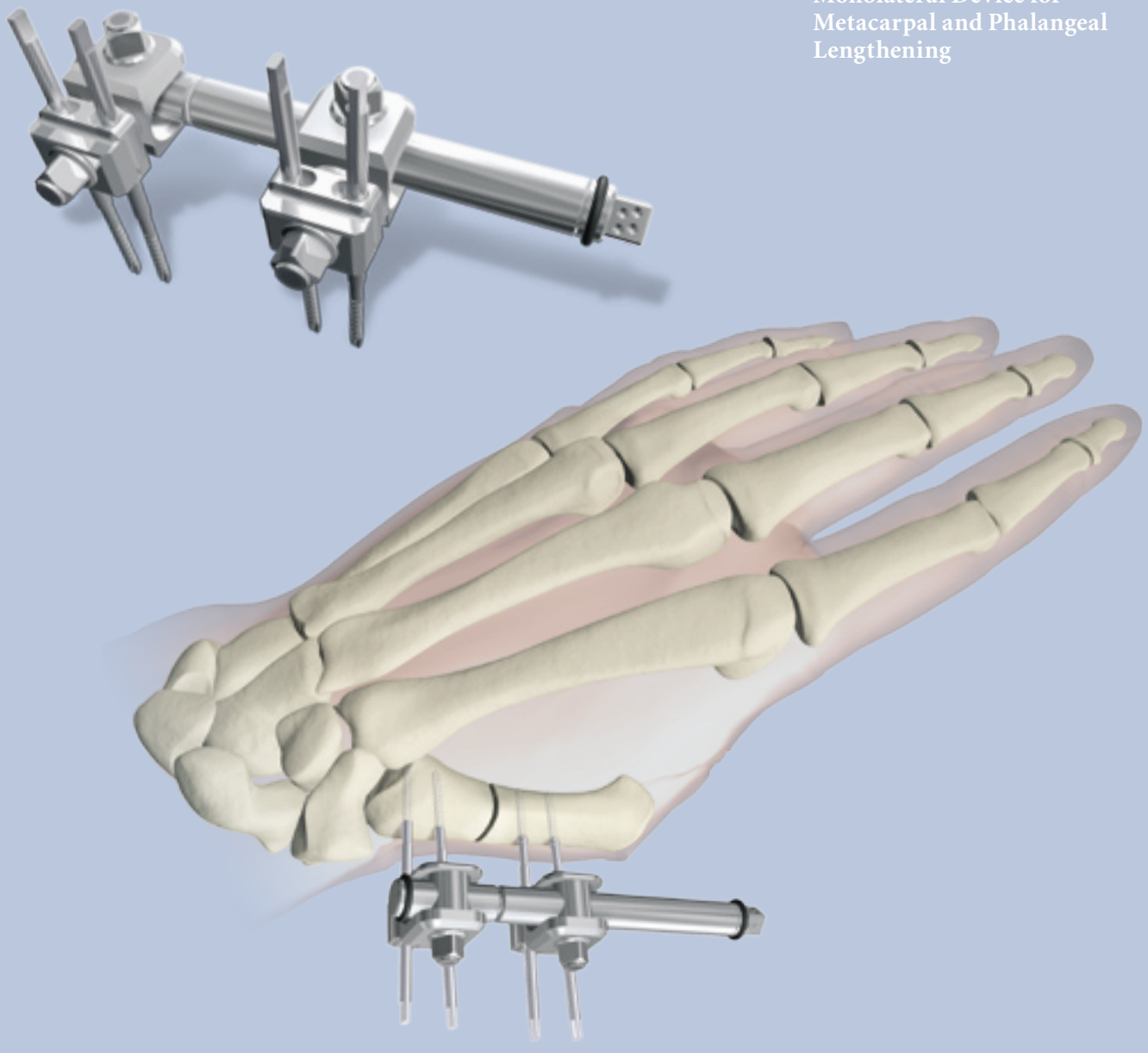
stryker®

Trauma

Hoffmann II Micro Lengthener

Operative Technique

Monolateral Device for Metacarpal and Phalangeal Lengthening



Introduction & Features

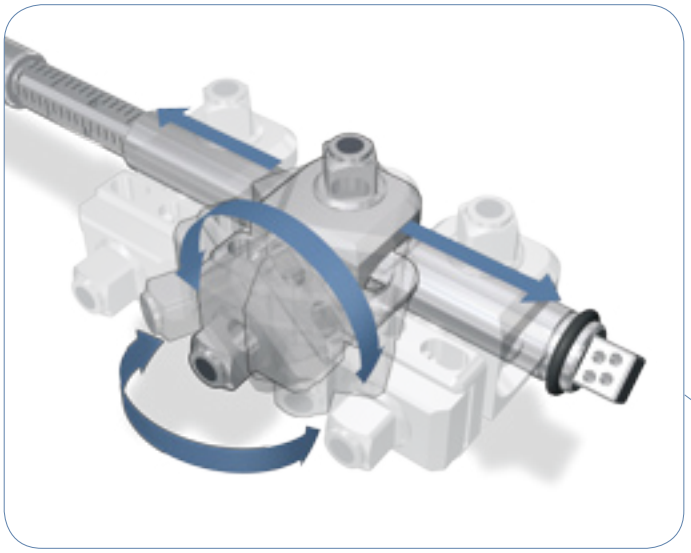
Based on the unique Hoffmann® II Micro System for fracture management, Stryker has developed the Hoffmann® II Micro Lengthener for metacarpal or phalangeal lengthening.

