

MAKING THE WORLD A HEALTHIER PLACE



designed by

*Dr. Ulrich Volz*

Drilling Protocol  
SDS1.2 und SDS2.2

**SDS** SWISS DENTAL  
SOLUTIONS 

# Biological Drilling Protocol

## SUITABLE FOR ALL BONE CLASSES

Most conventional implant systems will generate higher insertion torques in increasingly harder bone. Biologically, this is absolutely contraindicated and counterproductive. The more pressure on poorly perfused bone will lead to resorption (MAMMOTO'S LAW). The SDS Drilling Protocol takes into consideration both biology and MAMMOTO'S LAW as it generates decreasing insertion torques in increasingly harder bone. This is accomplished by using drills and drilling protocols adapted to different bone classes, thus protecting the bone and supporting its vascularization. This is crucial for long-term preservation of any tissue!

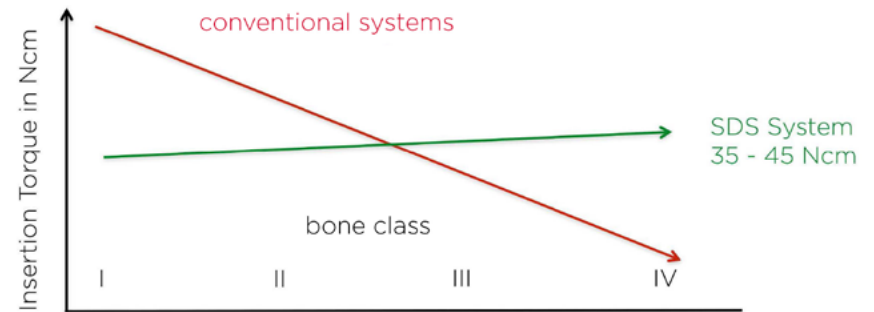
## DRILLING PROTOCOLS

It is recommended to keep these drilling sequences on hand during surgery; this will ensure that the protocol is adhered to flawlessly. Conversely, depending on the bone density, the implant bed can be optimally adapted to any non-standard situation. The images show each of the drilling sequences - from the round bur to the form drill - projected onto the implant, illustrating the remaining thread depth for stabilisation. The headline above the image indicates the implant type and its application with respect to different bone densities.

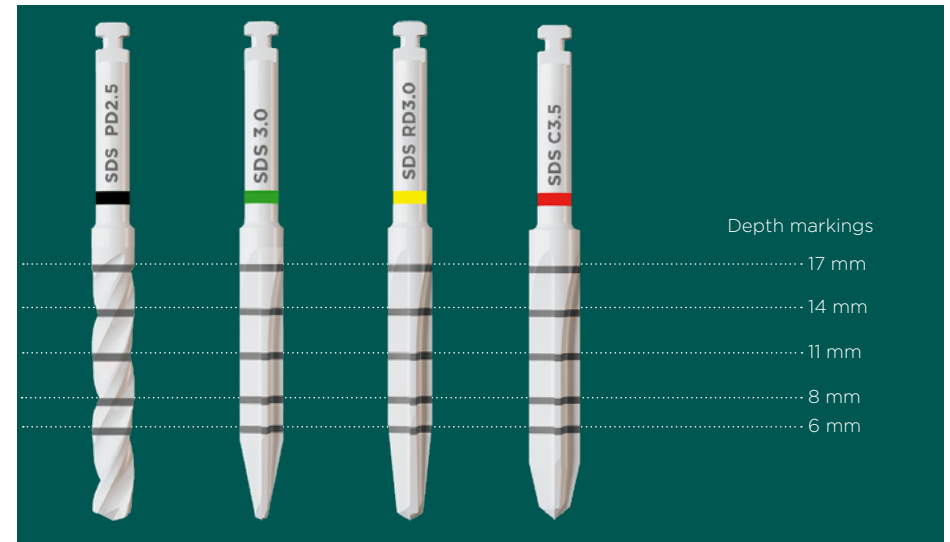
## PROPER USE

Drilling should be performed intermittently and under constant external cooling with pre-cooled (5°C / 41° F) sterile physiological saline solution. The external cooling prevents the bone tissue from heating up too much. In addition, bone chips can be removed or rinsed away. Ensure that the drill does not jam during use (increased risk of fracture).

The preparation is carried out under low pressure to the desired depth at a speed of 300 - 600 rpm. The speed should be maintained to avoid instrument fractures.

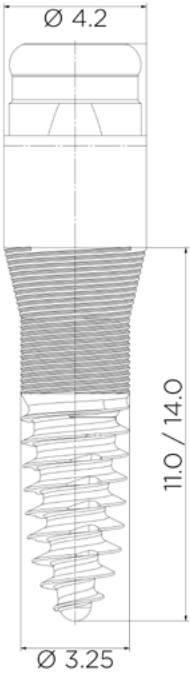


Uniform torque in all four bone classes when using the SDS drilling protocol compared to conventional systems.



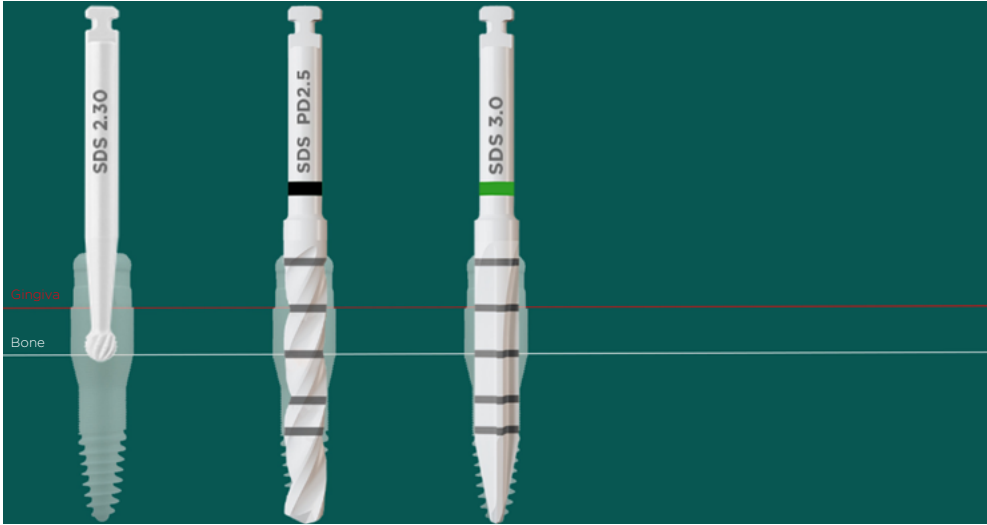
# SDS1.2\_3.3 Bone class III and II

SDS1.2\_3.3

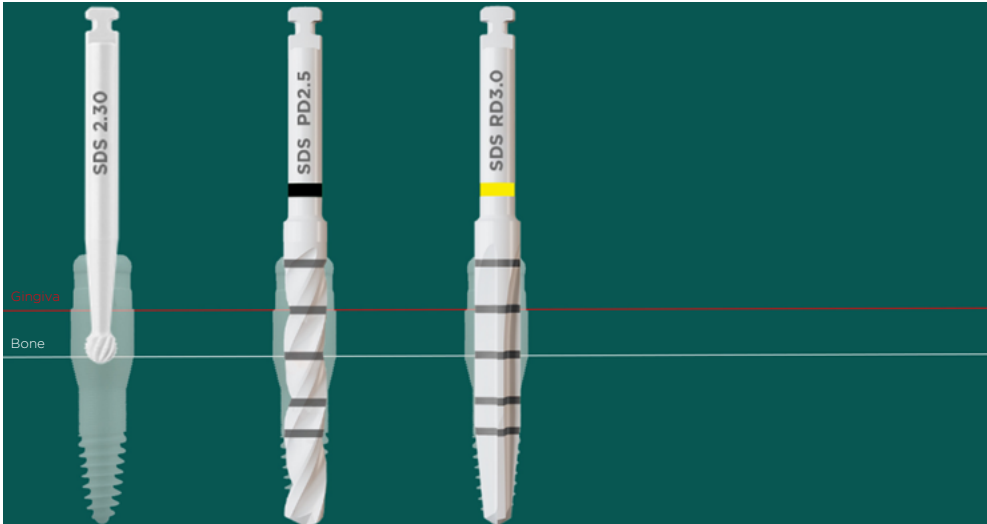


Recommended speed	
SDS 2.30	6.000 rpm
SDS PD2.5	1.000 rpm
SDS 3.0	300-600 rpm
SDS RD3.0	300-600 rpm

