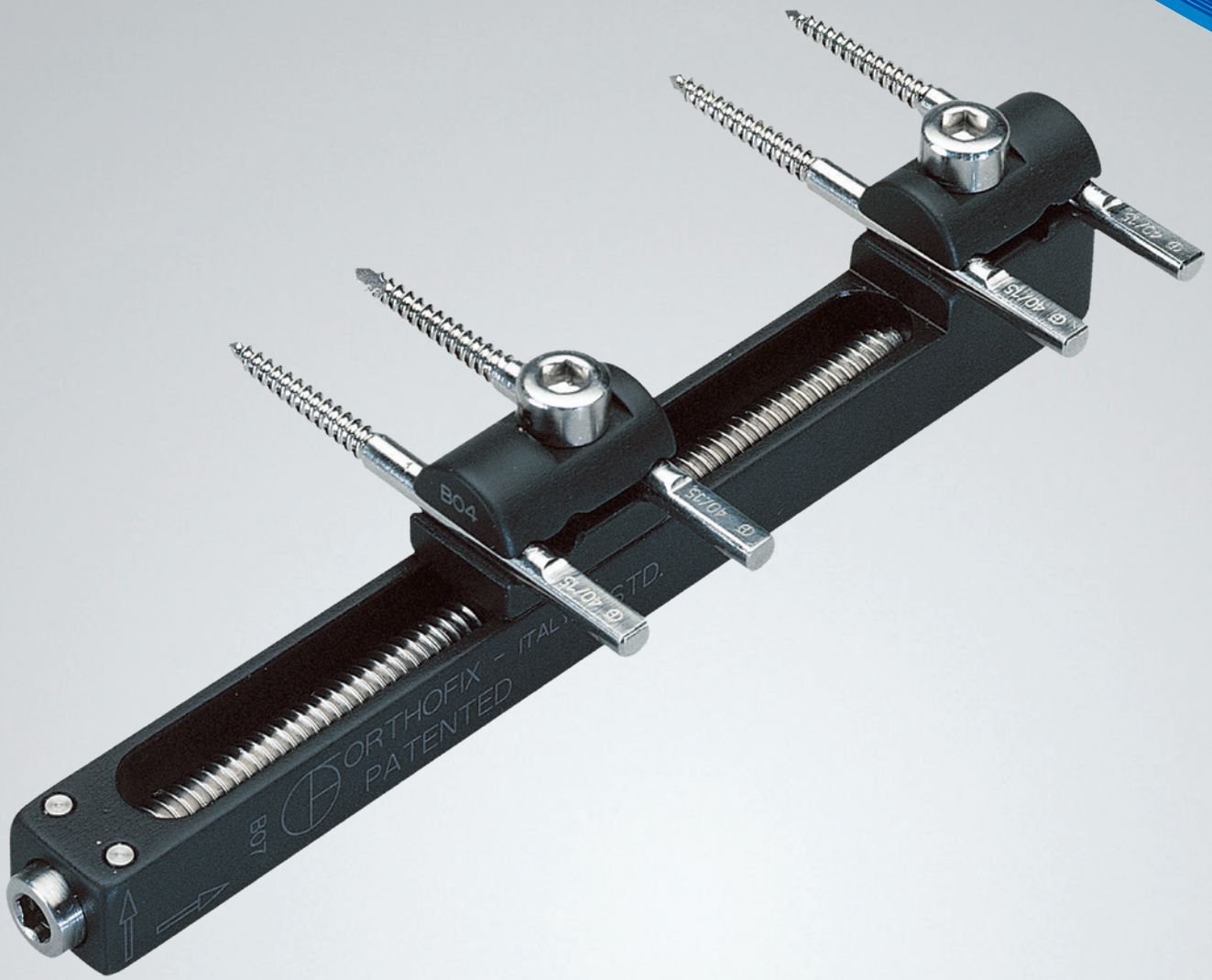
QUICK REFERENCE GUIDE

Minirail

System

Minirail System

Part B: Foot Applications



ORTHOFIX®

GENERAL POINTS

Bone fixation

The system is provided with 2 types of bone fixation:

1. Self-drilling screws, 3mm shank, with a tapered thread 2.5 - 2.0mm.
2. Threaded wires, 2mm shank, with a cylindrical thread 15mm long. Sizes supplied are 70/15, with a thread diameter of 1.6mm, and 100/15, with a thread diameter of 2.0mm.

