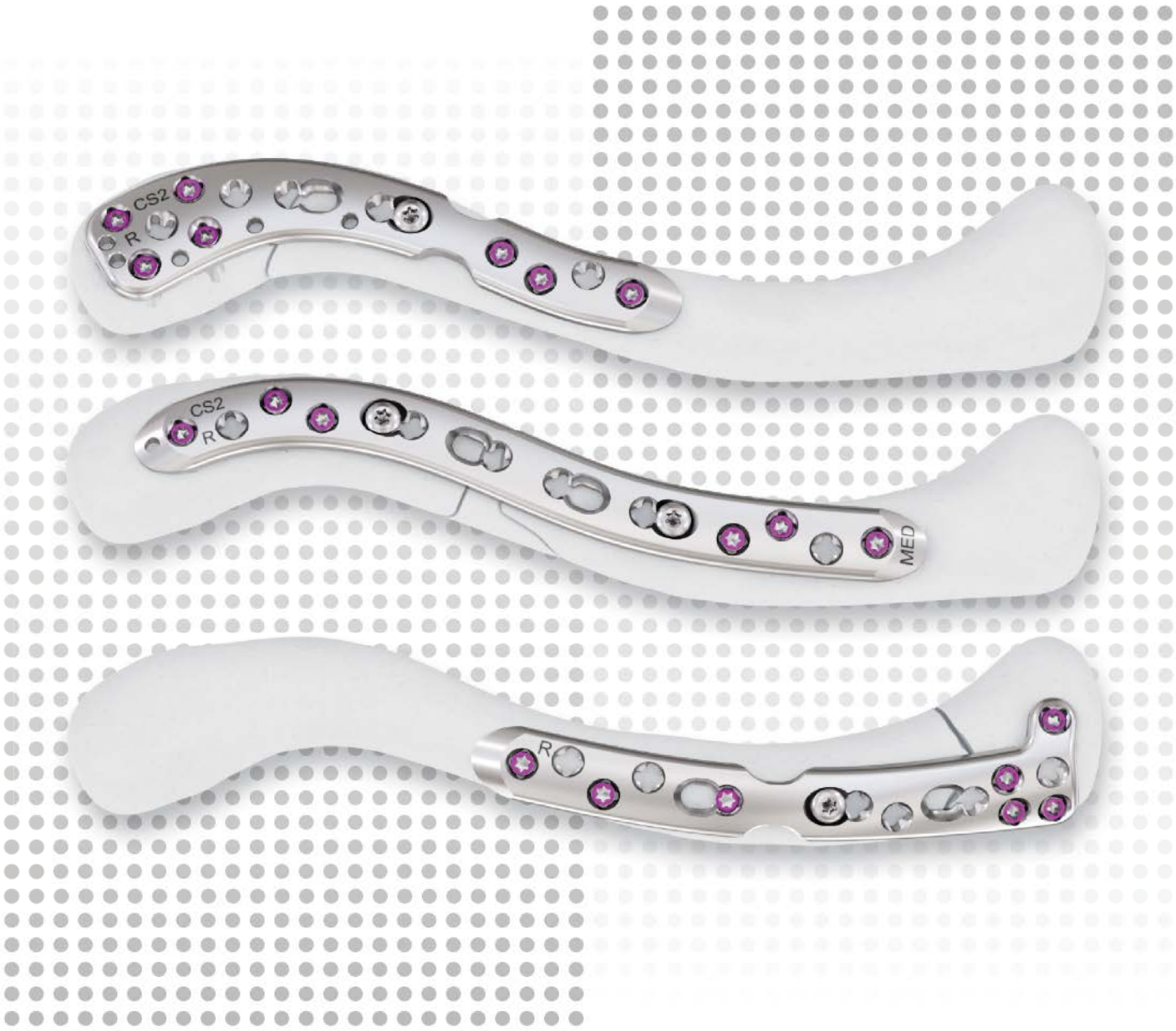
2.7 MM VARIABLE ANGLE LCP® CLAVICLE PLATE SYSTEM

Surgical Technique



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Note: For additional information, please refer to the package insert or www.e-ifu.com.

For detailed cleaning and sterilization instructions, please refer to www.depuysynthes.com/hcp/cleaning-sterilization or sterilization instructions, if provided in the instructions for use.

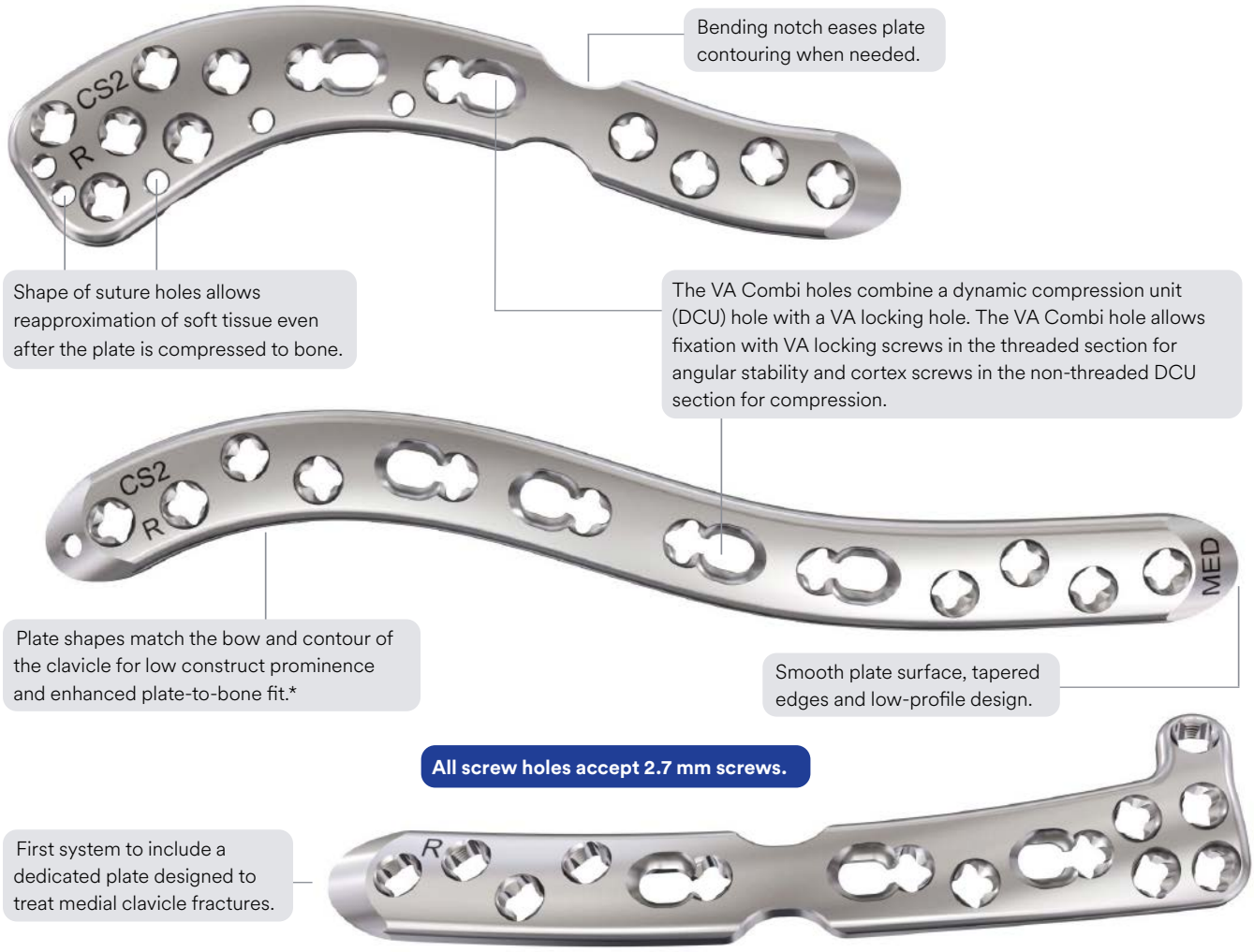
Image Intensifier Control

2.7 mm Variable Angle (VA) LCP® Clavicle Plate System

System Overview

Clavicle fractures can be treated non-operatively or operatively depending on the severity of the injury and involvement of surrounding soft tissue.[1] Literature shows that primary operative fixation provides more rapid return of function and minimizes early residual disability following fracture in patients with substantially displaced fractures compared to clavicle fractures treated non-operatively.[1] Additionally, the prevalence of symptomatic malunion and nonunion is significantly lower in patients treated with primary osteosynthesis.[1] However, in operatively treated clavicle fractures, poorly fitting clavicle plates were shown to cause implant induced irritation typically resulting in additional surgery to remove symptomatic hardware.[2]

The DePuy Synthes 2.7 mm VA LCP® Clavicle Plate System is designed to treat simple and complex fractures including malunions and nonunions with low construct prominence.



1. McKee MR, Whelan DB, Schemitsch EH, McKee MD. Operative versus nonoperative care of displaced midshaft clavicular fracture: a meta-analysis of randomized clinical trails. *J Bone Joint Surg Am*. 2012;94:675-684.

2. Vancleef S, Herteleer M, Carette Y, et al. Why off-the-shelf clavicle plates rarely fit: anatomic analysis of the clavicle through statistical shape modeling. *J Shoulder Elbow Surg*. 2019;28:631-638.

*Compared to Stryker VariAx 2 Clavicle System and Acumed Clavicle System. DePuy Synthes. Shape Verification Analyses. Windchill #0000290902, 0000295170, 0000290186, 2020.

