Surgical Technique

LCP Metaphyseal Plates.
For extra-articular fractures.

This publication is not intended for distribution in the USA.

Instruments and implants approved by the AO Foundation.
Image intensifier control

Warning
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 Synthes reusable devices, instrument trays and cases, as well as processing of Synthes non-sterile implants, please consult the Important Information leaflet (SE_023827) or refer to:
http://emea.depuysynthes.com/hcp/reprocessing-care-maintenance
LCP Metaphyseal Plates.
For extra-articular fractures.

Features and benefits

**LCP combi-holes allow uncompromising combinations**
The combi-hole allows an internal plate fixation using standard screws, angular stable locking screws, or a combination of both. This takes into account the most diverse intraoperative requirements.

**Angular stability allows for better fixation**
The angle- and axis-stable locking screws prevent loss of reduction under load. A precise anatomical contouring of the plate is unnecessary when using this system as a locking internal fixator.

**Easier plate contouring due to thinned plate profile**
The plate design facilitates anatomical contouring considerably, whilst taking into account the distinctive features of the metaphyseal bone area (e.g. complex bone shapes, thin soft tissue envelope).

**Indications**
The plates are indicated for extra-articular fractures of the metaphyseal area that extend into the shaft. The 3.5 plate is indicated for distal tibial and distal humeral fractures. The 3.5/4.5/5.0 plate is indicated for distal tibial and proximal humeral fractures.
Extra-articular fixation with the advantage of angled locking screws
The two distal holes in the thinned area of the plate, which are angled at 11° towards the centre of the plate, allow an optimal application of the locking screws in the epiphyseal area.

Additional design features
- Bullet nose plate tip for easier application of the minimally invasive surgical technique.
- Temporary fixation can be achieved effortlessly through the suture hole.
- Improved vascularization of the periost due to plate undercuts that reduce the plate-to-bone contact.
- The elongated hole in the shaft optimizes fine tuning of the reduction in the longitudinal axis.
Surgical steps

**Implant preparation**
Adapt the LCP Metaphyseal Plate to the anatomy of the bone.

**Plate fixation**
Use the LCP Metaphyseal Plate according to the LCP principles (see LCP Instructions for Use, Art. No. 036.000.019).

The two distal holes in the thinned area of the plate, which are angled at 11° towards the centre of the plate, allow for an optimal application of the locking screws in the epiphyseal area. Take this into consideration when bending the plate and threading in the threaded LCP Drill Sleeve for 2.8 mm drill bits (323.027).

The threaded LCP drill sleeves ensure easy and axially correct pre-drilling.

Insert Kirschner wires to determine the direction of the screws or to temporarily fix the plate using the centering sleeve for Kirschner wires.
- Small fragment: Centering Sleeve for 1.25 mm Kirschner wire (324.081)
- Large fragment: Centering Sleeve for 2.0 mm Kirschner wire (323.044)

The simultaneous use of two threaded LCP drill sleeves in the thinned plate area also assists insertion in the minimally invasive surgical technique.


**Warning:** Do not position the thinner portion of the plate over the fracture site.
Fixation with 3.5 mm locking screws
1 Axially correct pre-drilling for the self-tapping 3.5 mm locking screws requires the threaded LCP Drill Sleeve for 2.8 mm drill bits (323.027).

2 Use the Torque Limiter 1.5 Nm (511.115) and the Screwdriver Shaft (Hex 314.030, Stardrive 314.116) for the motor-driven insertion of the locking screw.

3 Stop the motor before locking, fix the torque limiter and the screwdriver shaft to the Handle with Quick Coupling (311.431) and tighten the screw. After one click, the optimal torque is reached.

Fixation with 5.0 mm locking screws
1 Axially correct pre-drilling for the self-tapping 5.0 mm locking screws requires the threaded LCP Drill Sleeve for 4.3 mm drill bits (323.042).

2 Use the Torque Limiter 4.0 Nm (511.771) and the Screwdriver Shaft (Hex 314.152, Stardrive 314.119) for the motor-driven insertion of the locking screw.

3 Stop the motor before locking, fix the torque limiter and the screwdriver shaft to the Handle (397.705) and tighten the screw. After one click, the optimal torque is reached.

4 Alternatively, use the Torque-limiting Screwdriver (Hex 324.052, Stardrive 314.163) to tighten the screw manually.
LCP Metaphyseal Plate 3.5

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LCP Metaphyseal Plate 3.5/4.5/5.0

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Screws for the LCP Metaphyseal Plate 3.5

Use the LCP Metaphyseal Plate 3.5 with 3.5 mm small fragment standard screws and locking screws.

Screws for the LCP Metaphyseal Plate 3.5/4.5/5.0

In the thinned plate area, use 3.5 mm small fragment standard screws and locking screws. Use large fragment standard screws and locking screws for the other plate area.

All plates and screws are available non-sterile and sterile packed.

For sterile implants add suffix “S” to article number.
MRI Information

Torque, Displacement and Image Artifacts according to ASTM F 2213-06, ASTM F 2052-06e1 and ASTM F2119-07
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 F2182-11a
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.