

QUICK REFERENCE GUIDE

*The
Orthofix
Hybrid
Fixation
System*



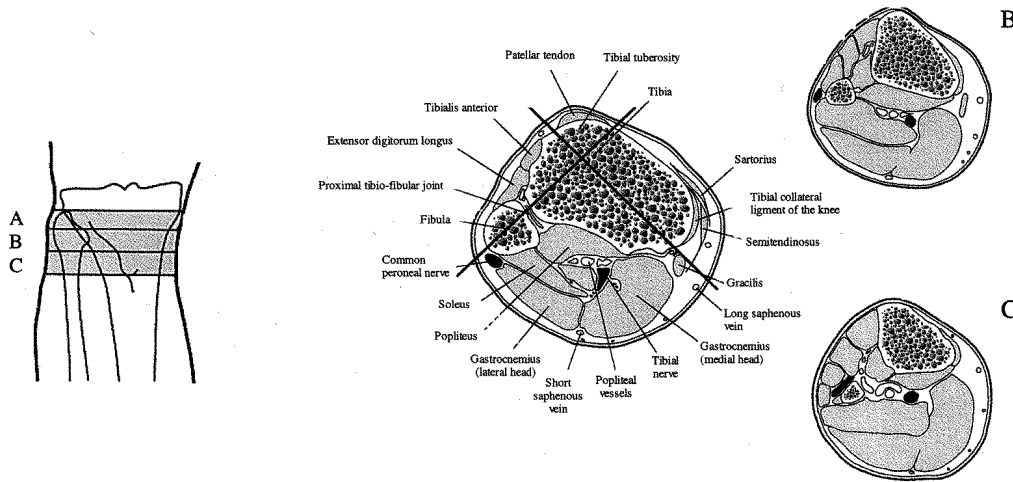
Hybrid Fixator
Assembly



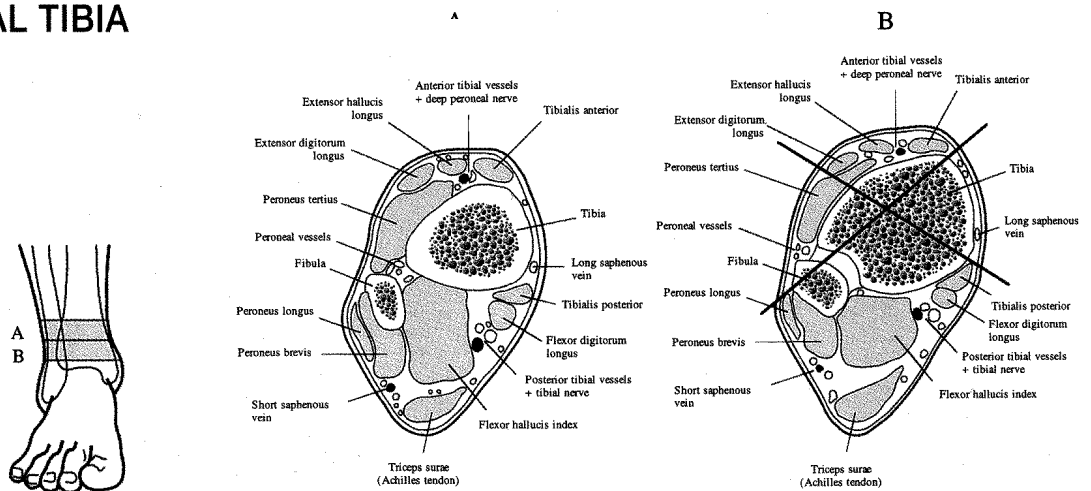
Sheffield Hybrid
Fixator Assembly

SAFE CORRIDORS FOR KIRSCHNER WIRE INSERTION

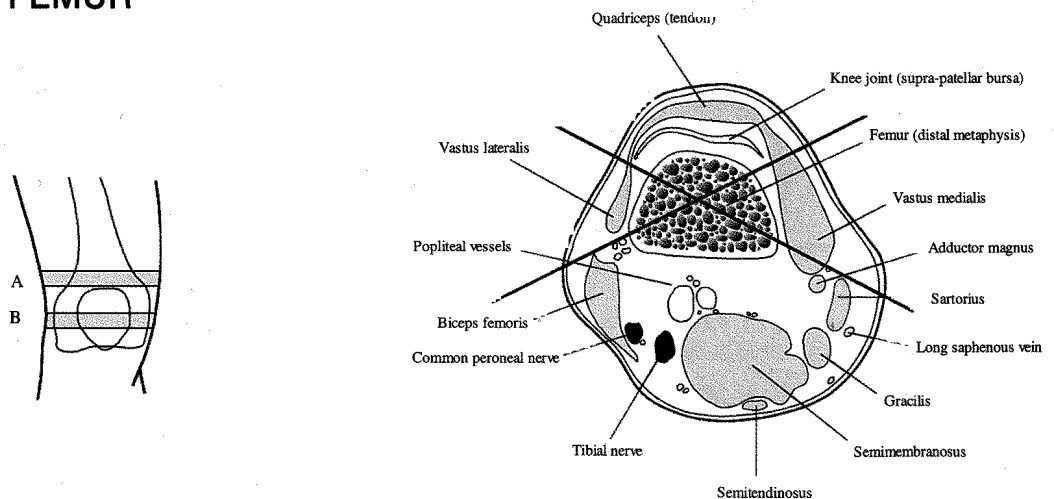
PROXIMAL TIBIA

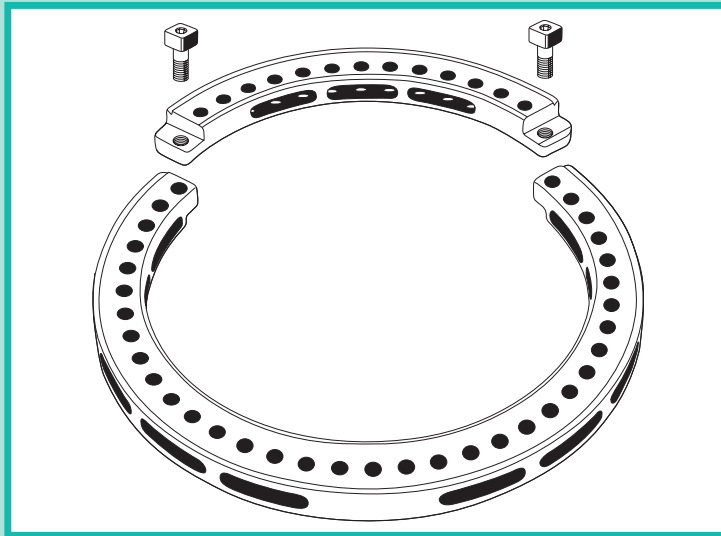


DISTAL TIBIA



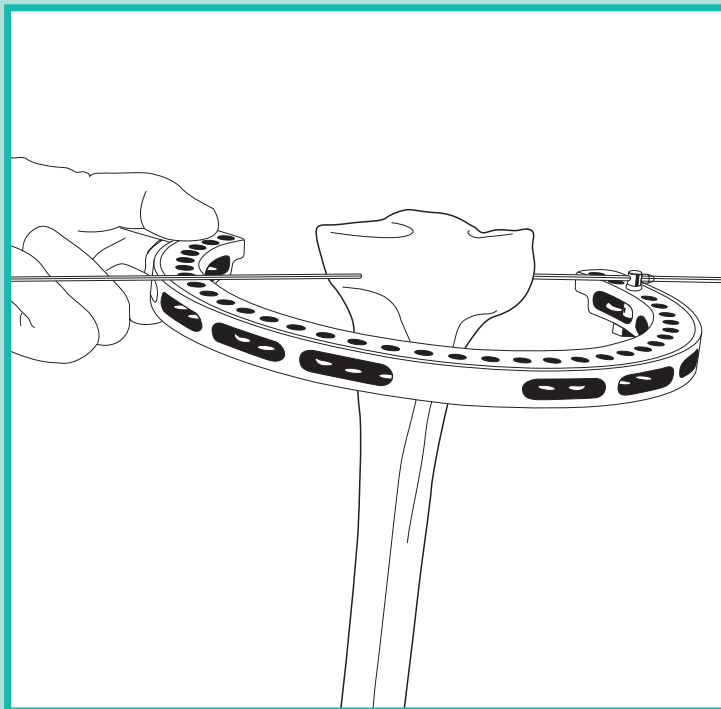
DISTAL FEMUR





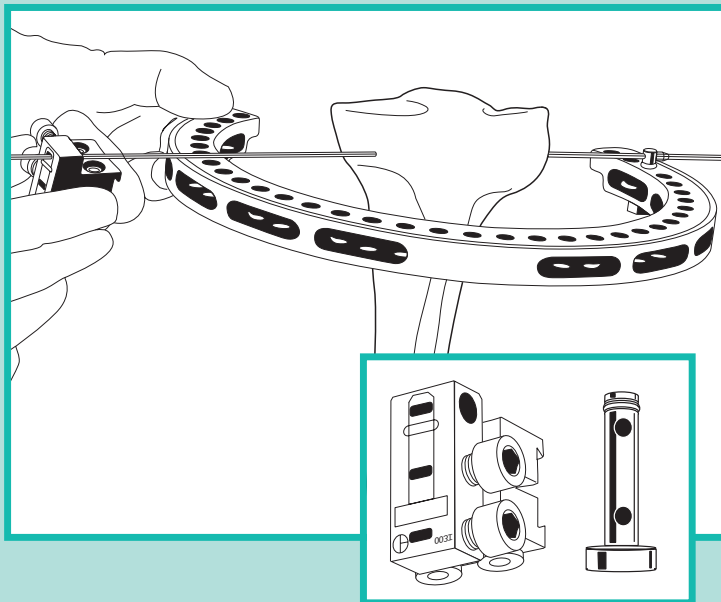
KIRSCHNER WIRE INSERTION

- Choose appropriate ring.
