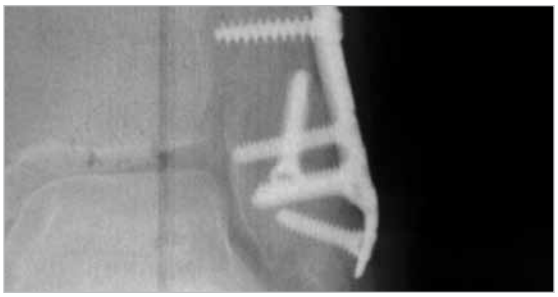
ACUMED®

Innovative Solutions

Locking Ankle Plate System

Locking Ankle Plate System

Since 1988, Acumed has been designing solutions for the demanding situations facing orthopaedic surgeons, hospitals and their patients. Our strategy has been to know the indication, design a solution to fit and deliver quality products and instrumentation.



Developed to be strong, low-profile and locking, Acumed's new Locking Ankle Plate System provides our customers with indication-specific locking plates that simplify and maximize periarticular fixation.

By offering a variety of size options and low-profile design, the Locking Ankle Plate System is the best solution for simple distal ankle fractures. Acumed has improved the design of our established nonlocking ankle plates by adding locking technology and Type II Anodize.

The Lower Extremity Modular System offers a broad range of implants and innovative instrumentation for lower extremity indications.

Indications:

Low-profile Locking (LPL) Lateral Fibula Plate:
Internal fixation for non-comminuted distal fibular fractures, osteotomies and nonunions.

Lateral Fibula Plates:
Internal fixation for distal fibular fractures, osteotomies, and nonunions.

Low-profile Locking (LPL) Anterior Tibia Plates:
Internal fixation for non-comminuted distal tibial fractures, osteotomies and nonunions, from an anterior approach.

Low-profile Locking (LPL) Medial Tibia Plates:
Internal fixation for non-comminuted distal tibial fractures, osteotomies and nonunions, from a medial approach.

Contraindications:

- Compromised soft tissues, presence of active infection.
- Extensive comminution.
- Fracture in patient with osteopenia.

Sizing:

- LPL Lateral Fibula Plates: 5, 7, 9, 11 and 13-holes.
- Lateral Fibula Plates: 9, 11 and 13-holes.
- LPL Anterior Tibia Plates: 5 and 7-holes.
- LPL Medial Tibia Plates: 7 and 9-holes.

Locking Ankle Plate System Features

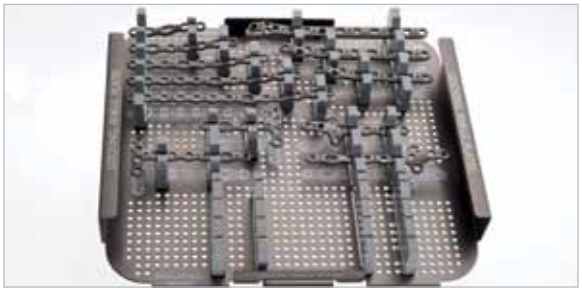
Acumed's Locking Ankle Plates accept either locking or nonlocking screws.

Low-profile: Designed for a minimally invasive approach and can reduce soft tissue irritation.

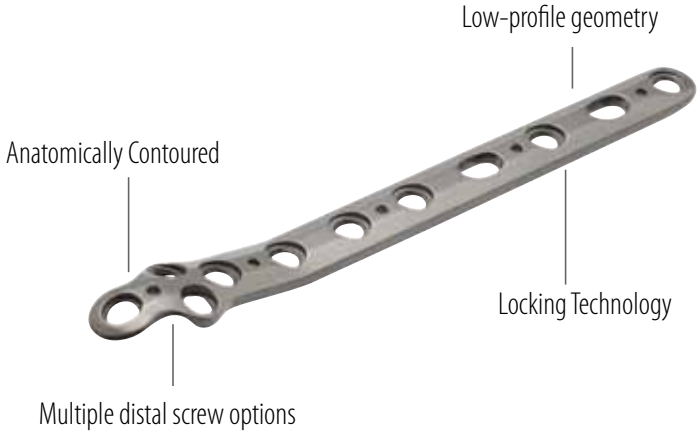
Approach-specific plates: Lateral Fibula, Medial Tibia and Anterior Tibia Plates offer surgeons versatility in patient care.

