

2.4 mm Cannulated Screw

A part of the DePuy Synthes Cannulated Screw System (CSS)

Surgical Technique

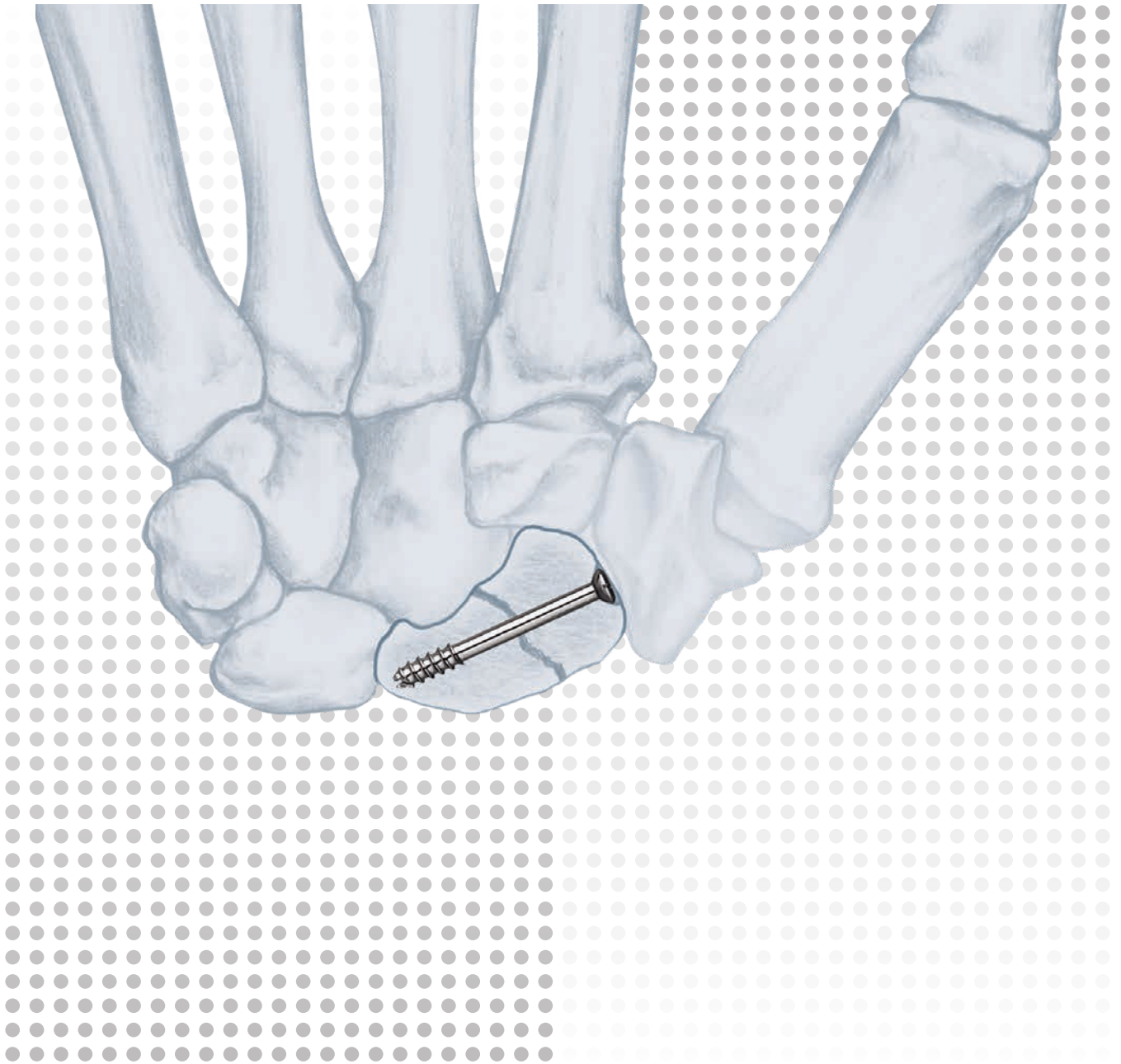


 Image intensifier control

This description alone does not provide sufficient background for direct use of DePuy Synthes products. Instruction by a surgeon experienced in handling these products is highly recommended.