The lengthener offers the same versatility and ease-of-use which makes the Hoffmann® II Micro system a leader in External Fixation for the Hand.

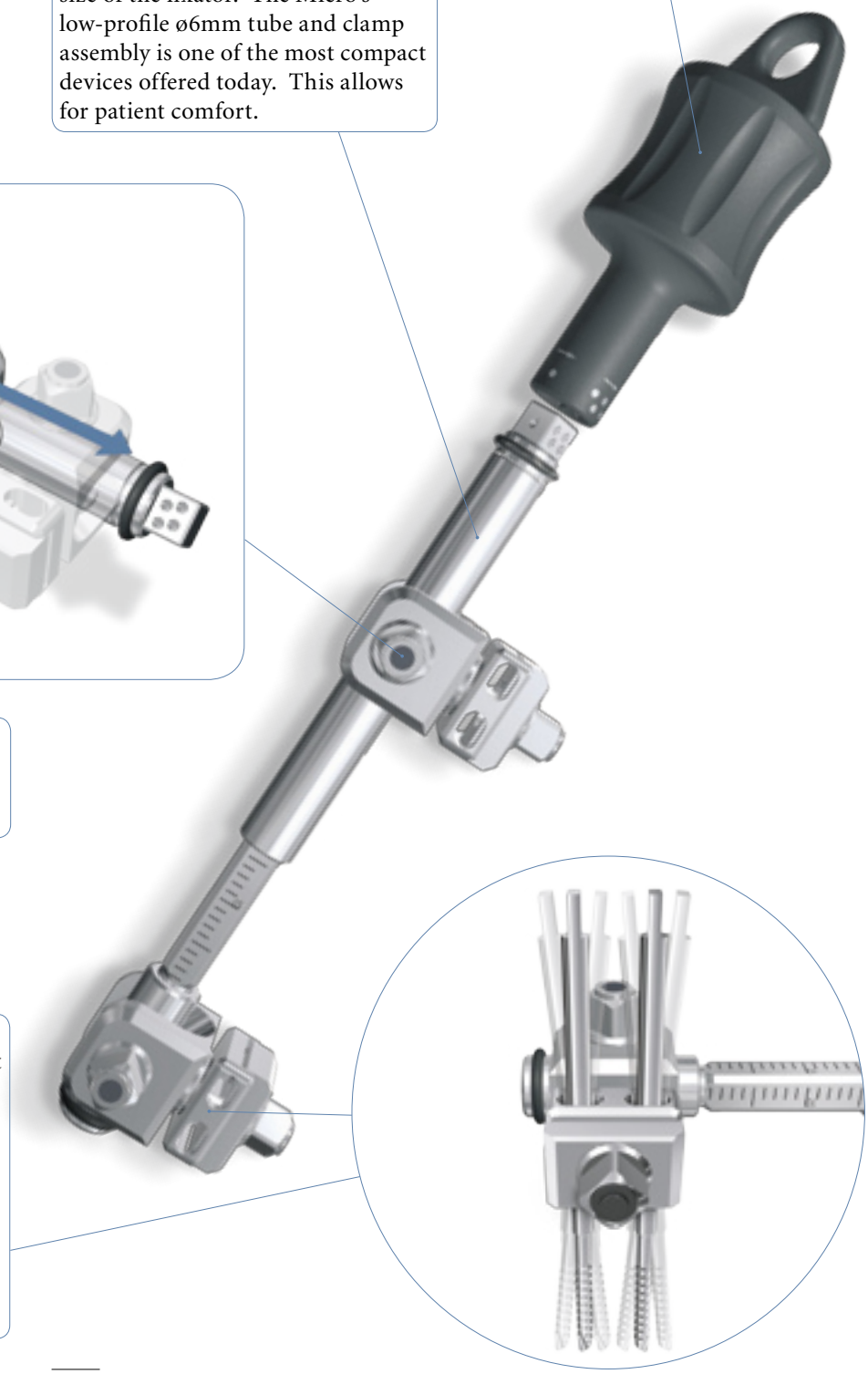
The Micro Lengthener is completely compatible with the Hoffmann® II Micro system instruments. There are no extra tools needed to assemble the frame.

The system offers an optional thumbwheel for the patient to use throughout the lengthening process. This tool will help the patient follow the regime of daily lengthening.

An obvious advantage is the overall size of the fixator. The Micro's low-profile ø6mm tube and clamp assembly is one of the most compact devices offered today. This allows for patient comfort.



The clamps can be positioned in variety of ways, which allows optimal pin placement and easy frame adaptability.



The clamps allow insertion of the Apex® Pins in a Parallel, Convergent or Divergent direction. Due to the clamp's oblong pin holes, the surgeon can easily insert pins while avoiding soft tissues or obtaining optimal pin/bone interface. It also works well when there is only limited space to insert the pins, which can be the case in phalangeal lengthening.

Relative Indications & Contraindications

Relative Indications

The primary indication for the Hoffmann® II Micro Lengthener is the lengthening of phalanges and metacarpals in congenital or post-trauma cases.

