



OVERFIX[®]

TRAUMA

SURGICAL TECHNIQUE

ANKLE ARTHRODESIS NAIL

RAMIC

Intramedullary Nail Systems



bioadvance

MEDICAL DEVICES

CONTENTS

Features	02
Indications & Contraindications	03
Surgical Technique	04
1. Position patient	04
2. Choose nail size	04
3. Prepare for fusion	04
4. Determine the entry point	05
5. Insert guide wire	05
6. Open the canal	06
7. Open distal tibia	06
8. Insert ball tip guide wire	07
9. Ream medullary canal	07
10. Insert ankle arthrodesis nail	08
11. Insert locking screw for calcaneus	09
12. Insert screw for calcaneus talus	10
13. Insert tibia screw	10
14. Insert end cap	11
15. Remove implant	11
Implants	12
Instruments	13

RAMIC · ANKLE ARTHRODESIS NAIL

INTRAMEDULLARY NAIL SYSTEMS

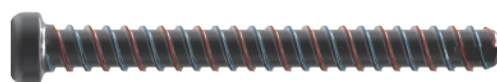
FEATURES

The curved nail allows the entry point at the central part of the anterior tubercle of the calcaneus, reducing the exposure of the distal nail end

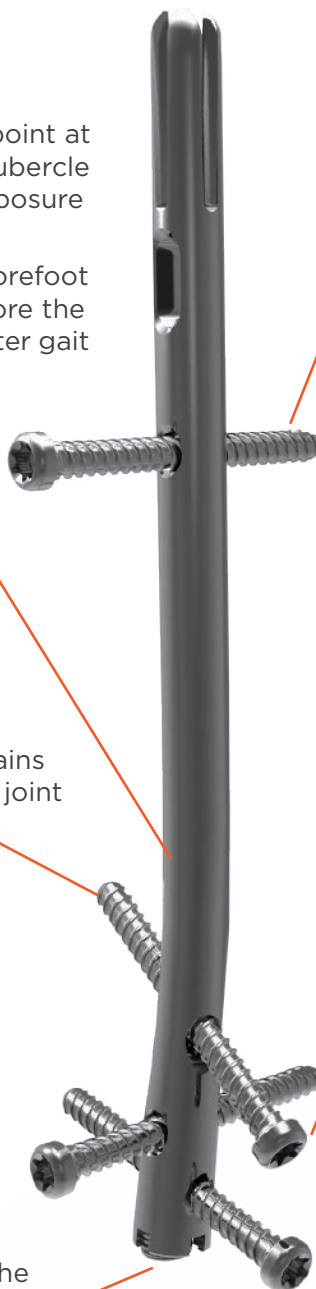
Allow the hind foot and the mid-forefoot to align in a straight line and restore the valgus angle of 3-5° to form a better gait after surgery

The oblique subtalar screw maintains the stability of the talar-calcaneal joint

The End Cap can be fastened to the distal locking screw to maintain the overall stability



The double thread design speeds up the screw insertion while maintaining the bone purchase



The spherical screw head is thin and round, reducing the soft tissue irritation for the end facets

RAMIC · ANKLE ARTHRODESIS NAIL

INTRAMEDULLARY NAIL SYSTEMS

INDICATIONS & CONTRAINDICATIONS

INDICATIONS

Ankle Arthrodesis nail system is used for ankle fusion surgery, including the following specific conditions:

- »Severe ankle deformities
- »Osteoarthritis, instability and bone defect after tumor resection
- »Neuropathic arthropathy or avascular necrosis of the talus
- »Revision of failed joint replacement or failed ankle fusion, nonunion of distal tibial fracture
- »Rheumatoid Arthritis and Pseudoarthrosis

CONTRAINDICATIONS

- »There is an infection
- »Patients with physical or mental impairment
- »Poor skin, bone or neurovascular condition
- »Patients who cannot repair the tendon system
- »Patients with the possibility of conservative treatment
- »Patients who require high levels of activity

