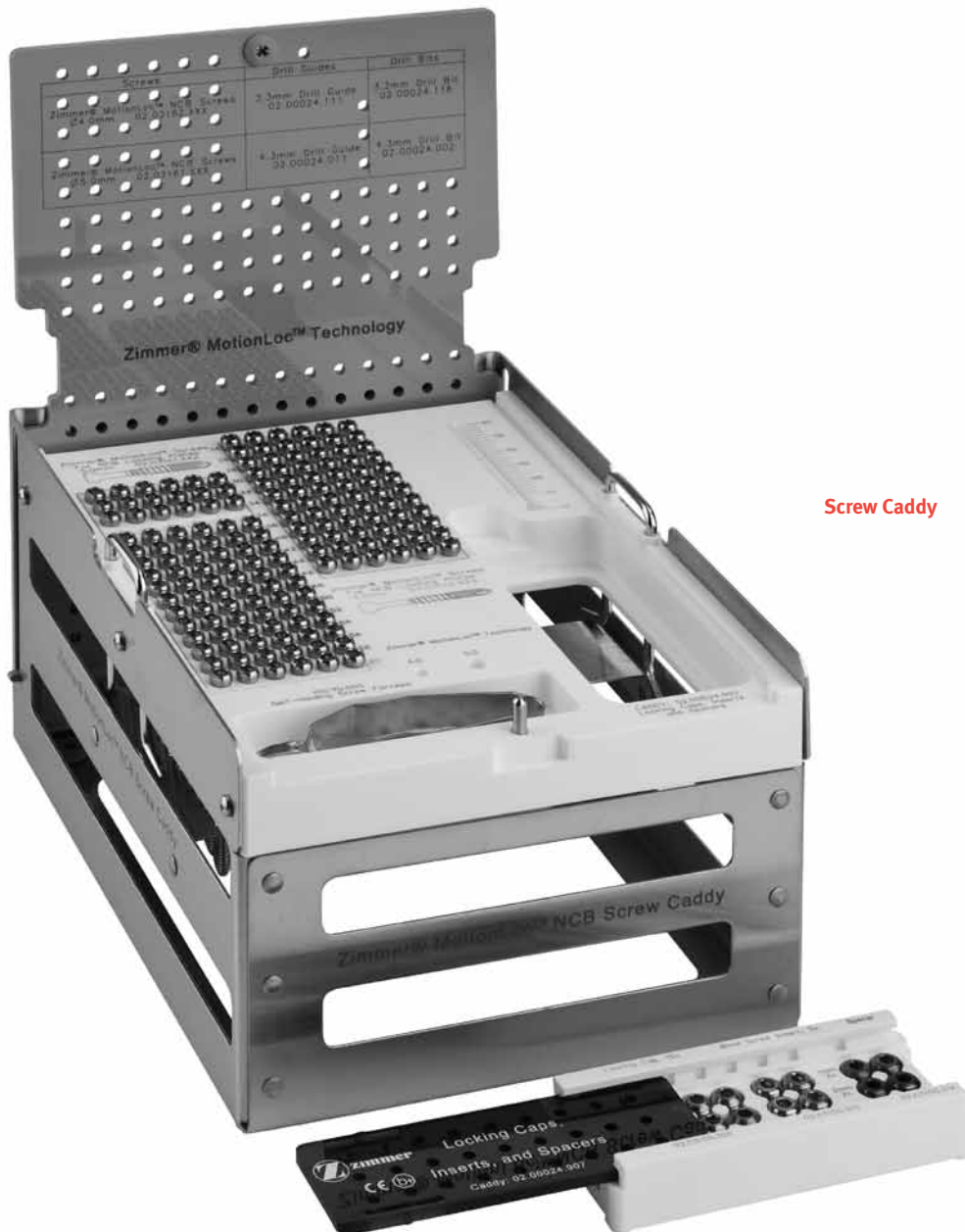




**Zimmer® MotionLoc™
Screw for the NCB®
Polyaxial Locking
Plate System**

Surgical Technique





Screw Caddy



NCB Polyaxial Locking Plate

Concept

- *MotionLoc* Screws reduce the stiffness of a locked plating construct.
- *MotionLoc* Screws reduce construct stiffness by elastic flexion of the *MotionLoc* Screw shaft within a controlled motion envelope in the near cortex
- *MotionLoc* constructs require the **plate to be elevated slightly off the bone** to enable elastic flexion of *MotionLoc* Screws

Indications for Use – MotionLoc™ Screw for NCB® Polyaxial Locking Plate System

The NCB Polyaxial Locking Plate System is indicated for temporary internal fixation and stabilization of fractures and osteotomies of long bones.

