stryker

Osteosynthesis

AxSOS
Locking Plate System

Operative Technique

Distal Lateral Femur

Introduction

The AxSOS Locking Plate System is designed to treat periarticular or intra-articular fractures of the Distal Femur, Proximal Humerus, Proximal Tibia, and the Distal Tibia. The system design is based on clinical input from an international panel of experienced surgeons, data from literature, and both practical and biomechanical testing.

The anatomical shape, the fixed screw trajectory, and high surface quality take into account the current demands of clinical physicians for appropriate fixation, high fatigue strength, and minimal soft tissue damage. This Operative Technique contains a simple step-by-step procedure for the implantation of the Distal Lateral Femoral Plate.

Distal Lateral Femoral Plate

Proximal Lateral Tibial Plate

Proximal Humeral Plate

Distal Medial Tibial Plate

Distal Anterolateral Tibial Plate

This publication sets forth detailed recommended procedures for using Stryker Osteosynthesis devices and instruments.

It offers guidance that you should heed, but, as with any such technical guide, each surgeon must consider the particular needs of each patient and make appropriate adjustments when and as required.

A workshop training is recommended prior to first surgery.

Features & Benefits

System

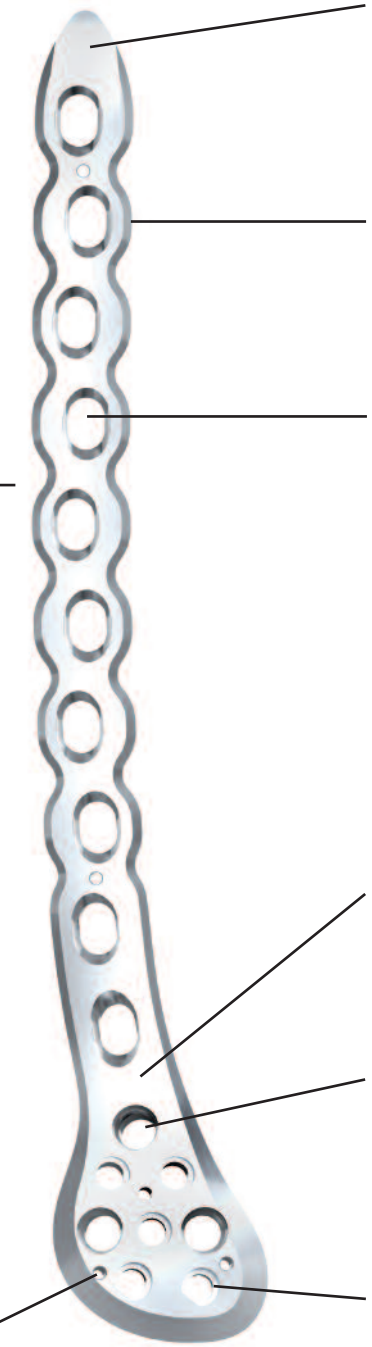
- The Distal Femoral Plate is designed with optimised fixed-angled screw trajectories which provide improved biomechanical stability and better resistance to pull out. The metaphyseal screw pattern also avoids any interference in the intercondylar notch and helps prevent loss of reduction.

Instruments

- Simple technique, easy instrumentation with minimal components.
- Compatible with MIPO (Minimally Invasive Plate Osteosynthesis) technique using state of the art instrumentation.

Range

- Longer plates cover a wider range of fractures.



Rounded & Tapered Plate Ends

- Helps facilitate sliding of plates sub-muscularly.

'Waisted' plate shape

- Uniform load transfer.

Innovative Locking Screw design

- The single thread screw design allows easy insertion into the plate, reducing any potential for cross threading or cold welding.

Shaft Holes - Standard or Locking

- Bi-directional shaft holes
- Compression, neutral or buttress fixation.
- Accept Standard 4.5/6.5mm SPS screws.
- Accept Locking Insert for axially stable screws.

Anatomically contoured

- Little or no bending required.
- Reduced OR time.

Aiming Block

- Facilitates the placement of the Drill Sleeve.

Unthreaded Freedom Holes

- Freehand placement of screws.
- Lag Screw possibility.

Monoaxial holes (5)

- Allow axially stable screw placement, bringing rigidity to construct.

K-Wire/Reduction holes

- Primary/temporary plate and fracture fixation.

Relative Indications & Contraindications

Relative Indications

The indication for use of this internal fixation device includes metaphyseal extra and intra articular fractures as well as periprosthetic fractures of the distal Femur.

Relative Contraindications

The physician's education, training and professional judgement must be relied upon to choose the most appropriate device and treatment. The following contraindications may be of a relative or absolute nature, and must be taken into account by the attending surgeon:

- 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 can not provide adequate support and/or fixation of the devices.
- Material sensitivity, documented or suspected.
- Obesity. An overweight or 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 are included in the instructions for use being attached to 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

General Guidelines

Patient Positioning: Supine with option to flex the knee up to 60° over a leg support. Visualization of the distal femur under fluoroscopy in both the lateral and AP views is necessary.

Surgical Approach: Standard Lateral, Modified Lateral or Lateral Parapatellar approach.

Instrument/Screw Set: 5.0mm

Reduction

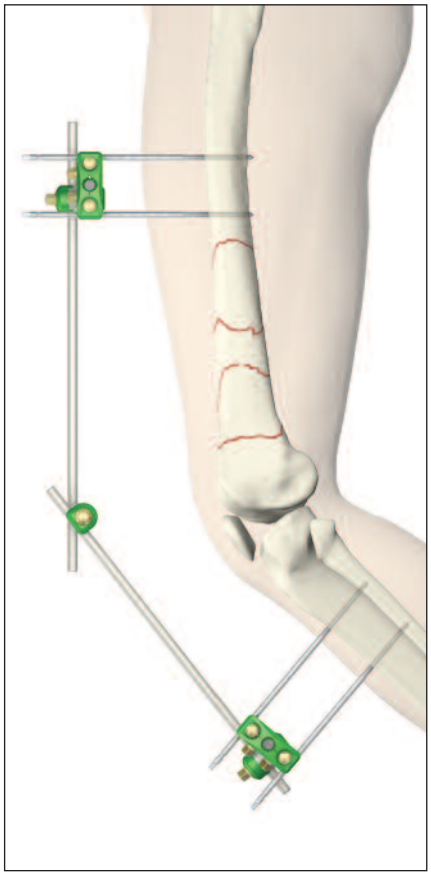
Anatomical reduction of the fracture should be performed either by direct visualization with the help of percutaneous clamps, or alternatively a bridging external fixator can aid with indirect reduction to correct the length, rotation, recurvatum and varus-valgus.

Fracture reduction of the articular surface should be confirmed by direct visualization, or fluoroscopy.
Use K-Wires and/or lag screws as necessary to temporarily secure the reduction. Typically, K-Wires set parallel to the joint axis will not only act to hold and support the reduction, but also help to visualize/identify the joint.

Care must be taken that these do not interfere with the required plate and screw positions. Consideration must also be taken when positioning independent lag screws prior to plate placement to ensure that they do not interfere with the planned plate location or Locking Screw trajectories.

If any large bony defects are present they should be filled by either bone graft or bone substitute material.

Note: If a sub-muscular technique has been used please see the relevant section later in this Guide.



Bending

In most cases the pre-contoured plate will fit without the need for further bending. However, should additional bending of the plate be required (generally at the junction from the metaphysis to the shaft) the Table Plate Bender (REF 702900) should be used.
Bending of the plate in the region of the metaphyseal locking holes will affect the ability to correctly seat the Locking Screws into the plate and is therefore not permitted.
Plate contouring in the shaft region should be restricted to the area between the shaft holes.
Plate contouring will affect the ability to place a Locking Insert into the shaft holes adjacent to the bending point.

