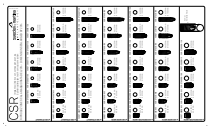
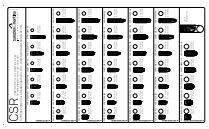
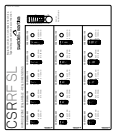
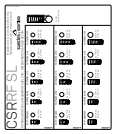
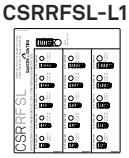
PROF3 depth gauge

It is a practical instrument which allows to verify the depth of the preparation holes and the distance between the implants. It is not included in any surgical kit, it can be ordered separately.



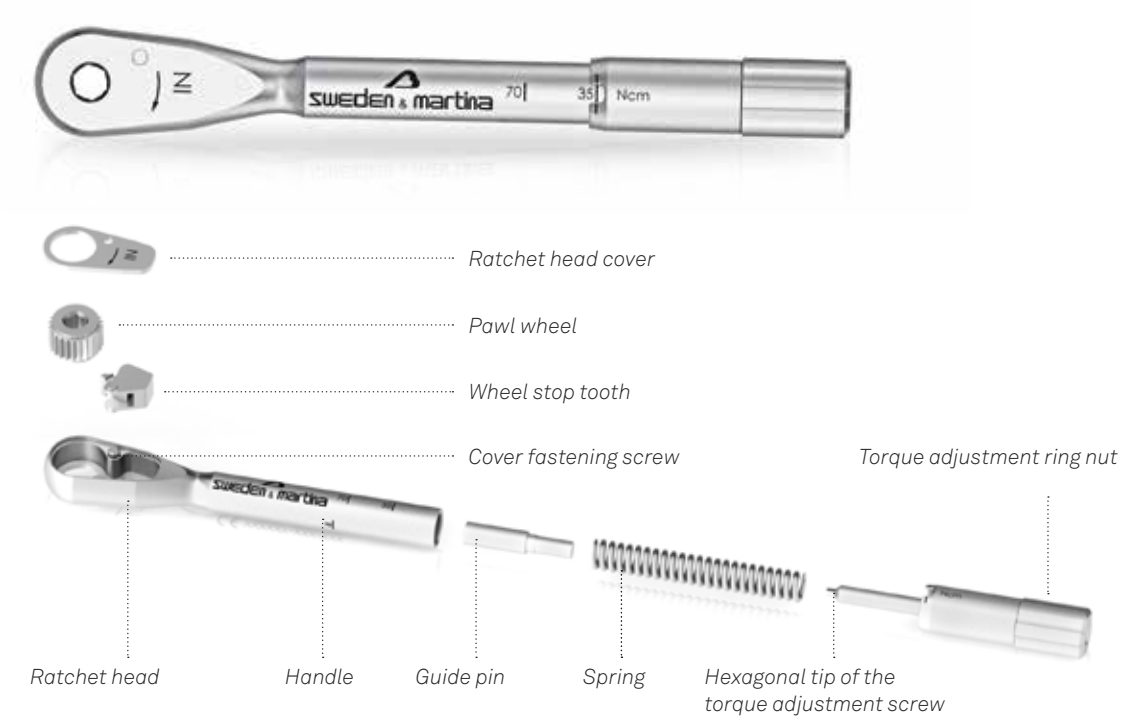
X-ray templates

The surgical kits are supplied with X-ray templates for the graphic representation of all the implant measurements to allow choosing the most suitable implant diameters and lengths by means of radiographic or tomographic methods. The templates are available in three versions: in real dimensions, increased of 20% and 30%.

description	code	included in the kit
X-ray template for CSR implants, real dimensions	**CSR-L100** 	**ZCSR-INT** **ZCSRUNI-INT**
X-ray template for CSR implants, dimensions increased by 20%	**CSR-L120** 	**ZCSR-INT** **ZCSRUNI-INT**
X-ray template for CSR implants, dimensions increased by 30%	**CSR-L130** 	**ZCSR-INT** **ZCSRUNI-INT**
X-ray template for CSR RF SL implants, real dimensions	**CSRRFSL-L100** 	**ZCSRRF-INT** **ZCSRUNI-INT**
X-ray template for CSR RF SL implants, dimensions increased by 20%	**CSRRFSL-L120** 	**ZCSRRF-INT** **ZCSRUNI-INT**
X-ray template for CSR RF SL implants, dimensions increased by 30%	**CSRRFSL-L130** 	**ZCSRRF-INT** **ZCSRUNI-INT**

Torque control ratchet CRI5-KIT

In addition, a special ratchet (CRI5-KIT) is available, with its own adjustment key, for quickly screwing the torque adjustment ring nut, and with gel lubricant for maintenance. The ratchet may be used with torque adjustment from 10 to 70 Ncm or in a blocked position without torque control. When using as a prosthetic ratchet for fastening the screws, refer to the torque values indicated in the table at page 42. The CRI5-KIT dynamometric key is a multipurpose instrument that can be dismantled, and it is sold as non-sterile.



Before each use, this instrument must be cleaned and sterilized according to the instructions on page 84. Adequate maintenance, performed following in detail all the step by step instructions for the disassembly and correct reassembly of the device during cleaning operations, is essential for the correct functioning of the device and for its durability. Personnel who use this tool must be suitably trained, and they must have read the instructions in this manual prior to handling the device. After sterilisation, the ratchet is ready for use. The instrument must be tested for correct assembly and correct funcionality every time it is used, whether for surgical and prosthetic procedures.

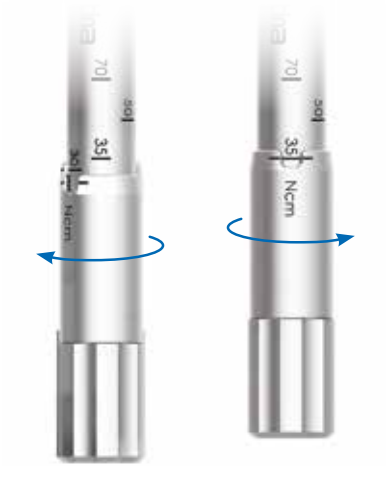
The torque is adjusted by aligning the marking of the desired torque in the circular opening of the handle. The “IN” arrow legible on the top of the head indicates the screwing position of the key. The “OUT” arrow legible on the top of the head indicates the loosening or unscrewing position. An unlimited torque position is obtained by positioning the torque adjustment device up to the line marked “R” on the handle of the ratchet body.

The ring nut may be screwed and unscrewed by hand, but to speed up these operations the kit also contains a driver that allows it to be turned quickly. Any deterioration of the screwing, insertion and torque mechanisms must be checked by personnel responsible for the use and maintenance of this dental instrument. The pieces of this mechanism are not interchangeable; one piece from one key cannot be replaced by a piece from another key as each ratchet is calibrated INDIVIDUALLY. If a piece is lost, please return the instrument to Sweden & Martina for repair. No components for assembling the ratchet can be sold individually. Failure to follow the instructions provided may cause problems of maintenance and stability of the prosthesis.

Important warning

Torque is always adjusted by screwing in/unscrewing the sleeve at the end of the instrument handle. Torque must always be adjusted upwards, starting from a value lower than that required and tightening the adjustment sleeve in a clockwise direction until the desired value is reached. This means that if a torque value lower than that used previously is to be set, the adjustment sleeve must be slackened by two whole turns beneath the new torque value required, and then tightened again in a clockwise direction to the desired value.

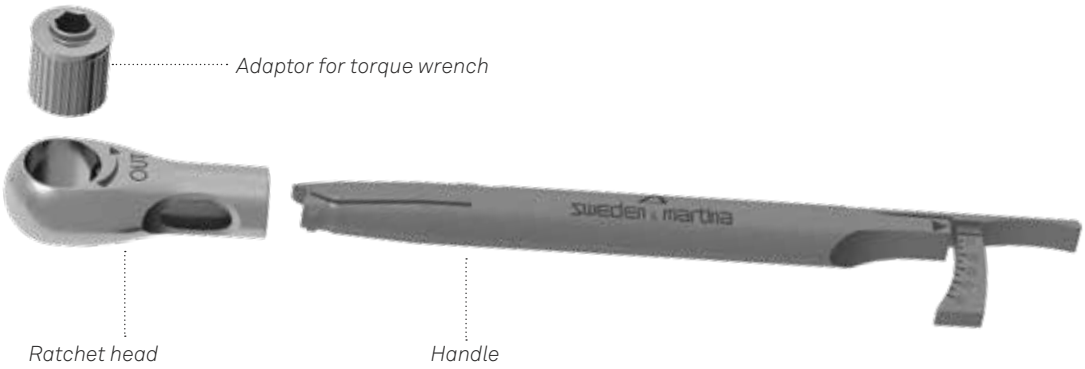
In order to set a torque value, turn the ring nut in the clockwise direction until the wanted value.



To turn down a torque value of work of the ratchet, first it is necessary to unscrew the ring nut in the anticlockwise direction until reaching a value inferior of the wanted one, then proceed with the clockwise direction screwing until the chosen torque.

Torque wrench with control lever TWL

The surgical kit of the CSR implant system includes a special torque wrench with control lever (TWL). The torque wrench can be used to indicate the value of the torque applied during the surgical phases of screwing and unscrewing, showing values from 10 to 90 Ncm. It is supplied complete with a specific adaptor that allows it to be used with surgical instruments with a hexagonal connection.
The torque wrench with control lever TWL is a multipurpose instrument that can be dismantled, and it is sold as non-sterile.



Every time this instrument is used, it must first be cleaned and sterilized following the instructions on page 85.
Adequate maintenance, carried out by scrupulously following all the steps indicated for dismantling and reassemblying of the torque wrench during cleaning operations is essential for its correct use and to prolong its shelf life. The personnel using this instrument must be suitably trained and must have read the instructions given in this manual before proceeding with any operations with it.

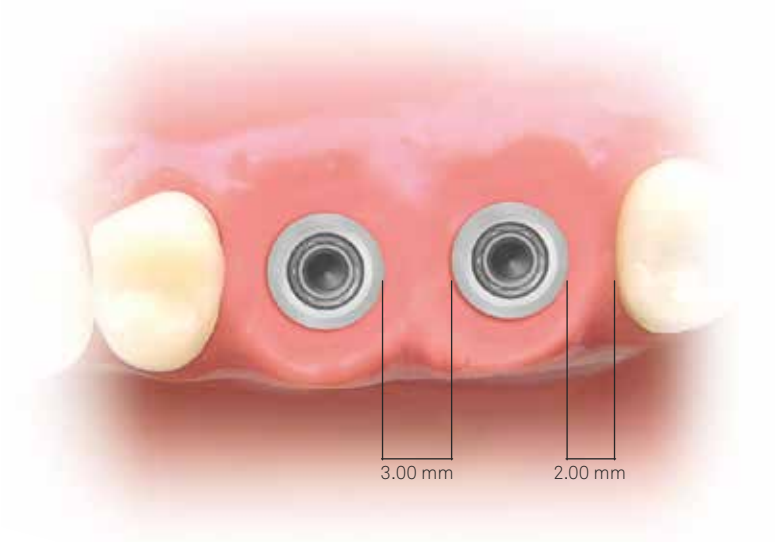
After sterilization and before use, check that the first mark on the scale is aligned with the arrow.
The instrument must be tested for correct assembly and correct funcionality every time it is used.

Important warning
The arm of the torque wrench must not move beyond the end of the scale, as this could lead to inaccurate torque readings.

The torque wrench can also be used as a fixed key, without using the scale, by using the entire handle as a lever. In this case, it must not exceed the torque value of 150 Ncm.
The personnel responsible for the use and maintenance of this instrument must check it for possible signs of deterioration of the tightening, insertion and torque mechanisms.
The single components of the torque wrench are not interchangeable, and it is not possible to use a component from one key to replace a component on another. If any component of the torque wrench is lost, always return the entire instrument to Sweden & Martina S.p.A. for all necessary repairs. Components for the assembly of the torque wrench with control lever are not sold individually. Failure to respect the instructions given may cause aesthetic problems and be damaging for the patient's health.

