



The Orthofix Femoral Nailing System

By Prof. Dr. D. Pennig

Whenever possible, femoral fractures should be stabilized within the first 24 hours following injury, provided the patient's condition will allow it. Do not start surgery unless the fracture is well reduced.

INSERTION SITE

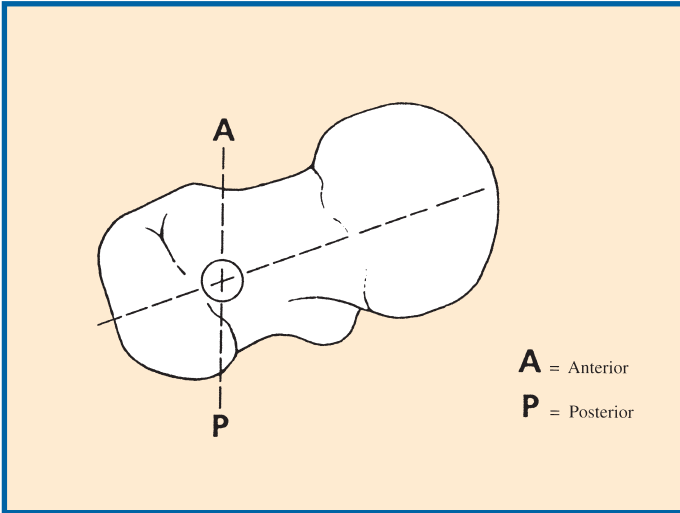
- The point of insertion is in the piriform fossa, close to its lateral wall, just medial to the greater trochanter. This point should never be too medial, in order to avoid injury to the Circumflex Femoral Artery.

REAMING

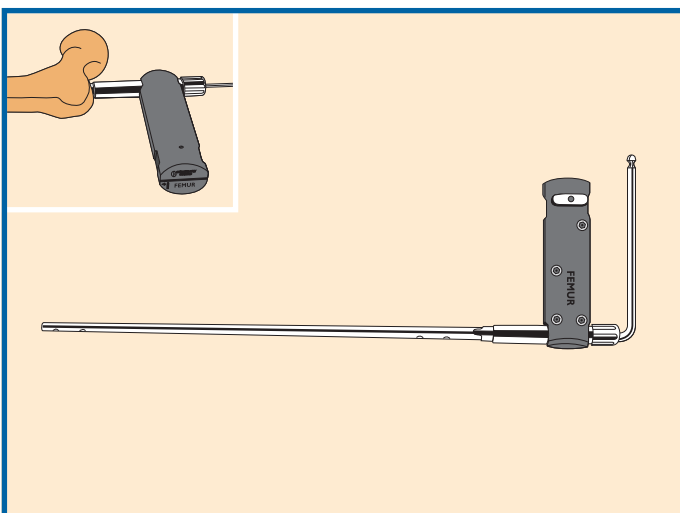
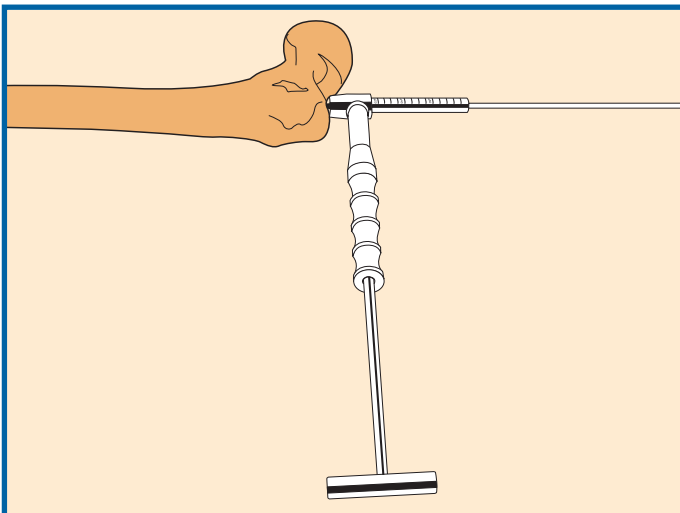
- Insert the guide wire with olive centrally in the medullary canal. This is ensured by driving it down until its tip sits in the subchondral bone exactly on the roof of the intercondylar notch, midway between the femoral condyles. Ream to a width 2-2.5 mm greater than the proposed nail. Use the cannulated Orthofix Internal Nail Template of appropriate diameter to check adequacy of reaming and the correct nail length. Exchange olive tipped guide wire for plain guide wire before removing template.

