Variable Angle LCP

Two-Column Volar Distal Radius Plate 2.4/2.7 mm, Extra-Long

Surgical Technique

Long Volar Plates for internal fracture fixation of bones and bone fragments of the distal radius, with or without extension into the diaphyseal segment of the radius

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

Table of Contents

■ **Notes**
▲ **Precautions**
▲ **WARNINGS**

Variable Angle LCP Two-Column Volar Distal Radius Plate 2.4/2.7 mm, Extra-Long

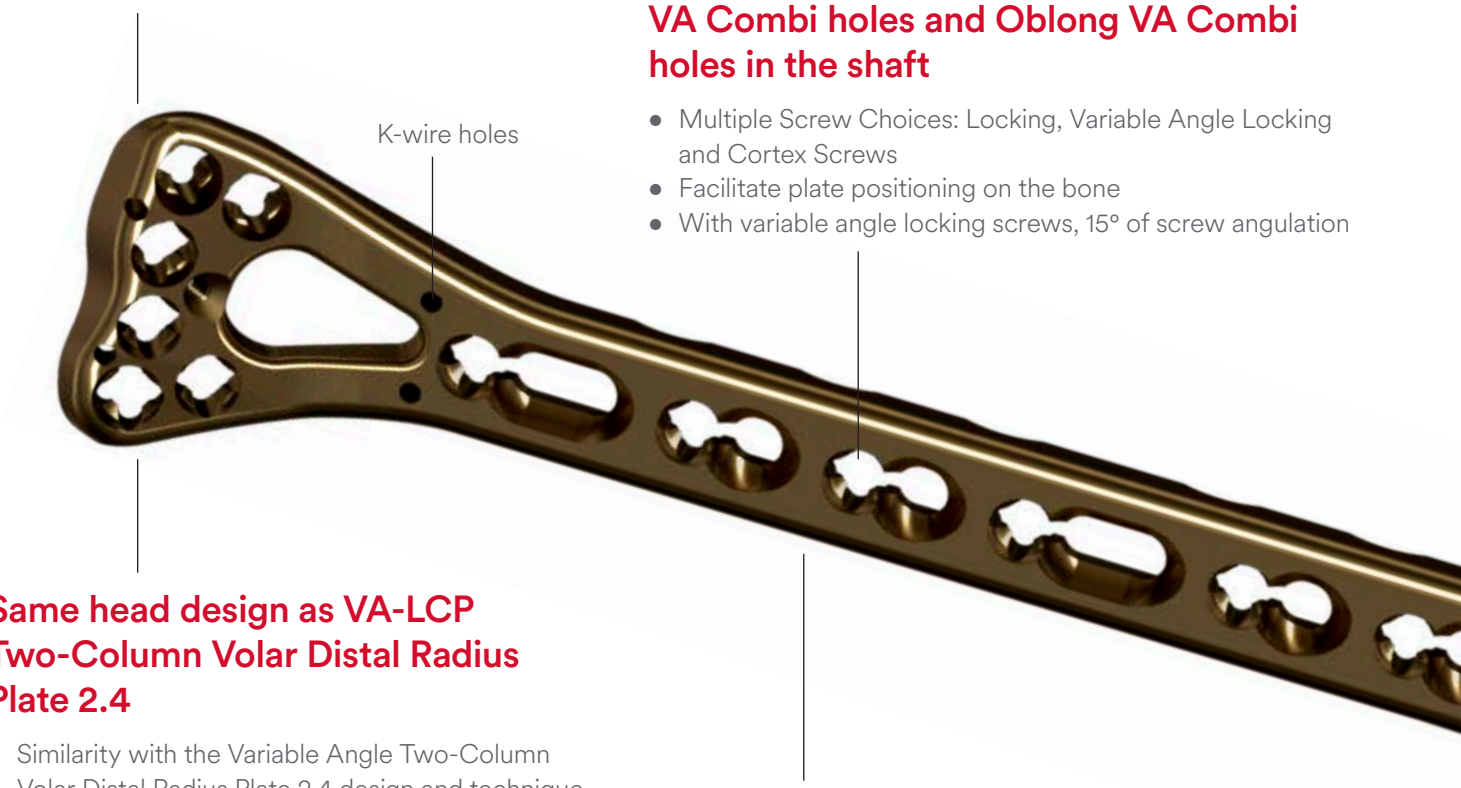
The VA-LCP Two-Column Volar Distal Radius Plate 2.4/2.7 mm, Extra-Long, is available in a variety of lengths and head sizes.

Various head widths

- Narrow (19.5 mm), standard (22.0 mm), wide (25.5 mm)
- Accepts Screws ∅ 2.4 mm and Buttress Pins ∅ 1.8 mm in the head of the plate (distal)

VA Combi holes and Oblong VA Combi holes in the shaft

- Multiple Screw Choices: Locking, Variable Angle Locking and Cortex Screws
- Facilitate plate positioning on the bone
- With variable angle locking screws, 15° of screw angulation



Same head design as VA-LCP Two-Column Volar Distal Radius Plate 2.4

- Similarity with the Variable Angle Two-Column Volar Distal Radius Plate 2.4 design and technique
- Compatible with Two-Column Plate Guiding Block 2.4

Various shaft lengths

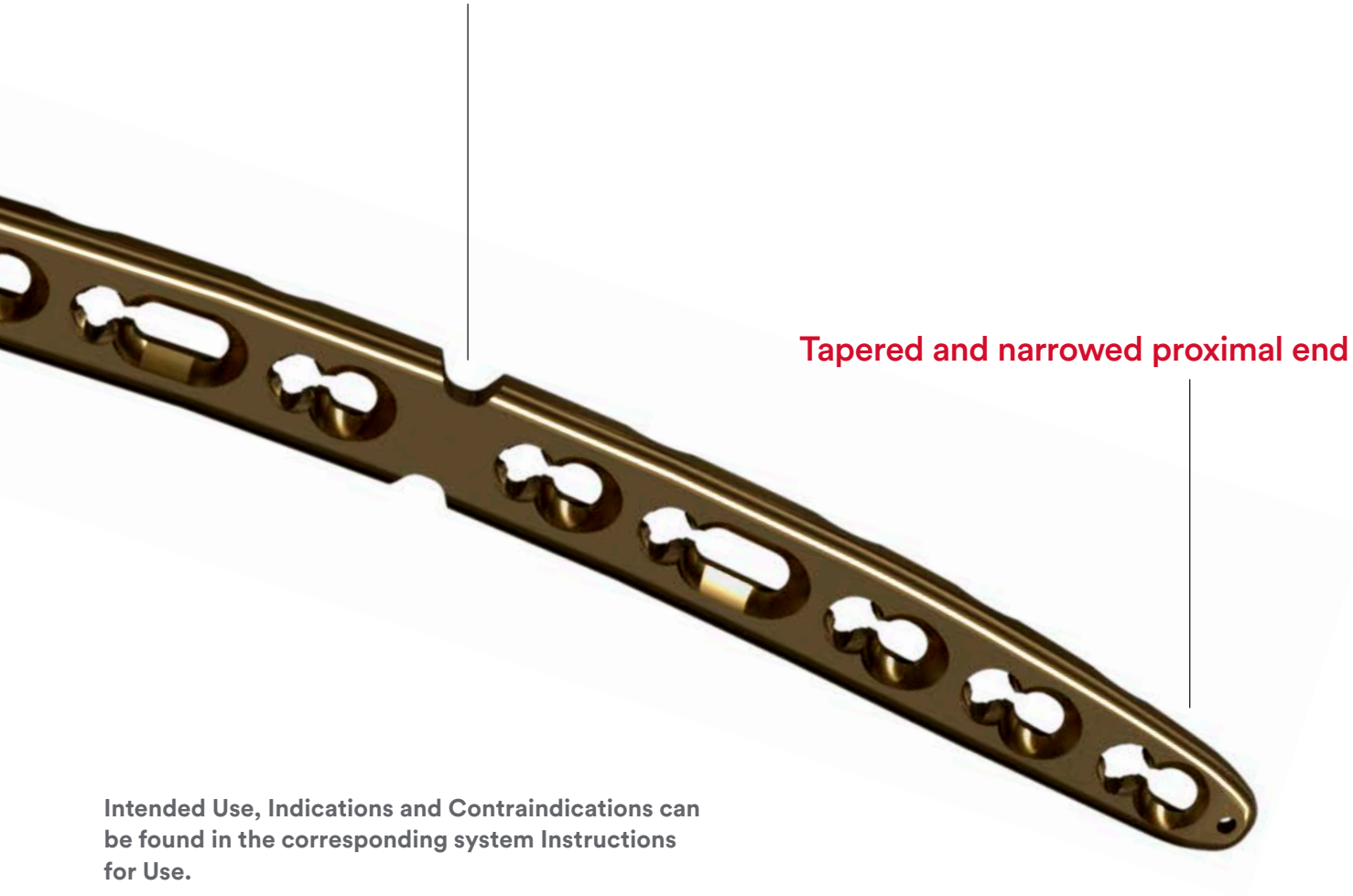
- 7 holes (105-110 mm depending on head size), 10 holes (145 mm), 13 holes (186 mm)
- Accepts Screws ∅ 2.4 mm and Screws ∅ 2.7 mm in the shaft of the plate (proximal)

