Sirus® Antegrade Femoral Nail System

Surgical Technique

The Cannulated Titanium Nail with Anatomical Shape and Lateral Entry Point

zimmer

Confidence in your hands®

Surgical Technique Sirus Antegrade Femoral Nail System

Contents

Introduction

Indications

- Closed and open femoral diaphyseal fractures
- Subtrochanteric fractures
- Diaphyseal fractures in combination with femoral neck
- Pseudarthrosis or delayed union
- Pathologic or pending pathologic fractures
- Corrective osteotomies, callus distractions and segment transfers

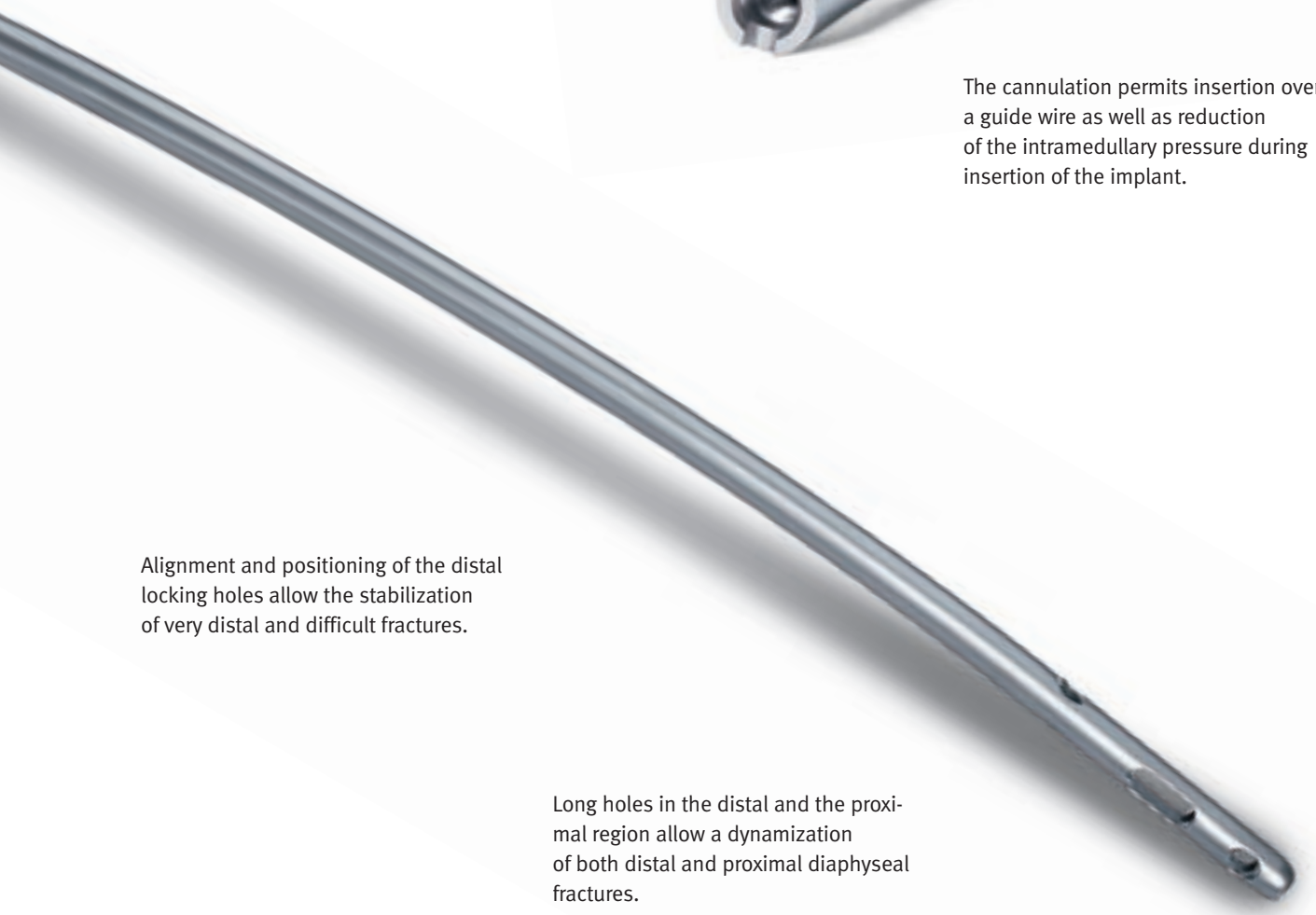
Features

- The *Sirus* Antegrade Femoral Nail System is for reamed and nonreamed intramedullary nailing

The three proximal recon screws with an antitorsion of 12° allow additional stabilization in the case of ipsilateral femoral neck fractures.

The optimized anatomical shape (with anticurvature and lateralization) allows easy insertion over the tip of the greater trochanter. This reduces the risk of injury to the arteria circumflexa femoris and the risk of iatrogenic femoral neck fractures.

The cannulation permits insertion over a guide wire as well as reduction of the intramedullary pressure during insertion of the implant.



Alignment and positioning of the distal locking holes allow the stabilization of very distal and difficult fractures.

Long holes in the distal and the proximal region allow a dynamization of both distal and proximal diaphyseal fractures.

Sample Cases

Proximal Diaphyseal Fracture

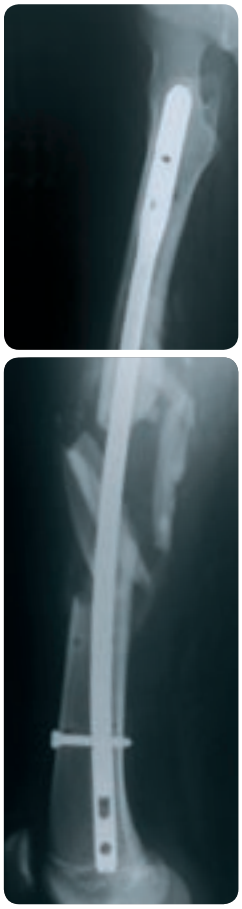
Preoperative

Postoperative

Postoperative after 7 weeks

Diaphyseal Fracture

Preoperative



Postoperative

Postoperative after 3 months

Surgical Technique

Positioning of the Patient

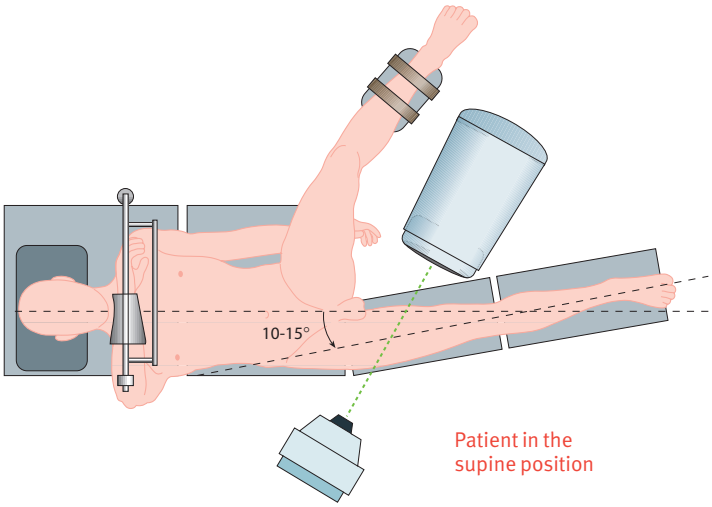
The patient is placed on the operating table in the supine position. The unaffected leg is flexed 90° at the hip and placed abducted in a leg holder.

After the patient is in the correct position, the C-arm must be adjusted so that the femur can be imaged in a lateral and anterior-posterior view along its whole length.

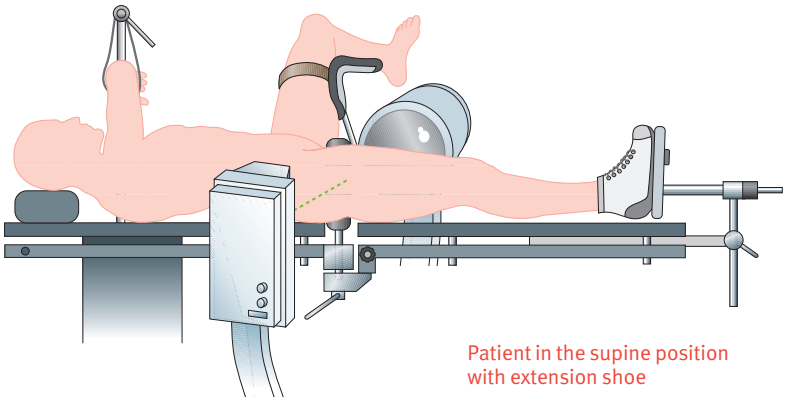
In the same position an extension table can be used if needed.

Note

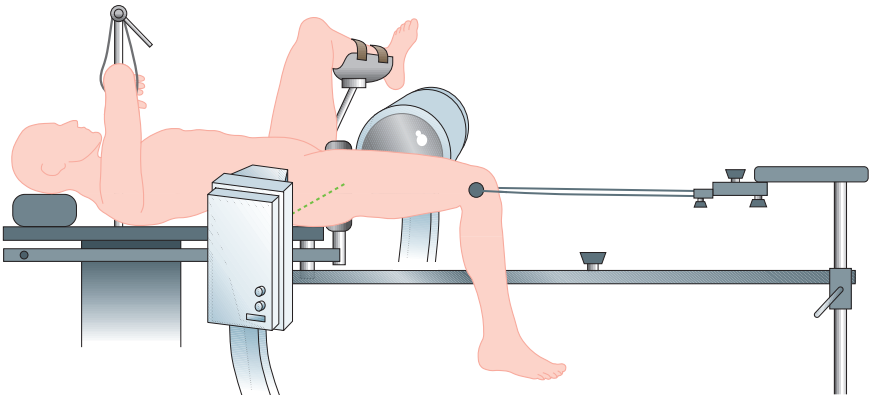
Alternatively a lateral positioning of the patient can be chosen.



