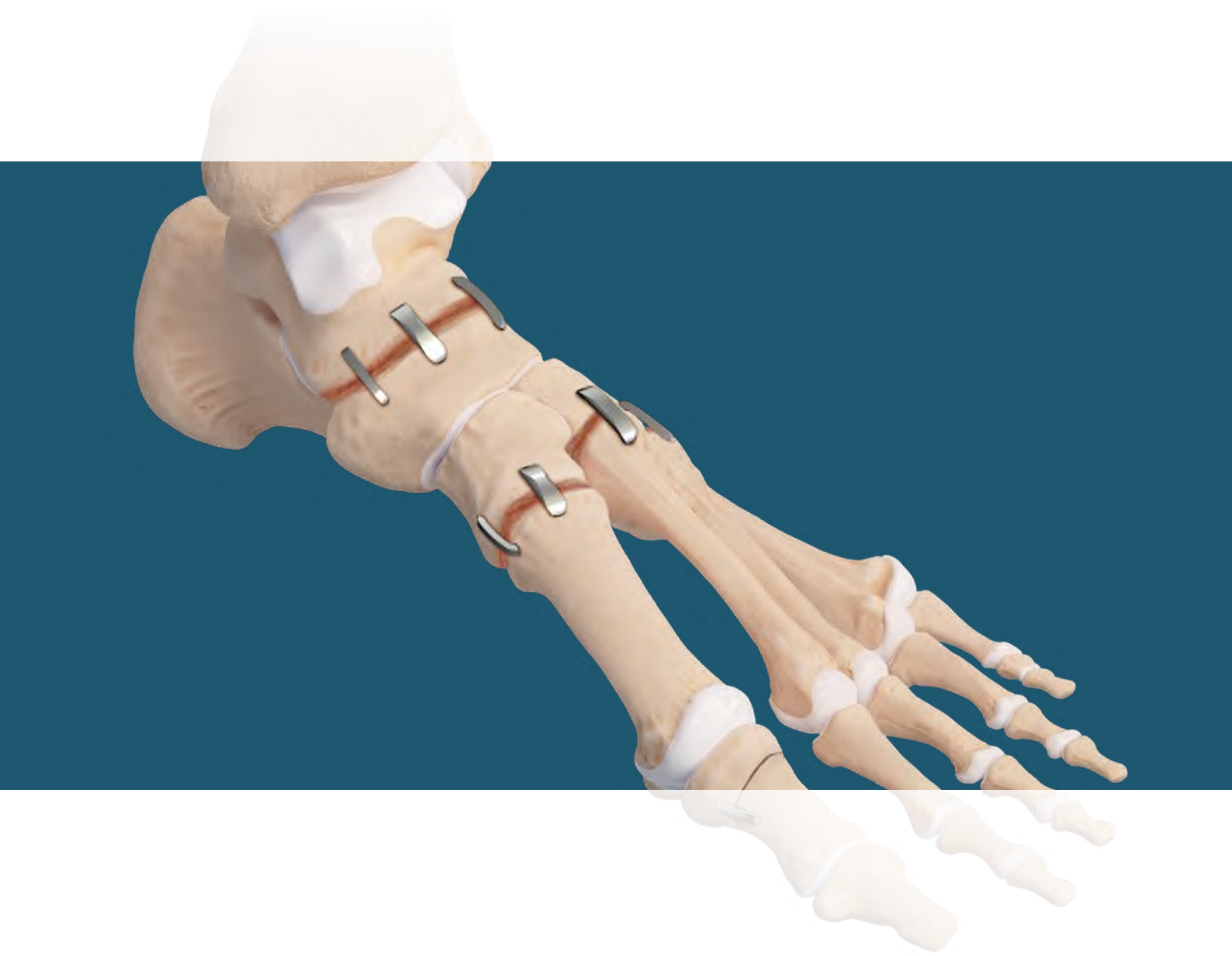
DynaNite® and SuperMX™ Nitinol Staple

Surgical Technique



Arthrex®

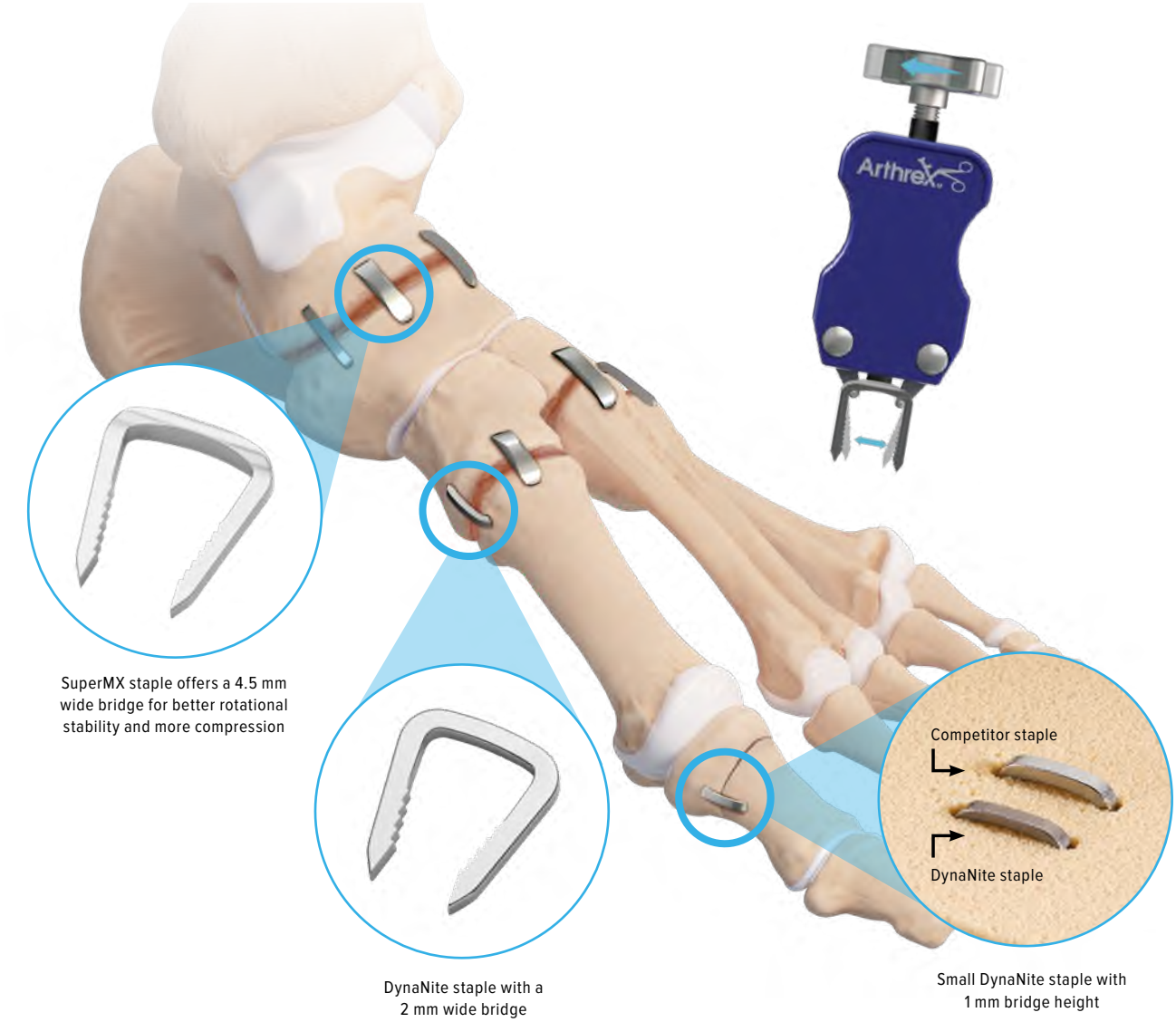
DynaNite® and SuperMX™ Nitinol Staple

The DynaNite and SuperMX staples are made of nitinol, a superelastic metal. When deformed, nitinol always attempts to return to its original shape. The DynaNite staple is manufactured with its legs angled inward; therefore, when implanted with the legs straight, the staple creates sustained, continuous compression across a fusion or an osteotomy.

Arthrex offers 14 sizes of DynaNite staples to accommodate the high-demand applications in the foot and ankle. The small low-profile 1 mm staple bridge height is ideal for forefoot procedures. Medium and large staples offer low-profile compressive solutions for mid- and hindfoot fixation.

The SuperMX staple is the staple of choice when additional rotational stability and compression is needed. It has a wider bridge width than the original DynaNite staples and offers even better rotational stability and compression. The DynaNite SuperMX nitinol staples are available in 6 sizes.

The technique is simple and reproducible, which will keep your staff and procedure as efficient as possible. The implant is available in single-use sterile kits, either as full kit with instruments or as staple on inserter only kit, which can be used with the DynaNite reusable instrument set (AR-8717S).



