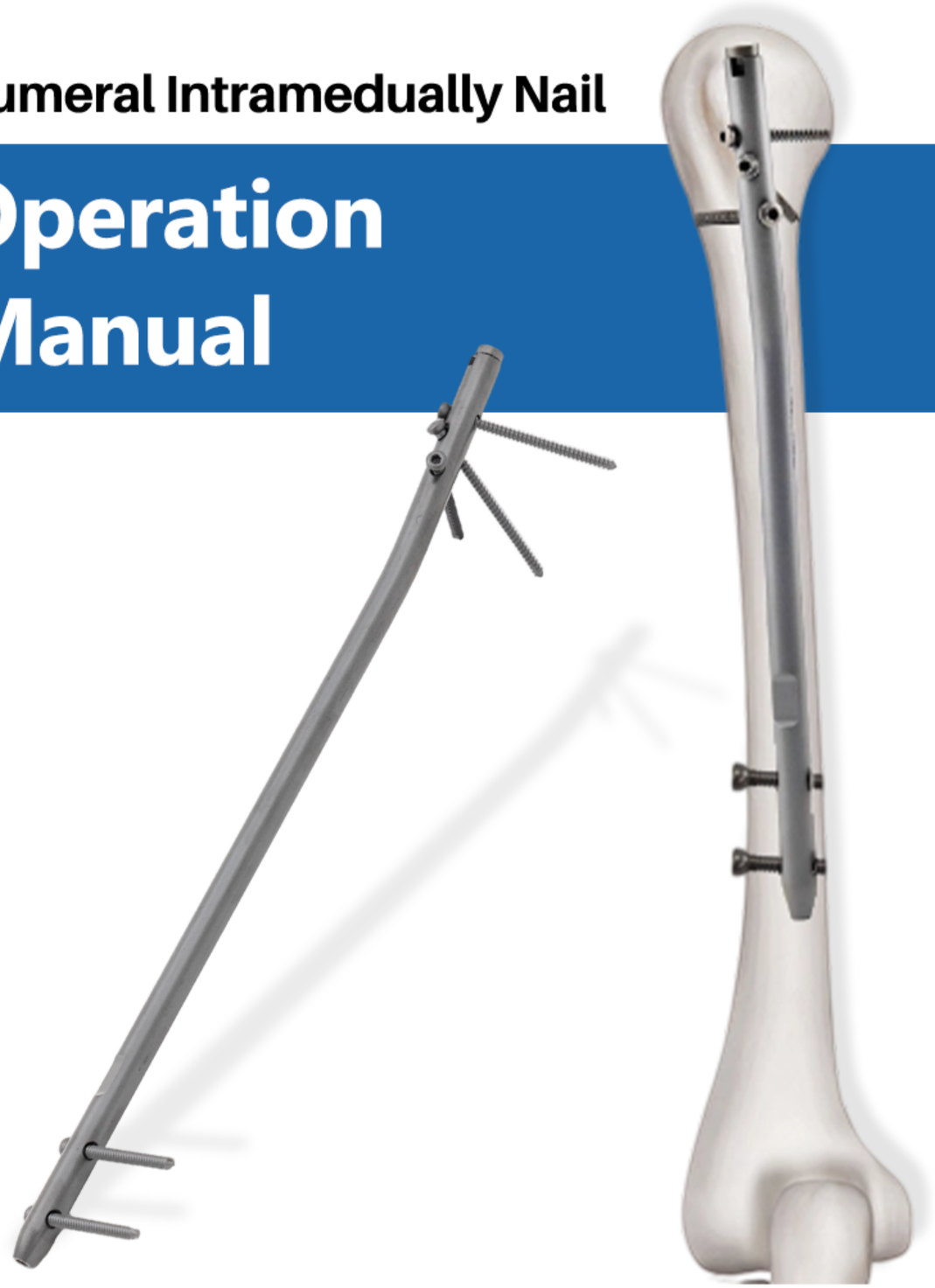
XC Medico

High-quality Orthopedic Manufacturer

XC Medico

Humeral Intramedually Nail

Operation Manual



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Indications

Proximal humeral fractures

Humeral shaft fractures

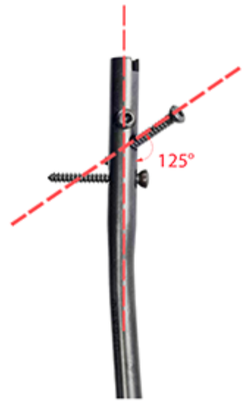
Revision internal fixation of fractures

Pathological fractures

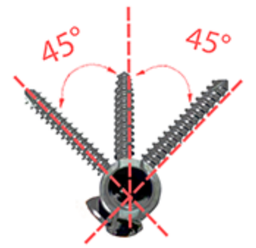
Characteristics

1. TC4 material has excellent mechanical properties.
2. The design of main nail conforms anatomically.
3. The 45-degree cross-locking design provides excellent stability.
4. Hollow structure allows for easy insertion.
5. Easy operation helps to save time

