

LCP Olecranon Plate

Surgical Technique

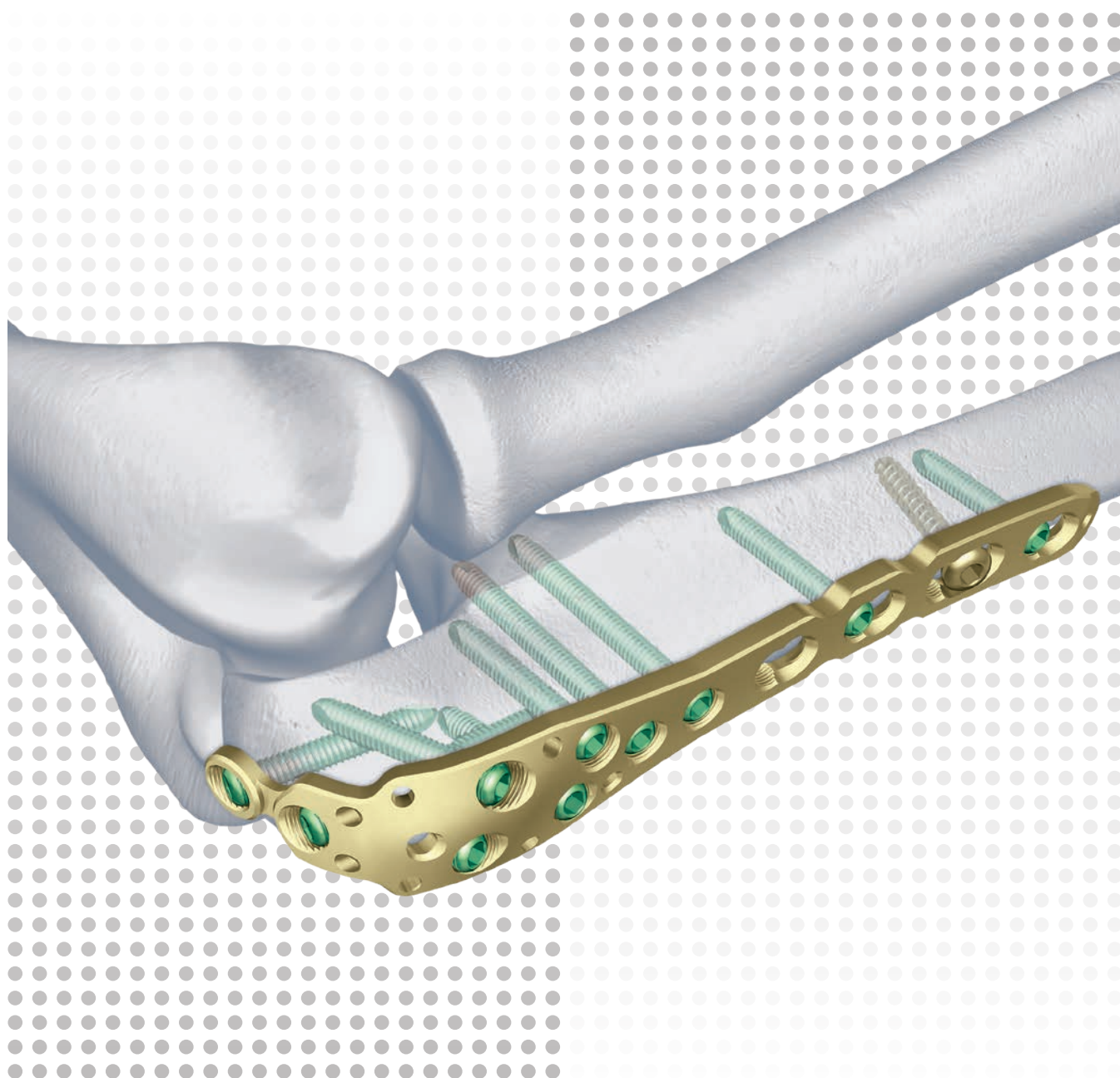


 Image intensifier control

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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LCP Olecranon Plate