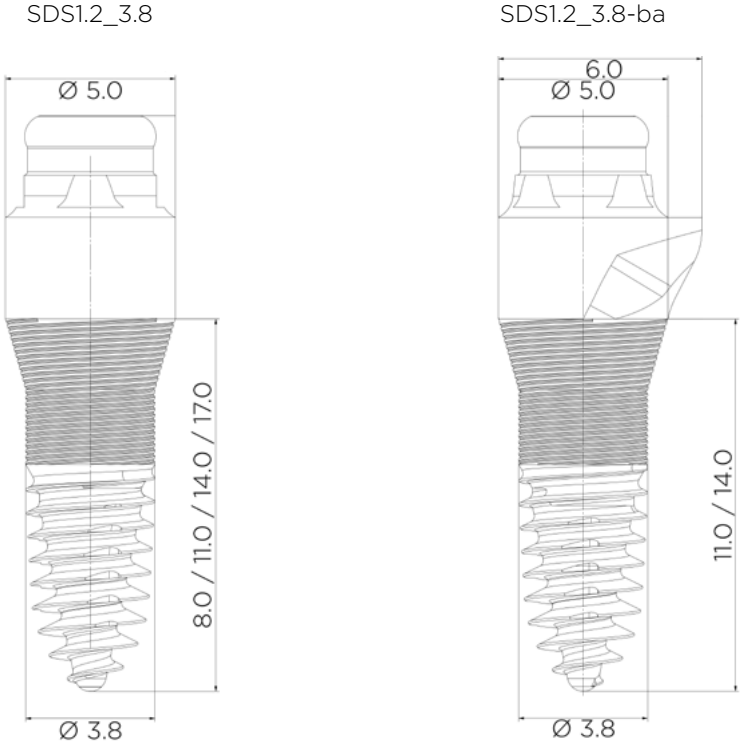
SDS1.2 Ø 3.3 mm: Bone class III



SDS1.2 Ø 3.3 mm: Bone class II



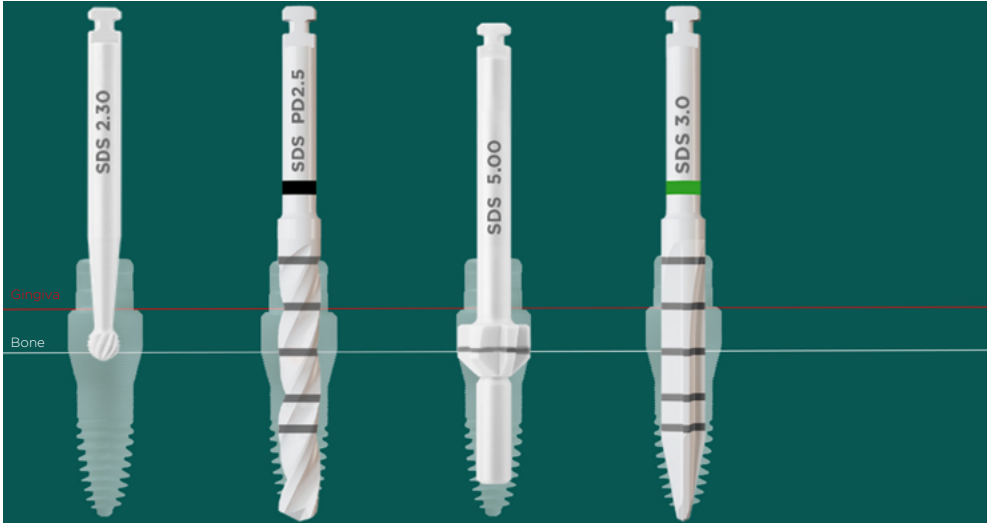
# SDS1.2\_3.8 Bone class IV and III



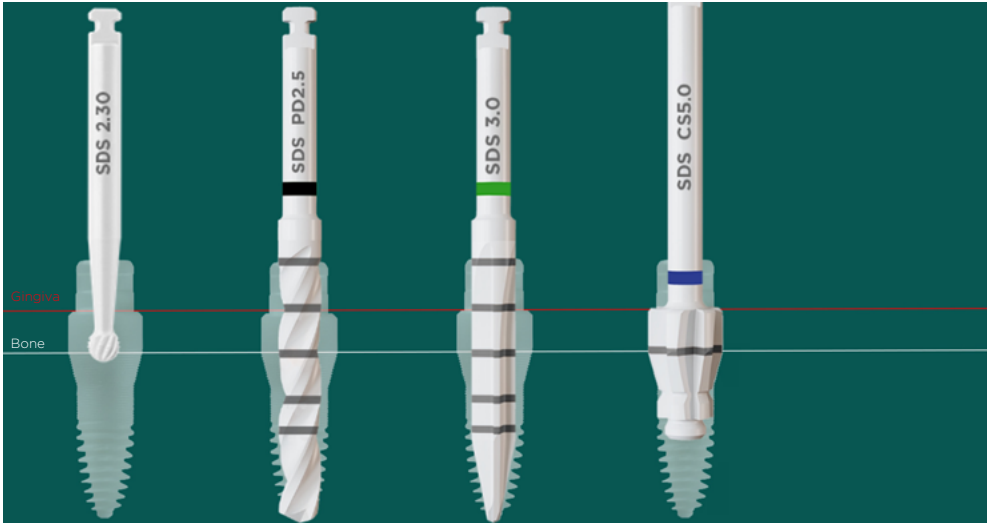
Recommended speed

SDS 2.30	6.000 rpm
SDS PD2.5	1.000 rpm
SDS 3.0	300-600 rpm
SDS 5.00	300-600 rpm
SDS CS5.0	300-600 rpm

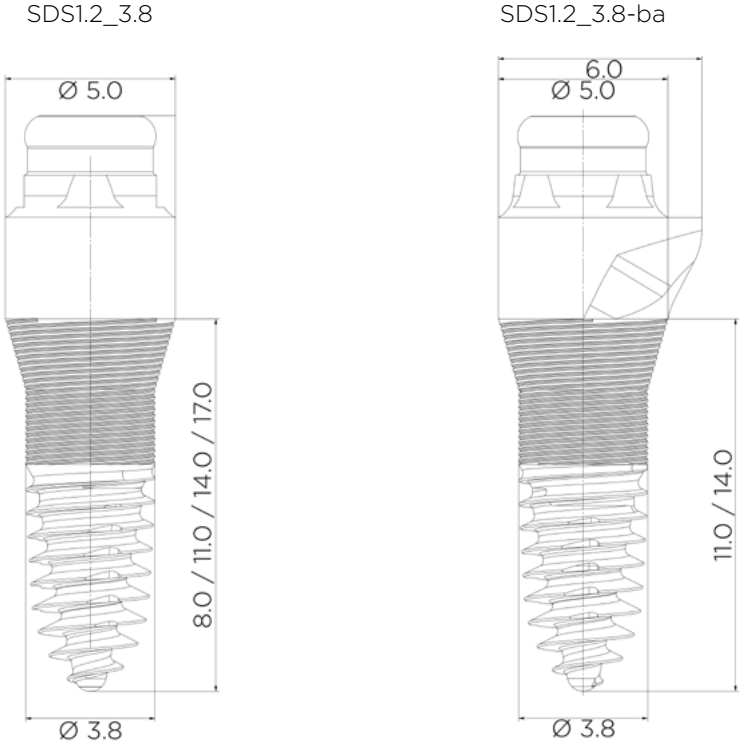
SDS1.2 Ø 3.8 mm: Bone class IV



SDS1.2 Ø 3.8 mm: Bone class III



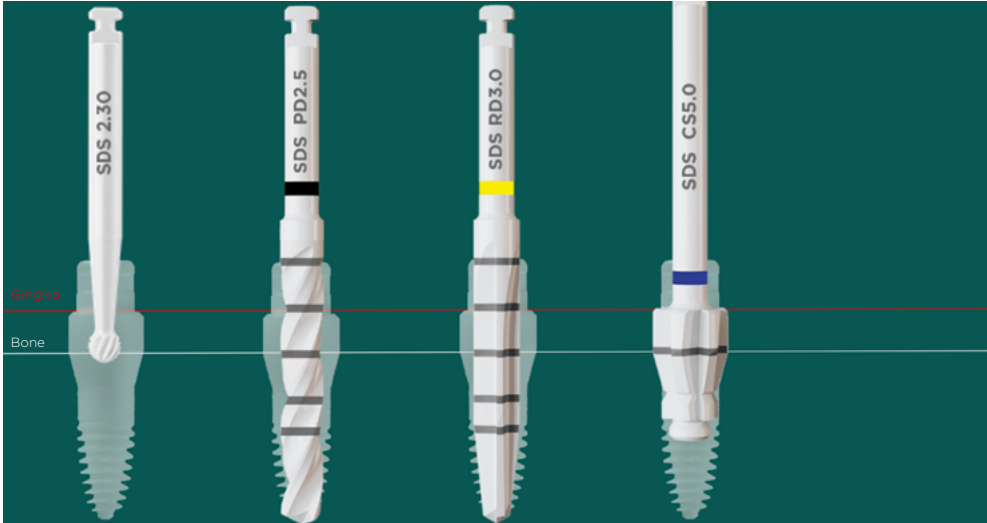
# SDS1.2\_3.8 Bone class II and I



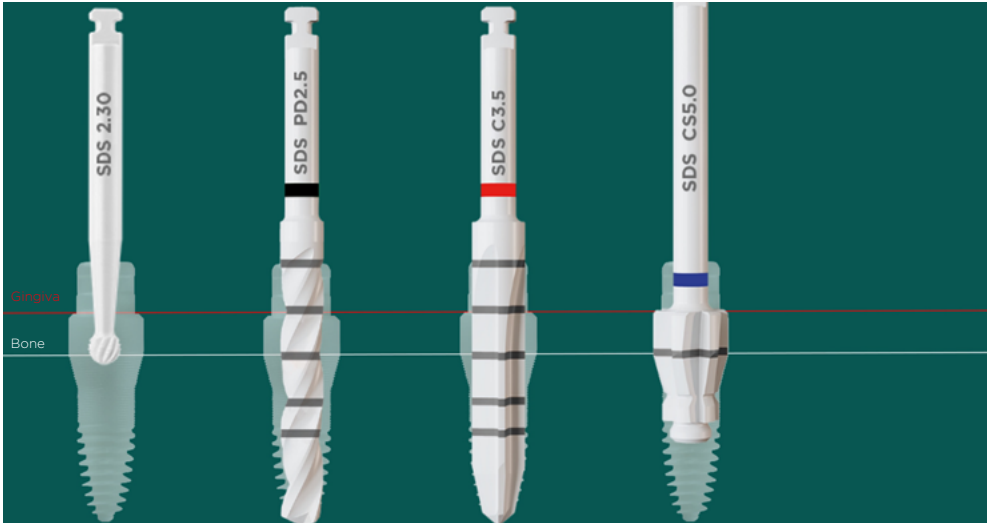
Recommended speed

SDS 2.30	6.000 rpm
SDS PD2.5	1.000 rpm
SDS RD3.0	300-600 rpm
SDS CS5.0	300-600 rpm
SDS C3.5	300-600 rpm

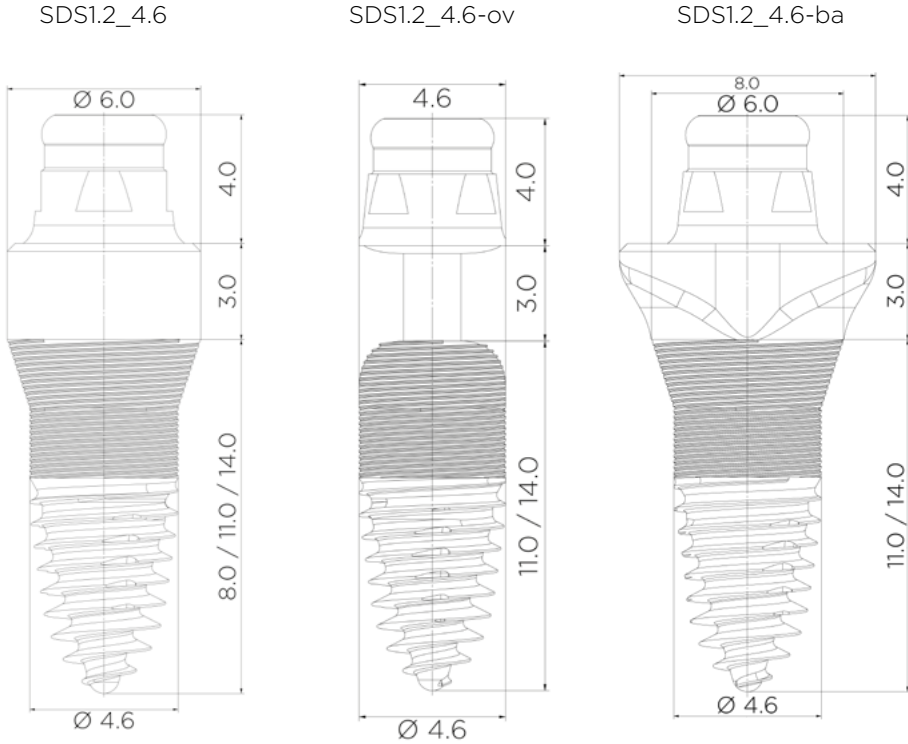
SDS1.2 Ø 3.8 mm: Bone class II



SDS1.2 Ø 3.8 mm: Bone class I



# SDS1.2\_4.6 Bone class IV and III



Recommended speed

SDS 2.30	6.000 rpm
SDS PD2.5	1.000 rpm
SDS 6.00	300-600 rpm
SDS 3.0	300-600 rpm
SDS 3.8	300-600 rpm
SDS CS6.0	300-600 rpm

