

Part of the DePuy Synthes Cannulated Screw System

2.4 mm Cannulated Screws

Surgical Technique

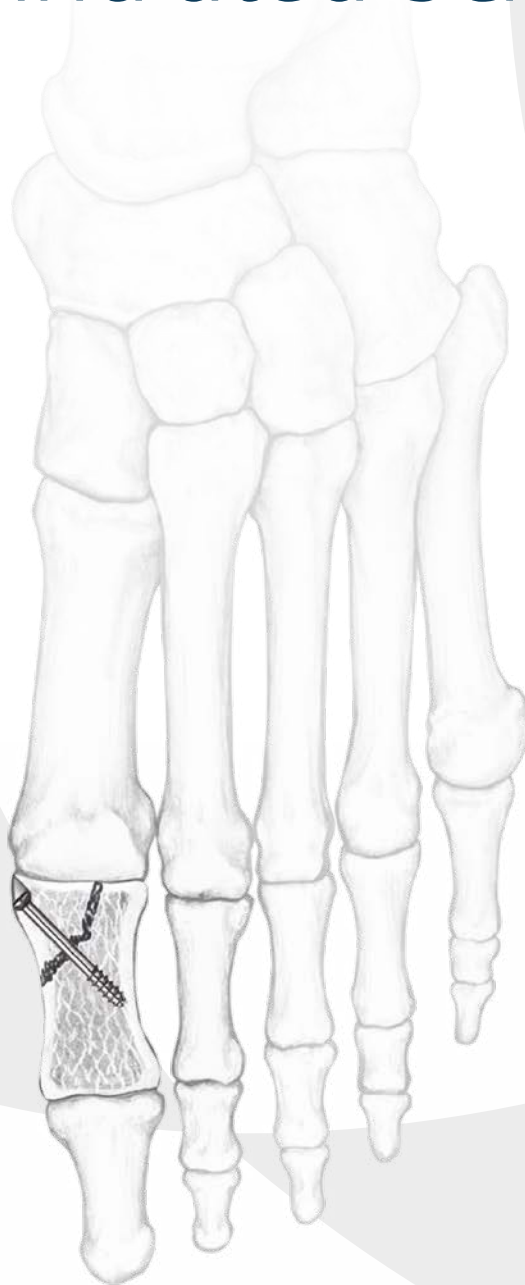


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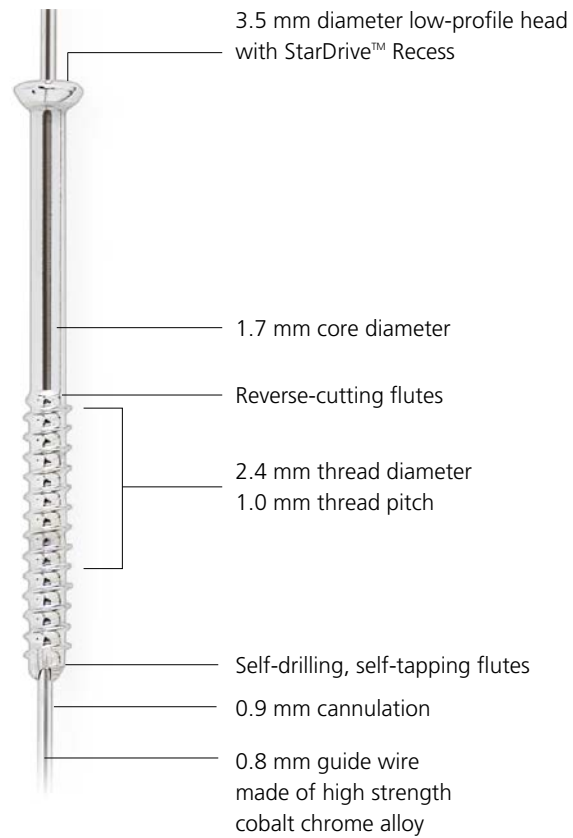
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MR Information
The 2.4 mm Cannulated Screw System has not been evaluated for safety and compatibility in the MR environment. It has not been tested for heating, migration or image artifact in the MR environment. The safety of the 2.4 mm Cannulated Screw System in the MR environment is unknown. Scanning a patient who has this device may result in patient injury.