Plate construct prominence is influenced by two variables: plate thickness and how well the plate fits the bow and curvature of the clavicle.[3] The VA LCP Clavicle Plate shapes are designed to accommodate the bow and curvature of the clavicle at corresponding fracture locations.[4] To achieve an enhanced plate-to-bone fit, a database of over 600 CT clavicle scans was used to develop the plate shapes, considering different clavicle sizes, genders, and ethnicities.[5] Furthermore, plate shapes are based on patient stature according to the shown correlation between patient height and clavicle length.[4]

Figure 1: Clavicle divided into fifths

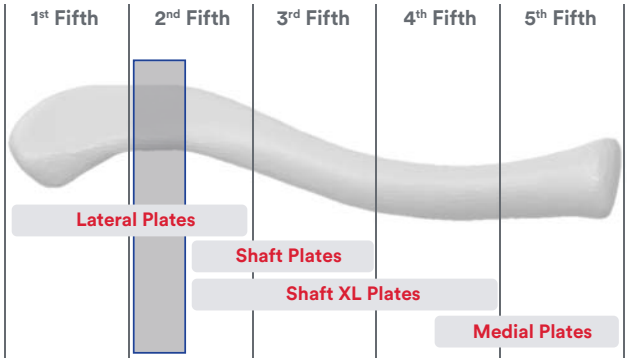


Plate Types

The system consists of three plate types: lateral, shaft, and medial. Each plate is available in left and right.

Zone for Lateral Plates

Fractures from the lateral clavicle end up to the medial end of the 2nd fifth.

Zone for Shaft Plates

Fractures medial to the coracoclavicular (CC) ligaments insertion up to the medial end of the 3rd fifth.

Zone for Shaft Plate Extra Long (XL)

Fractures medial to CC ligaments insertion up to the medial end of the 4th fifth.

Zone for Medial Plate

Fractures from the medial end of the clavicle, extending lateral, to the middle of the 4th fifth.

Plate Shapes

Lateral and shaft plates are available in different shapes

Lateral Plates	Shaft Plates	Medial Plate
CS1 Plate 	CS1 Plate 	
CS2 Plate 	CS2 Plate 	(available in one size)
CS3 Plate 	CS3 Plate 	
	XL Plate 	

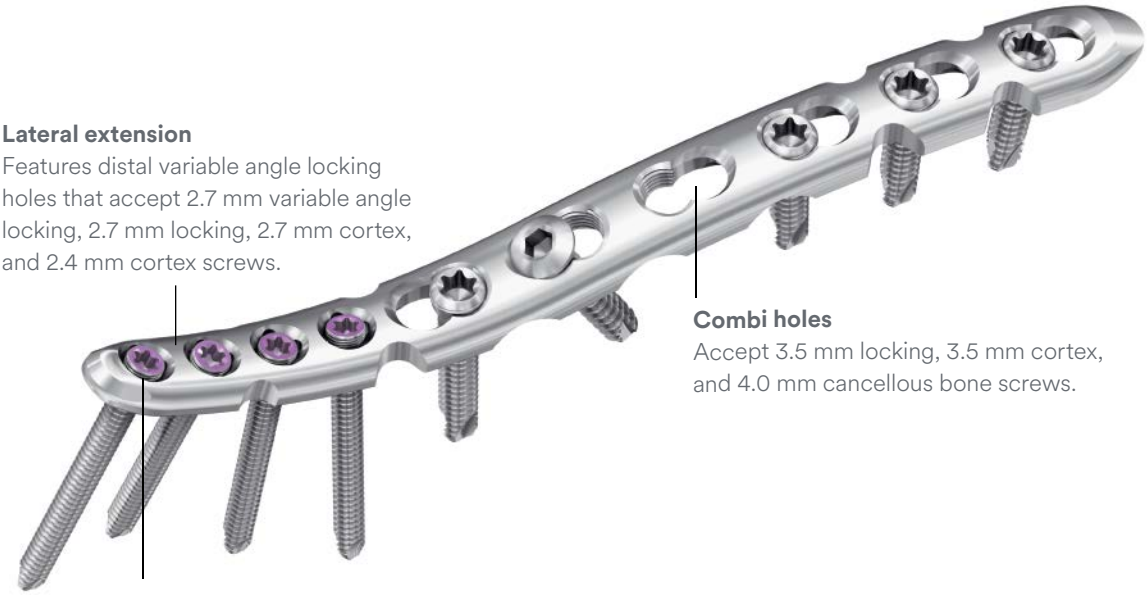
3. Design Verification Analyses – Shape and Prominence (Windchill #0000290186, 0000290902, 0000295170 and 0000290903, 2020).
4. DePuy Synthes. Shape Verification Analyses. Windchill #0000290902, 0000295170, 0000290186, 2020. DePuy Synthes. Fracture Coverage Analysis, Windchill #0000291576, 2020.
5. Engineering Memos – Morphology Analyses (Windchill #0000294539, 2020).

DePuy Synthes Clavicle Portfolio

DePuy Synthes offers a full portfolio of complementary plating systems for clavicle fractures and acromioclavicular (AC) joint injuries. In addition to the 2.7 mm VA LCP® Clavicle Plate system described in this surgical technique guide, DePuy Synthes offers the 2.7 mm/3.5 mm VA LCP® Anterior Clavicle Plates and the 2.7 mm VA LCP® Clavicle Hook Plate system.

VA LCP Anterior Clavicle Plates

- Plates designed to fit on the anterior aspect of the clavicle
- VA locking holes in the lateral portion of the plate allow for screw targeting of lateral bone fragments
- Combi holes allow fixation with locking screws in the threaded section for angular stability and with cortex screws in the DCU section for compression.



Lateral extension
Features distal variable angle locking holes that accept 2.7 mm variable angle locking, 2.7 mm locking, 2.7 mm cortex, and 2.4 mm cortex screws.

Combi holes
Accept 3.5 mm locking, 3.5 mm cortex, and 4.0 mm cancellous bone screws.

Variable angle screw holes
Recess for screwhead designed to minimize screw prominence to create a low-profile construct.

VA LCP Clavicle Hook Plate system

- Long and short hook plates to treat lateral clavicle fractures with associated AC ligament injuries
- Button hook plates designed to treat isolated ligamentous injuries of the AC joint
- Each plate is available in 3 hook depths
- Plates designed for low construct prominence and enhanced hook depths and angulations to fit subacromial space in a wide range of patients

For more information about these systems contact your DePuy Synthes sales consultant or access information online at https://www.depuysynthes.com.

Hook Plate, Long

Hook Plate, Short

Button Hook Plate

Available in 9 mm, 12 mm, and 15 mm hook depths

The AO Principles of Fracture Management

Mission

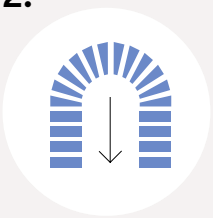
The AO's mission is promoting excellence in patient care and outcomes in trauma and musculoskeletal disorders.

AO Principles[6,7]

1.

Fracture reduction and fixation to restore anatomical relationships.

2.

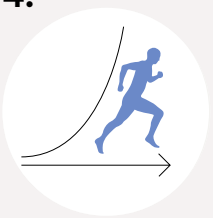


Fracture fixation providing absolute or relative stability, as required by the "personality" of the fracture, the patient, and the injury.

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.

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

Indications

The DePuy Synthes 2.7 mm VA LCP Clavicle Plate System is indicated for fixation of fractures, osteotomies, and nonunions of the clavicle in adults, and in both adolescents (12–18 years) and transitional adolescents (18–21 years), in which the clavicular growth plates have fused or in which the growth plates will not be crossed by the plate system.

▲ Contraindication:

The DePuy Synthes 2.7 mm VA LCP Clavicle Plate System is contraindicated for stable clavicle fractures, fixation of sternoclavicular joint, and systemic infection or infection localized to the site of the proposed implantation.

▲ Precaution:

The 2.7 mm VA LCP Clavicle Plates are designed for patients where the growth plates have fused or will not be crossed. The use of the clavicle plates in patients where the growth plates have not fused or will be crossed may result in premature closure of the physis and bone growth inhibition and therefore plates must be removed upon fracture healing.

Preparation

1. Preparation

Required Set	
01.133.273	Universal Small Fragment 2.7 mm VA LCP Clavicle Full Set
01.133.473	Ti Universal Small Fragment 2.7 mm VA LCP Clavicle Full Set

Patient Positioning

Patient positioning is based on surgeon preference. A supine position on a radiolucent operating table or a beach chair position with 30°–45° of tilt can be used to provide appropriate access to the clavicle.

A small roll or folded towel placed between the scapulae allows retraction of the shoulders and assists with reduction. The head of the patient should be turned away from the operative side and may be supported with a head rest. Prepare the entire upper extremity, the upper chest wall, and hemithorax. This includes the sternum and sternoclavicular articulation.

Anteroposterior and axial visualization of the clavicle with fluoroscopy is recommended. For medial fractures, position the c-arm perpendicular to the sternoclavicular joint. It is recommended to check access with the c-arm and take trial images prior to draping to ensure appropriate views can be obtained.

Approach

2. Approach

Determine the most appropriate incision length and location along the dotted line, based on the fracture pattern, fracture location and planned fixation method.

The medial, intermediate, and lateral supraclavicular nerves travel deep to the platysma then cross the clavicle, dividing into medial, intermediate, and lateral branches.[8] Subcutaneous dissection is performed carefully and permits identification of the supraclavicular sensory nerve branches. The major fibers of these nerves should be identified and protected with small vessel loops throughout the case.

Division of the platysma is performed carefully as the supraclavicular nerves may still be deep to the platysma depending on the cephalad level of the dissection. The platysma is carefully divided to expose the clavicle periosteum at the deltotrapezial fascia and the pectoralis origin. Dissection should be epiperiosteal to preserve the periosteum. Minimal periosteal dissection is carefully done to allow exposure of the fracture.