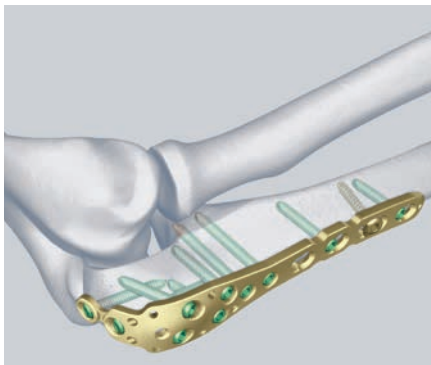
Overview

Anatomically contoured

- Plates are contoured
- Notches in the plate shaft
- The tab can be cut off if not required
- The proximal, spoon-shaped part of the plate is slightly thinner than the shaft
- The position and angle of the screws are anatomically adapted



Part of the DePuy Synthes LCP Elbow Set



LCP Olecranon Plate

Variety of plates:

- Left and right version
- Choice of six lengths with 2, 4, 6, 8, 10 or 12 LCP combi-holes in the shaft

Guide block for correct insertion.



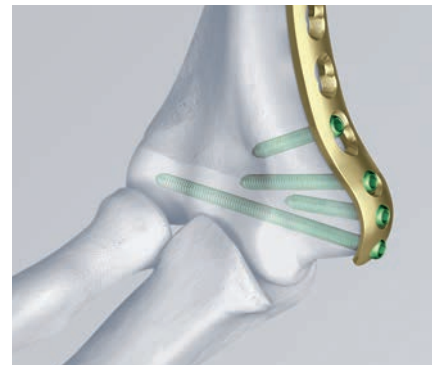
LCP Distal Humerus Plates

Variety of plates:

- Dorsolateral plates with and without support
- Medial plates
- All plates in a left and right version
- All plates in five lengths: 3, 5, 7, 9 and 14 holes

Anatomically contoured: no or only minimal bending necessary.

Guide block for correct insertion.



LCP Metaphyseal Distal Medial Humerus Plate

- Available in five lengths: 7, 9, 11, 13 and 15 holes

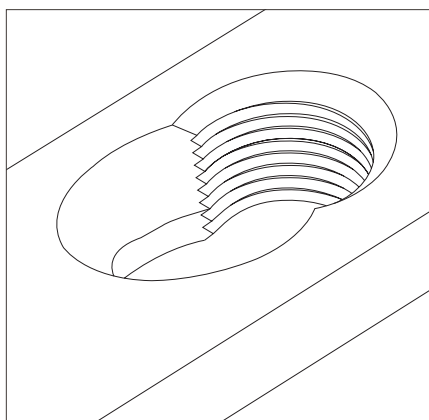
Anatomically contoured: no or only minimal bending necessary.

Plate undercuts to reduce plate-to-bone contact.

Guide block for correct insertion.

LCP Combi-Hole

Intraoperative choice between compression and angular stable locking



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

The AO Principles of Fracture Management

Mission

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

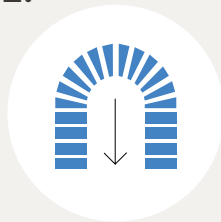
AO Principles^{1,2}

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.

Implantation

■ Note:

For information on fixation principles using conventional and locked plating techniques, please refer to the LCP Locking Compression Plate Surgical Technique.

