Expert Lateral Femoral Nail.

Technique Guide

Expert Nailing System

SYNTHES®

Original Instruments and Implants of the Association for the Study of Internal Fixation – AO ASIF

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Image intensifier control

Warning
This description is not sufficient for immediate application of the instrumentation. Instruction by a surgeon experienced in handling this instrumentation is highly recommended.

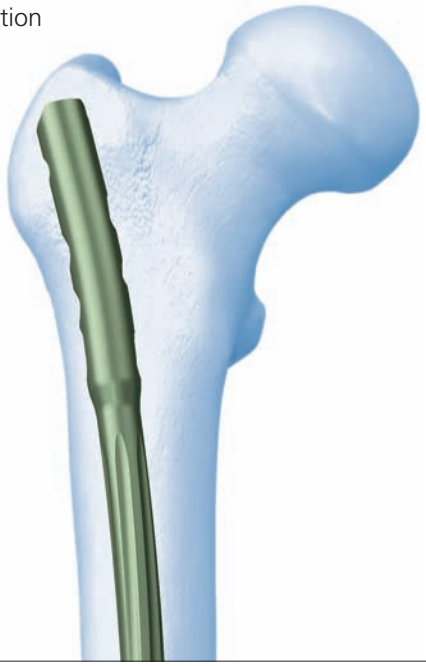
Expert Lateral Femoral Nail.
Optimized anatomical design for improved clinical outcome.

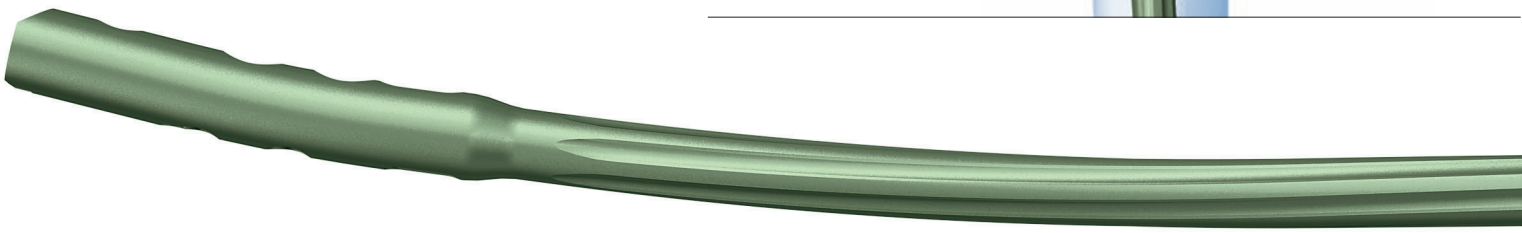
Expert Nailing System

One concept, one system
– Shorter learning curve
– Easier surgical procedure due to streamlined instrumentation
– Cost-efficiency thanks to common implants and instruments

Advanced anatomical nail design

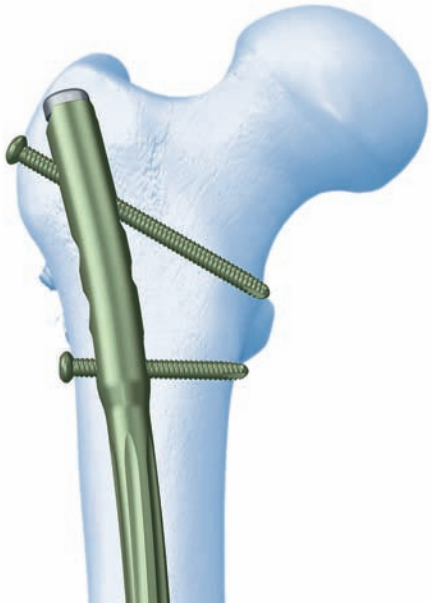
– Optimal fit in bone
– Easier insertion and extraction



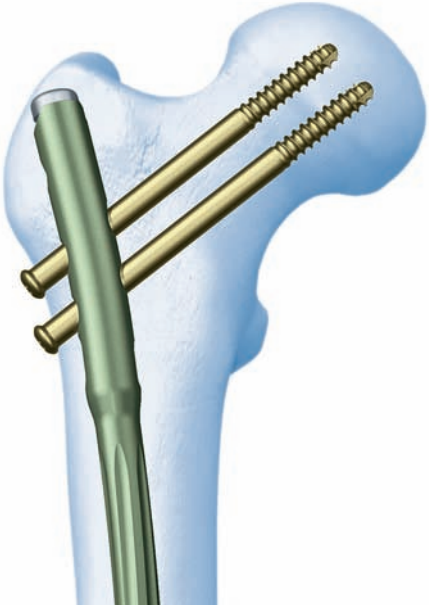


Optimized locking implants

Expanded indications
Standard locking
– femoral shaft fractures (except subtrochanteric fractures)



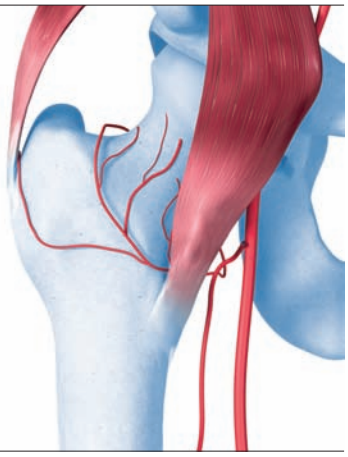
Recon locking
– subtrochanteric fractures
– combined femoral shaft and neck fractures



Optimal lateral entry point

– Easier and safer access to entry site
– Time-saving surgical technique

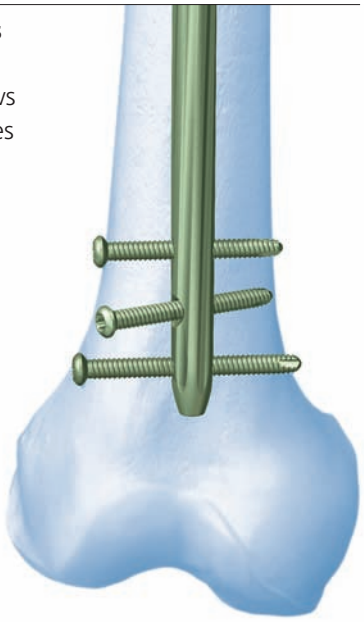
– Less soft tissue damage
– Lower risk of avascular necrosis



Optimized locking implants
– Better purchase in osteoporotic bone
– Time-saving surgical technique
– Optimal torque transmission

Cannulated end caps
– Easier insertion and extraction
– Self-holding Stardrive recess

Improved locking options
– Higher angular stability through multiplanar screws
– Less damage of soft tissues
– Improved mechanical resistance



AO ASIF Principles

In 1958, the AO ASIF (Association for the Study of Internal Fixation) formulated four basic principles[1], which have become the guidelines for internal fixation in general, and intramedullary nailing in particular:

Anatomic reduction
Before inserting the nail, the reduction can be achieved manually, using a reduction table, an external fixator or a distractor. A guide wire marks the prescribed path into the medullary canal and secures alignment of the fragments while the cannulated nail is being inserted over the wire. The nail insertion is generally monitored using x-rays. The nail is then locked proximally and distally to the bone fragments in order to hold the reduction.

Stable fixation
The intramedullary nail acts as an internal splint that controls but does not prevent micromovements of the fragments. It provides a relative stability that leads to an indirect healing through callus formation. The nails and the locking screws are available in different diameters that allow the surgeon to optimize stability. The judicious choice of locking options (number, position and direction) in the proximal and distal parts of the nail further improves the stability of the implant construct to the bone.

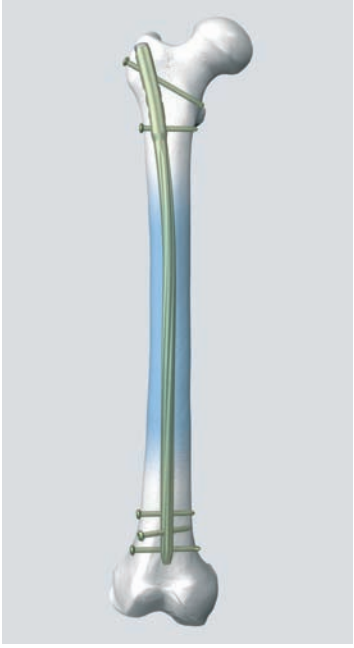
Preservation of blood supply
When the canal is not reamed, intramedullary nailing generates minimal trauma to the endosteum and, therefore, the blood supply is maximized through the uninjured endosteum and periosteum. Reaming the canal temporarily disrupts the endosteal blood supply but probably stimulates the revascularisation and therefore the bone healing.

Early mobilisation
Intramedullary nailing, combined with the AO technique, provides relatively stable fracture fixation with minimal trauma to vascular supply. This helps to create an improved environment for bone healing, accelerating the patient's return to previous mobility and function.

[1] M.E. Müller, M. Allgöwer, R. Schneider, and H. Willenegger: AO Manual of Internal Fixation, 3rd Edition. Berlin: Springer-Verlag. 1991.

Indications

Standard locking indications
The Expert Lateral 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 and 32-B [1–3].1)



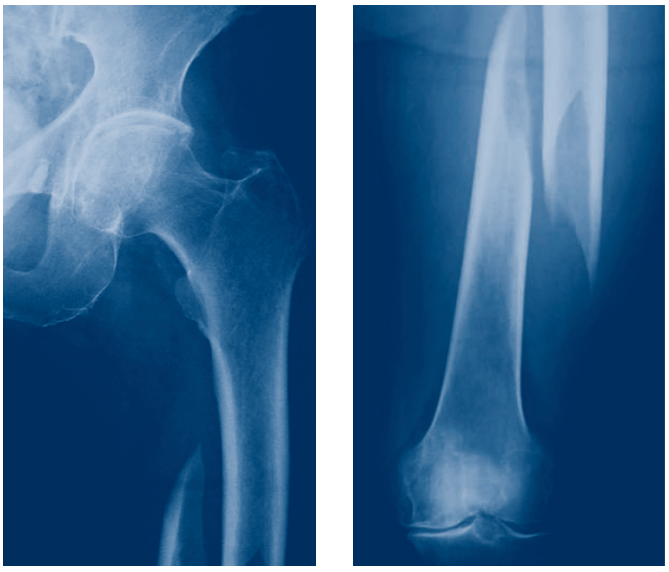
Recon locking indications
The Expert Lateral Femoral Nail with recon locking is indicated for fractures in the femoral shaft in case of combination with femoral neck fractures:
32-A/B/C combined with 31-B (double ipsilateral fractures)

Additionally the Expert Lateral Femoral Nail is indicated for fractures in the subtrochanteric section:
32-A [1–3].1 and 32-B [1–3].1

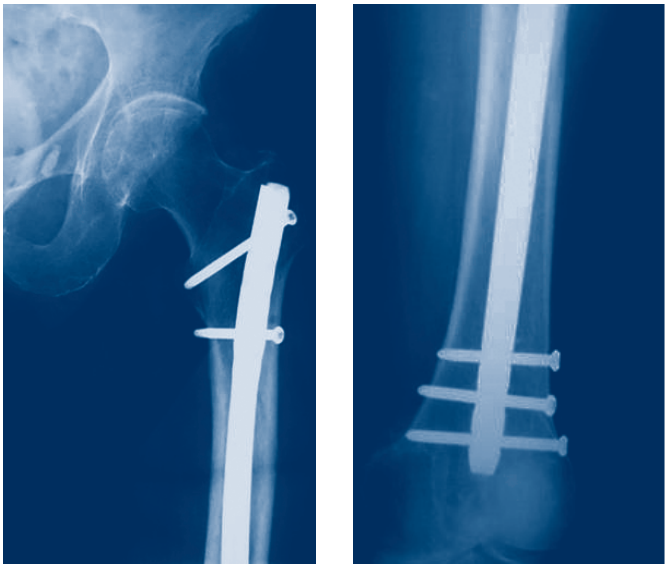
Case 1 – standard locking

85 year old female
Isolated femoral shaft fracture (AO 32-A1.2)

For simple shaft fractures, two proximal and two distal ML locking screws are normally sufficient to stabilize the fracture. Stability of the distal fragment can be enhanced by the use of a third locking screw in the oblique hole.



preoperative



follow up
(1 month after surgery)

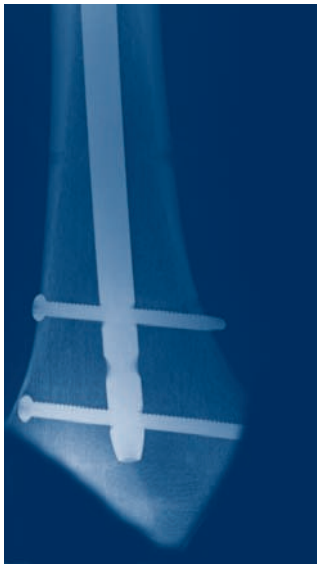
Case 2 – recon locking

49 year old male
Ipsilateral femoral neck and shaft fractures

The use of two hip screws (recon locking) ensures optimal stabilization for the treatment of combined femoral neck and shaft fractures.