Preparation of the implant site

To obtain a three-dimensional view of the bone available, it is recommended to lift a mucoperiosteal flap. As already mentioned previously, pre-operative clinical and radiographic exams play an important role in determining the position and direction according to which the implants will be positioned. in this stage, a surgical stent will be helpful, acting as a guide during the marking of the cortical bone with the precision drill and in the drilling phase with the 2.00 mm pilot drill.
As a rule a distance of 3.00 mm should be maintained between the perimeter of the implants, and at least 2.00 mm between implants and adjacent natural teeth. The numerous experimental and clinical studies carried out indicate that it is opportune to position the implants more in a lingual or a palatal direction to obtain the best aesthetic results, because this position helps preserve the level of the hard and soft tissues at the crown of the implant.
It is also essential to check that the thickness of the residual bone wall at buccal level is not less than 1.00 mm. The best aesthetic results are obtained with buccal walls of no less than 2.00 mm. If the thickness is smaller, there is a high risk of bone reabsorption failure and exposure of the threads.



The following pages contain information on the drilling sequences for the adequate preparation of all implant types. These procedures come from clinical experience. However, it should be remembered that bone types with different densities require different surgical approaches, and the indications below cannot replace the necessary training and knowledge of the doctors, nor their personal experience, which can at times lead to different solutions and indications.
The sequences that follow refer to specific bone types. In expansion techniques or in case of regenerative surgery, or when you want to increase the compaction in poor quality bone, the use of drills can be replaced with the relative osteotomes.
Remember to always use drills with stops correctly inserted. Remember that the drills always prepare a hole that is longer than the implant. For the overpreparation dimensions, refer to page 32 for the pilot drill and page 34 for the final drills. The preparations must be non-traumatic and as gradual as possible, and must be executed quickly and precisely. No overheating of the bone should be generated.
It should also be remembered to initially set the surgical micromotor with the correct torque, reduction and rotation values depending on the operation to be performed.
In particular, **drills** must be used at the speed indicated in each sequence, with the maximum torque and irrigated copiously with cold sterile physiological solution, better if cooled in a refrigerator.

Incorrect insertion of the instruments in the handpiece will cause instrument vibration, eccentric rotation, early wear and shaft buckling. Suitable surgical micromotors only should be used. Micromotors should be checked regularly by their manufacturers, according to the indications given by the same, to prevent potential malfunctions (e.g. axle shifts for transmission shafts, worn or faulty forceps, etc.). Failure to follow the instructions provided may cause surgical problems and damage to the patient's health.

Surgical sequence for CSR implants

Surgical sequence for CSR Straight Neck ø 3.00 mm implants

The graphic sequence refers to implants with ø 3.00 mm and H 15.00 mm. The use of the stop is at the dentist's discretion. Their use is recommended, most of all in the case of poor intraoperative visibility. Please remember that the drills over-prepare the length for a measurement reported in the table on page 32 (for pilot and intermediate drills).

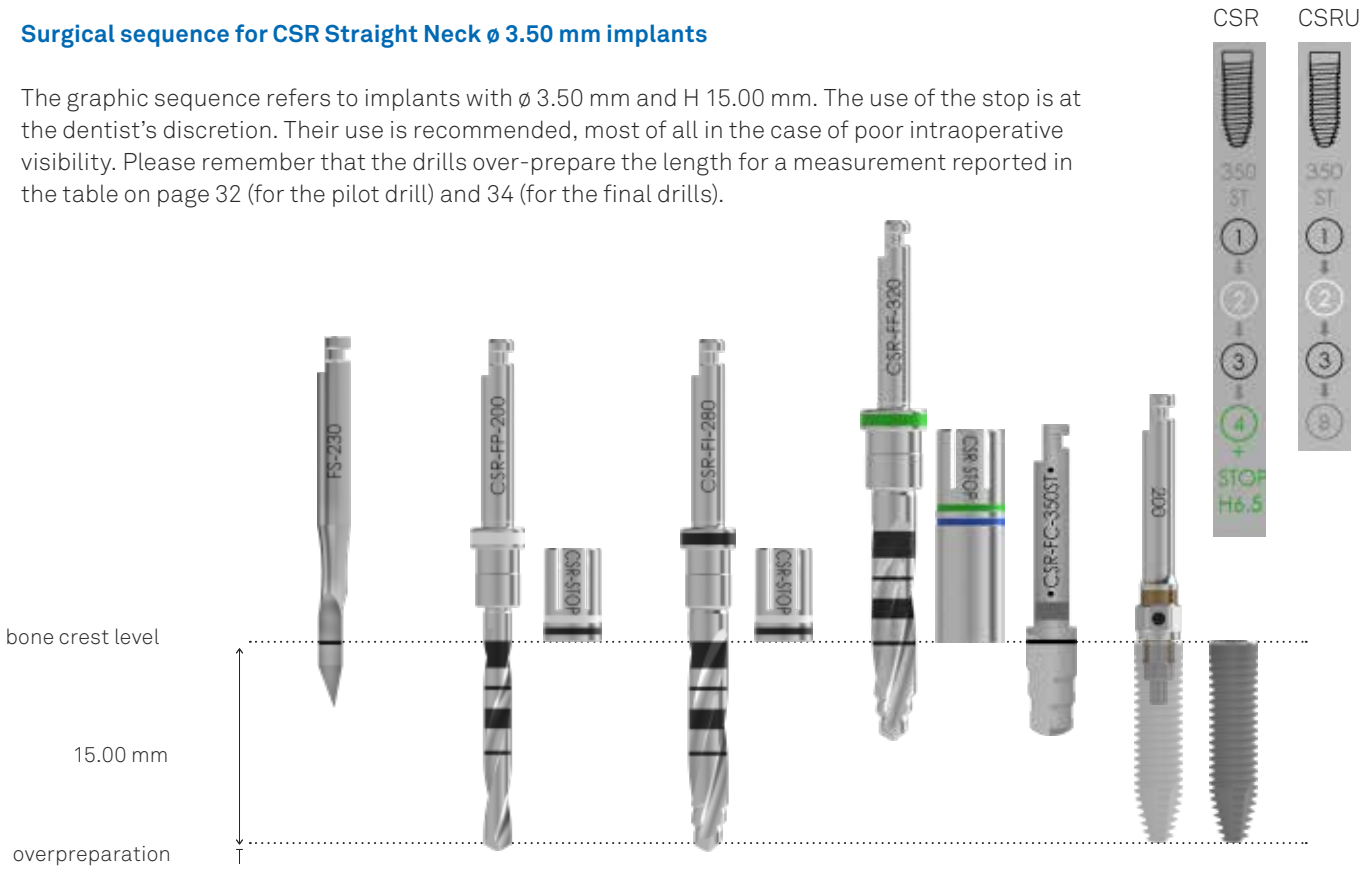
		FS-230	CSR-FP-200	FGS-200/300	EASYC4-EX200-CA
ø 3.00 mm	BONE D1	1.100 rpm	1.100 rpm	1.100 rpm	30 rpm
	BONE D2	1.100 rpm	1.100 rpm	1.100 rpm	30 rpm
	BONE D3	900 rpm	900 rpm	900 rpm	30 rpm
	BONE D4	-	-	-	-

Important warning
Due to the small diameter of the CSR Straight Neck ø 3.00 mm implant, the surgical site is prepared with the pilot and intermediate drill only. The CSR-FP-200 pilot drill has a cylindrical design; it can therefore be used for the preparation of all the heights of the CSR Straight Neck ø 3.00 mm implants up to the relative laser marking.

In the case of surgeries in the distal sectors or in case of poor oral opening of the patient, drills of reduced length are available, to be used without stop. For further details see page 36.

Surgical sequence for CSR Straight Neck ø 3.50 mm implants

The graphic sequence refers to implants with ø 3.50 mm and H 15.00 mm. The use of the stop is at the dentist's discretion. Their use is recommended, most of all in the case of poor intraoperative visibility. Please remember that the drills over-prepare the length for a measurement reported in the table on page 32 (for the pilot drill) and 34 (for the final drills).



ø 3.50 mm	BONE D1	1.100 rpm	1.100 rpm	1.100 rpm	1.100 rpm	30 rpm
	BONE D2	1.100 rpm	1.100 rpm	1.100 rpm	1.100 rpm	30 rpm
	BONE D3	900 rpm	900 rpm	900 rpm	900 rpm	30 rpm
	BONE D4	900 rpm	900 rpm	osteotome*	osteotome*	30 rpm

Important warning
CSR drills have a cylindrical design; it can therefore be used for the preparation of all the heights of the CSR Straight Neck ø 3.50 mm implants up to the relative laser marking. Regardless of the height of the implant to be inserted, the CSR-FF-320 drill must be used with the H 6.50 mm stop, as shown in the sequence.

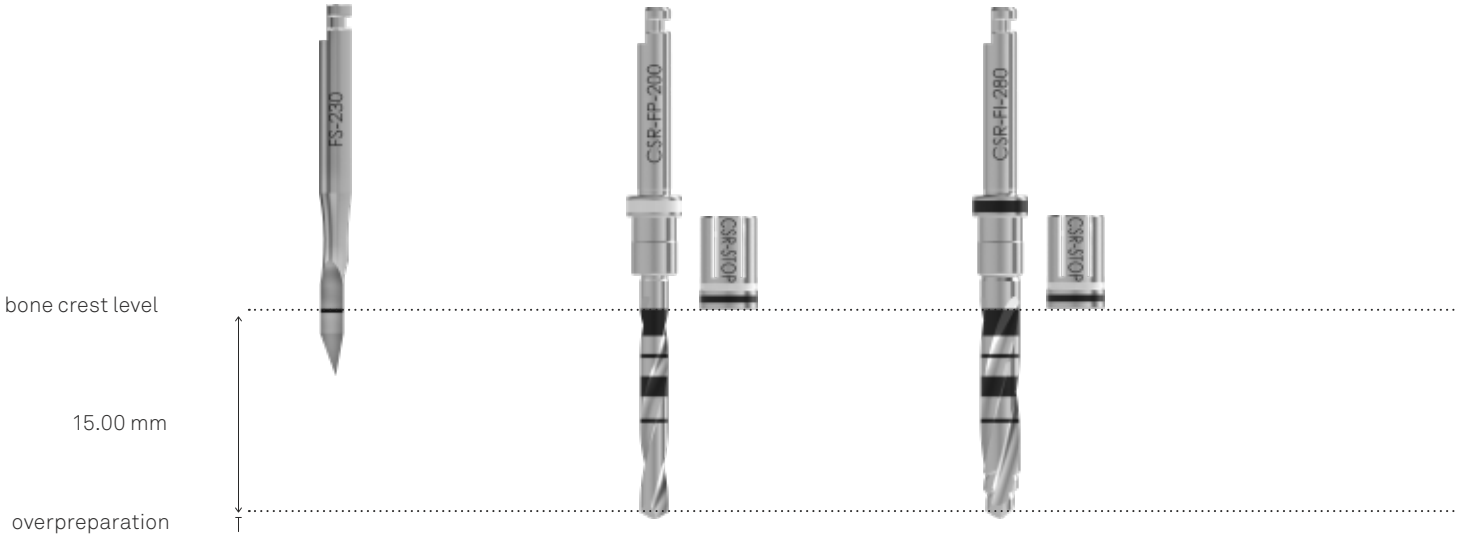
Important warning
The insertion of CSR implants with H 6.50 mm must be completed with the micromotor and not with control lever TWL.

*****_This drill is included in the ZCSRUNI-INT kit, and it's also available individually. In case of lack of this drill, it's possible to continue to prepare the site with the drill CSR-FF-320._
***Important note**: For implants with H 18.00 mm, preparation must be done without the aid of the stop for the entire length of the working part of the drill (the wider end of the drill serves as a stop and therefore acts as a safety stop). In the case of surgeries in the distal sectors or in case of poor oral opening of the patient, drills of reduced length are available, to be used without stop. For further details see page 36.*

** All the osteotomes have to be used at the reference notch of the implant to be inserted. For more details, please refer to page 38.*

Surgical sequence for CSR Straight Neck ø 3.80 mm implants

The graphic sequence refers to implants with ø 3.80 mm and H 15.00 mm. The use of the stop is at the dentist's discretion. Their use is recommended, most of all in the case of poor intraoperative visibility. Please remember that the drills over-prepare the length for a measurement reported in the table on page 32 (for the pilot drill) and 34 (for the final drills).