Operative Technique

General Guidelines

Locking Screw Measurement

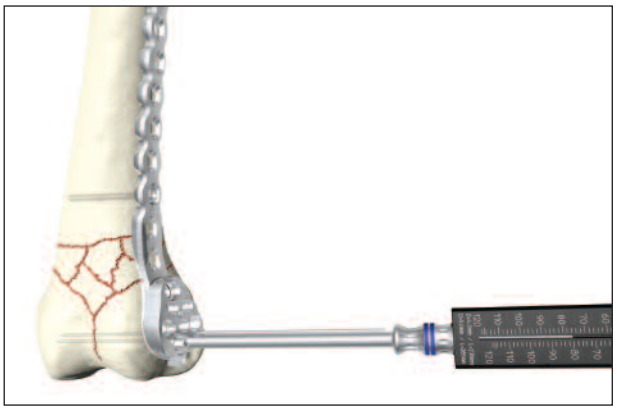
There are four options to obtain the proper Locking Screw length as illustrated below.

Correct Screw Selection

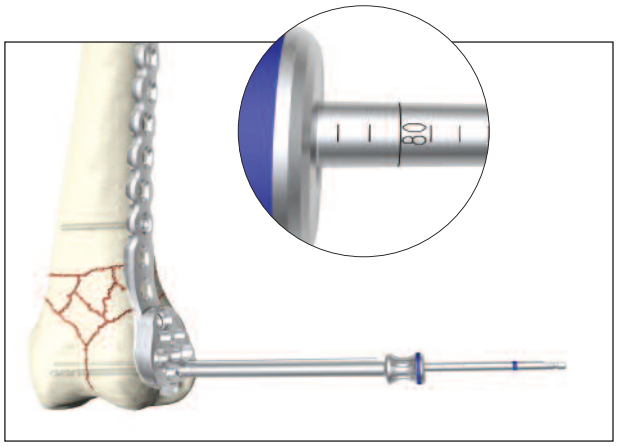
Select a screw approximately 2-3mm shorter than the measured length to avoid screw penetrations through the medial cortex in metaphyseal fixation.

Add 2-3mm to measured length for optimal bi-cortical shaft fixation.

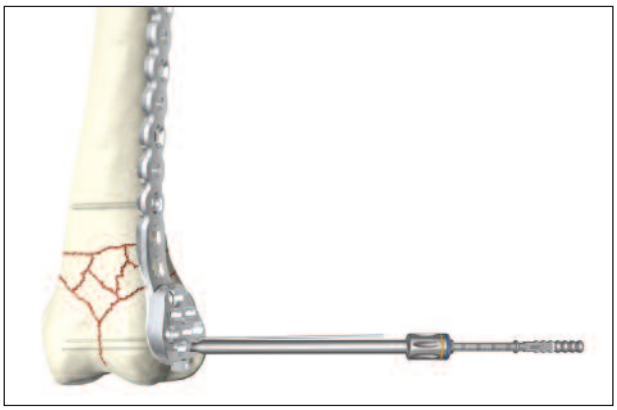
Measurement Options



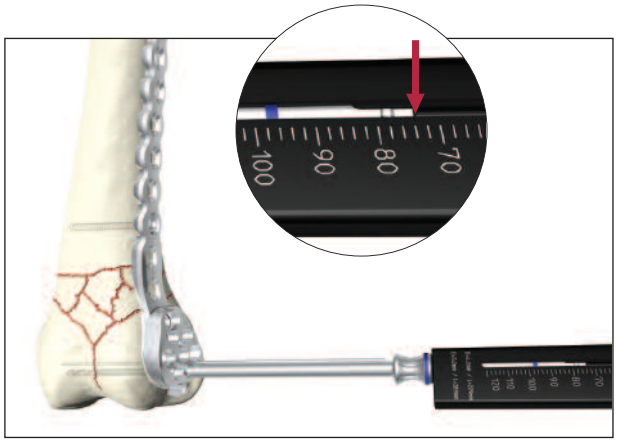
Measure off K-Wire



Read off Calibration

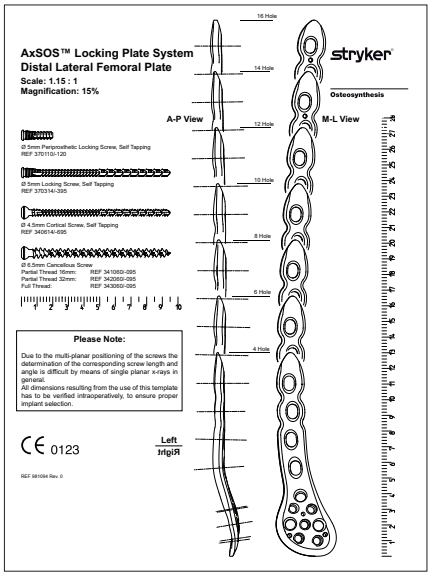


Conventional direct



Measure off Drill

Operative Technique



Step 1 – Pre Operative Planning

Use of the X-Ray Template (REF 981094) or Plate Trial (REF 702791) in association with fluoroscopy can help to assist in the selection of an appropriately sized implant (Fig. 1).

If the Plate Trial is more than 90mm away from the bone, e.g. with obese patients, a magnification factor of 10-15% will occur and must be compensated for. Final intraoperative verification should be made to ensure correct implant selection.

Fig. 1

Operative Technique

Step 2a – Pre Operative Locking Insert Application

If Locking Screws are chosen for the plate shaft, pre-operative insertion of Locking Inserts is recommended.

A 5.0mm Locking Insert (REF 370003) is attached to the Locking Insert Inserter (REF 702763) and placed into the chosen holes in the shaft portion of the plate (Fig. 2). Ensure that the Locking Insert is properly placed. The Inserter should then be removed (Fig. 2A).

Do not place Locking Inserts with the Drill Sleeve.

It is important to note that if a Temporary Plate Holder is to be used for primary proximal plate fixation, then a Locking Insert must not be placed in the same hole as the Temporary Plate Holder (See Step 5).

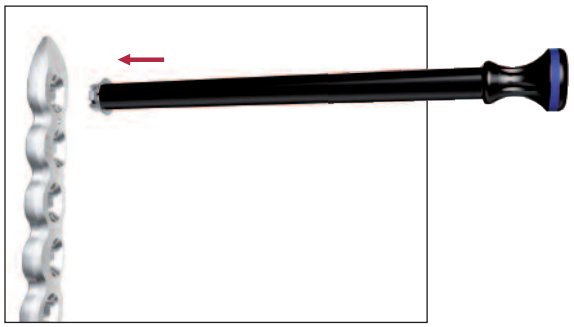


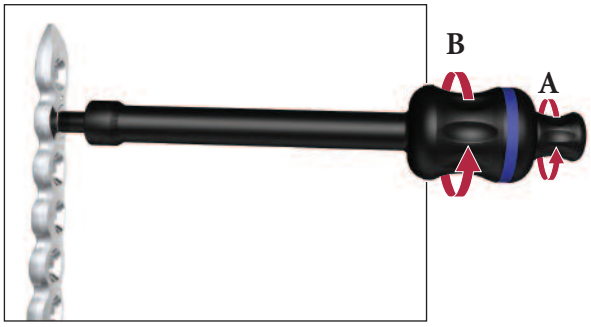
Fig. 2

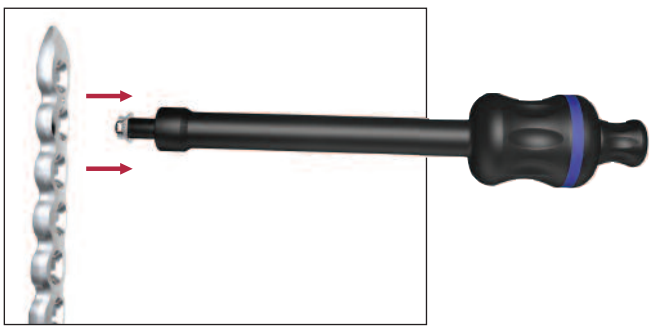
Fig. 2A

Locking Insert Extraction

Should removal of a Locking Insert be required for any reason, then the following procedure should be used. Thread the central portion (A) of the Locking Insert Extractor (REF 702768) into the Locking Insert that you wish to remove until it is fully seated.