SDS1.2  $\varnothing$  4.6 mm: Bone class IV

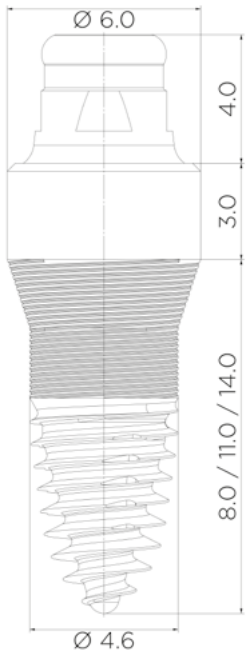


SDS1.2  $\varnothing$  4.6 mm: Bone class III

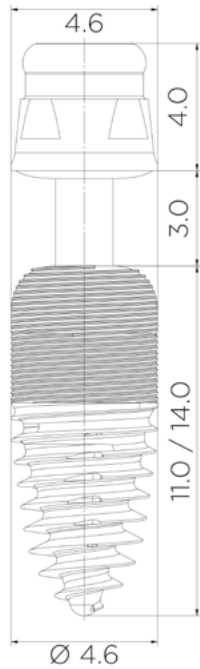


# SDS1.2\_4.6 Bone class II and I

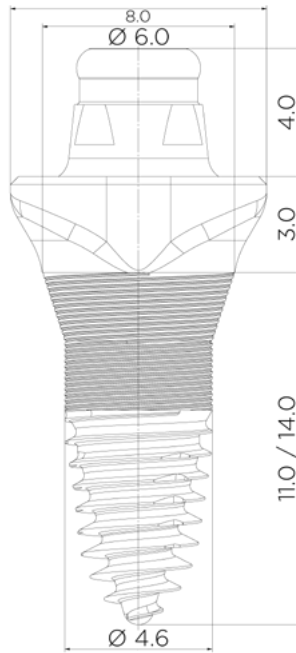
SDS1.2\_4.6



SDS1.2\_4.6-ov



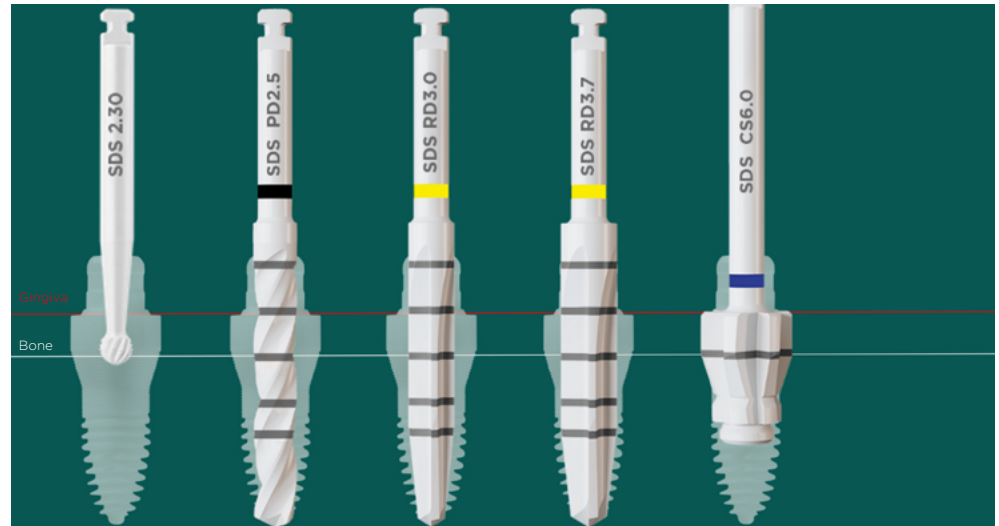
SDS1.2\_4.6-ba



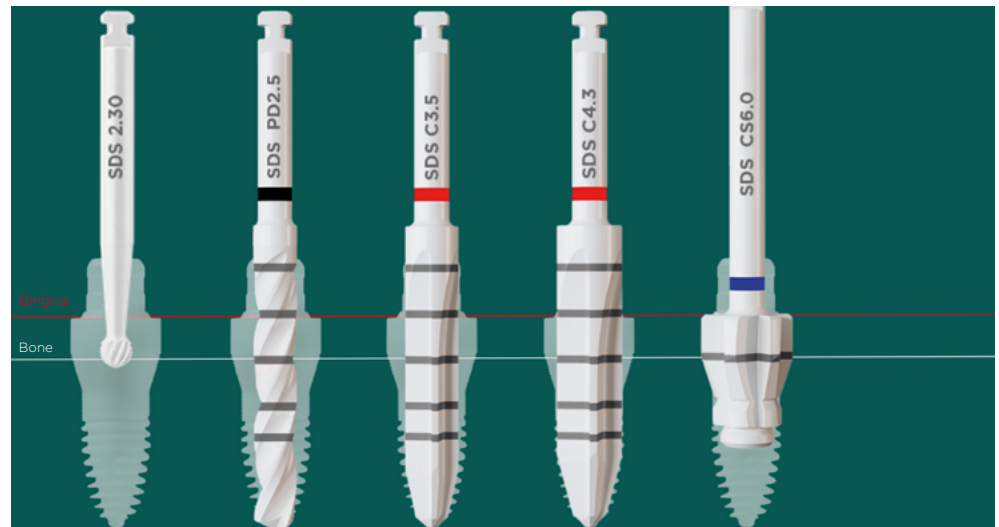
### Recommended speed

SDS 2.30	6.000 rpm
SDS PD2.5	1.000 rpm
SDS RD3.0	300-600 rpm
SDS RD3.7	300-600 rpm
SDS CS6.0	300-600 rpm
SDS C3.5	300-600 rpm
SDS C4.3	300-600 rpm

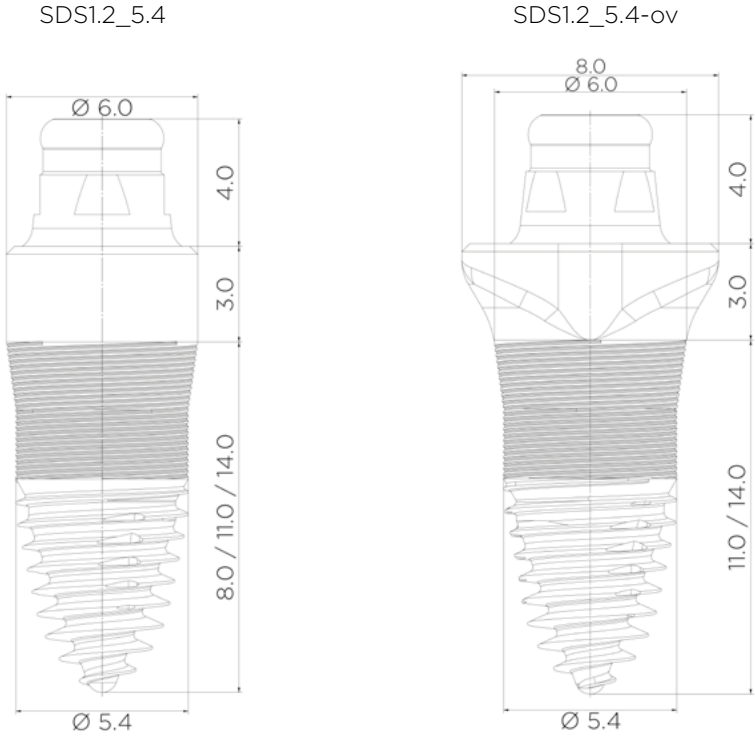
SDS1.2 Ø 4.6 mm: Bone class II



SDS1.2 Ø 4.6 mm: Bone class I



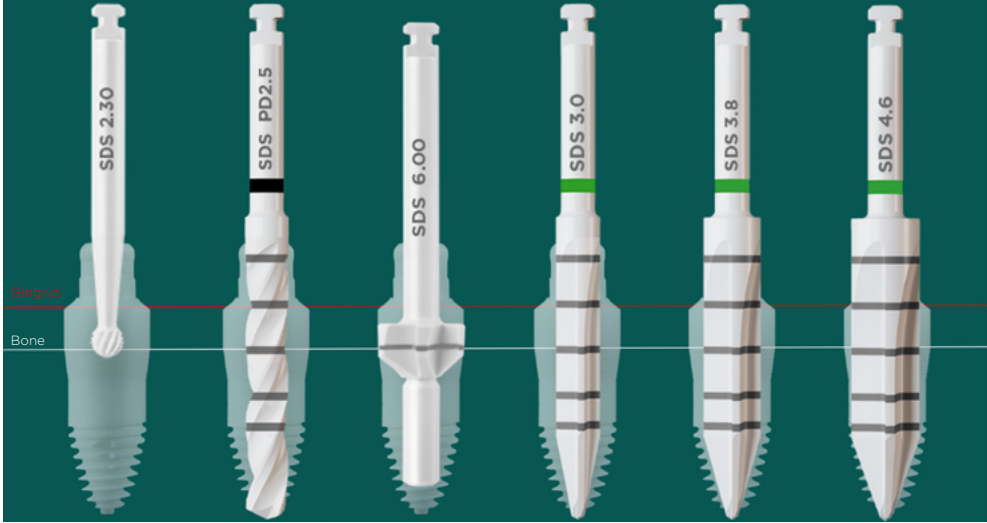
# SDS1.2\_5.4 Bone class IV and III



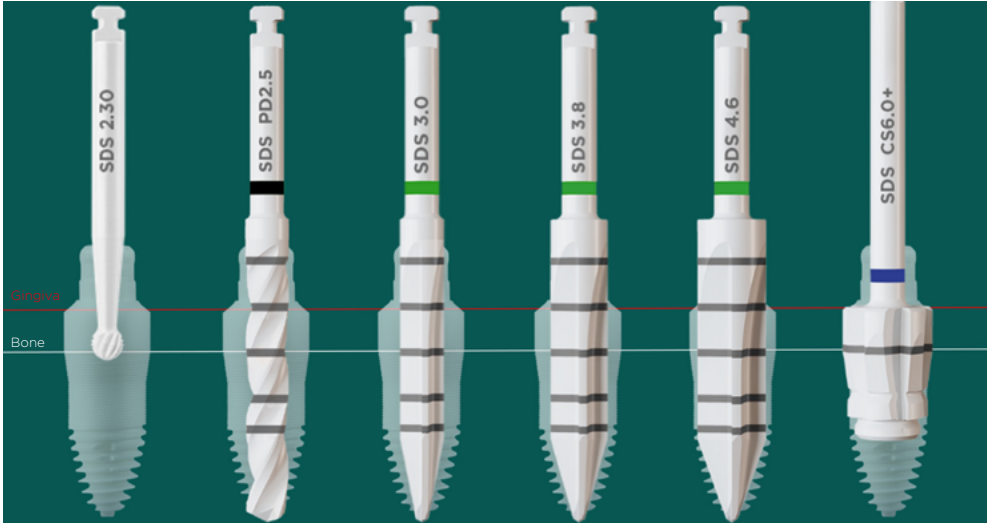
Recommended speed

SDS 2.30	6.000 rpm
SDS PD2.5	1.000 rpm
SDS 6.00	300-600 rpm
SDS 3.0	300-600 rpm
SDS 3.8	300-600 rpm
SDS 4.6	300-600 rpm
SDS CS6.0+	300-600 rpm

