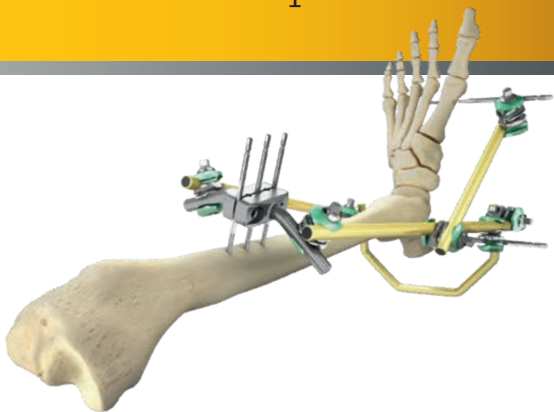




stryker

Hoffmann® 3

frame examples



External fixation

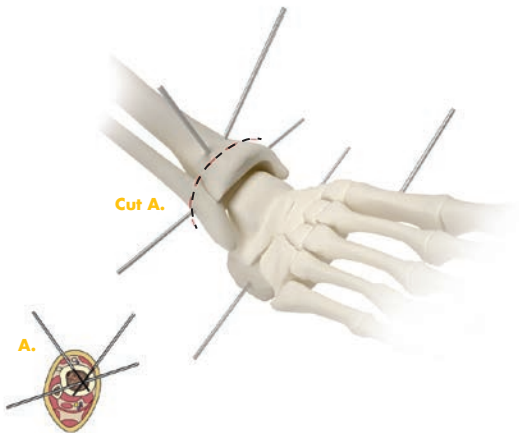
pocket guide



Ankle
frames

Pin technique / Safe zones

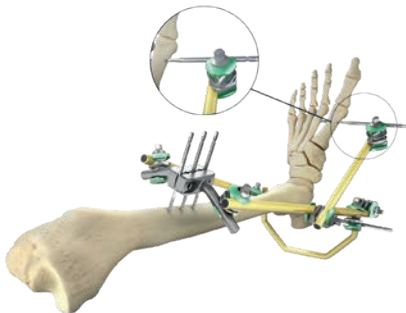
- Proximal to the ankle half pins can be placed from medial to lateral in the anteromedial face of the tibia
- Distal to the crossing of the anterior tibial vessels just proximal to the ankle transfixing pins may be placed
- Before insertion of anterior Apex half pins near ankle joint, perform blunt dissection to bone to ensure safety of neurovascular bundle
- Transfixing pins are placed through the calcaneus from medial to lateral



Ankle Delta Frame



Parallel pin placement / semi-circular rod used as a kick-stand / foot stabilizing Ø3 / 5mm hybrid apex pin



Components list

Ref #	Description	Qty
5050-4-300	Transfixing pin Ø5mm / Ø6mm, Ø300mm × Ø40mm	1
5018-5-150	Apex pin Ø5 × Ø150mm	3
5026-8-120	Self-drilling hybrid half pin apex Ø3 / Ø5mm, Ø120 × Ø20mm	1
4922-1-010	Rod-to-rod delta coupling	8
4922-2-020	5-Hole pin clamp	1
4922-2-140	30° Angled posts Ø11mm	2
4922-7-220	Semi circular rod Ø11 × Ø220mm	1
4922-8-350	Connecting rod Ø11 × Ø350mm	2
4922-8-200	Connecting rod Ø11 × Ø200mm	1

Note:

Alternatively the 5-hole pin clamp with posts can be replaced by a pre-welded 5-hole pin clamp with fixed posts (Ref 4922-2-240).

Standardization is achieved by utilizing a rod-to-rod delta coupling with Ø11mm connecting rod and 5mm apex pins and 3 / 5mm, 4 / 5mm hybrid apex pins. Alternatively a pin-to-rod coupling may be used.



