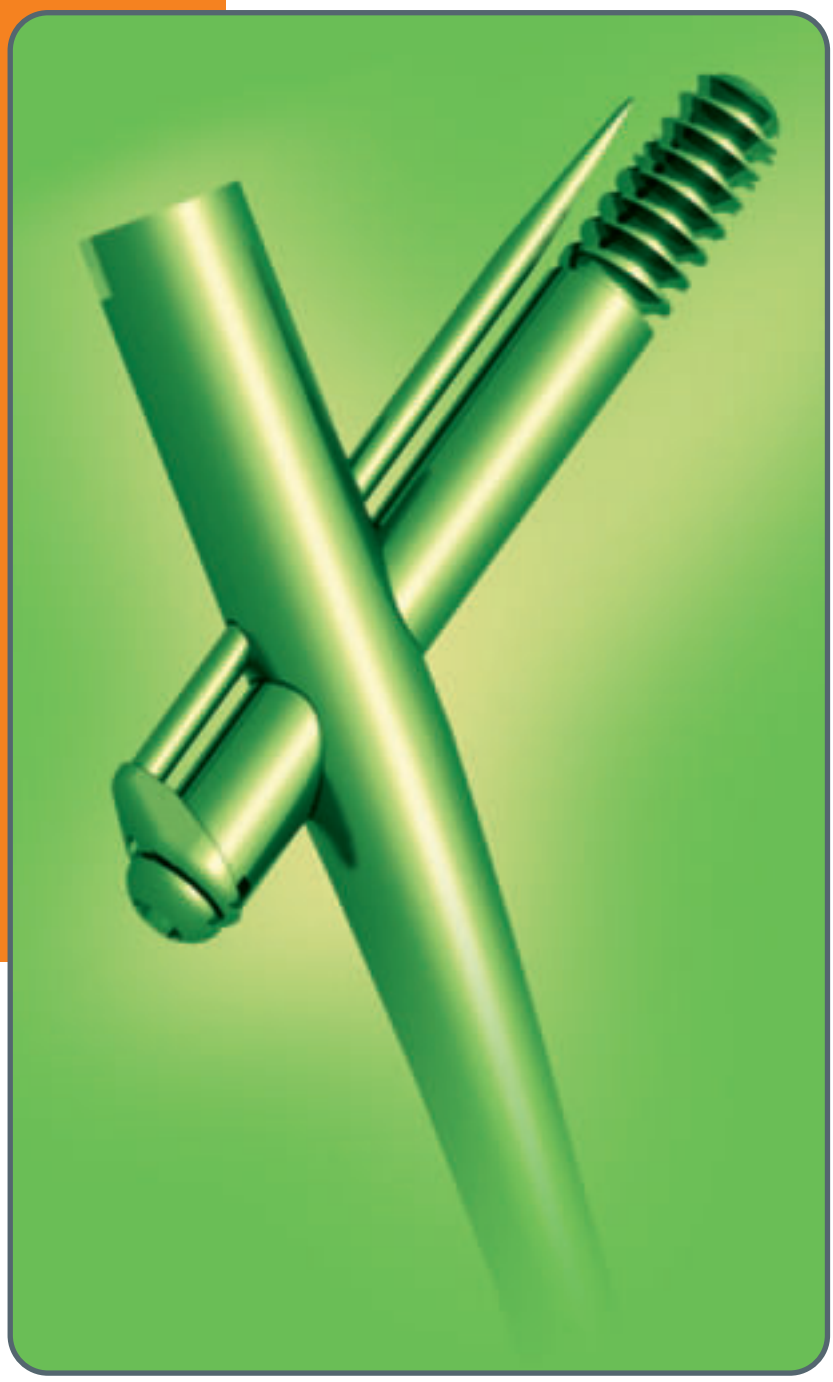
OR manual

PLATON



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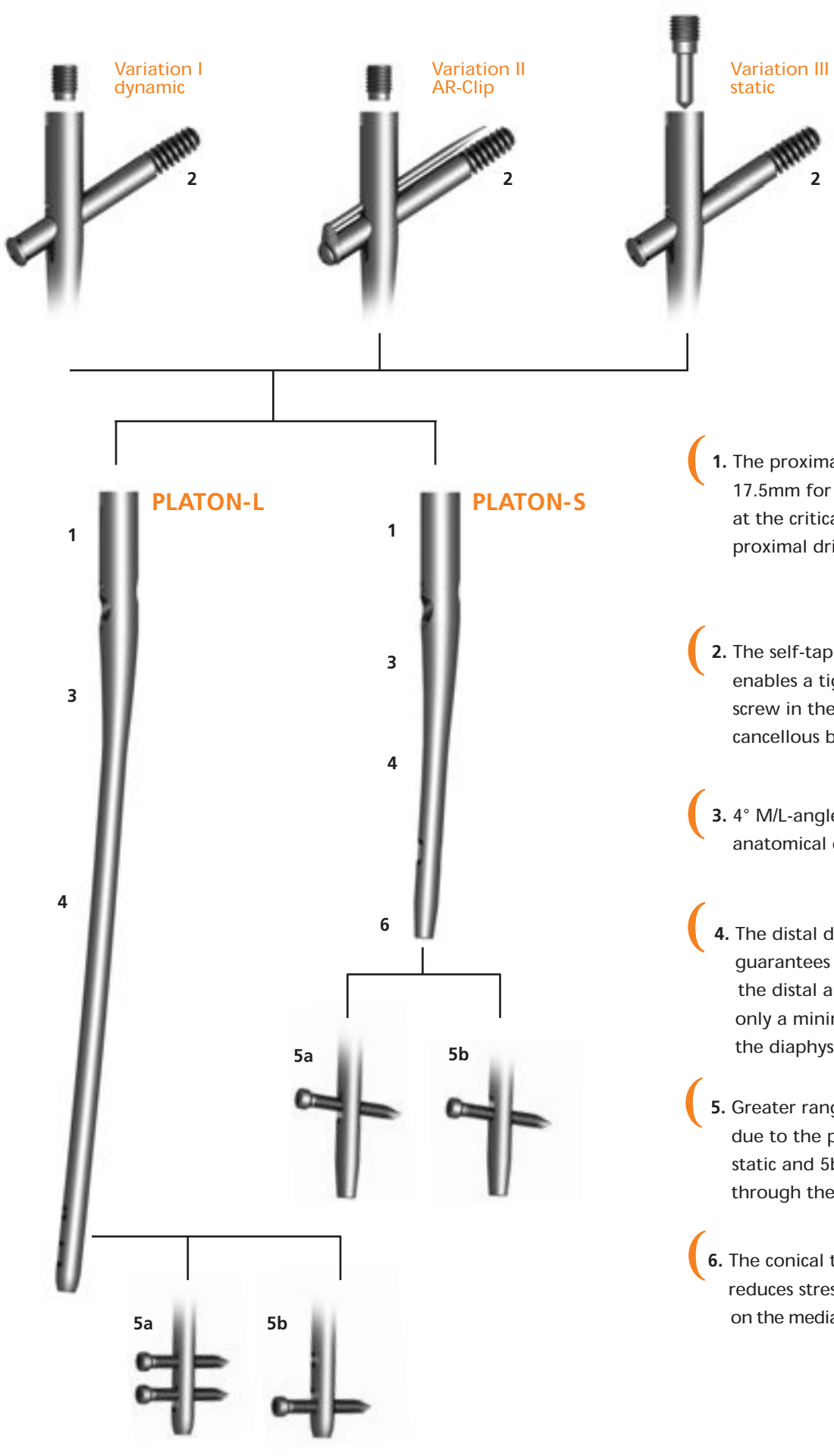


1. The proximal diameter of 17.5mm for high stability, at the critical area of proximal drilling

2. The self-tapping thread enables a tight fit of the screw in the femur head cancellous bone

3. 4° M/L-angle for an anatomical design

4. The distal diameter of 11mm guarantees high stability in the distal area and requires only a minimal drilling of the diaphysis

5. Greater range of indications due to the possibility of 5a. static and 5b. dynamic locking through the distal holes.

6. The conical tipp of the nail reduces stress concentration on the medial side of the bone.

PLATON-Locking-Nail-System

The intramedullary treatment at the proximal femur is today´s standard therapy for stabilization of per- and subtrochanteric fractures. With more than 700,000 implantations worldwide and extraordinary clinical results, this method of treatment has already proven its perfomance.

The knowledge of the success of intramedullary treatment and decades of experience from our team of developers was the basis for the development of the PLATON-Locking-Nail system.

The PLATON-system is distinguished by numerous improvements compared to regular systems and unites most modern technologies of development and production with simple handling.

For the treatment of a thorough range of indications, the PLATON-system offers three variations: **Variation I** corresponds mostly to the dynamic principle, a Cap Screw protects from medial migration of the Femoral Lag Screw. **Variation II** is distinguished by rotation control of the head-neck fragments with the help of the patented AR-Clip. **Variation III** offers the possibility of total fixation of the Femoral Lag Screw by the use of a Fixation Bolt.

With regard to the individual indication, all variations have the possibility of static as well as dynamic locking of the nail. The latter allowing dynamization under weight bearing conditions, with fully existent rotational stability of the osteosynthesis.

Collodiaphyseal angles of 125° and 130° and length types S and L are available:

The PLATON-S-Nail for the treatment of all stable fractures. The advantageous total length of 190mm ensures an excellent implant support in the diaphysis even with subtrochanteric fractures.

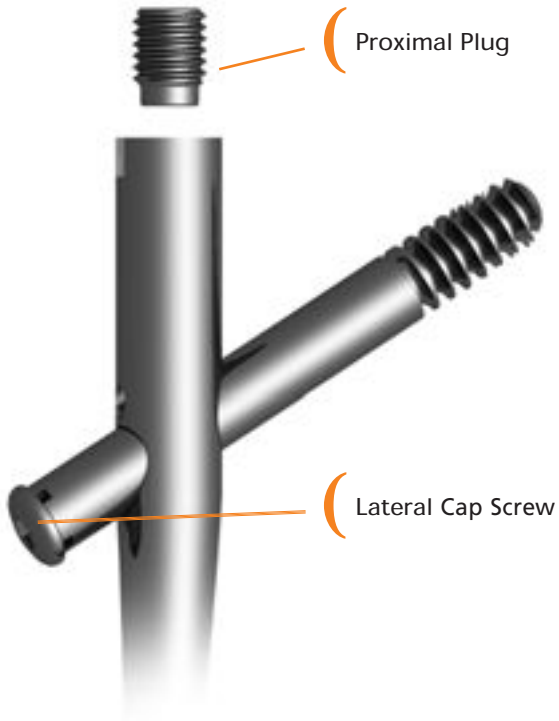
The PLATON-L-Nail for unstable and combined fractures. Total length from 340mm to 420mm.

In order to meet the highest quality demands, all nails and Lag Screws are made of high nitrogen implant steel alloy following DIN ISO 5832-9. Screws and supplements consist of implant steel following DIN ISO 5832-1.

Furthermore, the material used for nails and Femoral Lag Screws is characterized by a very high stability of more than 1200 MPa at a low variation of the mechanical attributes.

For an acurate implantation, high precision instruments are available for all Platon variations. The Platon Targeting Device enables the sleeve guided insertion of the Femoral Lag Screw, Cap, AR-Clip and Connection Screw. The instruments show a variety of innovative, detailed-solutions that make the implantation, as well as the later removal of material, much easier for the surgeon.