The distal segment can be stabilized by using two ML locking screws. Stability of the distal fragment can be enhanced by the use of a third locking screw in the oblique hole.

preoperative



follow up
(1 month after surgery)

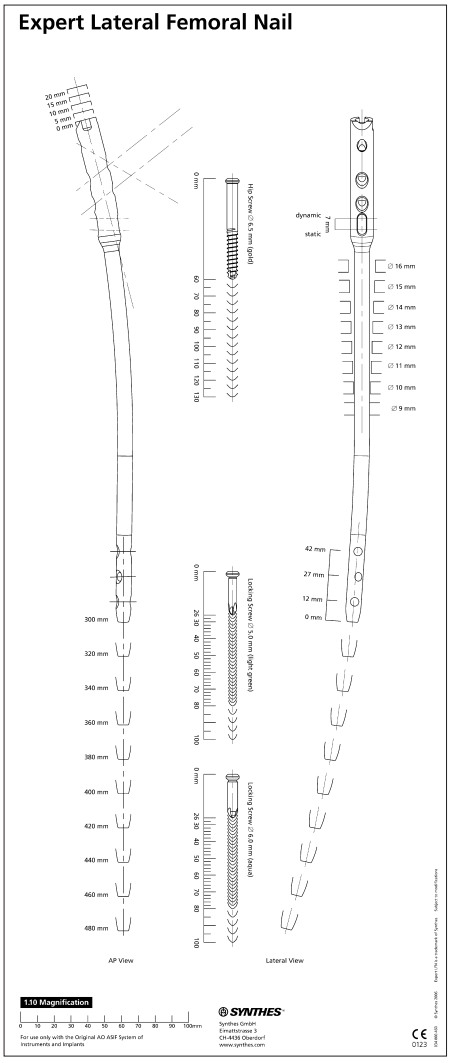
Preoperative Planning

Use the preoperative planner template for the Expert Lateral Femoral Nail (034.000.460) to estimate nail diameter and length.

To estimate the nail diameter, place the template on the lateral x-ray of the uninjured femur and measure the diameter of the medullary canal at the narrowest part that will contain the nail.

To estimate the nail length, place the template on the AP x-ray of the uninjured femur and select the appropriate nail length based on patient anatomy.

Note: When selecting the nail size, consider canal diameter, fracture pattern, patient anatomy and post-operative protocol.

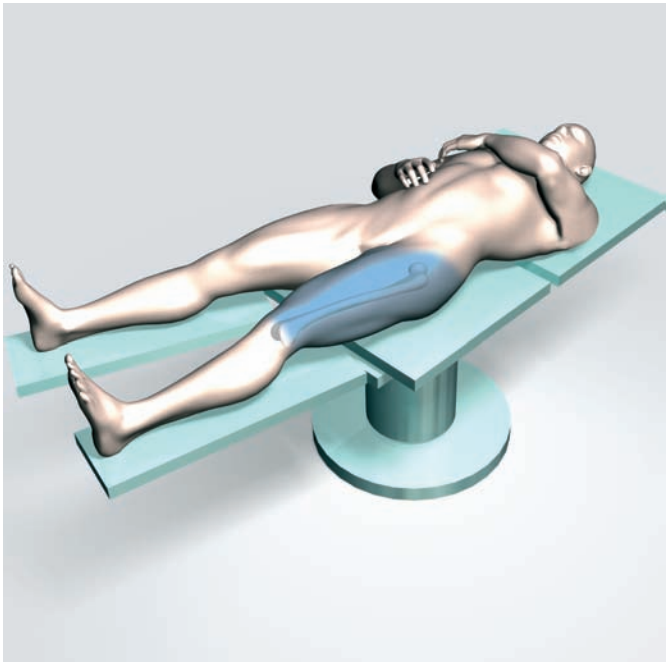


1

Position patient

Position the patient supine on a fracture or radiolucent operating table. Position the C-arm to allow visualization of the proximal femur, the fracture and the distal femur in both AP and lateral planes.

Alternatively, the patient can be positioned supine with the injured leg adducted or in the lateral decubitus position.



2

Reduce fracture

Instrument	
394.350	Large Distractor, complete

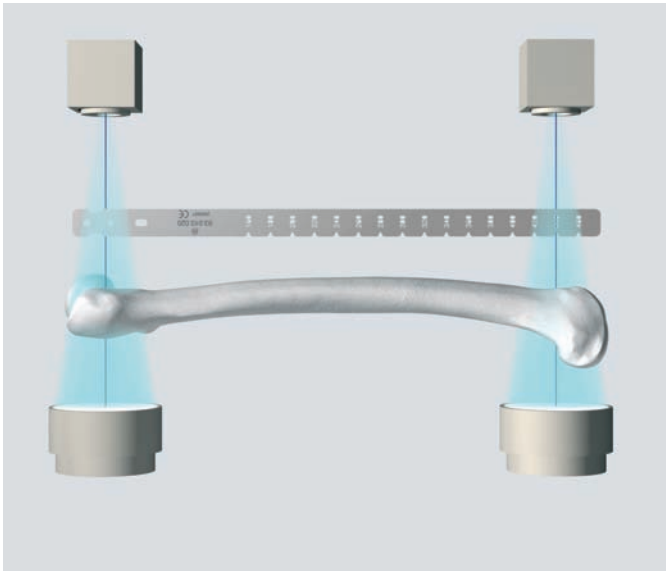
Perform closed reduction manually by axial traction under image intensifier control. The use of the large distractor may be appropriate in certain circumstances.

3
Confirm nail length and diameter

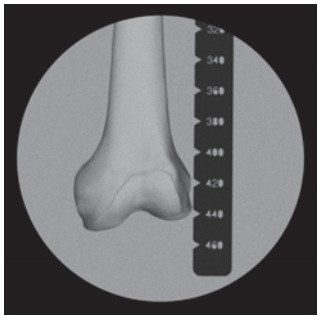
Instruments	
03.010.020	Radiographic Ruler for Expert Femoral Nails
03.010.023	Radiographic Ruler for Nail Diameters for Expert Femoral Nails

The required nail length must be determined after reduction of the femoral fracture.

- Position the C-arm for an AP view of the proximal femur. With long forceps, hold the ruler alongside the lateral thigh, parallel to and at the same level as the femur. Adjust the ruler until the proximal end is at the desired nail insertion position. Mark the skin at the proximal end of the ruler.



- Move the C-arm to the distal femur. Align the proximal end of the radiographic ruler to the skin mark, and take an AP image of the distal femur. Verify fracture reduction going from proximal to the fracture to distal.



Read nail length directly from the ruler image, selecting the measurement at or just proximal to the epiphyseal scar, or at the chosen insertion position.

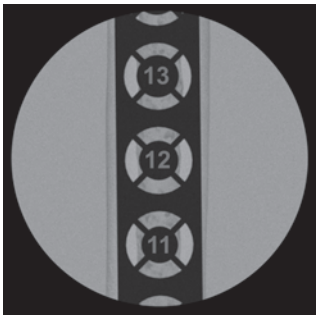
Important: It is recommended that all fractures are treated with the longest nail possible, taking into account patient anatomy or a previous implant.

Note: Compression (with the conventional backstroke technique*) or dynamization must be taken into account when determining the nail length. A shorter nail should be chosen when back-hammering or dynamization is planned for the procedure (the dynamic slot allows for 7 mm of movement).

* Backstroke technique: with the hammer guide attached to the connector and insertion handle (see Chapter 2 Insert Nail), light reverse hammer blows may be used to compress the fracture; monitor reduction radiographically.

Alternatives
Determine the nail length by the procedure above on the uninjured leg before draping (unsterile) or compare the length of two identical SynReam reaming rods ∅ 2.5 mm (352.032) or use the Depth Gauge (351.717 and 351.719) in combination with the SynReam Reaming Rod ∅ 2.5 mm, Length 950 mm (352.032).

Place the radiographic canal width estimator perpendicular to the femur axis so that the round diameter gauge is located over the isthmus. Select the nail diameter with which the medullary canal-to-cortex transition is still visible on both sides of the diameter gauge.



Notes
- The ruler provides only an estimate of the canal diameter as it is not at the same level as the femur.
- If the reamed technique is used, the diameter of the largest medullary reamer applied must be 0.5 mm to 1.5 mm larger than the nail diameter.

4
Approach

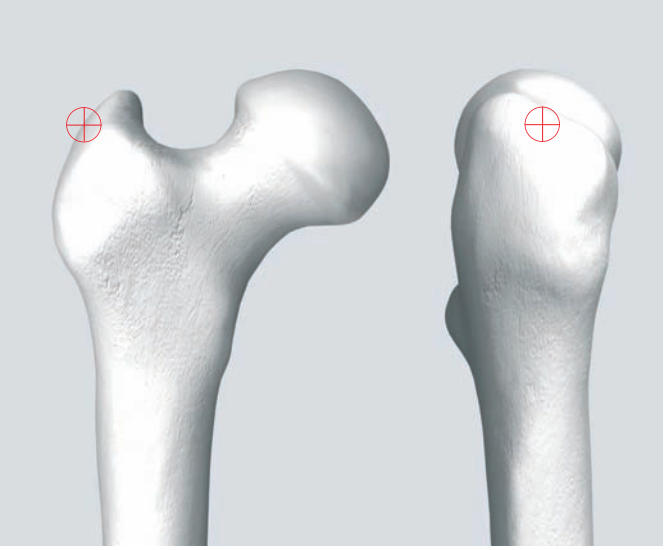
Palpate the posterior edge of the greater trochanter. Make a 3 cm incision in line with the central axis of the intramedullary canal in lateral view and 2 to 5 cm proximal to the tip of the greater trochanter, depending on the anatomy of the patient.

5
Determine entry point

The entry point is a determinant factor for the entire operation, especially for the optimal final position of the Expert Lateral Femoral Nail in the medullary canal.

- In AP view the entry point for the nail is approximately 10° lateral to the axis of the medullary canal. Depending on individual anatomy it is situated slightly lateral from the greater trochanter.
- In lateral view the entry point is in line with the axis of the intramedullary canal.

Note: To ensure a correct entry point the preoperative planner template for the Expert Lateral Femoral Nail can be used.



6
Insert guide wire

Instruments	
357.399	Guide Wire ∅ 3.2 mm, length 400 mm
393.100	Universal Chuck with T-Handle
357.410	Protection Sleeve 22.0/17.0, for No. 357.394
357.392	Drill Sleeve 17.0/3.2, length 161 mm, for No. 357.410
357.393	Trocar ∅ 3.2 mm, length 172 mm, for No. 357.392

Secure the guide wire in the universal chuck.

The effective mediolateral angle of the Lateral Femoral Nail is 10°; this means that in the AP view the guide wire must be inserted laterally to the greater trochanter at an angle of 10° to the intended extension of the medullary canal. Insert the guide wire for approx. 15 to 20 cm into the medullary canal and check the position under the image intensifier.

Thread the drill sleeve into the protection sleeve and insert the assembly over the guide wire through the incision to the bone.

In the lateral view, verify whether the position of the guide wire is straight and in the center of the medullary cavity.

Note: The correct entry point and angle are essential for a successful result. To ensure the correct position of the guide wire, hold a sterile Expert Lateral Femoral Nail onto the femur and check radiographically.

Option: percutaneous technique
Insert the trocar assembly (protection sleeve, drill sleeve and trocar) through the incision and to the bone. Lightly mark the insertion point at a 10° angle to the shaft axis in the AP view. Remove the trocar and insert the guide wire through the drill sleeve for approx. 15 to 20 cm into the medullary canal. Check the position in the AP and lateral views under the image intensifier.

7

Option: realign guide wire

Instruments	
357.066	Parallel Guide for Guide Wires ∅ 3.2 mm
393.100	Universal Chuck with T-Handle
357.399	Guide Wire ∅ 3.2 mm, length 400 mm

Important: The position of the guide wire will be decisive for the success of the next steps. If the position of the inserted guide wire is not optimal, it needs to be **realigned.**

Slide the parallel guide over the guide wire. Direct the parallel guide (ML/AP directions) so that the new guide wire can be inserted at the correct entry point.

Secure a new guide wire in the universal chuck.
Press the parallel guide firmly to the bone and insert the wire through the free sleeve of the parallel guide.

Verify the correct position of the new guide wire in both views.

Remove the parallel guide and the first guide wire.

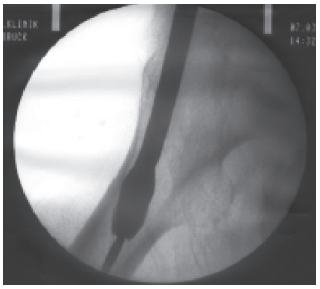
Note: This instrument facilitates the realignment of a guide wire as it uses the first wire as reference for the positioning of the new one.

