



# Surgical Technique

*Expert Femoral Nailing System*



# about us

Auxein Medical is an integrated, research based, orthopaedic Implants & instruments manufacturing company, producing a wide range of quality, affordable generic implants, trusted by healthcare professionals and patients across geographies. It is the Company's constant endeavor to provide a wide basket of generic and our innovator products that exceed the highest expectations of customers in term of quality and safety. The company has world-class manufacturing unit established in india and serves customers in over 75 countries worldwide.

## Our Achievements



## INTRODUCTION

The Expert Femoral Nail enables the surgeon to stabilize subtrochanteric femoral fractures, ipsilateral neck/shaft fractures, femoral shaft fractures, impending pathological fractures, malunions and nonunions.

## LOCKING OPTIONS

### Standard Locking

The Expert Femoral Nail with standard locking is indicated for fractures in femoral shaft (except subtrochanteric fractures).

- For sufficient proximal **static** locking, always use the 120° antegrade locking option together with the transverse static screw.



- For immediate **primary dynamization**, insert only one proximal locking screw through the dynamic slot.



- For **secondary dynamization** use both the dynamic and the 120° antegrade locking position and remove the 120° locking when required.

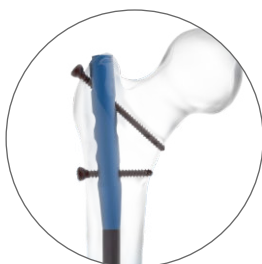


## INDICATIONS

### Standard Locking Indications

The Expert Femoral Nail with standard locking is indicated for fractures in the Femoral Shaft:

32-A/B/C (except subtrochanteric fractures 32-A [1-3].1, 32-B [1-3].1, and 32-C [1-3].1).



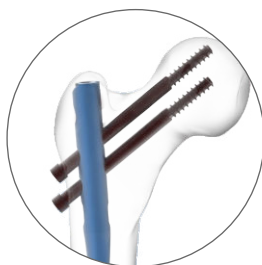
### Reconstruction Locking Indications

The Expert Femoral Nail with reconstruction locking is indicated for fractures in the femoral shaft in case of combination with femoral neck fractures:

32-A/B/C combined with 31-B (double ipsilateral fractures).

Additionally the Expert Femoral Nail is indicated for fractures in the subtrochanteric section:

32-A [1-3].1, 32-B [1-3].1, and 32-C [1-3].1.



**Contraindications:** Contraindications may be relative or absolute. The choice of particular device must be carefully weighed against patient's overall condition.

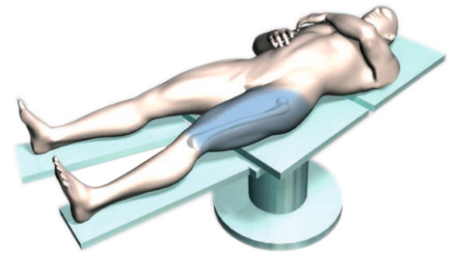
Conditions listed below may preclude or reduce the chance of successful outcome:

- Isolated or combined medial femoral neck fractures
- Low subtrochanteric fractures
- Femoral shaft fractures
- Medial neck fractures
- Signs of local inflammation
- Infection local to the operative site
- Fever or leukocytosis
- Blood supply limitation in operative site
- Morbid Obesity
- Any case in which there is inadequate tissue coverage of the operative site

The above mentioned list does not exhaust the topic of contraindications.

**Patient Positioning:** The patient is positioned supine on a fracture or radiolucent table. The C-arm is now positioned in such a way to allow visualization of proximal femur, fracture site and distal femur.

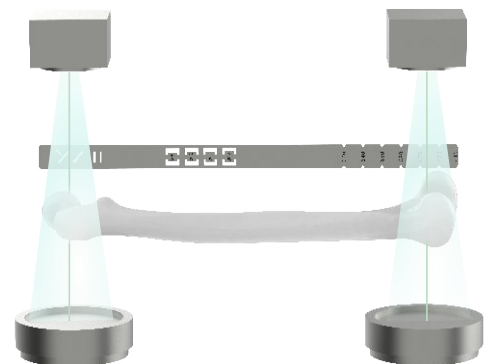
**Fracture Reduction:** Prior to Nail measurement, it is important to achieve fracture reduction manually under the C-arm.



**Measuring Nail Dimensions:** The Nail length and dia. are measured after the fracture reduction has been achieved. Firstly, the C-arm is positioned in AP view of the proximal femur. Now the Radiographic ruler (1459-063) is held alongside the lateral thigh, parallel to and at same level as femur.

The ruler is adjusted until the proximal end is at the desired nail insertion position. Accordingly, the skin is marked at the proximal end of the ruler.

Now the C-arm is positioned at the distal femur. While moving the C-arm from proximal to distal end verify the fracture reduction. Align the proximal end of the radiographic ruler to the skin mark and take an AP view image of distal femur. From the captured image, viewing at or just proximal to the epiphyseal scar note down the ruler reading for the required nail length.

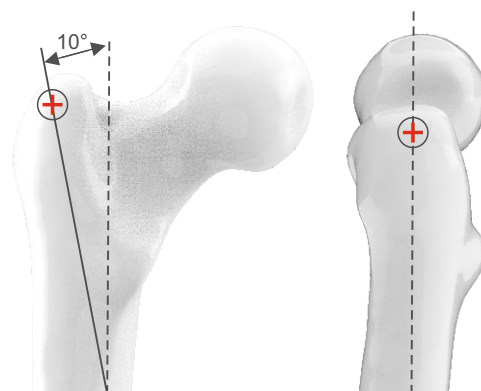


**Note: The Nail length can alternatively be determined by performing the above mentioned procedure on the uninjured leg.**

The Radiographic Ruler (1459-063) canal diameter gauge is placed perpendicular to the femur axis so that the gauge is located over the isthmus. The diameter is selected with which the medullary canal to cortex transition is still visible on both sides of the gauge.

**Approach:** Examine the posterior edge of the greater trochanter. A 3mm incision is made in line with the central axis of the intramedullary canal in lateral view and 2 to 5cm proximal to the tip of greater trochanter, depending on the anatomy of the patient.

**Determine the entry point:** It is very important part of the entire surgery as it determines an optimal final position of Expert Femoral Nail in the intramedullary canal. In AP view the entry point is approximately 10° lateral to the axis of medullary canal. Depending on individual anatomy it is situated lateral from the greater trochanter. In lateral view the entry point is in line with the intramedullary canal axis.



**Guide wire insertion:** The Threaded guide wire Ø3.2 mm (1459-060-I) is secured in the Guide wire holder (1459-055-I). The mediolateral angle of the Expert Femoral nail is 10° and so in AP view, guide wire has to be inserted laterally to the greater trochanter at an angle of 10° to the intended extension of medullary canal. The guide wire is inserted 15 to 20cm into the medullary canal and the final position is inspected under the image intensifier.



**Open Medullary Canal:** There are two different alternatives to open the intramedullary canal as described below:

- Using Entry Reamer:** Align the Protection sleeve (1459-053) concentric to the pre-inserted guide wire. The Entry Reamer (1459-002) is attached to the T-handle with quick coupling (1459-003). The Assembly is then inserted over the guide wire through the protection sleeve. It is advised to continuously move the reamer in to & fro motion while reaming to clear debris from medullary cavity and to avoid jamming.



**2. Using the Cannulated Awl:** For opening the medullary canal with the cannulated awl, the awl is placed over the guide wire and now a twisting motion is used to advance the awl to an approximate depth of 10cm.



**Reaming the medullary canal:** If necessary, the femoral canal is enlarged to the desired diameter for nail insertion. Before reaming, it is necessary to reduce any shaft fracture and align the intramedullary canal. Firstly, the reduction is performed by inserting a reduction rod (1459-007) through the predrilled hole along with the ball tip guide wire (1459-004) through the cannulation. After performing reduction, the reduction rod is removed and the ball tip guide wire is left behind in the intramedullary canal. Under the image intensifier, the fracture reduction is verified.



