stryker®

Trauma

Omega3 System
Compression Hip Screw

Operative Technique

- Hip Fracture
- Axially Stable Locking Option

The information contained in this document is intended for healthcare professionals only.

Contents

Introduction

The **Omega3 Compression Hip Screw** is a unique and innovative system reflecting the long experience of Stryker Trauma in the treatment of hip fractures.

This modular system offers the surgeon a wide choice of slimlined hip plates combined with a unique option of cephalic implants and state of the art instrumentation.

The system provides a simple and easy-to-use solution for surgeons facing hip fractures.

The Omega3 Hip Fracture System denotes the new locking technique for the hip plate shaft holes.
Only the Omega3 Hip Plates offer the possibility to apply 5.0mm Locking Inserts and Locking Screws in the plate diaphysis as well as standard 4.5mm Cortical Screws, 6.5mm Cancellous Screws and Asnis III Cannulated Screws.

The set includes locking instrumentation to apply and remove 5.0mm Locking Inserts and Locking Screws to the Omega3 Hip Plate.

Potential Features & Benefits

Omega3
Low Profile Hip Plate

- Available in both standard barrel (38mm) and short barrel (25mm) styles and a full range of sizes and angles.
- Hip plate barrel accepts the Omega Plus lag screws.
- In addition to 4.5mm cortical screws, the proximal hole of all sideplates accept 6.5mm cancellous screws or Asnis III 6.5mm cannulated screws for additional stabilization.
- The hip plate allows for 5.0mm locking inserts used in combination with 5.0mm locking screws for angular stable fixation. (Bi-directional shaft holes increase the fixed angled construct.) Innovative locking screws are guided into the plate, thus reducing the potential for cross-threading and coldwelding.
- Tapered plate allows for easier insertion when used in minimal invasive technique with short incision.

Locking Insert

Locking Screw

Omega3
Lag Screw Options

13mm Standard Lag Screw

- Leading edge of the cutting thread engages quickly, with or without tapping, and provides tactile control during final positioning.

15mm Super Lag Screw

- Provides excellent resistance to migration in case of osteoporotic bone.

Potential Features & Benefits

State of the Art Instrumentation

Accurate angle guides:

- Radiolucency (Fig. 1) of the angle guide body to precisely position the instrument, and therefore the guide pin.
- Multiple guide pin holes (Fig. 2) for accurate placement of the guide pin without need to move the instrument.
- Variable Angle Guide (Fig. 3) with “freehand” technique option.
- Stiff CoCr Ø2.8mm guide pin (Fig. 4) for reduced deflection. Available also with quick coupling for increased interface between the power tool and the guide pin.
- Compatibility with the Stryker AxSOS Locking Plate System.
- Layout of the trays sequenced according to the surgical technique.

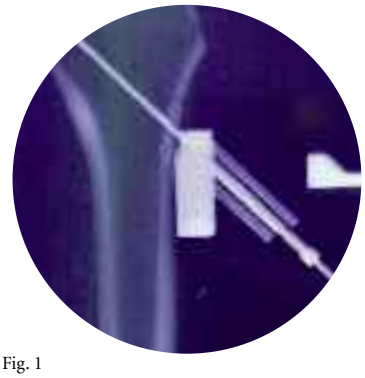


Fig. 1

Fig. 2

Fig. 3

Fig. 4

Relative Indications & Contraindications

Relative Indications

The Omega3 System is indicated for fractures of the proximal femur which may include:

- **Intertrochanteric fractures and subtrochanteric fractures**

Note: When treating subtrochanteric fractures with Omega3 Hip Plates, the length of the hip plate has to be chosen according to the fracture situation. An intramedullary device like the Gamma3 Long Nail may be an option for the treatment of subtrochanteric fractures.

- **Intracapsular and basal neck fractures**

Note: When using the Omega3 Lag Screw System, if there is rotational instability, it is recommended that an **Asnis III 6.5mm cannulated screw** be added to stabilize the fracture. Please refer to page 15 (Fig. 21).

Relative Contraindications

The surgeon's education, training and professional judgement must be relied upon to choose the most appropriate device and treatment.
Conditions presenting an increased risk of failure include:

- Any active or suspected latent infection or marked local inflammation in or about the affected area.
- Compromised vascularity that would inhibit adequate blood supply to the fracture or the operative site.
- Bone stock compromised by disease, infection or prior implantation that cannot provide adequate support and/or fixation of the devices.
- Material sensitivity, documented or suspected.
- Obesity: An obese patient can produce loads on the implant that can lead to failure of the fixation of the device or to failure of the device itself.
- Patients having inadequate tissue coverage over the operative site.
- Implant utilization that would interfere with anatomical structures or physiological performance.
- Any mental or neuromuscular disorder which would create an unacceptable risk of fixation failure or complications in postoperative care.
- Other medical or surgical conditions which would preclude the potential benefit of surgery. Detailed information is included in the instructions for use shipped with every implant.

See package insert for a complete list of potential adverse effects and contraindications. The surgeon must discuss all relevant risks, including the finite lifetime of the device, with the patient, when necessary.

Caution: Bone Screws are not intended for screw attachment or fixation to the posterior elements (pedicles) of the cervical, thoracic or lumbar spine.

Operative Technique

Preoperative Planning

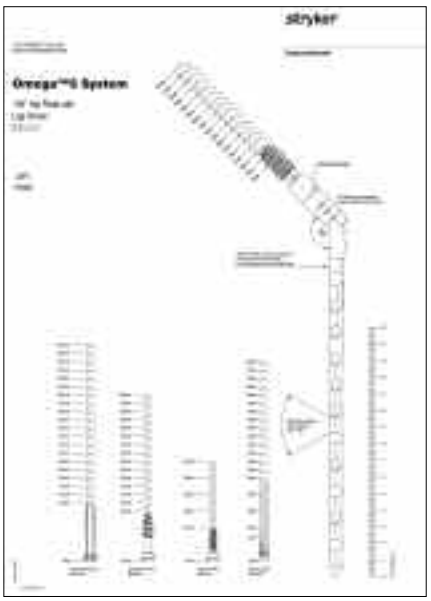


Fig. 5

Review the frontal and lateral X-Rays of the pelvis and injured femur prior to surgery to assess fracture stability, bone quality, as well as neck-shaft angle and to estimate plate length required.

Tip: Use templates (Fig. 5) preoperatively to plan plate angle, plate length, barrel length, and lag screw length.

The lag screw should be centered in the head on both anterior-posterior and lateral views, within 10 millimeters of subchondral bone. Application of the template to an X-Ray of the uninvolved hip may help simulate reduction of the fractured hip.

Preoperative X-Ray Templates for Omega3 System

REF	Description:
981120	Omega3 X-Ray Template Lag Screw 130 deg.
981121	Omega3 X-Ray Template Lag Screw 135 deg.
981122	Omega3 X-Ray Template Lag Screw 140 deg.
981123	Omega3 X-Ray Template Lag Screw 145 deg.
981124	Omega3 X-Ray Template Lag Screw 150 deg.
981130	Omega3 X-Ray Template Supracondylar Plate 95 deg.
982906	Omega3 X-Ray Template Folder, empty (**Note:** for the storage of the above mentioned X-Ray templates)

Operative Technique

Patient Positioning

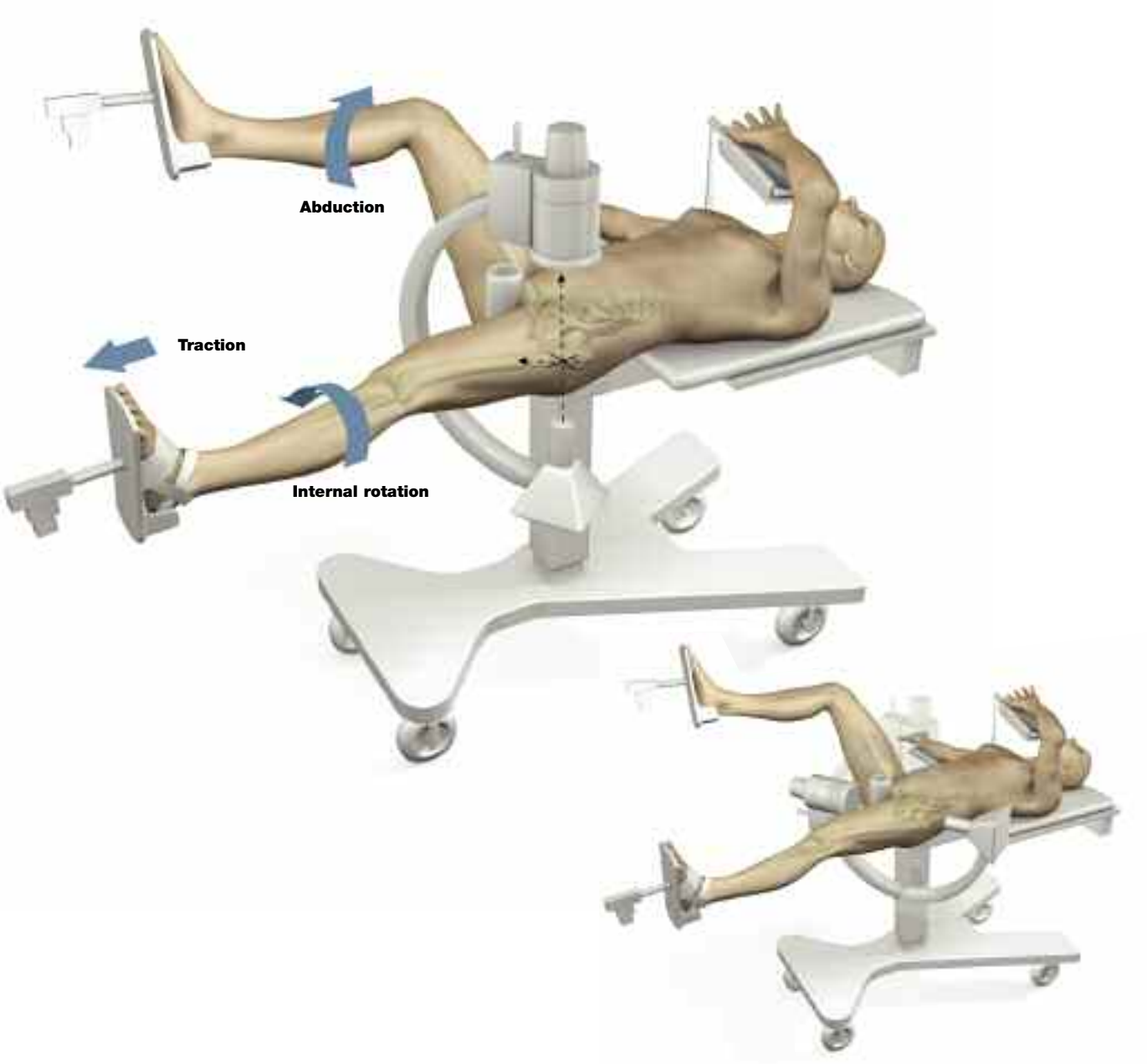
The patient is placed supine on the fracture table with the hip extended, adducted and slightly rotated inwards, until the patella is in a position parallel to the ground.

Satisfactory access to the hip with the C-arm in the frontal and lateral planes is verified.

The fracture is reduced as anatomically as possible by longitudinal traction, abduction and internal rotation on a fracture table.

Any inferior "sagging" at the fracture site seen on the lateral view should be corrected by elevating the fracture from posterior, prior to fixation.

In unstable fractures, guide pins can be placed in order to stabilize the reduced fragments.



Note: Access to the hip with the C-arm in the frontal and lateral planes is essential for the success of the system.

