stryker

Osteosynthesis

SPS

Small Fragment Set

- Features and Benefits
- Indications
- Operative Technique
- Ordering Information

Rationale

The newly developed Small Fragment Set is designed for the most common indications of traumatology and orthopaedics. The shape, material properties and the surface quality of the plates take into account the current demands from clinical physicians for high fatigue strength, optimised transfer of loading forces and a simple and standardised operative technique with broad applicability.

The implants are available in either Stainless Steel (316LVM) or Titanium Alloy (Ti-6Al-4V).

Implant Rationale

The Stryker Plating Systems (SPS) Small Fragment Set consists of seven different plate designs. The plates are differentiated by their function.

The main functions are:

- Compression
- Buttressing
- Neutralisation
- Bridging

Compression

The use of individual Lag-Screws in transverse and short oblique fractures may provide limited compression only. Axial compression can therefore be increased by using a compression plate in the compression mode in accordance with the tension-band principle, whenever possible. In order to provide increased stability, an interfragmentary screw may be inserted through the plate.

Neutralisation

In situations where Lag-Screws alone cannot provide sufficient stability, plates are used to increase stability and load sharing. When used, such neutralisation plates protect the inter-fragmental compression achieved by the Lag-Screws, from torsion, bending and shearing forces.
This allows early mobilisation and certain limited weight bearing.
The type of plate and screws used depends on the fracture site, pattern and the bone quality.
A Lag-Screw of either 3.5mm or 4.0mm can also be inserted through neutralisation plates.

Buttressing

Most specially designed plates are used in the metaphyseal area of bone and have the function as buttress plates. The screws must be inserted in such a position that under load there must be no shift in the position of the plate. The position is secured by placing the screws in the side of the plate hole closest to the fracture. During load application, any tendency for the plate to shift is reduced by the screws.

Bridging

In order to maintain length and alignment, a plate can be used to bridge a badly comminuted segment of bone.
This type of fixation is naturally less stable and union will depend on bridging callus. Consideration may be given to sub-cutaneous plate application which may maintain all soft tissue attachments and the nutrification of the intervening comminuted fragments. Both plate ends have to be solidly fixed to their corresponding parts of the bone by sufficient screws. Infrequently, bridging osteosynthesis is carried out in combination with bone grafting. Tumour resections and bone elongations represent other situations where bridging plates are used.
The compression plate of the Stryker Small Fragment Set can be used as a bridging plate in a non compression mode.

Screws

All the SPS Screws have a hexagonal head with a spherical underside and conform fully to the requirements set by ASTM F138 & F139/ISO 5832-1 standards. All the cortical screws within the range are self-tapping. Three cutting flutes on the tip of each screw allows cleaner cutting and help to avoid “compacting” of the bone chips at the tip of the screw.
Due to specially designed grooves, the screw offers an enhanced insertion torque. Furthermore, the bone splinters that may accumulate are pushed forward and kept out of the way of the thread thus preventing possible pressure necrosis. The range of different screw lengths has been increased and modified according to different anatomical regions.
Depending on the individual plate thickness, the screw heads can be almost completely countersunk into the specifically designed plate holes.
In addition to the cortical screws, cancellous screws may also be inserted.

Material Composition

ASTM F138 & F139/ISO 5832-1 and ASTM F136/ISO 5832-3 material standards provide rigid specifications which define the chemical composition, microstructural characteristics and mechanical properties of implant quality Stainless Steel and Titanium Alloy respectively. These standards ensure that Stainless Steel 316LVM and Titanium Alloy Ti-6Al-4V, even if provided by different suppliers, is consistent and compatible.
The material used for all SPS plates and screws meets these standards.

Introduction

Clinical Design Team

The System is designed with the kind collaboration of the following Surgeons:

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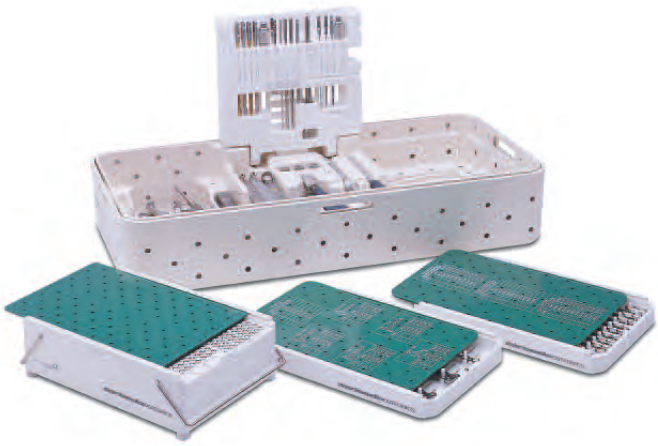
We would also like to thank various Operating Room Nurses and Sterilisation Staff for their help during the pre-market evaluation period.

Introduction

Cases and Trays

The Small Fragment Set consists of a single outer base available in plastic or metal containing four removable inserts. The two plate racks, screw rack and tray insert offer optimum modularity for storage and sterilisation. The vertical "pop-up" rack allows for easy access to all the instruments which are arranged in a logical order, whilst minimising "overhang" on the instrument table.



Drills and Taps

Contained within the set are all the relevant drill bits and taps corresponding to each screw diameter. Titanium oxide coating on the 3.5mm drill bit and tap enhances not only the cutting efficiency but the longevity and improved visual identity of each instrument. Whilst all of the cortical screws in the set are self-tapping, the inclusion of the tap offers clinicians the option of pre-tapping in dense cortical bone.

Screws

In addition to the standard 3.5mm and 4.0mm screw range, the Small Fragment Set also has the option to include a select range of 2.7mm self-tapping cortical screws. These can offer the option to perform independent interfragmentary Lag-Screws compression without the need for an additional implant set.

Features and Benefits

The system design is based on input from key clinicians, theatre and sterilisation staff, data from literature and both practical and biomechanical testing results of the system.

Features	Benefits
Stainless Steel or Titanium implant range	• Patient compatibility and surgeon preference
Multiple plate options	• Increased indication coverage all in one set
Rounded and tapered plate ends	• Reduced potential for soft-tissue irritation Easier placement of plate during sub-cutaneous insertion
3.5/4.0mm screw hole options	• Flexibility of cortical or cancellous screws
K-wire and reduction holes	• Enhanced primary/temporary plate and fracture fixation
Equal hole spacing on straight plates	• Greater operative flexibility for screw and plate placement
Low screw head profile in plate hole	• Reduced potential for soft-tissue irritation
Annealed Reconstruction plate	• Optimal three dimensional bending
Uniform bending stiffness in Waisted Compression plate	• Equal bending force distribution for increased fatigue strength and contourability
Speciality Reconstruction and Calcaneal plates in set	• Extended indications
Bi-directional holes	• Allows compression and/or distraction
Self-tapping screws	• Quick, simple and efficient
Sharp Hook, Ballspike, Periosteal and Freer Elevator	• Modified design for ease of use
Bending Irons	• Designed for easy plate contouring Closed design to capture plate during bending for security of use
Bending Templates	• Facilitates quicker anatomical contouring of the plate
Elastosil® Handles	• Ergonomic feel and better grip Does not retain heat after sterilisation
Screwdriver Holding Sleeve	• Efficiency in screw pick-up and insertion/removal via a “No-touch” technique
Retractors/Clamps	• Specialist forceps and optimised clamp design
Modular Case design	• Maximum flexibility for sterilisation method in either outer base or in sterilisation container Lighter for transportation purposes

Optional

2.7mm screws	• Offers smaller independent interfragmentary Lag-Screw option
2.7mm instruments	• Available all in one set, no need for additional set

Indications

Implants of the SPS Small Fragment Set are indicated for fractures in the following areas as shown below:

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.