Other indications include:

- Small Joint Arthrodesis in the Hand
- Acute Corrective Osteotomies
- Non-unions

Relative Contraindications

- Patients with a compromised immune system
- Non compliant patients who would not be able to follow the lengthening regime and proper pin care
- Pre-existing internal fixation that prohibits proper pin placement
- Bone pathology precluding pin placement

For complete product indications, contraindications, warnings and precautions, please refer to the Instructions for Use, which is included in the product packaging.

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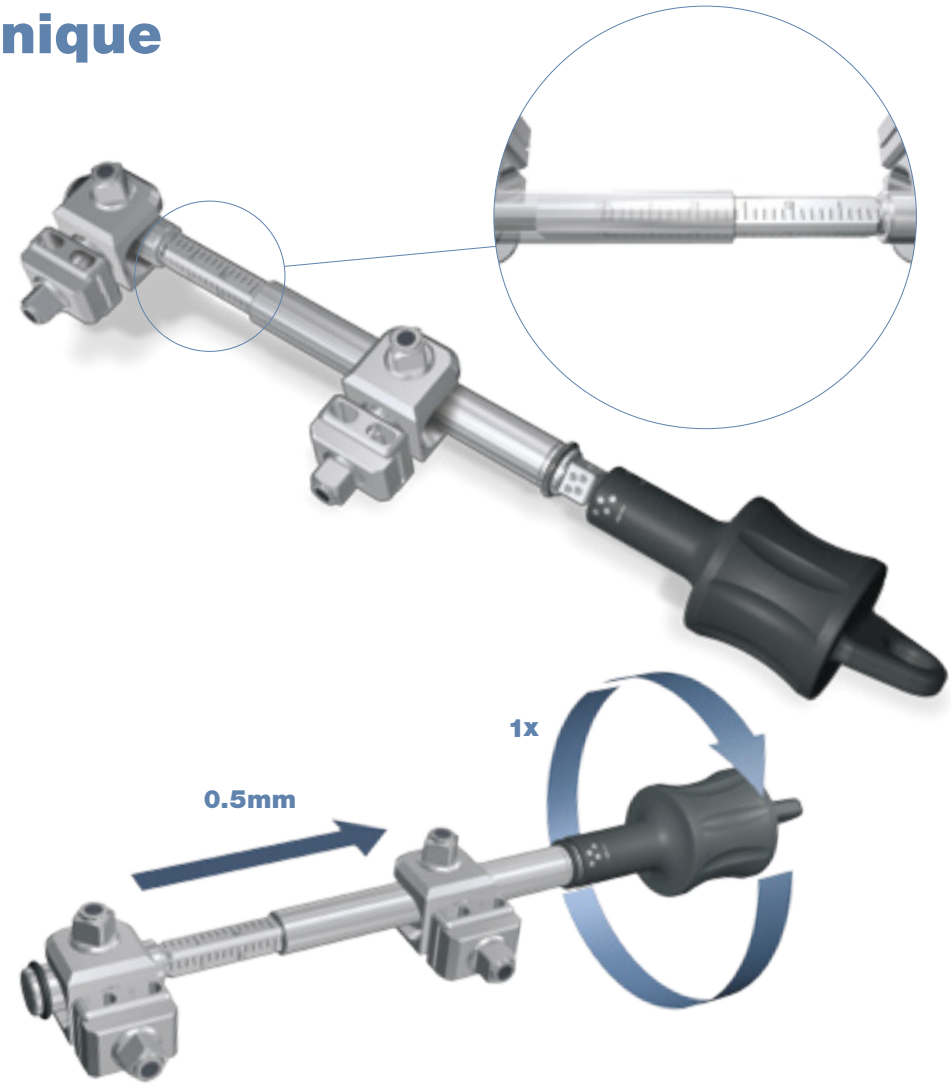
Lengthener Technical Details

The lengthener can distract up to 3.0 centimeters. This is marked on the inner-tube in millimeter increments.

One full turn of the Lengthening Bolt creates 0.5mm of lengthening. The bolt is marked with dimples to help the patient follow the daily lengthening regime.

The titanium Thumbwheel helps the patient with his or her daily regime. The dimples on the lengthening bolt match the markings on the thumbwheel for an easy connection and correct rotation.

Note:
The Thumbwheel should only be used with the lengthening bolt. Do not use it to tighten the multi-pin clamps as it does not supply enough torque.



