

Locking Large Fragment Implant and Instrument

Surgical Technique



TABLE OF CONTENTS

INTRODUCTION	
▶ Large Fragment LCP Instrument and Implant Set	2
▶ Indications	4
SURGICAL TECHNIQUE	
▶ Preparation and Reduction	5
▶ Screw Insertion	6
▶ Removal of Implant	9
PRODUCT INFORMATION	
▶ Implants	10
▶ Instruments	17
▶ Set List	19

The aim of every treatment for surgical fractures is to repair the anatomy and restore its function. According to the AO Internal fixation is differentiated by anatomical reduction, stable fixation, blood supply preservation and early, functional mobilization. For quite some time, plate and screw osteosynthesis has been identified as clinically beneficial. Using internal fixation with angular stabilization (internal fixators) in complicated fractures and in osteopenic bones, clinical outcomes have improved.

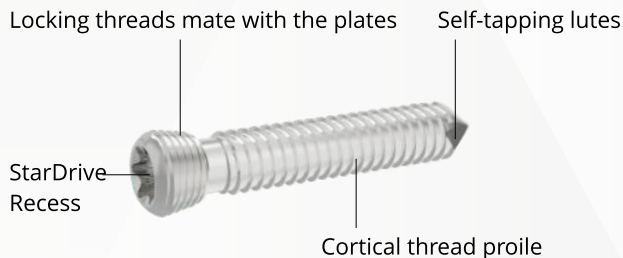
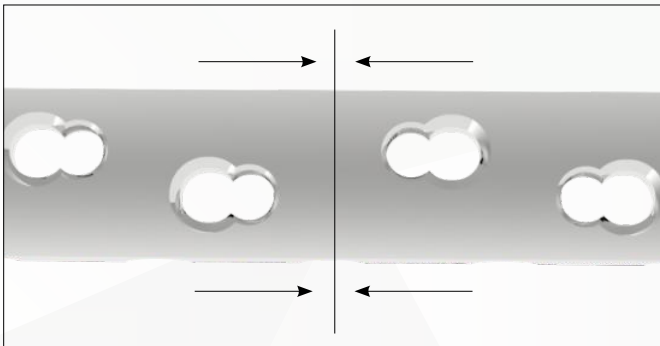
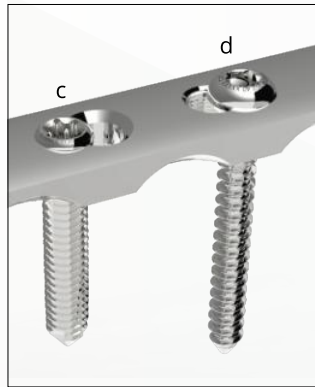
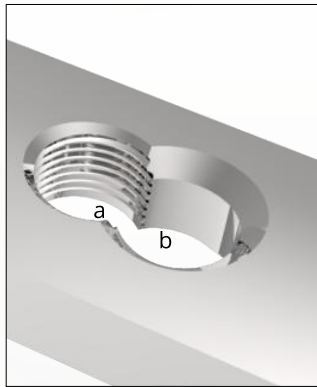
The Locking Compression Plate (LCP) System is part of a Stainless Steel and Titanium Plate and Screw System that merges locking screw technology with traditional plating techniques. The LCP Method has many similarities. To standard methods of plate fixation, but with a few major changes. Locking screws have the ability to build a construct with a fixed angle by using familiar. AO plating techniques. In osteopenic bone or multifragment fractures where standard screw purchase is affected, a fixed-angle construct offers enhanced fixation. In order to preserve stability, LCP plate constructs do not rely on plate-to-bone compression, but work similarly to many small multi-angled blade plates.

Treatment using Locking Compression Plate technology is characterized by the following points:

- ◆ Allows fracture treatment using locked plating with bicortical or unicortical locking screws;
- ◆ Allows fracture treatment using conventional plating with conventional cortex or cancellous bone screws;
- ◆ Permits the combination of conventional and lockingscrew techniques.

Note:

The LCP Method is applicable to several different types of plate and is thus appropriate for a wide range of types of fracture. For that reason, this technique guide does not deal with any specific fracture type.



Locking compression plates

The LCP Plates have these LC-DCP Plate features:

- ◆ Uniform hole spacing
- ◆ Load (compression) and neutral screw positions

Combination locking and compression Combi holes

The Combi holes allow placement of conventional cortex and cancellous bone screws on one side or threaded conical locking screws on the opposite side of each hole.