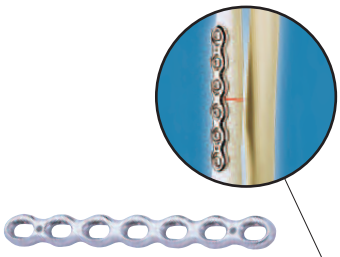
Obesity. An overweight or obese patient can produce loads on the implant that can lead to failure of the fixation of the device or to failure of the device itself.

Patients having inadequate tissue coverage over the operative site.

Implant utilization that would interfere with anatomical structures or physiological performance.

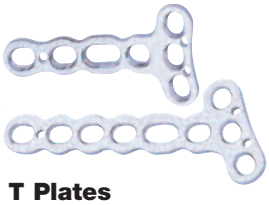
Any mental or neuromuscular disorder which would create an unacceptable risk of fixation failure or complications in postoperative care.

Other medical or surgical conditions which would preclude the potential benefit of surgery.



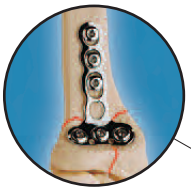
Compression Plates

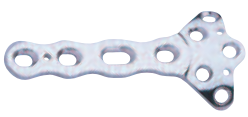
Fractures of the radius, ulna, distal tibia, fibula, distal humerus and clavicle.



T Plates

Fractures of the distal radius, calcaneus and lateral clavicle.



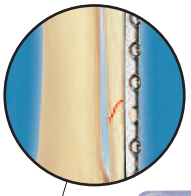


Clover Leaf Plate

Fractures of the distal tibia and proximal humerus.

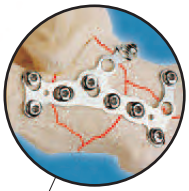
Reconstruction Plate

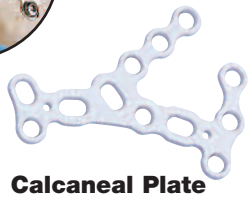
Fractures of the distal humerus, pelvis and acetabulum (except posterior wall fractures for Titanium Plates).



One Third Tubular Plate

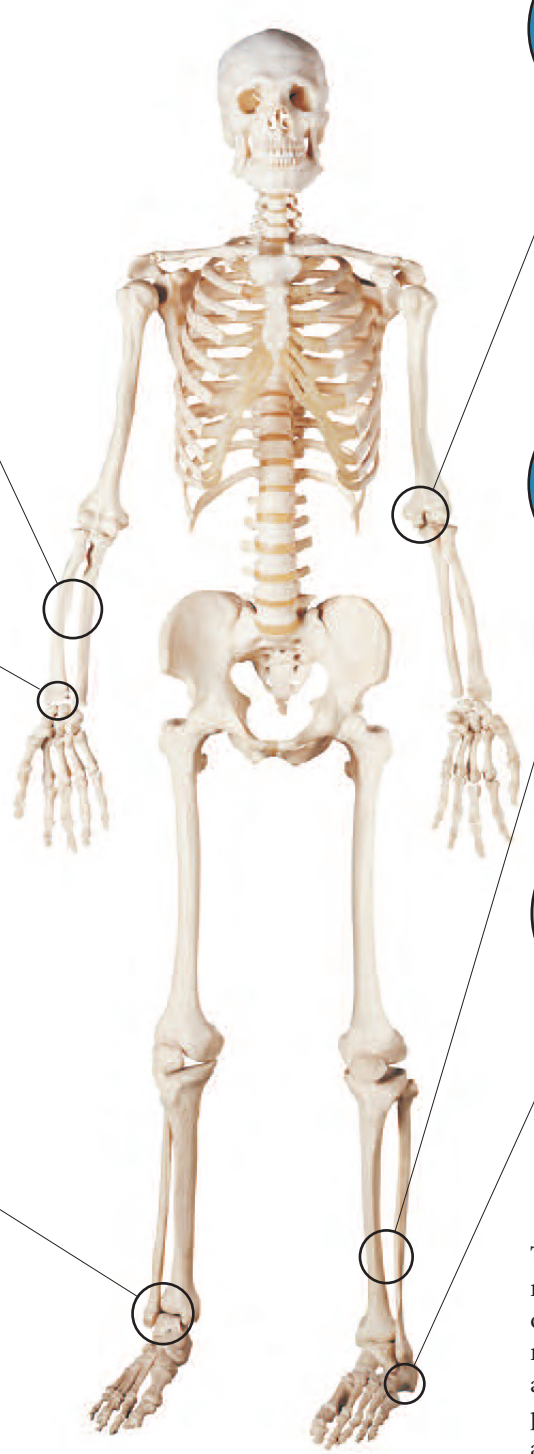
Fractures of the fibula, metatarsals and metacarpals.





Calcaneal Plate

Fractures of the calcaneus.

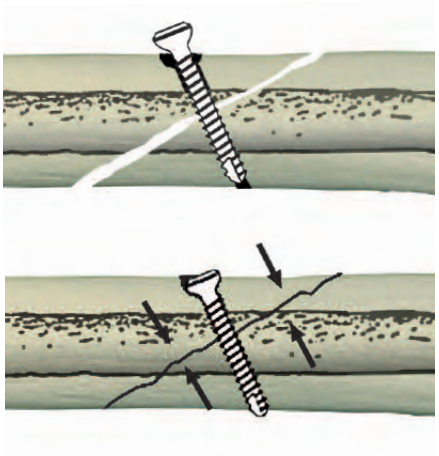


The SPS Small Fragment Set implants may also be used in revision surgery of pseudoarthroses, non-union and mal-union. Osteotomies, arthrodeses and ligament re-attachment may also be performed using these implants with the applicable operative technique.

Independent Interfragmentary Compression

When the thread of a screw only takes purchase in the far cortex of the bone, this is known as a Lag-Screw.
The screw thread takes no purchase in the near cortex of the bone either because the screw shaft has no thread or the drill hole in the near cortex is equal or greater than the outside diameter of the screw (the near cortex has to be overdrilled therefore to create a "gliding" hole). This will ensure that the screw thread will only take purchase in the area leading to the far cortex or "threaded" hole.

When such a screw is inserted and tightened, it causes the two fragments of bone to be compressed.

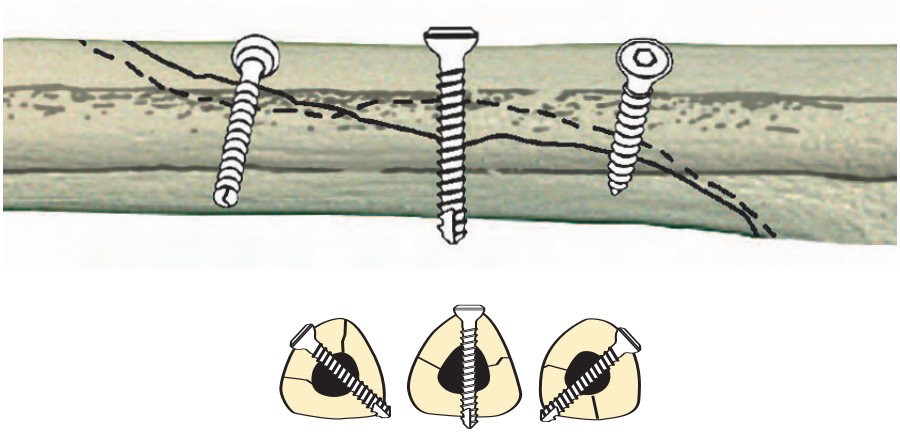


Often independent interfragmentary Lag-Screws are used in conjunction with Plating fixation.