Patient in the supine position



Patient in the supine position with extension shoe

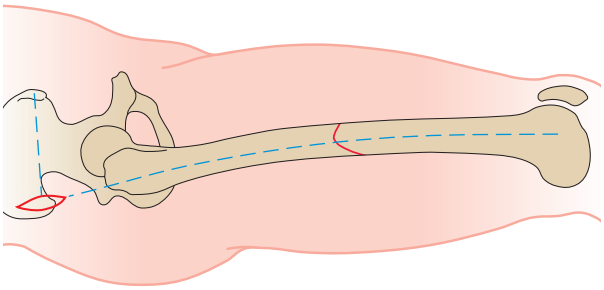


Patient in the supine position on an extension table with a Kirschner horseshoe

Opening of the Medullary Canal

1. Incision of the Skin

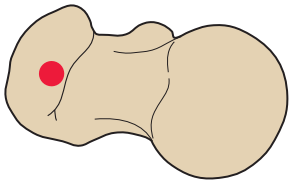
Extending the femoral shaft axis about 70 mm proximal to the tip of the trochanter, a longitudinal incision of about 40 mm is made. The fascia is split longitudinally in the direction of the tip of the trochanter, so that the greater trochanter can be palpated with the fingertip.



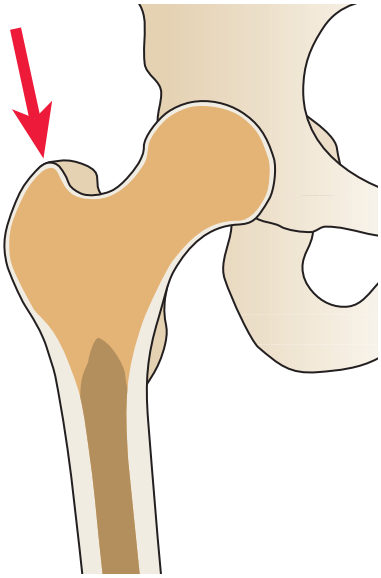
Incision of the skin

2. Entry Point of the Nail

The entry point of the intramedullary nail lies transversally in the extension of the axis of the medullary canal, directly lateral to the tip of the greater trochanter.

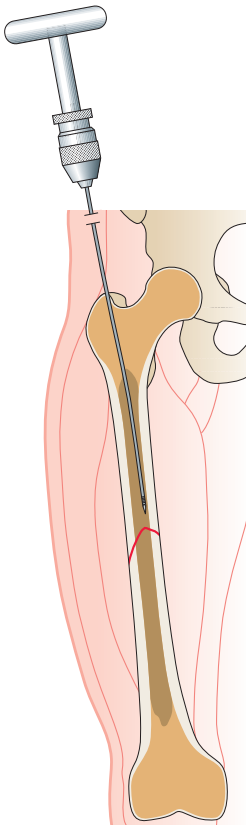


Point of insertion of the intramedullary nail (red)



3. Insertion of the Guide Rod

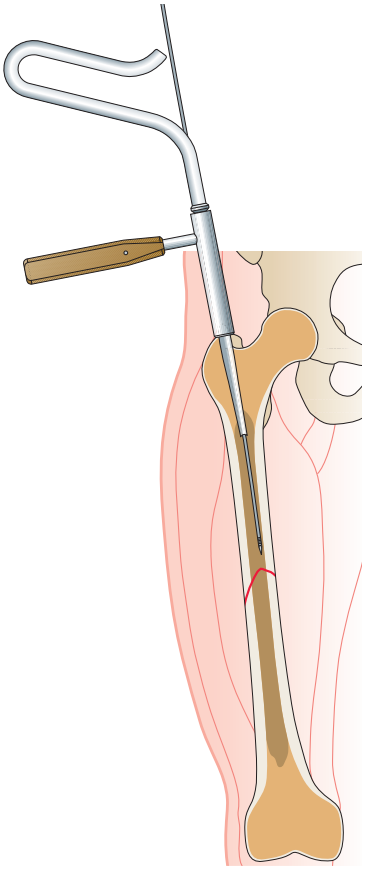
The guide rod ∅3.0 mm, length 365 mm (REF 02.00020.042), is clamped into a drill or into the universal chuck (REF 100.90.500) and, with the help of the image intensifier, placed at the correct point of entry.
It is then pushed forward with oscillating movements about 150 mm into the medullary canal. Next, the drill or universal chuck is removed and the correct position of the guide rod confirmed in both planes with the image intensifier.



Insertion of the guide rod into the medullary canal

4. Opening of the Medullary Canal

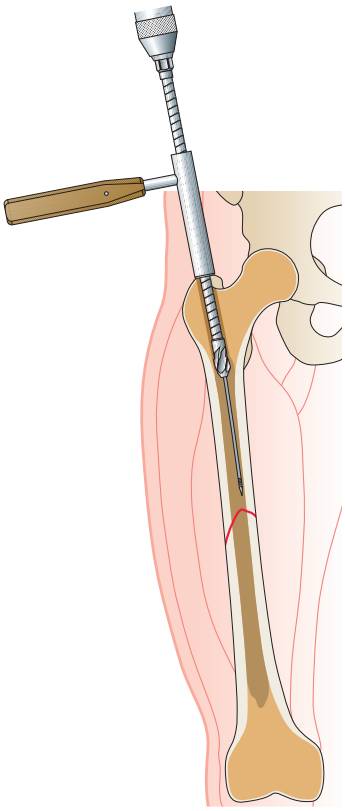
Slide the tissue protection sleeve (∅13 mm) (REF 02.00020.041) over the guide rod (∅3.0 mm, length 365 mm) (REF 02.00020.042). The cannulated awl (∅13 mm) (REF 02.00020.016) is pushed forward over the guide rod using light rotating motions until the stop on the tissue protection sleeve is seated.



Opening of the medullary canal with the cannulated awl and the tissue protection sleeve over the guide rod

5. Alternative Method for Opening of the Medullary Canal

In case of dense or hard bone, the medullary canal can be opened with the drill bit with flexible shaft (∅ 13 mm) (REF 02.00020.040). The medullary canal is predrilled until the stop on the tissue protection sleeve is seated.



Opening of the medullary canal using the drill bit with flexible shaft

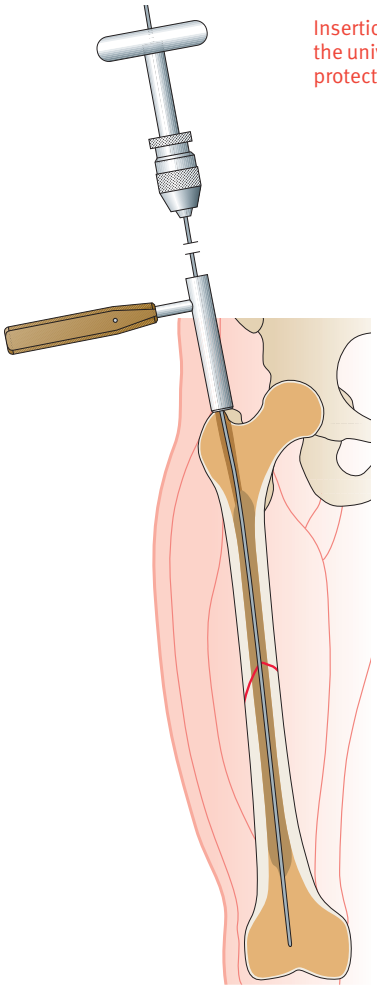
Nonreamed Method

Insertion of the Guide Wire

Remove all entry point opening instruments, exept the tissue protector. Insert the guide wire (∅3.0 mm, length 950 mm) (REF 02.00020.043) through the tissue protection sleeve into the medullary canal with the universal chuck (REF 100.90.500). The correct position of the guide wire should be checked by using the image intensifier in both planes.

For further procedures go to page 15.

Note
To simplify the insertion into the distal fragment in the case of a difficult reduction, the tip of the guide wire can be slightly bent.
In addition the usual repositioning techniques can be used. Especially in difficult cases, the joystick technique might be a reasonable option.
In the distal metaphyseal area of the femur, attention should be paid to place the guide wire centrally in the medullary canal in both planes.



Insertion of the guide wire with the universal chuck over the tissue protection sleeve

Reamed Method

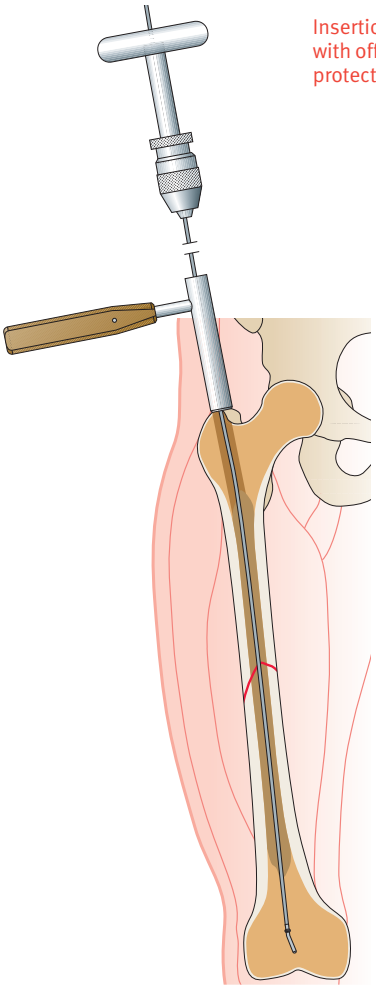
Note

For the reamed method, the instrumentation for the intramedullary reaming is needed.

1. Insertion of the Reaming Rod

The tissue protection sleeve (∅13 mm) used in the opening of the medullary canal is left in position. The awl or drill bit with flexible shaft and the guide rod are removed. The reaming rod with offset ball tip (∅3.0 mm) is inserted using the universal chuck (REF 100.90.500) and the image intensifier. The correct position of the tip of the reaming rod and the correct reposition of the fracture is then confirmed in both planes.

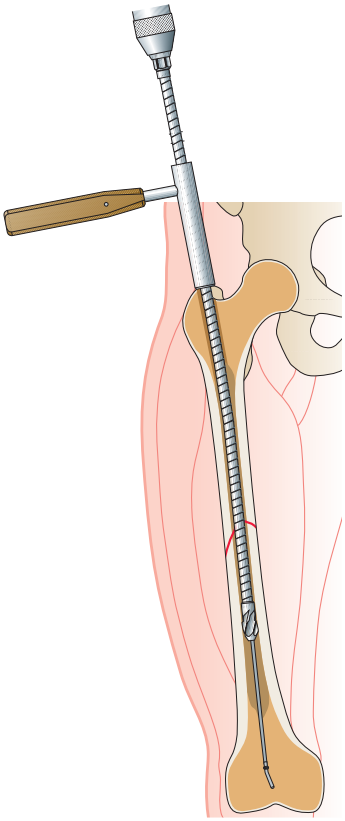
In cases of difficult repositioning, the usual repositioning techniques can be used. In particular the joystick technique might be a good option.
In the distal metaphyseal area of the femur, attention should be paid to place the reaming rod centrally in the medullary canal in both planes.