- a. Threaded hole section for locking screws
- b. DCU hole section for conventional screws
- c. Locking screw in threaded side of Combi hole
- d. Cortex screw in compression side of Combi hole

Notes:

- ◆ Combi holes in straight plates are oriented with the conventional portion of each hole further from the middle of the plate. This facilitates utilization of the LCP Plates for dynamic compression using traditional AO techniques.
- ◆ The holes in the straight LCP Plates are larger at the two ends to allow the insertion of cancellous bone screws.

4.0mm and 5.0mm locking screws, self-tapping, with StarDriveRecess

The locking screws mate with the threaded portion of the Combi holes to form a fixed-angle construct.

The Locking Compression Plates—Narrow and broad, they are designed to fixate various long bones such as the humerus, femur, and tibia. They can also be used to stabilise periprosthetic fractures, osteopenic bone, and nonunions or malunions.

The T-Plates designed to buttress metaphyseal fractures of the proximal humerus, medial tibial plate, and distal tibia. They can also be used to fix osteopenic bone as well as nonunions and malunions.

LCP Proximal Tibia Plate is designed to treat proximal tibia nonunions, malunions, and fractures, including simple, comminuted, lateral wedge, depression, medial wedge, bicondylar, periprosthetic, and fractures with accompanying shaft fractures.

The 3.5 mm/4.5 mm LCP Medial Proximal Tibia Plates are designed to buttress medial tibia plate metaphyseal fractures, split-type fractures, medial split fractures with accompanying depressions, and split or depression fractures of the medial tibia plate. The plates can also be utilised to stabilise the proximal quarter (lateral and medial) of the tibia as well as proximal tibial segmental fractures. The 4.5 mm version can also be utilised to close wedge tibial osteotomies and correct nonunions and malunions of the medial proximal tibia and tibia shaft.

1. Plate selection

The plates come in different lengths and configurations.

2. Contouring

For contouring the locking compression plate to the anatomy, use the latest bending tools.

Note:

To accept any degree of deformation, the plate holes have been built. Place the bending irons on two consecutive holes while bending the plate. This guarantees that it will not distort the threaded holes. Locking performance would be decreased by substantial distortion of the locking holes.

Precaution:

- ◆ Reverse bending or using incorrect bending instruments can weaken the plate and lead to premature failure of the plate (e.g. breakage). Do not bend the plate beyond what is appropriate to suit the anatomy.
- ◆ Do not bend the plate at the level of the holes.
- ◆ Instruments and screws can have sharp edges or changing joints that can tear or pinch the glove or skin of the person.
- ◆ Carefully handle instruments and dispose of worn bone cutting equipment in an approved sharp container.

3. Insertion of screw

Instruments

605A.045 Universal Drill And Tap Sleeve 4.5/3.2mm

For fixation, decide whether traditional cortex screws, cancellous bone screws, or locking screws will be used. It is possible to use a mix of anything.

Note:

A traditional screw should first be used to bring the plate to the bone if a combination of cortex, cancellous, and locking screws is used. If a locking screw is used first, when the locking screw is tightened to the plate, care should be taken to ensure that the plate is firmly held to the bone to prevent spinning the plate around the bone.

Insertion of cortex or cancellous bone screw:

- ◆ Neutral insertion of a conventional screw: It will center itself and allow neutral predrilling when pressing the universal drill guide into the DCU portion of the Combi hole.
- ◆ Dynamic compression, eccentric insertion of a cortex screw: Place the universal drill guide eccentrically at the edge of the DCU portion of the Combi cavity, without applying pressure, to drill a hole for dynamic compression. Dynamic compression corresponding to that of LC-DCP Plates will result from tightening the cortex screws.



Neutral position

Dynamic compression



Instruments

601.012	Drill Bits 3.2mm x 195mm for Quick Coupling T Handle
601.020	Drill Bits 4.3mm x 225mm for Quick Coupling T Handle
612A.035	Screw Driver for Holding Sleeve 3.5mm Tip
614.T25	Shaft for Star Screw Driver T25 Tip for 5.0/6.0mm screws
609.003	Depth Gauge for 4.5mm to 6.5mm Screws
735.08	Torque Limit Adapter 4.0Nm

Insertion of locking screw:

The locking screw is not a lag screw. When requiring correct anatomical reduction (e.g., joint surfaces) or interfragmentary compression, use nonlocking screws. Perform anatomical reduction before inserting the first locking screw, and patch the fracture with lag screws, if necessary. After locking screws have been inserted, an anatomical reduction is no longer feasible without the locking screw being loosened.