 Image intensifier control

2.4 mm Cannulated Screws



StarDrive Recess

- T8 StarDrive Recess improves torque transmission and allows easy removal
- Mates with self-retaining screwdriver



Thread lengths

- Short thread (1/4 the shaft length)
- Long thread (1/2 the shaft length)



Material

- Implant quality 316L stainless steel

AO Principles

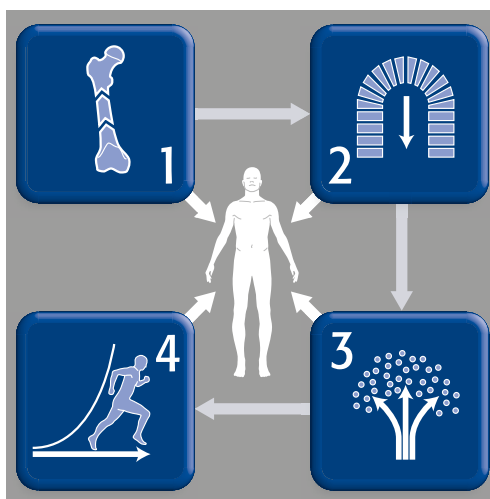
In 1958, the AO formulated four basic principles, which have become the guidelines for internal fixation.^{1,2}

Anatomic reduction

Fracture reduction and fixation to restore anatomical relationships.

Early, active mobilization

Early and safe mobilization and rehabilitation of the injured part and the patient as a whole.



Stable fixation

Fracture fixation providing absolute or relative stability, as required by the patient, the injury, and the personality of the fracture.

Preservation of blood supply

Preservation of the blood supply to soft tissues and bone by gentle reduction techniques and careful handling.

1. Müller ME, Allgöwer M, Schneider R, Willenegger H. *Manual of Internal Fixation*. 3rd ed. Berlin, Heidelberg, New York: Springer-Verlag; 1991.
2. Rüedi TP, RE Buckley, CG Moran. *AO Principles of Fracture Management*. 2nd ed. Stuttgart New York: Thieme; 2007.

Indications

- Intra-articular fractures of the carpals, metacarpals, tarsals and metatarsals
- Fixation of small bone fragments
- Bunionectomies and osteotomies
- Arthrodeses of small joints

Warning: This device is not approved for screw attachment or fixation to the posterior elements (pedicles) of the cervical, thoracic or lumbar spine.



Radial styloid fracture



Scaphoid



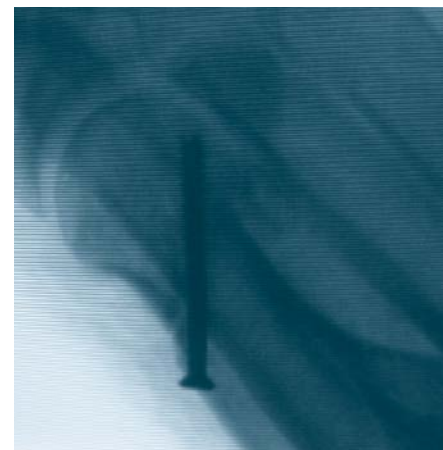
PIP fusion



Scaphoid



Carpal fusion



Compression screw in proximal phalanx

Surgical Technique Information

Cleaning cannulations

Instruments

319.289	1.0 mm Cleaning Brush
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319.293	0.8 mm Cleaning Stylet
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Note: Cleaning the cannulation in each instrument is imperative for proper function and component life.

Instruments should be cleared intraoperatively with the cleaning stylet to prevent accumulation of debris in the cannulation and potential binding of the instruments about the guide wire. Instruments should be cleaned postoperatively with both the stylet and 1.0 mm cleaning brush.

Screw removal

The cannulated StarDrive Screwdriver shaft is significantly stronger than the screw, so a solid driver may not be necessary. Insertion of a wire into the screw cannulation can assist in determining the screw axis to aid in proper screwdriver alignment.