Product Indications and Staple Sizes

The DynaNite and SuperMX nitinol staples are intended to be used for fixation in a variety of applications, including:

Indication	Smallest Staple	Largest Staple
Akin osteotomy	9 mm × 7 mm	11 mm × 15/12 mm
Moberg osteotomy	9 mm × 7 mm	11 mm × 15/12 mm
Interphalangeal joint fusion	9 mm × 7 mm	15 mm × 12 mm
1st MTP fusion	15 mm × 15 mm	20 mm × 15 mm
Chevron bunionectomy (1st MT)	11 mm × 10 mm	11 mm × 15/12 mm
TMT fusion	15 mm × 12 mm	25 mm × 20 mm
Lisfranc arthrodesis	15 mm × 15 mm	20 mm × 20 mm
Cotton osteotomy	18 mm × 15 mm	18 mm × 18 mm
Navicularcuneiform fusion	15 mm × 15 mm	20 mm × 20 mm
Talonavicular fusion	15 mm × 15 mm	25 mm × 20 mm
Calcaneocuboid fusion	18 mm × 15 mm	25 mm × 20 mm
Evans osteotomy	15 mm × 15 mm	20 mm × 20 mm
Dwyer calcaneal closing wedge	15 mm × 15 mm	20 mm × 20 mm

Staple Sizes and Critical Dimensions:

Staple Category	Bridge x Leg(s)	Bridge Hight	Bridge Width	Drill Diameter
Small	9 mm x 7 mm	1 mm	1.5 mm	1.65 mm
	9 mm x 10 mm	1 mm	1.5 mm	1.65 mm
	11 mm x 10 mm	1 mm	1.5 mm	1.65 mm
	11 mm x 15 mm x 12 mm	1 mm	1.5 mm	1.65 mm
Medium	13 mm x 10 mm	1.5 mm	1.5 mm	2.0 mm
	13 mm x 15 mm x 12 mm	1.5 mm	1.5 mm	2.0 mm
	15 mm x 12 mm	1.5 mm	1.5 mm	2.0 mm
Large	15 mm x 15 mm	1.95 mm	1.95 mm	2.65 mm
	18 mm x 15 mm	1.95 mm	1.95 mm	2.65 mm
	18 mm x 18 mm	1.95 mm	1.95 mm	2.65 mm
	18 mm x 18 mm x 15 mm	1.95 mm	1.95 mm	2.65 mm
	20 mm x 15 mm	1.95 mm	1.95 mm	2.65 mm
	20 mm x 20 mm	1.95 mm	1.95 mm	2.65 mm
	25 mm x 20 mm	1.95 mm	1.95 mm	2.65 mm
SuperMX	15 mm x 15 mm	1.8 mm	4.5 mm	2.65 mm
	18 mm x 15 mm	1.8 mm	4.5 mm	2.65 mm
	18 mm x 18 mm	1.8 mm	4.5 mm	2.65 mm
	20 mm x 15 mm	1.8 mm	4.5 mm	2.65 mm
	20 mm x 20 mm	1.8 mm	4.5 mm	2.65 mm
	25 mm x 20 mm	1.8 mm	4.5 mm	2.65 mm

