

Z5mlb (LockBall) Implants

General note

Chapters 1–4 of the surgical and prosthetic concept are to be followed for patient treatment with Z5mlb implants.

Chapter 6 describes specific features of Z5mlb implants, as well as, deviations from previously described procedures.

Clinical application (see also section 2.1 / 2.2)

- Z5mlb implants are designed for surgical implantation into the edentulous upper and lower jaw for the attachment of dentures to replace missing teeth. The Z5mlb implant system is also suitable for patients with metal allergies and the chronic diseases resulting from them.
- Maximum axial divergence of Z5mlb implants is 20° to each other.
- Z5mlb implants must be protected against any movement/loading during the osseointegration phase.
- Z5mlb implants are appropriate for horizontally (width) reduced space.

Contraindications (see also section 2.1 / 2.2)

- Less than 2 Z5mlb implants per jaw.
- Not suitable for vertically (height) reduced space.
- Not suitable for unilateral free-end prostheses without lateral support.
- Not suitable for situations where a rigid connection is needed.

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Z5m-36-08lb and Z5m-36-10lb

- Insertion depth 8 and 10 mm. Reduced thread diameter for limited alveolar ridge width and reduced to sufficient vertical bone availability.
- Maximum axial divergence of Z5mlb implants is 20° to each other.
- 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.

Z5m-40-08lb and Z5m-40-10lb

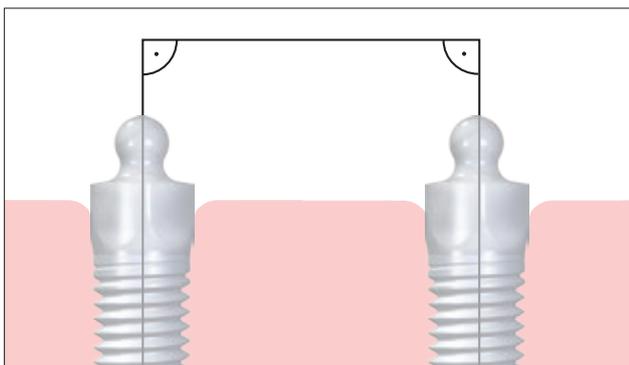
- Insertion depth 8 and 10 mm. Standard thread diameter for reduced to sufficient vertical bone availability.
- Maximum axial divergence of Z5mlb implants is 20° to each other.
- As rule of thumb the implant with the largest possible diameter should be used, since the mechanical strength increases more than proportionally with increasing implant diameter.

Product No.		Ø	Shoulder diameter	Insertion depth	Comments
Z5m-36-08lb		3.6 mm	4.4 mm	8.0 mm	Reduced thread diameter and reduced length for limited alveolar ridge width and reduced vertical bone availability.
Z5m-36-10lb		3.6 mm	4.4 mm	10.0 mm	Reduced thread diameter, for limited alveolar ridge width and sufficient vertical bone availability.
Z5m-40-08lb		4.0 mm	4.4 mm	8.0 mm	Standard thread diameter and reduced length for reduced vertical bone availability.
Z5m-40-10lb		4.0 mm	4.4 mm	10.0 mm	Standard thread diameter, for sufficient vertical bone availability.

Guided Surgery

zsystems recommends case planning by means of 3-dimensional X-ray (DVT/CT) and fabrication of a surgical template, derived from the 3D planning software data, providing guidance for parallel implant bed preparation and implant placement.

Caution: To ensure long term function of retention elements, as well as, to avoid overloading of implants, axial loading of the implants is ideal. Therefore, whenever possible, the implants should be positioned in parallel to each other and vertically to the occlusal plane (if only 2 implants are placed, a tangential rotation of the overdenture must be allowed). The implants should be placed at the same horizontal level to allow easy handling while removing and inserting the prosthesis.



Measurement of axial divergence

Drilling protocol

The drilling protocol for Z5mlb implants is consistent with the general drilling protocol for 3.6 and 4.0 mm diameter Z5m implants (see sec.: 3.2/3.4/3.5), although angle piece and ratchet adapters are different. Angle piece adapter Z5m-HA12lb or ratchet adapters Z5m-RA16lb / Z5m-RA24lb are to be used for LB implant insertion.

		
Z5m-HA12lb Angle piece adapter 12 mm	Z5m-RA16lb Ratchet adapter 16 mm	Z5m-RA24lb Ratchet adapter 24 mm
Stainless steel, for insertion of Z5mlb implants with the angle piece	Stainless steel, for insertion of Z5mlb implants with the torque ratchet	Stainless steel, for insertion of Z5mlb implants with the torque ratchet

Implant divergence

Z5mlb implants can only be fitted with a prosthetic restoration if maximum axial divergence of Z5mlb implants does not exceed 20°. zsystems recommends an optical check of implant axis regarding parallelism by using depth gauge DP220 after pilot drilling.



Insertion depth and gingiva height

Implant selection gingiva thickness

Measure the maximum gingival thickness at the planned implantation site (e.g., by using a probe with root canal measuring stop, local anaesthesia) prior to the surgery to determine the insertion depth of the Z5mlb implant into the bone.

Z5mlb implants a reavailable for a gingiva hight of 2 mm. Implant shoulder must be placed 1 mm above gingiva level to avoid overgrowth of gingiva.

Protective device healing period

Z5mlb implants must be protected against tongue-, cheek- and chewing pressure during osseointegration (see sec.: 2.4). Most times it is appropriate to generously grind out an existing overdenture in the area of the Z5mlb implants to avoid any contact with the overdenture.

