

Part of the DePuy Synthes Cannulated Screw System

# 3.5 mm Cannulated Screws

Surgical Technique



# Table of Contents

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<b>Introduction</b>	3.5 mm Cannulated Screws	2
	AO Principles	3
	Indications	4

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<b>Surgical Technique</b>	Surgical Technique Tips	5
	Insert Guide Wire	6
	Countersink (Optional)	6
	Measure for Screw Length	7
	Set Drilling Depth	7
	Drill	8
	Tap	8
	Insert Screw	9
	Implant Removal	9

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<b>Product Information</b>	Implants	10
	Instruments	11
	Set List	14

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## MR Information

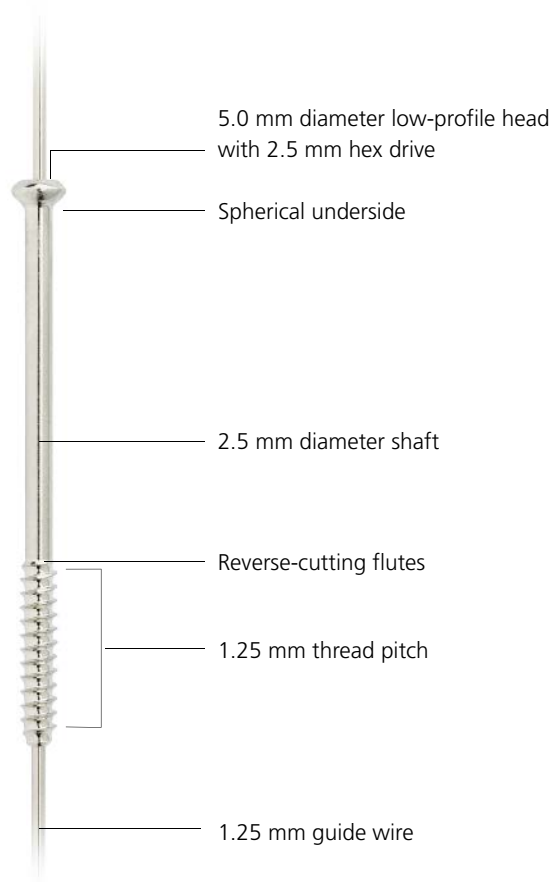
The 3.5 mm Cannulated Screw System has not been evaluated for safety and compatibility in the MR environment. It has not been tested for heating, migration or image artifact in the MR environment. The safety of the 3.5 mm Cannulated Screw System in the MR environment is unknown. Scanning a patient who has this device may result in patient injury.

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# 3.5 mm Cannulated Screws

## Features

- Cannulated shaft accepts 1.25 mm diameter guide wires (threaded and nonthreaded wires available)
- Hemispherical head ensures optimal annular contact with washers and DePuy Synthes plates when screws are angled
- Low-profile head reduces possibility of soft tissue irritation
- Standard 2.5 mm hexagonal drive is compatible with screwdrivers in other commonly used DePuy Synthes sets
- Reverse-cutting flutes assist in screw removal
- Thread profile designed to provide pullout resistance and insertion efficiency similar to those of the standard 3.5 mm cortex screw



## Thread lengths

- Partially threaded
- Fully threaded



## Material

Implant-quality 316L stainless steel

# AO Principles

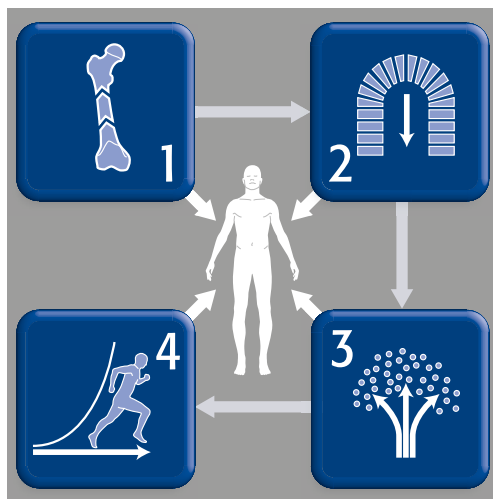
In 1958, the AO formulated four basic principles, which have become the guidelines for internal fixation.<sup>1,2</sup>

