VA-LCP Distal Humerus Plates 2.7/3.5.

The low-profile fixation system
with variable angle locking technology.

Surgical Technique

Instruments and implants
approved by the AO Foundation.

DePuy Synthes
COMPANIES 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 Synthes reusable devices, instrument trays and cases, as well as processing of 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

VA-LCP Distal Humerus Plates 2.7/3.5.

The low-profile fixation system
with variable angle locking technology.

Plate configurations

The VA-LCP Elbow Plating System offers three main double-plating configurations for the distal humerus: perpendicular, perpendicular with lateral support, and parallel.

Variable angle locking

Variable angle locking screws 2.7 mm give the surgeon the ability to create a fixed-angle construct with the freedom of up to 15° off-axis screw angulation.

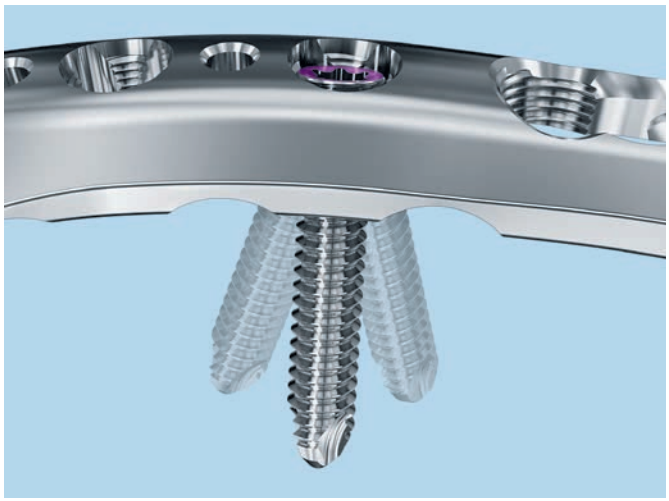
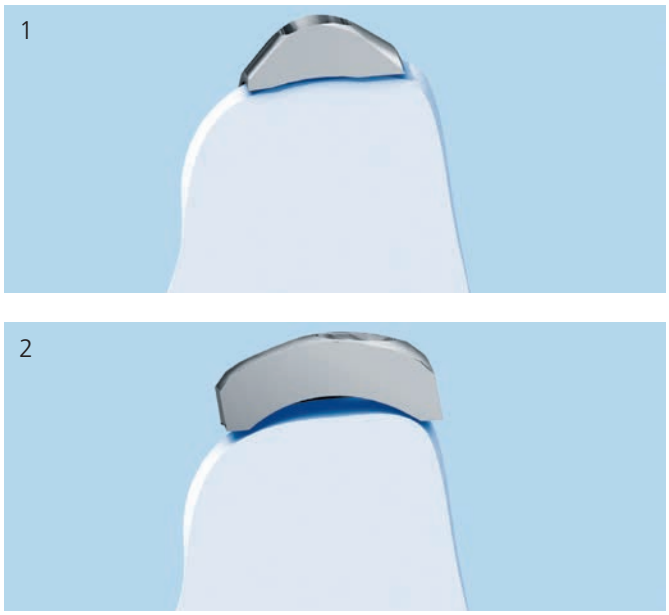


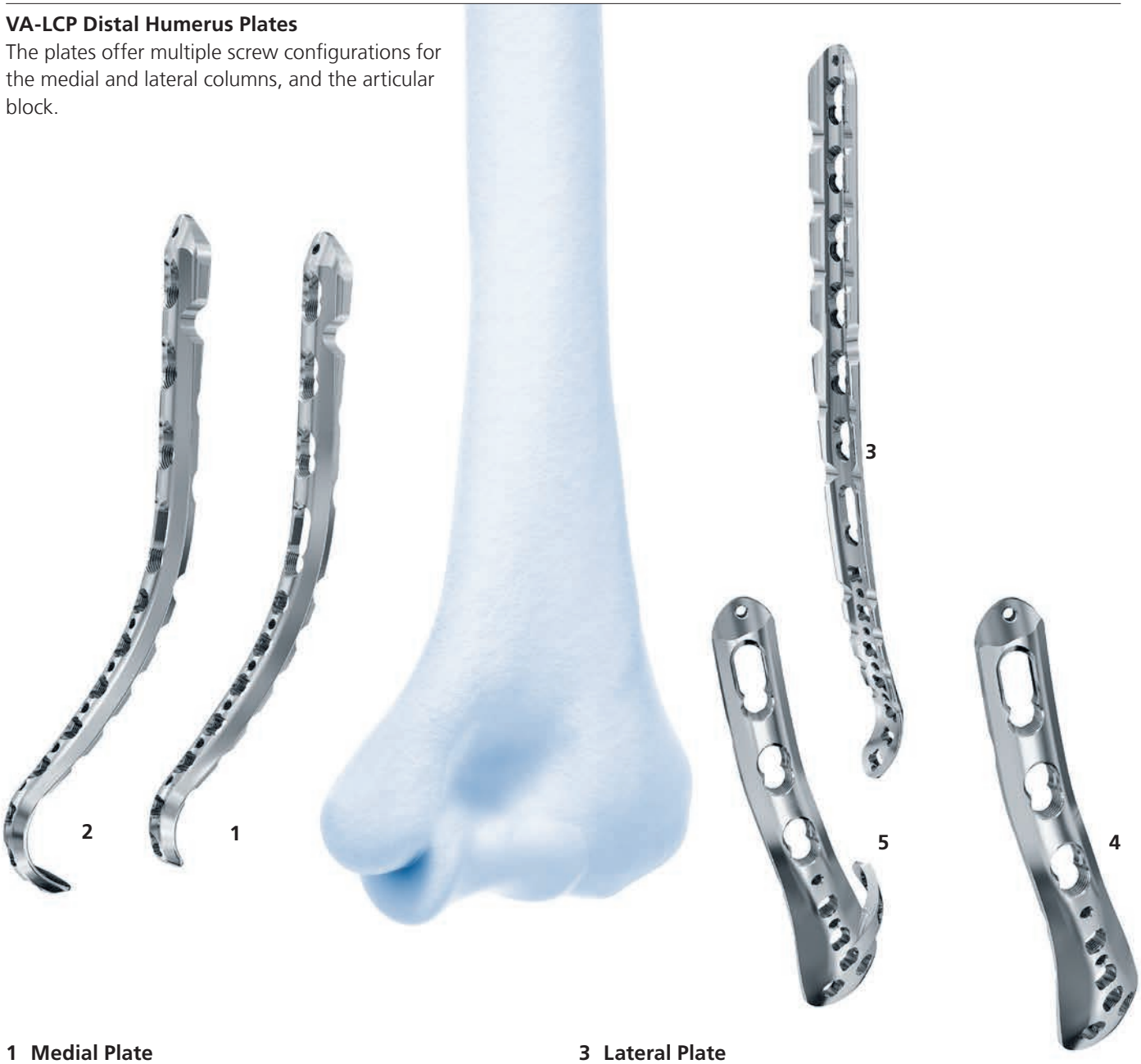
Plate design

Metaphyseal plate profile, together with rounded edges and an improved anatomical plate fit designed to minimize the prominence of the construct without compromising stability.



Cross-section of the VA-LCP Distal Humerus Plate, medial (1) and the LCP Distal Humerus Plate, medial (2) at the level of the medial epicondyle.