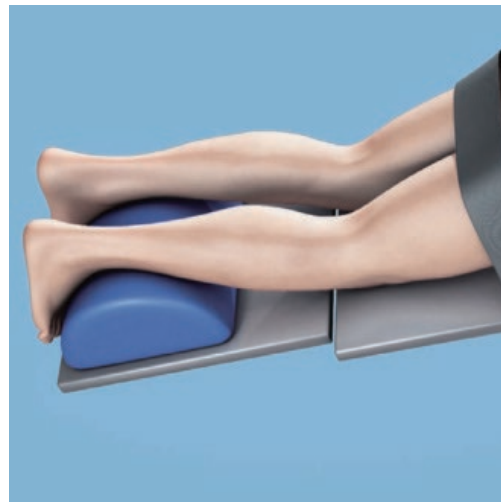
RAMIC · ANKLE ARTHRODESIS NAIL

SURGICAL TECHNIQUE

1. POSITION PATIENT

As shown in the figure, put the Ruler for Nail Length on the side of the ankle joint (the ruler can be clamped by the universal long auxiliary forceps to make it fixed), and compare the C-arm lateral view to prejudge the applicable intramedullary nail's diameter and length.

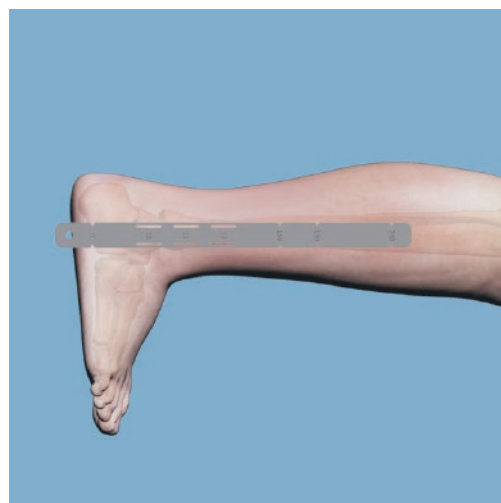
Required instrument: 13047120-Ruler for Nail Length



2. CHOOSE NAIL SIZE

As shown in the figure, put the Ruler for Nail Length on the side of the ankle joint (the ruler can be clamped by the universal long auxiliary forceps to make it fixed), and compare the C-arm lateral view to prejudge the applicable intramedullary nail's diameter and length.

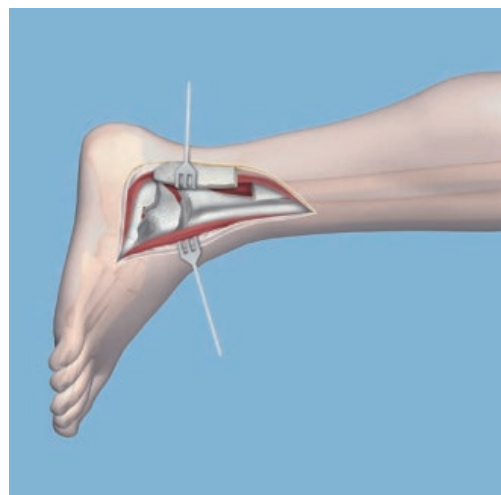
Required instrument: 13047120-Ruler for Nail Length



3. PREPARE FOR FUSION

Create an incision laterally over the fibula. Dissection to the bone is directed anteriorly. Create an osteotomy 10 cm from the distal tip of fibula. Resect approximately 1 cm of bone proximal to the first cut, creating a gap. This bone segment can be utilized as bone graft. Use osteotome tool to remove the articular cartilage between the tibia and talus, as well as talus and calcaneus. This step is indispensable, otherwise it may cause failure of the bone fusion.

Osteotome tools, we provide Foot Orthopedic Instrument Set (13025000), as optional

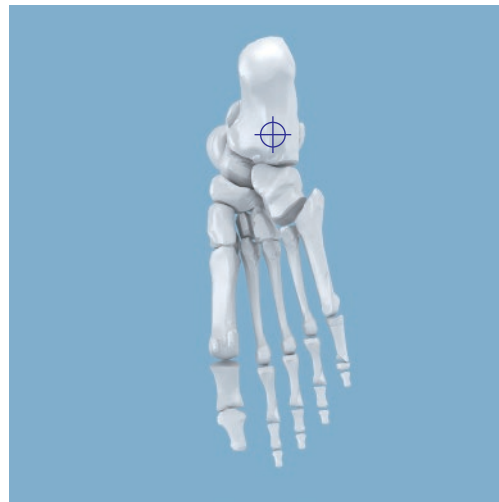


RAMIC · ANKLE ARTHRODESIS NAIL

SURGICAL TECHNIQUE

4. DETERMINE THE ENTRY POINT

From sagittal view, the entry point is at the top of the anterior tuberosity of the calcaneus. From coronal view, the entry point coincides with the central axis of the tibia. Make a longitudinal incision of 2-3cm after confirming this point.



