Femur

stryker®

AxSOS

Locking Plate System

Operative Technique

- Distal Lateral Femur
- Alternating threaded shaft holes

Femur Fractures

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.

All non-sterile devices must be cleaned and sterilized before use. Follow the instructions provided in our reprocessing guide (L24002000). Multi-component instruments must be disassembled for cleaning. Please refer to the corresponding assembly/ disassembly instructions.

See package insert (V15011 and V15013) for a complete list of potential adverse effects, contraindications, warnings and precautions. The surgeon must discuss all relevant risks, including the finite lifetime of the device, with the patient, when necessary.

Warning:

Fixation Screws:
Stryker Osteosynthesis bone screws are not approved or intended for screw attachment or fixation to the posterior elements (pedicles) of the cervical, thoracic or lumbar spine.

Contents

Introduction

The AxSOS Locking Plate System is intended for use in long bone fracture fixation. The AxSOS Locking Plate System is indicated for fixation of long bone fractures including fractures of the distal radius, the proximal humerus, the distal tibia, proximal tibia and the distal femur.

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

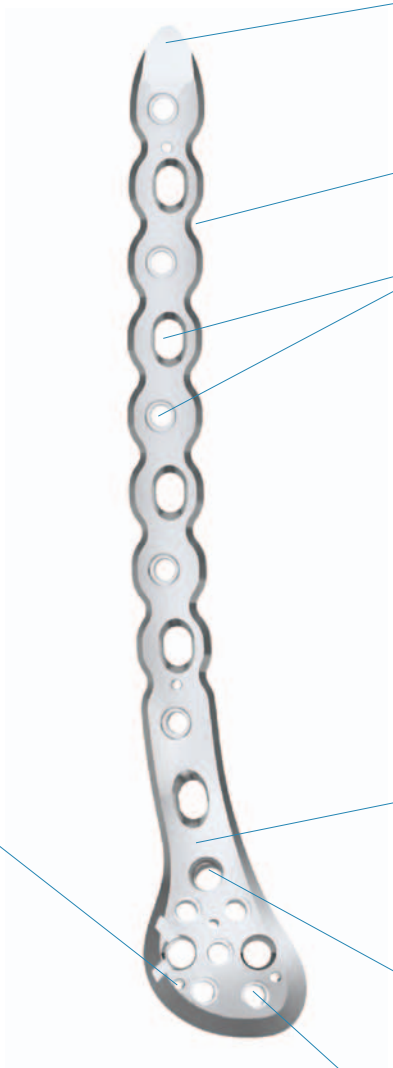
Features & Benefits

System
The Distal Lateral Femoral Plate is designed with optimized fixed-angled screw trajectories in the metaphyseal part and perpendicular fixed-angled screw trajectories in the diaphyseal part, which provide increased biomechanical stability and better resistance to pull out. The metaphyseal screw pattern also helps to avoid any interference in the intercondylar notch and helps prevent loss of reduction.

Instruments
- Simple technique with easy to use instrumentation.
- Compatible with MIPO (Minimally Invasive Plate Osteo-synthesis) technique using state of the art instrumentation.

Range
Longer plates cover a wider range of fractures.

Innovative Locking Screw Design
- Screw is guided into plate.
- The single thread screw design allows easy insertion into the plate, reducing any potential for cross threading or cold-welding.



Rounded & Tapered Plate Ends
Helps facilitate sliding of plates sub-muscularly.

Waisted Plate Shape
Uniform load transfer.

Shaft Holes - Standard or Locking
- Compression, neutral or buttress fixation.
- Accepts standard 4.5/6.5mm SPS screws.
- Accepts locking insert for axially stable screws.
- Pre-drilled locking holes allow axially stable screw placement.

K-Wire/Reduction Holes
Primary/temporary plate and fracture fixation.

Aiming Block
- Facilitates the placement of the Drill Sleeve.
- Provides attachement point for Plate Insertion Handle.

Anatomically Contoured
- Little or no bending required.
- May reduce OR time.
- Facilitates/allows for better soft tissue coverage.

Unthreaded Freedom Holes
- Freehand placement of screws.
- Lag Screw possibility.

5 Monoaxial Holes
Allow axially stable screw placement, bringing stability to construct.

Indications, Precautions & Contraindications

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.

Precautions

Stryker Osteosynthesis systems have not been evaluated for safety and compatibility in MR environment and have not been tested for heating or migration in the MR environment, unless specified otherwise in the product labeling or respective operative technique.

Contraindications

The physician'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 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.

Surgical Approach: Standard lateral, modified lateral or lateral parapatellar approach.

Instrument / Screw Set: 5.0mm

Reduction

Anatomical reduction of the fracture should be performed. This can be helped by both a bridging external fixator and percutaneous clamps.

Fracture reduction of the articular surface should then be checked by fluoroscopy or direct visualisation. Use K-Wires as necessary to temporarily secure the reduction.

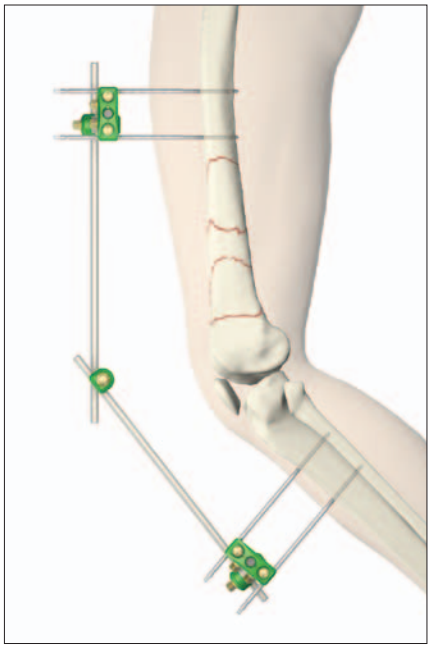
Typically, K-Wires set parallel to the joint axis will not only act to hold and support the reduction, but also help to visualize/identify the joint. Care must be taken that these do not interfere with the required plate and screw positions.

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:

When using a sub-muscular technique, please refer to the relevant section on page 18.



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 above the oblong hole is not recommended. Bending in this region may affect the ability to place a Locking Insert in a hole or to insert a Locking Screw in a threaded shaft hole.

