

3.5mm Medial Distal Tibia Plates

Surgical Technique



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3.5mm Medial Distal Tibia Plate

The 3.5mm LCP Medial Distal Tibia Plate is part of the Hardik International LCP System that merges locking screw technology with conventional plating techniques.

The plate is offered in stainless steel and features a limited-contact shaft profile, Combi holes in the shaft, and locking screw holes in the head. The Combi holes in the plate shaft combine a dynamic compression unit (DCU) hole with a locking screw hole. The Combi hole provides the flexibility of axial compression and locking capability throughout the length of the plate shaft.

Fixation with the 3.5mm LCP Medial Distal Tibia Plate has many similarities to traditional plate fixation methods, with a few important improvements. Locking screws provide the ability to create a fixed-angle construct while using standard AO plating techniques. Locking capability is important for fixed-angle constructs in osteopenic bone or multifragmentary fractures 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.

Note:

For information on fixation principles using conventional and locked plating techniques, please refer to the Small Fragment Locking Compression Plate (LCP) Technique Guide.

3.5mm Medial Distal Tibia Plates

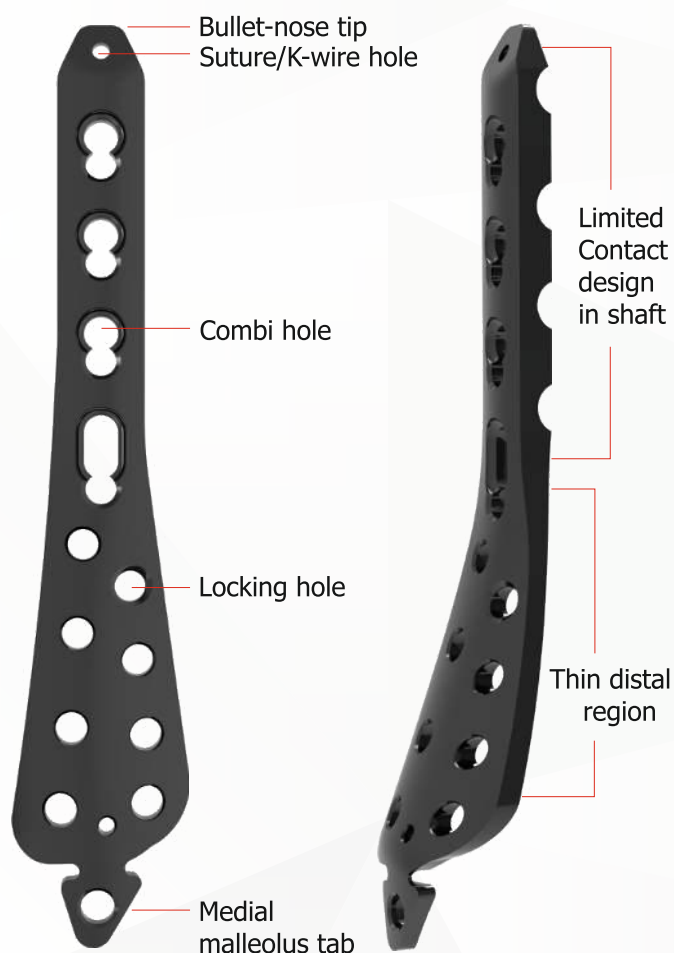


Plate features

- ▶ Anatomically contoured; plate is twisted 20° and bent to fit the distal tibia
- ▶ Available for left and right tibias
- ▶ Limited-contact shaft design with 4 to 14 combination locking compression holes
- ▶ Eight distal locking holes accept 3.5mm locking, 3.5mm cortex, or 4.0mm cancellous bone screws
- ▶ Proximal and distal holes for 1.6mm or 2.0mm Kirschner wires
- ▶ Locking holes in distal region are parallel to the joint
- ▶ Elongated hole in shaft aids in initial plate positioning
- ▶ The shaft holes accept 3.5mm locking screws in the threaded portion and 3.5mm cortex screws, 4.0mm cancellous bone screws in the compression portion
- ▶ Distal tab for optional medial malleolus screw accept 3.5mm locking, 3.5mm cortex or 4.0mm cancellous bone screws

Preparation



1. Preparation Required set

AGC.16A Small Fragment Locking Instrument and Universal Implant Set

Optional sets

Bone Forceps Set

Small Battery Drive Set

Warnings:

The direction of locking screws is already determined based on the design of the plate. If manual contouring is necessary, verify new screw angles using the screw placement verification technique.

