# Z5c implants (cemented, two-piece)

**General note**
Chapters 1 – 4 of the surgical and prosthetic concept are to be followed for patient treatment with two-piece Z5c implants. Chapter 7 describes specific features of Z5c implants, as well as, deviations from previously described procedures.

**Concept**
The cemented two-piece Z5c implant is a self-tapping tissue level implant. Its exterior design is consistent with the one-piece Z5m (monotype) implant in the thread and abutment regions.

In contrast to the one-piece Z5m implant, the internal cavity of the two-piece Z5c implant connection is covered after implantation with the enclosed healing cap (made from the plastic PEEK (poylyetheretherketone). The healing cap is secured into place by a simple snap and click technique. Transmucosal healing is recommended.

For prosthetic restoration a straight standard abutment and a 15° angled abutment are available.

Before inserting/cementing the abutment into the internal cavity, the healing cap must be removed.

The abutment itself can be modified s lightly after cementation by intraoral preparation utilizing a diamond burr (see sec.: 4.3). **The area of the implant shoulder may not be prepared.**

Impressions are **always** taken after the abutment has been cemented and any necessary preparation is performed.

**Clinical application (see also sec.: 2.1 / 2.2)**
- Z5c implants are designed for surgical implantation into the upper and lower jaw for the attachment of prosthodontic appliances to replace missing teeth. The Z5c implant system is also suitable for patients with metal allergies and the chronic diseases resulting from them.
- On account of their two-piece design and the resulting specific advantages during osseointegration, Z5c implants are particularly suitable for implantation in such situations in which the protection of one-piece Z5m implants is problematic.

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**Z5c-40-08, Z5c-40-10 and Z5c-40-12**

**Areas of application**

- Universal two-piece Z5c implant, suitable for most indications.
- As rule of thumb the implant with the largest possible diameter should be used, since the mechanical strength increases more than proportionally with increasing implant diameter.
- **Not suitable** for applications in which the risk of excessive bending moments exist (e.g. extended crowns, extension bridges, bridges with more than one pontic unit).

| Product-No. | | Ø | Shoulder | Insertion depth | Comments |
|---|---|---|---|---|---|
| Z5c-40-08 |  | 4.0 mm | 4.8 mm | 8.0 mm | Standard thread diameter with reduced length, suitable for most applications with reduced vertical bone availability. |
| Z5c-40-10 |  | 4.0 mm | 4.8 mm | 10.0 mm | Standard thread diameter for universal use in the upper and lower jaw. |
| Z5c-40-12 |  | 4.0 mm | 4.8 mm | 12.0 mm | Standard thread diameter for universal use in the upper and lower jaw with particularly good vertical bone availability. |
| Z5c-HC40 |  | Healing cap for Z5c implants with 4 mm standard thread diameter. | | | |

**Z5c-50-08, Z5c-50-10 and Z5c-50-12**

**Areas of application**

- AAs alternative for wide alveolar ridges.
- Implants with Ø 5.0 mm diameter are recommended for canine teeth and upper jaw/lower jaw molars.

| Product-No. | | Ø | Shoulder | Insertion depth | Comments |
|---|---|---|---|---|---|
| Z5c-50-08 |  | 5.0 mm | 6.0 mm | 8.0 mm | Wide thread diameter with reduced length, particularly suitable for wide alveolar ridges with reduced vertical bone availability. |
| Z5c-50-10 |  | 5.0 mm | 6.0 mm | 10.0 mm | Wide thread diameter for universal use especially for wide alveolar ridges. |
| Z5c-50-12 |  | 5.0 mm | 6.0 mm | 12.0 mm | Wide thread diameter, especially for wide jaws with particularly good vertical bone availability. |
| Z5c-HC50 |  | Healing cap for Z5c implants with 5 mm wide thread diameter. | | | |

