



AxSOS Targeting 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.

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Introduction

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.

This Operative Technique contains a simple step-by-step procedure for the implantation of the Distal Lateral Femoral Plate using the specially designed Targeting Device.



Features & Benefits

System

The Distal Lateral Femoral Plate is designed with fixed-angled screw trajectories in the metaphyseal part and perpendicular fixed-angled screw trajectories in the diaphysis. The system is designed to provide adequate biomechanical stability and resistance to pull-out. The metaphyseal screw pattern is also designed to also avoid any interference in the intercondylar notch and help prevent loss of reduction.

Unthreaded Freedom Holes

- Freehand placement of screws
- Lag Screw possibility

Anatomically contoured

- Little or no bending required
- Designed to provide adequate soft tissue coverage
- Helps confirm axial alignment

Innovative Locking Screw Design

And the second second

• Screw is guided into plate

Aiming Block

- Radiolucent for viewing of periarticular region during fluoroscopic evaluation
- Designed to help provide precise placement of metaphyseal Drill Sleeves and screws

Frame Fixator

- Creates a stable construct between the Targeting Arm and plate for screw targeting
- Helps reduce the bone to the plate and to maintain control of segmented fragments

Instruments

- Simple technique with easy to use instrumentation.
- Designed for MIPO (Minimally Invasive Plate Osteosynthesis) technique using state of the art instrumentation.

5 Monoaxial Holes

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

Range

Longer plates cover a wider range of fractures.

Rounded & Tapered Plate End

Designed to help facilitate sliding of plates sub-muscularly.



Shaft Holes Locking or Standard

- Threaded locking holes allow axially stable screw placement
- Neutral fixation using conventional 4.5/6.5mm SPS screws

Targeting Arm

- Precise fit between targeting holes and sleeves for accurate screw placement. Holes 17, 18, 19 and 20 are targeted freehand without the use of the targeting arm
- Radiolucent for unobstructed fluoroscopy control
- Designed for adequate view of periarticular region during fluoroscopy control

Indications, Precautions & Contraindications

Indications

The AxSOS Plus Locking Plate System is intended for use in long bone fracture fixation. The system is indicated for fixation of long bone fractures including but not limited to fractures of the humerus, tibia, and 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.

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 is included in the instructions for use 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.

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.

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 to 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:

When using a sub-muscular technique, please refer to the relevant section on page 11.

Bending

In most cases the pre-contoured plate will fit without the need for further bending.

Plate contouring will affect the ability to use the Targeting Device for percutaneous screw placement and is therefore **not recommended**.

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.

If for any reason the plate needs intra-operative contouring, it is recommended to perform shaft fixation using the conventional screw insertion technique without the use of the Targeting Device.

Table Plate Bender REF 702900

General Guidelines

Screw Measurement

There are four options to obtain the proper screw length as illustrated below. The Screw Scale (REF 703587) should always be used with the assembled Tissue Protection Sleeve **and** the Drill Guides.

Correct Screw Selection

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

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

Measurement Options

Measure off K-Wire

Measure off Calibration

Measure off Measure Gauge

Measure off Drill End

Screw Length Control

Step 1 – Pre-Operative Planning

Use of the X-Ray Template (REF 981084) in association with fluoroscopy can assist in the selection of an appropriately sized implant (Fig. 1).

Note:

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 hole(s) 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 threaded Drill Sleeve.

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. 1

Fig. 2A

Fig. 2B

Fig. 2C

Step 2 – Plate Insertion Handle Assembly

Screw the Connetion Pin (REF 703521) to the plate using the hex Screwdriver 3.5/4.3mm (REF 703537) (Fig. 3A).

Connect the Adaptor Nut (REF 702977) to the Plate Adaptor (REF 703523/703522) and slide the Plate Adaptor over the Connecting Pin with the connecting part for the Targeting Arm pointing to the anterior curvature of the plate. After correct engagement of the alignment teeth in the corresponding grooves in the plate, secure the Plate Adaptor by tightening the Adaptor Nut with the same hex Screwdriver (Fig. 3B).

