VA LCP™ Ankle Trauma System 2.7/3.5

Surgical Technique

AO approved by AO Technical Commission

DePuy Synthes
THE ORTHOPAEDICS COMPANY OF Johnson & Johnson

Image intensifier control

This description alone does not provide sufficient background for direct use of DePuy Synthes products. Instruction by a surgeon experienced in handling these products is highly recommended.

Processing, Reprocessing, Care and Maintenance
For general guidelines, function control and dismantling of multi-part instruments, as well as processing guidelines for implants, please contact your local sales representative or refer to:
http://emea.depuysynthes.com/hcp/reprocessing-care-maintenance
For general information about reprocessing, care and maintenance of DePuy Synthes reusable devices, instrument trays and cases, as well as processing of DePuy Synthes non-sterile implants, please consult the Important Information leaflet (SE_023827) or refer to:
http://emea.depuysynthes.com/hcp/reprocessing-care-maintenance

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VA LCP Ankle Trauma System 2.7/3.5

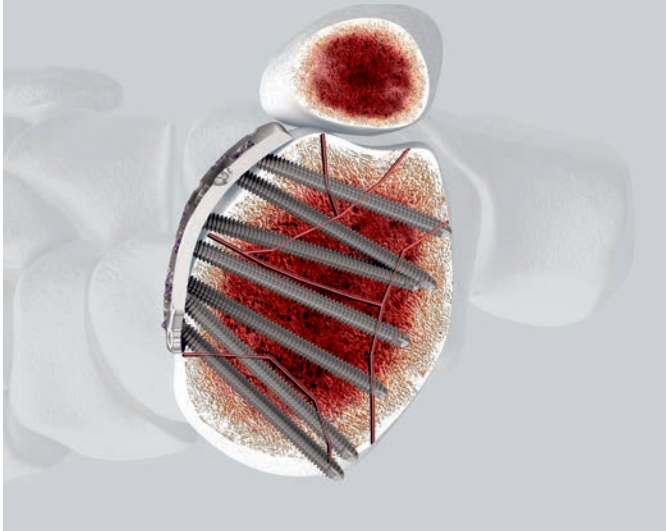
The ankle plating system offers variable angle locking compression plating (VA LCP™) options.

■ Note:

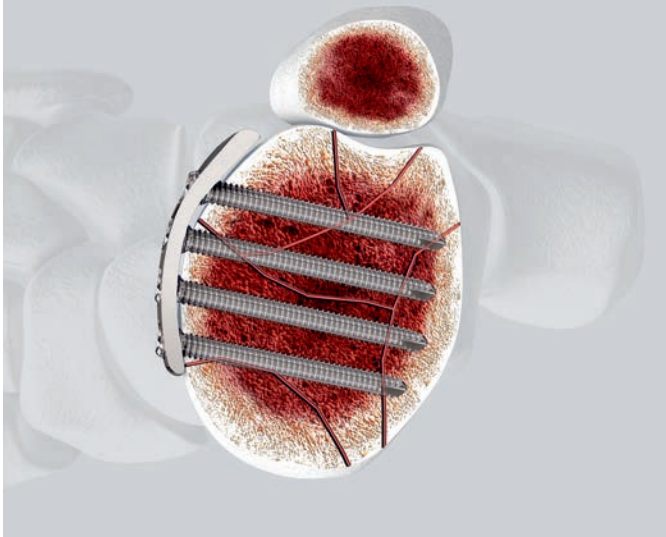
For information on fixation principles using conventional and locked plating techniques, please refer to the LCP™ Locking Compression Plate Surgical Technique.

- ∅ 2.7 mm variable angle locking screws
- Distribution of screws across the pilon (as shown in figure 1)
- Plates with rounded edges
- Anatomically contoured
- Low screwhead prominence

1 VA LCP Anterolateral Distal Tibia Plate 2.7/3.5

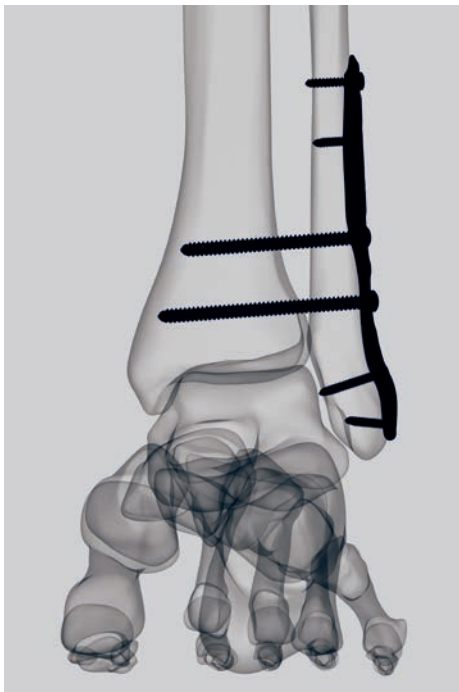


2 LCP Anterolateral Distal Tibial Plate 3.5



Cross-sections of the VA LCP Anterolateral Distal Tibial Plate 2.7/3.5 (1) and LCP Anterolateral Distal Tibial Plate 3.5 (2) at the level of the distal tibial pilon.

Compression / distraction forceps



Syndesmotic screw

Syndesmotic fixation option through the elongated hole in the VA LCP Lateral Distal Fibula Plate 2.7.

Intended Use, Indications and Contraindications can be found in the corresponding system Instructions for Use.

The AO Principles of Fracture Management

Mission

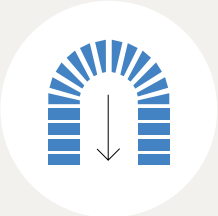
The AO's mission is promoting excellence in patient care and outcomes in trauma and musculoskeletal disorders.

AO Principles[1,2]

1.

Fracture reduction and fixation to restore anatomical relationships.

2.



Fracture fixation providing absolute or relative stability, as required by the "personality" of the fracture, the patient, and the injury.

3.

Preservation of the blood supply to soft-tissues and bone by gentle reduction techniques and careful handling.

4.

Early and safe mobilization and rehabilitation of the injured part and the patient as a whole.

[1] Müller ME, M Allgöwer, R Schneider, H Willenegger. Manual of Internal Fixation. 3rd ed. Berlin, Heidelberg, New York: Springer. 1991
[2] Buckley RE, Moran CG, Apivatthakakul T. AO Principles of Fracture Management: 3rd ed. Vol. 1: Principles, Vol. 2: Specific fractures. Thieme; 2017.

Preoperative Planning

■ Note:

The direction of the VA locking screws is determined by the design of the plate and based on the average anatomy of the specific bone. If manual plate contouring in the metaphyseal area is necessary, or if the implant does not match the normal patient anatomy, confirm the distal screw trajectories using Kirschner wires.

- Complete the preoperative radiographic assessment and prepare the preoperative plan. Determine plate length and instruments to be used.
- Visualization under image intensifier control in both the lateral and AP views is recommended.

▲ Precautions:

- For the medial plate head holes, it is required to use a minimum of five 2.7 mm VA locking screws.
- For the anteromedial plate head holes, it is required to use a minimum of five 2.7 mm VA locking screws.
- For the anterolateral plate head holes, it is required to use a minimum of seven 2.7 mm VA locking screws.

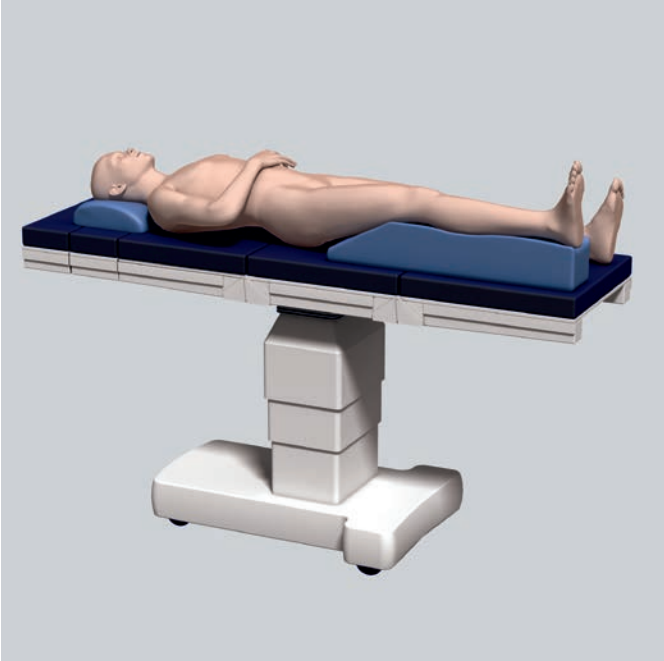
Patient Positioning

Medial, anteromedial and anterolateral plates

Position the patient supine on a radiolucent operating table. Elevate the leg on a padded rest with the knee moderately flexed to assist placement in a neutral position. Place the opposite leg level on a tabletop.

