

Instruments for Reconstructive Orthopaedic Surgery

Orthopaedic Foot Instruments

Surgical Technique

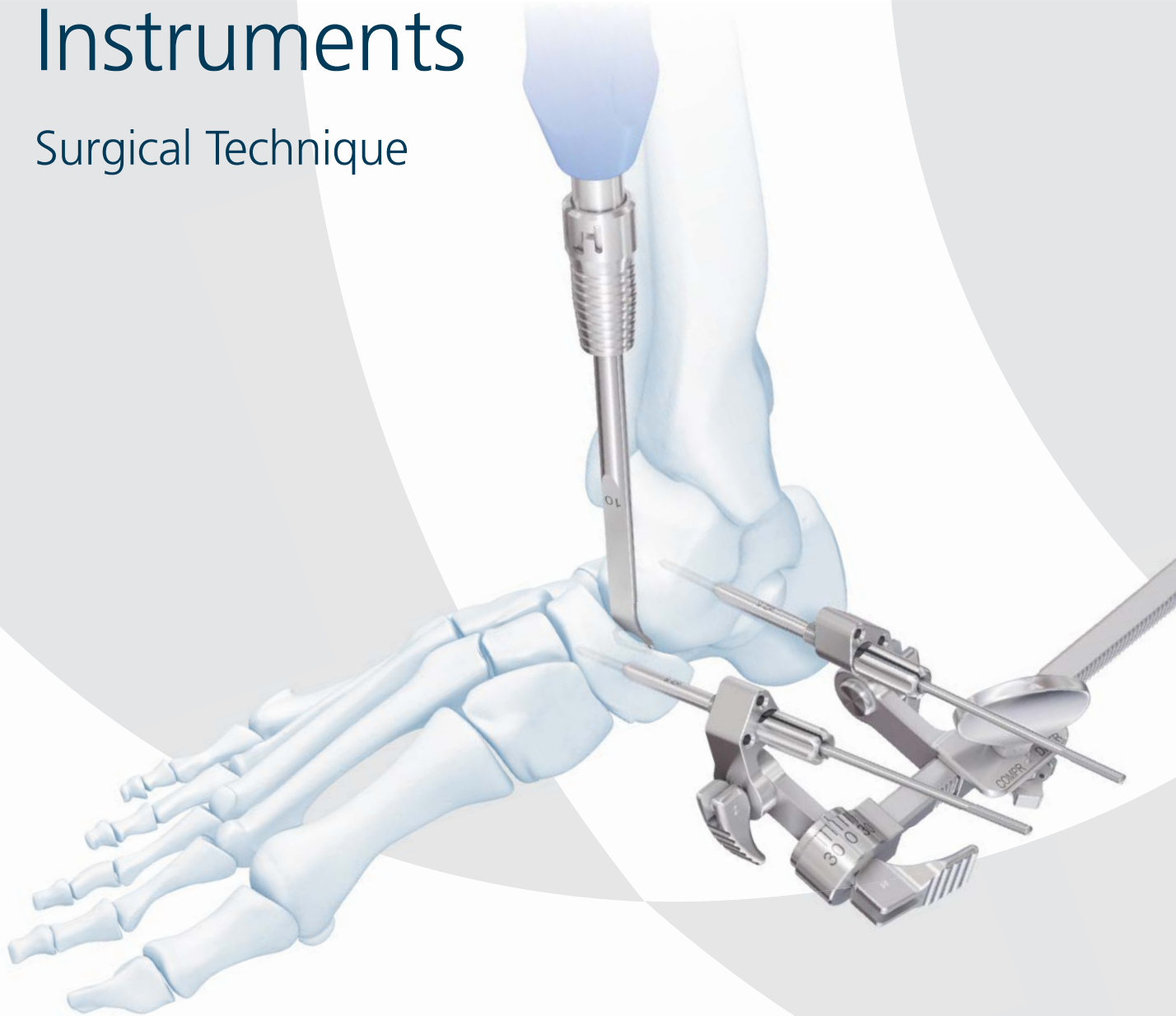


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MR Information

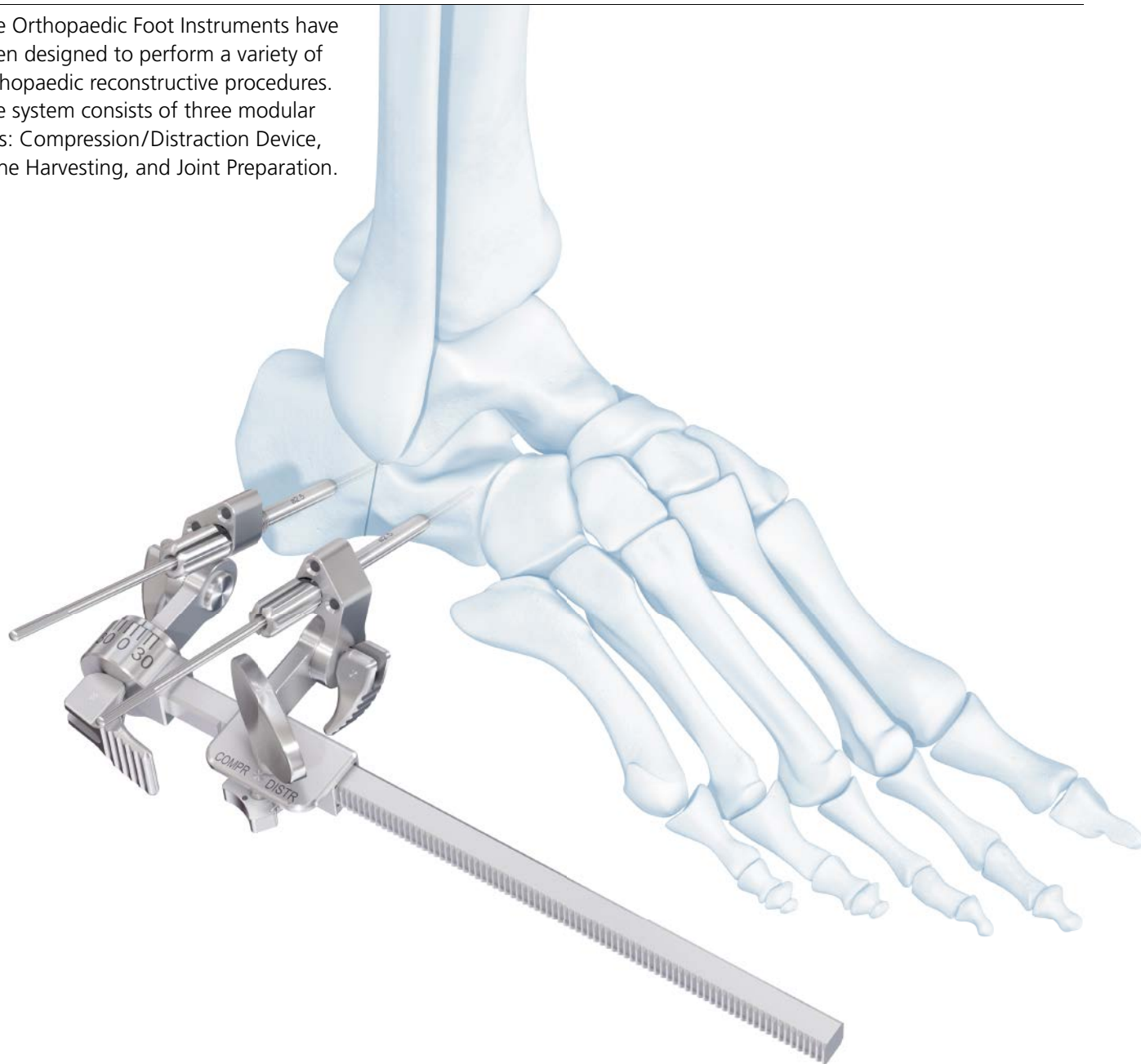
The Orthopaedic Foot Instruments have not been evaluated for safety and compatibility in the MR environment. It has not been tested for heating, migration or image artifact in the MR environment. The safety of the Orthopaedic Foot Instruments in the MR environment is unknown. Scanning a patient who has this device may result in patient injury.

 Image intensifier control

Orthopaedic Foot Instruments

Instruments for reconstructive orthopaedic surgery

The Orthopaedic Foot Instruments have been designed to perform a variety of orthopaedic reconstructive procedures. The system consists of three modular sets: Compression/Distraction Device, Bone Harvesting, and Joint Preparation.