It is recommended to provisionally apply the corresponding Targeting Arm to check the correct alignment of the Targeting Device and plate. Insert a Drill through the assembled Tissue Protection Sleeve and Drill Sleeve (REF's 703532, 703534 and 703541) into the relevant threaded plate hole prior to plate application.

The Targeting Arm can now be removed again.

The Plate Insertion Handle (REF 702978) can now be attached to help facilitate plate positioning and sliding of longer plates sub-muscularly (Fig. 3).

Fig. 3

Step 3 – Submuscular Plate Application

Patient Position

Place the patient in the supine position on a radiolucent table to allow visualization from knee to hip. May need small bump under ipsilateral hip to correct proximal leg external rotation. Use leg elevator to provide leg support and knee flexion to allow fluoroscopy of the femur in both the AP and lateral views. Prep and drape the leg circumferentially extending proximal to the hip to allow proximal extension of the surgical incision if needed. A sterile tourniquet may be useful if treating a distal femur fracture.

Surgical Approach

Surgeon may use an anterolateral or lateral parapatellar approach, depending on the fracture pattern. (HYPERLINK "http://www.OTA.org"www.OTA.org, Surgical Approach for Orthopaedic Trauma, Kregor et al.)

Lateral/Anterolateral surgical approach is commonly used for OTA A, B, and "simple" C (C-1/C-2) fracture patterns. The skin incision starts at Gerdy's turbicle and extends proximally to a direct lateral incision. The iliotibial band is incised in the same pattern. The joint capsule is then incised if intra-articular reduction needs to be performed or confirmed.

Lateral para-patellar surgical approach is used for OTA C fractures with significant intra-articular disruption. The skin incision starts just lateral to the tibial tuberosity and extends proximally on the lateral border of the patella. The incision can then traverse to a lateral position. A capsulotomy is performed at the lateral border of the patella and the patella mobilized medially to allow joint visualization.

The Soft Tissue Elevator (REF 702782) has been designed to create a pathway for the plate (Fig. 4). The plate has a special rounded and tapered end, which further allows for smooth insertion under the soft tissue.

After the appropriate surgical exposure, based on fracture pattern, is complete

(lateral/anterolateral/lateral para-patellar as described above) obtain fracture reduction. Fracture reduction, once obtained, can be held provisionally with k-wires and/or reduction forceps. External fixation may also be utilized to help with axial, angular, and rotational control across the fracture. Confirm anatomic reduction of the articular surface via direct visualization, palpation, and/or fluoroscopy. (Skeletal Trauma, 2nd ed., Master Techniques in Orthopaedic Surgery: Fractures, 2nd ed.)

Position the plate on the lateral surface of the femur by using the insertion handle to slide the plate proximally in a submuscular fashion. As you insert the plate, use the plate to feel the femur to confirm a direct lateral position, not anterior or posterior to the femoral shaft. Avoid plate insertion thru the muscle to avoid intra-muscular vessel disruption. Avoid periosteal disruption while inserting the plate to help preserve bone blood supply.

Fig. 6

Prior to any screw fixation, confirm that plate placement is correct. Confirm that the capsule edges and iliotibial band are not trapped under the plate, as these layers will need to be available for layered wound closure. Confirm that the plate is sub-muscular, not intra-muscular.

This helps to ensure that the most distal Locking Screws are directly supporting the joint surface In addition, Plate End Markers (REF 703530) may be inserted into the appropriate holes of the Targeting Arm to assist in locating the plate end (up to 16 hole plates) and holes with Locking Inserts during the entire procedure (Fig. 6).

Step 4 – Primary Plate Fixation

A K-Wire Ø2.0 × 315mm (REF 703561) can now be inserted through the cannulation of the Adaptor Nut and the Plate Adaptor to help secure the plate to the bone (Fig. 7). For increased provisional plate fixation, it is also recommended to insert a K-Wire in one of the metaphyseal plate K-Wire holes. This, in addition to other independently placed K-Wires can help to support articular surface fragments. Remove the Handle for Insertion by pressing the metal button at the top of the Handle.

