

For Treatment of Periprosthetic Fractures

3.5 mm Locking Attachment Plate

Surgical Technique



Table of Contents

Introduction	3.5 mm Locking Attachment Plate	2
	Indications	4
Surgical Technique	Preparation	5
	Reduce Fracture	7
	Choose and Insert LCP® Plate	7
	Choose Locking Attachment Plate	8
	Bend Locking Attachment Plate (Optional)	9
	Attach Threaded Insert	10
	Connect Locking Attachment Plate to LCP Plate	11
	Insert Kirschner Wires (Optional)	12
	Drill Screw Hole	13
	Determine Screw Length	14
	Insert Locking Screws	15
	Insert Cortex Screws (Optional)	16
	Place Additional Locking Attachment Plates (Optional)	16
	Product Information	Implants
Instruments		19
Set List		21
MR Information	Also Available	23

MR Information

The 3.5 mm Locking Attachment Plate 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 Locking Attachment Plate in the MR environment is unknown. Scanning a patient who has this device may result in patient injury.

 Image intensifier control

3.5 mm Locking Attachment Plate

The 3.5 mm Locking Attachment Plate is an alternative to cerclage cables. The plate is attached to existing DePuy Synthes Locking Compression Plates (LCP®) using a connecting screw, to augment stabilization of fractures.

The arms on each side of the plate offer the possibility of bypassing the prosthesis stem with 3.5 mm locking screws (or 3.5 mm cortex screws). The locking capability is important for a fixed-angle construct in periprosthetic fractures and fractures in the presence of intramedullary implants, particularly in osteopenic bone where screw purchase is compromised. These screws do not rely on plate-to-bone compression to resist patient load, but function similarly to multiple, small, angled blade plates.

The 3.5 mm Locking Attachment Plates, for 4.5 mm LCP Plates, fit the following plates:

- LCP Distal Femur and Distal Femur LISS™ Plates
- 4.5 mm LCP Condylar and 4.5 mm LCP Curved Condylar Plates
- 4.5 mm Broad LCP and 4.5 mm Curved Broad LCP Plates

The 3.5 mm Locking Attachment Plates, for 4.5 mm LCP Proximal Femur Plates, are slightly rounded to fit the following plates:

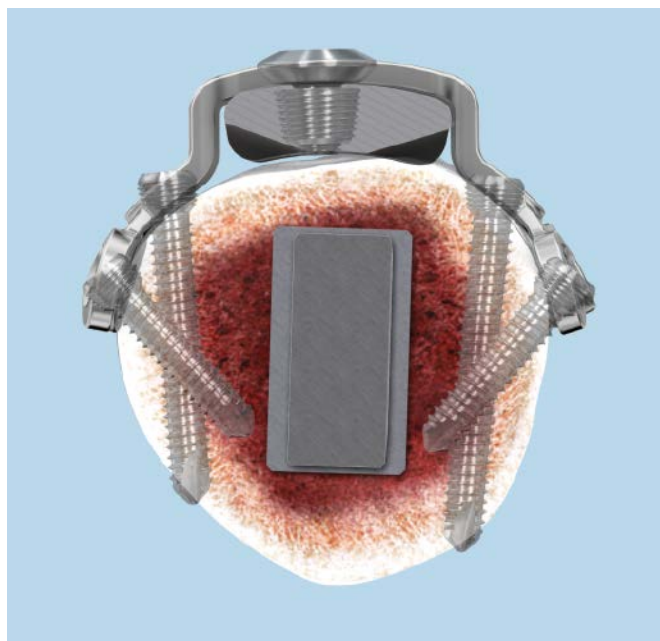
- 4.5 mm LCP Proximal Femur Plate
- 4.5 mm LCP Proximal Femur Hook Plate



3.5 mm Locking Attachment Plate continued

Features

- Compatible with the DePuy Synthes 4.5 mm Locking Compression Plate (LCP) System
- Low profile and anatomically contoured
- Angled 3.5 mm locking and 3.5 mm cortex screws on each side of the plate avoid the prosthesis stem
- 3.5 mm locking screws create a fixed-angled construct that improves fixation
- The arms can be bent and easily cut to better fit specific patient anatomy



3.5 mm Locking Attachment Plates,
for 4.5 mm LCP Plates



3.5 mm Locking Attachment Plates,
for 4.5 mm LCP Proximal Femur Plates

Indications

The DePuy Synthes 3.5 mm Locking Attachment Plate is intended for use with DePuy Synthes LCP Plates to augment the stabilization of fractures, including periprosthetic fractures and fractures in the presence of intramedullary implants in the femur, tibia and humerus, particularly in osteopenic bone.