Finish: Our plates are processed with Type II Anodize for a consistently smooth and even finish.

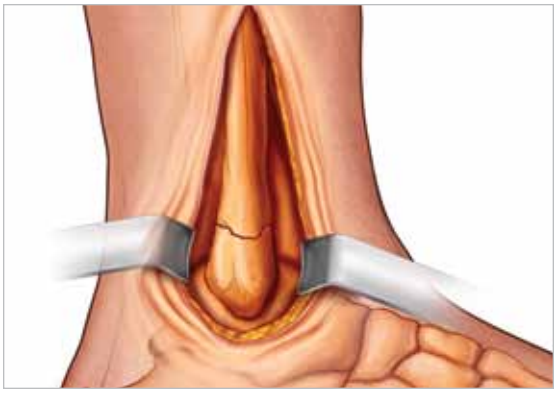
Lower Extremity Modular System: The Lower Extremity Modular System will support multiple combinations of existing implant trays. An intuitive screw caddy, locking drill guides with integrated sizing, and an extensive array of lower extremity specific instrumentation improves the efficiency and overall OR experience.



Intuitive design: Intrinsic labeling and visibility help the user find exactly what is needed to improve OR efficiency.



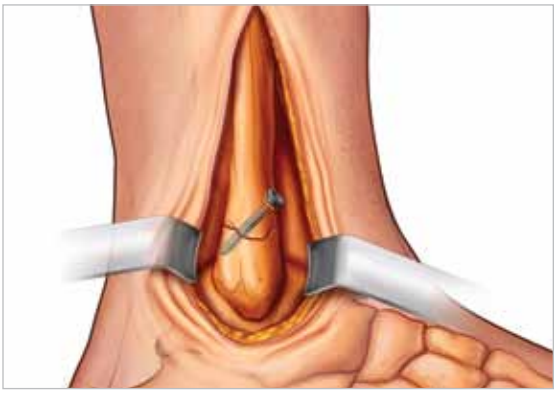
Low-profile Locking (LPL) Lateral Fibula Plates



1 **Exposure and Approach:**

The incision for a lateral malleolar fracture is made over the lateral aspect of the distal fibula between the superficial peroneal and sural nerves curving over the distal lateral malleolus. The peroneal tendons are mobilized and retracted. A lateral window can be made in the ankle capsule in order to expose the weight-bearing surface of the plafond. This can assist in locating loose bodies. The syndesmosis is inspected for integrity.

Caution: If the medial malleolus or the anterior tibia is fixed at the same time, take care to separate the two incisions by at least 7cm in order to avoid wound necrosis. In addition, if an external fixator was utilized in the initial phase of fixation, remove it prior to prepping the extremity.

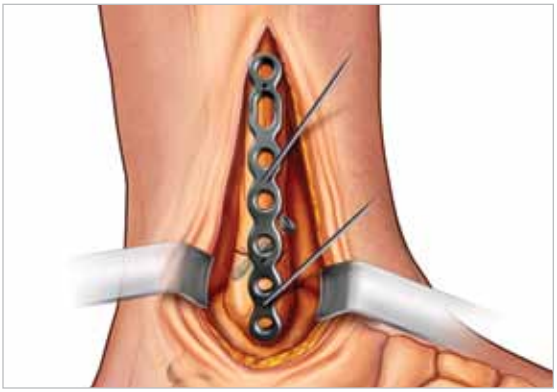


2 **Reduction:**

The fracture must be reduced prior to plate application. Reduction of the fibular fracture is established by peeling back 2mm of the periostium at the tips of the fracture fragments. Once the fibular fracture is reduced, it is temporarily clamped. Lag screws can be placed to hold length and alignment and obtain compression across the fracture site.

Note: The Lateral Fibula Plates are available in 2 styles: LPL (Low-profile Locking) with 5 lengths (5, 7, 9, 11, and 13-hole) and standard with 3 lengths (9, 11, and 13-holes). The plates are contoured for the lateral malleolus.

Caution: Care should be taken to avoid placing the lag screw(s) in a manner that would interfere with plate placement or irritate the peroneal tendons.