Scaphoid

1

Insert guide wire into scaphoid

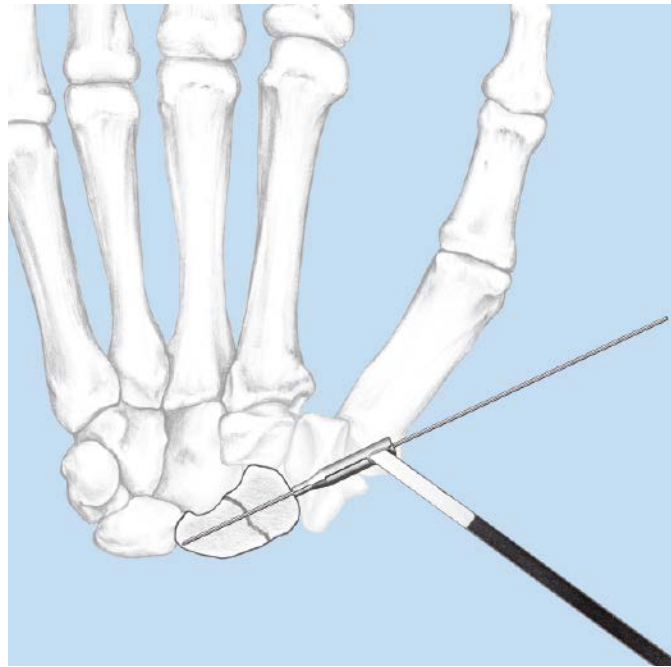
Instruments

292.619 0.8 mm Guide Wire

312.145 1.7 mm/0.8 mm Double Drill Sleeve

- 1 Insert a 0.8 mm guide wire through the 1.7 mm/0.8 mm double drill sleeve to the appropriate depth, under image intensification.
- 2 Remove the drill sleeve and check the position of the guide wire and reduction using image intensification.

Note: To prevent bending of the wire, repeatedly grab and drive the wire in short 15 mm increments. Insertion may be easier using a pen-style drive unit rather than a pistol-grip drive unit.



2

Predrill for screw (optional)

Instruments

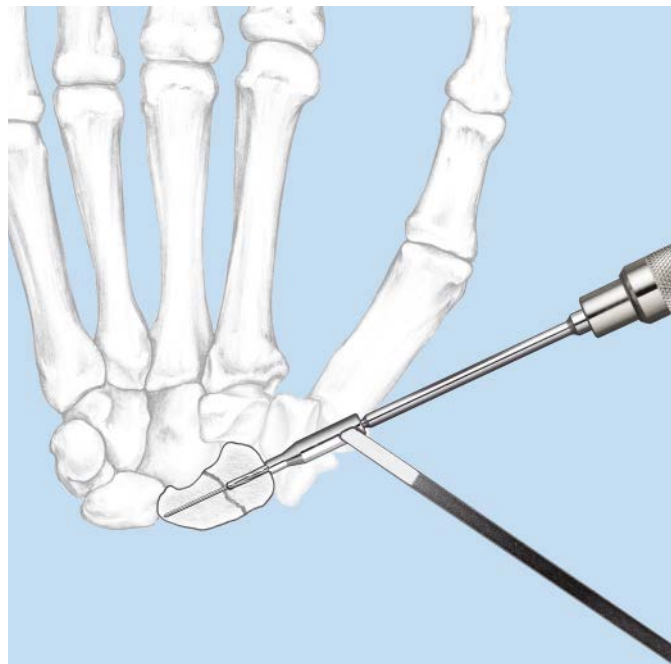
310.215 1.7 mm Cannulated Drill Bit

312.145 1.7 mm/0.8 mm Double Drill Sleeve

Predrilling the near cortex is recommended in dense cortical bone, as the axial force necessary for inserting self-drilling screws could temporarily distract the fragments at the fracture site.

- 1 Use the 1.7 mm cannulated drill bit with the 1.7 mm/0.8 mm double drill sleeve to drill the near cortex only. Use image intensification if necessary.

In some cases, especially in cancellous bone, the self-drilling flutes of the 2.4 mm cannulated screw make predrilling unnecessary.



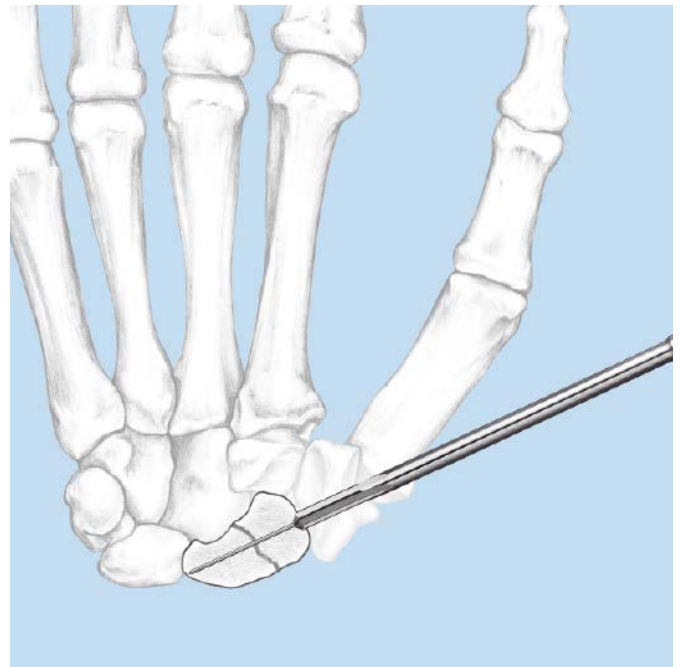
3 Countersink

Instruments

310.803	Cannulated Countersink
311.43	Handle, with quick coupling

In areas where soft tissue coverage is minimal or in thick cortical bone, use the cannulated countersink with the handle to create a recess for the screwhead.