Fibula plate

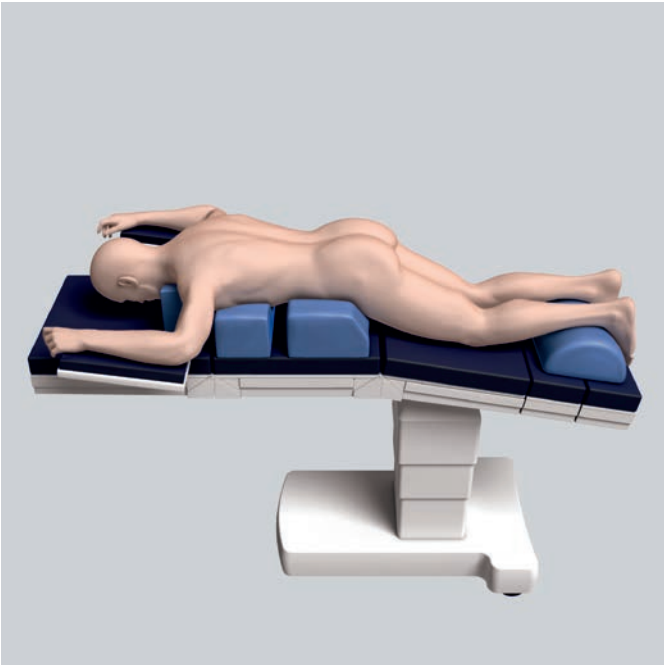
Position the patient supine on a radiolucent operating table with a sandbag (bump) underneath the buttock of the affected side. This allows the foot to lie in a neutral position and prevents the normal external rotation of the leg.



Posterolateral L- and T-plates

If using a posterior approach, position the patient prone on a radiolucent operating table. Pad bony prominences and take care with arm positioning. The ipsilateral posterior iliac crest may be prepped if autogenous bone grafting is desired. Use a sterile thigh tourniquet in this situation.

A small towel bump under the anterior aspect of the operative limb facilitates obtaining a lateral image while avoiding the contralateral limb. This bump is also useful to avoid an apex anterior deformity from the foot abutting the table.



Approach and Incision

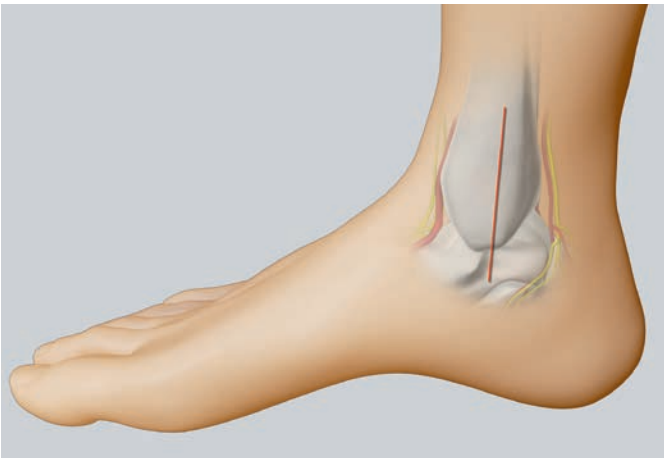
Medial and anteromedial plates

For a percutaneous approach, make an incision to access the medial malleolus.

For an open approach, extend the incision as much as necessary to expose the joint.

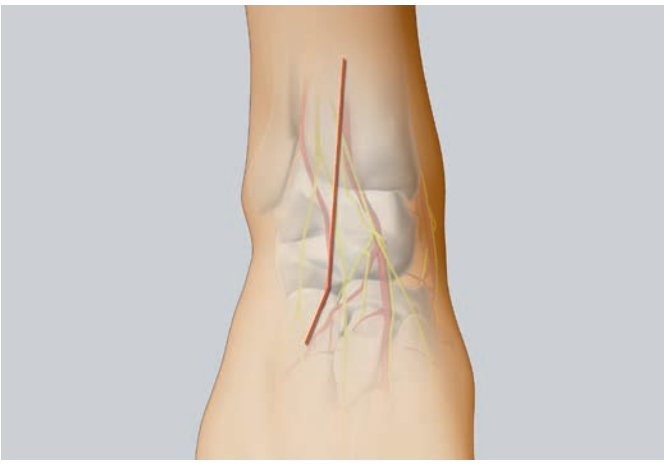
▲ Precaution:

When choosing a percutaneous approach, take care not to damage the saphenous nerve or saphenous vein.



Anterolateral plate

A longitudinal and straight incision should be centered at the ankle joint, parallel to the fourth metatarsal distally, and between the tibia and fibula proximally. Proximal extension of the incision should end 7–8 cm above the joint. Distally the incision can be extended to the level of the talonavicular joint, allowing exposure of the talar neck. The joint can be exposed using an arthrotomy.



Fibula plate

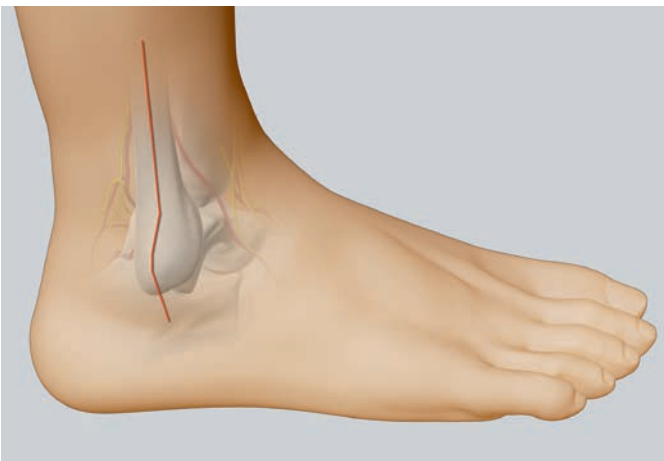
Make a straight lateral or posterolateral surgical incision to expose the fibular fracture, the distal fibula, and the fibular diaphysis. A lateral incision directly over the fibula can accentuate plate prominence and the wound closure will be directly over the implant.

Alternatively, make the incision along the posterolateral border of the fibula where there is more soft-tissue coverage.

Deep dissection allows exposure of the fibula along its length. An extraperiosteal approach to the fibula proximal to the fracture is usually preferred.

▲ Precaution:

Be careful not to damage the superficial peroneal nerve proximally and anteriorly, or the sural nerve posteriorly.



Reduce Articular Surface

Instruments

03.118.001	Periarticular Reduction Forceps, with pointed ball tips ∅ 6.5 mm, small
03.118.110	Periarticular Reduction Forceps, with pointed ball tips ∅ 6.5 mm, medium
03.118.002	Compression Forceps, large, with Speed Lock
03.118.003	Distraction Forceps, large, with Speed Lock
03.118.010–03.118.060	Compression Wire ∅ 2.8 mm, length 200 mm, thread length 10–60 mm

In spiral or oblique fracture patterns, a periarticular reduction forceps can be applied for reduction.

Alternatively, in some fracture patterns the plate can be used to assist with and guide the reduction.

■ Note:

Compression or distraction forceps may facilitate obtaining length, fracture reduction and visualization of the joint.

Confirm the reduction under image intensifier control.

Options for maintaining the reduction depend on the fracture configuration and include:

- Periarticular reduction forceps
- Kirschner wires through the plate
- Compression wires, rods and compression or distraction forceps
- Independent lag screws
- Lag screws through the plate
- VA locking screws through the plate

■ Note:

To verify that independent lag screws and Kirschner wires will not interfere with plate placement, evaluate placement intraoperatively with AP and lateral fluoroscopic images.

▲ Precaution:

VA locking and locking screws do not provide interfragmentary compression. Therefore, any desired compression must be achieved with non-locking screws. The articular surface must be reduced and compressed before fixation of the plate with VA locking screws.