- Full circumference rings may be made by joining 1/3 and 2/3 rings together with locking screws.



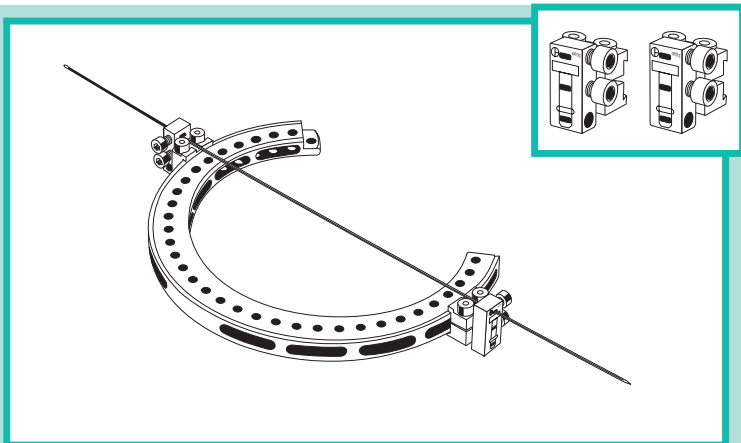
- Reference anatomically safe corridors on cross-section of limb.
- Insert wire closest to the joint first.
- Insert a two-hole securing pin into appropriate hole in ring.
- Introduce tip of K-wire with lateral olive through the two-hole securing pin.
- Push wire through soft tissues and drill through bone, while assistant maintains ring parallel to joint with limb centered within it. Avoid joint capsule.