Then turn the outer sleeve/collet (B) clockwise until it pulls the Locking Insert out of the plate.
The Locking Insert must then be discarded, as it cannot be reused.





Operative Technique

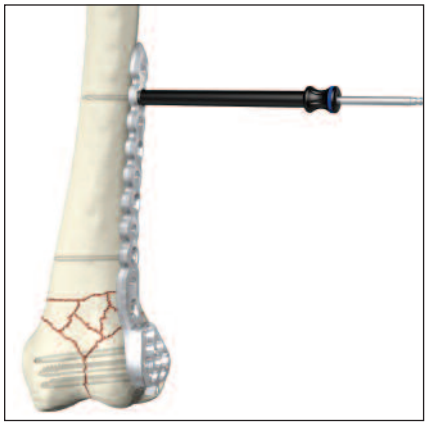
Step 2b – Intra – Operative Locking Insert Application

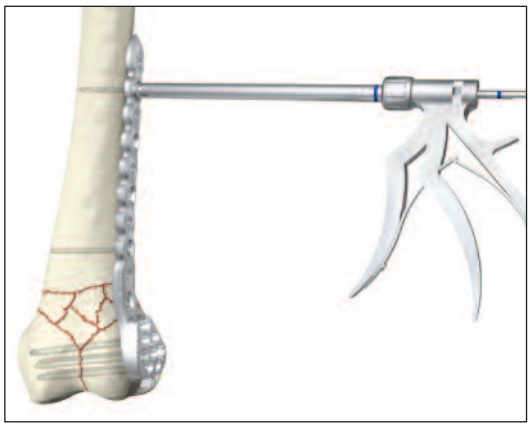
If desired, a Locking Insert can be applied in a standard hole in the shaft of the plate intra-operatively by using the Locking Insert Forceps (REF 702969), Centering Pin (REF 702674) and Guide for Centering Pin (REF 702672).

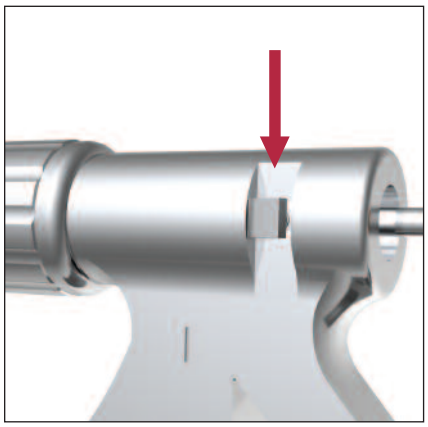
First, the Centering Pin is inserted through the chosen hole using the Guide. It is important to use the Guide as this centers the core hole for locking screw insertion after the Locking Insert is applied. After inserting the Centering Pin bi-cortically, remove the Guide.

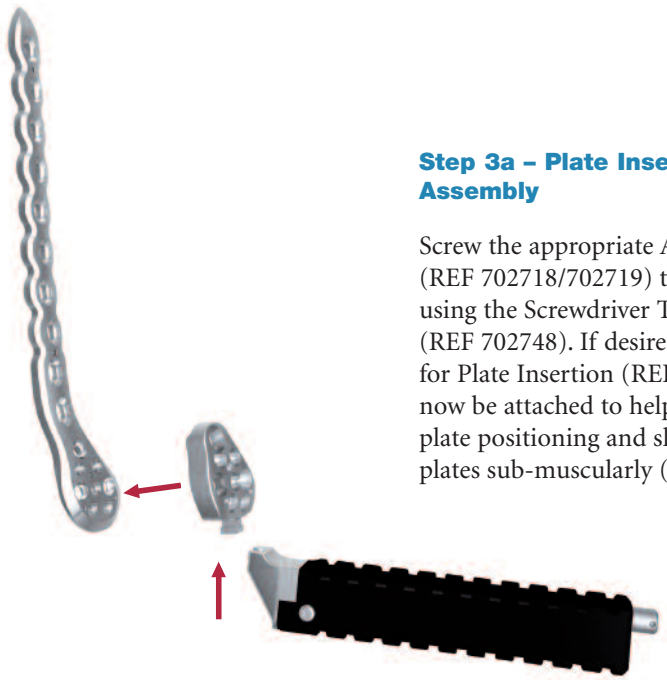
Next, place a Locking Insert on the end of the Forceps and slide the instrument over the Centering Pin down to the hole.

Last, apply the Locking Insert by triggering the forceps handle. Push the button on the Forceps to remove the device. At this time, remove the Centering Pin.









Step 3a – Plate Insertion Handle Assembly

Screw the appropriate Aiming Block (REF 702718/702719) to the plate using the Screwdriver T 20 (REF 702748). If desired, the Handle for Plate Insertion (REF 702778) can now be attached to help facilitate plate positioning and sliding of longer plates sub-muscularly (Fig. 3).

Fig. 3

Operative Technique

Step 3b – Plate Application

After the skin incision is performed and anatomical reduction is achieved, apply the plate to the lateral condyle. The proper position is when the distal and anterior margin of the plate is approx. 10mm from the articular surface. (Fig. 4).

This helps to ensure that the most distal Locking Screws are directly supporting the joint surface.

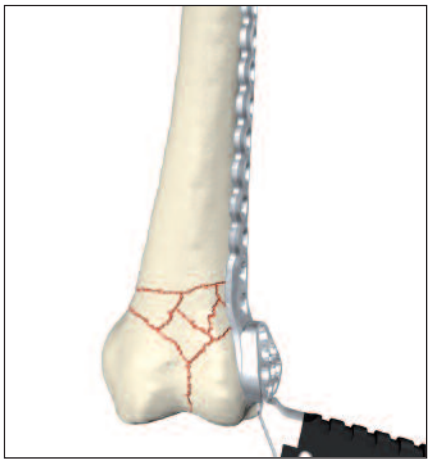


Fig. 4 – AP View

Fig. 4 – Lateral View

Step 4 – Primary Plate Fixation – Distal

The K-Wire holes in the metaphyseal Part of the plate allow for temporary plate fixation to the articular block. (Fig. 5).

Remove the Handle for Insertion by pressing the metal button at the end of the Handle.

Using the K-Wire Sleeve (REF 702703) in conjunction with the Drill Sleeve (REF 702708), a 2.0 x 285mm K-Wire can now be inserted into one of the distal Locking Screw holes (Fig. 6A). This wire should be parallel to the joint line to assure proper alignment of the distal femur.

This step also shows the position of a later placed screw and shows its relation to the joint surface. Furthermore, it will confirm the screw will not be placed intra-articularly.

Using fluoroscopy, the position of this K-Wire can be checked until the optimal position is achieved and the plate is correctly positioned. Correct proximal placement should also be re-confirmed at this point to make sure the plate shaft is properly aligned over the lateral surface of the femoral shaft (Fig. 6B).

If the distal and axial alignment of the plate cannot be achieved, the K-Wires should be removed, the plate readjusted, and the above procedure repeated until both the K-Wire and the plate are in the desired position.