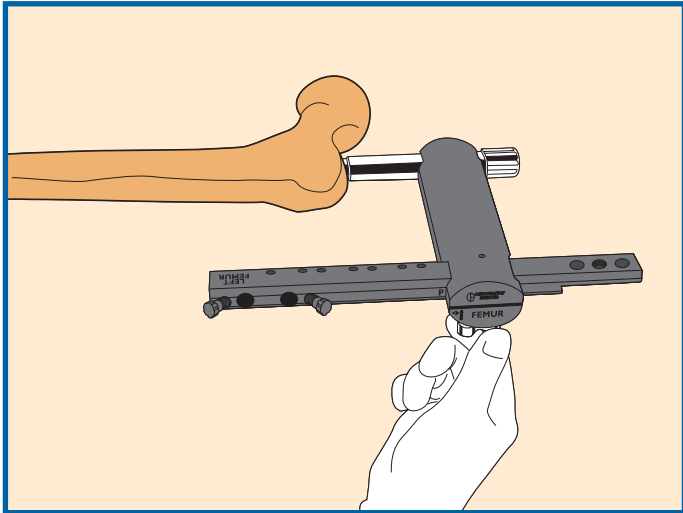
NAIL INSERTION

- Screw the Locking Rod into the nail and slide the handle over it. Check that the wings are engaged in the nail and tighten firmly with the Locking Rod Securing Nut. Insert the nail over the guide wire. **Use image intensification when passing the fracture.** The nail is correctly inserted when the step of the nail support is at the same level as the tip of the greater trochanter. **THE GUIDE WIRE MUST NOW BE REMOVED.**



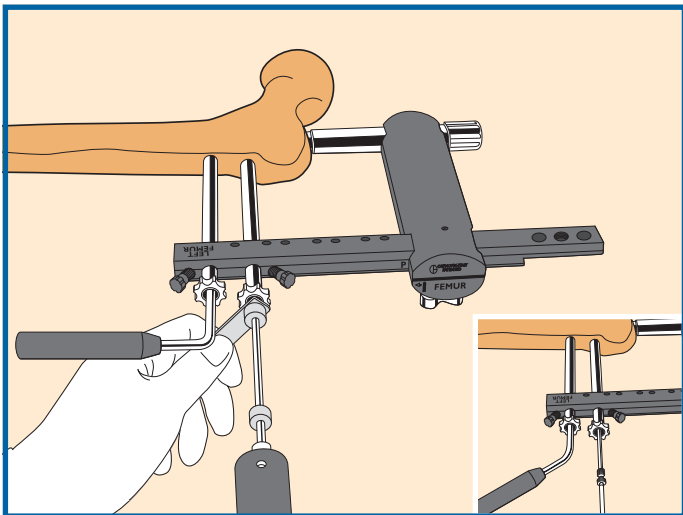
A = Anterior
P = Posterior



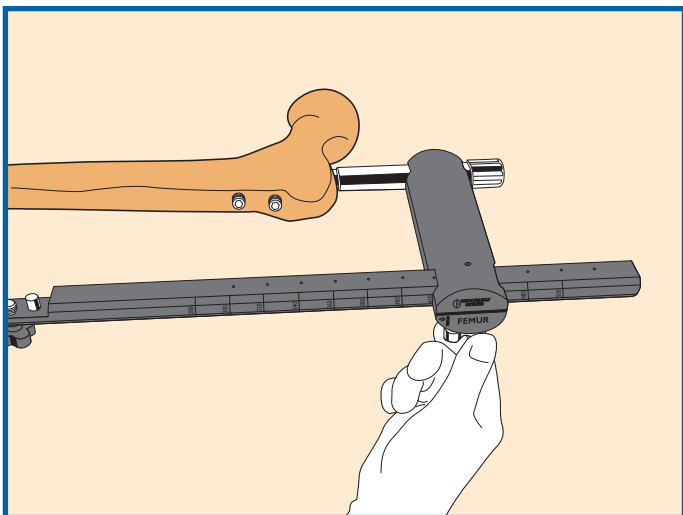


PROXIMAL LOCKING

- Insert the smaller component, part "A", of the guide bar into the handle, adjust its position until the "P" mark is level with the **front** surface of the handle, and lock it.