Compression/Distrraction Device Set

- Placement of 2.0 mm, 2.5 mm, and 3.0 mm K-wires at various angles
- Precise compression/distrraction mechanism
- Two extra K-wire holes for more stability
- Adjustable for ideal instrument placement



Bone Harvesting Set

- Various trephine diameters enable accurate local bone grafting
- Corresponding extraction attachments enable safe removal of the bone graft
- Silicone handles for optimal grip
- Depth gauge indicator



Joint Preparation Set

- A variety of chisel shapes and a cartilage remover facilitate proper joint preparation
- Silicon handles for optimal grip



Applications

Compression/Distracton Device Set

- Compression and distraction of joints or bones
- Fracture treatment
- Arthrodeses (e.g., subtalar arthrodesis)
- Osteotomies (e.g., lateral calcaneal lengthening osteotomy)

Bone Harvesting Set

- Bone harvesting (e.g., from the calcaneus, proximal tibia, or iliac crest)
- Bone biopsies

Joint Preparation Set

- Preparation of joints for arthrodeses
- Removal of joint cartilage and bone
- Removal of exostoses and osteophytes

Compression/Distraction Device Set

1. Preparation

Expose the indicated area. The approach will depend on the surgical procedure.

2. Prepare compression/distraction device

Instruments

03.111.021	Compression/Distraction Device
03.111.022	Compression/Distraction Holding Sleeve, 2.0 mm K-wire
03.111.023	Compression/Distraction Holding Sleeve, 2.5 mm K-wire
03.111.024	Compression/Distraction Holding Sleeve, 3.0 mm K-wire

Thread the holding sleeves corresponding to the K-wire size into the threaded fixation holes of the fixation arms.

Note: Do not tighten the holding sleeves at this point.

Open all locking clamps of the compression/distraction device.

For preliminary alignment, adjust the rotation and distance of the arms for the procedure.

Notes:

- **Lock the rotational mechanism first**
- **Lock both arms**
- **Adjust the space between the arms**
- **A range of different adjustment approaches may be used**



3. Insert K-wires

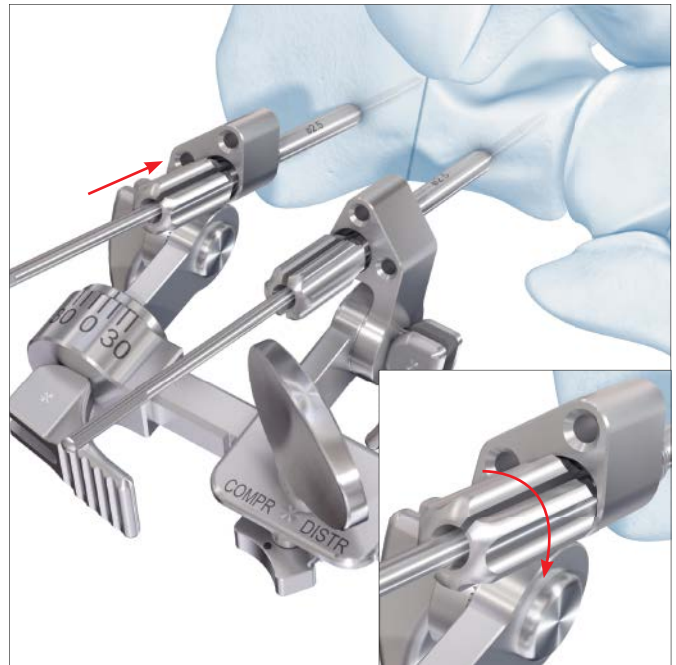
Instruments

	Kirschner Wires, 150 mm, trocar point
292.25	2.5 mm
292.30	3.0 mm
292.75	2.5 mm, with Thread, 15 mm thread length
292.79	2.0 mm, with Thread, 15 mm thread length

Position the device with the ends of the holding sleeves as close to the bone as possible.

Drill two K-wires through the holding sleeves into the bone.

Finger-tighten the holding sleeves. This will fix the device to the K-wires.