Attach the Flexible Reamer shaft (1459-006) with the suitable reamer head (1459-008 to 1459-019). The assembly is then glided over the ball tip guide wire to perform intramedullary reaming. The reaming is started with 8.5mm diameter and reamed to a dia. of 0.5 to 1.5mm greater than the selected nail diameter. Reaming is performed in 0.5mm increments.

**Note:** While reaming it is advised to hold the ball tip guide wire to prevent it from rotating and jamming the flexible reamer.



**Nail & Jig Assembly:** The Insertion Handle (1459-005) is positioned in such a way that the tab on the insertion handle aligns and sits in the Nail slot. Insert the Nail holding bolt (1459-020) through the insertion handle to tighten nail in place. Universal Screwdriver, Hex 6.5mm, Ball tip (1459-045) is used to tighten the nail holding bolt.



**Nail Insertion:** The Insertion handle and Nail assembly is oriented anteriorly to insert it into the medullary canal. Slight twisting motion is used to rotate the insertion handle 90° from anterior to lateral position to advance the last one third of the nail into the medullary canal.

The Nail is inserted until it reaches at or below the femoral opening and the final position is verified in both AP and lateral views under the Image intensifier.



If the nail is not fully inserted with the above method, then it is advised to use the slight hammer blows for nail insertion. The connecting rod-impactor (1459-058) is slid into the grooves on the insertion handle and using combination wrench (1459-057) is secured onto the insertion handle. The head of the Sliding Hammer (1459-022) is locked in place by tightening the nut below the head. Proceed with light strikes on the top of connector using hammer for final seating of the nail in the intramedullary canal. Remove the connecting rod after final seating.



Alternatively, the Impactor-Extractor rod (1459-054) can be secured into the threads on top of Connecting rod-impactor. The Sliding hammer is then slid into the rod and the nut near the hammer head is loosened to let the hammer freely slide on rod and impact the nail in bone.

**Note:**

- It is highly advised not to strike the insertion handle directly with the Hammer.
- If nail insertion is difficult then ream intramedullary canal to a large diameter or insert a small diameter nail.
- After hammering confirm that the nail is securely connected to the insertion handle. Retighten if necessary.

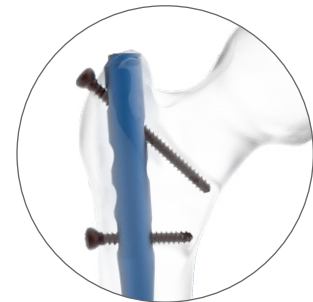
In case dynamization is planned for fracture reduction, it is recommended to over insert the nail by more than 7mm.



**Proximal Locking:** There are two different locking options at the proximal end of the nail as described below:

- 1. Standard Locking:** The standard Locking has further 3 different locking options depending on if dynamic or static locking is required at the proximal end of nail.

- a)** In order to achieve sufficient proximal static locking, the Ø4.8mm Locking bolt is inserted in 120° antegrade position along with another Ø4.8mm Locking bolt in transverse position.



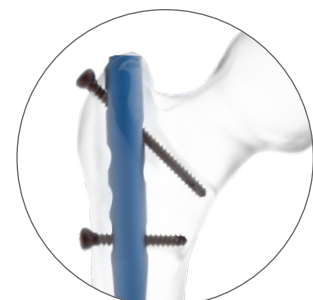
**a)**

- b)** In order to achieve immediate primary dynamization only one Ø4.8mm Locking bolt is inserted through the dynamic slot in the nail.



**b)**

- c)** For secondary dynamization, two Ø4.8mm Locking bolts are inserted one in 120° Antegrade position and second one in the dynamization hole.



**c)**

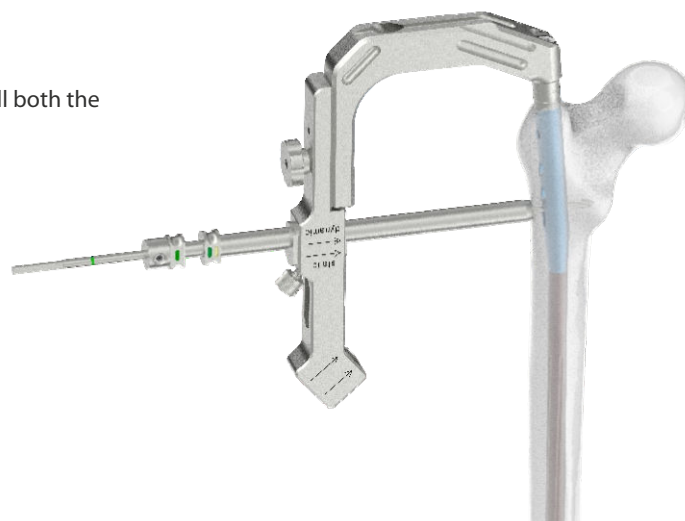
For Proximal Locking, Proximal Aiming Device (1459-026) is attached to the insertion handle. Now depending on if static or dynamic locking is required, the sleeve inside the proximal aiming arm is adjusted accordingly as per static and dynamic marking on the aiming arm.



The green trocar assembly [Outer drill sleeve 11/8.2mm (1459-037), Drill sleeve, Ø8/4.3mm (1459-040) & Trocar Ø4.3mm (1459-041)] is inserted through the aiming arm with the sleeve positioned in preferred configuration. A stab incision using trocar is then made to insert and sit flush the drill sleeve with the bone. The trocar is removed.



The Ø4.3mm Drill bit (1459-042) is used through the Drill Sleeve to drill both the cortex until the tip of drill bit just penetrates the far cortex.



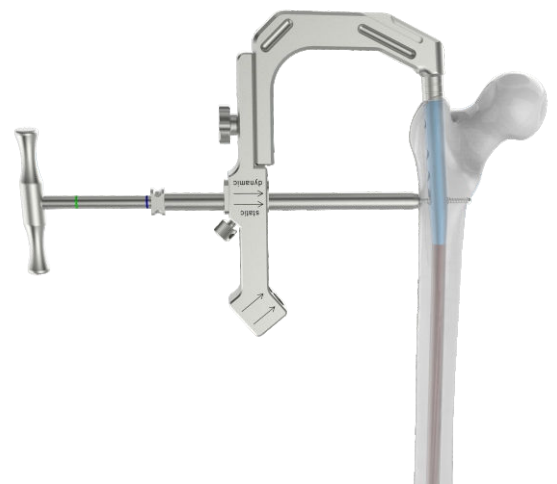
The Depth Gauge (1459-043) is inserted through the outer sleeve (1459-037) after removing the drill sleeve (1459-040) until the hook on the gauge grasps the far cortex. The marking on the gauge is then noted indicating the required locking bolt length.

**Note:** Before taking measurement ensure that the outer sleeve sits flush with the bone in order to get correct length of the locking bolt.



The Ø4.8mm Locking bolt of appropriate length is inserted through the outer sleeve with the help of the Screwdriver with T-handle (1459-044) and is tightened in the predrilled hole. The final position of the screw is verified under image intensifier. The locking bolt tip should not project more than 1 to 2mm beyond the medial far cortex.

For antegrade locking option repeat the above mentioned steps with the trocar assembly inserted through the oblique hole in the insertion handle.



In order to achieve dynamization, it is advised to perform distal locking first. After the Ø4.8mm locking bolt has been inserted in the dynamic hole at the proximal end of nail, the Ø4.0mm compression bolt (1459-059) is passed from top of the insertion handle and tightened with the help of the Universal screwdriver (1459-045). This causes the nail to move upwards along with the distal end of fractured bone and hence causing the fracture reduction. If there is a requirement for antegrade locking it should be performed only after the dynamization has been achieved.