Ankle Cross Brace Frame

Independent pin placement



Components list

Ref #	Description	Qty
5018-5-150	Apex pin $\text{\O}5 \times \text{\O}150\text{mm}$	1
5018-3-180	Apex Pin $\text{\O}5 \times 180\text{mm}$	1
5023-3-090	Apex Pin $\text{\O}4\text{mm} \times 90\text{mm}$	1
5030-5-200	Transfixing Pin $\text{\O}5 / 4 \times 200\text{mm}$	1
4922-1-010	Rod-to-Rod Couplings	5
4922-1-020	Pin-to-Rod Couplings	3
4922-1-030	Pin-to-Rod Couplings Inverted	2
4922-8-200	Connecting Rods $\text{\O}11 \times 200\text{mm}$	3
4922-8-350	Connecting Rods $\text{\O}11 \times 350\text{mm}$	2

Note:

Alternatively to the 4mm Apex Pin we recommend a 3/5 (Ref 5026-8-120) or 4/5mm (Ref 5026-1-150) Hybrid Apex Pin in the metatarsals used in combination with a standard Rod-to-Rod Delta Coupling (Ref 4922-1-010).

Alternatively to the 4mm Transfixing Pin with 5mm thread we recommend the 5mm Transfixing Pin 300 x 40mm with 6mm dia. thread (Ref 5050-4-300).

Ankle Bridging Frame



Parallel pin placement



Components list

Ref #	Description	Qty
5018-5-150	Apex pins $\text{Ø}5 \times 150\text{mm}$	2
5030-5-200	Transfixing pins $\text{Ø}5/4 \times 200\text{mm}$	2
4922-1-010	Rod-to-rod couplings	4
4922-2-020	5-hole pin clamps	3
4922-2-120	Straight posts $\text{Ø}11\text{mm}$	2
4922-2-140	30° Angled posts $\text{Ø}11\text{mm}$	2
4922-8-250	Connecting rods $\text{Ø}11 \times 250\text{mm}$	2

Note:

Alternatively the 5-hole pin clamp with straight Posts can be replaced by a pre-welded 5-hole pin clamp with fixed posts (Ref 4922-2-220).

Alternatively to the 4mm transfixing pin with 5mm thread we recommend the 5mm transfixing pin $300 \times 40\text{mm}$ with 6mm dia. thread (Ref 5050-4-300).



Ankle Bridging Half Frame

Independent pin placement



Components list

Ref #	Description	Qty
5018-5-150	Apex pins $\text{Ø}5 \times 150\text{mm}$	3
5023-3-090	Apex pin $\text{Ø}4 \times 90\text{mm}$	1
4922-1-010	Rod-to-rod delta couplings	3
4922-1-020	Pin-to-rod delta couplings	4
4922-8-150	Connecting rods $\text{Ø}11 \times 150\text{mm}$	2
4922-8-300	Connecting rod $\text{Ø}11 \times 300\text{mm}$	1

Note:

Alternatively, a second pin can be placed in the calcaneus.

Alternatively to the 4mm Apex pin it is recommended to use a 3 / 5 (Ref 5026-8-120) or 4/5mm (Ref 5026-1-150) Hybrid Apex pin in the metatarsals in combination with a standard rod-to-rod delta cCoupling (Ref 4922-1-010).

Ankle Stabilization Frame



Independent pin placement



Components list

Ref #	Description	Qty
5018-5-150	Apex pins $\text{Ø}5 \times 150\text{mm}$	2
5023-3-090	Apex pin $\text{Ø}4 \times 90\text{mm}$	1
4922-1-010	Rod-to-rod delta couplings	3
4922-1-020	Pin-to-rod delta couplings	3
4922-8-100	Connecting rod $\text{Ø}11 \times 100\text{mm}$	1
4922-8-250	Connecting rods $\text{Ø}11 \times 250\text{mm}$	2

Note:

Alternatively, a second pin can be placed in the calcaneus.

Alternatively to the 4mm Apex pin it is recommended to use a 3 / 5 (Ref 5026-8-120) or 4 / 5mm (Ref 5026-1-150) Hybrid Apex pin in the metatarsals in combination with a standard rod-to-rod delta coupling (Ref 4922-1-010).