5. INSERT GUIDE WIRE

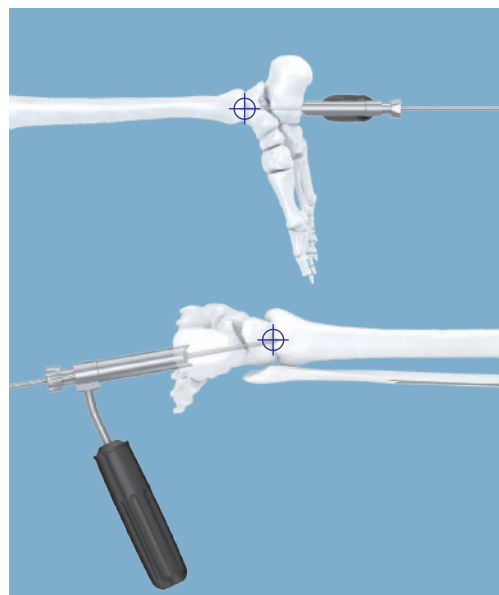
Insert Sleeve for Guide Wire into Entry Drill Guide (Ankle), connect Threaded Guide Wire-3.2×300 with power drive. Hold the handle of 13047040, make the end aligned with the entry point, and guide wire aligned with the intersection of the central axis of the distal tibia and the end surface. Insert the guide wire through the calcaneus and talus up to the distal end of the tibia, and manually move the calcaneus and talus about 5 degrees to the medial to make the guide wire and central axis of tibia coincide, and then continue to insert the guide wire until guide wire is drilled into the tibia about 5mm.

Required instrument:

13047040-Entry Drill Guide (Ankle)

13047050-Sleeve for Guide Wire

13047020-Threaded Guide Wire-3.2×300



RAMIC · ANKLE ARTHRODESIS NAIL

SURGICAL TECHNIQUE

6. OPEN THE CANAL

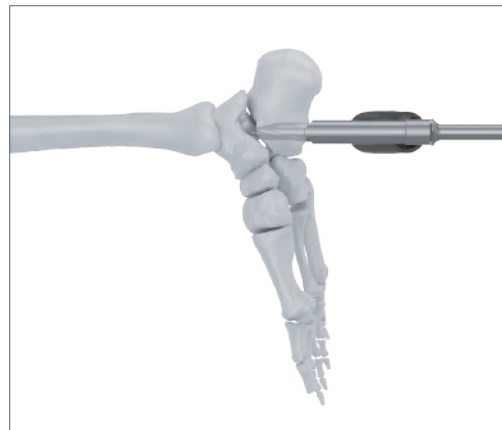
Connect Entry Reamer with power drive. Remove Sleeve for Guide Wire from Entry Drill Guide (Ankle). Place Entry Reamer over the guide wire. Drill through the calcaneus and talus until it reaches the distal end of the tibia. Remove Entry Reamer.

Required instrument:

13047040-Entry Drill Guide (Ankle)

13047020-Threaded Guide Wire-3.2×300

13047030-Entry Reamer

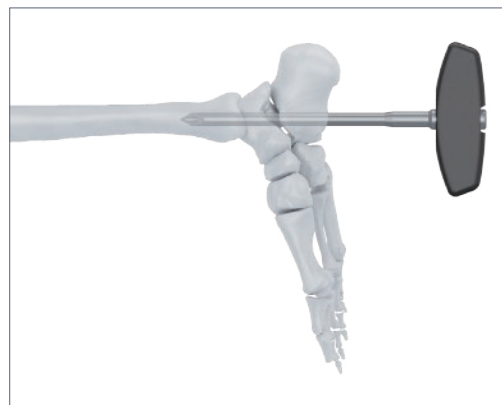


7. OPEN DISTAL TIBIA

Twist Awl-straight over the guide wire into the medullary canal of the tibia. Remove the guide wire.

