WORLD MARKET LEADER IN DENTAL CERAMIC IMPLANTS

# VALU€

2022 Product Catalog

SDS2.1_Value

designed by

Dr. Ulrich Volz

SDS SWISS DENTAL SOLUTIONS

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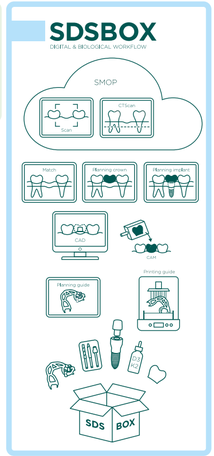
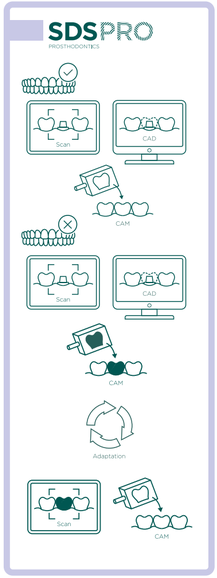
# Overview—thematic use of the SDS ceramic implant series SDS2.1_Value


The SDS2.1_Value ceramic implant series from the global market leader for ceramic implants, SDS SWISS DENTAL SOLUTIONS, is an inexpensively priced system designed to make it easier for you to get started in the field of ceramic implantology without having to do without the DYNAMIC THREAD® design, which has proven itself hundreds of thousands of times in practice.

The system is based on the two diameters of 3.8 and 4.6 mm in lengths of 8, 11 and 14 mm, and is delivered with the abutment, enabling you to use it in either a two-stage process or a one-stage process with immediate restoration. To do this, you cement the abutment intraoperatively and transform the two-piece implant into a one-piece implant. As the temporary or the later crown will be cemented on the grindable edge of the tissue-level implant, there are no limits to the surgical and esthetic possibilities.

For late and delayed immediate implant placement in particular, there is hardly a more clearly structured way of entering the field. This is especially true if you use the SDSBOX service, which does the majority of the work for you and reduces your planning to a minimum while simultaneously guaranteeing predictable results. Whether the prosthetic can be implemented directly or only via bite adjustment with a long-term temporary phase for adaptation, the Biological & Digital Workflow offered by SDS is predestined to ensure your success with ceramic implants.

# We have learned to think in terms of ceramics

## DYNAMIC THREAD® AND SDS IMPLANT ENGINEERING


For the development and production of ceramic implant series SDS2.1, the SDS team has drawn on more than 20 years' experience in the area of ceramic implants. Over the years and with tens of thousands of implants placed by our development team, we have gained an increasing understanding of the properties, possibilities and limitations of zirconia. The implants are used on a daily basis at the SDS company owner's SWISS BIOHEALTH CLINIC, and have been designed, developed and continuously improved based on practical application.

## CERVICAL PORTION OF THE IMPLANT THREAD

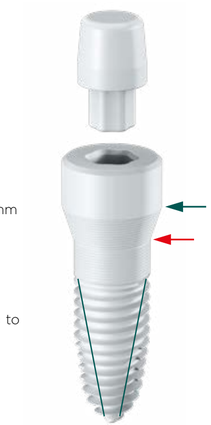
The micro thread of the upper part of the implant—in combination with the shape-congruent countersink drill for this portion of the implant—is ideally suited for cortical bone, which does not tolerate compression. At the same time, the use of the micro thread results in an increased core diameter in the area of highest implant loading, significantly improving implant stability. With tissue level insertions, the bone level is approximately at the height of the green arrow. The red arrow shows the implant portion that is exposed to the highest load according to ISO 14801 during simulated bone recession. The wide tulip forms the lower half of the abutment and supports the soft tissue thanks to an epithelial attachment to zirconia (in the sense of a desmodontal attachment). The attachment of the gingiva to the tulip of the implant results in a closing of the immunological door.

## APICAL PORTION OF THE IMPLANT THREAD

The lower area of the implant thread features a so-called Dynamic Thread®. This self-tapping thread increases primary stability and has up to 2.5 times the thread depth in the bone-compacting area, and a low thread pitch of 7 degrees compared to other implant systems. This thread design generates a very large surface area for safe osseointegration, even in difficult bone types. SDS implants featuring Dynamic Thread® ensure excellent primary stability at an insertion torque of max. 35 Ncm thanks to the combination of bone-type dependent drilling protocols and form drills adjusted correspondingly .