The PLATON-Locking-Nail Variation I dynamic



Characteristics of PLATON Variation I

Proximal Plug
– impedes tissue growth
– makes later implant removal easier

Femoral Lag Screw
– to support the dynamic principle

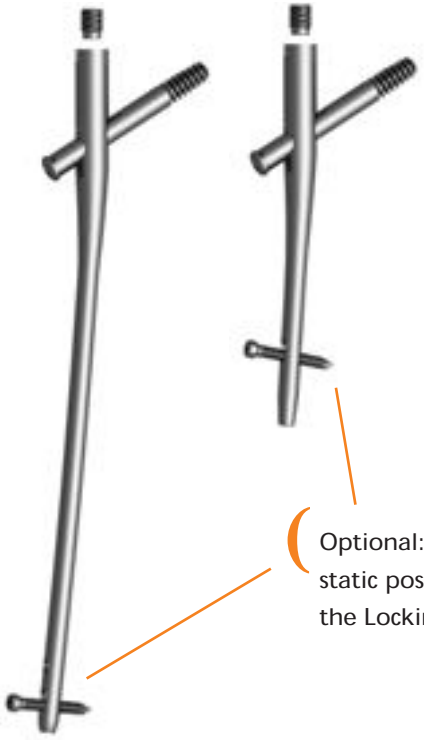
Lateral Cap Screw
– protects from medial migration of the Femoral Lag Screw
– offers best soft tissue protection in transient area to Femoral Lag Screw
– impedes tissue growth

Indications PLATON Variation I

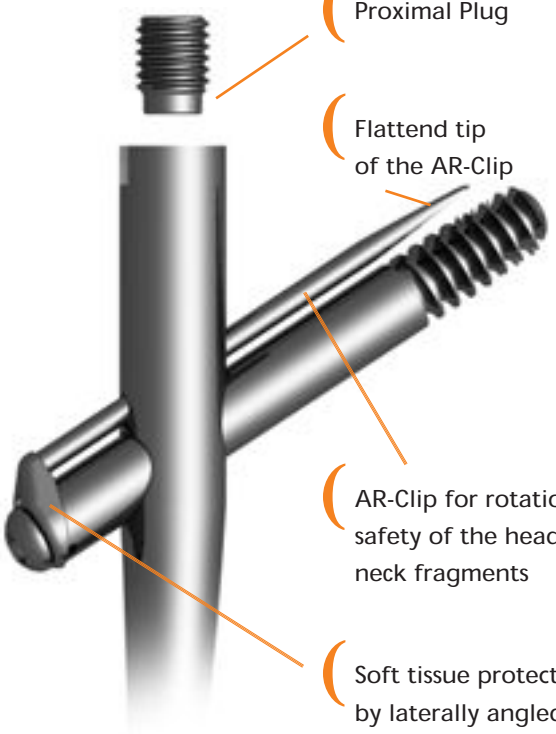
PLATON-S
– stable per- and high subtrochanteric fractures of the femur Type A1, A2, (A3) with disrupture of the lower trochanter (dynamic locking of the nail)
– stable per- and high subtrochanteric fractures of the femur Type A1, A2, (A3) without disrupture of the lower trochanter (static locking of the nail)

PLATON-L
– unstable per- and subtrochanteric femur fractures reaching up to the upper third of the trochanter of the Type A2, A3 (dynamic locking of the nail)
– unstable and pathological subtrochanteric fractures (static locking of the nail)
– stable trochanteric fractures in combination with femur shaft fractures (static locking of the nail)
– Pseudarthroses following delayed bone healing (dynamic locking of the nail)

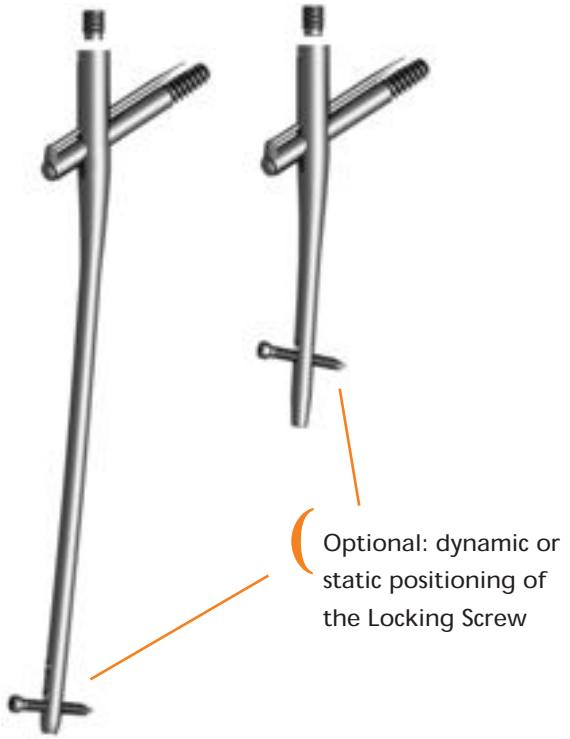
PLATON-L + S



The PLATON-Locking-Nail Variation II AR-Clip



PLATON-L + S



Characteristics of PLATON Variation II

Proximal Plug

– impedes tissue growth
– makes later implant removal easier

AR-Clip for rotation safety

– Rotation safety of the head-neck fragments, especially with lateral fractures and fractures extending medially
– reduced „cut-out" risk by flattened tip of the Clip and short distance towards the Femoral Lag Screw
– soft tissue protection by laterally angled construction
– in five lengths, tailored to the used Femoral Lag Screw length

Indications PLATON Variation II

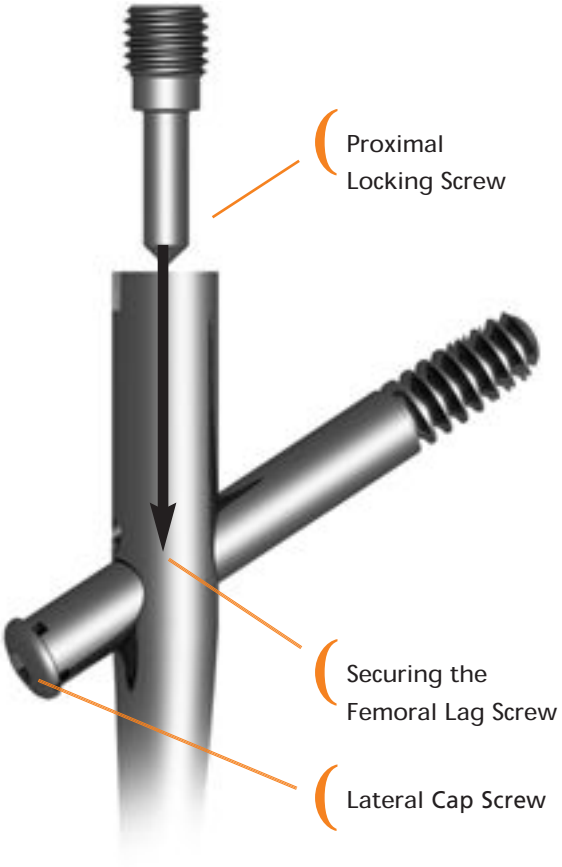
PLATON-S

– lateral to pertrochanteric unstable femur fractures of the type A1, A2, (A3) with rotation instability (dynamic locking of the nail)
– lateral to pertrochanteric stable fractures (static locking of the nail)
– pathological subtrochanteric fractures (static locking of the nail)

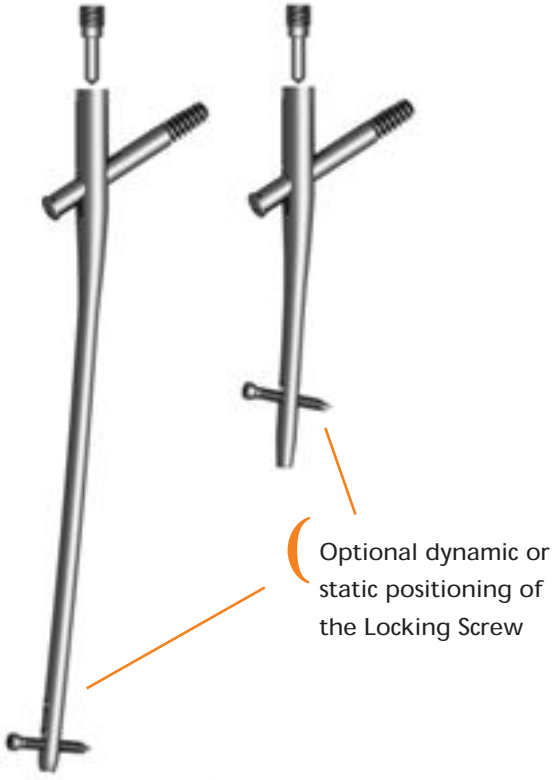
PLATON-L

– unstable femur shaft fractures combined with medial or lateral femoral neck fracture or trochanteric fractures of the type A1, B2 (dynamic locking of the nail)
– per- and subtrochanteric fractures of the type A2, A3 with rotation instability (dynamic locking of the nail)
– stable femur shaft fractures combined with medial or lateral femoral neck fracture
– proximal femur fractures combined with supracondylar fracture
– pathological subtrochanteric fractures (static locking of the nail)
– Pseudarthroses and instabilities following delayed bone healing (dynamic locking of the nail)

The PLATON-Locking-Nail Variation III static



PLATON-L + S



Characteristcs of PLATON Variation IIII

Proximal Fixation Bolt

– for fixation of the Femoral Lag Screw against rotation and gliding
– avoidance of tissue growth for easier later material removal
– in two versions, tailored to the collodiaphyseal angle used

Lateral Cap Screw

– offers optimal soft tissue protection in the transient area towards the Femoral Lag Screw
– avoids tissue growth

Indications PLATON Variation III

PLATON-S

– unstable subtrochanteric fractures (dynamic locking of the nail)
– pathological fractures (static locking of the nail)

PLATON-L

– high femur fractures (dynamic locking of the nail)
– pathological femur fractures (static locking of the nail)

PLATON OR manual

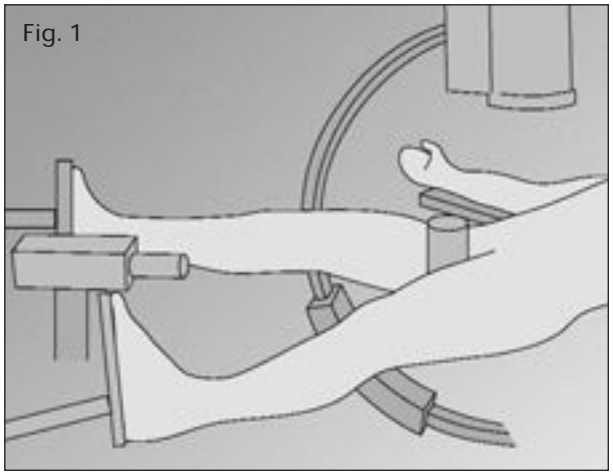


Fig. 1

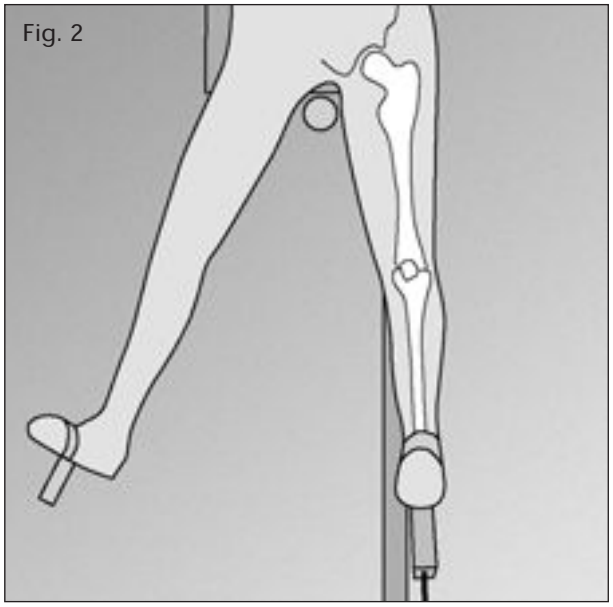


Fig. 2

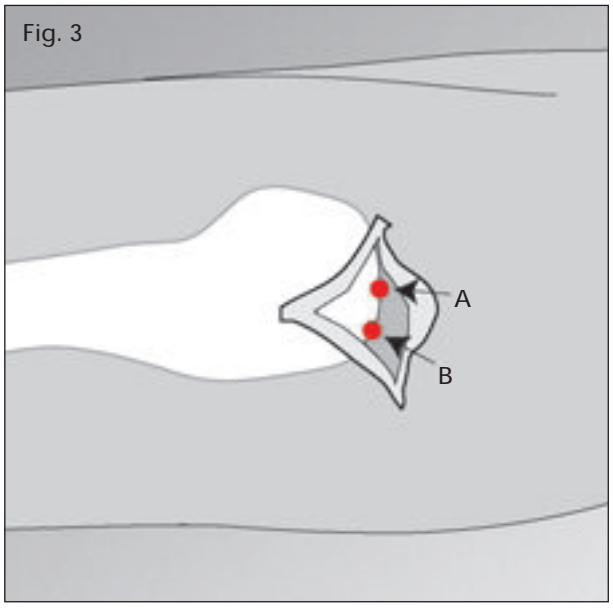


Fig. 3

1. Preoperative Planning

In order to place the PLATON-S-Nail correctly, a preoperative determination of the neck-shaft angle is helpful. With major dislocation of the fragments, an x-ray of the unaffected extremity can be useful. The angle measured in the standard x-ray AP view is to be reduced by 5-10° due to the femur neck anteversion.