At this point, alignment of the plate to the shaft of the femur should be checked by fluoroscopy both on the A/P and lateral projections.

Attach the correct Aiming Block (REF 703527 Left/703526 Right) to the Plate Adaptor (Fig. 8A). Ensure that the Aiming Block is properly seated on the Adaptor shaft by a 90° rotation on the Plate Adaptor and secured with the Aiming Block Screw (REF 703597) (Fig. 8B).

Using the Tissue Protection Sleeve (REF 703533) together with the Drill Sleeve (REF 703534) and the Trocar (REF 703524), the Drill Sleeve can now be inserted into either one of the two distal locking screw holes of the metaphyseal portion of the plate.

Ensure that the Drill Sleeve is properly seated in the thread of the plate hole.

Remove the Trocar, replace it with the K-Wire Sleeve (REF 703531) and insert a 2.0×315 mm K-Wire (REF 703561) (Fig. 8).

This wire should be parallel to the joint line to assure proper alignment of the distal femur. This step shows the position of a later placed screw and also shows its relation to the joint surface.

Fig. 8

It will also confirm the screw will not be placed intra-articularly.

Using fluoroscopy, the position of this K-Wire can be checked until the position is achieved and the plate is correctly positioned.

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

Do not remove K-Wires as a loss of plate position could result.

The proximal end of the plate must now be secured using the most proximal hole of the shaft.

Attach the correct targeting arm for to the plate adaptor. The Right targeting arm (REF 703528)is used for the right leg and the Left targeting arm (Ref 703529) is used for the left leg.

Mark the skin at the most proximal hole using the Tissue Protection Sleeve (REF 703532) and make a small incision.

Insert the Trocar with sharp tip (REF 703525) into the Tissue Protection Sleeve (REF 703532) and manipulate the assembly through the Targeting Arm and the stab incision until the tip of the Trocar is in contact with the plate.

Push the Tissue Protection Sleeve further into the hole until the locking notches of the Tissue Protection Sleeve fully engage in the corresponding groove in the Targeting Arm . You will hear a click, confirming that the sleeve has snapped into position. Essentially, this will securely lock the Tissue Protection Sleeve in the Targeting Arm. Ensure that the Sleeve Fixation Screw is orientated posteriorly as displayed on the Targeting Arm.

Remove the Trocar and replace it with a Drill Sleeve (REF 703534) and Trocar Ø4.3mm (REF 703524) and manipulate the assembly into the plate hole. Ensure that the Drill Sleeve is fully engaged in the thread of the plate hole to create a stable construct between the Targeting Arm and the plate, providing sufficient stability for accurate screw targeting. Secure the Drill Sleeve by tightening the Sleeve Fixation Screw. Remove the Trocar. A 2.0 × 315mm K-Wire (REF 703561) can now be inserted using the K-Wire Sleeve (REF 703531) (Fig. 9).

Alternatively, the 4.3mm Calibrated Drill (REF 703541) can be inserted bi-cortically. Leave the Drill Bit in place for primary plate stabilization (Fig. 9A). Note:

Please see literature number 2012500 (Distal Femur Targeting Video) for visual example of targeting assembly.

If desired, the plate can be pushed to the bone by using the Frame Fixator (REF 703545) instead of the drill or K-Wire.

Remove the flat butterfly-nut of the fixator. The self-drilling, self-tapping tip of the Frame Fixator pin should be inserted bi-cortically through the Drill Sleeve (REF 703534).

Use fluoroscopy to confirm bi-cortical purchase when necessary.

When inserting the pin by power, make sure to use a low-speed to avoid significant temperature increase which can lead to bone necrosis. Re-attach the flat butterfly-nut over the threaded part of the pin and turn the sleeve until the plate is in the desired position. (Fig. 10).

Note:

Using plates with 10 holes or longer, it is recommended to insert one or two additional Tissue Protection/Drill Sleeve assemblies in threaded holes in the middle positions of the plate shaft. This will help to compensate for plate deformity that might occur using standard cortical screws to push the plate against the bone. (Do not lock the Drill Sleeve) The additional assembly will allow the sleeve and the plate to contour to the bone without compromising the accuracy of the Locking Screws (Fig. 11).