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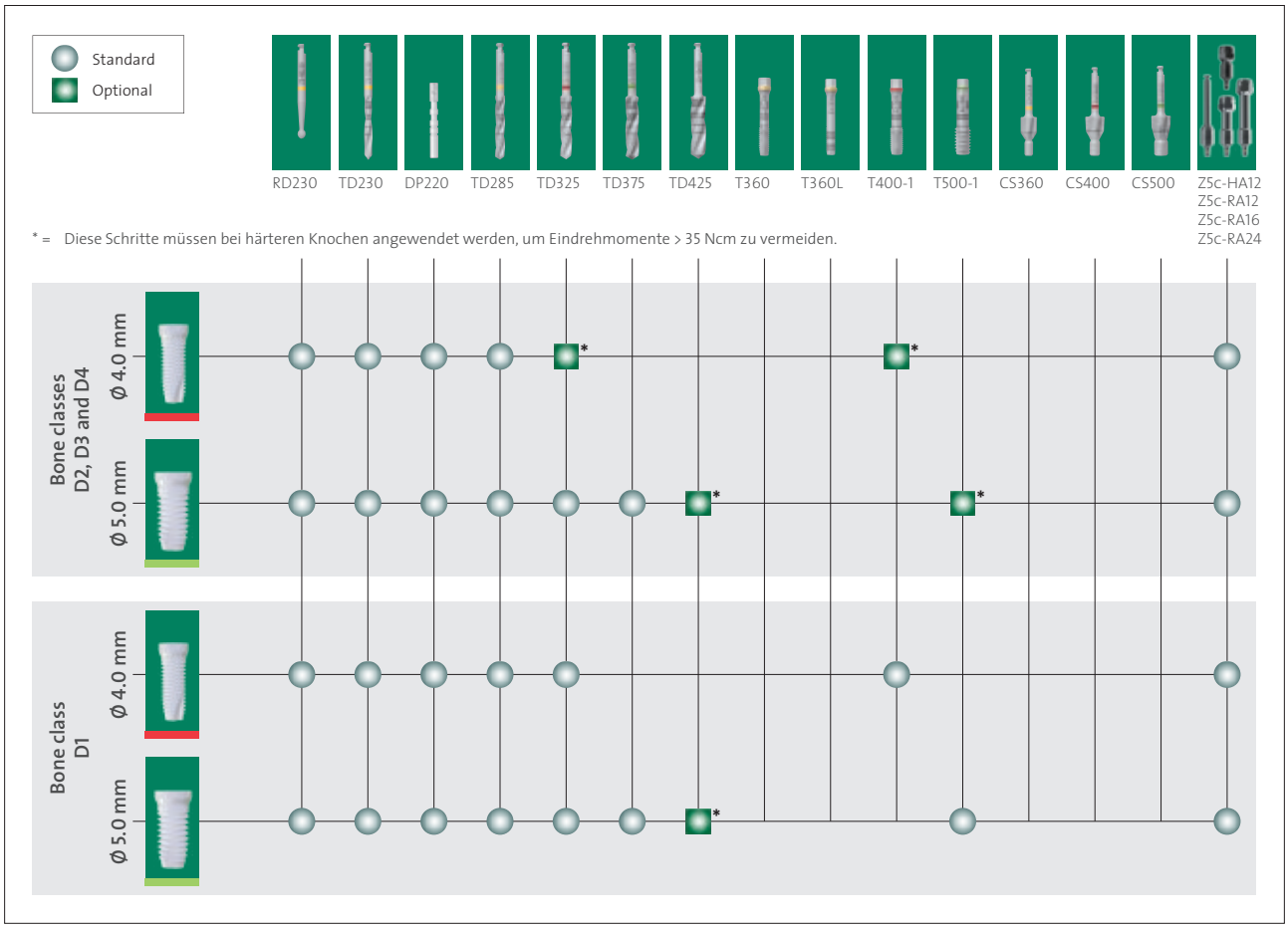
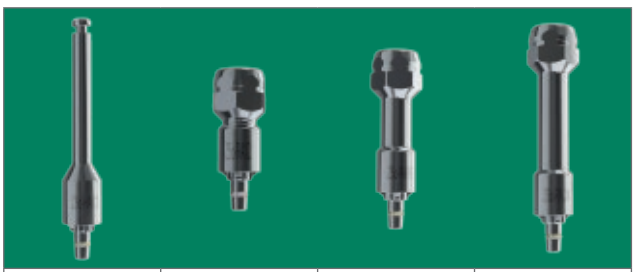
# Drilling protocol




During surgery, the surgeon decides on the scale of preparation required depending on the bone quality. In the case of harder bone and a two-piece system, there is a tendency to larger preparation to achieve torques of less than 35 Ncm during insertion.