2. Patient Positioning

The patient is positioned supine on the extension-table and the injured extremity is positioned in a foot extension and held in 5° inward rotation. The patella should be horizontal or rotated slightly inward. Rotating the C-arm enables a medial-lateral as well as an anterior-posterior view of the trochanteric area. Therefore, the uninjured leg should be abducted as much as possible (Fig. 1+2).

3. Reduction of the fracture

Prior to the operation, reduction of the fracture has to be conducted in an anatomical exact fashion. If this is not possible with instable or extremely dislocated fractures, the fracture (with slight extension of the incision distally) has to be reduced openly and eventually fixated with forceps.

4. Entry portal of the PLATON-S-Nail

The palpable proximal end of the greater trochanter is marked on the skin. Cranially, an approx. 5cm long skin incision parallel to the axis of the gluteus medius muscle in direction of the iliac crest is made. After splitting the iliotibial tractus, the tip of the greater trochanter (Fig. 3. A) is exposed by blunt preparation of the gluteus medius muscle. Absolute care must be taken when exposing the femur that it is in line with its long axis. Only with extreme antecurvation of the femur in the proximal area should the entry portal be positioned slightly more dorsally (Fig. 3. B).

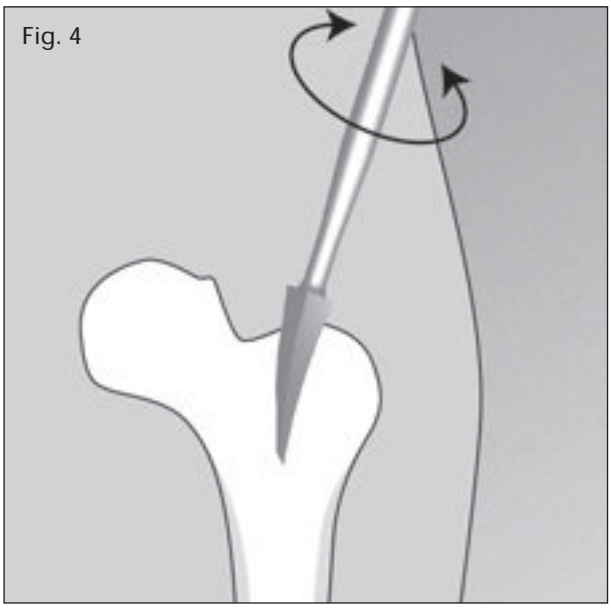


Fig. 4

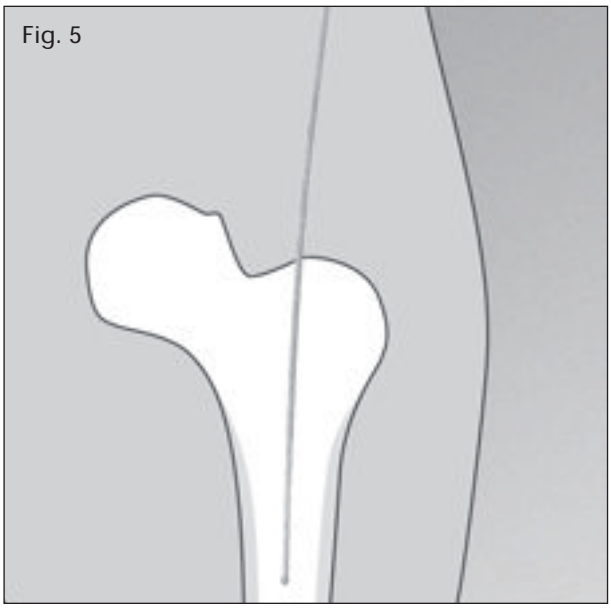


Fig. 5

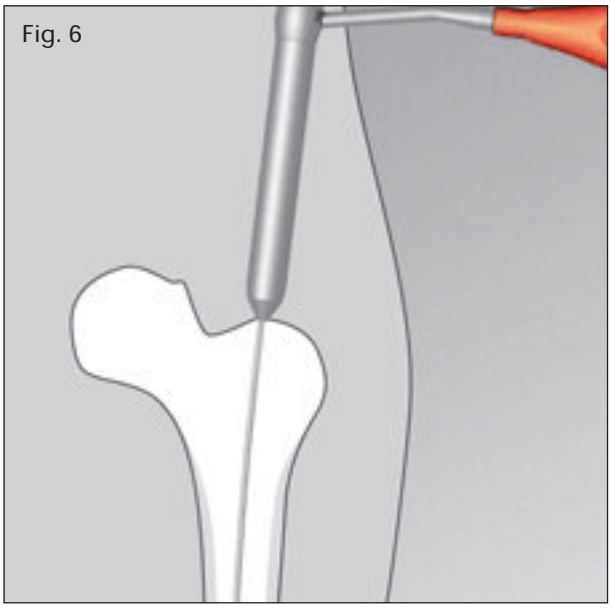


Fig. 6

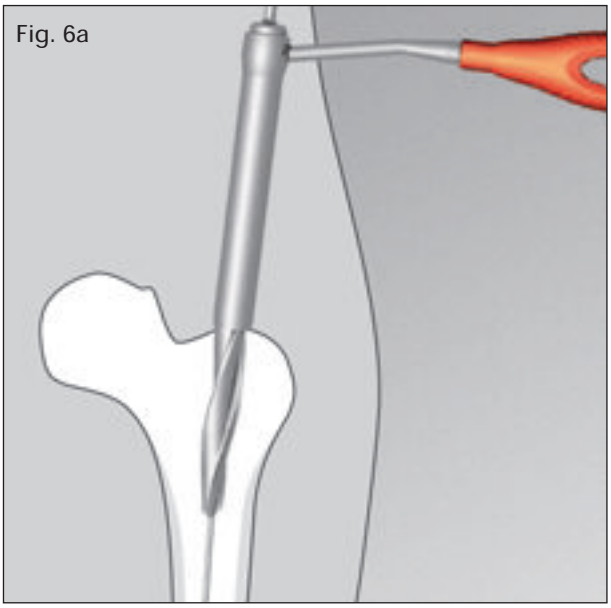


Fig. 6a

5. Opening of the femur / Inserting the Guide Pin

The femoral canal is opened by using a large curved awl. The instrument is slightly rotated at the described entry point. The tip of the awl must be aimed at the canal's center (Fig. 4).
With obese patients, we recommend the use of image intensification in order to place the entry portal correctly. The Reamer Guide Wire is then inserted centrally, under x-ray control, into the femoral canal (Fig. 5).

6. Preparation of the femoral canal

The proximal femur must be reamed to 18mm in the trochanteric area. Therefore, the Tissue Protection Sleeve (Art. No.202-107) with inserted Obturator (Art. No. 203-104) is slid over the Reamer Guide Wire (Fig. 6). After exchanging the Obturator with the Cannulated Drill (Art. No. 203-110), the trochanteric area is then reamed to 18mm (Fig. 6a).

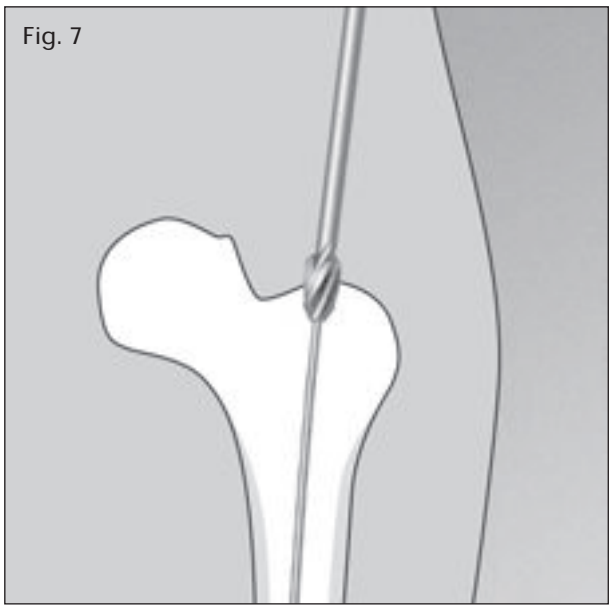


Fig. 7

PLATON-S-Nail

From our experience, this procedure alone enables implanting the nail without diaphyseal reaming. If the femoral canal seems to be too narrow for the 11mm PLATON-S-Nail, the femoral canal is reamed in 0.5mm increments with a flexible reamer, using the same Guide Wire, up to maximally 13mm (Fig. 7).

PLATON-L-Nail

The diaphyseal area is reamed in 0.5mm increments with a reamer, using a Guide Wire, up to maximally 13mm.

If bone fragments are present, reaming should be discontinued in the fracture area and penetration should be performed without reaming until passing the fragmented area (Fig. 7).

In order to avoid unneccessary complications, the bone should be reamed with the required caution.


Fig. 8

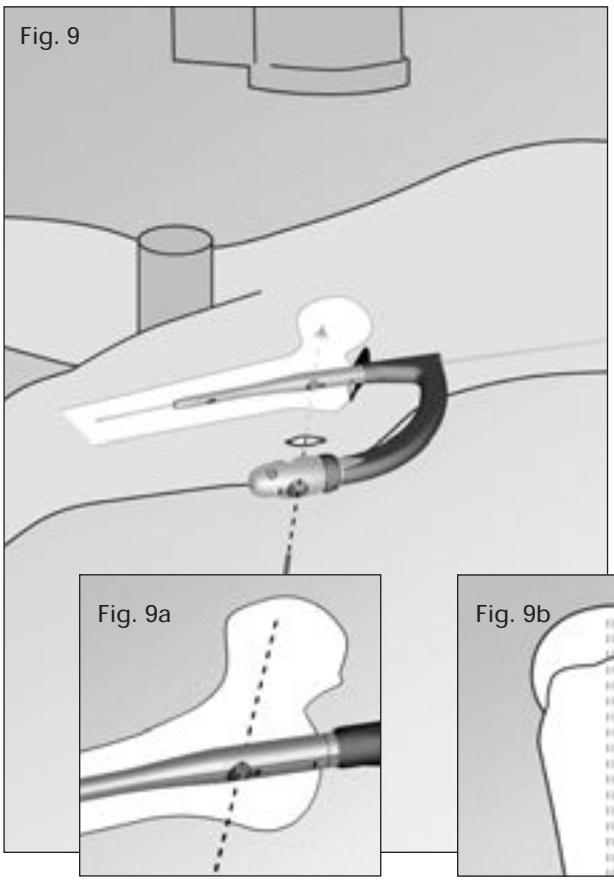
7. Preparation of the PLATON-Nail and the Targeting Device

The PLATON-Nail is mounted onto the Targeting Device (Art. No. 204-106) by the Nail Holding Screw (Art. No. 204-110) while using the Universal Joint Screwdriver (Art. No. 201-110) and Screwdriver Bit (Art. No. 201-115) (Fig. 8). A sound fixation of the nail onto the Targeting Device must be ensured so that false drillings at the time of later screw insertion can be avoided. The Targeting arm of the Targeting Device is always positioned laterally.

The markings of the desired neck-shaft angle on the Targeting arm and Targeting head are aligned, the Targeting head engages in the hexagonal connection. The locking ring is tightened.

For later adjustment of the Targeting head, the locking ring is loosened and the Targeting head is pulled and turned into the desired position.

Following the engagement of the Targeting head, checking the correct position according to the inscriptions on the Targeting head and Targeting arm, the locking ring is tightened again.