Precaution: In case of a completely loose prosthesis, a revision prosthesis is needed.



Preparation

1

Preparation

Required set

- | | |
|------------|--|
| 01.120.102 | 3.5 mm Locking Attachment Plate Set |
| or | |
| 01.120.104 | 3.5 mm Titanium Locking Attachment Plate Set |

Optional set

- | | |
|---------|-------------------------------|
| 105.907 | Collinear Reduction Clamp Set |
|---------|-------------------------------|

- Complete the preoperative radiographic assessment and prepare the preoperative plan.

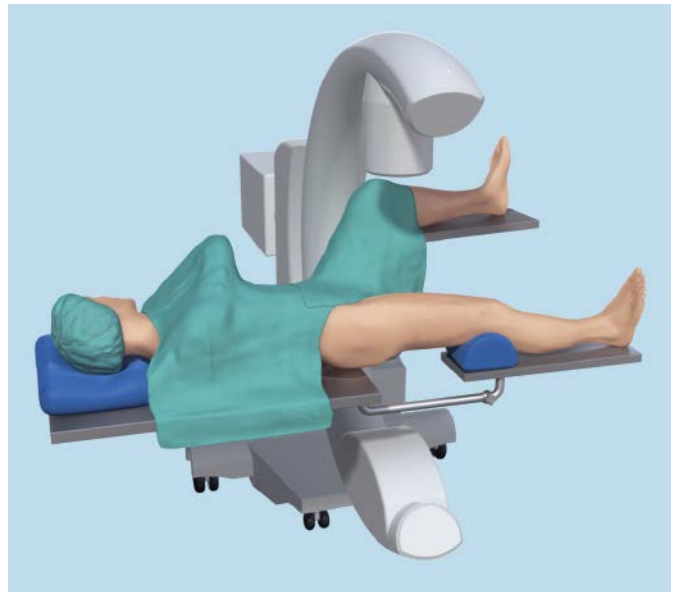


2

Position patient

- Position the patient supine on a radiolucent table. View the femoral shaft under fluoroscopy in both the lateral and AP views, especially if using a minimally invasive plating technique.

The leg should be able to move freely. The contralateral leg can be placed in an obstetric leg holder. Place the knee joint line slightly distal to the hinged part of the table to allow flexion of the knee during surgery.



3

Approach

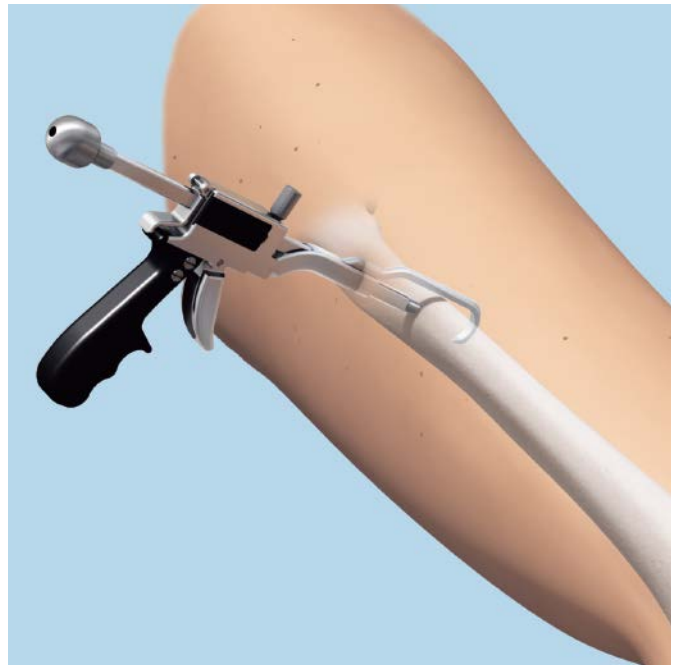
Make a straight incision on the lateral side of the femur, or two to three small incisions, depending on the reduction and plate insertion technique.

