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JET-X[◇] MINI Bar External Fixator

The JET-X MINI Bar External Fixator System offers a simple solution for treatment of distal radial fractures. Designed for ease of application, the JET-X MINI Double Pin Clamp facilitates fracture reduction while providing stability in a low-profile and lightweight design. The ball joint feature provides the ability to easily position the wrist in multiple planes to aid in fracture reduction.

Nota Bene

The technique description herein is made available to the healthcare professional to illustrate the author's suggested treatment for the uncomplicated procedure. In the final analysis, the preferred treatment is that which addresses the needs of the specific patient.

Indications

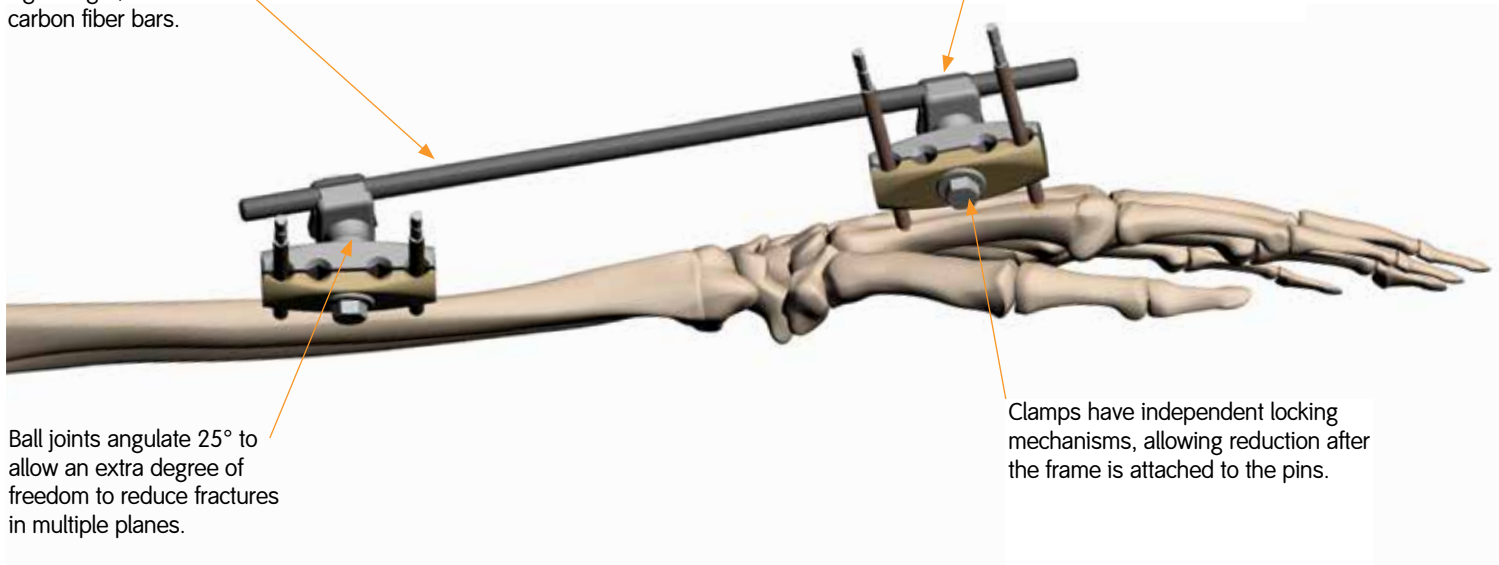
The Smith & Nephew JET-X MINI Bar External Fixator System is indicated for the management of fractures of the distal radius as a primary treatment device. This indication includes fixation supplementary to ORIF.

Design Features and Benefits

JET-X[®] MINI Bar External Fixator System

Lightweight, radiolucent carbon fiber bars.

Cartridge clamp design allows snap-fit assembly and prevents passive release of bar during reduction.



JET-X MINI Double Pin Clamp



Bar side of the clamp connects to 6mm composite straight bars.

Pin side of the clamp accepts pins with a 4mm shank. Multiple pin placement options are available to better fit patient anatomy and ensure frame stability.