Required instrument:

13047010-Awl-straight



RAMIC · ANKLE ARTHRODESIS NAIL

SURGICAL TECHNIQUE

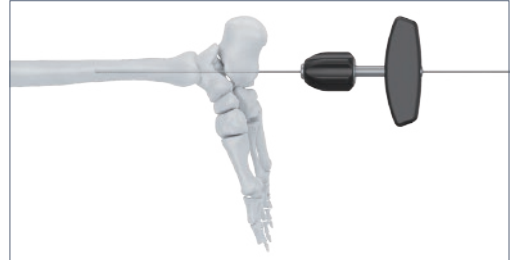
8. INSERT BALL TIP GUIDE WIRE

Rotate to loosen the Guide Wire Gripper, insert the Ball Tip Guide Wire and lock it. Insert Ball Tip Guide Wire through the opened canal into the middle of the tibial medullary canal. Then, loosen the Gripper and take it out.

Required instrument:

13034070-2.0×650 Ball Tip Guide Wire

13034210-Guide Wire Gripper



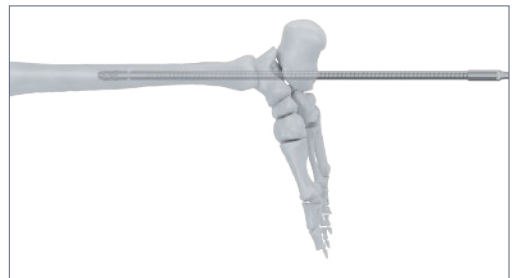
9. REAM MEDULLARY CANAL

Assemble Flexible Reamer Shaft-Short and Flexible Reamer Head onto power drive. Ream in 0.5mm increments to a diameter 0.5mm larger than the nail diameter over the Ball Tip Guide Wire.

Required instrument:

13047060-Flexible Reamer Shaft-Short

130300 (10-17) - (Φ9-Φ12.5) Flexible Reamer Head



RAMIC · ANKLE ARTHRODESIS NAIL

SURGICAL TECHNIQUE

10. INSERT ANKLE ARTHRODESIS NAIL

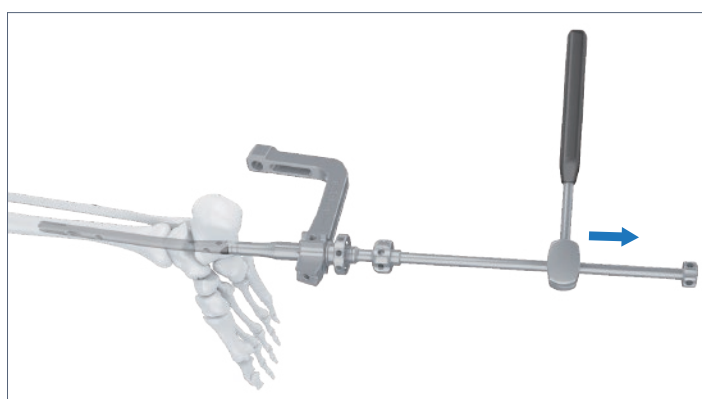
Make sure that the black knob on Insertion Handle is in the locked state, if it is loosened, please lock it and use Wrench to further tighten it.

Match the tang on the Insertion Handle to the notch in the Ankle Arthrodesis Nail. Place the Connecting Rod into the Insertion Handle, thread it into the nail and then tighten it with the help of Wrench.

Please pay attention to the Lateral arrow on Insertion Handle (namely, nail arc portion facing laterally).

Using a twisting motion, insert the nail over the Ball Tip Guide Wire. If needed, use light, controlled hammer blows to seat the nail. When the end of the Ankle Arthrodesis Nail completely enters the calcaneus, insertion is finished.

If inserted too deeply, Extended Rod can be used to thread into the end of Connecting Rod. Hammer can be used as slide hammer. Blow hammer reversely to pull out the nail.



Required instrument:

13047070-Insertion Handle (Ankle)