Skin Incision

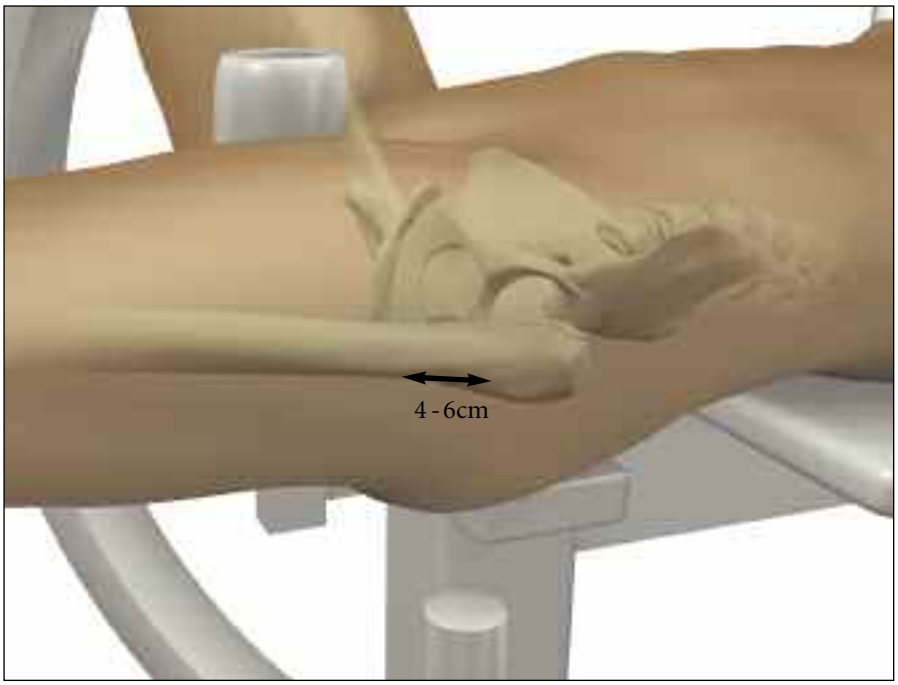


Fig. 6

A 4 to 6 cm incision is made, starting at the level of the lesser trochanter and continuing straight distally. Depending on the indication, choice of plate length or minimal invasive technique, the skin incision may be shorter or longer (Fig. 6).

The incision is continued through the subcutaneous tissue and tensor fascia lata in line with the skin incision.

Guide Pin Insertion

Orientation and placement of the guide pin is one of the most critical steps in this procedure.

By utilizing one or more of the following visual landmarks, correct positioning of the guide pin can be achieved.

With the guide pin placed at a 135° angle, the pin crosses the lateral cortex at the level of the lesser trochanter (Fig. 7 & 8); at the insertion of the gluteus maximus at the posterolateral edge of the femur; or two fingerbreadths (2.5 to 3.5cm) below the crest of the greater trochanter at the origin of the vastus lateralis.

For each 5° change in hip plate angle, the guide pin insertion point will be moved approximately 5mm distally (for increased angle) or proximally (for decreased angle).

The fixed angle guide corresponds to the barrel plate angle. Angles of 130°, 140°, 145° or 150° may be guided using the variable angle guide.

In the following description of the operative technique the most common used 135° CCD is shown in the procedure.

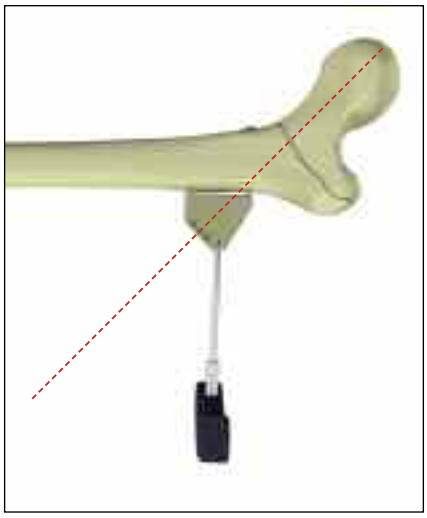


Fig. 7 Fixed Angle Guide for guide pin Placement

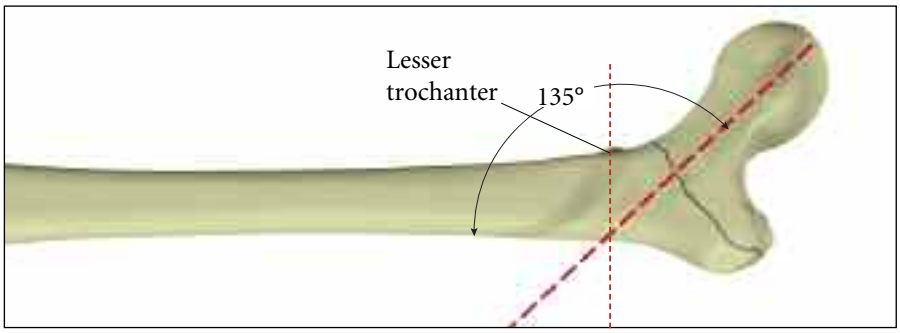


Fig. 8

A variable angle guide (Fig. 9) in conjunction with a T-handle can be used to insert the guide pin at 130°, 135°, 140°, 145° and 150°.

Note: The variable angle guide is radiolucent (Fig. 10) to facilitate correct positioning of the angle guide and the guide pin under image intensifier (helpful when a reduced skin incision is performed and direct visibility of the site is therefore reduced).

Note: Be sure to verify that the set angle is not changed when the variable angle guide is touching soft tissue. This may occur when the incision is made too small.

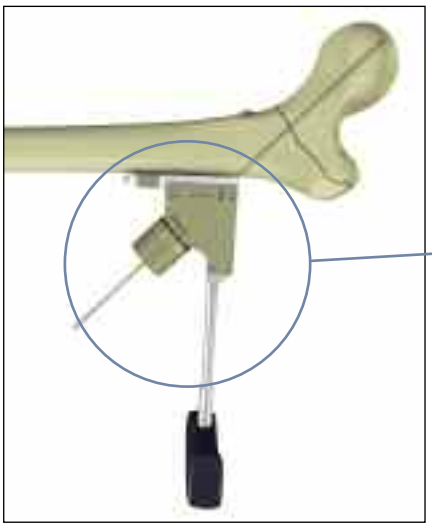


Fig. 9 Variable angle guide for guide pin placement or angle measurement when the guide pin is inserted in "free hand technique"

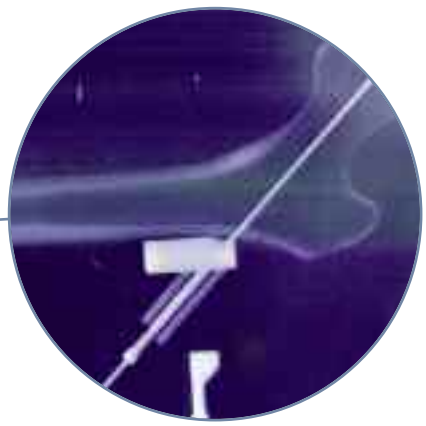


Fig. 10

Guide Pin Insertion, continued

Frontal view

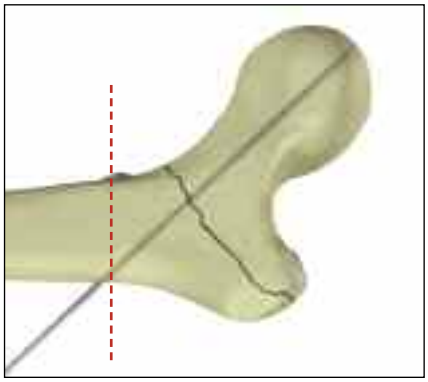


Fig. 11 A/P View

Lateral view

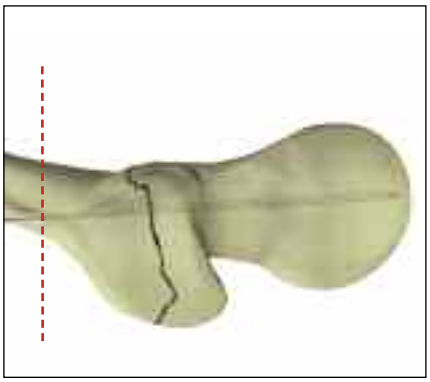


Fig. 12 Lateral View

While holding the appropriate angle guide firmly on the femoral shaft, the 2.8mm guide pin is inserted in the hole of the angle guide and advanced into the femoral head under image intensification until it reaches the subchondral bone in the center of the femoral head in both frontal and lateral views (Fig. 11 & 12).

If the guide pin is not positioned correctly, an additional pin can be inserted 5mm above or below the central position in the frontal plane, and 5mm anteriorly or posteriorly to the central position in the lateral plane, without removing the first guide pin (Fig. 13 & 14).

Note: To insert a second pin near the first one, use a quick coupling chuck for 2.8mm guide pin (REF 704027) together with a 2.8mm guide pin with quick coupling fitting (REF 704012S), otherwise there is a risk that the power drill chuck will touch the first guide pin.

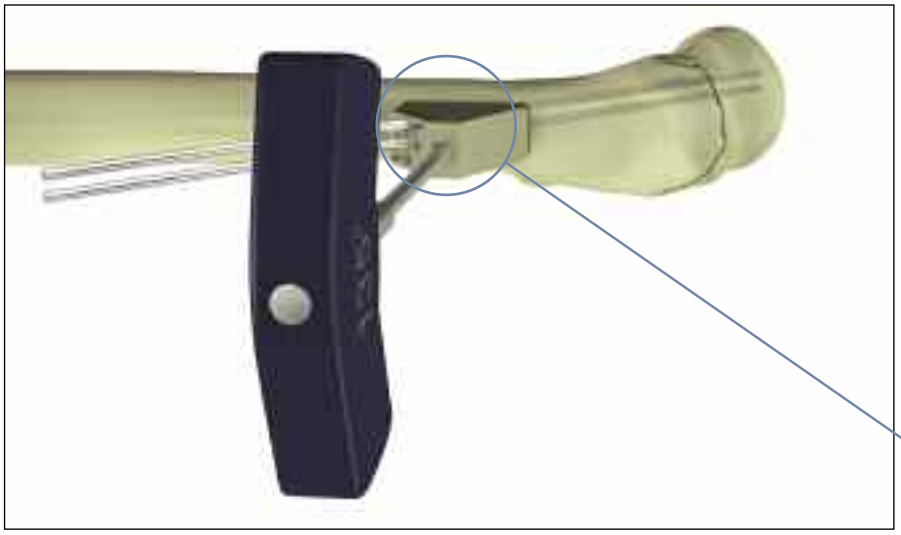


Fig. 13 Optional: Correction of guide pin placement possible using an additional guide pin: lateral view

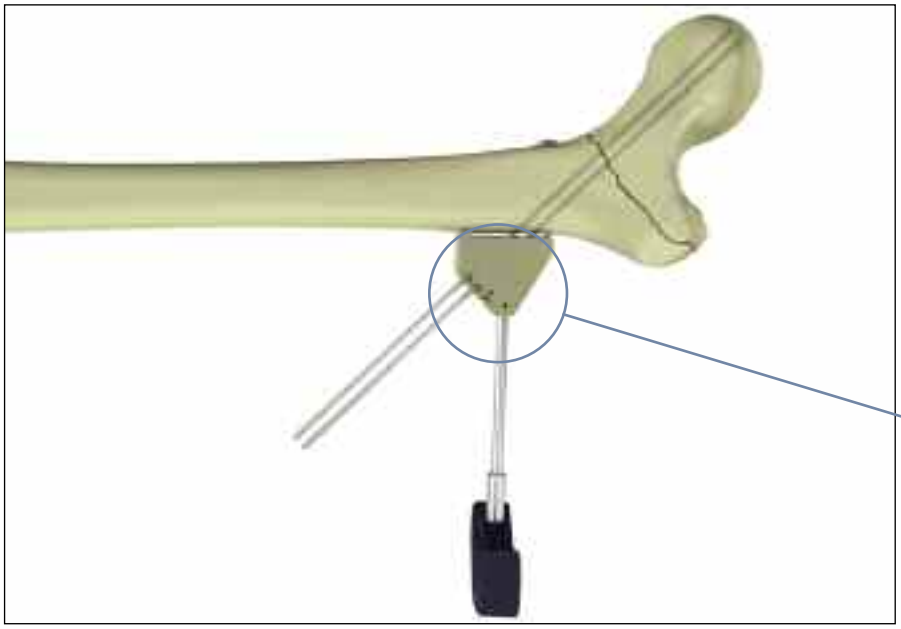
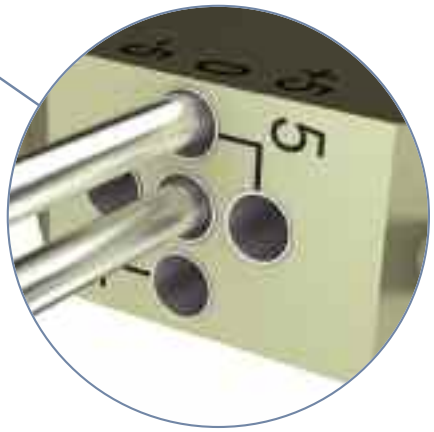
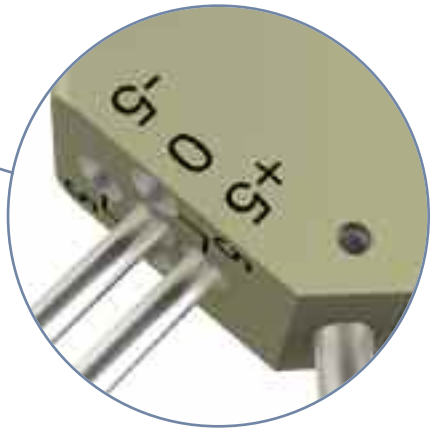


Fig. 14 Optional: Correction of guide pin placement possible using an additional guide pin: AP view





Guide Pin Insertion, continued

"Freehand" technique for guide pin placement:

Place a 2.8mm guide pin anterior to the neck of the femur (Fig. 15) and align it in the center of the head against the medial cortex by using image intensification.