Contraindications

Severe muscular, neural, or vascular diseases that endanger the extremities involved.

All concomitant diseases that may impair the fixation of the implant and/or the success of the intervention.

Lack of bone substance or poor bone quality which makes stable seating of the implant impossible.

Acute or chronic, local or systemic infections.

Allergy to the implanted material.

Technique

WARNING: The *MotionLoc* Screws are only intended for use in the diaphyseal side of a fracture where screw purchase in the far cortex opposite the plate can be obtained. Do not use them in the metaphysis or epiphysis of the bone.

WARNING: The *MotionLoc* Screws should not be used with NCB plates in a condition where the gap between the plate and the bone is greater than 3mm as this may place undue stress on the **screw and cause failure.**

WARNING: Do not use standard NCB Screws in the same fracture segment as the *MotionLoc* Screws since this may lead to a stress riser and potential failure.

WARNING: Do not use 4.0mm *MotionLoc* Screws for distal femur fractures.

NOTE: To maximize the effectiveness of the *MotionLoc* Screw, the plate should not be compressed to the bone. Use NCB Spacers in the diaphysis to elevate the plate off the bone surface. NCB Spacers are available in 1mm, 2mm, and 3mm sizes. Two spacers may be inserted into the plate before plate application.

Insert the NCB plate and temporarily fix it to the bone with a 2.0mm K-wire at each end of the plate (Fig. 1).

Fix the epiphyseal and metaphyseal segments of the fracture as described in the surgical techniques for the NCB Distal Femoral, Proximal Tibial, and Proximal Humeral Plates (Fig. 2).

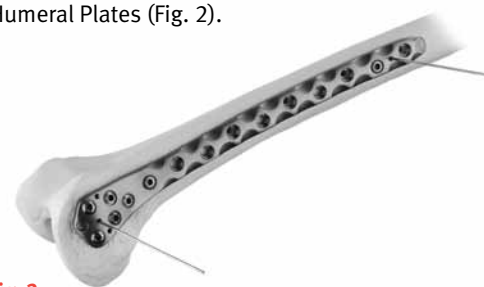


Fig. 2



Fig. 1

For NCB Femoral and Tibial Plate Shaft Fixation

WARNING: A **MINIMUM of four (4)** *MotionLoc* Screws are required to be placed in the shaft of the bone: 1) distal to the fracture in proximal humerus and proximal tibial fractures; and 2) proximal to the fracture for distal femur fractures.

To insert the **5.0mm** *MotionLoc* Screws use the **4.3mm** Drill Guide. Fully seat the Drill Guide into the plate hole perpendicular to the plate surface, and then tilt it as necessary to achieve the desired screw angle.

NOTE: The Drill Guide must remain fully seated in the plate hole to limit the amount of angulation to within the 30° cone allowed by the NCB system (Fig. 3).

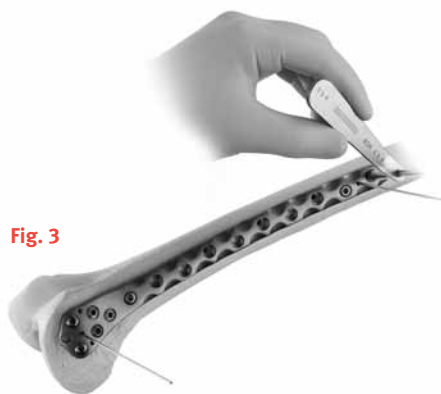


Fig. 3

Drill using the **4.3mm** drill bit. If drilling in hard cortical bone, remove the Drill Guide and tap the far cortex with the 5.0mm Tap.

Use the *NCB* Depth Gauge to determine the appropriate screw length (Fig. 4). *MotionLoc* Screws should fully engage the far cortex. For maximum stiffness reduction, screws should be placed as perpendicular to the plate as possible.



Fig. 4

Select the appropriate *NCB MotionLoc* Screw from the *MotionLoc* Screw Caddy. Insert the screw until it is gently seated in the plate hole (Fig. 5).



Fig. 5

WARNING: To prevent screw stripping in poor quality bone, **do not over-tighten** the screw.

NOTE: The plate may be gently lagged to the bone, but **do not compress plate to bone**.

NOTE: If *NCB* Spacers are not used, and the plate is directly adjacent to the bone, the *MotionLoc* Screws should be backed out a minimum of 1/2 turn to provide a 1mm gap.