8
Open medullary canal

Instruments	
357.399	Guide Wire ∅ 3.2 mm, length 400 mm
357.410	Protection Sleeve 22.0/17.0 mm, for No.357.394
357.392	Drill Sleeve 17.0/3.2, length 161 mm, for No. 357.410
03.010.165	Drill Bit ∅ 15.0 mm, cannulated, flexible, length 250 mm
03.010.167	Drill Bit ∅ 17.0 mm, cannulated, flexible, length 250 mm

Remove the drill sleeve.

Secure the flexible cannulated drill bit with the DHS quick coupling and guide it over the guide wire through the protection sleeve to the bone. Drill the medullary canal as far as the stop on the protection sleeve. Move the drill bit continuously backwards and forwards to clear the debris from the medullary cavity and to avoid jamming.



Use image intensifier control while drilling the medullary canal.

Remove the drill bit, the protection sleeve and the guide wire.

Note: The drill bit ∅ 15.0 mm is suitable for nails with diameters from 9.0 to 12.0 mm and drill bit ∅ 17.0 mm for nails with diameters from 13.0 to 16.0 mm.

Alternatives

Open medullary canal with reamer

Instruments	
357.399	Guide Wire ∅ 3.2 mm, length 400 mm
357.410	Protection Sleeve 22.0/17.0 mm, for No. 357.394
357.392	Drill Sleeve 17.0/3.2, length 161 mm, for No. 357.410
03.010.028	Drill Bit ∅ 15.0 mm, cannulated, length 300 mm
03.010.029	Drill Bit ∅ 17.0 mm, cannulated, length 280 mm

Remove the drill sleeve.

Secure the cannulated drill bit with the DHS quick coupling and guide it over the guide wire through the protection sleeve to the bone. Drill the medullary canal as far as the stop on the protection sleeve.

Use image intensifier control to drill the medullary canal.

Remove the drill bit, the protection sleeve and the guide wire.

Important: In case of small or difficult anatomy use the flexible drill bit in order to avoid damage to the far cortex.

Note: The drill bit 15.0 mm is suitable for nails with diameters from 9.0 – 12.0 mm and drill bit ∅ 17.0 mm for nails with diameters from 13.0 – 16.0 mm.

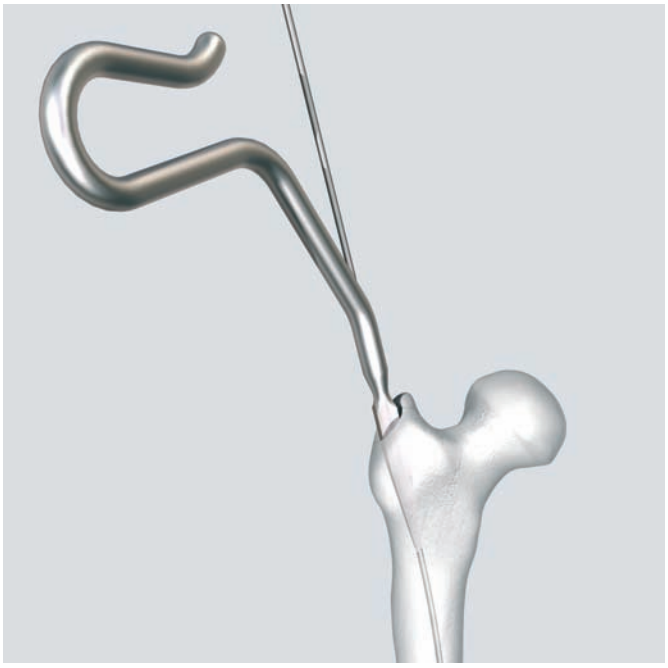
Open medullary canal with awl

Instruments	
357.399	Guide Wire ∅ 3.2 mm, length 400 mm
03.010.041	Awl ∅ 14.0/3.2 mm, cannulated

Remove the protection sleeve and the drill sleeve.

Place the cannulated awl ∅ 14.0 mm over the guide wire and open the medullary canal. Use a twisting motion to advance the awl to a depth of approximately 10 cm.

Remove the awl and the guide wire.



9

Option: ream medullary canal

Instruments	
189.060 / 175.500	SynReam Intramedullary Reaming System
351.782	Holding Forceps for Reaming Rods
03.010.093	Alternative: Rod Pusher for Reaming Rod with Hexagonal Screwdriver ∅ 8.0 mm

If necessary, enlarge the femoral canal with the medullary reamer to the desired diameter.

- Check fracture reduction under image intensifier.

Insert reaming rod
Insert the SynReam reaming rod into the medullary canal to the desired insertion depth. The tip must be correctly positioned in the medullary canal since it determines the final distal position of the Expert Lateral Femoral Nail.

Reaming
- Starting with the 8.5 mm diameter reaming head, ream to a diameter of 0.5 to 1.5 mm greater than the nail diameter. Ream in 0.5 mm increments and advance the reamer with steady, moderate pressure. Do not force the reamer. Partially retract the reamer repeatedly to clear debris from the medullary canal.

Use the holding forceps to retain the reaming rod while reaming and to prevent it from rotating.

Option
The length of the nail can be measured with two identical reaming rods using the "overlapping method".

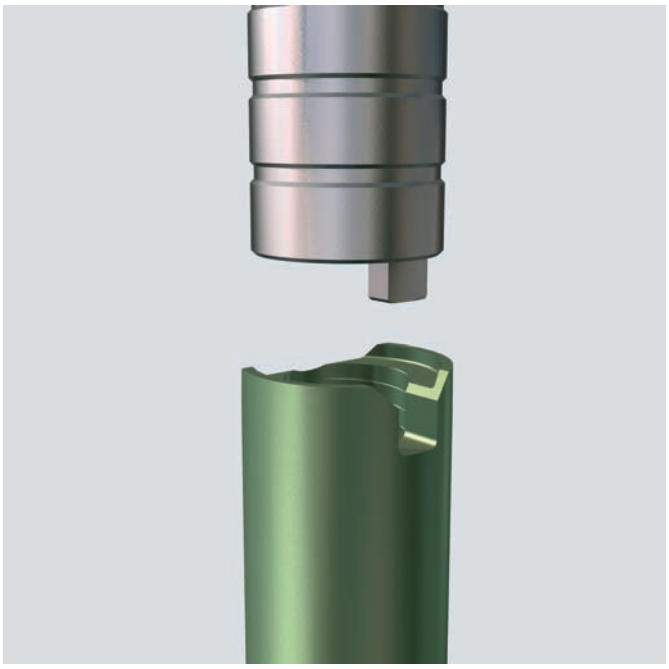
Use the rod pusher to help retain the reaming rod during reamer extraction.

Note: All Expert Lateral Femoral Nails are cannulated and can be inserted over the SynReam reaming rod. Reaming rod exchange is not required.

1

Assemble insertion instruments

Instruments	
03.010.045	Insertion Handle, for Expert Tibial and Femoral Nails
	or
03.010.046	Insertion Handle, long, for Expert Femoral Nails
03.010.044	Connecting Screw, cannulated, for Expert Tibial and Femoral Nails, for No. 03.010.045
	or
03.010.042	Connecting Screw, cannulated, long, for Expert Femoral Nails, for No. 03.010.046
03.010.092	Screwdriver, Hexagonal with Spherical Head ∅ 8 mm



Orient the insertion handle laterally towards the nail, and match the notch of the handle to the nail.

Place the connecting screw into the insertion handle and thread it into the proximal nail end using the screwdriver.

Notes

- The anatomical design of the Lateral Femoral Nail requires left and right version nails. The nails are therefore labeled left or right on the proximal anterior end.
- Check that the connecting screw is correctly tightened. Do not over-tighten.

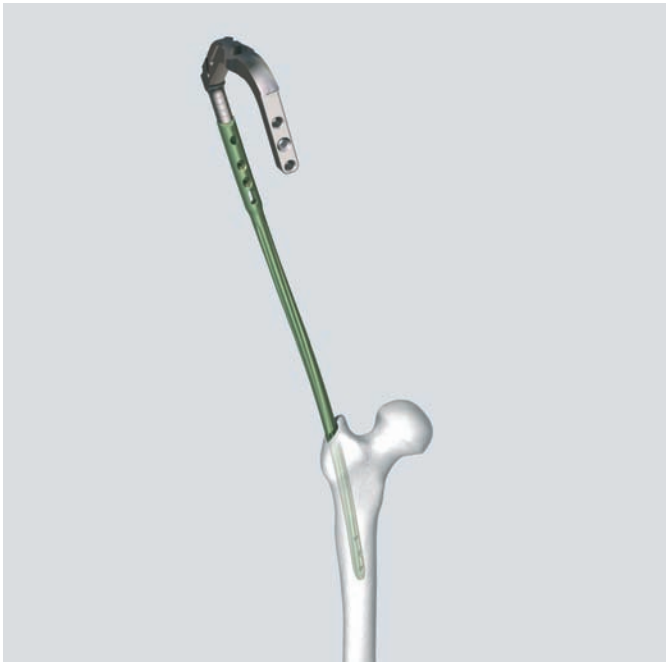
Optional instrument

03.010.093	Rod Pusher for Reaming Rod with Hexagonal Screwdriver ∅ 8.0 mm

Optionally, slide the connecting screw onto the rod pusher. Slide the assembly through the insertion handle and match the notch of the handle to the nail. Tighten using the rod pusher. Do not over-tighten.

2
Insert nail

Instruments	
03.010.045	Insertion Handle, for Expert Tibial and Femoral Nails
	or
03.010.046	Insertion Handle, long, for Expert Femoral Nails
03.010.044	Connecting Screw, cannulated, for Expert Tibial and Femoral Nails, for No. 03.010.045
	or
03.010.042	Connecting Screw, cannulated, long, for Expert Femoral Nails, for No. 03.010.046



Orient the insertion handle **anteriorly** to insert the nail into the medullary canal.

Use slight twisting motions to advance the nail.

Monitor nail passage across the fracture, and control in two planes to avoid malalignment.

Insert the nail until it is at or below the femoral opening. Check the final nail position in AP and lateral views.

Note: The nail **rotates** approximately 90° during insertion. The insertion handle rotates from anterior to lateral during insertion of the last one-third of the nail length.

Important: If the nail does not rotate to the lateral position, remove the nail and reinsert.

Notes
- Mount the aiming arm for proximal locking only when the nail has been completely inserted.
- The Lateral Femoral Nail can be passed over the SynReam Reaming Rod without use of the exchange tube.

Optional instruments

03.010.047	Connector, for Insertion Handle
03.010.056	Combined Hammer 700 g, can be mounted, for No. 357.220
	or
03.010.124	Combined Hammer 500 g, can be mounted, for No. 357.117
357.220	Hammer Guide, for No. 357.250
	or
357.117	Hammer Guide for DFN, for No. 357.026
321.160	Combination Wrench ∅ 11 mm
321.170	Pin Wrench ∅ 4.5 mm, length 120 mm

If necessary, use light hammer blows to insert the nail. Slide the connector into the **medial** grooves on the insertion handle (use the lateral position only when the patient anatomy requires this) and secure it in place using the combination wrench.

Lock the head of the combined hammer in place by tightening the nut onto the threads located below the hammer head using the pin wrench if necessary. Strike the connector directly.

Remove the connector.

Optionally, the hammer guide can be threaded into the connector and the hammer can be used as a slide hammer. Loosen the nut away from the threads located below the hammer head and secure onto the threads located above the handle.

Remove the hammer guide and the connector.

Important: If nail insertion is difficult, choose a smaller diameter nail or ream the intramedullary canal to a larger diameter.

Note: Do not hammer directly onto the insertion handle. Especially after hammering, confirm that the nail is securely connected to the insertion handle. Retighten if necessary.

Alternatives

Compression

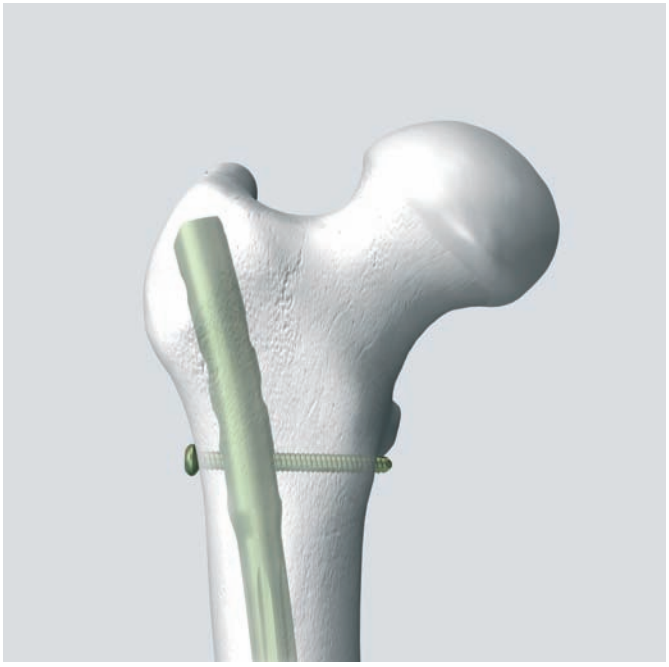
It is recommended to close fracture gaps in order to decrease the incidence of non-union or malunion.