3 **Selection and Placement:**

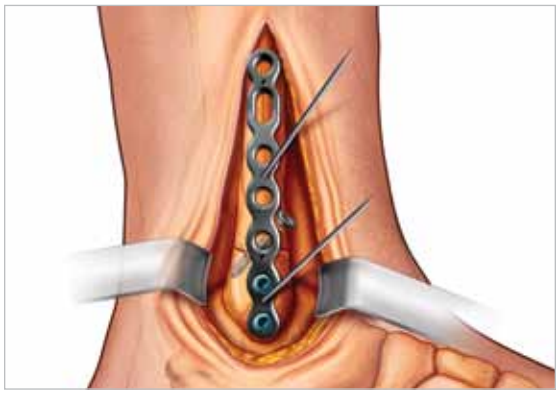
Plate selection should result in a plate that is approximately three holes (six cortices) proximal to the fracture line. K-wire holes in the plates can aid in temporary fixation of the plate to the bone surface with plate tacks (PL-PTACK) or .062" K-wire (WS-1607ST).

4 Initial Plate Fixation:

Nonlocking screws can be placed in order to compress the plate against the bone proximally, followed by locking screws in the distal metaphyseal bone. For nonlocking screws, use the drill guide to drill through both cortices. Use the depth gauge to determine proper screw length by inserting it into the plate and hooking the far cortex.

For locking screws, use the color coded locking drill guides (yellow guide (80-0385) for 2.0mm drill (80-0386) and green guide (80-0384) for 2.8mm drill (80-0387)). Drill to appropriate depth. The screw length can be estimated by matching the laser line on the drill with the markings on the drill guide. Alternatively, the depth gauge can be used to determine proper screw length by removing the drill guide and inserting the depth gauge into the plate and hooking the far cortex.

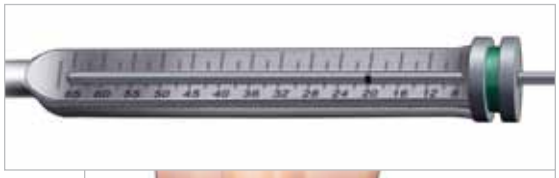
Note: Select screw diameter based upon the patient's bone quality. The 2.0mm drill (80-0346) is used for the 2.7mm cortical screws, and the 2.8mm drill (80-0387) is used for the 3.5mm cortical and 4.0mm cancellous screws.

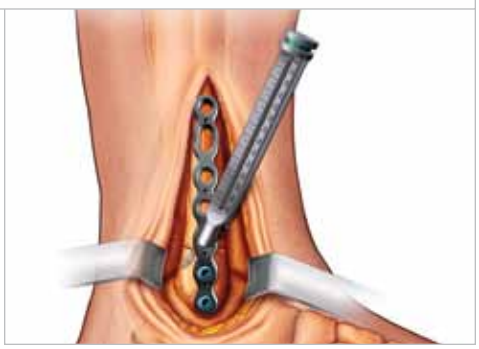


5 Insert Remaining Screws:

Complete reduction and stabilization of the fracture. Insert remaining screws as previously described.

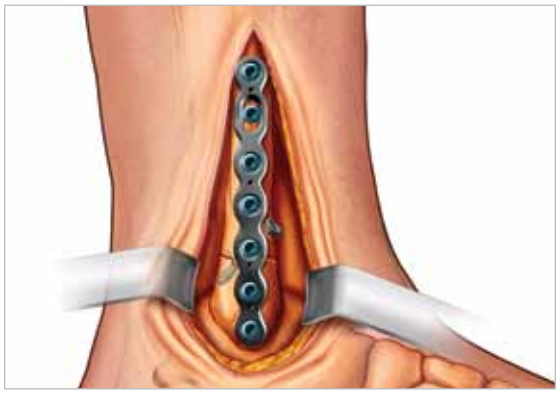
Note: Once the lateral malleolus is fixed, the integrity of the syndesmosis can be confirmed by manually applying traction to the fibula laterally and observing directly under fluoroscopy. The fibula is typically fixed prior to the tibial surface as with intact tibiofibular ligaments, the fibula can serve as an internal distraction device for the tibia. Occasionally, anterior or medial fixation is also necessary for associated anterior or medial tibial fractures.