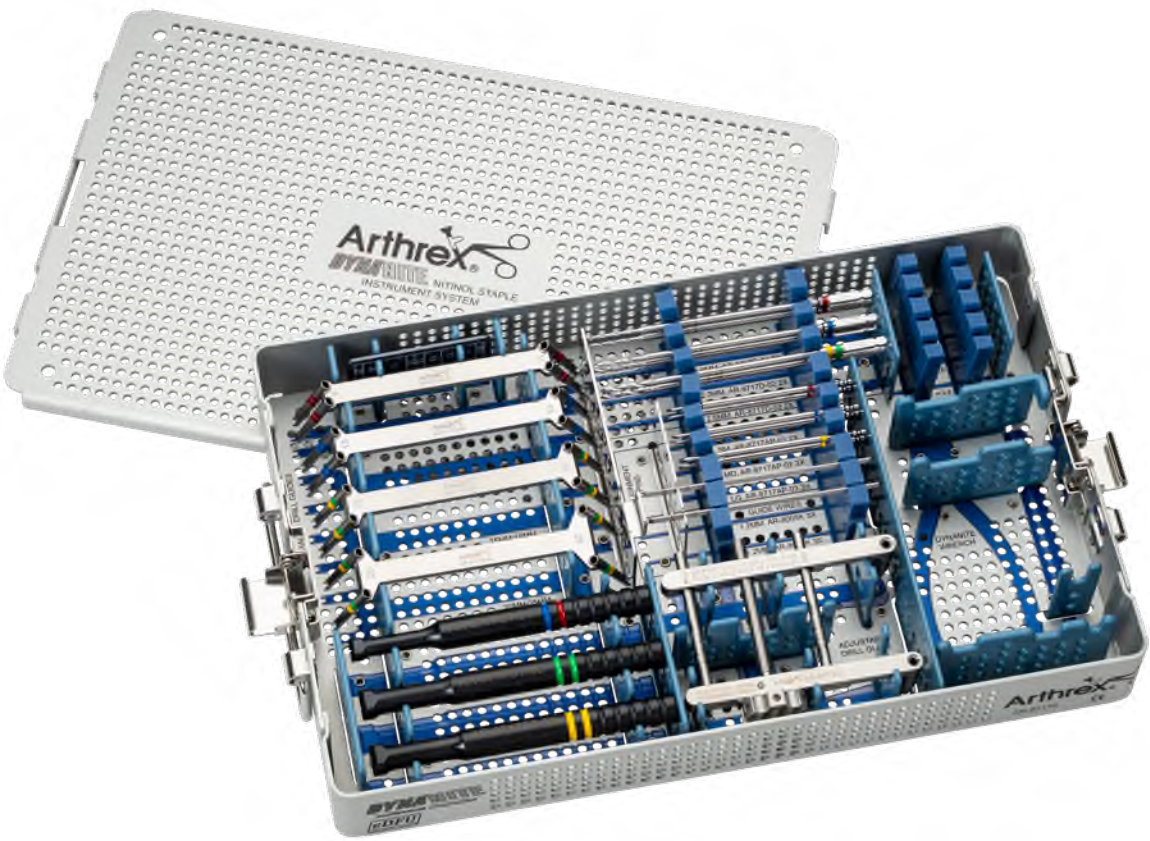
Disposable Kits

The DynaNite and SuperMX nitinol staples are available in single-use sterile kits. They either come in a full kit with the staple on inserter and disposable instruments or as a staple on inserter only kit without instruments.

Full Kit With Staple on Inserter and Disposable Instruments

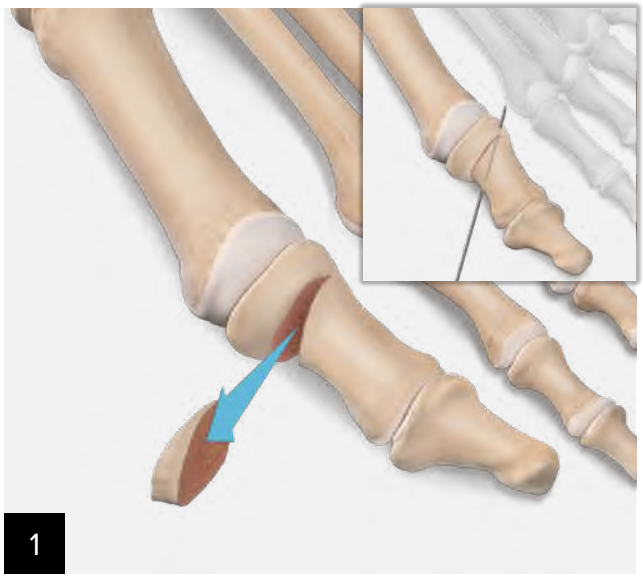
Reusable Instrument Set AR-8717S

The reusable instrument set AR-8717S for DynaNite and SuperMX staples includes all necessary drill guides, tamps, drill bits, and alignment pins for the DynaNite staples. The instruments are color coded for improved usability. In addition, an adjustable drill guide that can also function as a compressor/distractor, can be included. This set is intended to be used in combination with the staple on inserter kits.

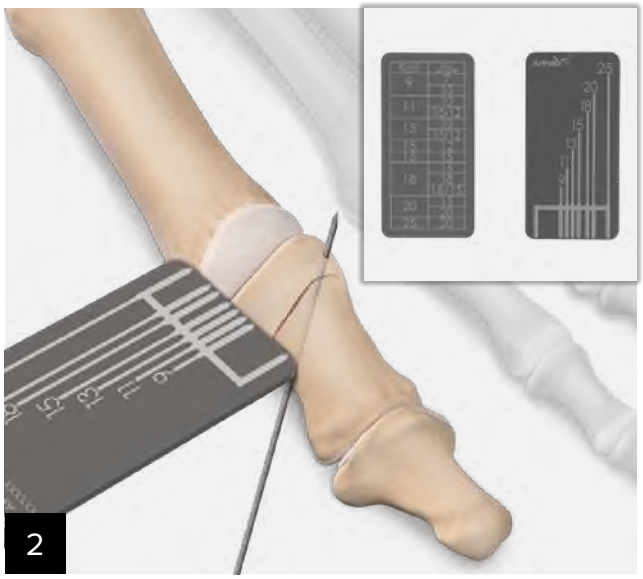


Reusable Instruments Reference Chart:

	Small Staple	Medium Staple	Large Staple	SuperMX™ Staple
Tamp	AR-**8717ST-01**	AR-**8717ST-01**	AR-**8717ST-02**	AR-**8717ST-03**
Drill, With Laser Mark	AR-**8717D-01-RU**	AR-**8717D-02-RU**	AR-**8717D-03-RU**	AR-**8717D-03-RU**
Alignment Pin	AR-**8717AP-01-RU**	AR-**8717AP-02-RU**	AR-**8717AP-03-RU**	AR-**8717AP-03-RU**
Parallel Drill Guide	AR-**8717G-01**	AR-**8717G-02**	AR-**8717G-03** AR-**8717G-04**	AR-**8717G-03** AR-**8717G-04**
DynaNite® Nitinol Staple	AR-**8717-0907** AR-**8717-0910** AR-**8717-1110** AR-**8717-111512**	AR-**8718-1310** AR-**8718-131512** AR-**8718-1512**	AR-**8719-1515** AR-**8719-1815** AR-**8719-1818** AR-**8719-181815** AR-**8719-2015** AR-**8719-2020** AR-**8719-2520**	AR-**8719MX-1515** AR-**8719MX-1815** AR-**8719MX-1818** AR-**8719MX-2015** AR-**8719MX-2020** AR-**8719MX-2520**

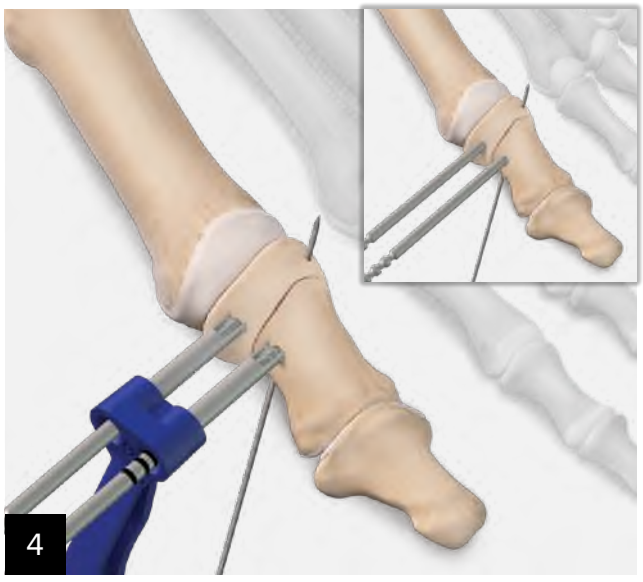


Expose the surgical site and create a closing wedge osteotomy while preserving the lateral cortex hinge. The stability of the osteotomy is enhanced by leaving the lateral cortex intact.
Option: Insert a guide wire obliquely to reduce the osteotomy.



Use the DynaNite staple sizing guide to determine the correct DynaNite staple size. Open the corresponding DynaNite staple kit and remove the DynaNite delivery device (with preloaded DynaNite staple) from the sterilized kit. The DynaNite staple legs are in tension against the delivery device, but are not yet fully opened to parallel.

Center the DynaNite drill guide across the osteotomy site. Use the DynaNite drill bit to drill the first hole in the proximal portion of the osteotomy site.
Note: The drill bit is laser-marked to help drill to the correct depth.

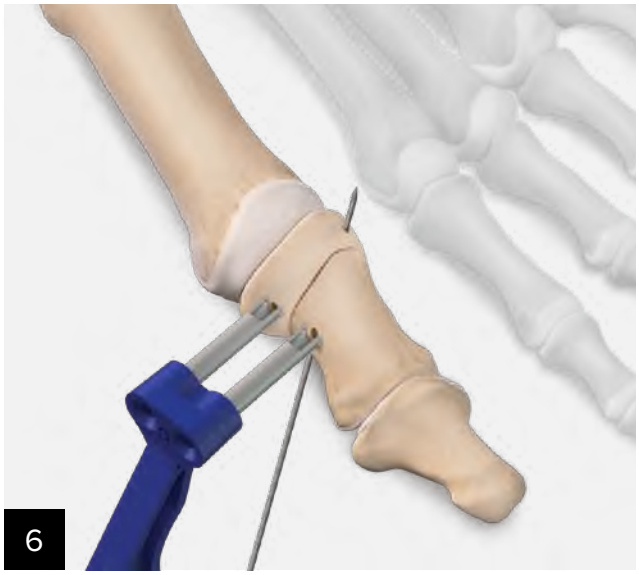


Insert a DynaNite alignment pin through the drill guide into the first drilled hole. Drill the second hole on the distal portion of the fusion site using the drill bit and drill guide. If desired, insert the second alignment pin. Remove the drill guide, leaving the alignment pin(s) in place to help identify drill hole locations.