Plate Insertion

Instruments

313.353	Drill Sleeve 2.7, for Aiming Arm No. 313.354, for DHP
03.118.100–03.118.101	Guiding Block for right/left VA LCP™ Medial Distal Tibial Plate 2.7/3.5
or	
03.118.102–03.118.103	Guiding Block for right/left VA LCP™ Antero-lateral Distal Tibial Plate 2.7/3.5
or	
03.118.106–03.118.107	Guiding Block for right/left VA LCP™ Lateral Distal Fibula Plate 2.7
314.116	Screwdriver Shaft STARDRIVE™ 3.5, T15, self holding, for AO/ASIF Quick Coupling
03.118.111	Silicone Handle with AO/ASIF Quick Coupling
03.118.008	Compression/Distraction Rod 2.7, 15°
03.110.002	Torque Limiter, 1.2 Nm, with AO/ASIF Quick Coupling

Percutaneous insertion

Guiding blocks can be used in combination with drill sleeves 2.7 for percutaneous plate insertion.

Attach the guiding block to the plate using the attachment screw and screwdriver shaft. Thread drill sleeves 2.7 securely into two of the most distal locking screw holes and use them as handles for percutaneous insertion.

Insert the plate through the incision. Carefully push the plate under the soft tissue.

■ Note:

The drill sleeves 2.7 (313.353) should only be used with a guiding block. The guiding block aligns the drill sleeve to ensure correct thread engagement.

Open insertion

Open the area as much as necessary to expose the fracture site.

Carefully push the plate under the soft tissue for placement on the shaft.

Use image intensifier control during plate placement in both the AP and lateral planes to ensure safe implant placement proximally along the shaft.

Plate Positioning and Provisional Fixation

Instruments

292.160	Kirschner Wire ∅ 1.6 mm with trocar tip, length 150 mm, Stainless Steel
03.118.010 – 03.118.060	Compression Wire ∅ 2.8 mm, length 200 mm, thread length 10 – 60 mm

After plate insertion, use image intensifier control to check alignment on the bone. Make any adjustments before inserting screws.

The plate may be temporarily held in place using any of the following options:

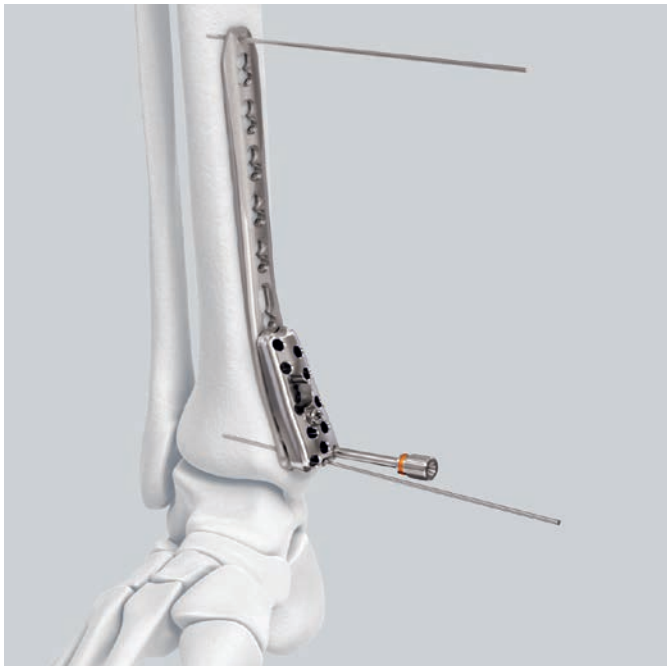
- Periarticular reduction forceps
- ∅ 1.6 mm Kirschner wires through the plate head and guiding block or plate shaft tip
- ∅ 2.8 mm compression wire in elongated combi-hole
- Cortex screw in a distal combi-hole
- Standard plate-holding forceps

Any of these options will allow plate positioning adjustments and prevent plate rotation while inserting the first VA locking screw in the plate head.

Note:

Ensure proper reduction before inserting the first VA locking screw. Once the VA locking screws are inserted, further reduction is not possible without loosening the VA locking screws.

Verify plate placement using image intensifier control. Make any adjustments before inserting screws.



Insertion of Distal Cortex Screw ∅ 3.5 mm

Instruments

310.230	Drill Bit ∅ 2.5 mm, length 180/155 mm, 2-flute, for Quick Coupling
323.360	Universal Drill Guide 3.5
03.118.111	Silicone Handle with AO/ASIF Quick Coupling
314.116	Screwdriver Shaft STARDRIVE™ 3.5, T15, self-holding, for AO/ASIF Quick Coupling
03.118.007	Depth Gauge, percutaneous
03.118.009	Adapter for Screws ∅ 3.5 mm, for Depth Gauge 03.118.007

■ Note:

The medial and anteromedial distal tibial plates have a hole to accommodate a ∅ 3.5 mm cortex screw distally, which allows the plate to be pulled to the bone.

Use the ∅ 2.5 mm drill bit with the universal drill guide 3.5 to predrill the bone.

Measure for screw length using the depth gauge and adapter.

Select and insert the appropriate ∅ 3.5 mm cortex screw using the silicone handle with the STARDRIVE™ screwdriver shaft for final tightening.

Also apply this technique if guiding blocks are not attached to the plate.

Insertion of VA Locking Screws ∅ 2.7 mm

Instruments

03.211.002	VA LCP™ Drill Sleeve 2.7, for Drill Bits ∅ 2.0 mm
03.118.007	Depth Gauge, percutaneous
323.062	Drill Bit ∅ 2.0 mm, with double marking, length 140/115 mm, 3-flute, for Quick Coupling
03.118.111	Silicone Handle with AO/ASIF Quick Coupling
314.467	Screwdriver Shaft, STARDRIVE™, T8, self-holding
03.110.002	Torque Limiter, 1.2 Nm, with AO/ASIF Quick Coupling
03.110.005	Handle for Torque Limiters 0.4/0.8/1.2 Nm
313.353	Drill Sleeve 2.7, for Aiming Arm No. 313.354, for DHP
03.118.100–03.118.101	Guiding Block for right/left VA LCP™ Medial Distal Tibial Plate 2.7/3.5
or	
03.118.102–03.118.103	Guiding Block for right/left VA LCP™ Anterolateral Distal Tibial Plate 2.7/3.5
or	
03.118.106–03.118.107	Guiding Block for right/left VA LCP™ Lateral Distal Fibula Plate 2.7

1. Drill screw hole

For insertion at variable angle

Remove the guiding block for insertion of the VA locking screws off the nominal axis.

Insert the cone-shaped end of drill guide into the desired VA locking hole in the plate. The drill guide cone will retain in the hole. The cone-shaped end of the drill guide allows drilling within a 30° cone.

When drilling off nominal axis the drill guide should remain in place and the drill bit may be aimed in any direction within the cone.

- Verify the drill bit angle and depth under image intensifier control to ensure the desired angle has been achieved.
- If necessary, drill at a different angle and verify again.

▲ Precautions:

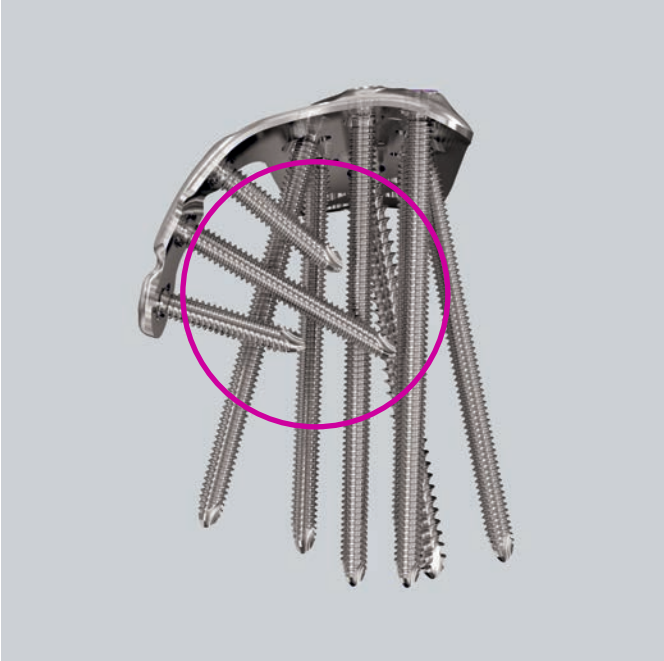
- For the medial and anteromedial plates, it is required to use a minimum of five ∅ 2.7 mm VA locking screws distally.
- For the anterolateral plate, it is required to use a minimum of seven ∅ 2.7 mm VA locking screws distally.