6 Closure:

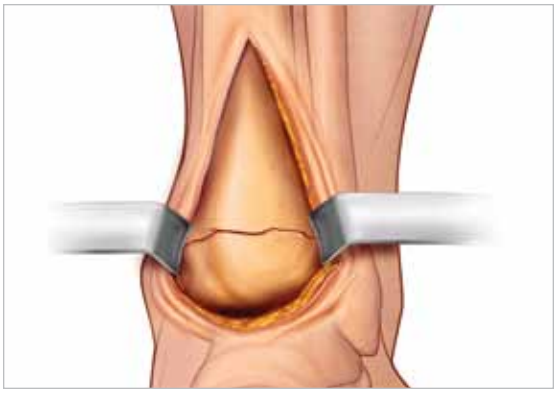
The incision is closed in layers. The fascia is reapproximated, especially over the peroneal muscle belly. These structures are reapproximated carefully so as to not include the adjacent neurovascular and tendinous structures. The foot is held at a 90 degree angle to permit anatomic closure.



7 Postoperative Care:

Patients are typically maintained in an expandible compression dressing for the first two postoperative weeks, followed by a cast for patients with softer bone or an equalizer, removable cast boot for the subsequent time period. Patients are maintained non-weight-bearing for the initial six-weeks and then advanced slowly to full-weight-bearing over the following six- weeks, as per radiographic and clinical healing. Keep in mind that the fibular shaft fracture will take much longer to completely heal than the metaphyseal area.

Low-profile Locking (LPL) Anterior Tibia Plates

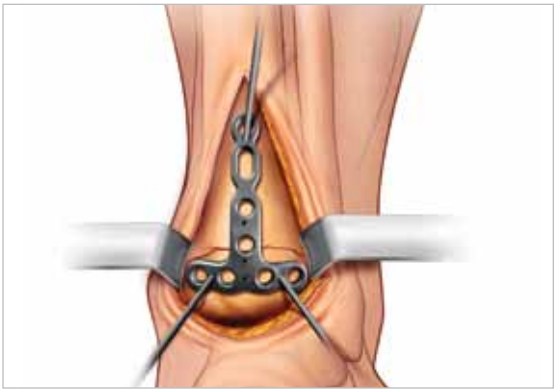


1 **Exposure and Approach:**

A longitudinal incision over the anterior aspect of the ankle is the recommended approach for the application of the LPL Anterior Tibia Plates. The incision for a central plafond fracture is made between the extensor hallucis longus (EHL) and tibialis anterior tendons from above the proximal aspect of the superior extensor retinaculum to the distal aspect of the inferior extensor retinaculum on the dorsal aspect of the foot. Care should be made to identify the superficial peroneal nerve. The extensor retinaculum is transected in a linear fashion between the EHL and tibialis anterior tendons. The tendons are bluntly retracted at the level of the tibiotalar joint. The neurovascular bundle is mobilized and retracted laterally. The ankle capsule is transected in order to expose the weight-bearing surface of the plafond.

Caution: If the medial malleolus or the lateral fibula is fixed at the same time, take care to separate the two incisions by at least 7cm in order to avoid wound necrosis. In addition, if an external fixator was utilized in the initial phase of fixation, remove it prior to prepping the extremity.

Note: The LPL Anterior Plates are not intended for an anterior lateral placement.

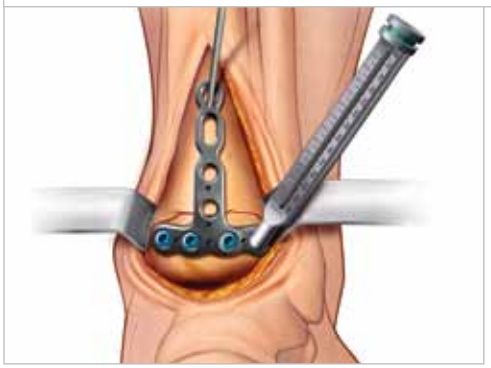


2 **Reduction:**

The fracture must be reduced prior to plate application.