If compression is planned, over-insert the nail to compensate for backstriking the nail: the final position of the nail should be flush with the trochanteric cortex.

- First lock distally and then use the hammer guide and the slide hammer to backstrike the nail under image intensification.

Important: Do not hammer directly on the connector or on the aiming arm.

Dynamization
If dynamization is planned, it is recommended to over-insert the nail by more than 7 mm (maximum distance between positions in static and dynamic modes).



Recon locking
If Recon locking is planned, insert the nail to a depth that allows centering of two recon screws in the femoral neck.

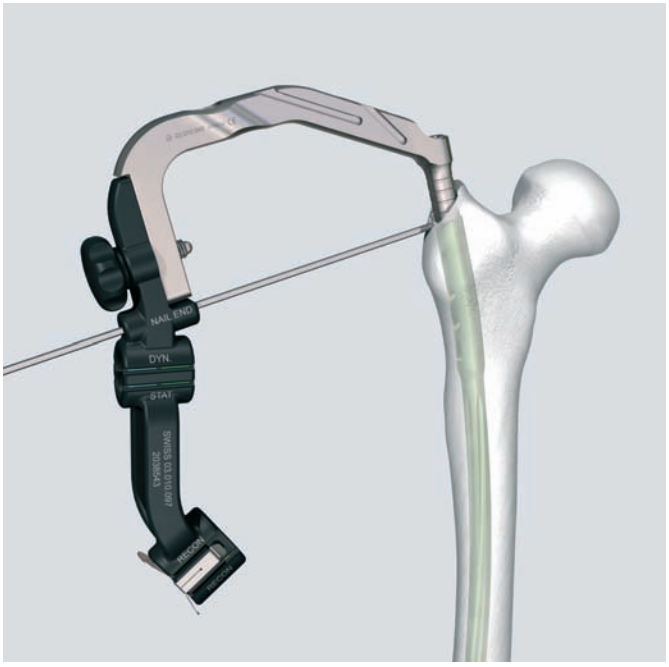
- AP view: to ensure the correct position of the screws, hold two guide wires on the grooves in the insertion handle and check radiographically.
- Lateral view: rotate the handle until it bisects the femoral head within the lateral view.

3
Check proximal nail position

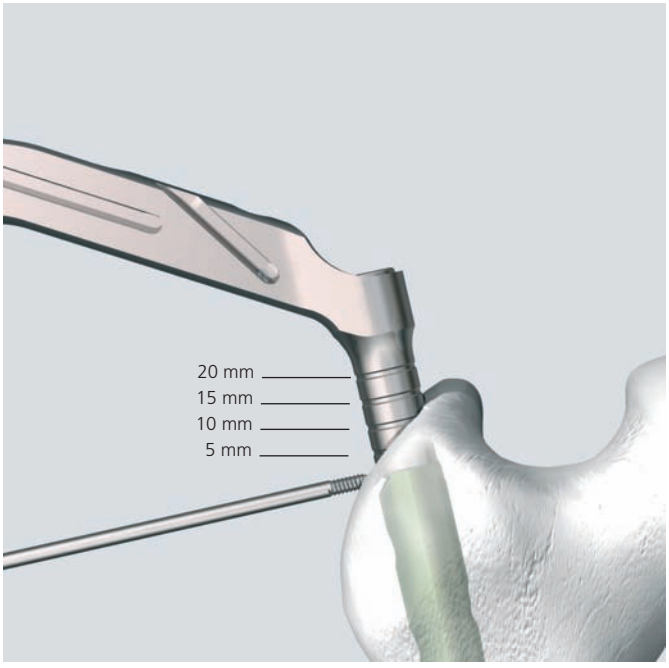
Instruments	
03.010.097	Aiming Arm for Expert Lateral Femoral Nail
357.399	Guide Wire ∅ 3.2 mm, length 400 mm

Attach the aiming arm to the insertion handle and insert a guide wire in the hole as shown in the illustration. The tip of the guide wire indicates the exact proximal position of the nail. Check final nail position under image intensification in AP and lateral views.

Remove the aiming arm when distal locking is the next step.



Note: The distance between the markings on the insertion handle is 5 mm and corresponds to the extensions of the end caps. This feature can be used for over-insertion of the nail or for correcting the nail length.



1

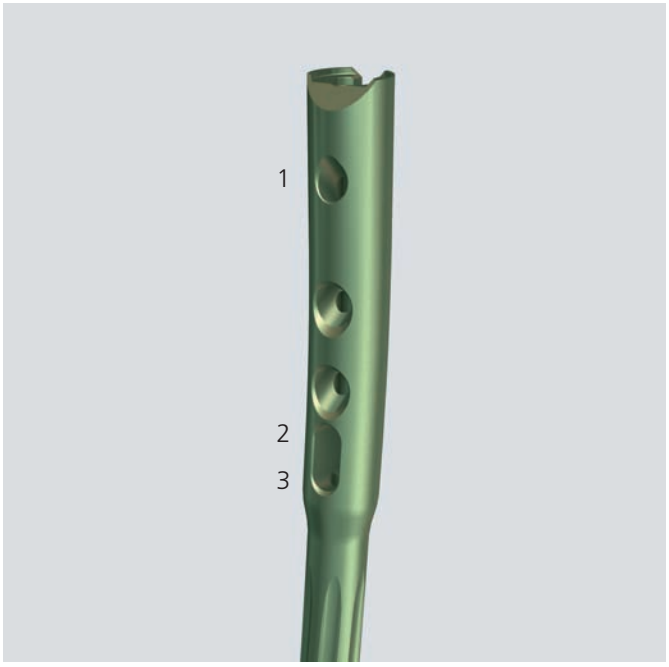
Locking options

There are three standard locking positions:

1 The 120° antegrade locking option allows static locking.

2 The dynamic locking option (DYN) corresponds to the proximal position of the standard locking slot.

3 The static locking option (STAT) corresponds to the distal position of the standard locking slot.

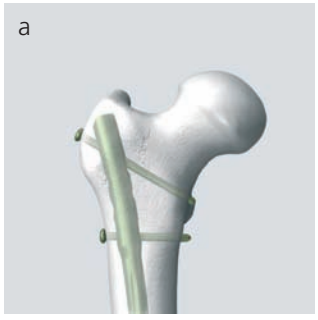


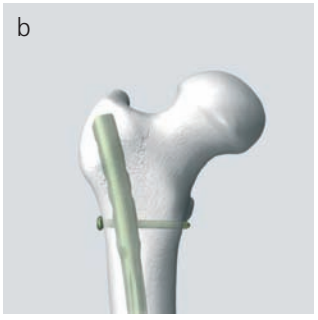
Proximal standard locking options:

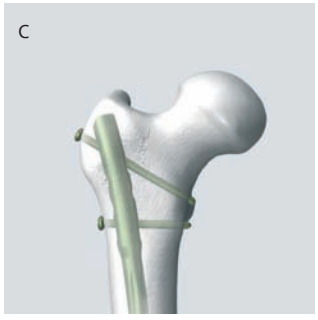
a For sufficient proximal **static** locking, always use the 120° antegrade locking option together with the transverse static screw.

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

c For **secondary dynamization** use both the dynamic and the 120° antegrade locking positions.







2

Choose locking screws and instruments

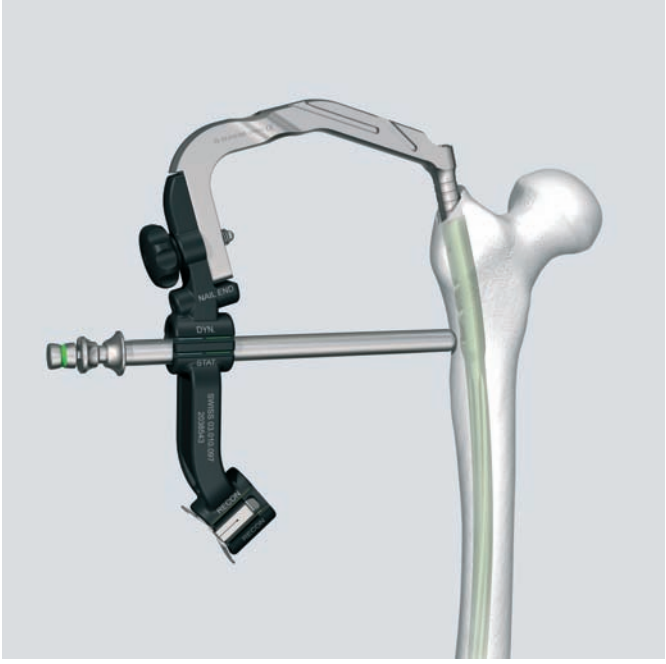
Use the correct locking screw, drill sleeve, trocar and drill bit for the selected nail diameter as shown in the table.

Nail diameter	Locking screw	Protection sleeve	Drill sleeve	Trocar	Drill bit
∅ 9 – 13 mm (light green)	∅ 5.0 mm (light green)	12.0/8.0 mm 03.010.063 (no color)	8.0/4.2 mm 03.010.065 (green)	∅ 4.2 mm 03.010.070 (green)	∅ 4.2 mm 03.010.061 (green)
∅ 14 – 16 mm (aqua)	∅ 6.0 mm (aqua)	12.0/8.0 mm 03.010.063 (no color)	8.0/5.0 mm 03.010.066 (no color)	∅ 5.0 mm 03.010.071 (no color)	∅ 5.0 mm 03.010.062 (no color)

3

Insert trocar combination

Instruments	
03.010.097	Aiming Arm for Expert Lateral Femoral Nail
03.010.063	Protection Sleeve 12.0/8.0, length 188 mm
03.010.065	Drill Sleeve 8.0/4.2, for No. 03.010.063
	or
03.010.066	Drill Sleeve 8.0/5.0, for No. 03.010.063
03.010.070	Trocar ∅ 4.2 mm, for No. 03.010.065
	or
03.010.071	Trocar ∅ 5.0 mm, for No. 03.010.066



Confirm that the insertion handle is securely connected to the nail and attach the aiming arm to the insertion handle.

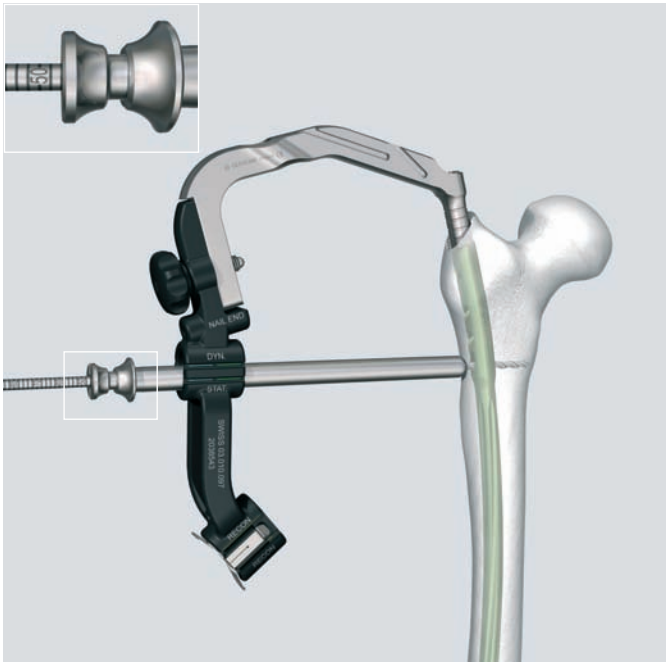
Insert the three-part trocar combination (protection sleeve, corresponding drill sleeve and trocar) through the desired ML hole marked green/aqua in the aiming arm, make a stab incision and insert the trocar to the bone. Remove the trocar.

Note: Do not exert force on the aiming arm, protection sleeve, drill sleeve and trocar. This force may prevent accurate targeting through the proximal locking holes and damage the drill bits.

4

Drill and determine locking screw length

Instruments	
03.010.061	Drill Bit ∅ 4.2 mm, calibrated, length 340 mm, 3-flute, for Quick Coupling, for No. 03.010.065
	or
03.010.062	Drill Bit ∅ 5.0 mm, calibrated, length 340 mm, 3-flute, for Quick Coupling, for No. 03.010.066



Use the corresponding drill bit (∅ 4.2 mm for ∅ 5.0 mm locking screws or ∅ 5.0 mm for ∅ 6.0 mm locking screws) to drill through both cortices until the tip of the drill bit just penetrates the far cortex.