8. Implantation of the PLATON-Nail

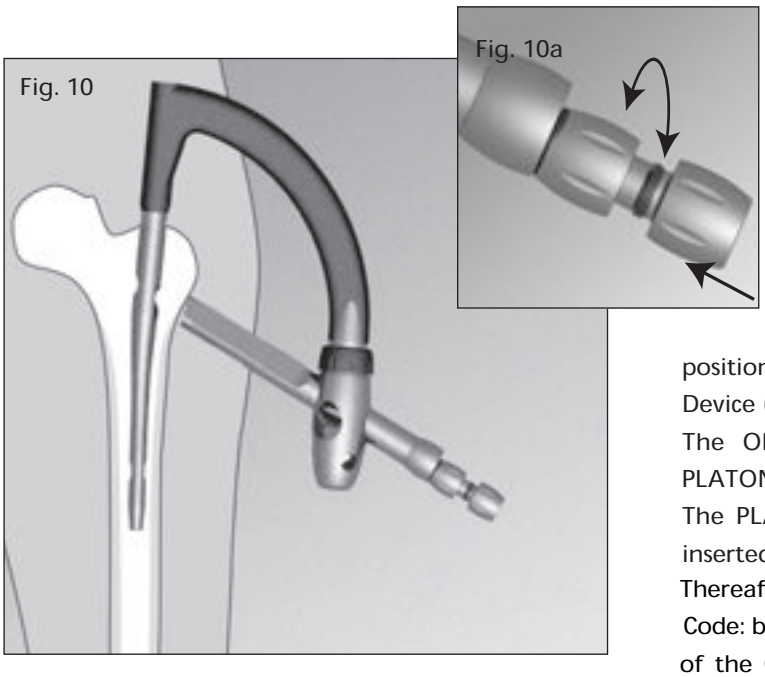
Under x-ray control, the PLATON-S-Nail is inserted with slight rotating movements over the Guide Pin and into the femoral canal. The correct position of the nail can be identified by the narrowing at the opening for the Femoral Lag Screw (Fig. 9a).

Caution: If it is not possible manually, to insert the nail completely, the nail must be removed and the canal over reamed until the implantation is possible by hand. **Under no circumstances should the use of force be administered (i.e. hammering).**

With the Platon-L-Nail it must be considered that due to the higher length, a hammering of the last centimeters can be necessary, requiring the use of the final impactor (Art. No 205-100).

9. Exact Positioning of the PLATON-Nail

After insertion is completed, the PLATON-Nail must be placed correctly. The ideal position of the Femoral Lag Screw is the lower half of the femoral head in the AP plane (Fig. 9a) and centrally in the lateral plane (Fig. 9b). With the help of a long K-wire, which is placed over the femoral neck, the correct position of the Femoral Lag Screw Guide Pin (Art. No. 206-100) must be ensured in the AP view using the image intensifier (Fig. 9).



10. Insertion of the Femoral Lag Screw

1. Remove the Reamer Guide Wire.

2. Skin incision and splitting of the fascia. Insertions of the Platon tissue protection sleeve (Art. No. 202-108) with inserted Obturator (Art. No. 203-107) at the desired position through the targeting head of the targeting Device (Art. No. 204-106) (Fig. 10).

The Obturator is removed while pushing the PLATON tissue protection Sleeve slightly forward. The PLATON double sleeve (Art. No. 202-106) is inserted.

Thereafter, the Guide Sleeve (Art. No. 202-112, Color Code: blue) is inserted into the Double Sleeve. Locking of the Guide Sleeve with a half twist (Fig. 10a).

The correct position is verified again by lengthening the axis to the future position of the Femoral Lag Screw (Fig. 9a).

Check if the locking ring on the Targeting arm of the Targeting Device is tightened and thereby ensure exact drilling.

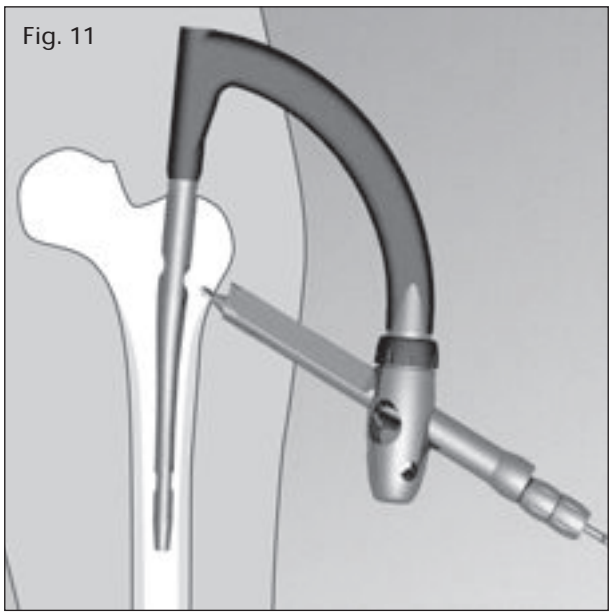


Fig. 11

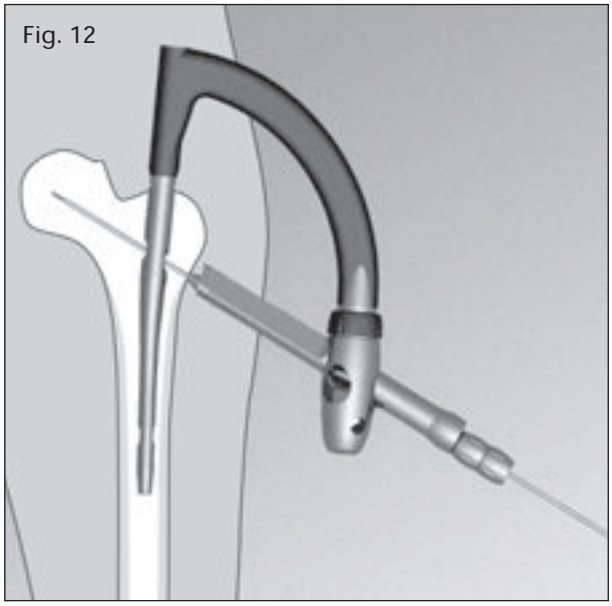


Fig. 12

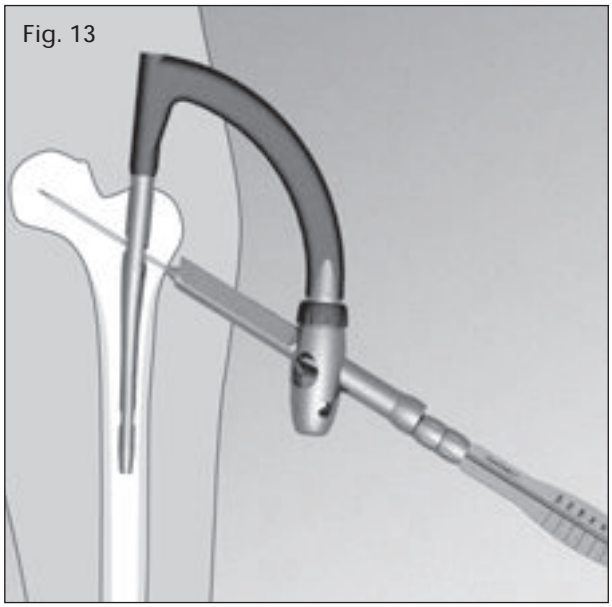


Fig. 13

The lateral cortex is opened for the Guide Wire (Art. No. 206-100) (Fig. 11) using a 5.5mm Ø drill (Art. No. 203-120).

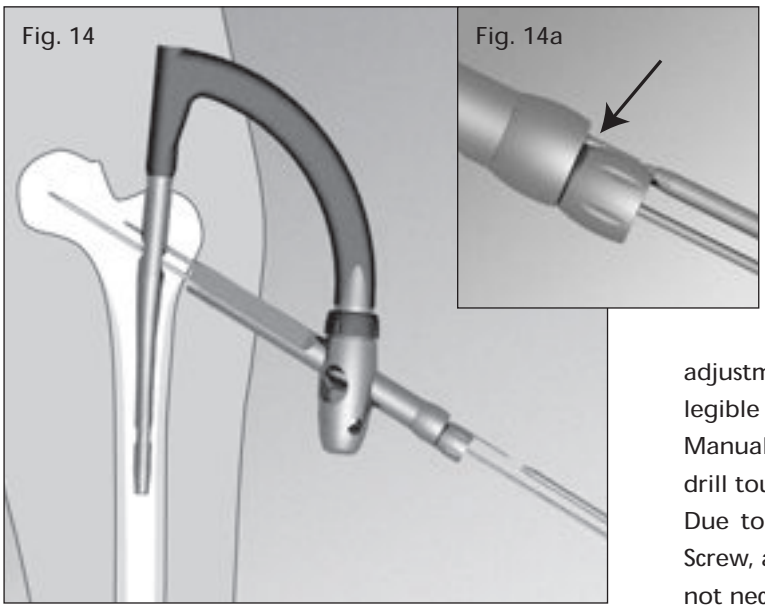
3. Replacement of the blue color coded Guide Sleeve (Art. No. 202-112) with the white color coded Guide Sleeve (Art. No. 202-111). Exact placement of the Guide Wire (Art. No. 206-100) into the femoral neck under x-ray control in both planes, using the chuck (Art. No.200-110) (Fig. 12). The Guide Wire´s tip should be positioned in the subchondral lamella.

Attention:
Corrections for the exact position of the Femoral Lag Screw can only be performed up to this point by retracting the Guide Wire and replacement.

Note: In order to avoid a false orientation of the Guide Wire ventrally, it is recommended to hold the guiding arm in position during the drilling process by slight counter-pressure from below.

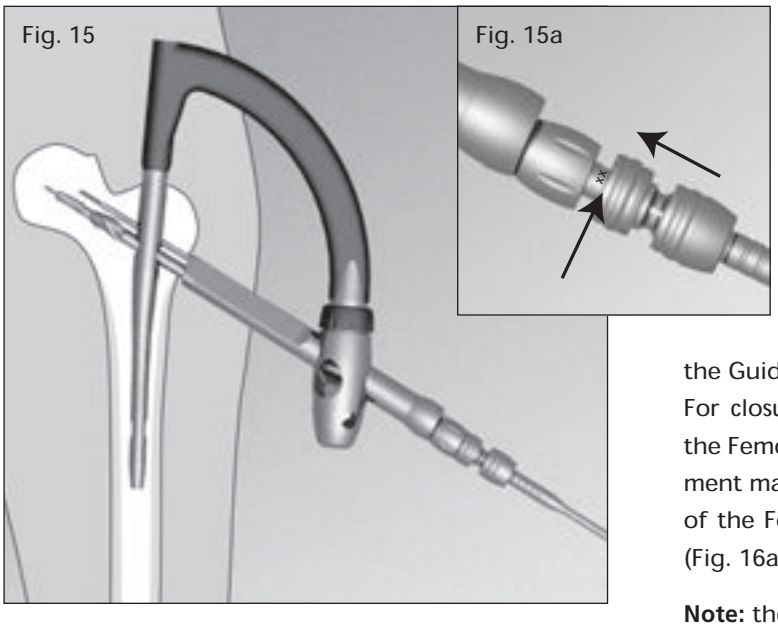
4. The length is determined by placing the Lenght Gauge (Art. No. 208-100) onto the Guide Wire. In order to avoid incorrect measurements, precaution must be taken so the Guide Sleeve is adjacent to the bone and the Length Gauge is slid against the Guide Sleeve. The end of the Guide Wire on the scale defines the length of the Femoral Lag Screw (Fig. 13).
If the measured length is between two markings, the longer version of the Femoral Lag Screw is to be chosen. Removal of the Guide Sleeve (Art. No. 202-111).

5. Alternatively placement of a preoperative rotation lock for stabilization of the proximal fragment.
In order to avoid a possible rotation of the proximal bone fragments during the reaming of the femoral neck canal and while screwing in the Femoral Lag Screw, a temporary pin can be inserted.
Insertion of the Fixation Pin (Art. No. 206-101) into the upper opening of the PLATON Double Sleeve (Art. No. 202-106) (Fig. 14) using the Fixation Pin adaptor (Art. No. 206-102). Opening of the lateral cortex.
The Fixation Pin is screwed into the femoral neck cancellous bone through the locking nail up to the ring marking.



Being placed correctly, there will be proper alignment of the Fixation Pin and the PLATON-Tissue Protection Sleeve (Fig. 14a). The ring marking serves as a means of orientation. Afterwards, removal of the adapter for the Fixation Pin.