Patient prep

Patient positioning

Under the appropriate anesthesia, the affected upper extremity is prepared sterile over an arm table. The arm can be positioned with a counter-traction post at the elbow, placing the thumb and index finger in sterile finger traps to apply initial traction and aid in fracture reduction.

Alternative patient positioning

The frame can be applied and traction achieved manually with the frame as a reduction device.

Surgical Technique

Metacarpal pin placement

Pins with a 15mm thread length are provided for use in the metacarpal. An adequate incision is made along the palpable edge of the index metacarpal to expose the metacarpal surface. This ensures that the extensor tendon is protected during drill and pin insertion. A small elevator should be used in a side-to-side motion to ensure that no extensor mechanism will be entrapped in metacarpal pins. Retract soft tissues for drill guide placement down to bone.

The double pin drill sleeves are connected to the double pin drill guide to provide a drill guide/sleeve assembly.

Note: To ensure a stable construct, pin spacing should be maximized when possible. Care should be taken to prevent pin placement in the mid-diaphyseal metacarpal shaft due to stress riser concerns.

The drill guide/sleeve assembly is placed such that the metacarpal pins are oriented 40° to 60° dorsal to the coronal plane.



Metacarpal pin insertion

The first pin site is predrilled using the 2mm drill bit through the drill guide/sleeve assembly. A 3mm half pin is then inserted using the pin driver until both cortices are engaged. Repeat the process to insert the second 3mm metacarpal pin.

Note: Pre-drilling is optional when using JET-X° Half Pins which are self-drilling and self-tapping.

Radial pin placement

Pins with a 20mm thread length are provided for use in the radius. An adequate incision is made at the planned site for pin insertion in the radius. Bluntly dissect down to bone, placing the double pin drill guide in place. Care should be taken to avoid the superficial radial nerve that is at risk in this area.

The drill guide/sleeve assembly is placed such that the proximal radial pins are oriented 40° to 60° dorsal to the interosseous plane.



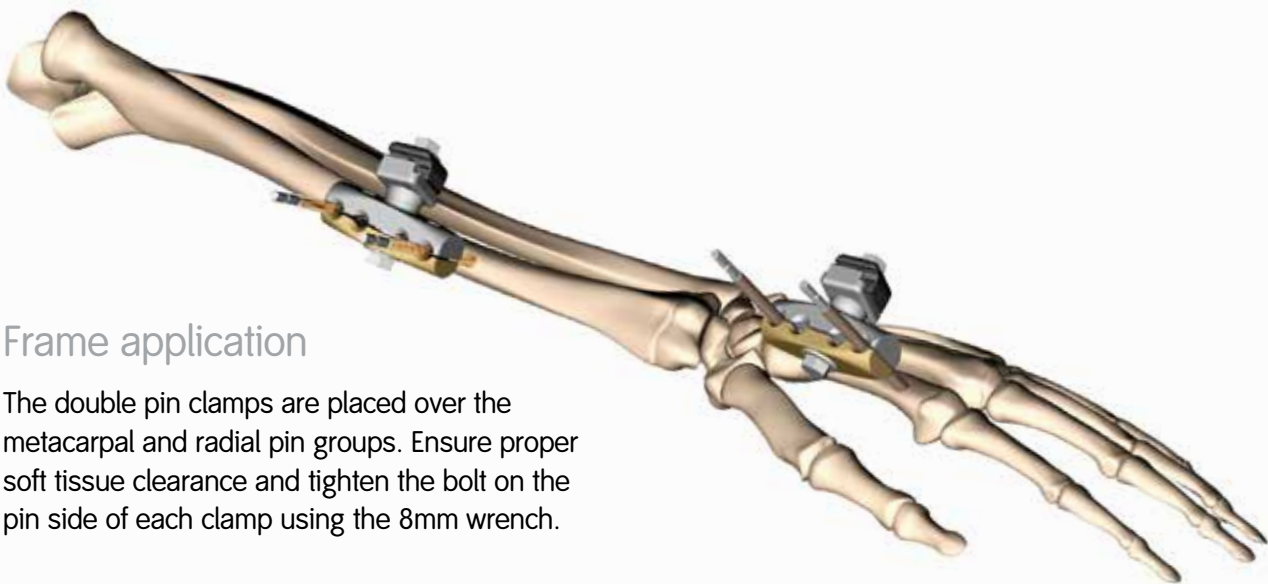
Radial pin insertion

The first pin site is predrilled using the 2mm drill bit through the drill guide/sleeve assembly. A 3mm half pin is then inserted using the pin driver until both cortices are engaged. Repeat the process to insert the second 3mm half pin.