Available sterile-packed

Shaft Holes	6-Hole Head Narrow	6-Hole Head Standard	7-Hole Head Wide
7-Hole Shaft	✓	✓	✓
10-Hole Shaft	n/a	✓	n/a
13-Hole Shaft	n/a	✓	n/a

Bending Notches and Undercuts

- Plates can be bent out-of-plane (flexion-extension). The 13-hole plate can be bent out-of-plane, as well as in-plane at the bending notches.



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

The AO Principles of Fracture Management

Mission

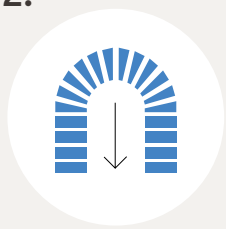
The AO's mission is promoting excellence in patient care and outcomes in trauma and musculoskeletal disorders.

AO Principles[1,2]

1.

Fracture reduction and fixation to restore anatomical relationships.

2.

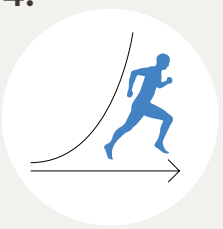


Fracture fixation providing absolute or relative stability, as required by the "personality" of the fracture, the patient, and the injury.

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.

1. Preparation

Ensure compatible instrumentation is available.

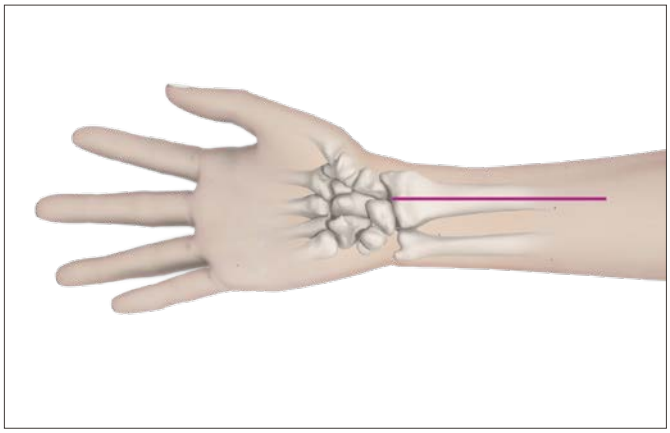
▲ Precaution:

The DePuy Synthes VA-LCP Two-Column Volar Distal Radius Plate 2.4/2.7 mm, Extra-Long is intended for patients where the growth plates have fused.
With the use of the VA-LCP Two-Column Volar Distal Radius Plate 2.4/2.7 mm, Extra-Long crossing unfused growth plate may result in premature closure of the physis and bone growth inhibition.

2. Approach

Make a longitudinal incision slightly radial to the flexor carpi radialis tendon (FCR). Dissect between the FCR and the radial artery, exposing the pronator quadratus. Detach the pronator quadratus from the lateral border of the radius and elevate it toward the ulna. The incision can be extended proximally depending on the fracture pattern and length of plate used.

To get better exposure of the radius, it is helpful to pronate the forearm.

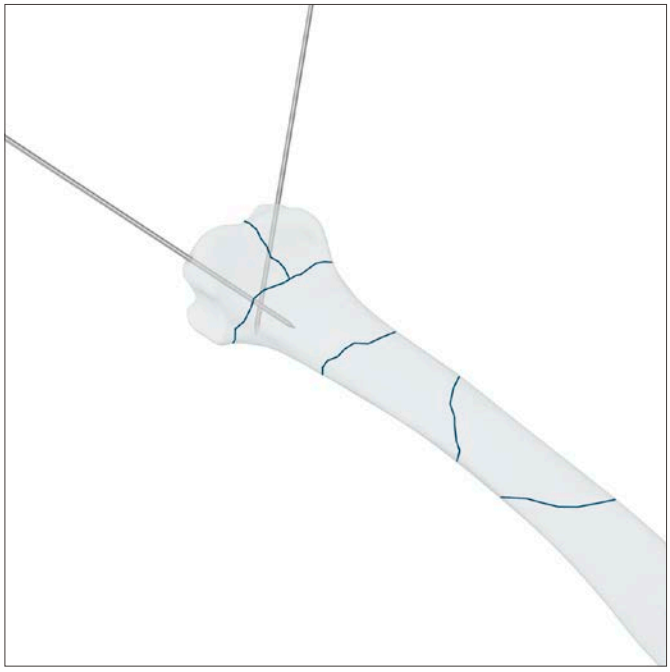


■ Note:

Leave the volar wrist capsule intact to avoid devascularization of the fracture fragments and destabilization of the volar wrist ligaments.

3. Reduction and provisional fixation–distal

Instruments	
292.120.01/ 292.120.10	Kirschner Wire ∅ 1.25 mm with trocar tip, length 150 mm, Stainless Steel
292.160.01/ 292.160.10	Kirschner Wire ∅ 1.6 mm with trocar tip, length 150 mm Stainless Steel
398.410	Reduction forceps with points, wide, ratchet lock, length 132 mm
399.970	Reduction forceps with points, ratchet lock, length 130 mm



Reduce the periarticular component of the fracture using the preferred reduction technique.

Refer to Section 6 for additional information regarding reduction techniques.

■ Note:

The reduction method will be fracture-specific.

4. Implant selection

Instruments	
03.111.570	Trial Implant for VA-LCP Two-Column Distal Radius Plate 2.4/2.7, Extra-Long, narrow, shaft 7 holes, head 6 holes, length 105 mm
03.111.670	Trial Implant for VA-LCP Two-Column Distal Radius Plate 2.4/2.7, Extra-Long, standard, shaft 7 holes, head 6 holes, length 109 mm
03.111.680	Trial Implant for VA-LCP Two-Column Distal Radius Plate 2.4/2.7, Extra-Long, standard, shaft 10 holes, head 6 holes, length 145 mm
03.111.690	Trial Implant for VA-LCP Two-Column Distal Radius Plate 2.4/2.7, Extra-Long, standard, shaft 13 holes, head 6 holes, length 186 mm
03.111.770	Trial Implant for VA-LCP Two-Column Distal Radius Plate 2.4/2.7, Extra-Long, wide, shaft 7 holes, head 7 holes, length 110 mm
Optional Instruments	
03.111.121S	Trial Implants for VA-LCP Two-Column Distal Radius Plates 2.4/2.7, Extra-Long, sterile

Left and right are marked on opposite sides of Trial implants.