In addition, larger self-drilling screws are available, with a 3mm shank, but with a tapered thread diameter 3.0-2.5mm.

- In the foot, the largest diameter implant should be selected that is compatible with the bone diameter, remembering that the diameter of the hole in the bone should never be larger than 30% of the bone diameter at that point. This is particularly important for stability when lengthening.

- All implants are self-drilling. The wires can be inserted directly percutaneously; the screws should be inserted through a small incision.

PRECAUTION: Any attempt to back out an Orthofix conical screw once it has been inserted may cause it to become loose.

If this happens with the 2.5-2.0mm threads, a screw with a larger thread can be inserted instead.

- The wires have cylindrical threads, and can therefore be backed out if necessary.

PRECAUTION: Diaphyseal bone screws and wires should always be inserted perpendicular to and in the center of the bone axis to avoid weakening it.

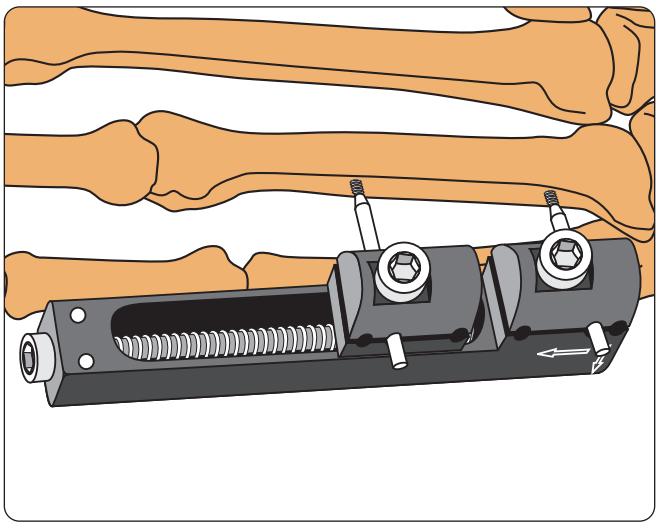
Fixator application

- The clamps should face down, beneath the fixator body, in cases where one is concerned with the body of the fixator striking the ground during weightbearing (metatarsal 1 and 5, calcaneus) or rubbing against adjacent soft tissues (metatarsals 2-4).

Please kindly refer to the product IFU PQMIN, to the Orthofix implantable devices and related instrument IFU PQSCR, and to the reusable medical devices IFU PQRMD that contain instructions for use of the product.

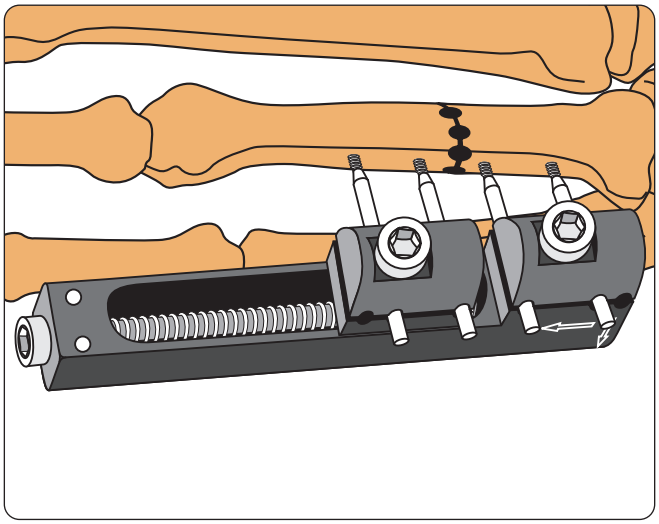
USE OF M 103 IN LENGTHENING OF A CONGENITALLY SHORT 4th METATARSAL

Insert a 2mm diameter threaded wire (or 3mm diameter bone screw) at 45° from the frontal plane and at right angles to the bone axis. Apply the MiniRail lengthener over the wire (or screw). Insert a second wire (or screw) into a screw seat in the second clamp.