VA-LCP Distal Humerus Plates
The plates offer multiple screw configurations for the medial and lateral columns, and the articular block.



1 Medial Plate
The standard medial column plate.

2 Medial Plate, with extension
The extension buttresses the medial epicondyle and includes an ascending screw that stabilizes the medial column.

3 Lateral Plate
The lateral plate for the parallel-plating configuration.

4 Dorsolateral Plate
The dorsolateral plate for the perpendicular-plating configuration with distal screws targeting the capitellum.

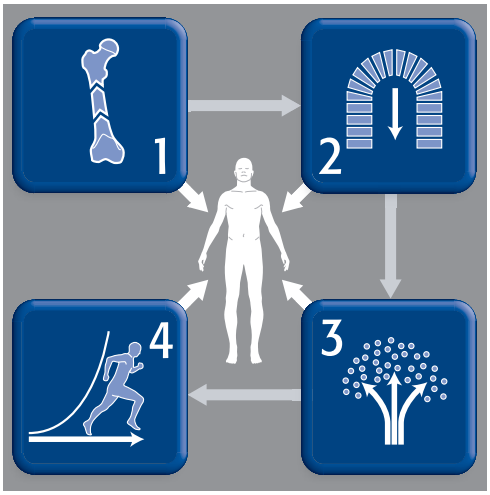
5 Dorsolateral Plate, with lateral support
The screws from the lateral support target the articular block.

AO Principles

In 1958, the AO formulated four basic principles, which have become the guidelines for internal fixation[1,2].

Anatomic reduction
Fracture reduction and fixation to restore anatomical relationships.

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



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

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

[1] Müller ME, Allgöwer M, Schneider R, Willenegger H. Manual of Internal Fixation. 3rd ed. Berlin, Heidelberg, New York: Springer. 1991.
[2] Rüedi TP, Buckley RE, Moran CG. AO Principles of Fracture Management. 2nd ed. Stuttgart, New York: Thieme. 2007.

Indications

- Intra-articular fractures of the distal humerus
- Supracondylar fractures of the distal humerus
- Nonunions of the distal humerus
- Osteotomies of the distal humerus
  (e.g. due to malunions, deformities)

Note: For information on fixation principles using conventional and locked plating techniques, please refer to the LCP Locking Compression Plate Surgical Technique (DSEM/TRM/0115/0278).

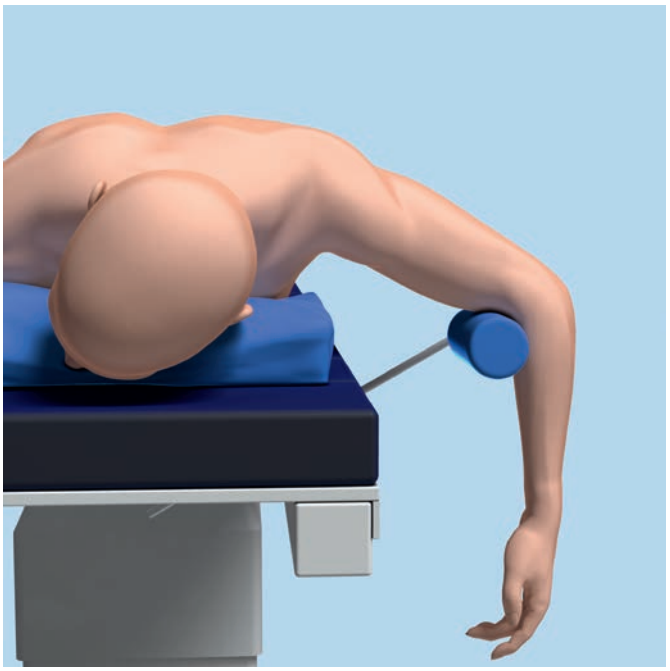
1

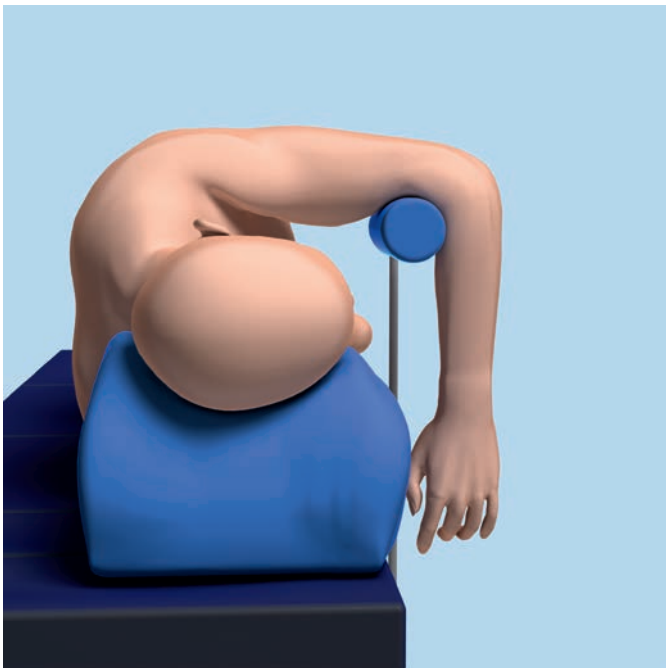
Preoperative planning

Complete the preoperative radiographic assessment and prepare the preoperative plan. Use the x-ray templates for the VA-LCP Distal Humerus Plates (Art. No. 034.000.721, 034.000.722 and 034.000.723) to determine the plate type, length, and the position of the screws.

2
Position patient

Position the patient in prone or in lateral decubitus with the arm on a radiolucent support, or a padded post. The forearm should be positioned such that it can be flexed to an angle greater than 120 degrees.





3
Approach

Fractures are approached through a slightly curved posterior incision just radial to the olecranon.

Precautions:
- Identify the ulnar nerve and elevate it at the ulnar epicondyle if necessary.
- If the plate is long, the radial nerve needs to be elevated off the back of the humerus and the plate placed underneath. Otherwise, the radial nerve rarely needs to be identified by more than palpation and almost never needs to be isolated or elevated with these fractures.

The type of approach is determined by the character of the fracture, and the preference and experience of the surgeon. For comminuted fractures, a distally pointed chevron olecranon osteotomy exposes the fracture best.

4
Reduce fracture and provide temporary fixation

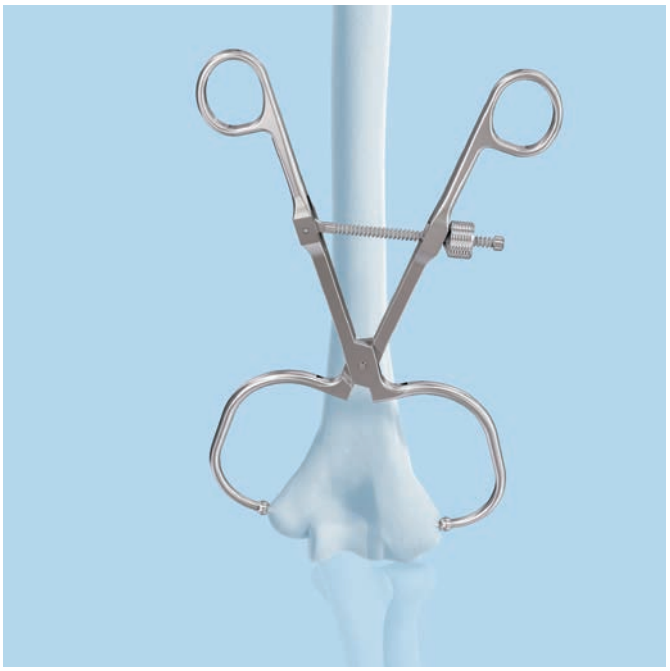
Instrument	
03.118.001	Periarticular Reduction Forceps, with pointed ball tips ∅ 6.5 mm, small

For AO C-type fractures, first reduce the fragments of the articular block under image intensifier control and use Kirschner wires and/or reduction forceps for temporary fixation.