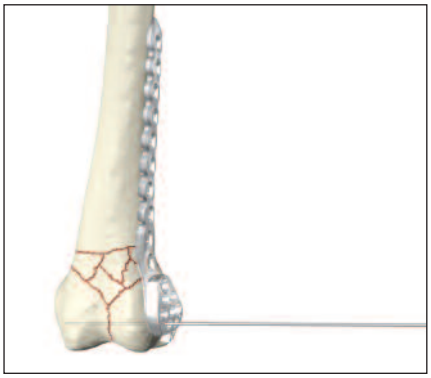


Fig. 5 – AP View

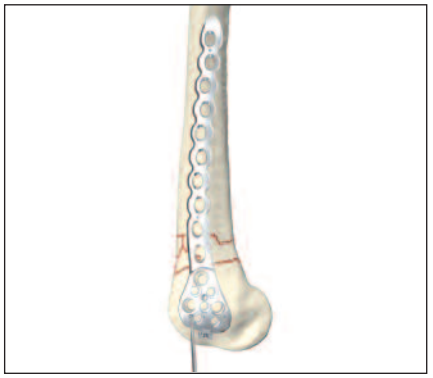


Fig. 5 – Lateral View

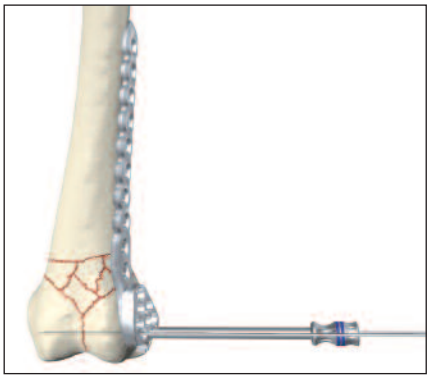


Fig. 6A – AP View

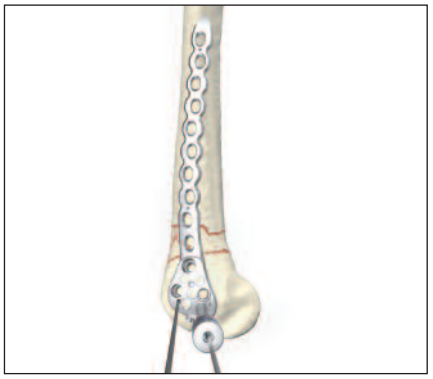


Fig. 6B – Lateral View

Additional K-Wires can be inserted in the K-Wire holes around the locking holes to further help secure the plate to the bone and also support depressed areas in the articular surface. Do not remove the Drill Sleeve and K-Wire Sleeve at this point as it will cause a loss of the plate position or reduction.

Operative Technique

Step 5 – Primary Plate Fixation – Proximal

The proximal end of the plate must now be secured. This can be achieved through one of four methods:

- A K-Wire inserted in the shaft K-Wire holes.
- A 4.5mm Cortical Screw using the standard technique.
- A 5.0mm Locking Screw with a Locking Insert (see Step 7 – Shaft Locking).
- The Temporary Plate Holder (REF 702776).

Using a 3.2mm Drill (REF 700357) and Double Drill Guide (REF 702417), drill a core hole through both cortices in the hole above the most proximal fracture line.

The length is then measured using the Depth Gauge for Standard Screws (REF 702877) and an appropriate Self-Tapping 4.5mm Cortical Screw is then inserted using Screwdriver (REF 702843) (Fig. 7).

The Temporary Plate Holder (REF 702776) has a self drilling, self tapping tip for quick insertion into cortical bone. To help prevent thermal necrosis during the drilling stage, it is recommended that this device is inserted by hand. Once the device has been inserted through the far cortex, the threaded outer sleeve/collet is turned clockwise until it pushes the plate to the bone (Fig. 8).

The core diameter of this instrument is 2.4mm to allow a 4.5mm Cortical Screw to be subsequently inserted in the same shaft hole (overdrill hole with 3.2mm Drill (REF 700357)).

Note: A Locking Insert and Locking Screw should not be used in the hole where the Temporary Plate Holder is used.

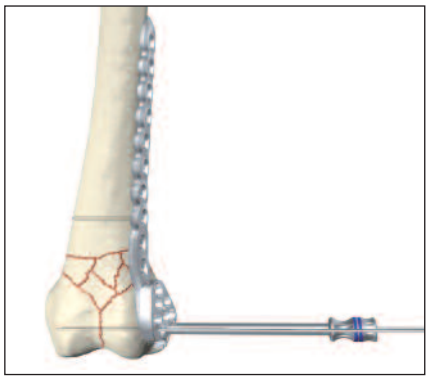


Fig. 7

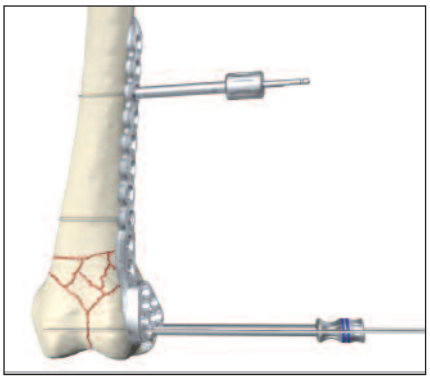


Fig. 8

Step 6 – Metaphyseal Locking

Locking Screws cannot act as Lag Screws. Should an interfragmentary compression effect be required in cases of intercondylar splits, 6.5mm Standard Cancellous Screws or 4.5mm Cortical Screws must first be placed in the unthreaded metaphyseal plate holes (Fig. 9) prior to the placement of any Locking Screws. Using the 4.5mm end of the Double Drill Guide (REF 702417), the near cortex is overdrilled to accept the shaft or the thread of the Lag Screw.
Use the other end of the Drill Guide to drill the core diameter (3.2mm). Measure the length of the screw using the Depth Gauge for Standard Screws (REF 702877), and pre-tap the near cortex with the Tap (REF 702807) if a Cancellous Screw has been selected. Consideration must also be taken when positioning these screws to ensure that they do not interfere with the given Locking Screw trajectories (Fig.10).

Fig. 9

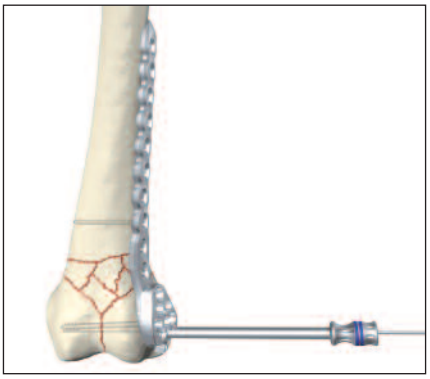


Fig. 10

Operative Technique

Fixation of the metaphyseal portion of the plate can be started using the preset K-Wire in the distal locking hole as described in Step 4.

The length of the screw can be taken by using the K-Wire side of the Drill/ K-Wire Depth Gauge (REF 702712) (See Locking Screw Measurement Guidelines on Page 6). Remove the K-Wire and K-Wire Sleeve leaving the Drill Sleeve in Place.

A 4.3mm Drill (REF 702743) is then used to drill the core hole for the Locking Screw (Fig. 11).
Using fluoroscopy, check the correct depth of the drill, and measure the length of the screw. The Drill Sleeve should now be removed, and the correct length 5.0mm Locking Screw is inserted using the Screwdriver T20 and Screw Holding Sleeve (REF 702733) (Fig. 12).

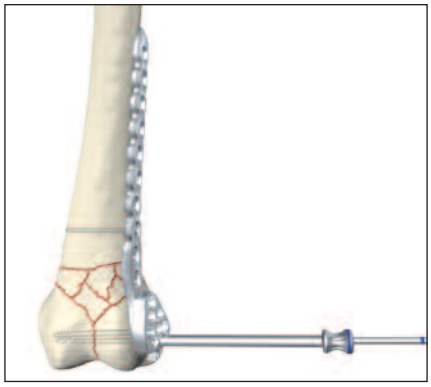


Fig. 11

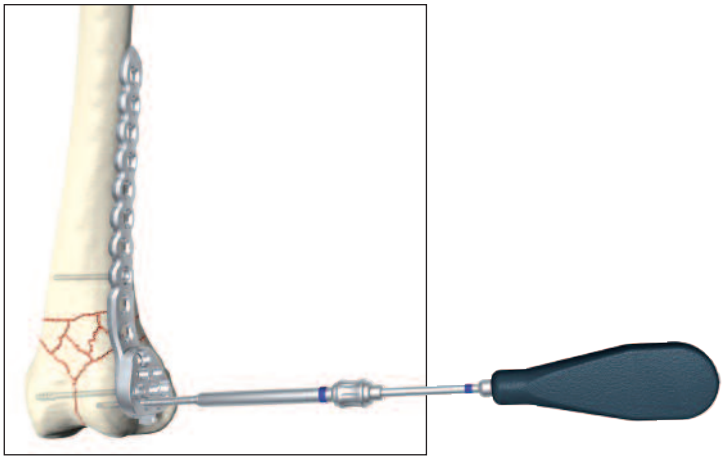


Fig. 12

Locking Screws should initially be inserted manually to ensure proper alignment.