- When wire has exited far cortex, stop drilling and ensure wire is parallel to ring and joint line.
- Continue to advance wire by tapping it with mallet, until lateral olive is against securing pin.

NB: Wire may be drilled above, below or through the ring, for best position relative to fracture and joint capsule.



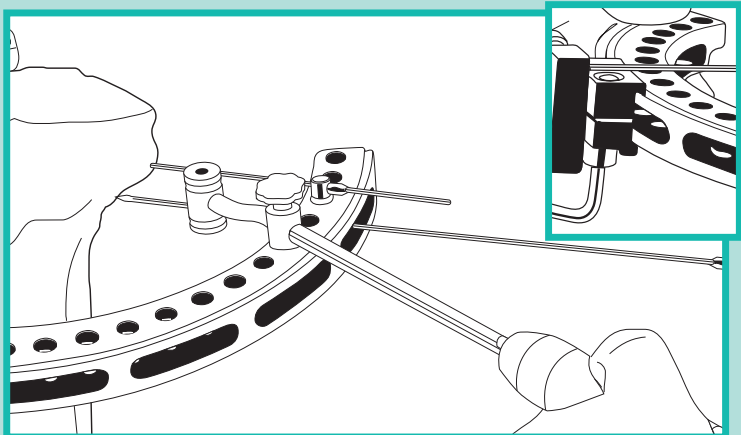
- Loosen all screws of three-hole wire clamp slider unit.
- Orient clamp in same direction as securing pin.
- Introduce wire into appropriate hole in slider unit.