Fix the articular block to the shaft using Kirschner wires and/or reduction forceps in both columns to ensure that the anatomy of the distal humerus is restored.

Ensure that the Kirschner wires or reduction forceps will not interfere with subsequent plate placement.

Notes:
- If necessary, reduce the articular block using independent screws.
- When using the dorsolateral plate without lateral support, it is important to reduce and fix the articular block with screws according to the AO Principles of Fracture Management (lag screw for simple articular fracture or position fully threaded screw for comminuted fracture).



Determination of Fixation Technique

Select a plate type and length appropriate for the fracture.

Notes:
- Choose the plate lengths that offer sufficient fixation proximal to the fracture line.
- To achieve sufficient stability for early mobilization in AO A-type and C-type fractures, use two plates: one for the medial and one for the lateral column.

1

Determine lateral-column plate type and length

Instruments	
03.117.004	Trial Implant for VA-LCP Distal Humeral Plate 2.7/3.5, dorsolateral, with lateral support, right, 4 holes, length 88 mm, Stainless Steel
or	
03.117.104	Trial Implant for VA-LCP Distal Humeral Plate 2.7/3.5, dorsolateral, with lateral support, left, 4 holes, length 88 mm, Stainless Steel
03.117.802	Trial Implant for VA-LCP Distal Humeral Plate 2.7/3.5, lateral, right, 2 holes, length 82 mm, Stainless Steel
or	
03.117.902	Trial Implant for VA-LCP Distal Humeral Plate 2.7/3.5, lateral, left, 2 holes, length 82 mm, Stainless Steel

Note: Do not bend trial implants.

Use of the trial implants and/or the descriptions and illustrations below is recommended to aid implant selection for the lateral column.

1a

Perpendicular plating

VA-LCP Distal Humerus Plate, dorsolateral
- Plate position: lateral column, dorsal
- Orientation of distal screws: posteroanterior

VA-LCP Distal Humerus Plate, dorsolateral with lateral support
- Plate position: lateral column, dorsal
- Orientation of distal screws: posteroanterior and latero-medial

Note: On very small humeri, the lateral support may protrude extensively over the lateral epicondyle, in which case the use of the plate without lateral support is recommended.

1b

Parallel plating

VA-LCP Distal Humerus Plate, lateral
- Plate position: lateral column, lateral
- Orientation of distal screws: lateromedial

2
Determine medial-column plate type and length

Instruments

03.117.602	Trial Implant for VA-LCP Distal Humeral Plate 2.7/3.5, medial, with Extension, right, 2 holes, length 85 mm, Stainless Steel
or	
03.117.702	Trial Implant for VA-LCP Distal Humeral Plate 2.7/3.5, medial, with Extension, left, 2 holes, length 85 mm, Stainless Steel

Note: Do not bend trial implants.

Precaution: To prevent extensive diaphyseal stress, it is recommended that the medial and lateral plates are not the same length. For example, use a short medial plate with a medium dorsolateral / lateral plate.

Use of the trial implants and/or the descriptions and illustrations below is recommended to aid implant selection for the medial column.

VA-LCP Distal Humerus Plate, medial
– Plate position: medial column, medial
– Orientation of distal screws: mediolateral

VA-LCP Distal Humerus Plate, medial, with Extension
– Plate position: medial column, medial
– Orientation of distal screws: mediolateral and ascending

Insert Lateral-Column Plate

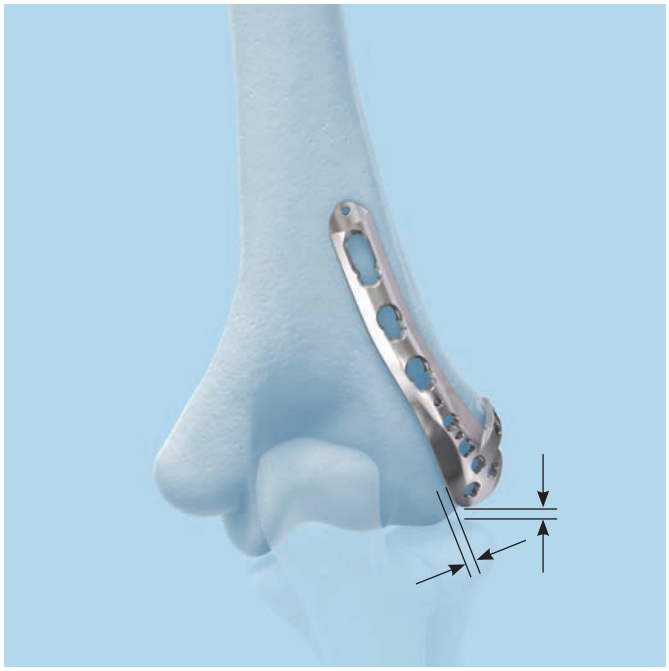
1
Position lateral-column plate

1a
Perpendicular plating: Position dorsolateral plate with or without lateral support

Position the plate on the dorsolateral aspect of the distal humerus with the distal spoon-shape portion covering the nonarticulating part of the capitulum, and with the lateral support extending over the most protruding tip of the lateral epicondyle, just proximal to the lateral collateral ligament insertion. Ensure that the shaft portion is positioned at a safe distance from the olecranon fossa.

For the dorsolateral plate with lateral support, the position of the plate should allow distal screw insertion through the lateral support to reach into the trochlea.

Precaution: The distal plate position has to be carefully chosen to avoid impingement of the radial head and thus a loss of extension. The distance between the plate and the cartilage should not normally be less than 3 mm.



1b

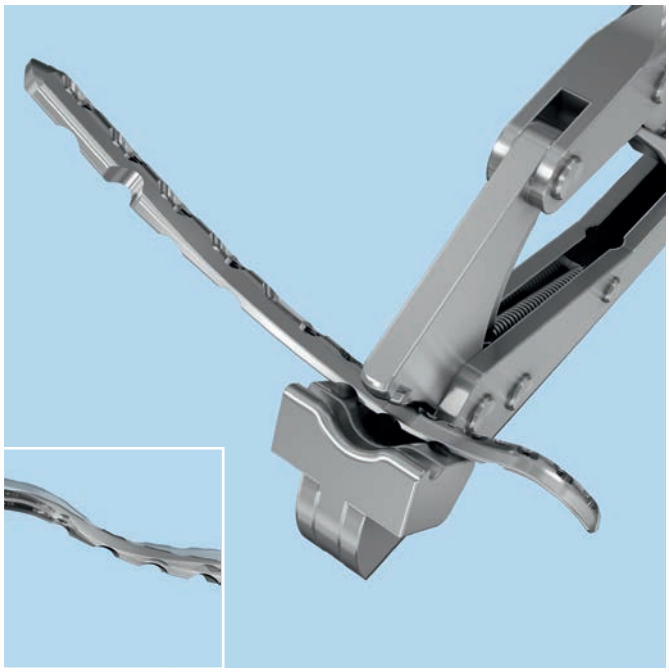
Parallel plating: Position lateral plate

Position the plate on the lateral ridge of the distal humerus. The most distal screw hole should lay on or close to the anatomical joint axis.