Crossing angle of locking holes



Bending angle



Mating locking pin

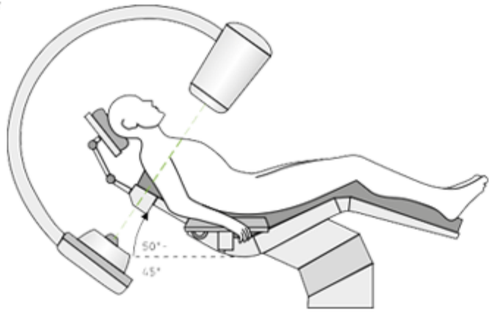
REF	Material	Diameter	Length
RG1SD07180	TC4	Φ7	180
RG1SD07200	TC4	Φ7	200
RG1SD07220	TC4	Φ7	220
RG1SD07240	TC4	Φ7	240
RG1SD07260	TC4	Φ7	260
RG1SD07280	TC4	Φ7	280
RG1SD07300	TC4	Φ7	300
RG1SD08180	TC4	Φ8	180
RG1SD08200	TC4	Φ8	200
RG1SD08220	TC4	Φ8	220
RG1SD08240	TC4	Φ8	240
RG1SD08260	TC4	Φ8	260
RG1SD08280	TC4	Φ8	280
RG1SD08300	TC4	Φ8	300
RG1SD09180	TC4	Φ9	180
RG1SD09200	TC4	Φ9	200
RG1SD09220	TC4	Φ9	220
RG1SD09240	TC4	Φ9	240
RG1SD09260	TC4	Φ9	260
RG1SD09280	TC4	Φ9	280
RG1SD09300	TC4	Φ9	300

REF	Material	Length
RSSDLD3520	TC4	20
RSSDLD3522	TC4	22
RSSDLD3524	TC4	24
RSSDLD3526	TC4	26
RSSDLD3528	TC4	28
RSSDLD3530	TC4	30
RSSDLD3532	TC4	32
RSSDLD3534	TC4	34
RSSDLD3536	TC4	36
RSSDLD3538	TC4	38
RSSDLD3540	TC4	40
RSSDLD3542	TC4	42
RSSDLD3544	TC4	44
RSSDLD3546	TC4	46
RSSDLD3548	TC4	48
RSSDLD3550	TC4	50

Preoperative Preparation and Surgical Procedures

1.Patient Position

Before surgery, X-ray examination and evaluation should be performed. For proximal fractures, a CT scan will help identify the size and position of the fragments. The length and diameter of the intramedullary nail are determined by assessing the extent of the fracture and measuring the medullary canal. And, the positioning of the locking screws should be included. The patient should be placed in a beach-chair position, with the upper arm able to move freely at the side of the operating table.



2.Selection of the Intramedullary Nail and Pre-assembly of Instruments

1) Based on the measurement of the isthmus diameter and length of the contralateral (healthy) humerus, select an intramedullary nail of appropriate length and diameter.

2) Pre-assembly of Instruments: Due to transportation or prolonged use, instruments may deform. To ensure smooth progress of the surgery, please be sure to assemble the complete set of instruments before surgery. Ensure that the Φ2.9-Φ3.5 drill used for the distal locking screws can pass through the assembled locking screw drill sleeve and be centered in the corresponding locking hole of the intramedullary nail.

3.Establishment of the Surgical Access and Determination of the Entry Point

Make an incision slightly lateral and anterior to the acromion, approximately 3-4 cm long, and split the deltoid muscle longitudinally. To protect the axillary nerve, do not split the deltoid more than 5 cm distal to the acromion.

The entry point is located slightly medial to the apex of the greater tubercle, posterior to the bicipital groove. Under lateral X-ray fluoroscopy, the entry point should be in the same plane as the humeral medullary canal.

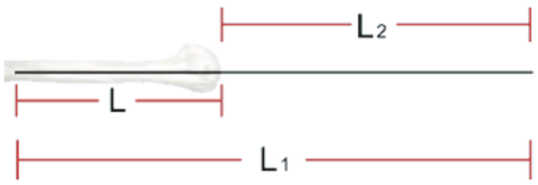
Use the triangular AWL to open the entry point and gradually drill into the medullary canal.

4.Reduction and Insertion of the Guide Wire

Following closed or open reduction, insert the Φ 2x500 guide wire into the medullary canal. Use X-ray fluoroscopy to confirm the correct position of the guide wire.

5.Determination of the Intramedullary Nail Length

Measure the length of the exposed guide wire (L2). Subtract the length of the exposed guide wire from the total guide wire length (L1) to obtain the required main nail length. Confirm this length again with the preoperatively measured length.



6.Reaming

Insert the humeral reamer along the guide wire and gradually enlarge the medullary canal. Generally, start with the smallest size humeral reamer. The diameter of the selected main nail must be 0.5 mm smaller than the final reamed medullary canal diameter. Avoid violent operation during reaming and avoid pulling out the guide wire.

7.Assembly of the Aiming Arm

Connect the humeral main nail of the appropriate length and diameter to the aiming arm and calibrate it. If calibration was performed previously, this step can be omitted.