Operative Technique

General Guidelines

Locking Screw Measurement

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

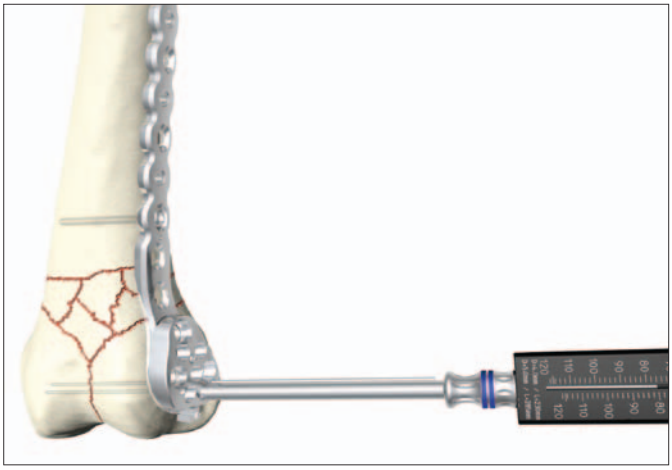
Correct Screw Selection

Note:

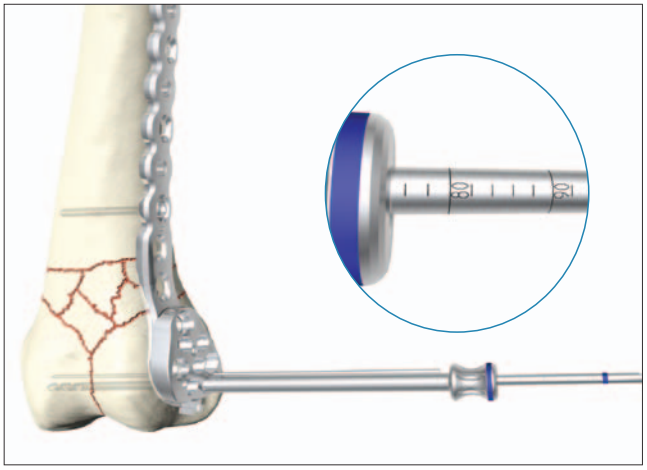
Select a screw approximately 2-3mm shorter than the measured length to avoid screw penetrations through the opposite cortex in metaphyseal fixation.

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

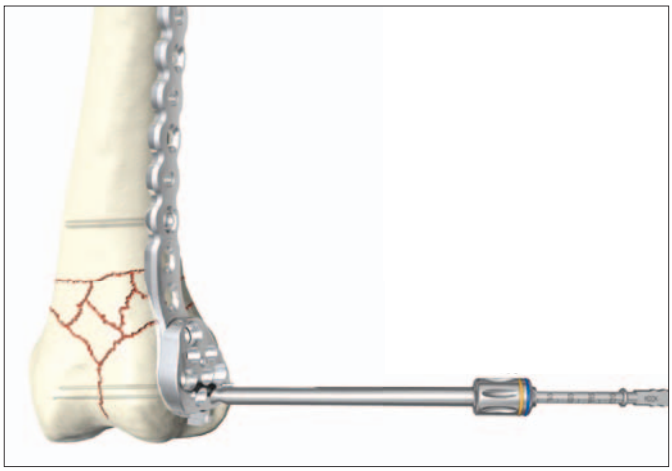
Measurement Options



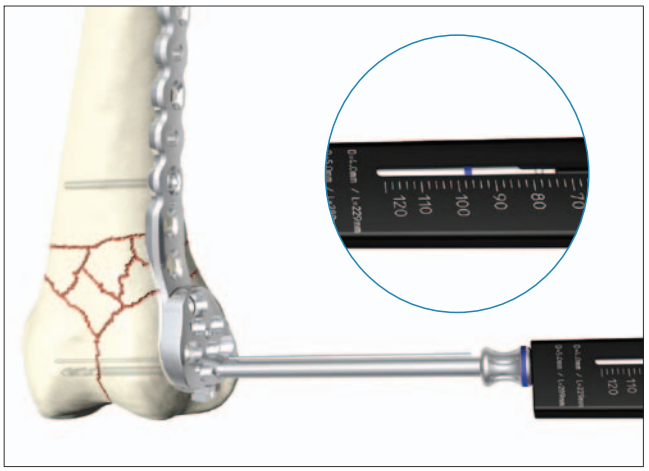
Measure off K-Wire



Read off drill bit calibration



Conventional direct measurement



Measure off the end of drill bit

Operative Technique

Step 1 – Pre-Operative Planning

Use of the X-Ray template (REF 981084) or Plate Trial (REF 702791) in association with fluoroscopy can help to assist in the selection of an appropriately sized implant (Fig. 1 & 1A).

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

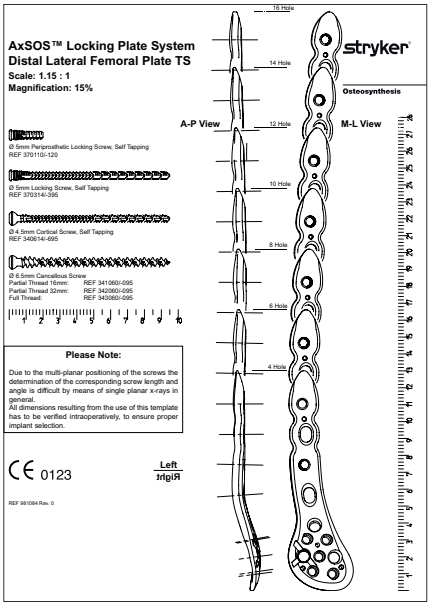


Fig. 1A

Step 2 – Pre-Operative Locking Insert Application

If additional 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).

Note:

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 should not be placed in the same hole as the Temporary Plate Holder (see step 6).

Fig. 2

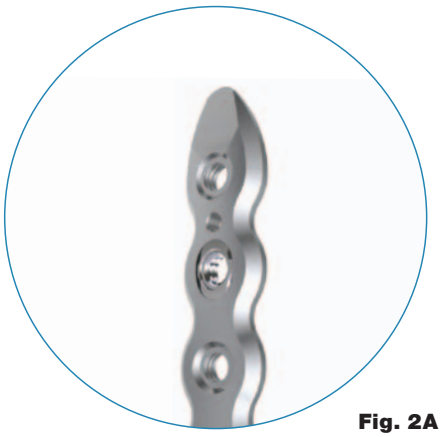


Fig. 2A

Step 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 (Fig. 2B)

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 should not be reused (Fig. 2C).

Fig. 2B

Fig. 2C

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 (Fig. 3A). 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 (Fig. 3B).