- Confirm drill bit position after drilling both cortices.

Ensure that the drill sleeve is pressed firmly to the lateral cortex and read the measurement corresponding to the appropriate length of the locking screw at the back of the drill sleeve. Remove the drill bit and the drill sleeve.

Note: A correct end position of the drill sleeve is important in order to choose the correct length of the locking screw.

Alternative instrument

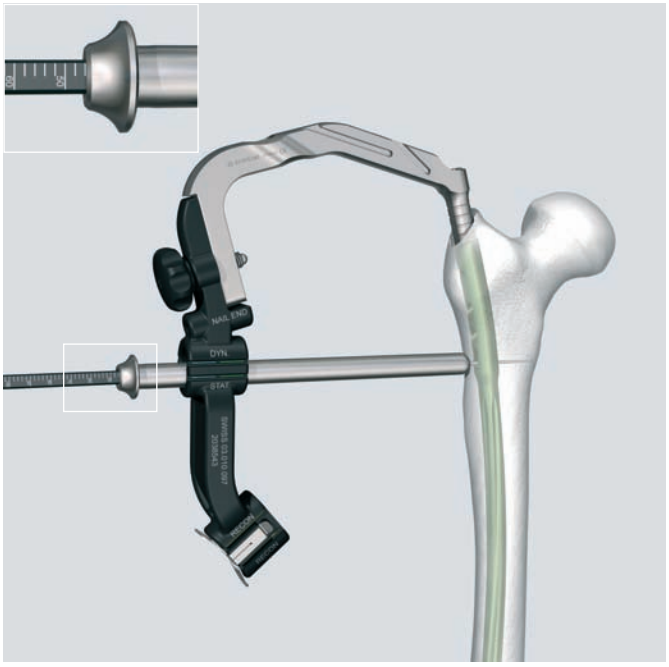
03.010.072	Depth Gauge for Locking Screws, measuring range up to 110 mm, for No. 03.010.063

After both cortices are drilled, remove the drill bit and the drill sleeve.

Disassemble the depth gauge into 2 parts: the outer sleeve and the measuring device with hook. Insert the measuring device into the protection sleeve. Make sure that the hook grasps the far cortex and that the protection sleeve is firmly pressed against the lateral cortex.

Read the measurement from the back of the protection sleeve, which corresponds to the appropriate length of the locking screw.

Note: A correct end position of the protection sleeve is important in order to choose the correct length of the locking screw.



5
Insert locking screws

Instrument	
03.010.107	Screwdriver Stardrive, T25, length 330 mm

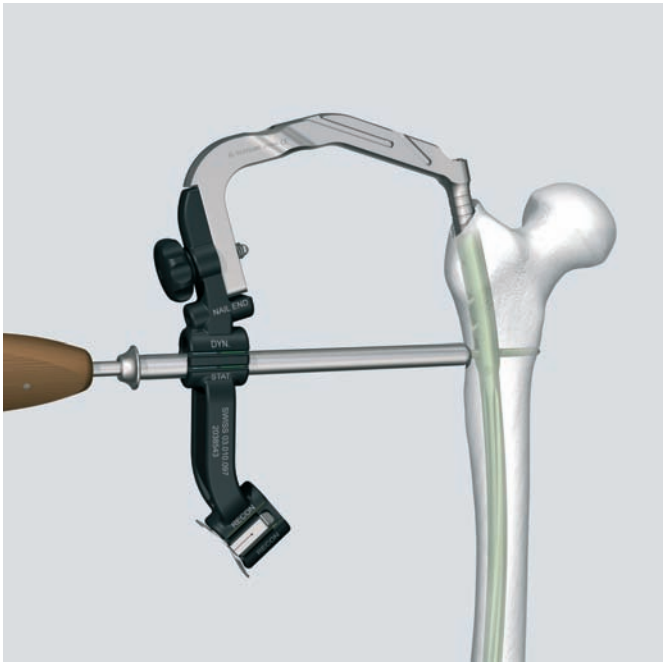
Insert the appropriate locking screw through the protection sleeve using the screwdriver Stardrive T25. Verify the position of the locking screw under image intensifier.

The tip of the locking screw should not project more than 1 to 2 mm beyond the medial far cortex.

Note: A groove on the screwdriver indicates when the locking screw is fully inserted.

Repeat steps 3 to 5 for the second proximal standard locking screw.

Note: If using 120° antegrade locking option, insert the trocar combination through the hole labeled 120° on the insertion handle.



1
Check nail position

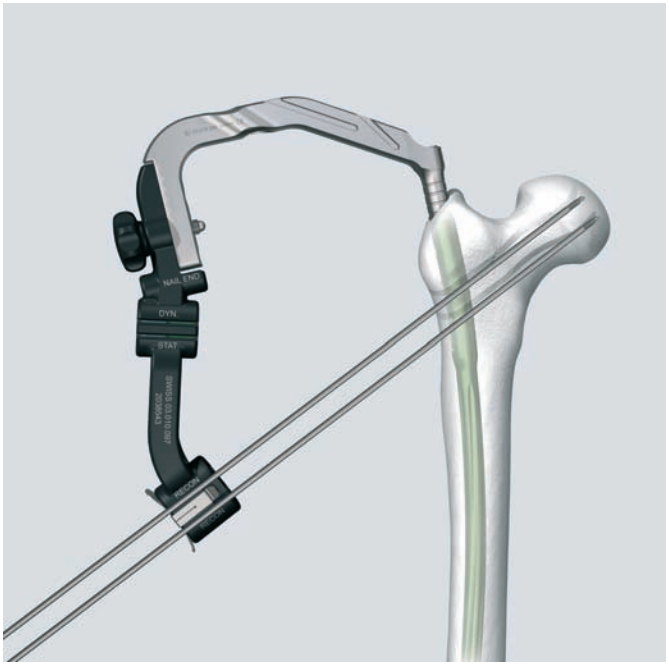
Instruments	
03.010.097	Aiming Arm for Expert Lateral Femoral Nail
357.399	Guide Wire ∅ 3.2 mm, length 400 mm

Confirm that the insertion handle is securely connected to the nail and attach the aiming arm to the insertion handle.

In the AP view adjust the nail insertion depth to ensure that the two recon screws can be placed into the femoral neck.

- The position of the nail can be verified by placing two guide wires onto the aiming arm and checking radiographycally.

- To ensure the correct anteversion of the implant you can insert an additional guide wire into the femoral head on the ventral side of the femoral neck.



2
Insert guide wires for hip screws

Instruments	
03.010.075	Protection Sleeve 11.5/8.5, for Expert LFN Reconstruction Locking
03.010.076	Drill Sleeve 8.5/3.2, for No. 03.010.075
03.010.077	Trocar ∅ 3.2 mm, for No. 03.010.076

Insert both yellow three-part trocar combinations (protection sleeve, drill sleeve and trocar) through the yellow marked holes in the aiming arm, make a stab incision and insert the trocars to the bone.

Remove the caudal trocar.

- Insert a guide wire subchondrally into the femoral head. Check guide wire placement radiographically in both planes.

Remove the cranial trocar.

- Insert the second guide wire subchondrally into the femoral head. Check the guide wire placement radiographically in both AP and lateral views.

Important: Verify in the AP view the guide wires are straight, and in the lateral view that they are in the center of the femoral neck.

Note: Do not exert force on the aiming arm, protection sleeves, drill sleeves and trocars. This force may prevent accurate targeting through the proximal locking holes and damage the drill bits.

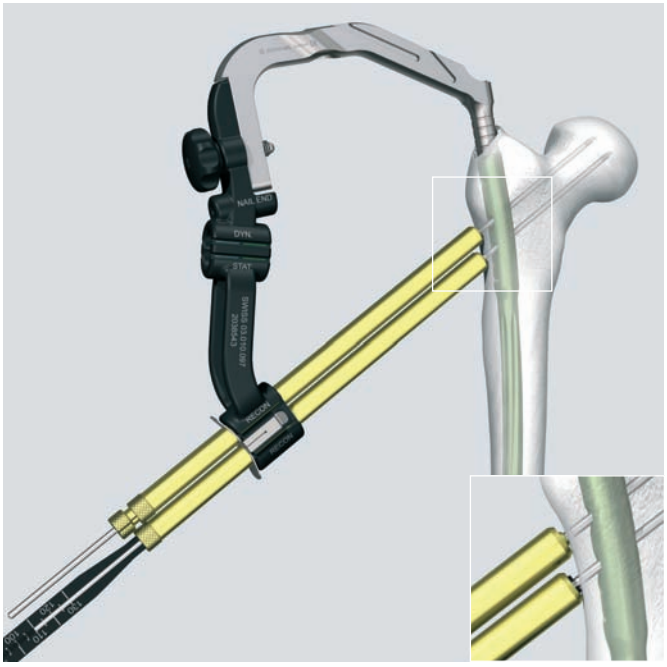
3

Determine length and drill for caudal hip screw

Instruments	
03.010.085	Direct Measuring Device for Guide Wires ∅ 3.2 mm, length 400 mm
03.010.078	Reamer ∅ 4.5/6.5 mm, length 450 mm, for Hip Screws Expert Lateral Femoral Nail
03.010.079	Fixation Sleeve for No. 03.010.078

It is recommended that you start with the insertion of the caudal hip screw.

Remove the drill sleeve and insert the direct measuring device over the guide wire into the protection sleeve to the bone. Read the length of the required hip screw directly on the measuring device.

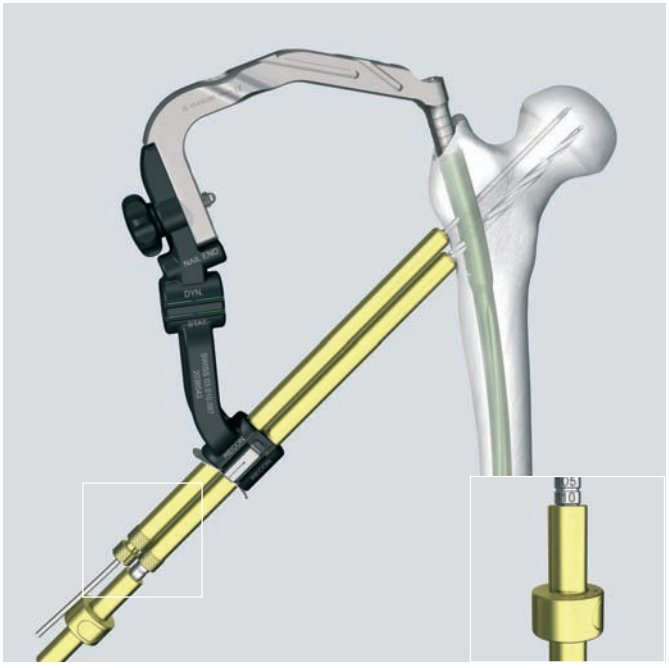


Remove the measuring device and the caudal guide wire.

Note: The determined length indicates the effective screw length.

Set the previously measured length for the screw on the reamer by fixing the fixation sleeve in the corresponding position. Read off the correct length on the side of the fixation sleeve pointing towards the tip of the reamer.

- Guide the reamer through the protection sleeve to the bone and drill to the stop. The fixed fixation sleeve prevents further drilling.



Note: Secure so that the locking mechanism is engaged in the locking grooves of the drill.

4

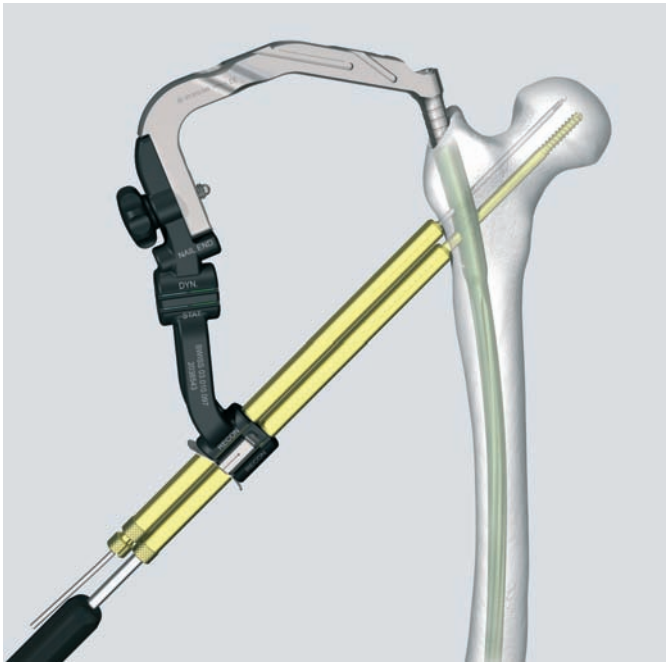
Insert caudal hip screw

Instrument	
03.010.108	Screwdriver Stardrive, T25, length 380 mm

Insert the appropriate hip screw through the protection sleeve into the femoral head using the longer screwdriver Stardrive T25. Verify the position of the locking screw under image intensification in both planes.

