LEONE 2.9 IMPLANT SURGICAL PROCEDURE

Please consult *Disclaimer, Treatment Planning and Preoperative Exams* on page 52 of Leone Implantology Product Catalogue 2015.

LEONE 2.9 IMPLANT SELECTION

LEONE 2.9 Implants present a maximum diameter of just 2.9 mm and facilitate implant therapy in unfavourable conditions where less invasiveness is requested. They are mainly recommended for narrow ridges and for limited interdental spaces in the anterior region, more specifically for upper lateral incisors and lower lateral and central incisors.
The conical-cylindrical design is suitable for cases with very narrow spaces; at the same time the thread profile has an increasing height thanks to the progressive reduction of the implant core diameter, assuring an optimal insertion torque and an excellent primary stability.

The number and dimensions (diameter and length) of the implants to be seated are generally determined by the following factors:
1. amount of bone available
2. characteristics of the implant site
3. masticatory load
4. aesthetic results
5. type of the prosthetic restoration
6. type of the surgical procedure followed

Further and particular single situations must be evaluated by the clinician.

A template Cat. 156-2003-05 is available showing LEONE 2.9 implants in actual dimensions, with dimensions increased by 10% and increased by 25%, to match possible distortions created by the instrument for radiographic examination (CBCT, panoramic radiograph and teleradiography). To determine exactly the distortion introduced by the diagnostic instrument, we recommend to use X-ray reference spheres of known diameter. Superimpose the template to the radiograph in order to select the implant in relation to the quantity of bone available.

*Small diameter implants are **not** recommended for the posterior region.*
Do not place the LEONE implants above the level of the alveolar crest.

The LEONE implant system is characterized by a high mechanical resistance validated through fatigue strength testing according to the ISO 14801 international standard, which indicates to perform testing with a cyclic loading at an angle of 30° with respect to the implant-abutment axis. Test results demonstrate for the LEONE 2.9 implant a fatigue strength of 220 N.[1]
In the literature, in comparison, it is reported that the average force generated during mastication is 145 N with inclination up to 10°.[2-3] It should also be underlined that very high masticatory forces can be generated due to many individual and prosthetic factors, such as crown height,[4] cantilever and restoration type, which locally can exceed the strength limit of the implants, especially in case of single or unsplinted implants.

[1] ISO 14801:2016 (E), Dentistry - Implants - Dynamic fatigue test for endosseous dental implants, International Organization for Standardization, Geneva, 2016
[2] Carlsson GE, Haraldson T. Functional response. In: Branemark P-I. Zarb GA, Albrektsson T. Eds. Tissue integrated prostheses. Osseointegration in clinical dentistry. Chicago: Quintessence, 1985:155-63
[3] Graf H. Occlusal forces during function. In: Proceedings of Symposium on Occlusion: Research on Form and Function. University of Michigan School of Dentistry, Ann Arbor: Rowe NH (Ed.), 1975:90–111
[4] Craig RG. Restorative dental material. 6th ed. St. Louis, C.V. Mosby, 1980

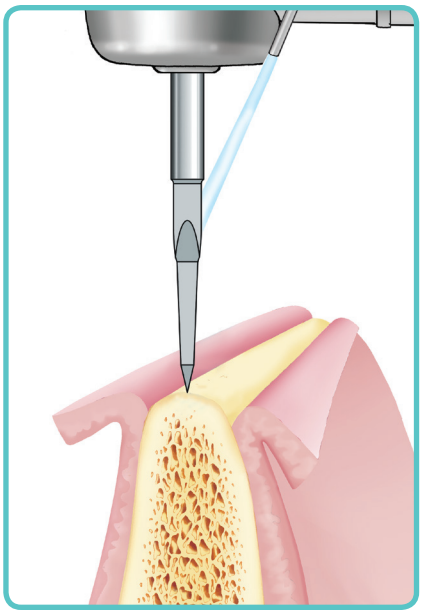
The Surgical Procedure and the Prosthetic Procedure reported were conceived with the invaluable contribution of Dr. Leonardo Targetti, whom we thank sincerely.