Processing, Reprocessing, Care and Maintenance

For general guidelines, function control and dismantling of multi-part instruments, as well as processing guidelines for implants, please contact your local sales representative or refer to:

<http://emea.depuysynthes.com/hcp/reprocessing-care-maintenance>

For general information about reprocessing, care and maintenance of DePuy Synthes reusable devices, instrument trays and cases, as well as processing of DePuy Synthes non-sterile implants, please consult the Important Information leaflet (SE_023827) or refer to:

<http://emea.depuysynthes.com/hcp/reprocessing-care-maintenance>

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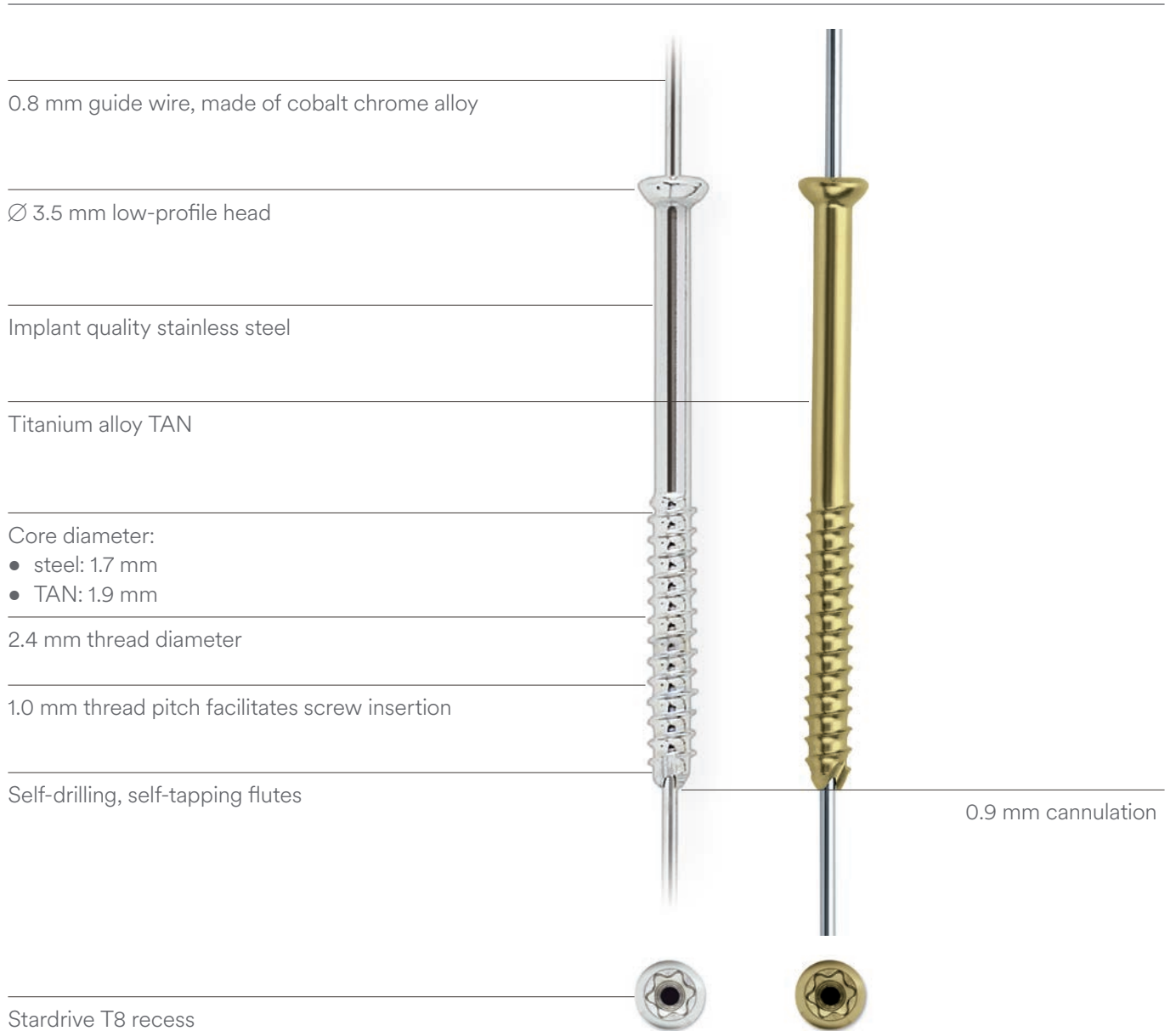
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2.4 mm Cannulated Screw

A part of the DePuy Synthes Cannulated Screw System (CSS)



Two design types

Short thread (¼ of the shaft length)

Long thread (½ of the shaft length)



Intended Use, Indications, and Contraindications can be found in the corresponding system Instructions for Use.