Required number of distal VA locking screws ∅ 2.7 mm

Plate type	Number of screws
VA LCP™ Medial Distal Tibial Plate 2.7/3.5	5
VA LCP™ Anteromedial Distal Tibial Plate 2.7/3.5	5
VA LCP™ Anterolateral Distal Tibial Plate 2.7/3.5	7

▲ Precautions:

- Avoid excessive re-drilling, especially in poor quality bone.
- When inserting screws into the anterior arm of the anteromedial plate, the screw lengths should not exceed 26 mm to prevent collisions with other screws and joint surface penetration.

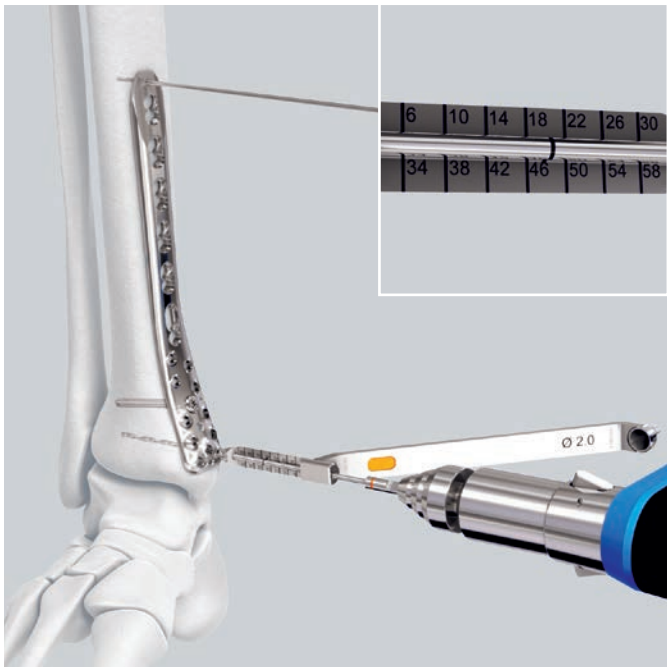


For screw insertion at nominal angle

VA locking screws can be inserted into the plate at the predefined nominal screw trajectory.

Option A: Universal drill guide

Use the coaxial end of the universal VA locking drill guide 2.0. The drill guide will self-retain in the hole.
If the drill bit with depth mark (323.062) is used, the drilling depth can be read from the scale on the drill guide.



Option B: Guiding blocks

Use guiding blocks in combination with the drill sleeve 2.7 (313.353) to drill at the nominal angle in the plate head.

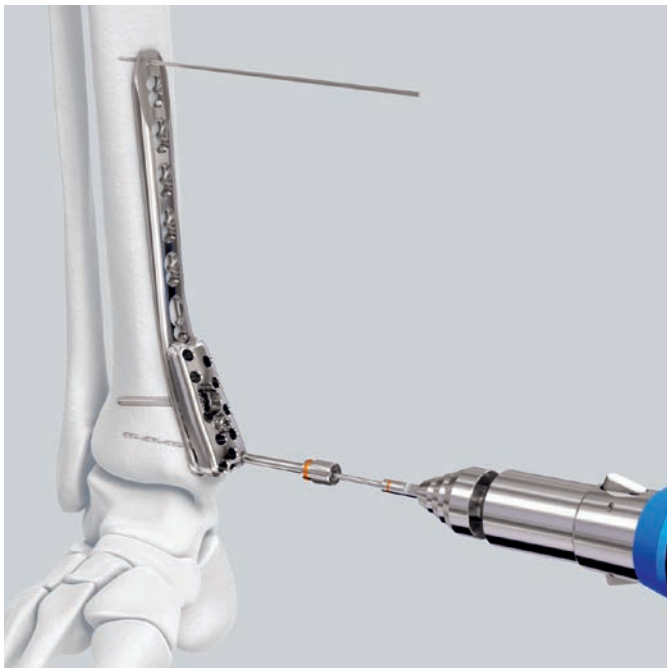
■ Note:

The drill sleeve 2.7 must be used with the guiding block.

Attach the guide block to the plate using the attachment screw and screwdriver shaft.

Be sure to attach the correct sided guide block to the plate (right guide block to right plate). If the incorrect side is attached, not all of the 2.7 mm screw holes will be accessible and those that are will not be aimed correctly.

Drill to the desired depth. Verify the drill depth under image intensifier control.



■ Notes:

- If using non-locking screws or inserting VA locking screws off axis, the guide block and threaded drill guide cannot be used.
- If inserting a 2.7 mm metaphyseal screw, the guide block cannot be used.

2. Measure screw length

Use the depth gauge to measure for the correct screw length. The percutaneous depth gauge can be used through the guiding block.

■ Note:

When measuring for ∅ 2.7 mm VA locking screws, the depth gauge can be used without the adapter sleeve.

3. Insert screws

Insert the correct length VA locking screw.

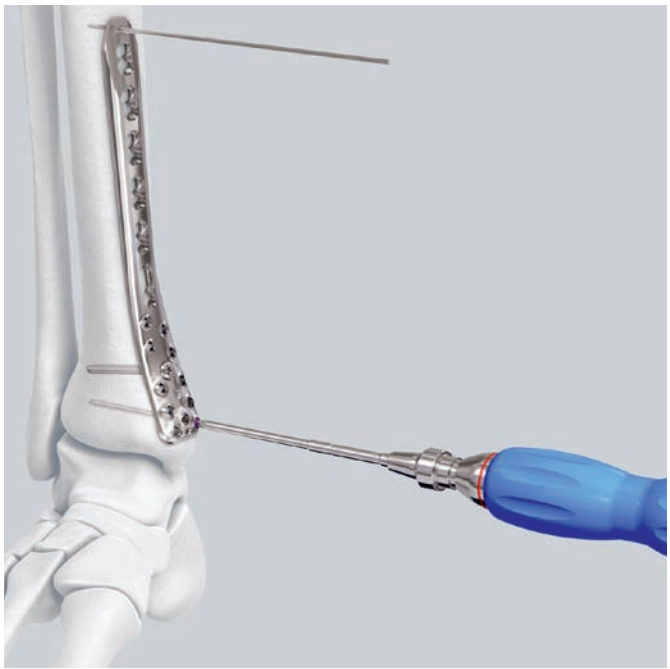
Confirm screw position and length prior to final tightening. Always use the torque limiter to finally tighten screws.

▲ Precaution:

Initial insertion of the VA locking screws may be performed using power equipment. Do not finally lock the screws with power tools.

■ Note:

The fibula plate has a hole to accommodate a 2.7 mm metaphyseal or cortex screw distally.



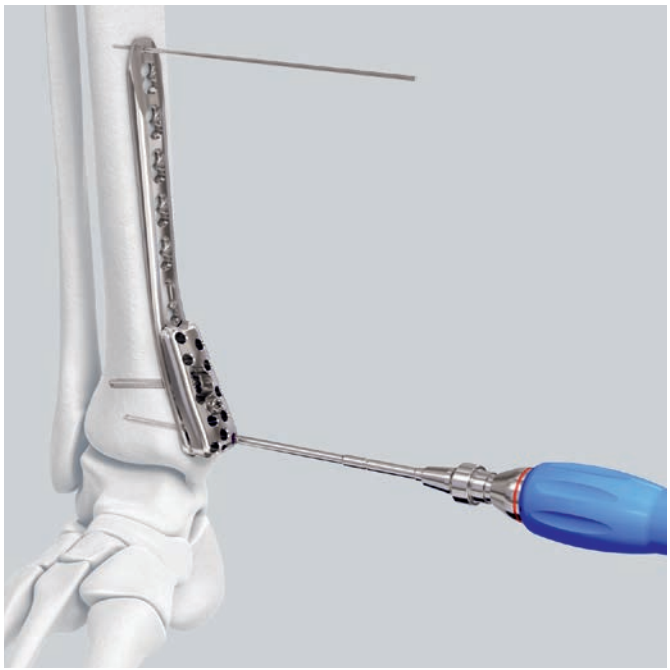
4. Additional screws

Repeat steps 1 through 3 for each additional screw. Insert a minimum of four additional distal screws in the medial and anteromedial distal tibia plate (to have a minimum of five distal screws in total) and a minimum of six additional distal screws in the anterolateral distal tibia plate (to have a minimum of seven distal screws in total). Add additional screws as needed.

If screws are inserted at the nominal angle, the same screw insertion technique can be applied with the guiding blocks.