Select the plates according to the fracture pattern and anatomy of the radius.

Use the trial implants to determine the size (width and length) of the plate to be used. Left and right are marked on opposite sides. The trial implants can be bent to approximate plate shape. Screw holes are etched on trial implants.

The trial implants can also be adapted to the anatomy of the bone and used as a bending template.

▲ Precaution:

Ensure the proper plate selection by verifying the L (left) and R (right) etching on the trial implant. The plate's distal lip is slightly lower on the radial side.

■ Note:

Use only manual bending. Excessive and repetitive bending of the trial implants should be avoided. Excessive bending includes >15° bending out-of-plane (flexion-extension) in both directions and >30° twisted. In-plane (side to side) bending of the trial implants is not recommended as it could cause permanent deformation.

▲ WARNING:

Do not implant trial implants.

Left and right are marked on opposite sides.

5. Plate contouring (optional)

Instruments	
329.040	Bending Iron for Plates 2.4 to 3.5, length 145 mm
329.050	Bending Iron for Plates 2.4 to 3.5, length 145 mm
329.290	Bending Pliers for Reconstruction Plates 2.7 and 3.5

If necessary, contour the plate to accommodate the patient's anatomy using the bending irons or bending pliers.

▲ Precautions:

- Avoid reverse bends and excessive bending. Reverse bends and excessive bending may weaken the plate and lead to premature plate failure.
- Excessive bending includes >15° bending out-of-plane (flexion-extension) in both directions and >30° twisting.
- In-plane bending can only be performed with the 13-hole plate using the bending pliers at the bending notch (maximum 10 degrees of bending).

Perform in-plane bending prior to out-of-plane bending and/or twisting.

For in-plane bending of the 13-hole plate, open and adjust the handles of the bending pliers. Slide the proximal end of the plate into the bending pliers as shown. (1)

1

The bending pliers is 2-sided. Use the side of the bending pliers with the wider opening to the left. (2)

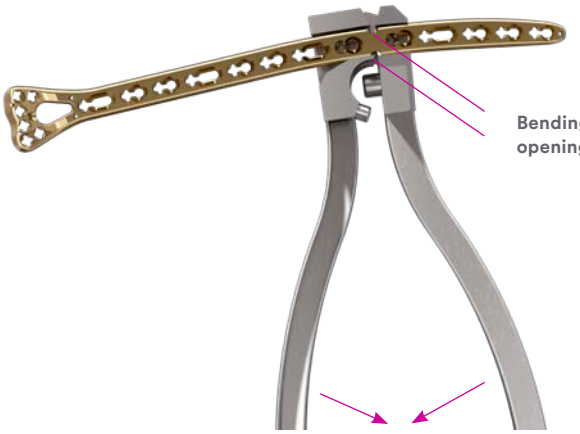
2

Correct side – Bending pliers with **wider opening on left.**

Incorrect side – Bending pliers with **wider opening on the right.**

Align the bending notches in the plate with the open section of the bending pliers as shown. (3) Squeeze the handles together to increase the bend at the tip of the plate. Open the handles to straighten the tip of the plate.

3



Bending notches positioned in opening of bending pliers.

Check VA portion of the Combi holes adjacent to the bending site with a variable angle drill guide after bending to ensure holes have not been deformed.

■ Note:

Illustrations are shown with a Right plate with the top surface of the plate facing upwards. To bend a Left plate, insert the plate with the bottom of the plate facing upwards in the bending pliers.

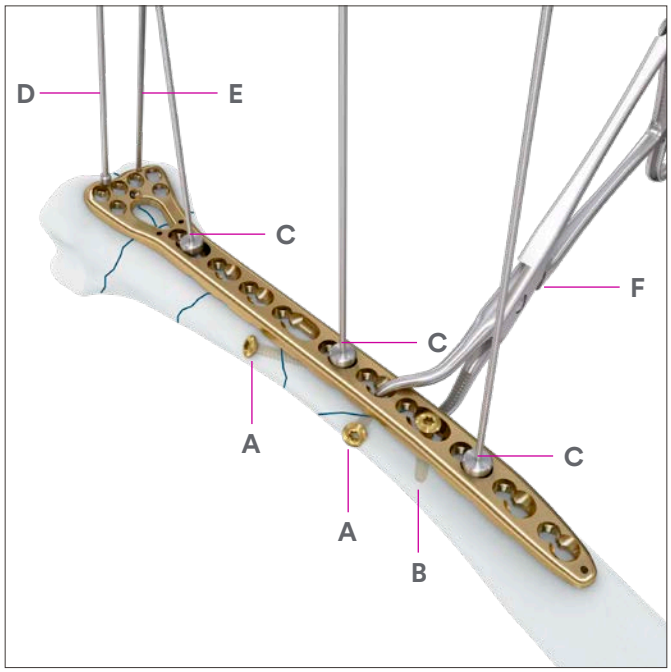
6. Plate positioning and preliminary fixation

Instruments	
292.120.01/ 292.120.10	Kirschner Wire ∅ 1.25 mm with trocar tip, length 150 mm, Stainless Steel
02.111.500.01/ 02.111.500.10	Plate Reduction Wire ∅ 1.25 mm, with thread, with Small Stop, length 150 mm, Stainless Steel
02.111.501.01/ 02.111.501.10	Plate Reduction Wire ∅ 1.25 mm, with thread, with Large Stop, length 150 mm, Stainless Steel
398.410	Reduction forceps with points, wide
399.970	Reduction forceps, with points

Apply the plate to fit the volar surface. Ensure plate is centered on the bone.

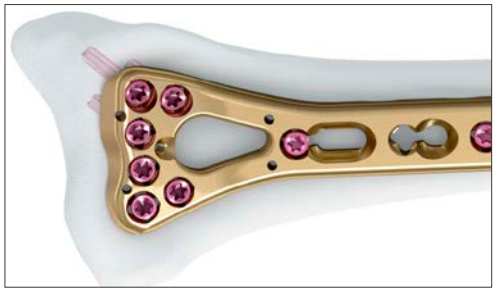
If necessary, use additional instrumentation (reduction clamps, provisional Kirschner wires, plate reduction wires, and lag screws) to aid in restoration of length and alignment.

Insert Kirschner wires ∅ 1.25 mm or plate reduction wires ∅ 1.25 mm with small stop through the desired Kirschner wire holes to provide provisional fixation. Plate reduction wires ∅ 1.25 mm with large stop can be inserted through nonthreaded screw holes. Remove reduction wires and Kirschner wires when provisional fixation is no longer necessary. Plate reduction wires and Kirschner wires are single-use items; do not re-use.



Example of potential reduction aids. Reduction will be fracture-specific.

A Lag screws
B Provisional fixation with cortex screw
C Plate reduction wires ∅ 1.25 mm with large stop
D Plate reduction wire ∅ 1.25 mm with small stop
E Kirschner wire ∅ 1.25 mm
F Reduction forceps



Ensure plate is centered on the bone.

Provisional screw fixation

Instruments	
314.453	Screwdriver Shaft, StarDrive™, 2.4, short, self-holding, for Quick Coupling OR
314.467	Screwdriver Shaft, StarDrive, T8, self-holding
311.430	Handle with Quick Coupling, length 110 mm
03.111.005	Depth Gauge for Screws ∅ 2.0 to 2.7 mm, measuring range up to 40 mm OR
319.006	Depth Gauge for Screws ∅ 2.0 and 2.4 mm, measuring range up to 38 mm OR
319.010	Depth Gauge for Screws ∅ 2.7 to 4.0 mm, measuring range up to 60 mm
Instruments for Cortex Screws ∅ 2.7 mm	
323.260	Universal Drill Guide 2.7
310.534	Drill Bit ∅ 2.0 mm, with marking, length 110/85 mm, 2-flute, for Quick Coupling
Instruments for Cortex Screws ∅ 2.4 mm	
323.202	Universal Drill Guide 2.4
310.509	Drill Bit ∅ 1.8 mm with marking, length 110/85 mm, 2-flute, for Quick Coupling

Determine size of cortex screw to be inserted. Insert a cortex screw into the first appropriate elongated Combi hole. Use the nonthreaded portion of the elongated Combi hole to insert cortex screws. Cortex screws can be used to compress the plate to the bone.