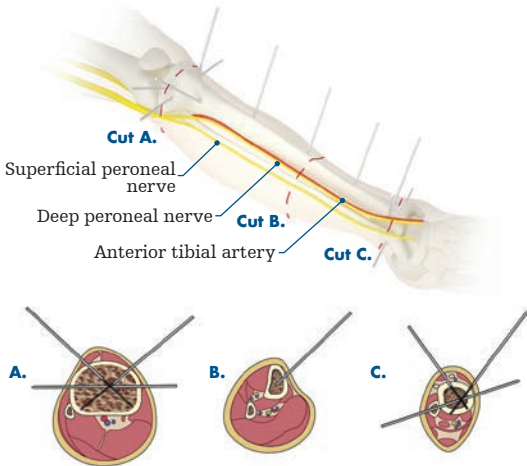


Tibial
frames

Pin technique / Safe zones



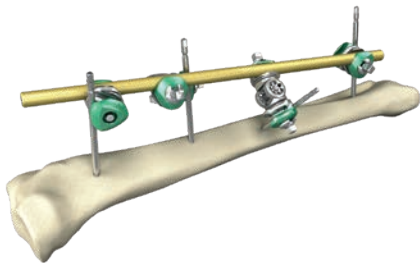
- Knowledge of the cross-sectional anatomy of the tibia may help with safe pin placement
- Apex half pins can be placed in the medial face of the tibia from plateau to pilon
- Transfixing pins should not be placed except in the distal third of the tibia proximal to the metaphysis or distal to the fibula head near the peroneal nerve
- Before insertion of anterior Apex half pins near the ankle joint, perform blunt dissection to bone to ensure safety of neurovascular bundle





Tibial Single Rod Frame

Independent pin placement, with multiplanar delta couplings



Components list

Ref #	Description	Qty
5018-5-150	Apex pins $\text{Ø}5 \times 150\text{mm}$	4
4922-1-010	Rod-to-rod delta couplings	2
4922-1-015	Rod-to-rod delta couplings, multiplanar	2
4922-8-300	Connecting rod $\text{Ø}11 \times 300\text{mm}$	1

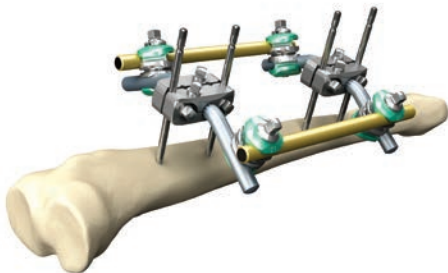
Note:

Standardization is achieved by utilizing a rod-to-rod delta coupling with $\text{Ø}11\text{mm}$ connecting rod and 5mm apex pins. Alternatively a pin-to-rod coupling may be used.

Tibial Standard Bi-lateral Frame



Parallel pin placement



Components list

Ref #	Description	Qty
5018-5-150	Apex pins $\text{Ø}5 \times 150\text{mm}$	4
4922-1-010	Rod-to-rod delta couplings	4
4922-2-020	5-hole pin clamps	2
4922-2-140	30° Angled posts $\text{Ø}11\text{mm}$	4
4922-8-300	Connecting rods $\text{Ø}11 \times 300\text{mm}$	2

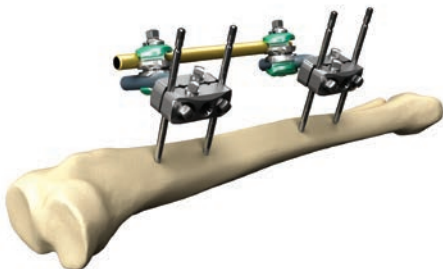
Note:

Alternatively the 5-hole pin clamps with 30 deg. posts can be replaced by 2 pre-welded 5-hole pin clamps with fixed posts (Ref 4922-2-240).