Upper portion:
Micro thread with 0.04 mm thread depth

Lower portion:
Dynamic Thread® with up to 2.5-fold thread depth





# Zirconia – the implant material of choice

## ZIRCONIA IS NOT DUCTILE

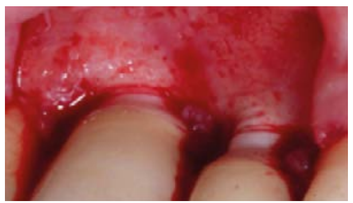
Unlike titanium, zirconia ceramics are less flexible and therefore cannot rotate into the bone as titanium implants do when chewing forces act on them. Thus, there can be thin bone tapering off along zirconia implants. We have developed new treatment protocols with A-PRF™ for many cases that can normally only be solved with bone augmentation, and can thus largely dispense with bone replacement materials. Also, a pointed alveolar ridge should never be leveled prior to implant placement, because the gingiva or papilla, respectively, will be reduced by exactly that amount.

## EPITHELIAL ATTACHMENT TO ZIRCONIA

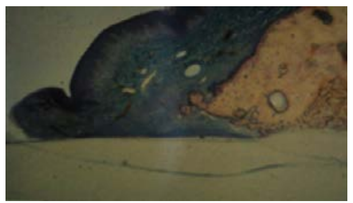
Soft tissue attaches to zirconia—Dr. Dr. Rudelt from Hamburg proved this by means of histological examinations of human material 30 years ago. This is further confirmed by current histological examinations carried out by Prof. Kniha and the Oliva family. Concepts such as "One Abutment – One Time" are also based on this characteristic. For the first time, we have at our disposal an implant material that both grows into/osseointegrates with bone and allows for soft tissue to attach. As a result, a defined implant-abutment transition is no longer necessary. The quadruple micro thread with the same pitch as the coarse thread (7 °) is only 0.04 mm deep and can come into contact with bone as well as be exposed, because the gingiva will also attach to this surface.

## CONCLUSIONS

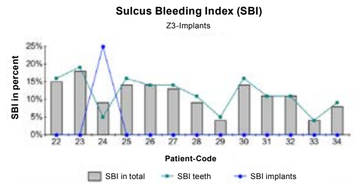
Ceramic implants should not be narrower at the implant-abutment transition, as is the case with titanium implants, but rather wider, which is what we have done at SDS, since the wide tulip stabilizes the gingiva, allowing it to attach. Ceramic implants must/should always be placed at tissue level, otherwise this valuable bond will be disrupted and destroyed. This way, soft tissue and pink esthetics are preserved to a maximum. In addition, the white color and soft tissue properties of ceramics make it unnecessary to place implants deep (at bone level). During the prosthetic restoration, the bond between epithelium and zirconia must never be destroyed with electrosurgical devices or retraction cords.



Re-entry after 3 years: the bone tapers off thinly—no circular soft tissue margin



Epithelial attachment to zirconia after an implant service life of 20 years: a solid bond




Sidharta JJ: Clinical follow-up of zirconia ceramic implants: Calcium cathode function. Dental dissertation, Medical faculty, Ulm university 2006

# SDS ceramic implant properties

## CAVE: CERAMIC DOES NOT DISSIPATE IATROGENIC HEAT

The only challenge that zirconia poses as an implant material is its poor ability to dissipate the heat generated at the surface, increasing the risk of overheating and destruction of the bone, particularly in type I bone. For this reason, when it comes to implant shapes and drilling protocols, we do not use cylindrical shapes or thread taps for shape-congruent implant preparation at SDS at all! Rather, we use the advantages of stepped implants, as they will immediately "drop" into type I bone cavities to well over 70 percent of their length, and can be fixed in their final position with just a few turns, with only the thread tips penetrating the bone to a depth of 0.15 mm.

Stepped implant: after type I bone preparation, the implant will "drop" more than halfway into the cavity.