▲ WARNING:

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

The AO Principles of Fracture Management

Mission

The AO's mission is promoting excellence in patient care and outcomes in trauma and musculoskeletal disorders.

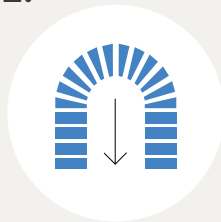
AO Principles^{1,2}

1.



Fracture reduction and fixation to restore anatomical relationships.

2.



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

3.



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

4.



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

¹ Müller ME, Allgöwer M, Schneider R, Willenegger H. Manual of Internal Fixation. 3rd ed. Berlin, Heidelberg New York: Springer 1991.

² Buckley RE, Moran CG, Apivatthakakul T. AO Principles of Fracture Management: 3rd ed. Vol. 1: Principles, Vol. 2: Specific fractures. Thieme; 2017.

Scaphoid

1. Insert guide wire into the scaphoid

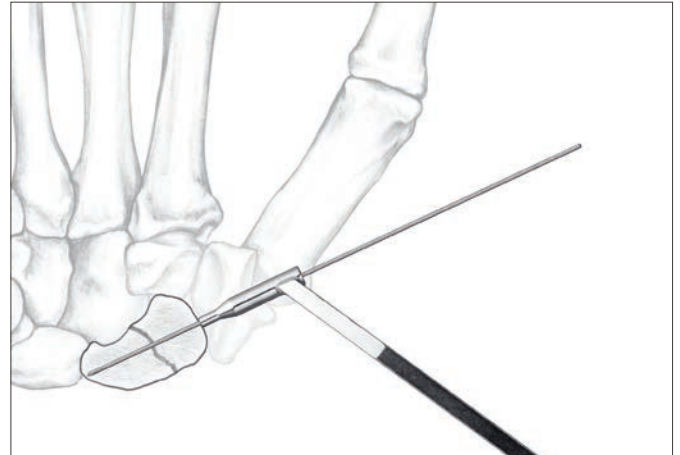
Instruments

292.619	0.8 mm Guide Wire
312.144	Double Drill Guide 1.9/0.8 for screws in TAN
312.145	Double Drill Guide 1.7/0.8 for screws in steel

- ① Insert the guide wire through the drill guide to the appropriate depth, using image intensification. Remove the drill guide and check the position of the guide wire and reduction.

Note:

Insertion of the guide wire may be facilitated using a pen-style drive unit rather than a pistol-grip drive unit. Insert the guide wire in 10 to 15 mm increments to potentially prevent wire bending.

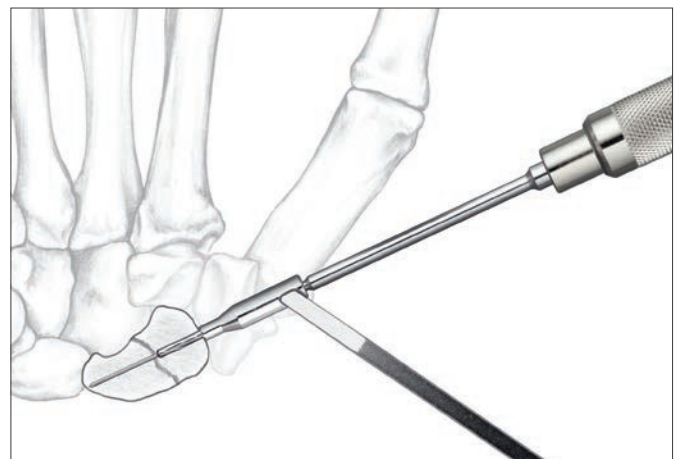


2. Predrill for the screw (optional)

Instruments

310.214	Drill Bit \varnothing 1.9 mm, cannulated, length 100 mm, for screws in TAN
310.215	Drill Bit \varnothing 1.7 mm, cannulated, length 100 mm, for screws in steel
312.144	Double Drill Guide 1.9/0.8 for screws in TAN
312.145	Double Drill Guide 1.7/0.8 for screws in steel