If the Locking Screw thread does not immediately engage in the plate thread, reverse the screw a few turns and re-insert the screw once it is properly aligned.

Final tightening of Locking Screws should always be performed manually using the Torque Limiting Attachment (REF 702751) together with the Solid Screwdriver T20 (REF 702754) and T-Handle (REF 702430) (Fig. 13). This helps to prevent over-tightening of Locking Screws, and also ensures that these Screws are tightened to a torque of 5.0Nm. The device will click when the torque reaches 5Nm.

Note: The Torque Limiters require routine maintainance. Refer to the Instructions for Maintainance of Torque Limiters (REF V15020).

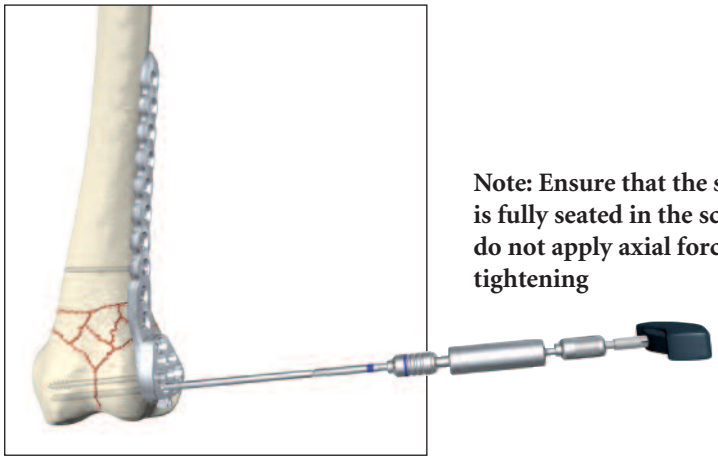
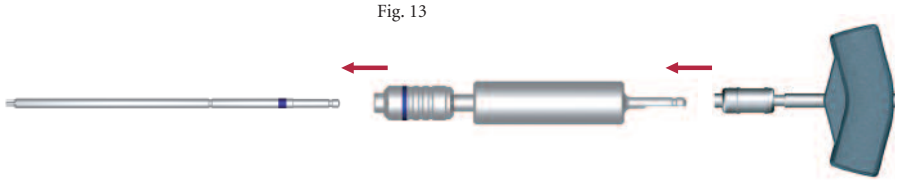


Fig. 13

Note: Ensure that the screwdriver tip is fully seated in the screw head, but do not apply axial force during final tightening



If inserting Locking Screws under power, make sure to use a low speed to avoid damage to the screw/plate interface, and perform final tightening by hand, as described above.
The remaining proximal Locking Screws are inserted following the same technique with or without the use a K-Wire.

Always use the Drill Sleeve (REF 702708) when drilling for Locking holes.

To ensure maximum stability, it is recommended that all locking holes are filled with a Locking Screw of the appropriate length.

Operative Technique

Step 7 – Shaft Fixation

The shaft holes of this plate have been designed to accept either 4.5mm Standard Cortical Screws or 5.0mm Locking Screws together with the corresponding Locking Inserts.

If a combination of Standard and Locking Screws is used in the shaft, then the Standard Cortical Screws must be placed prior to the Locking Screws.

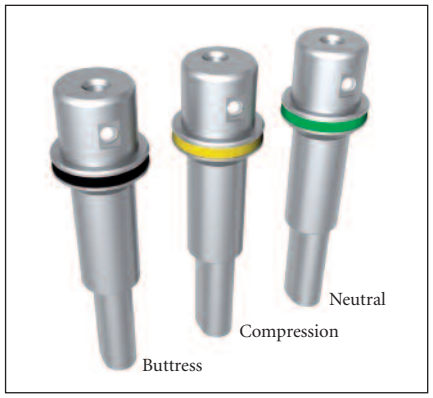
Locked Hole

70° Axial Angulation

20° Transverse Angulation

Option 1 – Standard Screws

4.5mm Standard Cortical Screws can be placed in neutral, compression or buttress positions as desired using the standard technique. These screws can also act as lag screws.



Drill Sleeve Handle

Option 2 – Locking Screws

5.0mm Locking Screws can be placed in a shaft hole provided there is a pre-placed Locking Insert in the hole. (See Step 1 or 2a).

The Drill Sleeve(REF 702708) is threaded into the Locking Insert to ensure initial fixation of the Locking Insert into the plate. This will also facilitate subsequent screw placement. A 4.3mm Drill Bit (REF 702743) is used to drill through both cortices (Fig. 14).

Avoid any angulation or excessive force on the drill, as this could dislodge the Locking Insert.

The screw measurement is then taken. The appropriate sized Locking Screw is then inserted using the Solid Screwdriver T20 (REF 702754) and the Screw Holding Sleeve (REF 702733) together with the Torque Limiting Attachment (REF 702751) and the T-Handle (REF 702430).

Note: Ensure that the screwdriver tip is fully seated in the screw head, but do not apply axial force during final tightening.

This procedure is repeated for all holes chosen for locked shaft fixation. All provisional plate fixation devices (K-Wires, Temporary Plate Holder, etc) can now be removed.

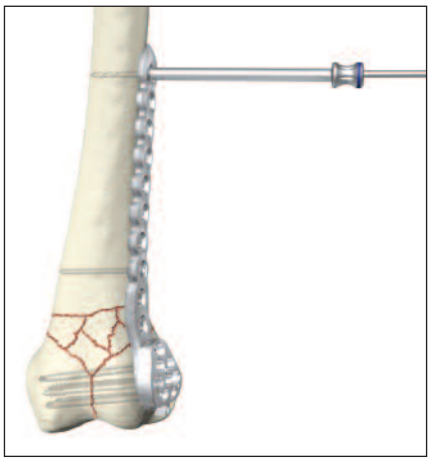


Fig. 14

Operative Technique

Sub-Muscular Insertion Technique

When implanting longer plates, a minimally invasive technique can be used. The Soft Tissue Elevator (REF 702782) can be used to create a pathway for the implant (Fig. 15).

The plate has a special rounded and tapered end, which allows a smooth insertion under the soft tissue (Fig. 16).

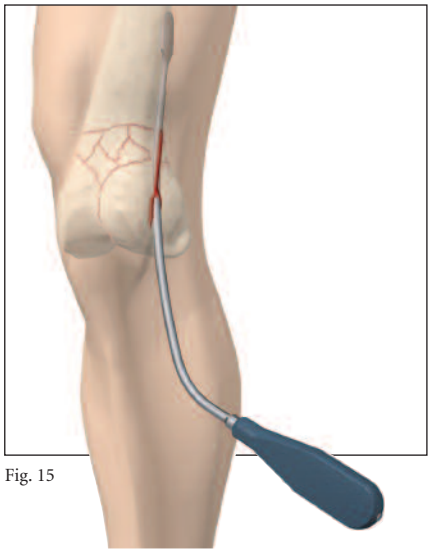


Fig. 15

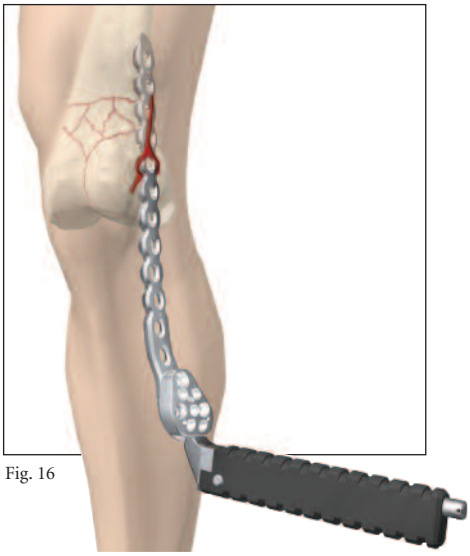


Fig. 16

Additionally, the Shaft Hole Locator can be used to help locate the shaft holes. Attach the appropriate side of the Shaft Hole Locator (REF 702791) by sliding it over the top of the Handle until it seats in one of the grooves at a appropriate distance above the skin (Fig. 17 - 18). The slot and markings on the Shaft Hole Locator act as a guide to the respective holes in the plate.