Tibial Standard Osteotaxis Half Frame

Parallel pin placement



Components list

Ref #	Description	Qty
5018-5-150	Apex pins $\text{Ø}5 \times 150\text{mm}$	4
4922-1-010	Rod-to-rod delta couplings	2
4922-2-020	5-hole pin clamps	2
4922-2-140	30° Angled posts $\text{Ø}11\text{mm}$	2
4922-8-300	Connecting rod $\text{Ø}11 \times 300\text{mm}$	1

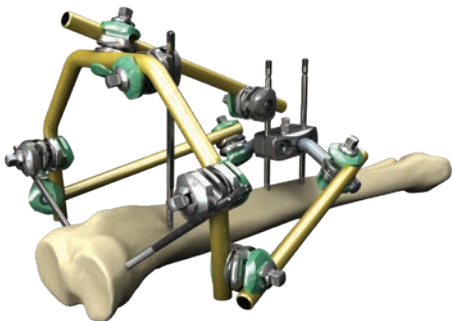
Note:

Alternatively the 5-hole pin clamps with posts can be replaced by 2 pre-welded 5-hole pin clamps with fixed posts (Ref 4922-2-340).

Tibial Plateau Semi-Circular Frame



Parallel / Independent pin placement



Components list

Ref #	Description	Qty
5018-5-150	Apex pins $\text{Ø}5 \times 150\text{mm}$	5
4922-1-010	Rod-to-rod delta couplings	5
4922-1-020	Pin-to-rod delta couplings	2
4922-1-030	Pin-to-rod delta couplings, inverted	2
4922-2-020	5-hole pin clamp	1
4922-2-140	30° Angled posts $\text{Ø}11\text{mm}$	2
4922-7-220	Semi circular rod $\text{Ø}11 \times 220\text{mm}$	1
4922-8-300	Connecting rods $\text{Ø}11 \times 300\text{mm}$	3

Note:

Alternatively the 5-hole pin clamp with posts can be replaced by a pre-welded 5-hole pin clamp with fixed posts (Ref 4922-2-240).

Tibial Plateau Hybrid Frame

Parallel pin placement / combination with Hoffmann LRF
(Limb Reconstruction Frame) System



Components list

Ref #	Description	Qty
4933-8-030	Wires Ø1.8mm with olive, diamond point	2
5018-5-150	Apex pins Ø5 × 150mm	4
4922-1-010	Rod-to-rod delta couplings	5
4922-2-340	5-Hole pin clamp with 30° fixed posts	1
4933-1-002	Wire bolts, medium	4
4933-1-010	Connecting nuts M8, short	7
4933-1-011	Connecting nut M8, long	1
4933-1-644	Ø8 Rod adaptor medium L=44mm	3
4933-6-210	Carbon fiber open ring Ø210mm	1
4922-8-300	Connecting rod Ø11 × 300mm	2

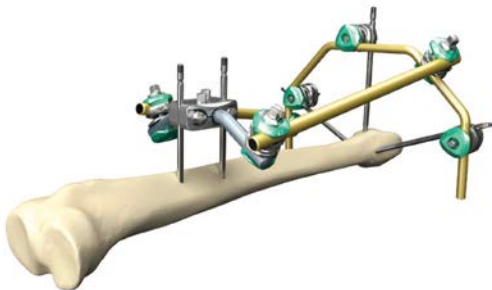
Note:

Depending on the indication and wire placement the medium wire bolts might be replaced by long wire bolts using washers to adjust accordingly. As well choice of wires can vary – in this frame 1.8mm wires might be replaced by 2mm dia. wires with or without olive.

Distal Tibia Semi-Circular Frame



Parallel pin placement



Components list

Ref #	Description	Qty
5018-5-150	Apex pins $\text{Ø}5 \times 150\text{mm}$	5
4922-1-010	Rod-to-rod delta couplings	4
4922-1-020	Pin-to-rod delta couplings	3
4922-2-020	5-Hole pin clamp	1
4922-2-140	30° Angled posts $\text{Ø}11\text{mm}$	2
4922-8-300	Connecting rods $\text{Ø}11 \times 300\text{mm}$	2
5028-7-030	Semi-circular rod $\text{Ø}8\text{mm}$	1

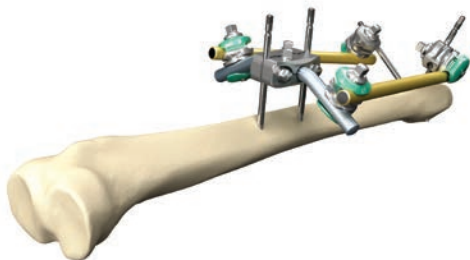
Note:

Alternatively the 5-hole pin clamp with posts can be replaced by a pre-welded 5-hole pin clamp with fixed posts (Ref 4922-2-240).