Drill with the drill bit using the universal drill guide.

Drill bits are color-coded according to the screw size:

■ Purple – Drill Bit ∅ 1.8 mm for Screws ∅ 2.4 mm

■ Orange – Drill Bit ∅ 2.0 mm for Screws ∅ 2.7 mm

▲ Precaution:

Use proper irrigation and suction when drilling.

Measure the appropriate screw length using the depth gauge and insert the cortex screw in the elongated hole. Adjust the plate as necessary and tighten the screw.

Perform several radiographic views of the distal radius to ensure alignment and reduction.

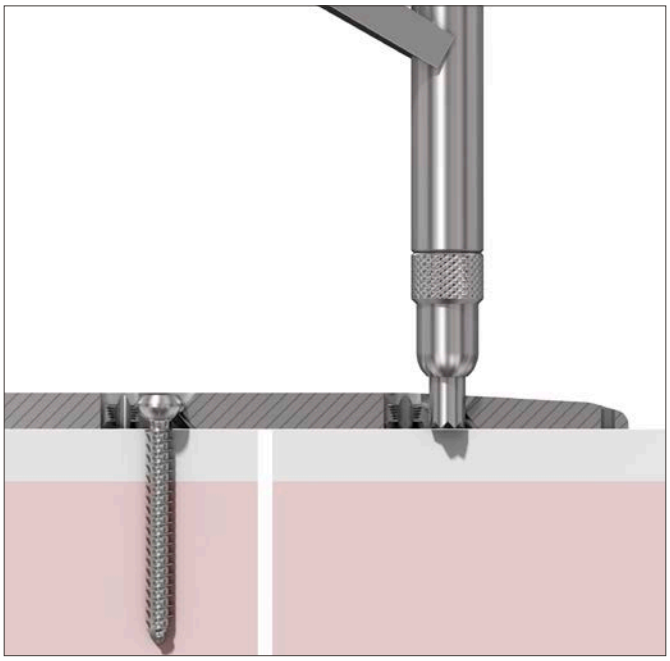
■ Notes:

- The size of screw, order of screw insertion and the use of Kirschner wires may vary depending on the fracture pattern and reduction technique. The fracture pattern will dictate the appropriate site for this first screw.
- Optionally a tap can be used if insertion of the screw into hard cortical bone is difficult.

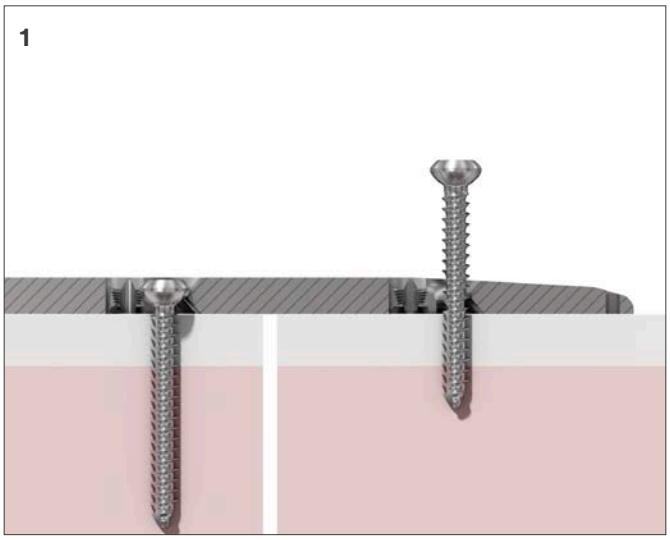
Taps (optional)	
311.260	Tap for Cortex Screws ∅ 2.7 mm, length 100/33 mm
311.230	Tap for Cortex Screws ∅ 2.4 mm, length 100/45 mm

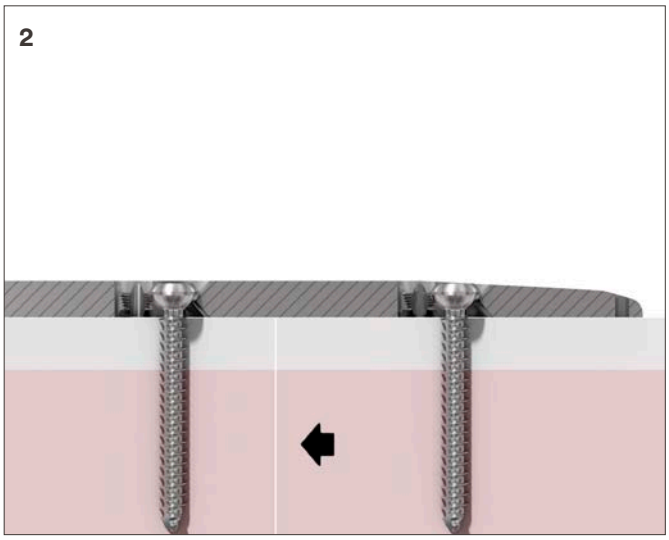
Compression Technique

To drill a hole for **dynamic compression,** place the universal drill guide eccentrically at the edge of the nonthreaded portion of the Combi hole, without applying pressure to the tip



Drill through the universal drill guide. Insert a cortex screw using a screwdriver (1). Tightening of the cortex screw will result in dynamic compression (2).





■ Note:

When and if to perform compression may vary depending on the fracture pattern and reduction technique. The fracture pattern will dictate the appropriate use of compression. Plate illustration has been simplified to show compression.

7a. Distal screw insertion – variable angle

Instruments	
03.110.000	VA-LCP Drill Sleeve 2.4, for Drill Bits ∅ 1.8 mm OR
03.110.023	VA-LCP Drill Sleeve 2.4, conical, for Drill Bits ∅ 1.8 mm OR
03.111.004	VA-LCP Drill Sleeve 2.4, for Drill Bits ∅ 1.8 mm, freehand usable
310.509	Drill Bit ∅ 1.8 mm with marking, length 110/85 mm, 2-flute, for Quick Coupling
314.453	Screwdriver Shaft, StarDrive 2.4 short, self-holding, for Quick Coupling OR
314.467	Screwdriver Shaft, StarDrive, T8, self-holding
311.430	Handle with Quick Coupling, length 110 mm
03.111.005	Depth Gauge for Screws ∅ 2.0 to 2.7 mm, measuring range up to 40 mm OR
319.006	Depth Gauge for Screws ∅ 2.0 and 2.4 mm, measuring range up to 38 mm

Insert and lock the cone portion of the drill sleeve tip into the cloverleaf design of the VA locking hole.

Use the drill bit ∅ 1.8 mm to drill to the desired depth at the desired angle. When drilling, the tip of the drill sleeve should remain fully seated in the hole.

▲ Precaution:

Use proper irrigation and suction when drilling.

The funnel for the drill sleeve allows the drill bit up to a 15° angulation around the central axis of the locking hole.

Use the depth gauge to determine the screw length.

■ Note:

For details on how to use the drill sleeve for freehand use, refer to the Surgical Technique of the VA-LCP Two-Column Volar Distal Radius Plate 2.4.

Insert the VA locking screws manually with the screwdriver shaft and handle. Tighten the screw just enough for the screw head to be fully seated in the VA locking hole.

Do not overtighten the screw.

Insert additional screws into the head of the plate.