Required number of distal VA locking screws ∅ 2.7 mm

Plate type	Number of screws
VA LCP™ Medial Distal Tibial Plate 2.7/3.5	5
VA LCP™ Anteromedial Distal Tibial Plate 2.7/3.5	5
VA LCP™ Anterolateral Distal Tibial Plate 2.7/3.5	7



Use of Compression/Distraction System

1. Insert compression wire

Instruments	
03.118.010 – 03.118.060	Compression Wire ∅ 2.8 mm, length 200 mm, thread length 10 – 60 mm
03.118.008	Compression/Distraction Rod 2.7, 15°
03.118.005	Compression/Distraction Rod 3.5, 15°
03.110.005	Handle for Torque Limiters 0.4/0.8/1.2 Nm
03.110.002	Torque Limiter, 1.2 Nm, with AO/ASIF Quick Coupling
314.467	Screwdriver Shaft, STARDRIVE™, T8, self-holding
03.127.016	Handle with Torque Limiting Function, 2.5 Nm
314.116	Screwdriver Shaft STARDRIVE™ 3.5, T15, self-holding, for AO/ASIF Quick Coupling

Place the plate on the bone, ensuring appropriate placement according to the specific procedure.

Estimate the appropriate thread length needed for the plate-bone combination and choose the appropriate compression wire length.

■ Note:

Bicortical fixation is recommended.

Use a wire driver to insert the initial compression wire through the non-threaded portion of the plate combi-hole and through the bone. It is recommended to use the elongated combi-hole where possible to maximize the compression or distraction distance.

To minimize wire thread stripping, slow down wire insertion when the spherical stop nears the plate. This will allow tactile confirmation of compression between the wire, plate and bone.

There should be sufficient force holding the plate to the bone, but the bone should not be tightly compressed as this will limit excursion of the plate relative to the bone.

A total of 4.5 mm compression can be achieved through the elongated combi-hole in the distal tibial plates. The syndesmotic slots of the fibula plate allow 10 mm of compression or distraction.

■ Note:

It is not recommended to use the compression wires through the VA locking holes 2.7 because the wire diameter is larger than the drill bit size.

2. Place second fixation point

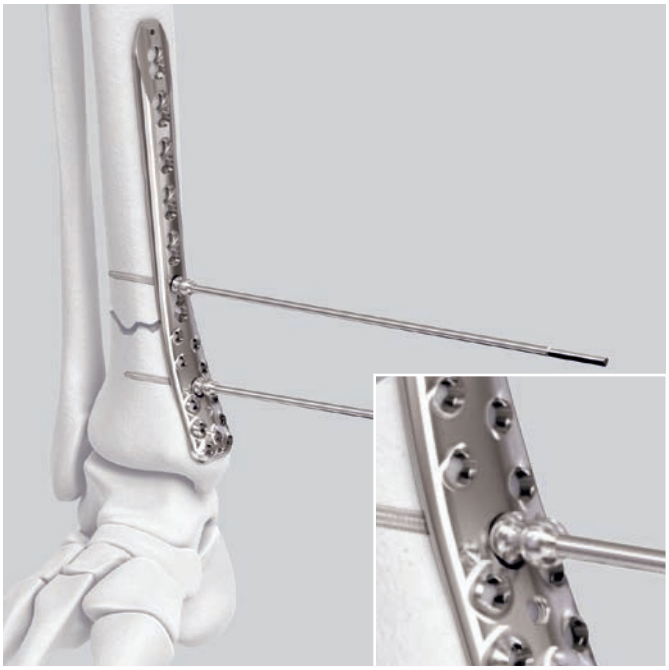
A second fixation point is required to span the fracture, which can be achieved using one of the following techniques:

Option A: Use screw fixation on the opposing fragment through the plate head. Then thread a compression/distraction rod 2.7 into an unused locking hole.

■ Note:

The compression/distraction rod needs to be inserted and locked using the appropriate torque limiter (1.2 Nm for rod 2.7, 2.5 Nm for rod 3.5).

Option B: Use provisional fixation on the opposing fragment through the plate before fixing the plate to the bone with screws. Provisional fixation can be achieved by inserting a ∅ 2.8 mm compression wire into an unused hole.



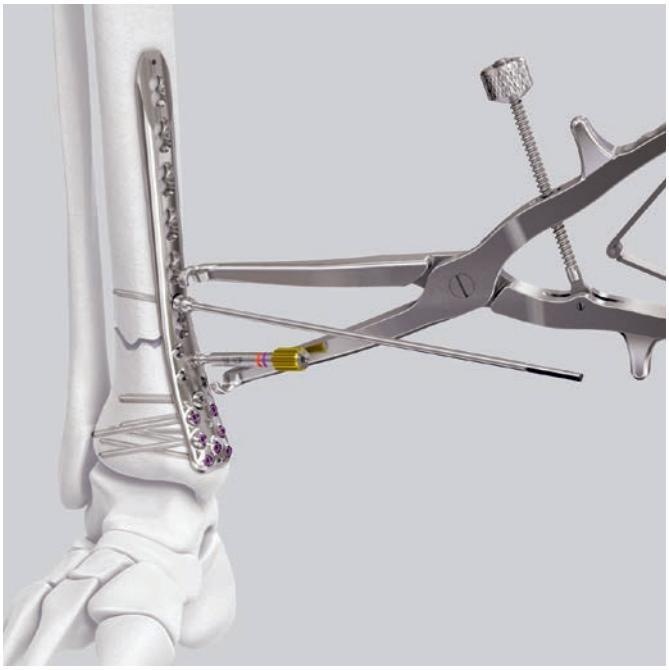
Option C: Insert a compression wire into the bone independent of the plate.

3. Compress or distract

Instruments	
03.118.002	Compression Forceps, large, with Speed Lock
or	
03.118.003	Distraction Forceps, large, with Speed Lock

Thread the speed lock retention nut counterclockwise so the forceps are in their open position. Place the compression/distraction forceps into position, with the tips around the compression wire and/or rod spheres.

Compress or distract by squeezing the handles. Do not exert excessive force. This may cause the compression wires to strip out of the bone.



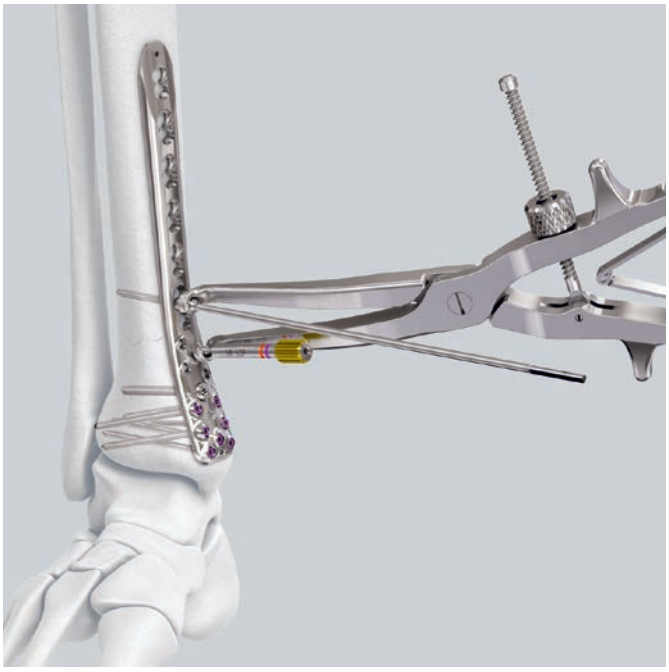
Thread the speed lock retention nut clockwise while maintaining pressure on the forceps to lock the device.

Place at least one screw on either side of the fracture before removing the forceps.

After stable fixation is achieved, remove the compression wires and rods.

■ Note:

Do not use the torque limiter when removing the rods.