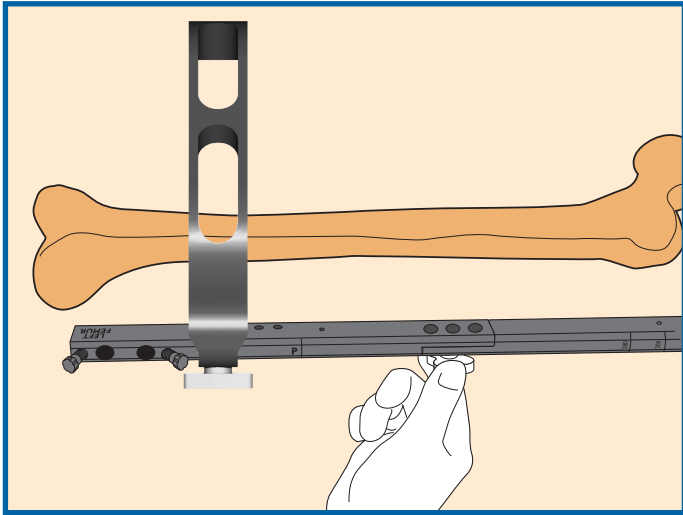
- **The ideal locking plane is about 20° anterior to the frontal plane.** Make two stab incisions at the level of the holes in the guide bar and extend them down to the bone with blunt dissection. Insert two screw guides into the holes in the guide bar and push them in turn down to the bone using the straight trocar. Lock each screw guide into position with the guide locking screw. Using a **4 mm** drill bit and drill guide inserted into the screw guide, drill the first hole. Remove the drill bit with the drill guide and insert the angled trocar. Drill the second hole. Insert the locking screws of correct length. Remove part "A" of the guide bar from the handle.



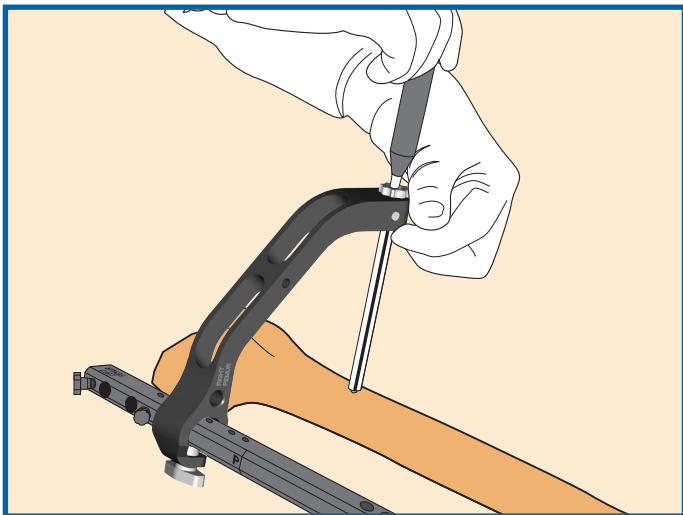
DISTAL LOCKING

NOTE: Before proceeding with distal locking, check that there is no rotational deformity, and that there is no distraction of the fracture site.

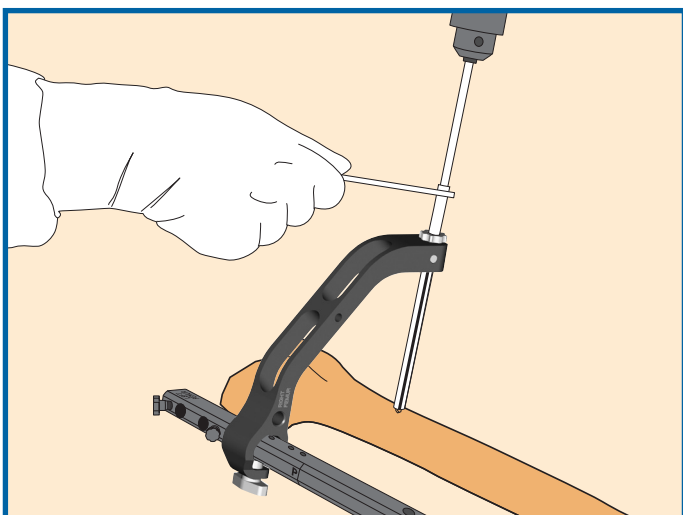
- Lock part "B" of the guide bar firmly to the handle, with the correct number corresponding to the length of the nail adjacent to the front edge of the handle.