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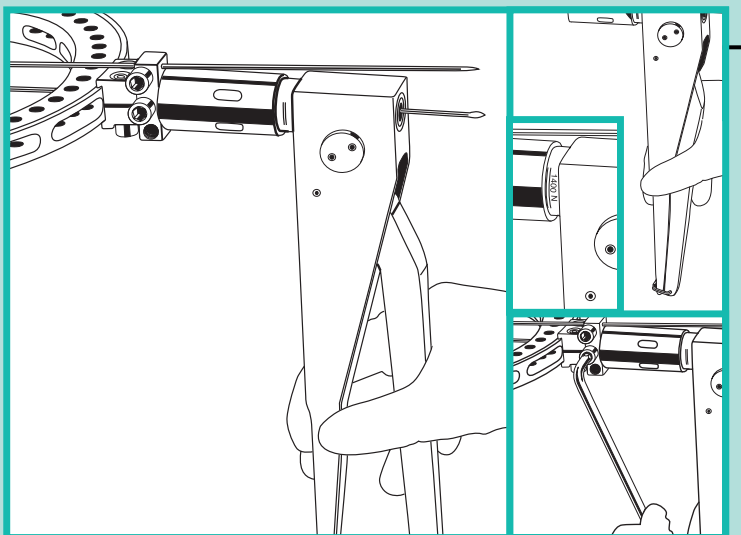


NB: First wire may be inserted free-hand. Use a K-wire without olive and attach it to ring using a three-hole wire clamp slider unit at each end.

- Tighten both slider units to ring, then tighten wire clamp screw on one end of wire.

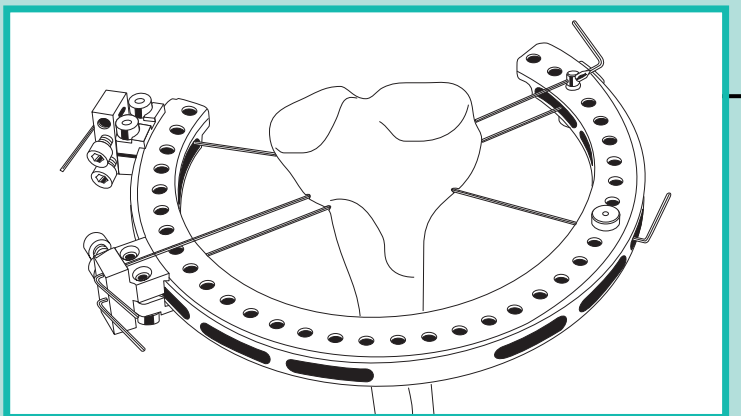


- Insert parallel wire next through second hole in securing pin, using wire guide.
- Disconnect the slider unit temporarily from the ring and then insert it over both wires.
- Tighten slider unit on to ring fully, using 3 mm Allen wrench.
- Position limb in center of ring.

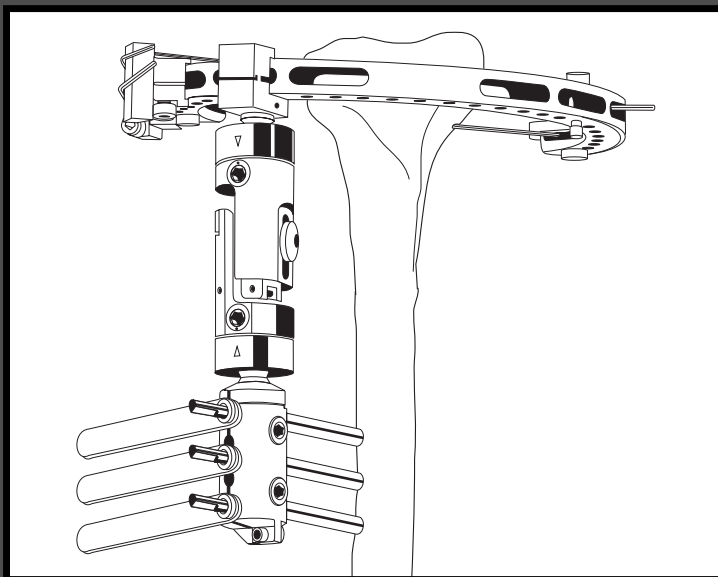


- To tension wires, open handle of wire tensioning device to fullest extent.
- Fully insert wire through the device sliding it up against face of slider unit.
- Tension wire to minimum of 1200 N, in two stages if necessary.
- Tighten wire clamp screws with 5 mm Allen wrench.
- Cut and/or bend wire and apply wire cover.