5

Turn the knob on the DynaNite delivery device clockwise until the staple legs are open to a width equal to the predrilled holes.

Note: The staple legs should be in a parallel, or near parallel, position prior to insertion to facilitate compression of the osteotomy once the staple is inserted.



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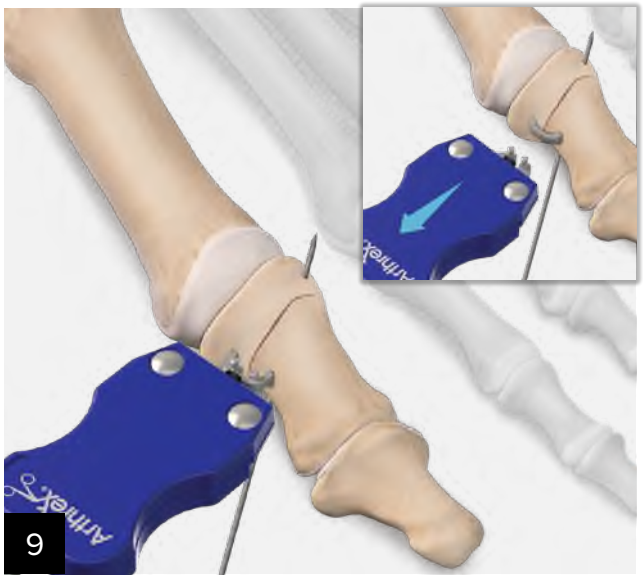
Remove the alignment pin(s) from the drilled holes. Hold the drill guide against the cortical surface to maintain the location of the drill holes.

7

Use the windows in the drill guide to help position the tips of the staple legs into the drilled holes. Once the surgeon is satisfied with the position of the staple, the drill guide can be removed.

8

Using the delivery device, advance the staple legs into the drill holes until the device is seated against the bone. A mallet can be used if necessary.

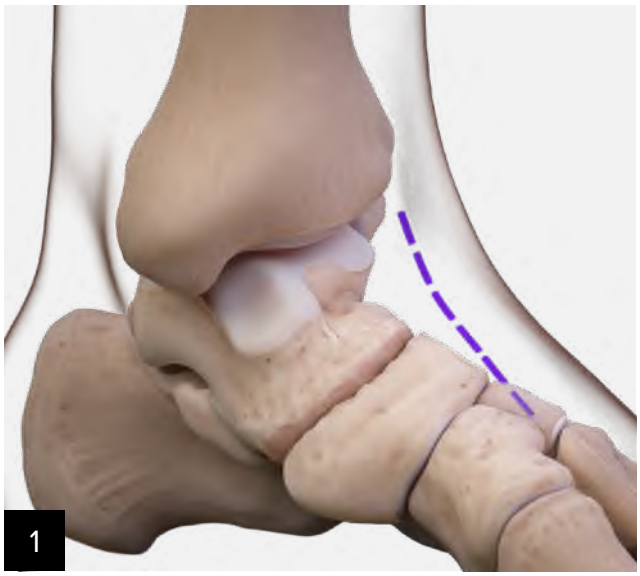


Once the DynaNite staple is inserted and seated against the bone, turn the delivery device knob counter-clockwise until the staple is no longer under tension with the delivery device. Slide the delivery device away from the staple.

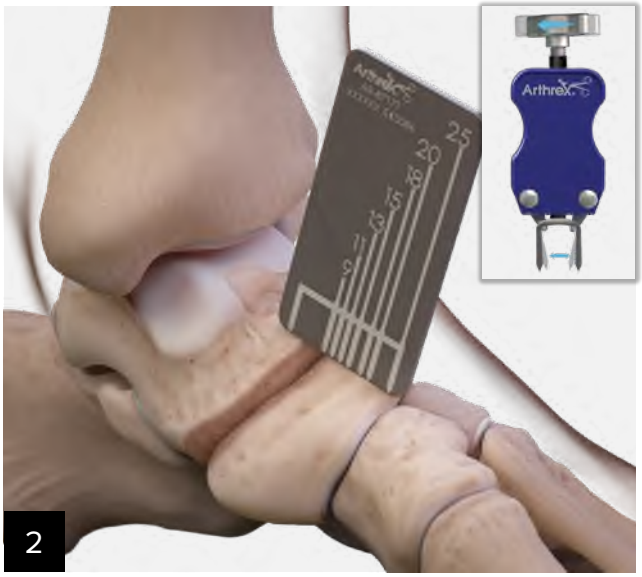
Remove the guide wire if one has been used in the procedure.

Use the DynaNite tamp to fully seat the staple against the cortical surface.

The low-profile DynaNite staple is seated flush to the cortical surface.