Insertion of the reaming rod with offset ball tip over the tissue protection sleeve

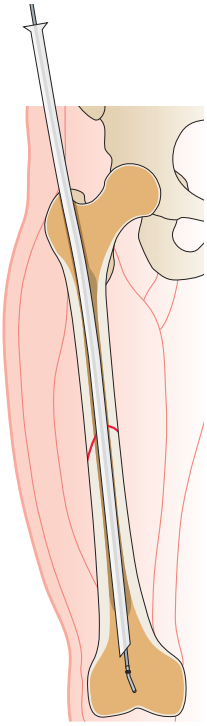
2. Reaming the Medullary Canal
The medullary canal is reamed in 0.5 mm stages over the reaming rod with offset ball tip (∅3.0 mm). To prevent heat necroses, reaming must be carried out with sharp drill bits. Excessive pressure must be avoided.

It is recommended to ream 1 mm larger than the chosen nail diameter.



Reaming of the medullary canal

3. Replacement of the Reaming Rod with Ball Tip by the Smooth Guide Wire
The reaming rod with ball tip is replaced with the smooth guide wire. To prevent dislocation of the bone fragments during this process, the medullary tube (REF 110.44.200) is pushed over the reaming rod with offset ball tip (REF 110.44.121). The reaming rod is then removed and replaced with the smooth guide wire (∅3.0 mm, length 950 mm) (REF 02.00020.043). Finally, the medullary tube is removed.



Insertion of the medullary tube in order to replace the reaming rod with offset ball tip with the guide wire

Insertion of the Intramedullary Nail for Femur

Note

The *Sirus* intramedullary nail has an anatomical shape. Therefore there are different nails for left and right. Nails marked LEFT must be used for the left femur only. Nails marked RIGHT must be used for the right femur only.

1. Attaching the targeting device

The length and diameter of the intramedullary nail are determined intraoperatively using the measuring device (REF 02.00020.045) or preoperatively using the X ray templates (lateral view REF 06.00749.000 and AP view REF 06.00750.000).

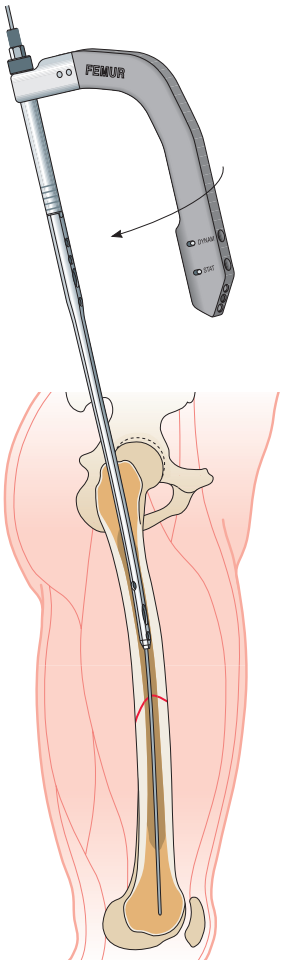
The targeting device (REF 02.00020.031) is attached to the intramedullary nail and fixed with the connection screw (REF 02.00020.003). When doing this, the cams of the targeting device have to be engaged in the grooves of the intramedullary nail and the connection screw firmly tightened.

2. Nail Insertion

Due to the anatomical nail shape the nail must be rotated approximately 90° during insertion. By applying this technique, stress peaks in the bone can be avoided.

The intramedullary nail for femur and targeting device unit is inserted over the smooth guide wire (∅3.0 mm) into the medullary canal by hand using light pressure with the targeting device oriented anteriorly. Since the patient is in the supine position, the targeting device therefore points upwards.

After passage of the proximal metaphysis the targeting device is slowly rotated by pushing the nail further down the intramedullary canal. At the end of the insertion the targeting device is rotated by approximately 90° and lies in a lateral direction.

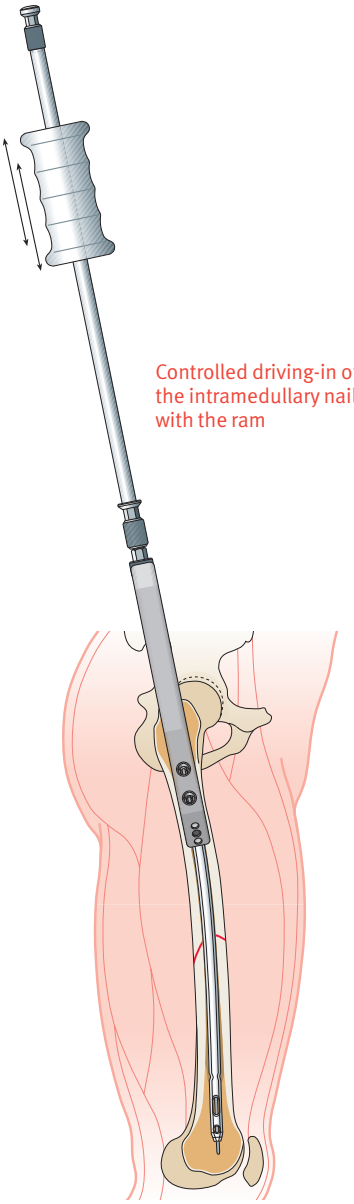


Insertion of the intramedullary nail for femur over the guide wire with a 90° rotation after passage of the proximal metaphysis

Alternative Insertion Method
If necessary, the intramedullary nail can be driven with light, controlled blows into the medullary canal. To do this, the ram guide (REF 02.00020.046) is screwed onto the connection screw (REF 02.00020.003) and the ram (REF 110.45.031) then mounted onto the guide. Finally the driving head (REF 02.00020.047) is screwed onto the ram guide.

Note
It is important that the nail advances into the medullary canal with each blow.
If this is not the case, the impaction must be stopped and the cause determined using the image intensifier. If necessary, a nail with a smaller diameter must be used or the medullary canal reamed larger.

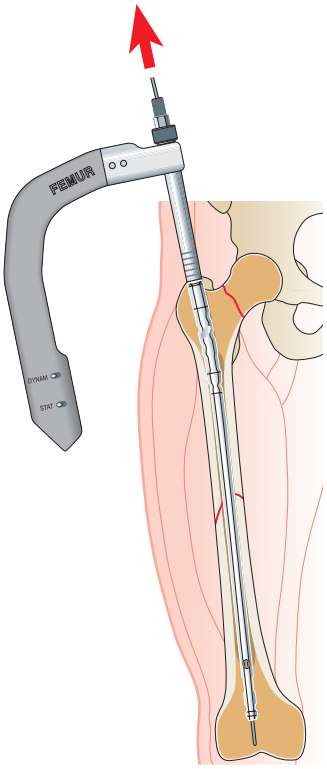
After nail insertion, the ram guide assembly is removed from the connection screw. The connection screw remains firmly attached to the intramedullary nail and the targeting device.



Controlled driving-in of the intramedullary nail with the ram

3. Removal of the Smooth Guide Wire (∅3.0 mm, Length 950 mm)

4. Confirmation of the Final Position of the Intramedullary Nail for Femur
The final position of the intramedullary nail must be checked in both planes with the image intensifier. In particular, the correct rotation of the extremity must be checked at this time.



Removal of the guide wire immediately after insertion of the intramedullary nail for femur

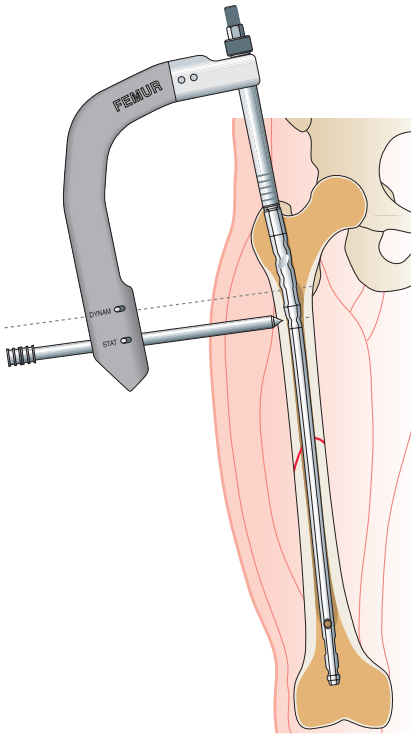
Options for Proximal Locking

Note
The reaming rod or guide wire must be removed before locking the nail.

Standard Proximal Locking

The standard proximal locking can be carried out statically or dynamically depending on the type of fracture.

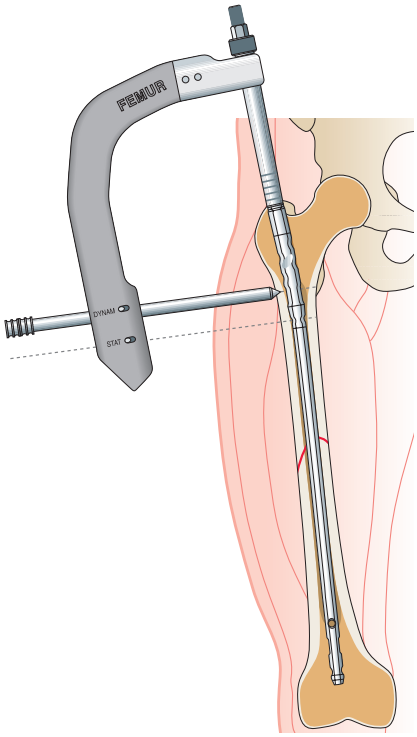
The hole on the targeting device marked with STAT is used for the static locking.



Targeting device with the tissue protection sleeve and trocar in position for static locking

The hole on the targeting device marked with DYNAM is used for the dynamic locking.

Note
If the cervical screws are inserted proximally, dynamic locking cannot be used. However the combination of the cervical screws with the proximal static locking screw is possible.

