Calcaneal Fracture Management System

Surgical Technique
Arthrex Calcaneal Fracture System

The Calcaneal Fracture System is an all-inclusive system of plates, screws and instrumentation designed to treat all classifications of calcaneal fractures. The calcaneal fracture system is comprised of seventeen different low-profile titanium plates with locking and nonlocking options. This all-inclusive system allows for anatomically specific fracture fixation ability.

**Indications:**
- Extra- and intra-articular calcaneal fractures
- Tongue-type calcaneal fractures
- Joint depression calcaneal fractures
- Comminuted calcaneal fractures

**Features:**

**Plates** – Four different sizes (XS, S, M, L) of left and right perimeter plates and five different shaped (left and right) percutaneous plates designed to fit the anatomy and contour of the calcaneus and address all calcaneal fracture patterns

**Low-Profile** – Strong 1.35 mm locking perimeter and percutaneous plates for conformability and less soft tissue irritation

**Calcaneal Specific Instrumentation** – Plate cutter, Schanz pins, Keyless Chuck T-handle and calcaneal specific elevators all within the set

**Variable Angle Locking** – Up to 15° with 3.5 mm screws

**Multiple Screw Options** – 3.5 mm nonlocking/locking/angle locking 4.0 mm cancellous and 4.0 mm cannulated screws
Calcaneal Fracture Perimeter Plates

- **Posterior tab can be bent over tuberosity**
- **Oblong hole**
- **Anterior cluster of holes**
- **Profile thickness 1.35 mm**
- **Titanium for strength and contourability**
- **Threaded holes accept 3.5 mm nonlocking/locking and 4.0 mm cancellous/cannulated screws**
- **15 degrees of VAL**
- **Four sizes of perimeter plates, left and right designs**
Calcaneal Fracture Percutaneous Plates

Four sizes of percutaneous plates, left and right designs

Low-Profile T-Plate

Radiolucent Percutaneous Guide

Profile thickness 1.35 mm

Tapered end to minimize soft tissue irritation

15 degrees of VAL

Percutaneous Drill Guide

Attachment screw

Oblong hole
Calcaneal Fracture Perimeter Plate Technique

Fracture Reduction:
Calcaneal specific instrumentation such as sayre and key elevator may be used to reduce the fragments. A Schanz pin with an AO connection can be placed into the calcaneal tuberosity to provide traction and manipulation of the tuberosity out of its angulated and translated position.

Plate Selection:
Select the appropriate Calcaneal Fracture Perimeter Plate to match the patient anatomy. Place the selected plate at the appropriate position on the lateral calcaneal wall with BB-Tak™ anchors or K-wires for temporary fixation.

In Situ Contouring
If contouring the plate is necessary, thread the locking drill guides or the bending guides into a screw hole and use them as benders.

Screw Insertion:
A nonlocking or cannulated screw should be placed inferior to the articular surface of the posterior facet from lateral to medial to the sustentacular fragment or “constant fragment.” This screw can be placed outside the plate or through the oblong hole in the plate depending on surgeon preference.

Nonlocking screws:
1. Nonlocking screws should be placed first to indirectly reduce the plate to the calcaneus.
2. Place the 3.5 mm Drill Guide into the appropriate plate hole and prepare a hole using the 2.5 mm Drill Bit.
3. Measure for screw length using the screw Depth Device.
4. Insert appropriate 3.5 mm or 4.0 mm screw.
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Locking screws:
1. Place the 3.5 mm Threaded Drill Guide into the appropriate plate hole and prepare a hole using the 2.5 mm Drill Bit.
2. Read the corresponding screw length from the laser line on the drill. Alternately, the screw Depth Device can be used to determine the screw length.
3. Insert appropriate 3.5 mm locking screw.

Variable Angle Locking screws:
1. Place the 3.5 mm VAL guide into the appropriate plate hole and prepare a hole with the 2.5 mm Drill Bit. The VAL guide will allow up to 15°.
2. Measure for screw length using the screw Depth Device.
3. Insert appropriate 3.5 mm locking screw.