NB: Where K-wires without olive have been used in conjunction with three-hole wire clamp slider units at each end, apply tensioning device to end of wire which has not yet been tightened in its slider unit and tension as above.

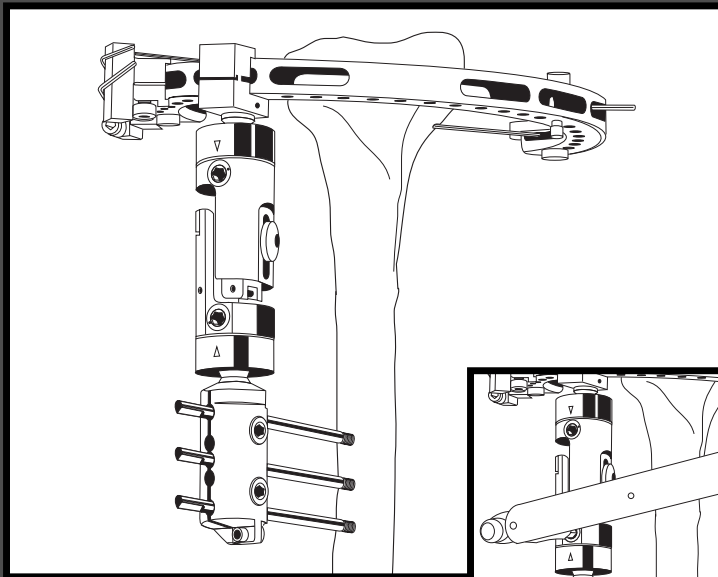


- Insert crossing wires at widest angle neurovascular structures will permit (usually between 50°-70°).
- For optimal ring stability wires should cross in the center of the tibia.
- Insert the securing pin into the ring, upside-down relative to the first securing pin to prevent wires from intersecting in bone.

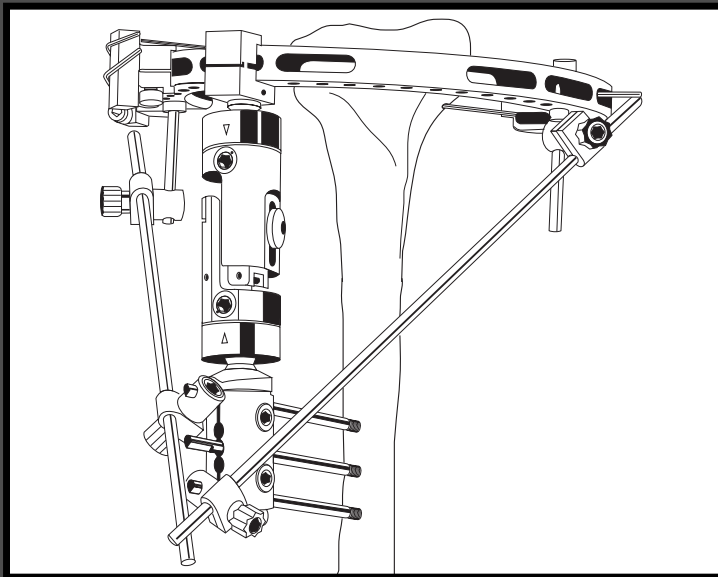
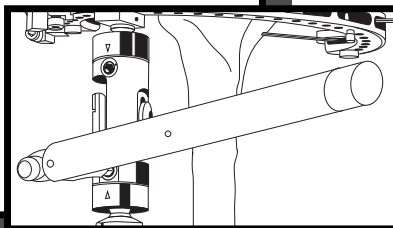


DIAPHYSEAL SCREW INSERTION

- Reduce fracture further by manipulation of ring and limb.
- Attach fixator to ring using the coupling with ball-joint, and lock with 3 mm Allen wrench.
- Position fixator parallel to long axis of bone with cams and all locking nuts accessible for tightening. Make sure fixator body is neither fully closed nor fully open.
- Clamp acts as its own template for screw insertion. Insert bone screws in standard manner (See Manual 1, "General Application Instructions"). Where two screws are inserted, use clamp seats 1 and 5; where three are inserted, use seats 1, 3 and 5.