If more stability is needed, additional 2.0 mm K-wires can be inserted through the extra K-wire holes of the arms, and drilled into the bone.

Precaution: Apart from the blue tightening device, do not use any other instruments to tighten or loosen the holding sleeves as they may cause damage.



4. Compress or distract

Perform the surgical procedure once the K-wires have been inserted.

Choose compression or distraction by adjusting the switch mechanism.

Turn the wing bolt to compress or distract.

Warning: Avoid excessive distraction. Too much distraction can damage the surrounding soft tissue.



5. Remove compression/distraction device

Instrument

03.111.041 Holding Sleeve Handle

Open the locking clamps. Slide the holding sleeve handle over the holding sleeve and turn counterclockwise to loosen the holding sleeves.

Carefully remove the device.

Remove the K-wires.

Alternative technique

Loosen the holding sleeves first, then open the locking clamps. Carefully remove the device.

Remove the K-wires.



Bone Harvesting Set

1. Preparation

Expose the indicated area. The approach will depend on the surgical procedure.

2. Place guide wire

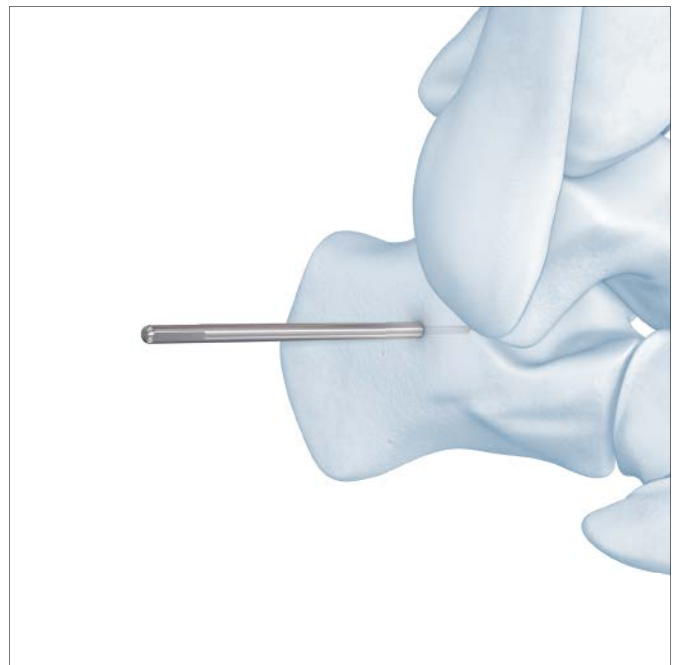
Instrument

02.111.001	Guide Wire for Trephines, with Stop
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Drill the guide wire into the location where bone removal is required.

Precaution: Drill the 3.2 mm guide wire until it reaches the stop at the end of the 1.2 mm tip.

Note: In case insertion of the guide wire by hand is not possible, use a power tool to drill the guide wire into the bone.



3. Cut bone graft

Instruments

03.111.013	Silicone Handle, short, quick coupling
	Trephine Attachments
03.111.025	5.5 mm diameter
03.111.026	7.0 mm diameter
387.659	8.5 mm diameter
387.660	9.5 mm diameter
387.661	10.5 mm diameter
387.662	12.5 mm diameter
387.663	14.0 mm diameter
03.111.030	Shaft for Trephine Attachments