Verify plate and screw placement with fluoroscopy with a lateral, A/P and axial heel view.
Fracture Reduction:
Calcaneal specific instrumentation such as sayre and key elevator may be used for the reduction. A schanz pin with an AO connection can be placed into the calcaneal tuberosity to provide traction and manipulation of the tuberosity out of its angulated and translated position.

Plate Selection:
Select the appropriate Calcaneal Fracture Percutaneous Plate to match the patient anatomy. Place the selected plate at the appropriate position on the lateral calcaneal wall. Secure the plate with BB-Tak™ anchors or K-wires for temporary fixation.

Percutaneous Guide:
The percutaneous calcaneal guide provides a means of locating, drilling, measuring and inserting screws. The percutaneous guide is connected to the corresponding plate through the attachment screw with a clockwise quarter-turn through the hole anterior to the oblong hole. The plate should be attached to the calcaneus with a 3.5 mm nonlocking screw, BB-Tak or K-wire. Attach the locking percutaneous drill guide through the percutaneous calcaneal guide.

Optional:
The skin can be marked for percutaneous insertion of screws.
Surgical Technique

Locking screws:
1. Attach the locking percutaneous drill guide through the percutaneous calcaneal guide. Prepare a hole using the 2.5 mm Drill Bit.
2. Read the corresponding screw length from the laser line on the drill. Alternately, the screw Depth Device can be used to determine the screw length.
3. Insert 3.5 mm locking screw through the guide.

Nonlocking screws:
1. Nonlocking screws should be placed first to indirectly reduce the plate to the calcaneus.
2. Attach the locking percutaneous drill guide through the percutaneous calcaneal guide. Prepare a hole using the 2.5 mm Drill Bit.
3. Read the corresponding screw length from the laser line on the drill. Alternately, the screw Depth Device can be used to determine the screw length.
4. Insert appropriate 3.5 mm or 4.0 mm screw.

Variable Angle Locking screws:
1. The percutaneous guide is removed.
2. Place the 3.5 mm VAL guide into the appropriate plate hole and prepare a hole with the 2.5 mm Drill Bit. The VAL guide will allow up to 15° angle.
3. Measure for screw length using the screw Depth Device.
4. Insert appropriate 3.5 mm locking screw.

Verify plate and screw placement with fluoroscopy with a lateral, A/P and axial heel view.
Ordering Information

Calcaneal Fracture Specific Instruments Module (AR-8950S-04):

- Schanz pin handle (tri-flat keyless chuck) AR-8954-02
- Plate Cutter, Hercules style AR-8954-03
- Sayre Elevator AR-8954-05
- Key Elevator, 3/8” Wide AR-8954-06
- CFS Tray Insert Calcaneal Instrumentation AR-8950C-32

Percutaneous Plate Guides and Drill Guides (AR-8950S-05):

- Guide, Perc-Calc Ant Process Calcaneal Plate, standard, left AR-8954-08
- Guide, Perc-Calc Ant Process Calcaneal Plate, standard, right AR-8954-09
- Guide, Perc-Calc Ant Process Calcaneal Plate, long, left AR-8954-10
- Guide, Perc-Calc Ant Process Calcaneal Plate, long, right AR-8954-11
- Guide, Perc-Calc Anterior Process / Posterior Tuberosity Calcaneal Plate, standard, left AR-8954-12
- Guide, Perc-Calc Anterior Process / Posterior Tuberosity Calcaneal Plate, standard, right AR-8954-13
- Guide, Perc-Calc Anterior Process / Posterior Tuberosity Calcaneal Plate, long, left AR-8954-14
- Guide, Perc-Calc Anterior Process / Posterior Tuberosity Calcaneal Plate, long, right AR-8954-15
- Attachment Screw, Perc-Calc Guide AR-8954-16
- Joystick, Perc-Calc Guide AR-8954-17
- Drill Guide, Perc, Threaded, Locking, 3.5 mm AR-8954-18
- Drill Guide, VAL, 3.5 mm AR-8954GV
- Drill Guide, VAL, locking, 3.5 mm AR-8954GVN
- Depth device, nonlocking AR-8954-19
- Caddy, Calc Fx Plates and Instruments AR-8950C-34