SDS1.2 Ø 5.4 mm: Bone class IV

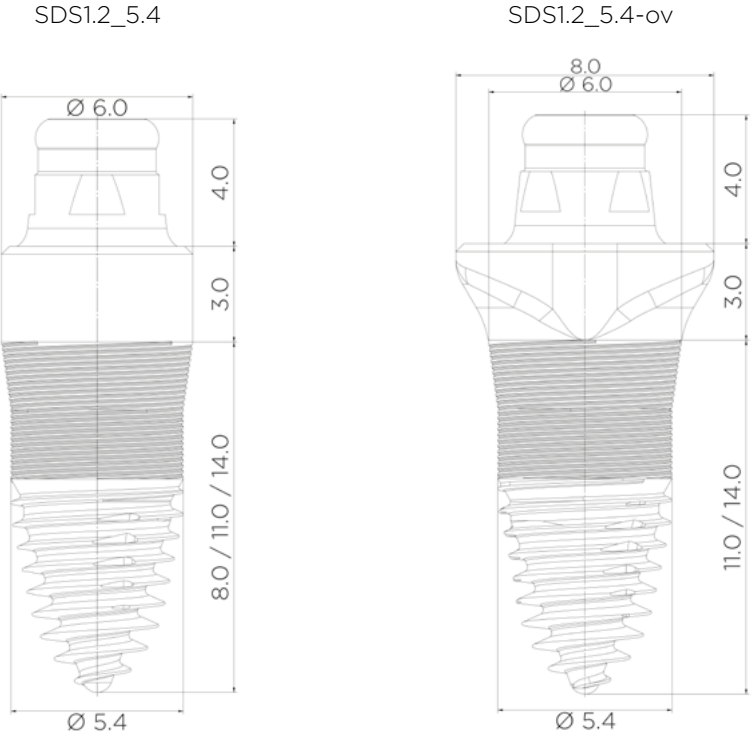


SDS1.2 Ø 5.4 mm: Bone class III





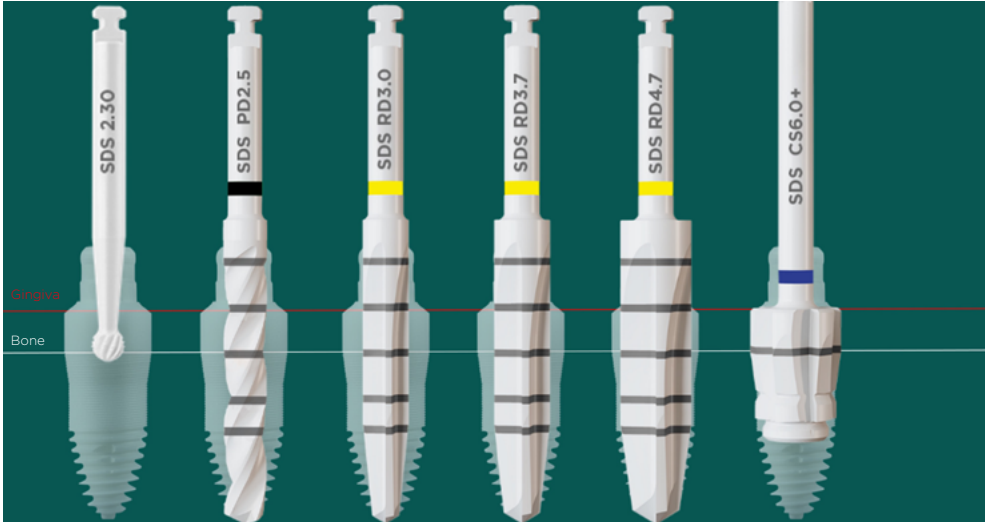
# SDS1.2\_5.4 Bone class II and I



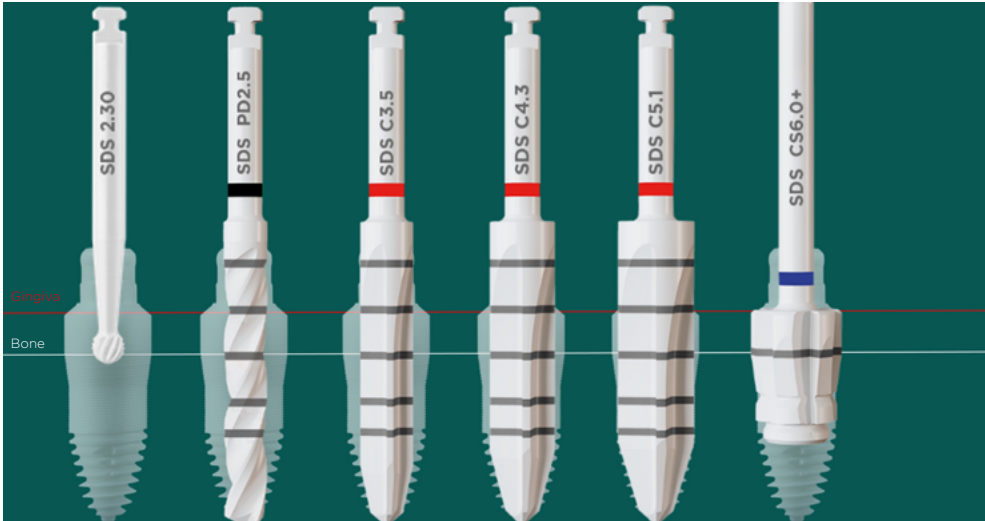
Recommended speed

SDS 2.30	6.000 rpm
SDS PD2.5	1.000 rpm
SDS RD3.0	300-600 rpm
SDS RD3.7	300-600 rpm
SDS RD4.7	300-600 rpm
SDS CS6.0+	300-600 rpm
SDS C3.5	300-600 rpm
SDS C4.3	300-600 rpm
SDS C5.1	300-600 rpm

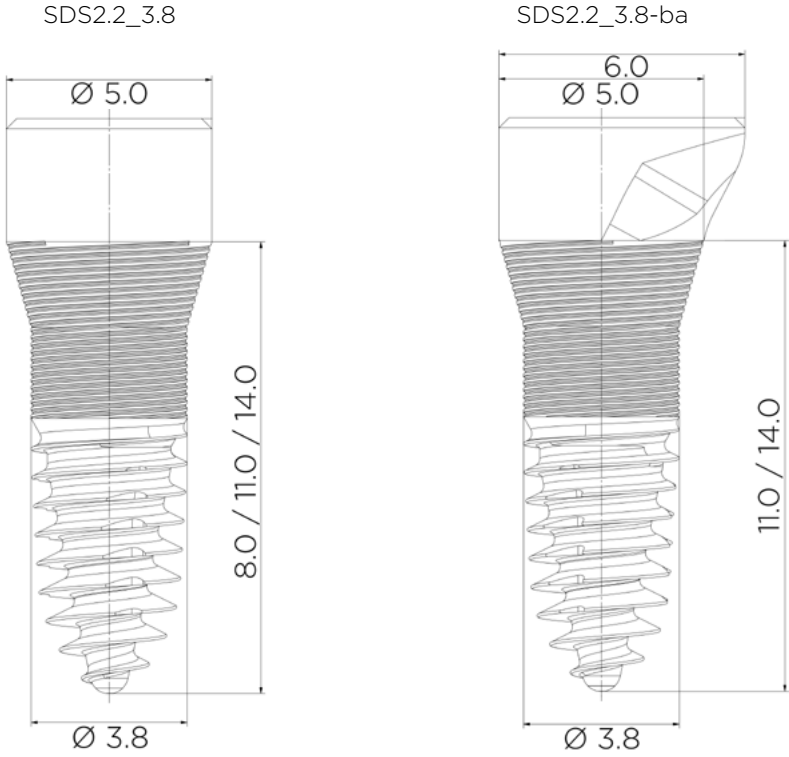
SDS1.2 Ø 5.4 mm: Bone class II



SDS1.2 Ø 5.4 mm: Bone class I



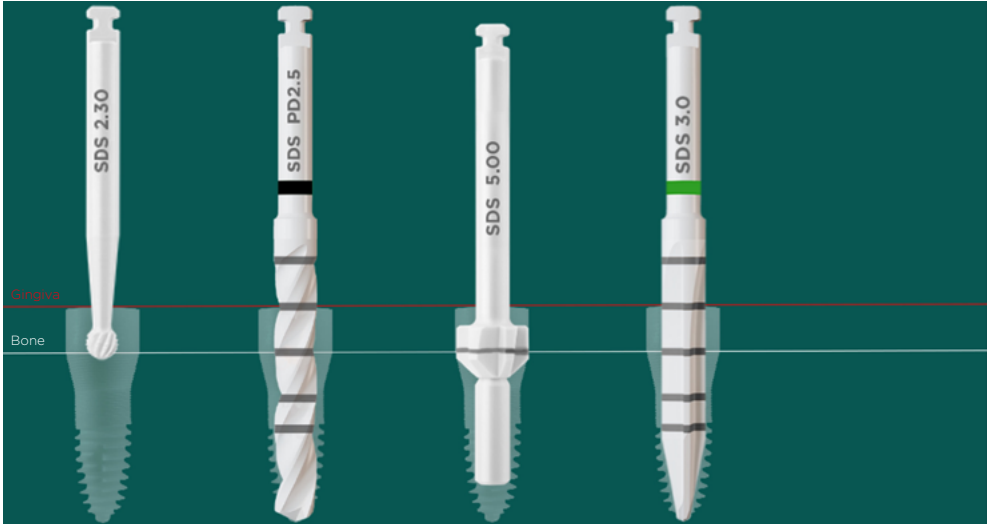
# SDS2.2\_3.8 Bone class IV and III



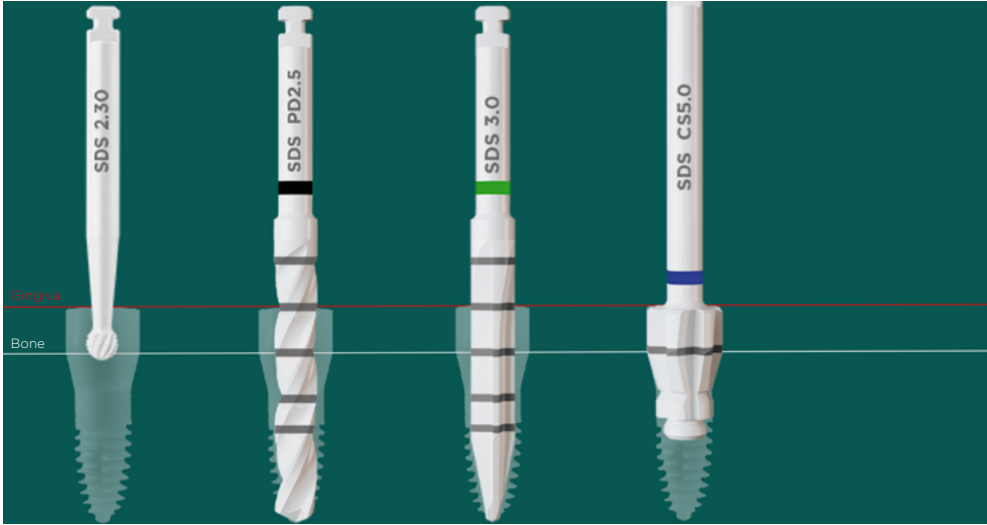
Recommended speed

SDS 2.30	6.000 rpm
SDS PD2.5	1.000 rpm
SDS 5.00	300-600 rpm
SDS 3.0	300-600 rpm
SDS CS5.0	300-600 rpm