Complete the preoperative radiographic assessment and prepare the preoperative plan. Determine plate length and instruments to be used.

Position the patient supine on a radiolucent operating table.



2. Reduce articular surface Instrument

Note:

Prior to reduction, application of an external fixator or large distractor may facilitate visualization and reduction of the joint.

Reduce the fracture fragments and confirm reduction using image intensification. Reduction may be stabilized using the following methods:

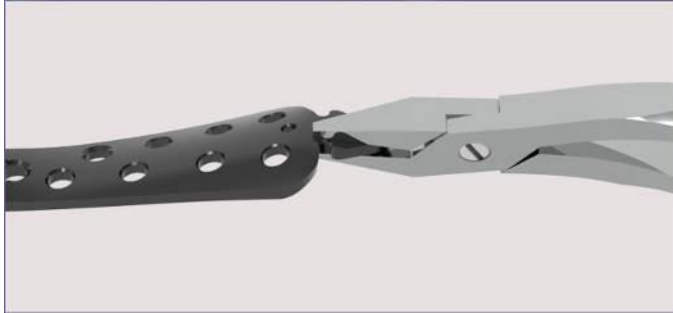
- ▶ Independent Kirschner wires
- ▶ K-wires through the plate
- ▶ Independent lag screws
- ▶ Lag screws through the plate
- ▶ Locking screws through the plate

Locking screws do not provide interfragment compression; therefore, any desired compression must be achieved with standard lag screws. The articular fractures must be reduced and compressed before fixation of the 3.5mm LCP Medial Distal Tibia Plate with locking screws.

3.5mm cortex screws may also be used as lag screws through the plate by overdrilling the near fragment.

Note:

To verify that independent lag screws will not interfere with plate placement, evaluate placement with AP and lateral fluoroscopic image.



3. Bend distal tab (optional)

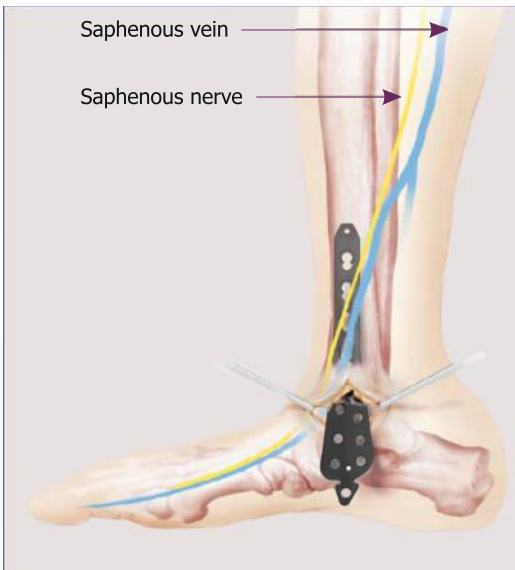
Instruments

660.014 Universal Bending Pliers

Contour the distal tab as necessary with the universal bending pliers.

Precaution:

Do not repeatedly bend the distal tab back and forth.