The optimum torque range lies between 25 – 35 Ncm.

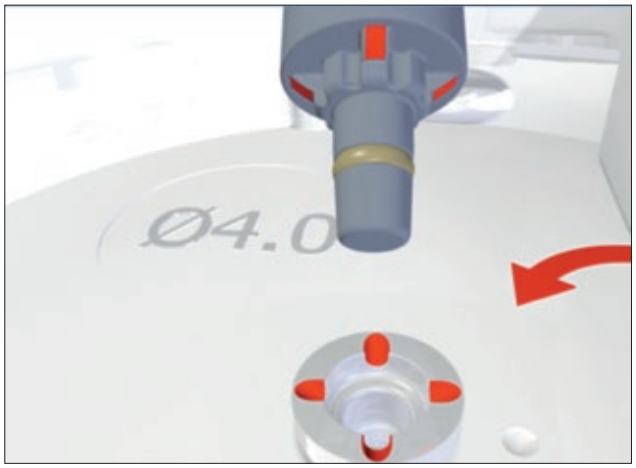
**35 Ncm must not be exceeded under any circumstances.**



| Z5c-HA12 | Z5c-RA12 | Z5c-RA16 | Z5c-RA24 |
|---|---|---|---|
| Hand piece adapter 12 mm | Ratchet adapter 12 mm | Ratchet adapter 16 mm | Ratchet adapter 24 mm |
| Stainless steel, for insertion of Z5c implants with the hand piece (max. 25 Ncm) | Stainless steel, for insertion of Z5c implants with the torque ratchet (max. 35 Ncm) | Stainless steel, for insertion of Z5c implants with the torque ratchet (max. 35 Ncm) | Stainless steel, for insertion of Z5c implants with the torque ratchet (max. 35 Ncm) |

**In case of pronounced resistance (> 35 Ncm)**
Torque should not be too high during implant insertion. This could otherwise lead to damage of the insertion screw adapter or the implant.

**If the two-piece Z5c implant cannot be inserted to the target depth at a maximum of 35 Ncm, remove implant, store in physiological saline solution and further prepare the drilled hole with the appropriate thread cutter (in case of Ø 4 mm / Ø 5 mm implants also prepare the cortex area with the TD425.**

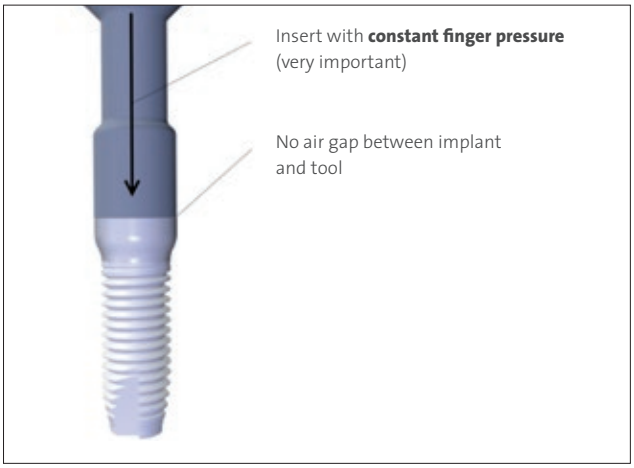



**Handling of the insertion screw adapter**
During the insertion of two-piece Z5c implants it must be assured that the insertion screw adapter precisely fits the target position on the implant and is positioned flush with the implant.

*Attention: do not leave an air gap between the implant and tool (connecting surface).*

During insertion, consistent vertical force (very important!!) must be exerted on the insertion screw adapter to ensure that the insertion screw adapter does not slip upwards out of the implant. **Important: insert precisely in rotational axis.**

When using an automatic tool for insertion, rotation may only commence once it is assured that the angle piece adapter is connected flush with the implant. Do not insert a rotating instrument into the implant.