Pin Insertion Guidelines

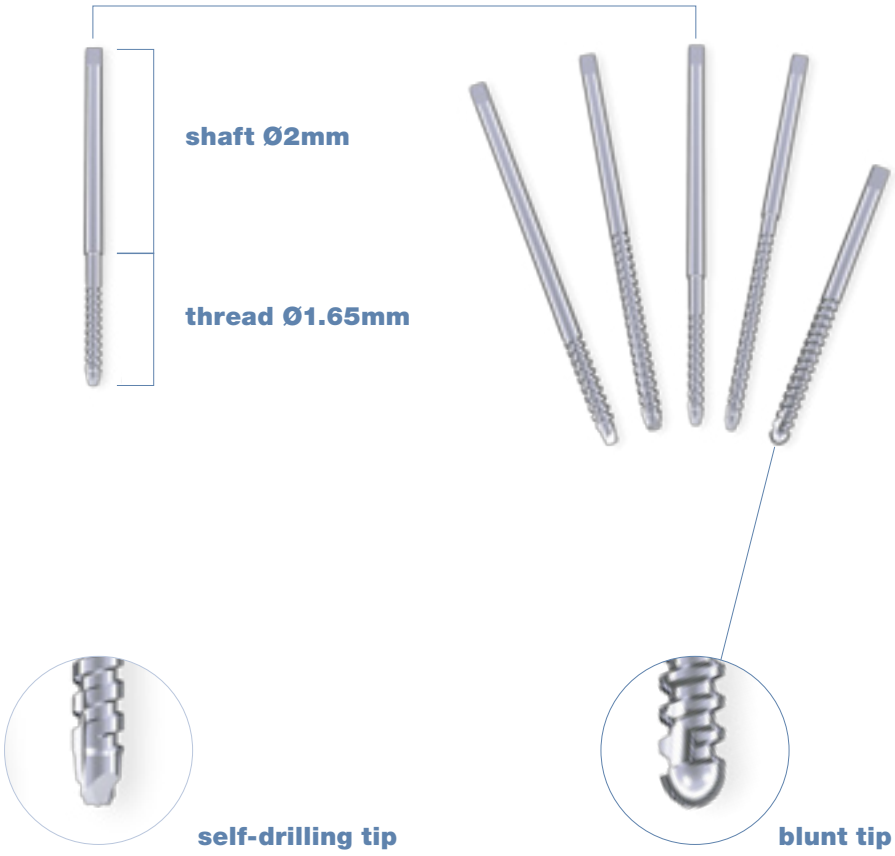
Two types of half-pins are offered in the system: Blunt/Self-Tapping and Self-Drilling/Self-Tapping. Pre-drilling is necessary when using Blunt/Self-Tapping half-pins. It is optional to pre-drill when using Self-Drilling/Self-Tapping half-pins.

- Use a ø1.6mm K-Wire to pre-drill a ø2.0mm half-pin
- Use a ø1.2mm K-Wire to pre-drill a ø1.65mm half-pin

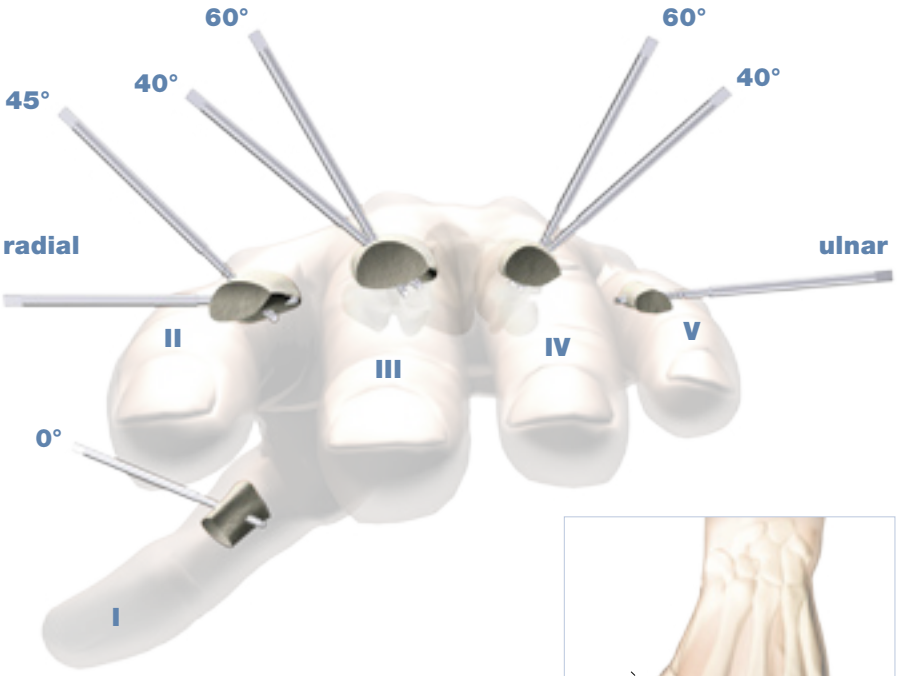
Blunt/Self-Tapping Half-Pins are offered in ø2.0mm thread diameter only. Self-Drilling/Self-Tapping Half-Pins are offered in ø2.0mm and ø1.65mm thread diameters. All Half-Pins have a ø2.0mm shaft diameter.

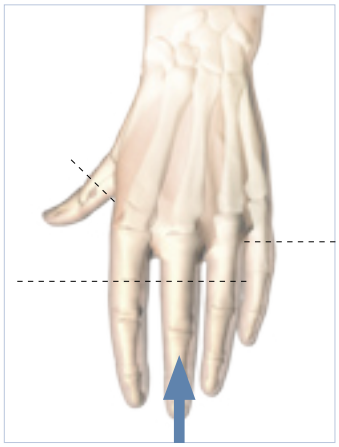
For greater frame stability, use ø2mm pins unless the anatomy requires ø1.65mm pins.

A (mini) open insertion technique is recommended to avoid unnecessary damage to the soft tissues. A Drill/Insertion Guide is provided in the system to facilitate this technique.