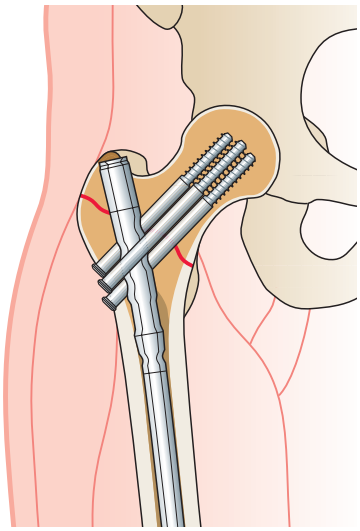


Targeting device with the tissue protection sleeve and trocar in position for dynamic locking

Cervical Screw Locking

In the case of subtrochanteric fractures (diaphyseal as well as ipsilateral fractures and femoral neck), the proximal region can be locked with up to three special recon screws (REF 02.03100.061 to .077).

Note
If inserting the cervical screws, at least the two screws in the nail must be used. It is recommended, especially with ipsilateral femoral neck fractures, to insert the third cervical screw which lies on the anterior nail side.



Insertion of the three cervical screws

An additional targeting module is screwed onto the targeting device and serves as a guide when inserting the cervical screws.

Targeting module
REF 02.00020.033

Surgical Steps for Standard Proximal Locking

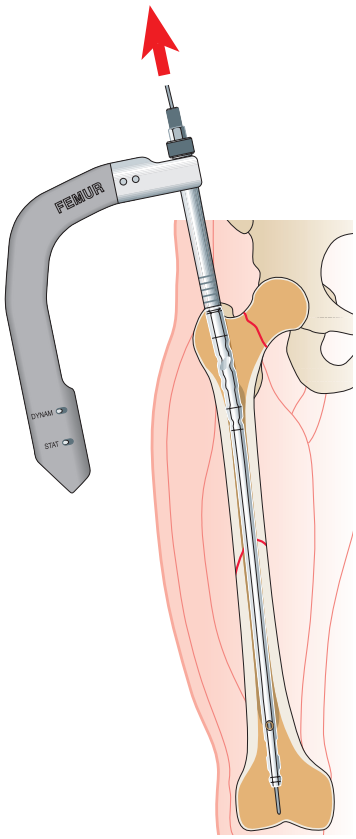
Note
It is recommended to do the proximal locking first since the targeting device may irritate the soft tissue.
In addition, the distal locking without the targeting device attached is easier to carry out because the leg can be positioned in abduction if needed.

If compression of a shaft fracture is required, distal locking should be achieved first and then slight extracting motions should be applied before removing the ram guide assembly.

Note
If using the dynamic locking, the cervical screws cannot be used.

1. Removal of the Guide Wire (∅3.0 mm, Length 950 mm)

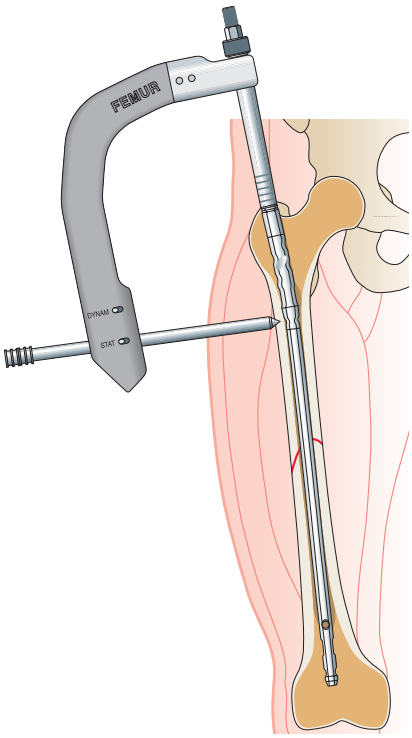
Before locking, the smooth guide wire must be removed and it needs to be checked if the connection screw is firmly attached to the nail. If not, the screw needs to be retightened.



Removal of the guide wire

2. Insertion of the Tissue Protection Sleeve with the Trocar

The tissue protection sleeve (∅10.0/8.0 mm) (REF 02.00020.005) with inserted trocar ∅8.0 mm (REF 02.00020.006) is introduced into the appropriate guide hole, marked STAT or DYNAM. The skin is incised at the appropriate site and dissected bluntly to the bone with scissors and clamp. The tissue protection sleeve together with the trocar are inserted until it touches the bone surface. The trocar is then removed.



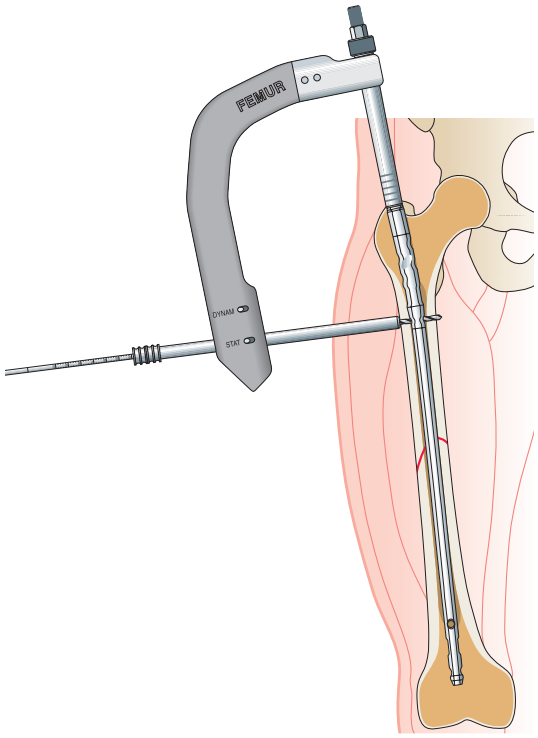
Insertion of tissue protection sleeve and trocar

3. Drilling of the Locking Holes

The drill guide ∅8.0/4.0 mm (REF 02.00020.007) is inserted into the tissue protection sleeve. Using the three-fluted drill bit ∅4.0 mm (REF 02.00020.010), both cortices are drilled through.

Note

Before drilling, ensure the guide wire (∅3.0 mm, length 950 mm) has been removed.

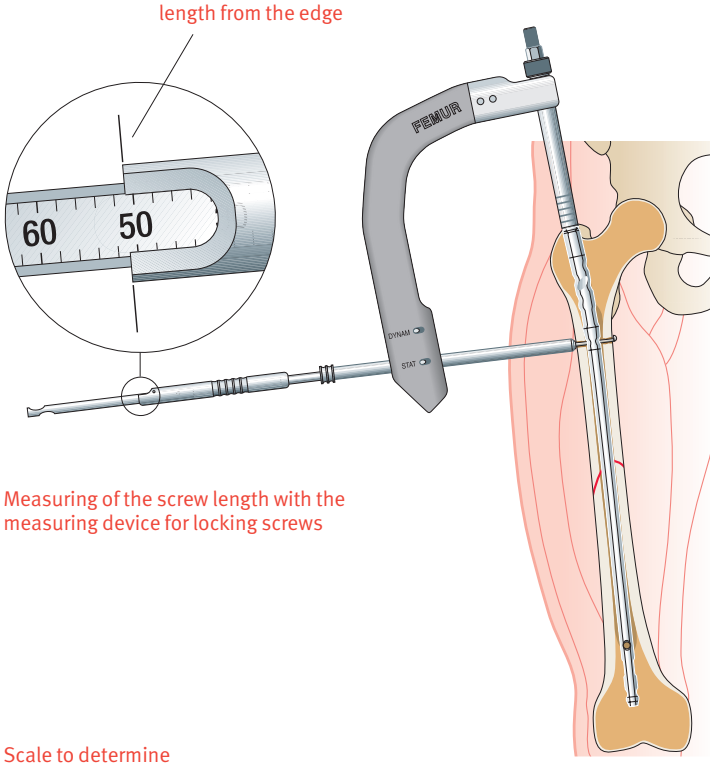


Setting of the first locking hole

4. Measuring of the Screw Length

The screw length is determined with the measuring device for locking screws (REF 02.00020.048).

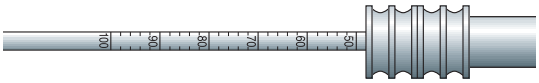
Alternatively, the screw length can be read directly from the drill. It is important that the tissue protection sleeve touches the bone when the screw length is being read from the drill.



Reading off the screw length from the edge

Measuring of the screw length with the measuring device for locking screws

Scale to determine screw length

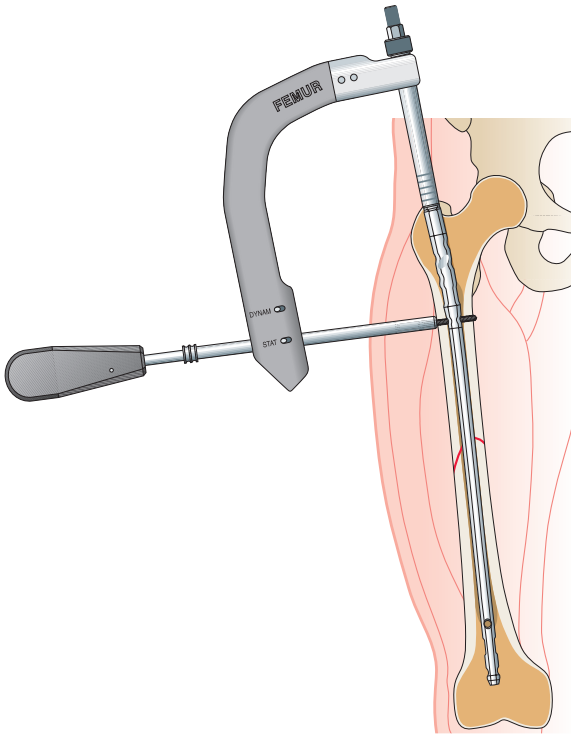


5. Insertion of the Locking Screw (∅4.9 mm)
The previously determined locking screw (∅4.9 mm) is inserted through the tissue protection sleeve (REF 02.00020.005).

6. Confirmation of the Correct Locking Screw Placement
The correct placement of the inserted locking screw should be confirmed in both planes under the image intensifier.

7. Insertion of the Dynamic Locking Screw
For dynamic locking, the procedure is similar to surgical steps 1 to 6, whereby the intended hole (DYNAM) on the targeting device is to be used.

It is recommended to use the solid screw driver (REF 02.00020.112) for the insertion of the 3.9 and 4.9 mm interlocking screws.