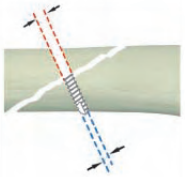
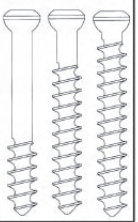
When a Lag-Screw is inserted at right angles to the fracture line this provides a maximum of interfragmental compression but a minimum of axial stability. The loss of reduction and fixation will occur when the two fragments start to glide on each other under axial load. It is often preferred therefore, when using multiple screws to insert one at right angles to the axis of the bone and the others at right angles to the fracture line.

In situations where space is restrictive it may be advantageous to more evenly distribute the load using three 2.7mm screws as opposed to two 3.5mm screws. For this purpose 2.7mm screws have been added to the SPS Small Fragment Set.

PLEASE NOTE THAT DUE TO THE SMALLER HEAD DIAMETER, THE 2.7MM SCREWS CAN NOT BE USED FOR PLATE FIXATION.



In this spiral fracture, which is fixed using multiple screws, the central screw is at 90° to the long axis of the bone and will ensure axial stability. The other screws are at right angles to the spiral fracture line and will ensure optimal compression.

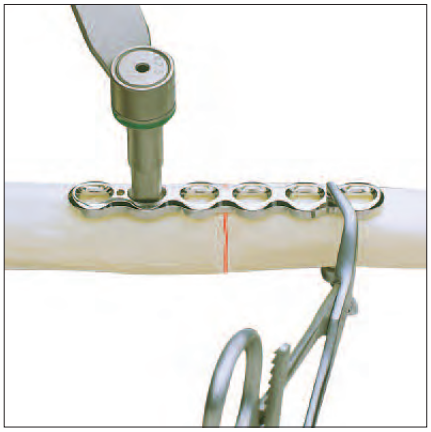
Thread Diameter	2.7	3.5	4.0	4.5	6.5
Screw Type	cortical self-tapping	cortical self-tapping	cancellous non-self-tapping	cortical self-tapping	cancellous non-self-tapping
Thread Length	full	full	partial/full	full	16/32/full
Drill Bit Gliding Hole	2.7	3.5	-/-	4.5	4.5/4.5/-
					
Drill Bit Threaded Hole	2.0	2.5	2.5	3.2	3.2
Tap	(2.7)	(3.5)	4.0	(4.5)	6.5

The chart above highlights the corresponding drill and screw diameters required to ensure interfragmentary Lag Screw compression.

Operative Technique

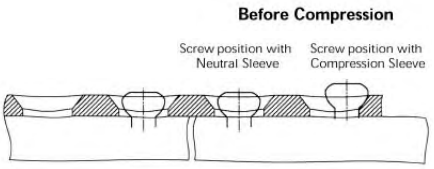
The Modular Drill Guide

The Modular Drill Guide and Sleeves have been designed specially for use with Compression plates.There are three fixation techniques available for this implant: Neutralisation, Compression and Buttress.



Neutral (Green)

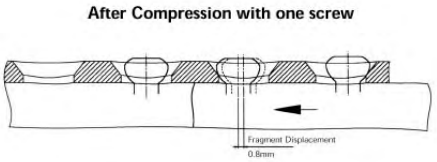
Use of the Neutral Drill Sleeve ensures that the screw will be centrally located in the plate hole. This screw position offers a maximum fragment displacement in either direction of approximately 0.8mm.

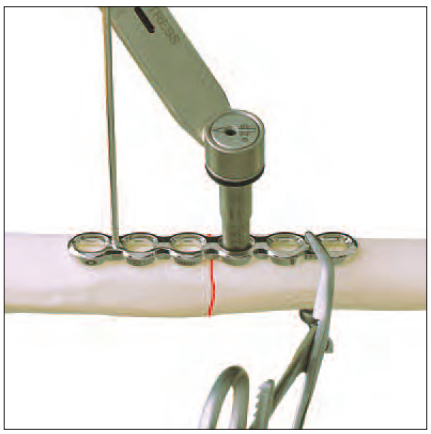


Compression (Yellow)

Use of the Compression Drill Sleeve ensures screw placement at the farthest end of the plate hole from the fracture site.

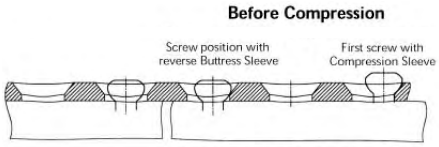
As the screw is inserted the fragment moves along a compression path of up to a maximum of approximately 0.8mm towards the fracture site.
*NB The arrow on the Drill Sleeve must point towards the fracture line.

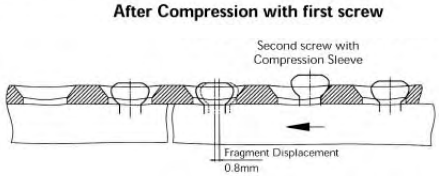




Buttress (Black)

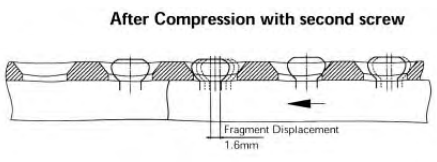
Use of a Buttress Drill Sleeve ensures a screw placement at the end of the hole nearest to the fracture line. This screw position is designed to prevent any axial displacement of the fragment under load.
*NB The arrow on the Drill Sleeve must point towards the fracture line.





Reverse Buttress (Black)

Should a displacement of 0.8mm not be sufficient for a compression osteosyntheses, then placement of the neutral screw using the Buttress Drill Sleeve in a reverse mode is recommended. This technique allows for a maximum displacement of up to approximately 1.6mm on either side of the fracture line.
*NB The arrow on the Drill Sleeve must point away from the fracture line.



Operative Technique

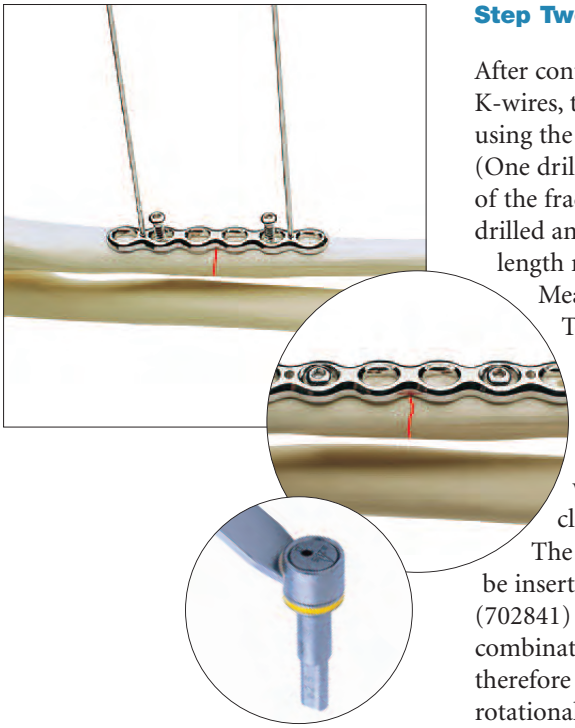
Compression Plate

eg: Mid-Shaft Ulna

Clear identification and classification of the fracture should first be established using the appropriate imaging methods. The appropriate anatomical reduction should be carried out before any definitive fixation is undertaken.