Operative Technique





Placement in the Phalanges

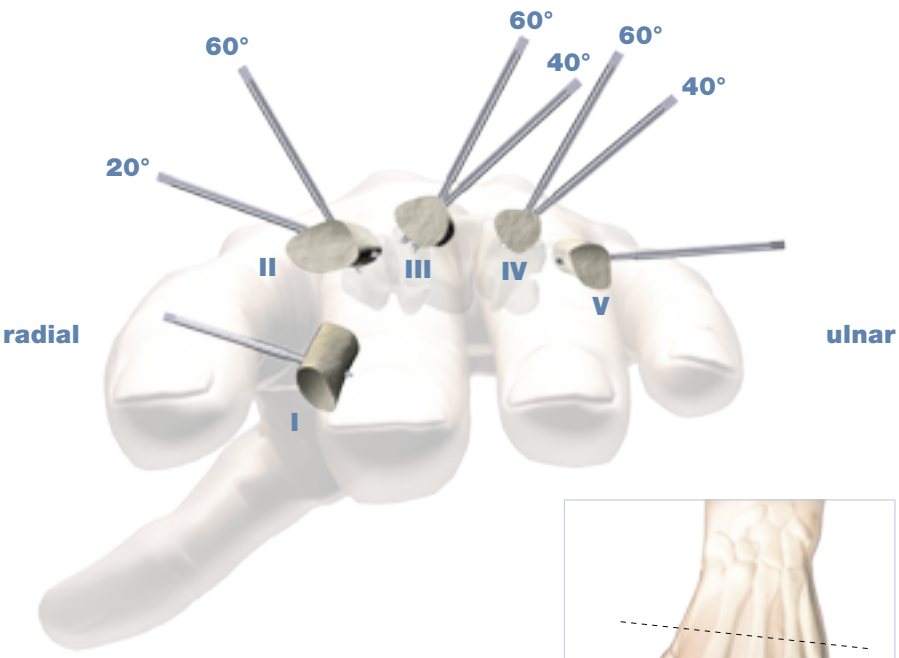
I Insert half-pins from the radial side in the frontal plane.

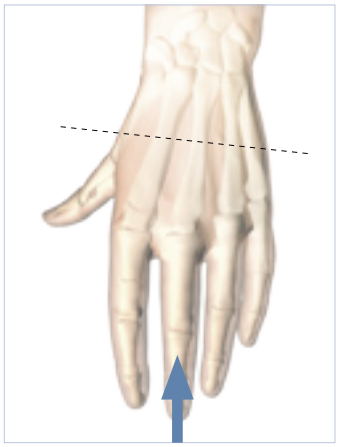
II Insert 0° to 45° from the frontal plane on the dorsal-radial side.

III Insert 40° to 60° from the frontal plane on the dorsal-radial side.

IV Insert 40° to 60° from the frontal plane on the dorsal-ulnar side.

V Insert from the ulnar side in the frontal plane.





Placement in the Metacarpals

I Insert half-pins from the radial side in the frontal plane.

II Insert 20° to 60° from the frontal plane on the dorsal-radial side.

III Insert 40° to 60° from the frontal plane on the dorsal-ulnar side.

IV Insert 40° to 60° from the frontal plane on the dorsal-ulnar side.

V Insert from the ulnar side in the frontal plane

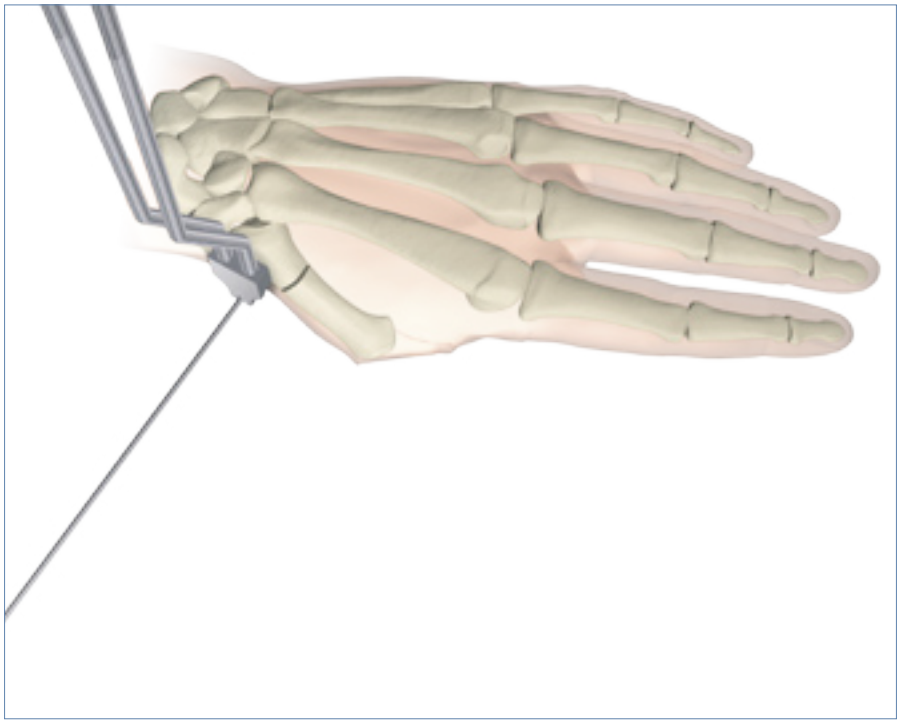
Note:
When inserting pins, ensure bi-cortical purchase.