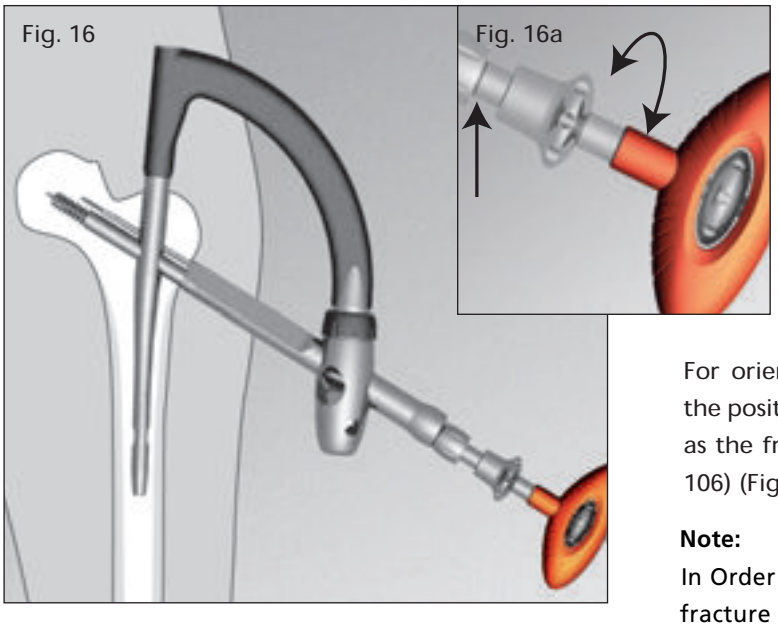
6. The previously measured length of the Femoral Lag Screw is applied to and fixated at the step drill (Art. No. 203-102). The adjustment is correct when the desired number is still legible on the side pointing towards the drill tip. Manual reaming of the femoral neck until the step drill touches the PLATON-Double Sleeve (Fig. 15/15a). Due to the self tapping thread of the Femoral Lag Screw, a further reaming and thread cutting is usually not necessary.



For easier insertion with very hard bone, manual precutting using the Femoral Lag Screw Tap (Art. No. 203-103) on the Lag Screw Inserter (Art. No. 201-131) is possible.

7. Mounting the Femoral Lag Screw in the previously measured length onto the Femoral Lag Screw Inserter (Art. No. 201-131). Inserting the Femoral Lag Screw over the Guide Wire under x-ray control (Fig. 16).
For closure of an eventually existing reduction gap, the Femoral Lag Screw anchored in the proximal fragment may be retracted laterally by the position wheel of the Femoral Lag Screw Inserter (Art. No. 201-131) (Fig. 16a).

Note: the Fixation Pin Adapter (Art. No. 206-102) may be used as a lever. The cylindrical step at the three-edge-connecting site is therefore put into one of the side drillings of the position wheel.



Using the **Nail-Variation II with AR-clip**, the Femoral Lag Screw should protrude for approximately 1-2mm on the bone´s lateral caudal side so that the AR-clip can be fixated.

For orientation serves the ring marking medially of the position wheel, which should be on the same level as the front side of the Double Sleeve (Art. No. 202-106) (Fig. 16a).

Note:
In Order to be prepared to close a gap in between the fracture fragments, it is recommended to bring the handwheel in its lateral end position (towards the handle of the inserter). Closure of the gap is then possible by turning the wheel clockwise.

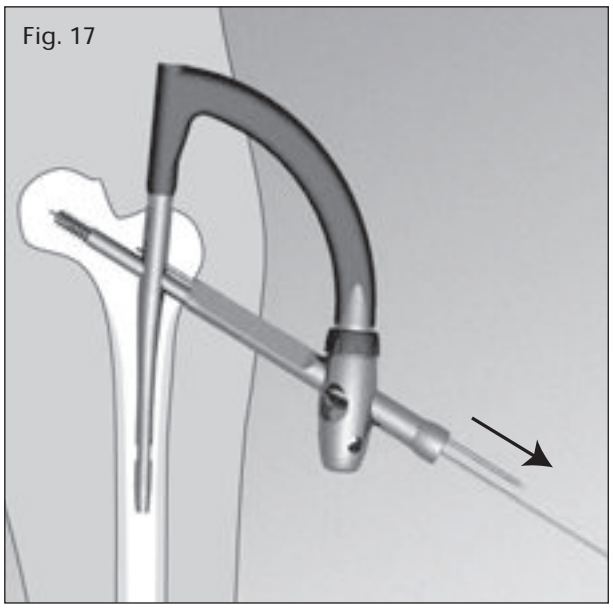


Fig. 17

Verification of the exact position with the image intensifier. Eventually, the position of the Femoral Lag Screw must be corrected. After correct placement of the Femoral Lag Screw, the lag screw inserter is to be removed, as well as the Double-Sleeve. Extracting the Fixation Pin with the help of the Chuck (Fig.17).

8. Afterwards, securing the Femoral Lag Screw by (a) inserting the Screw Cap if PLATON-Locking-Nail **Variation I and III** are used or (b) insertion of the AR-Clip if the **Nail-Variation II** with AR-Clip is used.

Note: The Femoral Lag Screw is to be screwed into its final position only after the extension is relaxed. Thereby, a greater dislocation is avoided.

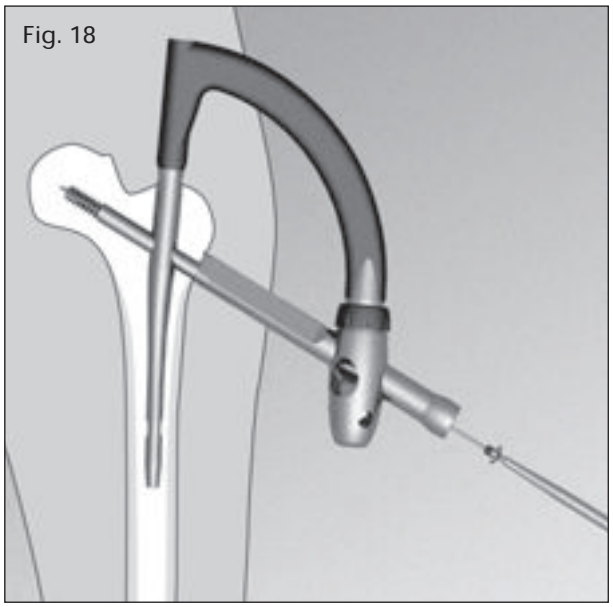


Fig. 18

11a. Insertion of the Screw Cap (if Variation I is used dynamically, with Variation III statically)

Note: If **Variation I** is used, it is strongly recommended to use the Screw Cap in order to avoid a medial migration at the femoral neck.

The Cap Screw (Art. No. 100-310) is screwed with the Screwdriver SW 5 (Art. No. 201-100), over the Guide Wire (Art. No. 206-100) in place through the Double Sleeve until it reaches the lateral side of the Femoral Lag Screw. Thereby, a self-resistance in the screw is to be overcome (Fig. 18-19).

Note:
If the bone is in poor condition (osteoporotic), please make sure that the lag screw is not turned in any further.

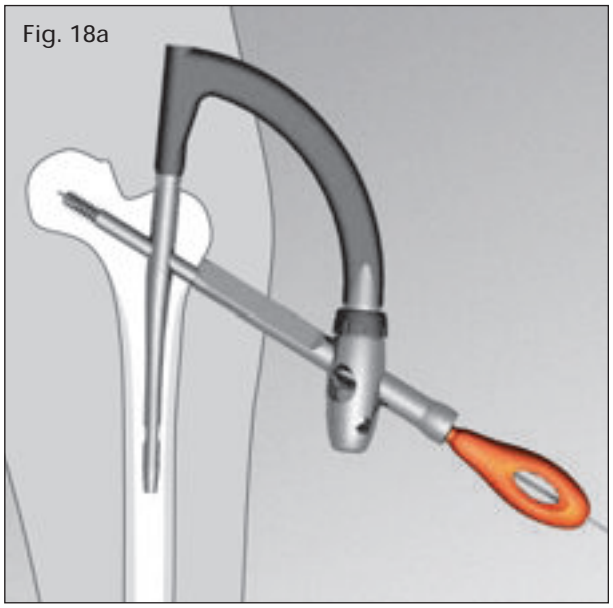


Fig. 18a

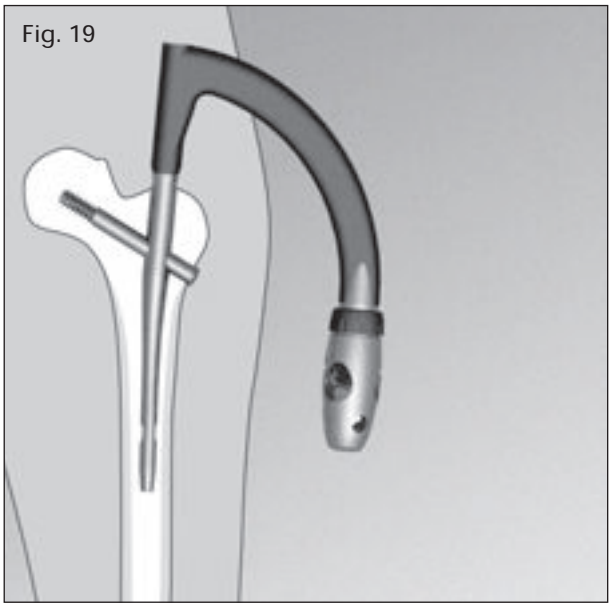
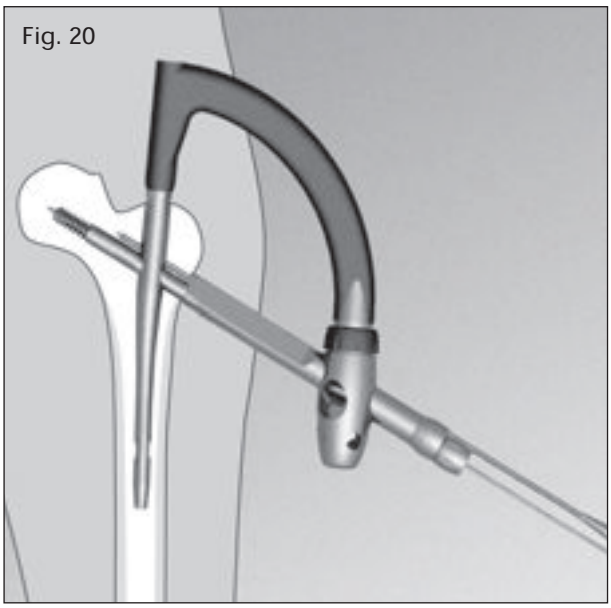
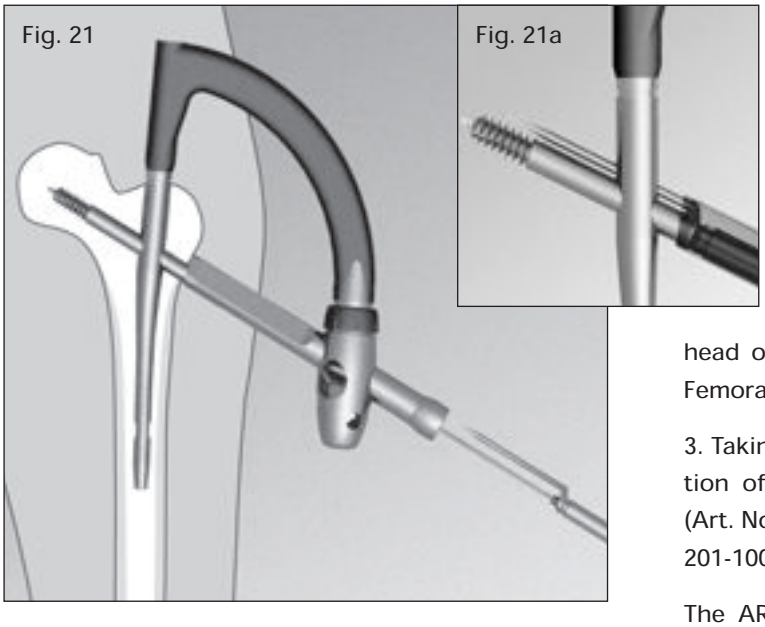