Perform several radiographic views of the distal radius to ensure alignment and reduction.

■ Note:

The order of screw insertion may vary depending on the fracture pattern and reduction technique. The fracture pattern will dictate the appropriate screw placement and order of screw insertion.

7b. Distal screw insertion – coaxial (fixed angle)

Instruments	
03.110.000	VA-LCP Drill Sleeve 2.4, for Drill Bits ∅ 1.8 mm OR
03.110.024	VA-LCP Drill Sleeve 2.4, coaxial, for Drill Bits ∅ 1.8 mm
310.509	Drill Bit ∅ 1.8 mm with marking, length 110/85 mm, 2-flute, for Quick Coupling
314.453	Screwdriver Shaft, StarDrive 2.4, short, self-holding, for Quick Coupling OR
314.467	Screwdriver Shaft, StarDrive, T8, self-holding
311.430	Handle with Quick Coupling, length 110 mm
03.111.005	Depth Gauge for Screws ∅ 2.0 to 2.7 mm, measuring range up to 40 mm OR
319.006	Depth Gauge for Screws ∅ 2.0 and 2.4 mm, measuring range up to 38 mm

The fixed-angle end of the drill sleeve only allows the drill bit to follow the nominal trajectory of the VA locking hole.

Insert and lock the coaxial (fixed angle) portion of the drill sleeve tip into the cloverleaf design of the VA locking hole.

Use the drill bit ∅ 1.8 mm to drill to the desired depth at the pre-defined angle. When drilling, the tip of the drill sleeve should remain fully seated in the hole.

▲ Precaution:

Use proper irrigation and suction when drilling.

Read the screw length directly from the laser mark on the drill bit. Alternatively, use the depth gauge to determine the screw length.

Insert the VA locking screws manually with the screwdriver shaft and handle. Tighten the screw just enough for the screw head to be fully seated in the VA locking hole.

Do not overtighten the screw.

Insert additional screws into the head of the plate.

Perform several radiographic views of the distal radius to ensure alignment and reduction.

■ Note:

The order of screw insertion may vary depending on the fracture pattern and reduction technique. The fracture pattern will dictate the appropriate screw placement and order of screw insertion.

7c. Distal Screw insertion – coaxial (fixed angle) with guiding blocks (optional)

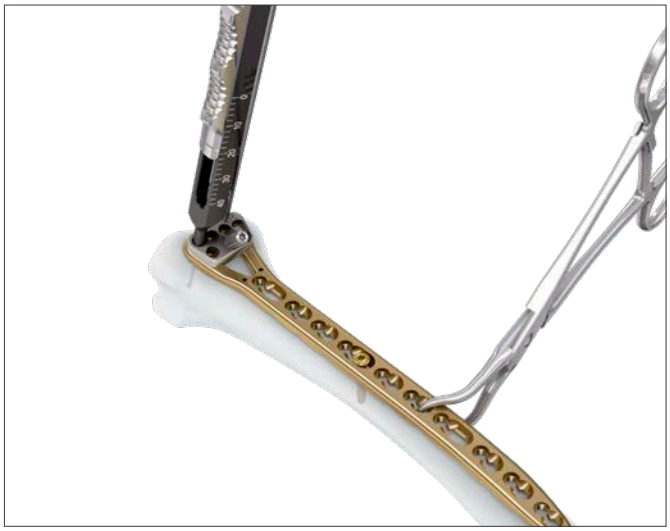
Instruments	
314.453	Screwdriver Shaft, StarDrive 2.4, short, self-holding, for Quick Coupling OR
314.467	Screwdriver Shaft StarDrive, T8, self-holding
311.430	Handle with Quick Coupling, length 110 mm
03.111.005	Depth Gauge for Screws ∅ 2.0 to 2.7 mm, measuring range up to 40 mm OR
319.006	Depth Gauge for Screws ∅ 2.0 and 2.4 mm, measuring range up to 38 mm
03.111.000	Quick Drill sleeve 2.4 with Scale, for Drill Bits ∅ 1.8 mm, for Guiding Block, for Distal Radius Plates
03.111.500	Guiding Block for Two-Column Distal Radius Plate 2.4, narrow, 6 holes, right
03.111.501	Guiding Block for Two-Column Distal Radius Plate 2.4, narrow, 6 holes, left
03.111.600	Guiding Block for Two-Column Distal Radius Plate 2.4, 6 holes, right
03.111.601	Guiding Block for Two-Column Distal Radius Plate 2.4, 6 holes, left
03.111.700	Guiding Block for Two-Column Distal Radius Plate 2.4, 7 holes, right
03.111.701	Guiding Block for Two-Column Distal Radius Plate 2.4, 7 holes, left

Select the corresponding guiding block for Two-Column Distal Radius Plate 2.4 and secure it to the plate using the screw for guiding block. Slightly tighten the screw for guiding block with the screwdriver.

Insert the quick drill sleeve with scale into the guiding block hole. Ensure that the quick drill sleeve is firmly seated in the hole. Drill to the desired depth using the drill bit ∅ 1.8 mm.

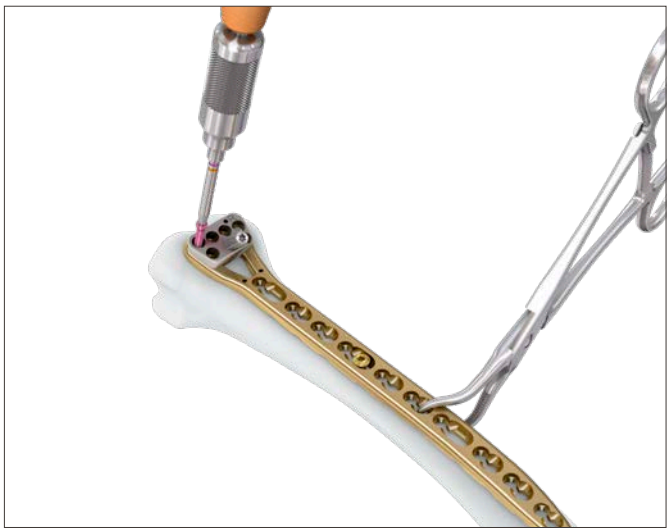
Read the screw length directly from the laser mark on the drill bit.

Alternatively, use the corresponding depth gauge directly through the guiding block.



Insert the VA locking screw manually through the guiding block using the screwdriver shaft and handle.

Loosen the screw for guiding block and remove the guiding block after screw insertion.



8a. Proximal screw insertion – variable angle

Instruments	
314.453	Screwdriver Shaft, StarDrive 2.4, short, self-holding, for Quick Coupling OR
314.467	Screwdriver Shaft, StarDrive, T8, self-holding
311.430	Handle with Quick Coupling, length 110 mm
03.111.005	Depth Gauge for Screws ∅ 2.0 to 2.7 mm, measuring range up to 40 mm OR
319.010	Depth Gauge for Screws ∅ 2.7 to 4.0 mm, measuring range up to 60 mm OR
319.006	Depth Gauge for Screws ∅ 2.0 and 2.4 mm, measuring range up to 38 mm
Instruments for Variable Angle Locking Screws ∅ 2.7 mm	
03.211.002	VA-LCP Drill Sleeve 2.7, for Drill Bits ∅ 2.0 mm OR
03.211.003	VA-LCP Drill Sleeve 2.7, conical, for Drill Bits, ∅ 2.0 mm
310.534	Drill Bit ∅ 2.0 mm, with marking, length 110/85 mm, 2-flute, for Quick Coupling
Instruments for Variable Angle Locking Screws ∅ 2.4 mm	
03.110.000	VA-LCP Drill Sleeve 2.4, for Drill Bits ∅ 1.8 mm OR
03.110.023	VA-LCP Drill Sleeve 2.4, conical, for Drill Bits ∅ 1.8 mm OR
03.111.004	VA-LCP Drill Sleeve 2.4, for Drill Bits ∅ 1.8 mm, freehand usable
310.509	Drill Bit ∅ 1.8 mm with marking, length 110/85 mm, 2-flute, for Quick Coupling

Determine screw size and select corresponding instrumentation. Insert and lock the cone portion of the drill sleeve tip into the cloverleaf design of the VA locking hole.