Operative Technique

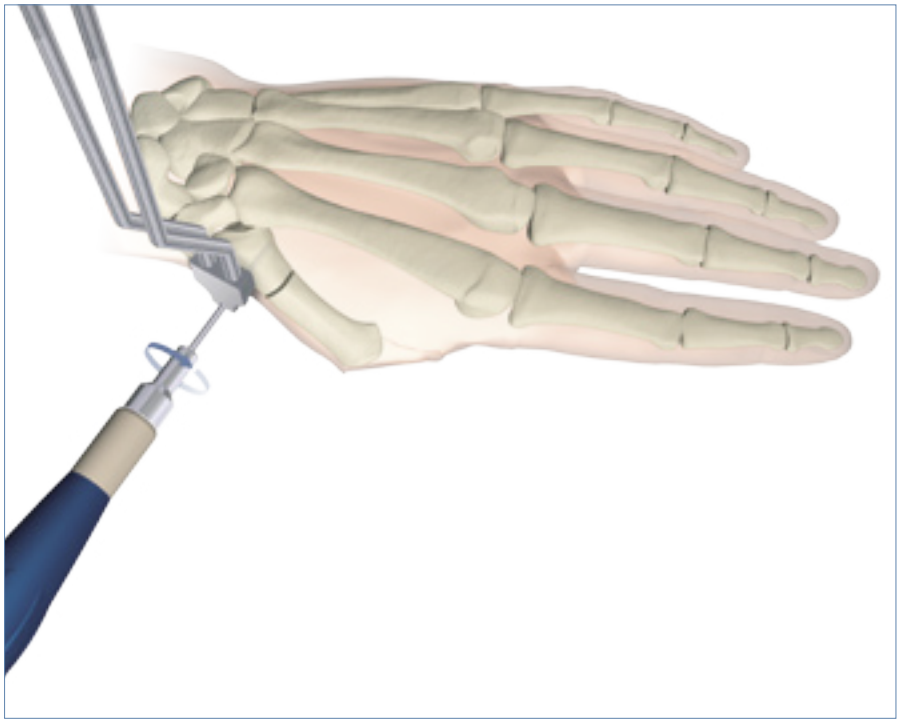
Lengthening of the 1st Metacarpal

Step 1
Drill the first proximal hole at least 5mm from the osteotomy site using the Drill/Pin Insertion Guide and the 1.6mm K-wire. If self-drilling/self-tapping half-pins are used, it is possible to insert the half-pins without pre-drilling as described in this step.

Note:
The drill/pin insertion angle is approximately 0° radial to the frontal plane. Use image intensification to determine proper pin placement, and ensure bi-cortical purchase.



Step 2
Manually insert the half-pin (blunt or self-drilling/self-tapping) using the ø2mm Pin Driver and Drill/Pin Insertion Guide.