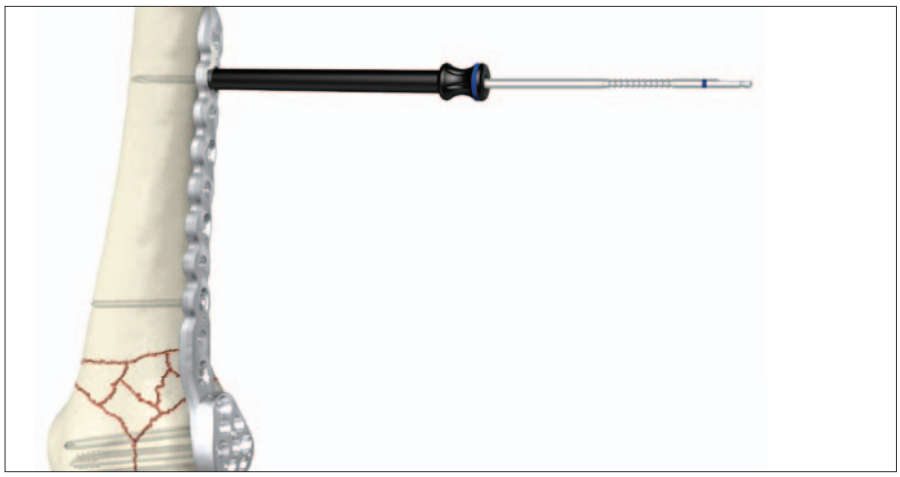


Fig. 3A

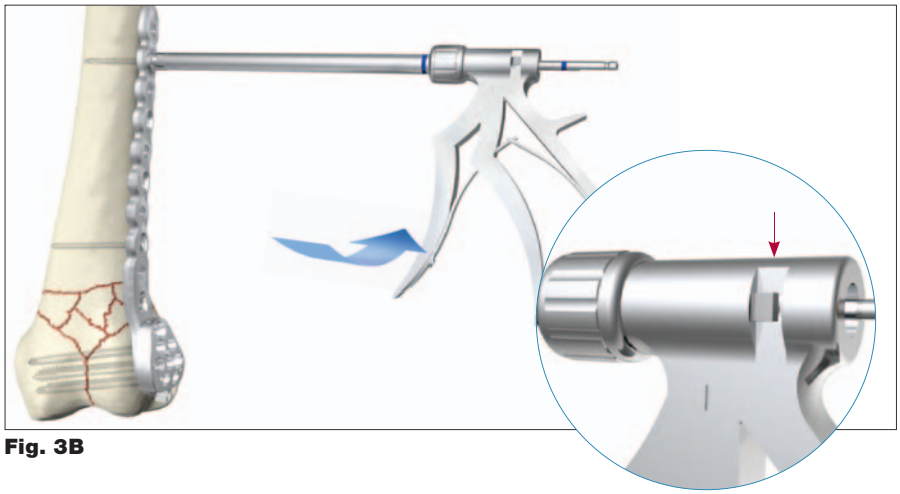


Fig. 3B

Step 3 – Aiming Block/Plate Insertion Handle Assembly

Screw the appropriate Aiming Block (REF 702718/702719) to the plate using the Screwdriver T20 (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. 4).

Fig. 4

Step 4 – 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 approximately 10mm from the articular surface (Fig. 5).

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

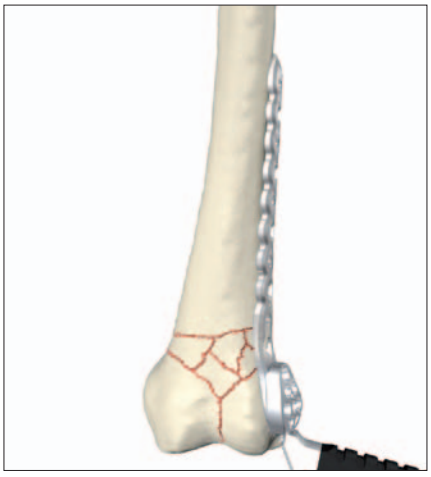


Fig. 5 – AP View

Fig. 5 – Lateral View

Step 5 – 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. 6).

Using the K-Wire Sleeve (REF 702703) in conjunction with the Drill Sleeve (REF 702708), a 2.0×285mm K-Wire can now be inserted into one of the distal Locking Screw holes (Fig. 7). This step shows the position of the Locking Screw in relation to the joint and the intercondylar notch, and confirms the screw will not be placed intra-articularly.

This wire should be parallel to the joint line to assure proper alignment of the distal femur.

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. 7).

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.

Additional 2.0×150mm K-Wires (REF 390192) 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 fragments of 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.

Remove the insertion handle by pressing the metal button at the end of the handle.