Reduce Fracture and Choose and Insert LCP® Plate

1

Reduce fracture

Reduce and temporarily secure the fragments with the collinear reduction clamp (sliding mechanism and arm) or cerclage.



2

Choose and insert LCP Plate

Choose an appropriate LCP Plate with sufficient length to bridge the fracture.

Refer to the appropriate DePuy Synthes technique guide for the chosen plate.

In case of osteoporotic bone, it is recommended to place bicortical screws where there is no obstruction and monocortical, periprosthetic screws in the area of the prosthesis. Alternatively, insert angulated cortex screws in the area of the prosthesis.

Note: Do not insert screws in the Combi holes where the locking attachment plate connects to the LCP Plate. These holes are required for the connecting screws.









Choose Locking Attachment Plate

3

Choose locking attachment plate

There are two versions of the locking attachment plate, one for general 4.5 mm LCP Plates (marked A), and one for 4.5 mm LCP Proximal Femur Plates (marked B). Both versions come in 4 hole or 8 hole options. Refer to the chart below to choose the appropriate locking attachment plate.

	4 holes	8 holes	For use with:
3.5 mm Locking Attachment Plate, for 4.5 mm LCP Plates (Marking: A) 			<ul style="list-style-type: none">- 4.5 mm Broad LCP Plate- 4.5 mm Curved Broad LCP Plate- Distal Femur LISS Plate- LCP Distal Femur Plate- 4.5 mm LCP Condylar Plate- 4.5 mm LCP Curved Condylar Plate
3.5 mm Locking Attachment Plate, for 4.5 mm LCP Proximal Femur Plates (Marking: B) 			<ul style="list-style-type: none">- 4.5 mm LCP Proximal Femur Plate- 4.5 mm LCP Proximal Femur Hook Plate

Bend Locking Attachment Plate (Optional)

4

Bend locking attachment plate (optional)

Instruments

329.151	Locking Calcaneal Plate Cutter
329.916	Bending Pin for Locking Attachment Plates

If required, the four outer holes of the locking attachment plate can be bent using the bending pins.

Screw the threaded bending pin into an outer hole of the locking attachment plate. Use it as a joystick to bend the arm of the plate.

Note: The arms of the 8-hole locking attachment plates can be cut with the plate cutter, if necessary.

Option: The drill sleeve may also be used to bend the attachment plate.



Attach Threaded Insert

5 Attach threaded insert

Instrument

314.163 StarDrive™ T25 Torque Limiting Screwdriver

The connecting screw consists of two parts: the upper screw and the threaded insert (Figure 1). Screw the threaded insert into the locking portion of the Combi hole of the LCP Plate with the torque limiting screwdriver. After one click, the optimum torque is reached.

Connecting screw

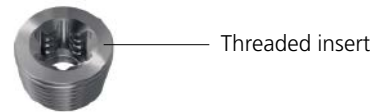
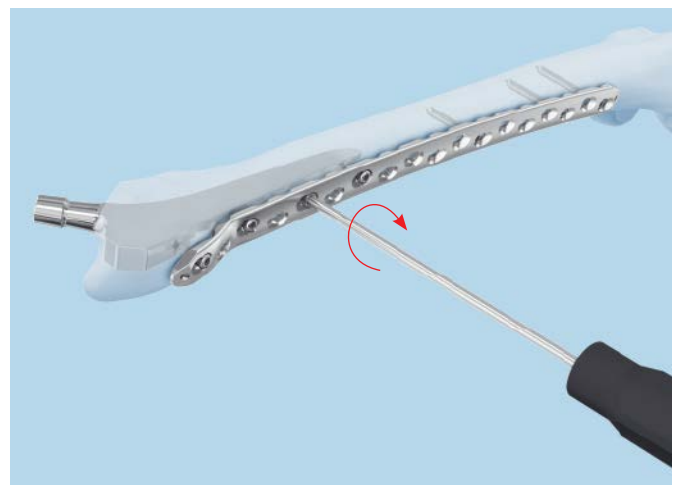


