Variable Angle LCP Condylar Plate 4.5/5.0. Part of the Synthes Variable Angle Periarticular Plating System.

Technique Guide

SYNTHES®

Instruments and implants
approved by the AO Foundation

Image intensifier control

Warning
This description alone does not provide sufficient background for direct use of the instrument set. Instruction by a surgeon experienced in handling these instruments is highly recommended.

Reprocessing, Care and Maintenance of Synthes Instruments
For general guidelines, function control and dismantling of multi-part instruments, please refer to: www.synthes.com/reprocessing

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Variable Angle LCP Condylar Plate 4.5/5.0

The Variable Angle LCP Condylar Plate 4.5/5.0 is part of the VA-LCP Periarticular Plating System which merges variable angle locking screw technology with conventional plating techniques.

The VA-LCP Condylar Plate 4.5/5.0 system has many similarities to standard locking fixation methods, with a few important improvements. Variable angle locking screws provide the ability to create a fixed-angle construct while also allowing the surgeon the freedom to choose the screw trajectory prior to "fixing" the angle of the screw.

A fixed-angle construct provides advantages in osteopenic bone or multifragmentary bridge-plated fractures where screws do not rely on plate-to-bone compression to resist patient load, but function similarly to multiple, small, angled blade plates.

The Variable Angle Locking Compression Plate (VA-LCP) has variable angle combi-holes in the plate shaft that combine a dynamic compression unit (DCU) hole with a variable angle locking screw hole. The variable angle combi-hole provides the flexibility of axial compression and variable angle locking capability throughout the length of the plate shaft.

Note: For information on fixation principles using conventional and locked plating techniques, please refer to the Synthes Large Fragment Locking Compression Plate (LCP) Technique Guide (036.000.019).

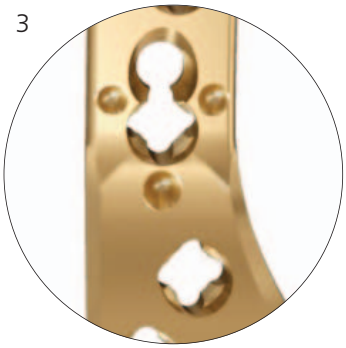
System

The VA-LCP Condylar Plate 4.5/5.0 system provides the flexibility to lock screws in trajectories that can diverge from the central axis of the plate hole.

Plates

- Available in stainless steel and titanium alloy with 6, 8, 10, 12, 14, 16, 18, 20 and 22 variable angle combi-holes in the shaft to accommodate fracture patterns that include shaft fractures in conjunction with articular fragments. (1)
- Plate shaft is precontoured to mimic the anterior bow of the femur; plate head is precontoured to match the distal femur. (2)
- Plate includes variable angle locking holes and variable angle combi-holes. (3)

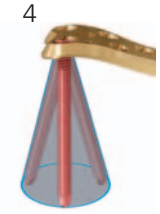
3



Screws

- Screws can be angled anywhere within a 30° cone around the central axis of the plate hole (4).
- Four columns of threads in the variable angle locking hole provide four points of threaded locking between the VA-LCP plate and the variable angle locking screw, forming a fixed-angle construct at the desired screw angle (5).
- The head of the 5.0 mm variable angle locking screw is rounded to facilitate various angles within the locking hole (6).

4



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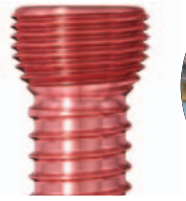

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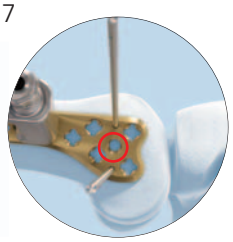

Note: The central hole in the head of the plate is a fixed-angle locking hole and accepts VA locking screws ∅ 5.0 mm. (7)

Instruments

- Permits use of minimally invasive surgical technique. (8)

8

AO Principles

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

Anatomic reduction
Fracture reduction and fixation to restore anatomical relationships.

Stable fixation
Stability by fixation or splintage, as the personality of the fracture and the injury requires.

Preservation of blood supply
Preservation of the blood supply to soft tissue and bone by careful handling.

Early, active mobilization
Early and safe mobilization of the part and patient.

[1] Müller, ME, M Allgöwer, R Schneider, H Willenegger (1991)

Indications

The Synthes VA-LCP Condylar Plate 4.5/5.0 system is indicated for buttressing multifragmentary distal femur fractures including: supra-condylar, intra-articular and extra-articular condylar fractures, periprosthetic fractures, fractures in normal or osteopenic bone, nonunions and malunions.