- Predrilling in 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. In some cases, the self-drilling flutes of the 2.4 mm Cannulated Screw make predrilling unnecessary. Use the cannulated drill bit with the double drill guide to drill the near cortex only. Use image intensification if necessary.
- ①



3. Measure

Instrument

319.703 Measuring Device

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.



4. Insert screw

Instrument

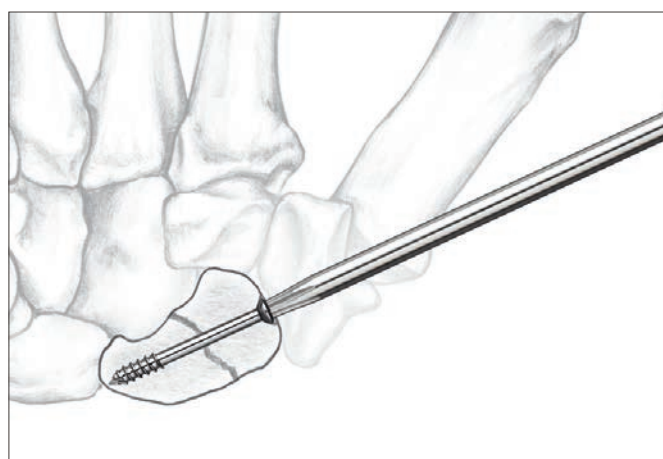
314.466 Self-retaining Cannulated Stardrive T8
Screwdriver Shaft

311.430 Handle

Use the cannulated 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 the bone

Instruments

292.619	0.8 mm Guide Wire
312.144	Double Drill Guide 1.9/0.8 for screws in TAN
312.145	Double Drill Guide 1.7/0.8 for screws in steel

Insert the guide wire through the drill guide to the appropriate depth. Remove the drill guide and check the position of the guide wire and reduction using image intensification.

■ Note:

Insertion of the guide wire may be facilitated using a pen-style drive unit rather than a pistol-grip drive unit. Insert the guide wire in 10 to 15 mm increments to potentially prevent wire bending.



2. Predrill for the screw (optional)

Instruments

310.214 or 310.215	Drill Bit Ø 1.9 mm, cannulated, length 100 mm, for screws in TAN Drill Bit Ø 1.7 mm, cannulated, length 100 mm, for screws in steel
312.144 or 312.145	Double Drill Guide 1.9/0.8 for screws in TAN Double Drill Guide 1.7/0.8 for screws in steel

Predrilling in 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. If the screw is intended to pass through the opposite cortex as well, predrilling is necessary. In some cases, based on surgical needs, the self-drilling flutes of the 2.4 mm Cannulated Screw may not require predrilling. Use image intensification if necessary.



3. Countersink

Instruments

310.803	Cannulated Countersink
311.430	Handle

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 screw head.

Countersinking also facilitates screw insertion if predrilling is not performed.