Note: Steps 2 and 3 are applicable for all three plate types for the lateral column.

2
Bend plate

Instruments	
329.150	Bending Pliers for Plates 2.4 to 4.0, length 230 mm
329.291	Bending Pliers for Clavicular Plates, length 227 mm
329.300	Bending Press, length 400 mm



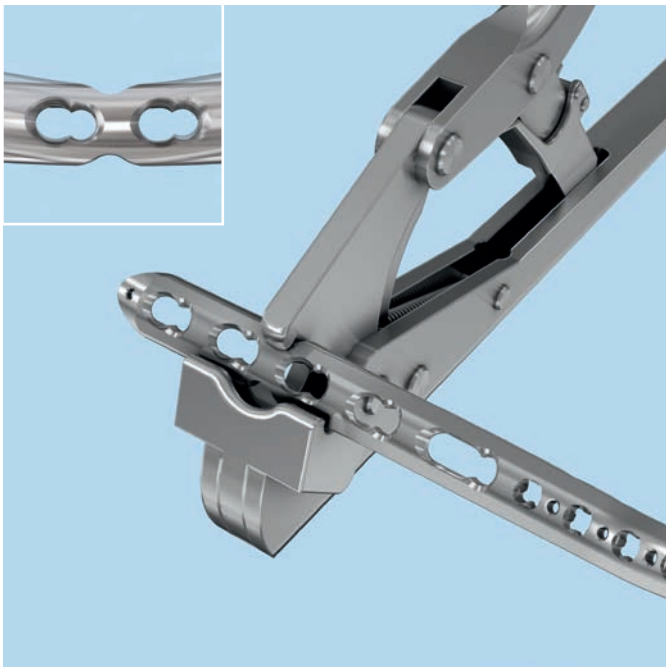
Due to varying patient anatomy, slight plate bending may be necessary.

Use the bending pliers to contour the plate around the axis of the undercuts.

Precaution: Contour the plate precisely at the level of the undercuts to avoid deformation of the plate holes.

Use the bending pliers for clavicular plates or the bending press to contour the plate around the axis of the reconstruction notches.

Precaution: Contour the plate precisely at the level of the reconstruction notches to avoid deformation of the plate holes.



3
Temporary plate fixation

Instruments	
310.250	Drill Bit ∅ 2.5 mm, length 110/85 mm, 2-flute, for Quick Coupling
314.070	Screwdriver, hexagonal, small, ∅ 2.5 mm, with Groove
319.010	Depth Gauge for Screws ∅ 2.7 to 4.0 mm, measuring range up to 60 mm
323.360	Universal Drill Guide 3.5

Note: The plate can be temporarily fixed with ∅ 1.6 mm Kirschner wires inserted through the kirschner wire holes.

Insert a ∅ 3.5 mm cortex screw through the DCU portion of the elongated hole.

Use the ∅ 2.5 mm drill bit with the 3.5 universal drill guide to predrill the bone through both cortices. To set the screws in a neutral position and to ensure the lowest possible profile construct, press the drill guide down.

Determine the required length of the cortex screw using the depth gauge.

Insert the appropriate ∅ 3.5 mm cortex screw using the hexagonal screwdriver. Do not tighten the screw.

Insert Distal Screws in Lateral-Column Plate

Determine the combination of screws to be used for distal fixation. If a combination of locking and non-locking screws is used, non-locking screws must be inserted first.

1

Optional: Fixation with low-profile metaphyseal compression screws ∅ 2.7 mm

Use the same instrumentation as per the insertion of variable angle locking screws ∅ 2.7 mm. Follow the instructions in step 3.

Precautions:

- The low-profile metaphyseal compression screw ∅ 2.7 mm can be used to pull the plate to the bone prior to locking screw insertion. However, the screw can not be used to create interfragmentary compression.
- The 1.2 Nm torque limiter is recommended for use during insertion of low-profile metaphyseal compression screws ∅ 2.7 mm to avoid potential screw damage as a result of excessive torque, for example due to screw collisions.
- As the low-profile metaphyseal screws ∅ 2.7 mm are non-locking, final tightening must be performed carefully, as with conventional 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.

2

Optional: Fixation with ∅ 2.4 mm cortex screws

Use the 2.4 universal drill guide and the 1.8 mm drill bit for insertion of ∅ 2.4 mm cortex screws. Determine the length of the screw by using the depth gauge.

3

Fixation with ∅ 2.7 mm variable angle locking screws

Instruments	
03.211.002	VA-LCP Drill Sleeve 2.7, for Drill Bits ∅ 2.0 mm
323.062	Drill Bit ∅ 2.0 mm, with double marking, length 140 / 115 mm, 3-flute, for Quick Coupling
03.118.007	Depth Gauge, percutaneous
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

Notes:

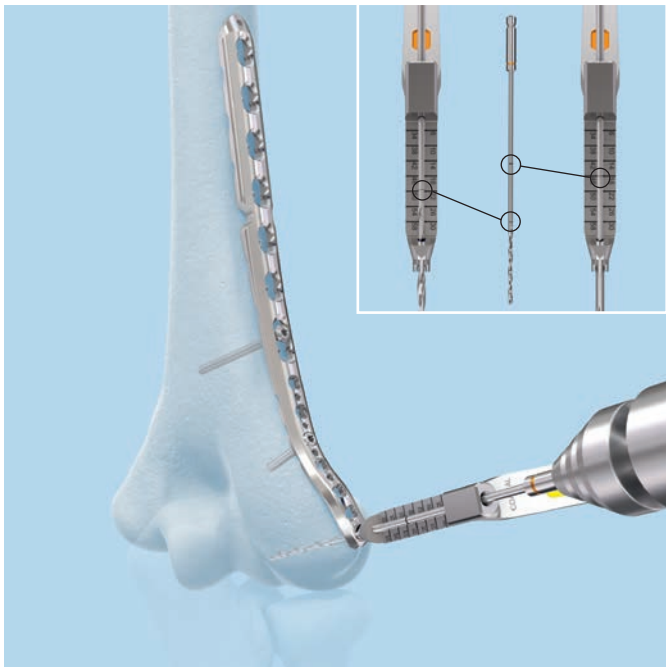
- When inserting screws at the nominal angle, screws should not collide with other screws in the same plate.
- Using variable angle drilling and the presence of another plate increases the risk of drill and screw collisions.
- Use VA-LCP drill sleeve 2.7 for ∅ 2.7 mm locking screws (non-VA). Always drill and insert at nominal angle.

Insert screw at nominal angle
Insert the VA-LCP drill sleeve 2.7 into the variable angle locking hole, ensuring that the drill sleeve tip keys into the cloverleaf portion of the hole.