Reduction of joint surface anatomy is the first priority of reconstruction, hence the fracture must be reduced prior to plate application. If the joint needs to be distracted, this can be achieved with a temporary external fixator or a laminar spreader. The articular surface can be gently reduced and put into place from above the joint with a bone tamp. The joint surface can be held in place temporarily with K-wires or lag screws that are external to the plate, while the proper plate is templated to the anterior distal tibial surface under fluoroscopic guidance.

Note: The LPL Anterior Tibia Plates are available in two lengths (5 and 7 hole). The plates are contoured for the anterior tibia. The plates can be further contoured with included plate benders (PL-2045 and PL-2040) to permit distal placement in an antiglide peri-articular position and permit a distal to proximal screw trajectory and avoid intra-articular placement of screws.

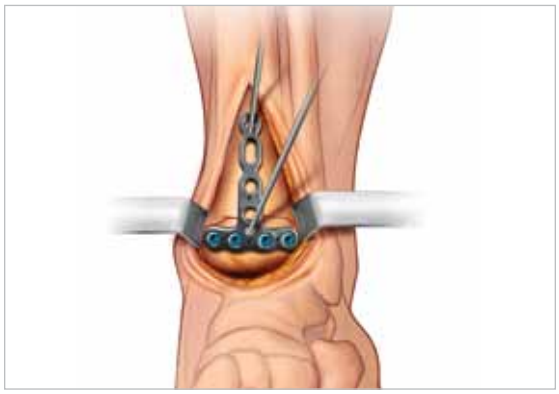


3 **Selection and Placement:**

Plate selection choice should result in a plate that is approximately three holes (six cortices) proximal to the fracture line. K-wire holes in the plates can aid in temporary fixation of the plate to the bone surface with plate tacks (PL-PTACK) or .062" K-wire (WS-1607ST).

4 **Initial Plate Fixation:**

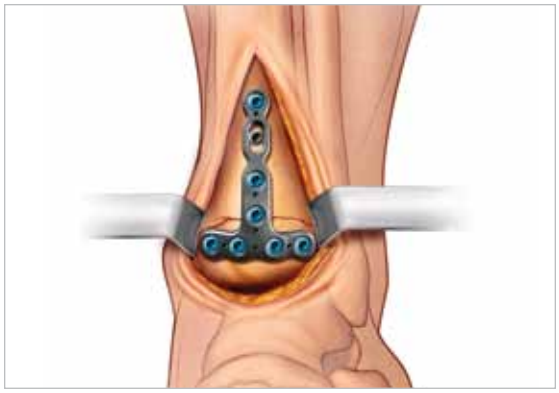
Once plate positioning and joint reduction are fluoroscopically confirmed, the distal-most, peri-articular, metaphyseal screws are placed. For nonlocking screws, use the drill guide to drill through both cortices. Use the depth gauge to determine proper screw length by inserting it into the plate and hooking the far cortex. For locking screws, use the color coded locking drill guides (yellow guide (80-0385) for 2.0mm drill (80-0386) and green guide (80-0384) for 2.8mm drill (80-0387)). Drill to appropriate depth. With the color coded drill, the screw length can be determined directly from the drill guide by reading the number on the drill guide that lines up with the laser line on the drill. Alternatively, the depth gauge can be used to determine proper screw length by removing the drill guide and inserting the depth gauge into the plate and hooking the far cortex.



Note: Select screw diameter based upon the patient's bone quality. The 2.0mm drill (80-0346) is used for the 2.7mm cortical screws and the 2.8mm drill (80-0387) is used for the 3.5mm cortical and 4.0mm cancellous screws.

5 **Insert Remaining Screws:**

Complete reduction and stabilization of the fracture. Insert remaining screws as previously described.



6 **Closure:**

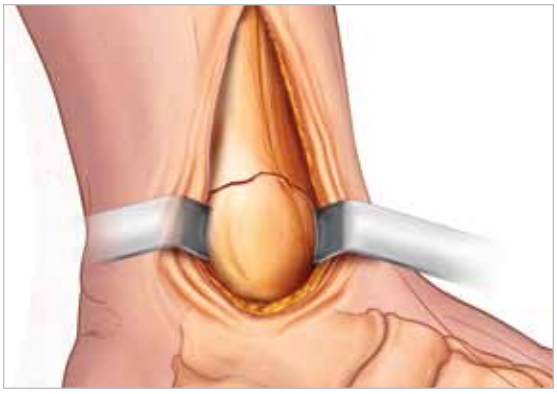
The joint capsule can be closed carefully, if intact, followed by the extensor retinaculum. These structures are reapproximated carefully so as to not include the adjacent neurovascular and tendinous structures. The foot is held at a 90 degree angle to avoid 'bowstringing' of the ankle extensor tendons.