Countersinking also facilitates screw insertion if predrilling is not performed.



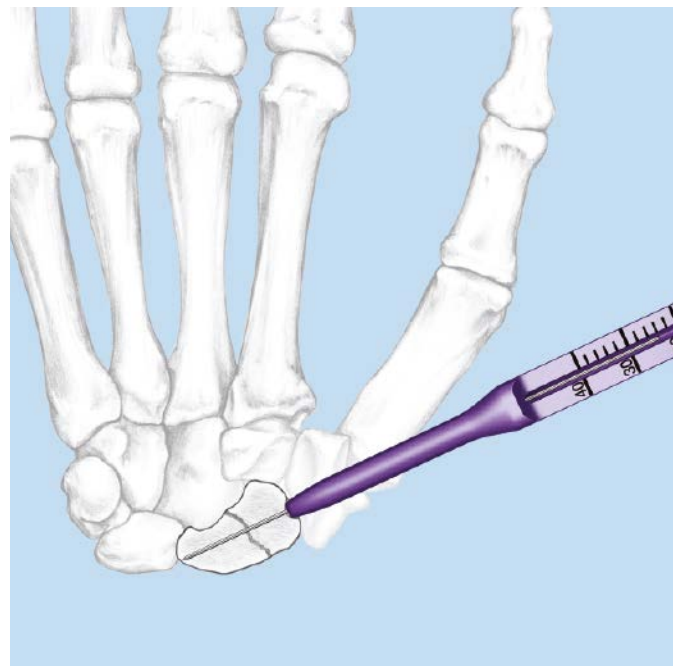
4 Measure for screw length

Instrument

319.703	Measuring Device
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Slide the tapered end of the measuring device over the guide wire and down to the bone.

The reading on the measuring device indicates the appropriate screw length to place the screw tip at the end of the guide wire. Subtract appropriately for any anticipated fracture reduction or interfragmentary compression resulting from screw insertion.



5

Insert screw

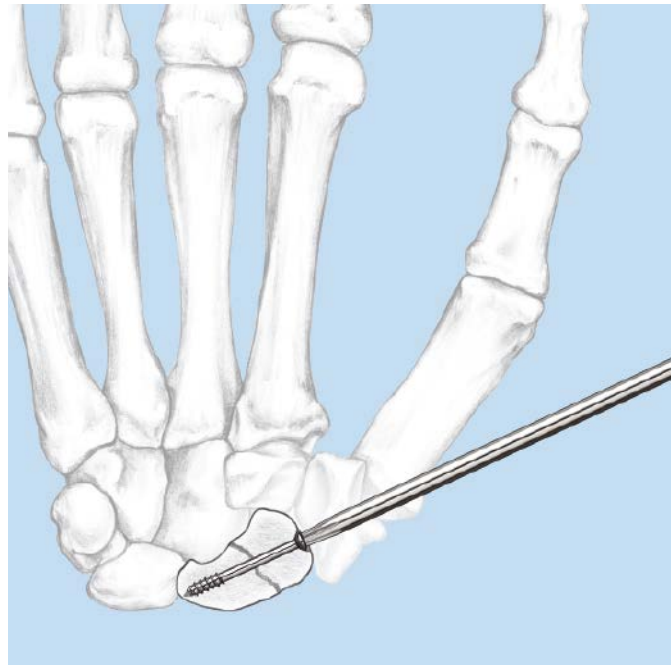
Instruments

311.43	Handle, with quick coupling
314.466	Cannulated StarDrive Screwdriver Shaft, T8

Use the self-retaining cannulated T8 StarDrive Screwdriver Shaft with the handle to insert the screw. After the screw is seated, remove and discard the guide wire.

Notes:

- Avoid removal and reinsertion of the screw in the same hole. The self-drilling feature of the screw can damage bone threads during reinsertion.
 - Inserting the screw under power is not recommended.
-