For medial fractures, elevate the sternocleidomastoid muscle.

▲ Precaution:

The periosteum of bone fragments must not be completely detached in order to preserve available bony blood supply thus enabling proper bone healing. It is critical not to strip any comminuted fragments.

Longitudinal incision

Vertical incision

8. Nathe T, Tseng S, Yoo B. The anatomy of the supraclavicular nerve during surgical approach to the clavicular shaft. *Clin Orthop Relat Res*. 2011;469(3):890-4.

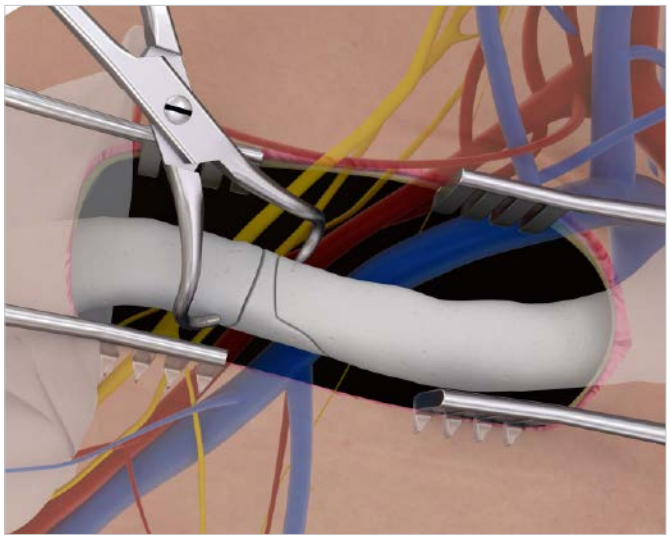
Reduce Fracture and Temporary Fixation

3. Reduce Fracture and Temporary Fixation

After fracture exposure, distract the two main fragments and restore the length of the clavicle. If the bone ends are angled or oblique, reduction with pointed or serrated reduction forceps is recommended. Normal length, axis angulation, and rotation should be restored. Any large comminuted fragments should also be reduced and temporarily held with small pointed bone clamps. Plan temporary fixation so that it does not interfere with placement of definitive fixation.

Additional options for maintaining reduction include:

- Continuous compression implants (see Continuous Compression Implant Brochure 103162-181126DSUS)
- Independent lag screws (see Universal Small Fragment Technique Guide USFSTG001)
- Lag screws through the plate (see Universal Small Fragment Technique Guide USFSTG001)
- Temporary K-wire fixation can be useful. If K-wires are employed be certain to protect all critical structures.



■ Option:

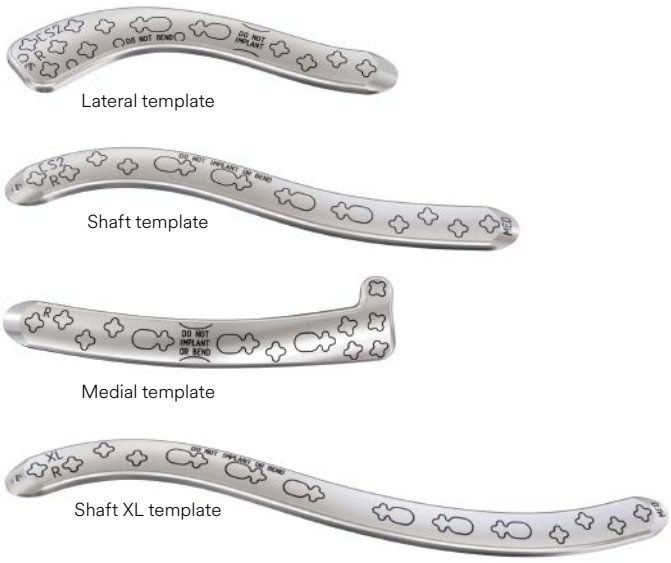
The plates can be used for biological, bridging osteosynthesis. With this technique, only the main fragments are reduced, and the actualfracture zone is not engaged with any screws.

Determine Plate Type and Shape

4. Determine Plate Type and Shape

Instruments

03.112.610– 03.112.615	Templates for 2.7 mm VA LCP Clavicle Plate, Lateral
03.112.620– 03.112.625	Templates for 2.7 mm VA LCP Clavicle Plate, Shaft
03.112.630– 03.112.631	Templates for 2.7 mm VA LCP Clavicle Plate, Medial
03.112.712– 03.112.713	Templates for 2.7 mm VA LCP Clavicle Plate, XL*

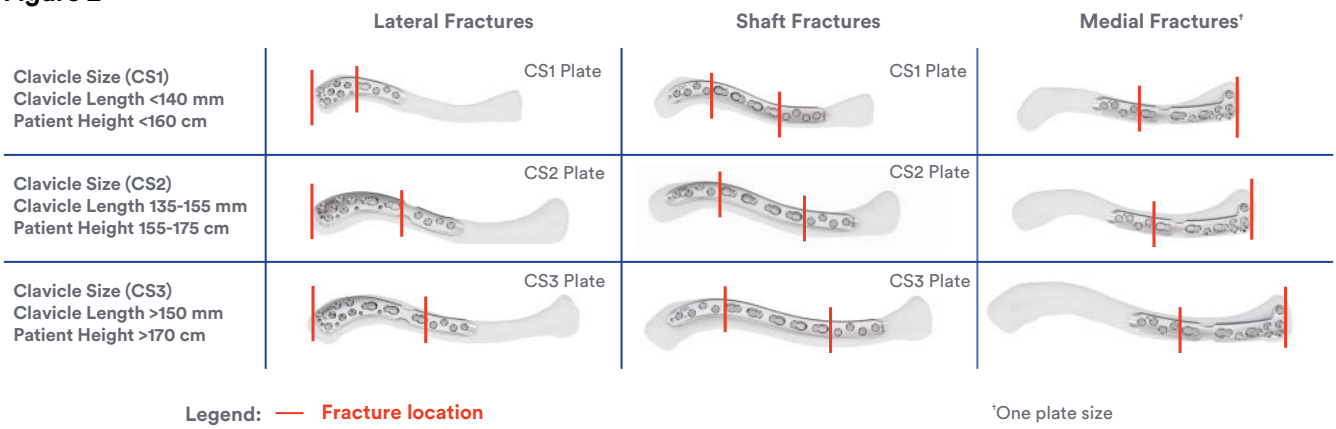


Use the templates to determine the appropriate plate type and shape.

Types: Plates are available in 3 different types: lateral, shaft, and medial. (Figure 2)

Shapes: Plate shapes match the bow and curvatures of the clavicle size at the corresponding fracture location.[9] Plate shapes are based on patient stature and clavicle size.[9] Lateral and shaft plate types are available in 3 sizes: CS1, CS2, and CS3. The medial plate is available in one size. (Figure 2)

Figure 2



*Corresponding plates available sterile only.

9. Fontana AD, Hoyen HA, Blauth M, et al. The variance of clavicle surface morphology is predictable: an analysis of dependent and independent metadata variables. *JSES Int.* https://doi.org/10.1016/j.jseint.2020.05.004

4. Determine Plate Type and Shape continued

Extended Shaft Fractures: For shaft fracture patterns that require a longer working length, the Shaft XL plate is designed to span from the lateral aspect to the medial aspect of a large size clavicle (clavicle size 3). For extended fractures, use a plate one size larger than the clavicle size. The shaft CS3 plate can be used to span from the lateral aspect to the medial aspect of a mid-size clavicle (clavicle size 2). The shaft CS2 plate can be used to span small size clavicles (clavicle size 1).(Figure 3)

The lateral and shaft templates and corresponding plates are designed to fit on the superior aspect of the clavicle. The medial end of the medial template and corresponding plate are designed to fit on the anterior aspect of the clavicle.

With the fractured bone segments in proper anatomic alignment, insert the template and assess if it fits the clavicle and is appropriate for fixation of the main fragments. The screw hole positions of the corresponding plate are marked on the template.

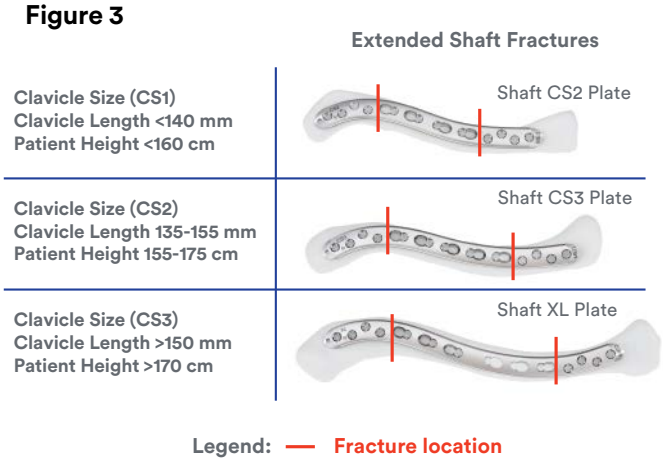
■ Important:

The recommended construct will achieve fixation with four 2.7 mm screws placed bicortically per main fracture fragment. For fractures in the medial clavicle, consider monocortical screw placement in the most medial screw holes to prevent perforation of neurovascular structures or the sternoclavicular joint.

Templates can be temporarily fixed to the bone using clamps or in the lateral clavicle by placing a K-wire (up to 2.0 mm) or compression wire through the hole in the template. Confirm reduction, template fit, planned screw positioning, and shoulder function. If needed use fluoroscopy.

If the surgical plan calls for axial dynamic compression, ensure that the template is positioned so there is at least one VA Combi hole in each main fragment.