Caution: Assure position stability of overdenture!

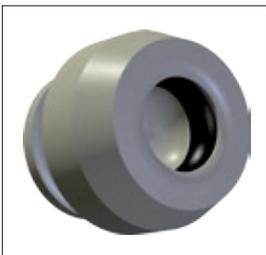
Preparation

Z5mlb implant abutments and shoulders may not be prepared.

Matrix

A metal-free Z5mlb-M2 matrix is recommended for the prosthetic restoration of Z5mlb implants.

This lockball matrix, proprietary to zsystems, consists of a biocompatible, tooth-colored, radiopaque plastic poly-ether ketone (PEEK) and fits all standard lockball implants with 2.25 mm ball diameter.

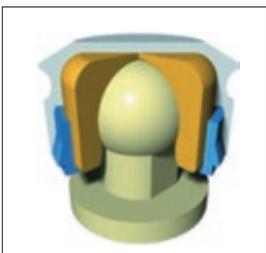


Z5mlb-M2 matrix, metal-free

The retention element consists of an O-ring and is guided by an inner groove. The pull-off force is approximately 7 N and cannot be changed individually. In case of wear or defect, the O-ring is easy to replace.

The maximum axial divergence of Z5mlb implants is 20° from each other.

Using other matrix systems, for example, the Pro-Snap matrix by Cendres + Métaux (www.cmsa.ch) is possible, comply with the instructions for use of the corresponding matrix manufacturers.



Pro Snap matrix,
Manufacturer: Cendres + Métaux
(www.cmsa.ch)

The Pro-Snap matrix system provides color-coded retention inserts with different retention values (yellow 8 / red 10 / green 12 N). The retention value (pull-of strength) can be varied easily by simple exchange of the retention insert. Please follow the Cendres + Métaux (www.cmsa.ch) manual.

Impression taking

No impression caps are available. Impressions are taken analogously to the standard procedure with a prepared natural tooth (see sec.: 4.4, page 2) using elastic impression material.

Master model

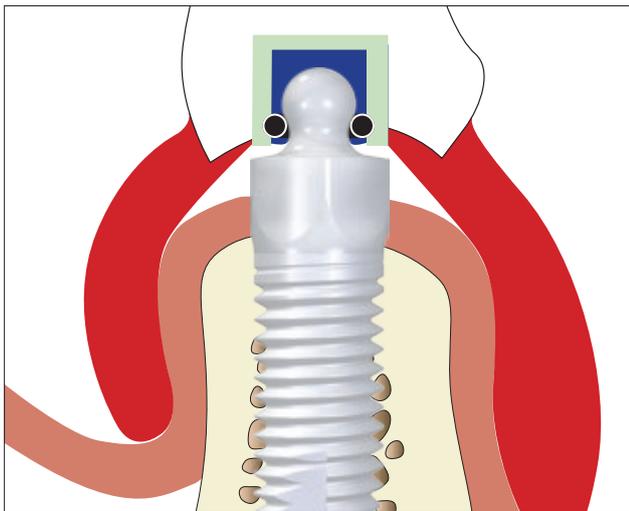
The Cendres + Métaux (www.cmsa.ch) product portfolio offers suitable lab analogs for fabrication of the master model which can also be used when using the Z5mlb-M2 matrix.

For model fabrication, the lab analogs must be inserted precisely into the impression. Positioning must be checked carefully and, if necessary, the lab analogs need to be fixated in the impression using an instant adhesive.

Prosthetic restoration of Z5mlb implants

As a matter of principle, overall planning is recommended for new fabrication of the prosthetic restorations.

Please observe the detailed instructions for use of Cendres + Métaux (www.cmsa.ch) for mounting Pro-Snap matrices, which also apply in principle for the metal-free Z5mlb-M2 matrix.



Schematic illustration: Z5mlb implant, Z5mlb-M2 matrix and prosthesis cross-section

Plastic resin may under no circumstances flow between the matrix and the implant abutment during chairside bonding of the matrix into the prosthesis. This can be assured by placing a thin foil or a coffer dam between the abutment and matrix.

The prosthesis must provide sufficient space both for the matrix and the resin (preoperative prosthetic planning!).

Try-in of the overdenture

The try-in should take place at first without the retention inserts installed in the Pro-Snap matrices. In the first step you should check the fit of the overdenture on the gingiva and in occlusion. In the second step the denture is tried-in with retention inserts and the retention force is adjusted.

Relining a denture anchored with Z5mlb implants

The alveolar ridge shrinks after a longer wearing time, so that the denture worn on the Z5mlb implants sinks down in the region of the mucosal bed. This leads to loss of resilience of the matrices and higher loads on the Z5mlb implants. At this point relining is necessary.

Thus, hybrid dentures with resilient anchoring elements must be checked in three-monthly recalls to eliminate damaging movements of the denture by corresponding measures early on.

The relining impression is taken directly over the Z5mlb implants. Here attention must be paid to correct seating of the denture or of the anchoring elements on the Z5mlb implants.

The laboratory analogs are then positioned in the dental laboratory and a relining model is produced for use in relining.

After relining, the matrices must be checked for possible impacting resin residue and correct function. It may be necessary to replace the retention elements of the matrix. Please follow the detailed instructions of the manufacturer Cendres + Métaux (www.cmsa.ch) for replacing Pro-Snap retention elements (Cendres + Métaux (www.cmsa.ch) Pro-Snap recommended).

Caution: The careful check of the matrix after relining is indispensable for correct function of the retention elements. If the function of the matrix is obstructed, this can lead to damage of the Z5mlb implant.