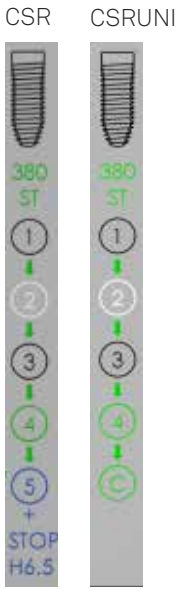


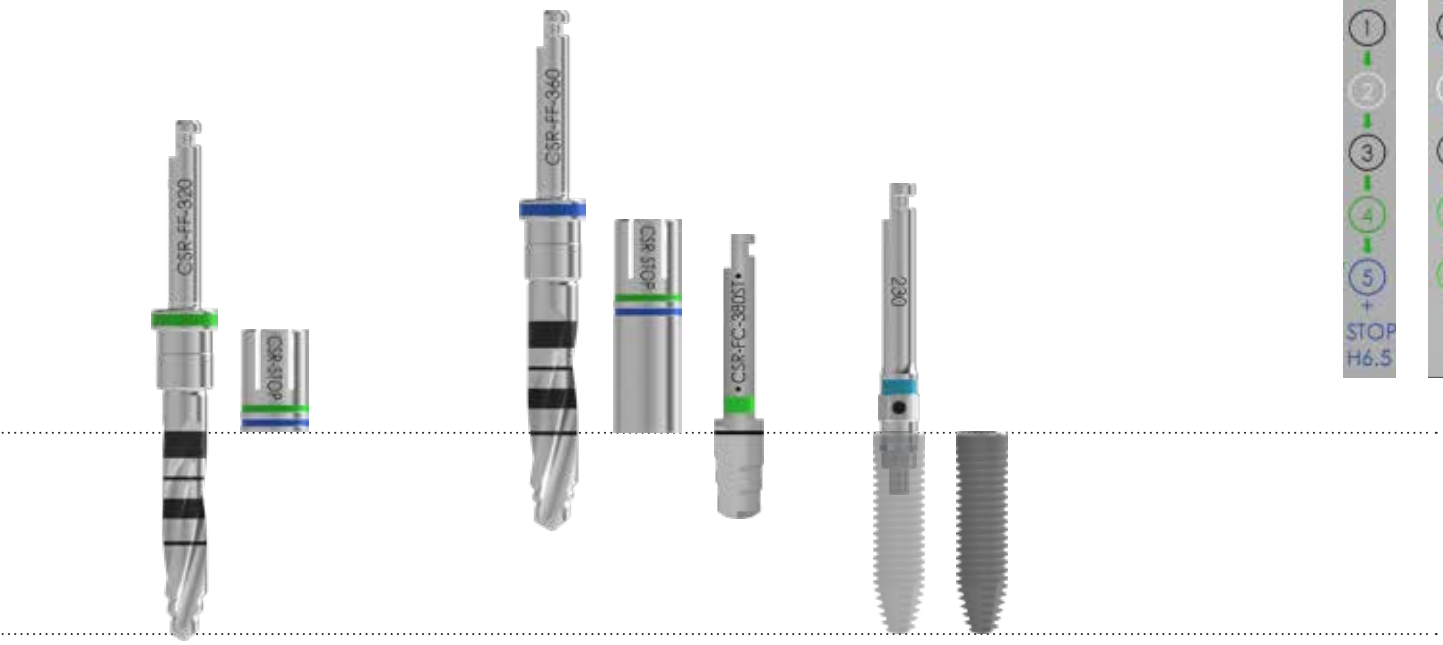
		FS-230	CSR-FP-200	CSR-FI-280
ø 3.80 mm	BONE D1	1.100 rpm	1.100 rpm	1.100 rpm
	BONE D2	1.100 rpm	1.100 rpm	1.100 rpm
	BONE D3	900 rpm	900 rpm	900 rpm
	BONE D4	900 rpm	900 rpm	osteotome*

Important warning
CSR drills have a cylindrical design; it can therefore be used for the preparation of all the heights of the CSR Straight Neck ø 3.80 mm implants up to the relative laser marking. Regardless of the height of the implant to be inserted, the CSR-FF-360 drill must be used with the H 6.50 mm stop, as shown in the sequence.

Important warning
The insertion of CSR implants with H 6.50 mm must be completed with the micromotor and not with control lever TWL.

In the case of surgeries in the distal sectors or in case of poor oral opening of the patient, drills of reduced length are available, to be used without stop. For further details see page 36.





CSR-FF-320 | **CSR-FF-360** **CSR-FC-380ST*** | **EASYC4-EX230-CA**

1.100 rpm	1.100 rpm	30 rpm
1.100 rpm	1.100 rpm	30 rpm
900 rpm	-	30 rpm
osteotome*	-	30 rpm

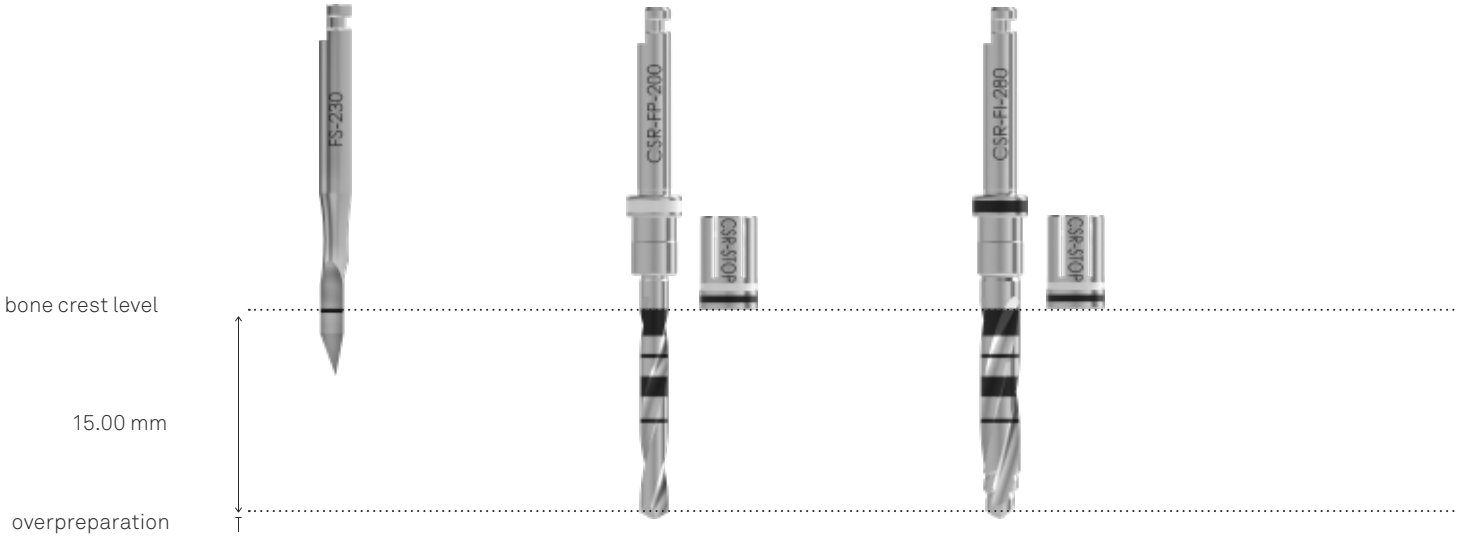
***Important note**: For implants with H 18.00 mm, preparation must be done without the aid of the stop for the entire length of the working part of the drill (the wider end of the drill serves as a stop and therefore acts as a safety stop).*

*****This drill is included in the ZCSRUNI-INT kit, and it's also available individually.*
In case of lack of this drill, it's possible to continue to prepare the site with the drill CSR-FF-360.

** All the osteotomes have to be used at the reference notch of the implant to be inserted.*
For more details, please refer to page 38.

Surgical sequence for CSR Wide Neck ø 3.80 mm implants

The graphic sequence refers to implants with ø 3.80 mm and H 15.00 mm. The use of the stop is at the dentist's discretion. Their use is recommended, most of all in the case of poor intraoperative visibility. Please remember that the drills over-prepare the length for a measurement reported in the table on page 32 (for the pilot drill) and 34 (for the final drills).



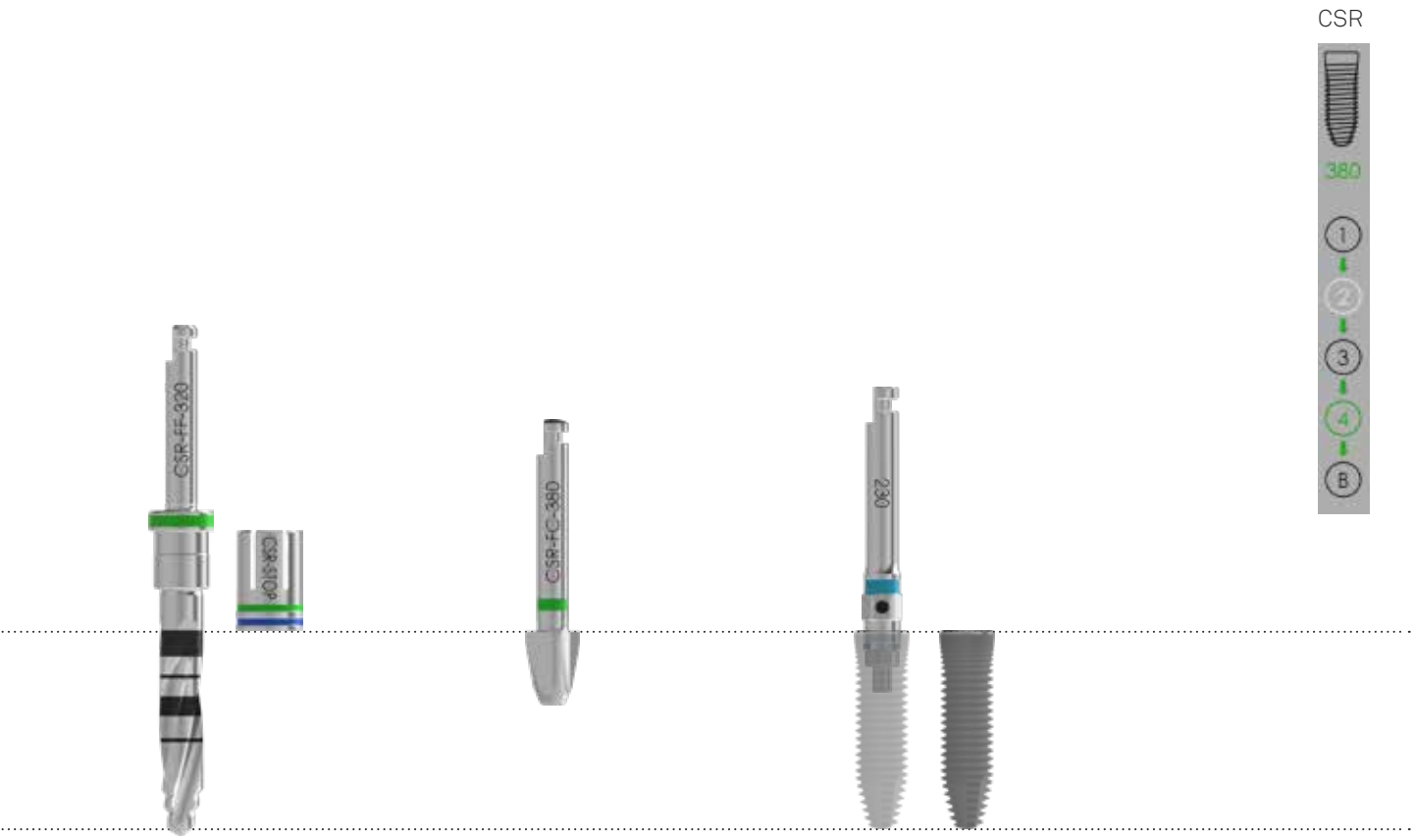
FS-230 **CSR-FP-200** **CSR-FI-280**

ø 3.80 mm	BONE D1	1.100 rpm	1.100 rpm	1.100 rpm
	BONE D2	1.100 rpm	1.100 rpm	1.100 rpm
	BONE D3	900 rpm	900 rpm	900 rpm
	BONE D4	900 rpm	900 rpm	osteotome*

Important warning
CSR drills have a cylindrical design; it can therefore be used for the preparation of all the heights of the CSR Wide Neck ø 3.80 mm implants up to the relative laser marking.