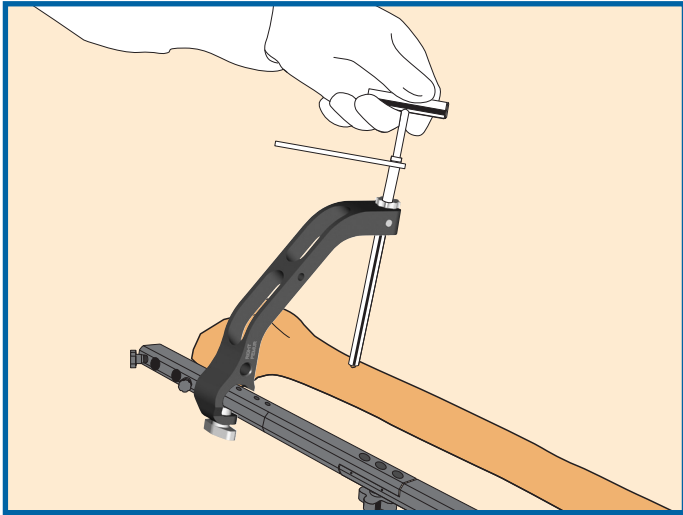
- Attach part "A" of the guide bar with the distal outrigger mounted on its ANTERIOR side, to part "B".



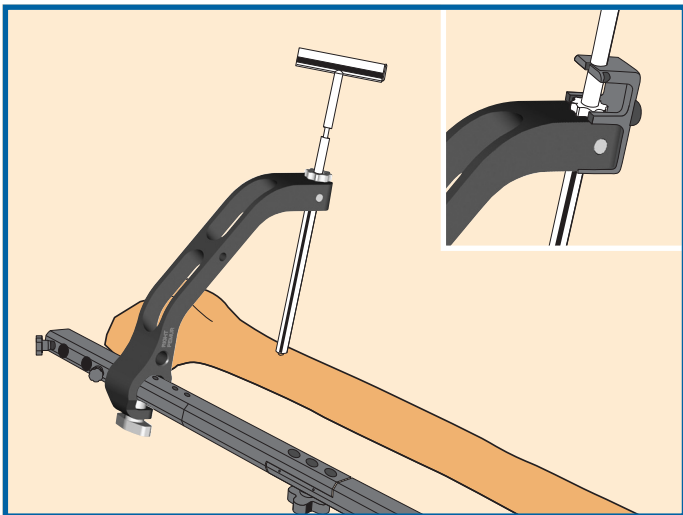
- Insert a screw guide through the hole in the outrigger down to the skin anteriorly. Position it over the centre of the femur, make a 15 mm incision at this point and extend it down to the deep fascia. Split the muscles longitudinally down to the bone. Insert the straight trocar into the screw guide and push the two together down to the bone. Tighten the small screw to fix the screw guide. If necessary, the position of the guide bar relative to the femur should be adjusted in the lateral view so that the screw guide meets the surface of the bone at 90°, to avoid oblique perforation of the anterior cortex.



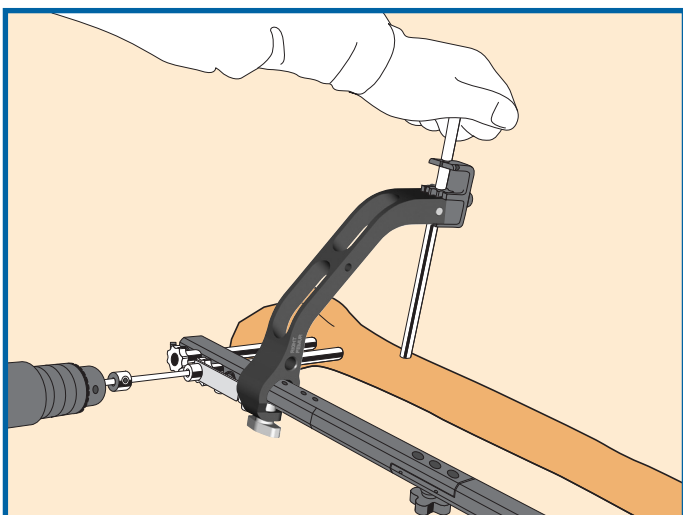
- Withdraw the trocar, insert the **6 mm** drill guide and drill the anterior cortex with the **6 mm** drill bit.



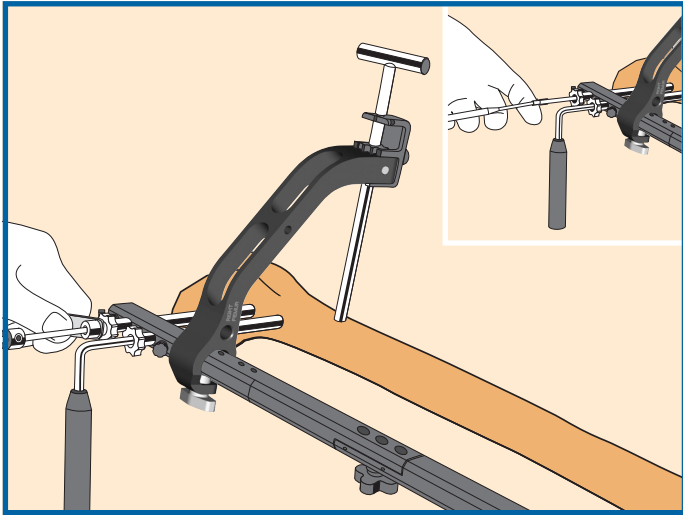
- Clear the hole in the bone with the 6 mm T-handled Reamer.