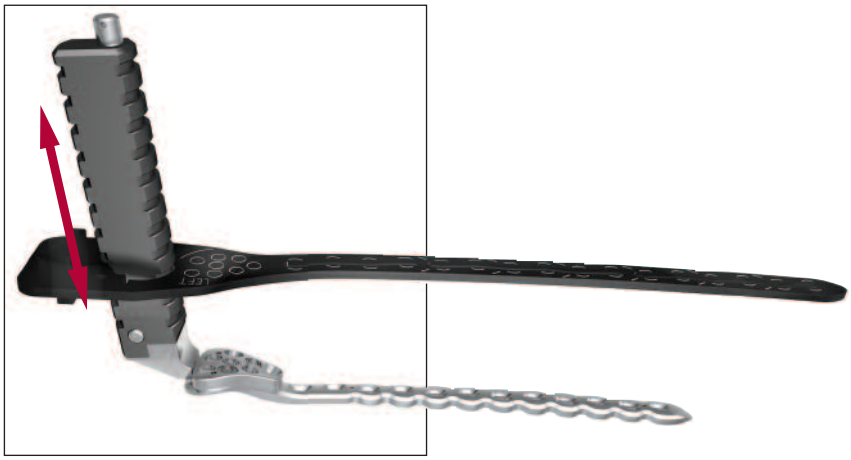


Fig. 17

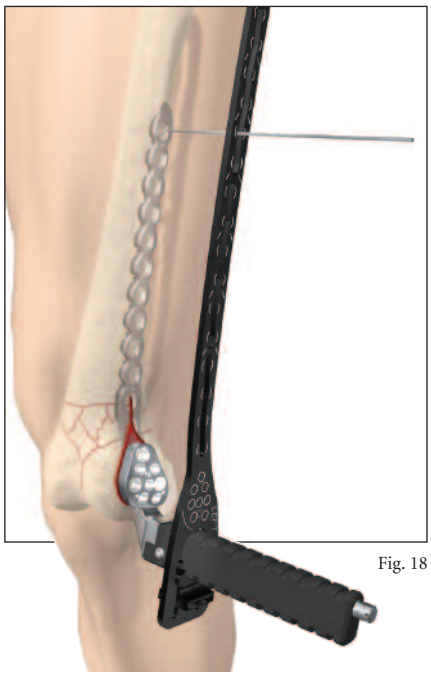


Fig. 18

Operative Technique

Percutaneous Screw Insertion

A small stab incision can then be made through the slot to locate the hole selected for screw placement. The Shaft Hole Locator can then be rotated out of the way or removed.

The Standard Percutaneous Drill Sleeve (REF. 702710) or the Neutral Percutaneous Drill Sleeve (REF 702958) in conjunction with the Drill Sleeve Handle (REF 702822) can be used to assist with drilling for Standard Screws. Use a 3.2mm drill bit (REF 700357).

With the aid of the Soft Tissue Spreader (REF 702918), the skin can be opened to form a small window (Fig. 19–20) through which either a Standard Screw or Locking Screw (provided a Locking Insert is present) can be placed. For Locking Screw insertion, use the threaded Drill Sleeve (REF 702708) together with the 4.3mm drill bit (REF 702743) to drill the core hole.

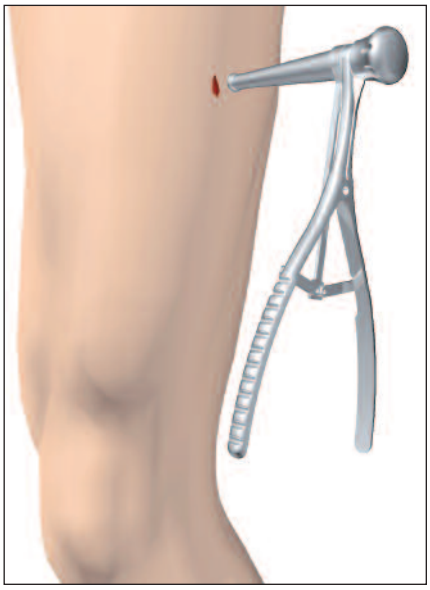


Fig. 19

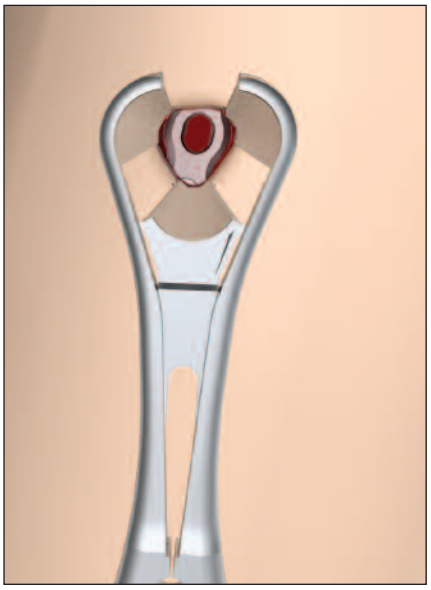


Fig. 20

Operative Technique

Periprosthetic Solution

Should the plate be used in conjunction with cables, e.g. with periprosthetic fractures, The Cable Plug (REF 370005) can be used. This Cable Plug fits into the shaft plate holes (Fig. 24) and facilitates a precise and stable platform to support a Cable Crimp. A range of shorter blunt ended Periprosthetic Locking Screws (Fig. 25) are also available when a prosthesis is present. If these Periprosthetic Locking Screws are chosen for the plate shaft, pre-operative insertion of Locking Inserts is recomended.

Fig. 24

Fig. 25

Final plate and screw positions are shown in Figures 21–23.