**2. Reconstruction Locking:** For reconstruction locking, the same proximal aiming device (1459-026) is attached to the insertion handle used for standard locking. Now through the reconstruction locking holes in the proximal aiming device, the yellow trocar assembly [outer sleeve 11/8.2mm (1459-037), drill sleeve Ø8.2mm (1459-038) & Trocar Ø2.5mm (1459-039)] is inserted and stab incision is made until the outer sleeve sits flush with the bone. The Caudal trocar is removed.



The Ø2.5mm Guide wire (1459-047) is inserted through the drill sleeve into the femoral head and check its final placement in the bone under image intensifier in both AP and lateral views. After removing the Cranial trocar, the second guide wire is inserted into the femoral head and final placement is verified under image intensifier in both AP and lateral views.

**Note:** It is advised not to exert force on the proximal aiming device, outer sleeves, drill sleeves and trocars as it may prevent accurate targeting through the proximal holes and could damage the drill bits.



It is recommended to start with insertion of a Ø6.4mm Anti-rotation screw at the caudal end.

The Measuring device (1456-049) is slid over the pre-inserted Ø2.5mm guide wire. Reading on the measuring device is noted indicating the required length of the Ø6.4mm Anti-rotation screw. Remove the measuring device and caudal guide wire.



The drilling length on the Ø6.5/2.5mm Cannulated step drill bit (1459-051) is set to the previously measured length using measuring device. The Cannulated drill bit is attached to the Quick coupling T-Handle (1459-003) and guided through the outer sleeve (1459-037) to drill the bone. The stopper on drill bit prevents it to drill past the desired set length.



The Long screwdriver with T-Handle (1459-021) is attached to the Anti-rotation screw of predetermined length and is inserted into femoral head through the outer sleeve. Once the screw is seated, confirm its final position using image intensifier in both AP and lateral planes. Repeat the above mentioned steps for inserting the Anti-rotation screw at the cranial end.



**Distal Locking:** Ø4.8mm Locking bolts are used for locking the nail from distal end. In order to achieve dynamization it is advised to lock the nail distally first.

**Jig Assembly:** The Proximal Aiming device (1459-026) is firstly detached from the Insertion handle (1459-005) and the Proximal Aiming bar (1459-023) is attached instead with the help of Locking bolt for proximal aiming bar (1459-024). The Distal Aiming bar (1459-027) is attached to the Proximal Aiming bar. The arrow indicated on the Proximal Aiming bar is aligned with the arrow corresponding to the nail length being used. The Hole in Distal Aiming bar is aligned with the left or right marked holes in the proximal aiming bar depending on the type of nail used (Left or right) and is locked in place with the help of Locking bolt for Distal Aiming Bar (1459-028).



**Nail Repositioning:** Prior to Ø4.8mm locking bolt insertion at the distal end of nail it is necessary to reposition the nail distally in order to align the nail holes with the holes in the Distal Aiming bar. Firstly, the Distal Targeting Device (1459-029) is attached to the Distal Aiming Bar and fixed with the help of Locking bolt for distal targeting device (1459-046). The Blue Trocar assembly [Outer Drill Sleeve 10/8.1mm (1459-030) & Trocar for Sleeve 8.1mm (1459-031)] is inserted through the distal targeting device hole and a stab incision is made to make a skin incision and advance the outer sleeve until it sits flush on bone.



Remove the trocar and insert the Drill sleeve 8.1/5.2mm (1459-032) into the outer sleeve. Through the drill sleeve insert Ø5.2mm Flat drill with T handle (1459-034) and drill until the end of drill bit reaches the groove on the nail.



Remove the drill bit along with drill sleeve and insert the Positioning Rod 8.1/5.2mm (1459-035) through the outer sleeve such that it sits on the groove on the nail. Push the nail using positioning rod and hold it in place using the stabilizing device (1459-036) as shown in the adjoining figure. Verify the final alignment of nail holes with respect to the distal aiming bar holes under the image intensifier.



**Drilling:** After the nail has been stabilized the distal Ø4.8mm Locking bolt can now be inserted. The Green trocar assembly [Outer drill sleeve 11/8.2mm (1459-037), Drill sleeve 8/4.3mm (1459-040) & Trocar Ø4.3mm (1459-041)] is passed through two distal holes of the distal aiming bar (1459-027) and a stab incision is made to advance the sleeve through the skin until it sits flush with the bone.



The trocar is removed and Ø4.3mm Drill bit is inserted to drill the bone. Once the bone has been drilled remove the drill sleeve and use the depth gauge (1459-043) to determine the required Ø4.8mm locking bolt length for insertion.



**Screw Insertion:** Using the Screwdriver with T handle (1459-044), the Ø4.8mm Locking bolt of selected length is inserted through the outer sleeve and is tightened into the bone. The stabilizing device along with the positioning rod are removed at the end.



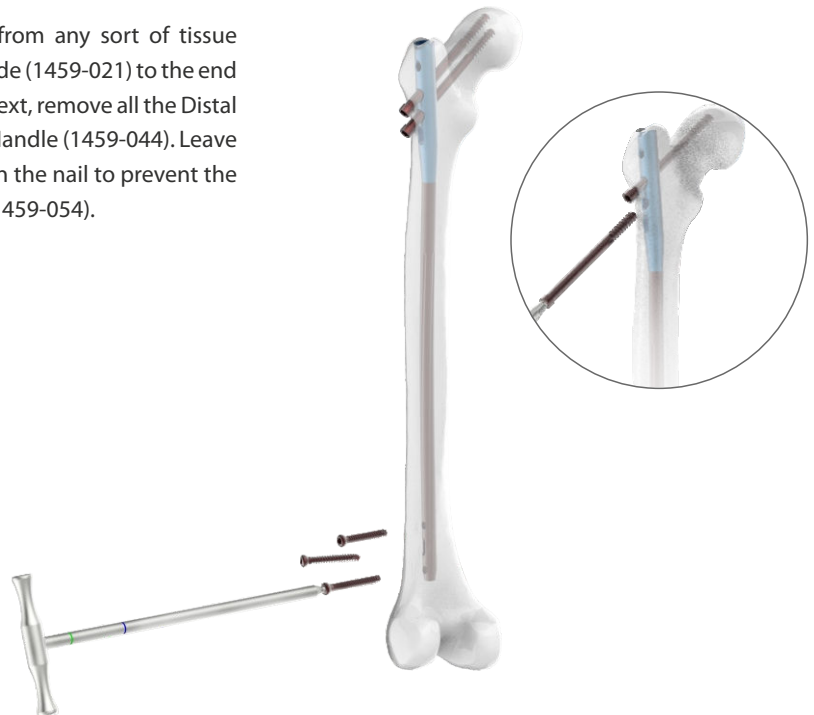
There is also a dynamic hole at distal end of nail which provides option for static or dynamic locking as per the requirement. The Distal screw device (1459-056) is attached to the holes at the distal end of distal aiming bar and fixed with the help of bolt for distal targeting device (1459-046). As per requirement the sleeve inside the Distal screw device is adjusted in static or dynamic configuration. The above mentioned same steps are then used for drilling and screw insertion either in static or dynamic hole.



**Insert End cap:** The Distal locking jig along with the insertion handle is removed. The end cap is then attached to the Long Screwdriver with T-Handle, hex 5mm (1459-021) and fixed in place by engaging the threaded shaft in it to prevent the end cap from falling during insertion. With the help of screwdriver, turn the end cap in anti-clockwise until the end cap thread aligns with the nail thread. Then rotate the end cap in clockwise direction until it sits in the nail. Unscrew and remove the Screwdriver.



**Implant Removal:** The socket of end cap is cleared from any sort of tissue ingrowth. Now, engage the Long screwdriver with T-handle (1459-021) to the end cap and rotate it anti-clockwise to remove the end cap. Next, remove all the Distal Ø4.8 locking bolts using 3.5mm Hex Screwdriver with T Handle (1459-044). Leave one proximal locking bolt or Anti-rotation screw intact in the nail to prevent the nail rotation while engaging the Impactor-extractor rod(1459-054).