13047080-Connecting Rod

13030430-Wrench

13034190-Hammer

13047130-Extended Rod

RAMIC · ANKLE ARTHRODESIS NAIL

SURGICAL TECHNIQUE

11. INSERT LOCKING SCREW FOR CALCANEUS

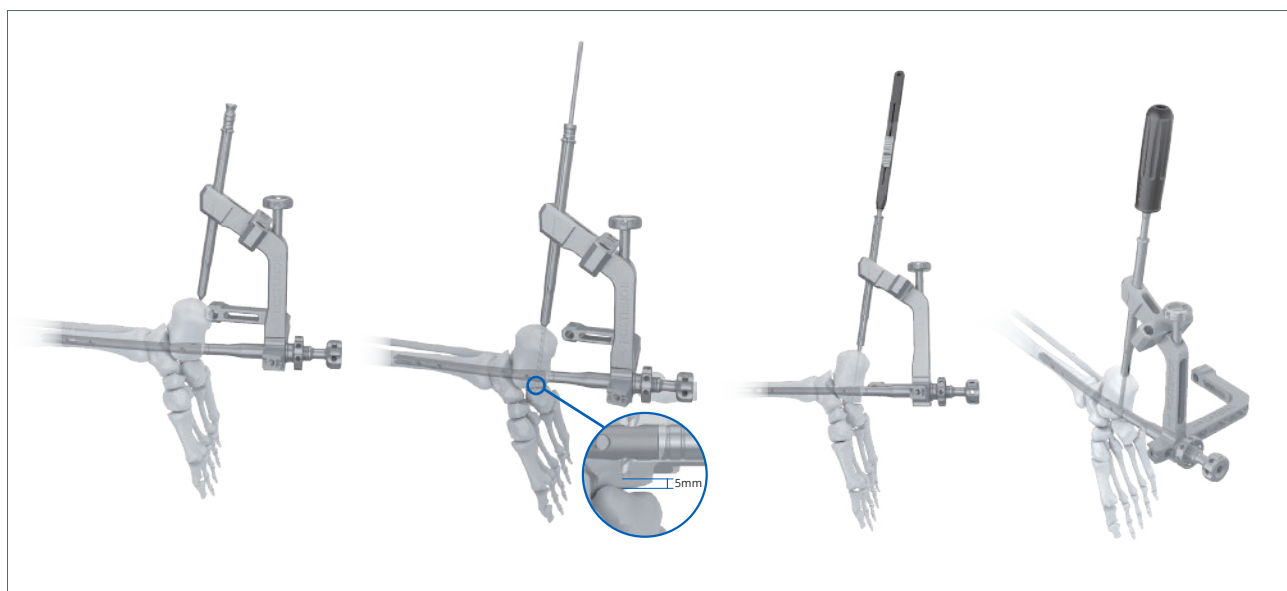
Attach Aiming Arm-Posterior onto Insertion Handle (Ankle) from the posterior direction and tighten the nut on Aiming Arm-Posterior with the help of Wrench.

First screw is on the most distal hole of the nail, which is inserted from posterior to anterior through the aiming hole on Aiming Arm-Posterior (as shown in picture).

Insert the three-part trocar combination (13030350, 13030360, 13030370) through the aiming hole. Make a stab incision and insert the trocar to the bone. Remove the Trocar.

Drill through calcaneus using Drill, $\Phi 4.2$, until the tip of the drill bit reaches the far cortex, leaving 5mm.

Remove Drill, $\Phi 4.2$ and Sleeve for Drill Bit; Put Depth Gauge for Locking Screw into Sleeve for Locking Screw, read the measurement and select the screw of the corresponding length. Insert locking screw through Sleeve for Locking Screw using Screwdriver for 5.0 Screw.



The second screw penetrates the calcaneus transversely, which is inserted through the lateral aiming hole on the Insertion Handle. The procedure of screw insertion is same as first one.

Required instruments:

- 13047090-Aiming Arm-Posterior
- 13030350-Sleeve for Locking Screw
- 13030360-Sleeve for Drill Bit
- 13030370-Trocar, $\Phi 4.2$
- 13030420-Drill, $\Phi 4.2$
- 13030400-Depth Gauge for Locking Screw
- 13047110-Screwdriver for 5.0 Screw
- 13030430-Wrench



RAMIC · ANKLE ARTHRODESIS NAIL

SURGICAL TECHNIQUE

12. INSERT SCREW FOR CALCANEUS TALUS

Aiming Arm-Posterior, left and right two holes based on patient situation. The procedure of screw insertion is same as first two screws.

NOTE: Before drilling this hole, please firstly use Hammer to tap the tail of the Connecting Rod, meanwhile hold and push the Insertion Handle to the proximal, which can narrow the gap between the calcaneus and the talus, increasing the successful rate of bone fusion. (It is recommended to repeat this action also for following tibia screw insertion)

Required instruments:

- 13047090-Aiming Arm-Posterior
- 13030350-Sleeve for Locking Screw
- 13030360-Sleeve for Drill Bit
- 13030370-Trocar, $\Phi 4.2$
- 13030420-Drill, $\Phi 4.2$
- 13030400-Depth Gauge for Locking Screw
- 13047110-Screwdriver for 5.0 Screw
- 13034190-Hammer



13. INSERT TIBIA SCREW

Assemble the Aiming Arm-Medial onto Insertion Handle, tighten the nut with the help of Wrench. The aiming hole is located on Aiming Arm-Medial. Choose the corresponding aiming hole according to the length of Ankle Arthrodesis Nail. The procedure of screw insertion is the same as the first three screws.