To drill to the correct depth, use an acceptable drill bit (3.2mm for 4.0mm screws and 4.3mm for 5.0mm screws).

Remove the drill guide.

Precaution:

Often irrigate the bone to prevent thermal damage during drilling. Ensure adequate cooling during insertion, for long screws and thick cortical bone. To avoid damage to the opposite side structure and to prevent removal problems, do not insert the drill tip into the opposite cortical bone.

Use the depth gauge to assess screw length. Using the torque limiting attachment and Hex Drive Screwdriver shaft, insert the locking screw under power.

Warning:

Using power equipment alone, locking screws can be partially inserted. Never, however, use power equipment without a torque limiting attachment to seat the locking screws on the plate.

When a click is heard, the screw is tightly fixed to the plate. To minimize the danger of stripping the head, do not lock the screws at full speed. This will make it impossible for the implant to be removed.

Alternative method of locking screw insertion: To manually insert the necessary locking screw, use the Hex-Drive Screwdriver. Tighten the locking screw carefully, as in order to achieve effective screw-to-plate locking, unnecessary force is not required.

Removal of Implant

To remove locking screws, first unlock all screws from the plate, then totally remove the screws from the bone. This stops the plate from rotating at the same time as the last locking screw is removed.



4.5mm Cortex Screws

- ◆ May be used in the DCU portion of the Combi holes in the plate shaft
- ◆ Compress the plate to the bone or create axial compression
- ◆ Self-tapping tip
- ◆ Available in stainless steel or titanium



5.0mm Locking Screw, self-tapping

Create a locked, fixed-angle screw/plate construct

- ◆ Available in 14mm–50mm lengths (2mm increments)
- ◆ Available in 55mm–110mm lengths (5mm increments)
- ◆ Threaded conical head
- ◆ Fully threaded shaft
- ◆ Self-tapping tip
- ◆ Available in stainless steel or titanium



6.5mm Cancellous Bone Screws, partially threaded

- ◆ Compress the plate to the bone and provide interfragmentary compression
- ◆ May be used in the DCU portion of the first and last Combi holes of the 4.5mm narrow and broad LCP Plates
- ◆ Available in 16mm, and 32mm thread lengths
- ◆ Available in stainless steel or titanium



6.5mm Cancellous Bone Screws, fully threaded

- ◆ Compress the plate to the bone
- ◆ May be used in the DCU portion of the first and last Combi holes of the 4.5mm narrow and broad LCP Plates
- ◆ Available in stainless steel or titanium



Narrow Locking Compression Plate 4.5mm

SS Code No.	Titanium Code No.	Numbers of Holes	Length (mm)
229.04	T229.04	4	80
229.05	T229.05	5	98
229.06	T229.06	6	116
229.07	T229.07	7	134
229.08	T229.08	8	152
229.09	T229.09	9	170
229.10	T229.10	10	188
229.11	T229.11	11	206
229.12	T229.12	12	224
229.14	T229.14	14	260
229.16	T229.16	16	296
229.18	T229.18	18	332



Broad Locking Compression Plate 4.5mm

SS Code No.	Titanium Code No.	Numbers of Holes	Length (mm)
230.04	T230.04	4	82
230.05	T230.05	5	100
230.06	T230.06	6	118
230.07	T230.07	7	136
230.08	T230.08	8	154
230.09	T230.09	9	172
230.10	T230.10	10	190
230.12	T230.12	12	226
230.14	T230.14	14	262
230.16	T230.16	16	298
230.18	T230.18	18	334



Locking Reconstruction Plate 4.5mm

SS Code No.	Titanium Code No.	Numbers of Holes	Length (mm)
231.04	T231.04	4	75
231.05	T231.05	5	94
231.06	T231.06	6	113
231.07	T231.07	7	132
231.08	T231.08	8	151
231.09	T231.09	9	170
231.10	T231.10	10	189
231.11	T231.11	11	208
231.12	T231.12	12	227
231.14	T231.14	14	265
231.16	T231.16	16	303
231.18	T231.18	18	341
231.20	T231.20	20	379
231.22	T231.22	22	417



Locking L-Buttress Plate 4.5mm (Left & Right)

SS Code No.	Titanium Code No.	Numbers of Holes	Length (mm)
232.03	T232.03	3	69
232.04	T232.04	4	85
232.05	T232.05	5	101
232.06	T232.06	6	117
232.07	T232.07	7	133
232.08	T232.08	8	149
232.09	T232.09	9	165
232.10	T232.10	10	184
232.11	T232.11	11	197
232.12	T232.12	12	213