## 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

The DePuy Synthes 3.5mm Cannulated Screws are intended for the fixation of fractures, osteotomies, fusions and nonunions of small bones and small bone fragments in adults and in both children (2-12 years) and adolescents (12-21 years) in which growth plates have fused or in which growth plates will not be crossed by screw fixation.

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



Fractures of the carpals and metacarpals



Fixation of metacarpal and metatarsal osteotomies



Radial styloid fractures

# Surgical Technique Tips

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## Cleaning cannulations

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### Instruments

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319.25	1.35 mm Cleaning Brush
319.38	1.25 mm Cleaning Stylet

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**Note: Cleaning the cannulation in each instrument is imperative for proper function.**

Instruments should be cleared intraoperatively with the 1.25 mm cleaning stylet to prevent accumulation of debris in the cannulation and potential binding of the instruments with the guide wire. Instruments should be cleaned postoperatively with the stylet and the 1.35 mm cleaning brush.

### Inserting guide wires

Reduce and hold bone fragments in position with Kirschner wires or forceps prior to placing guide wires.

### Drilling

Because of their hollow cross section and long length, cannulated drill bits are more susceptible to breakage than solid drill bits of the same diameter. Use less axial force, avoid bending, and advance the drill bit slowly to minimize the possibility of breakage. Cannulated drill bits should be inspected after every procedure and replaced if worn or damaged.

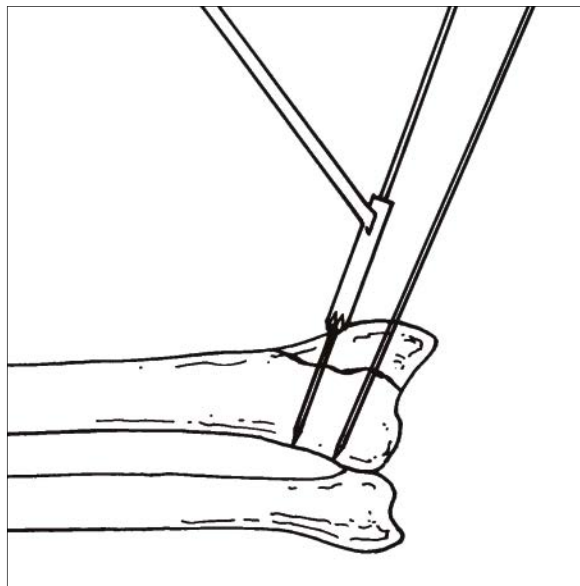
# Surgical Technique

## 1. Insert guide wire

### Instruments

900.721	1.25 mm Non-Threaded Guide Wire
900.722	1.25 mm Threaded Guide Wire
312.35	2.7 mm/1.25 mm Double Drill Sleeve

- Insert a 1.25 mm threaded or nonthreaded guide wire through the 2.7 mm/1.25 mm double drill sleeve to the appropriate depth. Check placement of the wire under image intensification. Remove the drill sleeve. If needed to prevent rotation of the fragment, insert a second guide wire parallel to the first, following the same procedure.



## 2. Countersink (optional)

### Instruments

310.86	Cannulated Countersink
311.43	Handle, with quick coupling

In areas where soft tissue coverage is minimal, use the cannulated countersink to create a recess for the screw head. Countersinking will also facilitate screw insertion.