Note: A groove on the screwdriver indicates when the locking screw is fully inserted.

Repeat steps 3 and 4 for the second more cranial hip screw.



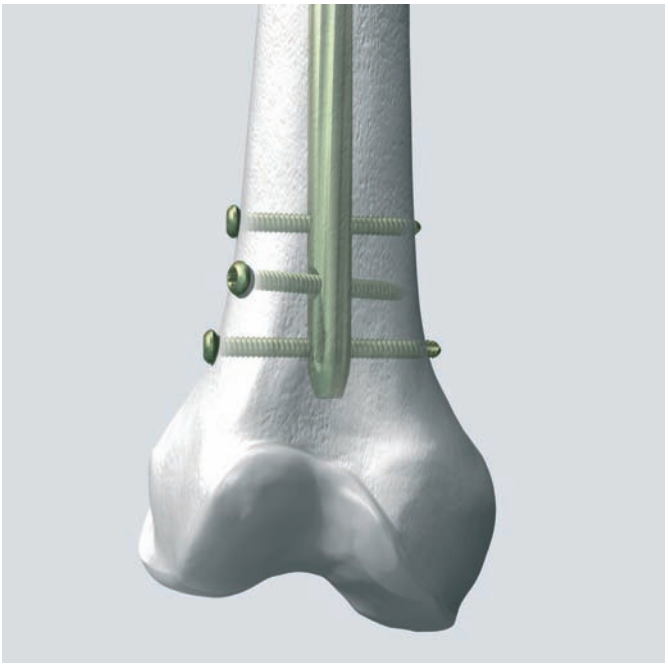
1

Choose locking screws and instruments

Use the appropriate locking screws and drill bit for the nail diameter selected:

Nail diameter	Locking screw	Drill bit
∅ 9 – 13 mm (light green)	∅ 5.0 mm (light green)	∅ 4.2 mm 03.010.101* or 03.010.104
∅ 14 – 16 mm (aqua)	∅ 6.0 mm (aqua)	∅ 5.0 mm 03.010.102* or 03.010.105

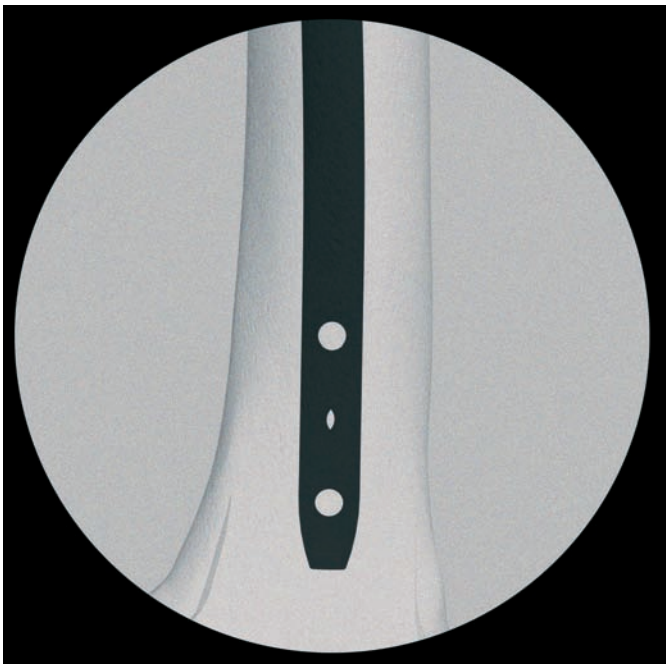
* For radiolucent drive



It is recommended that you lock distally first, enabling the use of the backstroke technique to prevent diastasis. Verify that the nail has been inserted to the appropriate depth.

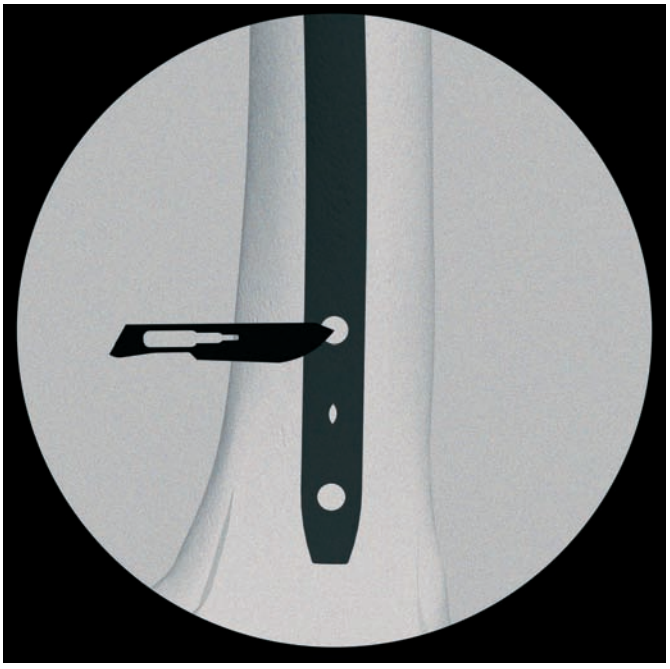
2
Align image

- Check reduction, correct alignment of the fragments and leg length before locking the nail.
- Align the C-arm with the hole in the nail until a perfect circle is visible in the center of the screen.



3
Determine incision point

- Place a scalpel blade on the skin over the center of the hole to mark the incision point and make a stab incision.



4
Drill

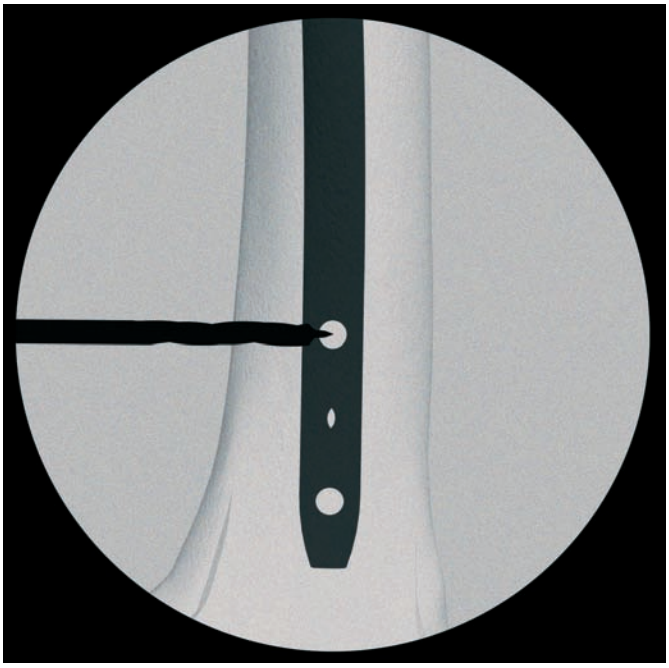
Instrument	
03.010.101	Drill Bit ∅ 4.2 mm, calibrated, length 145 mm, 3-flute, with Coupling for RDL
	or
03.010.102	Drill Bit ∅ 5 mm, calibrated, length 145 mm, 3-flute, with Coupling for RDL

- Using the radiolucent drive (511.300), under image intensification, insert the tip of the appropriate drill bit through the incision down to the bone.
- Incline the drive in order that the tip of the drill bit is centered over the locking hole. The drill bit should almost completely fill the circle of the locking hole. Hold the drill bit in this position and drill through both cortices until the tip of the drill bit penetrates the medial far cortex.

Tip: For greater drill bit control, discontinue drill power after perforating the near cortex. Manually guide the drill bit through the nail before drilling the far cortex.

Alternative instruments	
03.010.104	Drill Bit ∅ 4.2 mm, calibrated, length 145 mm, 3-flute, for Quick Coupling
	or
03.010.105	Drill Bit ∅ 5.0 mm, calibrated, length 145 mm, 3-flute, for Quick Coupling

- Standard freehand locking technique can be performed without the radiolucent drive. Use the appropriate drill bit shown in the table above.



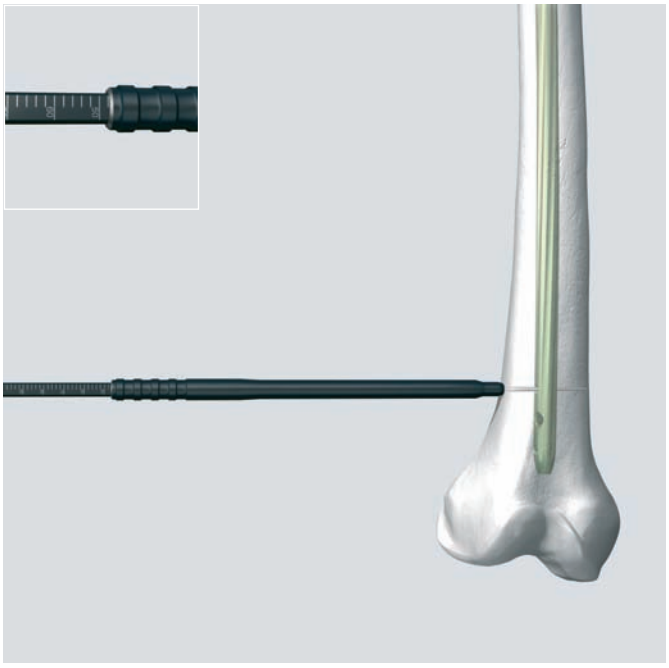
5

Determine length of the locking screw

Instrument	
03.010.072	Depth Gauge for Locking Screws, measuring range up to 110 mm, for No. 03.010.063

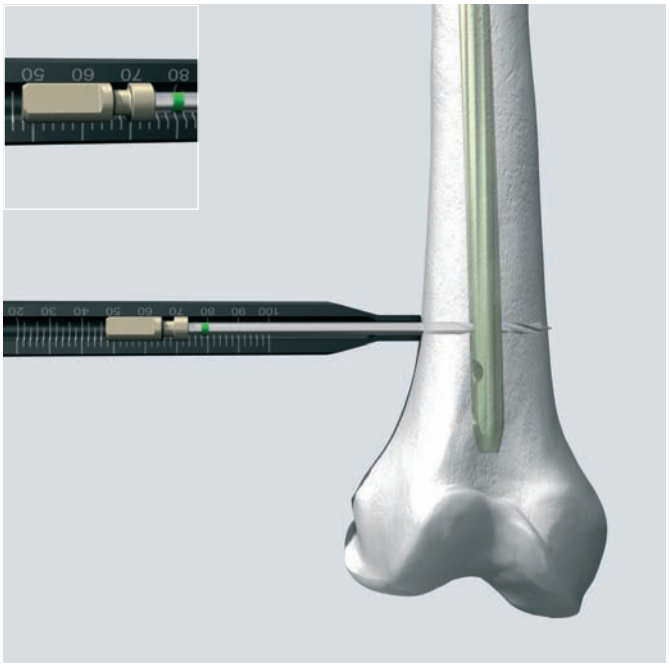
Measure the locking screw length using the depth gauge. Ensure that the outer sleeve is in contact with the bone and the hook grasps the far cortex.

Read the screw length directly from the measuring device at the back of the outer sleeve.



Alternative instrument

03.010.106	Direct Measuring Device for Drill Bits of length 145 mm, for Nos. 03.010.100–03.010.105

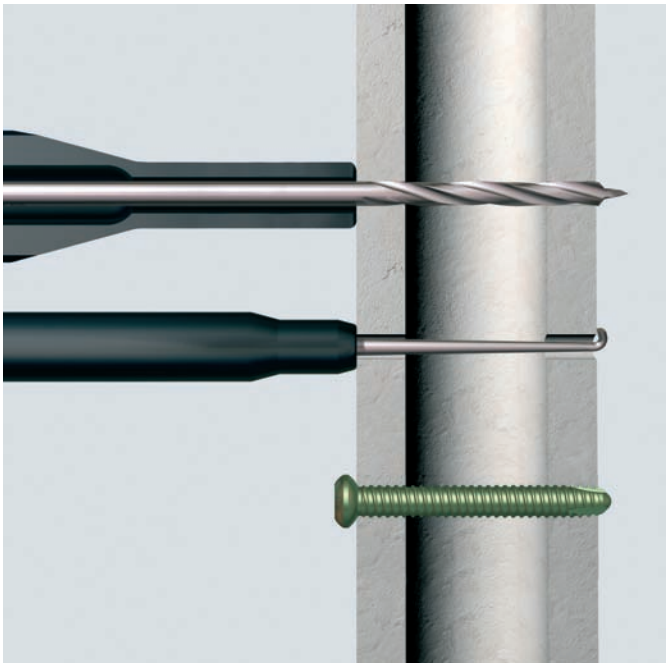


Stop drilling immediately after both cortices are penetrated and disassemble the drill bit from the radiolucent drive. Ensure the correct position of the drill bit beyond the far cortex.