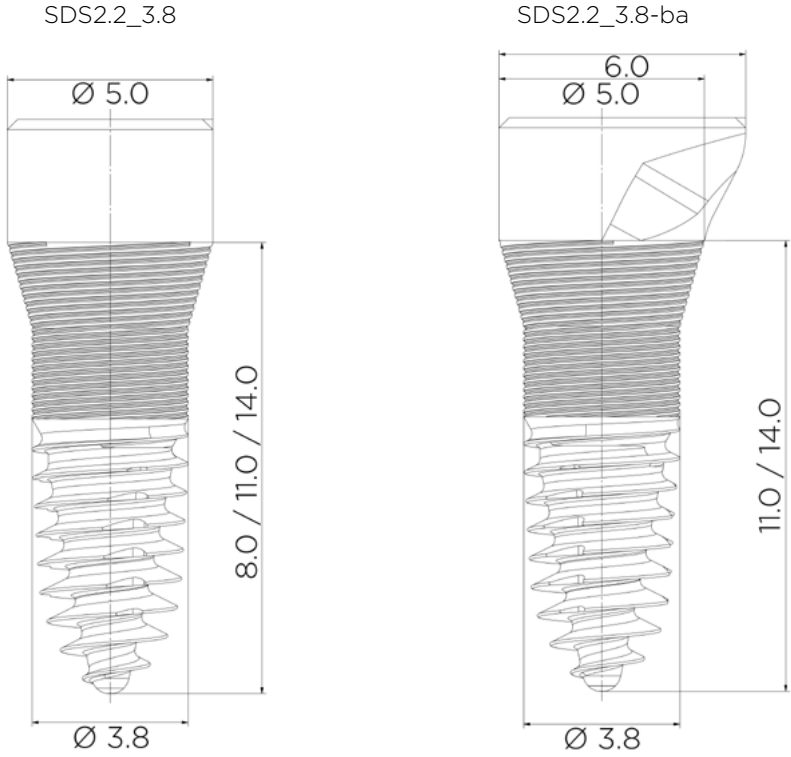
SDS2.2 Ø 3.8 mm: Bone class IV



SDS2.2 Ø 3.8 mm: Bone class III



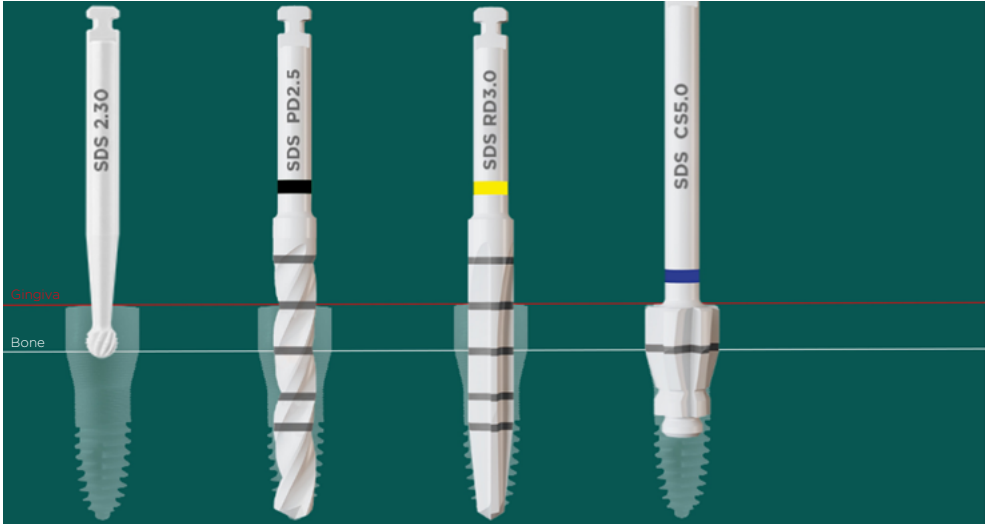
# SDS2.2\_3.8 Bone class II and I



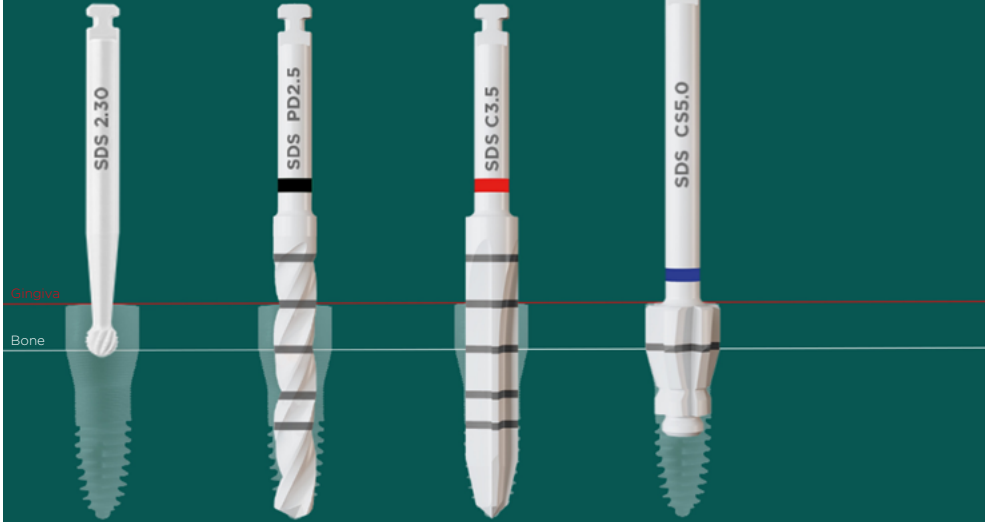
Recommended speed

SDS 2.30	6.000 rpm
SDS PD2.5	1.000 rpm
SDS RD3.0	300-600 rpm
SDS CS5.0	300-600 rpm
SDS C3.5	300-600 rpm

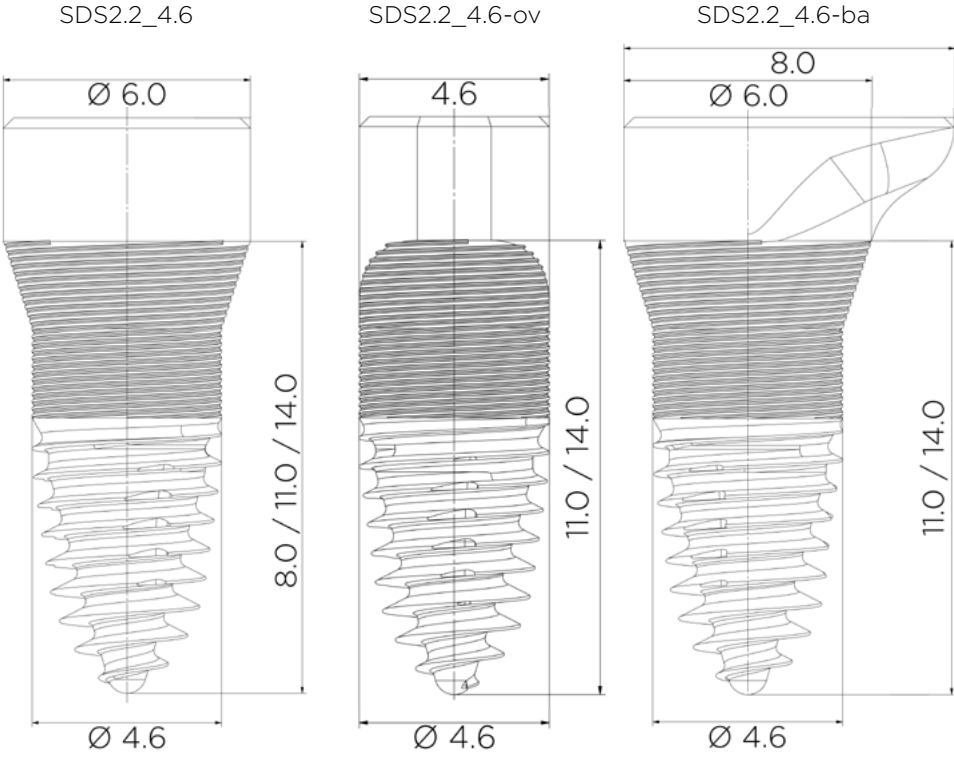
SDS2.2 Ø 3.8 mm: Bone class II



SDS2.2 Ø 3.8 mm: Bone class I



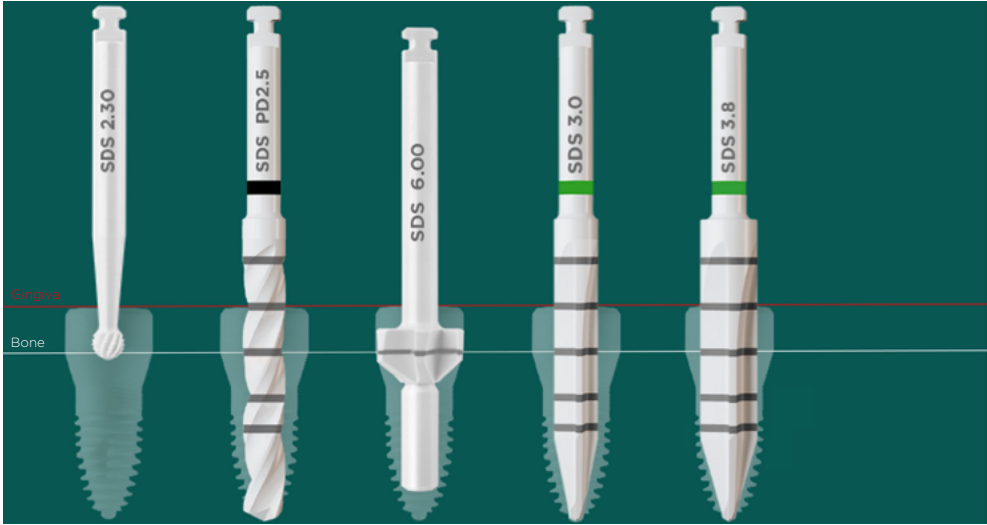
# SDS2.2\_4.6 Bone class IV and III



Recommended speed

SDS 2.30	6.000 rpm
SDS PD2.5	1.000 rpm
SDS 6.00	300-600 rpm
SDS 3.0	300-600 rpm
SDS 3.8	300-600 rpm
SDS CS6.0	300-600 rpm