(Proc. 07/10-17 *Oct 26, 2017*)

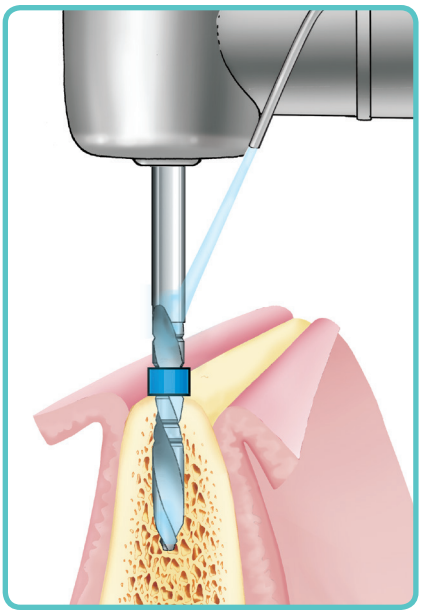
1) LEONE 2.9 IMPLANTS: PREPARATION OF THE IMPLANT SITE

The typology and the access to the surgical site shall be selected by the professional according to the clinical-morphological parameters. Schematically and with illustrative purpose only, the following steps for the preparation of the implant site are illustrated.

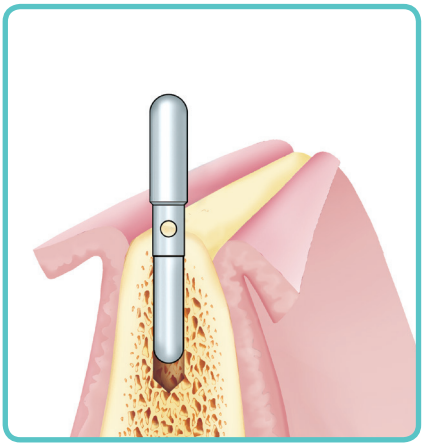
Please consult the procedure on page 55 and 56 of the Leone Implantology Product Catalogue 2015 to create the access to the bone crest and for the use of the depth indicators.



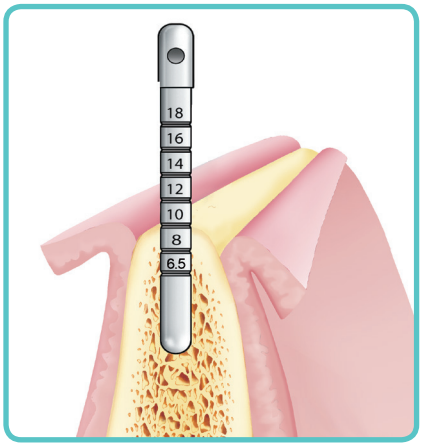
1.1 Use of the round bur or of the lance drill to mark the cortical bone for the subsequent drills.



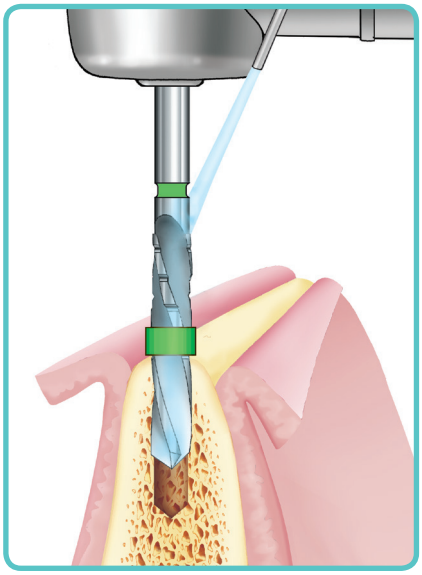
1.2 Use of the Ø 2.2 mm pilot drill: drill up to the depth mark **corresponding to the length of the selected implant** (max speed: 800 rpm with adequate irrigation).