Use the drill bit to drill to the desired depth at the desired angle. When drilling, the tip of the drill sleeve should remain fully seated in the hole.

The funnel for the drill sleeve allows the drill bit up to a 15° angulation around the central axis of the locking hole.

▲ Precaution:

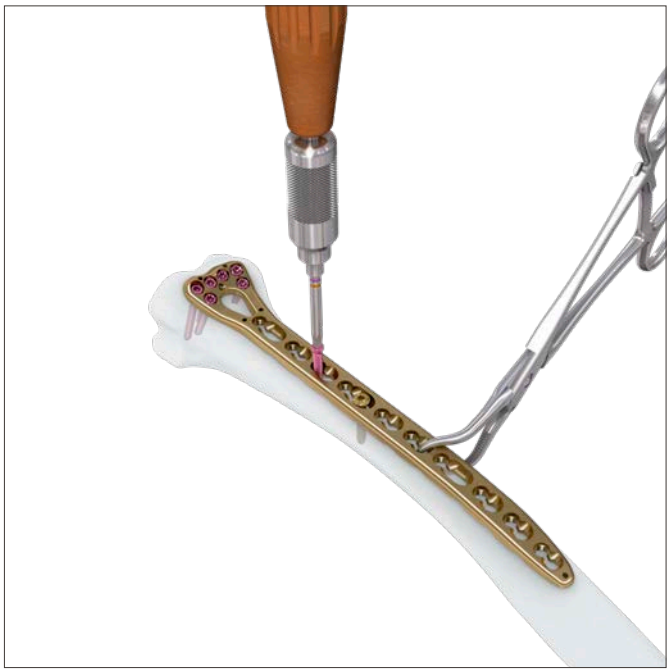
Use proper irrigation and suction when drilling.

Use the depth gauge to determine the screw length.

Insert the VA locking screws manually with the screwdriver shaft and handle. Tighten the screw just enough for the screw head to be fully seated in the VA locking hole.

Do not overtighten the screw.

Insert additional screws as needed.



■ Notes:

- The screw size, type of screw, screw placement, and order of screw insertion may vary depending on the fracture pattern and reduction technique. The fracture pattern will dictate the appropriate screw size, type of screw, and order of screw insertion.
- Alternatively, cortex screws ∅ 2.4 mm and ∅ 2.7 mm can be inserted into the shaft of the plate. Insert cortex screws into the nonthreaded portion of the Combi holes. Cortex screws can be used to provide compression.

Instruments for Cortex Screws ∅ 2.7 mm	
323.260	Universal Drill Guide 2.7
310.534	Drill Bit ∅ 2.0 mm, with marking, length 110/85 mm, 2-flute, for Quick Coupling
Instruments for Cortex Screws ∅ 2.4 mm	
323.202	Universal Drill Guide 2.4
310.509	Drill Bit ∅ 1.8 mm with marking, length 110/85 mm, 2-flute, for Quick Coupling

■ Note:

Optionally a tap can be used if insertion of the screw into hard cortical bone is difficult.

See table for corresponding tap for screw size and thread type.

Taps (optional)	
311.230	Tap for Cortex Screws ∅ 2.4 mm, length 100/45 mm
311.260	Tap for Cortex Screws ∅ 2.7 mm, length 100/33 mm
03.111.906	Tap for Locking Screws ∅ 2.7 mm, length 100/33 mm
03.111.908	Tap for Locking Screws ∅ 2.4 mm

Taps for locking screws are color-coded according to the screw size:

■ Orange – For screws ∅ 2.7 mm

■ Purple – For screws ∅ 2.4 mm

8b. Proximal screw insertion– coaxial (fixed angle)

314.453	Screwdriver Shaft, StarDrive 2.4, short, self-holding, for Quick Coupling OR
314.467	Screwdriver Shaft, StarDrive, T8, self-holding
311.430	Handle with Quick Coupling, length 110 mm
03.111.005	Depth Gauge for Screws ∅ 2.0 to 2.7 mm, measuring range up to 40 mm OR
319.010	Depth Gauge for Screws ∅ 2.7 to 4.0 mm, measuring range up to 60 mm OR
319.006	Depth Gauge for Screws ∅ 2.0 and 2.4 mm, measuring range up to 38 mm
Instruments for Variable Angle Locking Screws ∅ 2.7 mm	
03.211.002	VA-LCP Drill Sleeve 2.7, for Drill Bits ∅ 2.0 mm OR
03.211.004	VA-LCP Drill Sleeve 2.7, coaxial, for Drill Bits ∅ 2.0 mm
310.534	Drill Bit ∅ 2.0 mm, with marking, length 110/85 mm, 2-flute, for Quick Coupling
Instruments for Variable Angle Locking Screws ∅ 2.4 mm	
03.110.000	VA-LCP Drill Sleeve 2.4, for Drill Bits ∅ 1.8 mm OR
03.110.024	VA-LCP Drill Sleeve 2.4, coaxial, for Drill Bits ∅ 1.8 mm
310.509	Drill Bit ∅ 1.8 mm with marking, length 110/85 mm, 2-flute, for Quick Coupling

Determine screw size and select corresponding instruments. The fixed-angle end of the drill sleeve only allows the drill bit to follow the nominal trajectory of the VA locking hole.

Insert and lock the coaxial (fixed angle) portion of the drill sleeve tip into the cloverleaf design of the VA locking hole.

Use the drill bit to drill to the desired depth at the pre-defined angle.

Read the screw length directly from the laser mark on the drill bit. Alternatively, use the depth gauge to determine the screw length.

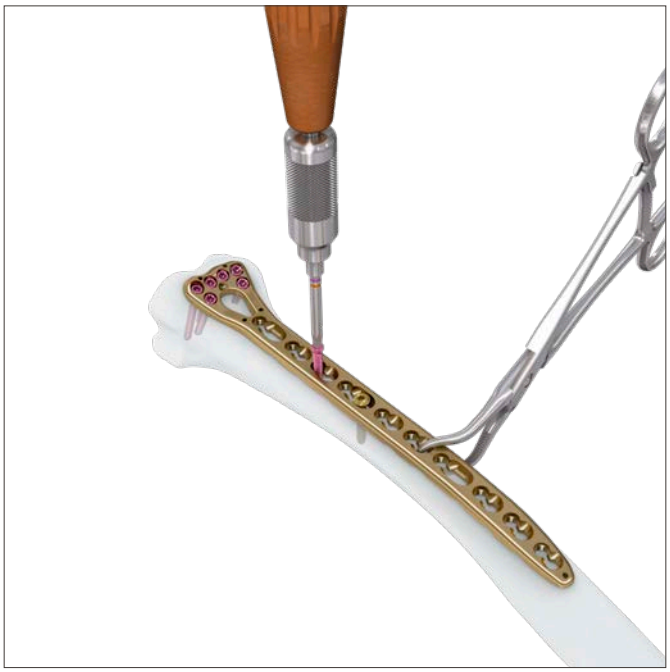
▲ Precaution:

Use proper irrigation and suction when drilling.

Insert the VA locking screws manually with the screw-driver shaft and handle and tighten just enough for the screw head to be fully seated in the VA locking hole.

Do not overtighten the screw.

Insert additional screws as needed.



■ Notes:

- The screw size, type of screw, screw placement, and order of screw insertion may vary depending on the fracture pattern and reduction technique. The fracture pattern will dictate the appropriate order of screw insertion.
- Alternatively, cortex screws ∅ 2.4 mm and ∅ 2.7 mm can be inserted into the shaft of the plate. Insert cortex screws into nonthreaded portion of the Combi holes. Cortex screws can be used to provide compression.