Attach the Impactor-Extractor rod to the open end of the nail and tighten it with the help of Combination wrench, 11mm (1459-057). Remove the last proximal locking bolt from the nail using 3.5mm Hex Screwdriver with T-Handle (1459-044). Take the Sliding hammer ensuring that its head is unlocked and slide it into the Impactor-Extractor rod. Now with the slight backward blows remove the nail from the bone.

## Expert Femur Nail

### Stainless Steel

|       | (Left)              | (Right)             | Dia x Length  |
|-------|---------------------|---------------------|---------------|
| Ø9mm  | <b>1459-9-320L</b>  | <b>1459-9-320R</b>  | Ø9mm x 320mm  |
|       | <b>1459-9-340L</b>  | <b>1459-9-340R</b>  | Ø9mm x 340mm  |
|       | <b>1459-9-360L</b>  | <b>1459-9-360R</b>  | Ø9mm x 360mm  |
|       | <b>1459-9-380L</b>  | <b>1459-9-380R</b>  | Ø9mm x 380mm  |
|       | <b>1459-9-400L</b>  | <b>1459-9-400R</b>  | Ø9mm x 400mm  |
|       | <b>1459-9-420L</b>  | <b>1459-9-420R</b>  | Ø9mm x 420mm  |
|       | <b>1459-9-440L</b>  | <b>1459-9-440R</b>  | Ø9mm x 440mm  |
| Ø10mm | <b>1459-10-320L</b> | <b>1459-10-320R</b> | Ø10mm x 320mm |
|       | <b>1459-10-340L</b> | <b>1459-10-340R</b> | Ø10mm x 340mm |
|       | <b>1459-10-360L</b> | <b>1459-10-360R</b> | Ø10mm x 360mm |
|       | <b>1459-10-380L</b> | <b>1459-10-380R</b> | Ø10mm x 380mm |
|       | <b>1459-10-400L</b> | <b>1459-10-400R</b> | Ø10mm x 400mm |
|       | <b>1459-10-420L</b> | <b>1459-10-420R</b> | Ø10mm x 420mm |
|       | <b>1459-10-440L</b> | <b>1459-10-440R</b> | Ø10mm x 440mm |
| Ø11mm | <b>1459-11-320L</b> | <b>1459-11-320R</b> | Ø11mm x 320mm |
|       | <b>1459-11-340L</b> | <b>1459-11-340R</b> | Ø11mm x 400mm |
|       | <b>1459-11-360L</b> | <b>1459-11-360R</b> | Ø11mm x 360mm |
|       | <b>1459-11-380L</b> | <b>1459-11-380R</b> | Ø11mm x 380mm |
|       | <b>1459-11-400L</b> | <b>1459-11-400R</b> | Ø11mm x 400mm |
|       | <b>1459-11-420L</b> | <b>1459-11-420R</b> | Ø11mm x 420mm |
|       | <b>1459-11-440L</b> | <b>1459-11-440R</b> | Ø11mm x 440mm |
| Ø12mm | <b>1459-12-320L</b> | <b>1459-12-320R</b> | Ø12mm x 320mm |
|       | <b>1459-12-340L</b> | <b>1459-12-340R</b> | Ø12mm x 340mm |
|       | <b>1459-12-360L</b> | <b>1459-12-360R</b> | Ø12mm x 360mm |
|       | <b>1459-12-380L</b> | <b>1459-12-380R</b> | Ø12mm x 380mm |
|       | <b>1459-12-400L</b> | <b>1459-12-400R</b> | Ø12mm x 400mm |
|       | <b>1459-12-420L</b> | <b>1459-12-420R</b> | Ø12mm x 420mm |
|       | <b>1459-12-440L</b> | <b>1459-12-440R</b> | Ø12mm x 440mm |
| Ø13mm | <b>1459-13-320L</b> | <b>1459-13-320R</b> | Ø13mm x 320mm |
|       | <b>1459-13-340L</b> | <b>1459-13-340R</b> | Ø13mm x 340mm |
|       | <b>1459-13-360L</b> | <b>1459-13-360R</b> | Ø13mm x 360mm |
|       | <b>1459-13-380L</b> | <b>1459-13-380R</b> | Ø13mm x 380mm |
|       | <b>1459-13-400L</b> | <b>1459-13-400R</b> | Ø13mm x 400mm |
|       | <b>1459-13-420L</b> | <b>1459-13-420R</b> | Ø13mm x 420mm |
|       | <b>1459-13-440L</b> | <b>1459-13-440R</b> | Ø13mm x 440mm |

Right

Left



## Expert Femur Nail

| Titanium |                 |                 |               |
|----------|-----------------|-----------------|---------------|
|          | (Left)          | (Right)         | Dia x Length  |
| Ø9mm     | TI-1459-9-320L  | TI-1459-9-320R  | Ø9mm x 320mm  |
|          | TI-1459-9-340L  | TI-1459-9-340R  | Ø9mm x 340mm  |
|          | TI-1459-9-360L  | TI-1459-9-360R  | Ø9mm x 360mm  |
|          | TI-1459-9-380L  | TI-1459-9-380R  | Ø9mm x 380mm  |
|          | TI-1459-9-400L  | TI-1459-9-400R  | Ø9mm x 400mm  |
|          | TI-1459-9-420L  | TI-1459-9-420R  | Ø9mm x 420mm  |
|          | TI-1459-9-440L  | TI-1459-9-440R  | Ø9mm x 440mm  |
| Ø10mm    | TI-1459-10-320L | TI-1459-10-320R | Ø10mm x 320mm |
|          | TI-1459-10-340L | TI-1459-10-340R | Ø10mm x 340mm |
|          | TI-1459-10-360L | TI-1459-10-360R | Ø10mm x 360mm |
|          | TI-1459-10-380L | TI-1459-10-380R | Ø10mm x 380mm |
|          | TI-1459-10-400L | TI-1459-10-400R | Ø10mm x 400mm |
|          | TI-1459-10-420L | TI-1459-10-420R | Ø10mm x 420mm |
|          | TI-1459-10-440L | TI-1459-10-440R | Ø10mm x 440mm |
| Ø11mm    | TI-1459-11-320L | TI-1459-11-320R | Ø11mm x 320mm |
|          | TI-1459-11-340L | TI-1459-11-340R | Ø11mm x 400mm |
|          | TI-1459-11-360L | TI-1459-11-360R | Ø11mm x 360mm |
|          | TI-1459-11-380L | TI-1459-11-380R | Ø11mm x 380mm |
|          | TI-1459-11-400L | TI-1459-11-400R | Ø11mm x 400mm |
|          | TI-1459-11-420L | TI-1459-11-420R | Ø11mm x 420mm |
|          | TI-1459-11-440L | TI-1459-11-440R | Ø11mm x 440mm |
| Ø12mm    | TI-1459-12-320L | TI-1459-12-320R | Ø12mm x 320mm |
|          | TI-1459-12-340L | TI-1459-12-340R | Ø12mm x 340mm |
|          | TI-1459-12-360L | TI-1459-12-360R | Ø12mm x 360mm |
|          | TI-1459-12-380L | TI-1459-12-380R | Ø12mm x 380mm |
|          | TI-1459-12-400L | TI-1459-12-400R | Ø12mm x 400mm |
|          | TI-1459-12-420L | TI-1459-12-420R | Ø12mm x 420mm |
|          | TI-1459-12-440L | TI-1459-12-440R | Ø12mm x 440mm |
| Ø13mm    | TI-1459-13-320L | TI-1459-13-320R | Ø13mm x 320mm |
|          | TI-1459-13-340L | TI-1459-13-340R | Ø13mm x 340mm |
|          | TI-1459-13-360L | TI-1459-13-360R | Ø13mm x 360mm |
|          | TI-1459-13-380L | TI-1459-13-380R | Ø13mm x 380mm |
|          | TI-1459-13-400L | TI-1459-13-400R | Ø13mm x 400mm |
|          | TI-1459-13-420L | TI-1459-13-420R | Ø13mm x 420mm |
|          | TI-1459-13-440L | TI-1459-13-440R | Ø13mm x 440mm |