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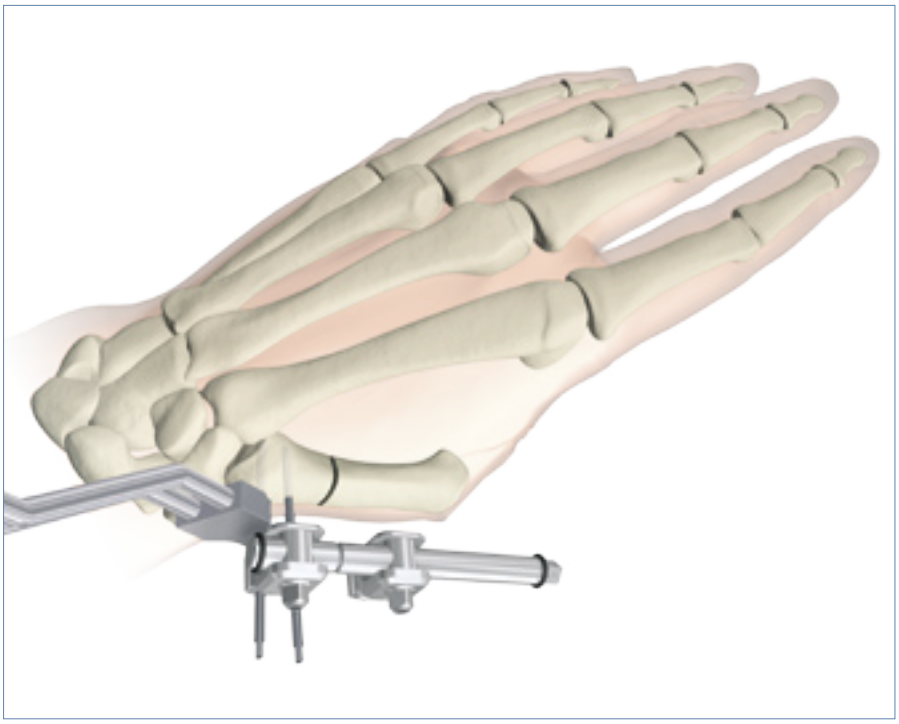
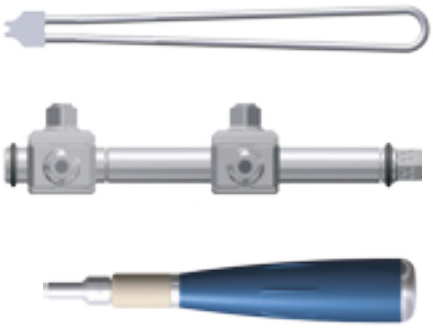
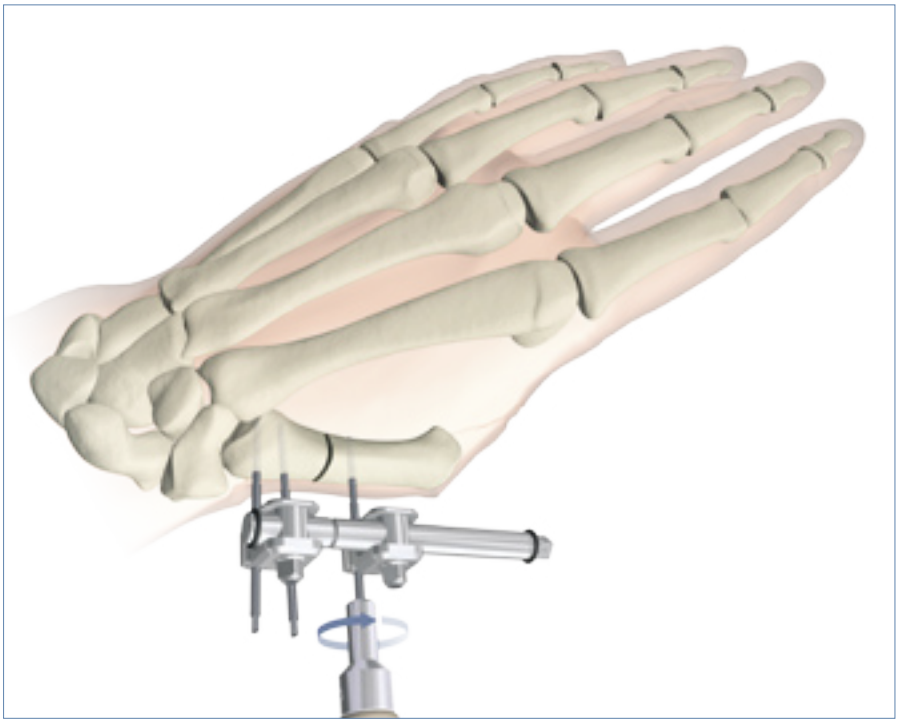


Step 3
Using the Multi-Pin Clamp of the Lengthener as a template, and the Drill/Pin Insertion Guide to protect soft tissue, manually insert the second half-pin through the Multi-Pin Clamp.



Note:
Predrilling is needed if using Blunt Pins.