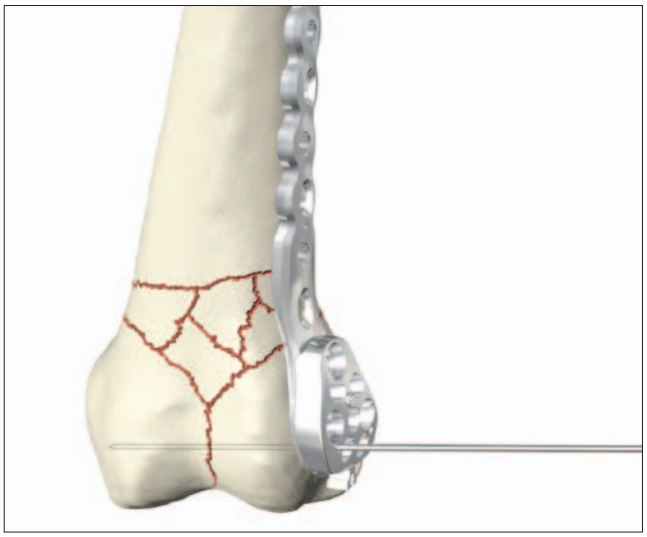


Fig. 6 – AP View

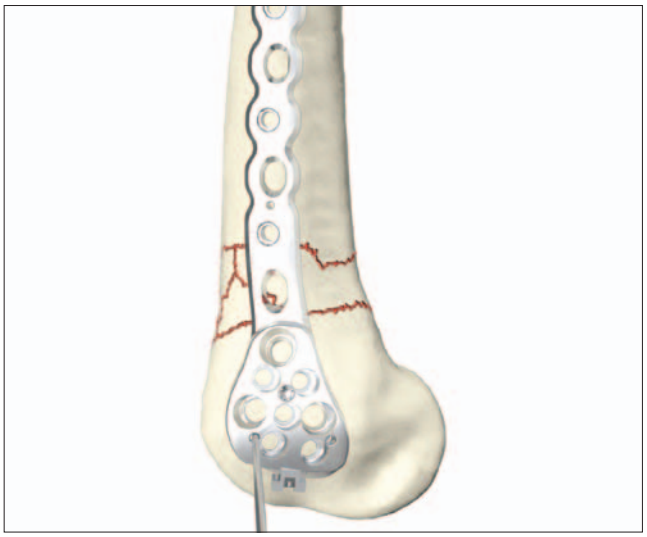


Fig. 6 – Lateral View

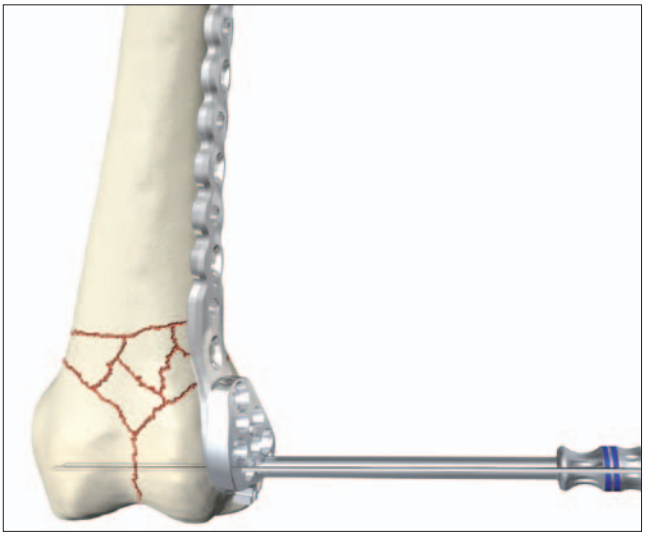


Fig.7 – AP View

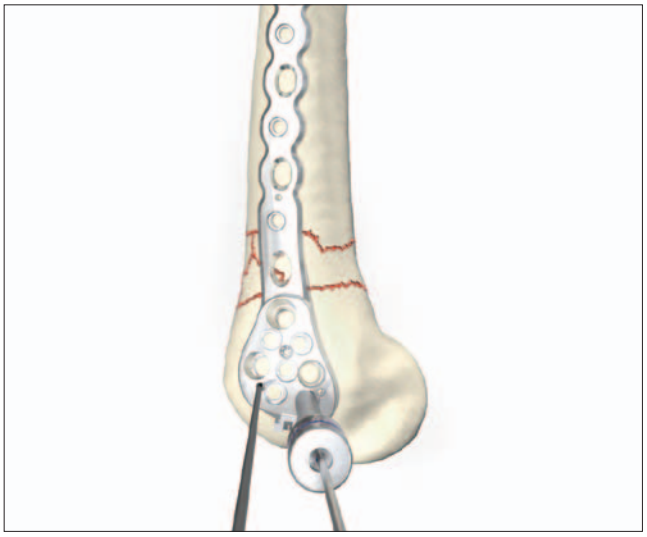


Fig. 7 – Lateral View

Step 6 – Primary Plate Fixation – Proximal (Optional)

The proximal end of the plate can 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 Cortex Screw using the standard technique.
- A 5.0mm Locking Screw in the pre-threaded locking holes or with a Locking Insert in the standard holes (see step 8 – Shaft Fixation).
- The Temporary Plate Holder (REF 702776) in the last unthreaded shaft hole.

Using a 3.2mm Drill (REF 700357) and Double Drill Guide (REF 702417), drill a core hole through both cortices in the first unthreaded 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 the Screwdriver (REF 702843) (Fig. 8).

Alternatively, the Temporary Plate Holder can be used.

In addition to providing temporary fixation, the Plate Holder pushes the plate to the bone. Also, it 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 the plate is in contact with the bone (Fig. 9). The core diameter of this instrument is 3.3mm to allow a 4.5mm Cortical Screw to be subsequently inserted in the same shaft hole.

The Temporary Plate Holder can also be used for indirect reduction anywhere along the fracture site using the "Pull Reduction Method".

Note:

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

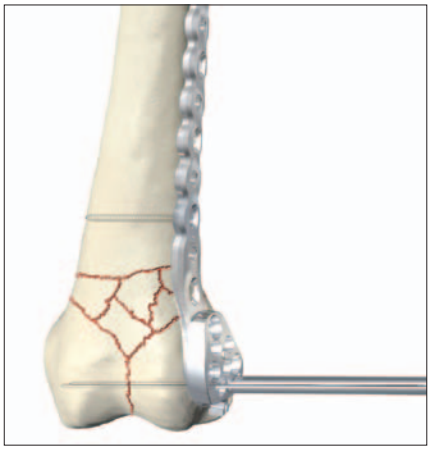


Fig. 8

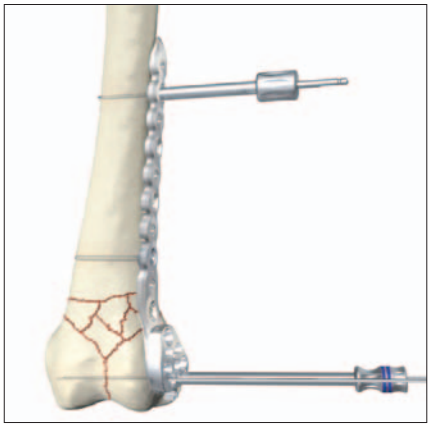


Fig. 9

Step 7 – 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. 10) 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). 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.11).

Fig. 10

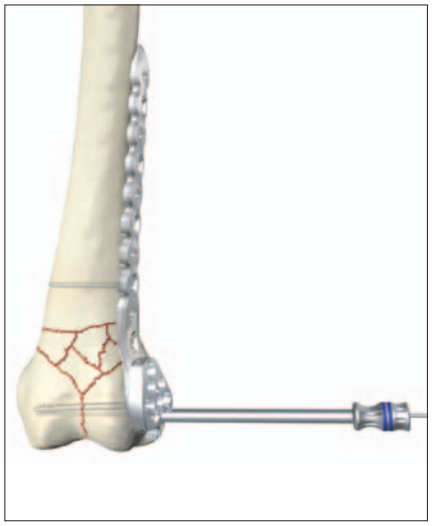


Fig. 11

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 5.

The length of the screw can be taken by using the K-Wire side of the Drill/ K-Wire Measure Gauge (REF 702712) (see Locking Screw Measurement Guidelines on Page 8). 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. 12).

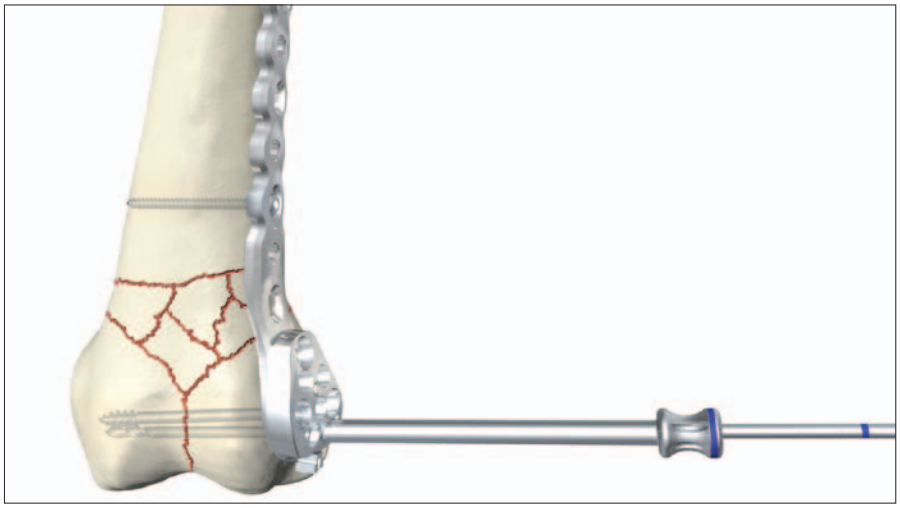


Fig. 12

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

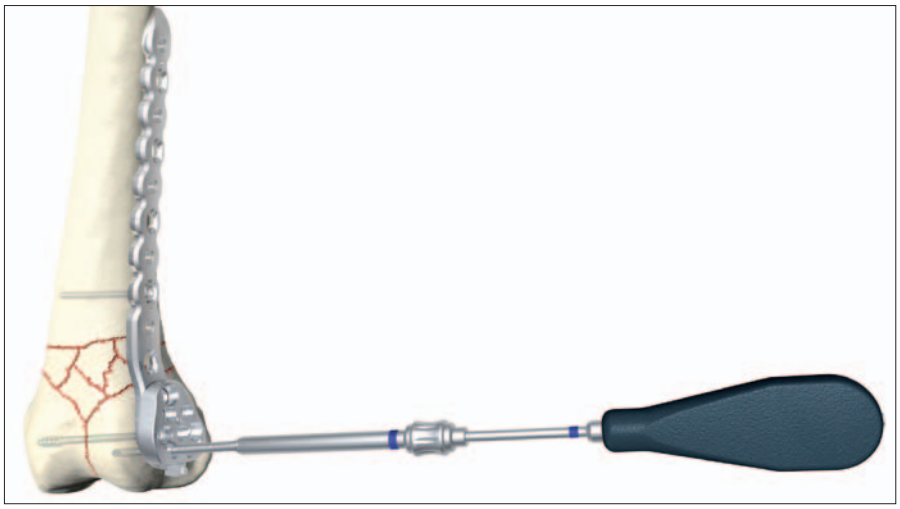


Fig. 13

Note:

- **Ensure that the screwdriver tip is fully seated in the screw head, but do not apply axial force during final tightening.**
- **If 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 must 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. 14).