Locking T-Buttress Plate 4.5mm

SS Code No.	Titanium Code No.	Numbers of Holes	Length (mm)
233.03	T233.03	3	67
233.04	T233.04	4	83
233.05	T233.05	5	99
233.06	T233.06	6	115
233.07	T233.07	7	131
233.08	T233.08	8	147
233.09	T233.09	9	163
233.10	T233.10	10	179
233.11	T233.11	11	195
233.12	T233.12	12	211



Locking T- Plate 4.5mm

SS Code No.	Titanium Code No.	Numbers of Holes	Length (mm)
234.03	T234.03	3	67
234.04	T234.04	4	83
234.05	T234.05	5	99
234.06	T234.06	6	115
234.07	T234.07	7	131
234.08	T234.08	8	147
234.09	T234.09	9	163
234.10	T234.10	10	179
234.11	T234.11	11	195
234.12	T234.12	12	211



Locking T- Plate 4.5mm

SS Code No.	Titanium Code No.	Numbers of Holes	Length (mm)
235.04	T235.04	4	120
235.05	T235.05	5	140
235.06	T235.06	6	160
235.07	T235.07	7	180
235.08	T235.08	8	200
235.09	T235.09	9	220
235.10	T235.10	10	240
235.11	T235.11	11	260
235.13	T235.13	13	300



Locking Proximal Tibia Plate 4.5mm (Left & Right)

SS Code No.	Titanium Code No.	Numbers of Holes	Length (mm)
236.04	T236.04	4	84
236.05	T236.05	5	102
236.06	T236.06	6	120
236.07	T236.07	7	138
236.08	T236.08	8	156
236.09	T236.09	9	174
236.10	T236.10	10	192
236.11	T236.11	11	210
236.12	T236.12	12	228
236.14	T236.14	14	264



Locking Distal Femoral Plate 4.5mm (Left & Right)

SS Code No.	Titanium Code No.	Numbers of Holes	Length (mm)
237.05	T237.05	5	156
237.06	T237.06	6	176
237.07	T237.07	7	196
237.08	T237.08	8	216
237.09	T237.09	9	236
237.10	T237.10	10	256
237.11	T237.11	11	276
237.13	T237.13	13	316



Locking Condylar Buttress Plate (Left & Right)

SS Code No.	Titanium Code No.	Numbers of Holes	Length (mm)
238.05	T238.05	5	152
238.06	T238.06	6	170
238.07	T238.07	7	188
238.08	T238.08	8	206
238.09	T238.09	9	224
238.10	T238.10	10	242
238.11	T238.11	11	260
238.13	T238.13	13	296
238.15	T238.15	15	332



Locking Proximal Femoral Plate (Left & Right)

SS Code No.	Titanium Code No.	Numbers of Holes	Length (mm)
239.03	T239.03	3	157
239.04	T239.04	4	175
239.05	T239.05	5	193
239.06	T239.06	6	211
239.07	T239.07	7	229
239.08	T239.08	8	247
239.09	T239.09	9	265
239.10	T239.10	10	283
239.11	T239.11	11	301
239.12	T239.12	12	319

Locking Proximal Femoral Plate
(head 4 hole) (Left & Right)

SS Code No.	Titanium Code No.	Numbers of Holes	Length (mm)
239A.03	T239A.03	3	143.4
239A.04	T239A.04	4	161.4
239A.05	T239A.05	5	179.4
239A.06	T239A.06	6	197.4
239A.07	T239A.07	7	215.4
239A.08	T239A.08	8	233.4
239A.09	T239A.09	9	251.4
239A.10	T239A.10	10	269.4
239A.11	T239A.11	11	287.4
239A.12	T239A.12	12	305.4



Locking Metaphyseal Plate 4.5mm

SS Code No.	Titanium Code No.	Numbers of Holes	Length (mm)
241.03	T241.03	3	120
241.04	T241.04	4	138
241.05	T241.05	5	156
241.06	T241.06	6	174
241.07	T241.07	7	192
241.08	T241.08	8	210
241.09	T241.09	9	228
241.10	T241.10	10	246
241.11	T241.11	11	264
241.12	T241.12	12	282



Locking Tomo Fix Plate 4.5mm

SS Code No.	Titanium Code No.	Numbers of Holes	Size	Length (mm)
243.01	T243.01	4	Small	112
243.02	T243.02	4	Standard	115

