4.5MM LCP® T-PLATE

For the treatment of physeal fractures of the proximal tibia in foals.
## CONTENTS

### INTRODUCTION

- 4.5mm LCP® T-Plate  
  4

- AO Principles  
  6

- Indications  
  7

### SURGICAL TECHNIQUE

- Plate Contouring and Positioning  
  8

- Screw Insertion Technique  
  10

### PRODUCT INFORMATION

- Implants  
  12

- Instruments  
  14
4.5MM LCP® T-PLATE

For the treatment of proximal tibia fractures in foals.

The DePuy Synthes Vet 4.5mm LCP® T-Plate is part of a stainless steel plate and screw system that merges locking screw technology with conventional plating techniques. The technical innovation of locking screws provides the ability to create a fixed-angle construct while following standard AO plating principles.

Features:
- Proximal screws converge to maximize screw purchase in bone.
- Uses locking or cortex screws
- Compatible with Large Fragment System

PLATE DESIGN

Screw Holes
All holes accept 4.0mm locking screws, 5.0mm locking screws, 4.5mm cortex screws or 5.5mm cortex screws.

Fixed angle stability
The threads on the head of the locking screws lock into the threaded plate holes to form a fixed-angle construct that will increase load transfer between the plate and bone. When compared to conventional plate-and-screw constructs, the angular and axial stability of locking screws increases the strength of the construct under load without requiring precise anatomical contouring.
LOCKING SCREWS

Screwhead
The tapered, double-lead machine thread on the head of the locking screw engages the threads of the locking plate holes. The resulting fixed-angle construct provides stable fixation of the bone fragments without having to compress the plate to the bone. A perfectly contoured plate is therefore not required to achieve fixation and maintain proper alignment.

Thread profile
Because locking screws do not compress the plate to the bone, the “pull-out” mode of failure is not applicable to locking screws. For this reason, locking screws are made with a smaller thread profile and a larger core diameter. This results in increased mechanical strength over comparably sized cortex screws.*

Drive mechanism
The STARDRIVE™ Recess of a locking screw provides three significant improvements over an internal hex drive:

• “Stripping” of the screw head is minimized as a failure mode, which results in a much higher tolerance to wear for the screwdriver.*
• The tapered STARDRIVE Recess provides automatic screw retention without the need for an additional screw holding mechanism.
• The more efficient STARDRIVE Recess allows a smaller screw head and allows the screw head to sit flush with the plate.

Caution:
DePuy Synthes Companies of Johnson & Johnson implants and instruments are manufactured with proprietary processes that produce superior products to those created by conventional manufacturing processes. Though other companies may be able to estimate the DePuy Synthes Companies general product design, DePuy Synthes Companies product dimensions are proprietary. The precision design of DePuy Synthes Companies products is very important for long-term product function and optimal fit between implants.

Only the finest quality materials are used to manufacture DePuy Synthes Companies implants. The metals DePuy Synthes Companies uses have been scientifically proven to be of the best biocompatibility and quality available today.

With these features and qualities, the mixing of DePuy Synthes Companies implants with the implants from other companies is not recommended. The overall performance may be compromised due to differences in design, chemical composition, mechanical properties, and quality.

Given these qualities are trade-secret, no competitor of DePuy Synthes Companies can make a genuine claim “the same as DePuy Synthes Companies.” Combining implants from other companies with DePuy Synthes Companies implants could reduce product performance. Consequently, it is strongly recommended to not mix parts from different manufacturers.

*Test data on file at DePuy Synthes Vet (Ref. Reports #SETSET_20110610, MT01-258)
In 1958, the AO formulated four basic principles, which have become the guidelines for internal fixation.\textsuperscript{1,2} They are:

**Anatomic Reduction**
Fracture reduction and fixation to restore anatomical relationships.

**Stable Fixation**
Stability by fixation or splintage, as the personality of the fracture and the injury requires.

**Preservation of Blood Supply**
Preservation of the blood supply to soft tissue and bone by careful handling.

**Early, Safe Mobilization**
Early, safe mobilization of the part and patient

The DePuy Synthes Vet 4.5mm LCP T-Plate is intended for treatment of physeal fractures of the proximal tibia in foals.
PLATE CONTOURING AND POSITIONING

1
Position plate

Instruments

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>329.30</td>
<td>Plate-Bending Press</td>
</tr>
<tr>
<td>511.701</td>
<td>Compact Air Drive II</td>
</tr>
<tr>
<td>511.791</td>
<td>Quick Coupling for K-Wires</td>
</tr>
<tr>
<td>VW2003.15</td>
<td>2.0 mm Kirschner Wire, 150 mm</td>
</tr>
<tr>
<td>311.449</td>
<td>Push-Pull Reduction Device, for 4.5mm LCP Plates</td>
</tr>
<tr>
<td>03.100.049</td>
<td>Bending Template for 4.5mm and 5.5mm LCP and LC-DCP Plates, 16 Holes</td>
</tr>
</tbody>
</table>

1a.
Reduce the fracture. If a tension band is to be used to assist the reduction, ensure that there is sufficient room to allow placement of the head of the plate on the epiphysis.