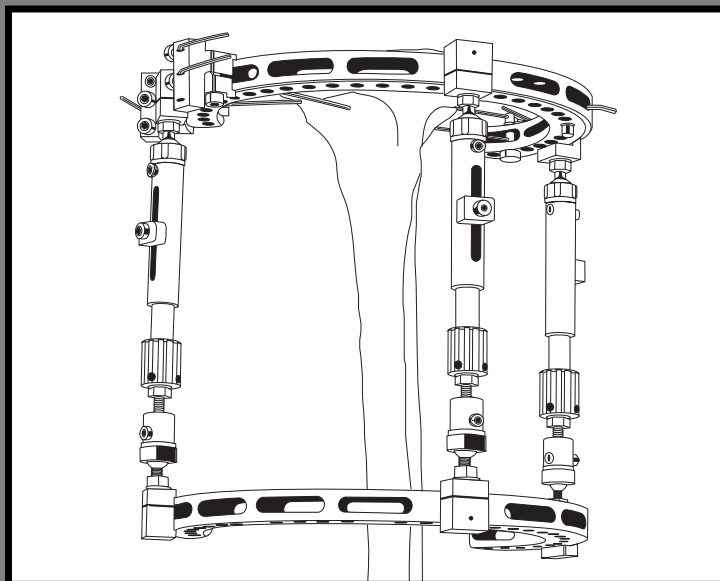


- Confirm fracture reduction.
- Lock micromovement locking nut, central body locking nut and ball-joints of the fixator with the 6 mm Allen wrench.
- Use torque wrench for final locking of ball-joints only.



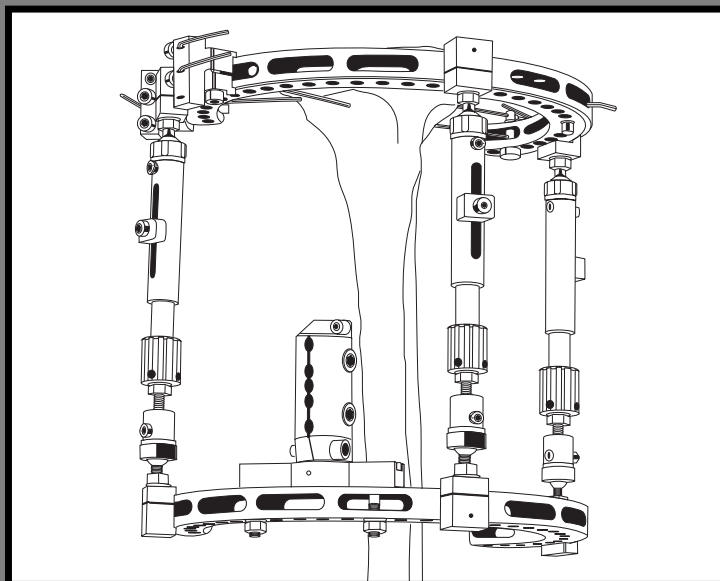
- Reinforcement bars may be added to increase stability.
- Insert post through ring and attach bar using a supplementary screw holder clamp.
- Attach opposite end of bar to bone screw using another supplementary screw holder clamp.
- As healing progresses, remove reinforcement bars to increase load sharing at the fracture site.