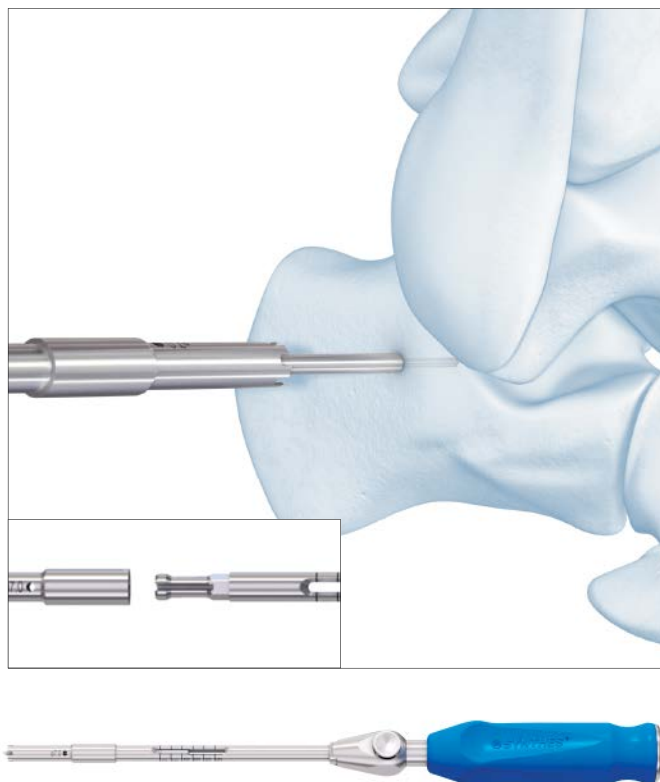
Warnings

- **Trephines have sharp cutting edges that may cause injury**
- **Handle the attachments with care. Damage to the cutting edges may cause failure and will alter the precision of the instrument**
- **Only use instruments with sharp edges**

Attach the shaft for trephine and extraction attachments to a handle.

Select the preferred trephine size and attach it to the shaft. Slide the trephine over the guide wire to the bone.

Note: The trephine cannot be disengaged from the shaft when it is inserted over the guide wire.



Use gentle rotational movements to cut into the bone.

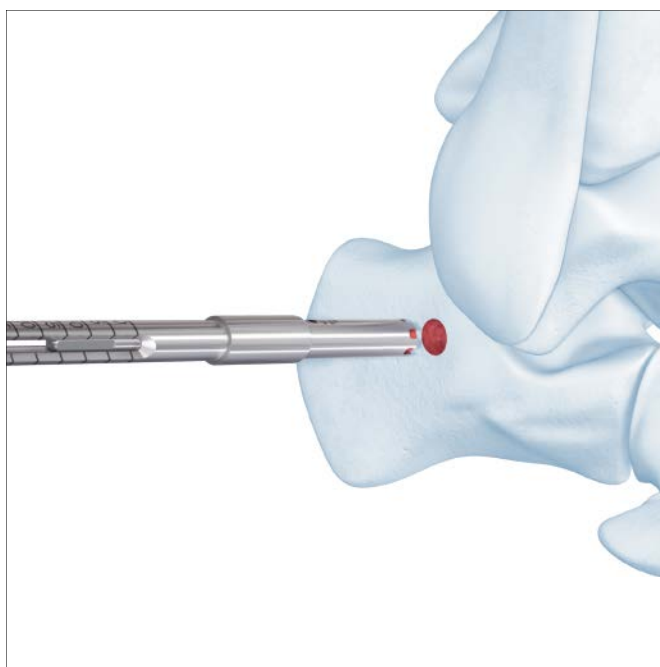
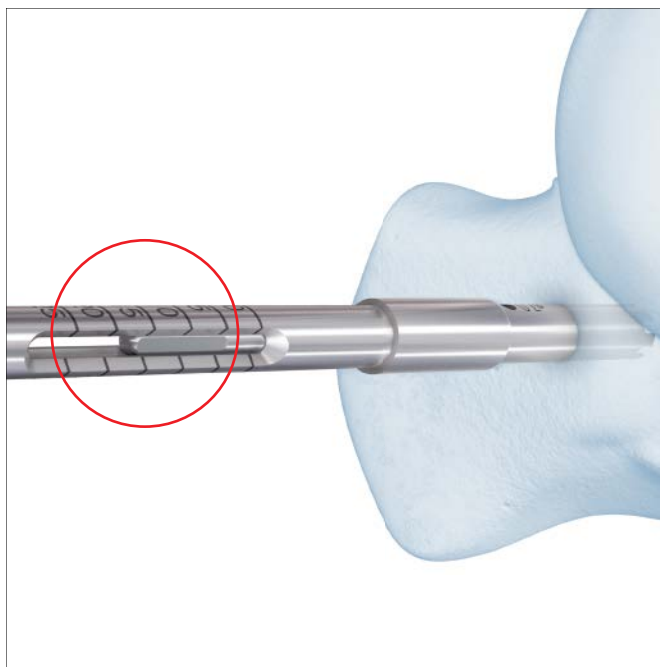
The end of the guide wire is visible through the window in the trephine shaft. Read the length of the bone graft.