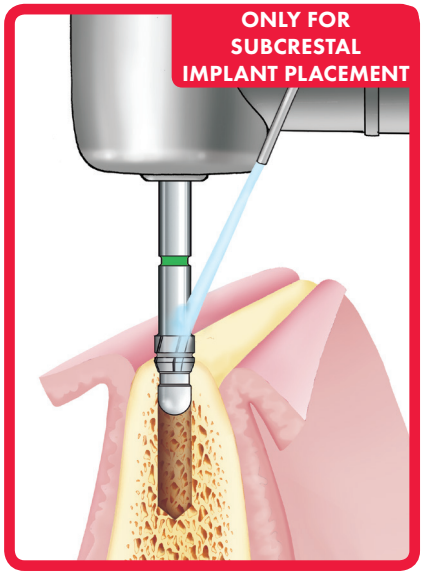
1.3 Use of paralleling pins for the control of the parallelism with natural teeth and/or other adjacent implant sites. A radiographic exam can be performed to increase accuracy in the evaluation of parallelism. The paralleling pin can also be utilized after the application of a Ø 2.8 mm twist drill, taking care to seat the pin in the implant site from the side with larger diameter. Paralleling pins present a hole for the placement of a safety leash.



1.4 Use of the depth gauge to check the depth of the newly-created implant site. The depth gauge presents a hole for the placement of a safety leash.



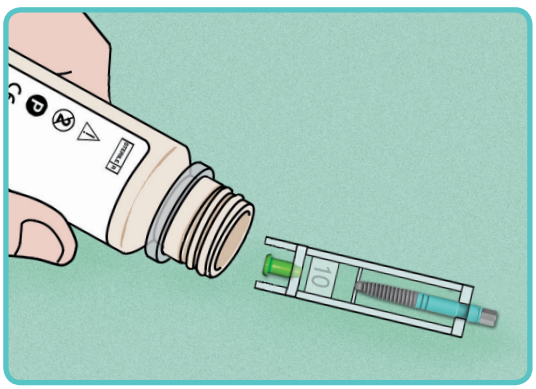
1.5 Use of the Ø 2.8 mm twist drill, short Cat. 151-2833-13 or long Cat. 151-2841-13: drill up to the reference mark corresponding to the depth of 6.5 mm (max speed: 600 rpm with adequate irrigation) for the final dimensioning. This depth is the same for all three lengths of the Ø 2.9 mm LEONE implant.



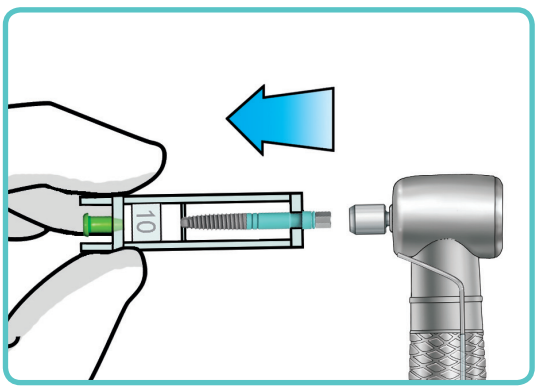
1.6 CAUTION: in the case of **subcrestal implant placement** use the Ø 3.3 mm countersink (Cat. 151-3333-24) up to the reference mark (max speed: 300 rpm with adequate irrigation) in order to permit a correct connection of the healing cap.