Distal Tibia Shaft Frame

Parallel / Independent pin placement



Components list

Ref #	Description	Qty
5018-5-150	Apex pins $\text{Ø}5 \times 150\text{mm}$	4
4922-1-010	Rod-to-rod delta couplings	2
4922-1-020	Pin-to-rod delta couplings	2
4922-2-020	5-Hole pin clamp	1
4922-2-140	30° Angled posts $\text{Ø}11\text{mm}$	2
4922-8-250	Connecting rods $\text{Ø}11 \times 250\text{mm}$	2

Note:

Alternatively the 5-hole pin clamp with posts can be replaced by a pre-welded 5-hole pin clamp with fixed posts (Ref 4922-2-240).

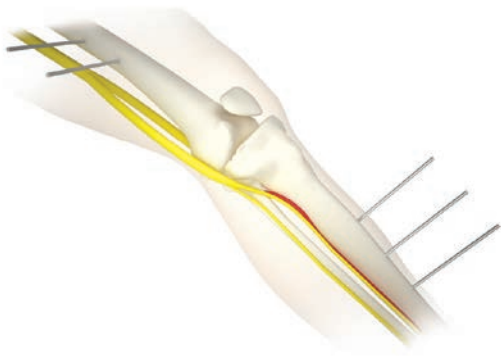


Knee
frames



Pin technique / Safe zones

- Half-pins are placed in the femur anterolaterally in the shaft
- These are connected to half-pins placed in the anterior-medial face of the tibia



Knee Bridging Z-Frame



Independent pin placement, with rod coupler



Components list

Ref #	Description	Qty
5018-6-180	Apex pins $\text{\O}5 \times 180\text{mm}$	4
4922-1-010	Rod-to-rod delta couplings	5
4922-1-220	Rod coupler, 30°	1
4922-8-250	Connecting rod $\text{\O}11 \times 250\text{mm}$	1
4922-8-400	Connecting rods $\text{\O}11 \times 400\text{mm}$	2

Note:

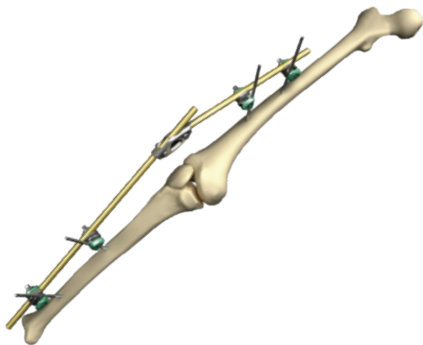
Alternatively the rod-to-rod delta couplings can be replaced by pin-to-rod delta couplings and multiplanar pin-to-rod delta couplings, thus offering more flexibility and freedom when placing the Apex pins and when reducing the fracture before final tightening.

Standardization is achieved by utilizing a rod-to-rod delta coupling with $\text{\O}11\text{mm}$ connecting rod and 5mm apex pins. Alternatively a pin-to-rod coupling may be used.