7 **Postoperative Care:**

Patients are typically maintained in an expandible compression dressing for the first two postoperative weeks, followed by a cast for patients with softer bone or an equalizer, removable cast boot for the subsequent time period. Patients are maintained non-weight-bearing for the initial six-weeks and then advanced slowly to full-weight-bearing over the following six-weeks as per radiographic and clinical healing.

Note: Keep in mind that the tibial shaft fracture will take much longer to completely heal than the metaphyseal area.

Low-profile Locking (LPL) Medial Tibia Plate

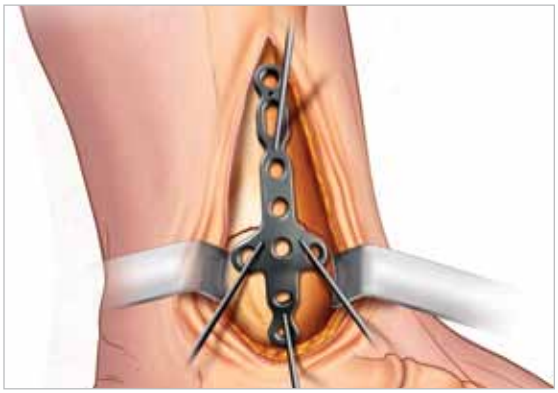


1 **Exposure and Approach:**

A curvilinear incision made over the medial aspect of the ankle is the recommended approach for the application of the LPL Medial Tibia Plates. The incision for a medial malleolar or medial pilon fracture is made over the medial aspect of the distal tibia along the course of the saphenous nerve and vein curving over the distal medial malleolus. The neurovascular bundle is mobilized and retracted. The posterior tibial tendon is identified within the sheath proximally and distally. The tendons are bluntly retracted at the level of the tibiotalar joint. A medial window is made in the ankle capsule in order to expose the weight bearing surface of the plafond.

Caution: If the anterior tibia or the lateral fibula is fixed at the same time, take care to separate the two incisions by at least 7cm in order to avoid wound necrosis. In addition, if an external fixator was utilized in the initial phase of fixation, remove it prior to prepping the extremity.

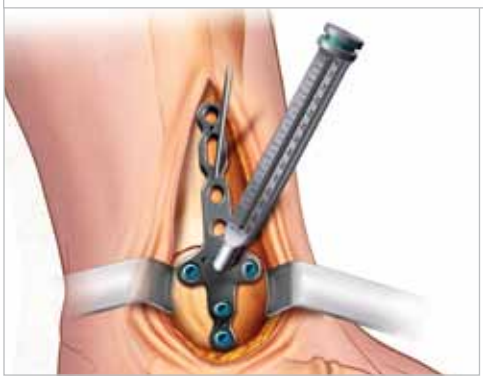
Note: The LPL Medial Tibia Plate is not designed for tibial diaphyseal fracture fixation.



2 **Reduction:**

The fracture must be reduced prior to plate application. The joint can be distracted with a temporary external fixator or a laminar spreader. The void above the joint surface is filled with bone graft from the proximal tibia or a synthetic calcium phosphate substitute (Callos®). The joint surface can be held in place temporarily with K-wires or lag screws that are outside the plate, while the proper plate is templated to the medial distal tibial surface under fluoroscopic guidance. Screws can be placed axially through the tip of the medial malleolus, if so desired. Care should be taken to avoid placing the screws in a manner that would interfere with plate placement or malreduce a vertical shear fracture of the medial malleolus.