2) LEONE 2.9 IMPLANTS: PLACEMENT OF THE IMPLANT

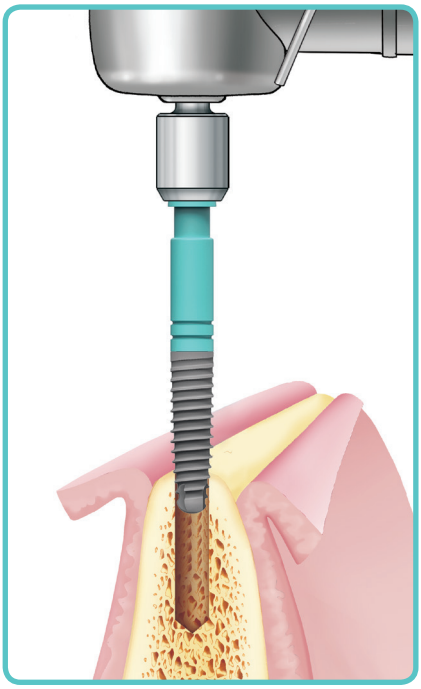
To open the packaging and the glass vial please consult pages 54 and 58 of the LEONE Implantology Product Catalogue 2015.



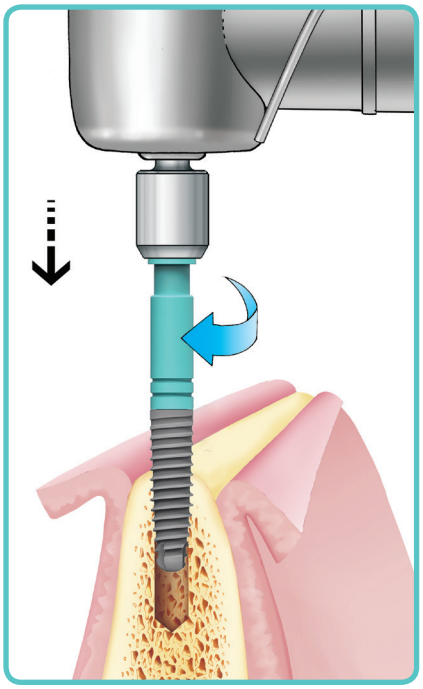
2.1 Extraction of the holder containing the implant and the cover cap on a sterile pad.



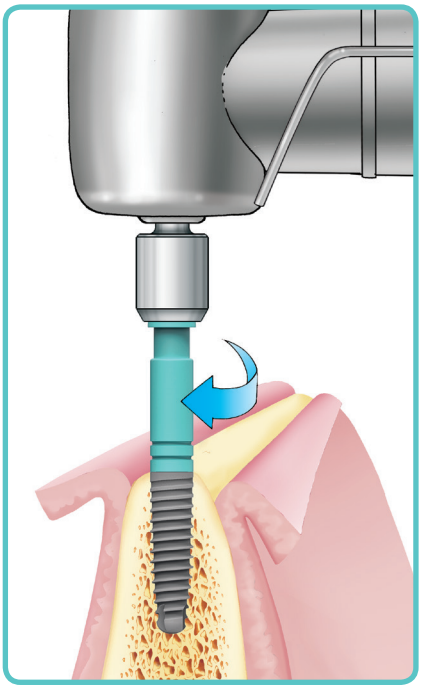
2.2 Connection of the handpiece adapter Cat. 156-1002-01 to the carrier of the implant. The use of the handpiece ensures the maintenance of the implant site axis during the implant insertion in the prepared site.



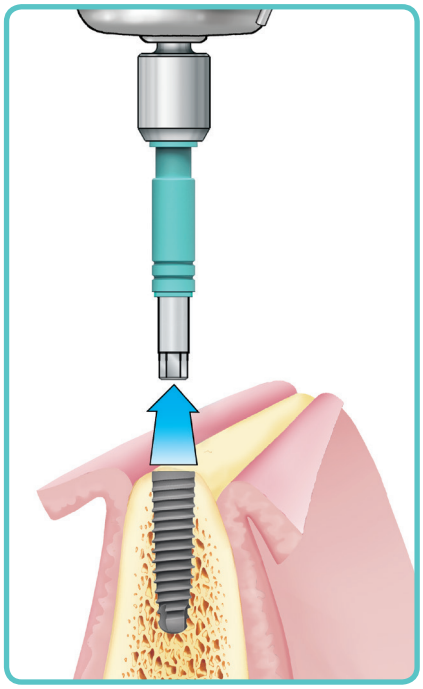
2.3 Initial seating of the implant into the implant site. If there is not enough space for a direct connection between the carrier and the handpiece adapter, the extension Cat. 156-1002-00 may be used.