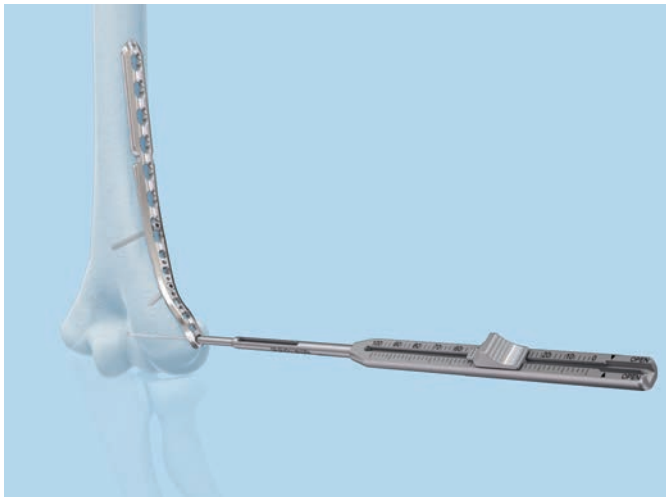
The fixed-angle end of the drill sleeve ensures that the drill bit follows the nominal trajectory of the locking hole.

Use the ∅ 2.0 mm drill bit to drill to the desired depth.

Determine the required length of the screw by using the scale on the drill sleeve. If a single marking is visible on the drill bit, the scale from 6 – 30 mm applies; if a double marking is visible, the scale from 34 – 58 mm applies.



Alternative technique: Remove the drill sleeve and use the depth gauge (03.118.007) to measure the screw length.



Note: If the depth gauge 319.010 is used for ∅ 2.7 mm screws, subtract 4 mm from the indicated length to obtain the correct screw length.

Use the SD8 Stardrive screwdriver shaft attached to the 1.2 Nm torque limiter to insert the ∅ 2.7 mm variable angle locking screw. For manual insertion, use the handle for torque limiters.

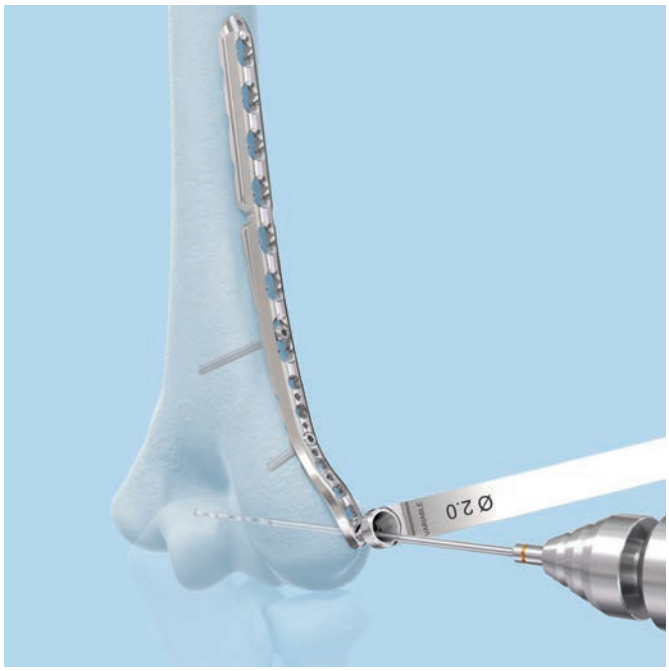
Important:
- To achieve maximum strength of the plate-screw interface, the use of the torque limiter is recommended.
- When inserting screws under power, final tightening should be done using manual screwdriver and torque limiter.

Optional: Variable angle
Use the funnel-shaped end of the drill sleeve to drill variable angle holes at the desired angle. The funnel allows the drill bit up to 15° off-axis angulation.

Use the ∅ 2.0 mm drill bit to drill at the desired angle and to the desired depth.

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

Remove the drill sleeve and use the depth gauge to measure the screw length.



Precautions:
- It is important not to angulate more than 15° from the central axis of the screw hole.
- Changing the angle of the screw is only allowed before tightening with the 1.2 Nm torque limiter.

Use the SD8 Stardrive screwdriver shaft attached to the 1.2 Nm torque limiter to insert the ∅ 2.7 mm variable angle locking screw. For manual insertion, use the handle for torque limiters.

Repeat for all distal holes to be used.

Precaution: Ensure that the screws do not protrude in the olecranon or coronoid fossa.

Insert Medial-Column Plate

1

Position medial plate or medial plate with extension

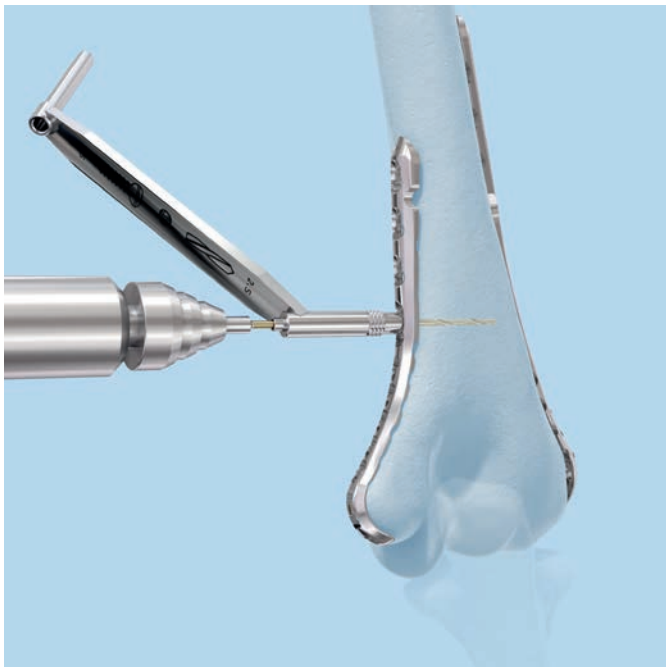
Position the medial plate on the medial ridge slightly dorsal to the intermuscular septum. The medial plate with extension will wrap around the medial epicondyle.

Distal screws should reach as far as possible into the bone. Choose a plate position that allows the longest possible screws.

If necessary, bend the plate to ensure optimal plate fit and position of the long screws through the articular block (see pages 16 and 17).

2
Temporary plate fixation

Instruments	
310.250	Drill Bit ∅ 2.5 mm, length 110/85 mm, 2-flute, for Quick Coupling
314.070	Screwdriver, hexagonal, small, ∅ 2.5 mm, with Groove
319.010	Depth Gauge for Screws ∅ 2.7 to 4.0 mm, measuring range up to 60 mm
323.360	Universal Drill Guide 3.5

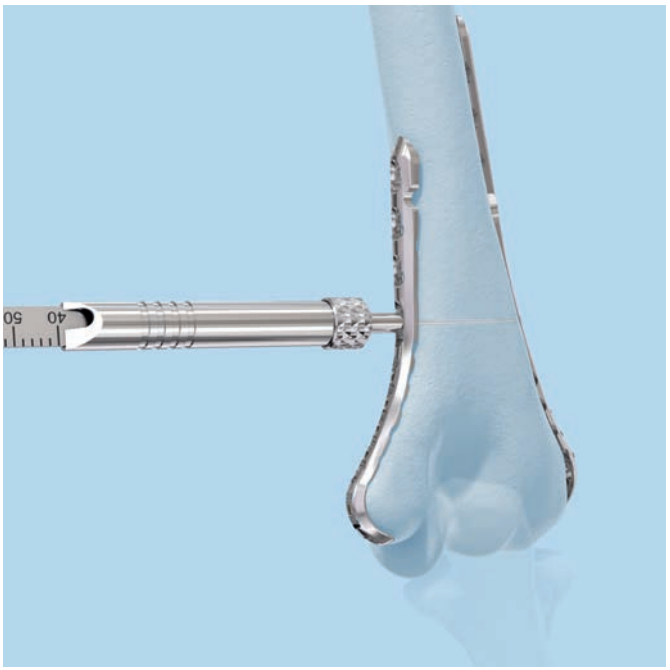


Insert a ∅ 3.5 mm cortex screw through the DCU portion of the elongated hole.