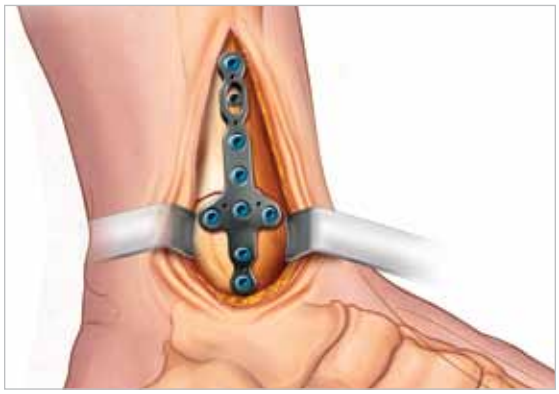
Note: The LPL Medial Tibia Plates are available in 2 lengths (7 and 9-hole). The LPL Medial Tibia Plates can be contoured with plate benders to permit distal placement in an antiglide peri-articular position and permit a distal to proximal screw trajectory and avoid intra-articular placement of screws. Distal K-wire holes have been placed in the plate in order to temporarily fixate the plate to the bone surface with plate tacks.



3 **Selection and Placement:**

Plate selection choice should result in a plate that is approximately three holes (six cortices) proximal to the fracture line. K-wire holes in the plates can aid in temporary fixation of the plate to the bone surface with plate tacks (PL-PTACK) or .062" K-wire (WS-1607ST).

Caution: This plate may not be appropriate for a distal third tibial shaft fracture that can accompany a medial tibial injury. Distal third tibial fractures require very rigid plate fixation or intramedullary nail placement.



4 **Initial Plate Fixation:**

Once plate positioning and joint reduction are fluoroscopically confirmed, the distal-most, peri-articular, metaphyseal screws are placed. For nonlocking screws use the drill guide to drill through both cortices. Use the depth gauge to determine proper screw length by inserting it into the plate and hooking the far cortex. For locking screws, use the color coded locking drill guides (yellow guide (80-0385) for 2.0mm drill (80-0386) and green guide (80-0384) for 2.8mm drill (80-0387)). Drill to appropriate depth. With the color coded drill, the screw length can be determined directly from the drill guide by reading the number on the drill guide that lines up with the laser line on the drill. Alternatively, the depth gauge can be used to determine proper screw length by removing the drill guide and inserting the depth gauge into the plate and hooking the far cortex.

Note: Select screw diameter based upon the patient's bone quality. The 2.0mm drill (80-0346) is used for the 2.7mm cortical screws, and the 2.8mm drill (80-0387) is used for the 3.5mm cortical and 4.0mm cancellous screws.

5 **Insert Remaining Screws:**

Complete reduction and stabilization of the fracture. Insert remaining screws as previously described.

6 **Closure:**

The joint capsule can be closed carefully, if intact. These structures are reapproximated carefully so as to not include the adjacent neurovascular and tendinous structures. The foot is held at a 90 degree angle to permit anatomic closure.

7 **Postoperative Care:**

Patients are typically maintained in an expandible compression dressing for the first two postoperative weeks, followed by a cast for patients with softer bone or an equalizer, removable cast boot for the subsequent time period. Patients are maintained non-weight-bearing for the initial six-weeks and then advanced slowly to full-weight-bearing over the following six-weeks, as per radiographic and clinical healing.

Note: Keep in mind that the tibial shaft fracture will take much longer to completely heal than the metaphyseal area.

Ordering Information

Locking Ankle Plates

Low-profile Locking (LPL) Lateral Fibula Plate 5-Hole	70-0145
Low-profile Locking (LPL) Lateral Fibula Plate 7-Hole	70-0147
Low-profile Locking (LPL) Lateral Fibula Plate 9-Hole	70-0149
Low-profile Locking (LPL) Lateral Fibula Plate 11-Hole	70-0151
Low-profile Locking (LPL) Lateral Fibula Plate 13-Hole	70-0153
Locking Lateral Fibula Plate 9-Hole	70-0169
Locking Lateral Fibula Plate 11-Hole	70-0171
Locking Lateral Fibula Plate 13-Hole	70-0173
Low-profile Locking (LPL) Medial Tibia Plate 7-Hole	70-0227
Low-profile Locking (LPL) Medial Tibia Plate 9-Hole	70-0229
Low-profile Locking (LPL) Anterior Tibia Plate 5-Hole	70-0245
Low-profile Locking (LPL) Anterior Tibia Plate 7-Hole	70-0247