Important warning
The insertion of CSR implants with H 6.50 mm must be completed with the micromotor and not with control lever TWL.

In the case of surgeries in the distal sectors or in case of poor oral opening of the patient, drills of reduced length are available, to be used without stop. For further details see page 36.



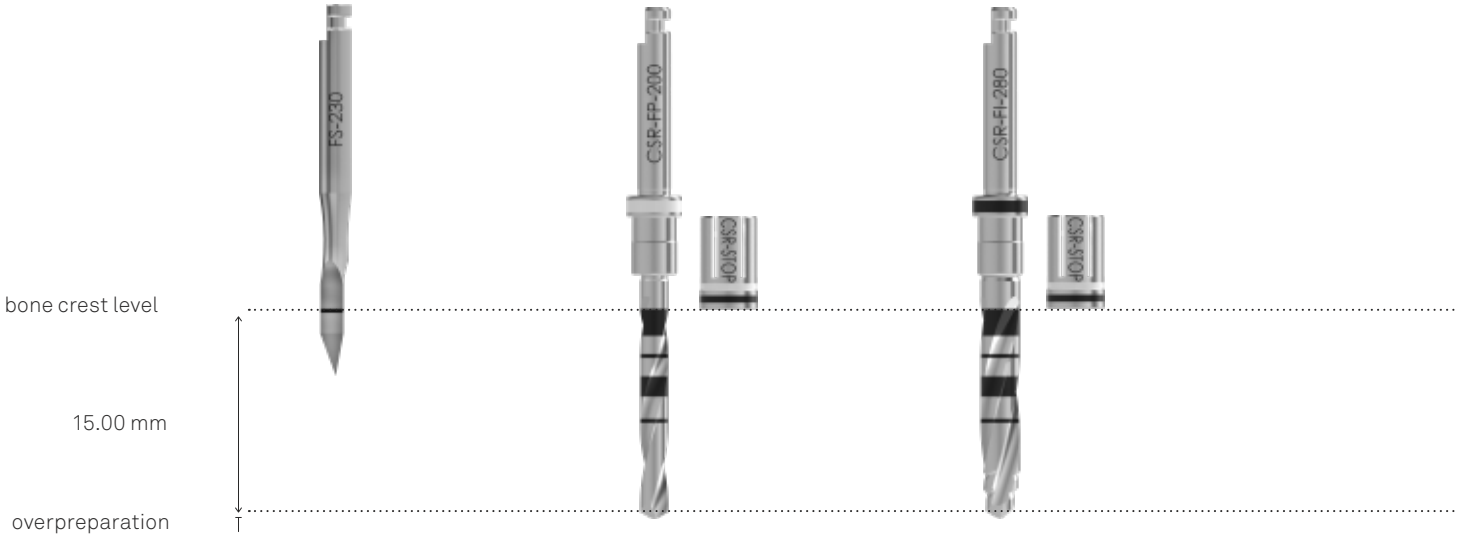
CSR-FF-320	CSR-FC-380	EASYC4-EX230-CA
1.100 rpm	1.100 rpm	30 rpm
1.100 rpm	1.100 rpm	30 rpm
900 rpm	-	30 rpm
osteotome*	-	30 rpm

***Important note**: For implants with H 18.00 mm, preparation must be done without the aid of the stop for the entire length of the working part of the drill (the wider end of the drill serves as a stop and therefore acts as a safety stop).*

** All the osteotomes have to be used at the reference notch of the implant to be inserted.*
For more details, please refer to page 38.

Surgical sequence for CSR Wide Neck ø 4.20 mm implants

The graphic sequence refers to implants with ø 4.20 mm and H 15.00 mm. The use of the stop is at the dentist's discretion. Their use is recommended, most of all in the case of poor intraoperative visibility. Please remember that the drills over-prepare the length for a measurement reported in the table on page 32 (for the pilot drill) and 34 (for the final drills).

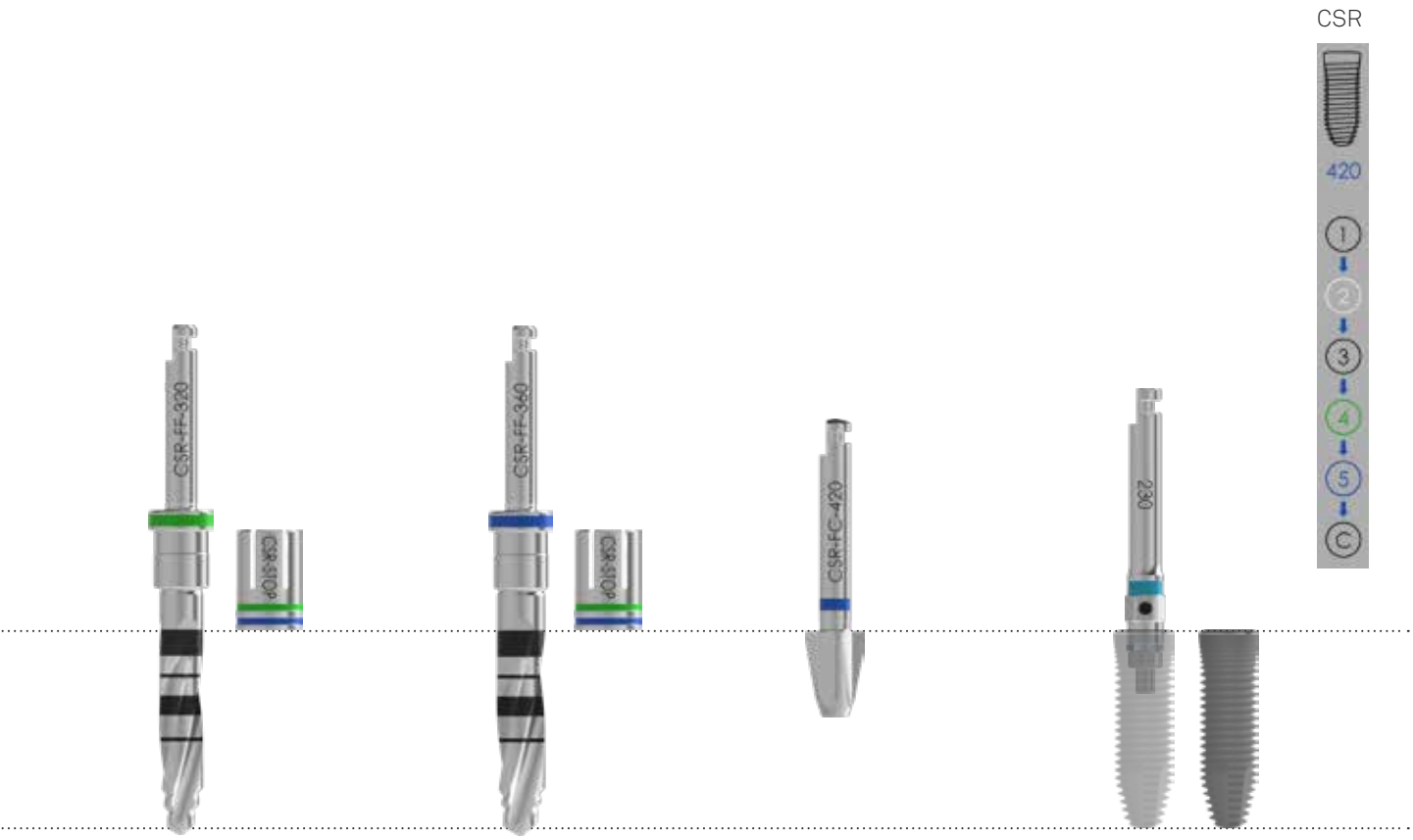


		FS-230	CSR-FP-200	CSR-FI-280
ø 4.20 mm	BONE D1	1.100 rpm	1.100 rpm	1.100 rpm
	BONE D2	1.100 rpm	1.100 rpm	1.100 rpm
	BONE D3	900 rpm	900 rpm	900 rpm
	BONE D4	900 rpm	900 rpm	osteotome*

Important warning
CSR drills have a cylindrical design; it can therefore be used for the preparation of all the heights of the CSR Wide Neck ø 4.20 mm implants up to the relative laser marking.

Important warning
The insertion of CSR implants with H 6.50 mm must be completed with the micromotor and not with control lever TWL.

In the case of surgeries in the distal sectors or in case of poor oral opening of the patient, drills of reduced length are available, to be used without stop. For further details see page 36.



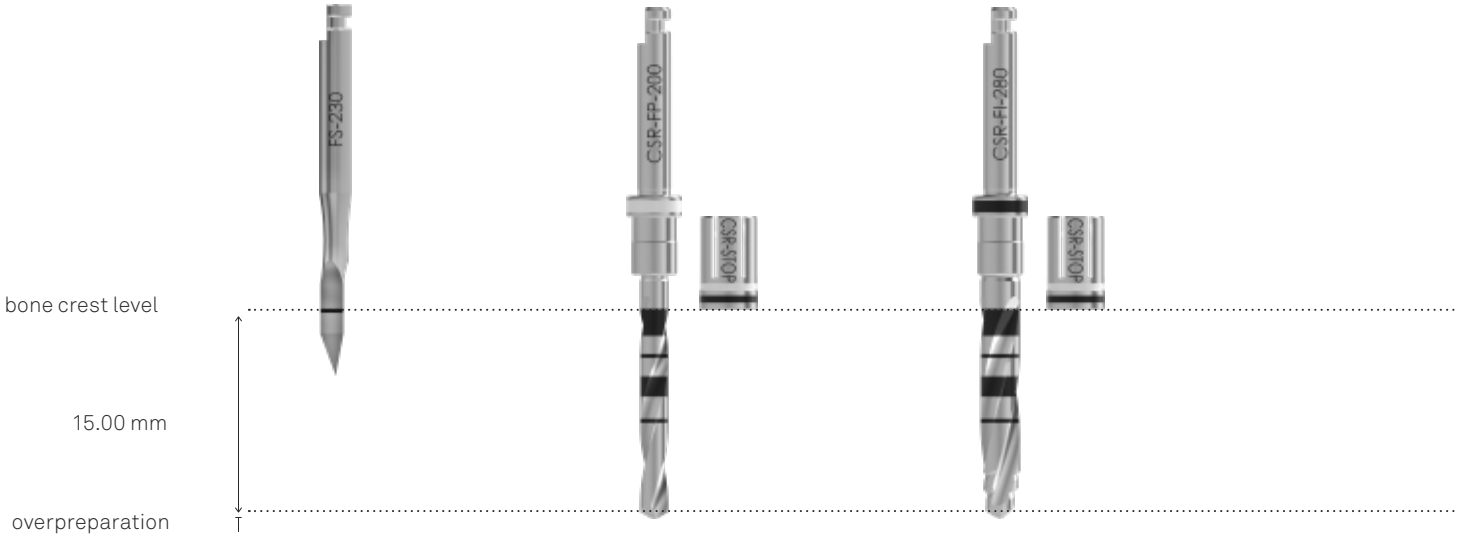
CSR-FF-320	CSR-FF-360	CSR-FC-420	EASYC4-EX230-CA
1.100 rpm	900 rpm	1.100 rpm	30 rpm
1.100 rpm	900 rpm	1.100 rpm	30 rpm
900 rpm	900 rpm	-	30 rpm
osteotome*	osteotome*	-	30 rpm

***Important note**: For implants with H 18.00 mm, preparation must be done without the aid of the stop for the entire length of the working part of the drill (the wider end of the drill serves as a stop and therefore acts as a safety stop).*

** All the osteotomes have to be used at the reference notch of the implant to be inserted.*
For more details, please refer to page 38.