Fig. 19



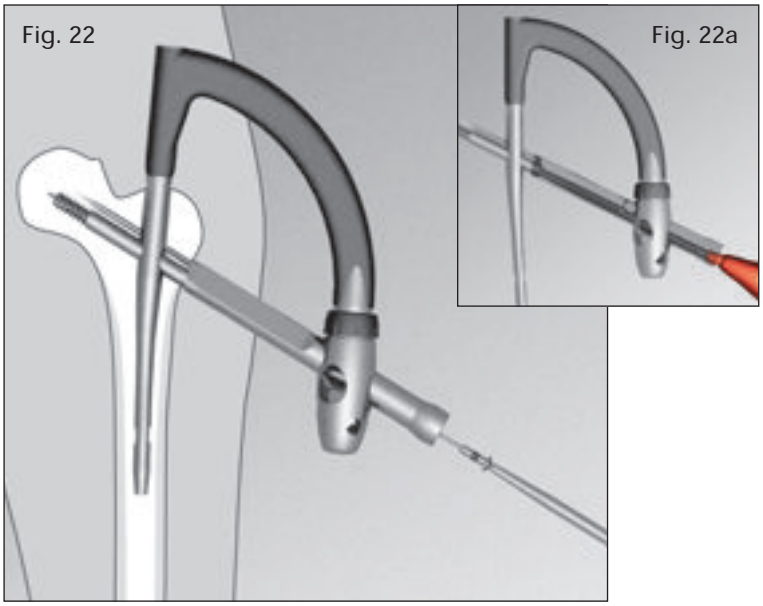
11b. Insertion of the AR-Clip with the Targeting Device (if Nail-Variation II with the AR-Clip is used)

1. If the Fixation Pin has not been positioned beforehand and the lateral cortex thereby has not already been opened, insertion of the Awl with trocar tip (Art. No. 203-116) into the upper opening of the PLATON-Double Sleeve (Art. No. 202-106) and opening of the lateral cortex.
With slight back and forth movements, the Awl is now pushed through the Locking-Nail, depending on the bone quality, up to the maximum insertion length (max. up to shortly before the end of the Femoral Lag Screw) into the cancellous bone of the femoral neck (Fig. 20). Then, removal of the Awl and PLATON-Double Sleeve. The Guide Wire remains in the Femoral Lag Screw.



2. The AR-Clip is screwed onto the Femoral Lag Screw Inserter (Art. No. 201-131) until the four cones engage in the recess of the Clip. To insert the AR-Clip, the Femoral Lag Screw Inserter is guided over the Guide Wire (Fig. 21). The AR-Clip is guided through the Tissue Protection Sleeve and being pushed through the prepared proximal drilling of the cortex and the Locking Nail, until the head of the AR-Clip touches the lateral end of the Femoral Lag Screw (Fig. 21a).

3. Taking off the Femoral Lag Screw Inserter and fixation of the AR-Clip with the AR-Connection Screw (Art. No.100-304) using the Screwdriver SW 5 (Art. No. 201-100) (Fig. 22).



The AR-Connection Screw is to be fastened to the maximum (Fig. 22a). Therefore, a self-resistance in the screw is to be overcome. This blocking device helps prevent autonomous loosening of the screw.

Note:
If the bone is in poor condition (osteoporotic), please make sure that the lag screw is not turned in any further.

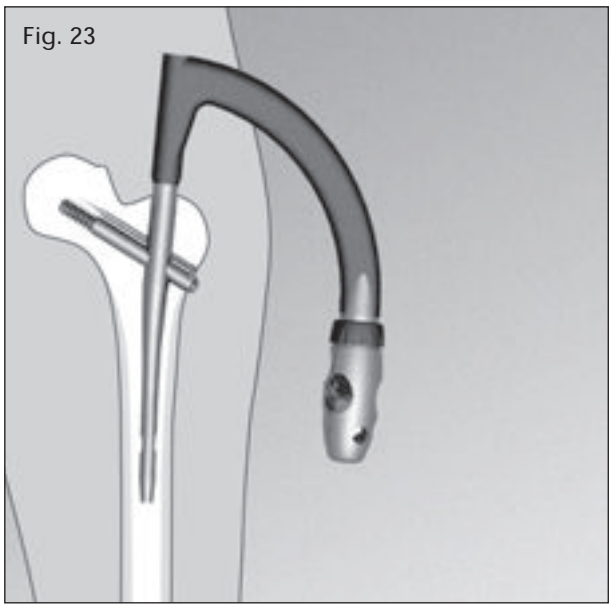


Fig. 23

At this point, the head-neck fragments are rotation-safe. Afterwards, removal of the Tissue Protection Sleeve (Art. No. 202-108).

Using a **PLATON-S-Nail**, the **distal** locking of the nail is done by using the Targeting Device (Art. No. 204-106). Therefore, the Targeting Device is to remain at the implant at this time (Fig. 23).

PLATON-L-Nails are locked distally using the freehand technique (Chapter 12b), thus the Targeting Device is to be removed.

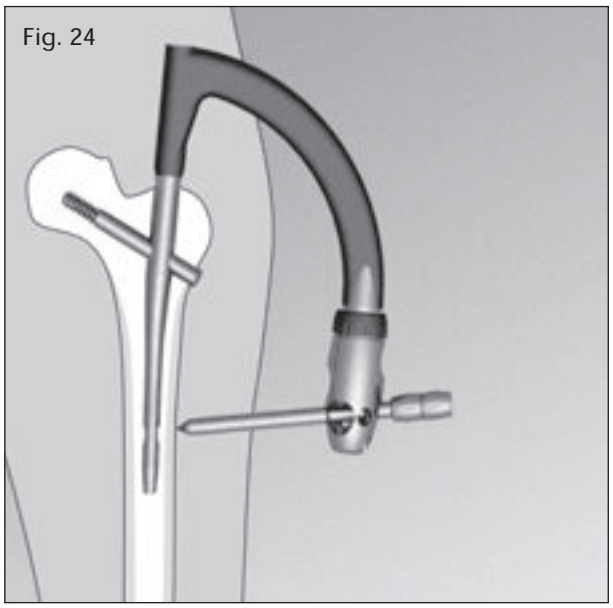


Fig. 24

12a. Distal locking of the PLATON-S-Nail

1. Positioning of the Targeting head for the desired distal locking (dynamic or static locking of the nail): For adjustment of the Targeting head, the locking ring is loosened and the Targeting head is pulled and turned into the desired position. Following the engagement of the Targeting head and checking the correct position according to the inscriptions on the Targeting head and Targeting arm, the locking ring is tightened again.

2. Insertion of the distal Tissue Protection Sleeve (Art. No. 202-103) with Obturator (Art. No. 203-100) at the desired preset position by the Targeting head of the Targeting Device. Locking of Tissue Protection Sleeve and Obturator with a half twist. After incision and splitting the fascia, the instruments are guided onto the cortex (Fig. 24). Removal of the Obturator.

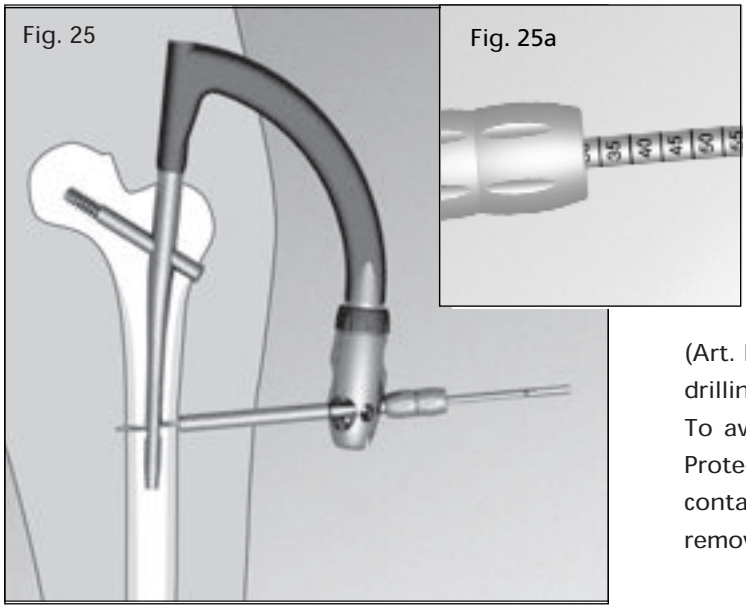


Fig. 25

Fig. 25a

3. Insertion of the Guide Sleeve Ø 9.0/ 5.5mm (Art. No. 202-104, Color Code: blue) into the Tissue Protection Sleeve, fixation with a half twist and guidance towards the cortex.
Check if the locking ring on the Targeting arm of the Targeting Device is tightened and thereby ensure exact drilling.
Afterwards, insert the drill Ø=5.5mm (Art. No. 203-120) (Fig. 15a) with blue color code and drilling of the lateral and medial cortex (Fig. 25).
To avoid soft tissue damage it is crucial that Tissue Protection Sleeve and Guide Sleeve have tight bone contact during the drilling process. After drilling, removal of the drill Guide Sleeve.

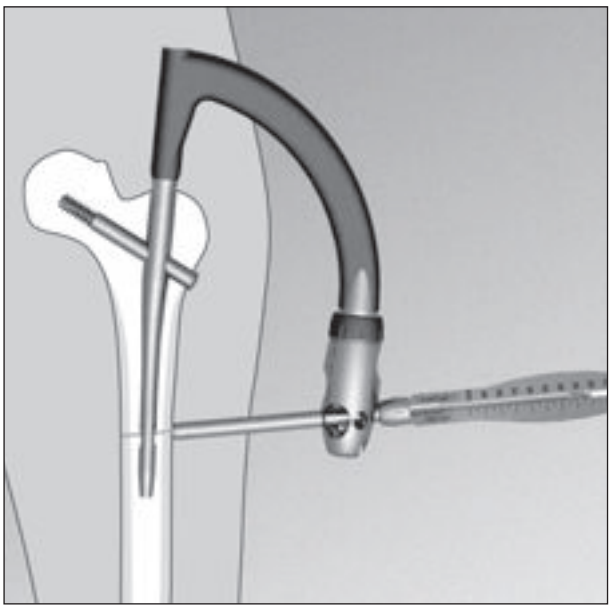


Fig. 27

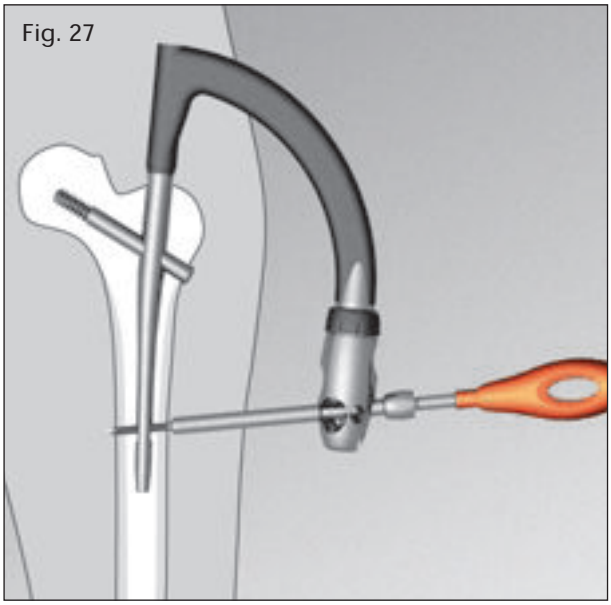
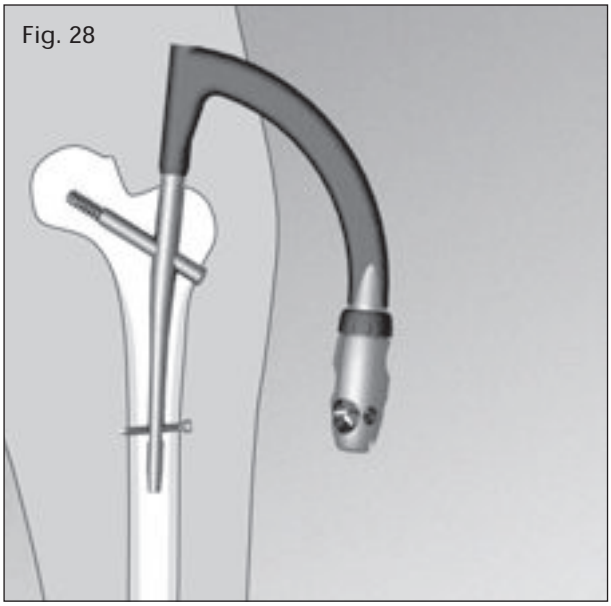


Fig. 28



4. The length of the distal locking screw is determined with the help of the scale you find on the shaft of the drill (Art. No. 203-120), and with the Guide Sleeve (Art. No. 202-104) (Fig. 25a).
Note:
Alternatively the length of the distal locking screw is to be determinated with the Screw Gauge (Art. No. 208-110).