A 3.2mm drill bit can be used to make an opening in the lateral cortex, allowing for easy insertion of the guide pin. Using image intensification, the guide pin is advanced until it reaches the subchondral bone in the femoral head. After confirming appropriate tip position of the guide pin on both frontal and lateral views, verify the appropriate plate angle by using the variable angle guide. To unlock the mechanism, pull the cylinder of the guide (Fig. 16) and turn it by 90° (Fig. 17).

Slide the variable angle guide over the guide pin and adjust it down to the lateral aspect of the femur (make sure that all the spikes are in contact with the bone shaft). The arrow on the cylinder will indicate at which angle the guide pin has been inserted (Fig. 18), and therefore the angle of the barrel plate to be selected.

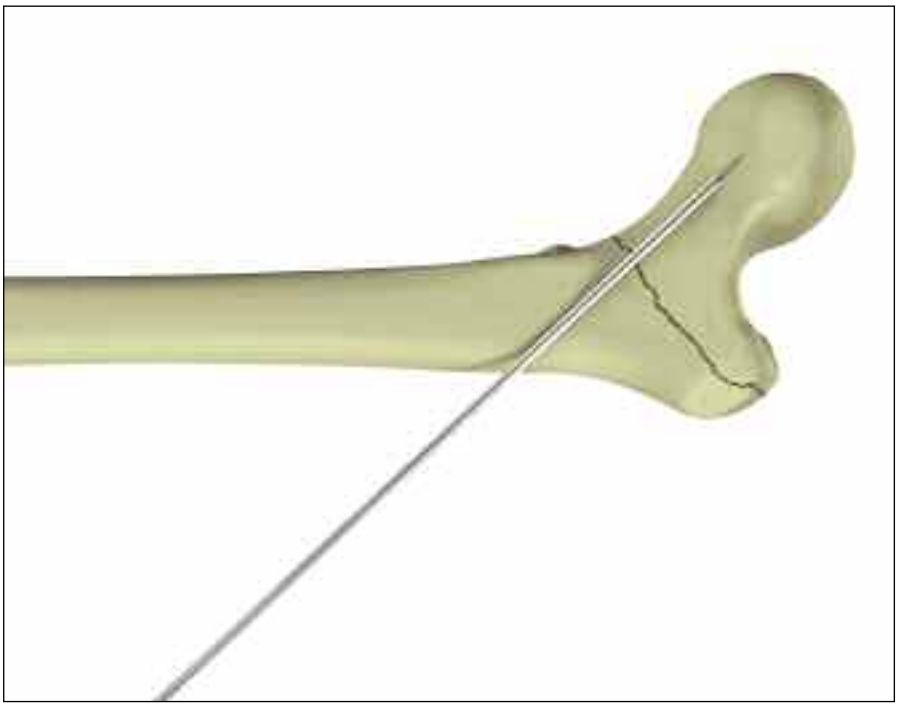


Fig. 15 Guide Pin anterior to the neck of the femur

Note: Be sure to verify that the set angle is not changed when the variable angle guide is touching soft tissue. This may occur when the incision is made too small.

Fig. 16

Fig. 17

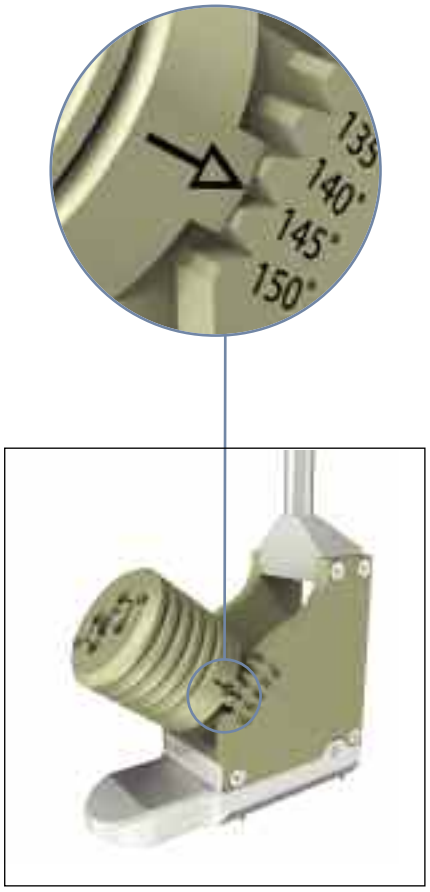


Fig. 18

Guide Pin Measurement

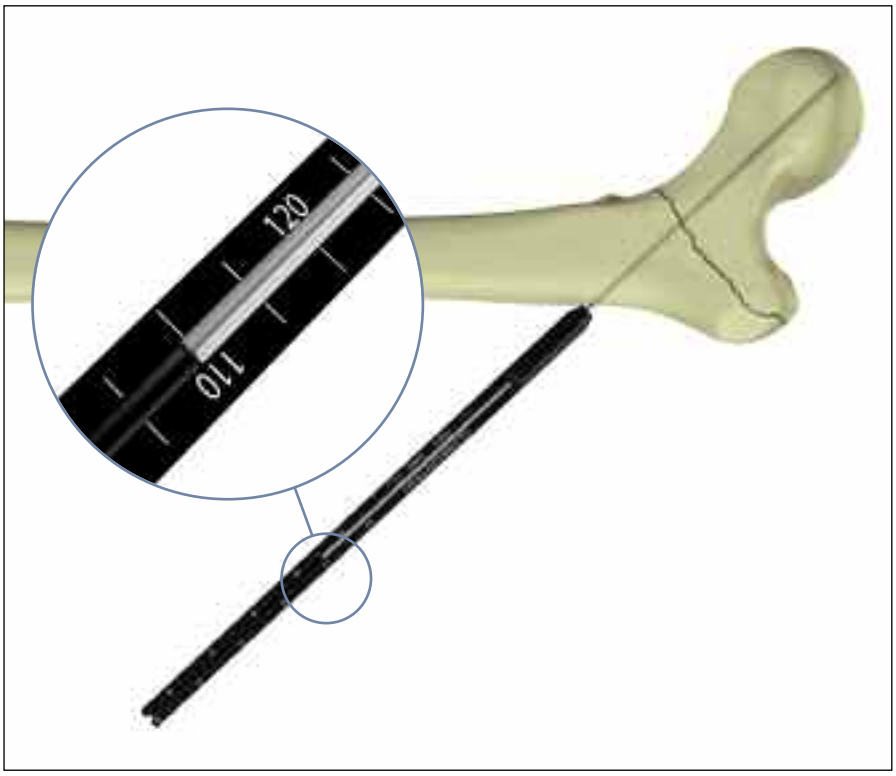


Fig. 19

The depth gauge indicates the exact length of the guide pin which has been inserted into the bone (Fig. 19).
The surgeon must decide the depth to which the lag screw will be inserted.

The reaming depth is recommended to be approximately 10mm shorter than the depth gauge reading to permit the correct tip-apex distance.

How to select the correct length of the lag screw when applying compression:

The fracture must first be reduced anatomically. Compression may enhance the reduction but does not replace it.

Intra-operatively, once the femoral neck channel has been reamed, the surgeon must use image intensification to judge the amount of compression required.

The compression is limited by the length of the compression screw threads (10mm) and also by the length of the lag screw chosen. The lag screw must be shorter than the reamed channel by the number of millimeters of compression required.

If, following the compression, a surgeon sees on the X-Ray that further compression is necessary but impossible due to the length of the implant and compression screw, he must remove the implant and choose a shorter length lag screw.
Any attempt to force compression can result in breakage of the compression screw.

Example without compression:

- Depth gauge measurement: **110mm**
- Reamer depth setting: **100mm**
- Lag screw length selected: **100mm**

Example with 5mm compression:

- Depth gauge measurement: **110mm**
- Reamer depth setting: **100mm**
- Desired compression: **5mm**
- Lag screw length selected: **95mm**

Anti-Rotation Guide Pin Insertion

The guide pin replacement instrument can also be used to insert a second guide pin parallel to the primary guide pin, depending on the fracture pattern (Fig. 20).

The guide pin for the lag screw must be placed in an inferior position to allow space for placement of a second pin or screw, if the femoral neck is narrow.

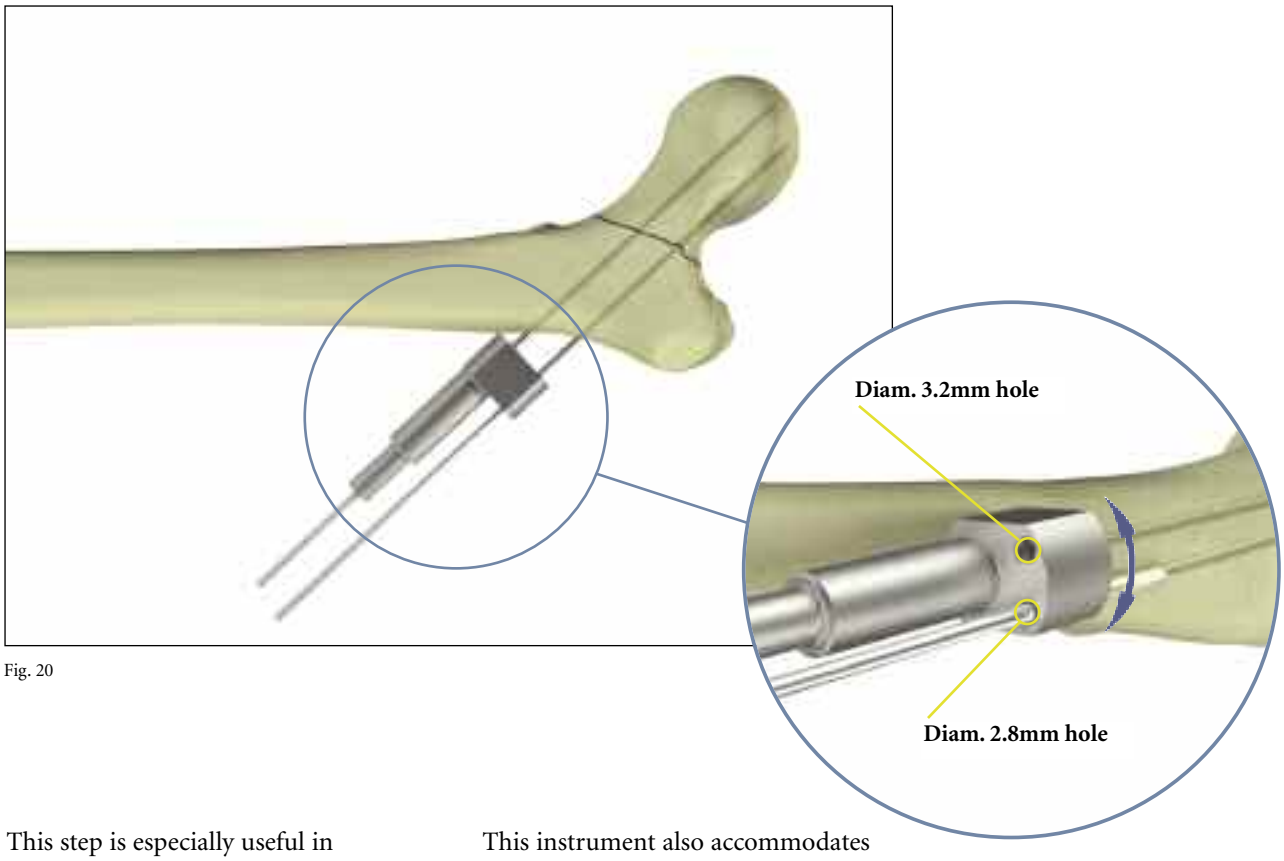


Fig. 20

This step is especially useful in providing temporary stability for femoral neck fractures and basal neck fractures, where the head could rotate during reaming or screw insertion.