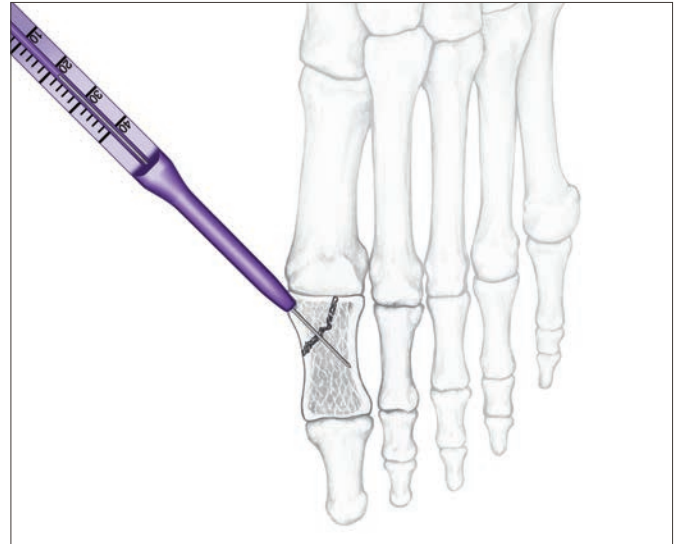
4. Measure for screw length

Instrument

319.703 Measuring Device

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

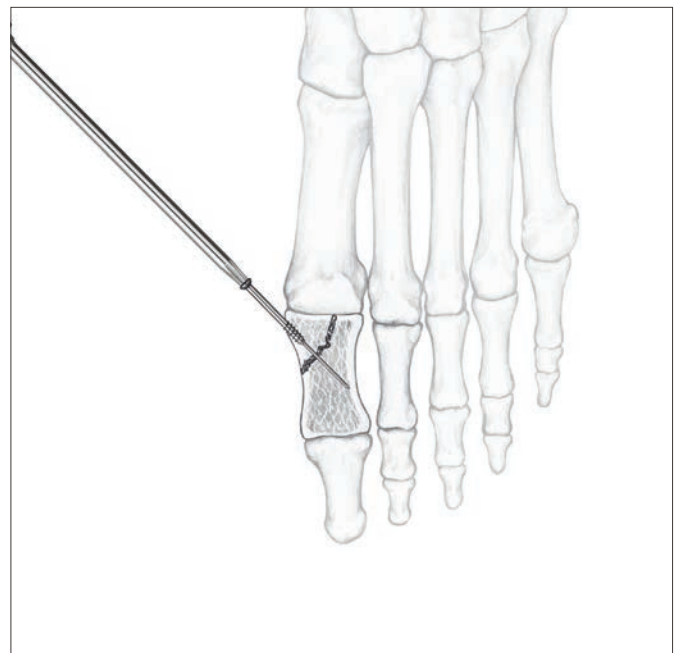
314.466 Self-retaining Cannulated Stardrive
T8 Screwdriver Shaft

311.430 Handle

Use the cannulated screwdriver shaft with the handle to insert the screw. After the screw is seated, remove and discard the guide wire.

■ Notes

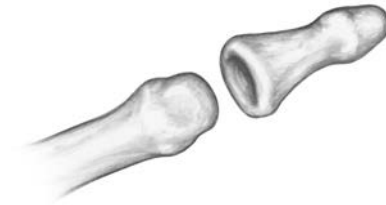
- A second screw or a Kirschner wire may be inserted to provide rotational stability.
- Avoid removal and reinsertion of the screw in the same hole. The self-drilling feature of the screw can damage bone threads during reinsertion.
- Inserting the screws under power is not recommended.



Small Joint 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 the bone

Instruments

292.619	0.8 mm Guide Wire
312.144	Double Drill Guide 1.9/0.8 for screws in TAN
312.145	Double Drill Guide 1.7/0.8 for screws in steel

- 1 Insert the guide wire through the drill guide under image intensification.

Make sure that the guide wire is positioned centrally within the medullary canal and that the screw will not damage the PIP joint. Recommended screw purchase is achieved if the threads pass across the narrow zone in the middle of the phalanx.

Remove the drill guide.

Note:

Insertion of the guide wire may be facilitated using a pen-style drive unit rather than a pistol-grip drive unit. Insert the guide wire in 10 to 15 mm increments to potentially prevent wire bending.



3. Drill

Instruments

310.214 or 310.215	Drill Bit Ø 1.9 mm, cannulated, length 100 mm, for screws in TAN Drill Bit Ø 1.7 mm, cannulated, length 100 mm, for screws in steel
312.144 or 312.145	Double Drill Guide 1.9/0.8 for screws in TAN Double Drill Guide 1.7/0.8 for screws in steel



Drill completely through the near bone and the near cortex of the far bone using the cannulated drill bit through the double drill guide.

🕒 Use image intensification if necessary.

4. Countersink

Instruments

310.803	Cannulated Countersink
311.430	Handle

Use the cannulated countersink and handle to create a recess for the screw head.