4. Insert Plate

Instruments

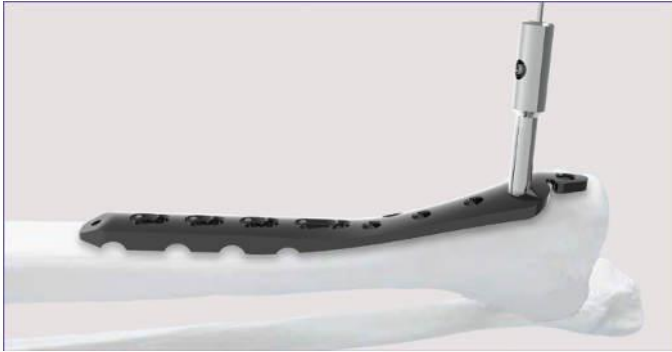
733.035 Drill Sleeve

738.035 LCP Plate Holder

For minimally invasive insertion, make a single incision distally and carefully push the plate under the soft tissue. Make stab incisions to insert screws into the shaft.

Note:

- ▶ Use a threaded plate holder in one of the distal holes as a handle for percutaneous insertion.
- ▶ Prior to placing the plate against the bone, thread the 2.8mm threaded drill guide into the distal holes. It is easier to thread these guides into the plate when the plate is off the bone.



If using a locking screw as the first screw, be sure the plate is held securely to the bone to prevent plate rotation as the screw is locked to the plate.

Note:

The locking screw is not a lag screw. Use standard screws when requiring a precise anatomical reduction (e.g. joint surfaces) or interfragmentary compression. Before inserting the first locking screw, perform anatomical reduction and fix the fracture with lag screws, if necessary. After the insertion of locking screws, an anatomical reduction will no longer be possible without loosening the locking screws.

Distal locking screw insertion Screw the 2.8mm threaded drill guide into an LCP Plate hole until fully seated. Use the 2.8mm drill bit to drill to the desired depth. Remove the drill guide. Use the depth gauge to determine screw length.

Note:

Do not bend the plate with the drill sleeve as this may damage the sleeve. Drill the screw hole with a suitable drill bit.

Whenever possible, locking screw should be inserted under power using the torque limiting attachment and the StarDrive Screwdriver shaft. Screws may also be inserted manually using the StarDrive Screwdriver. Be sure the plate is held securely to the bone to prevent plate rotation.

The audible click on the torque limiting attachment will notify the surgeon that the maximum torque value has been reached and that power insertion is completed. After screw insertion using the torque limiting attachment, always check that the screw are fully inserted by hand tightening them.

Warning:

Never insert locking screws under power unless using a torque limiting attachment.

Note:

- ▶ the hexagonal or StarDrive Recess, making implant removal more difficult.
- ▶ With porous bone there is a risk that the locking screw will fail to follow the drilled hole, resulting in a slightly oblique hole during mechanical insertion of the screw with subsequent partial loss of angular stability. Do not lock the screw at full speed as this risks damaging guidance through the drilled hole.



6. Insert Screws Continued

Shaft screw insertion

If using the threaded portion of the Combi holes, repeat the steps for distal locking screw insertion.

For nonlocking screws, use the standard AO screw insertion technique.

Depending on the bone quality, screws through the plate shaft can be either bicortical or unicortical.

Optional techniques

Medial malleolus screw insertion

If the tab for the medial malleolus screw is to be utilized, insert either a 3.5mm locking screw or a nonlocking 2.7mm, 3.5mm, or 4.0mm cortex screw, or a 4.0mm cancellous bone screw through the screw hole for malleolus fixation. Use the screw insertion techniques previously described.

Screw placement verification

Final position of the locking screws should be verified under image intensification with a K-wire prior to insertion. This is especially important when changing the contour of the plate, or in metaphyseal regions close to joint surfaces.

Implant Removal

Implant Removal

To remove locking screws, 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.


AGC.69A Locking Distal Tibia Plate 3.5mm Set-A
Locking Medial Distal Tibia Plate 3.5mm

Right	Left	Holes	Length
154.04R	154.04L	4	120mm
154.05R	154.05L	5	133mm
154.06R	154.06L	6	146mm
154.07R	154.07L	7	159mm
154.08R	154.08L	8	172mm
154.09R	154.09L	9	185mm
154.10R	154.10L	10	198mm
154.12R	154.12L	12	224mm
154.14R	154.14L	14	250mm



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