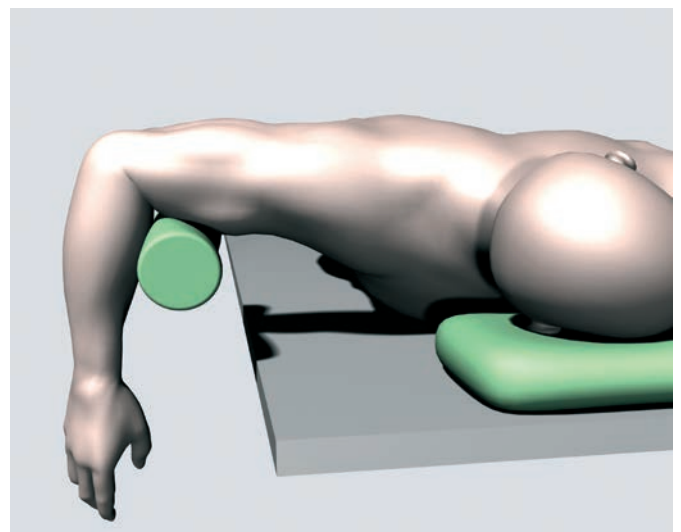
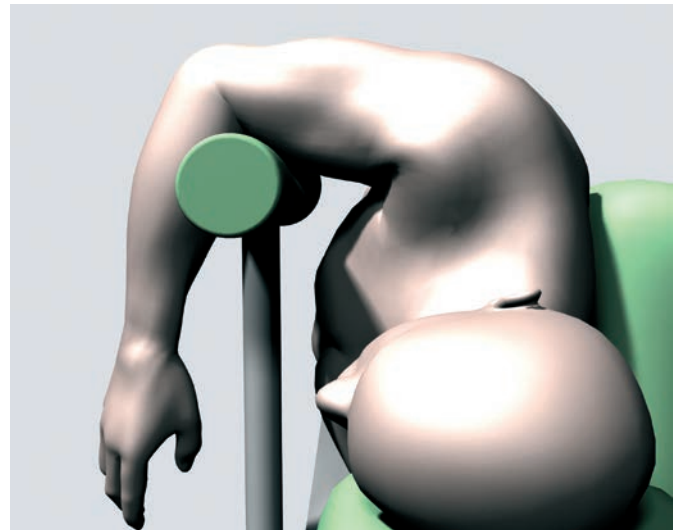
1. Position the patient

Place the patient either in the prone or the lateral position with the elbow flexed over a side rest. Depending on the fracture, use a posterior access up to approximately 5 cm distal from the supracondylar region.

The supine position with the forearm placed across the chest is an acceptable option, especially with extended approaches to the lateral pillar or column.

■ Note:

The position is chosen by the surgeon depending on his or her preference.



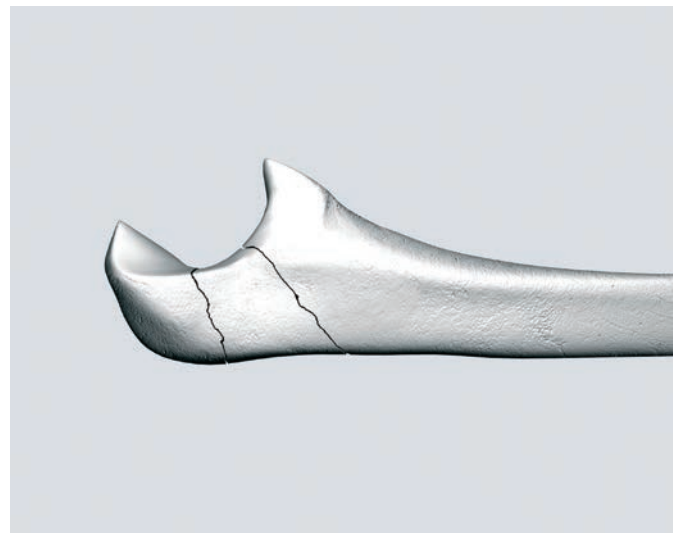
2. Surgical approach

The incision runs posterior from the supracondylar area to a point 4 or 5 cm distal to the fracture. It can be slightly curved to the radial side to protect the ulnar nerve.

3. Reduce the fracture and provide temporary fixation

Reduce the fracture directly or indirectly depending on the type of fracture. Examine the reduction of the coronoid process to determine if it is correct before fixation.

Use Kirschner wires for temporary fixation.



4. Determine plate length and adapt the plate

Required instruments

329.150	Bending Pliers for Plates 2.4 to 4.0, length 230 mm
or	
329.081	LCP Bending Iron for Reconstruction Plates
or	
329.040/050	Bending Iron for Plates 2.4 to 3.5, length 145 mm
329.916	Bending Pin for LCP Plates 3.5, with thread
329.151	Cutting Pliers with Positioning Pin \varnothing 3.0 mm
or	
391.931	Cutting Pliers for Plates, length 230 mm

Select a plate length appropriate for the fracture.

The plate can be bent slightly to adapt to the shape of the bone.

The plate can be bent at max. 4° at each notch in the plane of the shaft.