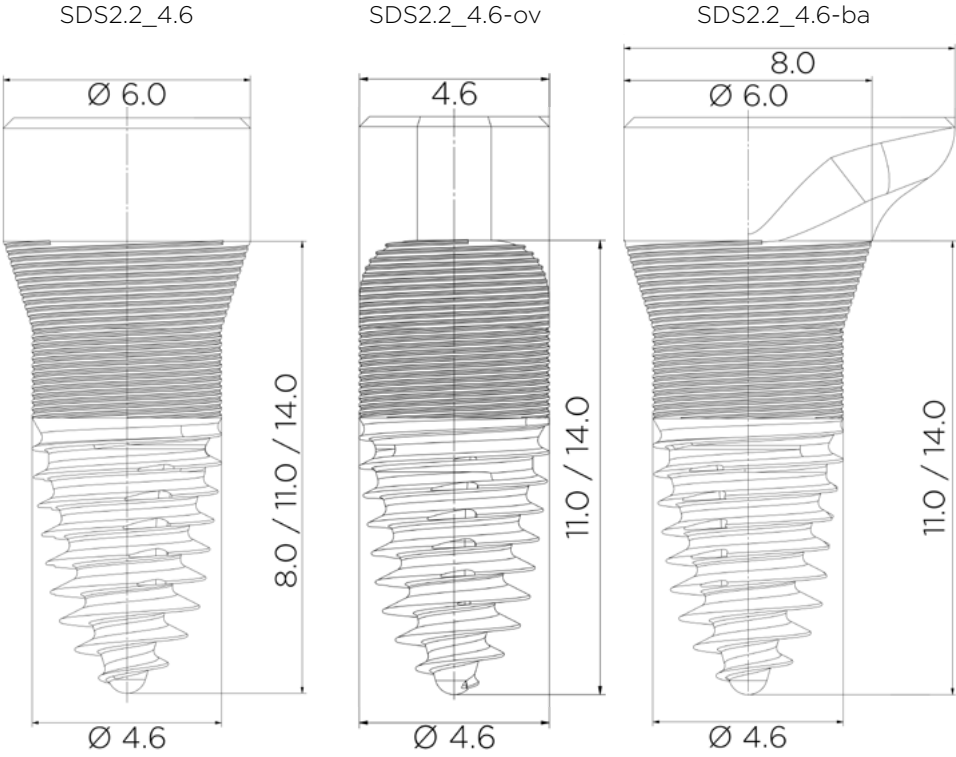
SDS2.2 Ø 4.6 mm: Bone class IV



SDS2.2 Ø 4.6 mm: Bone class III



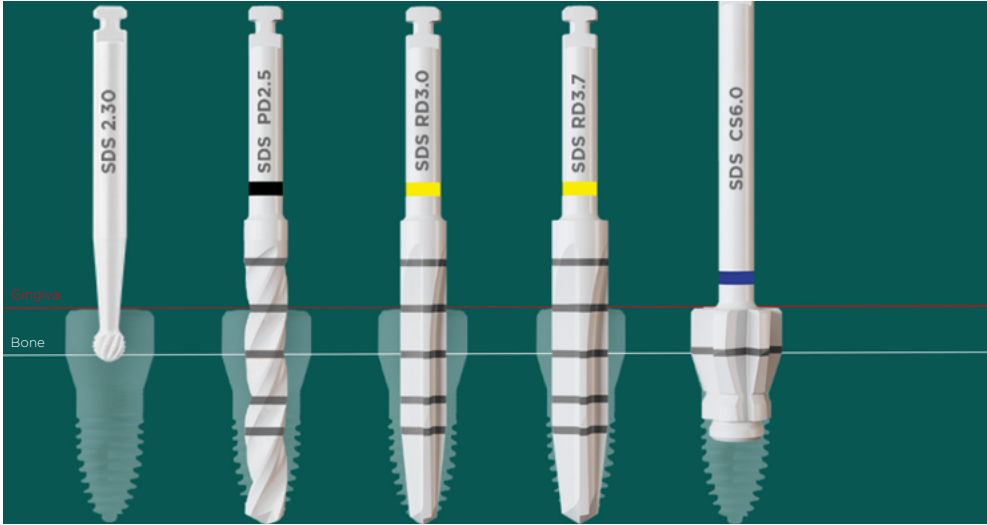
# SDS2.2\_4.6 Bone class II and I



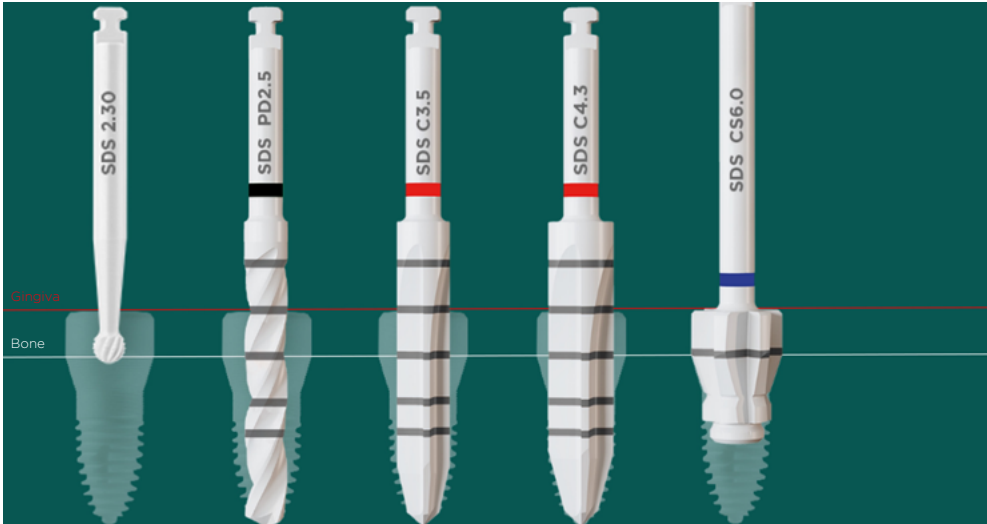
Recommended speed

SDS 2.30	6.000 rpm
SDS PD2.5	1.000 rpm
SDS RD3.0	300-600 rpm
SDS RD3.7	300-600 rpm
SDS CS6.0	300-600 rpm
SDS C3.5	300-600 rpm
SDS C4.3	300-600 rpm

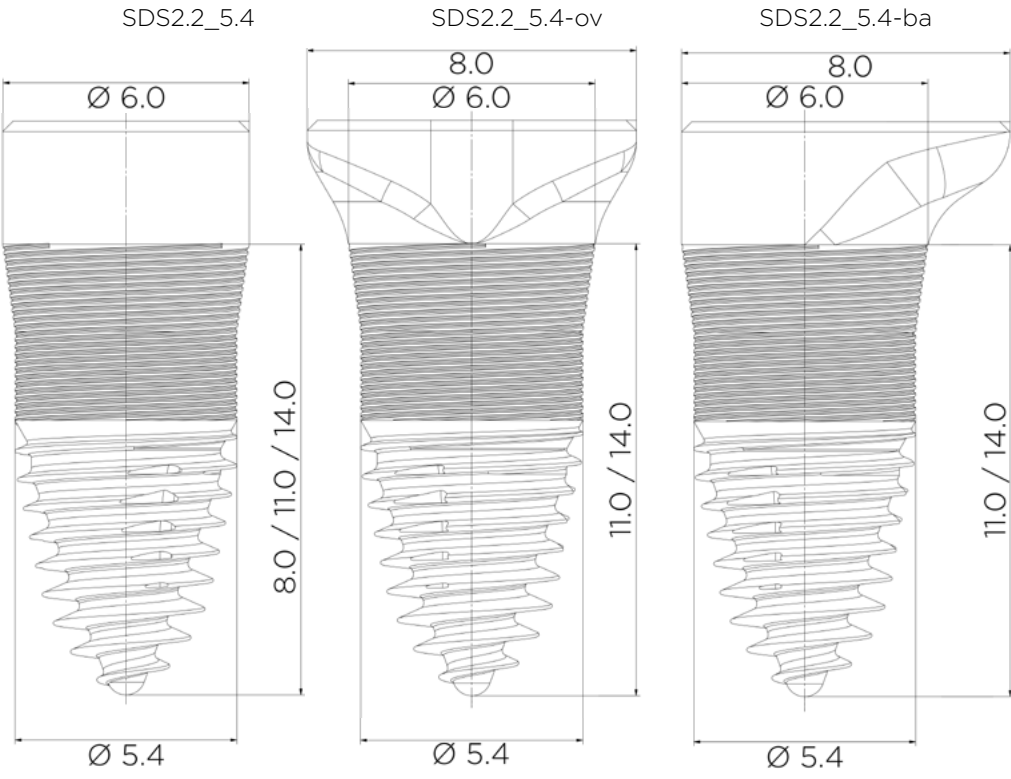
SDS2.2 Ø 4.6 mm: Bone class II



SDS2.2 Ø 4.6 mm: Bone class I



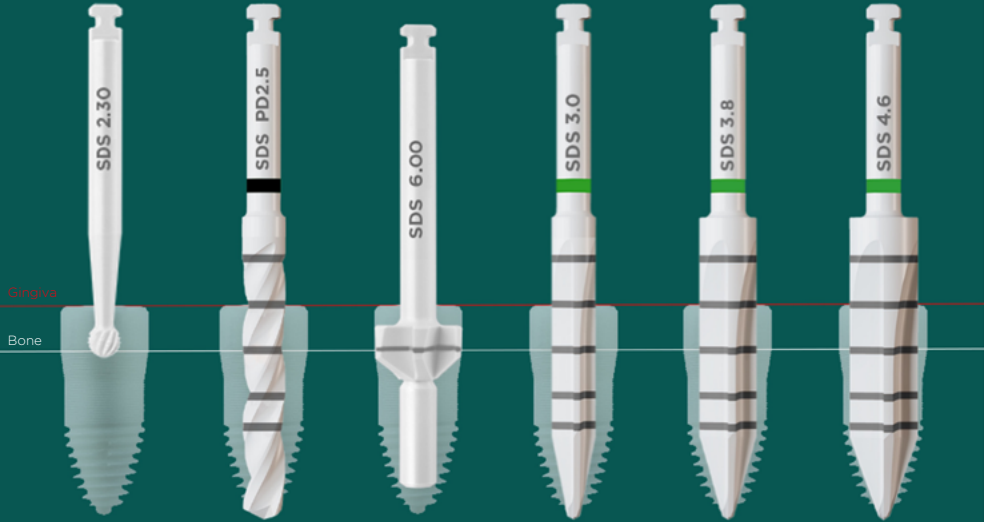
# SDS2.2\_5.4 Bone class IV and III



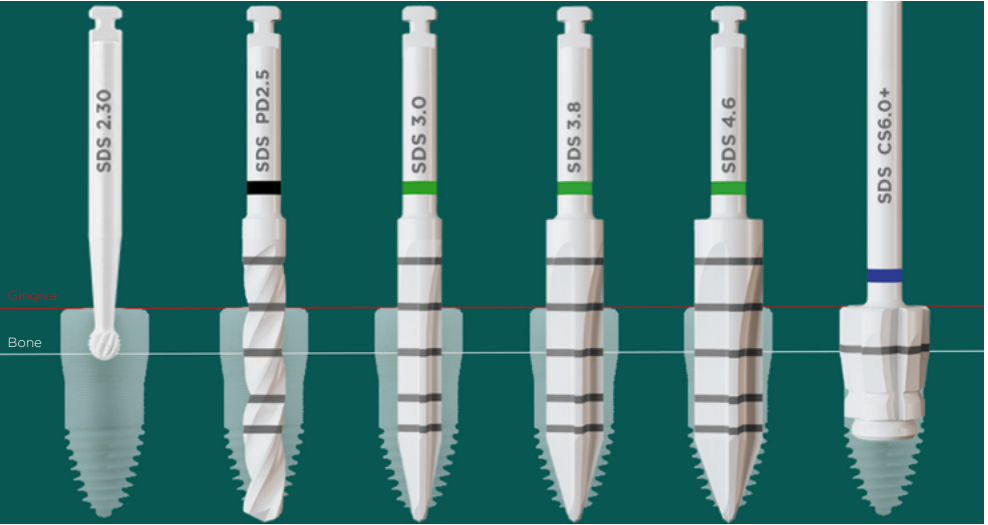
Recommended speed

SDS 2.30	6.000 rpm
SDS PD2.5	1.000 rpm
SDS 6.00	300-600 rpm
SDS 3.0	300-600 rpm
SDS 3.8	300-600 rpm
SDS 4.6	300-600 rpm
SDS CS6.0+	300-600 rpm