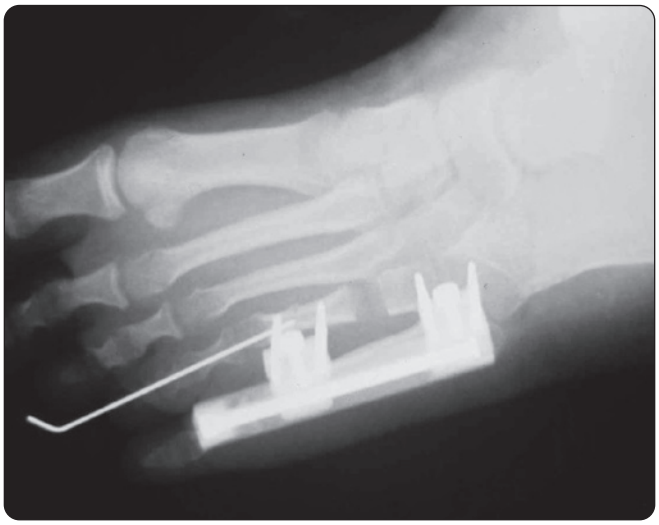


Insert the remaining threaded wires (or screws). Perform an osteotomy mid-way between the two clamps.

If a metaphyseal osteotomy is required, use the T-Clamp to place two screws or wires across the axis of the bone.



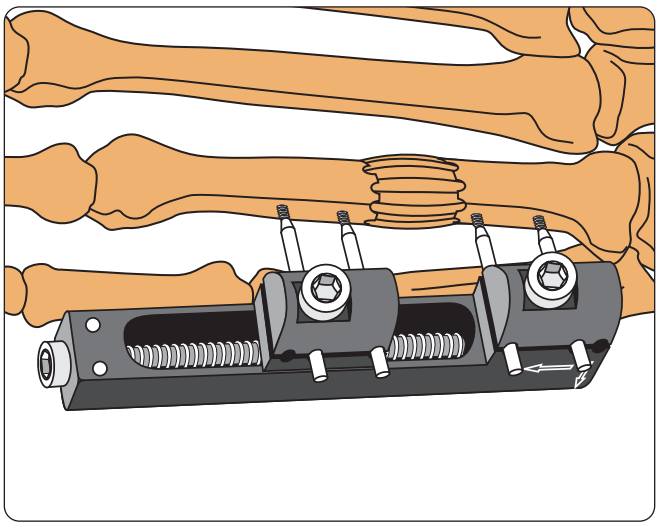
Insert a K-wire longitudinally through the metatarso-phalangeal joint to prevent any subluxation during callus distraction.



Post-operative management

Wait for 7-10 days before commencing distraction. Distract at a rate of 1mm per day (one quarter turn clockwise of the threaded screw four times a day).

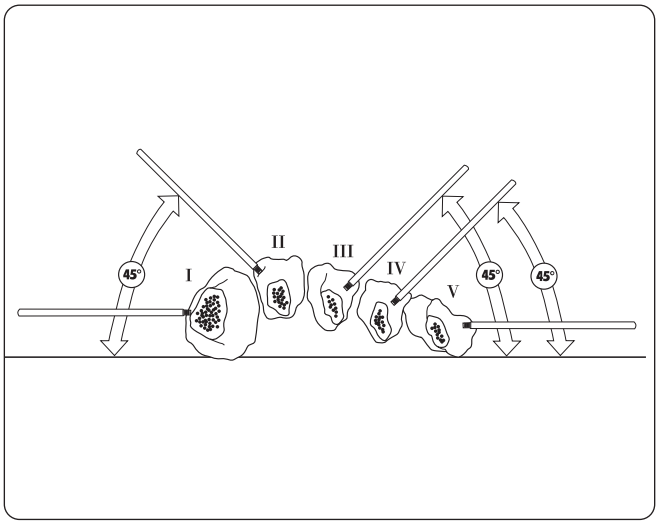
PRECAUTION: In patients undergoing callus distraction, the regenerated bone must be checked regularly and monitored radiologically.



Special considerations in other metatarsal applications

1st or 5th metatarsal
Apply the fixator in the frontal plane.

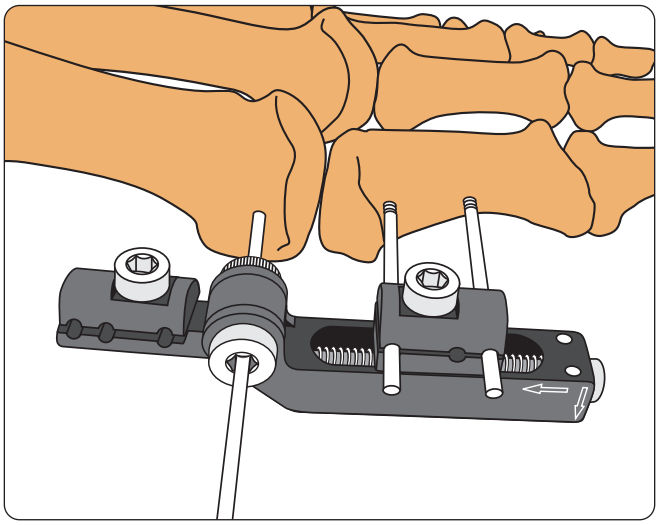
2nd or 3rd metatarsal
Incline wires (or screws) dorsally at an angle of 45° to the frontal plane.