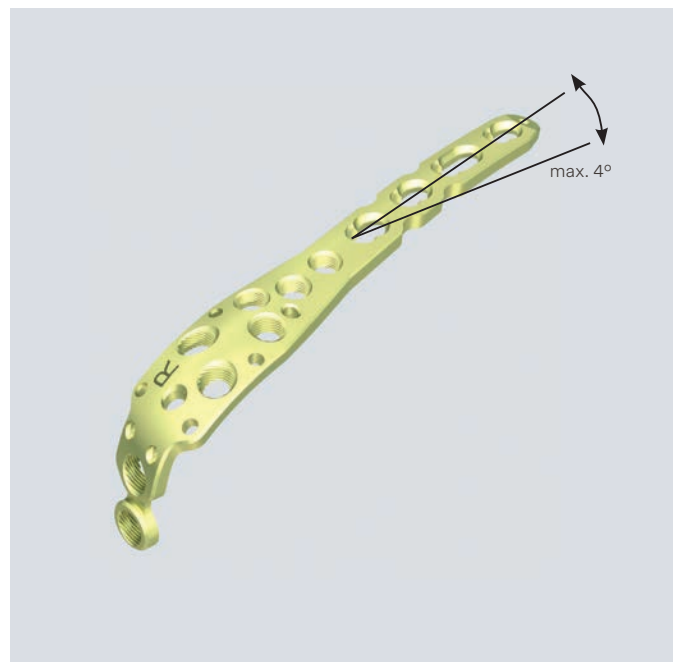
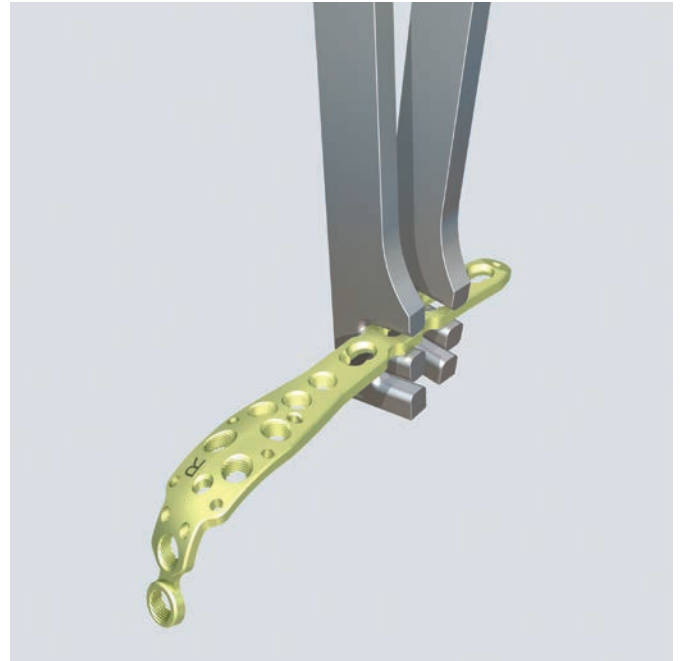
The tendon may have to be split in order to apply the plate from a posterior direction.

Evaluate whether or not the proximal tab should be used. If not, it can be cut off.

The tab can be bent for appropriate screw positioning, using the bending pin.

▲ Precaution:

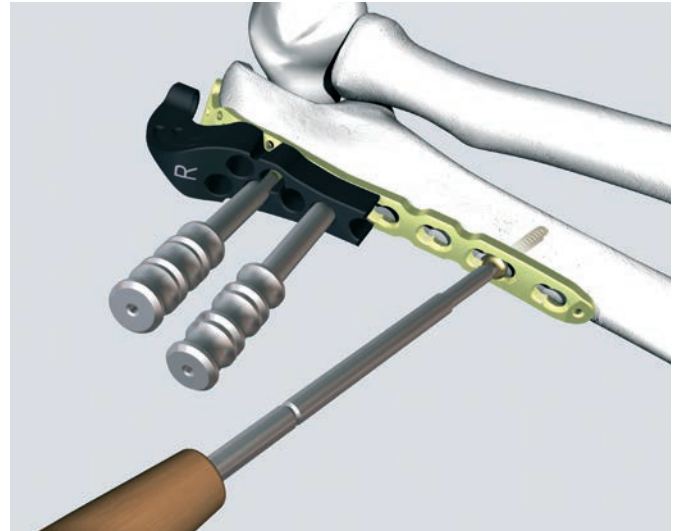
If the tab is bent, take care that the screw does not collide with proximal screws.