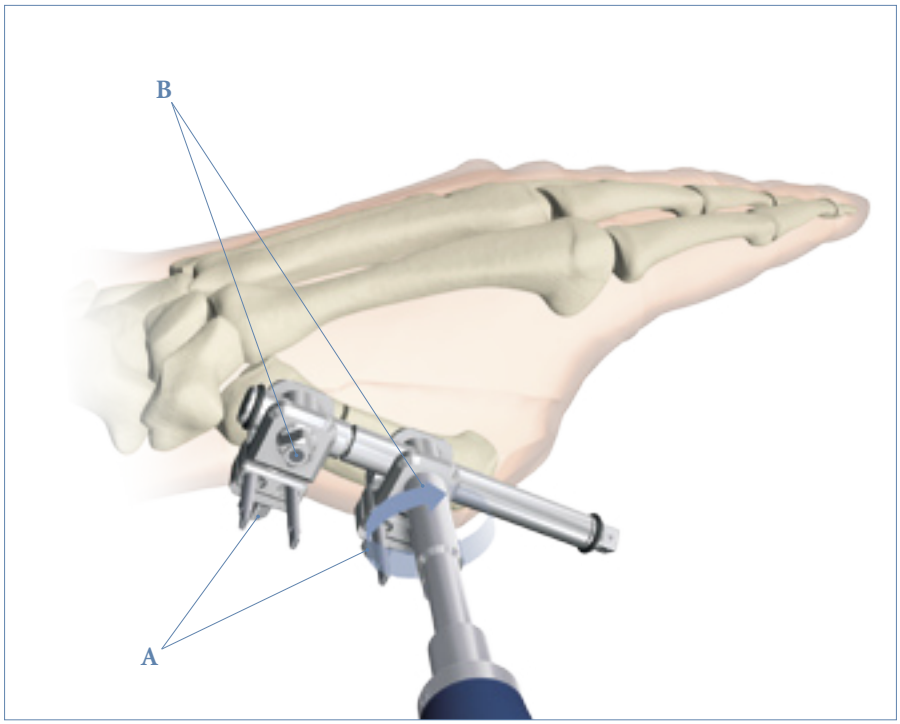


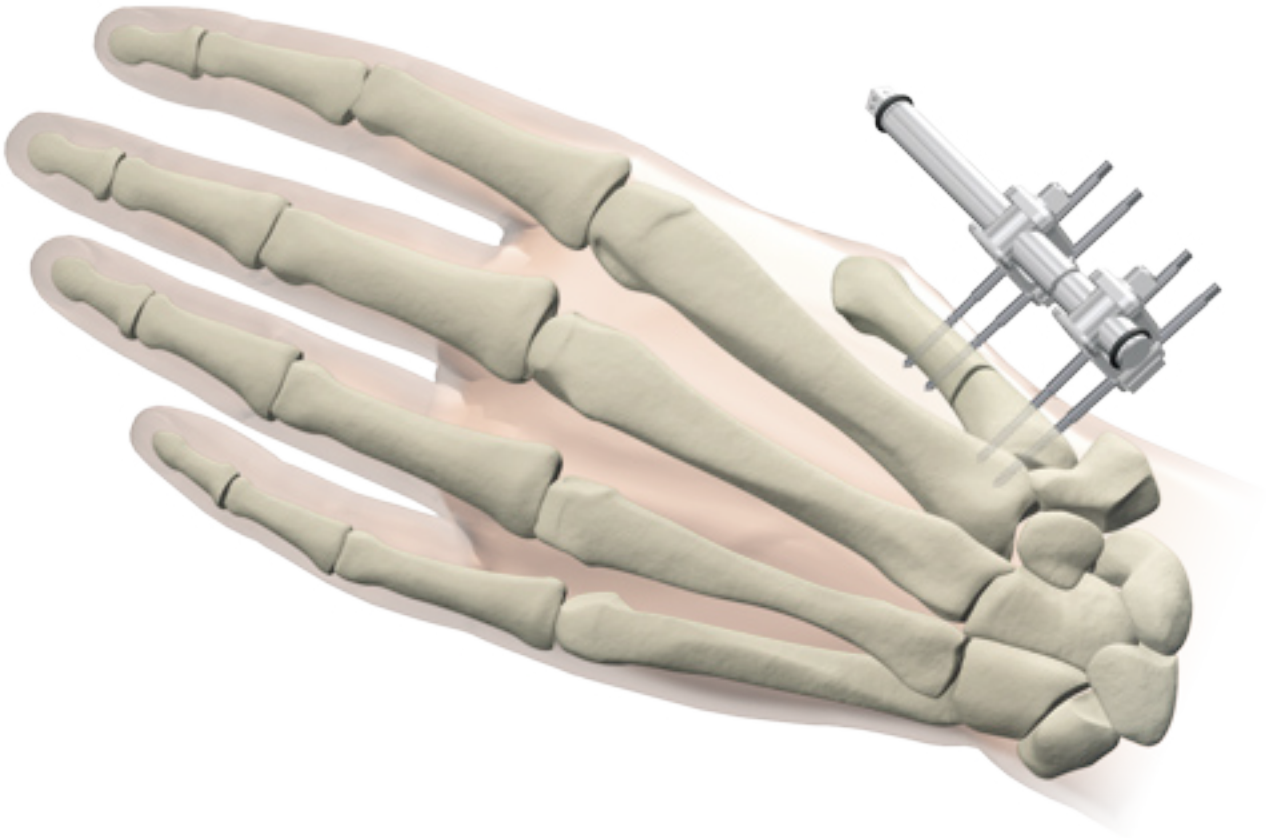
Step 4
Build the same Pin/Clamp construct on the distal side of the osteotomy following steps 1 through 3 ensuring that the lengthener is parallel to the long axis of the bone.

Operative Technique

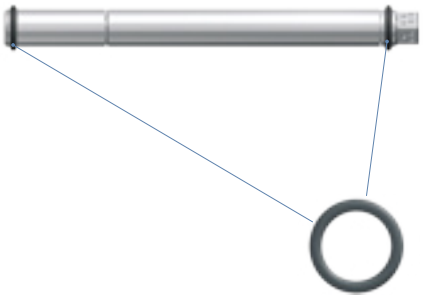
Step 5
After proper alignment is made, tighten Bolts A and B on both clamps.

Note:
The 4mm Nut Wrench shown here is designed to allow the proper torque needed to properly tighten bolts A and B. Take care not to over-torque the bolts when tightening with a spanner wrench.





Ordering Information - Components & Instruments

	REF	Description
	4960-3-000	Micro Lengthener Assembly
	4960-3-010	Micro Lengthener Tube
	4960-3-015	O-Ring for Micro Lengthener Tube
	4960-3-020	Micro Lengthener Multi-Pin Clamp
	4960-3-030	Thumbwheel
	4960-9-040	Drill/Pin Insertion Guide
	4960-9-030	4mm Nut Wrench
	4960-9-020	2mm/1.65mm Pin Driver
	5084-4-044	4mm Spanner Wrench

Ordering Information - Implants

Apex® Half-Pins - Self Drilling/Self Tapping

Stainless Steel REF	Diameter mm	Total Length mm	Thread Length mm
5080-2-012	2.0	45	12
5080-2-020	2.0	45	20

Apex® Half-Pins - Self Drilling/Self Tapping

Stainless Steel REF	Diameter mm	Total Length mm	Thread Length mm
5080-1-612	1.65/2.0	45	12
5080-1-620	1.65/2.0	45	20

Apex® Half-Pins - Blunt

Stainless Steel REF	Diameter mm	Total Length mm	Thread Length mm
5065-3-615	2.0	36	15
5065-4-520	2.0	45	20

K-Wires

Stainless Steel REF	Diameter mm	Total Length mm
390152	1.2	150
390164	1.6	150

Notes

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