HEFFIELD HYBRID FIXATOR ASSEMBLY

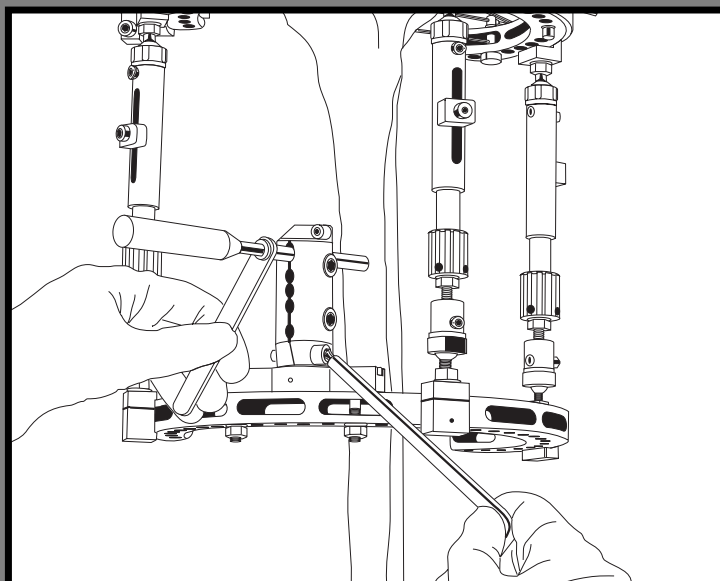


DIAPHYSEAL SCREW INSERTION

- Attach diaphyseal ring using three reduction units (antero-laterally, postero-laterally and postero-medially).
- All rings in one frame should be the same size.
- The telescopic and micrometric mechanisms of the reduction units should be partially open.
- Ensure that reduction units are perpendicular to the rings with the telescopic bodies oriented in the same way.
- Tighten all cams and locking screws.

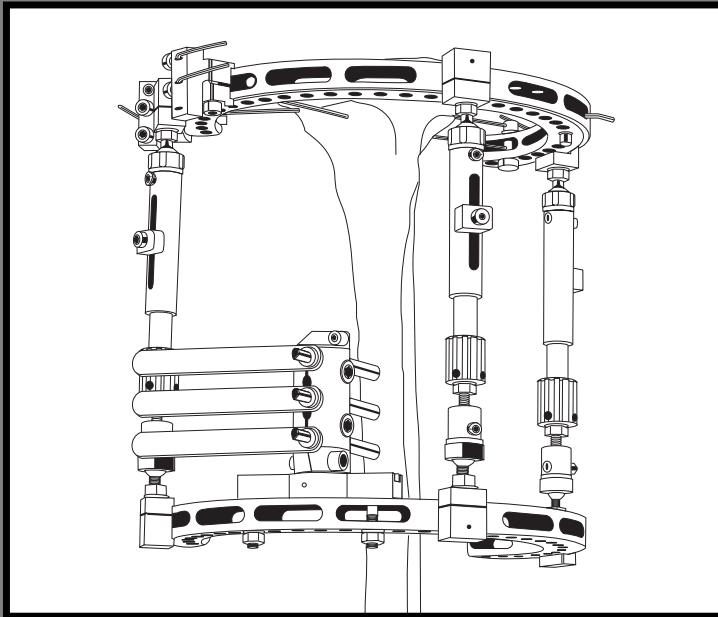


- A Sheffield Clamp is attached to the diaphyseal ring antero-medially using 10 mm spanner.
- Confirm fracture reduction.

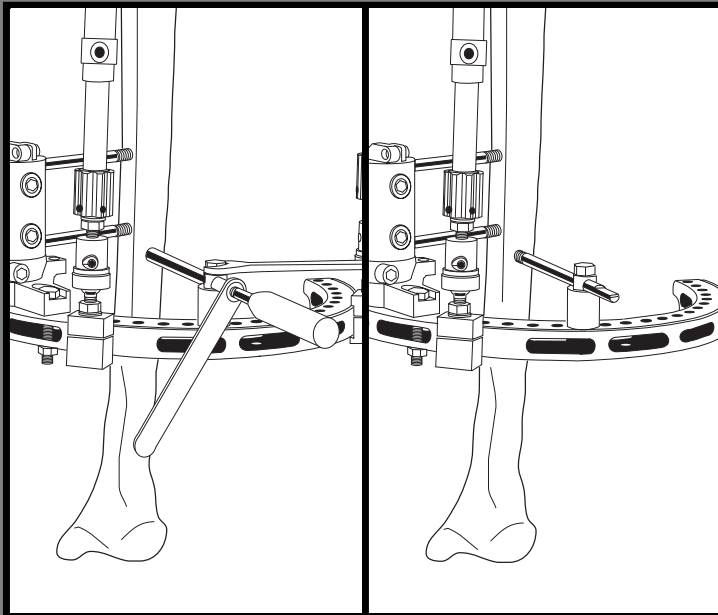


- Clamp can be rotated to establish ideal position for diaphyseal screws.
- Clamp cover locking screws should face anteriorly.
- Clamp acts as its own template for screw insertion.
- Using a trocar, identify desired bone screw orientation and tighten rotational locking screw with 6 mm wrench.