Insertion of VA Locking Screws ∅ 3.5 mm

Instruments

03.127.002	VA Double Drill Guide 3.5, for Drill Bits ∅ 2.8 mm
03.118.007	Depth Gauge, percutaneous
03.118.009	Adapter for Screws ∅ 3.5 mm, for Depth Gauge 03.118.007
310.288	Drill Bit ∅ 2.8 mm, length 165 mm, for AO/ASIF Quick Coupling
03.127.001	VA Fixed Angle Drill Guide 3.5, for Drill Bits ∅ 2.8 mm
03.127.016	Handle with Torque Limiting Function, 2.5 Nm
314.116	Screwdriver Shaft STARDRIVE™ 3.5, T15, self-holding, for AO/ASIF Quick Coupling

■ Note:

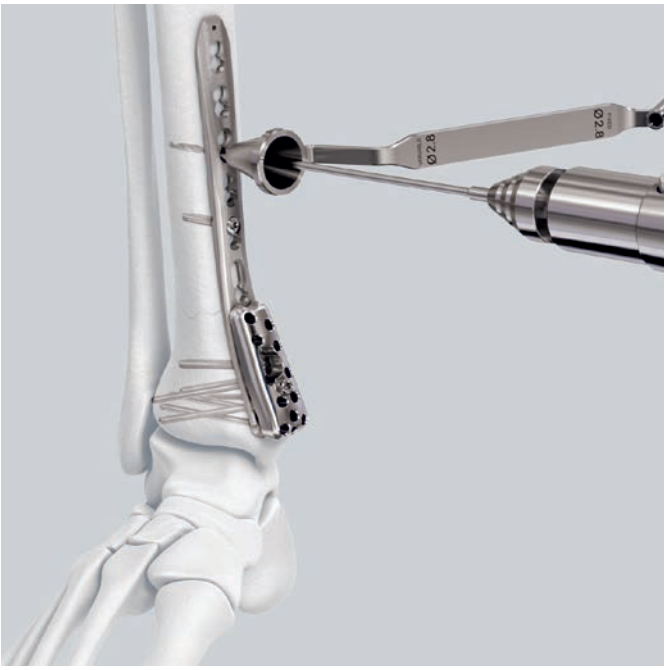
Ensure proper reduction before inserting the first VA locking screw. Once the locking screws are inserted, further reduction is not possible without loosening the locking screws.

1. Drill screw hole

For screw insertion at variable angle

To insert the VA locking screws off the nominal axis, insert the cone-shaped end of drill guide into the desired VA locking screw hole in the plate. The drill guide will self-retain in the hole. The cone-shaped end of the drill guide allows drilling within a 30° cone.

When drilling off nominal axis, the drill guide should remain in place and the drill bit may be aimed in any direction within the cone.



- Verify the drill bit angle and depth under image intensifier control to ensure the desired angle has been achieved.
- If necessary, drill at a different angle and verify again.

For screw insertion at nominal angle

To insert VA locking screws at the nominal angle, insert the coaxial end of the double drill guide, or the VA fixed angle drill guide (03.127.001), into the desired VA locking hole.

- Verify the position of the drill bit under image intensifier control to ensure the desired position has been achieved.

▲ Precaution:

Avoid excessive re-drilling, especially in poor quality bone.

2. Measure screw length

Use the depth gauge to measure for the correct screw length.

■ Note:

When measuring for ∅ 3.5 mm and ∅ 4.0 mm screws, the adapter must be attached to the depth gauge.

3. Insert screws

Insert the correct length VA locking screws.

Confirm screw position and length prior to final tightening.

Always use the handle with torque limiting function 2.5 Nm (03.127.016) for final tightening.

▲ Precautions:

- Initial insertion of the VA locking screws may be done using power equipment. Do not finally lock the screws with power tools.
- Do not lock the screws to the plate under power. Screw engagement and final locking must be done manually with:
  - the torque limiter 1.2 Nm for 2.7 mm

  or
  - the Handle with Torque Limiting Function, 2.5 Nm for 3.5 mm
- Only initial insertion of the variable angle locking screws may be done using power equipment.
- Confirm screw position and length prior to final tightening.
- Final tightening must be done manually using the 1.2 Nm torque limiter (for 2.7 mm) or the Handle with Torque Limiting Function, 2.5 Nm (for 3.5 mm).

Confirmation of Reduction and Fixation

Carefully assess final reduction and fixation via direct visualization and image intensifier control. Confirm the stability of the fixation and whether there is unrestricted motion at the ankle joint.

Implant Removal

Optional Instruments

311.440	T-Handle with Quick Coupling
309.520	Extraction Screw, conical, for Screws Ø 2.7, 3.5 and 4.0 mm
309.521	Extraction Screw for Screws Ø 3.5 mm

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.

If a screw cannot be removed with the screwdriver (e.g. if the hexagonal or STARDRIVE recess of the locking screw is damaged or if the screw is stuck in the plate), use the T-Handle with Quick-Coupling (311.440) to insert the conical Extraction Screw (309.520 or 309.521) into the screw head, and unscrew the screw in a counterclockwise direction.

▲ Precaution:

Do not use the torque limiting handle for screw removal.

Optional Techniques

Anteromedial Plates

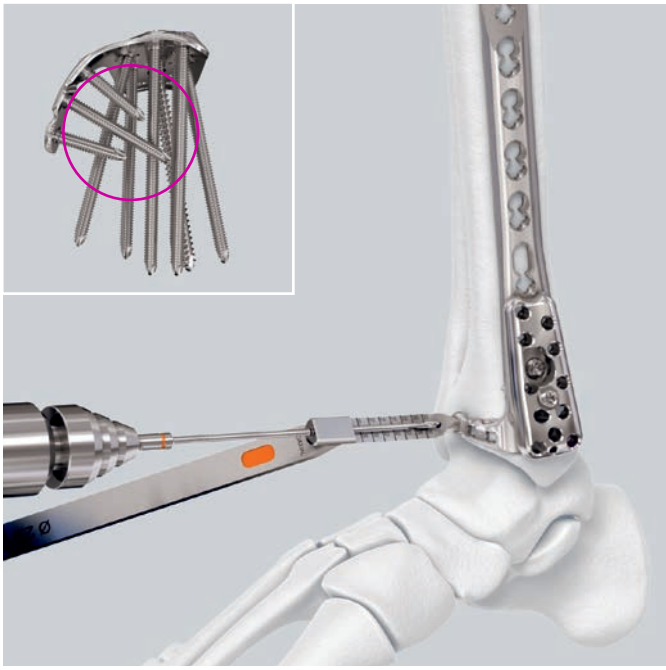
Insertion of VA Locking Screws ∅ 2.7 mm in Anterior Arm

Insert up to three ∅ 2.7 mm VA locking screws or ∅ 2.7 mm non-locking screws into the anterior arm.

▲ Precaution:

Screws should be no longer than 26 mm to avoid collisions with screws placed from the medial side and to avoid penetrating the joint surface.

Refer to “Drill Screw Hole” section for ∅ 2.7 mm VA locking screw insertion technique.



Distal Fibula Plates

Insertion of Cortex Screw(s) ∅ 3.5 mm and ∅ 4.0 mm in Syndesmotic Slots

Instruments for ∅ 3.5 mm cortex screw insertion

310.230	Drill Bit ∅ 2.5 mm, length 180/155 mm, 2-flute, for Quick Coupling
323.360	Universal Drill Guide 3.5
03.118.111	Silicone Handle with AO/ASIF Quick Coupling
314.116	Screwdriver Shaft STARDRIVE™ 3.5, T15, self-holding, for AO/ASIF Quick Coupling
03.118.007	Depth Gauge, percutaneous
03.118.009	Adapter for Screws ∅ 3.5 mm, for Depth Gauge 03.118.007

Additional instruments for ∅ 4.0 mm cortex screw insertion

310.229	Drill Bit ∅ 2.9 mm, length 150 mm, 2-flute, for Quick Coupling
312.401	Double Drill Guide 4.0/2.9
314.030	Screwdriver Shaft, hexagonal, small, ∅ 2.5 mm

Insert the double drill sleeve into the syndesmotic slot on the plate.

■ Note:

The slots have 30° angulation to aim the syndesmotic screws into the center of the distal tibia. Follow the angulation of the drill guide. Do not overangulate.

Use the respective drill bit to drill to the desired length.

Remove the drill sleeve.

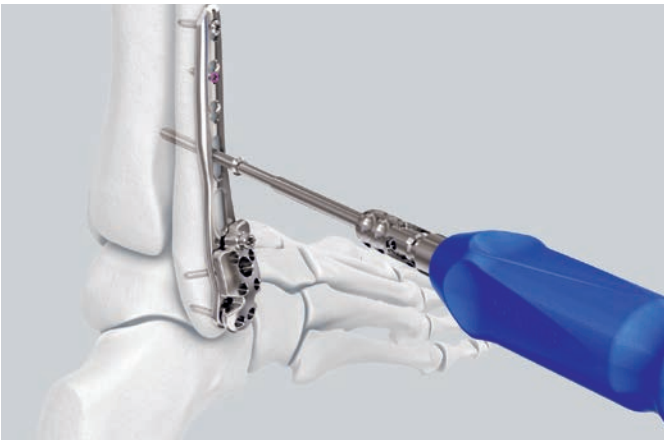
Use the depth gauge to determine screw length.

■ Note:

When measuring for ∅ 3.5 mm and ∅ 4.0 mm screws, the adapter must be attached to the depth gauge.