Surgical sequence for CSR Reduced Neck ø 4.20 mm implants

The graphic sequence refers to implants with ø 4.20 mm and H 15.00 mm. The use of the stop is at the dentist's discretion. Their use is recommended, most of all in the case of poor intraoperative visibility. Please remember that the drills over-prepare the length for a measurement reported in the table on page 32 (for the pilot drill) and 34 (for the final drills).



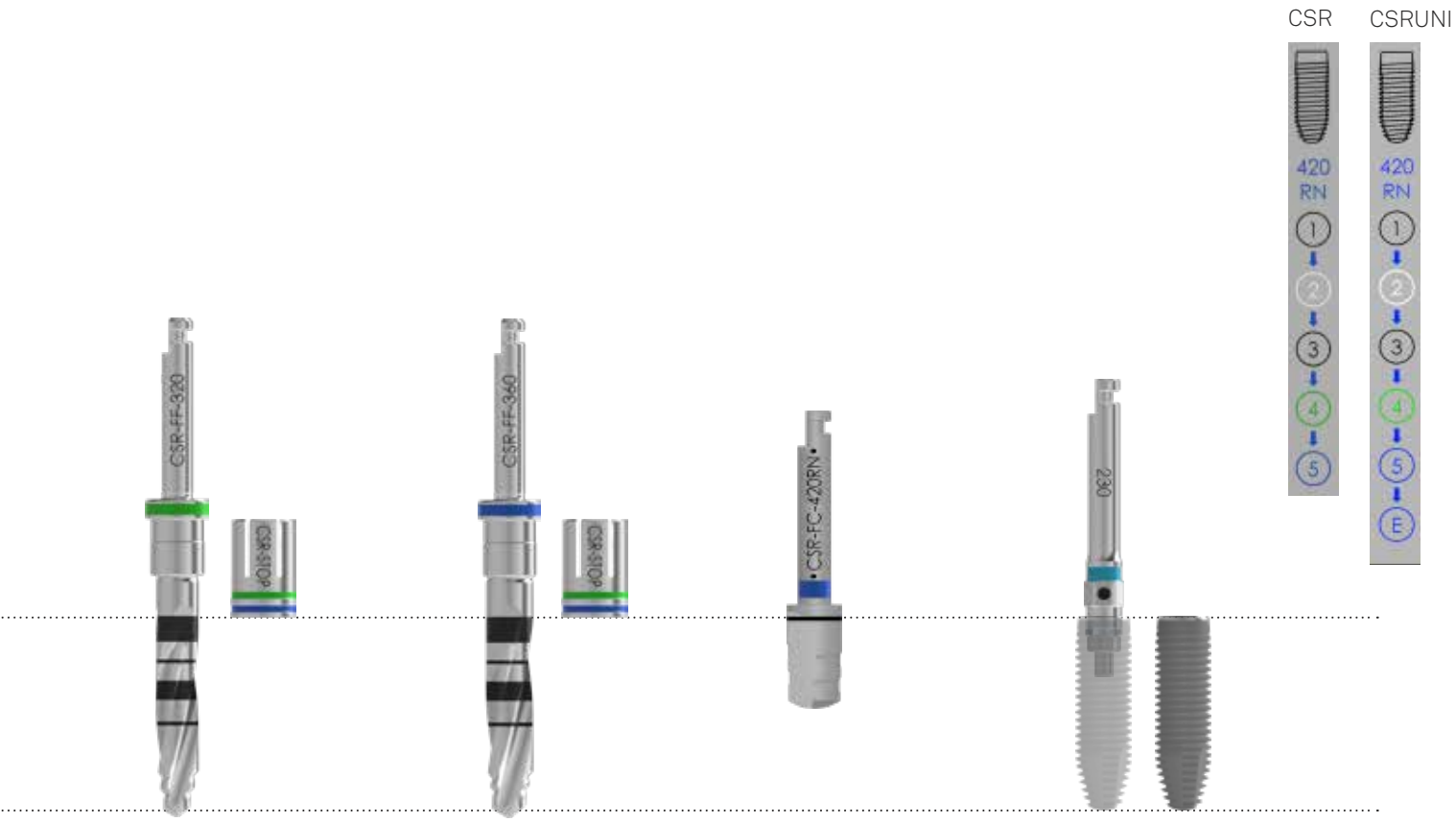
FS-230 **CSR-FP-200** **CSR-FI-280**

ø 4.20 mm	BONE D1	1.100 rpm	1.100 rpm	1.100 rpm
	BONE D2	1.100 rpm	1.100 rpm	1.100 rpm
	BONE D3	900 rpm	900 rpm	900 rpm
	BONE D4	900 rpm	900 rpm	osteotome*

Important warning
CSR drills have a cylindrical design; it can therefore be used for the preparation of all the heights of the CSR Reduced Neck ø 4.20 mm implants up to the relative laser marking.

Important warning
The insertion of CSR implants with H 6.50 mm must be completed with the micromotor and not with control lever TWL.

In the case of surgeries in the distal sectors or in case of poor oral opening of the patient, drills of reduced length are available, to be used without stop. For further details see page 38.



CSR-FF-320 | **CSR-FF-360** | **CSR-FC-420RN*** | **EASYC4-EX230-CA**

1.100 rpm	900 rpm		30 rpm
1.100 rpm	900 rpm		30 rpm
900 rpm	900 rpm		30 rpm
osteotome*	osteotome*		30 rpm

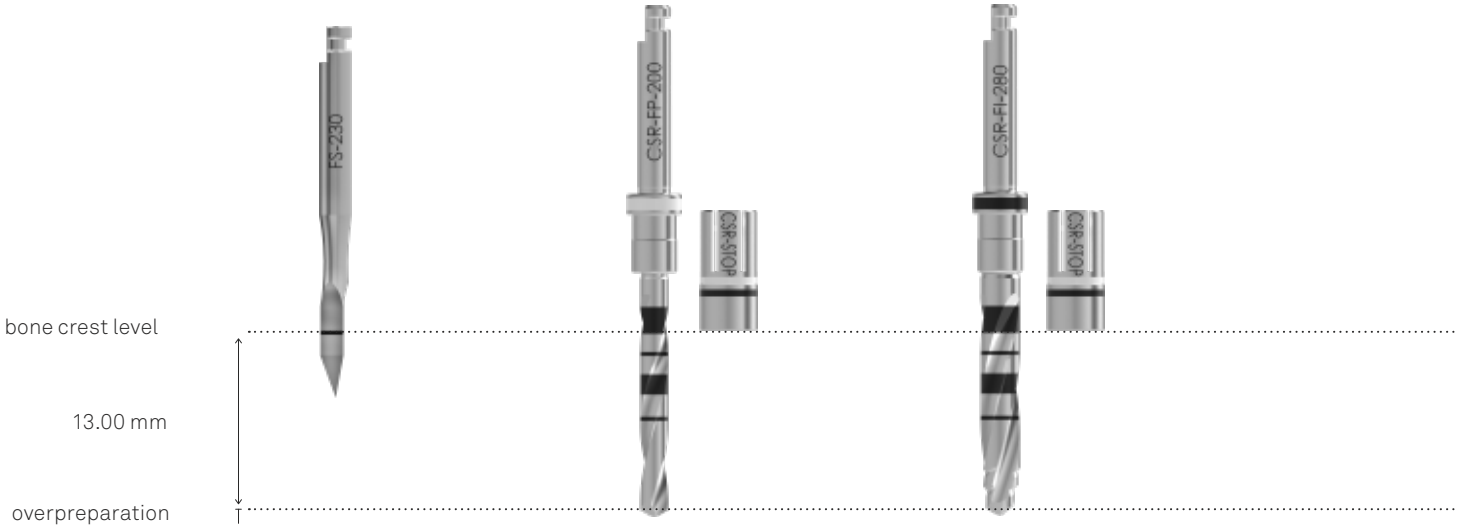
***Important note**: for implants with H 18.00 mm, preparation must be done without the aid of the stop for the entire length of the working part of the drill (the wider end of the drill serves as a stop and therefore acts as a safety stop).*

***la presente fresa da collo è in dotazione con il kit ZCSRUNI-INT o è acquistabile in vendita singola. Chi non disponesse della fresa da collo in oggetto, può continuare a preparare il sito con la fresa CSR-FF-360*

** All the osteotomes have to be used at the reference notch of the implant to be inserted. For more details, please refer to page 38.*

Surgical sequence for CSR Reduced Neck ø 5.00 mm implants

The graphic sequence refers to implants with ø 5.00 mm and H 13.00 mm. The use of the stop is at the dentist's discretion. Their use is recommended, most of all in the case of poor intraoperative visibility. Please remember that the drills over-prepare the length for a measurement reported in the table on page 32 (for the pilot drill) and 34 (for the final drills).



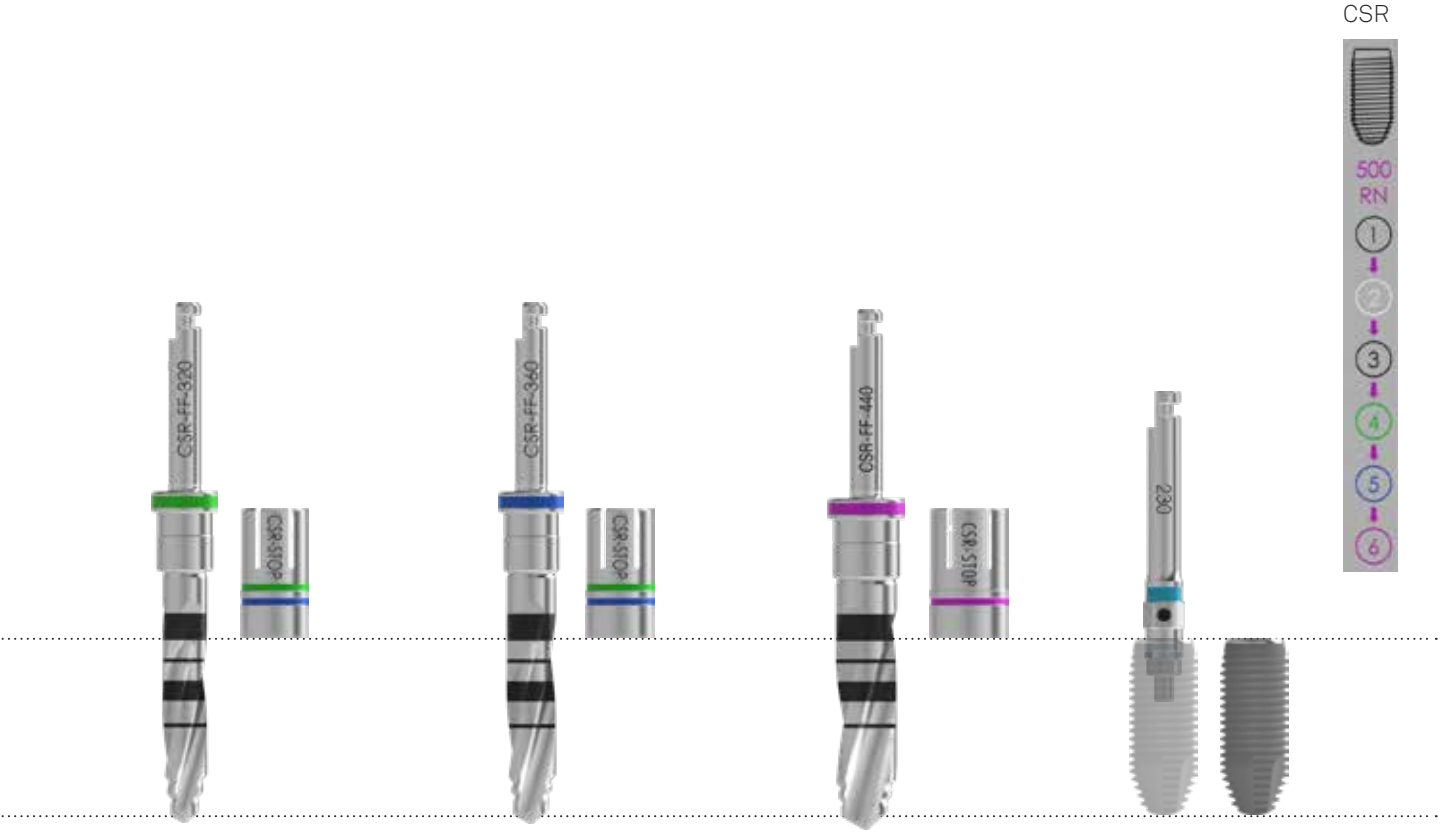
		FS-230	CSR-FP-200	CSR-FI-280
ø 5.00 mm	BONE D1	1.100 rpm	1.100 rpm	1.100 rpm
	BONE D2	1.100 rpm	1.100 rpm	1.100 rpm
	BONE D3	900 rpm	900 rpm	900 rpm
	BONE D4	900 rpm	900 rpm	osteotome*

Important warning
CSR drills have a cylindrical design; it can therefore be used for the preparation of all the heights of the CSR Reduced Neck ø 5.00 mm implants up to the relative laser marking.