Compression Screw in Proximal Phalanx

1

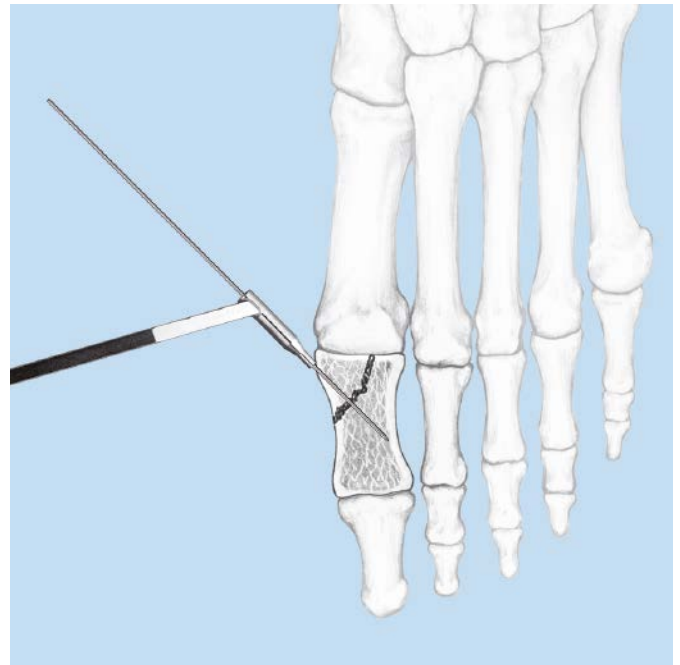
Insert guide wire into bone

Instruments

292.619	0.8 mm Guide Wire
312.145	1.7 mm/0.8 mm Double Drill Sleeve

- 1 Insert a 0.8 mm guide wire through the 1.7 mm/0.8 mm double drill sleeve to the appropriate depth. Remove the drill sleeve and check the position of the guide wire and reduction using image intensification.

Note: To prevent bending of the wire, repeatedly grab and drive the wire in short 15 mm increments. Insertion may be easier using a pen-style drive unit rather than a pistol-grip drive unit.



2

Predrill for screw (optional)

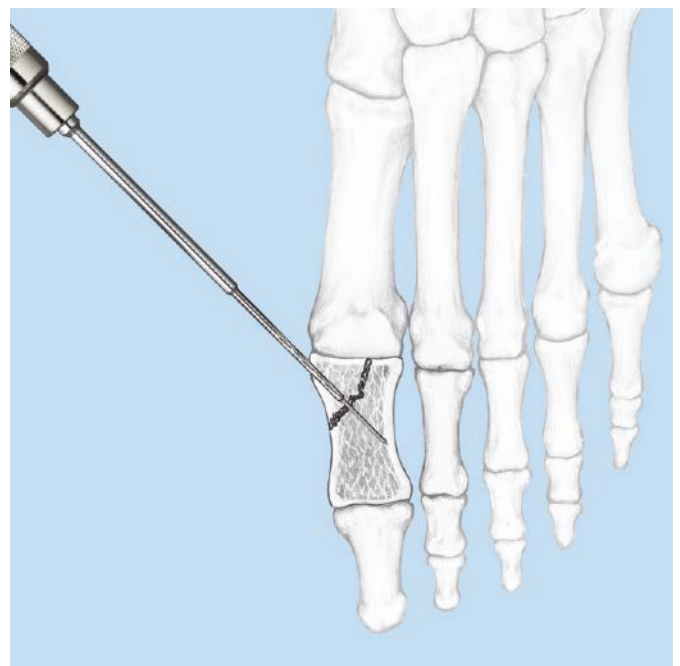
Instruments

310.215	1.7 mm Cannulated Drill Bit
312.145	1.7 mm/0.8 mm Double Drill Sleeve

Predrilling the near cortex is recommended in dense cortical bone, as the axial force necessary for inserting self-drilling screws could temporarily distract the fragments at the fracture site.

- 1 Use the 1.7 mm cannulated drill bit with the 1.7 mm/0.8 mm double drill sleeve to drill the near cortex only. Use image intensification if necessary.

In some cases, especially in cancellous bone, the self-drilling flutes of the 2.4 mm cannulated screw make predrilling unnecessary.



3

Countersink

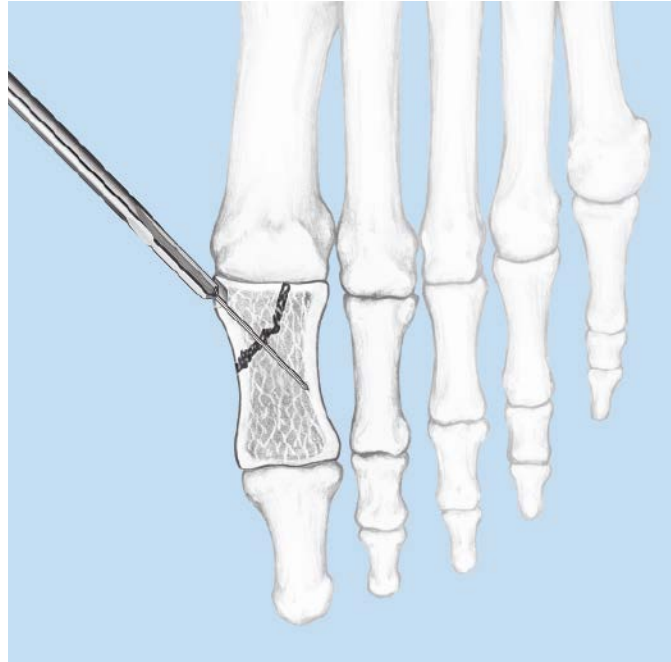
Instruments

310.803	Cannulated Countersink
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311.43	Handle, with quick coupling
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In areas where soft tissue coverage is minimal or in thick cortical bone, use the cannulated countersink with the handle to create a recess for the screwhead.