Figure 1



Connect Locking Attachment Plate to LCP Plate

6

Connect locking attachment plate to LCP Plate

Instruments

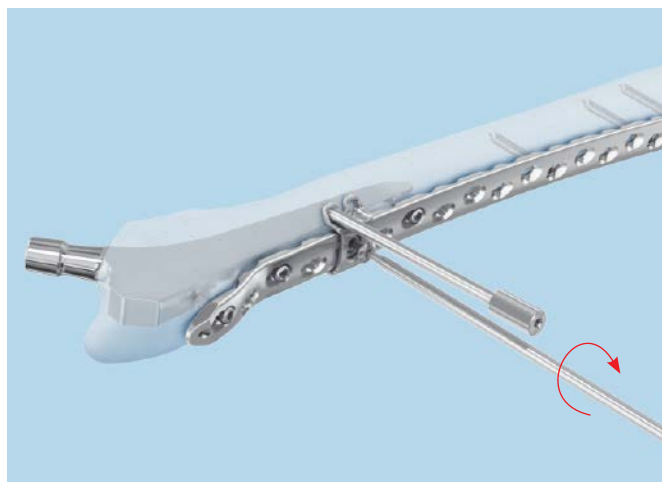
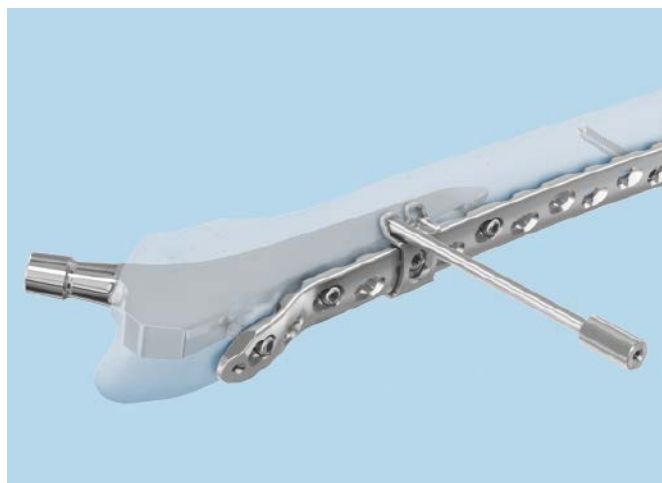
03.100.045	StarDrive Screwdriver Shaft, T15, 250 mm long
03.120.040	Drill Sleeve, for 2.8 mm Drill Bit
311.431	Large Handle with quick coupling
511.773	Torque Limiting Attachment, 1.5 Nm, quick coupling

Thread the drill sleeve into the locking attachment plate to use it as a handle.

Position the locking attachment plate on the LCP Plate directly above the threaded insert which was previously inserted.

Attach the locking attachment plate to the LCP Plate by threading the upper screw into the threaded insert of the connecting screw, using the T15 StarDrive™ Screwdriver. After one click, the optimum torque is reached.

- ⦿ Check implant position under image intensifier control.



Insert Kirschner Wires (Optional)

7

Insert Kirschner wires (optional)

Instruments

03.120.042 Centering Sleeve for 1.6 mm Kirschner Wire

292.18 1.6 mm Kirschner Wire with trocar point, 285 mm

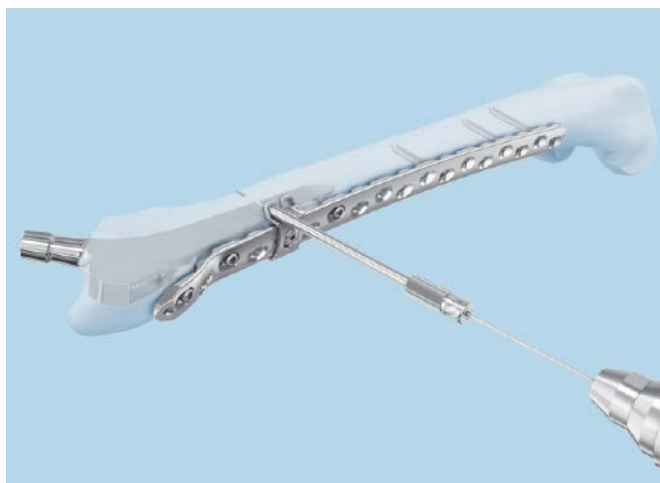
Use Kirschner wires for temporary fixation and to check the screw position and direction.