Right

Left



## End Caps For Expert Femur Nail



| Stainless Steel | Titanium          | Length |
|-----------------|-------------------|--------|
| <b>1459-01</b>  | <b>TI-1459-01</b> | 0mm    |
| <b>1459-05</b>  | <b>TI-1459-05</b> | 5mm    |
| <b>1459-10</b>  | <b>TI-1459-10</b> | 10mm   |
| <b>1459-15</b>  | <b>TI-1459-15</b> | 15mm   |
| <b>1459-20</b>  | <b>TI-1459-20</b> | 20mm   |

## Ø4.8mm Locking Bolt, Self-Tapping, For Expert Femur Nail



| Stainless Steel     | Titanium               | Length (mm) |
|---------------------|------------------------|-------------|
| <b>1458-4.8-026</b> | <b>TI-1458-4.8-026</b> | 26          |
| <b>1458-4.8-028</b> | <b>TI-1458-4.8-028</b> | 28          |
| <b>1458-4.8-030</b> | <b>TI-1458-4.8-030</b> | 30          |
| <b>1458-4.8-032</b> | <b>TI-1458-4.8-032</b> | 32          |
| <b>1458-4.8-034</b> | <b>TI-1458-4.8-034</b> | 34          |
| <b>1458-4.8-036</b> | <b>TI-1458-4.8-036</b> | 36          |
| <b>1458-4.8-038</b> | <b>TI-1458-4.8-038</b> | 38          |
| <b>1458-4.8-040</b> | <b>TI-1458-4.8-040</b> | 40          |
| <b>1458-4.8-042</b> | <b>TI-1458-4.8-042</b> | 42          |
| <b>1458-4.8-044</b> | <b>TI-1458-4.8-044</b> | 44          |
| <b>1458-4.8-046</b> | <b>TI-1458-4.8-046</b> | 46          |
| <b>1458-4.8-048</b> | <b>TI-1458-4.8-048</b> | 48          |
| <b>1458-4.8-050</b> | <b>TI-1458-4.8-050</b> | 50          |
| <b>1458-4.8-052</b> | <b>TI-1458-4.8-052</b> | 52          |
| <b>1458-4.8-054</b> | <b>TI-1458-4.8-054</b> | 54          |
| <b>1458-4.8-056</b> | <b>TI-1458-4.8-056</b> | 56          |
| <b>1458-4.8-058</b> | <b>TI-1458-4.8-058</b> | 58          |
| <b>1458-4.8-060</b> | <b>TI-1458-4.8-060</b> | 60          |
| <b>1458-4.8-062</b> | <b>TI-1458-4.8-062</b> | 62          |
| <b>1458-4.8-064</b> | <b>TI-1458-4.8-064</b> | 64          |
| <b>1458-4.8-066</b> | <b>TI-1458-4.8-066</b> | 66          |
| <b>1458-4.8-068</b> | <b>TI-1458-4.8-068</b> | 68          |
| <b>1458-4.8-070</b> | <b>TI-1458-4.8-070</b> | 70          |
| <b>1458-4.8-072</b> | <b>TI-1458-4.8-072</b> | 72          |
| <b>1458-4.8-074</b> | <b>TI-1458-4.8-074</b> | 74          |
| <b>1458-4.8-076</b> | <b>TI-1458-4.8-076</b> | 76          |
| <b>1458-4.8-078</b> | <b>TI-1458-4.8-078</b> | 78          |
| <b>1458-4.8-080</b> | <b>TI-1458-4.8-080</b> | 80          |
| <b>1458-4.8-082</b> | <b>TI-1458-4.8-082</b> | 82          |
| <b>1458-4.8-084</b> | <b>TI-1458-4.8-084</b> | 84          |
| <b>1458-4.8-085</b> | <b>TI-1458-4.8-085</b> | 85          |
| <b>1458-4.8-090</b> | <b>TI-1458-4.8-090</b> | 90          |

## Ø6.4mm Cannulated Anti -Rotation Screw, Self-Tapping, For Expert Femur Nail

| Stainless Steel | Titanium           | Length |
|-----------------|--------------------|--------|
| <b>1459-060</b> | <b>TI-1459-060</b> | 60mm   |
| <b>1459-065</b> | <b>TI-1459-065</b> | 65mm   |
| <b>1459-070</b> | <b>TI-1459-070</b> | 70mm   |
| <b>1459-075</b> | <b>TI-1459-075</b> | 75mm   |
| <b>1459-080</b> | <b>TI-1459-080</b> | 80mm   |
| <b>1459-085</b> | <b>TI-1459-085</b> | 85mm   |
| <b>1459-090</b> | <b>TI-1459-090</b> | 90mm   |
| <b>1459-095</b> | <b>TI-1459-095</b> | 95mm   |
| <b>1459-100</b> | <b>TI-1459-100</b> | 100mm  |
| <b>1459-105</b> | <b>TI-1459-105</b> | 105mm  |
| <b>1459-110</b> | <b>TI-1459-110</b> | 110mm  |
| <b>1459-115</b> | <b>TI-1459-115</b> | 115mm  |
| <b>1459-120</b> | <b>TI-1459-120</b> | 120mm  |
| <b>1459-125</b> | <b>TI-1459-125</b> | 125mm  |
| <b>1459-130</b> | <b>TI-1459-130</b> | 130mm  |

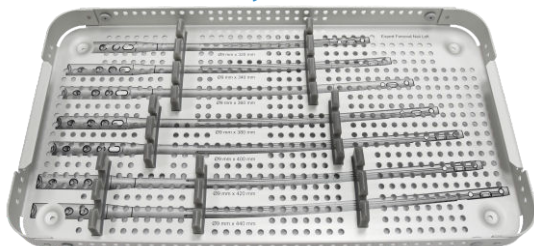


**1-014L Implant Box for Expert Femur Nail (Left)**



## Implant Box (Left)

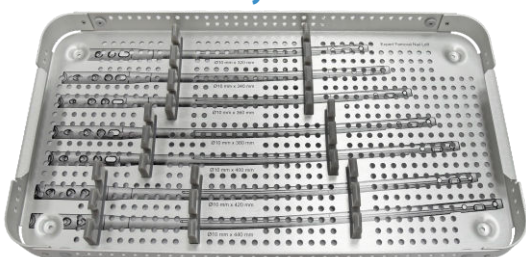
**Tray 1**



| Dia  | Length         | Qty  |
|------|----------------|------|
| Ø9mm | 320mm to 440mm | 1pcs |

*Stainless Steel or Titanium Implants can be placed as per requirement*

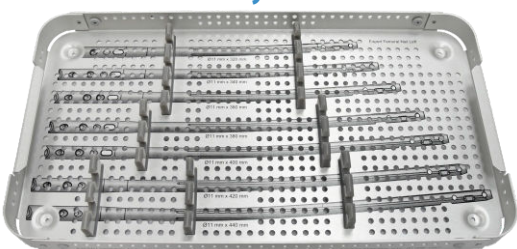
**Tray 2**



| Dia   | Length         | Qty  |
|-------|----------------|------|
| Ø10mm | 320mm to 440mm | 1pcs |

*Stainless Steel or Titanium Implants can be placed as per requirement*

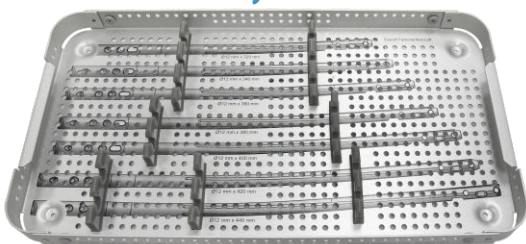
**Tray 3**



| Dia   | Length         | Qty  |
|-------|----------------|------|
| Ø11mm | 320mm to 440mm | 1pcs |