Correct positioning of the anti-rotational wire can be done by rotating the instrument anteriorly or posteriorly (Fig. 20).

This instrument also accommodates a 3.2mm guide wire, should the surgeon wish to insert a 6.5mm Asnis III cannulated screw for definitive rotational stability (Fig. 21).

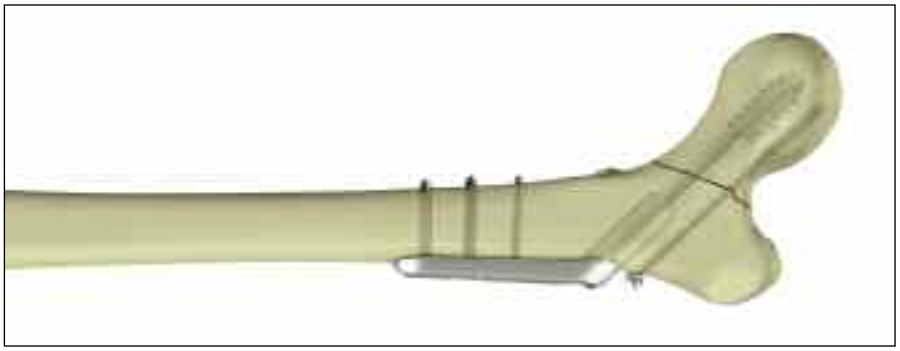
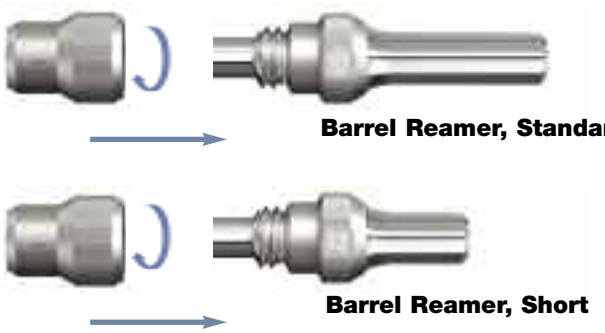


Fig. 21

Combination Reamer Assembly Instructions



Barrel Reamer, Standard

Barrel Reamer, Short

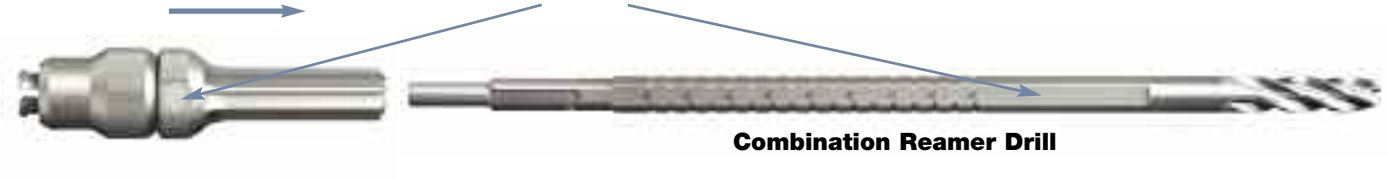
Step 1

Select and assemble the barrel reamer.
Note: Choose the corresponding barrel reamer, i.e., standard barrel reamer for Omega3 plate with standard barrel, or the short barrel reamer for Omega3 plate with short barrel. The stop sleeve must be threaded until a mechanical stop is felt.

Step 2

Align the flat side of the barrel reamer to the flat side of the combination reamer drill, and engage the barrel reamer over the coupling end of the combination reamer drill.

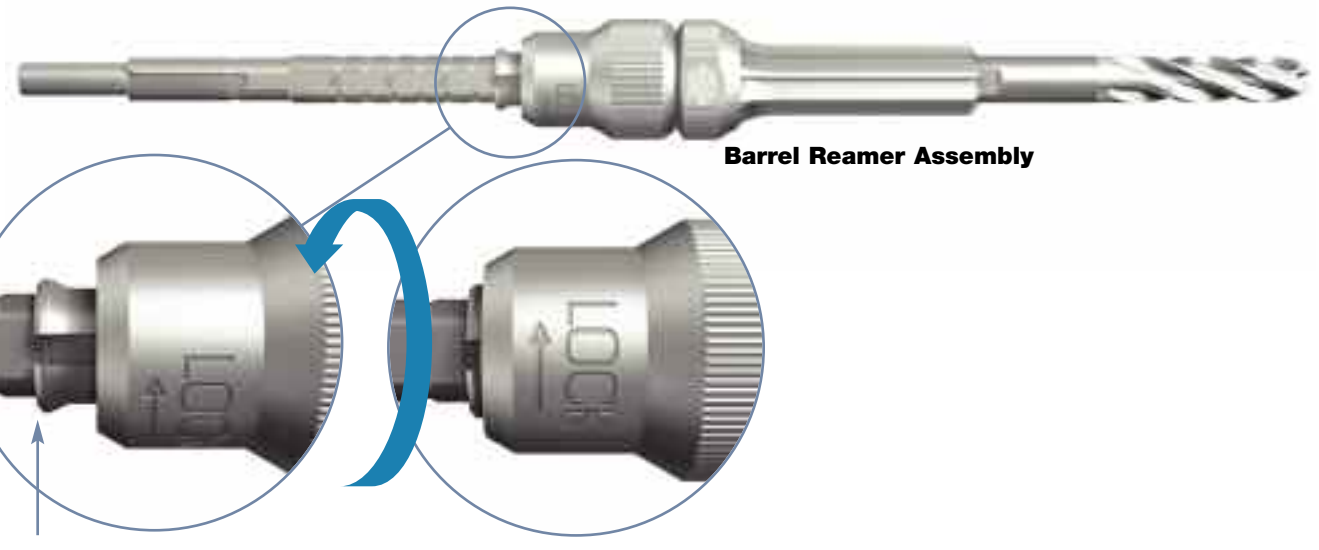
Note: Flat sides must be aligned



Combination Reamer Drill

Step 3

Slide the barrel reamer until the stop has been adjusted to the correct measurement behind the barrel. Lock the barrel reamer by turning the stop sleeve counter-clockwise until the barrel reamer is fixed to the combination reamer drill.



Barrel Reamer Assembly

Note: Correct measurement behind the barrel, then lock the stop sleeve

Femoral Head / Neck Reaming

Select and assemble the correct barrel reamer (according to the standard or short barrel plate selected).

The combination reamer is set and locked by firmly turning the stop sleeve counter-clockwise at the predetermined depth setting (approximately 10mm less than the guide pin measurement).

Ream over the guide pin with the combination reamer until the stop reaches the lateral cortex (Fig. 22).

Remove the combination reamer while still reaming clockwise, in order to remove debris from the reamed canal.

Note: Guide pins are not intended for re-use.
They are for single use only. Guide pins may be damaged or bent during surgical procedures. If a guide pin is re-used, it may become lodged in the drill and could be advanced into the pelvis, damaging large blood vessels or vital organs.

Fig. 22

Should the guide pin be inadvertently withdrawn, reverse the guide pin replacement instrument (Fig. 23), insert it into the femur, and reinsert the guide pin(Fig. 24).

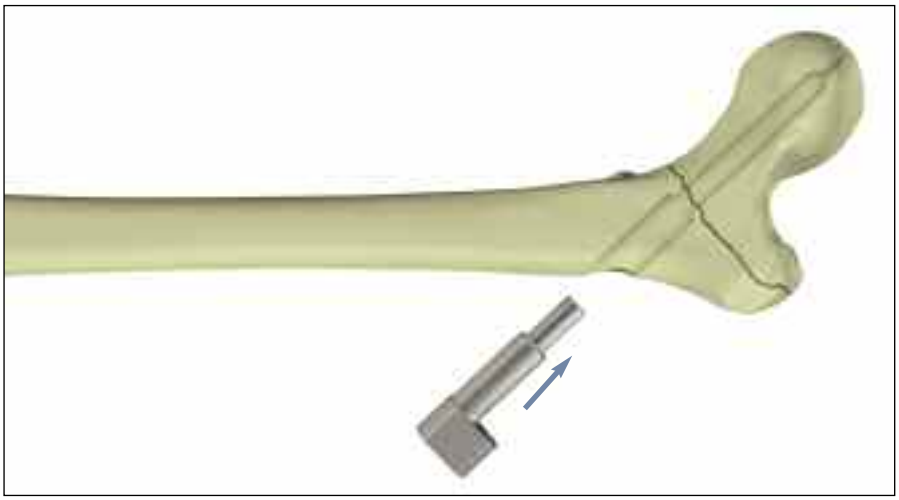


Fig. 23

Note for short barrel plates:

For more lateral intertrochanteric fractures or medial displacement osteotomies, the short barrel plates provide fixation without the barrel crossing the fracture.

Reaming is accomplished using the short barrel reamer, following the same procedure for standard barrel reaming.

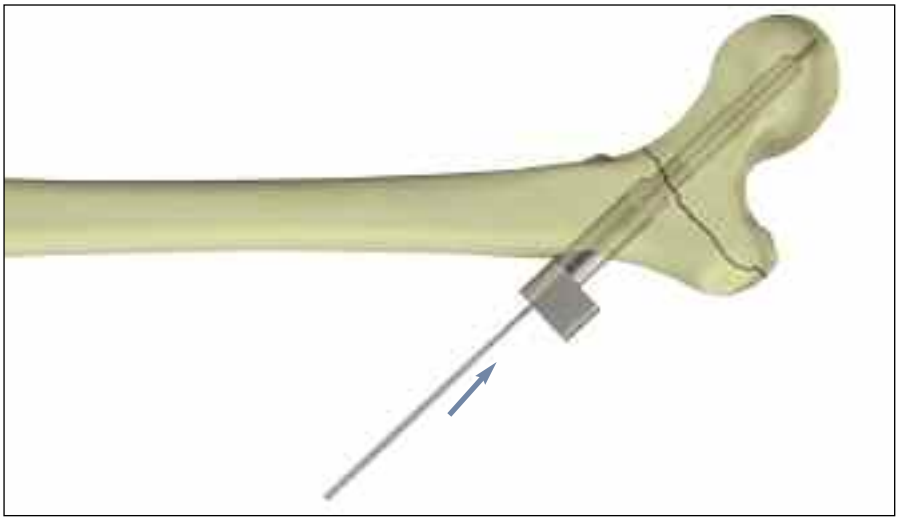
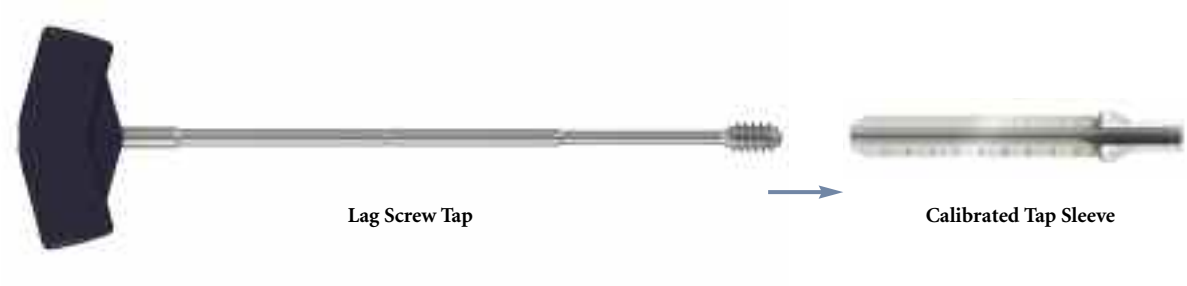


Fig. 24

Lag Screw Tap Assembly

Push the quick coupling sleeve on the large T-handle and insert the lag screw tap fitting into the coupling.

Assemble the lag screw tap sleeve to the lag screw tap by aligning the flat sides of the tap to the flat sides in the tap sleeve.