SDS stepped implant vs. cylindrical implant

## CREATING OPTIMALLY VASCULARIZED BONE

In type III and IV bone, the Dynamic Thread® condenses the bone in the same manner as a bone condenser, thus enabling high primary stability. The Dynamic Thread®—in conjunction with our bone-type-based drilling protocol—enables you to create lacunae for stem cells in hard bone. The overextended preparation in hard bone types, in combination with the extreme thread depths of the SDS Dynamic Thread®, results in the formation a cavity for bone chips, defect blood and stem cells, accelerating callus formation by up to 30 times. The resulting lamellar bone is far better supplied with blood than bone growing apositionally, which forms as a result of direct contact between implant and bone. Positive side effect: In this void space, there is no bone-implant contact, and thus no friction with heat generation during insertion!

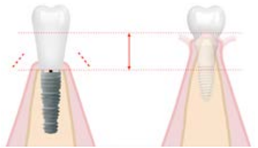
Lacunae for stem cells: The red areas are void spaces formed as a result of overextended preparation.

Healing chambers in Type I bone



## PRESERVING PAPILLA HEIGHT

In the past, titanium implants placed in narrow alveolar ridges required extensive augmentation or a removal of the alveolar ridge. This resulted in massive papilla height loss. Since with ceramic implants, the bone is allowed to taper off thinly—on the one hand—and the transition between implant and abutment is smooth—on the other—the entire papilla height can be maintained without the need for augmentation.



Papilla height loss compared: Titanium implant (left) vs. ceramic implant (right).

## SDS2.1_VALUE

The SDS2.1_Value ceramic implant relies on the proven outer contour of the SDS implants. The abutment included in the delivery is cemented and can be ground as far as the tulip area.

# SDS2.1 – The TZP-A hybrid ceramic implant system

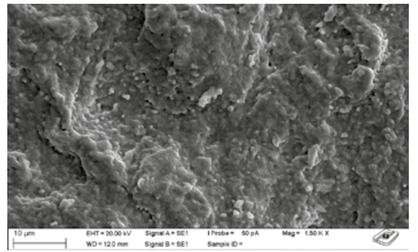
## MATERIAL

SDS2.1 implants made of TZP-A (Tetragonal Zirconia Polycrystal)—a material which is being continuously improved—achieve hitherto unknown strength values thanks to optimized and continuously further developed production processes. SDS2.1 implants have an optimized surface.

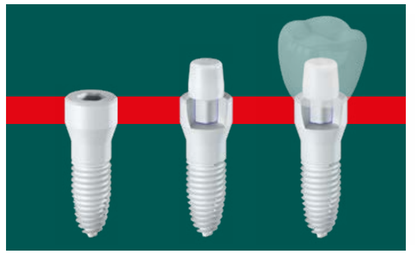
## DESIGN FEATURES

SDS2.1 implants feature the Dynamic Thread®, which is proven for all bone types. The dynamic thread performs convincingly in all situations, even in case of immediate implants placed according to the SDSACC immediate implant concept.

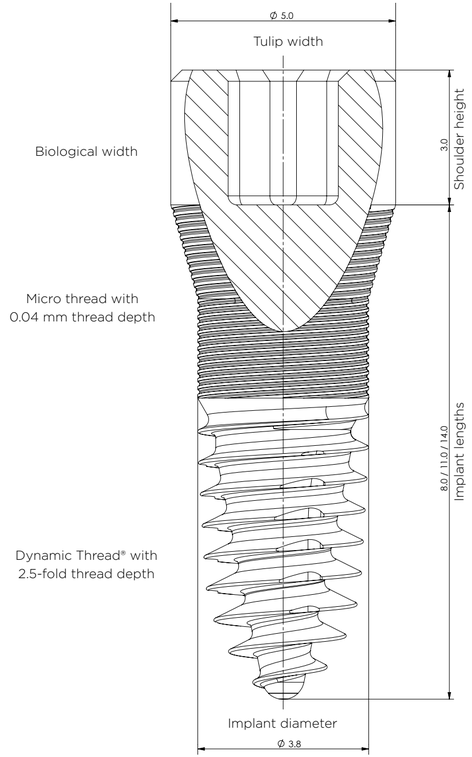
The implant can optionally be ground deep into the tulip area with a Red Ring diamond bur at max. rotation, cooled with water, and gentle application of pressure to match it to the line of the gingiva, and can then be used for cementing crown/bridge restorations without any further steps required immediately after impression taking.




Optimized surface.

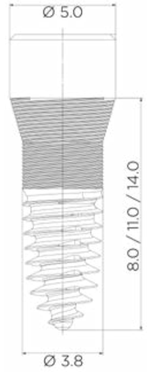


SDS2.1 Standard abutment cemented, crown cemented at tissue level.