Insert the centering sleeve for K-wires into the drill sleeve. Add additional drill sleeves and centering sleeves as needed.

- ① Insert K-wires carefully and check their positions and directions under the image intensifier.

Note: If angles are not optimal, they can be corrected by bending the plate as needed with the bending pins.

Remove the centering sleeve for K-wires and the K-wires.



Drill Screw Hole

8

Drill screw hole

Instrument

03.120.041 2.8 mm 3-Fluted Drill Bit, quick coupling,
200 mm

- ① Carefully drill the screw hole under image intensifier control. Drill past, or as close as possible to, the prosthesis stem, to allow placement of the longest possible screw.



Determine Screw Length

9

Determine screw length

Instruments

03.120.041 2.8 mm 3-Fluted Drill Bit, quick coupling, 200 mm

03.120.049 Depth Gauge, for 3.5 mm screws

Measure for screw length using the drill bit or depth gauge. To measure using the drill bit, read the drilled depth directly from the laser mark on the drill bit.

Note: Read the calibrated drill bit at the bottom of the slider, on the side closest to the drill tip.

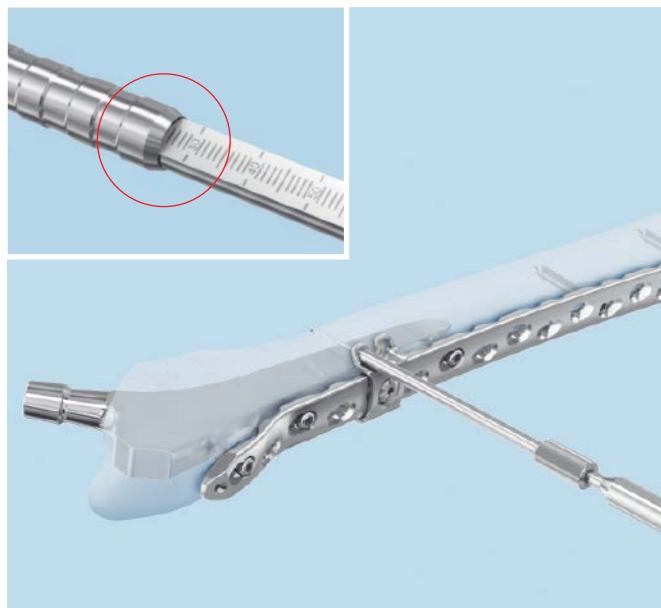
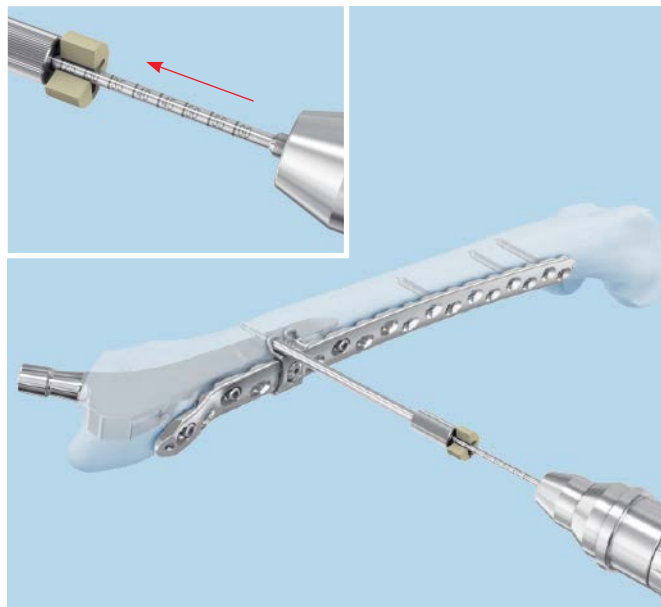
To measure using the depth gauge, insert the depth gauge through the drill sleeve and measure.