Place the direct measuring device onto the drill bit. Read the measurement on the measuring device at the end of the drill bit.

Important: This corresponds to the appropriate locking screw length.

Note: The end position of the drill bit beyond the far cortex, as well as the correct position of the measuring device, is important in order to choose the optimal locking screw length.



6
Insert locking screw

Instruments	
03.010.107	Screwdriver Stardrive, T25, length 330 mm
03.010.112	Holding Sleeve, with Locking Device

Insert the locking screw with the appropriate length using the screwdriver Stardrive T25 and the holding sleeve, if required.

Verify the screw length under image intensification. The screw tip should be about 2 mm outside of the cortex. Exchange the locking screw with the appropriate length if necessary.

Use the holding sleeve:

a Insert the holding sleeve onto the shaft of the screwdriver and place the tip of the screwdriver in the recess of the locking screw.

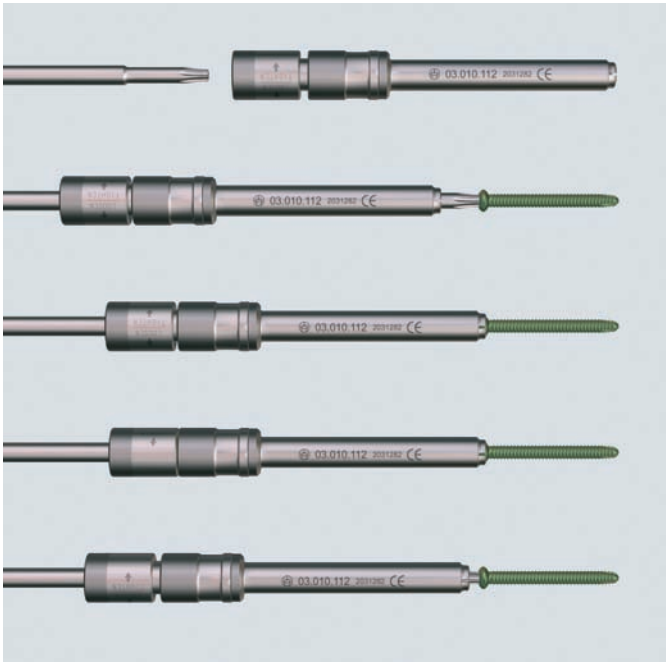
b Push the holding sleeve in the direction of the locking screw. The sleeve now holds the locking screw.

c Lock the holding sleeve by tightening it counter-clockwise.

d Release the holding sleeve after insertion of the locking screw by loosening it clockwise and pushing backwards.

Repeat steps 2 to 6 for the second and third locking screws.

Note: In the event of diastasis, the backstroke technique can be used after insertion of the second distal locking screw.



Insert End Cap

1
Insert end cap

Instruments	
03.010.110	Screwdriver Stardrive, T40, cannulated, length 300 mm
357.399	Guide Wire ∅ 3.2 mm, length 400 mm

The end caps for the Expert Lateral Femoral Nails are available in extension lengths from 0 to 20 mm as shown in the table.

Nail diameter	End Cap extension:	0 mm	5 mm	10 mm	15 mm	20 mm
∅ 9 – 12 mm	(grey)	04.003.000	04.003.001	04.003.002	04.003.003	04.003.004
∅ 13 – 16 mm	(grey)	04.003.000	04.003.006	04.003.007	04.003.008	04.003.009

End caps fulfill two functions: they prevent bone ingrowth into the nail; and they extend the nail height if it is over-inserted.

Remove the insertion handle, the aiming arm and the connecting screw.

The end caps are cannulated for use over a guide wire if necessary. Insert the guide wire into the proximal end of the nail. Engage the end cap with the screwdriver Stardrive T40 by exerting axial pressure. To minimize the chance of cross threading turn the end cap counter-clockwise until the thread of the end cap aligns with that of the nail. Then turn the end cap clockwise to thread it into the nail.

Remove the screwdriver and the guide wire.

1

Remove end cap and locking screws

Instruments	
03.010.110	Screwdriver Stardrive, T40, length 300 mm
03.010.107	Screwdriver Stardrive, T25, length 330 mm
357.399	Guide Wire ∅ 3.2 mm, length 400 mm
03.010.112	Holding Sleeve, with Locking Device

Implant removal is an optional procedure.

Clear the Stardrive socket of the end cap and the locking implants from any tissue ingrowth. Remove the end cap with the screwdriver Stardrive T40. A guide wire can be inserted for easy aligning of the screwdriver into the cannulated end cap.

Remove all locking screws except one of the proximal locking screws using the screwdriver Stardrive T25 and the holding sleeve.

2
Remove nail

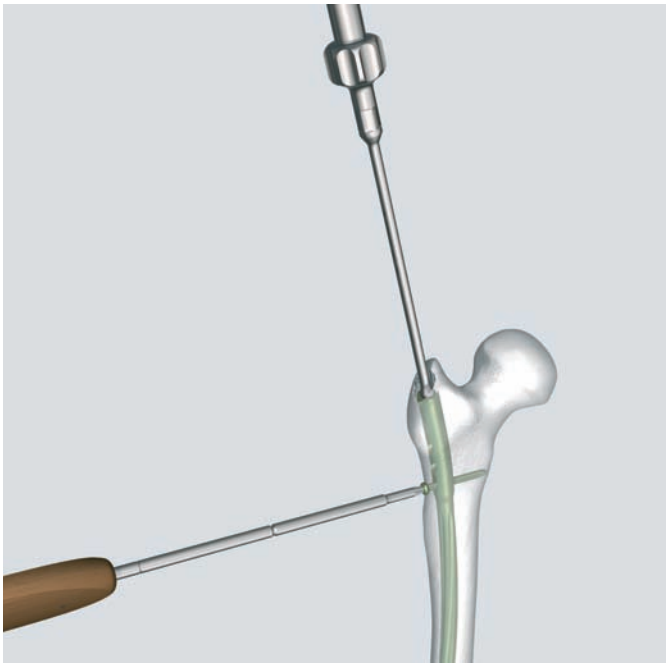
Instruments	
03.010.000	Extraction Screw, for Tibial and Femoral Nails
357.220	Hammer Guide, for No. 357.250
03.010.107	Screwdriver Stardrive, T25, length 330 mm
03.010.056	Combined Hammer 700 g, can be mounted, for No. 357.220

Before removing the final locking screw, attach the extraction screw to the nail and tighten it to prevent rotation or displacement of the nail. Attach the hammer guide to the extraction screw.

Remove the remaining locking screw with the screwdriver Stardrive T25.

Extract the nail by applying gentle blows with the hammer.

Important: The nail will rotate about 90°, analogous to the movement during the insertion.



Alternative

Instruments	
03.010.001	Extraction Screw, for Tibial and Femoral Nails, for No. 516.100
03.010.107	Screwdriver Stardrive, T25, length 330 mm

Before removing the final locking screw, attach the extraction screw for Air Pulse to the nail and tighten it to prevent rotation or displacement of the nail.

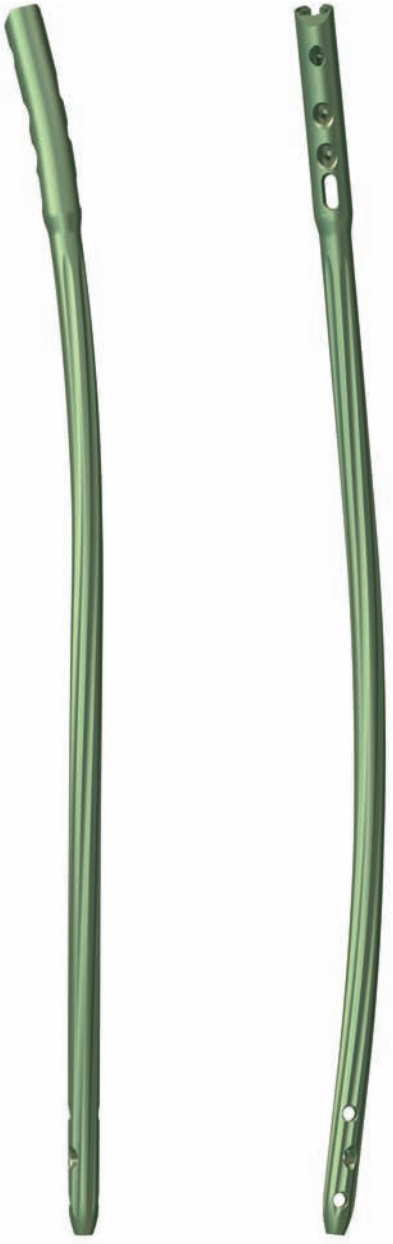
Remove the remaining locking screw with the screwdriver Stardrive T25.

Attach the Air Pulse to the extraction screw and extract the nail.

Expert Lateral Femoral Nail
Anatomical design with left and right nails

Material:	Ti-6Al-7Nb (TAN)
Diameters:	9 – 16 mm (1 mm increments) 9 – 12 mm nails have a proximal diameter of 13.5 mm 13 – 16 mm nails have a proximal diameter of 16 mm
Colors:	9 – 13 mm (light green) use locking screws ∅ 5.0 mm (light green) 14 – 16 mm (aqua) use locking screws ∅ 6.0 mm (aqua)
Lengths:	300 – 480 mm (20 mm increments)
Cannulation:	All nails are cannulated.

In the Vario Case for Lateral Femoral Nails (68.003.000 for right nails; 68.003.001 for left nails) space is provided for 40 nails (20 right and 20 left nails, each space is available to all diameters and lengths).



Length mm	∅ 9 mm, right* light green	∅ 9 mm, left* light green
300	04.003.240	04.003.241
320	04.003.244	04.003.245
340	04.003.248	04.003.249
360	04.003.252	04.003.253
380	04.003.256	04.003.257
400	04.003.260	04.003.261
420	04.003.264	04.003.265
440	04.003.268	04.003.269
460	04.003.272	04.003.273
480	04.003.276	04.003.277

Length mm	∅ 10 mm, right* light green	∅ 10 mm, left* light green
300	04.003.340	04.003.341
320	04.003.344	04.003.345
340	04.003.348	04.003.349
360	04.003.352	04.003.353
380	04.003.356	04.003.357
400	04.003.360	04.003.361
420	04.003.364	04.003.365
440	04.003.368	04.003.369
460	04.003.372	04.003.373
480	04.003.376	04.003.377

* Available non-sterile or sterile packed. Add "S" to the article number to order sterile products.

Length mm	∅ 11 mm, right* light green	∅ 11 mm, left* light green
300	04.003.440	04.003.441
320	04.003.444	04.003.445
340	04.003.448	04.003.449
360	04.003.452	04.003.453
380	04.003.456	04.003.457
400	04.003.460	04.003.461
420	04.003.464	04.003.465
440	04.003.468	04.003.469
460	04.003.472	04.003.473
480	04.003.476	04.003.477

Length mm	∅ 12 mm, right* light green	∅ 12 mm, left* light green
300	04.003.540	04.003.541
320	04.003.544	04.003.545
340	04.003.548	04.003.549
360	04.003.552	04.003.553
380	04.003.556	04.003.557
400	04.003.560	04.003.561
420	04.003.564	04.003.565
440	04.003.568	04.003.569
460	04.003.572	04.003.573
480	04.003.576	04.003.577

Length mm	∅ 13 mm, right* light green	∅ 13 mm, left* light green
300	04.003.640	04.003.641
320	04.003.644	04.003.645
340	04.003.648	04.003.649
360	04.003.652	04.003.653
380	04.003.656	04.003.657
400	04.003.660	04.003.661
420	04.003.664	04.003.665
440	04.003.668	04.003.669
460	04.003.672	04.003.673
480	04.003.676	04.003.677

* Available non-sterile or sterile packed. Add "S" to the article number to order sterile products.

Length mm	∅ 14 mm, right* aqua	∅ 14 mm, left* aqua
300	04.003.740S	04.003.741S
320	04.003.744S	04.003.745S
340	04.003.748S	04.003.749S
360	04.003.752S	04.003.753S
380	04.003.756S	04.003.757S
400	04.003.760S	04.003.761S
420	04.003.764S	04.003.765S
440	04.003.768S	04.003.769S
460	04.003.772S	04.003.773S
480	04.003.776S	04.003.777S

Length mm	∅ 15 mm, right* aqua	∅ 15 mm, left* aqua
300	04.003.840S	04.003.841S
320	04.003.844S	04.003.845S
340	04.003.848S	04.003.849S
360	04.003.852S	04.003.853S
380	04.003.856S	04.003.857S
400	04.003.860S	04.003.861S
420	04.003.864S	04.003.865S
440	04.003.868S	04.003.869S
460	04.003.872S	04.003.873S
480	04.003.876S	04.003.877S

Length mm	∅ 16 mm, right* aqua	∅ 16 mm, left* aqua
300	04.003.940S	04.003.941S
320	04.003.944S	04.003.945S
340	04.003.948S	04.003.949S
360	04.003.952S	04.003.953S
380	04.003.956S	04.003.957S
400	04.003.960S	04.003.961S
420	04.003.964S	04.003.965S
440	04.003.968S	04.003.969S
460	04.003.972S	04.003.973S
480	04.003.976S	04.003.977S

* These diameters are available only sterile packed.