Figure 3



4. Determine Plate Type and Shape continued

If the fracture pattern is simple and absolute stability can be achieved, a shorter plate may be selected. For complex fractures with an extensive area of comminution, a longer plate should be selected.

After confirmation of correct alignment and implant size, remove the template.

▲ Warning:

Avoid penetration of the vital neurovascular structures that lie posterior to the clavicle. Perforation of these structures with any instrument or fixation device can lead to major complications including death.

■ Technique tip:

To help determine the necessary amount of clavicular length to restore, prior to the patient being draped, measure the distance between the acromioclavicular joint and the sternoclavicular joint on the contralateral side and refer to Figure 2 on page 11. The template can also be placed on the contralateral clavicle to check length.

▲ Precaution:

Do not bend or implant the templates.

Select Plate Type and Shape

5. Select Plate Type and Shape

Select the plate type and shape that corresponds to the template that was used.

If templates were not used, select a plate type and shape based on the clavicle morphology and fracture location. See Figures 2 and 3 on pages 11 and 12 for plate options and instructions on sizing and positioning of the plate.

With the fractured bone segments in proper anatomic alignment, confirm that the plate fits the clavicle and is appropriate for fixation of the main fragments.

■ Note:

Plates are available in Stainless Steel and Titanium alloy.

Adapt Plate to Bone (Optional)

6. Adapt Plate to Bone (Optional)

Instruments	
03.133.200	Plate Bender Iron Closed
03.133.201	Plate Bender Iron Open
329.291	Bending Pliers

Check if the plate fit is satisfactory. Due to the high degree of variability of the clavicle shape and length, slight plate bending may be necessary.

In-Plane Bending: Use the bending pliers for in-plane bending. In-plane bending can only be performed with the lateral and medial plates at the bending notch. Insert the plate in the slots in the front of the plier jaws and center over the bending notch.

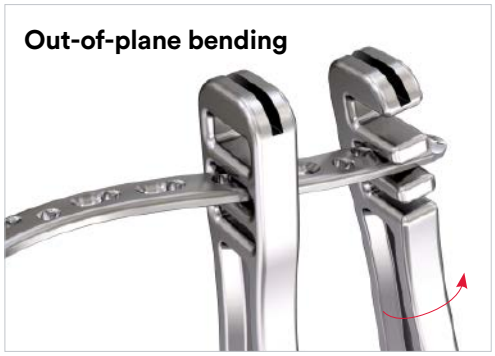
For additional leverage and control, loosen the adjustment screw on the bending pliers so that the handles are closer together. Make a series of small bends, threading the adjustment screw roughly one-half turn each time.

Out-of-Plane Bending: Use bending pliers or bending irons for out-of-plane bending. For bending irons, place the plate in the middle slot of the closed bending iron to hold the plate. Position the middle open bending iron slot at any location along the plate in order to bend that segment of the plate.

Plates may be contoured up to 10° in-plane or out-of-plane.

In-plane bending

Out-of-plane bending



6. Adapt Plate to Bone continued

Tab Bending: The bending pliers may also be used to adjust the tab on the medial plates.

Torsional Bending: Use bending irons for torsional bending, i.e., twisting. Place the plate in the middle slot of the closed bending iron to hold the plate. Position the middle open bending iron slot at any location along the plate and rotate the two irons.

Plates may be twisted up to 10°.

▲ Bending Precautions:

- Do not bend the plate more than 10° as it may impact the mechanical performance. Excessive bending may weaken the plate and lead to premature plate failure.
- Avoid reverse bending (i.e., bending and then straightening the plate) as it may compromise the strength of the plate or cause it to break.
- Do not make an acute bend directly over a screw hole as it may damage the thread or deform the screw hole. Check the VA portion of holes adjacent to the bending site with a variable angle drill guide after bending to ensure holes have not been deformed.
- Nominal screw angle is determined by plate design and screw length. If the plate is contoured and/or a screw longer than 40 mm is selected, take care to ensure that the screws do not collide with one another. The use of image intensification is recommended.

Correct handling

Correct handling of the implant is extremely important. If the shape of the implant must be altered, the device should not be bent sharply, bent backwards, notched, or scratched. Such manipulations, in addition to all other improper handling or use, can produce surface defects and/or concentrate stress in the core of the implant. This, in turn, may eventually cause the product to fail.

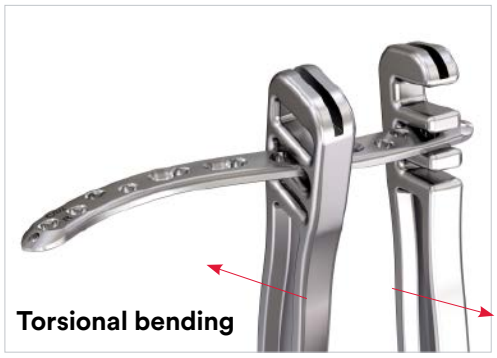
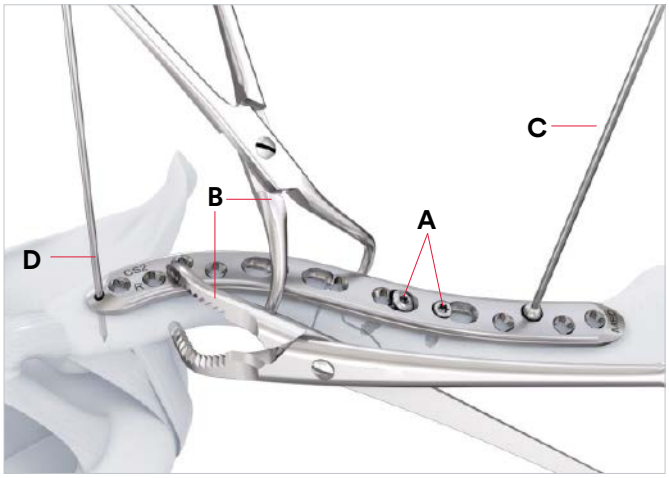


Plate Insertion and Temporary Fixation

7. Plate Insertion and Temporary Fixation

Instruments	
292.16	1.6 mm K-wire with trocar point 150 mm
03.211.410	1.6 mm Compression Wire 10 mm Thread
03.211.415	1.6 mm Compression Wire 15 mm Thread



Position the plate on the reduced bone and attach it temporarily using any of the following techniques:

A. Cortex screw or metaphyseal screw
B. Reduction forceps/serrated clamps
C. Compression wire
D. K-wire

It is important to center the compression wire within the plate holes to minimize shifting of the plate position as the wire pulls the plate to the bone.

A K-wire up to 2.0 mm can be inserted in the lateral suture hole or K-wire hole as a reference to visualize the lateral aspect of the clavicle and aid in proper plate placement.

▲ Warning:

Avoid penetration of the vital neurovascular structures that lie posterior to the clavicle. Perforation of these structures with any instrument or fixation device can lead to major complications including death.

After plate insertion, confirm fit and alignment of the bone using fluoroscopy.

■ Technique tip:

The suture holes on the lateral plate (see page 30) are designed with an undercut to allow for suture needle passage. However, depending on the individual patient's anatomy, the undercut may be blocked and no needle passage possible. In this case, insert the suture through the suture holes before starting with final plate fixation.

Screw Configuration

8. Screw Configuration

All screw holes in the VA LCP Clavicle Plates accept 2.7 mm screws.

■ Important:

The recommended construct will achieve fixation with four 2.7 mm screws placed bicortically per main fracture fragment. For fractures in the medial clavicle, consider monocortical screw placement in the most medial screw holes to prevent perforation of neurovascular structures or the sternoclavicular joint.

Determine the combination of 2.7 mm screws required for fixation. Any of the screws listed on the reference chart can be used with the corresponding instrumentation.

When planning screw location and length, consider screw collision and over-penetration.

■ Important:

If a combination of VA locking, cortex, or metaphyseal screws will be used, it is recommended to insert cortex or metaphyseal screws first, next to the fracture. This will pull the plate to the bone to ensure that the plate sits flush on the clavicle and enhance construct stability, especially in configurations where a high implant load is expected.

▲ Warning:

Avoid penetration of the vital neurovascular structures that lie posterior to the clavicle. Perforation of these structures with any instrument or fixation device can lead to major complications including death.

Screw Reference Chart				
Screw Size (mm)	**Screw Type**	**Drill Bit (mm)**	**Torque Limit (Nm)**	**Driver Options**
2.7	Variable Angle Locking	2.0	1.2	T8
	Metaphyseal		Do Not Use	T8
	Cortex		Do Not Use	T8

Screw direction at nominal angle

Lateral Plate

Shaft Plate

Medial Plate

8. Screw Configuration continued

Cortex Screws

Cortex screws can be used in the non-threaded DCU portion of the VA Combi hole (1) (Figure 4) in the neutral/centered position or in the eccentric position for compression. Cortex screws can be used in VA locking hole (2) in the nominal position only. If a cortex screw is placed in a VA locking hole, it cannot be placed in an eccentric position and the screw head will not sit flush with the plate surface.

VA Locking Screws

VA locking screws can be used in VA locking holes (2) (Figure 4) at either a nominal angle or at variable angles (Figure 5). VA locking screws can also be used in the threaded portion of VA Combi holes. VA locking screws should not be used in the non-threaded DCU portion of VA Combi holes.

Metaphyseal Screws

Metaphyseal screws provide compression with a low-profile screw head that sits flush with the plate. Metaphyseal screws have the same screw shaft thread as the VA locking screws and can be used in VA locking holes (2) (Figure 4) and the threaded portion of VA Combi holes (1) at the nominal angle. They cannot be used in the non-threaded DCU portion of VA Combi holes.

■ Note:

2.7 mm standard locking screws are not compatible with the VA locking holes of the DePuy Synthes 2.7 mm VA LCP Clavicle Plate System.