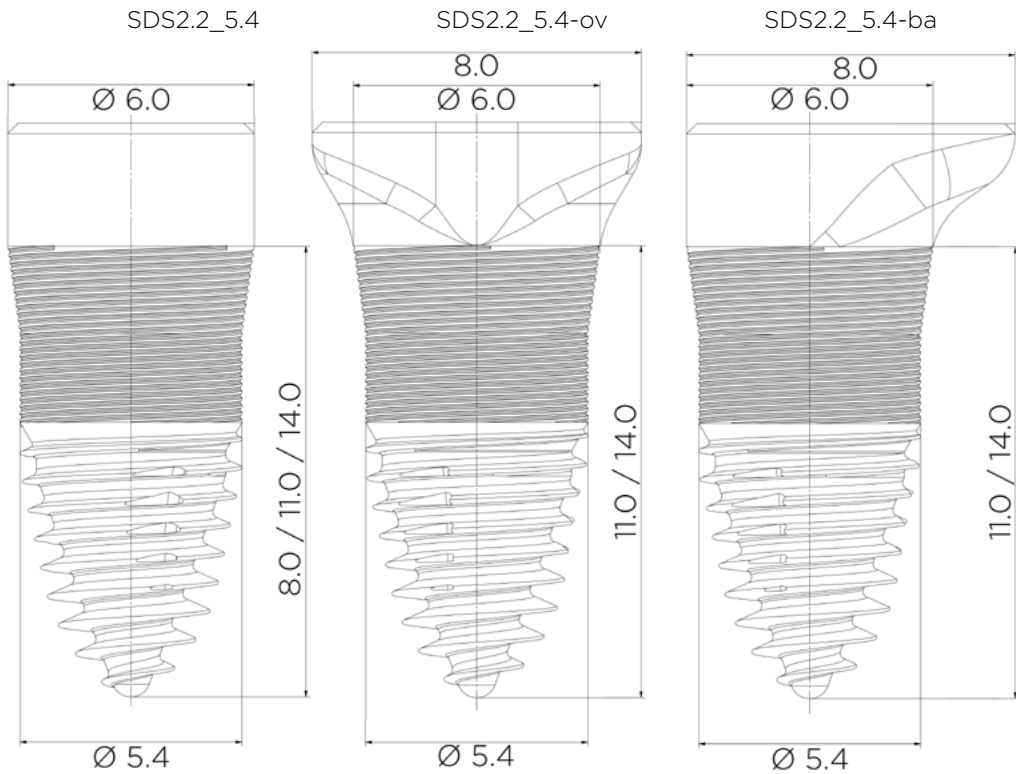
SDS2.2 Ø 5.4 mm: Bone class IV



SDS2.2 Ø 5.4 mm: Bone class III



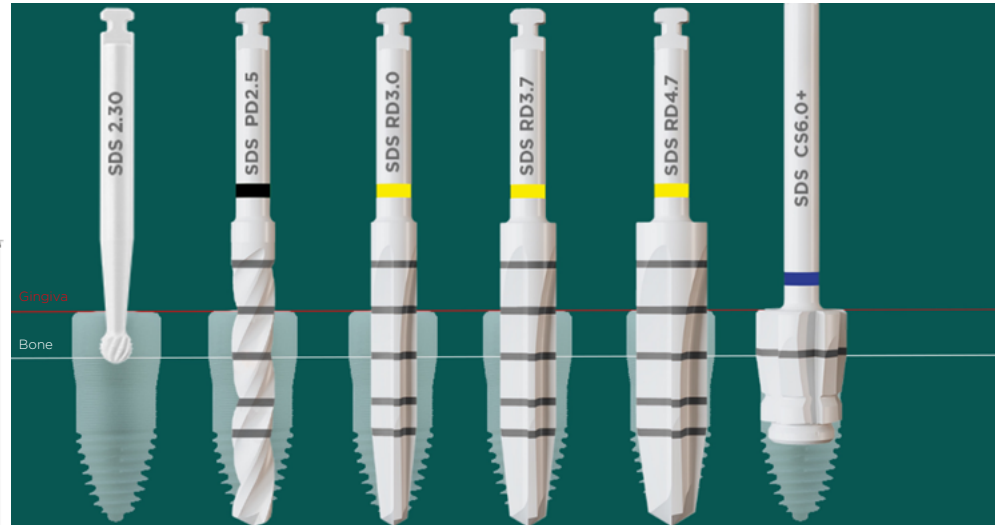
# SDS2.2\_5.4 Bone class II and I



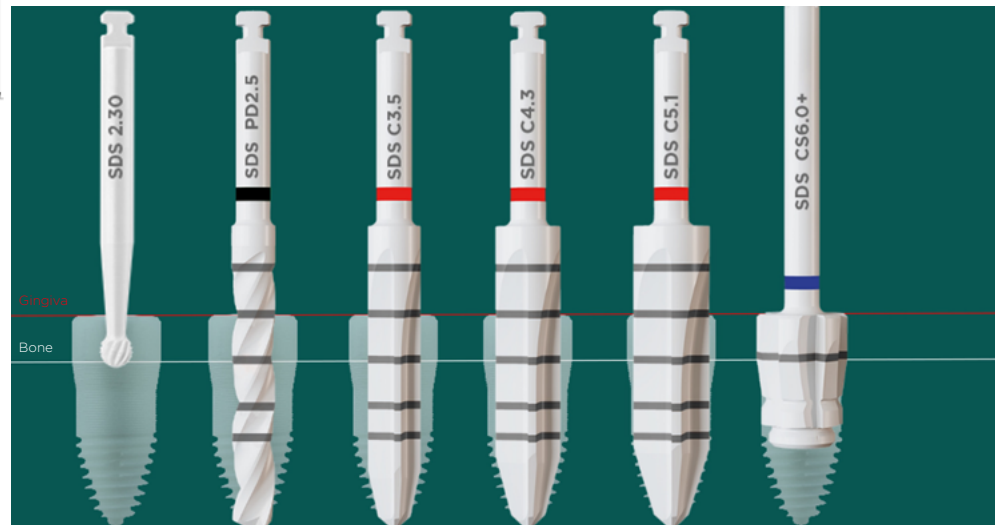
### Recommended speed

SDS 2.30	6.000 rpm
SDS PD2.5	1.000 rpm
SDS RD3.0	300-600 rpm
SDS RD3.7	300-600 rpm
SDS RD4.7	300-600 rpm
SDS CS6.0+	300-600 rpm
SDS C3.5	300-600 rpm
SDS C4.3	300-600 rpm
SDS C5.1	300-600 rpm

SDS2.2 Ø 5.4 mm: Bone class II



SDS2.2 Ø 5.4 mm: Bone class I



## SDS2.2-si surgical protocol for external sinus lift with SDS implants

### PREREQUISITES

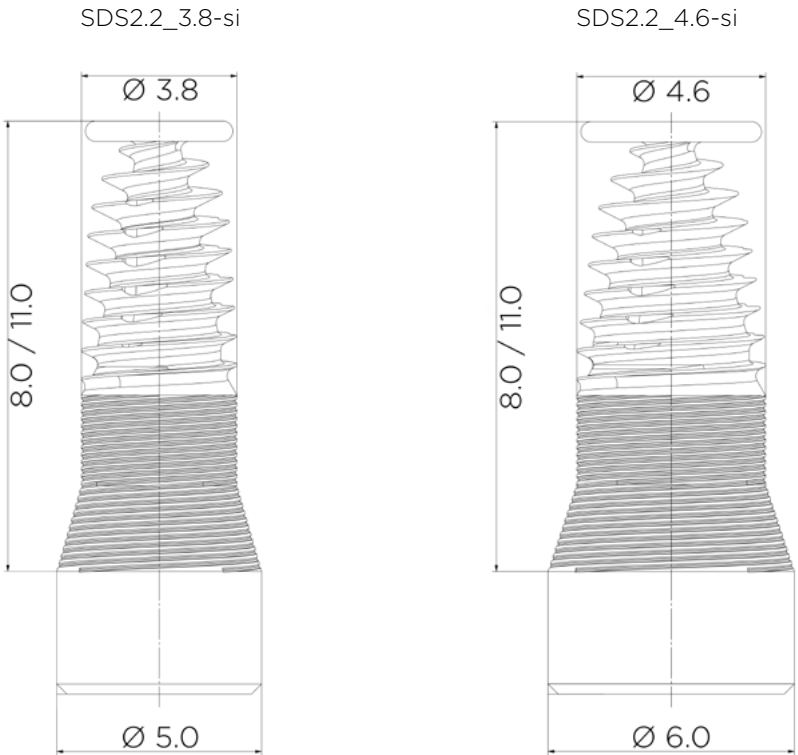
- Confident command of standard sinus lift techniques (internal/external sinus lift) and possible complications
- Experience with PRF membranes/brushing technique/piezo surgery/apical mattress sutures
- Experience with SDS implants
- 3-dimensional X-ray image (DVT/CT)
- inflammation-free maxillary sinus
- intact Schneiderian membrane
- min. 3 mm residual bone in the area of the maxillary sinus floor for sufficient primary stability
- max. 5 mm residual bone in the area of the maxillary sinus floor

### SURGICAL PROTOCOL

- Prepare the immune system
- Adjust LDL and vitamin D3 levels
- High-dose vitamin C injections, single shots (800 mg Augmentin + 8 mg Dexamethasone) i.v. over 3 days (-1, OP, +1)
- Incision into the alveolar ridge with marginal gingival incision into adjacent teeth to avoid a vertical incision
- Application of the "Brushing technique" to avoid slitting the periosteum
- Thinning out the vestibular bone in the area of the window with the Safescraper® and simultaneous recovery of cortical chips
- Removal of the bone window using piezo surgery without perforating the Schneiderian membrane
- Elevation of the Schneiderian membrane (far to the medial, dorsal and palatal side-> to generate max. cavity volume)
- There should not be any tension on the membrane with expulsive forces on the sinus implant
- Implant osteotomy according to drilling protocol
- Reinforcement of membrane with one layer of A-PRF™, insertion of the sinus implant
- Placement of the bony vestibular window cover over the disc to increase the "shadow effect"
- Filling of the cavity with more A-PRF™ membranes and cortical chips from the Safescraper®
- Sealing of the window (exclusively with cortical bone chips), covering with one to two A-PRF™ - membranes
- Saliva-impervious and tension-free wound closure with a two-layer suturing technique (apical mattress sutures and single button or continuous sutures)
- Monophilic, atraumatic + resorbable suture material (preferably PGC25 Atramat®)



