



Rhausler Bone Screw Insertion Instructions

Step by Step – the bone screw insertion and cam locking is one action on a screw-by-screw basis. It is not necessary to insert all bone screws and then return to lock all bone screws as with most other systems.

- 1) Surgeon gets the desired bone screw in the UNLOCKED position with both the central hex fully engaged and the cam locking mechanism (outer sleeve) inserted into the cam.
- 2) Surgeon inserts the bone screw into the groove (screw hole) in the Dynamic, Semiconstrained or QuickPlate plates or PLAGE with visual identification that the widest part of the bone screw head is in the groove. At this point the 4 pedals in the unlocked position will have moved in slightly and then returned to the unstressed and neutral position in the groove. The surgeon on advancing the bone screw cannot feel this slight movement of the pedals. The bone screw head is specifically not tightened to the bone at this point.
- 3) Surgeon now LOCKS the cam in the bone screw in the groove in an “untightened” to the bone position. The bone screws are dynamic in the slots and can freely slide and rotate in the slots. A common misconception is that the cam lock expands the pedals of the bone screw head. The cam lock only holds the bone screw head pedals in the neutral position and it is the shape of the groove that “locks” the bone screw in the groove as the cam prevents the pedals from the inward movement necessary to come out of the groove. If the bone screws are mechanically tightened to the bone before the locking cam is moved into the locked position, then the force needed to lock is greatly increased and may exceed the force that the “clocked” tightener can apply. Slightly unscrewing this bone screw by a fraction of a turn removes the bone tightening force on the bone screw head, which removes the distortion of the bone screw head pedals, and allows the locking cam to be moved to the locked position easier.
- 4) All the bone screws of the construct are placed in a like manner.
- 5) Once all the bone screws are placed and locked in the slot, they are sequentially tightened to the bone for final tightening using only the inner hex. The bone screw heads are “locked” in the plate groove but can freely turn in these slots. This turning does not affect the locking mechanism.

Additional tips:

- 1) If the cam locking mechanism of the screwdriver becomes disengaged from the bone screw head and the bone screw is inserted into the slot and then tightened, the bone screw head pedals can become slightly distorted making the reengagement of the cam locking part of the insertion screwdriver into the cam difficult or impossible. The bone screw can be loosened slightly to leave the screw head in the groove to lessen the bone screw pedal distortion, and then insert the cam locking mechanism. If necessary you can change out the bone screw.
- 2) If the screwdriver is removed from the bone screw head in the wound, the easiest way to reestablish the bone screw hex and the cam locking mechanism is to:
 - a. Disassemble the screwdriver by pulling off the outer cam locking mechanism from the screwdriver body.



- b. Insert the cam locking mechanism into the bone screw cam, apart from the screwdriver body. Once inserted the cam locking mechanism will stand on its own.
 - c. Insert the body of the screwdriver hex through the engaged cam locking mechanism and rotate until it goes into the hex of the bone screw. The screwdriver and the cam locking mechanism are engaged to lock the cam and to tighten the bone screw to the bone.
- 3) To avoid the scrub nurse/tech from passing a locked bone screw to the surgeon, the scrub nurse/tech needs to load the bone screw from the bone screw caddy. The screwdriver outer cam locking mechanism needs to be pulled up tight toward the handle. Then bring in the screwdriver at a 45 degree to the caddy to engage the bone screw hex. Once the hex of the screwdriver is on top of the bone screw hex, while bringing the screwdriver up to a perpendicular position, slightly rotate the screwdriver with downward pressure to fully engage the bone screw hex. Once the hex of the screwdriver is engaged into the bone screw now rotate with downward pressure the outer cam locking mechanism. Once the cam locking mechanism is engaged in the cam the bone screw is now ready to be removed from the caddy by pulling the screwdriver straight up from the caddy.

Note: The scrub nurse/tech should be specifically instructed to engage the hex of the screwdriver and to engage the cam locking mechanism into the cam and NOT to rotate the cam locking mechanism so that the cam is turned to the locked position.