Important warning
The insertion of CSR implants with H 6.50 mm must be completed with the micromotor and not with control lever TWL.

In the case of surgeries in the distal sectors or in case of poor oral opening of the patient, drills of reduced length are available, to be used without stop. For further details see page 36.

CSR



CSR-FF-320	CSR-FF-360	CSR-FF-440	EASYC4-EX230-CA
1.100 rpm	1.100 rpm	900 rpm	30 rpm
1.100 rpm	1.100 rpm	900 rpm	30 rpm
900 rpm	900 rpm	900 rpm	30 rpm
osteotome*	osteotome*	osteotome*	30 rpm

** All the osteotomes have to be used at the reference notch of the implant to be inserted.*

For more details, please refer to page 38.

Surgical sequence for CSR RF SL implants

Surgical sequence for CSR RF SL implants height 8.50 mm

The graphic sequence refers to implants with ø 5.00 mm. For the other diameters use only the drills indicated in the individual tables. The use of the STOP is at the dentist's discretion. However, its use is recommended, especially in cases of poor intra-operative visibility.

FS-230 **CSR-FP-200** **SE-FK250** **SH-FK380-085**

ø 3.80 mm	**VS-ZT-380SL-085**		use up to: marking 8.50 mm	use up to: marking 8.50 mm	
	BONE D1	1.100 rpm	1.100 rpm	1.100 rpm	900 rpm
	BONE D2	1.100 rpm	1.100 rpm	1.100 rpm	900 rpm
	BONE D3	900 rpm	900 rpm	900 rpm	800 rpm
	BONE D4	900 rpm	osteotome	-	-

ø 4.25 mm	**VS-ZT-425SL-085**				
	BONE D1	1.100 rpm	1.100 rpm	1.100 rpm	900 rpm
	BONE D2	1.100 rpm	1.100 rpm	1.100 rpm	900 rpm
	BONE D3	900 rpm	900 rpm	900 rpm	800 rpm
	BONE D4	900 rpm	osteotome	-	-

ø 5.00 mm	**VS-ZT-500SL-085**				
	BONE D1	1.100 rpm	1.100 rpm	1.100 rpm	900 rpm
	BONE D2	1.100 rpm	1.100 rpm	1.100 rpm	900 rpm
	BONE D3	900 rpm	900 rpm	900 rpm	800 rpm
	BONE D4	900 rpm	osteotome	-	-

***Please note**: to prepare the surgical site, use the ZCSRRF-INT surgical kit.*

CSR RF

SH-FK425-085	SH-FK500-085	See chart below	EASYC4-EX230-CA
		50 Ncm max	50 Ncm max
-	-	**SH-MS-380-CA** (20 rpm)	20 rpm
-	-	-	20 rpm
-	-	-	20 rpm
-	-	-	20 rpm

900 rpm	-	**SH-MS-425-CA** (20 rpm)	20 rpm
900 rpm	-	-	20 rpm
800 rpm	-	-	20 rpm
-	-	-	20 rpm

900 rpm	900 rpm	**SH-MS-500-CA**(20 rpm)	20 rpm
900 rpm	900 rpm	-	20 rpm
800 rpm	800 rpm	-	20 rpm
-	-	-	20 rpm

Surgical sequence for CSR RF SL implants height 10.00 mm

The graphic sequence refers to implants with ø 5.00 mm. For the other diameters use only the drills indicated in the individual tables. The use of the STOP is at the dentist's discretion. However, its use is recommended, especially in cases of poor intra-operative visibility.

FS-230 **CSR-FP-200** **SE-FK250** **SH-FK380-100**

ø 3.80 mm	**VS-ZT-380SL-100**		use up to: marking 10.00 mm	use up to: marking 10.00 mm	
	BONE D1	1.100 rpm	1.100 rpm	1.100 rpm	900 rpm
	BONE D2	1.100 rpm	1.100 rpm	1.100 rpm	900 rpm
	BONE D3	900 rpm	900 rpm	900 rpm	800 rpm
	BONE D4	900 rpm	osteotome	-	-

ø 4.25 mm	**VS-ZT-425SL-100**				
	BONE D1	1.100 rpm	1.100 rpm	1.100 rpm	900 rpm
	BONE D2	1.100 rpm	1.100 rpm	1.100 rpm	900 rpm
	BONE D3	900 rpm	900 rpm	900 rpm	800 rpm
	BONE D4	900 rpm	osteotome	-	-

ø 5.00 mm	**VS-ZT-500SL-100**				
	BONE D1	1.100 rpm	1.100 rpm	1.100 rpm	900 rpm
	BONE D2	1.100 rpm	1.100 rpm	1.100 rpm	900 rpm
	BONE D3	900 rpm	900 rpm	900 rpm	800 rpm
	BONE D4	900 rpm	osteotome	-	-

***Please note**: to prepare the surgical site, use the ZCSRRF-INT surgical kit.*

CSR RF

SH-FK425-100 | **SH-FK500-100** | **See chart below** | **EASYC4-EX230-CA**

		50 Ncm max	50 Ncm max
-	-	**SH-MS-380-CA**(20 rpm)	20 rpm
-	-	-	20 rpm
-	-	-	20 rpm
-	-	-	20 rpm

900 rpm	-	**SH-MS-425-CA** (20 rpm)	20 rpm
900 rpm	-	-	20 rpm
800 rpm	-	-	20 rpm
-	-	-	20 rpm

900 rpm	900 rpm	**SH-MS-500-CA** (20 rpm)	20 rpm
900 rpm	900 rpm	-	20 rpm
800 rpm	800 rpm	-	20 rpm
-	-	-	20 rpm

Surgical sequence for CSR RF SL implants height 11.50 mm

The graphic sequence refers to implants with ø 5.00 mm. For the other diameters use only the drills indicated in the individual tables. The use of the STOP is at the dentist's discretion. However, its use is recommended, especially in cases of poor intra-operative visibility.

FS-230 **CSR-FP-200** **SE-FK250** **SH-FK380-115**

ø 3.80 mm	**VS-ZT-380SL-115**		use up to: marking 11.50 mm	use up to: marking 11.50 mm	
	BONE D1	1.100 rpm	1.100 rpm	1.100 rpm	900 rpm
	BONE D2	1.100 rpm	1.100 rpm	1.100 rpm	900 rpm
	BONE D3	900 rpm	900 rpm	900 rpm	800 rpm
	BONE D4	900 rpm	osteotome	-	-

ø 4.25 mm	**VS-ZT-425SL-115**				
	BONE D1	1.100 rpm	1.100 rpm	1.100 rpm	900 rpm
	BONE D2	1.100 rpm	1.100 rpm	1.100 rpm	900 rpm
	BONE D3	900 rpm	900 rpm	900 rpm	800 rpm
	BONE D4	900 rpm	osteotome	-	-

ø 5.00 mm	**VS-ZT-500SL-115**				
	BONE D1	1.100 rpm	1.100 rpm	1.100 rpm	900 rpm
	BONE D2	1.100 rpm	1.100 rpm	1.100 rpm	900 rpm
	BONE D3	900 rpm	900 rpm	900 rpm	800 rpm
	BONE D4	900 rpm	osteotome	-	-

***Please note**: to prepare the surgical site, use the ZCSRRF-INT surgical kit.*

CSR RF

SH-FK425-115 | **SH-FK500-115** | **See chart below** | **EASYC4-EX230-CA**

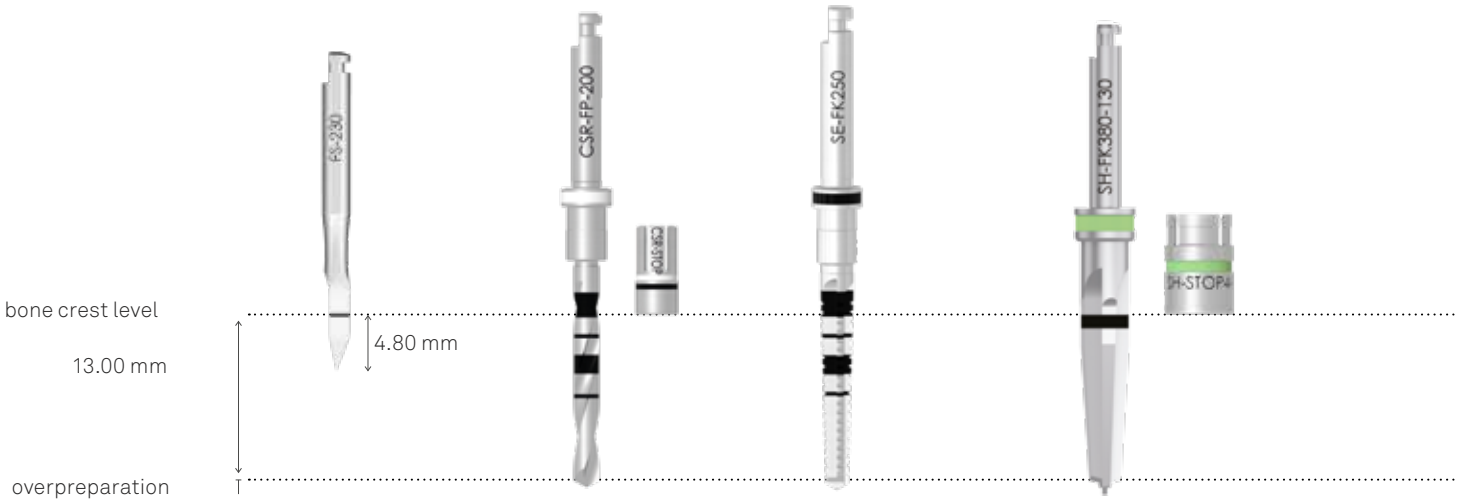
		50 Ncm max	50 Ncm max
-	-	**SH-MS-380-CA** (20 rpm)	20 rpm
-	-	-	20 rpm
-	-	-	20 rpm
-	-	-	20 rpm

900 rpm	-	**SH-MS-425-CA** (20 rpm)	20 rpm
900 rpm	-	-	20 rpm
800 rpm	-	-	20 rpm
-	-	-	20 rpm

900 rpm	900 rpm	**SH-MS-500-CA** (20 rpm)	20 rpm
900 rpm	900 rpm	-	20 rpm
800 rpm	800 rpm	-	20 rpm
-	-	-	20 rpm

Surgical sequence for CSR RF SL implants height 13.00 mm

The graphic sequence refers to implants with ø 5.00 mm. For the other diameters use only the drills indicated in the individual tables. The use of the STOP is at the dentist's discretion. However, its use is recommended, especially in cases of poor intra-operative visibility.