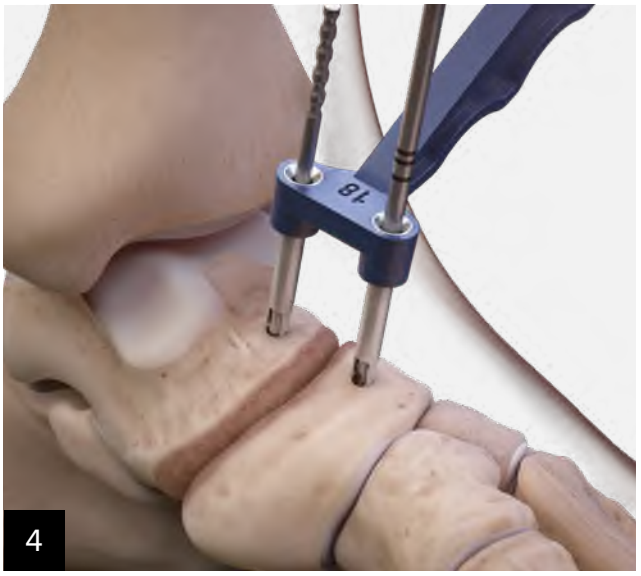


Create a dorsal incision to expose the talonavicular joint and prepare the joint surface for fusion.
Option: Insert an external guide wire to fix the fusion site temporarily.



Use the DynaNite staple sizing guide to determine the correct DynaNite SuperMX staple size. Open the corresponding DynaNite SuperMX staple kit and remove the DynaNite delivery device (with preloaded DynaNite SuperMX staple) from the sterilized kit. Turn the inserter handle clockwise to open the SuperMX staple leg from an inward position into a parallel, or near parallel, position.

Center the SuperMX drill guide across the fusion site. Use the 2.6 mm SuperMX drill bit to drill the first hole in the proximal portion of the fusion site.
Note: The drill bit is laser-marked to help drill to the correct depth.



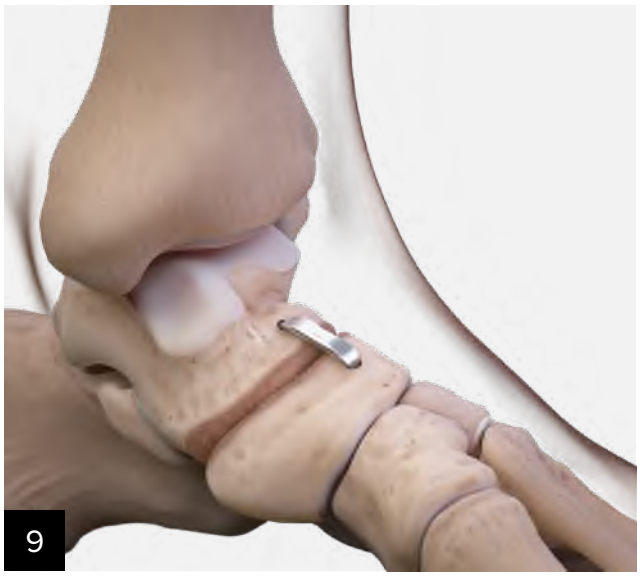
Insert a DynaNite alignment pin through the drill guide into the first drilled hole. Drill the second hole on the distal portion of the fusion site using the drill bit and drill guide.

Remove drill and alignment pin from the drilled holes. Hold the drill guide against the cortical surface to maintain the location of the drill holes. Use the windows in the drill guide to help position the tips of the staple legs into the drilled holes.

Using the delivery device, advance the staple legs into the drill holes until the device is seated against the bone. A mallet is used to insert the staple down to the bone. Remove the drill guide.

Once the SuperMX staple is inserted and seated against the bone, turn the delivery device knob counterclockwise to release the tension between the staple and the inserter. Slide the delivery device away from the staple.

Use the SuperMX tamp to fully seat the staple against the cortical surface.



The SuperMX staple is seated flush to the cortical surface.

An additional SuperMX staple or DynaNite staple can be inserted in the same way as described above.