3.5/4.0 mm Screws:

- Locking Screw, Ti, 3.5 mm x 14 – 60 mm, qty. 4 AR-8935L-14 – 60
- Cortical LPS Screw, Ti, 3.5 mm x 14 – 60 mm, qty. 4 AR-8935-14 – 60
- Cancellous LPS Screw, Ti, 4 mm x 14 – 60 mm, qty. 4 AR-8940-14 – 60
- LPS Screw, Ti, cannulated, Short Thd, 4 mm x 14 – 60 mm, qty. 4 AR-8740-14PTS – 60PTS

Disposables:

- BB-Tak AR-13226
- BB-Tak, Threaded AR-13226T
- Schanz Pin, 5.0 mm, Self Drilling, 150 mm AR-8954-01
- Guidewire w/Trocar Tip, .062” (1.6 mm), qty. 3 AR-8941K
- Guidewire w/Trocar Tip, threaded, .062” (1.6 mm), qty. 3 AR-8941KT
- Guidewire w/Trocar Tip, nonthreaded, .094”(2.4 mm) x 8”, qty. 4 AR-8967K

Percutaneous Plates:

- Calcaneal Fracture Percutaneous Plate, Anterior Process / Posterior Tuberosity, Standard, Left AR-8954YL-S
- Calcaneal Fracture Percutaneous Plate, Anterior Process / Posterior Tuberosity, Standard, Right AR-8954YR-S
- Calcaneal Fracture Percutaneous Plate, Anterior Process / Posterior Tuberosity, Long, Left AR-8954YL-L
- Calcaneal Fracture Percutaneous Plate, Anterior Process / Posterior Tuberosity, Long, Right AR-8954YR-L
- Calcaneal Fracture Percutaneous Plate, Anterior Process, Standard, Left AR-8954ML-S
- Calcaneal Fracture Percutaneous Plate, Anterior Process, Standard, Right AR-8954MR-S
- Calcaneal Fracture Percutaneous Plate, Anterior Process, Long, Left AR-8954ML-L
- Calcaneal Fracture Percutaneous Plate, Anterior Process, Long, Right AR-8954MR-L
- Low Profile T-Plate, 3.5 mm, 4 Hole AR-8954MT

Perimeter Plates:

- Calcaneal Fracture Perimeter Plate, x-small, left AR-8954PL-XS
- Calcaneal Fracture Perimeter Plate, small, left AR-8954PL-S
- Calcaneal Fracture Perimeter Plate, medium, left AR-8954PL-M
- Calcaneal Fracture Perimeter Plate, large, left AR-8954PL-L
- Calcaneal Fracture Perimeter Plate, x-small, right AR-8954PR-XS
- Calcaneal Fracture Perimeter Plate, small, right AR-8954PR-S
- Calcaneal Fracture Perimeter Plate, medium, right AR-8954PR-M
- Calcaneal Fracture Perimeter Plate, large, right AR-8954PR-L
Complementary Products

**Large Cannulated Screws:**
- 4.5 mm Fully and Partially Threaded Cannulated Screws (20 – 80 mm)
- 6.7 mm Fully and Partially Threaded Cannulated Screws (40 – 120 mm)

**Orthobiologics:**
- Quickset™ (Calcium Phosphate Bone Cement)
- StimuBlast® (Demineralized Bone Matrix)

**Trim-It Pin™:**
Absorbable k-wires that can be used to stabilize the fractures without the need to remove

*Quickset is a registered trademark of
**StimuBlast is a registered trademark of AlloSource
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