8.Insertion of the Intramedullary Nail

Use the locking wheel(M6*37) for the aiming arm to connect the intramedullary nail to the handle. Insert the main nail along the guide wire, pushing it in by hand as much as possible. Gently rotating the handle helps to insert the main nail. If significant resistance is encountered, select a main nail one size smaller in diameter or ream further so that the medullary canal is at least 0.5 mm larger in diameter than the selected main nail. Alternatively, use the locking wheel wrench (SW5) to gently tap the connection screw to assist in nail insertion.

9.Insertion of the Proximal Locking Screws

Assemble the proximal aiming arm. First, install the protective sleeve and guide sleeve onto the proximal end of the aiming arm. Locate on the skin,

Perform drilling with the Φ2.9-Φ3.5 drill through the Φ3.5 drill sleeve.

Remove the Φ2.9-Φ3.5 drill and locking screw drill sleeve. Use the depth gauge to measure the depth and read the scale.

Based on the measurement result, select a proximal locking screw of the appropriate length. Use the T-handle screwdriver (SW2.5) to insert it through the outer sleeve.

Follow the above steps to insert the other two proximal locking screws.

10.Insertion of the Distal Locking Screws

Connect the guide rod and secure it with the locking wheel (M6*37) for the aiming arm. Insert the positioning rod sleeve and trocar through the positioning hole.

Remove the trocar. Use the drill (diameter Φ5.2*300) through the positioning rod sleeve to drill through the unilateral cortex.

Remove the drill. Insert the T-handle flat drill (Φ5.2) along the positioning rod sleeve and clean the bone debris.

Remove the drill and the positioning rod sleeve. Insert the positioning rod. After confirming that the positioning rod can touch the main nail platform, use the positioning block to connect and fix the positioning rod to the long guide rod of the aiming arm.

Attach the locking screw drill sleeve to the curved handle at the distal end of the aiming arm. Locate on the skin, make an incision, and dissect the soft tissue down to the bone surface. Insert the locking screw drill sleeve down to the bone surface. Place the inner sleeve. Use the Φ2.9-Φ3.5 drill to perform drilling through the Φ3.5 drill sleeve.

After drilling through both cortices, remove the drill and inner sleeve, and use the depth gauge to measure the length of the transverse locking screw.

Based on the measurement result, select a distal locking screw of the appropriate length. Use the T-handle screwdriver (SW2.5) to insert it through the locking screw drill sleeve until it reaches the appropriate depth.

Follow the same steps to insert the other distal locking screws.

11.Insertion of the End Cap

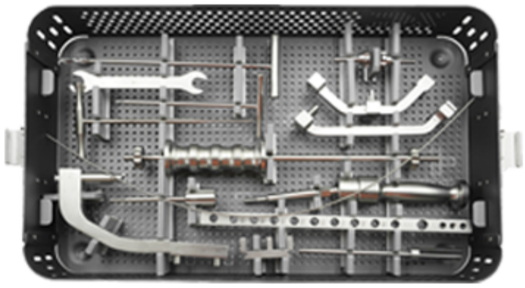
Remove the aiming arm, connection handle, and the Φ 2x500 guide wire. Use the T-handle screwdriver (SW2.5) to hold the end cap and screw it into the tail of the intramedullary nail until tight.

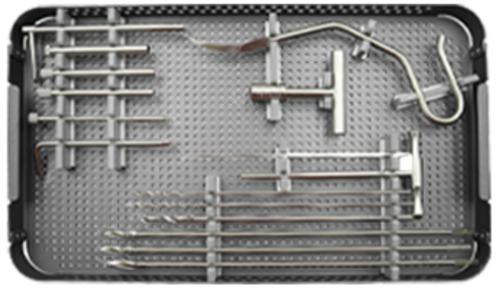
12.Removal of the Implant

First, use the T-handle screwdriver (SW2.5) to remove all locking screws one by one, and then remove the end cap. Use the wrench to connect the polyaxial extractor (M6*1) to the main nail, then connect the polyaxial joint and the hollow extractor (M10*1). After locking all connection parts, slide the hammer to remove the main nail.

Tool information

Standard Humeral Intramedullary Nail Instrument Set





Number	Products	Qty.	Number	Products	Qty.
1	Drill Bit 5.2mm	1	17	Guider Bolt M6*37	1
2	Open Wrench	1	18	Nail Connector	1
3	Tap 3.5mm	1	19	Distal Guider	1
4	Distal Positiong Frame	1	20	Proximal Guider	1
5	Depth Gague 0-60mm	1	21	Fixed Connector	1
6	Drill Bit 2.9*250mm	2	22	Location Rod	1
7	Drill Bit 5.2*300mm	1	23	Drill Sleeve	1
8	Reamer 8.5*340mm	1	24	Drill Sleeve 5.2mm	1
9	Reamer 8.0*340mm	1	25	Hex Wrench	1
10	Reamer 7.5*340mm	1	26	Gauge Cannula	1
11	AWL	1	27	Universal Joint	1
12	Sleeve	1	28	Guide Rod	1
13	Screwdriver SW2.5	1	29	Hammer	1
14	Sleeve	1	30	Guide Wire	1
15	Quick Coupling T-Handle	1	31	Aluminium Box	1
16	Sighting Device Handle	1			