**Note: If the countersink fails to bite, the near cortex can be predrilled using the cannulated drill bit.**

### 3. Measure for screw length

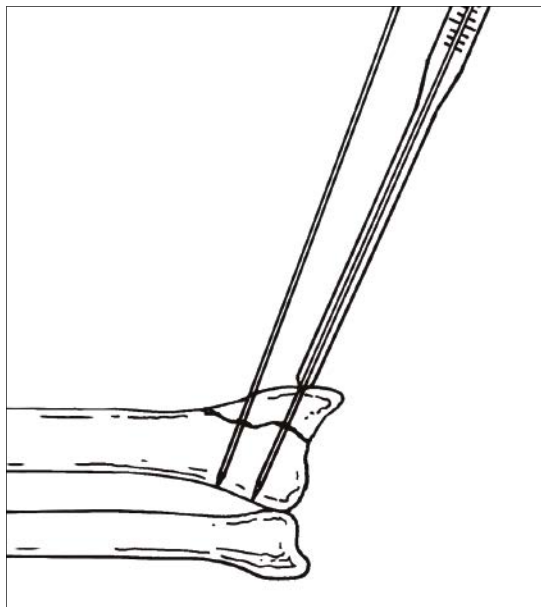
#### Instrument

319.15	Cannulated Screw Measuring Device
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Slide the tapered end of the cannulated screw measuring device over the guide wire, down to the bone. Read the scale at the end of the guide wire to determine appropriate screw length. This reading will place the screw 5 mm short of the tip of the guide wire, allowing the threaded portion of the guide wire to remain in the bone during screw insertion.

#### Notes:

- Only use the guide wire in its original length to ensure correct measurement.
- If the reading indicates 34 mm, use a 34 mm screw to place the screw 5 mm short of the wire tip.
- If countersinking, this should be done prior to measuring for screw length.



### 4. Set drilling depth

#### Instruments

310.67	2.7 mm Cannulated Drill Bit
312.85	3.5 mm/2.7 mm Drill Guide with Stop
319.15	Cannulated Screw Measuring device

To set the drilling depth, insert the 2.7 mm cannulated drill bit into the 2.7 mm insert sleeve of the 3.5 mm/2.7 mm drill guide with stop until the quick coupling end of the bit rests on the drill guide. Insert the drill bit into the nontapered end of the measuring device, and loosen the knurled nut on the drill guide with stop. Rotate the threaded end of the drill guide with stop until the drill bit length corresponds to the reading obtained for screw length. Tighten the knurled nut.





## 5. Drill

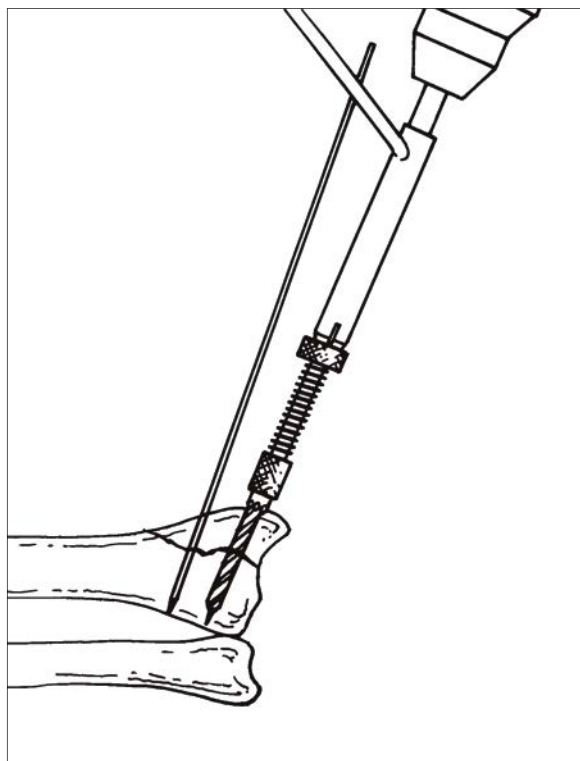
### Instruments

312.85	3.5 mm/2.7 mm Drill Guide with Stop
900.722	1.25 mm Threaded Guide Wire

Place the drilling assembly over the guide wire. Drill until the quick coupling end of the drill bit contacts the drill guide with stop.