Step 5 – Metaphyseal Plate Fixation

Locking Screws cannot act as lag screws. Should an interfragmentary compression effect be required for metaphyseal fragments, a partially threaded 6.5mm standard cancellous screw must first be placed in one of the unthreaded metaphyseal plate holes **prior** to the placement of any Locking Screws.

Freehand placement of this screw(s) can be performed using the freehand Tissue Protection Sleeve (REF 703546) together with the Drill Sleeve (REF 703535) (Fig. 12).

It is recommended to use the posterior unthreaded metaphyseal hole by placing the freehand Tissue Protection Sleeve in the recess (see arrow) at the posterior aspect of the Aiming Block (Fig. 12A). This screw trajectory helps to avoid interference with any of the later inserted Locking Screws in the metaphysis.

Use the Calibrated Drill Ø3.2mm (REF 703542) and drill the core hole to the appropriate depth.

It is recommended to drill under fluoroscopy control to avoid interference with preset K-Wires. Manipulate the K-Wires as necessary.

The screw length can directly be read off the Calibrated Drill or using the Screw Scale (REF 703587) as described under Measurement Options on page 8.

Over-drill the first cortex using the drill Ø4.5mm (REF 703543) through the Tissue Protection Sleeve and pre-tap the near cortex with the 6.5mm cancellous Tap (REF 703553).

The screw can then be inserted through the Tissue Protection Sleeve. Care must be taken that these screws do not interfere with the Locking Screw trajectories.

Fig. 12

Locking Fixation of the metaphyseal portion of the plate can now be started. Remove the preset K-Wire and K-Wire Sleeve in the metaphyseal plate hole.

Using the calibrated Drill Bit Ø4.3mm (REF 703541), drill the core hole for the Locking Screw. Stop drilling once the drill tip touches the medial cortex to ensure that the screw tip will not protrude.

It is recommended to use multiple fluoroscopic views which may be necessary to insure proper location and depth of the drill.

The screw length can be determined with a direct read off the calibration of the drill or any other measurement option as described on page 8.

The drill and the Drill Sleeve should now be removed and the correct length 5.0mm Locking Screw is inserted using the screwdriver T20 (REF 703539) (Fig. 13).

The screw is near its final seating position when the blue marking around the shaft of the Screwdriver approaches the end of the Tissue Protection Sleeve (Fig. 13A). Locking Screws should initially be inserted manually to ensure proper alignment.

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 the plate thread, reverse the screw a few turns and re-insert the screw once it is properly aligned
- Care should be taken to ensure that there is no intra-articular penetration of metaphyseal screws

Difficult Screw Insertion:

Initial locked screw insertion should begin manually to ensure proper alignment followed by power. If power is chosen for initial insertion, start at low-speed to allow the threads to engage the plate, preventing crossthreading. Final seating of locking screws is completed by use of the torque limiter attachment on the T-handle.

In the event of cross-threading, the screw should be removed and discarded. Check for debris and remove with irrigation. You may use a cortical screw in a locking screw hole if a locking screw is not available or if appropriate insertion unattainable.

In the extreme event of broken or stripped screws, the Stryker implant extraction set (Literature number LIES-OT) includes a variety of broken screw removal instruments.

Final tightening of Locking Screws should always be performed manually using the Torque Limiting Attachment (REF 702751) together with the Screwdriver Bit T20 (REF 703540) and the T-Handle (REF 702430) (Fig. 14). This helps 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 maintainance. Refer to the Instructions for Maintainance of Torque Limiters (REF V15020).

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 above.

The remaining metaphyseal Locking Screws are inserted following the same technique with or without the use of K-Wires.

To ensure stability, it is recommended that a minimum of four locking holes are filled with a Locking Screw of the appropriate length (Fig 15).

Note:

If Hybrid or non-locked metaphyseal fixation is prefered, 4.5mm standard cortical screws can be used in threaded holes instead of Locking Screws.

Step 6 – Shaft Fixation

a) Standard Screws

Standard cortical screws in the shaft should be placed prior to any Locking Screws.