Required instruments:

- 13047100-Aiming Arm-Medial
- 13030350-Sleeve for Locking Screw
- 13030360-Sleeve for Drill Bit
- 13030370-Trocar, $\Phi 4.2$
- 13030420-Drill, $\Phi 4.2$
- 13030400-Depth Gauge for Locking Screw
- 13047110-Screwdriver for 5.0 Screw
- 13034190-Hammer
- 13030430-Wrench



RAMIC · ANKLE ARTHRODESIS NAIL

SURGICAL TECHNIQUE

14. INSERT END CAP

Loosen Connecting Rod, remove Aiming Arm, use Screwdriver for 5.0 Screw to insert End cap.

Required instrument:

13047110-Screwdriver for 5.0 Screw



15. REMOVE IMPLANT

Use Screwdriver for 5.0 Screw to remove the caps and screws from distal to proximal. Keep the most proximal screw unmoved. Thread the Connecting Rod into the tail of Ankle Arthrodesis Nail, thread the Extended Rod into the tail of Connecting Rod. Remove the last screw. Knock out the Ankle Arthrodesis Nail by Hammer along Extended Rod.

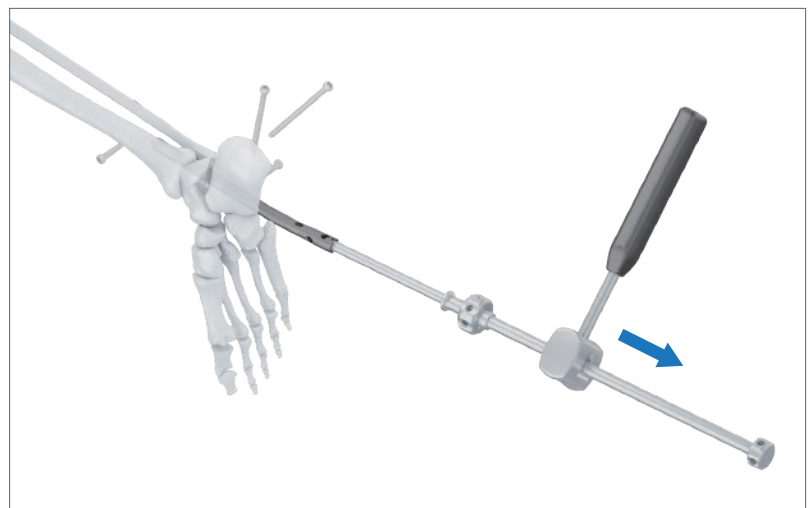
Required instrument:

13047110-Screwdriver for 5.0 Screw

13047080-Connecting Rod

13047130-Extended Rod

13034190-Hammer



RAMIC · ANKLE ARTHRODESIS NAIL

INTRAMEDULLARY NAIL SYSTEMS

IMPLANTS

ANKLE ARTHRODESIS NAIL

PRODUCT CODE	SPECIFICATION
56400015	Φ10×150 (Left)
56400018	Φ10×180 (Left)
56401018	Φ11×180 (Left)
56410015	Φ10×150 (Right)
56410018	Φ10×180 (Right)
56411018	Φ11×180 (Right)



END CAP

PRODUCT CODE	SPECIFICATION
56430000	—



LOCKING SCREW










PRODUCT CODE	SPECIFICATION
56420528	Φ5.0×28
56420530	Φ5.0×30
56420532	Φ5.0×32
56420534	Φ5.0×34
56420536	Φ5.0×36
56420538	Φ5.0×38
56420540	Φ5.0×40
56420542	Φ5.0×42
56420544	Φ5.0×44
56420546	Φ5.0×46
56420548	Φ5.0×48
56420550	Φ5.0×50
56420555	Φ5.0×55
56420560	Φ5.0×60
56420565	Φ5.0×65
56420570	Φ5.0×70
56420575	Φ5.0×75
56420580	Φ5.0×80
56420585	Φ5.0×85
56420590	Φ5.0×90
56420595	Φ5.0×95
56420600	Φ5.0×100