### Notes:

- **Avoid directing the drill bit; let it follow the guide wire. Take care to remove the drill bit slowly and to pull back straight while running the drill forward to prevent guide wire pullout. Image intensification may be used to confirm drilling depth.**
- **If the fracture pattern necessitates insertion of a fully threaded screw, drill a gliding hole in the near fragment 3.5 mm insert sleeve and the 3.5 mm cannulated drill bit.**



## 6. Tap

### Instruments

311.39	Cannulated Tap for 3.5 mm Cannulated Screws
311.43	Handle, with quick coupling
312.28	3.5 mm/2.5 mm Double Drill Sleeve

Use the cannulated tap through the 3.5 mm/2.5 mm double drill sleeve to tap the near cortex.

**Note: In dense metaphyseal bone, it may be necessary to tap over the entire nonthreaded length of the guide wire.**

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## 7. Insert screw

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### Instruments

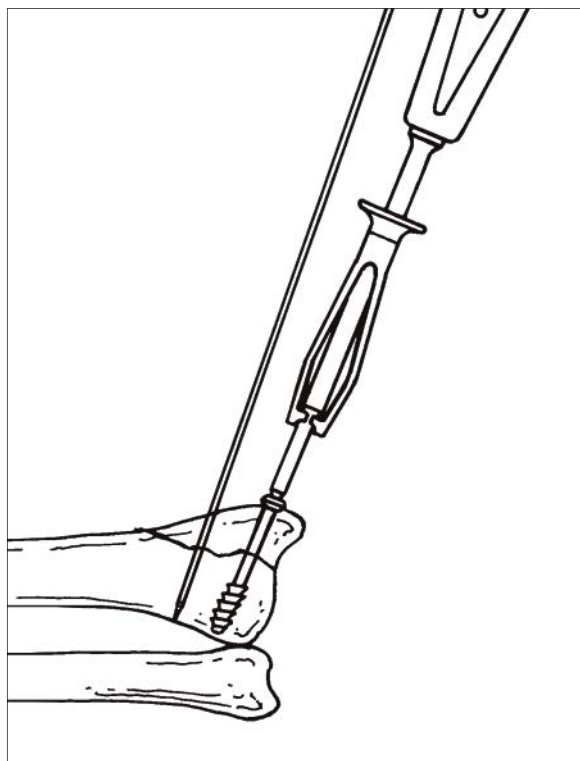
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314.08	Holding Sleeve
314.29	Cannulated Hexagonal Screwdriver

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Using the cannulated hexagonal screwdriver with the holding sleeve, insert the previously selected screw (Step 3). Remove and discard the guide wire.

**Note: In osteoporotic bone, a washer may be necessary to prevent the screwhead from sinking into the bone.**



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## 8. Implant Removal

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### Instruments

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314.03	Small Hexagonal Screwdriver Shaft (2.5 mm hex)
311.43	Handle, with quick coupling

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Expose the screw head and remove the screws using the special screwdriver for the removal of cannulated screws.

**Precaution: Do not use the cannulated screwdriver for implant removal.**

# Implants

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## 3.5 mm Cannulated Screws, partially threaded

- 10 mm–50 mm lengths in 2 mm increments
- 316L stainless steel



## 3.5 mm Cannulated Screws, fully threaded

- 10 mm–50 mm lengths in 2 mm increments
- 316L stainless steel



## Washer, 7.0 mm

- To prevent screwhead from sinking into osteoporotic bone



# Instruments

310.67 2.7 mm Cannulated Drill Bit, quick coupling, 160 mm, 1.35 mm cannulation



310.68\* 3.5 mm Cannulated Drill Bit, quick coupling, 160 mm



310.86 Cannulated Countersink



311.39 Cannulated Tap for 3.5 mm Cannulated Screws



311.43 Handle, with quick coupling



312.28 3.5 mm/2.5 mm Double Drill Sleeve



312.35 2.7 mm/1.25 mm Double Drill Sleeve



\*Also available.