Remove the drill bit and the drill sleeve.

Alternative instrument

319.01* Depth Gauge, for small screws

If using the conventional small fragment depth gauge, remove the drill sleeve before measuring.



* Also available

Insert Locking Screws

10

Insert locking screws

Instruments

03.100.045	StarDrive Screwdriver Shaft, T15, 250 mm long
311.431	Large Handle with quick coupling
511.773	Torque Limiting Attachment, 1.5 Nm, quick coupling

Choose a 3.5 mm locking screw according to the measured length.

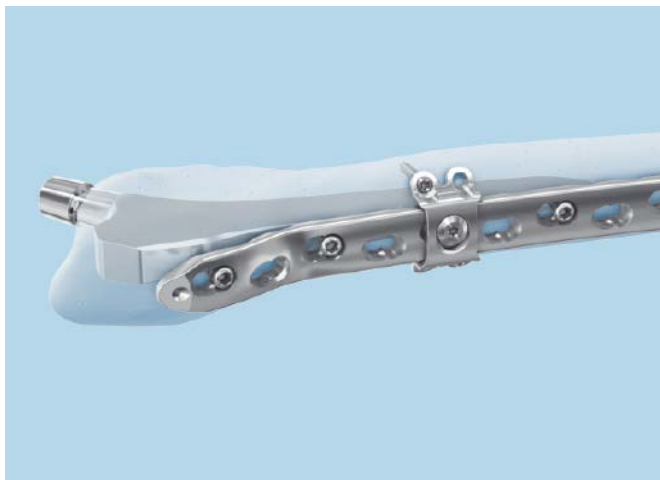
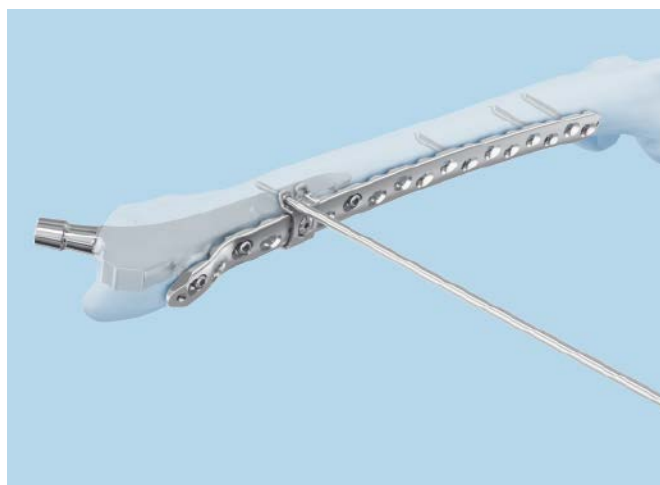
Precaution: If the drill bit contacts the prosthesis while drilling, choose a screw 2 mm shorter than measured, to prevent stripping of the thread in the bone and loss of screw anchoring.

Insert the locking screw using power equipment and the torque limiting attachment (TLA). Connect the screwdriver shaft to the TLA. Insert the screw into the locking hole. Stop the power tool before locking.

Uncouple the screwdriver shaft and TLA and attach to the handle with quick coupling. Manually tighten the screw. After one click, the optimum torque is reached.

Note: If there is thick cortical bone or cement, it may be necessary to remove the TLA before manually tightening the screw.

Place additional locking screws as previously described.



Insert Additional Screws and Locking Attachment Plates

11

Insert cortex screws (optional)

If a slight screw angulation is needed, it is possible to insert 3.5 mm cortex screws instead of 3.5 mm locking screws into the 3.5 mm holes of the locking attachment plate.

12

Place additional locking attachment plates (optional)

If required, place additional locking attachment plates.