2.4 Insert the implant using the dental micromotor. Set a micromotor's maximum speed to 20 rpm and a maximum torque value to 50 Ncm.

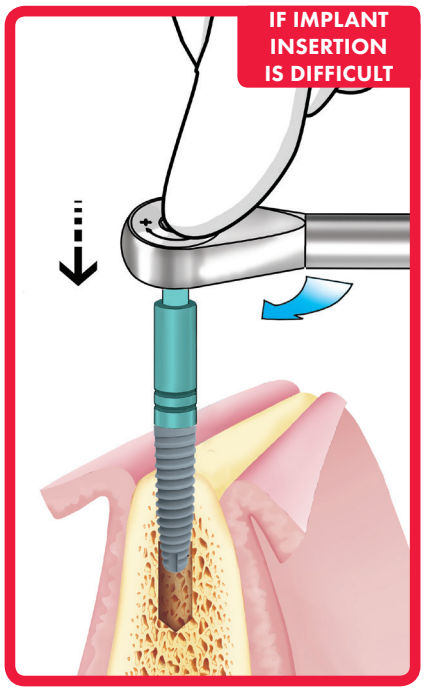


2.5 Insertion of the implant without irrigation until it is positioned at the level of the alveolar crest.

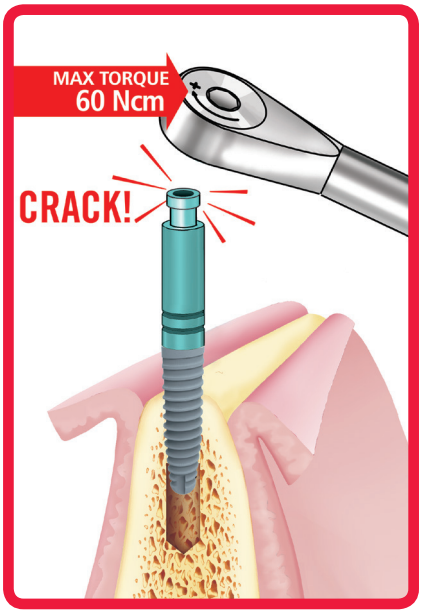


2.6 Removal of the carrier from the implant by pulling it out.

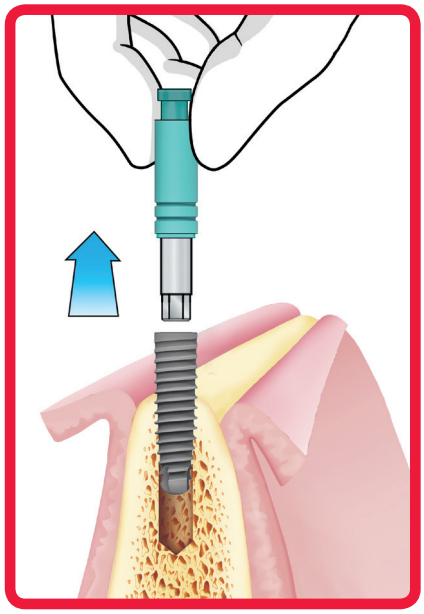
2.7 Rinsing and drying of the implant's inner side before placing the cap.