5. Attach the plate temporarily

Required instruments

312.910	Aiming Block, right, for LCP Olecranon Plate
312.911	Aiming Block, left, for LCP Olecranon Plate
323.053	Centering Sleeve 6.0/5.0, for PHILOS Aiming Device
323.054	Drill Sleeve 5.0/2.9, for PHILOS Aiming Device
323.055	Centering Sleeve for Kirschner Wire Ø 1.6 mm, length 70 mm, for Nos. 323.027 and 323.054
● 314.030	Screwdriver Shaft, hexagonal, small, Ø 2.5 mm
or	
● 314.116	Screwdriver Shaft Stardrive 3.5, T15, self-holding, for AO/ASIF Quick Coupling



After adapting the plate, mount the aiming device, drill and centering sleeves on the proximal part of the plate.

Position the plate on the reduced bone, and attach it temporarily with a cortex screw Ø 3.5 mm.

6. Determine screw length for proximal part

Required instruments

323.060 PHILoS Direct Measuring Device for Kirschner Wire \varnothing 1.6 mm

Alternative

319.010 Depth Gauge for Screws \varnothing 2.7 to 4.0 mm, measuring range up to 60 mm

Determine the screw position and length in the proximal region with a Kirschner wire and the direct measuring device.

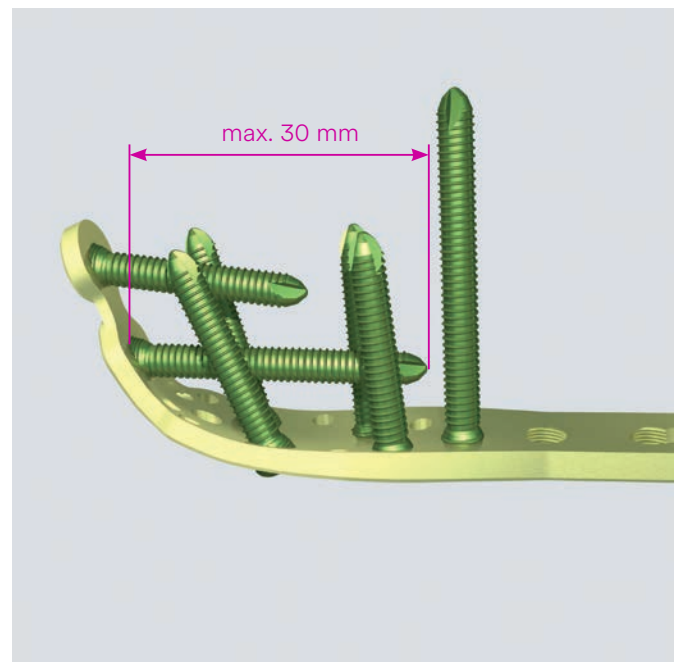
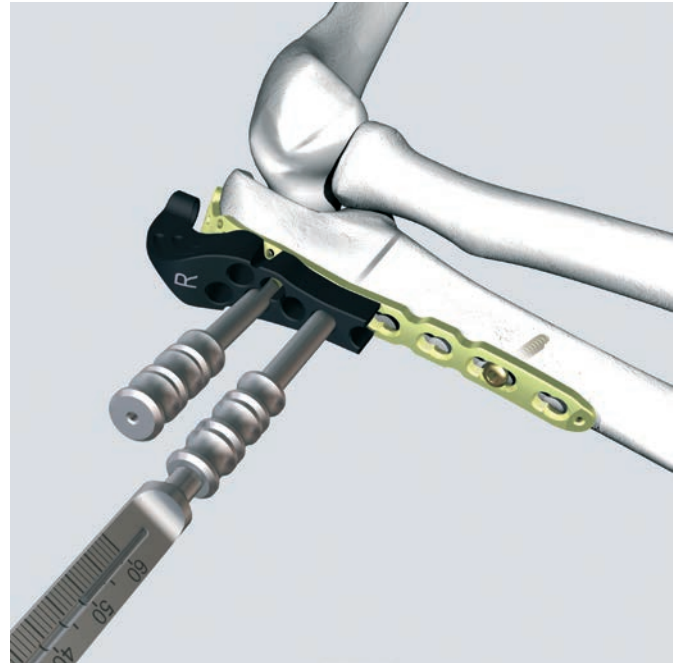
- After positioning the plate, insert the Kirschner wire to the desired location using an image intensifier. Determine the length of the screw with the direct measuring device.