Implants

3.5 mm Locking Attachment Plates, for 4.5 mm LCP Plates[◇]

For Distal Femur LISS Plate, LCP Distal Femur Plate, 4.5 mm LCP Condylar Plate, 4.5 mm LCP Curved Condylar Plate, 4.5 mm Broad LCP Plate and 4.5 mm Curved Broad LCP Plate (Marking: A):

Stainless Steel	Titanium	Holes
02.120.601	04.120.601	4
02.120.602	04.120.602	8



4 holes

8 holes

3.5 mm Locking Attachment Plates, for 4.5 mm LCP Proximal Femur Plates[◇]

For 4.5 mm LCP Proximal Femur Plate and 4.5 mm LCP Proximal Femur Hook Plate (Marking: B):

Stainless Steel	Holes
02.120.603	4
02.120.604	8



4 holes

8 holes

Connecting Screws for Locking Attachment Plate, StarDrive Recess[◇]

Two-part screw connects the Locking Attachment Plate to the 4.5 mm LCP Plates through the locking holes

Stainless Steel	Titanium
02.120.606	04.120.606



[◇] Available nonsterile and sterile-packed.
Add "S" to product number for sterile product.

Screws used with the 3.5 mm Locking Attachment Plate

3.5 mm Locking Screws, self-tapping, with StarDrive Recess

- Create a locked, fixed-angle screw-to-plate construct
- Threaded conical head
- Fully threaded shaft



212.101-212.131
412.101-412.131

3.5 mm Cortex Screws, self-tapping*

- Compress the plate to the bone or create axial compression
- Allow slight angulation through locking holes in the locking attachment plate



204.810-204.860
404.810-404.855

* Also available

Instruments

03.100.045 StarDrive Screwdriver Shaft, T15, 250 mm long



03.120.040 Drill Sleeve, for 2.8 mm Drill Bit



03.120.041 2.8 mm 3-fluted Drill Bit, quick coupling, 200 mm



03.120.042 Centering Sleeve for 1.6 mm Kirschner Wire



03.120.049 Depth Gauge, for 3.5 mm screws (for use with 03.120.040)



311.431 Large Handle with quick coupling



314.163 StarDrive T25 Torque Limiting Screwdriver



329.151 Locking Calcaneal Plate Cutter



329.916 Bending Pin for Locking Attachment Plates



511.773 Torque Limiting Attachment, 1.5 Nm, quick coupling



3.5 mm Locking Attachment Plate Set

Stainless Steel (01.120.102) and Titanium (01.120.104)

Graphic Case

60.120.100 Graphic Case for 3.5 mm Locking Attachment Plates

Instruments

03.100.045 StarDrive Screwdriver Shaft, T15, 250 mm long

03.120.040 Drill Sleeve, for 2.8 mm Drill Bit, 4 ea.

03.120.041 2.8 mm 3-Fluted Drill Bit, quick coupling, 200 mm, 2 ea.

03.120.042 Centering Sleeve for 1.6 mm K-wire, 4 ea.

03.120.049 Depth Gauge, for 3.5 mm screws

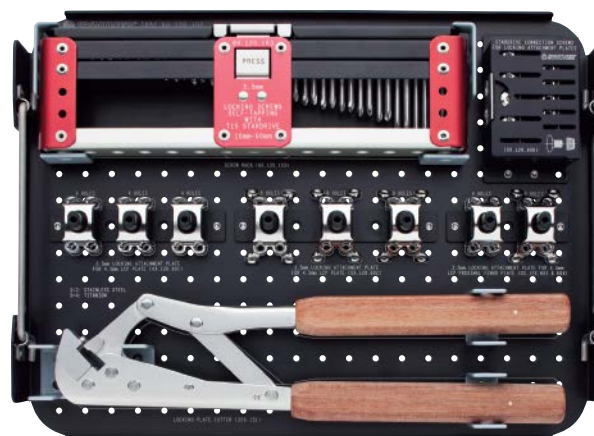
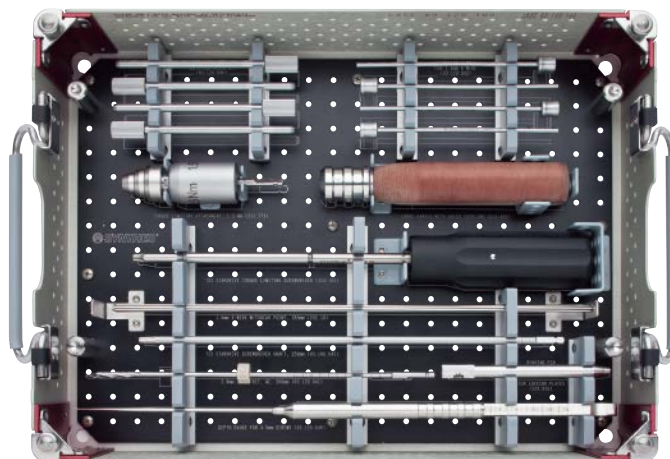
311.431 Large Handle with quick coupling