WARNING: After insertion, the reverse cutting threads (for screw removal) of the *MotionLoc* Screw should not be engaged in the near cortex as this will reduce the effectiveness of the construct and may cause failure of the screw. Verify that the threads of the *MotionLoc* Screw are not engaged in the near cortex.

To lock the screw to the plate, insert a Locking Cap and tighten it using the *NCB* 6Nm Torque-Limiting Screwdriver until a **CLICK** is heard from the handle of the Screwdriver. The **CLICK** indicates that enough torque has been applied to effectively lock the Cap (Fig. 6).



Fig. 6

Repeat this procedure as necessary to insert a **MINIMUM of four (4)** *MotionLoc* Screws and Locking Caps into the shaft of the bone (Fig. 7).



Fig. 7

NCB Spacers may be removed (Fig. 8).

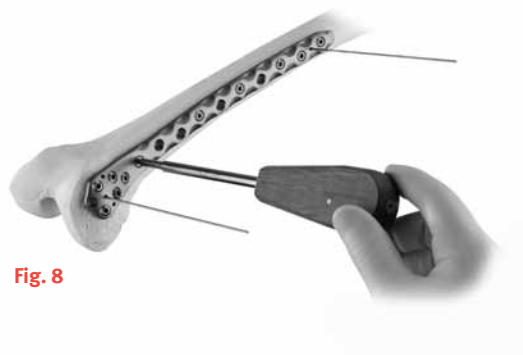


Fig. 8

For NCB Tibial and Humeral Plate shaft fixation

WARNING: A **MINIMUM of four (4)**

MotionLoc Screws on the diaphyseal side of the fracture are required to be placed in the shaft of the bone: 1) distal to the fracture in proximal humerus and proximal tibial fractures; and 2) proximal to the fracture for distal femur fractures.

To insert the **4.0mm** *MotionLoc* Screws use the **3.3mm** Drill Guide. Fully Seat the Drill Guide into the plate hole perpendicular to the plate surface, and then tilt it as necessary to achieve the desired screw angle.

NOTE: The Drill Guide must remain fully seated in the plate hole to limit the amount of angulation to within the 30° cone allowed by the NCB system.

Drill using the **3.3mm** drill bit. If drilling in hard cortical bone, remove the Drill Guide and tap the far cortex with the 4.0mm Tap.

Use the NCB Depth Gauge to determine the appropriate screw length.

MotionLoc Screws should fully engage the far cortex. For maximum stiffness reduction, screws should be placed as perpendicular to the plate as possible.

Select the appropriate NCB *MotionLoc* Screw from the *MotionLoc* Screw Caddy. Insert the screw until it is gently seated in the plate hole.

WARNING: To prevent screw stripping in poor quality bone, **do not over-tighten** the screw.

NOTE: The plate may be gently lagged to the bone, but **do not compress plate to bone**.

NOTE: If NCB Spacers are not used, and the plate is directly adjacent to the bone, the *MotionLoc* Screws should be backed out a minimum of ½ turn to provide a 1mm gap.

WARNING: After insertion, the reverse cutting threads (for screw removal) of the *MotionLoc* Screw should not be engaged in the near cortex as this will reduce the effectiveness of the construct and may cause failure of the screw. Verify that the threads of the *MotionLoc* Screw are not engaged in the near cortex.

To lock the screw to the plate, insert a Locking Cap and tighten it using the NCB 6Nm Torque-Limiting Screwdriver until a **CLICK** is heard from the handle of the Screwdriver. The **CLICK** indicates that enough torque has been applied to effectively lock the Cap.

Repeat this procedure as necessary to insert a **MINIMUM of four (4)** *MotionLoc* Screws and Locking Caps into the shaft of the bone.

NCB Spacers may be removed.

Implant Removal

To remove the NCB plate, first remove all the Locking Caps. Then loosen all the bone screws without completely removing them (this prevents rotation of the bone plate when removing the last screw). Then completely remove all bone screws.

NOTE: Make sure that the tip of the NCB Screwdriver is correctly placed in the hex drive of the locking caps and/or *MotionLoc* Screws. Failure to do so could damage the hex drive and complicate the extraction of the implant.

NOTE: In case of difficulties in loosening the *MotionLoc* Screws, tighten the screws slightly before loosening them.

Technical Pearls

Minimizing stress in the fixation construct:

- Elevation of the plate over the bone surface is defined by the first two locked screws.
- **Additional screws should be gently seated into plate holes** before application of locking caps. If an additional screw is not fully seated, application of the locking cap may induce stress by forcing the screw into the bone. Conversely, if an additional screw is excessively tightened against an elevated plate, the plate may be bent.

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