1
Preparation

Sets	
01.231.030	VA-LCP Condylar Plate 4.5/5.0, Stainless Steel
or	
01.231.031	VA-LCP Condylar Plate 4.5/5.0, Titanium Alloy
01.231.032	Instruments for VA-LCP Condylar Plate 4.5/5.0
01.231.033	VA Periarticular Aiming Arm Instruments for VA-LCP Condylar Plate 4.5/5.0 VA locking screws ∅ 5.0 mm
Optional sets	
LCP Large Fragment Instruments and Standard Instruments Periarticular Instrument Set	
Reduction Instruments	

Complete preoperative radiographic assessment and prepare the preoperative plan. Position the patient supine on a radiolucent operating table. Viewing the distal femur under fluoroscopy in both the lateral and AP view is necessary.

Use the VA-LCP Condylar Plate 4.5/5.0 x-ray template (034.000.697 for right and 034.000.699 for left) for estimation of implant size.

2
Attach insertion handle

Instruments	
03.231.005	Locking Bolt for Aiming Arm Instruments, for VA-LCP Condylar Plate 4.5/5.0
03.231.006	Locking Nut for Aiming Arm Instruments, for VA-LCP Condylar Plate 4.5/5.0
03.231.001	Insertion Handle for Aiming Arm for VA-LCP Condylar Plate 4.5/5.0
321.160	Combination Wrench ∅ 11.0 mm

Thread the nut onto the locking bolt. (1)

Position the insertion handle so that the spherical pins on the underside align with the dimples around the first combi-hole of the appropriate VA-LCP Condylar Plate 4.5/5.0. (2)

Insert the locking bolt with nut into the through hole of the insertion handle. Thread the tip into the threaded portion of the combi-hole until it is firmly finger-tight.

Tighten the locking bolt with the combination wrench. (3)

Note: It is important to place the plate flat on the back table when positioning the insertion handle and locking bolt to ensure the locking bolt is perpendicular to the plate and not cross-threaded into the combi-hole.

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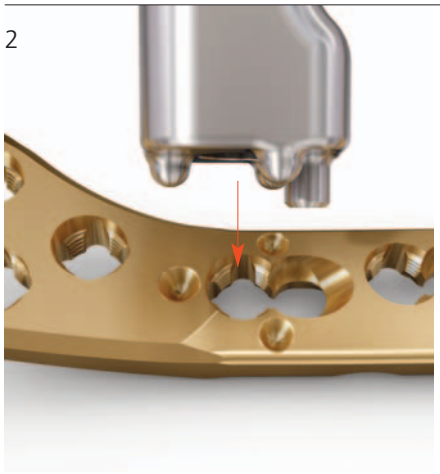


3

3
Secure aiming arm to plate

Instruments	
03.231.003	Aiming Arm for VA-LCP Condylar Plate 4.5/5.0, left
or	
03.231.004	Aiming Arm for VA-LCP Condylar Plate 4.5/5.0, right
03.231.007	Guide Sleeve for Aiming Arm Instruments, for VA-LCP Condylar Plate 4.5/5.0
324.215	Wire Guide 5.0, percutaneous, for Guide Wire ∅ 2.5 mm
321.160	Combination Wrench ∅ 11.0 mm

Attach the appropriate aiming arm to the insertion handle (1). Use the combination wrench to secure the connection bolt to the insertion handle.

Insert a guide sleeve into the hole in the aiming arm that corresponds with the most proximal combi-hole in the plate. Orient the arrow on the guide sleeve in the direction of the "LOCKING" arrow on the aiming arm. (2)

Insert the wire guide through the guide sleeve and thread it into the plate. Tighten the wire guide to the plate to achieve a stable construct between the aiming arm and the plate. (3)

Using the combination wrench, tighten the nut on the locking bolt to compress the insertion handle to the plate. The insertion handle should be securely attached to the plate and can now be used for plate insertion. Attach the insertion handle securely to the plate before using it for plate insertion. (4)

1

2

3

4

4

Remove aiming arm

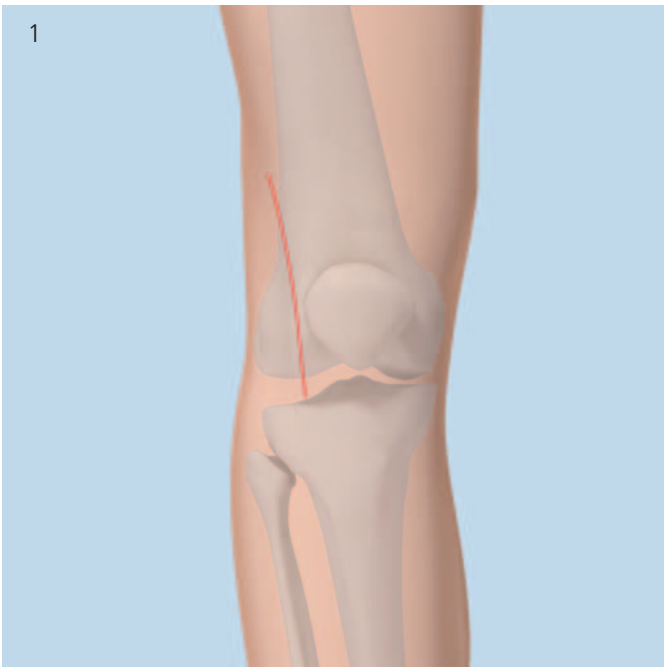
Remove the wire guide, guide sleeve and aiming arm to prepare for initial plate insertion.