*Stainless Steel or Titanium Implants can be placed as per requirement*

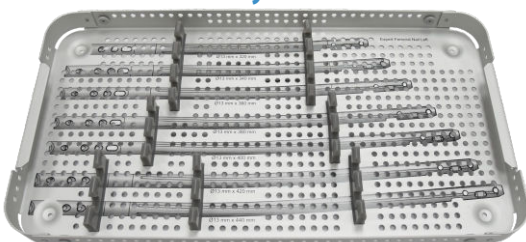
**Tray 4**



| Dia   | Length         | Qty  |
|-------|----------------|------|
| Ø12mm | 320mm to 440mm | 1pcs |

*Stainless Steel or Titanium Implants can be placed as per requirement*

**Tray 5**



| Dia   | Length         | Qty  |
|-------|----------------|------|
| Ø13mm | 320mm to 440mm | 1pcs |

*Stainless Steel or Titanium Implants can be placed as per requirement*



### Ø4.8mm Locking Bolt, Self-Tapping, For Expert Femur Nail

| Dia    | Length       | Qty  |
|--------|--------------|------|
| Ø4.8mm | 26mm to 90mm | 5pcs |

*Stainless Steel or Titanium Implants  
can be placed as per requirement*

### Ø6.4mm Cannulated Anti -Rotation Screw, Self-Tapping, For Expert Femur Nail

| Dia    | Length        | Qty  |
|--------|---------------|------|
| Ø6.4mm | 60mm to 130mm | 2pcs |

*Stainless Steel or Titanium Implants  
can be placed as per requirement*

### End Caps For Expert Femur Nail

| Length      | Qty  |
|-------------|------|
| 0mm to 20mm | 2pcs |

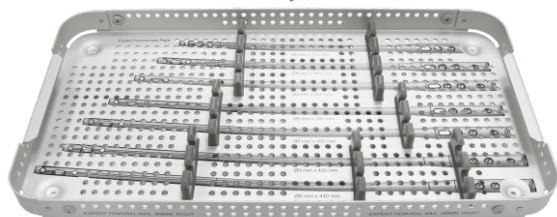
*Stainless Steel or Titanium Implants  
can be placed as per requirement*

**1-014R Implant Box for Expert Femur Nail (Right)**



## Implant Box (Right)

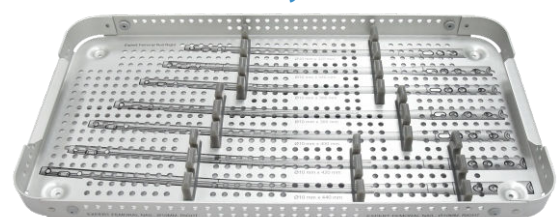
**Tray 1**



| Dia  | Length         | Qty  |
|------|----------------|------|
| Ø9mm | 320mm to 440mm | 1pcs |

*Stainless Steel or Titanium Implants can be placed as per requirement*

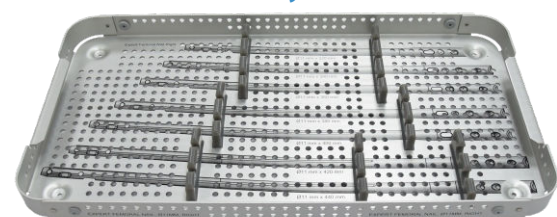
**Tray 2**



| Dia   | Length         | Qty  |
|-------|----------------|------|
| Ø10mm | 320mm to 440mm | 1pcs |

*Stainless Steel or Titanium Implants can be placed as per requirement*

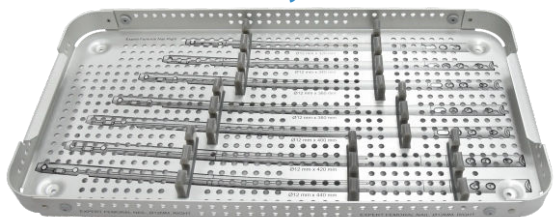
**Tray 3**



| Dia   | Length         | Qty  |
|-------|----------------|------|
| Ø11mm | 320mm to 440mm | 1pcs |

*Stainless Steel or Titanium Implants can be placed as per requirement*

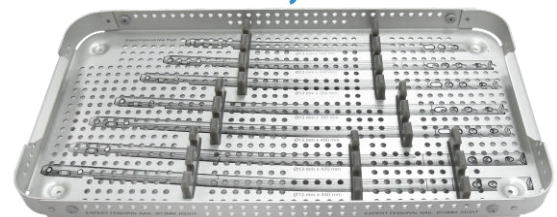
**Tray 4**



| Dia   | Length         | Qty  |
|-------|----------------|------|
| Ø12mm | 320mm to 440mm | 1pcs |

*Stainless Steel or Titanium Implants can be placed as per requirement*

**Tray 5**



| Dia   | Length         | Qty  |
|-------|----------------|------|
| Ø13mm | 320mm to 440mm | 1pcs |

*Stainless Steel or Titanium Implants can be placed as per requirement*



### Ø4.8mm Locking Bolt, Self-Tapping, For Expert Femur Nail

| Dia    | Length       | Qty  |
|--------|--------------|------|
| Ø4.8mm | 26mm to 90mm | 5pcs |

*Stainless Steel or Titanium Implants  
can be placed as per requirement*

### Ø6.4mm Cannulated Anti -Rotation Screw, Self-Tapping, For Expert Femur Nail

| Dia    | Length        | Qty  |
|--------|---------------|------|
| Ø6.4mm | 60mm to 130mm | 2pcs |

*Stainless Steel or Titanium Implants  
can be placed as per requirement*

### End Caps For Expert Femur Nail

| Length      | Qty  |
|-------------|------|
| 0mm to 20mm | 2pcs |

*Stainless Steel or Titanium Implants  
can be placed as per requirement*

**1459-001**

Cannulated Awl for Expert Femur Nail


**1459-002**

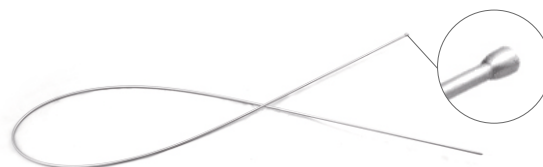
Entry Reamer Ø14.3mm for Expert Femur Nail


**1459-003**

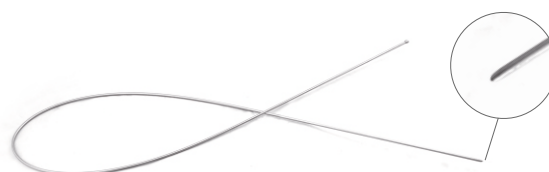
T-Handle with Quick Coupling for Entry Reamer - Expert Femur Nail


**1459-004**

Guide Wire With Ball Tip Ø2.5/3.65mm x Length 1000mm - Nitinol, for Expert Femur Nail


**1459-062**

Guide Wire Without Ball Tip Ø2.5mm x Length 1000mm - Nitinol, for Expert Femur Nail


**1459-005**

Insertion Handle for Expert Femur Nail



**1459-006** Flexible Reamer Shaft (AO Connection) for Expert Femur Nail



**1459-007** Reduction Rod for Expert Femur Nail



#### Reamer Head

| Code            | Dia     | Code            | Dia     |
|-----------------|---------|-----------------|---------|
| <b>1459-008</b> | Ø8.5mm  | <b>1459-014</b> | Ø11.5mm |
| <b>1459-009</b> | Ø9mm    | <b>1459-015</b> | Ø12mm   |
| <b>1459-010</b> | Ø9.5mm  | <b>1459-016</b> | Ø12.5mm |
| <b>1459-011</b> | Ø10mm   | <b>1459-017</b> | Ø13mm   |
| <b>1459-012</b> | Ø10.5mm | <b>1459-018</b> | Ø13.5mm |
| <b>1459-013</b> | Ø11mm   | <b>1459-019</b> | Ø14mm   |