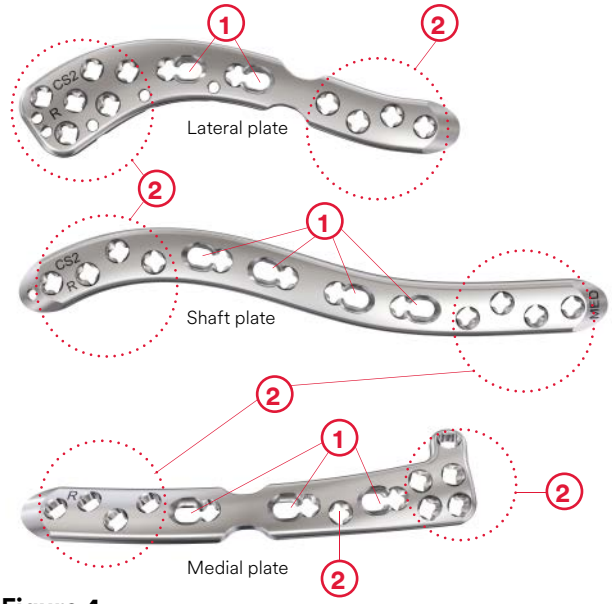
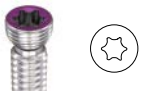


Figure 4

Figure 5: VA locking screw +/-15° of angulation

8. Screw Configuration continued

<table>
<tr><th rowspan="2">Screw Type</th><th rowspan="2">Plate Hole Type</th><th colspan="3">Application Options</th><th colspan="2">Drill Sleeve</th><th rowspan="2">Torque Limiter</th></tr>
<tr><th>Angulation</th><th>Reduction Plate to Bone</th><th>DCU Options</th><th>Universal Small Fragment</th><th>Additional</th></tr>
<tr><td rowspan="3">Variable Angle Locking
  </td><td>VA Locking in VA Combi hole
  </td><td>Variable</td><td>No</td><td>No</td><td>03.133.007
Variable Angle Drill Guide
  </td><td>03.211.002*
Universal Variable Angle Locking Drill Guide
  </td><td rowspan="2">03.110.002
Torque Limiting Attachment 1.2 Nm
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Threaded Guide
  </td><td>03.211.002*
Universal Variable Angle Locking Drill Guide
 
03.211.004
Variable Angle Locking Drill Guide
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  </td><td>VA Locking in VA Combi hole
 
VA Locking
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Threaded Guide
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Universal Variable Angle Locking Drill Guide
 
03.211.004
Variable Angle Locking Drill Guide
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Non-Locking Drill Guide
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Universal Drill Guide 2.7
  </td><td rowspan="3">Do not use
  </td></tr>
<tr><td>Yes</td><td>Neutral

No compression</td><td>03.133.006
Non-Locking Drill Guide
+
03.133.005
Neutral Sleeve Adapter
+
  </td></tr>
<tr><td>VA Locking
  </td><td>No</td><td>Yes</td><td>No</td><td>03.133.008
Threaded Guide
  </td><td>03.211.004
Variable Angle Locking Drill Guide
  </td></tr>
</table>

*Also available. Not included in set 01.133.273/01.133.473. Not all 2.7 mm VA compatible instruments shown in this table.

Screw Insertion – 2.7 mm Cortex Screws

9. Screw Insertion – 2.7 mm Cortex Screws

Screw Hole Preparation

Instruments

03.133.005	2.7 mm Neutral Sleeve Adaptor
03.133.006	2.7 mm Non-Locking Drill Guide
03.133.100*	2.0 mm Drill Bit/Quick Coupling 110 mm, 30 mm Calibration
323.26†	2.7 mm Universal Drill Guide
310.534†‡	2.0 mm Drill Bit with Depth Mark/110 mm
323.062†‡	2.0 mm Drill Bit with Depth Mark/140 mm

For neutral/centered screw placement (Figure 6), thread the 2.7 mm neutral sleeve adaptor onto the 2.0 mm end of the 2.7 mm non-locking drill guide. Place the drill guide tip in the center of the DCU screw hole. Compression will not occur across the fracture.

Dynamic compression can be achieved by eccentric insertion of a cortex screw. To drill a hole for dynamic compression using a 2.7 mm cortex screw, do not use the neutral sleeve adapter. Place the 2.0 mm end of the drill guide tip eccentrically at the edge of the DCU portion of the screw hole away from the fracture (Figure 7). Compression will occur as the cortex screw is tightened and the screw head slides across the compression hole.

Use the 2.0 mm drill bit to drill to the desired depth. The 2.0 mm drill bits are calibrated so the depth measurements can be read directly from the drill bit shaft (Figure 8).

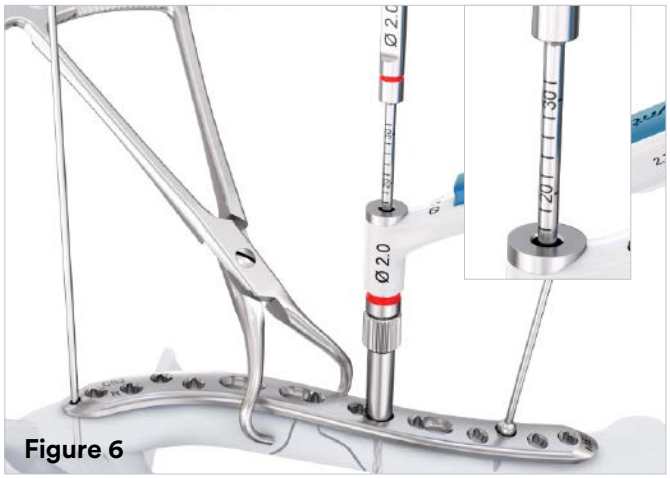


Figure 6

Figure 7

Figure 8

*For use with 03.133.006/323.26.

†Additionally available instruments.

‡For use with 323.26.

9. Screw Insertion – 2.7 mm Cortex Screws continued

■ Note:

Irrigate and apply suction for removal of debris potentially generated during implantation and to avoid heat generation during drilling.

▲ Warning:

Avoid penetration of the vital neurovascular structures that lie posterior to the clavicle. Perforation of these structures with any instrument or fixation device can lead to major complications including death.

Hole Depth Measurement

Instruments

03.111.005	Depth Gauge for 2.0–2.7 mm Screws
03.133.080	2.7/3.5 mm Depth Gauge, 0–60 mm

After drilling and removing the drill guide, insert the depth gauge tip through the drilled hole and measure. For bi-cortical measuring, insert the depth gauge tip through both cortices and hook onto the far cortical bone.

Using the depth gauge for 2.0–2.7 mm screws (03.111.005), slide the black portion of the gauge toward the bone until it stops. Length is read from the line marked on the silver slider.

Using the 2.7/3.5 mm depth gauge (03.133.080), pull the knob up until it stops. Depth marks are provided on both sides and length is read from the top edge of the metal sleeve.

9. Screw Insertion – 2.7 mm Cortex Screws continued

Screw Insertion

Instruments	
03.133.150	Universal Screwdriver Handle
314.467	StarDrive Screwdriver Shaft/T8/105 mm
314.453	StarDrive Screwdriver Shaft/T8/55 mm
311.26*	Tap for 2.7 mm Cortex Screws, 100 mm

To manually insert a cortex screw, attach the T8 StarDrive screwdriver shaft onto the Universal Screwdriver Handle (03.133.150). Insert the screwdriver (314.467) tip into the recess of the desired screw to retrieve it from the screw caddy. Advance the screw into the screw hole until it is fully seated in the plate. Cortex screws can also be inserted using power.

■ Optional Technique:

If inserting screws into very dense bone, use taps after drilling to facilitate screw insertion.

*Additionally available instruments.

Screw Insertion – 2.7 mm VA Locking Screws and Metaphyseal Screws

10. Screw Insertion – 2.7 mm VA Locking Screws and Metaphyseal Screws

Screw Hole Preparation

Instruments – Nominal Angle Drilling

03.133.008	2.0 mm Threaded Drill Guide (Figure 9)
03.211.004	2.0 mm Variable Angle Locking Drill Guide/Coaxial (Figure 10)
03.133.100*	2.0 mm Drill Bit/Quick Coupling 110 mm, 30 mm Calibration
314.467	StarDrive Screwdriver Shaft/T8/150 mm
314.453	StarDrive Screwdriver Shaft/T8/55 mm
03.211.002†	2.0 mm Universal Variable Angle Locking Drill Guide (nominal angle side)
310.534†‡	2.0 mm Drill Bit with Depth Mark/110 mm
323.062†‡	2.0 mm Drill Bit with Depth Mark/140 mm

Nominal angle drilling

Screw the 2.0 mm threaded guide into the screw hole, perpendicular to the plate, until fully seated (Figure 9). To ease threading, engage the drill guide with the screw hole by making a quarter turn counterclockwise until the starting thread of the drill guide engage the threads of the screw hole. Turn clockwise once the threads are fully engaged.

The T8 StarDrive screwdriver shaft may be used to help insert the threaded drill guide into the screw holes. Insert the screwdriver shaft into the back of the threaded drill guide and rotate.

The nominal angle of each screw hole is determined by the plate design. Cortex screw heads will not be flush with the plate when inserted in a locking hole. To reduce the screw head protrusion, a low-profile Metaphyseal screw may be used at a nominal angle.