Knee Bridging Frame

Independent pin placement, with rod coupler



Components list

Ref #	Description	Qty
5018-6-180	Apex pins $\text{Ø}5 \times 180\text{mm}$	4
4922-1-020	Rod-to-rod delta couplings	4
4922-1-220	Rod coupler, 30°	1
4922-8-350	Connecting rods $\text{Ø}11 \times 350\text{mm}$	1
4922-8-450	Connecting rods $\text{Ø}11 \times 450\text{mm}$	1

Note:

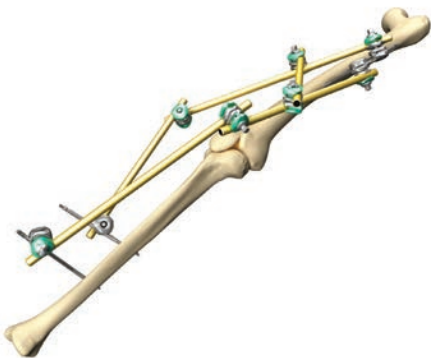
Alternatively the rod coupler might be replaced by a multiplanar delta coupling (Ref 4922-1-015) potentially providing easier fracture reduction and frame alignment.

Standardization is achieved by utilizing a rod-to-rod delta coupling with $\text{Ø}11\text{mm}$ connecting rod and 5mm apex pins. Alternatively a pin-to-rod coupling may be used.

Knee Bridging Frame



Independent pin placement



Components list

Ref #	Description	Qty
5018-6-180	Apex pins $\text{\O}5 \times 180\text{mm}$	2
5021-6-180	Apex pins $\text{\O}6 \times 180\text{mm}$	2
4922-1-010	Rod-to-rod couplings	4
4922-1-020	Pin-to-rod delta couplings	4
4922-8-200	Connecting rod $\text{\O}11 \times 200\text{mm}$	1
4922-8-350	Connecting rods $\text{\O}11 \times 350\text{mm}$	4

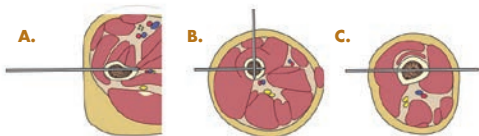
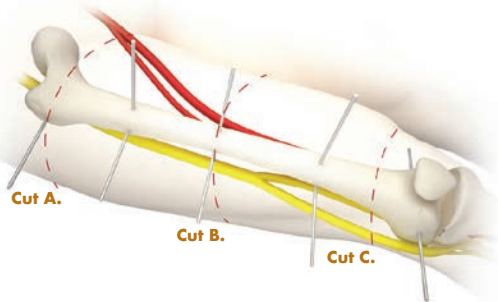
An anatomical illustration of the human skeleton. The two femurs (thigh bones) are highlighted in a bright orange color, while the rest of the skeleton is shown in a natural bone color. The femurs are shown in a frontal view, extending from the hip joints down to the knee joints. The rest of the skeleton, including the skull, spine, ribs, pelvis, and lower legs, is shown in a light beige color. A red circle is located in the top left corner of the image.

Femur
frames

Pin technique / Safe zones

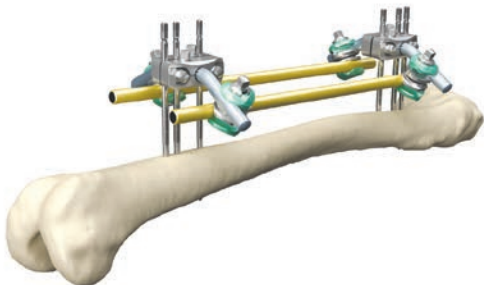


- In the femur half pins may be placed from lateral to medial over the entire length of the bone
- Transfixing pins can be placed in the distal quarter of the femur distal to the passage of the femoral artery posteriorly



Femur Bi-Lateral Frame (Double Half Frame)

Parallel pin placement



Components list

Ref #	Description	Qty
5021-6-180	Apex pins $\text{Ø}6 \times 180\text{mm}$	6
4922-1-010	Rod-to-rod delta couplings	4
4922-2-020	5-Hole pin clamps	2
4922-2-140	30° Angled posts $\text{Ø}11\text{mm}$	4
4922-8-350	Connecting rods $\text{Ø}11 \times 350\text{mm}$	2

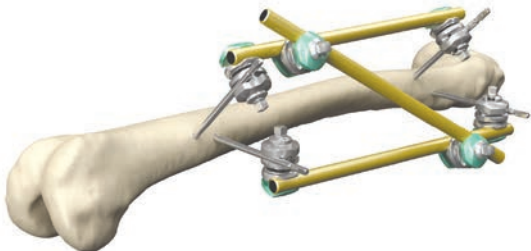
Note:

Alternatively the 5-hole pin clamp with posts can be replaced by 2 pre-welded 5-hole pin clamps with fixed posts (Ref 4922-2-240). alignment.