Continue insertion of the trephine to the desired depth.

Remove the trephine by pulling back on the handle.

The extracted bone graft should remain in the trephine

Note: If the bone graft cannot be removed with the trephine, use the bone extraction attachment to remove the bone graft from the bone (see alternative technique on page 13).



4. Remove bone graft from trephine instrument

Instrument

03.111.031 Stylet for Bone Harvesting Trephines

Remove the handle and insert the stylet into the back of the trephine shaft (Figure 1).

Carefully push the bone graft and guide wire out the front of the trephine (Figure 2).



Figure 1

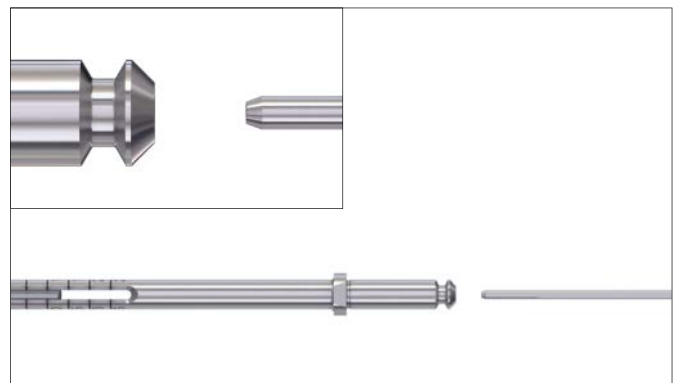


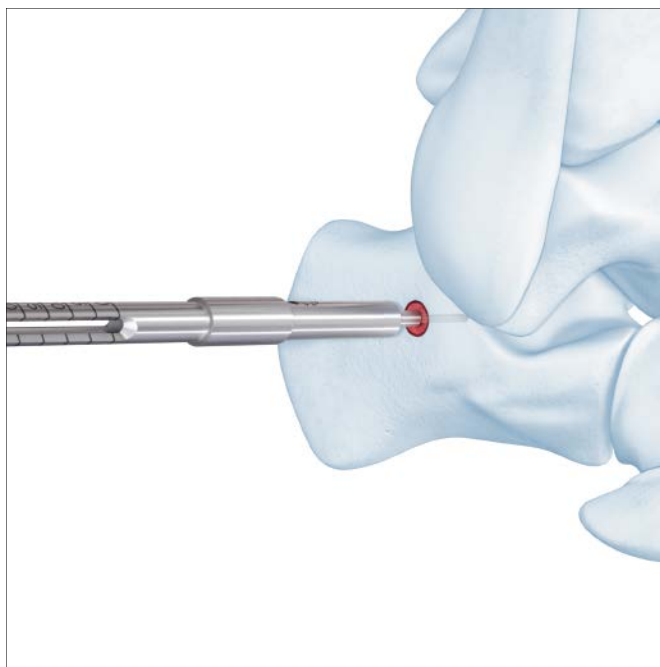
Figure 2

Alternative technique

Removal of bone graft with the bone extraction attachment

Instruments

03.111.013	Silicone Handle, short, quick coupling
	Extraction Attachments
03.111.027	5.5 mm diameter
03.111.028	7.0 mm diameter
387.669	8.5 mm diameter
387.670	9.5 mm diameter
387.671	10.5 mm diameter
387.672	12.5 mm diameter
387.673	14.0 mm diameter
03.111.030	Shaft for Trepine Attachments



Note: All trephines have a corresponding extraction attachment size.

Insert the extraction attachment over the guide wire to the depth created by the trephine (the handle should not rotate).

To break the graft dowel free, turn the holder slowly until a cracking noise is heard or there is no more resistance when turning. Remove the holder. Both the bone dowel and the guide wire will remain in the extraction attachment.

Remove the bone graft as described in Step 4.

Note: It is possible to use a hammer in combination with the handles to aid in removal of the graft. Use light, controlled hammer blows.

Joint Preparation Set

1. Preparation

Expose the indicated area. The approach will depend on the surgical procedure.