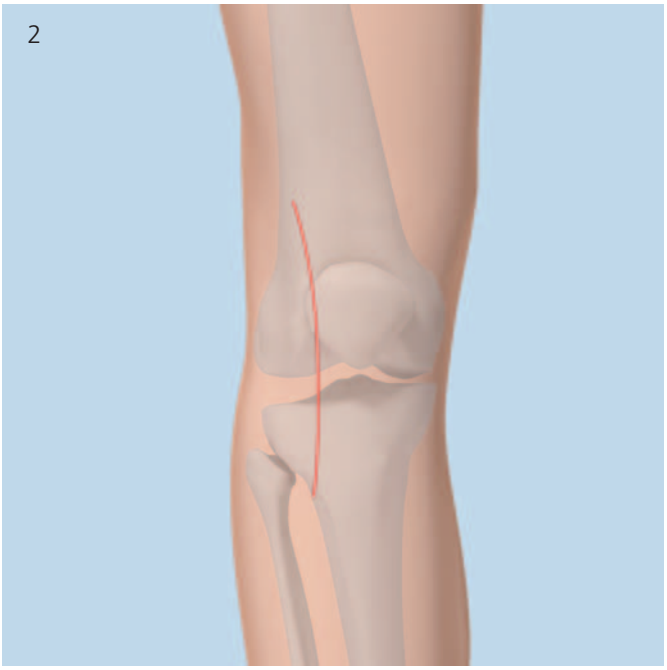
1
Make incision

Lateral Incision (1)
A lateral incision is recommended for a simple articular (AO Classification 33-C1) or extra-articular fracture (AO Classification 32- or 33-A). The incision begins at Gerdy's tubercle.

Note: The incision can be extended if necessary to improve visualization of the articular surface or lateral metaphysis and diaphysis. It may not always be appropriate to use limited incisions and closed reduction techniques.

Lateral parapatellar incision (2)
In the presence of a complex intra-articular fracture (AO classifications 33-C2 or C3), perform a lateral parapatellar approach. Perform an arthrotomy to expose the joint for reduction. Translate the patella and extensor mechanism as necessary with eversion of the patella in special circumstances. Ensure adequate exposure of the joint for an anatomic reduction.





2
Reduce articular surface

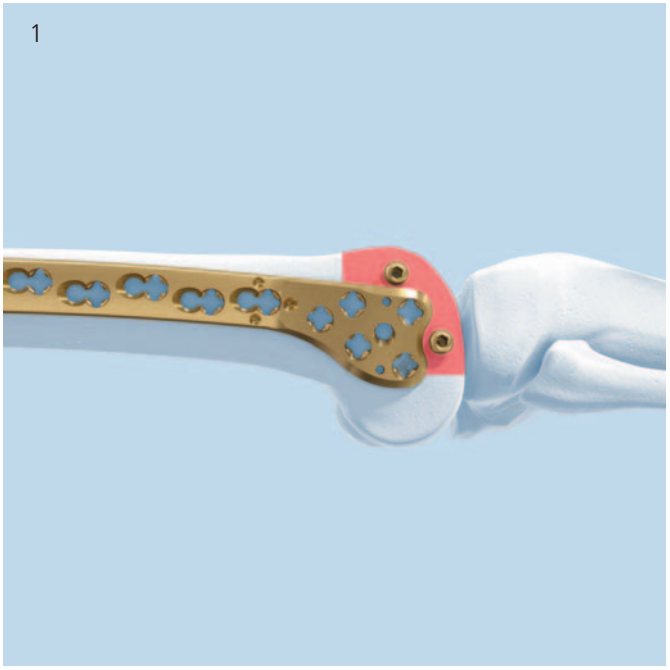
Instruments
Pointed Reduction Forceps
Kirschner Wires

Reduce and temporarily secure the articular fragments with pointed reduction forceps and/or Kirschner wires. If a Hoffa plane fracture is present, the posterior condylar fragments must be reduced and provisionally stabilized with Kirschner wires inserted from anterior to posterior.