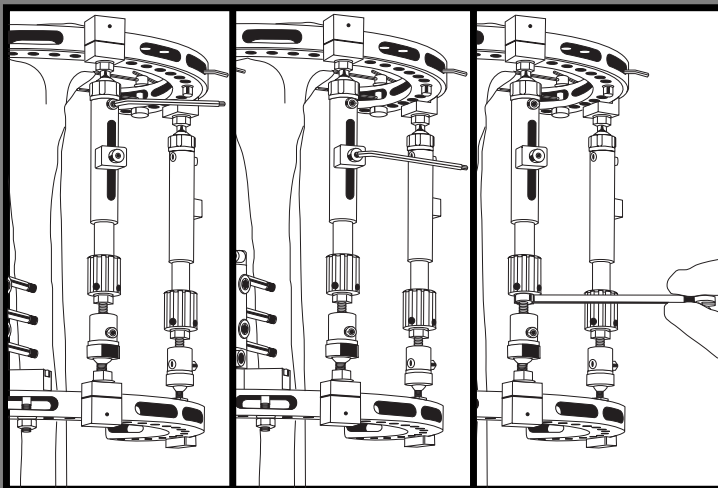
Quick Reference Guide



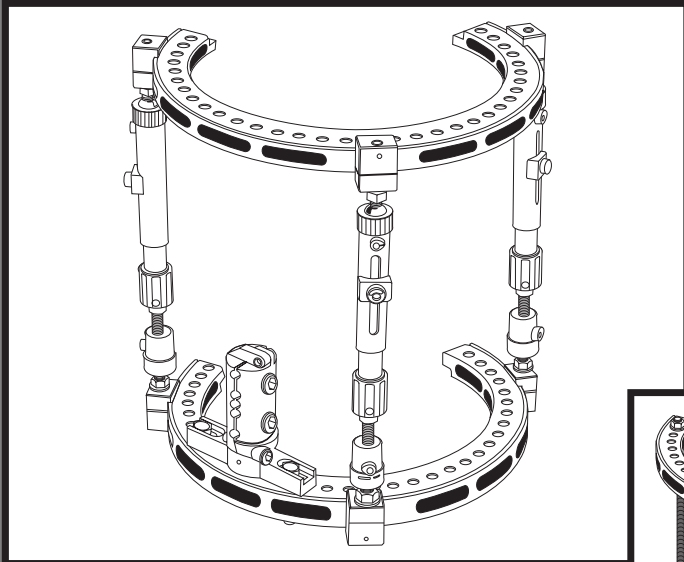
- Screws are inserted in the standard manner.
- Where two screws are inserted, use clamp seats 1 and 5; where three are inserted, use seats 1, 3 and 5.



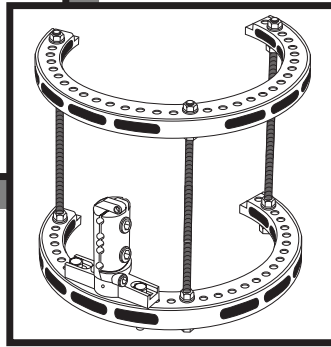
- An additional screw may be inserted at 45° - 90° to the first group using a single screw clamp attached to the diaphyseal ring.
- Where this screw is used, only two screws would normally be inserted through the Sheffield Clamp.
- This clamp can rotate for optimal screw placement.



- Final fracture reduction can be made using the distraction and ball-joint facilities of the three reduction units, after loosening the cams and locking screws.
- After reduction, ensure that all cams and locking screws are fully tightened.
- The micrometric mechanism may be used for post-operative length correction of the fracture.



- Standard frame may be preconstructed before inserting the Kirschner wires.



The Orthofix Quality System has been certified to be in compliance with the requirements of:

- *Medical Devices Directive 93/42/EEC, Annex II - (Full Quality System)*
 - *International Standards EN 46001/ISO 9001*
- for orthopaedic external fixator systems including bone screws, nails and wires, sterile external and internal fixation systems.*

WARNING: Use of the incorrect cleaning detergent may damage the instrumentation. Detergents with free chlorine or sodium hydroxide must not be used.

NOTE: A detailed Operative Technique is available for surgeons new to the procedure.



See Manual 1 "General Application Instructions" for Equipment Maintenance, Cleaning and Sterilization.

Your Distributor is:

 **ORTHOFIX®**

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