Step One

For this simple transverse Ulnar fracture the primary stabilisation of the fracture site could be carried out through the use of the Reduction Forceps or K-wires (max. ø 1.6mm). The dedicated K-wire and reduction holes offered in the plate allows the surgeon to "try on" the plate fit around the fracture site before initialising any screw holes into the bone.



Step Two

After contouring and fixation with the K-wires, the first drill holes are made using the Neutral Drill Sleeve (702825) (One drill hole is made on each side of the fracture line). Both cortices are drilled and the appropriate screw length measured using the Measuring Gauge (702875). To achieve optimal purchase of the screw in the far cortex, a screw length one size longer than originally measured is recommended, whilst taking into account the close proximity of the Radius. The desired screws can then be inserted using the Screwdriver (702841) and Holding Sleeve (702490) combination. These first two screws therefore hold the plate in a neutral rotationally stable position.
The K-wires are removed.

In this indication the implant should have a compression effect therefore the next drill hole (which can be made on either side of the fracture line) is made using the Compression Drill Sleeve (702829), ensuring that the arrow is pointing in the direction of the fracture line. Again both cortices are drilled and the appropriate screw length measured. Before insertion of this screw however, the previously inserted adjacent screw is loosened. The screw in the compression hole is inserted and the fracture compressed. The previously loosened screw is then re-tightened.

For increased compression repeat this procedure on the opposite side of the fracture line.

Step Three

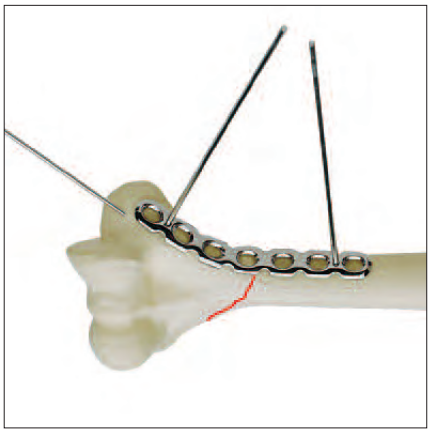
Additional screws are inserted in the neutral position until final fixation is complete. In order to achieve a longer displacement, a further screw on each side of the fracture can be set in the compression mode. Please note that this may only be possible if the initial screws have been inserted using the Buttress Drill Sleeve (702831) in a reverse position.

Operative Technique

Reconstruction Plate

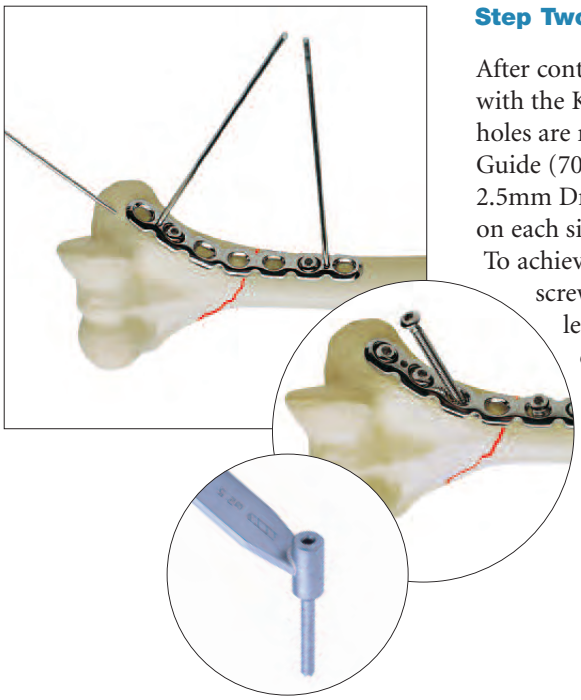
eg: Distal Humerus

Clear identification and classification of the fracture should first be established using the appropriate imaging methods. The appropriate anatomical reduction should be carried out before any definitive fixation is undertaken.



Step One

For this distal Humeral fracture, reduction and primary stabilisation of the fracture site could first be carried out through either the use of independent K-wires (max. ø 1.6mm) and Reduction Forceps or through the dedicated K-wire and reduction holes offered in the plate. This allows the surgeon to "try on" the plate fit around the fracture site before initialising any screw holes into the bone.



Step Two

After contouring and affixing the plate with the K-wires the first neutral drill holes are made using the Double Drill Guide (702418) together with the 2.5mm Drill. (One drill hole is made on each side of the fracture site).

To achieve optimal purchase of the screw in the far cortex, a screw length one size longer than originally measured is recommended (this plate, like all plates in the SPS Small Fragment Set offers the opportunity to use 4.0mm cancellous screws rather than cortical screws). The desired screws can then be inserted using the Screwdriver (702841) and Holding Sleeve (702490) combination. These screws hold the plate in a neutral position. Depending on the fracture pattern it may be advisable to insert a Lag-Screw through the plate for incresed stability.

Step Three

Additional screws are added in the neutral, compression or buttress position until final fixation is complete.

Certain indications may require screw angulation through the plate which can be easily achieved when using the Double Drill Guide (702418).

Note: Titanium Recon plate bending limitations, see page 18 "Plate Bending"

Operative Technique

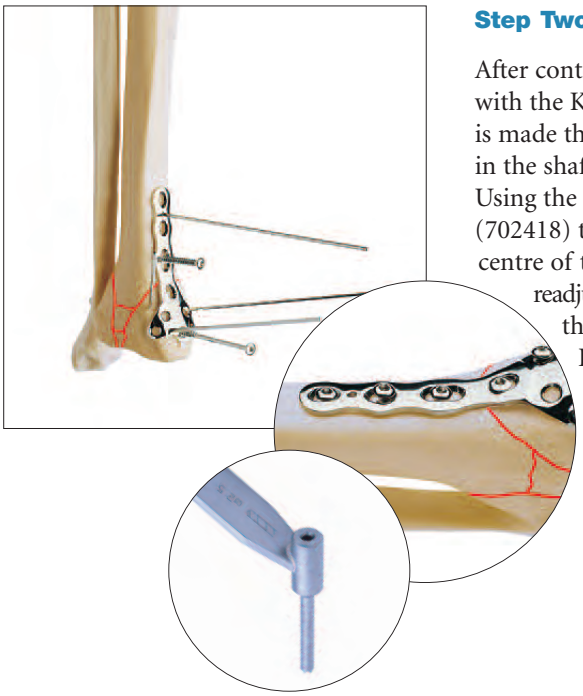
Cloverleaf Plate

eg: Distal Tibia

Clear identification and classification of the fracture should first be established using the appropriate imaging methods. The appropriate anatomical reduction should be carried out before any definitive fixation is undertaken.

Step One

In a Pilon fracture, as with any intra-articular fracture, the precision of the primary reduction is critical to the outcome of the surgery. In this instance, the primary stabilisation of the fracture site could first be carried out through either the use of independent K-wires (max. ø 1.6mm) and Reduction Forceps or through the dedicated K-wire and reduction holes offered in the plate.