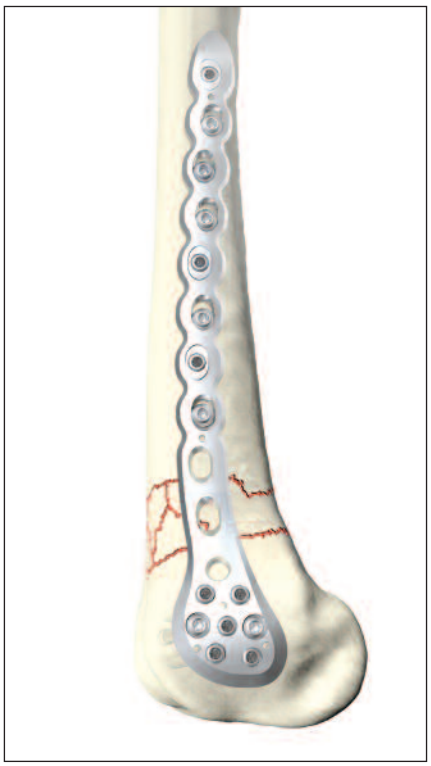


Fig. 21

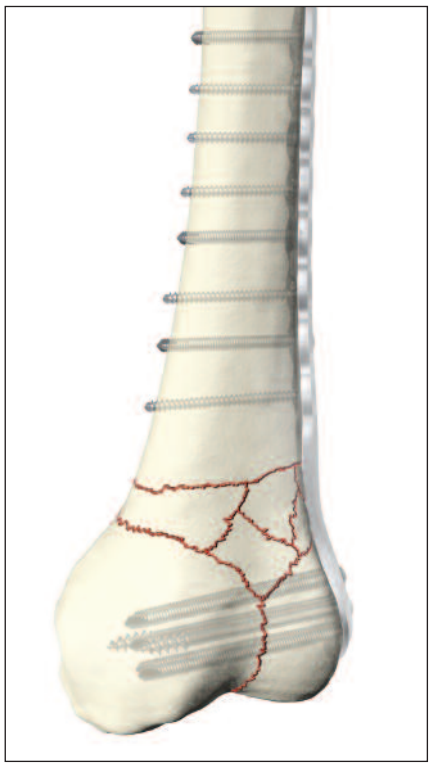


Fig. 22

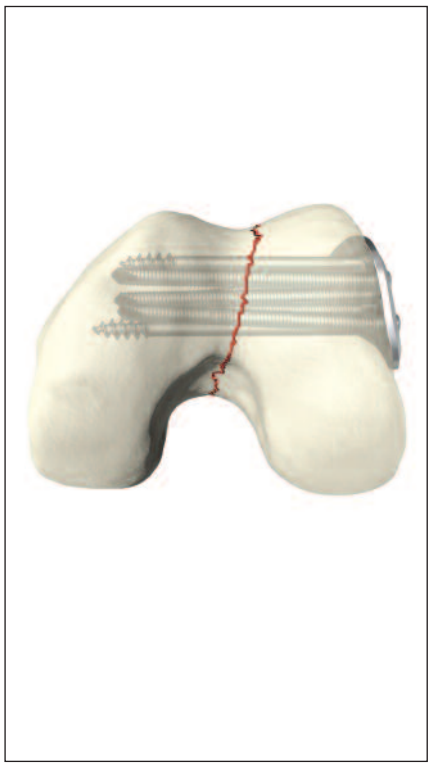
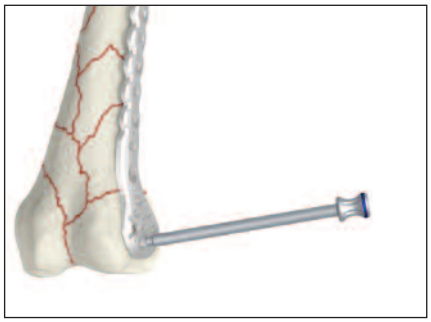


Fig. 23

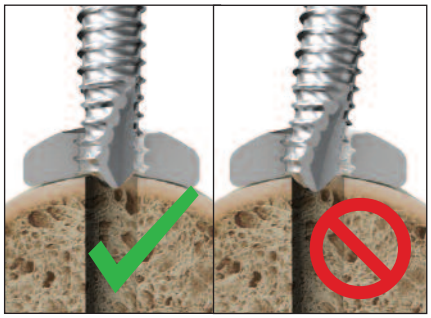
Tips & Tricks

1. Always use the threaded Drill Sleeve when drilling for Locking Screws (threaded plate hole or Locking Insert).



Free hand drilling will lead to a misalignment of the Screw and therefore result in screw jamming during insertion. It is essential, to drill the core hole in the correct trajectory to facilitate accurate insertion of the Locking Screws.

2. Always start inserting the screw manually to ensure proper alignment in the plate thread and the core hole.
It is recommended to start inserting the screw using "the two finger technique" on the Teardrop handle. Avoid any angulations or excessive force on the screwdriver, as this could cross-thread the screw.

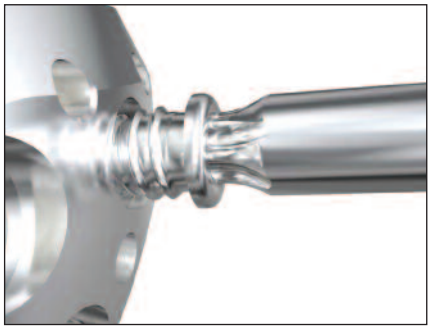


If the Locking Screw thread does not immediately engage the plate thread, reverse the screw a few turns and re-insert the screw once it is properly aligned.

3. If power insertion is selected after manual start (see above), use low speed only, **do not apply axial pressure**, and never "push" the screw through the plate!

Allow the single, continuous threaded screw design to engage the plate and cut the thread in the bone on its own, as designed.

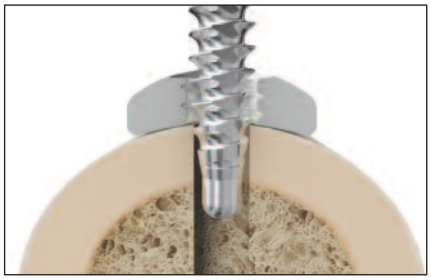
Stop power insertion approximately 1cm before engaging the screw head in the plate.



Power can negatively affect screw insertion, if used improperly, damaging the screw/plate interface (screw jamming). This can lead to screw heads breaking or being stripped.

Again, if the Locking Screw does not advance, reverse the screw a few turns, and realign it before you start re-insertion.

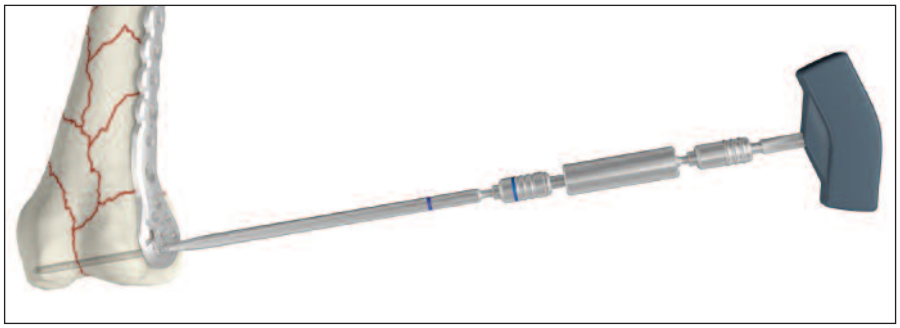
4. It is advisable to **tap hard** (dense) **cortical bone** before inserting a Locking Screw. Use low-speed setting for power tapping.



The spherical tip of the Tap precisely aligns the instrument in the predrilled core hole during thread cutting. This will facilitate subsequent screw placement.

5. Do not use power for final insertion of Locking Screws.
It is imperative to engage the screw head into the plate using the Torque Limiting Attachment. Ensure that the screwdriver tip is fully seated in the screw head, but do not apply axial force during final tightening.

If the screw stops short of final position, back up a few turns and advance the screw again (with torque limiter on).



Ordering Information - Implants

DISTAL LATERAL FEMUR

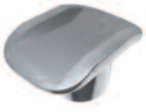
Locking Screws Ø5.0mm
Standard Screws Ø4.5, 6.5mm

Stainless Steel REF		Plate Length	Shaft Holes	Locking Holes
Left	Right	mm		
436504	436524	130	4	5
436506	436526	166	6	5
436508	436528	202	8	5
436510	436530	238	10	5
436512	436532	274	12	5
436514	436534	310	14	5
436516	436536	343	16	5

5.0MM LOCKING INSERT

Stainless Steel REF	System mm
370003	5.0

5.0MM CABLE PLUG



Stainless Steel REF	System mm
370005	5.0

Note: For Sterile Implants, add 'S' to REF

Ordering Information - Implants

5.0MM LOCKING SCREW, SELF TAPPING
T20 DRIVE

Stainless Steel REF	Screw 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

4.5MM CORTICAL SCREW, SELF TAPPING
3.5MM HEX DRIVE

Stainless Steel REF	Screw 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
340655	55
340660	60
340665	65
340670	70
340675	75
340680	80
340685	85
340690	90
340695	95

6.5MM CANCELLOUS SCREW, 16MM THREAD
3.5MM HEX DRIVE

Stainless Steel REF	Screw Length mm
341060	60
341065	65
341070	70
341075	75
341080	80
341085	85
341090	90
341095	95