314.163 StarDrive T25 Torque Limiting Screwdriver

329.151 Locking Calcaneal Plate Cutter

329.916 Bending Pin for Locking Attachment Plates, 2 ea.

511.773 Torque Limiting Attachment, 1.5 Nm, quick coupling



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

3.5 mm Locking Attachment Plate Set continued

Stainless Steel (01.120.102) and Titanium (01.120.104)

Implants

3.5 mm Locking Attachment Plates, for 4.5 mm LCP Plates[◊], 3 ea.

Stainless Steel*	Titanium**	Holes
02.120.601	04.120.601	4
02.120.602	04.120.602	8

3.5 mm Locking Attachment Plates, for 4.5 mm LCP Proximal Femur Plates[◊], 2 ea.

Stainless Steel*	Holes
02.120.603	4
02.120.604	8

Connecting Screws for Locking Attachment Plates, StarDrive Recess[◊], 10 ea.

Stainless Steel*	Titanium†
02.120.606	04.120.606

3.5 mm Locking Screws, self-tapping, with StarDrive Recess, 4 ea.

Stainless Steel*	Titanium†	Length (mm)
212.101	412.101	10
212.102	412.102	12
212.103	412.103	14
212.104	412.104	16
212.105	412.105	18
212.106	412.106	20
212.107	412.107	22
212.108	412.108	24
212.109	412.109	26
212.110	412.110	28
212.111	412.111	30
212.112	412.112	32
212.113	412.113	34
212.115	412.115	36
212.116	412.116	38
212.117	412.117	40
212.118	412.118	42
212.119	412.119	45
212.121	412.121	50
212.123	412.123	55
212.124	412.124	60

292.18 1.6 mm Kirschner Wire, trocar point, 285 mm, 1 pkg. of 10

* Implant quality 316L stainless steel.

** Commercially pure titanium.

† Titanium alloy (Ti-6Al-7Nb).

◊ Available nonsterile or sterile-packed.

Add "S" to catalog number to order sterile product.

Also Available

Instrument

319.01 Depth Gauge, for small screws

Power Equipment

511.701 ComPact Air Drive II
 511.791 Quick Coupling for Kirschner Wires
 530.100 Power Drive

Implants

3.5 mm Locking Screws, self-tapping

Stainless Steel*	Titanium†	Length (mm)
212.126	412.126	70
212.128	412.128	80
212.130	412.130	90
212.131	412.131	95

3.5 mm Cortex Screws, self-tapping

Stainless Steel*	Titanium**	Length (mm)
204.810	404.810	10
204.812	404.812	12
204.814	404.814	14
204.816	404.816	16
204.818	404.818	18
204.820	404.820	20
204.822	404.822	22
204.824	404.824	24
204.826	404.826	26
204.828	404.828	28
204.830	404.830	30
204.832	404.832	32
204.834	404.834	34
204.836	404.836	36
204.838	404.838	38
204.840	404.840	40
204.842	404.842	42
204.844	404.844	44
204.845	404.845	45
204.846	404.846	46
204.848	404.848	48
204.850	404.850	50
204.855	404.855	55
204.860	—	60

* Implant quality 316L stainless steel.

† Titanium alloy (Ti-6Al-7Nb).

** Commercially pure titanium.

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