Step Two

After contouring and affixing the plate with the K-wires the first drill hole is made through the oblong hole in the shaft section of the plate. Using the Double Drill Guide, (702418) the hole is drilled in the centre of the oblong hole. This allows for readjustment of the plate before the final fixation.

Precise reduction and fixation of individual fragments is now performed through the Cloverleaf portion of the plate.

Multiple screws are inserted and K-wires manipulated as necessary. As in this instance the plate should have a buttressing effect all of the remaining holes in the shaft section of the plate are drilled using the Double Drill Guide (702418). In order to achieve the buttressing effect the Drill Guide must be positioned at the nearest end of the hole to the fracture line.

Step Three

Additional screws are added until adequate fixation is complete.

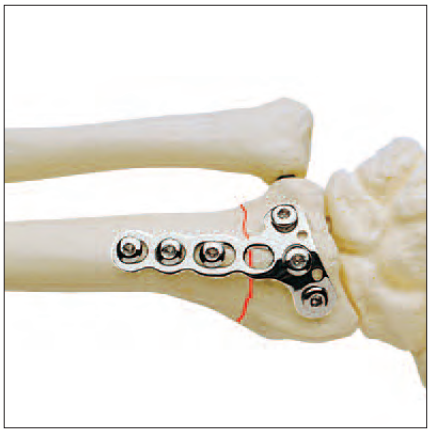
It should be noted that all of the plates in the SPS Small Fragment Set accept either 3.5mm or 4.0mm screws.

Depending on the bone quality and fracture pattern, the 4.0mm cancellous screws may be preferred in the Cloverleaf section.

Operative Technique

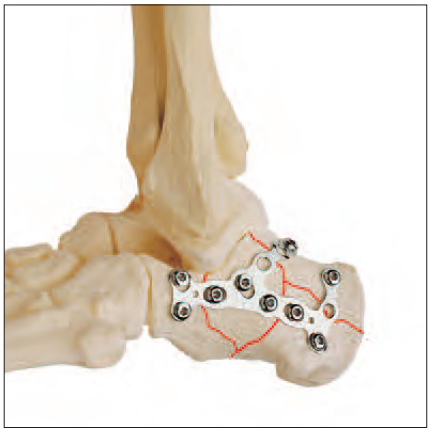
T-Plate

In this plate the oblong hole allows the plate to be readjusted before final tightening. The bi-directional compression holes offer not only axial compression but compression across the T-section, for articular reduction.



Oblique T-Plate

This plate offers the same options as the standard T-plate. The 20° offset angle of the head of this plate additionally offers a more anatomic fit along the Radial Styloid.



Calcaneal Plate

This low profile, anatomically shaped plate design allows contouring to either the left or right Calcaneus.
The combination of oblong and round holes ensures adequate fixation, increased strength and screw angulation in the critical central area.

This area has also been strengthened for improved durability.
2.7mm screws can be used in the round holes offering a very low profile fixation.

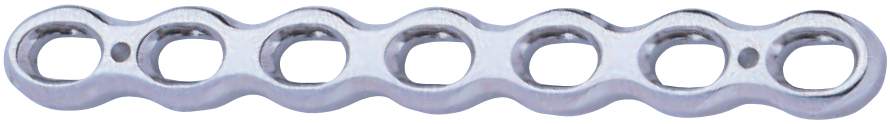
One-Third Tubular Plate

This plate is primarily a neutralisation implant. However, eccentric placement of screws will result in limited axial compression. The plate hole collars maximise stability and eliminate the possible penetration of the screwhead into the near cortex thus preserving the screws' fixation.

The equal hole spacing in this plate allows it's application to a variety of fracture patterns without assuming the fracture location in relation to a 'gap' in the plate.

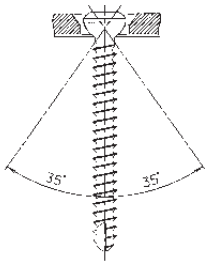
Technical Details

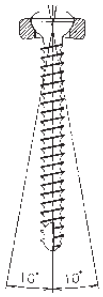
It is well known that any plate osteosynthesis may lead to local necrosis in the area of the bony supporting surface. This has been addressed by the design of the plate contour. The unique contour is designed to reduce the occurrence of two undesirable traits: extensive support over a large surface area and point contact with extreme compression of the surface.



The outside contours of the plates are fully rounded in order to protect the surrounding tissue from injury during insertion or from irritation due to relative movements after implantation. The ends of the plates are drawn into an oval shape in order to make them easier to push under soft tissue and surrounding muscle. This makes it possible for the plates to be used for the sub-cutaneous technique with small incisions.

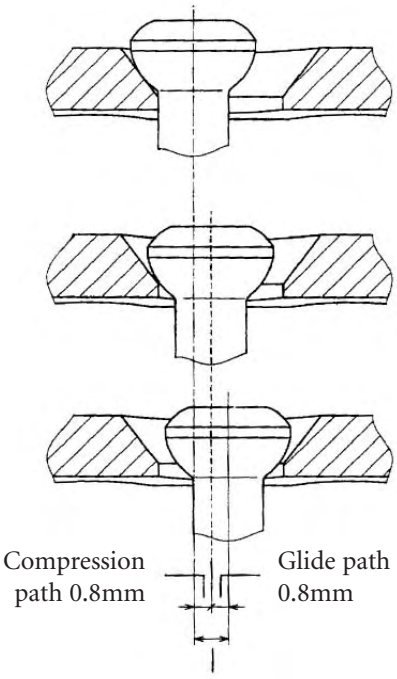
The holes in the plates are designed such that fixation can be performed either with self-compression, or with neutral fixation and buttressing. The arrangement, size and shape of the holes are symmetrical so that the plate position can be freely selected for the fracture.





Cortical screws can be inserted into all holes and can be angled axially by 35° and sidewards by 10°. The heads of the screws can be almost completely countersunk into the holes in the plates.

In addition to cortical screws, cancellous screws can also be inserted with sufficient angulation into all of the holes. The availability of different Drill Sleeves allows a compression, distraction, neutralisation or buttress effect created by specific screw placement in the plate hole.



Overall glide path 1.6mm

When using an SPS Compression plate, 1.6mm of compression can be achieved by placing one screw in each of the distal and proximal fragments in the compression position.

For special situations, this path can be doubled by placing an additional screw on each side of the fragment in the compression position. In this case, all screws on the compression side must be momentarily loosened, and may only be tightened again after compression has been achieved.

The One-Third Tubular plate is manufactured with collars on the underside of the plate holes to improve and optimise stability of plate fixation and overall plate strength around the screws holes.