This helps to prevent over-tightening of Locking Screws, and also ensures that these screws are tightened to a torque of 6.0Nm. The device will click when the torque reaches 6.0Nm.

Note:

The Torque Limiters require routine maintenance. Refer to the instructions for maintenance of Torque Limiters (REF V15020).

Operative Technique

If inserting Locking Screws under power, make sure to use a low speed drill setting to avoid damage to the screw/plate interface and potential thermal necrosis. Perform final tightening by hand, as described before. The remaining distal Locking Screws are inserted following the same technique with or without the use of a K-Wire.

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

To ensure maximum stability, it is recommended that a minimum of four locking holes are filled with a Locking Screw of the appropriate length (Fig 15). More screws may be appropriate in osteopenic bone.

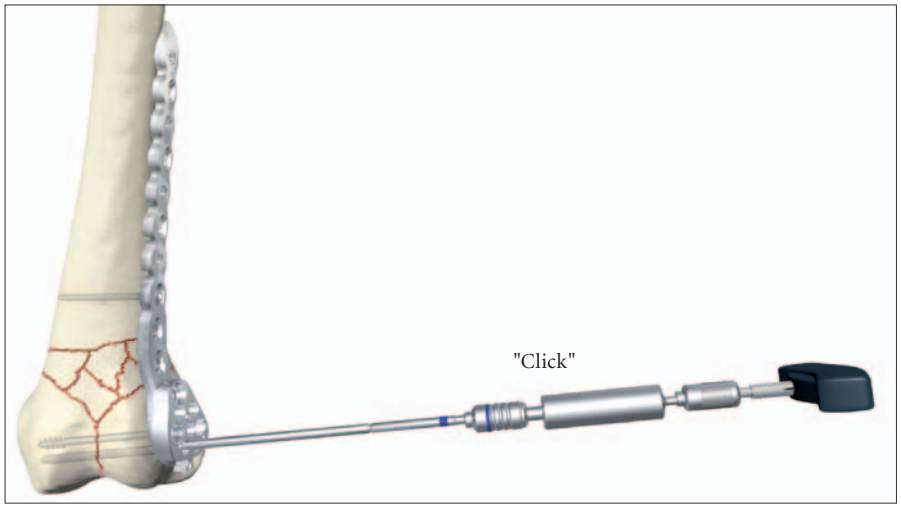
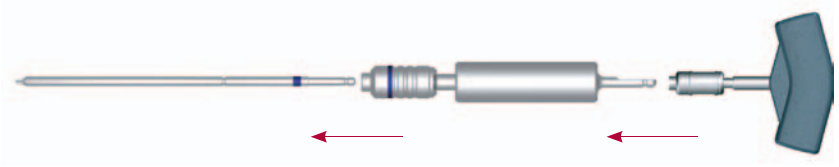


Fig. 14



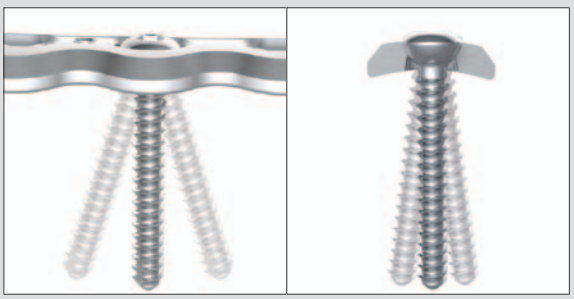
Step 8 – Shaft Fixation

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

Note:

If a combination of standard and Locking Screws is used in the shaft, the plate fixation should begin with Standard Cortical Screws prior to the Locking Screws. Always lag before you lock.

Locked Hole



70° Axial Angulation **20° Transverse Angulation**

(Non-locked holes only)

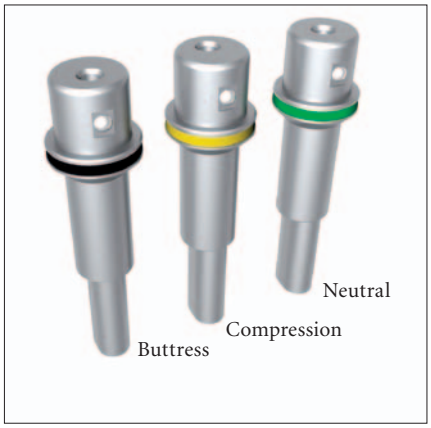
Option 1 – Standard Screws

4.5mm Standard Cortical Screws can be placed in Neutral, Compression or Buttress positions as desired using the relevant Drill Guides and the standard technique.

These screws can also act as Lag Screws.

Note:

This is only possible in non-threaded holes.



Option 2 – Locking Screws

5.0mm Locking Screws can be placed in the threaded shaft holes or holes with pre-placed Locking Inserts.
Use the Drill Sleeve (REF 702708) to pre-drill the core hole for subsequent locking screw placement.
The Drill Sleeve should be fully inserted into a locking hole or Locking Insert to ensure initial fixation of the Locking Insert into the plate.

A 4.3mm Drill Bit (REF 702743) is used to drill through both cortices(Fig. 15).

Note:

Avoid any angulation or excessive force on the drill, as this could dislodge a pre-inserted 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.