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

To set screws in a neutral position and to ensure the lowest possible profile construct, press the drill guide down.

Determine the required length of the cortex screw using the depth gauge.



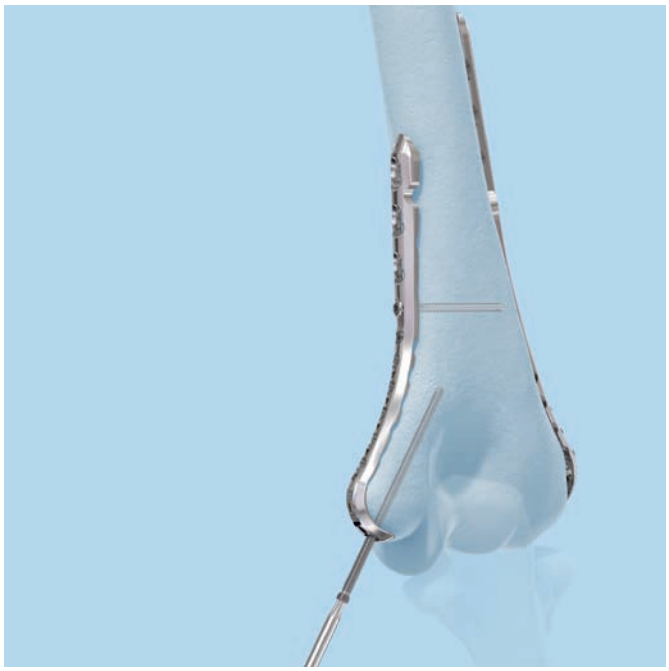
Insert the appropriate ∅ 3.5 mm cortex screw using the hexagonal screwdriver. Do not tighten the screw.

Insert Distal Screws in Medial-Column Plate

For variable angle locking and low-profile metaphyseal screw insertion, use a similar procedure to the lateral plate (see pages 20 to 24 for details).

Notes:
- When inserting screws distally in the medial distal humerus plate with extension, insert the most distal screw (ascending screw) first to avoid collision with other screws.
- Using variable angle in close proximity to another plate increases the risk of drill and screw collisions.

Precaution: Careful drilling is necessary, as interference with screws in the lateral plate is possible. In case of interference, stop drilling and use a screw of appropriate length.



Insert Plate-Shaft Screws

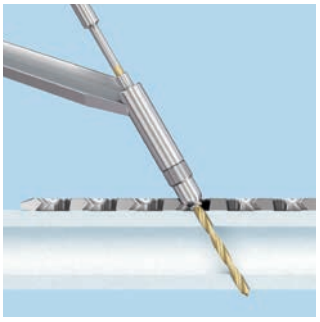
After fixing the distal portion of the lateral and medial plates, determine where locking or cortex screws will be used in the shaft.

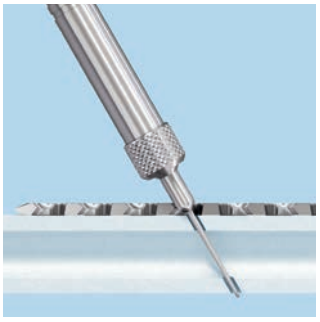
Note: If a combination of cortex and locking screws is used, cortex screws must be inserted first to pull the plate to the bone.

1a

Fixation with ∅ 3.5 mm cortex screws

Instruments	
310.250	Drill Bit ∅ 2.5 mm, length 110/85 mm, 2-flute, for Quick Coupling
323.360	Universal Drill Guide 3.5
319.010	Depth Gauge for Screws ∅ 2.7 to 4.0 mm, measuring range up to 60 mm
314.070	Screwdriver, hexagonal, small, ∅ 2.5 mm, with Groove
Optional instrument	
311.320	Tap for Cortex Screws ∅ 3.5 mm, length 110/50 mm





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

To set screws in a neutral position and to ensure the lowest possible profile construct, press the drill guide down in the non-threaded hole. To obtain compression, place the drill guide at the end of the non-threaded hole away from the fracture, avoiding downward pressure on the spring-loaded tip.

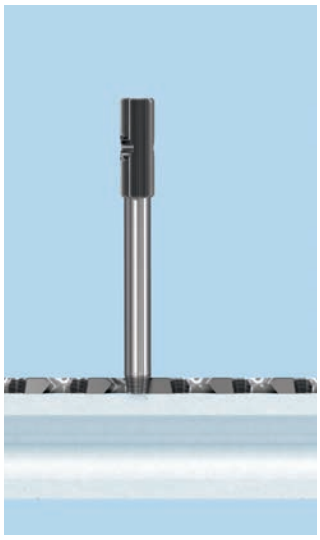
Determine the required length of the cortex screw using the depth gauge.

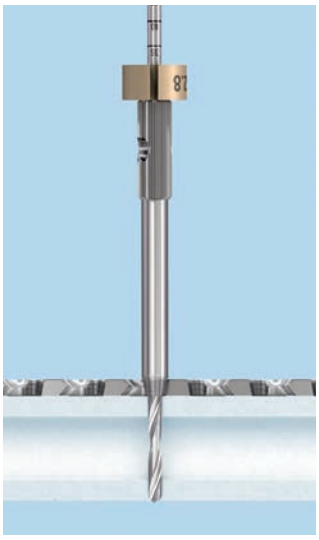
Insert the appropriate ∅ 3.5 mm cortex screw using the hexagonal screwdriver.