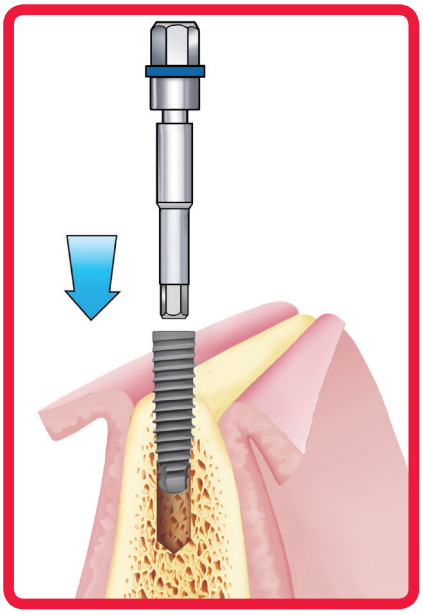
2.8 If the maximum torque value of 50 Ncm is not enough to complete the insertion of the implant, remove the handpiece adapter from the carrier and attach the ratchet (Cat. 156-1014-00). Be sure the instrument is directed in the long axis by gentle pressing the head of the instrument with a finger, avoiding bending movements.



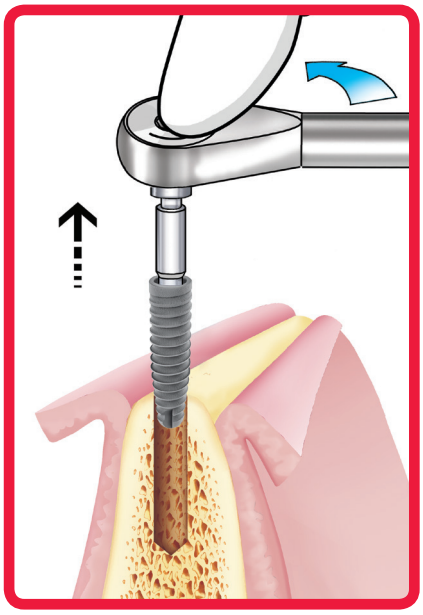
2.9 When using a ratchet, the forces exerted on the implant and on the correspondent peri-implant bone can become excessive. In this eventuality, should value of 60 Ncm be exceeded, a torque limiting device will cause a fracture above the connection with the implant; now the carrier can be removed. Note that carrier fracture is not always visually perceptible, but it is detectable by a sudden loss of functionality of the insertion instrument accompanied by a sharp crack.



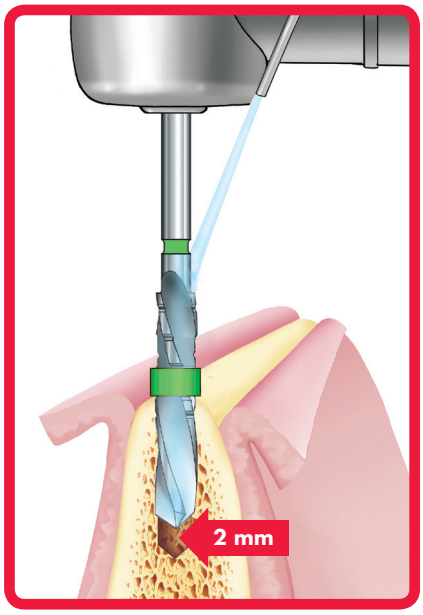
2.10 Removal of the fractured carrier.



2.11 Replace it with the universal implant driver (Cat.156-1013-00) or with the implant driver specific for the GREEN connection size (Cat.156-1033-00) which withstand an applied torque up to 140 Ncm and allow the removal of the implant.



2.12 Attach the ratchet to the driver and remove the implant from the implant site.



2.13 Reuse the green twist drill Ø 2.8 mm and drill deeper up to a maximum of 2 mm less than the implant length (e.g. implant L =10 mm, drill up to the depth mark corresponding to 8 mm). Reinsert the implant using the micromotor, repeat steps 2.3-2.6.

CAUTION: in the case of subcrestal positioning make sure that peri-implant hard tissues will not hinder the correct activation of the prosthetic component.

For the following steps: *Implant closure, Second stage surgery, Soft tissue conditioning, Prosthetic procedure, refer to the indications for the LEONE Implant System* (pages 65-72 and 81-120), taking into consideration that the LEONE 2.9 Implant has the same connection size as the Ø 3.3 mm LEONE implant (colour code GREEN).