		FS-230	CSR-FP-200	SE-FK250	SH-FK380-130
ø 3.80 mm	**VS-ZT-380SL-130**		use up to: marking 13.00 mm	use up to: marking 13.00 mm	
	BONE D1	1.100 rpm	1.100 rpm	1.100 rpm	900 rpm
	BONE D2	1.100 rpm	1.100 rpm	1.100 rpm	900 rpm
	BONE D3	900 rpm	900 rpm	900 rpm	800 rpm
	BONE D4	900 rpm	osteotome	-	-
ø 4.25 mm	**VS-ZT-425SL-130**				
	BONE D1	1.100 rpm	1.100 rpm	1.100 rpm	900 rpm
	BONE D2	1.100 rpm	1.100 rpm	1.100 rpm	900 rpm
	BONE D3	900 rpm	900 rpm	900 rpm	800 rpm
	BONE D4	900 rpm	osteotome	-	-
ø 5.00 mm	**VS-ZT-500SL-130**				
	BONE D1	1.100 rpm	1.100 rpm	1.100 rpm	900 rpm
	BONE D2	1.100 rpm	1.100 rpm	1.100 rpm	900 rpm
	BONE D3	900 rpm	900 rpm	900 rpm	800 rpm
	BONE D4	900 rpm	osteotome	-	-

***Please note**: to prepare the surgical site, use the ZCSRRF-INT surgical kit.*

CSR RF

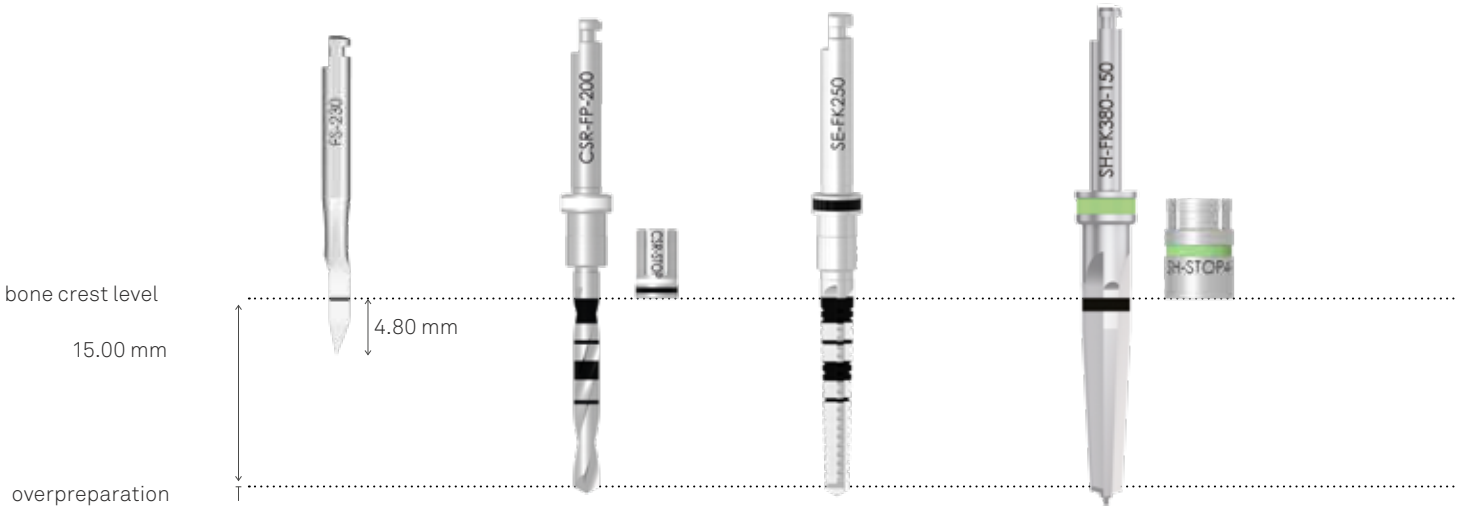
SH-FK425-130	SH-FK500-130	See chart below	EASYC4-EX230-CA
		50 Ncm max	50 Ncm max
-	-	**SH-MS-380-CA** (20 rpm)	20 rpm
-	-	-	20 rpm
-	-	-	20 rpm
-	-	-	20 rpm

900 rpm	-	**SH-MS-425-CA** (20 rpm)	20 rpm
900 rpm	-	-	20 rpm
800 rpm	-	-	20 rpm
-	-	-	20 rpm

900 rpm	900 rpm	**SH-MS-500-CA** (20 rpm)	20 rpm
900 rpm	900 rpm	-	20 rpm
800 rpm	800 rpm	-	20 rpm
-	-	-	20 rpm

Surgical sequence for CSR RF SL implants height 15.00 mm

The graphic sequence refers to implants with ø 5.00 mm. For the other diameters use only the drills indicated in the individual tables. The use of the STOP is at the dentist's discretion. However, its use is recommended, especially in cases of poor intra-operative visibility.



	FS-230	CSR-FP-200	SE-FK250	SH-FK380-150
ø 3.80 mm	**VS-ZT-380SL-150**		use up to: marking 15.00 mm	use up to: marking 15.00 mm	
	BONE D1	1.100 rpm	1.100 rpm	1.100 rpm	900 rpm
	BONE D2	1.100 rpm	1.100 rpm	1.100 rpm	900 rpm
	BONE D3	900 rpm	900 rpm	900 rpm	800 rpm
	BONE D4	900 rpm	osteotome	-	-
ø 4.25 mm	**VS-ZT-425SL-150**				
	BONE D1	1.100 rpm	1.100 rpm	1.100 rpm	900 rpm
	BONE D2	1.100 rpm	1.100 rpm	1.100 rpm	900 rpm
	BONE D3	900 rpm	900 rpm	900 rpm	800 rpm
	BONE D4	900 rpm	osteotome	-	-
ø 5.00 mm	**VS-ZT-500SL-150**				
	BONE D1	1.100 rpm	1.100 rpm	1.100 rpm	900 rpm
	BONE D2	1.100 rpm	1.100 rpm	1.100 rpm	900 rpm
	BONE D3	900 rpm	900 rpm	900 rpm	800 rpm
	BONE D4	900 rpm	osteotome	-	-

***Please note**: to prepare the surgical site, use the ZCSRRF-INT surgical kit.*

CSR RF

SH-FK425-150	SH-FK500-150	See chart below	EASYC4-EX230-CA
		50 Ncm max	50 Ncm max
-	-	**SH-MS-380-CA** (20 rpm)	20 rpm
-	-	-	20 rpm
-	-	-	20 rpm
-	-	-	20 rpm

900 rpm	-	**SH-MS-425-CA** (20 rpm)	20 rpm
900 rpm	-	-	20 rpm
800 rpm	-	-	20 rpm
-	-	-	20 rpm

900 rpm	900 rpm	**SH-MS-500-CA** (20 rpm)	20 rpm
900 rpm	900 rpm	-	20 rpm
800 rpm	800 rpm	-	20 rpm
-	-	-	20 rpm

Implant insertion

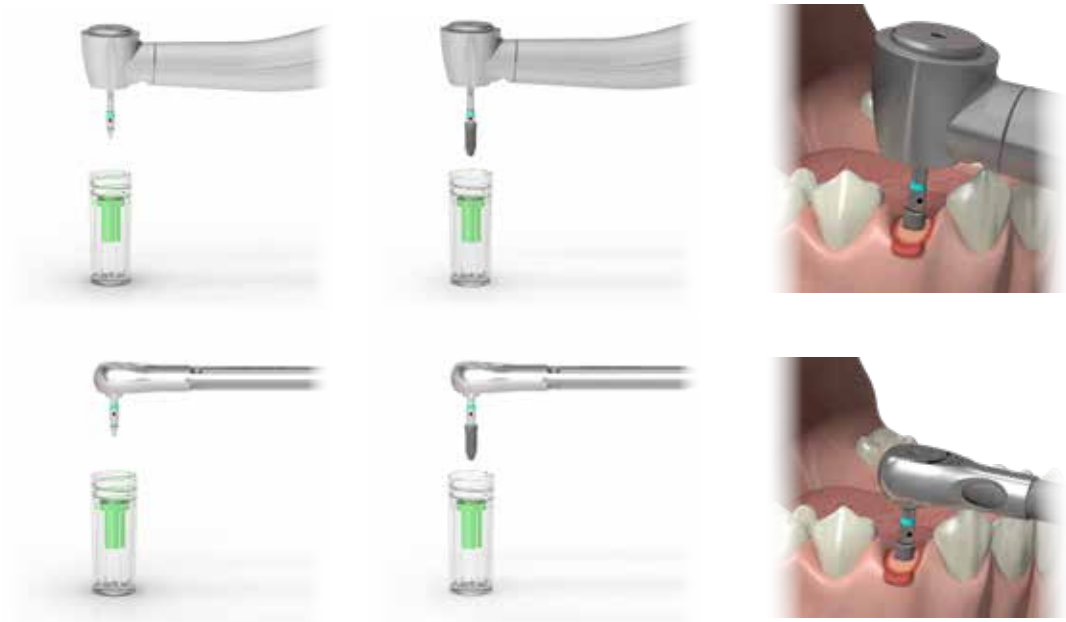
1 Use the patient label inside the pack for the patient's medical file, and apply it to the Dental Card: this will make it easier to record the patient's treatment plan and will keep a trace of the batch used.

2 Open the blister pack and place the vial inside it on a sterile surface (e.g. on a disposable towel or a sterile cloth) next to the operating area.

3 Immediately before the insertion into the oral cavity, remove the blue cap of the vial, making sure not to remove the transparent cap containing the surgical cover screw. The implant holding cylinder inside the vial and the surgical cover screw are coloured according to a colour code that allows the rapid identification of the implant diameter.

Standard procedure

When the vial is opened, the mounter is exposed with the hexagon ready to be engaged. The implant may be picked up using the dedicated Easy Insert driver and then screwed mechanically in place with the aid of a suitable surgical micromotor with torque control set at a screwing speed of 20 rpm and max torque 70 Ncm.
The driver has been tested up to 70 Ncm and has not presented any deformations or failures.
Instruments with torque control, both mechanical and normal, are regularly calibrated with a suitable calibrated instrument.



After implant insertion

Healing times
It is essential to respect the healing times recommended in implant surgery, and periodically checking the progress of osseointegration with X-rays. The preliminary healing times of an implant are influenced by the quality of the receiving bone. In the case of immediate load, consider the warnings reported on pages 4-7.
In the case of a deferred loading, in order to minimize the discomfort conditioned by the biological times for the osseointegration, the use of mobile temporary prosthesis has to be carried out with prudence, widely unloading the prosthesis.

After healing is completed, the surgical cover screws are removed from the implants. If the right angle driver is used, the surgical micromotor must be set with the following parameters: 20 rpm and torque 10 Ncm. After that, depending on the protocol adopted, proceed with the adaptation of the profiles of the tissues with a proper temporary or with proper healing abutments. It is recommended to secure the healing abutments manually or at any rate with a torque no greater than 10 Ncm.

Intraoperative removal of implants if necessary

If a previously inserted implant needs to be removed, this can be done by directly engaging the hexagonal driver connection of the implant.
Accurately clean away blood and any other residues produced during insertion from the implant socket by irrigating the site.

Insert the hexagon of the driver inside the implant connection, being very careful that the instrument is on-axis with the implant and that it completely and closely engages the internal hexagon. Use the driver BC-EX230 or BL-EX230 for CSR implants with DAT connection or BC-EX200 or BL-EX200 for CSR implants with DAT-N connection. Drivers not included in the surgical kit.

Block the head of the CRI5-KIT ratchet or of the TWL key and connect it with the hexagonal tip of the driver making sure that the laser-etched arrow on the ratchet head indicates an anticlockwise direction, and move it in this direction while keeping the driver/ratchet assembly on-axis with the index finger.
It is recommended to apply a higher torque than the one applied during the insertion phase.
Once it has been unscrewed pick up the removed implant using sterile forceps.

Cleaning, disinfection, sterilisation and storage of surgical kits and instruments

Warning! All surgical instruments for dental implants are sold in non-sterile condition. Before use, the instruments must be cleaned, disinfected and sterilised according to the following procedure validated by Sweden & Martina. These processes are to be performed before first use, and before each subsequent re-use. Repeating the processes described in this section has a minimal effect on these devices' wear and tear.