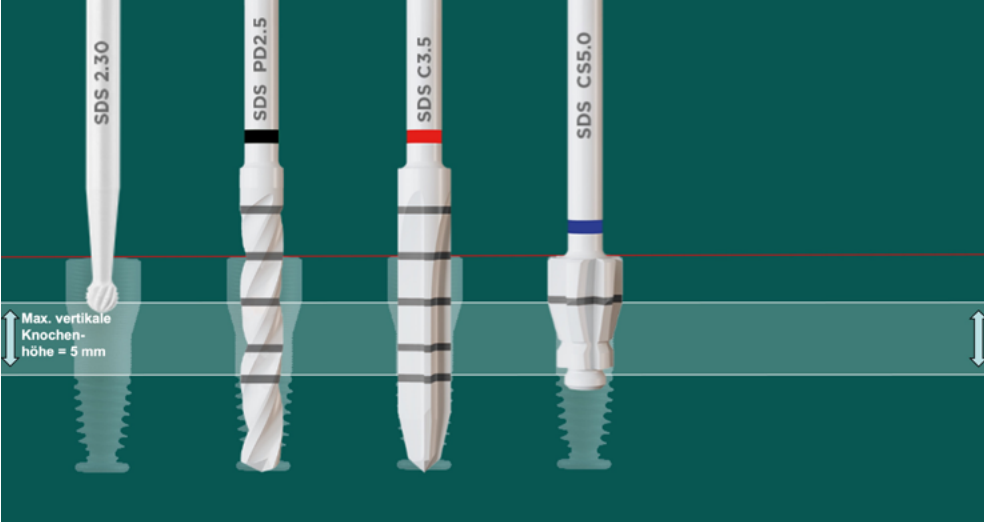
# SDS2.2\_si Bone class IV to I



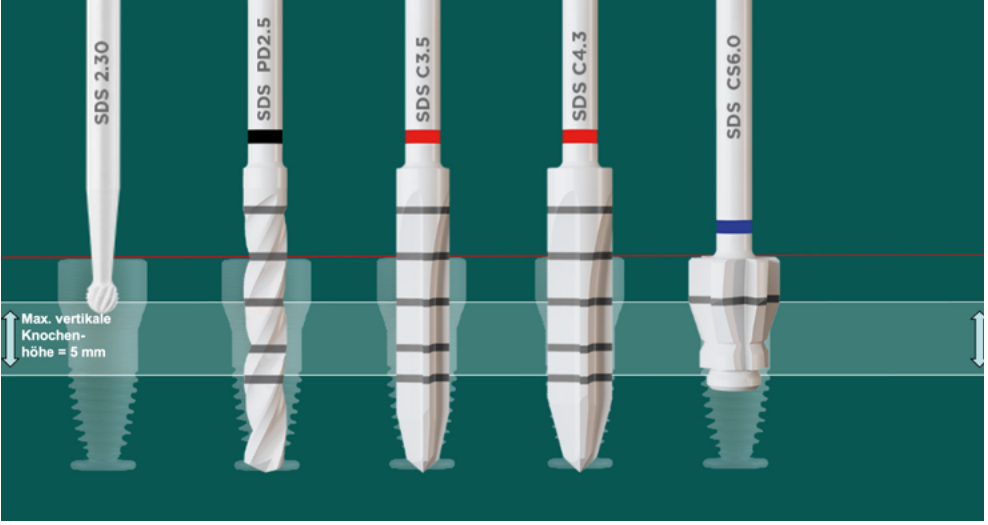
Recommended speed

SDS 2.30	6.000 rpm
SDS PD2.5	1.000 rpm
SDS CS5.0	300-600 rpm
SDS C4.3	300-600 rpm
SDS CS6.0	300-600 rpm

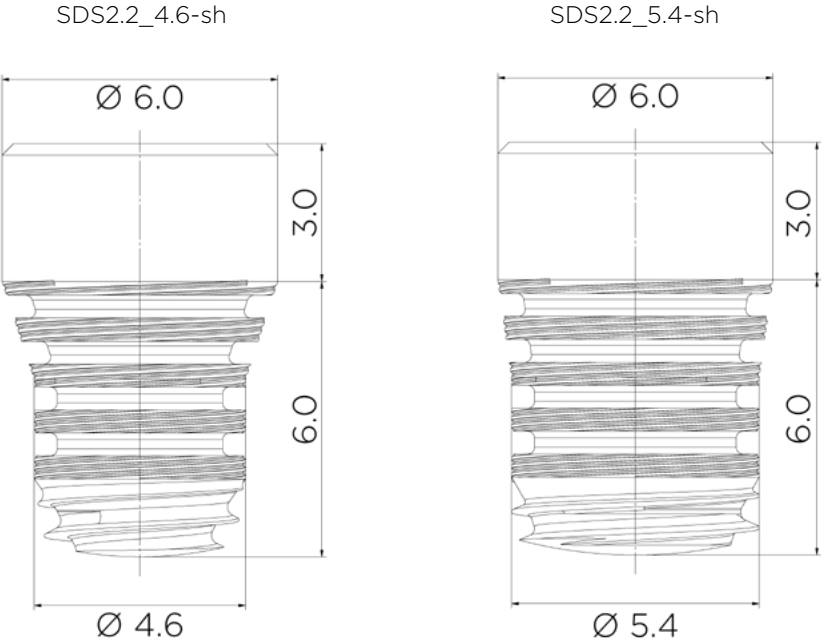
SDS2.2 3811-si Ø 3.8 mm: all Bone classes



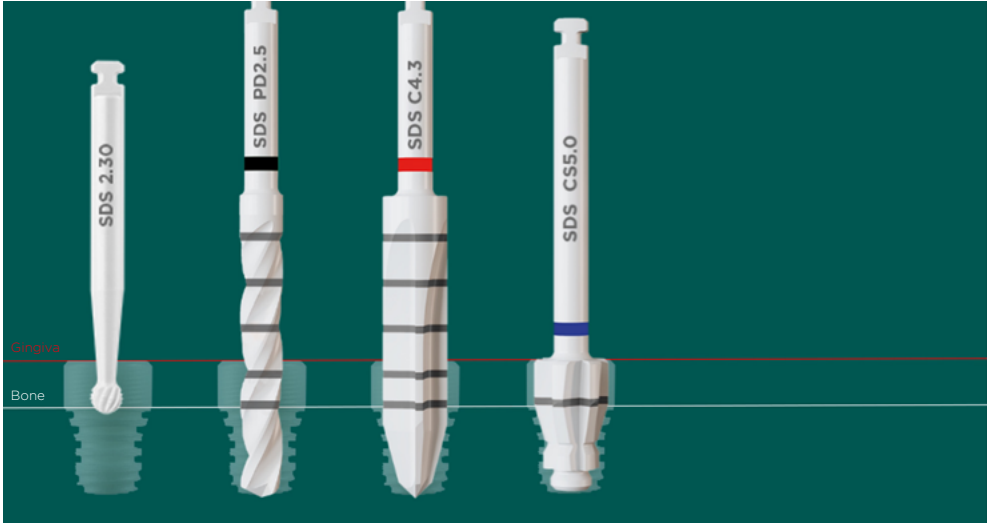
SDS2.2 4611-si Ø 4.6 mm: all Bone classes



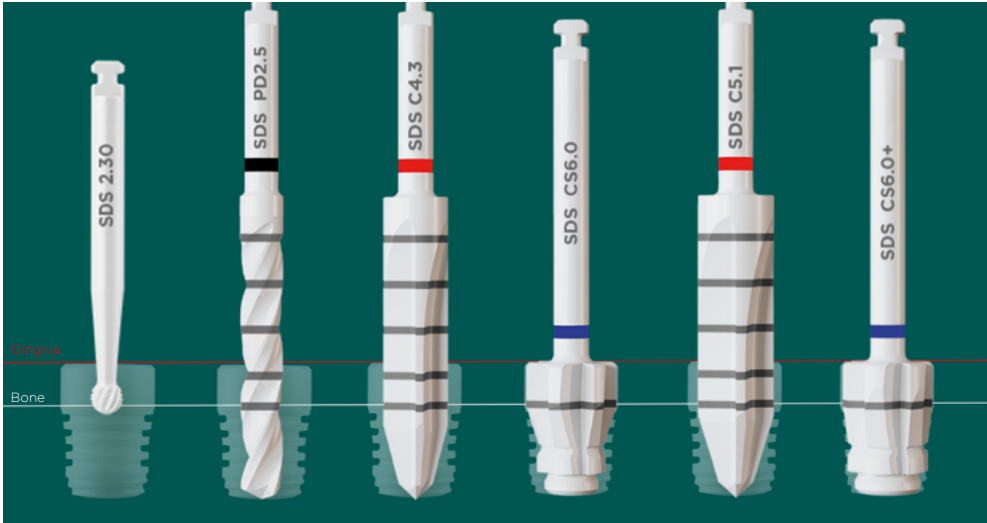
# SDS2.2\_sh Bone class IV to I



SDS2.2 4606-sh Ø 4.6 mm: all Bone classes

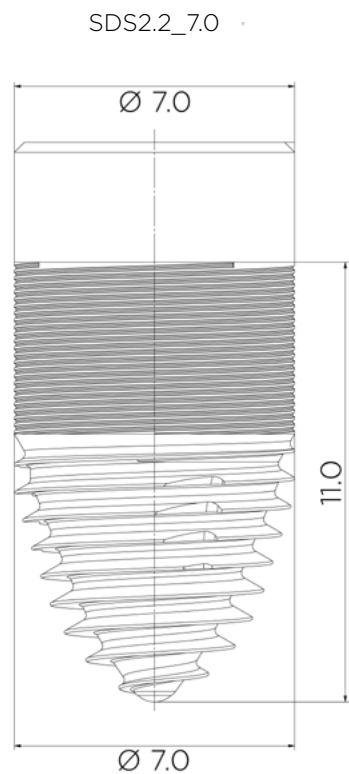


SDS2.2 5406-sh Ø 5.4 mm: all Bone classes



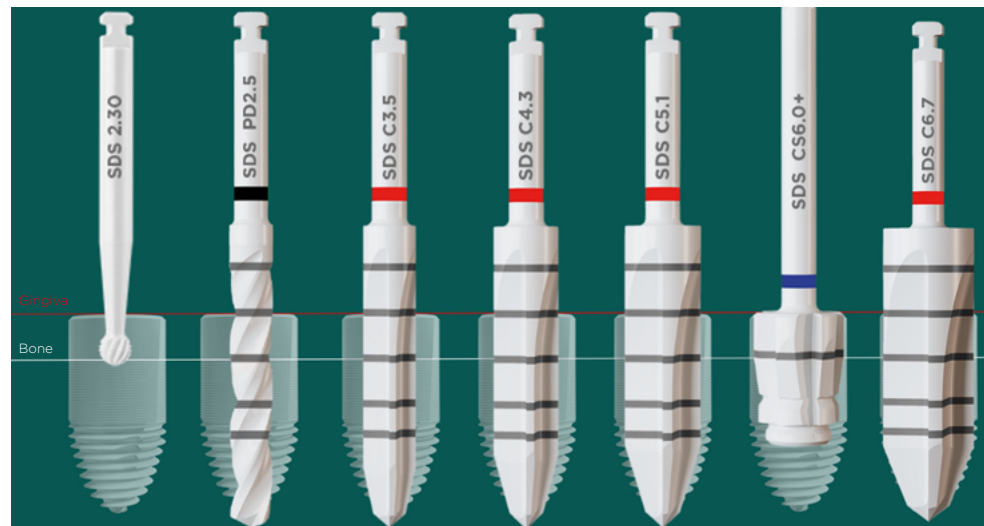
Recommended speed	
SDS 2.30	6.000 rpm
SDS PD2.5	1.000 rpm
SDS C4.3	300-600 rpm
SDS C5.1	300-600 rpm
SDS CS5.0	300-600 rpm
SDS CS6.0	300-600 rpm
SDS CS6.0+	300-600 rpm

# SDS2.2\_7.0 Bone class II and I



Recommended speed	
SDS 2.30	6.000 rpm
SDS PD2.5	1.000 rpm
SDS C3.5	300-600 rpm
SDS C4.3	300-600 rpm
SDS C5.1	300-600 rpm
SDS CS6.0+	300-600 rpm
SDS C6.7	300-600 rpm

SDS2.2 Ø 7.0 mm: Bone class II and I





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3. Auflage