Mark the chosen standard shaft hole using the Tissue Protection Sleeve and make a small incision. Insert the Tissue Protection Sleeve (REF 703532) together with the Trocar with sharp tip (REF 703525) until the tip is in contact with the plate (Fig. 16).

Push the Tissue Protection Sleeve further until you hear a **click**, confirming that the sleeve has snapped into position (Fig. 17).

Remove the Trocar with sharp tip and replace it with the Drill Sleeve (REF 703535). Insert the Trocar Ø3.2mm (REF 703536) and manipulate the assembly into the plate hole. Lock the Drill Sleeve with the Sleeve Fixation Screw and remove the Trocar (Fig. 18).

The Calibrated Drill Ø3.2mm (REF 703542) is then used to drill the core hole for the 4.5mm Cortical Screw (Fig. 19).

Drill through both cortices for bi-cortical screw fixation. The screw length can be determined with a direct read off the calibration of the core drill, or any other measurement option as described on page 8.

If the screw is set in a lag function, remove the Drill Sleeve after core hole drilling and over-drill the first cortex using the drill Ø4.5mm (REF 703543).

The appropriate size self-tapping Cortical Screw is inserted using the hex Screwdriver (REF 703537) or the Screwdriver Bit (REF 703538) for power insertion (Fig. 20). In hard cortical bone, it is advised to use the Tap Ø4.5mm (REF 703551) before screw insertion. Repeat the same procedure for other chosen unthreaded shaft holes.

Fig. 17

Fig. 19

b) Locking Screws

5.0mm Locking Screws can be placed in the threaded shaft holes or holes with pre-placed Locking Inserts. For the placement of these screws, follow the same procedure detailed in step a). For Locking Screws use appropriate instrumentation outlined as follows:

- Drill Sleeve Ø4.3mm (REF 703534)
- Trocar Ø4.3mm (REF 703524)
- Calibrated Drill Ø4.3mm (REF 703541)
- Screwdriver T20 (REF 703539)
- Screwdriver Bit T20 (REF 703540)
- Tap 5mm Locking (REF 703554)
- 6Nm Torque Limiter (702751)

Note:

If an uncommonly thick cortex is identified during preoperative planning, pretap both cortices using the Tap for Locking Screws (REF 703554) before screw insertion. If power tapping is selected, use low speed only and do not apply axial pressure on the power tool. It is also recommended, to predrill and pretap the threaded hole before exchanging the Frame Fixator for a Locking Screw in the last shaft hole.

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

Fig. 22

Additional Tips

Peri-prosthetic Solution

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

This Cable Plug fits into unthreaded shaft plate holes (Fig.24) and facilitiates a precise and stable platform to support a Cable Crimp. A range of shorter blunt ended Peri-prosthetic Locking Screws (Fig.25) are available when a prosthesis is present.

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

 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.

2. It is advisable to tap hard (der	ise)
cortical bone before inserting	а
Locking Screw.	
Use 5.0mm Tap (REF 703554).	

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.

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

3. 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 St REF Left	eel Right	Plate Length mm	Shaft Holes	Locking Holes Metaphyseal	Locking Holes 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
437518S	437538S	379	18	5	9
437520S	437540S	415	20	5	10

Note:

The proximal holes of plates longer than 16 holes cannot be approached using the targeting arms.

5.0MM LOCKING INSERT

9

Stainless Steel REF	System mm	
370003	5.0	

5.0MM CABLE PLUG

Stainless Steel REF	System mm	
370005	5.0	

Note:

The Classic series of AxSOS plates (Series 436XXX) requires use of Locking Inserts exclusively in the shaft portion of the plate should the surgeon wish to lock in the shaft. For insertion instructions, please refer to Step 1 – Pre-Operative Planning on page 9.