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312.85      3.5 mm/2.7 mm Drill Guide with Stop



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314.03      Small Hexagonal Screwdriver Shaft  
(2.5 mm hex)



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314.08      Holding Sleeve



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314.10\*      Cannulated Hexagonal Screwdriver Shaft  
(2.5 mm hex)



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314.29      Cannulated Hexagonal Screwdriver  
(2.5 mm hex)



\*Also available.

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319.15 Cannulated Screw Measuring Device



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319.25 1.35 mm Cleaning Brush



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319.38 1.25 mm Cleaning Stylet



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319.97 Screw Forceps



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900.721 1.25 mm Non-Threaded Guide Wire, 150 mm



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900.722 1.25 mm Threaded Guide Wire, 150 mm



# 3.5 mm Cannulated Screw Instrument and Implant Set (105.03)

## Graphic Case

690.499 3.5 mm Cannulated Screw Instrument and Implant Set Graphic Case (includes removable screw rack)

## Instruments

900.721 1.25 mm Non-Threaded Guide Wire, 150 mm, 10 ea.  
 900.722 1.25 mm Threaded Guide Wire, 150 mm, 10 ea.  
 310.67 2.7 mm Cannulated Drill Bit, quick coupling, 160 mm, 2 ea.  
 310.86 Cannulated Countersink  
 311.39 Cannulated Tap for 3.5 mm Cannulated Screws  
 311.43 Handle, with quick coupling  
 312.28 3.5 mm/2.5 mm Double Drill Sleeve  
 312.35 2.7 mm/1.25 mm Double Drill Sleeve  
 312.85 3.5 mm/2.7 mm Drill Guide with Stop  
 314.03 Small Hexagonal Screwdriver Shaft  
 314.08 Holding Sleeve  
 314.29 Cannulated Hexagonal Screwdriver  
 319.15 Cannulated Screw Measuring Device  
 319.25 1.35 mm Cleaning Brush  
 319.38 1.25 mm Cleaning Stylet  
 319.97 Screw Forceps



## Implants

3.5 mm Cannulated Screws, partially threaded, 3 ea.

	Length (mm)		Length (mm)
205.010	10	205.032	32
205.012	12	205.034	34
205.014	14	205.036	36
205.016	16	205.038	38
205.018	18	205.040	40
205.020	20	205.042	42
205.022	22	205.044	44
205.024	24	205.046	46
205.026	26	205.048	48
205.028	28	205.050	50
205.030	30		

219.98 Washer, 7.0 mm, 6 ea.

Note: For additional information, please refer to package insert.

For detailed cleaning and sterilization instructions, please refer to [www.depuysynthes.com/hcp/cleaning-sterilization](http://www.depuysynthes.com/hcp/cleaning-sterilization) or sterilization instructions, if provided.

**Also Available**

## 3.5 mm Cannulated Screws, fully threaded

	Length (mm)		Length (mm)
205.210	10	205.232	32
205.212	12	205.234	34
205.214	14	205.236	36
205.216	16	205.238	38
205.218	18	205.240	40
205.220	20	205.242	42
205.222	22	205.244	44
205.224	24	205.246	46
205.226	26	205.248	48
205.228	28	205.250	50
205.230	30		

292.621	1.25 mm Threaded Guide Wire, 150 mm, spade point on both ends
310.68	3.5 mm Cannulated Drill Bit, quick coupling, 160 mm
312.86	Drill Guide Handle (component of 312.85)
312.87	2.7 Drill Sleeve (component of 312.85)
312.88	3.5 Drill Sleeve (component of 312.85)
314.10	Cannulated Hexagonal Screwdriver Shaft, for 3.5 mm and 4.0 mm Cannulated Screws



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