Tipp:
If the drill hits the lateral cortex noticeably, the length of the distal locking screw is equivalent to the measured length +5mm (witch is nearly equivalent to the thickniss of the medial cortex).
In order to avoid incorrect measuring, precaution must be taken so the Guide Sleeve is adjacent to the bone and the guide sleeve is properly connected to the tissue protection sleeve. If the measured length is between two markings, the longer version of the distal Locking screw is to be chosen.

5. Place the 6.2mm Locking Screw in its defined length onto the Screwdriver SW 5 (Art. No. 201-100). Insert the screw through the Tissue Protection Sleeve ensuring that the Tissue Protection Sleeve is adjacent to the bone (Fig. 27).
The screw should not be fastened too tightly to the cortex. The marking on the shaft of the screwdriver serves as an orientation. If the screw is aligned with the sleeve´s rim, the screw head is positioned tension free at the lateral cortex. Verification of correct placement by x-ray in two planes and documentation (Fig. 28).
Removal of the Tissue Protection Sleeve and Targeting Device from the PLATON-Nail by loosening the Nail Holding Screw (Art. No. 204-110) under use of the Universal Joint Screwdriver (Art. No. 201-110) and the screw driver bit (Art. No. 201-115).

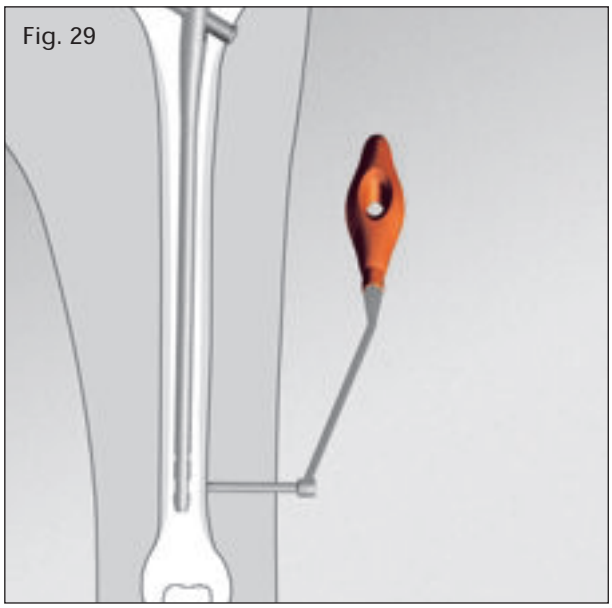


Fig. 29

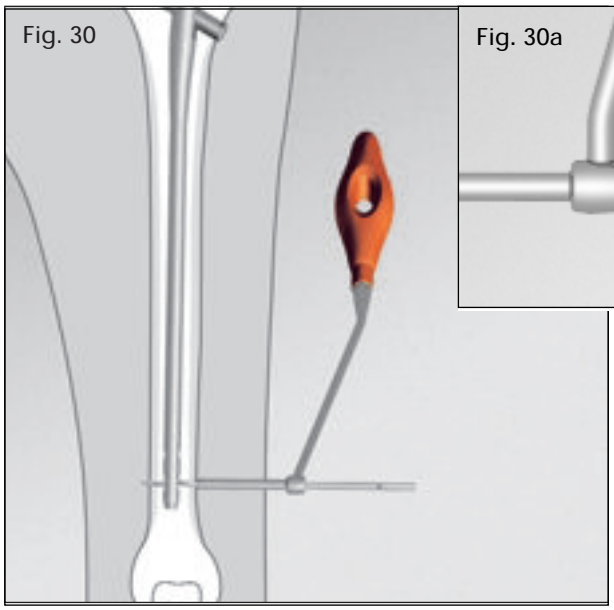


Fig. 30

Fig. 30a

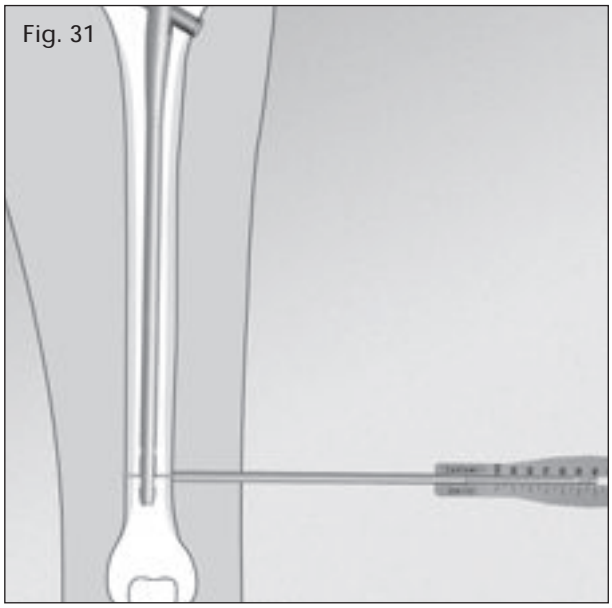


Fig. 31

12b. Distal locking PLATON-L-Nail (freehand technique)

1. The image intensifier is adjusted to the round screw hole of the nail until a complete circle is visible.

2. Following the incision and splitting of the fascia, the freehand Targeting Device (Art. No. 204-120) is inserted immediately onto the cortex (Fig. 29).
Placement of the freehand Targeting Device under x-ray control exactly into the center of the visible round-hole with static locking or into the lower long-hole with dynamic locking.

3. Drilling, using the drill with the 5.5mm tip (Art. No. 203-121). It is important that the freehand Targeting Device has tight bone contact during the drilling process to avoid soft tissue irritation (Fig. 30).
The length of the screw is read off the scale on the shaft of the drill behind the freehand targeting device.
If you drill through the medial cortex, the measured length is equivalent to the length of the screw.

Tipp:
If the drill hits the medial cortex noticeably, the length of the distal locking screw is equivalent to the measured length +4mm (nearly to the thickness of the medial cortex).

Note:
Alternatively the length of the distal locking screw is to be determinated with the Screw Gauge (Art. No. 208-110).

4. Thereafter, the 6.2mm locking screw is placed with the screwdriver SW 5 (Art. No. 201-100 or Art. No. 201-102) (Fig. 32).

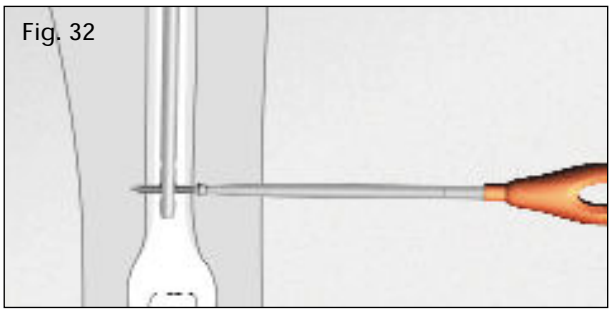


Fig. 32

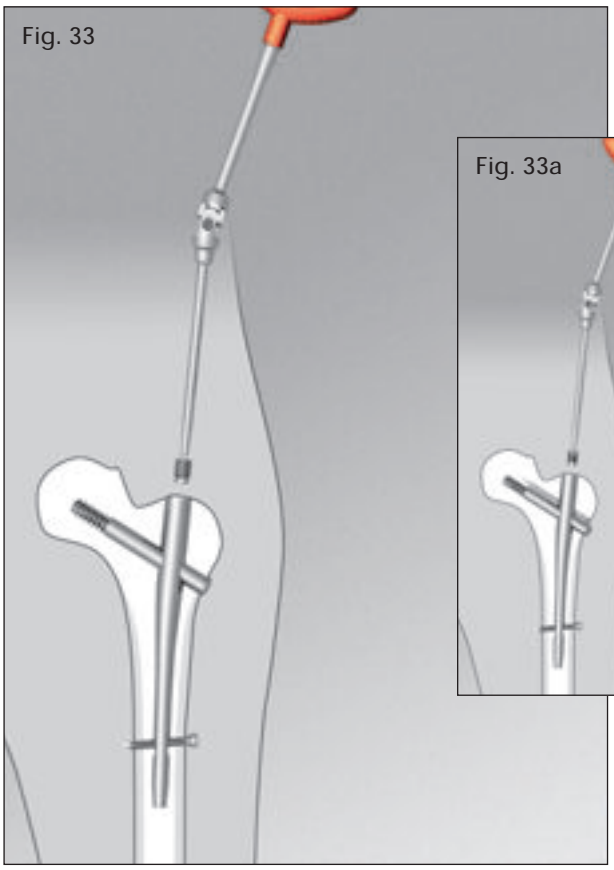


Fig. 33

Fig. 33a

13a. Positioning of the Proximal Plug with PLATON-Nail Variation I (Fig. 33) and Variation II with AR-Clip (Fig. 33a)

Following the removal of the Targeting Device, the Proximal Plug (Art. No. 100-301) is inserted with the Screwdriver Bit SW 4 (Art. No. 201-120) for the Universal Joint Screwdriver SW 10 (Art. No. 201-110).
In order to avoid tilting during the insertion, the Proximal Plug must be exactly leveled to the proximal axis of the locking-nail (Fig. 33). The Proximal Plug is positioned correctly when aligned with the PLATON-Locking-Nail after screwing.

13b. Positioning of the proximal Fixation Bolt with PLATON-Nail Variation III static (Fig. 34)

Following the removal of the Targeting Device, the Fixation Bolt is screwed into the nail tightly with the screwdriver SW 4 (Art. No. 201-120) and the Universal Joint Screwdriver SW10 (Art. No. 201-110) (Fig. 34). Thus, turning and displacement of the Femoral Lag Screw is impossible.
Precaution must be taken to ensure that there is an exact alignment in the proximal nail axis. Thus, tilting is avoided during insertion. Following insertion, the Fixation Bolt must be in line with the PLATON-Nail.

Attention: The angle specified on the Fixation Bolt must match the angle of the implanted nail.

Note: The insertion of Fixation Bolt and Proximal Plug can be simplified if the screws are inserted through the Targeting Device following the removal of the Nail Holding Screws while the Targeting Device is still connected to the nail. A certain stability for the Targeting Device is achieved by leaving the screwdriver SW 5 in the distal screwhead (Fig. 34a).