1b.
Contour the plate as needed. Screw position in the tibial epiphysis must be considered when contouring of the plate.

Note: Please be aware that contouring the head of the plate changes the locking screw trajectories (maximal screw lengths that can be used without the screws interfering with each other). This may also occur inadvertently when the shaft of the plate is contoured near the head of the plate or if the head of the plate is placed in the bending press. See Figure 1.

In addition, the vertical alignment of the head of the plate must allow for locking screws to be placed in the epiphysis, avoiding the joint and physsis. See Figure 2.
1c.
Place the caudal hole in the head of the plate adjacent to the collateral ligament. If needed, the plate can be clamped into position or temporarily secured using 2.0mm Kirschner wires.

1d.
Insert the Push-Pull Reduction Device into the center proximal hole and secure the plate to the bone. See Figure 3.

Note: A threaded drill guide inserted into one of the proximal holes can be used to hold the plate during placement and clamping.
Screw Insertion Technique

2 Screw Insertion
Refer to the DePuy Synthes Veterinary Large Fragment Technique Guide J9574A for correct screw insertion techniques.

**Note:** All screws must be fully tightened for proper function. Avoid over-tightening cortex screws as this may result in stripping the bone. Do not perform final tightening of the screws to the plate under power. It is recommended that final tightening should be performed manually.

For 4.0 and 5.0 mm Locking Screws, 511.771 Torque Limiting Attachment, 4 Nm, can be used. Screws inserted with the Torque Limiting Adapter should be checked by hand to ensure they are fully tightened.

2a Insert a 5.0mm locking screw into the caudal hole (A) using standard screw insertion technique. If locking fixation is not desired, a 4.5mm or 5.5mm cortex screw should be inserted.

Ensure that the screw engages the epiphysis and does not enter the joint or physis.

2b Insert a locking (or cortex) screw into the cranial proximal hole (B) using the standard screw insertion technique.

If Kirschner wires were placed, they can be removed at this time.

2c Remove the push/pull device from the center proximal hole (C) and replace with a screw.
2d
Place a 5.5 mm cortex screw into the most distal Combi-hole (D) in the load position and tighten fully to compress the fracture.

2e
Place cortex screws into holes E and F.

The screws should be parallel to the locking screw in hole A to avoid entering the physis. The screws in holes E and/or F may be used in a lag fashion to secure the lateral metaphyseal fragment.

2f
Insert a 5.0mm locking screw into the remaining hole. For longer plates, insert 5.0mm locking screws into all remaining holes.
<table>
<thead>
<tr>
<th>4.5mm LCP T-plate</th>
<th>Shaft Holes</th>
<th>Length (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VP4353.04</td>
<td>4</td>
<td>91</td>
</tr>
<tr>
<td>VP4353.06</td>
<td>6</td>
<td>127</td>
</tr>
<tr>
<td>VP4353.08</td>
<td>8</td>
<td>163</td>
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<tr>
<td>VP4353.10</td>
<td>10</td>
<td>199</td>
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</table>

5.5 mm Cortex Screws, non self-tapping, with Hexagonal recess

<table>
<thead>
<tr>
<th>VS501.024-060</th>
<th>24 mm – 60 mm (in 2 mm increments)</th>
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<tbody>
<tr>
<td>VS501.064</td>
<td>64 mm</td>
</tr>
<tr>
<td>VS501.070-100</td>
<td>70 mm – 100 mm (in 10 mm increments)</td>
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</tbody>
</table>

4.5 mm Cortex Screws, self-tapping, with Hexagonal recess

<table>
<thead>
<tr>
<th>VS402.014-072</th>
<th>14 mm – 72 mm (in 2 mm increments)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VS402.076</td>
<td>76 mm</td>
</tr>
<tr>
<td>VS402.080-100</td>
<td>80 mm – 100 mm (in 5 mm increments)</td>
</tr>
</tbody>
</table>

5.0 mm Locking Screws, self-tapping, with Stardrive recess

<table>
<thead>
<tr>
<th>VS502.014-050</th>
<th>14 mm – 50 mm (in 2 mm increments)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VS502.055-090</td>
<td>55 mm – 90 mm (in 5 mm increments)</td>
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</tbody>
</table>

4.0 mm Locking Screws, self-tapping, with Stardrive recess

| VS406.014-062     | 14 mm – 62 mm (in 2 mm increments) |
### Also Available

**4.5mm Cortex Screws, non self-tapping, with Hexagonal recess**

| VS401.014-017 | 14 mm – 72 mm (in 2 mm increments) |
| VS401.072 | 76 mm |
| VS401.080-082 | 80 mm – 100 mm (in 5 mm increments) |