6.5MM CANCELLOUS SCREW, FULL THREAD
3.5MM HEX DRIVE

Stainless Steel REF	Screw Length mm
343060	60
343065	65
343070	70
343075	75
343080	80
343085	85
343090	90
343095	95

6.5MM CANCELLOUS SCREW, 32MM THREAD
3.5MM HEX DRIVE

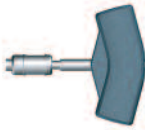
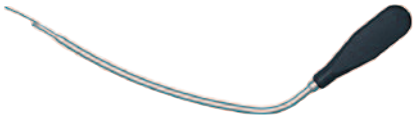
Stainless Steel REF	Screw Length mm
342060	60
342065	65
342070	70
342075	75
342080	80
342085	85
342090	90
342095	95

5.0MM PERIPROSTHETIC LOCKING SCREW, SELF TAPPING
T20 DRIVE

Stainless Steel REF	Screw Length mm
370110	10
370112	12
370114	14
370116	16
370118	18
370120	20

Note: For Sterile Implants, add 'S' to REF

Ordering Information - 5.0mm Instruments

	REF	Description
5.0mm Locking Instruments		
	702743	Drill Ø4.3mm x 262mm
	702773	Tap Ø5.0mm x 140mm
	702748	Screwdriver T20, L300mm
	702754	Solid Screwdriver T20, L180mm
	702733	Screw Holding Sleeve
	702703	K-wire Sleeve
	702708	Drill Sleeve
	702884	Direct Depth Gauge for Locking Screws
	702751	Torque Limiter T20/5.0mm
	702763	Locking Insert Inserter 5.0mm
	702430	T-Handle medium, AO Fitting
	390191	K-wire 2.0mm x 285mm
	702768	Locking Insert Extractor
	702778	Handle for Plate Insertion
	702712	Drill/K-Wire Measure Gauge
	702776	Temporary Plate Holder
	702776-1	Spare Shaft for Temporary Plate Holder
	702918	Soft Tissue Spreader
	702962	Trocar (for Soft Tissue Spreader)
	702782	Soft Tissue Elevator

Ordering Information - 5.0mm Instruments

REF	Description
5.0mm Locking Instruments	
702719	Aiming Block, distal Femur, Left
702718	Aiming block, distal Femur, Right
702718-2	Spare Set Screw for Femur Aiming Block
702791	Plate Trial/Shaft Hole Locator - Distal Femur

SPS Standard Instruments

700357	Drill Bit Ø3.2mm x 230mm, AO
700354	Drill Bit Ø4.5mm x 180mm, AO
702806	Tap Ø4.5mm x 180mm, AO
702807	Tap Ø6.5mm x 180mm, AO
702417	Double Drill Guide Ø3.2/4.5mm
702822	Drill Sleeve Handle
702824	Drill Sleeve Ø3.2mm Neutral
702823	Drill Sleeve Ø3.2mm Compression
702839	Drill Sleeve Ø3.2mm Buttress
702710	Percutaneous Drill Sleeve Ø3.2mm
702958	Percutaneous Drill Sleeve Ø3.2mm Neutral
702877	Depth Gauge 0-150mm for Screws Ø4.5/6.5mm
702843	Screwdriver Hex 3.5mm for Standard Screws L300mm
702853	Solid Screwdriver Hex 3.5mm for Standard Screws L165mm
702862	Screwdriver Holding Sleeve for Screws Ø4.5/6.5mm
702429	Teardrop Handle, large, AO Fitting
900106	Screw Forceps
390192	K-wires 2.0mm x 150mm

Other Instruments

702969	5.0mm Locking Insert Forceps

702672	Guide for Centering Pin

702674	Centering Pin for 5.0mm Plate

702755	Torque Tester with Adapters

702900	Table Plate Bender
981094	X-Ray Template, Distal Femur

Cases and Trays

902921	Metal Base – Instruments
902922	Lid for Base – Instruments
902923	Instrument Tray 1 (Top)
902965	Instrument Tray 2 (Middle) with space for Locking Insert Forceps Instrumentation
902964	Instrument Tray 3 (Bottom) with space for Locking Insert Forceps Instrumentation
902925	Screw Rack
902949	Metal Base – Screw Rack
902954	Lid for Base – Screw Rack
902947	Metal Base – Implants
902926	Implant Tray – Distal Femur
902927	Lid for Base – Distal Femur
902959	Locking Insert Storage Box 5.0mm
902960	Cable Plug Storage Box 5.0mm

Additional Information

HydroSet Injectable HA

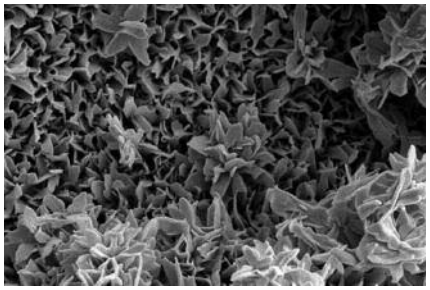
Indications

HydroSet is a self-setting calcium phosphate cement indicated to fill bony voids or gaps of the skeletal system (i.e. extremities, craniofacial, spine, and pelvis). These defects may be surgically created or osseous defects created from traumatic injury to the bone. HydroSet is indicated only for bony voids or gaps that are not intrinsic to the stability of the bony structure.

HydroSet cured in situ provides an open void/gap filler than can augment provisional hardware (e.g K-Wires, Plates, Screws) to help support bone fragments during the surgical procedure. The cured cement acts only as a temporary support media and is not intended to provide structural support during the healing process.

Femoral Condyle Void Filling

Note: Screw fixation must be provided by bone



Scanning Electron Microscope image of HydroSet material crystalline microstructure at 15000x magnification

HydroSet is an injectable, sculptable and fast-setting bone substitute. HydroSet is a calcium phosphate cement that converts to hydroxyapatite, the principle mineral component of bone. The crystalline structure and porosity of HydroSet makes it an effective osteoconductive and osteointegrative material, with excellent biocompatibility and mechanical properties[1]. HydroSet was specifically formulated to set in a wet field environment and exhibits outstanding wet-field characteristics.[2] The chemical reaction that occurs as HydroSet hardens does not release heat that could be potentially damaging to the surrounding tissue. Once set, HydroSet can be drilled and tapped to augment provisional hardware placement during the surgical procedure. After implantation, the HydroSet is remodelled over time at a rate that is dependent on the size of the defect and the average age and general health of the patient.

Advantages

Injectable or Manual Implantation

HydroSet can be easily implanted via simple injection or manual application techniques for a variety of applications.

Fast Setting

HydroSet has been specifically designed to set quickly once implanted under normal physiological conditions, potentially minimizing procedure time.

Isothermic

HydroSet does not release any heat as it sets, preventing potential thermal injury.

Excellent Wet-Field Characteristics

HydroSet is chemically formulated to set in a wet field environment eliminating the need to meticulously dry the operative site prior to implantation.[2]

Osteoconductive

The composition of hydroxyapitite closely match that of bone mineral thus imparting osteoconductive properties.[3]

Augmentation of Provisional Hardware during surgical procedure

HydroSet can be drilled and tapped to accommodate the placement of provisional hardware.

References
1. Chow, L, Takagi, L. A Natural Bone Cement – A Laboratory Novelty Led to the Development of Revolutionary New Biomaterials. J. Res. Natl. Stand. Technolo. 106, 1029-1033 (2001).
2. 1808.E703. Wet field set penetration (Data on file at Stryker)
3. Dickson, K.F., et al. The Use of BoneSource Hydroxyapatite Cement for Traumatic Metaphyseal Bone Void Filling. J Trauma 2002; 53:1103-1108.

Ordering Information

Ref	Description
397003	3cc HydroSet
397005	5cc HydroSet
397010	10cc HydroSet
397015	15cc HydroSet

Note: For more detailed information refer to Literature No. 90-07900

CE 1275

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LOT **D4507**