Alternative

Remove the Kirschner wire and centering sleeves, and determine the length of the screw hole with the depth gauge after drilling.

▲ Precaution:

If screws longer than 30 mm are used in the proximal part, they can collide with the shaft screws.



7. Drill screw hole and insert screw in proximal part

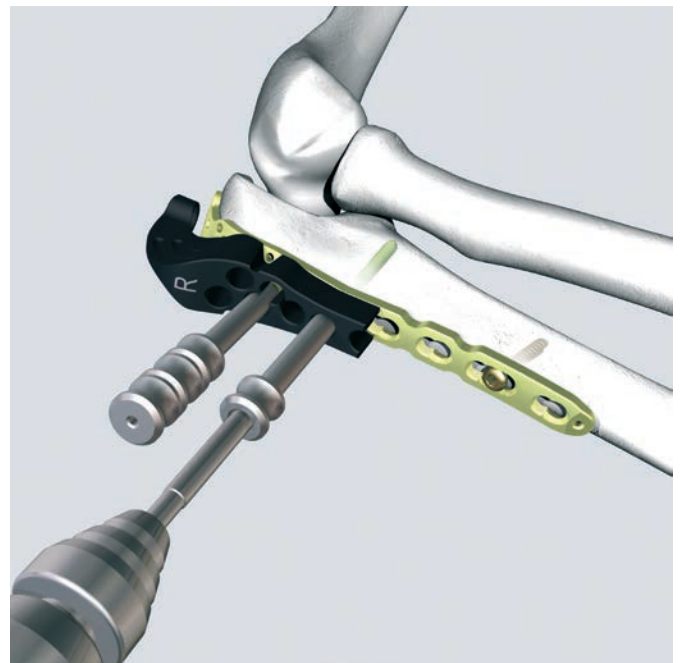
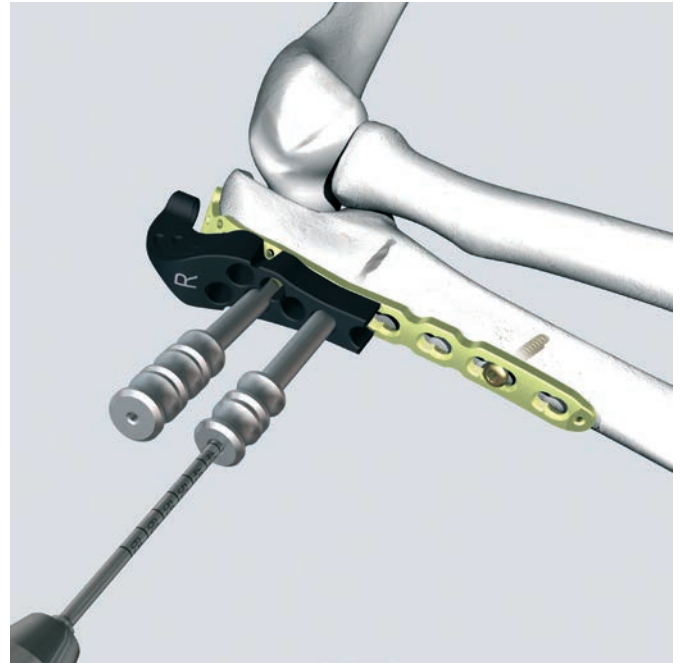
Required instruments

310.284	Drill Bit \varnothing 2.8 mm with Stop, length 165 mm, 2-flute, for Quick Coupling
511.770	Torque Limiter, 1.5 Nm, for Compact Air Drive and for Power Drive
or	
511.773	Torque Limiter, 1.5 Nm, for AO/ASIF Quick Coupling

Remove the centering sleeve. Pre-drill the screw hole with the drill bit. Remove the drill sleeve and drill bit.