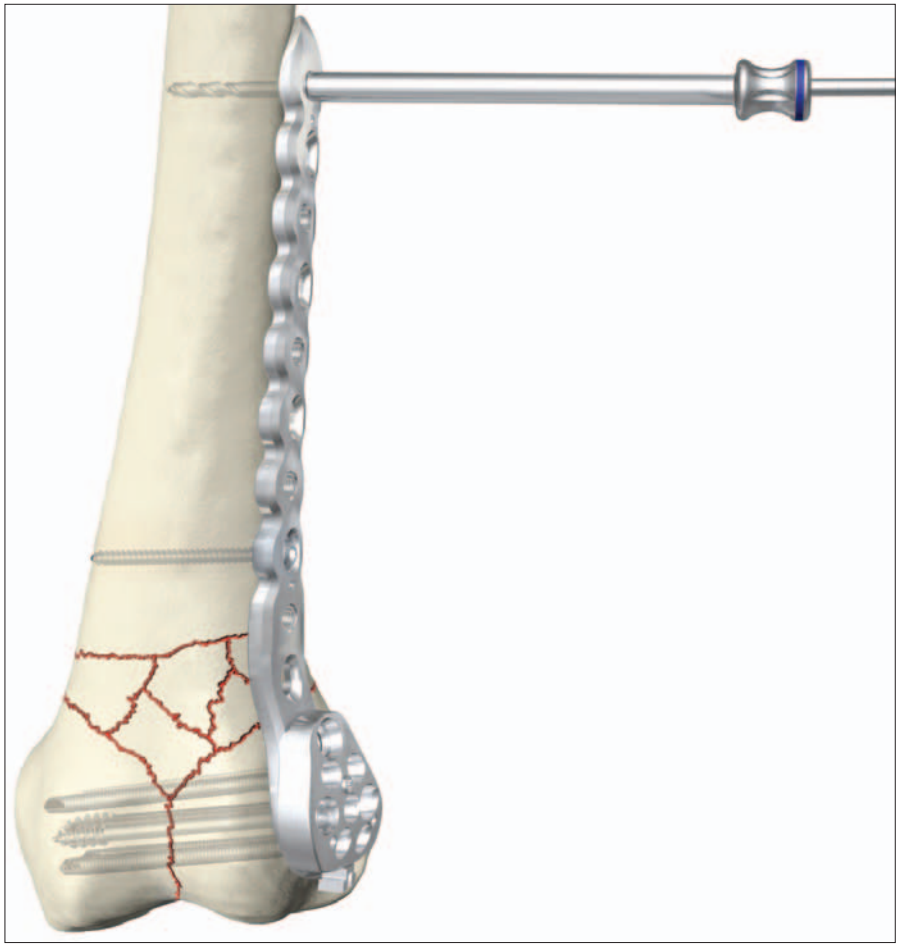


Fig. 15

Maximum stability of the Locking Insert is achieved once the screw head is fully seated and tightened to 6.0Nm.

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.

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 plate (Fig. 16). The plate has a special rounded and tapered end, which allows a smooth insertion under the soft tissue (Fig. 17).

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. 18). The slot and markings on the Shaft Hole Locator act as a guide to the respective holes in the plate.

A small stab incision can then be made through the slot to locate the hole selected for screw placement (Fig. 19). The Shaft Hole Locator can then be rotated out of the way or removed.

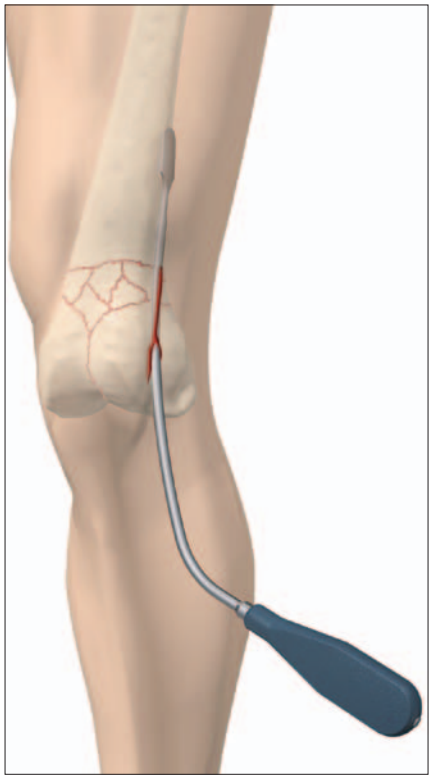


Fig. 16

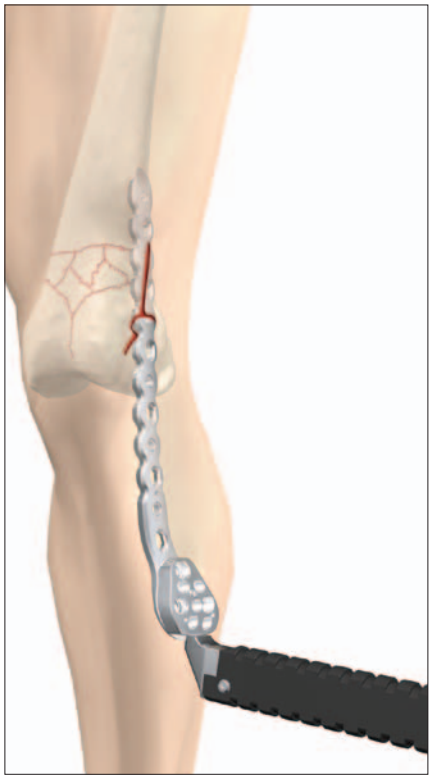


Fig. 17

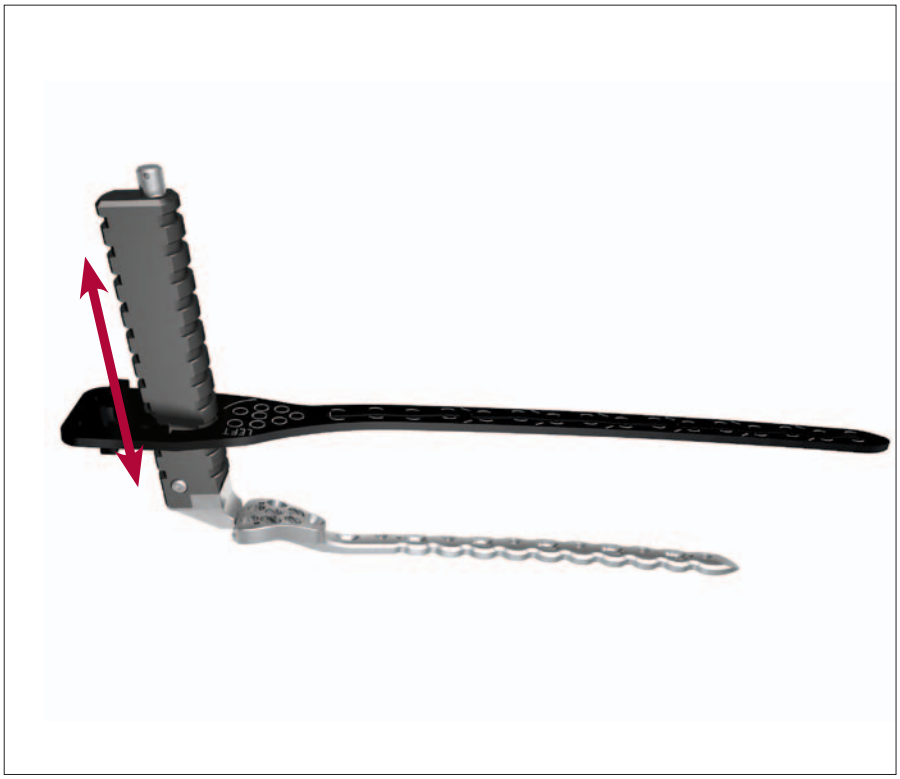


Fig. 18

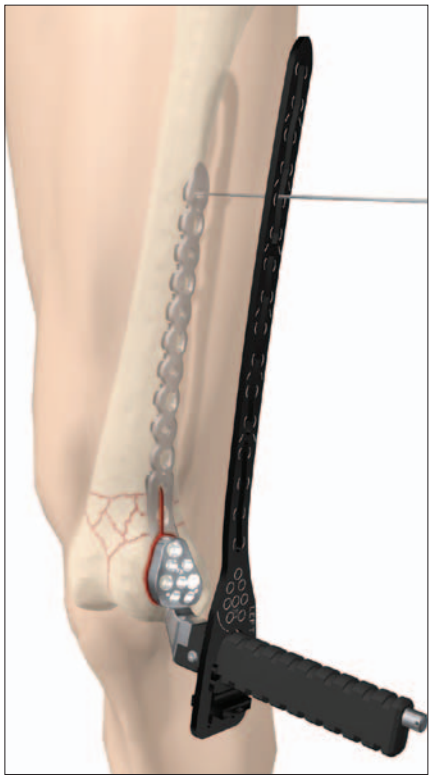


Fig. 19

Operative Technique

With the aid of the Soft Tissue Spreader (REF 702918) and Trocar (REF 702962), the skin can be opened to form a small window (Figures 20 & 21) through which either a Standard Screw or Locking Screw can be placed.