**1459-020** Nail Holding Bolt for Expert Femur Nail



**1459-021** Long Screwdriver with T-Handle, Hex 5mm, for Expert Femur Nail



**1459-022** Sliding Hammer for Expert Femur Nail



**1459-023** Proximal Aiming Bar for Expert Femur Nail



**1459-024** Locking Bolt For Proximal Aiming Bar - Expert Femur Nail



**1459-025** Allen Key, Hex 5mm for Expert Femur Nail



**1459-026** Proximal Aiming Device for Expert Femur Nail



**1459-027** Distal Aiming Bar for Expert Femur Nail



**1459-028** Locking Bolt for Distal Aiming Bar - Expert Femur Nail



**1459-029** Distal Targeting Device for Expert Femur Nail



**1459-030** Outer Drill Sleeve 10/8.1mm for Distal Targeting Device - Expert Femur Nail



**1459-031** Trocar for Sleeve 8.1mm for Distal Targeting Device- Expert Femur Nail



**1459-032** Drill Sleeve 8.1/5.2mm for Positioning Rod - Expert Femur Nail



**1459-033** Drill Bit Plain Shank/Jacob Chuck End Ø5.2mm x Length 250mm for Expert Femur Nail



**1459-034** Ø5.2mm T-Handle Drill Bit with Flat End for Expert Femur Nail



**1459-035** Positioning Rod 8.1/5.2mm for Expert Femur Nail



**1459-036** Stabilizing Device for Expert Femur Nail



**1459-037** Outer Drill Sleeve 11/8.2mm for Expert Femur Nail



**1459-038** Trocar Sleeve Ø8.2/2.5mm for Expert Femur Nail



**1459-039** Trocar Ø2.5mm for Expert Femur Nail



**1459-040** Drill Sleeve 8/4.4mm for Expert Femur Nail



**1459-041** Trocar Ø4.3mm for Expert Femur Nail



**1459-042** Drill Bit Plain Shank/Jacob Chuck End Ø4.3mm x Length 300mm for Expert Femur Nail



**1459-061** Stopper for Ø4.3mm Drill Bit - Expert Femur Nail



**7-118-01** Allen Key, Hex 3mm for Expert Femur Nail



**1459-043** Depth Gauge measuring upto 90mm for Ø4.8mm Locking Bolt - Expert Femur Nail



- 1459-044** Screwdriver with T-Handle, Hex 3.5mm for Ø4.8mm Locking Bolt - Expert Femur Nail



- 1459-045** Universal Screwdriver, Hex 6.5mm, Ball Tip for Nail Holding Bolt- Expert Femur Nail



- 1459-046** Distal Bolt, Hex 5mm for Distal Targeting Device - Expert Femur Nail



- 1459-047** Guide Wire with Threaded Tip Ø2.5mm x Thread Length 10mm x Length 338mm



- 1459-048** Guide Wire, Ø2.5mm x Length 338mm



- 1459-049** Direct Measuring Device, Length upto 120mm, for Expert Femur Nail



**1459-050-1** Tissue Protector for Expert Femur Nail



**1459-051** Cannulated Step Drill Bit for Anti-Rotation Screw - Expert Femur Nail



**1459-051-1** Stopper for Step Drill Bit - Expert Femur Nail



**1459-053** Protection Sleeve 17/14.5mm for Expert Femur Nail



**1459-052** Guide Sleeve 14.3/3.2mm for Protection Sleeve - Expert Femur Nail



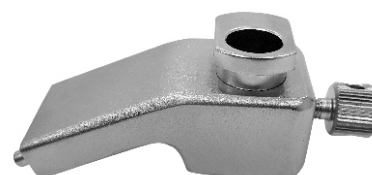
**1459-054** Impactor - Extractor Rod for Expert Femur Nail



**1459-055-1** Guide Wire Holder for Expert Femur Nail



**1459-056** Distal Screw Device (Static/ Dynamic Locking) for Expert Femur Nail



**1459-057** Combination Wrench 11mm for Expert Femur Nail



**1459-058** Connecting Rod - Impactor for Expert Femur Nail



**1459-058-1** Connecting Block for Connecting Rod - Expert Femur Nail



**1459-059** Compression Bolt Ø4mm for Expert Femur Nail



**1459-060-1** Guide Pin, Ø3.2mm x Length 480mm



**1459-063** Radiographic Ruler for Expert Femur Nail



**1459-064** Depth Gauge measuring upto 100mm for Expert Femur Nail



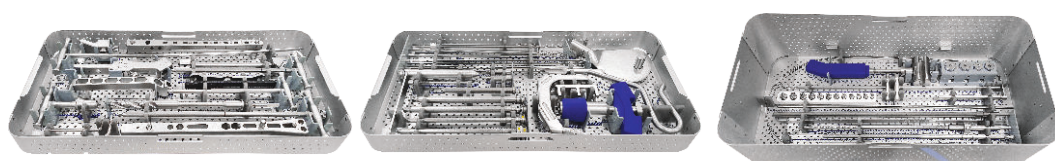
**7-010-02** Medullary Exchange Tube



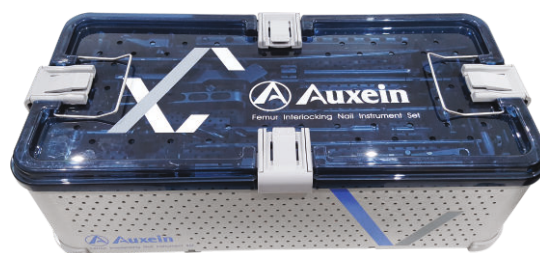
**7-010-03** T-Handle for Flexible Reamer (AO Connection)