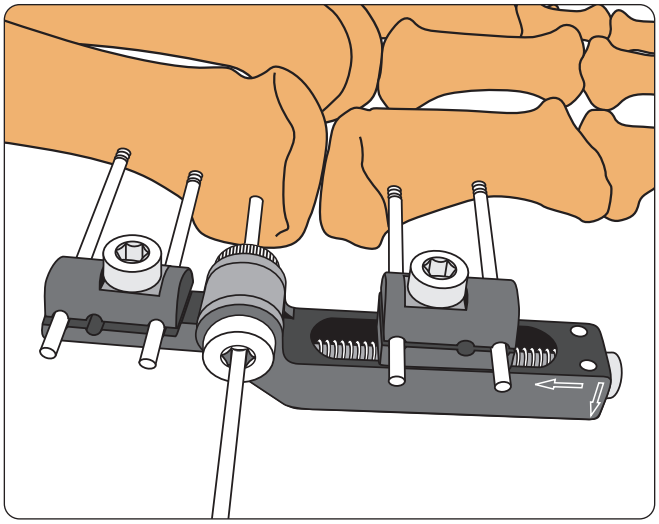
USE OF M 111 IN TREATMENT OF JOINT STIFFNESS (HALLUX RIGIDUS)

Insert a 2mm Kirschner Wire into the head of the first metatarsal from the medial side, so that it is in the center of rotation of the joint. Orientate the fixator so that the body of the fixator with the distraction mechanism is facing the proximal phalanx. The hexagon at the hinge should face outwards (it may be necessary to transpose the two components of the hinge to achieve this). Slide the articulating hinge over the Kirschner Wire. Insert a 2mm threaded wire (or 3mm diameter bone screw) in the distal seat of the distal clamp and a second wire or screw into the proximal seat of the distal clamp.

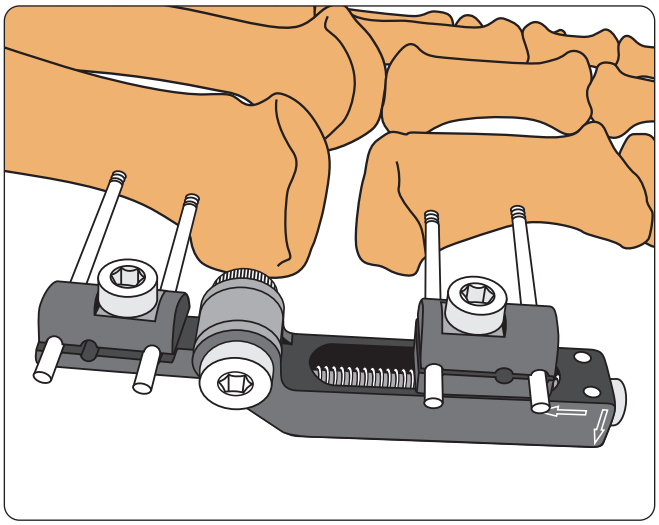
PRECAUTION: Check that the movement of the joint is around the axis of the Kirschner Wire; if not, remove it and re-site it, adjusting the distraction mechanism as necessary.



Insert wires or screws into the distal end of the first metatarsal.



Distract 5mm acutely (intraoperatively). Remove the K-wire and tighten the articulated body locking screw.



Post-operative management

Wait 3 days following surgery and begin gradual distraction. Distract the joint 0.5mm/day until a joint space two or three times the normal width is obtained (one full turn clockwise of the threaded screw = 1mm distraction). When the soft tissues have relaxed, loosen the articulated body locking screw to commence physiotherapy. At the end of an exercise period, place the hallux in the neutral position and retighten the articulated body locking screw.

USE OF M122 IN PAEDIATRIC METATARSUS ADDUCTUS

5 year old girl with right metatarsus adductus. AP X-ray shows medial deviation of metatarsals 2-5 at the Lisfranc's joint.