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**Healing cap**

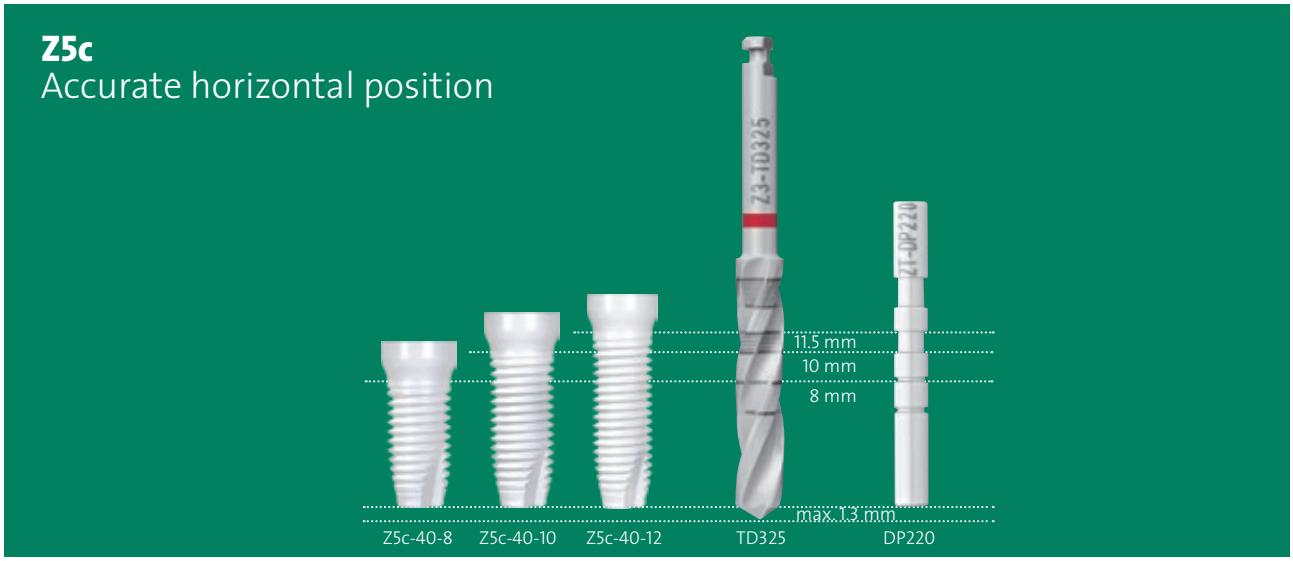
After implant installation, the internal cavity of the two-piece Z5c implant connection is covered with the enclosed healing cap Z5c-HC40/Z5c-HC50 (manufactured from PEEK (Polyetheretherketone). The healing cap is secured into place by a simple snap and click technique. Transgingival healing is recommended where ever possible. Good wound closure with closefitting gingiva is of utmost importance.

**Protective device healing period**

Temporary restorations may not transfer any forces onto Z5c Iimplants (see sec.: 2.4).

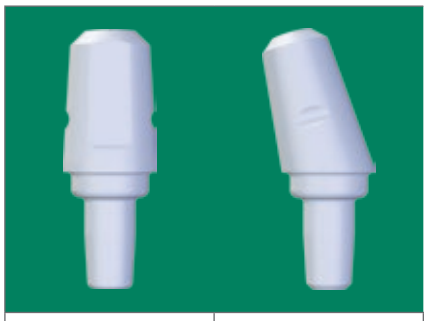
**Accurate horizontal position**

Proper insertion depth: It is recommended to observe the 11.5 mm marking.