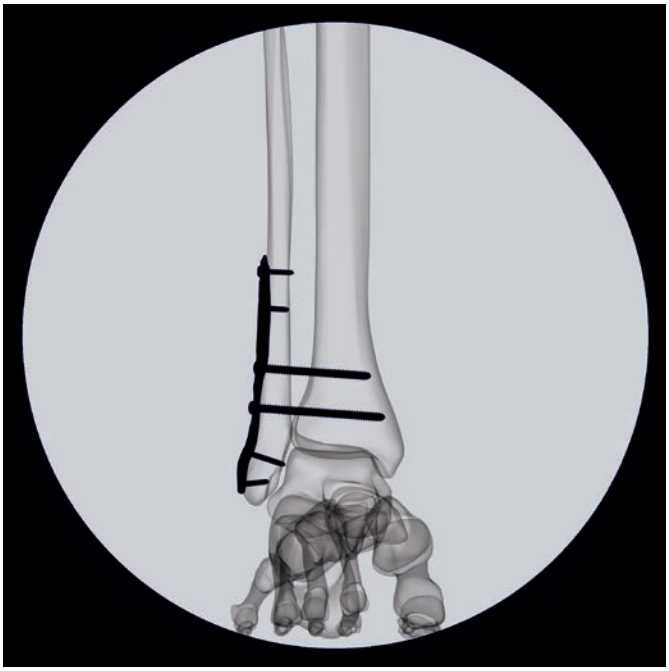
Select and insert the cortex screw using the silicon handle with the appropriate screwdriver shaft for final tightening.

Verify the position of the drill bit under image intensifier control to ensure the desired position has been achieved.



■ Note:

It is not recommended to use ∅ 2.7 mm cortex screws in the syndesmotic slots as the screwhead diameter is too small and the screw may fall through the slot at certain angulations.



All Plates

Insertion of Low Profile Metaphyseal Compression Screws ∅ 2.7 mm

The low profile metaphyseal compression screw ∅ 2.7 mm can be used in the ∅ 2.7 mm VA locking and ∅ 2.7 mm combi-holes.

Insertion is only possible without the use of guiding blocks. The screw can be inserted up to 15° off-axis.

Use the same instrumentation as per the insertion of ∅ 2.7 mm VA locking screws.

▲ Precautions:

- The low profile metaphyseal compression screw ∅ 2.7 mm can be used to pull the plate to the bone. However, the screw cannot be used to create interfragmentary compression.
- The 1.2 Nm torque limiter is recommended for use during insertion to avoid potential screw damage as a result of excessive torque, for example due to screw collisions.
- As the low profile metaphyseal compression screws ∅ 2.7 mm are non-locking, final tightening must be performed carefully, as with other cortical screws. Do not wait for the torque limiter to “click” during final tightening. This is not required and could result in the screw thread stripping out of the bone.

Plates

VA LCP Medial Distal Tibial Plates 2.7/3.5

Stainless Steel	Holes	Length (mm)	Side
02.118.002	4	112	right
02.118.003	4	112	left
02.118.004	6	142	right
02.118.005	6	142	left
02.118.006	8	172	right
02.118.007	8	172	left
02.118.008	10	202	right
02.118.009	10	202	left
02.118.010	12	232	right
02.118.011	12	232	left

Optional

02.118.012	14	262	right
02.118.013	14	262	left
02.118.014	16	292	right
02.118.015	16	292	left

All plates are available sterile packed.
For sterile implants add suffix S to article number.

VA LCP Anteromedial Distal Tibial Plate 2.7/3.5

Stainless Steel	Holes	Length (mm)	Side
02.118.102	4	112	right
02.118.103	4	112	left
02.118.104	6	142	right
02.118.105	6	142	left
02.118.106	8	172	right
02.118.107	8	172	left
02.118.108	10	202	right
02.118.109	10	202	left
02.118.110	12	232	right
02.118.111	12	232	left

Optional

02.118.112	14	262	right
02.118.113	14	262	left
02.118.114	16	292	right
02.118.115	16	292	left

All plates are available sterile packed.
For sterile implants add suffix S to article number.

VA LCP Anterolateral Distal Tibial Plate 2.7/3.5

Stainless Steel	Holes	Length (mm)	Side
02.118.202	4	82	right
02.118.203	4	82	left
02.118.204	6	112	right
02.118.205	6	112	left
02.118.206	8	142	right
02.118.207	8	142	left
02.118.208	10	172	right
02.118.209	10	172	left
02.118.210	12	202	right
02.118.211	12	202	left

Optional

02.118.212	14	232	right
02.118.213	14	232	left
02.118.214	16	262	right
02.118.215	16	262	left
02.118.216	18	292	right
02.118.217	18	292	left

All plates are available sterile packed.
For sterile implants add suffix S to article number.

VA LCP Posterolateral Distal Tibial L-Plate 2.7

Stainless Steel	Holes	Length (mm)	Side
02.118.302	4	72	right
02.118.303	4	72	left
02.118.304	6	90	right
02.118.305	6	90	left

The plates are not anatomically dedicated to the left or the right leg. The indication of the side only helps to identify the different geometries. The plate shown in the picture is the right version.

All plates are available sterile packed.
For sterile implants add suffix S to article number.

VA LCP Posterolateral Distal Tibial T-Plate 2.7

Stainless Steel	Holes	Length (mm)
02.118.306	4	72
02.118.307	6	90

All plates are available sterile packed.
For sterile implants add suffix S to article number.

VA LCP Lateral Distal Fibula Plate 2.7

Stainless Steel	Titanium	Holes	Length (mm)	Side
02.118.400	04.118.400	3	79	right
02.118.401	04.118.401	3	79	left
02.118.402	04.118.402	4	92	right
02.118.403	04.118.403	4	92	left
02.118.404	04.118.404	5	105	right
02.118.405	04.118.405	5	105	left
02.118.406	04.118.406	6	118	right
02.118.407	04.118.407	6	118	left
02.118.408	04.118.408	7	131	right
02.118.409	04.118.409	7	131	left

Optional

02.118.410	04.118.410	9	157	right
02.118.411	04.118.411	9	157	left
02.118.412	04.118.412	11	183	right
02.118.413	04.118.413	11	183	left
02.118.414	04.118.414	13	209	right
02.118.415	04.118.415	13	209	left
02.118.416	04.118.416	15	235	right
02.118.417	04.118.417	15	235	left

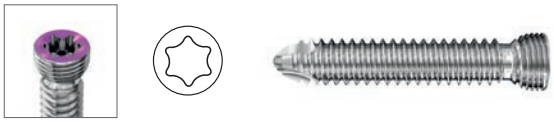
All plates are available sterile packed.
For sterile implants add suffix S to article number.

Screws

Standard screws

VA locking screws ∅ 2.7 mm

0X.211.010– 0X.211.060	VA Locking Screw STARDRIVE™ ∅ 2.7 mm (head 2.4), self-tapping, length 10–60 mm



■ Note:

VA locking screws ∅ 2.7 mm must be tightened to 1.2 Nm.

VA locking screws ∅ 3.5 mm

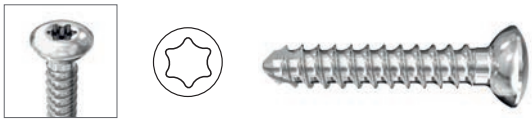
02.127.110– 02.127.160	VA Locking Screw STARDRIVE™ ∅ 3.5 mm, self-tapping, length 10–60 mm, Stainless Steel

■ Note:

VA locking screws ∅ 3.5 mm must be tightened to 2.5 Nm.

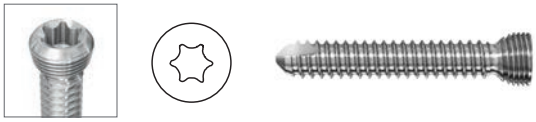
Cortex screws ∅ 2.7 mm

X02.870– X02.900	Cortex Screw STARDRIVE™ ∅ 2.7 mm, self-tapping, length 10–60 mm
X02.962– X02.969	Cortex Screw STARDRIVE™ ∅ 2.7 mm, self-tapping, length 42–60 mm



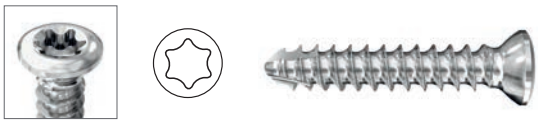
Locking Screw ∅ 2.7 mm*

X02.920– X02.960	Locking Screw ∅ 2.7 mm (head LCP 3.5), self-tapping, length 20–60 mm



Low profile cortex screws ∅ 3.5 mm

0X.206.210– 0X.206.260	Low Profile Cortex Screw STARDRIVE™ ∅ 3.5 mm, self-tapping, length 10–60 mm



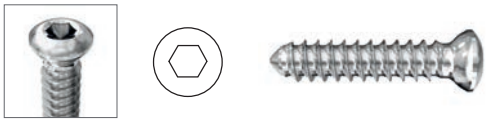
All screws are available sterile packed.
For sterile implants add suffix S or TS to article number.