Insertion of the screw over the tissue protection sleeve

Surgical Steps for Cervical Screws

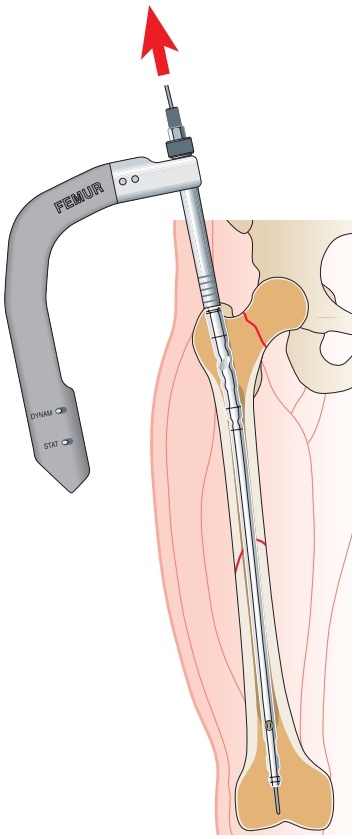
Note
If inserting the cervical screws, at least the two screws inserted in the nail must be used. It is recommended, especially with ipsilateral femoral neck fractures, to insert the third cervical screw which lies on the anterior nail side.

When using the cervical screws, the proximal dynamic locking hole cannot be used.

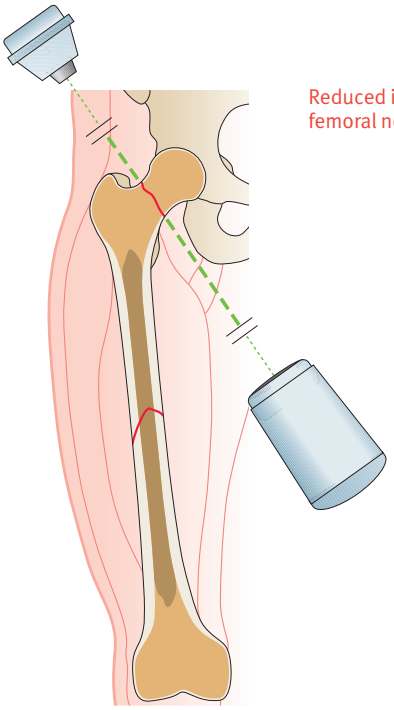
1. Removal of the Guide Wire (∅3.0 mm, Length 950 mm)
Before locking, the smooth guide wire must be removed and it needs to be checked if the connection screw is firmly attached to the nail. If not, the screw needs to be retightened.

2. Reducing the Fracture
Before locking with the cervical screws, attention should be paid that the femoral head has been properly reduced.

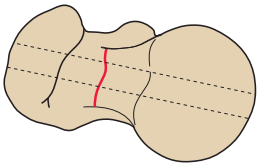
If the anatomical reduction cannot be achieved with the closed technique – especially concering malrotation of the femoral head and neck fragment – the incision for the cervical screws should be enlarged, that a forceps can be used for reduction.



Removing of the guide wire



Reduced ipsilateral femoral neck fracture



Axial view of the repositioned fracture

3. Fastening of the Targeting Module

The targeting module for cervical screws (REF 02.00020.033) is fastened with the screw for targeting module (REF 02.00020.034) to the targeting device for femur (REF 02.00020.031).

Note

With the right femur RIGHT and with the left femur LEFT is visible.

On the lateral side of the targeting module RIGHT must be visible for the right femur, whereas LEFT must be visible for the left femur.

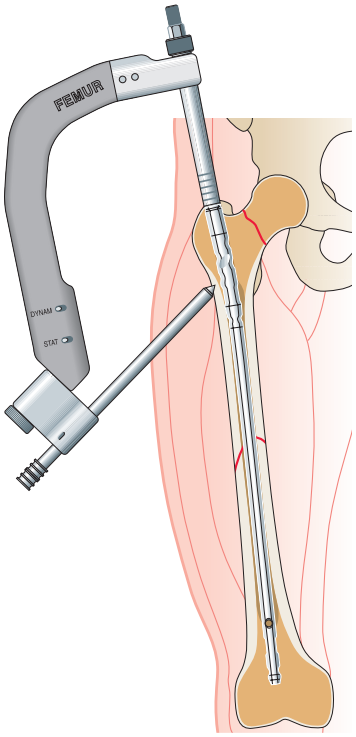
Example:
Targeting module firmly attached on the targeting device with a right intramedullary nail for femur. Important: RIGHT must then be visible from the lateral side

4. Insertion of the Tissue Protection Sleeve with Trocar

Caution

The distal cervical screw should lie near Shenton's arch. Therefore in a first step, the exact position of the intramedullary nail with respect to its penetration depth should be determined in the anterior-posterior plane.

The skin is incised at the appropriate site. The tissue protection sleeve (∅ 10.0/8.0 mm) (REF 02.00020.005) with inserted trocar (∅ 8.0 mm) (REF 02.00020.006) is introduced into the distal targeting hole of the targeting module and pushed forward up to the bone.



The tissue protection sleeve with inserted trocar in the distal targeting hole of the targeting module

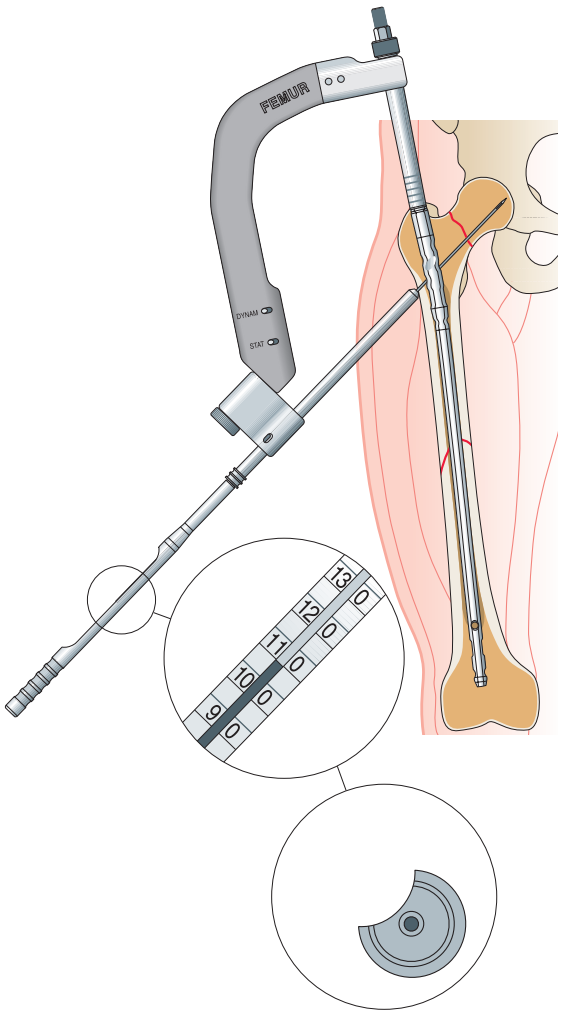
5. Insertion of the First Guide Wire

Replacing the trocar and tissue protection sleeve, the positioning guide for cervical screws (REF 02.00020.035) is placed into the targeting hole. The guide wire ∅2.0 mm, length 440 mm (REF 02.00020.037), is inserted through the positioning guide. The guide wire should be brought about 4 mm past the cortex at Shenton's arch and be inserted up to about 2 mm before the cortex of the femoral head.
The correct position of the guide wire needs to be checked in the axial view using the image intensifier. The wire needs to be parallel to the femoral neck axis and end up in the center of the femoral head.

Next, the length of the inserted guide wire is measured with the measuring device for cervical screws (REF 02.00020.038).

Note

The measuring device for cervical screws measures the actual length of the guide wire in the bone. If the tip of the guide wire was inserted into the subcortical bone, the appropriate cervical screw must be chosen approximately 10 mm shorter.

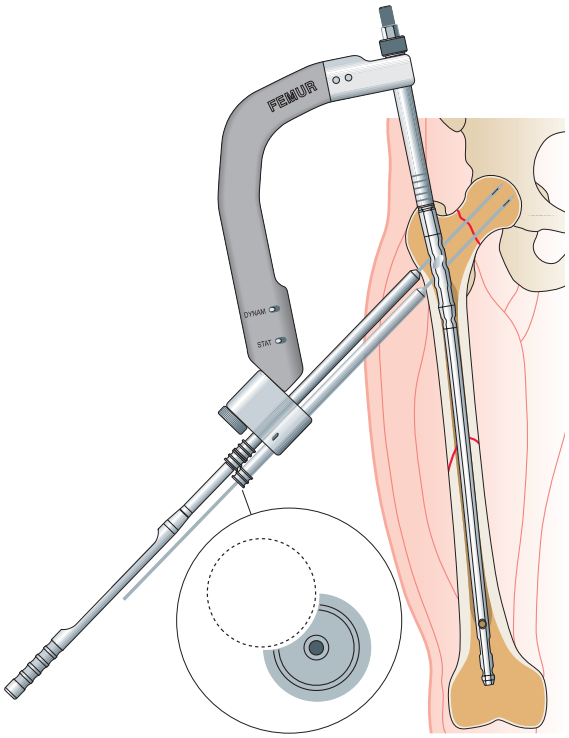


Measuring the length of the inserted guide wire with the measuring device for cervical screws.

6. Insertion of the Second Guide Wire

Caution
The inserted distal guide wire and the positioning guide should be maintained while the other guide wires are introduced. The positioning guide serves to stabilize and correct the positioning of the guide wires with respect to each other.

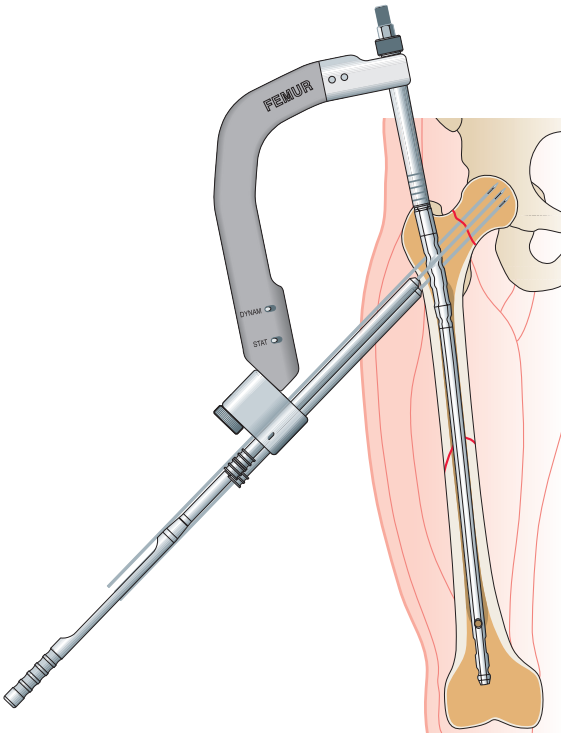
For the proximal cervical screw, the skin is opened at the entry point. The tissue protection sleeve ∅10.0/8.0 mm (REF 02.00020.005) with inserted trocar ∅8.0 mm (REF 02.00020.006) is introduced into the proximal targeting hole of the targeting module (REF 02.00020.033) and pushed forward until reaching the bone. The trocar is replaced by the drill guide ∅8.0/2.0 mm (REF 02.00020.036). Next, the second guide wire ∅2.0 mm, length 440 mm (REF 02.00020.037), is inserted. The penetration depth of the guide wire is again read on the measuring device for cervical screws (REF 02.00020.038). The drill guide must be inserted completely into the tissue protection sleeve.