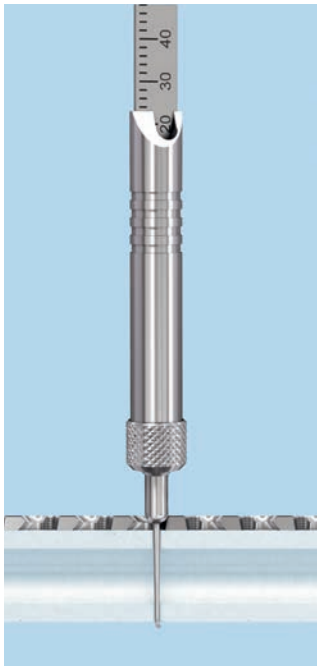
1b

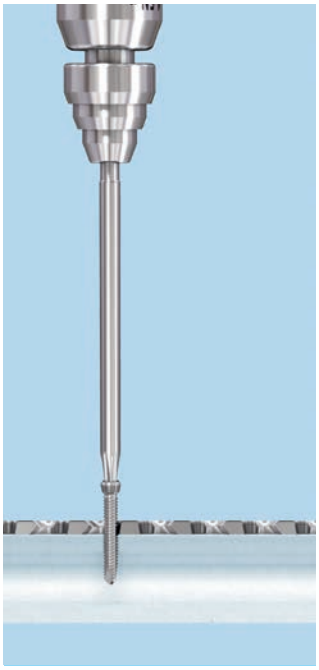
Fixation with ∅ 3.5 mm locking screws

Instruments	
323.027	LCP Drill Sleeve 3.5, for Drill Bits ∅ 2.8 mm
310.284	LCP Drill Bit ∅ 2.8 mm with Stop, length 165 mm, 2-flute, for Quick Coupling
319.010	Depth Gauge for Screws ∅ 2.7 to 4.0 mm, measuring range up to 60 mm
314.030	Screwdriver Shaft, hexagonal, small, ∅ 2.5 mm
or	
314.116	Screwdriver Shaft Stardrive 3.5, T15, self-holding, for AO/ASIF Quick Coupling
511.773	Torque Limiter, 1.5 Nm, for AO/ASIF Quick Coupling
311.431	Handle with Quick Coupling









Insert the 3.5 mm drill sleeve into the locking hole until fully seated. Drill through both cortices with the ∅ 2.8 mm drill bit and use the scale to read-off the screw length.

Alternative technique: Remove the drill guide. Use the depth gauge to determine the screw length.

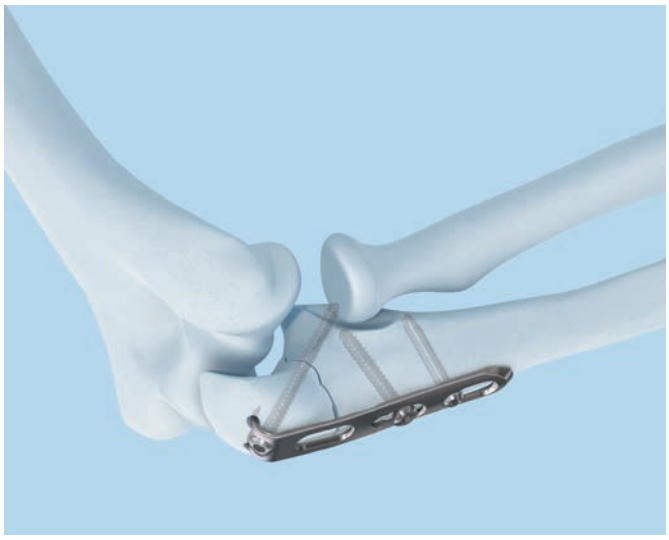
Insert the locking screw with the appropriate screwdriver shaft (hexagonal or Stardrive recess) mounted on the 1.5 Nm torque limiter. Insert the screw manually or with the use of a power tool until a click is heard. If a power tool is used, reduce the speed when tightening the head of the locking screw into the plate.

Repeat the above steps for all required shaft holes.

Fixation of Olecranon Osteotomy

If the olecranon has been osteotomized for approaching the distal humerus, reduce the olecranon and fix the osteotomy.

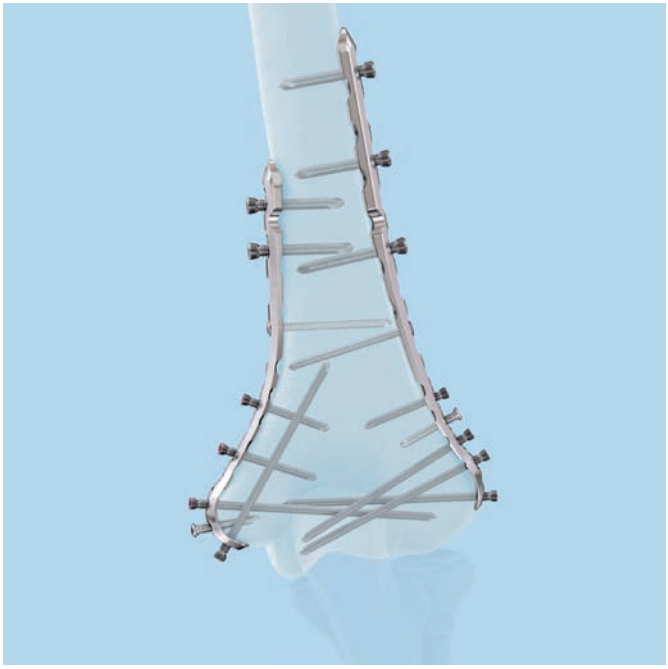
Note: Irrigate prior to closure.



Implant Removal

Instruments

314.030	Screwdriver Shaft, hexagonal, small, ∅ 2.5 mm
or	
314.116	Screwdriver Shaft Stardrive 3.5, T15, self-holding, for AO/ASIF Quick Coupling
314.467	Screwdriver Shaft, Stardrive, T8, self-holding
311.431	Handle with Quick Coupling
309.521	Extraction Screw for Screws ∅ 3.5 mm
309.510	Extraction Screw, conical, for Screws ∅ 1.5 and 2.0 mm



To remove the plate, first unlock all the screws with the screwdriver. Remove the plate in a second step since it could otherwise rotate while unlocking the last screw, which can cause soft tissue damage.
If a screw cannot be removed with the screwdriver, use the handle with quick-coupling to insert the conical extraction screw into the screw head, and unscrew the screw in a counter-clockwise direction.

Implants

Plates

VA-LCP Distal Humeral Plate 2.7/3.5, dorsolateral

Holes	Length	Right	Left
3 (short)	75 mm	0X.117.203	0X.117.303
4 (medium)	88 mm	0X.117.204	0X.117.304
7 (long)	127 mm	0X.117.207	0X.117.307
9 (extra-long)	153 mm	0X.117.209	0X.117.309
11	179 mm	0X.117.211S*	0X.117.311S*
13	205 mm	0X.117.213S*	0X.117.313S*

VA-LCP Distal Humeral Plate 2.7/3.5, dorsolateral, with lateral support

Holes	Length	Right	Left
3 (short)	75 mm	0X.117.003	0X.117.103
4 (medium)	88 mm	0X.117.004	0X.117.104
7 (long)	127 mm	0X.117.007	0X.117.107
9 (extra-long)	153 mm	0X.117.009	0X.117.109
11	179 mm	0X.117.011S*	0X.117.111S*
13	205 mm	0X.117.013S*	0X.117.113S*

VA-LCP Distal Humeral Plate 2.7/3.5, lateral

Holes	Length	Right	Left
1 (short)	69 mm	0X.117.801	0X.117.901
2 (medium)	82 mm	0X.117.802	0X.117.902
5 (long)	121 mm	0X.117.805	0X.117.905
7 (extra-long)	147 mm	0X.117.807	0X.117.907
9	173 mm	0X.117.809S*	0X.117.909S*
11	199 mm	0X.117.811S*	0X.117.911S*

X = 2: Stainless steel
X = 4: TAN
All plates and screws are also available sterile packed.
For sterile implants, add suffix "S" to article number.
*Only available sterile