## SDS2.1 Product overview, areas of use and indications

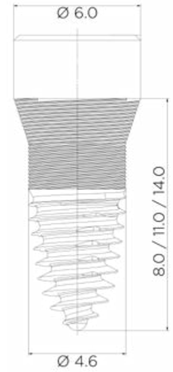
SDS2.1_3.8




| Ø Thread 3.8 mm | | |
|---|---|---|
| SDS2.1_3808 | Length in mm | 8 |
| SDS2.1_3811 | Length in mm | 11 |
| SDS2.1_3814 | Length in mm | 14 |
| Ø Tulip 5.0 mm | | |

Indication
UJ lateral incisors, first and second premolars
LJ central and lateral incisors, first and second premolars

SDS2.1_4.6



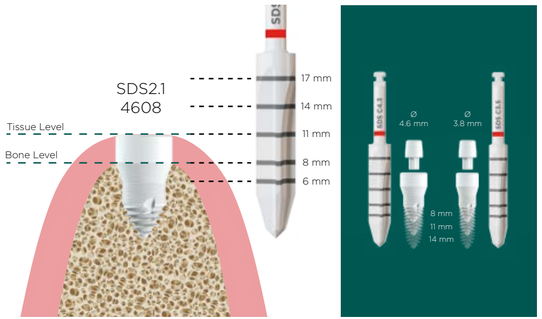

| Ø Thread 4.6 mm | | |
|---|---|---|
| SDS2.1_4608 | Length in mm | 8 |
| SDS2.1_4611 | Length in mm | 11 |
| SDS2.1_4614 | Length in mm | 14 |
| Ø Tulip 6.0 mm | | |

Indication
UJ central incisors, canines, first and second molars
LJ canines, first and second molars

SDS2.1_3808 SDS2.1_3811 SDS2.1_3814

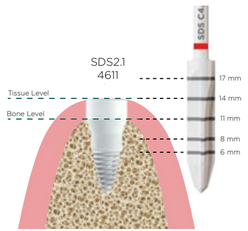
SDS2.1_4608 SDS2.1_4611 SDS2.1_4614

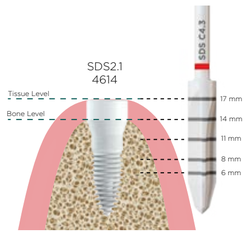
# Geometries



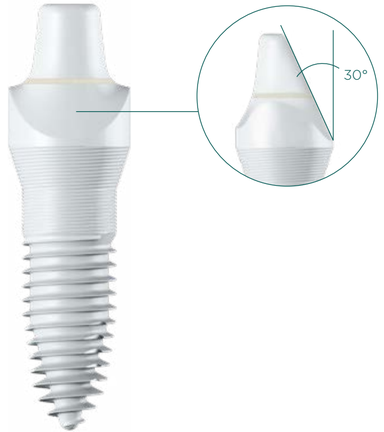







The micro thread ends coronally at the level of the length stated on the packaging (8, 11 or 14 mm). The prosthetic plateau is located exactly 3 mm above this. As a result, the implantologist can by guided by the nominal length (= bone level) or the level 3 mm above that (highest point of the papilla). The implants are available in diameters of 3.8 and 4.6 mm.

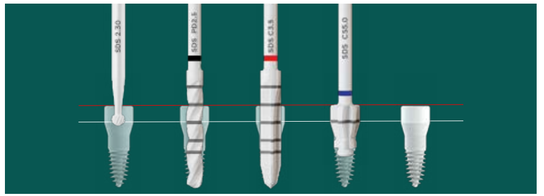



The abutment of the SDS2.1_Value can easily be ground to an angle of 30 degrees.



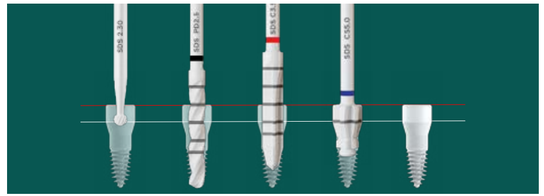
## SDS IMPLANTS 3.8 MM Ø (HARD BONE)

The implant position is marked with the 2.5-mm round bur. This is followed by the pilot bur with a diameter of 2.5 mm. The final form bur has a diameter of 3.5 mm. The last bur used is the so-called countersink, which is used to prepare the coronal portion congruently so as to avoid any compression in this area. The implant is inserted with a maximum of one rotation per second, without exceeding a torque of 35 Ncm.