2. Choose instrument

Instruments

03.111.012	Silicone Handle, long, quick coupling
03.111.014	Joint Preparation Cartilage Remover, 12 mm, quick coupling, 124 mm length
	Joint Preparation Chisels
03.111.016	Straight, broad, 15 mm wide
03.111.017	20° bend, narrow, 10 mm wide
03.111.018	20° bend, broad, 15 mm wide
03.111.019	Curved, narrow, 10 mm wide
03.111.020	Curved, broad, 15 mm wide

Precautions

- **Chisels and cartilage remover have sharp cutting edges that may cause injury**
- **Handle the instruments with care. Damage to the cutting edges may cause failure and will alter the precision of the instrument**
- **Only use instruments with sharp edges**

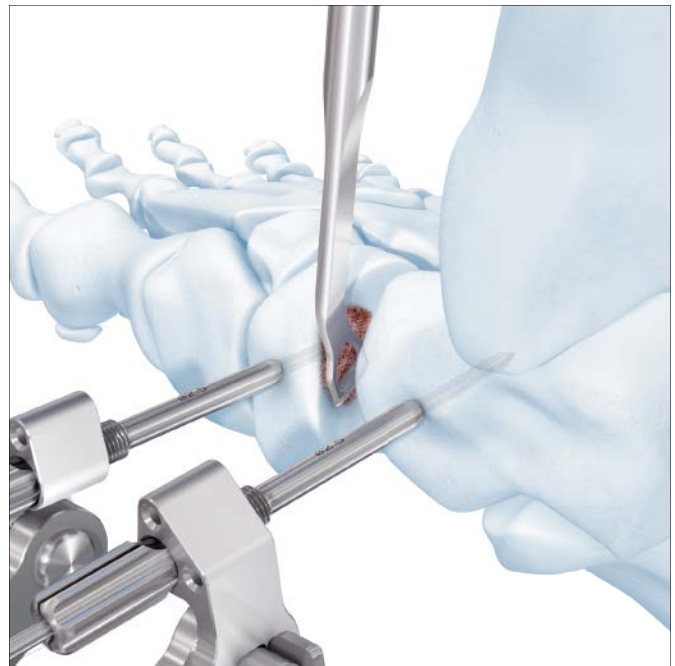
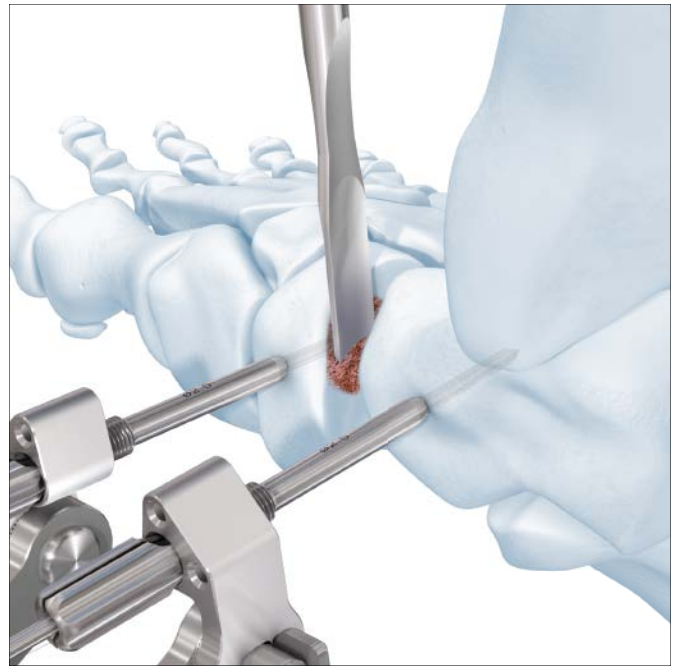
Attach the appropriate chisel or cartilage remover to a quick coupling handle.

3. Prepare joints and/or bones

Notes

- It is possible to use a hammer in combination with the handles
- Use light, controlled hammer blows

For the cartilage remover, place it in the joint and pull back on the handle while applying force on the bone surface. This will peel away the surface.