Measuring the length of the second inserted guide wire with the measuring device over the tissue protection sleeve and drill guide – by doing so, the positioning guide remains in the distal hole

7. Insertion of the Third Guide Wire

In the case of ipsilateral femoral neck fractures, the use of a third guide wire is recommended. The procedure is identical to step 6. In this case, the positioning guide also remains in its initial position with the distal guide wire. The correct position of the third guide wire needs to be confirmed with image intensifier in the axial view.

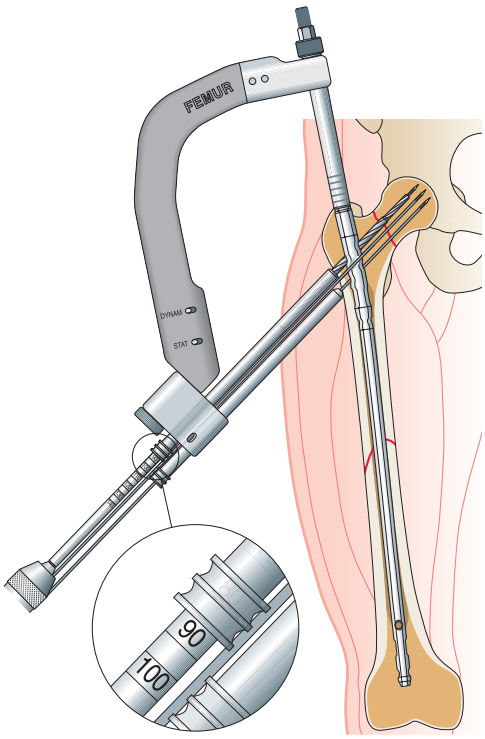


Measuring the length of the third inserted guide wire with the measuring device – by doing so, the positioning guide remains in the distal hole

8. Drilling of the Proximal Cervical Screw Hole

The tissue protection sleeve (REF 02.00020.005) is inserted in the proximal hole of the targeting module. Drilling with the step reamer ∅6.5/4.5 mm (REF 02.00020.039) is done cautiously over the proximal guide wire through the tissue protection sleeve. Always use the image intensifier during the reaming process to control the position of the reamer in the femoral head and to make sure that the guide wire does not advance.

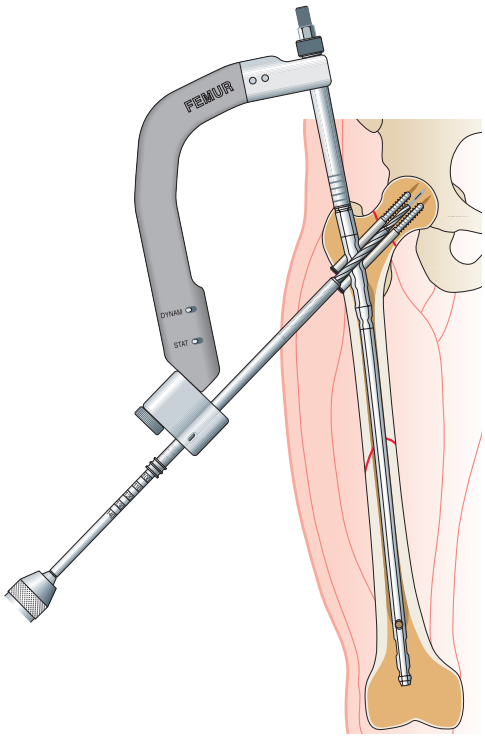
Confirm the previously determined screw length with the scaling on the reamer.



Drilling for the distal cervical screw with the step reamer

9. Insertion of the Proximal Cervical Screw

Using the cannulated screwdriver (REF 02.00020.012), onto which the extension (REF 02.00020.070) is placed, the cannulated cervical screw (REF 02.03100.061 to .077) is screwed in over the guide wire through the tissue protection sleeve.
The cervical screw should be inserted carefully. In the case of weak cancellous bone, the danger of overrotation exists, even with very low insertion torques. Afterwards the guide wire is removed. Next, the correct position of the cervical screw is checked in both planes with the image intensifier.



Drilling with the step reamer for the ventral cervical screw, with the two previously inserted cervical screws

10. Insertion of Further Cervical Screws

The distal and if needed the anterior cervical screw is inserted in the same way as described previously. The positioning guide is replaced with the tissue protection sleeve if needed.

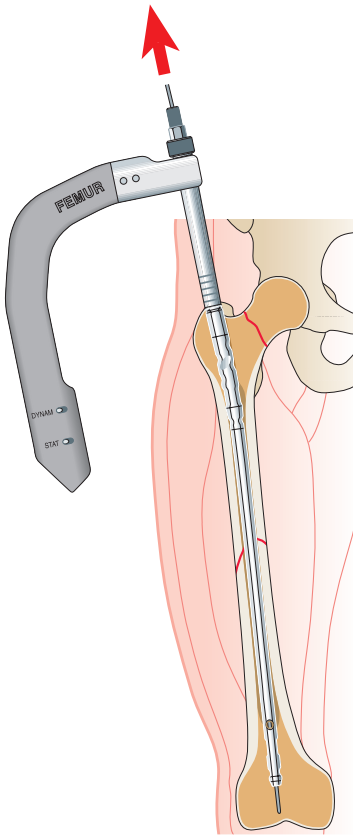
Note

Before drilling, the parallel position of the guide wires needs to be confirmed with the image intensifier in both planes, as the distal wire can be misguided by the Shenton's arch.

Surgical Steps for Distal Locking

Note
To statically lock at least two distal screws should be inserted.

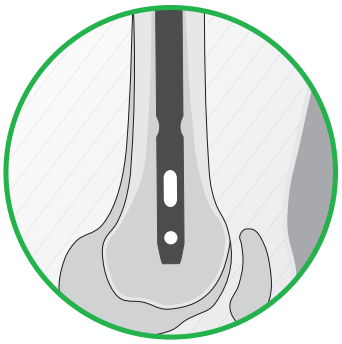
1. Removal of the Guide Wire ∅3.0 mm, Length 950 mm
Before locking, the guide wire must be removed.



Before locking, the guide wire must be removed

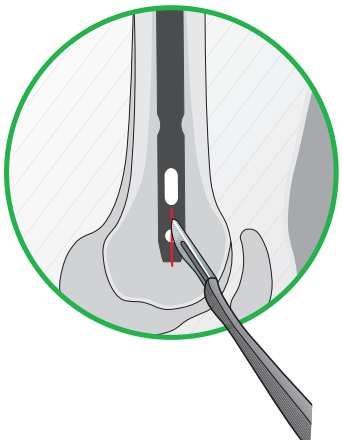
2. Positioning of the C-arm
The C-arm needs to be positioned so that the intended locking hole appears circular in the monitor and is found approximately in the center of the image.

Wrong



Right

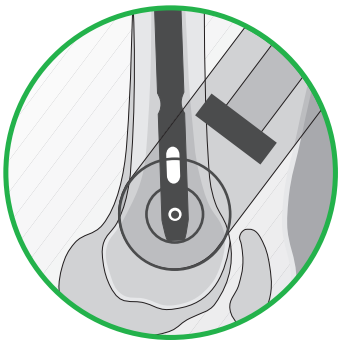
3. Incision of the Skin
The skin is incised over the selected hole on the lateral side of the femur. After spreading the soft tissues, the site is prepared with scissors or a clamp bluntly up to the bone.



Incision of the skin with the scalpel

4. Drilling of the Locking Holes
Using the C-arm and radiolucent drill attachment, the tip of the drill bit ∅4.0 mm (REF 02.00020.054) is centred above the appropriate locking hole. Both cortices are then drilled through.

In order to avoid injury to the dorsal nerves and blood vessels when using the locking holes in the sagittal plane, the second cortex must be drilled through with special care. The skin incision must be anterior.



Centering of the drill bit in the middle of the nail hole

5. Measuring of the Screw Length
The screw length is determined with the measuring device for locking screws (REF 02.00020.048).

Note
The screw length is read off directly.

6. Insertion of the Locking Screw
The previously selected self-tapping locking screw ∅4.9 mm is inserted.

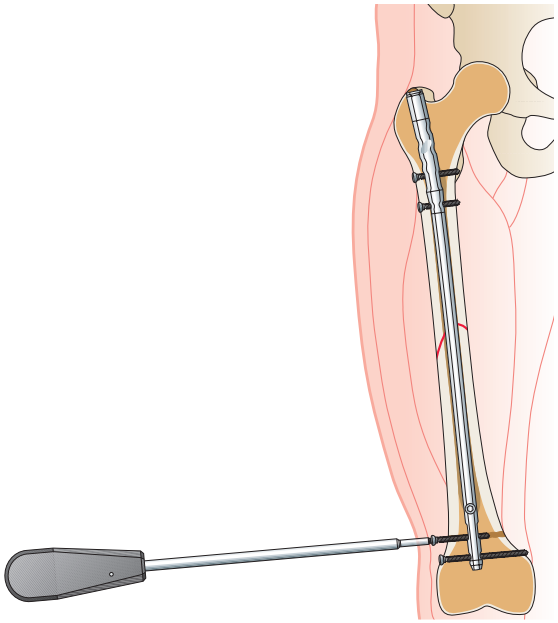
7. Confirmation of the Correct Locking Screw Placement
The correct placement of each inserted locking screw must be checked in both planes with the image intensifier.