Instrumentation

2.8mm Locking Drill Guide 6-65mm	80-0384
2.0mm Locking Drill Guide 6-65mm	80-0385
2.0mm Quick Release Drill	80-0386
2.8mm Quick Release Drill	80-0387
Small Ratchet Handle with Quick Release Connection	80-0398

Instrumentation

2.5mm Quick Release Hex Driver	HPC-0025
2.5mm Solid, Quick Release, Driver Tip	HT-2502
6mm-70mm Depth Gauge, 2mm Increments	MS-9022
3.5mm x 5" Quick Release Drill	MS-DC35
2.7mm Cortical Screw Bone Tap	MS-LTT27
3.5mm Cortical Screw Bone Tap	MS-LTT35
3.5mm Screw Driver Sleeve	MS-SS35
Plate Bender	PL-2040
Plate Bender, Large	PL-2045
Cortical and Cancellous Screw Countersink	PL-2080
Offset Drill Guide	PL-2095
2.0mm / 2.8mm Thin Drill Guide	PL-2118
2.8mm / 3.5mm Thin Drill Guide	PL-2196
Plate Tack	PL-PTACK
.045" X 6" ST Guide Wire	WS-1106ST
.062" x 6" Guide Wire	WS-1607ST

The Locking Ankle Plate System my also be used in combination with the following Acumed Products:

- Fibula Rod System
- Acutrak 2® - 5.5
- Acutrak 2® Standard
- AcuTwist® Compression Screws
- Extremity Screws
- Syndesmosis Screws
- Tension Band Pins
- Bone Graft System
- Callos®

Soft Tissue Instrument Tray

8" Bone Reduction Forceps	MS-1280
Bone Reduction Forceps, 5.25"	MS-45300
Periosteal Elevator, 7.25"	MS-46211
15mm Hohmann Retractor	MS-46827
Bone Reduction Forceps with Points, 5 Broad	MS-47135
Inge Retractor, 6.5"	MS-48217
Needle Nose Pliers, 5.5"	MS-48245
Freer Elevator, 7.5"	MS-57614
Small Pointed Reduction Forceps	OW-1200
Reduction Forceps wtih Serrated Jaw	PL-CL04
8mm Hohmann Retractor	PL-CL05
Sharp Hook	PL-CL06

Optional Instruments

Inge Retractor without Teeth	80-0472
Large Cannulated Quick Release Driver Handle	MS-3200
Plate Holder Assembly	PL-2030

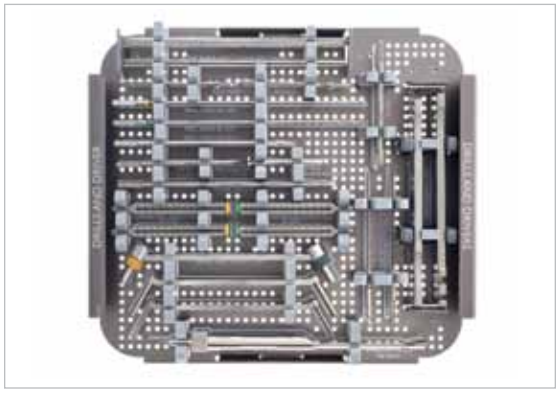
Tray Components

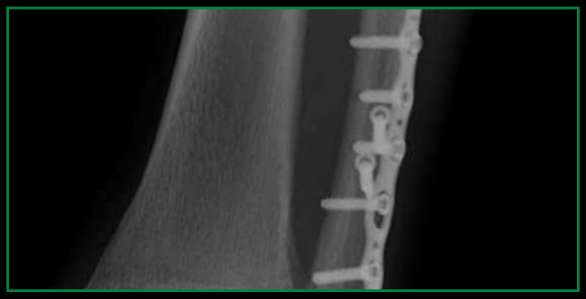
Lower Extremity Modular System, Ankle Plate Assembly	80-0444
Lower Extremity Modular System Screw Caddy	80-0430
Lower Extremity Screw Caddy Cover (Replacement)	80-0432

Optional Trays

Calcaneal Plate Tray	80-0437
Lower Extremity System Utility Tray	80-0429

For ordering information, please contact your local Acumed® Sales Representative.





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Effective: 3/2010