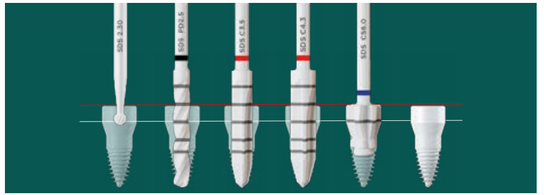
## SDS IMPLANTS 3.8 MM Ø (SOFT BONE)

If more stability needs to be generated in soft type III or IV bone, the depth of the final bur used is shortened by 3 mm, allowing the aggressive tip of the SDS implant to obtain “power” from the safe apical area without putting pressure on the cortical bone, which is susceptible to compression.



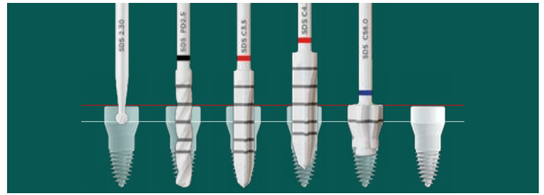
## SDS IMPLANTS WITH 4.6 MM Ø (ONE-PIECE AND TWO-PIECE)

Analogous to the drilling protocol for the 3.8 mm implant. Here, the final form bur has a diameter of 4.3 mm.



## SDS IMPLANTS WITH 4.6 MM Ø (SOFT BONE)

Analogous to in the drilling protocol for the 3.8 mm implant, except that the depth of the 4.3 mm form bur is reduced by 3 mm, not the 3.5 mm one.



# SDS Implant indications

## SDS2.1_VALUE

- Suited for all bone types, immediate and late implant placement
- Indicated for implants connected by bridge or splinting
- SDS2.1 implants must be placed at tissue level, the shoulder always remains the prosthetic plateau; the abutment must be cemented (glass ionomer cement: Ketac™Cem)!
- Fixed crown/bridge restoration (glass ionomer cement: Ketac™Cem)
- Splint multiple implants

## CONTRAINDICATIONS

- SDS2.1 implants are not suited for indications where there is a risk of excessive bending moments (bridges with more than one pontic, crown/bridge with cantilever).
- SDS2.1 implants are not approved for bone-level positioning
- SDS2.1_3.8 mm Ø implants not approved as single implant in molar or canine region
- SDS2.1_3.8 mm Ø implant not approved for bridge restoration
- Implant diameter smaller than 4.6 mm Ø for central upper incisors, canines, molars and/or bridge restorations
- Implant-supported partial or full dentures not approved
- Connection of natural tooth with implant not approved

## SDS DRILL CASE “REDUCED FOR 2.1”


| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SDS2.1 | 4.6 | 4.6 | 3.8 (4.6) | 3.8 (4.6) | 4.6 | 3.8 (4.6) | 4.6 | 4.6 | 3.8 (4.6) | 4.6 | 3.8 (4.6) | 3.8 (4.6) | 4.6 | 4.6 | SDS2.1 |
| region | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | region |
| region | 47 | 46 | 45 | 44 | 43 | 42 | 41 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | region |
| SDS2.1 | 4.6 | 4.6 | 3.8 (4.6) | 3.8 (4.6) | 4.6 | 3.8 (4.6) | 4.6 | 4.6 | 3.8 (4.6) | 4.6 | 3.8 (4.6) | 3.8 (4.6) | 4.6 | 4.6 | SDS2.1 |

(in brackets) = approved, but mostly second choice, or diameter too large, respectively | red red = recommended diameter

# Healing chambers

The special form of the SDS implants (largest thread depth of all implant systems) in combination with the overextended preparation produces what are known as “healing chambers” in the apical portion. These are void spaces which fill with callus or “de novo” bone extremely quickly (10–50 µm/day). This is far superior to autochthonous bone, as the lamellar bone promotes vascularization through rapid angiogenesis.