8. Insertion of Further Distal Locking Screws
For each further locking screw, steps 2 to 7 are repeated.

Possibility of Dynamic Distal Locking

1. Insertion of the Locking Screw for Later Dynamic Locking

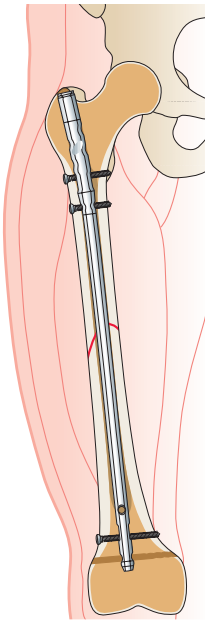
If a secondary dynamic locking is required, a locking screw can be inserted at the distal end of the long hole. The procedure corresponds to the previously described steps.



Insertion of the locking screw for later dynamic locking

2. Activation of the Dynamic Locking

To activate the dynamic locking, the static locking screws have to be removed.



Distal dynamic locking screw after the removal of the static locking screws

Cap Screw

If a femoral nail is inserted too deep in the medullary canal, the different lengths of cap screws ensure that the extra distance can be compensated. The cap screws are available in lengths from 0 to 25 mm (in 5 mm steps).

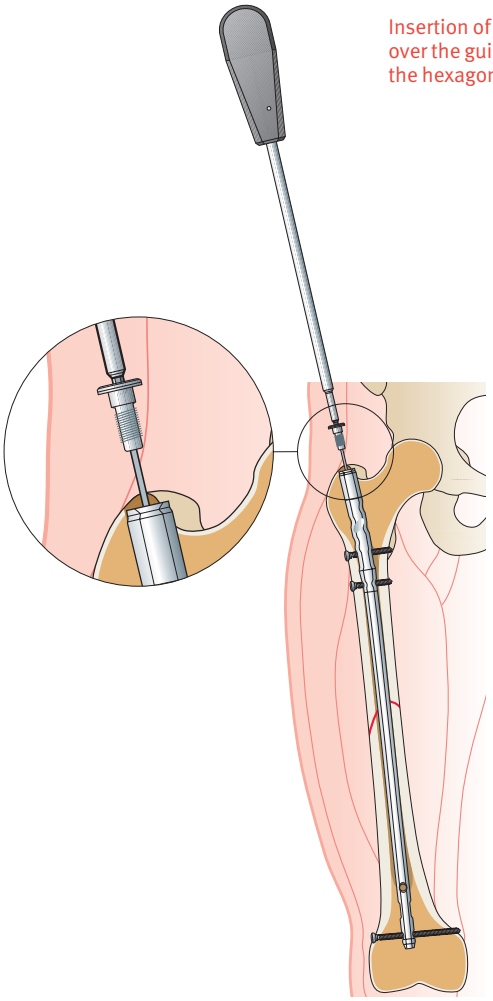
1. Insertion of the Guide Wire
The guide wire ∅ 2.0 mm, length 300 mm (REF 02.00020.050), is inserted into the intramedullary nail through the connection screw of the targeting device which is still attached.

2. Removal of the Connection Screw and the Targeting Device
The connection screw and the targeting device are removed. The inserted guide wire remains in the intramedullary nail.

3. Insertion of the Cap Screw
The previously selected cap screw is inserted over the guide wire using the cannulated screwdriver (REF 02.00020.012).

4. Confirmation that the Cap Screw is Properly Seated
The correct seat of the cap screw in the intramedullary nail must be checked using the image intensifier.

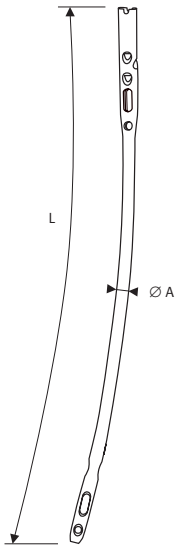
5. Removal of the Guide Wire



Insertion of the cap screw over the guide wire with the hexagonal screwdriver

Implants Sirus® Intramedullary Nail for Femur

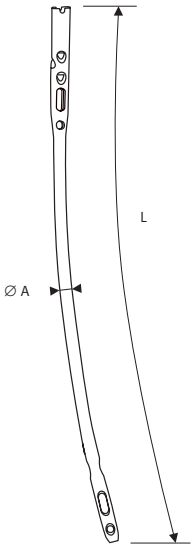
Sirus® Intramedullary nail for femur right, sterile



		Titanium			Titanium
∅ A mm	L mm	REF	∅ A mm	L mm	REF
9.3	300	02.02651.930	12	300	02.02651.230
9.3	320	02.02651.932	12	320	02.02651.232
9.3	340	02.02651.934	12	340	02.02651.234
9.3	360	02.02651.936	12	360	02.02651.236
9.3	380	02.02651.938	12	380	02.02651.238
9.3	400	02.02651.940	12	400	02.02651.240
9.3	420	02.02651.942	12	420	02.02651.242
9.3	440	02.02651.944	12	440	02.02651.244
9.3	460	02.02651.946	12	460	02.02651.246
9.3	480	02.02651.948	12	480	02.02651.248
10.3	300	02.02651.030	13	300	02.02651.330
10.3	320	02.02651.032	13	320	02.02651.332
10.3	340	02.02651.034	13	340	02.02651.334
10.3	360	02.02651.036	13	360	02.02651.336
10.3	380	02.02651.038	13	380	02.02651.338
10.3	400	02.02651.040	13	400	02.02651.340
10.3	420	02.02651.042	13	420	02.02651.342
10.3	440	02.02651.044	13	440	02.02651.344
10.3	460	02.02651.046	13	460	02.02651.346
10.3	480	02.02651.048	13	480	02.02651.348
11	300	02.02651.130			
11	320	02.02651.132			
11	340	02.02651.134			
11	360	02.02651.136			
11	380	02.02651.138			
11	400	02.02651.140			
11	420	02.02651.142			
11	440	02.02651.144			
11	460	02.02651.146			
11	480	02.02651.148			

* US patent No. 6, 461, 360 B1

Sirus® Intramedullary nail for femur left, sterile



		Titanium			Titanium
∅ A mm	L mm	REF	∅ A mm	L mm	REF
9.3	300	02.02652.930	12	300	02.02652.230
9.3	320	02.02652.932	12	320	02.02652.232
9.3	340	02.02652.934	12	340	02.02652.234
9.3	360	02.02652.936	12	360	02.02652.236
9.3	380	02.02652.938	12	380	02.02652.238
9.3	400	02.02652.940	12	400	02.02652.240
9.3	420	02.02652.942	12	420	02.02652.242
9.3	440	02.02652.944	12	440	02.02652.244
9.3	460	02.02652.946	12	460	02.02652.246
9.3	480	02.02652.948	12	480	02.02652.248
10.3	300	02.02652.030	13	300	02.02652.330
10.3	320	02.02652.032	13	320	02.02652.332
10.3	340	02.02652.034	13	340	02.02652.334
10.3	360	02.02652.036	13	360	02.02652.336
10.3	380	02.02652.038	13	380	02.02652.338
10.3	400	02.02652.040	13	400	02.02652.340
10.3	420	02.02652.042	13	420	02.02652.342
10.3	440	02.02652.044	13	440	02.02652.344
10.3	460	02.02652.046	13	460	02.02652.346
10.3	480	02.02652.048	13	480	02.02652.348
11	300	02.02652.130			
11	320	02.02652.132			
11	340	02.02652.134			
11	360	02.02652.136			
11	380	02.02652.138			
11	400	02.02652.140			
11	420	02.02652.142			
11	440	02.02652.144			
11	460	02.02652.146			
11	480	02.02652.148			

* US patent No. 6, 461, 360 B1

Graphic case for implants, femur (with content), includes graphic case, insert locking screws, cervical screws and end caps

	REF
	100.99.108F

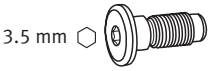
Graphic case (empty)

Quantity*	REF
1	100.99.108

Insert (empty) for cervical screws

Quantity*	REF
1	100.99.108/3

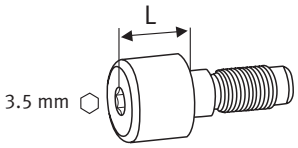
Sirus® Cap screw, for femur



Titanium

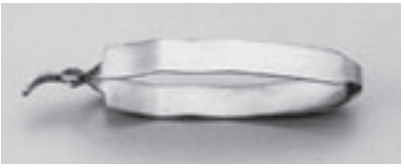
Quantity*	REF
1	02.03650.096

Sirus® Cap screw, for femur



Titanium

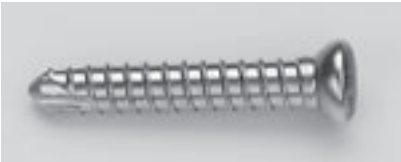
L mm	Quantity*	REF
5	1	02.03650.097
10	1	02.03650.098
15	1	02.03650.095
20	1	02.03650.099
25	1	02.03650.100



Screw forceps self-holding

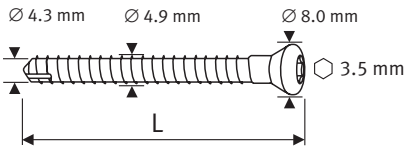
Quantity*	REF
1	100.90.005

* Indicates the quantity in the graphic case for implants, femur
REF stands for 1 piece.