Ordering Information

Full Kit (Staple on Inserter With Instruments)

Product Description	Item Number
DynaNite® implant system, 9 mm × 7 mm	AR-**8717DS-0907**
DynaNite® implant system, 9 mm × 10 mm	AR-**8717DS-0910**
DynaNite® implant system, 11 mm × 10 mm	AR-**8717DS-1110**
DynaNite® implant system, 11 mm × 15 mm / 12 mm	AR-**8717DS-111512**
DynaNite® implant system, 13 mm × 10 mm	AR-**8718DS-1310**
DynaNite® implant system, 13 mm × 15 mm / 12 mm	AR-**8718DS-131512**
DynaNite® implant system, 15 mm × 12 mm	AR-**8718DS-1512**
DynaNite® implant system, 15 mm × 15 mm	AR-**8719DS-1515**
DynaNite® implant system, 18 mm × 15 mm	AR-**8719DS-1815**
DynaNite® implant system, 18 mm × 18 mm	AR-**8719DS-1818**
DynaNite® implant system, 18 mm × 18 mm / 15 mm	AR-**8719DS-181815**
DynaNite® implant system, 20 mm × 15 mm	AR-**8719DS-2015**
DynaNite® implant system, 20 mm × 20 mm	AR-**8719DS-2020**
DynaNite® implant system, 25 mm × 20 mm	AR-**8719DS-2520**
SuperMX™ implant system, 15 mm × 15 mm	AR-**8719MXDS-1515**
SuperMX™ implant system, 18 mm × 15 mm	AR-**8719MXDS-1815**
SuperMX™ implant system, 18 mm × 18 mm	AR-**8719MXDS-1818**
SuperMX™ implant system, 20 mm × 15 mm	AR-**8719MXDS-2015**
SuperMX™ implant system, 20 mm × 20 mm	AR-**8719MXDS-2020**
SuperMX™ implant system, 25 mm × 20 mm	AR-**8719MXDS-2520**

DynaNite® Reusable Instruments Set (AR-8717S)

Product Description	Item Number
Drill, with laser marks, 1.6 mm	AR-**8717D-01-RU**
Drill, with laser marks, 2 mm	AR-**8717D-02-RU**
Drill, with laser marks, 2.6 mm	AR-**8717D-03-RU**
Parallel drill guide, 9 mm / 11 mm	AR-**8717G-01**
Parallel drill guide, 13 mm / 15 mm	AR-**8717G-02**
Parallel drill guide, 15 mm / 18 mm	AR-**8717G-03**
Parallel drill guide, 20 mm / 25 mm	AR-**8717G-04**
Adjustable drill guide	AR-**8717AG**
Alignment pin, small	AR-**8717AP-01-RU**
Alignment pin, medium	AR-**8717AP-02-RU**
Alignment pin, large	AR-**8717AP-03-RU**
Tamp, small / medium	AR-**8717ST-01**
Tamp, large	AR-**8717ST-02**
DynaNite® staple sizing guide	AR-**8717T**
DynaNite® staple instrument case	AR-**8717C**
Sizing guide	AR-**8717T**

Staple on Inserter Only Kits

Product Description	Item Number
DynaNite® nitinol staple, 9 mm × 7 mm	AR-**8717-0907**
DynaNite® nitinol staple, 9 mm × 10 mm	AR-**8717-0910**
DynaNite® nitinol staple, 11 mm × 10 mm	AR-**8717-1110**
DynaNite® nitinol staple, 11 mm × 15 mm / 12 mm	AR-**8717-111512**
DynaNite® nitinol staple, 13 mm × 10 mm	AR-**8718-1310**
DynaNite® nitinol staple, 13 mm × 15 mm / 12 mm	AR-**8718-131512**
DynaNite® nitinol staple, 15 mm × 12 mm	AR-**8718-1512**
DynaNite® nitinol staple, 15 mm × 15 mm	AR-**8719-1515**
DynaNite® nitinol staple, 18 mm × 15 mm	AR-**8719-1815**
DynaNite® nitinol staple, 18 mm × 18 mm	AR-**8719-1818**
DynaNite® nitinol staple, 18 mm × 18 mm / 15 mm	AR-**8719-181815**
DynaNite® nitinol staple, 20 mm × 15 mm	AR-**8719-2015**
DynaNite® nitinol staple, 20 mm × 20 mm	AR-**8719-2020**
DynaNite® nitinol staple, 25 mm × 20 mm	AR-**8719-2520**
SuperMX™ nitinol staple, 15 mm × 15 mm	AR-**8719MX-1515**
SuperMX™ nitinol staple, 18 mm × 15 mm	AR-**8719MX-1815**
SuperMX™ nitinol staple, 18 mm × 18 mm	AR-**8719MX-1818**
SuperMX™ nitinol staple, 20 mm × 15 mm	AR-**8719MX-2015**
SuperMX™ nitinol staple, 20 mm × 20 mm	AR-**8719MX-2020**
SuperMX™ nitinol staple, 25 mm × 20 mm	AR-**8719MX-2520**

Disposables

Product Description	Item Number
Guide wire, 1.2 mm × 100 mm	AR-**8005K**
Guide wire, 1.2 mm × 100 mm, sterile	AR-**8005KS**

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