Frame application

The double pin clamps are placed over the metacarpal and radial pin groups. Ensure proper soft tissue clearance and tighten the bolt on the pin side of each clamp using the 8mm wrench.



Fracture reduction

The composite bar should now be attached to the clamps. This is achieved by pushing the bar against the upper jaw of the clamp of both the radial and metacarpal pin clamps until the bar snaps into place.

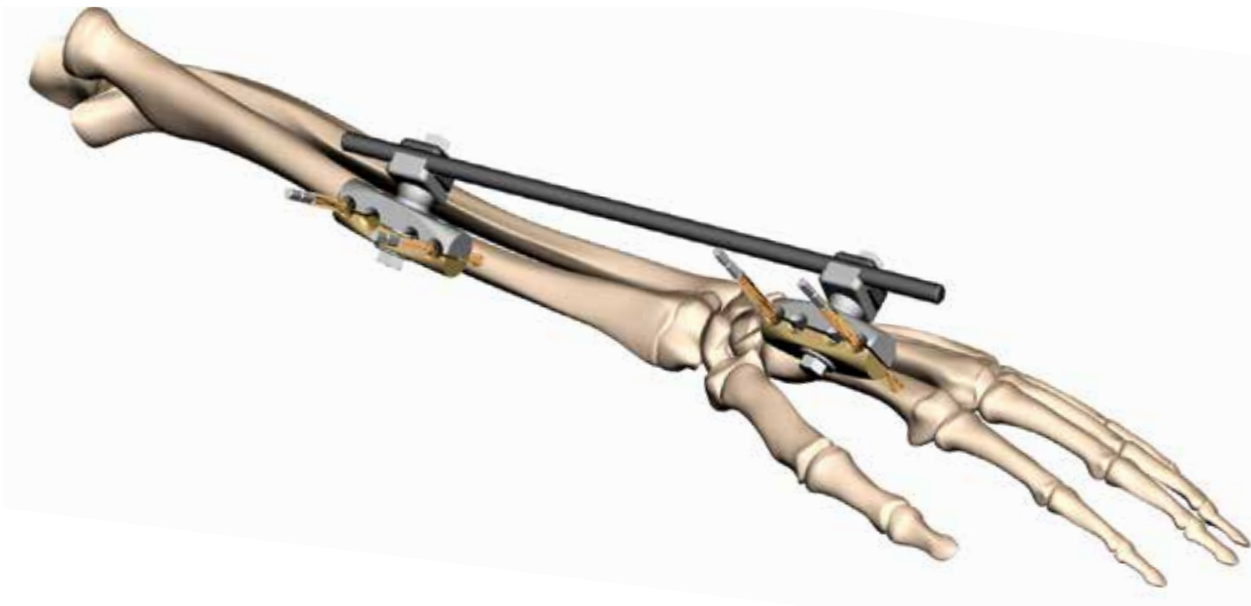


Ensure that the fracture is properly reduced. Fracture reduction adjustment can be made before the nut on the bar side of the MINI double pin clamp is locked into place.

The frame can be used to help reduce the fracture. Each pin cluster can be used as a handle to manipulate the fracture until adequate reduction is achieved. Minor adjustments can be made to perfect the reduction if necessary. Once reduction is satisfactory, tighten the bar side of the clamp on the metacarpal pin clamp using the 8mm wrench. The frame is then locked by tightening the bar side of the clamp on the radial pin clamp.



Check the frame to ensure that all tightening points on the clamps are locked.