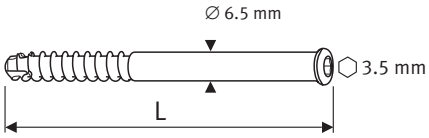


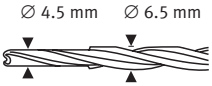
Locking screw, self-tapping

Cervical screw cannulated



Drill ∅ 4.0 mm



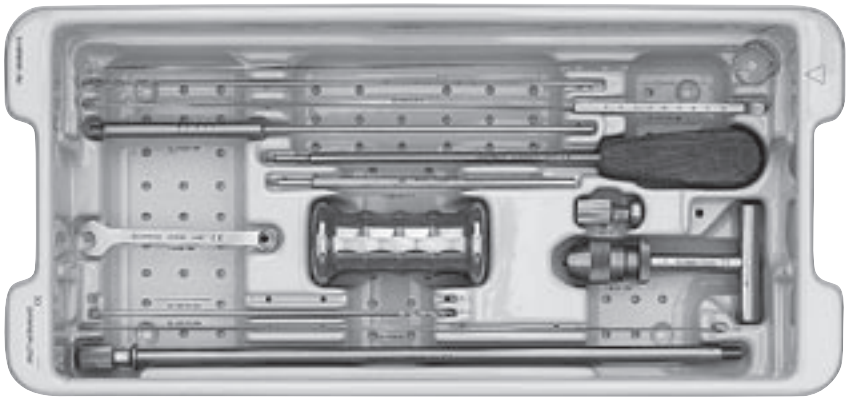


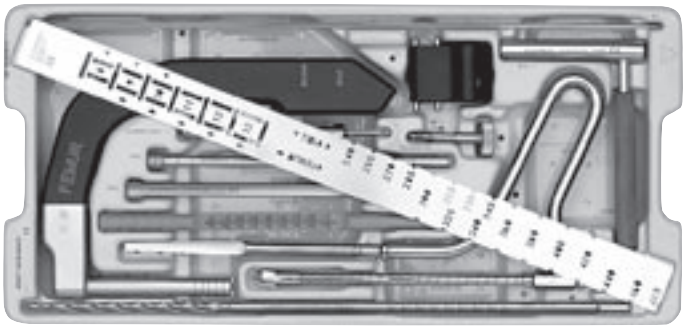
Step reamer ∅ 4.5 / 6.5 mm cannulated

		Titanium
L mm	Quantity*	REF
24	3	02.03149.024
26	3	02.03149.026
28	3	02.03149.028
30	3	02.03149.030
32	3	02.03149.032
34	3	02.03149.034
36	3	02.03149.036
38	3	02.03149.038
40	3	02.03149.040
42	3	02.03149.042
44	3	02.03149.044
46	3	02.03149.046
48	3	02.03149.048
50	3	02.03149.050
52	3	02.03149.052
54	3	02.03149.054
56	3	02.03149.056
58	3	02.03149.058
60	3	02.03149.060
64	3	02.03149.064
68	3	02.03149.068
72	3	02.03149.072
76	3	02.03149.076
80	3	02.03149.080
85	3	02.03149.085
90	3	02.03149.090
95	3	02.03149.095
100	3	02.03149.100

		Titanium
L mm	Quantity*	REF
60	3	02.03100.061
65	3	02.03100.062
70	3	02.03100.063
75	3	02.03100.064
80	3	02.03100.065
85	3	02.03100.066
90	3	02.03100.067
95	3	02.03100.068
100	3	02.03100.069
105	3	02.03100.070
110	3	02.03100.071
115	3	02.03100.072
120	3	02.03100.073
125	3	02.03100.074
130	3	02.03100.075
135	3	02.03100.076
140	3	02.03100.077

Instruments Sirus® Intramedullary Nail for Femur





Graphic case for instruments, femur (with content)

REF
110.99.207F

Graphic case (empty)

Quantity*	REF
1	100.99.207

Insert (empty)

Quantity*	REF
1	100.99.207/4

Combination wrench hexagonal

⬡ mm	L mm	Quantity*	REF
11	140	1	100.90.080

Ram

Quantity*	REF
1	110.45.031

Universal chuck cannulated, with T-handle

L mm	Quantity*	REF
140	1	100.90.500

Three-fluted drill bit, with quick coupling

∅ mm	L mm	Quantity*	REF
4.0	355	1	02.00020.010

Hexagonal screwdriver large, cannulated

∅ mm	L mm	⬡ mm	Quantity*	REF
2.2	340	3.5	1	02.00020.012

* Indicates the quantity in the graphic case for implants, femur
REF stands for 1 piece.

Hexagonal screwdriver, solid

∅ mm	L mm	⬡ mm	Quantity*	REF
2.2	340	3.5	1	02.00020.112

Elongation, for hexagonal screwdriver

∅ mm	L mm	⬡ mm	Quantity*	REF
2.2	190	3.5	1	02.00020.070

Cleaning wire

∅ mm	L mm	Quantity*	REF
2.0	465	1	02.00020.014

Ram guide

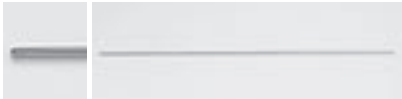
Quantity*	REF
1	02.00020.046

Driving head

Quantity*	REF
1	02.00020.047

Measuring device, for locking screws

Quantity*	REF
1	02.00020.048



Guide wire, for cap screws

∅ mm	L mm	Quantity*	REF
2.0	440	1	02.00020.071

Guide wire

∅ mm	L mm	Quantity*	REF
3.0	950	–	02.00020.043

Connection screw, for targeting device

Quantity*	REF
1	02.00020.003

Tissue protection sleeve

∅ mm	Quantity*	REF
10.0/8.0	1	02.00020.005

Trocar

∅ mm	Quantity*	REF
8.0	1	02.00020.006

Drill guide

∅ mm	Quantity*	REF
8.0/4.0	1	02.00020.007

Guide rod, with threaded tip

∅ mm	L mm	Quantity*	REF
3.0	365	1	02.00020.042

Ratchet wrench

⬡ mm	Quantity*	REF
11	1	02.00020.049

Chuck

∅ mm	Quantity*	REF
1.6–2.4	1	02.00020.052

Awl cannulated

∅ mm	Quantity*	REF
13	1	02.00020.016

Targeting device, for femur

Quantity*	REF
1	02.00020.031

Targeting module, for cervical screws

Quantity*	REF
1	02.00020.033

Screw, for targeting module

Quantity*	REF
1	02.00020.034

Measuring device, for cervical screws

Quantity*	REF
1	02.00020.038

Step reamer cannulated, for cervical screws

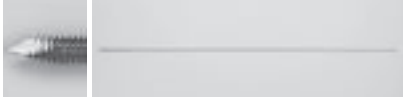
∅ mm	Quantity*	REF
6.5/4.5	1	02.00020.039

Positioning guide, for cervical screws

Quantity*	REF
1	02.00020.035

Drill guide

∅ mm	Quantity*	REF
8.0/2.0	1	02.00020.036



Guide wire, with threaded tip, for cervical screws

∅ mm	L mm	Quantity*	REF
2.0	440	3	02.00020.037

Drill bit, with flexible shaft

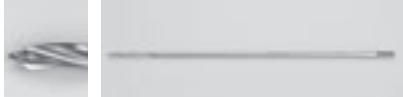
∅ mm	L mm	Quantity*	REF
13	290	1	02.00020.040

Tissue protection sleeve

∅ mm	Quantity*	REF
15/13	1	02.00020.041

Measuring device

Quantity*	REF
1	02.00020.045



Three-fluted drill bit, with quick coupling

∅ mm	L mm	Quantity*	REF
3.2	250	1	02.00020.053
4.0	250	1	02.00020.054

SRTD handle

L mm	Quantity*	REF
360	–	02.00020.055

SRTD tissue protection sleeve

∅ mm	Quantity*	REF
12.0/8.0	–	02.00020.056

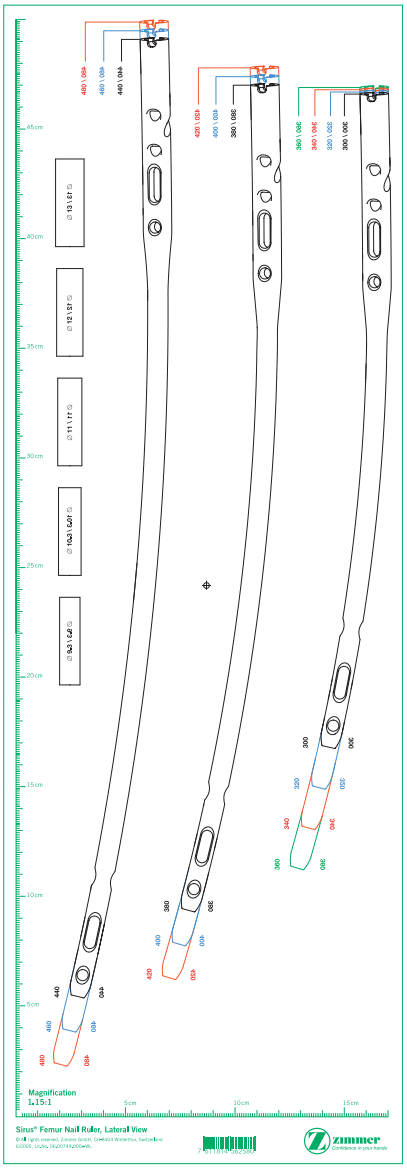
SRTD drill guide

∅ mm	Quantity*	REF
3.2	–	02.00020.057
4.0	–	02.00020.059

* Indicates the quantity in the graphic case for implants, femur
REF stands for 1 piece.

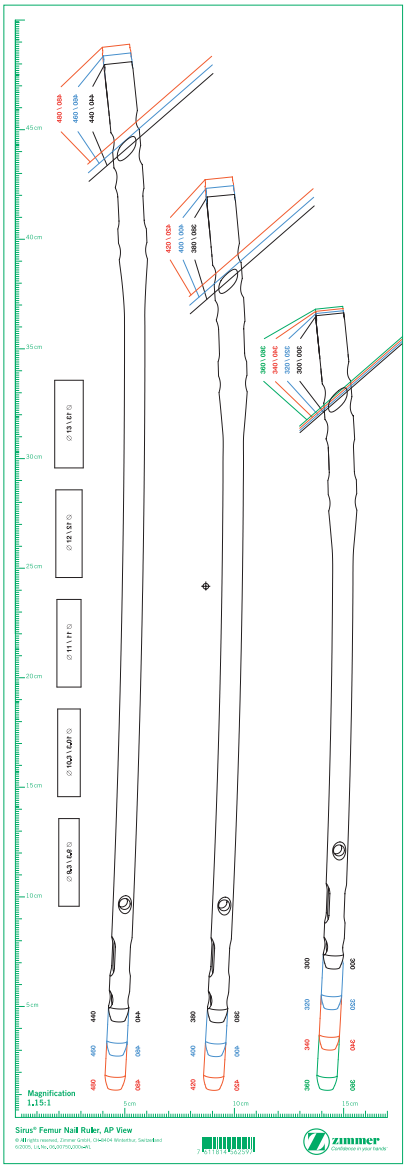
SRTD prick punch

∅ mm	Quantity*	REF
3.2	–	02.00020.058
4.0	–	02.00020.060



X ray template femur, lateral view

Quantity*	REF
–	06.00681.000



X ray template femur, AP view

Quantity*	REF
–	06.00682.000

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