The Standard Percutaneous Drill Sleeve (REF 702710) or 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).

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.

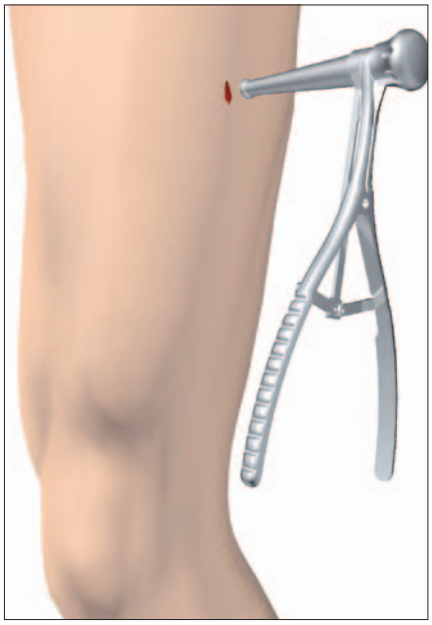


Fig. 20

Fig. 21

Operative Technique

Final plate and screw positions are shown in Figures 22-24

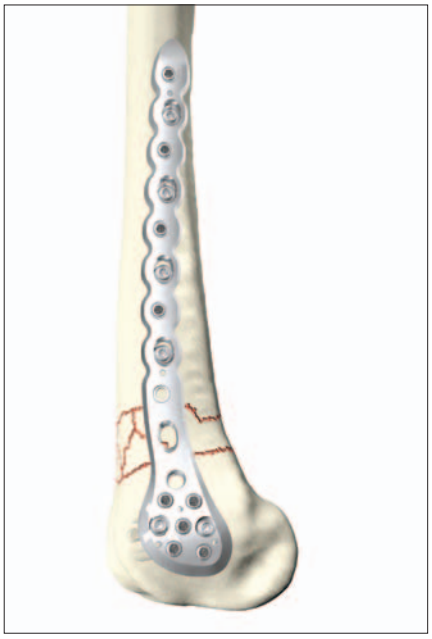


Fig. 22

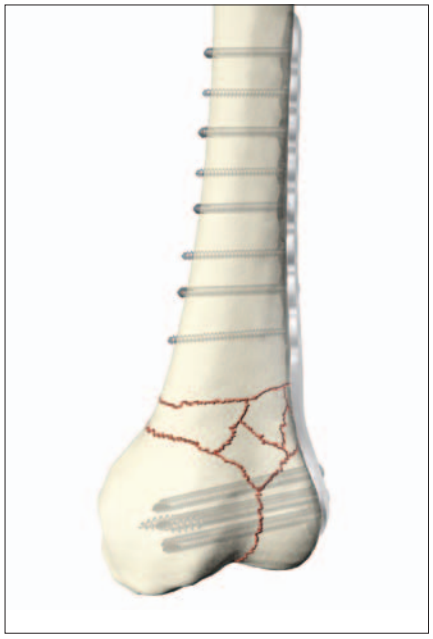


Fig. 23

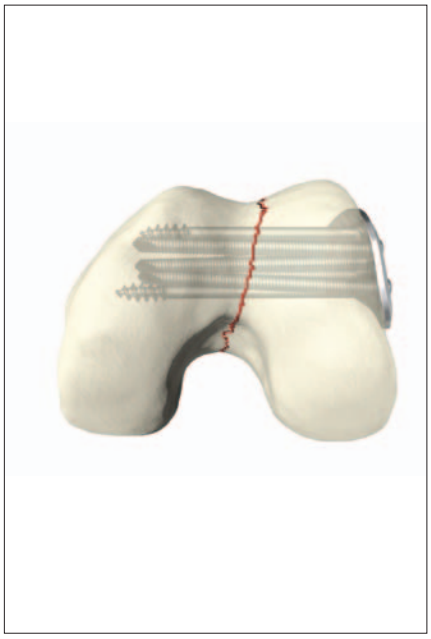


Fig. 24

Peri-prosthetic Solution

Should the plate be used in conjunction with cables, e.g. with peri-prosthetic fractures, the Cable Plug (REF 370005) can be used.

This Cable Plug fits into unthreaded shaft plate holes (Fig. 25) and facilitates a precise and stable platform to support a Cable Crimp. A range of shorter blunt ended Peri-prosthetic Locking Screws (Fig. 26) are available when a prosthesis is present.

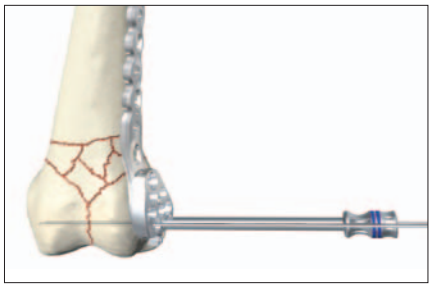
These Locking Screws can be placed in the threaded shaft holes or holes with pre-placed Locking Inserts.

Fig. 25

Fig. 26

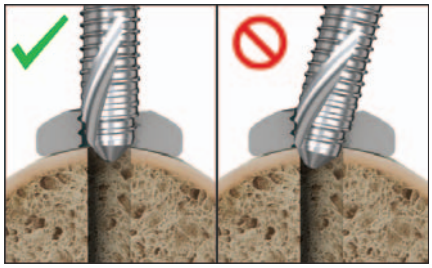
Additional Tips

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 three finger technique"** on the teardrop handle. Avoid any angulations or excessive force on the screwdriver, as this could cross-thread the screw.

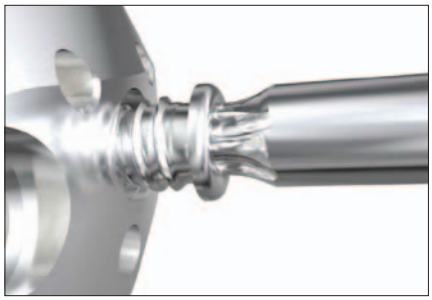


If the Locking Screw thread does not immediately engage the plate thread, reverse the screw a few turns and re-insert the screw once it is properly aligned.

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.