Make sure to always check the functionality of the instruments before use. Any instrument showing signs of wear should be replaced with a new device immediately. Specifically, it is recommended that the correct retention of the screwdrivers inside the engagement wells on the heads of the screws that are to be taken out and screwed in with those tools always be checked. Failure to comply with these instructions may result in cross infection and intraoperative complications.

a. Cleaning

Containers and transport to be used for cleaning have no special requirements. If automated cleaning is applied: use ultrasonic bath with a suitable cleaning solution. It is recommended that only neutral detergents be used. The concentration of the solution and the duration of the cleaning process should be in accordance with the solution manufacturer's instructions. Use demineralised water to prevent the formation of stains and marks. When draining, check that residues have been completely removed from recesses, holes, etc., in the devices. If necessary, repeat the cycle or clean manually.

If manual cleaning is performed, use a suitable neutral detergent, following the manufacturer's instructions for use. Brush the products with soft bristles under running water. Using the brush, apply the cleaning solution to all surfaces. Rinse with distilled water for at least 4 minutes. Ensure that plenty of running water flows through any holes. When cleaning drills with internal irrigation, use the pins provided with the handpieces to ensure that the irrigation holes have been thoroughly cleaned and cleared of any residual bone chips or biological tissue. After rinsing, dry the devices completely and pack them in suitable sterilisation bags. If a drying cycle is performed as part of the washing and disinfection machine cycle, do not exceed 120 °C.

b. Sterilisation

When using a vacuum autoclave, sterilise using the following procedures:

- Autoclave (Gravity-Displacement Cycles) at the temperature of 121 °C with a minimum of 30 minutes of exposure and a 15-minute drying cycle;
- Autoclave (Dynamic-Air-Removal Cycles) at the temperature of 132 °C with 4 minutes of exposure and at least a 20-minute drying cycle.

c. Storage

After sterilisation, the product should remain in the pouches used for sterilisation. The pouches should only be opened immediately prior to reuse. Sterilisation pouches are normally capable of maintaining sterility inside the pouch unless the pouch is damaged. Care should therefore be taken to not use components if the pouches in which they were stored are damaged and to re-sterilise them in new pouches before re-use. The shelf life of sterilised products in pouches should not exceed that recommended by the pouch manufacturer. The product should be stored in a cool, dry place, away from direct sunlight, and from sources of water and heat.

Cleaning, disinfection, sterilisation and storage of the CRI5-KIT torque ratchet

The processes described below are to be carried out before the first use, and before any subsequent use. Repeating the processes described in this section has a minimal effect on these devices' wear and tear. Failure to comply with these instructions may result in cross infection. Containers and transport to be used for cleaning have no special requirements. As soon as possible after each use of the wrench, place it in a container filled with a disinfectant/detergent solution and cover everything with a cloth. The purpose of this operation is to prevent that contaminants from the patient dry out, by dissolving them, and to then make cleaning easier and more effective. Completely disassemble the wrench as indicated below.

Completely unscrew the torque adjustment screw and pull out the spring inside the ratchet body handle. Do not separate the spring from the pin that acts as a stop.

Using the hexagonal bit at the base of the torque adjustment screw, unscrew and completely remove the cover fastening screw from the side marked OUT. Apply light pressure to avoid damaging the hexagonal bit.

After removing the cover, remove the two components inside the ratchet head: the notched pawl wheel and the wheel stop tooth.

For manual cleaning, mechanically clean all of the tool's external and internal surfaces with a soft bristle brush under warm water. Rinse the poorly accessible holes in the head and around the pawl wheel and wheel stop tooth by injecting hot water using a syringe without the needle. If necessary, do the same for the inside of the handle and torque adjuster. Use a suitable neutral detergent, following the manufacturer's instructions for its use. Using the brush, apply the cleaning solution to all surfaces. Rinse with distilled water for at least 4 minutes. Make sure that plenty of running water flushes through all the passages. If automated cleaning is applied: use ultrasonic bath with a suitable cleaning solution.
It is recommended that only neutral detergents be used. The concentration of the solution and the duration of the cleaning process should be in accordance with the solution manufacturer's instructions. Use demineralised water to prevent the formation of stains and marks. During this cycle, avoid that the parts make contact with one another as this can cause deterioration of the machined surfaces, and a resulting loss of torque measurement accuracy. When draining, check that residues have been completely removed from recesses, holes, etc., in the devices. If necessary, repeat the cycle or clean manually.
Observation: Blood residues or other deposits reduce the effectiveness of sterilisation, which is why it is important to thoroughly clean all the parts. During all cleaning cycles, avoid that the liquids spurt or splash and work with appropriate personal protection. Avoid contact between this instrument and other nickel-plated instruments.
The parts must be reassembled before sterilisation. Dry the parts and lubricate the functional areas moderately and reassemble the wrench as shown in the figures below.
Excess lubricant will cause it to come up on the instrument's surface during sterilisation.
Use only the lubricant supplied.

After having lubricated the parts shown in the figures, assemble the two elements that make up the ratchet head in the following sequence: toothed pawl wheel and then the wheel stop tooth.

Lubricate the areas that make contact between the pawl wheel tooth and the wheel stop tooth pin.

Once parts 2 and 3 have been lubricated and assembled in the ratchet head, position the cover and rotate the ratchet body from the OUT side. Tighten the screw with the hexagonal tip of the torque adjustment screw.

Lubricate the spring inside the ratchet handle as shown in the figure. Assemble the torque adjustment screw, checking that the instrument is working properly by manually activating the pawl wheel.

Sterilization: Before sterilisation, the wrench must be fully assembled and adjusted to its minimum torque. The medical device must undergo steam sterilisation.
Recommended cycle: • 3 (4 for the US market) pre-vacuums,
• 18 minutes at 134°C / 273°F at 2 bars and drying for 20 minutes.
We recommend the use of devices fitted with vacuum pumps (type B) to reduce the risk of air pockets forming. This recommendation is particularly important for hollow tools and to guarantee perfect drying. The hot air steriliser is not recommended as it can accelerate the ageing of the spring and consequently cause modification of the torque.
This procedure is essential to maintain the precision of the instrument within a tolerance range of ± 3.5 Ncm. Operate the torque and insertion mechanism to check its correct operation.
Remove all traces of lubricant from the external surfaces of the key. Place the device in a suitable sterilization bag. Disassembly and reassembly operations must be carried out following the instructions provided.

Cleaning, disinfection, sterilization and storage of the TWL torque wrench

The TWL torque wrench and its screwdriver are produced by Elos Medtech Pinol A/S.
For the cleaning, disinfection, sterilization and storage processes please refer to the producer's indications at the following link https://elosmedtech.com/IFU/

Maintenance of the prosthesis

Some implant restoration-related complications are reported in the literature. These complications may lead to a loss of osseointegration and implant failure. Correct maintenance by the patient, satisfactory home dental hygiene and regular sessions with a professional hygienist increase the device service life. Complications such as the unscrewing of the screws securing the prostheses to implants or bone reabsorption causing the loss of the gingival support surface in the case of removable prostheses can be easily prevented with regular check-ups. If post or prostheses screws need to be tightened, this must be done by the practitioner, using suitable instruments with control over tightening torque.

The calibration of these instrument should be checked regularly. In the event of complications of this kind, patients should contact their practitioner as soon as possible, so that the necessary work to restore correct orthodontic functionality can be carried out. Delays in consulting the practitioner may lead firstly to the fracture of the connection screw or of the prosthesis, and secondly to the loss of the implant, thereby compromising rehabilitation results. Practitioners must make this clear to their patients. Complications may be biological (impaired integration) or mechanical (fracture of a component due to excessive loads). If there are no complications, duration depends on the devices and the whole restoration system depends on mechanical resistance in relation to the fatigue accumulated by the device.

Responsibility for defective products and warranty terms

Optimal patient care and attention to their needs are necessary conditions for the success of implantation procedures and, therefore, patients must be carefully selected and informed of the associated risks and obligations connected with the treatment and encouraged to cooperate with the dentist in the interests of the success of the same treatment. The patient must, therefore, maintain good hygiene, which should be confirmed during check-up appointments, guaranteed and recorded and the practitioners instructions and orders shall be observed. The warranty only covers manufacturing defects as long as the faulty piece is identified by the article code and batch number and returned within the validity period of the warranty. The warranty terms are available on the website www.sweden-martina.com.

Disposal

If removed from the oral cavity due to biological or mechanical failure, the implant fixtures must be disposed of as biological waste. The surgical instruments are made of small components, mostly metal. They may therefore be disposed of as metal wastes. If dirty, they must be disposed of as biological wastes. In general, the local regulations apply.

Cleaning/sterilisation/storage of prosthetic components and instruments

Warning! All surgical instruments for dental implants are sold in non-sterile condition. Before use, the instruments must be cleaned, disinfected and sterilised according to the following procedure validated by Sweden & Martina. These processes are to be performed before first use, and before each subsequent re-use.
Repeating the processes described in this section has a minimal effect on these devices' wear and tear.

Make sure to always check the functionality of the instruments before use. Any instrument showing signs of wear should be replaced with a new device immediately. Specifically, it is recommended that the correct retention of the screwdrivers inside the engagement wells on the heads of the screws that are to be taken out and screwed in with those tools always be checked. Failure to comply with these instructions may result in cross infection and intraoperative complications.

a.Cleaning
Containers and transport to be used for cleaning have no special requirements. If automated cleaning is applied: use ultrasonic bath with a suitable cleaning solution. It is recommended that only neutral detergents be used. The concentration of the solution and the duration of the cleaning process should be in accordance with the solution manufacturer's instructions. Use demineralised water to prevent the formation of stains and marks.
When draining, check that residues have been completely removed from recesses, holes, etc., in the devices. If necessary, repeat the cycle or clean manually.

If manual cleaning is performed, use a suitable neutral detergent, following the manufacturer's instructions for use. Brush the products with soft bristles under running water. Using the brush, apply the cleaning solution to all surfaces. Rinse with distilled water for at least 4 minutes.
Ensure that plenty of running water flows through any holes. When cleaning drills with internal irrigation, use the pins provided with the handpieces to ensure that the irrigation holes have been thoroughly cleaned and cleared of any residual bone chips or biological tissue. After rinsing, dry the devices completely and pack them in suitable sterilisation bags. If a drying cycle is performed as part of the washing and disinfection machine cycle, do not exceed 120 °C.

b.Sterilisation
When using a vacuum autoclave, sterilise using the following procedures:
- autoclave (Gravity-Displacement Cycles) at the temperature of 121 °C with a minimum of 30 minutes of exposure and a 15-minute drying cycle;
- autoclave (Dynamic-Air-Removal Cycles) at the temperature of 132 °C with 4 minutes of exposure and at least a 20-minute drying cycle.

c. Storage
After sterilisation, the product should remain in the pouches used for sterilisation. The pouches should only be opened immediately prior to reuse. Sterilisation pouches are normally capable of maintaining sterility inside the pouch unless the pouch is damaged. Care should therefore be taken to not use components if the pouches in which they were stored are damaged and to re-sterilise them in new pouches before re-use. The shelf life of sterilised products in pouches should not exceed that recommended by the pouch manufacturer. The product should be stored in a cool, dry place, away from direct sunlight, and from sources of water and heat.

Please visit the website **https://www.sweden-martina.com/en_gb/ifu/** for more information on:
- material composition;
- maintenance, cleaning/sterilization/storage of prosthetic components, surgical instrumentation and the
- CRI5-KIT torque control ratchet,
- legend of symbols used in packaging.

THE LAST REVISION DATE OF THIS MANUAL IS JULY 2022.

The design and manufacture of the devices covered by this manual has been undertaken in compliance with the most up-to-date directives and harmonised standards with regard to materials used, manufacturing processes, sterilisation, information provided and packaging.

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The implants, standard prosthetic components and surgical instruments contained in this catalogue are Medical devices and are manufactured by Sweden & Martina S.p.A., except for: the torque wrench with control lever TWL and related adaptor which are medical devices manufactured by Elos Medtch Pinol A/S, Engvej 33, 3330 Gorlose, Denmark. They conform to the ISO 9001 and ISO 13485 standards and are certified with the CE Mark in compliance with Regulation (EU) Medical Devices n.2017/745.
The Sweden & Martina plant manufactures Medical Devices in compliance with the CGMPs in force in the USA and in other countries worldwide.