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

314.466	Self-retaining Cannulated Stardrive T8 Screwdriver Shaft
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311.430	Handle
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Use the cannulated 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.



Cleaning and Screw Removal

Cleaning cannulation

Instrument

319.293	0.8 mm Cleaning Stylet
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Cleaning the instrument cannulations is imperative for proper function and component life.

Instruments should be cleared intraoperatively with the cleaning stylet to prevent accumulation of debris in the cannulations and potential binding of the instruments on the guide wire.

Screw removal

The cannulated Stardrive can be used for screw removal. Insertion of a wire into the screw cannulation can assist in determining the screw axis to aid in proper screwdriver alignment.

Implants

2.4 mm Cannulated Screws, long thread

(X11.810– X11.830)

10 mm–20 mm, 1 mm increments

22 mm–30 mm, 2 mm increments



2.4 mm Cannulated Screws, short thread

(X11.841–X11.849)

17 mm– 20 mm, 1 mm increments

22 mm–30 mm, 2 mm increments



X = 2: steel

X = 4: TAN

Instruments

0.8 mm Guide Wire, 100 mm (292.619)



Cannulated Drill Bits

- 310.214: B 1.9 mm for screws in TAN
- 310.215: B 1.7 mm for screws in steel

For predrilling in dense bone



Double Drill Guides

- 312.144: 1.9/0.8 for screws in TAN
- 312.145: 1.7/0.8 for screws in steel



Cannulated Countersink (310.803)

Creates a recess for the screw head



Measuring Device (319.703)

For 2.4 mm Cannulated Screws



Cannulated Stardrive T8 Screwdriver Shaft (314.466)

Used for insertion and removal of 2.4 mm Cannulated Screws



Stardrive T8 Screwdriver Shaft (314.467)



Handle, with Quick Coupling (311.430)

Used with Cannulated Countersink (310.803) and Screwdriver Shafts (314.466 and 314.467)



Screw and Plate Forceps (347.985)



0.8 mm Cleaning Stylet (319.293)

For intraoperative clearing of cannulated instruments



Sets

Sets

01.202.002	Instrument Set for Cannulated Screw \varnothing 2.4 mm (Stainless Steel)
01.202.004	Instrument Set for Cannulated Screw \varnothing 2.4 mm (TAN)
68.202.000	Module for Instrument Set for Cannulated Screw B 2.4 mm, with Lid, without Contents

Implants

Cannulated Screw \varnothing 2.4 mm, long thread, self-drilling

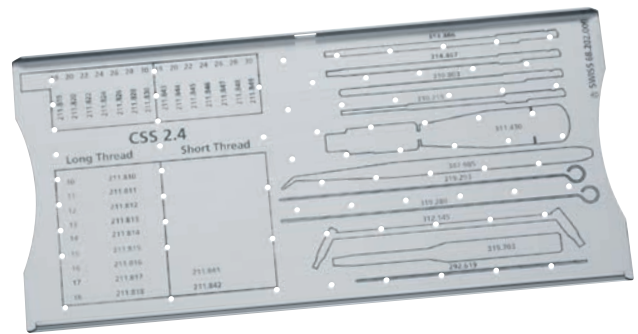
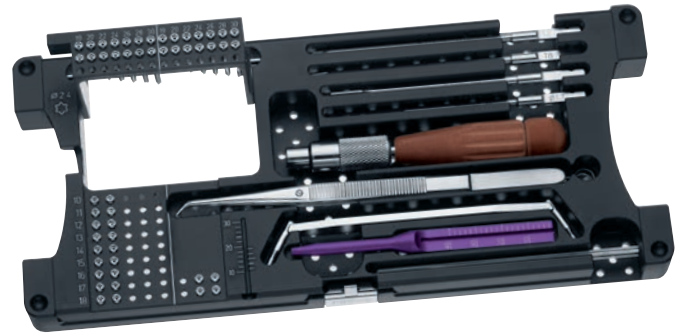
X11.810*	length 10/4 mm	3 pcs
X11.811*	length 11/5 mm	3 pcs
X11.812*	length 12/5 mm	3 pcs
X11.813*	length 13/6 mm	3 pcs
X11.814*	length 14/6 mm	3 pcs
X11.815*	length 15/7 mm	3 pcs
X11.816*	length 16/7 mm	3 pcs
X11.817*	length 17/8 mm	3 pcs
X11.818*	length 18/8 mm	3 pcs
X11.819*	length 19/9 mm	3 pcs
X11.820*	length 20/9 mm	3 pcs
X11.822*	length 22/10 mm	3 pcs
X11.824*	length 24/10 mm	3 pcs
X11.826*	length 26/12 mm	3 pcs
X11.828*	length 28/12 mm	3 pcs
X11.830*	length 30/14 mm	3 pcs