Catalog Information

JET-X[®] MINI Distal Radius Set
Set. No. 7106-7459

Cat No	Description	Qty
7106-7362	Distal Radius Fixator Module Tray	1
7106-7327	2mm Graduated Drill	1
7106-3202	Distal Radius Half Pin 3mm x 20mm	2
7106-3152	Distal Radius Half Pin 3mm x 15mm	2
7106-5225	6mm x 225mm Composite Straight Bar	1
290058	4mm Protective Cap	4
102915	8mm Wrench	1
7106-2016	JET-X MINI Double Pin Clamp with Ball Joint	2
7106-7329	Double Pin Drill Guide	1
7106-7328	Double Pin Drill Sleeve	2
7106-7330	Half Pin Driver	1
7163-1186	MINI Connector	1



Catalog Information

JET-X[®] MINI Distal Radius Kit, Sterile*
Set No. 7106-4701



Description	Qty
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2mm Graduated Drill	1
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Distal Radius Half Pin 3mm x 15mm	2
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Distal Radius Half Pin 3mm x 20mm	2
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6mm x 225mm Composite Straight Bar	1
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4mm Protective Cap	4
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Disposable Insertion Wrench	1
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Disposable Zimmer/Hall Adapter	1
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Disposable 8mm Wrench	1
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JET-X MINI Double Pin Clamp with Ball Joint	2
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Disposable Double Pin Drill Guide	1
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Disposable Double Pin Drill Sleeve	2
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* Sold as kit only; items not available individually

Freedom Clamps

Cat. No.	Description
7106-2009	6mm Bar to 5mm Pin
7106-4010	10.5mm Bar to 4mm Pin
7106-4011	6mm Bar to 4mm Pin

Cat. No.	Description
7106-4012	6mm Bar to 6mm Pin
7106-4019	10.5mm Bar to 6mm Pin



Quick Clamps

Cat. No.	Description
7106-7371	10.5mm Bar to 4mm Pin
7106-7373	10.5mm Bar to 6mm Pin
7106-7377	6mm Bar to 4mm Pin

Cat. No.	Description
7106-7378	6mm Bar to 6mm Pin
7106-7380	6mm Bar to 5mm Pin



Double Pin Clamp with Ball Joint
Cat. No. 7106-2016



Bars

Cat. No.	Description	Cat. No.	Description
7106-5075	6mm x 75mm	7106-5180	6mm V Bar
7106-5110	6mm x 110mm	7106-5185	6mm x 185mm
7106-5150	6mm x 150mm	7106-5225	6mm x 225mm

Distractor Clip
Cat. No. 7106-3213



AO T-handle Connector with
8mm Socket
Cat. No. 7106-7305



JET-X^o MINI – Instruments

Cat No	Description	
7106-7309	Trocar	
7106-7310	Tissue Protector Handle	
7106-7311	Tissue Protector	
7106-7315	Drill for 3mm Half Pins	
7106-7316	Drill for 4mm Half Pins	
7106-7317	Drill for Extra Short 5mm Half Pins	
7106-7322	10mm Ratchet Wrench	
7106-7323	8mm Ratchet Wrench	
7106-7324	Quick Clamp Bar to Pin Drill Guide	
7106-7325	Quick Clamp MINI Bar to Pin Drill Guide	
7106-7327	Distal Radius 2.0mm Drill	
7106-7328	Distal Radius Double Pin Drill Sleeve	
7106-7329	Distal Radius Double Pin Drill Guide	
7106-7330	Distal Radius Half Pin Driver	

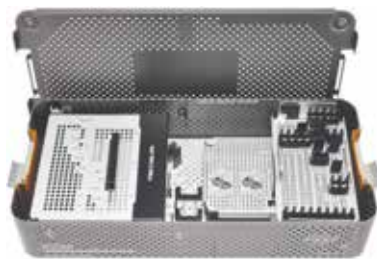
Original JET-X^o MINI – Instruments

Cat No	Description
7106-3001	AO T-handle Connector with 10mm Socket
7106-3003	10mm Ratchet
7106-3006	3.5mm Drill with AO Connector
7106-3203	Drill for 3mm Short Half Pins
7106-3204	Drill for 4mm Short Half Pins
7106-3205	Combination MINI Drill Sleeve/ Tissue Protector
7106-3210	8mm Ratchet Wrench
7106-3211	Drill Guide
7106-3212	4mm Trocar
7106-4015	Multiple Pin Clamp