Tapping for Lag Screw

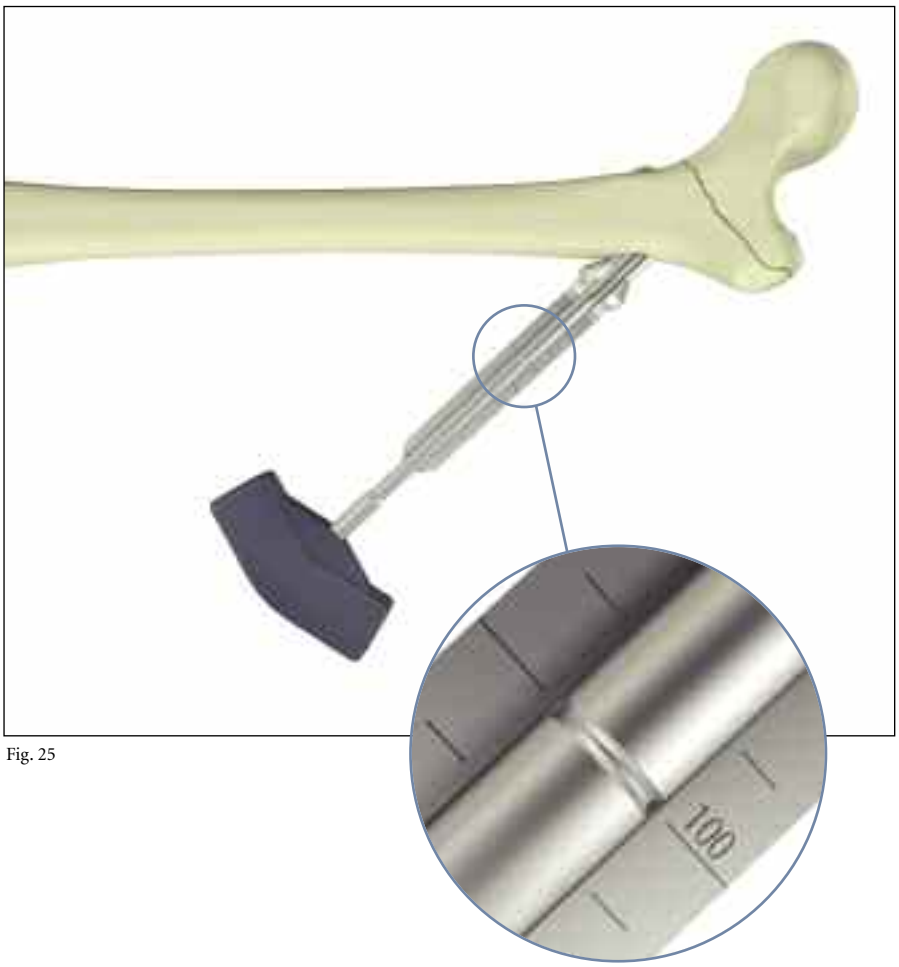


Fig. 25

The lag screw tap should be used when good quality, dense bone is encountered; the calibrated tap sleeve indicates the proper depth of the tap.

The tap is advanced until the indicator ring on the tap reaches the correct depth marking on the centering sleeve (Fig. 25).

Note: If significant torque is required to tap very dense bone, consideration should be given to placing an antirotation guide-wire.

Example:

- Depth gauge measurement: **110mm**
- Reamer depth setting: **100mm**
- Tapping depth: **100mm**
- Lag screw length selected: **100mm**

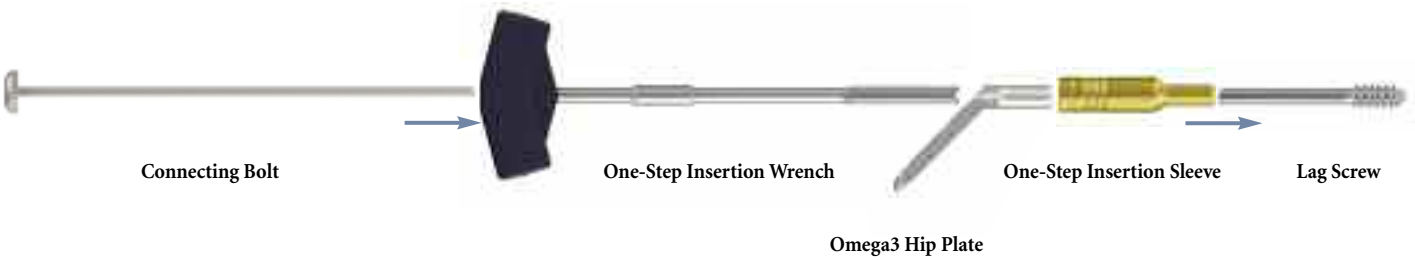
One-Step Lag Screw and Hip Plate Insertion Instrument Assembly Instructions

Assemble the large T-handle to the one-step insertion wrench as described in instruction below. Slide the one-step insertion wrench through the barrel of the hip plate.

The connecting bolt is inserted through the large T-handle and threaded into the lag screw.

Prior to assembling the one-step insertion sleeve to the one-step insertion wrench/hip plate assembly, ensure that the one-step insertion sleeve is opened (mark on the inner sleeve lining up with the "open" mark on the outer sleeve).

Assemble the one-step insertion sleeve to the one-step insertion wrench between the hip plate and the lag screw, and lock the one-step insertion sleeve.



To lock the one-step insertion sleeve, the inner and outer sleeve are twisted in opposite directions until the mark on the inner sleeve lines up with the "close" mark on the outer sleeve.

To unlock the sleeve, align the mark with the "open" mark on the outer sleeve.

One-Step Insertion Option, continued

Fig. 26

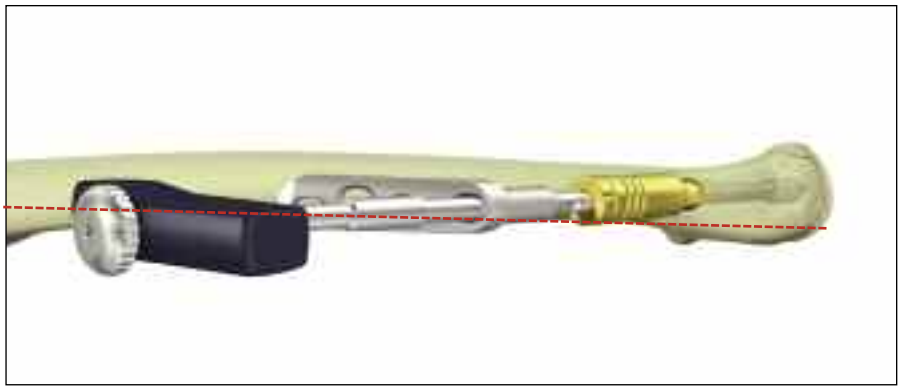


Fig. 27

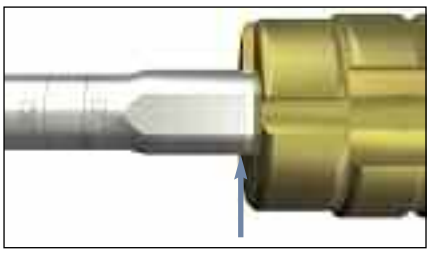


Fig. 28

Stop inserting the lag screw when the 135° ring reaches the one-step insertion sleeve (when a 135° hip plate is selected)

Assemble the appropriate hip plate and the lag screw onto the one-step insertion wrench.

For typical anatomy (135° head/neck angle), advance the one-step insertion wrench until the ring marked "135°" reaches the one-step insertion sleeve.

For valgus anatomy (150° head/neck angle), advance the one-step insertion wrench until the ring marked "150°" reaches the one-step insertion sleeve. Other angled plates should be inserted proportionally between the marks.

Place the entire assembly over the guide pin and introduce it into the reamed hole (Fig. 26).

Advance the lag screw into the proximal femur to the predetermined depth and verify using image intensification.

At the conclusion of screw insertion, the handle of the one-step insertion instrument must be aligned with the long axis of the femoral shaft to allow proper keying of the lag screw to the plate barrel (Fig. 27).

Remove the one-step insertion sleeve and advance the hip plate onto the lag screw shaft.

The plate impactor should be used to fully seat the plate.

Unscrew the connecting bolt and remove the one-step insertion wrench from the back of the lag screw; remove the 2.8mm guide pin.

Depth of the insertion of the lag screw is determined by observing the two depth indicator rings on the one-step inserter wrench (Fig. 28). From here the operation is continued with either the axial stable fixation of the hip plate using locking inserts and locking screws or the standard fixation with cortical screws (See page 21).

Omega3 Hip Plate Fixation with Standard Cortical Screws

The Omega3 System allows for two alternatives of plate fixation:
1. Fixation with 4.5mm cortical screws.
2. Axial stable fixation with 5.0mm locking inserts and locking screws.
For axial stable fixation with locking inserts and locking screws please refer to the section on page 22. For standard 4.5mm cortical screw fixation please follow the steps described below.

Using standard cortical screw insertion technique, fix the Omega3 hip plate to the femoral shaft beginning at the proximal end of the plate.

Note: When using the reduced skin incision technique, supplementary stab incisions can be performed for distal screw placements.

Use the drill bit through the drill sleeve with the green ring (neutral) assembled to the drill guide handle, to drill the bone screw holes (Fig. 29).

Note: If necessary it is possible to obtain compression of a shaft fracture or osteotomy site when using the drill sleeve with the yellow ring (1mm compression).

Determine appropriate cortical screw length using the depth gauge (Fig. 30). Always select a screw length one size longer in order to ensure the optimal bi-cortical purchase.

Insert the self tapping screw using the 3.5mm hex screwdriver with T-handle (Fig. 31).

Option

A 4.5mm tap is available, to pre-tap in extremely hard cortical bone.
It is recommended to use the tap in conjunction with a sleeve, if soft tissue is close to the tap (Fig. 32).

Antero-lateral view of the Omega3 hip plate fixed with standard cortical screws (Fig. 33).

Fig. 29

Fig. 30

Fig. 31

Fig. 32

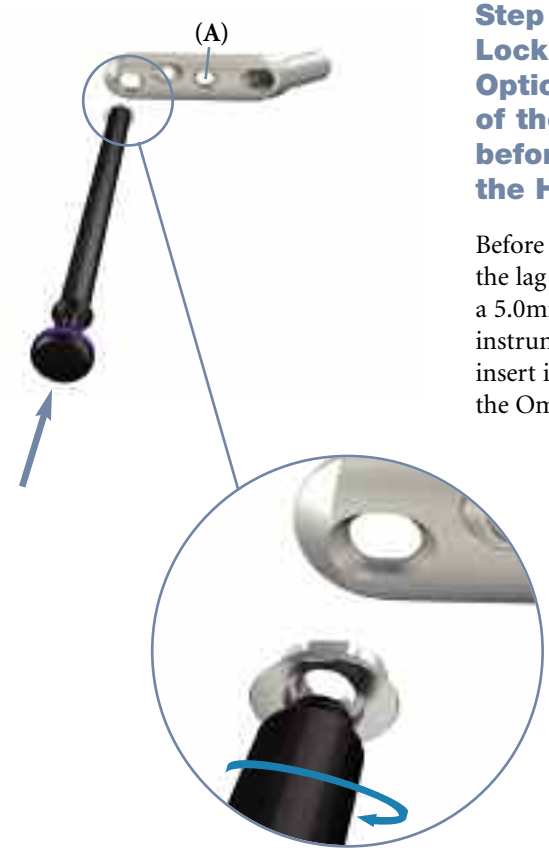
Fig. 33

Omega3 Hip Plate Fixation with Axial Stable Locking Screws

The shaft of the Omega3 hip plate is designed to accept Ø 4.5mm standard cortical screws for neutral or compression plate attachment to the femoral bone according to standard technique described in this operative technique (page 21).

Alternatively, Ø 5.0mm locking inserts and Ø 5.0mm locking screws may be preferred for axial stable locking in patients with poor bone quality or to perform minimal invasive surgery with a shorter plate.

Locking inserts and screws may be used in conjunction with standard cortical screws on the same hip plate. However, standard cortical screws may not be used in the locking inserts. Also it is mandatory to utilize the instrumentation designed specifically for the locking inserts and screws.



Step 1
Locking Insert Placement: Option 1: Placement of the Locking Insert before Implantation of the Hip Plate

Before placing the hip plate over the lag screw onto the bone, thread a 5.0mm locking insert to the inserter instrument and push the locking insert into the chosen shaft hole of the Omega3 hip plate.