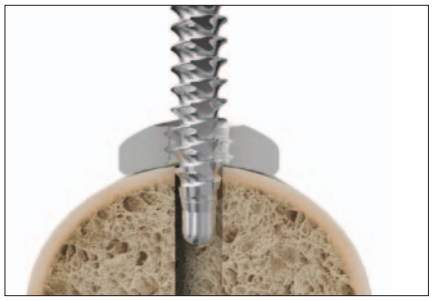
Allow the single, continuous threaded screw design to engage the plate and cut the thread in the bone on its own, as designed.

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



Power can negatively affect tcrew 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.

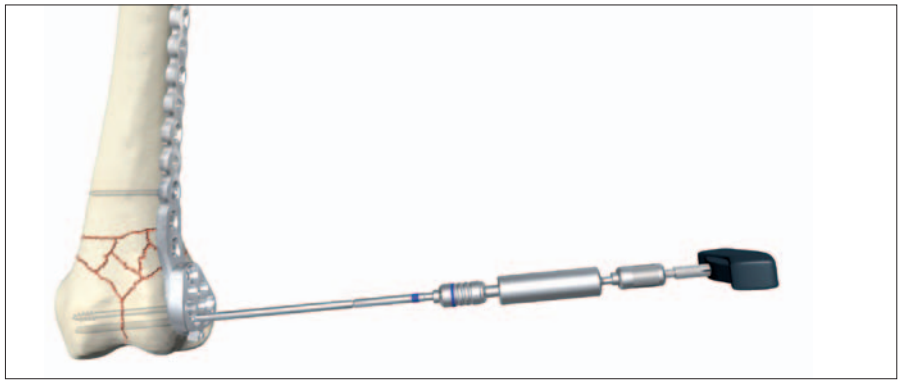
4. It is advisable to t**ap hard (dense) cortical bone** before inserting a Locking Screw.
Use 5.0mm Tap REF 702773.



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 5.0mm
Standard Screws 4.5, 6.5mm

Stainless Steel REF		Plate Length	Shaft Holes	Locking Holes	Locking Holes
Left	Right	mm		Metaphyseal	Shaft
437504	437524	130	4	5	2
437506	437526	166	6	5	3
437508	437528	202	8	5	4
437510	437530	238	10	5	5
437512	437532	274	12	5	6
437514	437534	310	14	5	7
437516	437536	343	16	5	8

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:

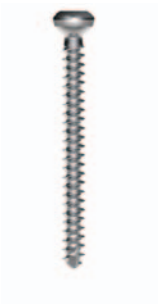
- **For Sterile Implants, add "S" to the REF**
- **16 holes plates are not available sterile.**

Ordering Information – Implants

5.0MM LOCKING SCREW, SELF TAPPING
T20 Drive

Stainless Steel REF	Screw Length mm
371314	14
371316	16
371318	18
371320	20
371322	22
371324	24
371326	26
371328	28
371330	30
371332	32
371334	34
371336	36
371338	38
371340	40
371342	42
371344	44
371346	46
371348	48
371350	50
371355	55
371360	60
371365	65
371370	70
371375	75
371380	80
371385	85
371390	90
371395	95

4.5MM CORTICAL SCREW, SELF TAPPING
3.5mm Hex Drive

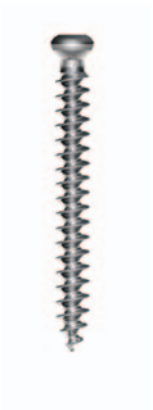


Stainless Steel REF	Screw Length mm
340614	14
340616	16
340618	18
340620	20
340622	22
340624	24
340626	26
340628	28
340630	30
340632	32
340634	34
340636	36
340638	38
340640	40
340642	42
340644	44
340646	46
340648	48
340650	50
340655	55
340660	60
340665	65
340670	70
340675	75
340680	80
340685	85
340690	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

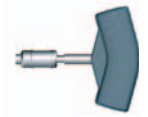
Stainless Steel REF	Screw Length mm
342060	60
342065	65
342070	70
342075	75
342080	80
342085	85
342090	90
342095	95

5.0MM PERI-PROSTHETIC 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 the REF.

Ordering Information – Locking Instruments

	REF	Description
5.0mm Locking Instruments		
	702743	Drill Ø4.3mm × 262mm
	702773	Tap Ø5.0mm × 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 × 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 – Instruments

	REF	Description
		5.0mm Locking Instruments
	702969	Locking Insert Forceps
	702672	Guide for Centering Pin
	702674	Centering Pin
	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
		Optional Instruments
	703615	Drill Ø4.3mm×262 mm, flat Tip

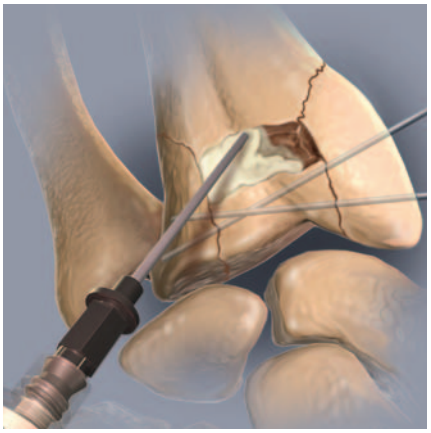
Ordering Information – Instruments

REF	Description
SPS Standard Instruments	
700357	Drill Bit Ø3.2mm × 230mm, AO
700354	Drill Bit Ø4.5mm × 180mm, AO
702806	Tap Ø4.5mm × 180mm, AO
702807	Tap Ø6.5mm × 180mm, AO
702417	Double Drill Guide Ø4.5/3.2mm
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 Ø4.5/6.5, Titanium
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
390164	K-Wires 1.6mm × 150mm (optional)
390192	K-Wires 2.0mm × 150mm
Other Instruments	
702755	Torque Tester with Adapters
702900	Table Plate Bender
981084	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)
902964	Instrument Tray 3 (Bottom incl. Locking Insert Forceps)
902925	Screw Rack
902949	Metal Base – Screw Rack
902954	Lid for Base – Screw Rack
902947	Metal Base – Implants
902966	Implant Tray – Distal Femur
902967	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

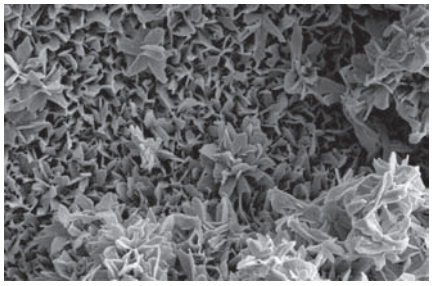
HydroSet is a self-setting calcium phosphate cement indicated to fill bony voids or gaps of the skeletal system (i.e. extremities, craniofacial, spine, and pelvis). These defects may be surgically created or osseous defects created from traumatic injury to the bone. HydroSet is indicated only for bony 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.



Distal Radius Void Filling

Note:

- **Screw fixation must be provided by bone.**
- **For more detailed information refer to Litterature No. 90-07900.**



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 remodeled over time at a rate that is dependent on the size of the defect and the average age and general health of the patient.

CE 1275

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 Metaphyse

Ordering Information

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

stryker®

Joint Replacements

Trauma, Extremities & Deformities

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Stryker Trauma AG
Bohnackerweg 1
CH - 2545 Selzach
Switzerland

www.osteosynthesis.stryker.com

Literature Number: **982301**
LOT **C4510**