Instruments for Cortex Screws ∅ 2.7 mm	
323.260	Universal Drill Guide 2.7
310.534	Drill Bit ∅ 2.0 mm, with marking, length 110/85 mm, 2-flute, for Quick Coupling
Instruments for Cortex Screws ∅ 2.4 mm	
323.202	Universal Drill Guide 2.4
310.509	Drill Bit ∅ 1.8 mm with marking, length 110/85 mm, 2-flute, for Quick Coupling

■ Note:

Optionally a tap can be used if insertion of the screw into hard cortical bone is difficult. See table for a listing of available taps.

9. Confirm joint reconstruction

Ensure proper joint reconstruction, screw placement, and screw length using multiple radiographic views. Verify that the distal screws are not in the joint by using additional views such as a 10° dorsally tilted, 20° inclined lateral, and 45° pronated oblique view.

10. Final tightening of VA locking screws

Instruments	
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
511.776	Torque Limiter, 0.8 Nm, with AO/ASIF Quick Coupling
314.453	Screwdriver Shaft, StarDrive 2.4, short, self-holding, for Quick Coupling OR
314.467	Screwdriver Shaft, StarDrive, T8, self-holding

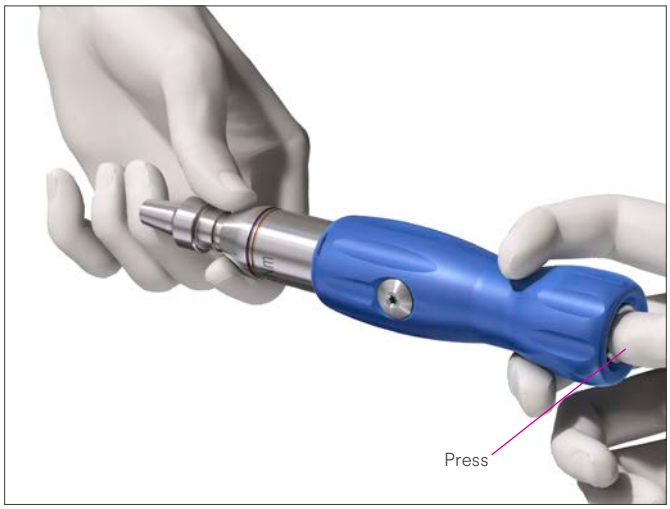
Use the **torque limiter 0.8 Nm** to perform the final locking step for the **VA locking screws ∅ 2.4 mm.**

Use the **torque limiter 1.2 Nm** to perform the final locking step for the **VA locking screws ∅ 2.7 mm.**

The torque limiter prevents overtightening and the VA locking screws are securely locked into the plate.

■ Notes:

- For dense bone, visually inspect if the screw is countersunk after tightening with the torque limiter. If required, carefully tighten without the torque limiter until the screw head is flush with the plate surface.
- For final locking of VA Locking Buttress Pins ∅ 1.8 mm, LCP Buttress Pins ∅ 1.8 mm and Locking Screws Ø 2.7 mm, use the torque limiter 0.8 Nm.



11. Implant Removal

Instruments	
311.430	Handle with Quick Coupling, length 110 mm
314.453	Screwdriver Shaft, StarDrive 2.4, short, self-holding, for Quick Coupling
Optional Instruments	
314.467	Screwdriver Shaft StarDrive, T8, self-holding
314.468	Holding sleeve for Screws StarDrive ∅ 2.4 mm, T8, for Screwdriver Shafts ∅ 3.5 mm, for No. 314.467

To remove locking screws, first unlock all screws from the plate; then remove the screws completely from the bone.

The last screw removed should be a nonlocking screw in the shaft. This prevents the plate from spinning when locking screws are removed.

■ Note:

If the screws cannot be removed with the standard instruments, the Extraction Set for Standard Screws provides additional instruments for screw removal.

Implants

Plates

VA-LCP Two-Column Volar Distal Radius Plates 2.4/2.7 mm, Extra-Long, sterile

Part number	Head size	Head width (mm)	Head holes	Shaft holes	Length (mm)	Left/ Right
0X.111.570S	narrow	19.5	6	7	105	right
0X.111.571S	narrow	19.5	6	7	105	left
0X.111.670S	standard	22.0	6	7	109	right
0X.111.671S	standard	22.0	6	7	109	left
0X.111.680S	standard	22.0	6	10	145	right
0X.111.681S	standard	22.0	6	10	145	left
0X.111.690S	standard	22.0	6	13	186	right
0X.111.691S	standard	22.0	6	13	186	left
0X.111.770S	wide	25.5	7	7	110	right
0X.111.771S	wide	25.5	7	7	110	left

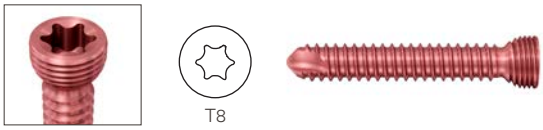
All plates are available sterile only.

X = 2: 316L Stainless Steel
X = 4: Commercially Pure Titanium (TiCP)

Screws

Variable Angle Locking Screws ∅ 2.4 mm

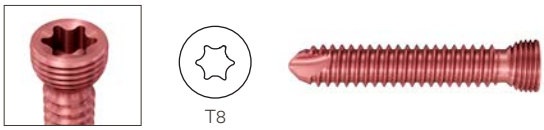
*0X.210.108–*0X.210.130 VA Locking Screw StarDrive ∅ 2.4 mm, self-tapping, lengths 8 mm to 30 mm



For use in VA locking holes in the head and shaft of the plate

Variable Angle Locking Screws ∅ 2.7 mm

0X.211.010–0X.211.030 VA Locking Screw StarDrive ∅ 2.7 mm (head 2.4), self-tapping, lengths 10 mm to 30 mm



For use in VA locking holes in the shaft of the plate.

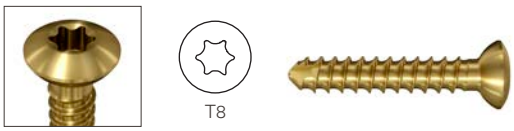
Cortex Screws ∅ 2.4 mm

*X01.756–*X01.780 Cortex Screw StarDrive ∅ 2.4 mm, self-tapping, lengths 6 mm to 30 mm

For use in VA locking holes or Combi holes

Cortex Screws ∅ 2.7 mm

X02.868–X02.890 Cortex Screw StarDrive ∅ 2.7 mm, self-tapping, lengths 8 mm to 30 mm



For use in Combi holes

All screws are also available sterile packed. Add suffix "S" to article number.
* Screws are also available sterile packed in Sterile Tubes. Add suffix "TS" to article number.

X = 2: 316L Stainless Steel
X = 4: Titanium alloy (Ti-6Al-7Nb)

Optional screws and buttress pins

Variable Angle Locking Buttress Pins ∅ 1.8 mm

0X.210.078 – 0X.210.100 VA-LCP Buttress Pin ∅ 1.8 mm, StarDrive, lengths 8 mm to 30 mm


For use in VA locking holes in the head of the plate.

LCP Buttress Pins ∅ 1.8 mm

X00.190– X00.199 Buttress Pin, StarDrive ∅ 1.8 mm (head LCP 2.4), lengths 12 mm to 30 mm


For use in VA locking holes in the head of the plate.

Locking Screws ∅ 2.4 mm

X12.806 – X12.830 Locking Screw StarDrive ∅ 2.4 mm, self-tapping, lengths 6 mm to 30 mm


For use in VA locking holes but only in predefined angle using coaxial (fixed-angle) technique.