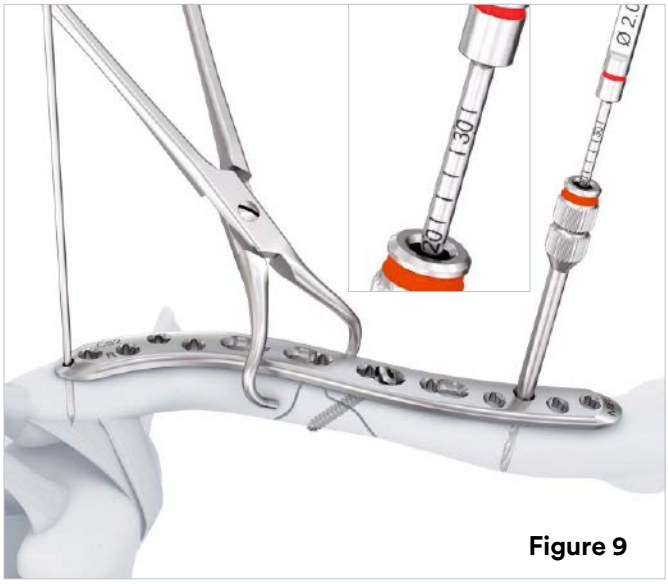


Figure 9

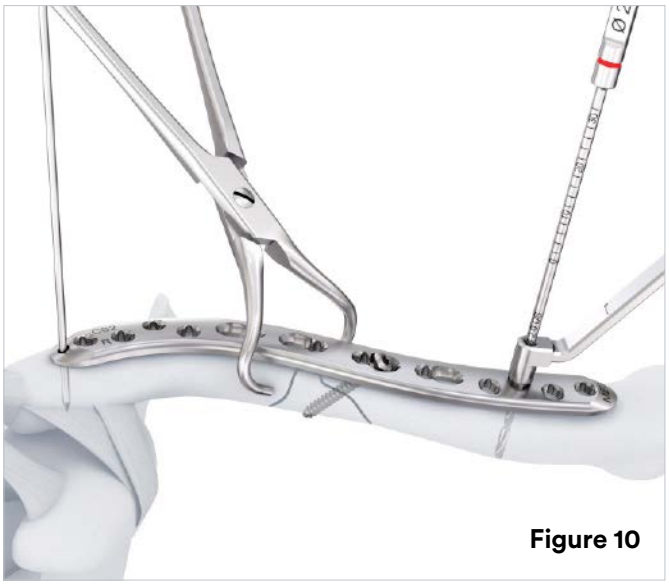


Figure 10

*For use with 03.133.008 or 03.211.004. Depth marks on drill bit do not correspond to drill guide 03.211.004.

†Additionally available instruments.

‡For use with 03.211.002. Mates with scale on 03.211.002.

10. Screw Insertion – 2.7 mm VA Locking Screws and Metaphyseal Screws continued

Use the 2.0 mm drill bit to drill to the desired depth. Drill bit (03.133.100) is calibrated so that depth measurements can be read directly from the drill bit shaft when used with the corresponding drill guide (03.133.008) (Figure 9).

▲ Precaution:

Nominal screw angle is determined by plate design and screw length. If the plate is contoured and/or a screw longer than 40 mm is selected, take care to ensure that screws do not collide with one another. The use of image intensification is recommended.

■ Note:

Irrigate and apply suction for removal of debris potentially generated during implantation and to avoid heat generation during drilling.

▲ Warning:

Avoid penetration of the vital neurovascular structures that lie posterior to the clavicle. Perforation of these structures with any instrument or fixation device can lead to major complications including death.

10. Screw Insertion – 2.7 mm VA Locking Screws and Metaphyseal Screws continued

Instruments – Variable Angle Drilling (VA locking screws only)

03.133.007	2.7 mm Variable Angle Drill Guide
03.133.100*	2.0 mm Drill Bit/Quick Coupling 110 mm, 30 mm Calibration
03.211.002†	2.0 mm Universal Variable Angle Locking Drill Guide (VA side)
310.534†‡	2.0 mm Drill Bit with Depth Mark/110 mm
323.062†‡	2.0 mm Drill Bit with Depth Mark/140 mm

Variable angle drilling (VA locking screws only)

Insert the desired VA drill guide into the VA locking screw hole. The VA drill guide features a VA cone on one side and a VA spherical tip on the other side.

When using the cone end of the drill guide, press firmly to ensure the drill guide tip keys securely into the cloverleaf portion of the VA locking screw hole. The notches on top of the cone are visual markers for the drill guide tip orientation. The cone will provide +/-15° of angulation.

When using the spherical tip end for freehand drilling, gently press the instrument into the VA hole. The lip portion of the spherical tip end engages with the VA locking hole to provide tactile feedback of the angulation. Continue to provide light pressure while holding the drill guide at the desired angle. The spherical tip end of the drill guide provides freedom to choose angulation. To ensure a precise 15° angulation, use the cone end of the Variable Angle Drill Guide.

■ Reminder:

Metaphyseal screws can only be inserted in VA locking holes at the nominal angle.

*For use with 03.133.007. Depth marks on drill bit do not indicate screw length in cone drill guide.

†Additionally available instruments.

‡For use with 03.211.002. Mates with scale on 03.211.002.

10. Screw Insertion – 2.7 mm VA Locking Screws and Metaphyseal Screws continued

▲ Precaution:

Verify the drill bit angle under image intensification to ensure the desired angle has been achieved. Drilling consecutive screw holes off-axis can cause screws to collide.

■ Note:

Irrigate and apply suction for removal of debris potentially generated during implantation and to avoid heat generation during drilling.

▲ Warning:

Avoid penetration of the vital neurovascular structures that lie posterior to the clavicle. Perforation of these structures with any instrument or fixation device can lead to major complications including death.

Hole Depth Measurement

Instruments	
03.111.005	Depth Gauge for 2.0–2.7 mm Screws
03.133.080	2.7/3.5 mm Depth Gauge, 0–60 mm

See Hole Depth Measurement section on page 22 for instructions on how to measure screw hole depth.

■ Important:

If using the 2.7/3.5 mm depth gauge (03.133.080) for 2.7 mm VA locking screws, subtract 2 mm from the indicated length on the depth gauge to obtain the correct screw length. The depth gauge for 2.0–2.7 mm screws (03.111.005) does not require subtraction from the reading.

10. Screw Insertion – 2.7 mm VA Locking Screws and Metaphyseal Screws continued

Screw Insertion

Instruments	
03.133.150	Universal Screwdriver Handle
03.110.002	Torque Limiting Attachment 1.2 Nm
314.467	StarDrive Screwdriver Shaft/T8 105 mm
03.111.906*	Tap for 2.7 mm Locking Screws, 100 mm

Instruments for shorter screwdriver construct with torque limiting attachment	
03.110.005	Handle for Torque Limiting Attachment
03.110.002	Torque Limiting Attachment 1.2 Nm
314.453	StarDrive Screwdriver Shaft/T8/55 mm

To manually insert a VA locking screw, attach the 1.2 Nm torque limiting attachment (TLA) onto the universal screwdriver handle. Insert the screwdriver shaft tip into the recess of the desired screw to retrieve it from the screw caddy. Advance the screw into the screw hole.

▲ Precaution:

Nominal screw angle is determined by plate design and screw length. If the plate is contoured and/or a screw longer than 40 mm is selected, take care to ensure that screws do not collide with one another. The use of image intensification is recommended.

*Additionally available instruments.

10. Screw Insertion – 2.7 mm VA Locking Screws and Metaphyseal Screws continued

Screw Insertion continued

Advance the screw and lock it in the plate. The TLA will provide an audible click once torque value is reached indicating that the screw is seated and locked.

To insert under power, use the T8 StarDrive screwdriver shaft attached to the 1.2 Nm TLA. Confirm screw position and length prior to final tightening. Final tightening must be done manually or at a low speed using the 1.2 Nm TLA.

■ Optional Technique:

If inserting screws into very dense bone, use taps after drilling to facilitate screw insertion.

■ Note:

VA locking screws will not be flush with the plate unless placed at a nominal angle.

▲ Precautions:

- Always use a 1.2 Nm torque limiting attachment (TLA) when inserting VA locking screws.
- Do not lock screws using power tools without the 1.2 Nm TLA or at high speeds as this may damage the screwdriver and cause the screw head to strip, making it difficult to remove the implant.

Soft Tissue Attachment (Optional)

11. Soft Tissue Attachment (optional)

Lateral plates have suture holes on the lateral and anterior aspects of the plate to reattach ruptured ligaments or muscles if necessary.

Pass suture through the holes on the anterior side to attach the anterior part of the deltoid. Pass suture through the holes on the lateral side to attach the superior acromioclavicular ligament or other soft tissue structures. For added stability use multiple suture holes.

Taper point suture needles sized 26 mm ½ C radius are recommended. Search Ethicon Wound Closure Resource Center for applicable suture options.

■ Note:

Use suture holes to reattach deltoid and accomplish deltoid stabilization. For added stability use multiple suture holes.

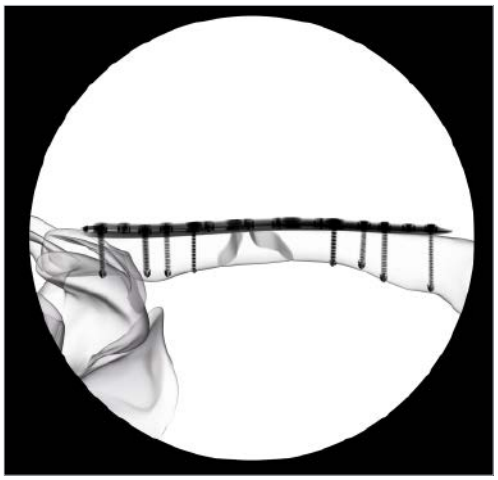
■ Technique tip:

The suture holes are designed with an undercut to allow for suture needle passage. However, depending on the individual patient's anatomy, the undercut may be blocked and no needle passage possible. In this case, insert the suture through the suture holes before starting with final plate fixation (see page 17).