Insert the screw manually or using a power tool. Always use the torque limiter to restrict the maximum torque. A distinct click can be heard when the maximum torque is reached, indicating a secure fit. Remove the screwdriver and centering sleeve.

Repeat steps 6 and 7 until all required proximal screws are inserted.



8. Insert the screws in the shaft area

Required instruments

323.027	LCP Drill Sleeve 3.5, for Drill Bits \varnothing 2.8 mm
310.284	Drill Bit \varnothing 2.8 mm with Stop, length 165 mm, 2-flute, for Quick Coupling
319.010	Depth Gauge for Screws \varnothing 2.7 to 4.0 mm, measuring range up to 60 mm
511.770	Torque Limiter, 1.5 Nm, for Compact Air Drive and for Power Drive
or	
511.773	Torque Limiter, 1.5 Nm, for AO/ASIF Quick Coupling
● 314.030	Screwdriver Shaft, hexagonal, small, \varnothing 2.5 mm
or	
● 314.116	Screwdriver Shaft Stardrive 3.5, T15, self-holding, for AO/ASIF Quick Cou- pling

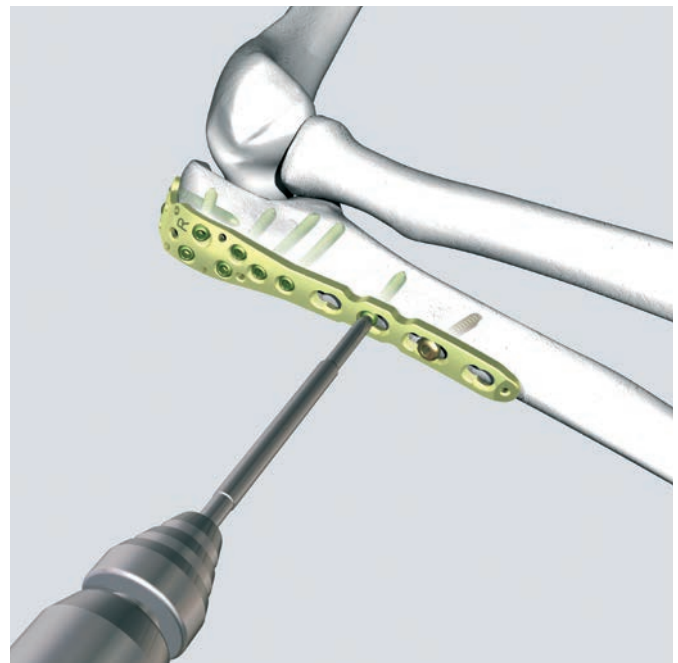
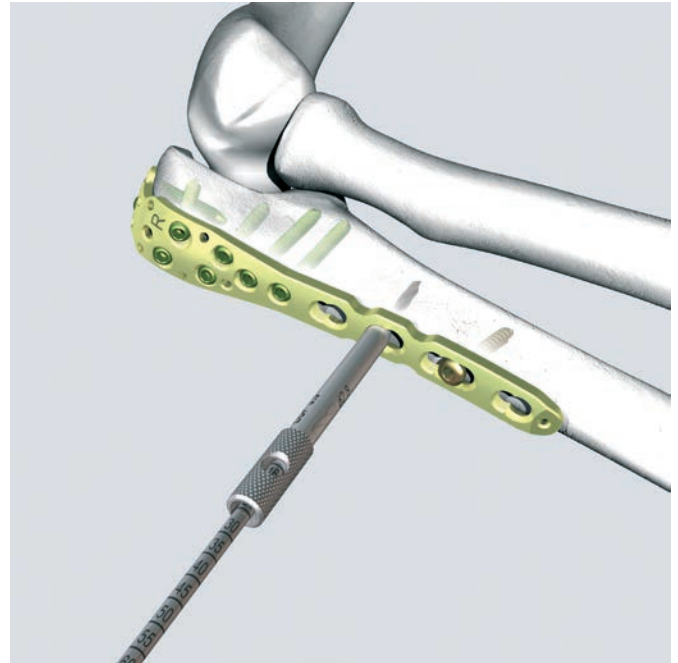
Carefully screw the LCP drill sleeve into the threaded part of the desired combination hole until the thread completely engages. Pre-drill the screw hole with the 2.8 mm drill bit.