Thanks to the formation of these healing chambers, the overextended drilling protocol also eliminates the risk of bone overheating as the void spaces mean that relatively little of the implant surface is in contact with the autochthonous bone. Since zirconia is a thermal insulator, it cannot dissipate the frictional heat generated at the surface. As a result, the risk of bone trauma caused by overheating during the screwing-in process is elevated with systems that do not use the SDS biological drilling protocol. This would manifest itself in the form of unremitting pain within the first twelve hours after the implant insertion.

## ANIMATIONS AND FILMS TO EXPLAIN THE DRILLING PROTOCOL

Animation to demonstrate the drilling protocol
4.6 mm—hard bone

Animation to demonstrate the drilling protocol
4.6 mm—soft bone

Healing chamber through overextended preparation

Only the thread tips (green) engage with the autochthonous bone

The healing chambers fill with blood

Transformation to healthy, well vascularized lamellar bone



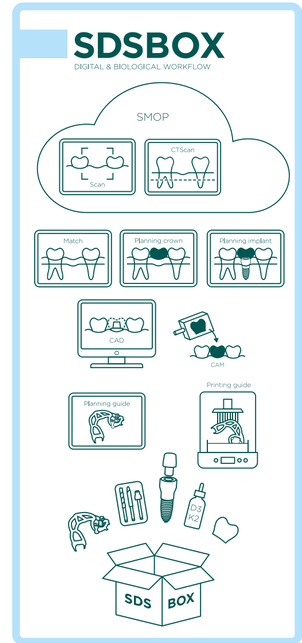
# SDS BOX

## IMPLANT PLACEMENT HAS NEVER BEEN EASIER, FASTER AND SAFER!

Start placing ceramic implants in a smart and well-organized manner, and let us support you with our SDS BOX Service, which makes your interventions even safer and sets a new benchmark in terms of “biological and digital workflow.” The SDS BOX contains everything you need for straightforward late implant placement. Let the best and most experienced dental technicians and surgeons at the SWISS BIOHEALTH CLINIC plan your intervention for you:

- Open the SDS BOX
- Remove the drilling template and place it in the required position
- Apply the ultra-precise implant bed with the included ceramic drills and tools for template-guided navigation
- Effortlessly insert the implant in the perfect position
- If needed: for immediate restorations, fix the temporary or temporaries supplied together with the BOX in the planned position using the positioning splint.
- For optimal healing: Provide your patient with vitamin D3 and K2, to be taken over a period of three months

SDS BOX was the first navigation system in the world to be accredited by the CleanImplant Foundation



# Conclusion of the healing phase

## CHECKING OPTIMAL OSSEOINTEGRATION

Ceramic implants are assimilated completely neutrally as they do not have any free electrons on their surface. For this reason, they are assimilated into the connective tissue without bone loss or signs of gingiva inflammation in around one percent of cases. This does not occur with titanium implants, which heal via a kind of chronic inflammation involving the release of the inflammation mediators TNF-α and IL-1β. As a result, their initial healing rate is approximately 1% higher than that of ceramic implants. However, with ceramic implants there is no risk of loss due to peri-implantitis (according to a consensus conference on paradontology in 2006 = 16% of titanium implants after five years).

The rare cases in which ceramic implants do not heal are therefore practically unrecognizable; they look stable, the gingiva is bright, pink and keratinized around the tulip area and there is a good percussion sound due to the hardness of the ceramic material. A very good but expensive method is to measure the ISQ with AnyCheck, which should be > 70, or the periosteum test value, which should be < 0 (i.e. negative). A considerably simpler method that is free of charge is to check with an insertion tool and a wrench.

The healed implant is re-tightened by applying a torque of 35 Ncm in a clockwise direction (i.e. by screwing in rather than out). In 99% of cases, the wrench will come loose and the implant will not turn any further. In approximately one percent of cases, the implant will turn a little further and the wrench will come loose at 35 Ncm. Due to the highly aggressive nature of the Dynamic Thread, the implant can never spin in the sense of an “eternal thread.”

After this, wait for another six weeks and then re-check the implant by again applying 35 Ncm insertion torque with the wrench. Only then should the prosthetic restoration be carried out. If the implant was already fitted with an abutment intraoperatively, of course it is no longer possible to tighten it with the insertion tool. In this case, please obtain the insertion tool 1.0 from SDS, cement it with Ketac over the cemented abutment, allow the glass ionomer cement to harden for at least seven minutes and then re-tighten. The cemented insertion tool will come loose from the abutment at exactly 35 Ncm. There is no danger that the abutment in the implant interface might break. The underlying biology is as follows: the non-inflammatory, extremely thin layer of connective tissue can differentiate itself not only in the granulation tissue but also in the bone tissue. Bone tissue emerges from connective tissue by means of mineralization.