JET-X° MINI – Sterilization Cases/Trays

MINI Instrument and Clamp Set Set No. 7106-7462



Cat No	Description	Qty
7106-5180	V-Bar 6mm	1
7106-5185	6mm x 185mm Bar	2
7106-5225	6mm x 225mm Bar	4
7106-7305	AO T-handle Connector with 8mm Socket	1
7106-7309	Trocar	1
7106-7310	Tissue Protector Handle	2
7106-7311	Tissue Protector	2
7106-7315	Drill for 3mm Half Pin	2
7106-7316	Drill for 4mm Half Pin	2
7106-7322	10mm Ratchet Wrench	1
7106-7323	8mm Ratchet Wrench	1
7106-7325	Quick Clamp Mini Bar to Pin Drill Guide	1
7106-7361	Tray	1
7106-7371	Quick Clamp 10.5mm to 4mm Pin	2
7106-7373	Quick Clamp 10.5mm to 6mm Pin	2
7106-7377	Quick Clamp 6mm to 4mm Pin	3
7106-7378	Quick Clamp 6mm to 6mm Bar	3

Sterilization/Resterilization

External Fixation Devices and Instruments

Unless specifically labeled sterile, the external fixation devices and instruments are supplied non-sterile and must be sterilized prior to use. The JET-X MINI Distal Radius Kit is supplied sterile and has been sterilized by ethylene oxide gas. All radiation sterilized components have been exposed to a minimum of 25 kilo Grays of gamma radiation. The method of sterilization is noted on the package label.

External fixation devices are considered single use devices. The external fixation devices may be steam sterilized using the following validated cycles and parameters:

Dynamic air removal (prevacuum) steam

- Exposure temperature: 132°C (270°F); Minimum exposure time: 4 minutes
OR
- Exposure temperature: 135°C (275°C); Minimum exposure time: 3 minutes
- Minimum drying time: Wrapped devices – 15 minutes; containerized devices –30 minutes

For non-US customers

UK steam cycle

- Prevacuum cycle
- Exposure temperature: 134°C (273°F)
- Exposure time: 3 minutes
- Vacuum drying: 30 minutes

Note The procedure outlined in HTM 2010 should be followed

World Health Organization (WHO) steam cycle

- Exposure temperature: 134°C (273°F)
- Exposure time: 18 minutes
- Vacuum drying: 30 minutes

Instruments (reusable devices) may be steam sterilized using the same cycles above and also the following validated cycles and parameters:

Gravity displacement steam

- Exposure temperature: 132°C (270°F)
- Exposure time:
 - 15 minutes for wrapped devices
 - 30 minutes for containerized devices
- Purge: 1 minute
- Minimum vacuum drying: 30 minutes

Immediate Use Steam Sterilization (IUSS) or Flash Steam

- Exposure temperature: 132°C (270°F)
- Exposure time:
 - Gravity displacement: 15 minutes
 - Dynamic air removal (prevacuum): 4 minutes

Half Pins and Wires

Half pins and wires are considered implants and are therefore single use devices. These devices are sold both sterile and nonsterile. The sterile devices are often removed from their original packaging and placed in a containment device for processing. Used implants cannot be reprocessed for use. The validated steam sterilization cycles and parameters are as follows:

Dynamic air removal (prevacuum) steam

- Exposure temperature: 132°C (270°F); Minimum exposure time: 4 minutes
- OR
- Exposure temperature: 135°C (275°F); Minimum exposure time: 3 minutes
 - Minimum drying time: Wrapped devices – 15 minutes; containerized devices – 30 minutes

Gravity displacement steam

- Exposure temperature: 132°C (270°F)
- Exposure time:
 - 15 minutes for wrapped devices
 - 30 minutes for containerized devices
- Purge: 1 minute
- Minimum vacuum drying: 30 minutes

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