**1459-065T** Instrument Trays for Expert Femur Nailing Instrument Set

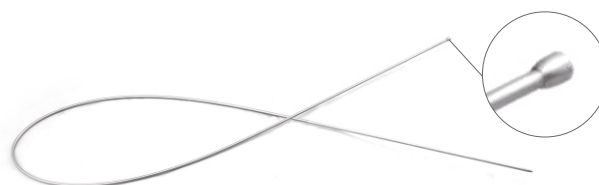


**1459-066** Container with PPSU Lid for Expert Femur Nailing Instrument Set

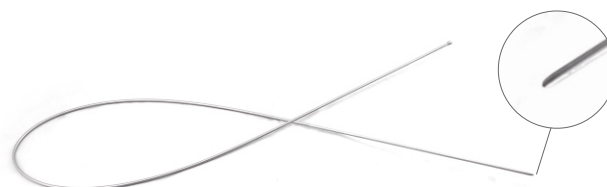


### Optional Instruments

**1459-004S** Guide Wire With Ball Tip Ø2.5/3.65mm x Length 1000mm -Stainless Steel, for Expert Femur Nail



**1459-062S** Guide Wire Without Ball Tip Ø2.5mm x Length 1000mm -Stainless Steel, for Expert Femur Nail



**INS-1459** Expert Femur Nailing Instrument Set



## INS-1459 Expert Femur Nailing Instrument Set

| Code            | Set Consisting of                                                                     | Units |
|-----------------|---------------------------------------------------------------------------------------|-------|
| <b>1459-001</b> | Cannulated Awl for Expert Femur Nail                                                  | 1     |
| <b>1459-002</b> | Entry Reamer Ø14.3mm for Expert Femur Nail                                            | 1     |
| <b>1459-003</b> | T-Handle with Quick Coupling for Entry Reamer - Expert Femur Nail                     | 1     |
| <b>1459-004</b> | Guide Wire With Ball Tip Ø2.5/3.65mm x Length 1000mm - Nitinol, for Expert Femur Nail | 1     |
| <b>1459-062</b> | Guide Wire Without Ball Tip Ø2.5mm x Length 1000mm - Nitinol, for Expert Femur Nail   | 1     |
| <b>1459-005</b> | Insertion Handle for Expert Femur Nail                                                | 1     |
| <b>1459-006</b> | Flexible Reamer Shaft (AO Connection) for Expert Femur Nail                           | 2     |
| <b>1459-007</b> | Reduction Rod for Expert Femur Nail                                                   | 1     |
| <b>1459-008</b> | Reamer Head, Ø8.5mm for Expert Femur Nail                                             | 1     |
| <b>1459-009</b> | Reamer Head, Ø9.0mm for Expert Femur Nail                                             | 1     |
| <b>1459-010</b> | Reamer Head, Ø9.5mm for Expert Femur Nail                                             | 1     |
| <b>1459-011</b> | Reamer Head, Ø10.0mm for Expert Femur Nail                                            | 1     |
| <b>1459-012</b> | Reamer Head, Ø10.5mm for Expert Femur Nail                                            | 1     |
| <b>1459-013</b> | Reamer Head, Ø11.0mm for Expert Femur Nail                                            | 1     |
| <b>1459-014</b> | Reamer Head, Ø11.5mm for Expert Femur Nail                                            | 1     |
| <b>1459-015</b> | Reamer Head, Ø12.0mm for Expert Femur Nail                                            | 1     |
| <b>1459-016</b> | Reamer Head, Ø12.5mm for Expert Femur Nail                                            | 1     |
| <b>1459-017</b> | Reamer Head, Ø13.0mm for Expert Femur Nail                                            | 1     |
| <b>1459-018</b> | Reamer Head, Ø13.5mm for Expert Femur Nail                                            | 1     |
| <b>1459-019</b> | Reamer Head, Ø14.0mm for Expert Femur Nail                                            | 1     |
| <b>1459-020</b> | Nail Holding Bolt for Expert Femur Nail                                               | 2     |
| <b>1459-021</b> | Long Screwdriver with T-Handle, Hex 5mm, for Expert Femur Nail                        | 1     |
| <b>1459-022</b> | Sliding Hammer for Expert Femur Nail                                                  | 1     |
| <b>1459-023</b> | Proximal Aiming Bar for Expert Femur Nail                                             | 1     |
| <b>1459-024</b> | Locking Bolt For Proximal Aiming Bar - Expert Femur Nail                              | 1     |
| <b>1459-025</b> | Allen Key, Hex 5mm for Expert Femur Nail                                              | 1     |
| <b>1459-026</b> | Proximal Aiming Device for Expert Femur Nail                                          | 1     |
| <b>1459-027</b> | Distal Aiming Bar for Expert Femur Nail                                               | 1     |
| <b>1459-028</b> | Locking Bolt for Distal Aiming Bar - Expert Femur Nail                                | 1     |
| <b>1459-029</b> | Distal Targeting Device for Expert Femur Nail                                         | 1     |
| <b>1459-030</b> | Outer Drill Sleeve 10/8.1mm for Distal Targeting Device - Expert Femur Nail           | 1     |
| <b>1459-031</b> | Trocar for Sleeve 8.1mm for Distal Targeting Device- Expert Femur Nail                | 1     |
| <b>1459-032</b> | Drill Sleeve 8.1/5.2mm for Positioning Rod - Expert Femur Nail                        | 1     |
| <b>1459-033</b> | Drill Bit Plain Shank/Jacob Chuck End Ø5.2mm x Length 250mm for Expert Femur Nail     | 1     |
| <b>1459-034</b> | Ø5.2mm T-Handle Drill Bit with Flat End for Expert Femur Nail                         | 1     |
| <b>1459-035</b> | Positioning Rod 8.1/5.2mm for Expert Femur Nail                                       | 1     |
| <b>1459-036</b> | Stabilizing Device for Expert Femur Nail                                              | 1     |
| <b>1459-037</b> | Outer Drill Sleeve 11/8.2mm for Expert Femur Nail                                     | 2     |

| Code              | Set Consisting of                                                                   | Units |
|-------------------|-------------------------------------------------------------------------------------|-------|
| <b>1459-038</b>   | Trocar Sleeve Ø8.2/2.5mm for Expert Femur Nail                                      | 2     |
| <b>1459-039</b>   | Trocar Ø2.5mm for Expert Femur Nail                                                 | 1     |
| <b>1459-040</b>   | Drill Sleeve 8/4.4mm for Expert Femur Nail                                          | 2     |
| <b>1459-041</b>   | Trocar Ø4.3mm for Expert Femur Nail                                                 | 1     |
| <b>1459-042</b>   | Drill Bit Plain Shank/Jacob Chuck End Ø4.3mm x Length 300mm for Expert Femur Nail   | 3     |
| <b>1459-061</b>   | Stopper for Ø4.3mm Drill Bit - Expert Femur Nail                                    | 1     |
| <b>7-118-01</b>   | Allen Key, Hex 3mm for Expert Femur Nail                                            | 1     |
| <b>1459-043</b>   | Depth Gauge measuring upto 90mm for Ø4.8mm Locking Bolt - Expert Femur Nail         | 1     |
| <b>1459-044</b>   | Screwdriver with T-Handle, Hex 3.5mm for Ø4.8mm Locking Bolt - Expert Femur Nail    | 1     |
| <b>1459-045</b>   | Universal Screwdriver, Hex 6.5mm, Ball Tip for Nail Holding Bolt- Expert Femur Nail | 1     |
| <b>1459-046</b>   | Distal Bolt, Hex 5mm for Distal Targeting Device - Expert Femur Nail                | 2     |
| <b>1459-047</b>   | Guide Wire with Threaded Tip Ø2.5mm x Thread Length 10mm x Length 338mm             | 3     |
| <b>1459-048</b>   | Guide Wire, Ø2.5mm x Length 338mm                                                   | 3     |
| <b>1459-049</b>   | Direct Measuring Device, Length upto 120mm, for Expert Femur Nail                   | 1     |
| <b>1459-050-1</b> | Tissue Protector for Expert Femur Nail                                              | 1     |
| <b>1459-051</b>   | Cannulated Step Drill Bit for Anti-Rotation Screw - Expert Femur Nail               | 1     |
| <b>1459-051-1</b> | Stopper for Step Drill Bit - Expert Femur Nail                                      | 1     |
| <b>1459-053</b>   | Protection Sleeve 17/14.5mm for Expert Femur Nail                                   | 1     |
| <b>1459-052</b>   | Guide Sleeve 14.3/3.2mm for Protection Sleeve - Expert Femur Nail                   | 1     |
| <b>1459-054</b>   | Impactor - Extractor Rod for Expert Femur Nail                                      | 1     |
| <b>1459-055-1</b> | Guide Wire Holder for Expert Femur Nail                                             | 1     |
| <b>1459-056</b>   | Distal Screw Device (Static/ Dynamic Locking) for Expert Femur Nail                 | 1     |
| <b>1459-057</b>   | Combination Wrench 11mm for Expert Femur Nail                                       | 1     |
| <b>1459-058</b>   | Connecting Rod - Impactor for Expert Femur Nail                                     | 1     |
| <b>1459-058-1</b> | Connecting Block for Connecting Rod - Expert Femur Nail                             | 1     |
| <b>1459-059</b>   | Compression Bolt Ø4mm for Expert Femur Nail                                         | 1     |
| <b>1459-060-1</b> | Guide Pin, Ø3.2mm x Length 480mm                                                    | 2     |
| <b>1459-063</b>   | Radiographic Ruler for Expert Femur Nail                                            | 1     |
| <b>1459-064</b>   | Depth Gauge measuring upto 100mm for Expert Femur Nail                              | 1     |
| <b>7-010-02</b>   | Medullary Exchange Tube                                                             | 1     |
| <b>7-010-03</b>   | T-Handle for Flexible Reamer (AO Connection)                                        | 1     |
| <b>1459-065T</b>  | Instrument Trays for Expert Femur Nailing Instrument Set                            | 3     |
| <b>1459-066</b>   | Container with PPSU Lid for Expert Femur Nailing Instrument Set                     | 1     |



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