Ordering Information – Plates

One Third Tubular Plate with Collars

Stainless Steel REF	Plate Length mm	Holes	Titanium REF
430202	25	2	621122
430203	38	3	621123
430204	**51**	**4 ✔**	**621124**
430205	**64**	**5 ✔**	**621125**
430206	**77**	**6 ✔**	**621126**
430207	**90**	**7 ✔**	**621127**
430208	**103**	**8 ✔**	**621128**
430209	116	9	621129
430210	129	10	621130
430211	142	11	621131
430212	155	12	621132
430213	168	13	621133
430214	181	14	621134

Waisted Compression Plate

Stainless Steel REF	Plate Length mm	Holes	Titanium REF
430002	26	2	621142
430003	39	3	621143
430004	**52**	**4 ✔**	**621144**
430005	**65**	**5 ✔**	**621145**
430006	**78**	**6 ✔**	**621146**
430007	**91**	**7 ✔**	**621147**
430008	**104**	**8 ✔**	**621148**
430009	117	9	621149
430010	**130**	**10 ✔**	**621150**
430011	143	11	621151
430012	156	12	621152
430014	182	14	621154
430016	208	16	621156
430018	234	18	621158
430020	260	20	621160

Standard Compression Plate

Stainless Steel REF	Plate Length mm	Holes	Titanium REF
430052	26	2	N/A
430053	39	3	N/A
430054	52	4	N/A
430055	65	5	N/A
430056	78	6	N/A
430057	91	7	N/A
430058	104	8	N/A
430059	117	9	N/A
430060	130	10	N/A
430061	143	11	N/A
430062	156	12	N/A
430064	182	14	N/A
430066	208	16	N/A
430068	234	18	N/A
430070	260	20	N/A

Recon Plate

Stainless Steel REF	Plate Length StSt mm	Holes	Plate Length Ti mm	Titanium REF
430104	**48**	**4✔**	**54**	**621174S**
430105	**60**	**5✔**	**66**	**621175S**
430106	**72**	**6✔**	**78**	**621176S**
430107	**84**	**7✔**	**90**	**621177S**
430108	**96**	**8✔**	**102**	**621178S**
430109	108	9	114	621179S
430110	**120**	**10✔**	**126**	**621180S**
N/A	N/A	11	138	621181S
430112	144	12	150	621182S
430114	168	14	N/A	N/A
430116	192	16	N/A	N/A
430118	216	18	N/A	N/A
430120	240	20	N/A	N/A
430122	264	22	N/A	N/A

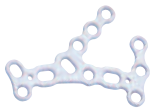
T-Plate

Stainless Steel REF	Plate Length mm	Holes Shaft	Holes Head	Titanium REF
431023	**40**	**3**	**3 ✔**	**621423**
431024	**49**	**4**	**3 ✔**	**621424**
431025	57	5	3	621425
431026	**66**	**6**	**3 ✔**	**621426**
431028	83	8	3	621428
431030	100	10	3	621430
431034	**51**	**4**	**4 ✔**	**621434**
431036	68	6	4	621436

Oblique T-Plate

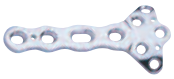
Stainless Steel REF	Plate Length mm	Holes Shaft	Titanium REF
431003	**45**	**3 ✔**	**621463**
431004	**53**	**4 ✔**	**621464**
431005	62	5	621465
431006	**70**	**6 ✔**	**621466**
431008	88	8	621468

Calcaneal Plate



Stainless Steel REF	Length mm	Titanium REF
431102	50	621552
431103	**60 ✔**	**621553**
431104	**70 ✔**	**621554**
431105	80	621555

Cloverleaf Plate



Stainless Steel REF	Plate Length mm	Holes	Titanium REF
431043	**66**	**3 ✔**	**621443**
431044	**80**	**4 ✔**	**621444**
431045	94	5	621445
431046	**109**	**6 ✔**	**621446**
431048	138	8	621448
431050	167	10	621450

K-Wires with trocar tip - (PKG 10)

Stainless Steel REF	Diameter mm	Length mm	Titanium REF
390142	1.0	150	690015
390157	**1.25 ✔**	**150**	**690020**
390162	1.4	150	N/A
390164	**1.6 ✔**	**150**	**690030**
390192	**2.0 ✔**	**150**	**690035**

Washer

Stainless Steel REF	Diameter mm	Thickness mm	Titanium REF
390018	**7.0 ✔**	**0.8**	**619905**
390019	**9.0 ✔**	**1.0**	**619909**

For sterile Implants add "S" to the REF

✔ Recommended set item

Ordering Information – Screws

3.5mm Cortical Screw, Self Tapping

Stainless Steel REF	Screw Length mm	Titanium REF
338610	**10 ✔**	**603010**
338612	**12 ✔**	**603012**
338614	**14 ✔**	**603014**
338616	**16 ✔**	**603016**
338618	**18 ✔**	**603018**
338620	**20 ✔**	**603020**
338622	**22 ✔**	**603022**
338624	**24 ✔**	**603024**
338626	**26 ✔**	**603026**
338628	**28 ✔**	**603028**
338630	**30 ✔**	**603030**
338632	**32 ✔**	**603032**
338634	**34 ✔**	**603034**
338636	**36 ✔**	**603036**
338638	**38 ✔**	**603038**
338640	**40 ✔**	**603040**
338642	**42 ✔**	**603042**
338644	**44 ✔**	**603044**
338645	45	603045
338646	**46 ✔**	**603046**
338648	**48 ✔**	**603048**
338650	**50 ✔**	**603050**
338655	**55 ✔**	**603055**
338660	**60 ✔**	**603060**
338665	65	N/A
338670	70	N/A
338675	75	N/A
338680	80	N/A
338685	85	N/A
338690	90	N/A
338695	95	N/A
338700	100	N/A
338705	105	N/A
338710	110	N/A
338715	115	N/A
338720	120	N/A

2.7mm Cortical Screw, Self Tapping

Stainless Steel REF	Screw Length mm	Titanium REF
349608	8	605008
349610	10	605010
349612	12	605012
349614	14	605014
349616	16	605016
349618	18	605018
349620	20	605020
349622	22	605022
349624	24	605024
349626	26	605026
349628	28	605028
349630	30	605030
349632	32	605032
349634	34	605034
349636	36	605036
349638	38	605038
349640	40	605040
349645	45	605045
349650	50	605050
349655	55	605055
349660	60	605060

Due to the smaller head diameter, the 2.7mm screws cannot be used for plate fixation.

4.0mm Cancellous Screw, Partial Thread

Stainless Steel REF	Screw Length mm	Titanium REF
345510	**10 ✔**	**604210**
345512	**12 ✔**	**604212**
345514	**14 ✔**	**604214**
345516	**16 ✔**	**604216**
345518	**18 ✔**	**604218**
345520	**20 ✔**	**604220**
345522	**22 ✔**	**604222**
345524	**24 ✔**	**604224**
345526	**26 ✔**	**604226**
345528	**28 ✔**	**604228**
345530	**30 ✔**	**604230**
345532	**32 ✔**	**604232**
345534	**34 ✔**	**604234**
345535	35	604235
345536	**36 ✔**	**604236**
345538	**38 ✔**	**604238**
345540	**40 ✔**	**604240**
345545	**45 ✔**	**604245**
345550	**50 ✔**	**604250**
345555	**55 ✔**	**604255**
345560	**60 ✔**	**604260**
345565	65	604265
345570	70	604270
345575	75	604275
345580	80	604280
345585	85	604285
345590	90	604290
345595	95	604295
345600	100	604300

4.0mm Cancellous Screw, Full Thread

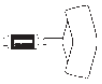
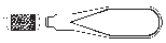
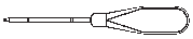
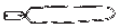
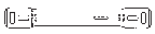
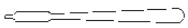
Stainless Steel REF	Screw Length mm	Titanium REF
345410	**10 ✔**	**604010**
345412	**12 ✔**	**604012**
345414	**14 ✔**	**604014**
345416	**16 ✔**	**604016**
345418	**18 ✔**	**604018**
345420	**20 ✔**	**604020**
345422	**22 ✔**	**604022**
345424	**24 ✔**	**604024**
345426	**26 ✔**	**604026**
345428	**28 ✔**	**604028**
345430	**30 ✔**	**604030**
345432	**32 ✔**	**604032**
345434	**34 ✔**	**604034**
345435	35	604035
345436	**36 ✔**	**604036**
345438	**38 ✔**	**604038**
345440	**40 ✔**	**604040**
345445	**45 ✔**	**604045**
345450	**50 ✔**	**604050**
345455	**55 ✔**	**604055**
345460	**60 ✔**	**604060**
345465	65	604065
345470	70	604070
345475	75	604075
345480	80	604080
345485	85	604085
345490	90	604090
345495	95	604095
345500	100	604100

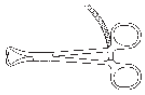
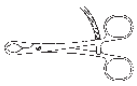
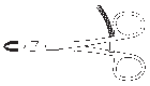
For full range of standard non-self tapping screws please refer to the Stryker® Trauma Product Catalogue.