Note: The first, most proximal hole of the plate does not accept a locking insert (A). A non-locking screw must always be used to align and advance the hip plate to the bone.

Note: Make sure that the locking insert is completely pushed into the shaft hole. Unthread the inserter. Repeat this procedure with each hole you want to put a locking insert with locking screws.

Note: Do not attempt to push locking inserts into the plate holes with the drill sleeve.

Omega3 Hip Plate Fixation with Axial Stable Locking Screws, continued

Option 2: Placement of the Locking Insert after Implantation of the Hip Plate (in situ):

If desired, a locking insert can be applied in a compression hole in the shaft of the plate intra-operatively (in situ) by using the locking insert forceps, holding pin and guide for holding pin. When choosing this option, first implant the hip plate according to the description on page 21, perform a cortical screw insertion in the most proximal hole to advance the plate to the bone and then continue as described below with the locking inserts and locking screws.

First, the holding pin is inserted through the chosen hole using the drill sleeve for holding pin (Fig. 34). It is important to use the guide as this centers the core hole for locking screw insertion after the locking insert is applied. After inserting the holding pin bi-cortically, remove the guide.

Fig. 34

Next, place a locking insert on the end of the forceps and slide the instrument over the holding pin down to the hole (Fig. 35). Finally, apply the locking insert by triggering the forceps handle.

Fig. 35

Push the button on the forceps to remove the device (Fig. 36). At this time, remove the holding pin.

Fig. 36

Omega3 Hip Plate Fixation – with Axial Stable Locking Screws, continued

Fig. 37

Step 2
Cortical Screw Insertion:
Perform cortical screw insertion in the first, most proximal hole according to the description on page 21 (Fig. 37).

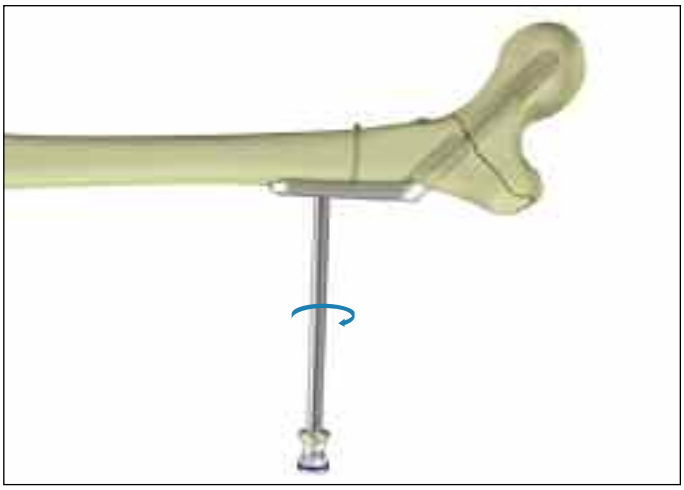


Fig. 38

Step 3
Apply Drill Sleeve:
Thread the drill sleeve into the locking insert to expand its base within the plate hole, thus securing it (Fig. 38).

For easier alignment, first push the drill sleeve down towards the plate and then rotate it to engage the thread.

Fig. 39

Step 4
Drill:
Drill through both cortices of the femoral shaft using the 4.3mm drill bit attached to power (Fig. 39).

Omega3 Hip Plate Fixation with Axial Stable Locking Screws, continued

Step 5
Screw Measurement:
Measure the required screw length by one of the two possibilities:

Option 1:
Measuring off the drill, using the calibrations marked on the drill (Fig. 40).

Note: Always select a screw length one size longer than measured, in order to ensure the optimal bi-cortical purchase.

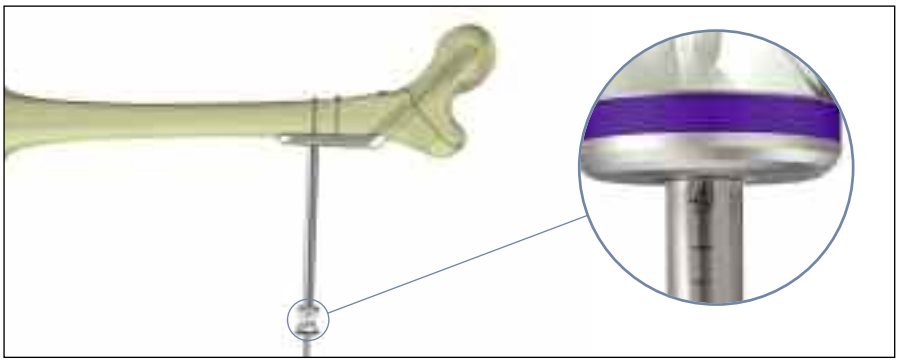


Fig. 40

Option 2:
Read directly off the direct measuring gauge through the locking insert across both cortices (Fig. 41).

Note: Always select a screw length one size longer than measured in order to ensure the optimal bi-cortical purchase.

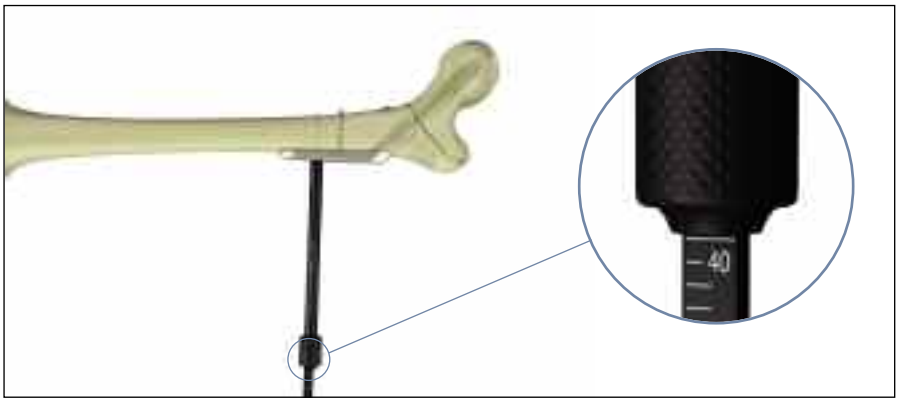


Fig. 41

Omega3 Hip Plate Fixation with Axial Stable Locking Screws, continued

Step 6
Screw Insertion:

Insert the locking screw into the locking insert, using the screw driver T20, AO fitting, the torque limiter and the T-handle, medium. Alternatively the screwdriver T20, AO fitting can be used under direct power. However, final tightening always must be done manually.

The locking screw is adequetly tightened when the torque limiter clicks at least once at the end of manual tightening (Fig. 42).

Note: The torque limiter is crucial to the mechanical integrity of the construct.

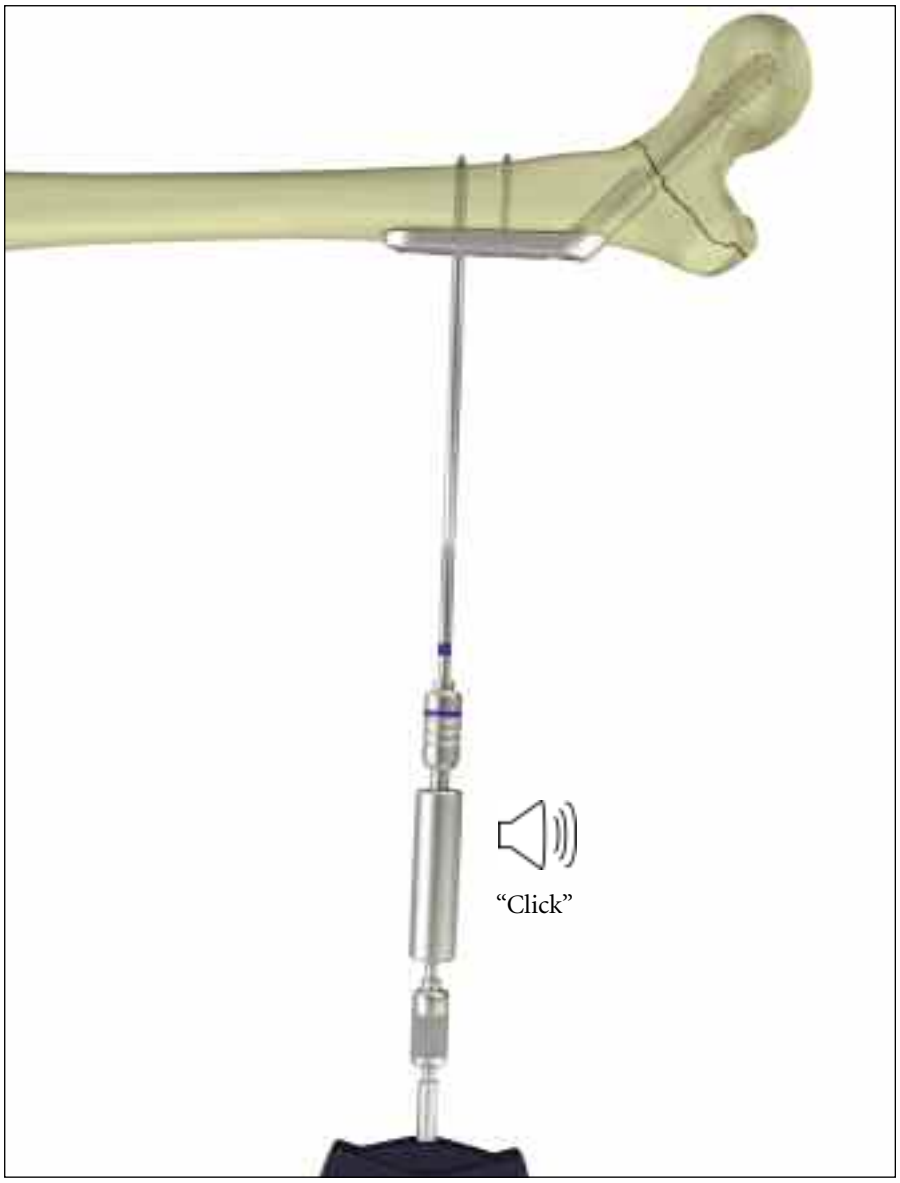


Fig. 42

Antero-lateral view of the Omega3 hip plate fixed with axial stable locking screws (Fig. 43).

Fig. 43

Extraction of Optional Locking Inserts

Should removal of a locking insert be required then the following procedure should be used:

Step 1: Thread the central portion (Fig. 44) of the Extractor into the locking insert until it is fully seated.

Step 2: Turn the outer collet (Fig. 45) clockwise until it pulls the locking insert out of the plate.

Step 3: Remove the locking insert from the extractor by threading it off.

Note: Discard the locking insert as it cannot be reused.

Fig. 44

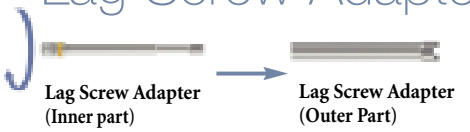
Fig. 45

Alternative: Lag Screw and Hip Plate Insertion

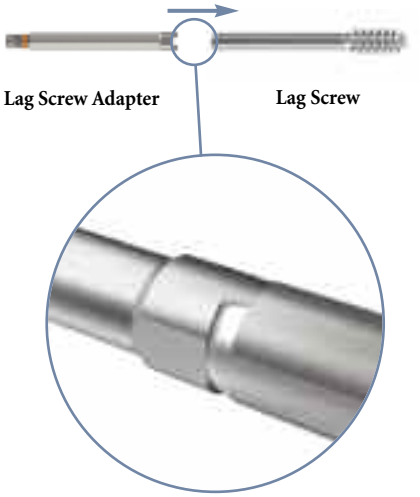
As an alternative to the one-step insertion, the standard technique may be used to insert the hip plate and the lag screw.

Lag Screw Instrument Assembly Instructions

Lag Screw Adapter Assembly:



Thread the inner part of the lag screw adapter through the outer part.



Thread the assembly into the lag screw.

Lag Screw Inserter Assembly:

Slide the lag screw inserter sleeve over the lag screw inserter.

Alternative: Lag Screw and Hip Plate Insertion, continued

Select a lag screw of the appropriate length and assemble it to the lag screw adapter. Join the lag screw inserter assembly to the lag screw adapter assembly. Insert the lag screw into the bone over the guide pin.

The centering sleeve on the inserter assembly is advanced into the pre-reamed hole, and the lag screw is driven into the prepared channel.

Advance the lag screw by turning and pushing the T-handle clockwise to its final position.