<table>
<thead>
<tr>
<th>Thread Diameter</th>
<th>5.5mm</th>
<th>4.5mm</th>
<th>5.0mm</th>
<th>4.0mm</th>
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</thead>
<tbody>
<tr>
<td>Screw Type</td>
<td>Cortex</td>
<td>Cortex</td>
<td>Locking</td>
<td>Locking</td>
</tr>
<tr>
<td>Drill Bit for Threaded Hole</td>
<td>4.0mm</td>
<td>3.2mm</td>
<td>4.3mm</td>
<td>3.2mm</td>
</tr>
<tr>
<td>Tap</td>
<td>5.5mm</td>
<td>4.5mm</td>
<td>Self-Tapping</td>
<td>Self-Tapping</td>
</tr>
<tr>
<td>Drive Type</td>
<td>3.5mm Hexagonal</td>
<td>3.5mm Hexagonal</td>
<td>T25 Stardrive</td>
<td>T25 Stardrive</td>
</tr>
</tbody>
</table>
INSTRUMENTS

LARGE FRAGMENT STANDARD INSTRUMENT SET (103.531)

Graphic Case
690.542 Large Fragment Instrument Set
   Graphic Case

Instruments
310.29 3.2 mm Drill Bit, quick coupling, 195 mm
310.40 4.0 mm Drill Bit, quick coupling, 197 mm
310.48 4.5 mm Drill Bit, quick coupling, 145 mm
310.55 5.5 mm Drill Bit, quick coupling, 197 mm
310.99 Countersink, for 4.5 mm Cortex Screws
311.44 T-Handle with quick coupling
311.48 Tap for 4.5 mm Cortex and 4.5 mm Shaft Screws, 180 mm/110 mm tap depth
311.55 Tap for 5.5 mm Cortex Screws, 197 mm/100 mm tap depth
311.66 Tap for 6.5 mm Cancellous Screws, 197 mm/150 mm calibration
312.46 4.5 mm/3.2 mm Double Drill Sleeve
312.560 5.5 mm/4.0 mm Double Drill Sleeve
314.11 Holding Sleeve
314.15 Large Hexagonal Screwdriver Shaft
314.27 Large Hexagonal Screwdriver
319.10 Depth Gauge, for large screws
321.12 Articulated Tension Device
321.20 Ratchet Wrench, 11 mm width across flats
322.535 5.5 mm Universal Drill Guide
323.46 4.5 mm Universal Drill Guide

Also Available
310.31 3.2 mm Drill Bit, quick coupling, 145 mm
310.44 4.5 mm Drill Bit, quick coupling, 145 mm

Note: Large Fragment Instrument Set (103.530) consists of Large Fragment Standard Instrument Set (103.531), with graphic case, and Large Fragment Locking Instrument Set (103.532).

For detailed cleaning and sterilization instructions, please refer to:
www.synthes.com/cleaning-sterilization
In Canada, the cleaning and sterilization instructions will be provided with the Loaner shipments.
LARGE FRAGMENT LOCKING INSTRUMENT SET (103.532)

Instruments

<table>
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<tr>
<th>Item</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>310.431</td>
<td>4.3 mm Drill Bit, quick coupling, 180 mm</td>
</tr>
<tr>
<td>311.449</td>
<td>Push-Pull Reduction Device, for 4.5 mm LCP Plates</td>
</tr>
<tr>
<td>312.449</td>
<td>4.3 mm Threaded Drill Guide, 3 ea.</td>
</tr>
<tr>
<td>314.118</td>
<td>Stardrive Screwdriver, T25</td>
</tr>
<tr>
<td>314.119</td>
<td>Stardrive Screwdriver Shaft, T25, quick coupling</td>
</tr>
<tr>
<td>397.705</td>
<td>Handle, quick coupling, for Compact Air Drive Connection</td>
</tr>
<tr>
<td>511.771</td>
<td>Torque Limiting Attachment, 4 Nm</td>
</tr>
</tbody>
</table>

Also Available

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>312.445</td>
<td>3.2 mm Threaded Drill Guide, for 4.0 mm Locking Screws</td>
</tr>
<tr>
<td>324.075</td>
<td>Threaded Plate Holder</td>
</tr>
<tr>
<td>397.705</td>
<td>Handle, for AO Reaming Coupler Connection</td>
</tr>
<tr>
<td>511.774</td>
<td>Torque Limiting Attachment, 4 Nm, for AO Reaming Coupler</td>
</tr>
</tbody>
</table>

Note: Large Fragment Instrument Set (103.530) consists of Large Fragment Standard Instrument Set (103.531), with graphic case, and Large Fragment Locking Instrument Set (103.532).

Compact Air Drive II Accessories

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>511.701</td>
<td>Compact Air Drive II</td>
</tr>
<tr>
<td>511.771</td>
<td>Torque Limiting Attachment, 4 Nm</td>
</tr>
<tr>
<td>511.791</td>
<td>Quick Coupling for K-wires</td>
</tr>
<tr>
<td>511.75</td>
<td>AO Quick Coupling for Drill bits</td>
</tr>
</tbody>
</table>

For the full range of attachments and accessories for the Compact Air Drive II, please contact your DePuy Synthes Vet representative or consult the DePuy Synthes Power Tools product catalog.
CAUTION: Federal Law restricts these devices to sale by or on the order of a veterinarian.