Instruments Included in Joint Preparation Set (01.211.001)

03.111.012 Silicone Handle, long, quick coupling



03.111.014 Joint Preparation Cartilage Remover, 12 mm, quick coupling, 124 mm length



03.111.015 Joint Preparation Chisel, straight, narrow, 10 mm wide



03.111.016 Joint Preparation Chisel, straight, broad, 15 mm wide



03.111.017 Joint Preparation Chisel, 20° bend, narrow, 10 mm wide



03.111.018 Joint Preparation Chisel, 20° bend, broad, 15 mm wide



03.111.019 Joint Preparation Chisel, curved, narrow, 10 mm wide



03.111.020 Joint Preparation Chisel, curved, broad, 15 mm wide



Instruments Included in Compression/ Distraction Device Set (01.211.002)

03.111.021 Compression/Distraction Device



Compression/Distraction Holding Sleeve

03.111.022 2.0 mm K-wire
03.111.023 2.5 mm K-wire
03.111.024 3.0 mm K-wire



03.111.041 Holding Sleeve Handle



Kirschner Wire, 150 mm, trocar point

292.25 2.5 mm
292.30 3.0 mm



Kirschner Wire with Thread, 150 mm,
trocar point, 15 mm thread length

292.75 2.5 mm
292.79 2.0 mm



Instruments Included in Bone Harvesting Set (01.211.003)

02.111.001 Guide Wire for Trephines, with Stop,
3.2 mm diameter, 1.6 mm tip



03.111.013 Handle, short, quick coupling



Trephine Attachment

03.111.025 5.5 mm diameter
03.111.026 7.0 mm diameter
387.659 8.5 mm diameter
387.660 9.5 mm diameter
387.661 10.5 mm diameter
387.662 12.5 mm diameter
387.663 14.0 mm diameter



Extraction Attachment

03.111.027 5.5 mm diameter
03.111.028 7.0 mm diameter
387.669 8.5 mm diameter
387.670 9.5 mm diameter
387.671 10.5 mm diameter
387.672 12.5 mm diameter
387.673 14.0 mm diameter



03.111.030 Shaft for Trephine Attachments



03.111.031 Stylet for Bone Harvesting Trephines



Joint Preparation Set (01.211.001)

Graphic Case

60.211.013 Module Case for Joint Preparation Set

Instruments

03.111.012 Handle, long, quick coupling

03.111.014 Joint Preparation Cartilage Remover, 12 mm, quick coupling, 124 mm length



Joint Preparation Chisels

	(mm)	Description
03.111.015	10	Straight, narrow
03.111.016	15	Straight, broad
03.111.017	10	20° bend, narrow
03.111.018	15	20° bend, broad
03.111.019	10	Curved, narrow
03.111.020	15	Curved, broad

Compression/Distractor Device (01.211.002)

Graphic Case

60.211.015 Compression/Distractor Module Case

Instruments

03.111.021 Compression/Distractor Device

Compression/Distractor Holding Sleeves,
2 ea.

03.111.022 2.0 mm K-wire

03.111.023 2.5 mm K-wire

03.111.024 3.0 mm K-wire

03.111.041 Holding Sleeve Handle

Kirschner Wires, 150 mm, trocar point

292.25 2.5 mm, 1 pkg. of 10

292.30 3.0 mm, 1 pkg. of 10

292.75 2.5 mm, with Thread, 15 mm thread length,
1 pkg. of 10

292.79 2.0 mm, with Thread, 15 mm thread length,
1 pkg. of 10



For detailed cleaning and sterilization instructions, please refer to www.synthes.com/cleaning-sterilization or sterilization instructions, if provided.

Bone Harvesting Set (01.211.003)

Graphic Case

60.211.017 Bone Harvesting Module Case

Instruments

02.111.001 Guide Wire for Trephines, with Stop, 3.2 mm diameter, 1.6 mm tip, 2 ea.
 03.111.013 Silicone Handle, short, quick coupling



Trephine Attachments

	Dia. (mm)		Dia. (mm)
03.111.025	5.5	387.661	10.5
03.111.026	7.0	387.662	12.5
387.659	8.5	387.663	14.0
387.660	9.5		

Extraction Attachments

	Dia. (mm)		Dia. (mm)
03.111.027	5.5	387.671	10.5
03.111.028	7.0	387.672	12.5
387.669	8.5	387.673	14.0
387.670	9.5		

03.111.030 Shaft for Trephine Attachments

03.111.031 Stylet for Bone Harvesting Trephines



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