Depth of insertion of the lag screw is determined by observing the two depth indicator rings on the inserter (Fig. 46).

Fig. 46

The T-handle of the insertion/extraction wrench is aligned with the long axis of the femur in preparation for placement of the hip plate (Fig. 47).

Note: In this manner, the "flats" of the lag screw are in proper alignment with the barrel of the hip plate for the keyed hip plate system.

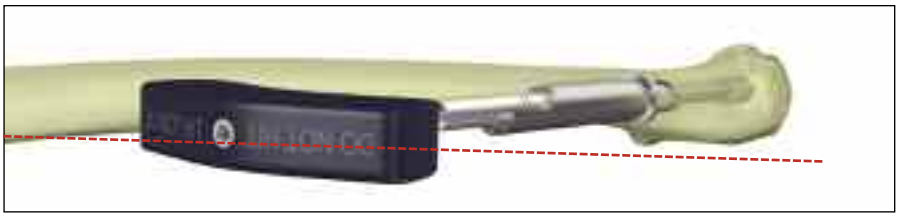
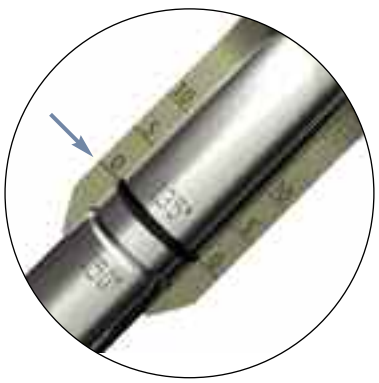


Fig. 47

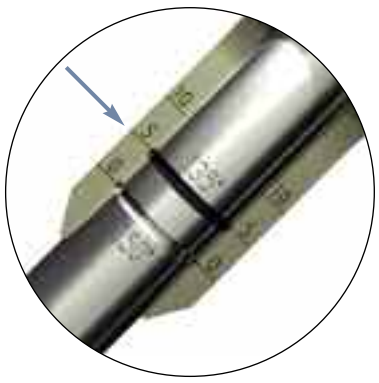
Depth Indicator Rings

Depth indicator rings measure desired compression.

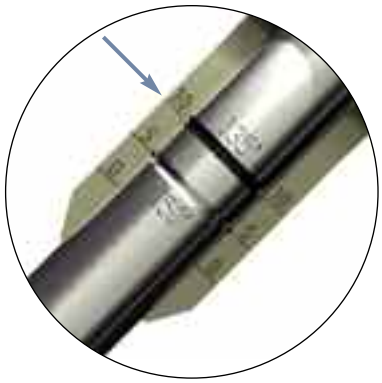
For typical anatomy (135° head/neck angle), advance the lag screw inserter assembly until the ring marked "135°" reaches the zero mark on the inserter.



No Compression, in case of 135° plate



5mm Compression, in case of 135° plate



10mm Compression, in case of 135° plate

For valgus anatomy (150° head/neck angle), advance the lag screw inserter assembly until the ring marked "150°" reaches the zero mark on the inserter.

Center the sleeve corresponding to the amount of compression desired.

Alternative: Lag Screw and Hip Plate Insertion, continued

Upon completion of lag screw insertion, the lag screw inserter assembly is removed from the lag screw by pulling back, leaving the lag screw adapter in place.

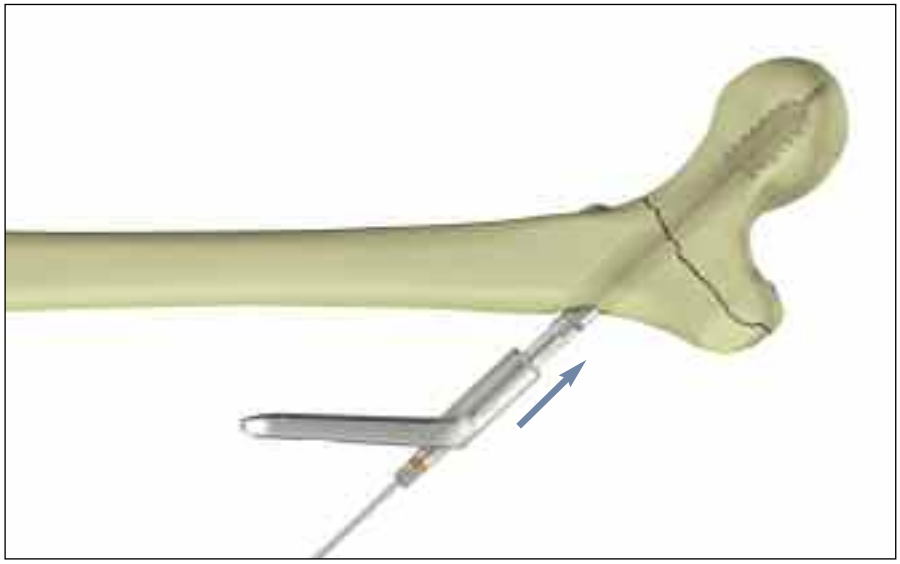


Fig. 48

The selected Omega3 hip plate is now placed over the lag screw adapter and advanced to engage the lag screw (Fig. 48).

Impaction of the fracture may be accomplished by using the plate impactor together with a hammer or mallet (Fig. 49).

Note: Use gentle hammering only - otherwise the impactor may be destroyed.

Unscrew the lag screw adapter by hand and remove it. Then, remove the 2.8mm guide pin.

Note: All guide pins are for single use and therefore must be discarded at the end of the surgical procedure.

Fig. 49

For further continuation of the procedure please refer to page 21 for the fixation of the hip plate with standard cortical screws or follow the instructions on page 22 for the axial stable fixation of the hip plate with 5.0mm locking inserts and locking screws.

Fracture Compression

When all screws are inserted and tightened, and all traction is released, fracture compression can be accomplished by means of the compression screw (Fig. 50).

Caution should be used when applying compression. The compression screw exerts a powerful force that must be correlated with the quality of the bone.

The compression is limited by the length of the compression screw threads (10mm) and also by the length of the implant chosen. The implant must be shorter than the reamed channel by the number of millimeters of compression required.
See example on page 14 and 29.

If, following the compression, a surgeon sees on the X-ray that further compression is necessary but impossible due to the length of the implant and compression screw, he must remove the implant and choose a shorter length implant.
Any attempt to force compression can result in breakage of the compression screw.

The compression screw can also be used to protect the inner thread of the lag screw against soft tissue ingrowth, and it also prevents the lag screw from any medial migration.

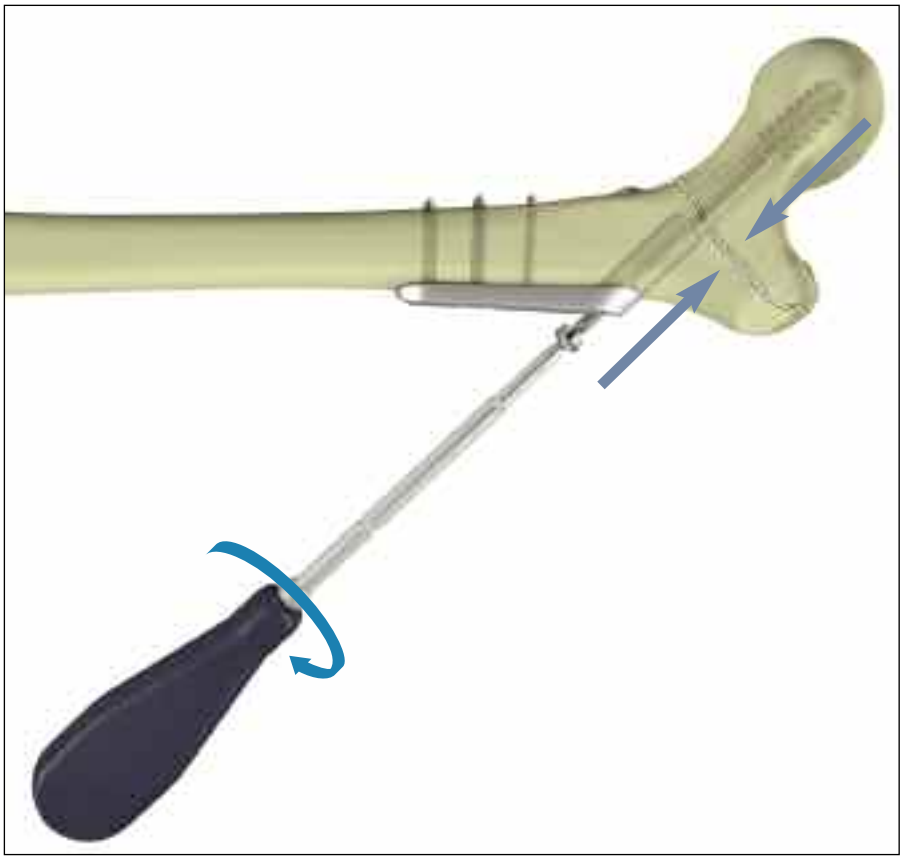


Fig. 50

Closing the Wound

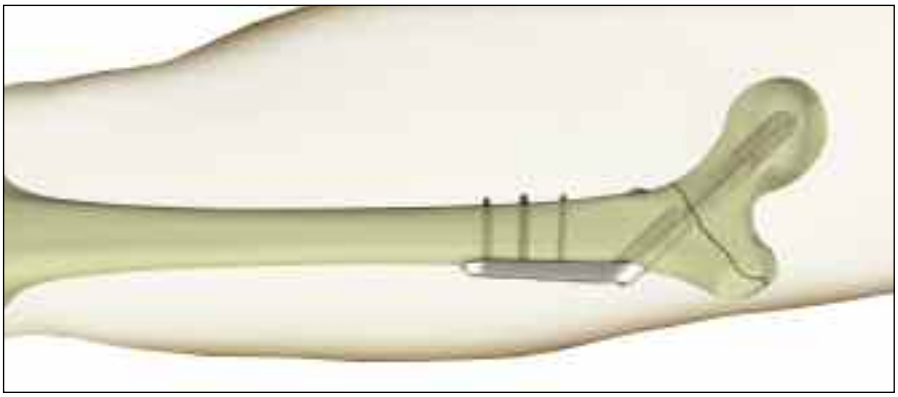


Fig. 51

Closure of the wound is done in layers, closing separately the fascia of the vastus lateralis muscle and the facia lata. Carefully reapproximate the subcutaneous tissue and the skin (Fig. 51).

Implant Removal

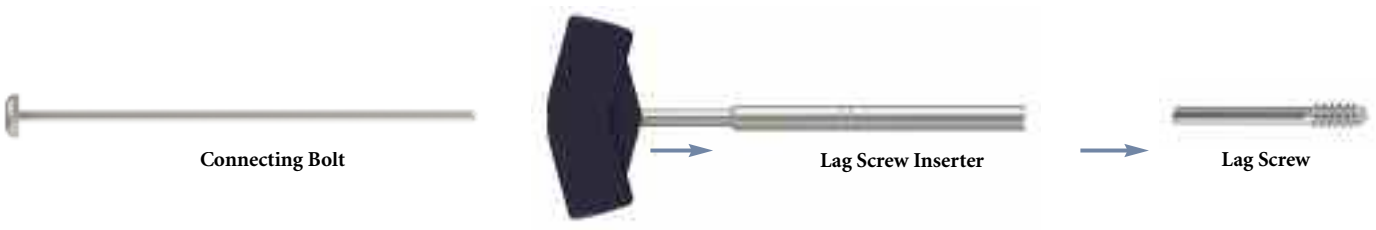
Fig. 52

Should the need arise for hardware removal, the lag screw is extracted after removal of the hip plate through use of the large T-handle connected to the lag screw inserter and the connecting bolt.
The T-handle is turned counter-clockwise (Fig. 52).

Note: A guide wire can be placed into the screw to aid in alignment of the T-handle.

Lag Screw Removal Assembly

The connecting bolt is inserted through the lag screw inserter and threaded into the lag screw.