Ordering Information – Screws

5.0MM LOCKING SCREW, SELF TAPPING

T20 Drive

Stainless Steel REF	Screw Length mm
271214	14
3/1314	14
3/1316	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	70
371380	73 80
271205	80
3/1383	85
3/1390	90
3/1395	95

4.5MM CORTICAL SCREW, SELF TAPPING

3.5mm Hex Drive

Ö	Stainless Steel REF	Screw Length mm
- 12	340614	14
	340616	16
- 16	340618	18
- 35	340620	20
- 31	340622	22
	340624	24
経	340626	26
- 16	340628	28
- B	340630	30
35	340632	32
- 4E	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

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
1	370110	10
	370112 370114	12
1	370116 370118	16 18
	370120	20

Note:

For Sterile Implants, add "S" to the REF.

Ordering Information – Targeting Instruments

	REF	Description
	990243	Targeting Instruments, complete set (2 trays)
Stryker	902912 1806-9700	Metal Tray, Femur Targeting Instruments (Empty tray) Spare Lid for Tray
	703521	Connecting Pin - Distal Lateral Femur
	703523	Plate Adaptor Distal Lateral Femur, left
	703522	Plate Adaptor Distal Lateral Femur, right
H10	702977	Adaptor Nut
стана С	703527	Aiming Block Distal Lateral Femur, left
S	703526	Aiming Block Distal Lateral Femur, right
· ·	703597	Aiming Block Screw, Ø8mm
	703529	Targeting Arm - Distal Lateral Femur, left
	703528	Targeting Arm - Distal Lateral Femur, right
	703530	Plate End Marker, Ø12

Ordering Information – Instruments

	REF	Description
	902913	Metal Tray, Instruments (Empty Tray)
stryker	1806-9700	Spare Lid for Tray
	703537	Screwdriver, HEX 3.5/4.3mm
	703538	Screwdriver Bit, HEX 3.5/4.3mm, AO
	703539	Screwdriver, T20
	703540	Screwdriver Bit, T20, AO Fitting
++- E	703541	Calibrated Drill Bit, Ø4.3mm x 315mm, AO
	703542	Calibrated Drill Bit, Ø3.2mm x 315mm, AO
	703587	Screw Scale
	703545	Frame Fixator, Ø4.2mm, AO Fitting
	703532	Tissue Protection Sleeve, centric
	703591	Sleeve Fixation Screw
	703533	Tissue Protection Sleeve, Aiming Block
	703534	Drill Sleeve, Ø4.3mm
	703535	Drill Sleeve, Ø3.2mm
	703531	K-Wire Sleeve, Ø2.0mm
	703524	Trocar, Ø4.3mm
	703536	Trocar, Ø3.2mm
	703525	Trocar, Sharp Tip
	703554	Tap Locking, Ø5.0mm × 295mm, AO
	703551	Tap Cortical, Ø4.5mm × 295mm, AO
	703553	Tap Cancellous, Ø6.5mm × 295mm, AO
	703561	K-Wire Drill Tip, Ø2.0mm × 315mm
	703544	Screw Measure Gauge
	703543	Cortical Opener, Ø4.5mm, AO Fitting
	702978	Plate Insertion Handle

Ordering Information – Instruments

	REF	Description
<u>j </u>	703546	Tissue Protection Sleeve, Free Hand
/	702751	6Nm Torque Limiter
~	702763	Locking Insert Inserter
	702768	Locking Insert Extractor
	702782	Soft Tissue Elevator
	702430	T-Handle, AO Coupling

REF	Description

Other Instruments

702755 Torque Tester with Adapters

	REF	Description				
	Optional Instruments					
	703618	Drill Bit with flat Tip, 4.3×315 mm, small AO				
•	702900	Table Plate Bender				
	702900-23 702900-26	Bending Sleeve, Plastic (2 required) Replacement Screws M5x30 (2 Pieces)				

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
- For more detailed information refer to Literature 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 properties1. HydroSet was specifically formulated to set in a wet field environment and exhibits outstanding wet-field characteristics². 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.

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 implantation².

Osteoconductive

The composition of hydroxyapitite closely match that of bone mineral thus imparting osteoconductive properties³.

Augmentation of Provisional Hardware during surgical procedure

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

References

- 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		

CE 1275

Notes

stryker

Reconstructive

Hips Knees Trauma & Extremities Joint Preservation Orthobiologics

Medical & Surgical

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