For sterile Implants add "S" to the REF

✔ Recommended set item

Ordering Information – Instruments

	Reference	Description
	700347 ✔	**Drill Bit ø2.5mm x 125mm, AO Fitting**
	700349 ✔	**Drill Bit ø3.5mm x 125mm, AO Fitting**
	702802 ✔	**Tap ø3.5mm x 125mm, AO Fitting**
	702803 ✔	**Tap ø4.0mm x 125mm, AO Fitting**
	702811 ✔	**Countersink ø6.0mm x 100mm, AO Fitting**
	702427 ✔	**Small T-Handle (Elastosil®), AO Quick Coupling**
	702428 ✔	**Small Teardrop-Handle (Elastosil®), AO Quick Coupling**
	702418 ✔	**Double Drill Guide ø2.5/3.5mm**
	702822 ✔	**Drill Sleeve Handle**
	702825 ✔	**Drill Sleeve ø2.5mm (Neutral) Green**
	702829 ✔	**Drill Sleeve ø2.5mm (Compression) Yellow**
	702831 ✔	**Drill Sleeve ø2.5mm (Buttress) Black**
	702841 ✔	**Screwdriver (Elastosil®) Hex 2.5mm, L200**
	702485 ✔	**Screwdriver Hex 2.5mm, L115, AO Fitting**
	702490 ✔	**Screwdriver Holding Sleeve for Screws ø3.5/4.0mm**
	702875 ✔	**Depth Gauge 0-70mm, for Screws ø2.7/3.5/4.0mm, Titanium**
	700151 ✔	**Hook**
	700153 ✔	**Ball Spike**
	900106 ✔	**Screw Forceps**
	702901 ✔	**Bending Iron**
	700664 ✔	**Hohmann Retractor 6mm**
	700665 ✔	**Hohmann Retractor 8mm**
	700667 ✔	**Hohmann Retractor 15mm**
	700666 ✔	**Periosteal and Freer Elevator**

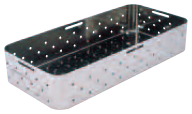
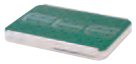
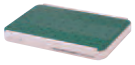
	Reference	Description
	702931	Repositioning Forceps Self-Centering
	702926	Repositioning Forceps with Points
	702932	Repositioning Forceps with Serrated Jaws
	702942	Repositioning Forceps with Widened and Serrated Jaws
	702943	Repositioning Forceps with Ballspike and Elavator Jaws
	702944	Repositioning Forceps with Ballspike
	702426	Small T-Handle (metal), AO Quick Coupling
	702821	Parallel Drill Guide ø2.0/2.5mm
	702816	Swanson Reamer ø6.0mm x 100mm, AO Fitting
	702903	Bending Plier
	702928	Faraboeuf Forceps L190mm
	702951	Plate Cutter
	702951-1	Replacement Components for Plate Cutter
	710301	Template Reconstruction plate, 5 Holes
	710302	Template Reconstruction plate, 8 Holes
	710303	Template Reconstruction plate, 18 Holes
	710304	Template Compression plate, 5 Holes
	710305	Template Compression plate, 8 Holes
	710306	Template Compression plate, 18 Holes
	710351	Template Calcaneal plate, 50mm
	710352	Template Calcaneal plate, 60mm
	710353	Template Calcaneal plate, 70mm
	702876	Depth Gauge 0-110mm, for Screws ø2.7/3.5/4.0mm, Titanium

Optional Instruments for ø 2.7mm screws

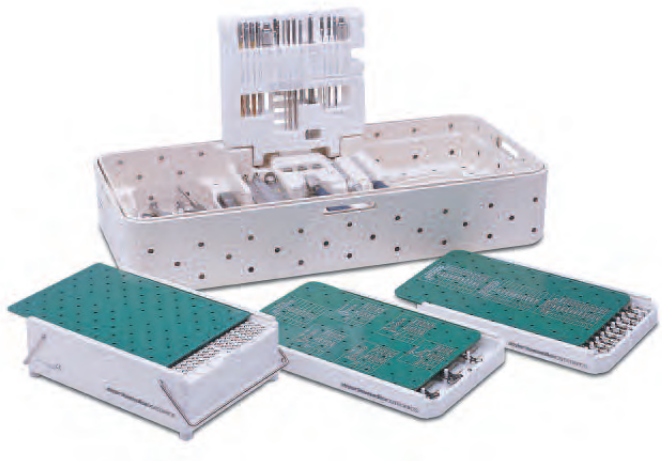
700346	Drill Bit ø2.0mm x 125mm, AO Fitting
700348	Drill Bit ø2.7mm x 125mm, AO Fitting
702801	Tap ø2.7mm x 125mm, AO Fitting
702416	Double Drill Guide ø2.0/2.7mm
702489	Screwdriver Holding Sleeve for Screws ø2.7mm

✔ **Recommended set item**

Ordering Information – Cases and Trays

	REF	Description
		Generic Case configuration
	**901618 ✔**	**Plastic Base (Option 1)**
	901619	Metal Base (Option 2)
	**901613 ✔**	**Plastic Lid**
	**901614 ✔**	**Tray Insert with Pop-up Rack**
	**901615 ✔**	**Screw Rack with Lid**
	**901616 ✔**	**Plate Rack with Lid #1 for Waisted Compression, Straight Compression and One Third Tubular plates**
	**901617 ✔**	**Plate Rack with Lid #2 for Reconstruction, Oblique T, T, Cloverleaf and Calcaneal plates**
	901620	Generic Plate Rack with Lid #3

	REF	Description
		Metal Case configuration
	**902001 ✔**	**Metal Tray with Pop-up Rack**
	**902002 ✔**	**Metal Lid**
	**902003 ✔**	**Metal Screw Rack with Lid**
	**902004 ✔**	**Metal Plate Rack with Lid #1 for Waisted Compression, Straight Compression and One Third Tubular plates**
	**902005 ✔**	**Metal Plate Rack with Lid #2 for Reconstruction, Oblique T, T, Cloverleaf and Calcaneal plates**



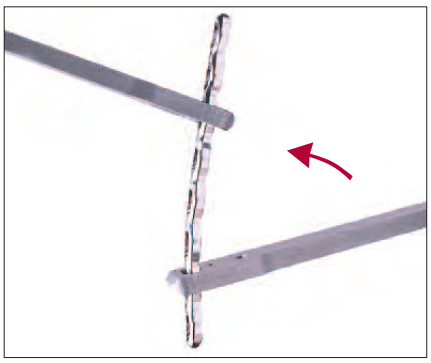
✔ Recommended set item

Additional Information

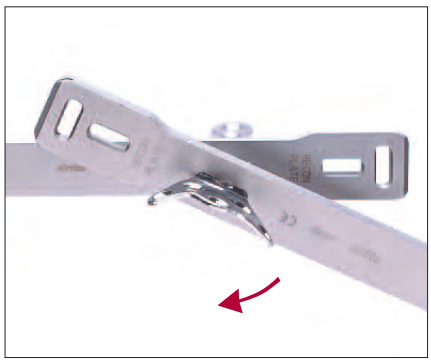
Plate Bending

There are three types of plate curvatures that are often used to best match the anatomy of different bones within the body.