Countersinking also facilitates screw insertion if predrilling is not performed.



4

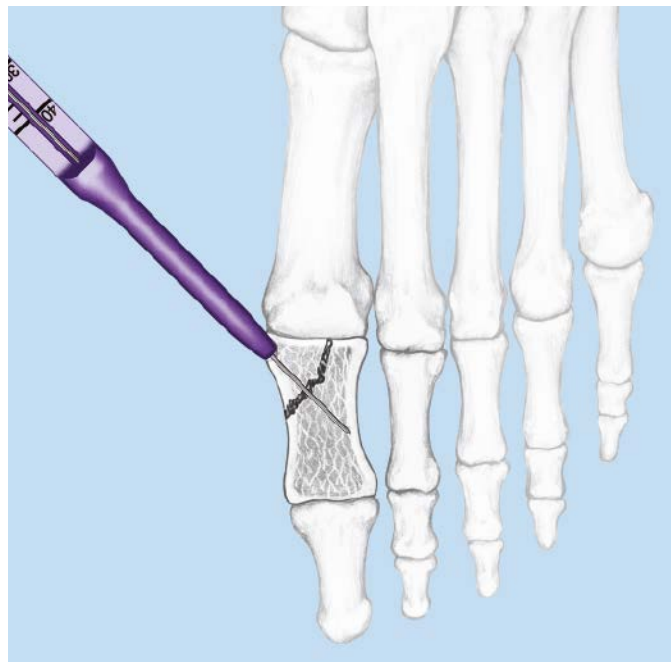
Measure for screw length

Instrument

319.703	Measuring Device
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Slide the tapered end of the measuring device over the guide wire and down to the bone.

The reading on the measuring device indicates the appropriate screw length to place the screw tip at the end of the guide wire. Subtract appropriately for any anticipated reduction or interfragmentary compression resulting from screw insertion.



5

Insert screws

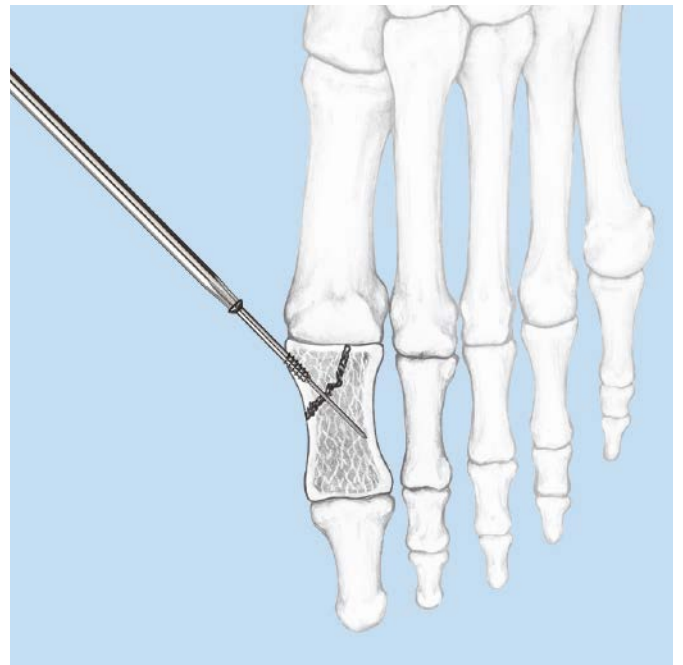
Instruments

311.43	Handle, with quick coupling
314.466	Cannulated StarDrive Screwdriver Shaft, T8

Use the self-retaining cannulated T8 StarDrive Screwdriver Shaft with the handle to insert the screw. After the screw is seated, remove and discard the guide wire.