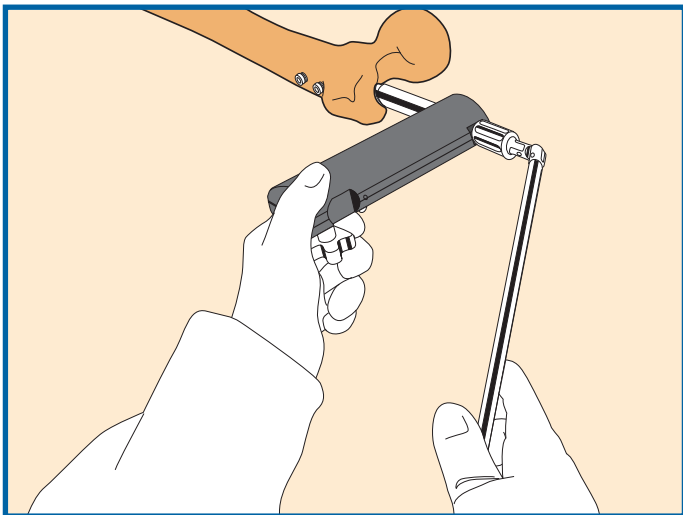
- Remove the 6 mm T-Handled Reamer and insert the T-Handled Stabilizing Rod through the screw guide, down to the nail, tapping the nail to ensure contact. Attach the correct Stabilizing Spacer for the diameter of the nail (e.g. "10" for a 10 mm nail) to the T-Handled Stabilizing Rod.



- Maintaining contact between the tip of the Stabilizing Rod and the nail, insert two screw guides through the holes in the guide bar. Make a single 4-5 cm incision over the points of contact with the skin. Advance the more proximal screw guide down to the bone. Insert a **4 mm** drill guide into this screw guide and drill the bone with the **4 mm** drill bit. **While drilling, grip the T-handle of the Stabilizing Rod, to keep its tip against the nail, and maintain this position throughout the drilling procedure.**

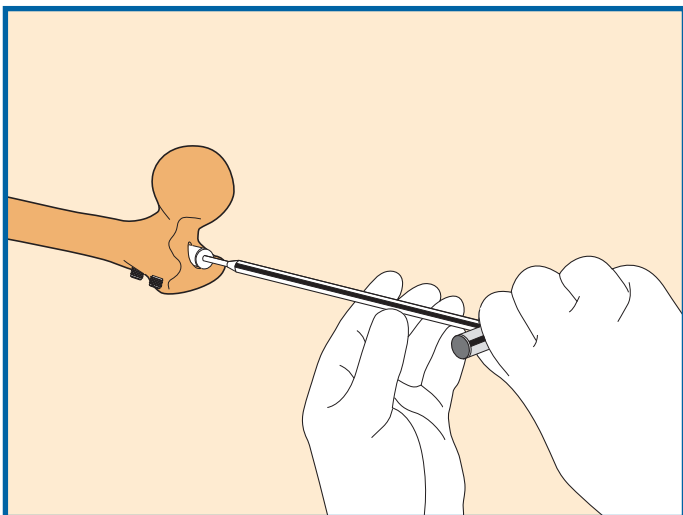


- Remove the drill bit and drill guide, and insert the angled trocar. Advance the second screw guide and drill the second hole in the same way. Insert the locking screws of correct length.



REMOVAL OF THE HANDLE AND CLOSURE

- Before removing the handle from the nail, check correct insertion of locking screws both in the AP and lateral planes.



- Remove the handle and the locking rod and insert the nail end cap over a Kirschner wire, choosing the correct length to leave the top of the nail end cap flush with, or just above, the tip of the greater trochanter.

The Orthofix Quality System has been certified to be in compliance with the requirements of:

- Medical Devices Directive 93/42/EEC, Annex II - (Full Quality System) as amended in 2007/47/EC
- International Standards ISO 13485 / ISO 9001 for external fixator devices, implants for osteosynthesis and related instruments.



See "Orthofix Internal Fixation System" instruction leaflet (PQ INF) and appropriate Operative Manual prior to use prior to use.

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