X = 2 (stainless steel)
X = 4 (titanium)

* Not available "TS" packed

Cortex screws ∅ 4 mm

X06.414– X06.460	Cortex Screw ∅ 4.0 mm, self-tapping, Length 14–60 mm



For use in syndesmotic slots of fibula plate

Low profile metaphyseal compression screws ∅ 2.7 mm

0X.118.510– 0X.118.560	Low Profile Metaphyseal Compression Screw, STARDRIVE™ ∅ 2.7 mm, self-tapping, length 10–60 mm

All screws are available sterile packed.
For sterile implants add suffix S or TS to article number.

X = 2 (stainless steel)
X = 4 (titanium)

Also compatible with the VA LCP Ankle Trauma System 2.7/3.5

Locking screws ∅ 2.7 mm

X02.210– X02.260	Locking Screw STARDRIVE™ ∅ 2.7 mm (head LCP 2.4), self-tapping, length 10–60 mm



For axial insertion in the VA locking holes

■ Note:

Locking screws ∅ 2.7 mm must be inserted at zero degrees and must be tightened to 1.2 Nm.

Locking screws ∅ 3.5 mm

212.101– 212.125	Locking Screw STARDRIVE™ ∅ 3.5 mm, self-tapping, length 10–65 mm, Stainless Steel



For axial insertion in the VA locking holes

■ Note:

Locking screws ∅ 3.5 mm must be inserted at zero degrees and must be tightened to 1.5 Nm.

Cortex screws ∅ 3.5 mm

0X.200.010– 0X.200.060	Cortex Screw STARDRIVE™ ∅ 3.5 mm, self-tapping, length 10–60 mm



X = 2 (stainless steel)
X = 4 (titanium)

Instruments

Standard screw insertion instruments

323.062	Drill Bit ∅ 2.0 mm, with double marking, length 140/115 mm, 3-flute, for Quick Coupling	
310.230	Drill Bit ∅ 2.5 mm, length 180/155 mm, 2-flute, for Quick Coupling	
310.284	LCP Drill Bit ∅ 2.8 mm with Stop, length 165 mm, 2-flute, for Quick Coupling	
310.350	Drill Bit ∅ 3.5 mm, length 110/85 mm, 2-flute, for Quick Coupling	
03.211.003	VA LCP Drill Sleeve 2.7, conical, for Drill Bits ∅ 2.0 mm	
03.211.004	VA LCP Drill Sleeve 2.7, coaxial, for Drill Bits ∅ 2.0 mm	

03.211.002	VA LCP Drill Sleeve 2.7, for Drill Bits ∅ 2.0 mm	
323.260	Universal Drill Guide 2.7	
313.353	Drill Sleeve 2.7, for Aiming Arm No. 313.354, for DHP	
03.127.002	VA Double Drill Guide 3.5, for Drill Bits ∅ 2.8 mm	
03.127.001	VA Fixed Angle Drill Guide 3.5, for Drill Bits ∅ 2.8 mm	
03.127.004	VA Drill Guide 3.5, for Drill Bits ∅ 2.8 mm, long, with spherical head	
03.127.005	Trocar for VA Drill Guide 3.5, for Drill Bits ∅ 2.8 mm, long, with spherical head	
03.127.006	Protection Sleeve for VA Drill Guide 3.5, for Drill Bits ∅ 2.8 mm, long, with spherical head	
03.113.024	Drill Bit ∅ 2.8 mm with Stop, calibrated, length 250/225 mm, for Quick Coupling	

323.360	Universal Drill Guide 3.5	
03.211.001	Holding Pin for VA Locking Plates 2.4/2.7	
03.118.111	Silicone Handle with AO/ASIF Quick Coupling	
03.110.005	Handle for Torque Limiters 0.4/0.8/1.2 Nm	
03.127.016	Handle with Torque Limiting Function, 2.5 Nm	

314.116	Screwdriver Shaft STARDRIVE ™3.5, T15, self-holding, for AO/ASIF Quick Coupling	
314.467	Screwdriver Shaft, STARDRIVE™, T8, self-holding	
03.110.002	Torque Limiter, 1.2 Nm, with AO/ASIF Quick Coupling	
03.118.007	Depth Gauge, percutaneous	
03.118.009	Adapter for Screws ∅ 3.5 mm, for Depth Gauge 03.118.007	
292.160	Kirschner Wire ∅ 1.6 mm with trocar tip, length 150 mm, Stainless Steel	

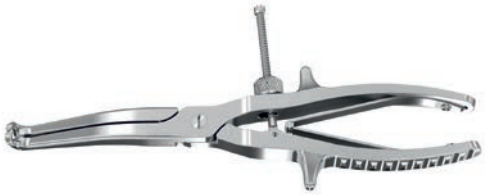
Optional instruments for screw insertion

310.229	Drill Bit ∅ 2.9 mm, length 150 mm, 2-flute, for Quick Coupling	
315.280	Drill Bit ∅ 2.7 mm, length 125/100 mm, 3-flute, for Quick Coupling	
312.401	Double Drill Guide 4.0/2.9	
314.030	Screwdriver Shaft, hexagonal, small, ∅ 2.5 mm	

Guiding blocks

03.118.100	Guiding Block for right VA LCP Medial Distal Tibial Plate 2.7/3.5	
03.118.101	Guiding Block for left VA LCP Medial Distal Tibial Plate 2.7/3.5	
03.118.102	Guiding Block for right VA LCP Anterolateral Distal Tibial Plate 2.7/3.5	
03.118.103	Guiding Block for left VA LCP Anterolateral Distal Tibial Plate 2.7/3.5	
03.118.106	Guiding Block for right VA LCP Lateral Distal Fibula Plate 2.7	
03.118.107	Guiding Block for left VA LCP Lateral Distal Fibula Plate 2.7	

Reduction instruments

03.118.001	Periarticular Reduction Forceps, with pointed ball tips ∅ 6.5 mm, small	
03.118.110	Periarticular Reduction Forceps, with pointed ball tips ∅ 6.5 mm, medium	
03.118.002	Compression Forceps, large, with Speed Lock	
03.118.003	Distraction Forceps, large, with Speed Lock	

03.118.005	Compression/Distraction Rod 3.5, 15°	
03.118.008	Compression/Distraction Rod 2.7, 15°	
03.118.010– 03.118.060	Compression Wire ∅ 2.8 mm, length 200 mm, thread length 10 to 60 mm (5 mm increments)	

MRI Information

Torque, Displacement and Image Artifacts according to ASTM F 2213, ASTM F 2052 and ASTM F 2119

Non-clinical testing of worst case scenario in a 3 T MRI system did not reveal any relevant torque or displacement of the construct for an experimentally measured local spatial gradient of the magnetic field of 3.69 T/m. The largest image artifact extended approximately 169 mm from the construct when scanned using the Gradient Echo (GE). Testing was conducted on a 3 T MRI system.

Radio-Frequency-(RF-)induced heating according to ASTM F 2182

Non-clinical electromagnetic and thermal testing of worst case scenario lead to peak temperature rise of 9.5 °C with an average temperature rise of 6.6 °C (1.5 T) and a peak temperature rise of 5.9 °C (3 T) under MRI Conditions using RF Coils (whole body averaged specific absorption rate [SAR] of 2 W/kg for 6 minutes [1.5 T] and for 15 minutes [3 T]).

▲ Precautions:

The above mentioned test relies on non-clinical testing. The actual temperature rise in the patient will depend on a variety of factors beyond the SAR and time of RF application. Thus, it is recommended to pay particular attention to the following points:

- It is recommended to thoroughly monitor patients undergoing MR scanning for perceived temperature and/or pain sensations.
- Patients with impaired thermoregulation or temperature sensation should be excluded from MR scanning procedures.
- Generally, it is recommended to use a MR system with low field strength in the presence of conductive implants. The employed specific absorption rate (SAR) should be reduced as far as possible.
- Using the ventilation system may further contribute to reduce temperature increase in the body.

Not all products are currently available in all markets.
This publication is not intended for distribution in the USA.
Intended use, Indications and Contraindications can be found in the corresponding system Instructions for Use.
All Surgical Techniques are available as PDF files at www.depuysynthes.com/ifu

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