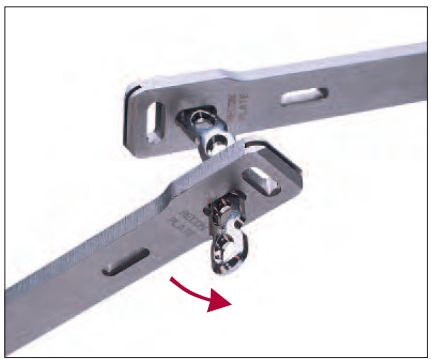
- **A bend along the main plate axis as shown in pictures 1 and 6.**
- **Twisted along the main plate axis as shown is pictures 2 and 3.**
- **A bend 'on the flat' to adapt to the long axis of the bone, as shown in pictures 4 and 7.**



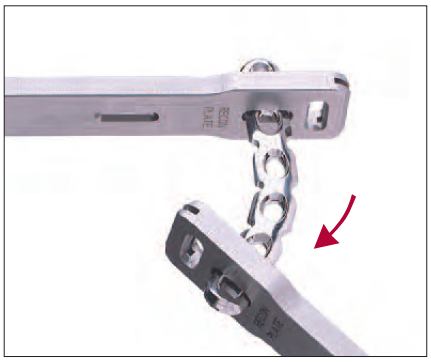
Picture 1



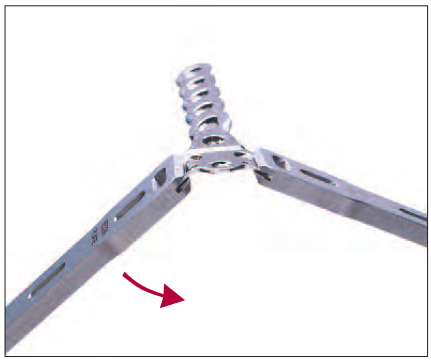
Picture 2



Picture 3



Picture 4



Picture 5

Picture 6

Picture 7

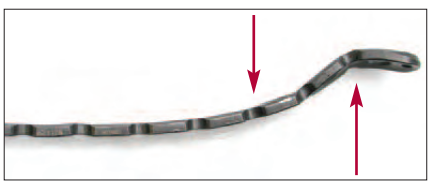
The bending irons (702901) included in the SPS Small Fragment Set have custom sized slots to accommodate the bending and twisting of various plates within the set.

Manipulation of the implants is achieved by inserting the relevant plates into the appropriate slot and then using the irons to form the plate to the required anatomical fit as shown in the various pictures above and left.

An additional small slot at the tip of both bending irons facilitates necessary contouring of the T, Cloverleaf and Calcaneal plates (see picture 5).

An optional bending plier (702903) can be used to facilitate contouring of the reconstruction plates only (pictures 6 and 7).

negative bending max. 20°



positive bending max. 35°

Bending specifications for Titanium Recon Plates

Generally, a maximum bend of 20° is possible between each set of holes. However, shaping of the most distal hole of the plate for distal medial humeral fractures often requires a bend up to 35°. This bend is permitted due to the fact that it is a positive bend, i.e. through the cross-sectional concavity of the plate as shown. Backbending, repetitive or multiple bending attempts will weaken the plate to the point of breakage.

Additional Information

Other Stryker Plating Systems

Matta Pelvic System

Designed by Joel M. Matta, M.D. the Matta Pelvic System, with four modular trays, features the latest innovations in Pelvic implants and instrumentation.

The implants include a new, specially designed MPS Symphysis plate with an increased plate width through the midsection – this unique plate offers Clinicians new options when treating Symphysis Pubis Disruptions.

The implants also include differentiated curved radius 88mm or 108mm plates designed to respect both the Female and Male anatomies as well as a more malleable MPS Flex plate which allows easier three dimensional contouring.

All the plates are fully compatible with a wide range of 3.5mm and 4.5mm cortical screws. In addition, the 6.5mm screws included, make the Implant Set the most comprehensive on the market.

The Instrument and Reduction Forceps have been simplified to better assist the Clinician in what is an already complicated procedure. The Instruments can be easily handled and manoeuvred around the anatomy without any visual restriction. Additional Reduction Forceps like the 3.5mm Jungbluth are unique and epitomise the innovation and practicality of this System.

Featuring:

3.5mm cortical screws – self tapping
4.5mm cortical screws – self tapping
6.5mm cancellous screws – 16mm thread
6.5mm cancellous screws – 32mm thread
MPS Symphysis plate
MPS Flex plate (annealed)
MPS Straight plate
MPS Curved R108 plate
MPS Curved R88 plate
Modular Case design
Drill, Taps, Countersink – AO couplings
2 Depth Gauges –
(for 3.5mm and 4.5/6.5mm Screws)
Fixed Angle Drill Guides
Elastosil® Handles on all fixed handle instruments
Reduction Pins
Spiked Disks and Ball Spike Pushers
Screw Holding Sleeves
Bending Irons and Templates
Bending Plier
Unique Repositioning Forceps
Sciatic Nerve Retractors

Basic Fragment Set

This System offers Clinicians multiple options for the most common treatments of long–bone fractures.

A new selection of seven plates, each featuring K-wire and reduction holes–for improved primary stabilisation; rounded plate ends – to facilitate the option of subcutaneous plate insertion; uniform hole spacing with bi-directional holes offering increased screw angulation; as well as the unique outer plate contouring are all features of the implant set.

A comprehensive screw range is enhanced by a self-cutting design. A full range of instrumentation is complemented by the unique range of reduction clamps and forceps. These non-standardised instruments offer the Clinician new possibilities in their approach to large-bone fracture reduction and fixation.

Featuring:

Modular Case design
4.5mm cortical screws – self tapping
6.5mm cancellous screws – 16mm thread
6.5mm cancellous screws – 32mm thread
6.5mm cancellous screws – Full thread
Drill, Taps, Countersink – AO couplings
2 Diameters of K-wires
Modular and Fixed Angle Drill Guides
Compression plate – Broad
Compression plate – Narrow
T-plate
T-Buttress plate
L-Buttress plate
Reconstruction plate
Elastosil® Handles on all fixed handle instruments
Combined Hook and Ball Spike
Combined Periosteal and Freer Elevator
Hohmann Retractors
Bending Irons and Templates
Optional Table Plate Bender Plier
Forceps

stryker®

Joint Replacements

Trauma, Extremities & Deformities

Craniomaxillofacial

Spine

Biologics

Surgical Products

Neuro & ENT

Interventional Pain

Navigation

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Communications

Imaging

Patient Handling Equipment

EMS Equipment

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