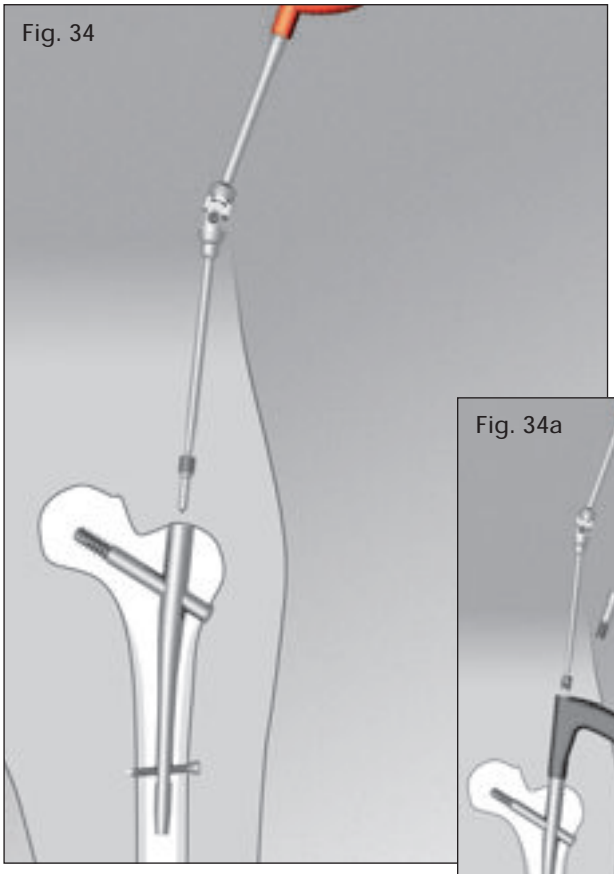


Fig. 34

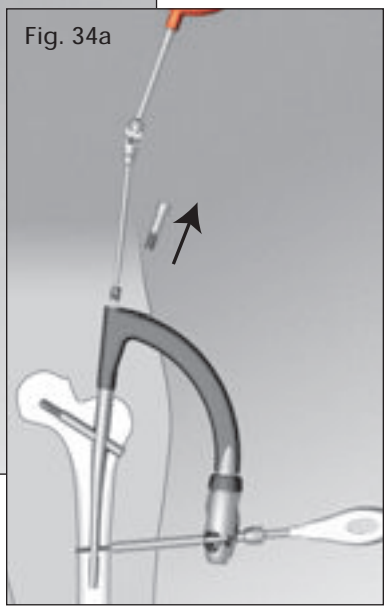


Fig. 34a

14. Removal of the Implants

1. Removal of the distal Locking Screw

Excision of the old scar, locating the screw head. Palpation of the exact position is then followed by incision and exposure. Removal of the distal Locking Screw with the Screwdriver SW 5 (Art. No. 201-100 or Art. No 201-102) (Fig. 35).

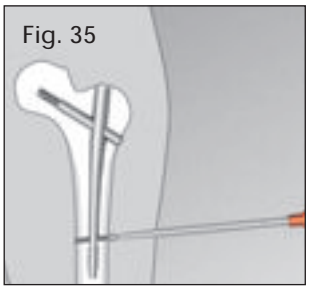


Fig. 35

2. Removal of the Proximal Plug or the Fixation Bolt

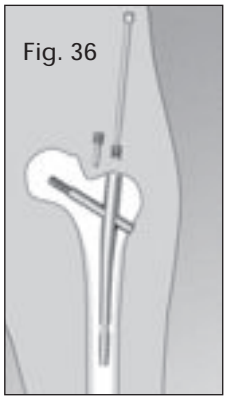


Fig. 36

Excision of the upper scar. Splitting of the aponeurosis and blunt preparation up to the tip of the greater trochanter. Exposure of the proximal nail end. Removal of the Proximal Plug with the Universal Joint Screwdriver (Art. No. 201-110) and Screwdriver Bit SW 4 (Art. No. 201-120) (Fig. 36).

3. Removal of Cap Screw or the AR-Clip

Excision of the middle scar, splitting the fascia and exposure of the lateral end of the Femoral Lag Screw (optionally with the help of the image intensifier).

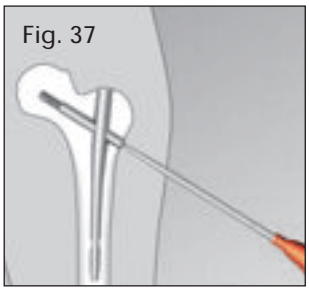


Fig. 37

The insertion of a Guide Wire (Art. No. 206-100) into the Femoral Lag Screw can be helpful.

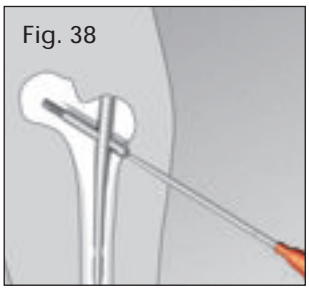


Fig. 38

The Cap Screw is extracted with the screwdriver (Art. No. 201-100) (Fig. 37).

If an AR-Clip is implanted, it should be removed prior to the lag screw. For easier location of the screw head the Guide Guide Wire (Art. No. 206-100) or a K-wire should be inserted through the connecting screw (Art. No. 100-304). Next, the connecting screw is removed with the Screwdriver (Art. No. 201-100) (Fig. 38). The Clip with the screwed on Lag Screw Inserter (Art. No 201-131) is also removed. For removal of the Clip a Kocher clamp or similar can be used alternatively.

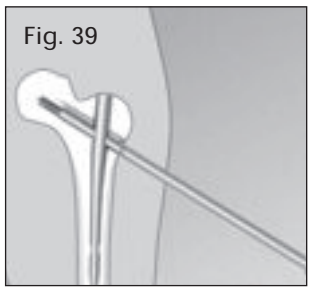


Fig. 39

If the Femoral Lag Screw does not take hold when loosening the connecting screw, the Femoral Lag Screw can be arrested temporary by using a 2mm Kirschner wire inserted through the small hole in the Clip.

4. Removal of the Femoral Lag Screw

The Lag screw inserter is connected to the Femoral Femoral Lag Screw. Lag Screw (Fig. 40) and the Femoral Lag Screw can be removed.

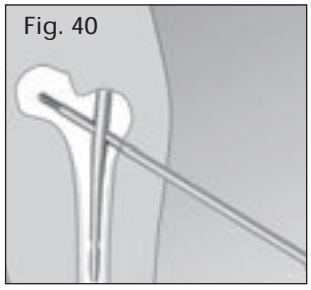


Fig. 40

5. Removal of the PLATON-Nail

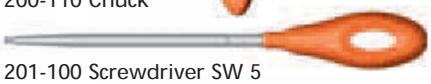
In order to remove the Nail, the Extraction Adapter (Art. No. 205-105) is screwed into the Nail. The Extraction Rod (Art. No. 205-115) is connected to the extraction rod handle (Art.-No. 205-125) and the impaction weight (Art. No. 205-120). The Extraction Rod is then screwed onto the Extraction Adapter and tightened with the Wrench (Art.-No. 201-140). The Nail is then carefully extracted (Fig. 41).

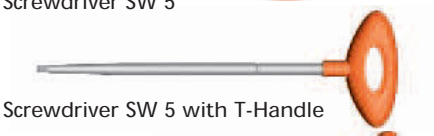

Fig. 41

Note: If problems occur with exact insertion of the Extraction Adapter, the Nail can be removed alternatively with the Femoral Lag Screw and the screwed on Lag Screw Inserter. The screw is then driven into the proximal nail end until it is locked in the thread. Now the Nail can easily be removed.

PLATON Instruments


200-110 Chuck

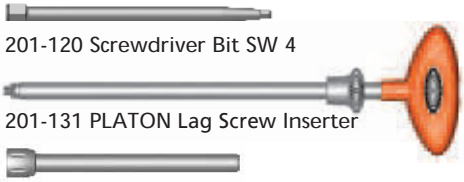

201-100 Screwdriver SW 5


201-102 Screwdriver SW 5 with T-Handle


201-110 Universal Joint Screwdriver SW 10


201-115 Screwdriver Bit SW 10


201-120 Screwdriver Bit SW 4


201-131 PLATON Lag Screw Inserter

202-103 Tissue Protection Sleeve Ø 11 / Ø 9


202-104 Guide Sleeve Ø 9 / Ø 5.5


202-106 PLATON Double Sleeve


202-107 Tissue Protection Sleeve Ø 21 / Ø 19


202-108 PLATON Tissue Protection Sleeve Ø 21


202-111 Guide Sleeve Ø 12 / Ø 3.2


202-112 Guide Sleeve Ø 12 / Ø 5.5


203-100 Obturator Ø 9


203-102 PLATON Step Drill


203-103 PLATON Lag Screw Tap


203-104 Obturator Ø 19


203-107 Obturator Ø 14


203-110 Drill, cannulated Ø 17.5 / Ø 3.5


203-116 Awl

203-120 Drill Ø 5.5, L 300

203-121 Drill Ø 5.5, L 220


204-106 PLATON Targeting Device


204-110 PLATON Nail Holding Screw M12


204-120 Freehand Targeting Device

206-100 Guide Wire Ø 3.2, L 450

206-101 PLATON Fixation Pin Ø 4, L 300

206-102 Fixation Pin Adapter


208-100 Length Gauge


208-110 Screw Gauge

209-101 PLATON Implant box (empty)

209-103 PLATON Instrument box (empty)

PLATON Instruments for Explantation


201-140 Wrench SW 10


205-100 Impactor


205-105 Extraction Rod Adapter M 12


205-115 Extraction Rod


205-120 Impaction Weight


205-125 Handle for Extraction Rod

PLATON-Components

PLATON-Femoral Lag Screw, smooth

Dimension	Art. No. non-sterile	Art. No. sterile
Ø 12, L 75	100-218	100-818
Ø 12, L 80	100-219	100-819
Ø 12, L 85	100-220	100-820
Ø 12, L 90	100-221	100-821
Ø 12, L 95	100-222	100-822
Ø 12, L 100	100-223	100-823
Ø 12, L 105	100-224	100-824
Ø 12, L 110	100-225	100-825
Ø 12, L 115	100-226	100-826
Ø 12, L 120	100-227	100-827

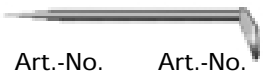
PLATON-Cap Screw

Dimension	Art.-No. non-sterile	Art.-No. sterile
Ø 14	100-310	100-910

Locking Screw

Dimension	Art.-No. non-sterile	Art.-No. sterile
Ø 6.2, L 25	101-100	101-120
Ø 6.2, L 30	101-101	101-121
Ø 6.2, L 35	101-102	101-122
Ø 6.2, L 40	101-103	101-123
Ø 6.2, L 45	101-104	101-124
Ø 6.2, L 50	101-105	101-125
Ø 6.2, L 55	101-106	101-126
Ø 6.2, L 60	101-107	101-127
Ø 6.2, L 65	101-108	101-128
Ø 6.2, L 70	101-109	101-129
Ø 6.2, L 75	101-110	101-130
Ø 6.2, L 80	101-111	101-131
Ø 6.2, L 85	101-112	101-132
Ø 6.2, L 90	101-113	101-133
Ø 6.2, L 95	101-114	101-134

PLATON AR-Clip



Dimension	Art.-No. non-sterile	Art.-No. sterile
XS	100-299	100-899
S	100-303	100-903
M	100-305	100-905
L	100-307	100-907
XL	100-311	100-911

PLATON AR-Connection Screw

Dimension	Art.-No. non-sterile	Art.-No. sterile
M 7	100-304	100-904

PLATON-S-Nail

Dimension	Art. No. non-sterile	Art. No. sterile
Ø 11, L 190, 125	100-400	100-600
Ø 11, L 190, 130	100-401	100-601

PLATON-L-Nail

Dimension	Side	Art.-No. non-sterile	Art.-No. sterile
Ø 11, L 320, 125	right	100-409	100-609
Ø 11, L 340, 125	right	100-410	100-610
Ø 11, L 360, 125	right	100-411	100-611
Ø 11, L 380, 125	right	100-412	100-612
Ø 11, L 400, 125	right	100-413	100-613
Ø 11, L 420, 125	right	100-414	100-614
Ø 11, L 320, 130	right	100-419	100-619
Ø 11, L 340, 130	right	100-420	100-620
Ø 11, L 360, 130	right	100-421	100-621
Ø 11, L 380, 130	right	100-422	100-622
Ø 11, L 400, 130	right	100-423	100-623
Ø 11, L 420, 130	right	100-424	100-624
Ø 11, L 320, 125	left	100-429	100-629
Ø 11, L 340, 125	left	100-430	100-630
Ø 11, L 360, 125	left	100-431	100-631
Ø 11, L 380, 125	left	100-432	100-632
Ø 11, L 400, 125	left	100-433	100-633
Ø 11, L 420, 125	left	100-434	100-634
Ø 11, L 320, 130	left	100-439	100-639
Ø 11, L 340, 130	left	100-440	100-640
Ø 11, L 360, 130	left	100-441	100-641
Ø 11, L 380, 130	left	100-442	100-642
Ø 11, L 400, 130	left	100-443	100-643
Ø 11, L 420, 130	left	100-444	100-644

PLATON-Proximal Plug

Dimension	Art.-No. non-sterile	Art.-No. sterile
M12, L 15	100-301	100-901

PLATON-Fixation Bolt

Dimension	Art.-Nr. non-sterile	Art.-Nr. sterile
125°	100-308	100-908
130°	100-309	100-909

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