Cannulated Screw \varnothing 2.4 mm, short thread, self-drilling

X11.841*	length 17/5 mm	3 pcs
X11.842*	length 18/5 mm	3 pcs
X11.843*	length 19/5 mm	3 pcs
X11.844*	length 20/5 mm	3 pcs
X11.845*	length 22/5 mm	3 pcs
X11.846*	length 24/6 mm	3 pcs
X11.847*	length 26/6 mm	3 pcs
X11.848*	length 28/6 mm	3 pcs
X11.849*	length 30/6 mm	3 pcs
292.619*	Guide Wire \varnothing 0.8 mm, length 100 mm	10 pcs

X = 2: steel
X = 4: TAN

* Available nonsterile or sterile-packed. Add "s" to catalog number to order sterile product.



Instruments

310.214	Drill Bit \varnothing 1.9 mm, cannulated, length 100 mm, for Quick Coupling or	
310.215	Drill Bit \varnothing 1.7 mm, cannulated, length 100 mm, for Quick Coupling	2 pcs
310.803	Countersink, cannulated, for Cannulated Screws \varnothing 2.4 mm	1 pcs
311.430	Handle with Quick Coupling, length 110 mm	1 pcs
312.144	Double Drill Guide 1.9/0.8 or	
312.145	Double Drill Guide 1.7/0.8	1 pcs
314.466	Screwdriver Shaft, cannulated, Stardrive T8, self-holding	2 pcs
314.467	Screwdriver Shaft, Stardrive T8, self-holding	1 pcs
319.293	Cleaning Stylet \varnothing 0.8 mm, for Cannulated Instruments	1 pcs
319.703	Measuring Device for Cannulated Screws \varnothing 2.4 mm	1 pcs
347.985	Holding Forceps for Cortex Screws \varnothing 1.0 to 2.4 mm	1 pcs

MRI Information

Torque, Displacement and Image Artifacts according to ASTM F2213, ASTM F 2052 and ASTM F2119

Non-clinical testing of worst case scenario in a 3 T MRI system did not reveal any relevant torque or displacement of the construct for an experimentally measured local spatial gradient of the magnetic field of 3.69 T/m. The largest image artifact extended approximately 169 mm from the construct when scanned using the Gradient Echo (GE). Testing was conducted on a 3 T MRI system.

Radio-Frequency-(RF-)induced heating according to ASTM F2182

Non-clinical electromagnetic and thermal testing of worst case scenario lead to peak temperature rise of 9.5 °C with an average temperature rise of 6.6 °C (1.5 T) and a peak temperature rise of 5.9 °C (3 T) under MRI Conditions using RF Coils [whole body averaged specific absorption rate (SAR) of 2 W/kg for 6 minutes (1.5 T) and for 15 minutes (3 T)].

▲ Precautions:

The above mentioned test relies on non-clinical testing. The actual temperature rise in the patient will depend on a variety of factors beyond the SAR and time of RF application. Thus, it is recommended to pay particular attention to the following points:

- It is recommended to thoroughly monitor patients undergoing MR scanning for perceived temperature and/or pain sensations.
- Patients with impaired thermo regulation or temperature sensation should be excluded from MR scanning procedures.
- Generally it is recommended to use a MR system with low field strength in the presence of conductive implants. The employed specific absorption rate (SAR) should be reduced as far as possible.
- Using the ventilation system may further contribute to reduce temperature increase in the body

Not all products are currently available in all markets.
This publication is not intended for distribution in the USA.
Intended use, Indications and Contraindications can be found in the corresponding system Instructions for Use.
All Surgical Techniques are available as PDF files at www.depuysynthes.com/ifu



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