Determine the screw length with the depth gauge or scaled drill bit. Insert the screw as described in step 7.

Repeat this step until stable plate-bone fixation is achieved.

▲ Precaution:

If screws longer than 30 mm were used in the proximal part, they can collide with the shaft screws.



Implant Removal

Required instruments

● 314.030	Screwdriver Shaft, hexagonal, small, Ø 2.5 mm
or	
● 314.116	Screwdriver Shaft Stardrive 3.5, T15, self-holding, for AO/ASIF Quick Coupling

309.520	Extraction Screw, conical, for Screws Ø 2.7, 3.5 and 4.0 mm
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309.521	Extraction Screw for Screws Ø 3.5 mm
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311.430	Handle with Quick Coupling length 110 mm
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Unlock all screws from the plate, then remove the screws completely from the bone. This prevents simultaneous rotation of the plate when unlocking the last locking screw.

If a screw cannot be removed with the screwdriver (e.g. if the hexagonal or Stardrive recess of the locking screw is damaged or if the screw is stuck in the plate), use the T-Handle with Quick-Coupling (311.440) to insert the Extraction Screw (309.520 or 309.521) into the screw head, and unscrew the screw in a counter-clockwise direction.

Implants

LCP Olecranon Plates 3.5


Stainless steel	Titanium	Number of shaft holes	Length mm	
236.502	436.502	2	86	right
236.504	436.504	4	111	right
236.506	436.506	6	138	right
236.508	436.508	8	163	right
236.510*	436.510*	10	190	right
236.512*	436.512*	12	216	right
236.503	436.503	2	86	left
236.505	436.505	4	111	left
236.507	436.507	6	138	left
236.509	436.509	8	163	left
236.511*	436.511*	10	190	left
236.513*	436.513*	12	216	left




All plates are available sterile packed. For sterile implants add suffix S to article number.


* Optional in sets 186.603/608/613/618.

Screws

*X12.102-124  Locking Screw \varnothing 3.5 mm,
length 12-60 mm, self-tapping,
with Stardrive recess



*X13.012-060  Locking Screw \varnothing 3.5 mm,
length 12-60 mm, self-tapping,
with hexagonal recess

**X04.814-860  Cortex Screw \varnothing 3.5 mm,
length 14-60 mm, self-tapping,
with hexagonal recess



All screws are available sterile packed. For sterile implants
add suffix S to article number.

X=2: Stainless Steel

*X=4 TAN

**X=4 TiCP

Instruments

312.910 Aiming Block, right,
for LCP Olecranon Plate



312.911 Aiming Block, left,
for LCP Olecranon Plate



323.053 Centering Sleeve 6.0/5.0,
for PHILOS Aiming Device



323.054 Drill Sleeve 5.0/2.9,
for PHILOS Aiming Device



323.055 Centering Sleeve for Kirschner Wire
Ø 1.6 mm, length 70 mm,
for Nos. 323.027 and 323.054



329.150 Bending Pliers for Plates 2.4 to 4.0,
length 230 mm

314.030 Screwdriver Shaft, hexagonal,
small, Ø 2.5 mm

or

314.116 Screwdriver Shaft Stardrive 3.5,
T15, self-holding, for AO/ASIF
Quick Coupling

309.520 Extraction Screw, conical,
for Screws \varnothing 2.7, 3.5 and 4.0 mm

309.521 Extraction Screw for Screws \varnothing 3.5 mm

311.430 Handle with Quick Coupling
length 110 mm

■ **Note:**

The Olecranon Plate is compatible with 3.5 mm LCP instruments and standard small-fragment instruments. These additional instruments are also required, although they are not shown here.

MRI Information

Torque, Displacement and Image Artifacts according to ASTM F 2213, ASTM F 2052 and ASTM F 2119

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 F 2182

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 thermoregulation 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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