Soft tissue

Perform the following:
- Percutaneous tendo achilles lengthening
- Abductor hallucis release
- Partial anterio tibial tendon resection
- Capsulotomies 2-5

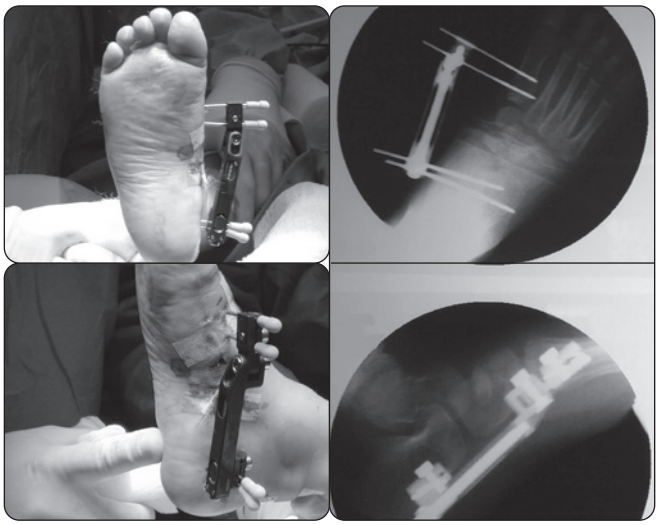
Orientate the MiniRail fixator on the medial side of the first metatarsal with the shorter hinged side distal on the foot.

Two distal screws or wires are inserted from the medial side into the first metatarsal, distal to the growth plate, in the coronal plane at 90 degrees to the axis of the bone.

The fixator hinge is orientated to accommodate the angle between the forefoot and hindfoot, so that screws inserted into the calcaneus are at 90 degrees to the bone axis. Orientate hinge on fixator to accommodate the appropriate alignment of the forefoot with the rearfoot.

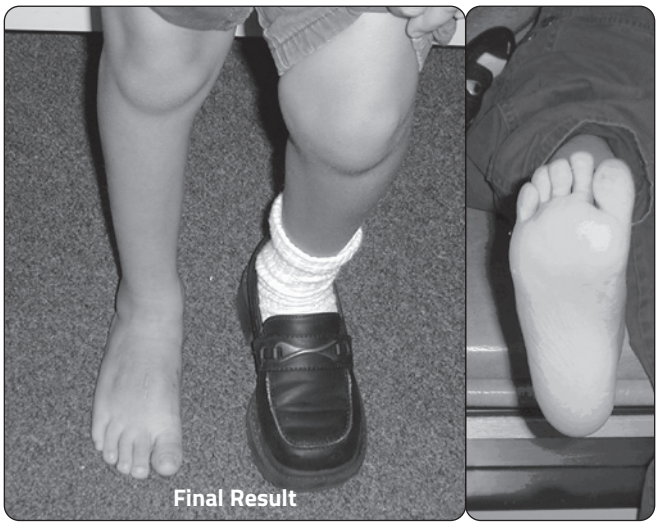
Two proximal pins are inserted into the calcaneus.

Translation of the pins in the distal clamp will provide lateral deviation of all metatarsals as required.



Post-operative management

Non-weightbearing for the first three days. Ambulation after third day as tolerated with a surgical shoe. External fixation for six weeks with casting for ten days after fixator removal. Pin site care twice a day.



Final Result

Operative Technique Contributing Surgeon:
Dr. B.Magnan
Dr. E. Rodríguez
Dr. G. De Vito

Please refer to the "Instructions for Use" supplied with the product for specific information on indications for use, contraindications, warnings, precautions, adverse reactions and sterilization.

Electronic Instructions for use available at the website http://ifu.orthofix.it

Electronic Instructions for use - Minimum requirements for consultation:
- Internet connection (56 Kbit/s)
- Device capable to visualize PDF (ISO/IEC 32000-1) files
- Disk space: 50 Mbytes

Free paper copy can be requested from customer service (delivery within 7 days):
tel: +39 045 6719301, fax: +39 045 6719370
e-mail: customerservice@orthofix.it

Caution: Federal law (USA) restricts this device to sale by or on the order of a physician. Proper surgical procedure is the responsibility of the medical professional. Operative techniques are furnished as an informative guideline. Each surgeon must evaluate the appropriateness of a technique based on his or her personal medical credentials and experience.

Manufactured by:
ORTHOFIX Srl
Via Delle Nazioni 9, 37012 Bussolengo
(Verona), Italy
Tel: +39 045 6719000
Fax: +39 045 6719380
www.orthofix.com

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