RAMIC · ANKLE ARTHRODESIS NAIL

INTRAMEDULLARY NAIL SYSTEMS

INSTRUMENTS

PRODUCT CODE	PARTS DESCRIPTION	QUANTITY	PICTURE
13047010	Awl-straight	1	
13047020	Threaded Guide Wire-3.2×300	3	
13047030	Entry Reamer	1	
13047040	Entry Drill Guide (Ankle)	1	
13047050	Sleeve for Guide Wire	1	
13034070	2.0×650 Ball Tip Guide Wire	1	
13030010	Flexible Reamer Head-Φ9	1	
13030011	Flexible Reamer Head-Φ9.5	1	
13030012	Flexible Reamer Head-Φ10	1	
13030013	Flexible Reamer Head-Φ10.5	1	
13030014	Flexible Reamer Head-Φ11	1	
13030015	Flexible Reamer Head-Φ11.5	1	
13030016	Flexible Reamer Head-Φ12	1	
13030017	Flexible Reamer Head-Φ12.5	1	
13047060	Flexible Reamer Shaft-Short	1	
13047070	Insertion Handle (Ankle)	1	

RAMIC · ANKLE ARTHRODESIS NAIL

INTRAMEDULLARY NAIL SYSTEMS





INSTRUMENTS

PRODUCT CODE	PARTS DESCRIPTION	QUANTITY	PICTURE
13047080	Connecting Rod	1	
13047090	Aiming Arm-Posterior	1	
13047100	Aiming Arm-Medial	1	
13030350	Sleeve for Locking Screw	1	
13030360	Sleeve for Drill Bit	1	
13030370	Trocar, Φ4.2	1	
13030420	Drill, Φ4.2	2	
13030400	Depth Gauge for Locking Screw	1	
13047110	Screwdriver for 5.0 Screw	1	
13034190	Hammer	1	
13034210	Guide Wire Gripper	1	
13047130	Extended Rod	1	
13030430	Wrench	1	

RAMIC · ANKLE ARTHRODESIS NAIL

INTRAMEDULLARY NAIL SYSTEMS

INSTRUMENTS

PRODUCT CODE	PARTS DESCRIPTION	QUANTITY	PICTURE
13047120	Ruler for Nail Length	1	
13026220	Implant Forceps	1	
13047991	Outer Case	1	
13047996	Screw box	1	

OPTIONAL INSTRUMENTS

PRODUCT CODE	PARTS DESCRIPTION	QUANTITY
13025000	Orthopedic Foot Instrument	Optional

From our subsidiaries in Mexico, Argentina, Bolivia and Chile, we offer the most complete medical devices for trauma, spine, hip and knee.



Each product line has the certifications that comply with the regulations and sanitary registries in force in each country. We implement traceability and technovigilance procedures in the different stages of storage and commercialization. This rigorous control allows us to maintain a high brand value, guaranteeing highest safety for patients.

With more than 8 years dedicated to medical devices import and sale, we stand out for our service, clinical efficiency products and competitive costs.

To find out more about our medical devices, please contact us to link you to the closest supplier to your location.



CDMX
Amores 1322
Colonia del Valle Centro
CP 03100, CDMX
+52 55 5925 5323
bioadvance.com.mx

GUADALAJARA
Av. Patria 179. Of. 302 y 303, Piso 3
CP. 45030. Col. Prados Guadalupe
Zapopan, Jalisco
+52 33 1656 4268
bioadvance.com.mx

ARGENTINA
Cnel. Cetz 336, Piso 2
Martínez, B1642
Buenos Aires
+54 11 4765 5995
bioadvance.com.ar

BOLIVIA
Calle Pedro Rodríguez 3830
Santa Cruz de la Sierra
Bolivia
+59 1 7048 5050
bolivia.bioadvanceusa.com

CHILE
Av. Alonso de Cordova 5870
Of. 1711, 7560885
Santiago de Chile
+56 9 8493 9874
chile.bioadvanceusa.com

in bioadvance-argentina
© bioadvance
f bioadvancemed
✉ info@bioadvance.com.ar
globe bioadvance.com.ar



OVERFIX[®]
TRAUMA

bioadvance
MEDICAL DEVICES

MÉXICO

bioadvance.com.mx

ARGENTINA

bioadvance.com.ar

BOLIVIA

bolivia.bioadvanceusa.com

CHILE

chile.bioadvanceusa.com