VA-LCP Distal Humeral Plate 2.7/3.5, medial

Holes	Length	Right	Left
1 (short)	69 mm	0X.117.401	0X.117.501
2 (medium)	82 mm	0X.117.402	0X.117.502
4 (long)	108 mm	0X.117.404	0X.117.504
6 (extra-long)	134 mm	0X.117.406	0X.117.506
8	160 mm	0X.117.408S*	0X.117.508S*
10	186 mm	0X.117.410S*	0X.117.510S*

VA-LCP Distal Humeral Plate 2.7/3.5, medial, with Extension

Holes	Length	Right	Left
1 (short)	72 mm	0X.117.601	0X.117.701
2 (medium)	85 mm	0X.117.602	0X.117.702
4 (long)	111 mm	0X.117.604	0X.117.704
6 (extra-long)	137 mm	0X.117.606	0X.117.706
8	163 mm	0X.117.608S*	0X.117.708S*
10	189 mm	0X.117.610S*	0X.117.710S*

X = 2: Stainless steel
X = 4: TAN
All plates and screws are also available sterile packed.
For sterile implants, add suffix "S" to article number.
*Only available sterile

Screws

Distal screws

0*X.211.010 – 0*X.211.060	VA Locking Screw Stardrive ∅ 2.7 mm (head 2.4), self-tapping, length 10 – 60 mm	
0*X.118.510 – 0*X.118.570	Low Profile Metaphyseal Compression Screw Stardrive ∅ 2.7 mm, self-tapping, length 10 –70 mm	
*X01.760 – *X01.790	Cortex Screw Stardrive ∅ 2.4 mm, self-tapping, length 10 – 40 mm	

Shaft screws

*X12.102 – *X12.124	Locking Screw Stardrive ∅ 3.5 mm, self-tapping, length 12 – 60 mm	
or		
*X13.012 – *X13.060	Locking Screw ∅ 3.5 mm, self-tapping, length 12 – 60 mm	
**X04.810 – **X04.860	Cortex Screw ∅ 3.5 mm, self-tapping, length 10 – 60 mm	
or		
*0X.200.012 – *0X.200.060	Cortex Screw Stardrive ∅ 3.5 mm, self-tapping, length 12–60 mm	

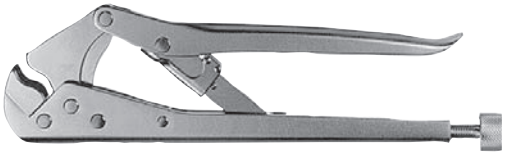
X=2: Stainless Steel
*X=4: TAN
**X=4 TiCP

All plates and screws are also available sterile packed.
For sterile implants, add suffix "S" to article number.

Instruments

309.521	Extraction Screw for Screws ∅ 3.5 mm	
309.510	Extraction Screw, conical, for Screws ∅ 1.5 and 2.0 mm	
310.250	Drill Bit ∅ 2.5 mm, length 110/85 mm, 2-flute, for Quick Coupling	
311.431	Handle with Quick Coupling	
310.284	LCP Drill Bit ∅ 2.8 mm with Stop, length 165 mm, 2-flute, for Quick Coupling	
314.467	Screwdriver Shaft, Stardrive, T8, self-holding	
319.010	Depth Gauge for Screws ∅ 2.7 to 4.0 mm, measuring range up to 60 mm	
314.030	Screwdriver Shaft, hexagonal, small, ∅ 2.5 mm	
323.062	Drill Bit ∅ 2.0 mm, with double marking, length 140/115 mm, 3-flute, for Quick Coupling	
311.320	Tap for Cortex Screws ∅ 3.5 mm, length 110/50 mm	

314.116	Screwdriver Shaft Stardrive 3.5, T15, self-holding, for AO/ASIF Quick Coupling	
323.027	LCP Drill Sleeve 3.5, for Drill Bits ∅ 2.8 mm	
323.360	Universal Drill Guide 3.5	
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	
03.118.001	Periarticular Reduction Forceps, with pointed ball tips ∅ 6.5 mm, small	

329.150	Bending Pliers for Plates 2.4 to 4.0, length 230 mm	
314.070	Screwdriver, hexagonal, small, ∅ 2.5 mm, with Groove	
03.118.007	Depth Gauge, percutaneous	
03.211.002	VA-LCP Drill Sleeve 2.7, for Drill Bits ∅ 2.0 mm	
511.773	Torque Limiter, 1.5 Nm, for AO/ASIF Quick Coupling	
329.291	Bending Pliers for Clavicular Plates, length 227 mm	
329.300	Bending Press, length 400 mm	

Trial Implants

03.117.004	Trial Implant for VA-LCP Distal Humeral Plate 2.7/3.5, dorsolateral, with lateral support, right, 4 holes, length 88 mm, Stainless Steel
03.117.104	Trial Implant for VA-LCP Distal Humeral Plate 2.7/3.5, dorsolateral, with lateral support, left, 4 holes, length 88 mm, Stainless Steel
03.117.802	Trial Implant for VA-LCP Distal Humeral Plate 2.7/3.5, lateral, right, 2 holes, length 82 mm, Stainless Steel
03.117.902	Trial Implant for VA-LCP Distal Humeral Plate 2.7/3.5, lateral, left, 2 holes, length 82 mm, Stainless Steel

03.117.602	Trial Implant for VA-LCP Distal Humeral Plate 2.7/3.5, medial, with Extension, right, 2 holes, length 85 mm, Stainless Steel

03.117.702	Trial Implant for VA-LCP Distal Humeral Plate 2.7/3.5, medial, with Extension, left, 2 holes, length 85 mm, Stainless Steel

Bibliography

Kaiser T, Brunner A, Hohendorff B, Ulmar B, Babst R. Treatment of supra- and intra-articular fractures of the distal humerus with the LCP Distal Humerus Plate: a 2-year follow-up. J Shoulder Elbow Surg 2011; 20:206 –212.

Sanchez-Sotelo J, Torchia ME, O'Driscoll SW. Complex Distal Humeral Fractures: Internal Fixation with a Principle-Based Parallel-Plate Technique. J Bone Joint Surg Am 2007; 89:961– 969.

Schuster I, Korner J, Arzdorf M, Schwieger K, Diederichs G, Linke B. Mechanical Comparison in Cadaver Specimens of Three Different 90-Degree Double-Plate Osteosyntheses for Simulated C2-Type Distal Humerus Fractures With Varying Bone Densities. J Orthop Trauma 2008; 22(2):113 –120.

Stoffel K, Cunneen S, Morgan R, Nicholls R, Stachowiak G. Comparative stability of perpendicular versus parallel double-locking plating systems in osteoporotic comminuted distal humerus fractures. J Orthop Res 2008; 26(6):778 –784.

MRI Information

Torque, Displacement and Image Artifacts according to ASTM F 2213-06, ASTM F 2052-06e1 and ASTM F 2119-07

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 2182-11a

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.

DePuy Synthes
COMPANIES OF Johnson&Johnson
People inspired™

Synthes GmbH
Eimattstrasse 3
4436 Oberdorf
Switzerland
Tel: +41 61 965 61 11
Fax: +41 61 965 66 00
www.depuysynthes.com

Not all products are currently available in all markets.

This publication is not intended for distribution in the USA.

All surgical techniques are available as PDF files at
www.depuysynthes.com/ifu

CE
0123

 036.001.366 DSEM/TRM/0115/0303(2) 03/16