Ordering Information

	REF	Description
	Kits	
	990226	**Omega 3 Instrument Set Complete**
	990225	**Omega 3 Instrument Set "Light"**
	Cases and Trays	
	902035	Omega3 Metal Case, empty
	901745	Omega3 Lower Tray, empty
	902036	Omega3 Upper Tray, empty
	902037	Omega3 Screw Rack, empty
	902039	Omega3 Metal Case Lid
	902114	Omega3 Silicone Mat
	Instruments	
	700358	Drill Bit Ø 3.2mm x 145mm
	700359	Drill Bit Ø 4.5mm x 145mm
	702402	Tissue Protection Sleeve
	702430	Elastosil T-Handle, Medium
	702844	Screwdriver Hex 3.5mm
	702672	Drill Sleeve for Holding Pin, ø4.9mm, 5.0mm Locking Set
	702674	Holding Pin, Ø4.3mm, 5.0mm Locking Set
	702708	Drill Sleeve, 5.0mm Locking Set
	702743	Calibrated Drill Bit, Ø4.3mm x 262mm, 5.0mm Locking Set, AO Fitting
	702751	Universal Torque Limiter, 5.0mm Locking Set, AO Fitting
	702754	Screwdriver T20, 5.0mm Locking Set, AO Fitting
	702763	Locking Insert Inserter, 5.0mm Locking Set
	702768	Locking Insert Extractor, 5.0mm Locking Set
	702808	Tap Ø4.5mm x 145mm, AO Fitting
	702809	Tap Ø6.5mm x 145mm, AO Fitting
	702822	Drill Guide Handle
	702840	Drill Sleeve Ø 3.2mm, Neutral
	702853	Screwdriver Hex 3.5mm, AO Fitting
	702878	Depth Gauge Assembly
	702884	Direct Depth Gauge, 5.0mm Locking Set
	702969	Locking Insert Forceps, 5.0mm Locking Set
	704001	Plate Impactor Assembly

Ordering Information

	REF	Description
	704003	One-Step Insertion Sleeve
	704004	Connecting Bolt, Cannulated
	704010	Lag Screw Depth Gauge
	704013	Fixed Angle Guide 135º
	704014	Variable Angle Guide, Modular
	704019	Guide Pin Replacement Instrument
	704020	Elastosil T-Handle, Large AO Fitting
	704026	Cleaning Stylet, Ø 2.8mm
	704027	Adapter, Guide Wire/Hall
	704205	95º Angle Guide for Supracondylar Plate
	704044	Combination Reamer Shaft, Hall Fitting
	704046	Adapter, Small AO/Hall
	704047	One Step Insertion Wrench, Non-Modular
	900106	Screw Forceps
	3861-3-005	Lag Screw Tap, Non-Modular
	3861-3-010	Lag Screw Tap Sleeve
	3861-3-026	Lag Screw Adapter
	704005-20	Barrel Reamer Assembly, Standard
	704006-20	Barrel Reamer Assembly, Short

Ordering Information

	REF	Description
		Guide Wires
	704011S	Guide Wire Ø 2.8mm x 230mm, CoCr, Threaded Tip, Sterile
	704012S	Guide Wire, Quick Coupling, Ø 2.8mm x 230mm, CoCr, Threaded Tip, Sterile
		Optional Instruments
	702634	Large AO to Hall Coupling
	702748	Screwdriver T20, 5.0mm Locking Set
	702823	Drill Sleeve Ø3.2mm, Compression
	702863	Holding Sleeve for Screwdrivers
	702946	Self-Centering Bone Forceps with Swivel Head, Size 3
	704025	Drill Sleeve Ø 3.2mm, Supracondylar
	704041	Variable Angle Guide, Non Modular
	3861-3-015	Lag Screw Inserter, Non Modular
	3861-3-020	Lag Screw Inserter Sleeve
	702918	Soft Tissue Spreader, 5.0mm Locking Set
	704002	One-Step Insertion Wrench, Modular
	704001-1	Plate Impactor Head

Ordering Information – Implants

Omega3 KEYED Hip-Plate, Standard Barrel

Stainless Steel REF	Holes	Angle	Length mm
597002S	2	130˚	47
597003S	3	130˚	63
597004S	4	130˚	79
597005S	5	130˚	95
597006S	6	130˚	111
597008S	8	130˚	143
597010S	10	130˚	175
597012S	12	130˚	207
597022S	2	135˚	47
597023S	3	135˚	63
597024S	4	135˚	79
597025S	5	135˚	95
597026S	6	135˚	111
597028S	8	135˚	143
597030S	10	135˚	175
597032S	12	135˚	207
597042S	2	140˚	47
597043S	3	140˚	63
597044S	4	140˚	79
597045S	5	140˚	95
597046S	6	140˚	111
597048S	8	140˚	143
597050S	10	140˚	175
597052S	12	140˚	207
597062S	2	145˚	47
597063S	3	145˚	63
597064S	4	145˚	79
597065S	5	145˚	95
597066S	6	145˚	111
597068S	8	145˚	143
597070S	10	145˚	175
597072S	12	145˚	207
597082S	2	150˚	47
597083S	3	150˚	63
597084S	4	150˚	79
597085S	5	150˚	95
597086S	6	150˚	111
597088S	8	150˚	143
597090S	10	150˚	175
597092S	12	150˚	207

Omega3 KEYED Hip-Plate, Short Barrel

Stainless Steel REF	Holes	Angle	Length mm
597202S	2	130˚	47
597203S	3	130˚	63
597204S	4	130˚	79
597205S	5	130˚	95
597212S	2	135˚	47
597213S	3	135˚	63
597214S	4	135˚	79
597215S	5	135˚	95
597222S	2	140˚	47
597223S	3	140˚	63
597224S	4	140˚	79
597225S	5	140˚	95
597232S	2	145˚	47
597233S	3	145˚	63
597234S	4	145˚	79
597235S	5	145˚	95
597242S	2	150˚	47
597243S	3	150˚	63
597244S	4	150˚	79
597245S	5	150˚	95

Note: Implants available Sterile only

Ordering Information – Implants

Omega3 KEYLESS Hip-Plate, Standard Barrel

Stainless Steel REF	Holes	Angle	Length mm
597102S	2	130°	47
597103S	3	130°	63
597104S	4	130°	79
597105S	5	130°	95
597106S	6	130°	111
597108S	8	130°	143
597110S	10	130°	175
597112S	12	130°	207
597122S	2	135°	47
597123S	3	135°	63
597124S	4	135°	79
597125S	5	135°	95
597126S	6	135°	111
597128S	8	135°	143
597130S	10	135°	175
597132S	12	135°	207
597142S	2	140°	47
597143S	3	140°	63
597144S	4	140°	79
597145S	5	140°	95
597146S	6	140°	111
597148S	8	140°	143
597150S	10	140°	175
597152S	12	140°	207
597162S	2	145°	47
597163S	3	145°	63
597164S	4	145°	79
597165S	5	145°	95
597166S	6	145°	111
597168S	8	145°	143
597170S	10	145°	175
597172S	12	145°	207
597182S	2	150°	47
597183S	3	150°	63
597184S	4	150°	79
597185S	5	150°	95
597186S	6	150°	111
597188S	8	150°	143
597190S	10	150°	175
597192S	12	150°	207

Omega3 KEYLESS Hip-Plate, Short Barrel

Stainless Steel REF	Holes	Angle	Length mm
597254S	4	130°	79
597255S	5	130°	95
597264S	4	135°	79
597265S	5	135°	95
597274S	4	140°	79
597275S	5	140°	95
597284S	4	145°	79
597285S	5	145°	95
597294S	4	150°	79
597295S	5	150°	95

Note: Implants available Sterile only

Ordering Information – Implants

Standard Lag Screw Ø13mm

Stainless Steel REF	Length mm
3362-5-050	50
3362-5-055	55
3362-5-060	60
3362-5-065	65
3362-5-070	70
3362-5-075	75
3362-5-080	80
3362-5-085	85
3362-5-090	90
3362-5-095	95
3362-5-100	100
3362-5-105	105
3362-5-110	110
3362-5-115	115
3362-5-120	120
3362-5-125	125
3362-5-130	130

Super Lag Screw Ø15mm

Stainless Steel REF	Length mm
3362-8-050	50
3362-8-055	55
3362-8-060	60
3362-8-065	65
3362-8-070	70
3362-8-075	75
3362-8-080	80
3362-8-085	85
3362-8-090	90
3362-8-095	95
3362-8-100	100
3362-8-105	105
3362-8-110	110
3362-8-115	115
3362-8-120	120
3362-8-125	125
3362-8-130	130

Compression Screw

Stainless Steel REF	Length mm
596001S	32.3

Note: Implants available Sterile only

Ordering Information – Implants

Cortical Screws ø4.5mm, Self Tapping, Hex 3.5mm

Stainless Steel REF	Length mm
340614	14
340616	16
340618	18
340620	20
340622	22
340624	24
340626	26
340628	28
340630	30
340632	32
340634	34
340636	36
340638	38
340640	40
340642	42
340644	44
340646	46
340648	48
340650	50
340652	52
340654	54
340655	55
340656	56
340658	58
340660	60
340662	62
340664	64
340665	65
340666	66
340668	68
340670	70
340672	72
340674	74
340675	75
340676	76
340678	78
340680	80
340685	85
340690	90
340695	95
340700	100
340705	105
340710	110

Screw lengths 30 – 60mm fit into Screw Rack (REF 902037)

Locking Screws ø5.0mm, Self Tapping, T20 Drive

Stainless Steel REF	Length mm
370314	14
370316	16
370318	18
370320	20
370322	22
370324	24
370326	26
370328	28
370330	30
370332	32
370334	34
370336	36
370338	38
370340	40
370342	42
370344	44
370346	46
370348	48
370350	50
370355	55
370360	60
370365	65
370370	70
370375	75
370380	80
370385	85
370390	90
370395	95

Screw lengths 30 – 60mm fit into Screw Rack (REF 902037)

5.0mm Locking Insert

Stainless Steel REF	Diameter mm
370003	5.0

Locking inserts fit into screw rack (REF 902037)

Note: For Sterile, add 'S' to REF

Ordering Information – Implants

Cancellous Screws ø6.5mm – 16mm thread

Stainless Steel REF	Length mm	Stainless Steel REF	Length mm
341030	30	341085	85
341035	35	341090	90
341040	40	341095	95
341045	45	341100	100
341050	50	341105	105
341055	55	341110	110
341060	60	341115	115
341065	65	341120	120
341070	70	341125	125
341075	75	341130	130
341080	80		

Note: Screw lengths 60 - 90mm fit into Screw Rack (REF 902037)

Asnis III Cannulated Screws ø6.5mm, Thread Length 20mm

Stainless Steel REF	Length mm	Stainless Steel REF	Length mm
326040S	40	326085S	85
326045S	45	326090S	90
326050S	50	326095S	95
326055S	55	326100S	100
326060S	60	326105S	105
326065S	65	326110S	110
326070S	70	326115S	115
326075S	75	326120S	120
326080S	80		

Cancellous Screws ø6.5mm – 32mm thread

Stainless Steel REF	Length mm	Stainless Steel REF	Length mm
342045	45	342090	90
342050	50	342095	95
342055	55	342100	100
342060	60	342105	105
342065	65	342110	110
342070	70	342115	115
342075	75	342120	120
342080	80	342125	125
342085	85	342130	130

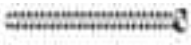
Asnis III Cannulated Screws ø6.5mm, Thread Length 40mm

Stainless Steel REF	Length mm	Stainless Steel REF	Length mm
326255S	55	326290S	90
326260S	60	326295S	95
326265S	65	326300S	100
326270S	70	326305S	105
326275S	75	326310S	110
326280S	80	326315S	115
326285S	85	326320S	120

Cancellous Screws ø6.5mm – Fully threaded

Stainless Steel REF	Length mm	Stainless Steel REF	Length mm
343020	20	343080	80
343025	25	343085	85
343030	30	343090	90
343035	35	343095	95
343040	40	343100	100
343045	45	343105	105
343050	50	343110	110
343055	55	343115	115
343060	60	343120	120
343065	65	343125	125
343070	70	343130	130
343075	75		

Asnis III Cannulated Screws ø6.5mm, Fully Threaded



Stainless Steel REF	Length mm	Stainless Steel REF	Length mm
326430S	30	326485S	85
326435S	35	326490S	90
326440S	40	326495S	95
326445S	45	326500S	100
326450S	50	326505S	105
326455S	55	326510S	110
326460S	60	326515S	115
326465S	65	326520S	120
326470S	70	326525S	125
326475S	75	326530S	130
326480S	80		

Note: For Sterile, add 'S' to REF of Cancellous Screws;
Asnis III Cannulated Screws are available Sterile only.

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