Femur Emergency Frame



Independent pin placement

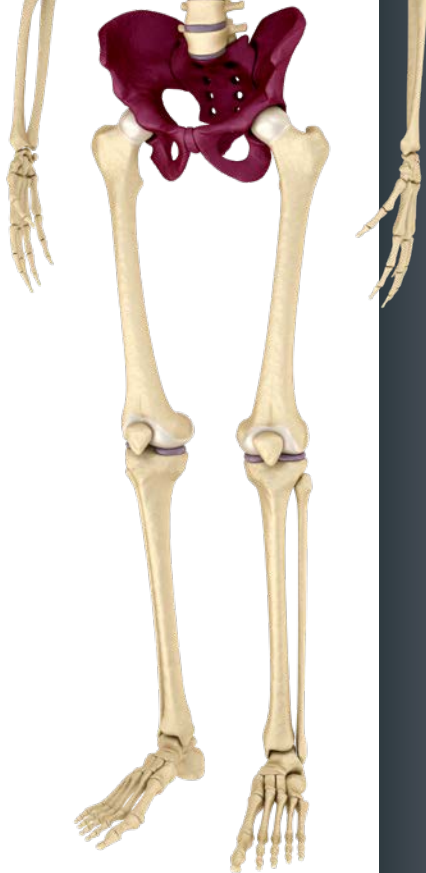


Components list

Ref #	Description	Qty
5021-6-180	Apex pins $\text{Ø}6 \times 180\text{mm}$	4
4922-1-010	Rod-to-rod delta couplings	2
4922-1-020	Pin-to-rod delta couplings	4
4922-8-350	Connecting rods $\text{Ø}11 \times 350\text{mm}$	3

Note:

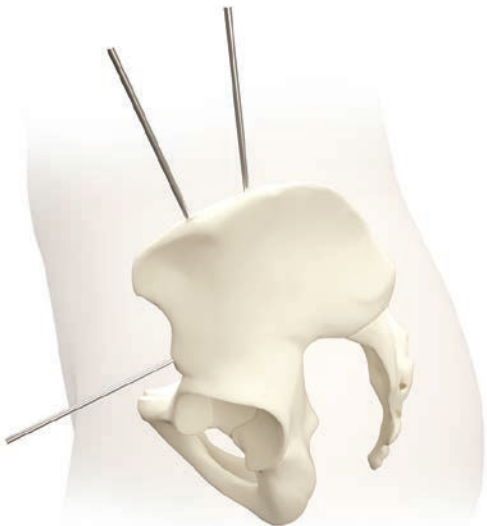
Apply additional pins and rods before patient transportation.



Pin technique / Safe zones



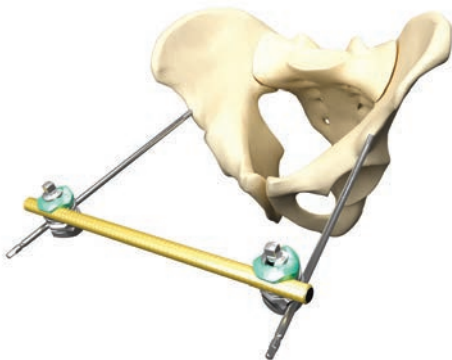
- Pins can be placed percutaneously in the iliac wings
- Pins can be placed in the pelvis in the crest between the anterior-superior and anterior-inferior iliac spines





Pelvic Emergency Frame

Single supra-acetabular pin placement



Components list

Ref #	Description	Qty
5021-8-200	Apex pins $\text{Ø}6 \times 200\text{mm}$	2
4922-1-020	Pin-to-rod delta couplings	2
4922-8-400	Connecting rods $\text{Ø}11 \times 400\text{mm}$	1