Notes:

- A second screw or a Kirschner wire may be inserted to provide rotational stability.
 - Avoid removal and reinsertion of the screw in the same hole. The self-drilling feature of the screw can damage bone threads during reinsertion.
 - Inserting the screws under power is not recommended.
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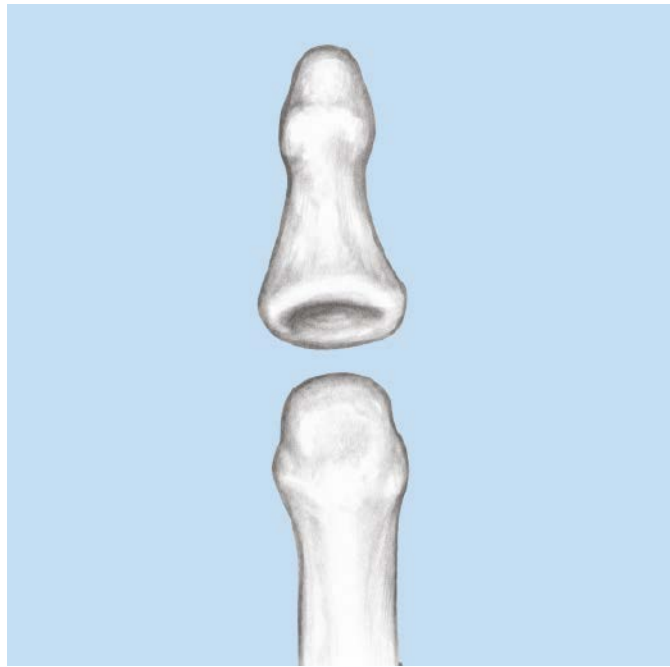


Arthrodesis

1

Prepare bone surfaces

Prepare bone surfaces for the arthrodesis by removing the cartilage and subchondral bone as necessary.



2

Insert guide wire into bone

Instruments

292.619	0.8 mm Guide Wire
312.145	1.7 mm/0.8 mm Double Drill Sleeve

- 1 Insert a 0.8 mm guide wire through the 1.7 mm/0.8 mm double drill sleeve to the appropriate depth, under image intensification.

Remove the drill sleeve.

Note: To prevent bending of the wire, repeatedly grab and drive the wire in short 15 mm increments. Insertion may be easier using a pen-style drive unit rather than a pistol-grip drive unit.



3

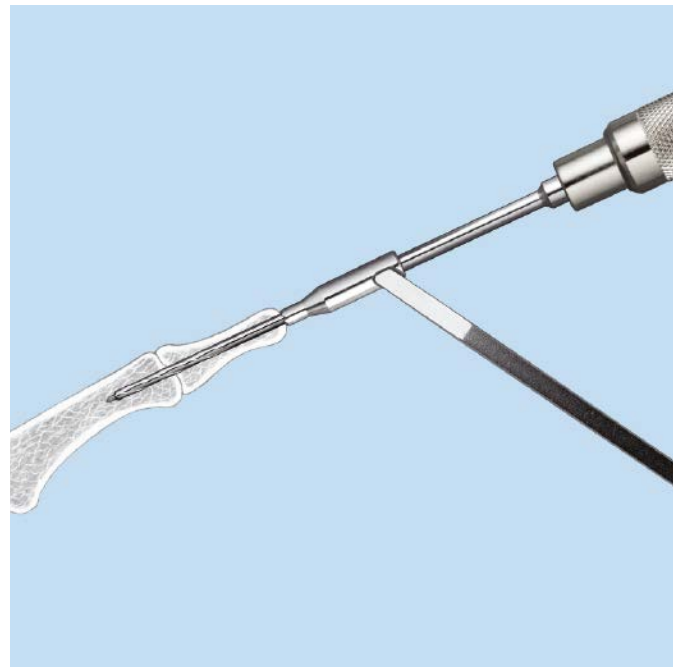
Drill

Instruments

310.215	1.7 mm Cannulated Drill Bit
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312.145	1.7 mm/0.8 mm Double Drill Sleeve
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Drill completely through the near bone and the near cortex of the far bone using the 1.7 mm cannulated drill bit through the 1.7 mm/0.8 mm double drill sleeve.



4

Countersink

Instruments

310.803	Cannulated Countersink
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311.43	Handle, with quick coupling
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Use the cannulated countersink and handle to create a recess for the screwhead.