Selected Instruments

601.012 Drill Bits 3.2mm x 195mm for Quick Coupling T Handle



601.020 Drill Bits 4.3mm x 225mm for Quick Coupling T Handle



733.050 LCP Drill Sleeve 5.0mm, For Drill Bits 4.3mm
733.065 LCP Drill Sleeve 6.5mm, For Drill Bits 4.5mm



612.035 Large Hexagonal Screw Driver 3.5mm Tip



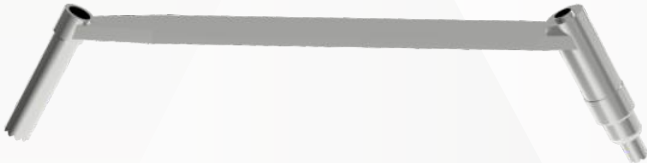
614.T25 Shaft for Star Screw Driver T25 Tip for 5.0/6.5mm screws



609.003 Depth Gauge for 4.5mm to 6.5mm Screws Length 100mm



605A.045 Universal Drill And Tap Sleeve 4.5/3.2mm
605A.065 Drill And Tap Sleeve 6.5/3.2mm



603.001 Quick Coupling T Handle



738.050 LCP Plate Holder 4.5mm Length 120mm



612.011 Quick Coupling Stright Handle



735.08 Torque Limit Adapter 4.0 Nm





- AGC.17 Large Fragment Locking Instrument Set
- AGC.18 Large Fragment screw 4.5/ 5.0/5.5mm Screw Set
- AGC.66 Large Locking Implant Set
- AGC.67 Large Locking Tibia Implant Set
- AGC.68 Large Locking Femoral Implant Set
- AGC.71 Large Fragment Locking Instrument Basic Set

Instruments

- 601.012 Drill Bits 3.2mm x 195mm for Quick Coupling T Handle
- 601.013 Drill Bits 3.5mm x 195mm for Quick Coupling T Handle
- 601.020 Drill Bits 4.3mm x 225mm for Quick Coupling T Handle
- 601.028 Drill Bits 4.5mm x 225mm for Quick Coupling T Handle
- 603.001 Quick Coupling T Handle
- 612.011 Quick Coupling Stright Handle
- 603.045 Tap For 4.5mm Cortex Screw For Quick Coupling
- 603.065 Tap 6.5mm Cancellous Screws for Quick Coupling
- 734.050 Tap 5.0mm Locking Screw For Quick Coupling
- 606.045 Counter Sink for 4.5mm
- 605A.045 Universal Drill And Tap Sleeve 4.5/3.2mm
- 605.065 Drill And Tap Sleeve 6.5/3.2mm
- 607.045 DCP Drill Sleeve 4.5mm for use 3.2mm Drill
- 733.050 LCP Drill Sleeve 5.0mm, For Drill Bits 4.3mm
- 733.065 LCP Drill Sleeve 6.5mm, For Drill Bits 4.5mm
- 609.003 Depth Gauge for 4.5mm to 6.5mm Screws
- 610.002 Screw Forceps Self-Holding
- 612A.035 Screw Driver for Holding Sleeve 3.5mm Tip
- 735.08 Torque Limit Adapter 4.0Nm
- 614.T25 Shaft for Star Screw Driver T25 Tip for 5.0/6.5mm screws
- 614.035 Shaft for Hexagonal Screw Driver 3.5mm Tip for 5.0/6.5mm screws
- 616.007 Bending Pliers With Rolls
- 617.001 Sharp Hook
- 707.018 Retractor Small 18mm Wide
- 707.024 Retractor Small 24mm Wide
- 687.277 Slf-Centering Bone Holding Forceps Length 277mm
- 688.255 Reduction Forceps Serrated Jaw Length 255mm
- 689.205 Reduction Forceps With Points length 205mm
- 738.050 LCP Plate Holder Length 120mm for 4.5mm Plate
- 613A.035 Holding Sleeve for Locking screws 5.0mm
- 613B.035 Holding Sleeve for Non Locking screws 4.5mm
- 328B.18 K Wire (Double Side Trocar Tip) 1.8mm x 150mm
- 328B.20 K Wire (Double Side Trocar Tip) 2.0mm x 150mm



House of Ortho Tools

Plot No. G-2041/42/A, Kishan Gate, Lodhika G.I.D.C.,
Kalawad Road, Metoda, RAJKOT-360 021, (INDIA).

www.hardikinternational.com
info@hardikinternational.com

☎ : +91 97370 47470/1/2/4 S : [hardikinternational](https://www.hardikinternational.com)

Follow us :