Using an insertion tool and a wrench, the implant can be re-tightened by applying a torque of 35 Ncm in a clockwise direction (i.e. screw it in, not out).



# Cementing

A sterilizable piece of tubing is enclosed in the implant packaging for the purpose of cementing the abutment. Before the prosthetic appointment, sterilize the tube together with the abutment at 120°C on the autoclave’s gentle program. Then place the tube about 1 to 1.5 mm onto the abutment in order to be able to hold it better.

Grip the tube with a pair of diamond-coated tweezers and try it out in the interface of the SDS2.1 ceramic implant. Then fill in the cement and position the abutment with gentle turning and shaking motions in the interface.

Press on the abutment inside the tube with the tip of the tweezers and leave it for final hardening after approximately two minutes.

After at least seven minutes of hardening time, pull off the tube with the tweezers and remove excess cement with the scaler or with ultrasound.

Animation on cementing the abutment

# Implant prosthetics

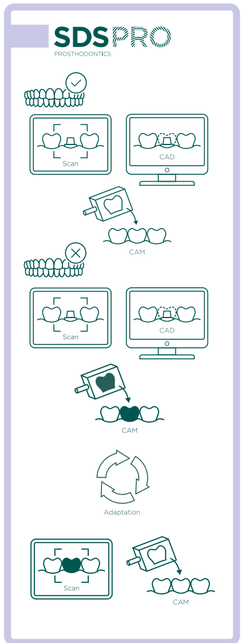
## GRINDING THE IMPLANT

Because the SDS implants are made of a particularly hard and pure zirconia material, they are approved for grinding under the CE label and by the FDA. A new Red Ring diamond bur must be used (recommendation: Brasseler ZR8379). Do not exert any pressure at all and use maximum water cooling. With the two-piece 2.1_SDS implant, lay the edge exactly at gingiva level, a maximum of 0.5 mm subgingivally. The edges of both long-term temporaries and the definitive restoration should fit perfectly but without any friction at all, as this would either cause orthodontic forces to be exerted on the bone and/or put pressure on the implants or the dental prosthesis. The long-term temporaries are cemented with Durelon® (carboxylate cement), and the final restoration with a glass ionomer cement.

## ZR379

ZR grinders, special instruments for dental practices
Application: crown-bridge technology

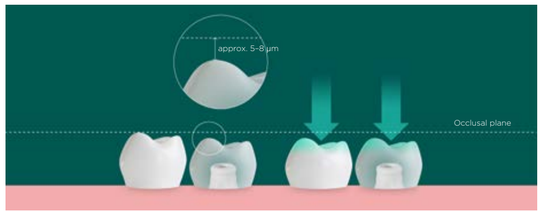
The grinding of ceramic abutments and the trepanning or fitting of ceramic restorations are a daily challenge for dentists. The result of long series of tests, instruments are now available to meet these special requirements: the ZR grinders. Diamond particles are bound via a special bond, giving the grinding instruments a significantly improved service life and removal rate in comparison with conventional diamond instruments.






## OCCLUSION DESIGN

If the occlusion were designed as strongly on an implant as on a natural tooth, the implant crown would be overloaded in the event of loading due to the 5–8 µm intrusion of the natural tooth. For that reason, the implant-supported crown is reduced by an amount of approximately 5–8 µm in order to ensure that both teeth experience the same load in the event of intrusion of the natural tooth. To do this, use an occlusion foil that is roughly 5–8 µm thick and have the patient bite on it lightly. The foil should "hold" on the natural tooth but not on the implant crown. The foil should only hold on the implant crown when the patient bites firmly.




## PONTICS AND SPLINTING

No more than one pontic may be installed between zirconia implants. For 3.8 mm implants: width of anterior teeth or premolars. For 4.6 mm implants: molar width.

Animation to demonstrate the occlusion concept for an implant-supported crown next to natural teeth.

# Where you can get support

## COSTUMER SERVICE
Orders, questions about the system
+49 7531 891 686 0 | info@swissdentalsolutions.com

## INTERNATIONAL SALES FORCE
Personal contact, surgical accompaniment
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