Locking Screws ∅ 2.7 mm

X02.208 – X02.230 Locking Screw StarDrive ∅ 2.7 mm, (head LCP 2.4) self-tapping, lengths 8 mm to 30 mm


For use in VA locking holes but only in predefined angle using coaxial (fixed-angle) technique in the shaft of the plate.

All screws are also available sterile packed. Add suffix "S" to article number.

X = 2: 316L Stainless Steel
X = 4: Titanium alloy (Ti-6Al-7Nb)

Trial Implants

Trial Implants for VA-LCP Two-Column
Volar Distal Radius Plates 2.4/2.7 mm, Extra-Long

Part number	For plate head size	For plate head width (mm)	For plate head holes	For plate shaft holes	For plate length (mm)	Left/Right
03.111.570	narrow	19.5	6	7	105	Left/Right
03.111.670	standard	22.0	6	7	109	Left/Right
03.111.680	standard	22.0	6	10	145	Left/Right
03.111.690	standard	22.0	6	13	186	Left/Right
03.111.770	wide	25.5	7	7	110	Left/Right
03.111.121S	all	19.5–25.5	6–7	7–13	105–186	Left/Right

■ Notes:

- Screw holes are etched on trial implants.
- Left and right are marked on opposite sides of the trial implants
- Part number 03.111.121S is a sterile pack, including all sizes of the trial implants for the VA-LCP Two-Column Volar Distal Radius Plate, 2.4/2.7 mm, Extra-Long

Instruments

292.120.01/ 292.120.10 (10/pack)	Kirschner Wire ∅ 1.25 mm with trocar tip, length 150 mm, Stainless Steel	
292.160.01/ 292.160.10 (10/pack)	Kirschner Wire ∅ 1.6 mm with trocar tip, length 150 mm, Stainless Steel	
03.110.000	VA-LCP Drill Sleeve 2.4, for Drill Bits ∅ 1.8 mm	
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	
03.110.023	VA-LCP Drill Sleeve 2.4, conical, for Drill Bits ∅ 1.8 mm	
03.110.024	VA-LCP Drill Sleeve 2.4, coaxial, for Drill Bits ∅ 1.8 mm	
03.111.005	Depth Gauge for Screws ∅ 2.0 to 2.7 mm, measuring range up to 40 mm	

03.211.002	VA-LCP Drill Sleeve 2.7, for Drill Bits ∅ 2.0 mm	
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	
310.509	Drill Bit ∅ 1.8 mm with marking, length 110/85 mm, 2-flute, for Quick Coupling	
310.534*	Drill Bit ∅ 2.0 mm with marking, length 110/85 mm, 2-flute, for Quick Coupling	
311.430	Handle with Quick Coupling, length 110 mm	
314.453	Screwdriver Shaft, StarDrive 2.4, short, self-holding, for Quick Coupling	
314.467	Screwdriver Shaft, StarDrive, T8, self-holding	

*For sterile packaging, add suffix “S” to article number

323.202	Universal Drill Guide 2.4	
323.260	Universal Drill Guide 2.7	
511.776	Torque Limiter 0.8 Nm, with AO/ASIF Quick Coupling	

Optional Instruments

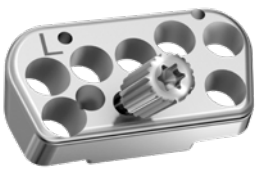
02.111.500.01* 02.111.500.10 (10/pack)	Plate Reduction Wire ∅ 1.25 mm, with thread, with Small Stop, length 150 mm, Stainless Steel	
02.111.501.01* 02.111.501.10 (10/pack)	Plate Reduction Wire ∅ 1.25 mm, with thread, with Large Stop, length 150 mm, Stainless Steel	
03.111.000	Quick Drill Sleeve 2.4 with Scale, for Drill Bits ∅ 1.8 mm, for Guiding Block, for Distal Radius Plates	
03.111.004	VA-LCP Drill Sleeve 2.4, for Drill Bits ∅ 1.8 mm, freehand useable	

*For sterile packaging, add suffix “S” to article number

03.111.007	Screw for Guiding Block for Distal Radius Plates (Replacement part)	
03.111.906	Tap for Locking Screws ∅ 2.7 mm, length 100/33 mm	
03.111.908	Tap for Locking Screws ∅ 2.4 mm	
310.190*	Drill Bit ∅ 2.0 mm, length 100/75 mm, 2-flute, for Quick Coupling	
310.260*	Drill Bit, ∅ 2.7 mm, 100/75 mm, 2-flute, for Quick Coupling	
310.530*	Drill Bit, ∅ 2.4 mm, length 100/75 mm, 2-flute, for Quick Coupling	
310.870	Countersink 2.7, length 62 mm	
310.972	Countersink for Screws ∅ 2.0 and 2.4 mm, Stainless Steel	

*For sterile packaging, add suffix "S" to article number

311.230	Tap for Cortex Screws ∅ 2.4 mm, length 100/45 mm	
311.260	Tap for Cortex Screws ∅ 2.7 mm, length 100/33 mm	
314.468	Holding Sleeve for Screws StarDrive ∅ 2.4 mm, T8, for Screwdriver Shafts ∅ 3.5 mm, for No. 314.467	
319.006	Depth Gauge for Screws ∅ 2.0 and 2.4 mm, measuring range up to 38 mm	
319.010	Depth Gauge for Screws ∅ 2.7 to 4.0 mm, measuring range up to 60 mm	
329.040	Bending Iron for Plates 2.4 to 3.5, length 145 mm	
329.050	Bending Iron for Plates 2.4 to 3.5, length 145 mm	
329.290	Bending Pliers for Reconstruction Plates 2.7 and 3.5	

398.410	Reduction Forceps, with Points, wide, ratchet lock, length 132 mm	
399.970	Reduction Forceps with Points, ratchet lock, length 130 mm	
03.111.500	Guiding Block for Two-Column Distal Radius Plate 2.4, narrow, 6 holes, right (03.111.007 Screw for Guiding Block included)	
03.111.501	Guiding Block for Two-Column Distal Radius Plate 2.4, narrow, 6 holes, left (03.111.007 Screw for Guiding Block included)	
03.111.600	Guiding Block for Two-Column Distal Radius Plate 2.4, 6 holes, right (03.111.007 Screw for Guiding Block included)	
03.111.601	Guiding Block for Two-Column Distal Radius Plate 2.4, 6 holes, left (03.111.007 Screw for Guiding Block included)	
03.111.700	Guiding Block for Two-Column Distal Radius Plate 2.4, 7 holes, right (03.111.007 Screw for Guiding Block included)	
03.111.701	Guiding Block for Two-Column Distal Radius Plate 2.4, 7 holes, left (03.111.007 Screw for Guiding Block included)	

MRI Information

Torque, Displacement, and Image Artifacts according to ASTM F 2213, ASTM F 2052, and ASTM F2119

Non-clinical testing of the DePuy Synthes 2.4/2.7 mm VA-LCP Two-Column Volar Distal Radius Plates Extra-Long 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 15.9 T/m for 1.5T and 7.9 T/m for 3.0T. The largest image artifact extended approximately 117 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 F2182

Non-clinical electromagnetic and thermal testing of worst case scenario lead to peak temperature rise of 7.0°C with an average temperature rise of 4.8°C (1.5 T) and a peak temperature rise of 8.4°C (3 T) under MR Conditions using RF Coils (whole body averaged specific absorption rate [SAR] of 2 W/kg for 15 minutes [1.5 T] and [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 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

DePuy Synthes
THE ORTHOPAEDICS COMPANY OF Johnson&Johnson

Synthes GmbH
Eimattstrasse 3
4436 Oberdorf
Switzerland
Tel: +41 61 965 61 11

www.depuysynthes.com

SE_846421 AB (DSEM/TRM/0916/0740) EOS: 178464-211207 12/2021

CE
0123