Reduction and Fixation Confirmation

12. Reduction and Fixation Confirmation

Carefully assess the final reduction and fixation by both direct visualization and image intensification. Inspect the construct by rechecking each screw before closing to verify that the screws are secure. AP and additional views, using fluoroscopic visualization, can be used to confirm reduction and appropriate positioning of plate and screws. Confirm full range of motion of the shoulder and stability of the fixation.



■ Note:

VA locking screw will not be flush with the plate unless placed at a nominal angle. Cortex screw heads will not be flush with the plate when inserted into VA locking holes.

Surgical Closure

13. Surgical Closure

Thoroughly irrigate the wound prior to closure. A careful layered closure should be performed. The trapezial-deltoid fascia can often be approximated over the plate. The platysma and the subcutaneous tissue should be closed as separate layers.

Implant Removal (Optional)

Implant Removal (optional)

Instruments	
03.133.150	Universal Screwdriver Handle
314.467	StarDrive Screwdriver Shaft/T8
Optional Set	
01.240.001	Screw Removal Set

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 the screws cannot be removed with the screwdriver, insert the conical extraction screw with left-handed thread into the screw head using the handle with quick coupling, and loosen the locking screw by turning it counterclockwise.

For additional instructions on screw removal consult the Screw Removal Technique Guide DSUS/TRM/1016/1197.

▲ Precautions:

- Do not use the torque limiting attachment for screw removal.
- The 2.7 mm VA LCP Clavicle Plates are designed for patients where the growth plates have fused or will not be crossed. The use of the clavicle plates in patients where the growth plates have not fused or will be crossed may result in premature closure of the physis and bone growth inhibition and therefore plates must be removed upon fracture healing.

Implants

2.7 mm VA LCP Clavicle Plates*

Stainless Steel	Titanium	Plate Type	Plate Size	Left/ Right
02.112.610	04.112.610	Lateral	CS1	Left
02.112.611	04.112.611	Lateral	CS1	Right
02.112.612	04.112.612	Lateral	CS2	Left
02.112.613	04.112.613	Lateral	CS2	Right (shown)
02.112.614	04.112.614	Lateral	CS3	Left
02.112.615	04.112.615	Lateral	CS3	Right
02.112.620	04.112.620	Shaft	CS1	Left
02.112.621	04.112.621	Shaft	CS1	Right
02.112.622	04.112.622	Shaft	CS2	Left
02.112.623	04.112.623	Shaft	CS2	Right (shown)
02.112.624	04.112.624	Shaft	CS3	Left
02.112.625	04.112.625	Shaft	CS3	Right
02.112.630	04.112.630	Medial	N/A	Left
02.112.631	04.112.631	Medial	N/A	Right (shown)
02.112.712S†	04.112.712S	Shaft	XL	Left
02.112.713S†	04.112.713S	Shaft	XL	Right (shown)

Lateral Plate

Shaft Plate

Medial Plate


Shaft XL Plate

*Implants available non-sterile and sterile packed. Add "S" to the article number to order sterile products.

†Available sterile only.

2.7 mm Variable Angle Locking Screws*

02.211.010–
02.211.040
2.7 mm Variable Angle Locking Screw
Self-tapping, StarDrive recess, Stainless steel
Available in 10 mm–40 mm lengths, in
2 mm increments

04.211.010–
04.211.040
2.7 mm Variable Angle Locking Screw
Self-tapping, StarDrive recess, Titanium alloy
Available in 10 mm–40 mm lengths, in
2 mm increments

For use in VA locking holes and the threaded portion of VA Combi holes.

2.7 mm Cortex Screws*

202.870–
202.900
2.7 mm Cortex Screw, Self-tapping
StarDrive recess, Stainless steel
Available in 10 mm–40 mm lengths, in
2 mm increments

402.870–
402.900
2.7 mm Cortex Screw, Self-tapping
StarDrive recess, Titanium alloy
Available in 10 mm–40 mm lengths, in
2 mm increments

For use in the non-threaded portion of VA Combi screw holes. If used in VA locking holes the screw head will not sit flush with the plate surface.

2.7 mm Metaphyseal Screws*

02.118.510–
02.118.540
2.7 mm Metaphyseal Screw, Self-tapping
T8 StarDrive recess, Stainless steel
Available in 10 mm–40 mm lengths, in
2 mm increments

04.118.510–
04.118.540
2.7 mm Metaphyseal Screw, Self-tapping
T8 StarDrive recess, Titanium alloy
Available in 10 mm–40 mm lengths, in
2 mm increments

For use in VA locking holes and the threaded portion of VA Combi holes at the nominal angle. They cannot be used in the non-threaded portion of VA Combi holes.

*Screws available non-sterile and sterile packed.
Add “S” to the article number to order sterile products.

Templates

Templates for 2.7 mm VA LCP Clavicle Plates*

Stainless Steel	Plate Type	Plate Size	Left/Right
03.112.610	Lateral	CS1	Left
03.112.611	Lateral	CS1	Right
03.112.612	Lateral	CS2	Left
03.112.613	Lateral	CS2	Right (shown)
03.112.614	Lateral	CS3	Left
03.112.615	Lateral	CS3	Right
03.112.620	Shaft	CS1	Left
03.112.621	Shaft	CS1	Right
03.112.622	Shaft	CS2	Left
03.112.623	Shaft	CS2	Right (shown)
03.112.624	Shaft	CS3	Left
03.112.625	Shaft	CS3	Right
03.112.630	Medial	N/A	Left
03.112.631	Medial	N/A	Right (shown)
03.112.712	Shaft	XL	Left
03.112.713	Shaft	XL	Right (shown)

Lateral Template

Shaft Template

Medial Template

Shaft XL Template

*Templates available non-sterile only.

Instruments

03.110.002	Torque Limiting Attachment 1.2 Nm	
03.110.005	Handle for Torque Limiting Attachment	
03.111.005	Depth Gauge for 2.0 mm/2.4 mm and 2.7 mm Screws	
03.133.005	2.7 mm Neutral Sleeve Adapter, F/2.7 Non-Locking Drill Guide	
03.133.006	2.7 mm Non-Locking Drill Guide	
03.133.007	2.7 mm VA Drill Guide	
03.133.008	2.0 mm Threaded Guide F/2.7 mm Screws, VA and LCP	
03.133.080	2.7/3.5 mm Depth Gauge 0–60 mm	

03.133.100	2.0 mm Drill Bit/QC 110 mm 30 mm Calibration	
03.133.101	2.0 mm Drill Bit/QC 140 mm 60 mm Calibration	
03.133.150	Universal Screwdriver Handle	
03.133.200	Plate Bender Irons/Closed, F/2.7/3.5 mm Plates	
03.133.201	Plate Bender Irons/Open, F/2.7/3.5 mm Plates	
03.211.004	2.0 mm Variable Angle Locking Drill Guide/Coaxial	
03.211.410	1.6 mm Compression Wire 10 mm Thread/150 mm Length	
03.211.415	1.6 mm Compression Wire 15 mm Thread/150 mm Length	

292.16	1.6 mm Kirschner Wire w/Trocar Point, 150 mm	
292.20	2.0 mm Kirschner Wire w/Trocar Point, 150 mm	
314.467	StarDrive Screwdriver Shaft/T8/105 mm	
314.453	StarDrive Screwdriver Shaft/T8/55 mm	
329.291	Bending Pliers	

Also Available

03.111.906	Tap for 2.7 mm Locking Screw 100 mm/33 mm	
03.211.002	2.0 mm Universal Variable Angle Locking Drill Guide	
310.534	2.0 mm Drill Bit with Depth Mark QC/110 mm	
311.26	Tap for 2.7 mm Cortex Screws 100 mm	
323.062	2.0 mm Drill Bit with Depth Mark QC/140 mm	
323.26	2.7 mm Universal Drill Guide	

MRI Safety Information

Implants

Non-clinical testing has demonstrated the DePuy Synthes 2.7 mm VA LCP Clavicle Plate System is MR Conditional. A patient with this device can be safely scanned in an MR system meeting the following conditions:

- Static magnetic field of 1.5 Tesla or 3.0 Tesla transmit quadrature-drive coil only
- Maximum spatial field gradient of 2000 gauss/cm (20T/m) for 1.5 Tesla or 3.0 Tesla
- Maximum MR system reported, whole-body averaged specific absorption rate (SAR) of 2W/kg (Normal Operating Mode)

Under the scan conditions defined above the DePuy Synthes 2.7 mm VA LCP Clavicle Plate System is estimated to heat surrounding tissue by 4° C during 15 minutes of continuous scanning.

In non-clinical testing, the image artifact caused by the device extends approximately 138 mm from the DePuy Synthes 2.7 mm VA LCP Clavicle Plate System when imaged with a gradient echo pulse sequence and a 3.0T MRI system.

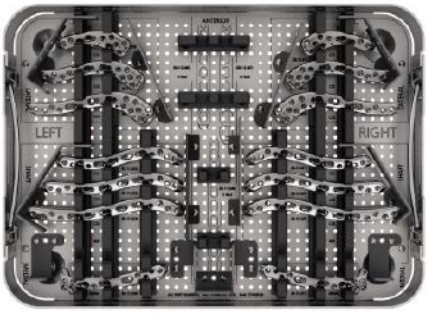
Instruments (including templates)

MR Safety Information is not applicable to instruments. Instruments are not intended to be used in an MR environment.