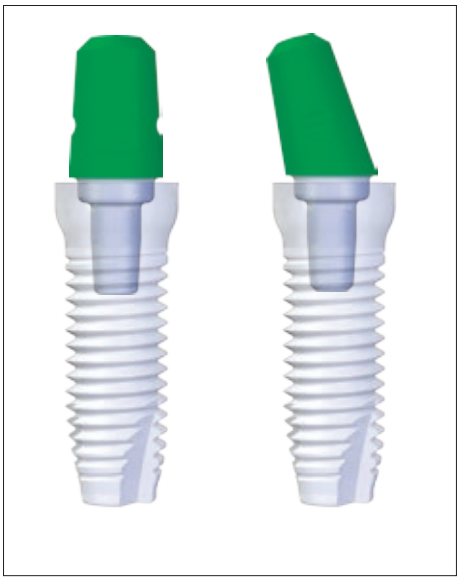


**Abutments**

A straight standard abutment and 15° angled abutment are available for prosthetic restoration. The abutment itself can be modified slightly after cementation (allow at least 10 min chemical curing) by intraoral preparation utilizing a diamond burr (see sec.: 4.3). **The area of the implant shoulder may not be prepared.**



| | |
|---|---|
| Z5c-A00<br>Straight abutment<br><br>Zirkolith®, for prosthetic restoration of Z5c implants | Z5c-A15<br>15° angled abutment<br><br>Zirkolith®, for prosthetic restoration of Z5c implants |



Area which can be prepared marked green

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**Cementing of abutments**

The durable and safe implant-abutment connection is ensured by the highly precise internal conical connection. Cementation of the abutment is an additional safeguarding measure which also ensures permanent bacteria-proof seal.

The underside of the abutment may not be manipulated/prepared/sandblasted/etched in the area of the abutment-insertion-post. Internal cavity of implant connection, as well as, abutment-insertion-post must be cleaned accurately. Careful measures/review must be taken to avoid residues/contaminations to ensure correct abutment cementing in final position.

**Cement**

For cementation dual-cure (chemical- and light-cure) self-etching (no additional surface treatment necessary) automix (double cartridge with mixing tip) cements are suitable. zsystems recommends PanaviaTM SA Cement Automix.

**Flowchart cementing**

- dry out work-field/use retraction thread
- remove healing cap
- clean internal cavity of implant connection accurately with alcohol
- dry internal cavity of implant connection/ keep dry (paper points)
- insert abutment into ratchet adapter Z5m-RA16, Z5m-HA12 or Z5m-RA24
- clean abutment-insertion-post with alcohol and dry (no additional surface treatment permitted, no sandblasting or other!)
- dispense a little amount of cement onto the abutment-insertion-post and distribute circular
- insert abutment into implant and activate implant abutment connection pressing down the abutment firmly
- light-cure
- remove excess cement after curing

Area of abutment-insertion-post where cement may be applied marked red

**Preparation**

Z5c implants can be modified slightly after cementation (allow at least 10 min chemical-cure) by intraoral preparation utilizing a diamond burr (see sec.: 3.7/4.3). **The area of the implant shoulder may not be prepared.**

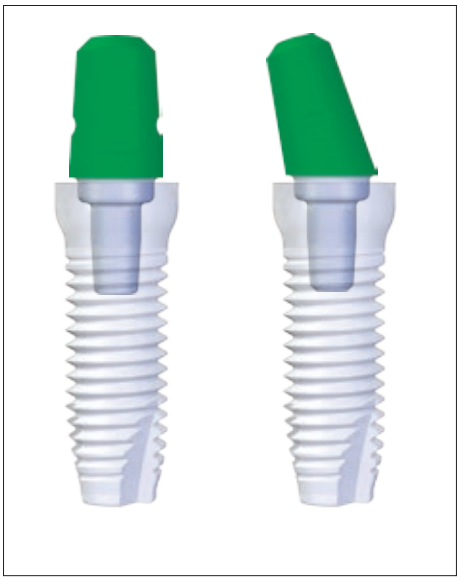
**Impression taking**

Impressions are always taken after the abutment has been cemented. The procedure is analogous to the standard procedure with a natural prepared tooth (see sec.: 4.4).

Prefabricated impression caps/laboratory analogs are not available.

**Prosthetic restoration of Z5c implants**

After impression taking of the cemented abutment, the following work steps don't differ from the procedure with monotype Z5m implants. Please refer to the related sections of the surgical and prosthetic manual for prosthetic restoration (see sec.: 4.1 – 4.12).



*Area which can be prepared marked green*

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# Notes