Pelvic Osteotaxis Frame



Multi-Iliac crest pin placement



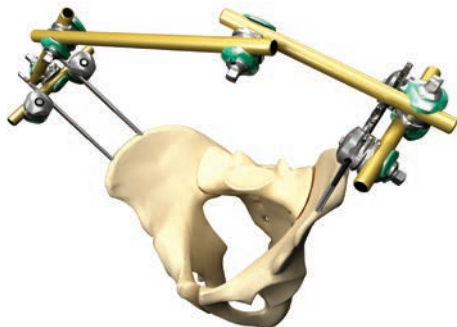
Components list

Ref #	Description	Qty
5018-6-200	Apex pins $\text{\O}5 \times 200\text{mm}$	6
4922-1-010	Rod-to-rod delta couplings	7
4921-2-080	Pelvic pin clamps	2
4922-8-350	Connecting rods $\text{\O}11 \times 350\text{mm}$	2
4922-8-400	Connecting rods $\text{\O}11 \times 400\text{mm}$	2



Pelvic Osteotaxis Frame

Independent iliac crest pin placement



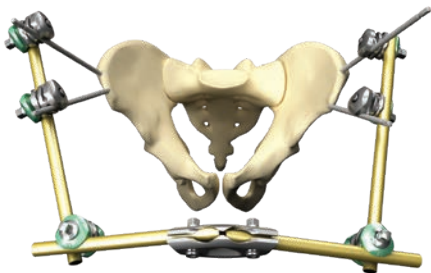
Components list

Ref #	Description	Qty
5018-6-200	Apex pins $\text{Ø}5 \times 200\text{mm}$	4
4922-1-010	Rod-to-rod delta couplings	4
4922-1-030	Pin-to-rod delta couplings, inverted	4
4922-8-150	Connecting rods $\text{Ø}11 \times 150\text{mm}$	2
4922-8-350	Connecting rods $\text{Ø}11 \times 350\text{mm}$	3

Pelvic Osteotaxis Frame



Independent iliac crest pin placement, with rod coupler



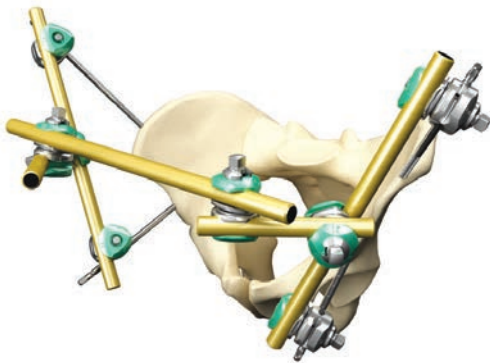
Components list

Ref #	Description	Qty
5018-6-180	Apex pins $\text{Ø}5 \times 180\text{mm}$	4
4922-1-010	Rod-to-rod delta couplings	2
4922-1-030	Pin-to-rod delta couplings, inverted	4
4922-1-220	Rod coupler, 30°	1
4922-8-150	Connecting rods $\text{Ø}11 \times 150\text{mm}$	2
4922-8-250	Connecting rods $\text{Ø}11 \times 250\text{mm}$	2



Pelvic Orthogonal Frame Construct

Perpendicular iliac crest / Supra-acetabular pin placement



Components list

Ref #	Description	Qty
5018-6-200	Apex pins $\text{\O}5 \times 200\text{mm}$	4
4922-1-010	Rod-to-rod couplings	4
4922-1-020	Pin-to-rod couplings	4
4922-8-150	Connecting rods $\text{\O}11 \times 150\text{mm}$	2
4922-8-350	Connecting rods $\text{\O}11 \times 350\text{mm}$	2
4922-8-400	Connecting rods $\text{\O}11 \times 400\text{mm}$	1



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Trauma & Extremities



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Manufacturer:

Stryker Trauma GmbH
Prof.-Küntschers-Str. 1-5
24232 Schönkirchen,
Germany

stryker.com