Universal SF VA LCP Clavicle Implant Set
01.133.270 (Stainless Steel)
01.133.470 (Titanium)

Graphic Cases

60.133.145	Universal Small Fragment VA LCP® Clavicle Anatomy Tray
60.133.110	Tray Lid, 2/3



Implants

2.7 mm VA LCP® Clavicle Plates

Stainless Steel	Titanium	Plate Type	Plate Size	Left/ Right
02.112.610	04.112.610	Lateral	CS1	Left
02.112.611	04.112.611	Lateral	CS1	Right
02.112.612	04.112.612	Lateral	CS2	Left
02.112.613	04.112.613	Lateral	CS2	Right
02.112.614	04.112.614	Lateral	CS3	Left
02.112.615	04.112.615	Lateral	CS3	Right
02.112.620	04.112.620	Shaft	CS1	Left
02.112.621	04.112.621	Shaft	CS1	Right
02.112.622	04.112.622	Shaft	CS2	Left
02.112.623	04.112.623	Shaft	CS2	Right
02.112.624	04.112.624	Shaft	CS3	Left
02.112.625	04.112.625	Shaft	CS3	Right
02.112.630	04.112.630	Medial	N/A	Left
02.112.631	04.112.631	Medial	N/A	Right

Universal SF VA LCP Clavicle Full Set
01.133.273 (Stainless Steel)
01.133.473 (Titanium)

Graphic Cases

60.133.000	Outer Case Lid 3/3 Width
60.133.003	Outer Case 3 High 3/3 Width
60.133.100	Universal SF Insertion Tray
60.133.130	Universal SF Reduction Tray
60.133.145	Universal Small Fragment VA LCP Clavicle Anatomy Tray
60.133.150	Universal SF Screw Rack
60.133.190	Universal Small Fragment VA Clavicle Instrument Tray

Length Marker Push Pins

	Length		Length
60.116.310	10 mm	60.116.324	24 mm
60.116.312	12 mm	60.116.326	26 mm
60.116.314	14 mm	60.116.328	28 mm
60.116.316	16 mm	60.116.330	30 mm
60.116.318	18 mm	60.116.332	32 mm
60.116.320	20 mm	60.116.334	34 mm
60.116.322	22 mm	60.116.336	36 mm

60.116.451	Blank Push Pin for 2.7 mm Holes
60.116.452	Screw Type Push Pin/Blank
60.116.507	Screw Type Push Pin/Cortex
60.116.513	Screw Type Push Pin/Locking
60.116.521	Screw Type Push Pin/VA Locking
60.116.527	Screw Type Push Pin/Metaphyseal
60.133.191	VA Clavicle Label Sheet

Implants

2.7 mm VA LCP Clavicle Plate

Stainless Steel	Titanium	Plate Type	Plate Size	Left/ Right
02.112.610	04.112.610	Lateral	CS1	Left
02.112.611	04.112.611	Lateral	CS1	Right
02.112.612	04.112.612	Lateral	CS2	Left
02.112.613	04.112.613	Lateral	CS2	Right
02.112.614	04.112.614	Lateral	CS3	Left
02.112.615	04.112.615	Lateral	CS3	Right
02.112.620	04.112.620	Shaft	CS1	Left
02.112.621	04.112.621	Shaft	CS1	Right
02.112.622	04.112.622	Shaft	CS2	Left
02.112.623	04.112.623	Shaft	CS2	Right
02.112.624	04.112.624	Shaft	CS3	Left
02.112.625	04.112.625	Shaft	CS3	Right
02.112.630	04.112.630	Medial	N/A	Left
02.112.631	04.112.631	Medial	N/A	Right

2.7 mm VA Lckng Screw Slf-Tpng With T8 Stardrive Recess

	Length		Length
02.211.010	10 mm	02.211.024	24 mm
02.211.012	12 mm	02.211.026	26 mm
02.211.014	14 mm	02.211.028	28 mm
02.211.016	16 mm	02.211.030	30 mm
02.211.018	18 mm	02.211.032	32 mm
02.211.020	20 mm	02.211.034	34 mm
02.211.022	22 mm	02.211.036	36 mm

Universal SF VA LCP Clavicle Full Set
01.133.273 (Stainless Steel)
01.133.473 (Titanium)

2.7 mm Metaphyseal Scr Slf-Tpng W/T8 Strdrv Recess

	Length		Length
02.118.510	10 mm	02.118.524	24 mm
02.118.512	12 mm	02.118.526	26 mm
02.118.514	14 mm	02.118.528	28 mm
02.118.516	16 mm	02.118.530	30 mm
02.118.518	18 mm	02.118.532	32 mm
02.118.520	20 mm	02.118.534	34 mm
02.118.522	22 mm	02.118.536	36 mm

2.7 mm Cortex Screw Slf-Tpng With T8 Stardrive Recess

	Length		Length
202.870	10 mm	202.884	24 mm
202.872	12 mm	202.886	26 mm
202.874	14 mm	202.888	28 mm
202.876	16 mm	202.890	30 mm
202.878	18 mm	202.892	32 mm
202.880	20 mm	202.894	34 mm
202.882	22 mm	202.896	36 mm

3.5 mm Locking Screw Slf-Tpng W/StarDrive™ Recess*

	Length		Length
212.101	10 mm	212.108	24 mm
212.102	12 mm	212.109	26 mm
212.103	14 mm	212.110	28 mm
212.104	16 mm	212.111	30 mm
212.105	18 mm	212.112	32 mm
212.106	20 mm	212.113	34 mm
212.107	22 mm	212.115	36 mm

3.5 mm Cortex Screw, self-tapping, with T15 StarDrive Recess*

	Length		Length
02.200.010	10 mm	02.200.024	24 mm
02.200.012	12 mm	02.200.026	26 mm
02.200.014	14 mm	02.200.028	28 mm
02.200.016	16 mm	02.200.030	30 mm
02.200.018	18 mm	02.200.032	32 mm
02.200.020	20 mm	02.200.034	34 mm
02.200.022	22 mm	02.200.036	36 mm

*For use with the 2.7 mm/3.5 mm VA LCP Anterior Clavicle Plates.

Universal SF VA LCP Clavicle Full Set
01.133.273 (Stainless Steel)
01.133.473 (Titanium)

Instruments

292.12	1.25 mm Kirschner Wire W/Trocar Point 150 mm
292.16	1.6 mm Kirschner Wire W/Trocar Point 150 mm
292.20	2.0 mm Kirschner Wire W/Trocar Point 150 mm
310.89	Countersink F/3.5 mm Cortex & 4.0 mm Cancellous Bone Screws
314.06	Holding Sleeve
314.116	Stardrive Screwdriver Shaft QC/T15
314.453	Stardrive Screwdriver Shaft, T8, 55 mm
314.467	Stardrive Screwdriver Shaft T8, 105 mm
319.391	Sharp Hook - Small Taper
323.023	1.6 mm Wire Sleeve
329.291	Bending Pliers
398.40	Reduction Forceps With Points Narrow-Ratchet 132 mm
398.41	Reduction Forceps With Points Broad-Ratchet
399.19	Small Hohmann Retractor 8 mm Short Narrow Tip 160 mm
399.49	Hohmann Retractor 15 mm 160 mm
399.99	Reduction Forceps With Serrated Jaw-Ratchet 144 mm
511.773	Torque Limiting Attachment 1.5 Nm/ Quick Coupling
511.776	Torque Limiting Attachment 0.8 Nm/ Quick Coupling
03.110.002	Torque Limiting Attachment 1.2 Nm
03.110.005	Handle For Torque Limiting Attachment
03.111.005	Depth Gauge For 2.0 mm-2.7 mm Screws
03.127.016	2.5 Nm Torque Limiting Handle With QC
03.133.001	3.5 mm Neutral Sleeve Adapter, F/3.5 Non-Locking Drill Guide
03.133.002	3.5 mm Non-Locking Drill Guide
03.133.003	3.5 mm VA Drill Guide
03.133.004	2.8 mm Thrdd Guide F/ 3.5 mm Scr, VA and LCP
03.133.005	2.7 mm Neutral Sleeve Adapter, F/2.7 Non-Locking Drill Guide
03.133.006	2.7 mm Non-Locking Drill Guide
03.133.007	2.7 mm VA Drill Guide
03.133.008	2.0 mm Thrdd Guide F/ 2.7 mm Scr, VA and LCP
03.133.080	2.7/3.5 mm Depth Gauge 0 to 60 mm
03.133.100	2.0 mm Drill Bit/QC 30 mm
03.133.101	2.0 mm Drill Bit/QC 60 mm
03.133.102	2.5 mm Drill Bit/QC 45 mm
03.133.103	2.5 mm Drill Bit/QC 80 mm
03.133.105	2.7 mm Drill Bit/QC 45 mm
03.133.106	2.8 mm Drill Bit/QC 45 mm
03.133.107	2.8 mm Drill Bit/QC 80 mm
03.133.109	3.5 mm Drill Bit/QC 60 mm
03.133.150	Universal Screwdriver Handle
03.133.175	2.5 mm Hex Driver Shaft
03.133.200	Plate Bender Irons /Closed, F/2.7/3.5 mm Plates
03.133.201	Plate Bender Irons /Open, F/2.7/3.5 mm Plates
03.133.202	Periosteal Elevator 6 mm Curved
03.211.004	2.0 mm VA Coaxial Locking Drill Guide
03.211.410	1.6 mm Compression Wire, 10 mm Thread/150 mm Length
03.211.415	1.6 mm Compression Wire, 15mm Thread/150 mm Length

Please also refer to the package insert(s) or other labeling associated with the devices identified in this surgical technique for additional information.

CAUTION: Federal Law restricts these devices to sale by or on the order of a physician.

Some devices listed in this technique guide may not have been licensed in accordance with Canadian law and may not be for sale in Canada. Please contact your sales consultant for items approved for sale in Canada.

Not all products may currently be available in all markets.

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Note: For recognized manufacturer, refer to the product label.

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