5

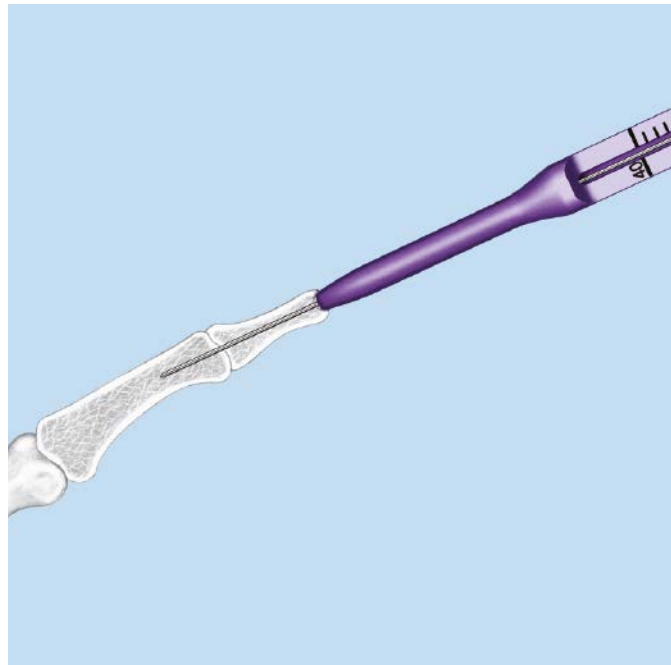
Measure for screw length

Instrument

319.703	Measuring Device
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Slide the tapered end of the measuring device over the guide wire and down to the bone.

The reading on the measuring device indicates the appropriate screw length to place the screw tip at the end of the guide wire.



6

Insert screw

Instruments

311.43	Handle, with quick coupling
314.466	Cannulated StarDrive Screwdriver Shaft, T8

Use the self-retaining cannulated T8 StarDrive Screwdriver Shaft with the handle to insert the screw. After the screw is seated, remove and discard the guide wire.

Note: Check rotation of the distal phalanx while tightening the screw.



Implants

2.4 mm Cannulated Screws, short thread

- 17 mm–20 mm lengths in 1 mm increments
- 22 mm–30 mm lengths in 2 mm increments
- Thread length \approx 1/4 screw length
- 316L stainless steel



2.4 mm Cannulated Screws, long thread

- 10 mm–20 mm lengths in 1 mm increments
- 22 mm–30 mm lengths in 2 mm increments
- Thread length \approx 1/2 screw length
- 316L stainless steel



Instruments

292.619 0.8 mm Guide Wire, 100 mm



310.215 1.7 mm Cannulated Drill Bit, quick coupling, 100 mm



310.803 Cannulated Countersink, for 2.4 mm Cannulated Screws



311.43 Handle, with quick coupling



312.145 1.7 mm/0.8 mm Double Drill Sleeve



314.466 Cannulated StarDrive Screwdriver Shaft, T8



314.467 StarDrive Screwdriver Shaft, T8



319.289 1.0 mm Cleaning Brush



319.293 0.8 mm Cleaning Stylet



319.703 Measuring Device



347.985 Screw and Plate Forceps



2.4 mm Cannulated Screw Instrument and Implant Set (105.175)

Graphic Case

305.108 2.4 mm Cannulated Screw Set Module Case

Instruments

292.619 0.8 mm Guide Wire, 100 mm (1 pkg. of 10)
310.215 1.7 mm Cannulated Drill Bit, quick coupling,
100 mm, 2 ea.
310.803 Cannulated Countersink, for 2.4 mm
Cannulated Screws
311.43 Handle, with quick coupling
312.145 1.7 mm/0.8 mm Double Drill Sleeve
314.466 Cannulated StarDrive Screwdriver Shaft, T8,
2 ea.
314.467 StarDrive Screwdriver Shaft, T8
319.289 1.0 mm Cleaning Brush
319.293 0.8 mm Cleaning Stylet
319.703 Measuring Device, for use with 2.4 mm
Cannulated Screws
347.985 Screw and Plate Forceps



Note: For additional information, please refer to the package insert or www.e-ifu.com.

For detailed cleaning and sterilization instructions, please refer to www.depuy-synthes.com/hcp/cleaning-sterilization or sterilization instructions, if provided in the instructions for use.

Implants

2.4 mm Cannulated Screws, long thread
(thread length \approx 1/2 screw length)

	Length (mm)	Thread Length (mm)	Qty.
211.810	10	4	4
211.811	11	5	4
211.812	12	5	4
211.813	13	6	4
211.814	14	6	4
211.815	15	7	4
211.816	16	7	4
211.817	17	8	2
211.818	18	8	2
211.819	19	9	2
211.820	20	9	2
211.822	22	10	2
211.824	24	10	2
211.826	26	12	2
211.828	28	12	2
211.830	30	14	2

2.4 mm Cannulated Screws, short thread
(thread length \approx 1/4 screw length)

	Length (mm)	Thread Length (mm)	Qty.
211.841	17	5	2
211.842	18	5	2
211.843	19	5	2
211.844	20	5	2
211.845	22	5	2
211.846	24	6	2
211.847	26	6	2
211.848	28	6	2
211.849	30	6	2

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