Locking Implants

Locking Screw ∅ 5.0 mm
Used for standard proximal locking and for distal locking (nails ∅ 9 – 13 mm)

Material: Ti-6Al-7Nb (TAN)

Drill: ∅ 4.2 mm

Color: Light green

Lengths: 26 – 80 mm (2 mm increments)
85 – 100 mm (5 mm increments)

Design: 4.3 mm core diameter
Stardrive T25 recess (self-holding)
Fully threaded
Self-tapping, blunt tip
Double lead

Length mm	∅ 5.0 mm* light green	Length mm	∅ 5.0 mm* light green
26	04.005.516	58	04.005.548
28	04.005.518	60	04.005.550
30	04.005.520	62	04.005.552
32	04.005.522	64	04.005.554
34	04.005.524	66	04.005.556
36	04.005.526	68	04.005.558
38	04.005.528	70	04.005.560
40	04.005.530	72	04.005.562
42	04.005.532	74	04.005.564
44	04.005.534	76	04.005.566
46	04.005.536	78	04.005.568
48	04.005.538	80	04.005.570
50	04.005.540	85	04.005.575
52	04.005.542	90	04.005.580
54	04.005.544	95	04.005.585
56	04.005.546	100	04.005.590

* Available non-sterile or sterile packed. Add "S" to the article number to order sterile products.

In the Vario Case for the Expert Femoral Nails Locking Implants (68.003.010), space is provided for two locking screws ∅ 5.0 mm per length.

Locking Screws ∅ 6.0 mm
Used for standard proximal locking and for distal locking (nails ∅ 14 – 16 mm)

Material: Ti-6Al-7Nb (TAN)

Drill: ∅ 5.0 mm

Color: Aqua

Lengths: 26 – 80 mm (2 mm increments)
85 – 100 mm (5 mm increments)

Design: 4.8 mm core diameter
Stardrive T25 recess (self-holding)
Fully threaded
Self-tapping, blunt tip
Double lead

Length mm	∅ 6.0 mm* aqua
26	04.005.616
28	04.005.618
30	04.005.620
32	04.005.622
34	04.005.624
36	04.005.626
38	04.005.628
40	04.005.630
42	04.005.632
44	04.005.634
46	04.005.636
48	04.005.638
50	04.005.640
52	04.005.642
54	04.005.644
56	04.005.646

Length mm	∅ 6.0 mm* aqua
58	04.005.648
60	04.005.650
62	04.005.652
64	04.005.654
66	04.005.656
68	04.005.658
70	04.005.660
72	04.005.662
74	04.005.664
76	04.005.666
78	04.005.668
80	04.005.670
85	04.005.675
90	04.005.680
95	04.005.685
100	04.005.690

* Available non-sterile or sterile packed. Add "S" to the article number to order sterile products.

In the Vario Case for the Expert Femoral Nails Locking Implants (68.003.010), space is provided for two locking screws ∅ 6.0 mm per length (requires optional screw rack 68.003.010.06).

Hip Screw ∅ 6.5 mm
Used for recon locking (all nails)

Material: Ti-6Al-7Nb (TAN)

Drill: ∅ 6.5/4.5 mm

Color: Gold

Lengths: 60 – 130 mm (5 mm increments)

Design: 6.5 mm shaft diameter/
4.5 mm core diameter
Stardrive T25 recess (self-holding)
Thread length 30 mm
Self-tapping, blunt tip

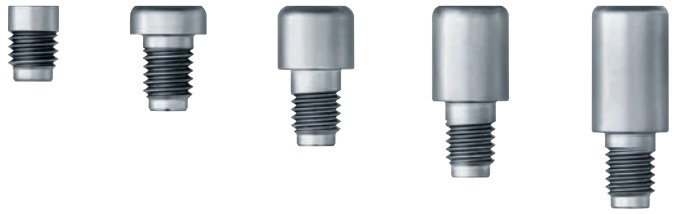
Length mm	∅ 6.5 mm* gold
60	04.003.022
65	04.003.023
70	04.003.024
75	04.003.025
80	04.003.026
85	04.003.027
90	04.003.028
95	04.003.029

Length mm	∅ 6.5 mm* gold
100	04.003.030
105	04.003.031
110	04.003.032
115	04.003.033
120	04.003.034
125	04.003.035
130	04.003.036

* Available non-sterile or sterile packed. Add "S" to the catalogue number to order sterile products.

In the Vario Case for the Expert Femoral Nails Locking Implants (68.003.010), space is provided for two hip pin screws ∅ 6.5 mm per length (requires optional module 685.132)

End Caps
Used to protect nail threads from tissue ingrowth



Material: Ti-6Al-7Nb (TAN)

Color: Grey

Diameters: 12 mm for nails ∅ 9 – 12 mm
16 mm for nails ∅ 13 – 16 mm

Lengths: 0 mm – sits flush with end of nail
5, 10, 15 and 20 mm extensions – extend nail height if nail is overinserted

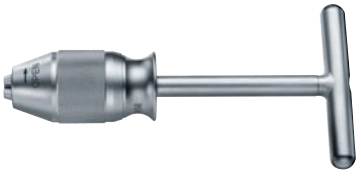
Cannulation: All end caps are cannulated

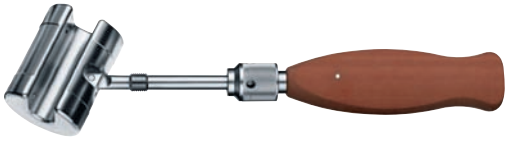
Design: Stardrive T40 recess (self-holding)

Extensions mm	∅ 12 mm*	∅ 16 mm*
0	04.003.000	04.003.000
5	04.003.001	04.003.006
10	04.003.002	04.003.007
15	04.003.003	04.003.008
20	04.003.004	04.003.009

* Available non-sterile or sterile packed. Add "S" to the article number to order sterile products.

Standard Instruments

321.160	Combination Wrench ∅ 11.0 mm	
321.170	Pin Wrench ∅ 4.5 mm, length 120 mm	
357.066	Parallel guide for guide wires ∅ 3.2 mm	
357.220	Hammer Guide, for No. 357.250	
357.392	Drill Sleeve 17.0/3.2, length 161 mm, for No. 357.410	
357.393	Trocar ∅ 3.2 mm, length 172 mm, for No. 357.392	
357.398	Shaft, hexagonal, ∅ 8.0 mm, cannulated, short, length 125 mm	
357.399	Guide Wire ∅ 3.2 mm, length 400 mm	
357.410	Protection Sleeve 22.0/17.0, for No. 357.394	
393.100	Universal Chuck with T-Handle	

03.010.000	Extraction Screw, for Tibial and Femoral Nails	
03.010.020	Radiographic Ruler for Femoral Nails	
03.010.023	Radiographic Ruler for Medullary Nails, length 365 mm	
03.010.028	Drill Bit ∅ 15.0 mm, cannulated, length 300 mm, 3-flute	
03.010.029	Drill Bit ∅ 17.0 mm, cannulated, length 280 mm	
03.010.044	Connecting Screw, cannulated, for Tibial and Femoral Nails, for No. 03.010.045	
03.010.045	Insertion Handle, for Tibial and Femoral Nails	
03.010.047	Connector, for Insertion Handle	
03.010.056	Combined Hammer 700 g, can be mounted, for No. 357.220	
03.010.061	Drill Bit ∅ 4.2 mm, calibrated, length 340 mm, 3-flute, for Quick Coupling, for No. 03.010.065	
03.010.062	Drill Bit ∅ 5.0 mm, calibrated, length 340 mm, 3-flute, for Quick Coupling	

03.010.063	Protection Sleeve 12.0/8.0, length 188 mm	
03.010.065	Drill Sleeve 8.0/4.2, for No. 03.010.063	
03.010.066	Drill Sleeve 8.0/5.0, for No. 03.010.063	
03.010.070	Trocar ∅ 4.2 mm, for No. 03.010.065	
03.010.071	Trocar ∅ 5.0 mm	
03.010.072	Depth Gauge for Locking Screws, measuring range up to 110 mm, for No. 03.010.063	
03.010.075	Protection Sleeve 11.5/8.5, for LFN Reconstruction Locking	
03.010.076	Drill Sleeve 8.5/3.2, for No. 03.010.075	
03.010.077	Trocar ∅ 3.2 mm, for No. 03.010.076	
03.010.078	Reamer ∅ 4.5/6.5 mm, length 450 mm, for Hip Screws LFN	
03.010.079	Fixation Sleeve, for No. 03.010.078	
03.010.085	Direct Measuring Device for Guide Wires ∅ 3.2 mm, length 400 mm	

03.010.092	Screwdriver, hexagonal with spherical head ∅ 8.0 mm	
03.010.097	Aiming Arm for LFN	
03.010.101	Drill Bit ∅ 4.2 mm, calibrated, length 145 mm, 3-flute, with Coupling for RDL	
03.010.102	Drill Bit ∅ 5.0 mm, calibrated	
03.010.106	Direct Measuring Device for Drill Bits of length 145 mm, for Nos. 03.010.100 to 03.010.105	
03.010.107	Screwdriver Stardrive, T25, length 330 mm	
03.010.108	Screwdriver Stardrive, T25, length 380 mm	
03.010.110	Screwdriver Stardrive, T40, cannulated, length 300 mm	
03.010.112	Holding Sleeve, with Locking Device	
03.010.165	Flex. Drill Bit cannulated ∅ 15.0 mm	
03.010.167	Flex. Drill Bit cannulated ∅ 17.0 mm	

Note: Do not use standard instruments together with alternative instruments without contacting your Synthes representative tirst.

Optional Instruments

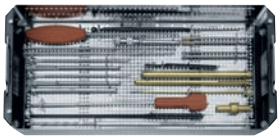
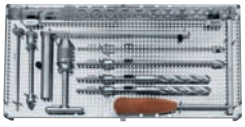
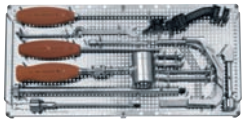
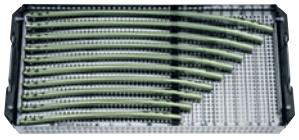
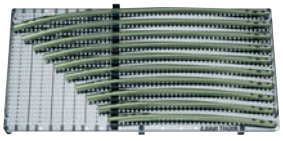
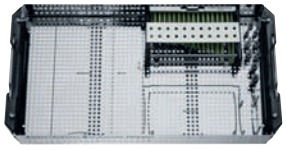
357.117	Hammer Guide for DFN, for No. 357.026	
03.010.001	Extraction Screw, for Tibial and Femoral Nails, for No. 516.100	
03.010.041	Awl ∅ 14.0/3.2 mm, cannulated	
03.010.042	Connecting Screw for Percutaneous Insertion Guide*	
03.010.046	Insertion Handle for Percutaneous Insertion**	

* Alternative Instrument for 03.010.044
** Alternative Instrument for 03.010.045

03.010.093	Rod Pusher for Reaming Rod with Hexagonal Screwdriver ∅ 8.0 mm	
03.010.104	Drill Bit ∅ 4.2 mm, calibrated, length 145 mm, 3-flute, for Quick Coupling	
03.010.105	Drill Bit ∅ 5.0 mm, calibrated, length 145 mm	
03.010.124	Combined Hammer 500 g, can be mounted, for No. 357.117	
319.970	Screw Forceps self-hold, lenght 85 mm	

Note: Do not use standard instruments together with alternative instruments without contacting your Synthes representative first.

Vario Case

68.003.301	Vario Case for Standard Instruments, for Expert LFN, without Lid, without Contents	
689.530	Lid (Stainless Steel), extra-large, for Vario Case	 
68.003.000	Vario Case for Expert Lateral Femoral Nails, right	
68.003.001	Vario Case for Expert Lateral Femoral Nails, left	
68.003.010	Vario Case for Locking Implants, for Expert Femoral Nails	
68.003.010.06	Rack for Locking Screws Stardrive 6.0 mm, for Vario Case No. 68.003.010	
685.132	Module for Hip Screws ∅ 6.5 mm, for Vario Case No. 685.130	
689.507	Lid, size 1/1, for Vario Case	

530.010	Power Drive, complete
530.100	Power Drive
530.200	Battery, for Power Drive
530.280	Battery Casing

511.300	Radiolucent Drive Mark II
511.730	Jacobs Chuck with Key (large)
511.750	Quick Coupling, for Drill Bits
511.761	Large Quick Coupling
511.785	Reduction Drive Unit
511.790	Quick Coupling, for Kirschner Wires

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