Secure the condyles with appropriately placed screws. The VA-LCP Condylar Plate 4.5/5.0 may be held laterally on the condyle to select an area where the screw(s) will not interfere with the footprint of the plate. Placing screws around the periphery of the condyle, choosing screws with smaller heads (e.g. screws ∅ 3.5mm), and sinking screws so that they are nearly flush with the lateral condylar cortical edge will ease subsequent plate insertion and improve fit. (1)

For fixation of a posterior articular fragment (Hoffa fracture), place cortex screws ∅ 3.5 mm or cancellous bone screws ∅ 4.0 mm from anterior to posterior and countersink the screw heads so they lie below the level of articular cartilage. An appropriate headless compression screw may also be used.

1



3
Insert plate and determine plate position

Instruments
Pointed Reduction Forceps
Guide Wires ∅ 2.5 mm

Using the insertion handle assembly, insert the plate submuscularly distal to proximal. Slide the plate proximally until the plate head is oriented properly on the lateral condyle. (1)

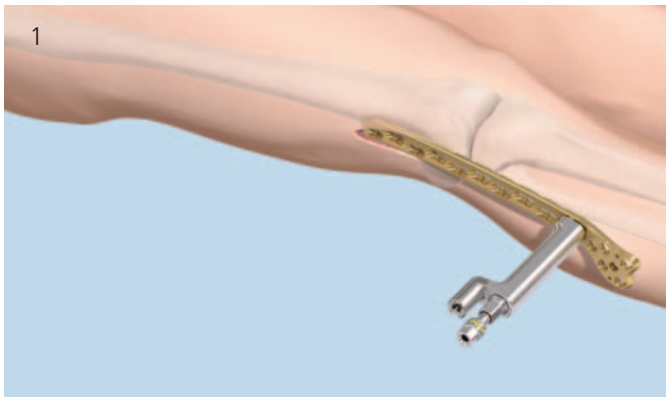
Note: The aiming arm can be attached either before or after insertion of the plate. In larger patients, it is advantageous to attach the aiming arm after plate insertion as it could impinge upon the lateral soft tissues during insertion.

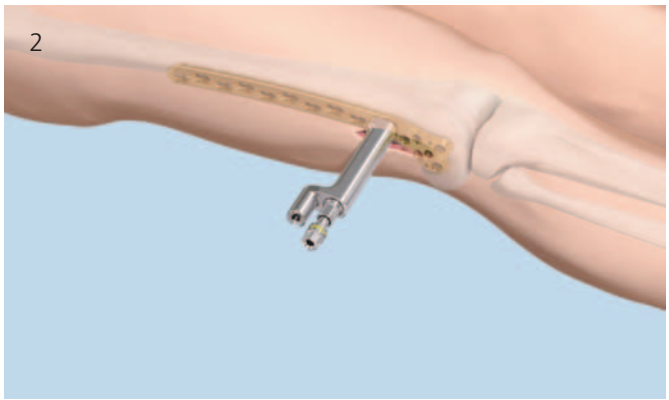
Because the shaft of the femur is frequently out of alignment with the distal fragment, proper plate placement can be determined by orienting the distal shape to that of the condyle. Orient the plate so that the shape mimics the condyle anteriorly and posteriorly (2).

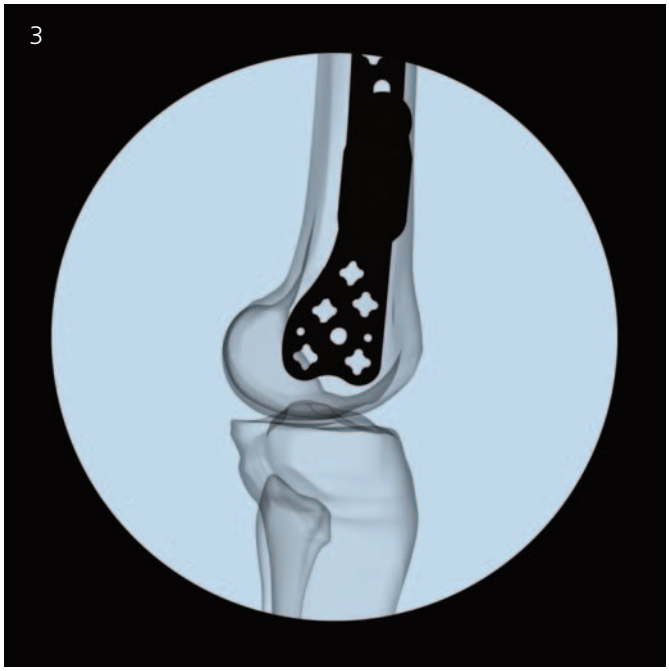
Position the plate parallel to the anterior portion of the lateral femoral condyle which is typically internally rotated approximately 10 to 15 degrees with respect to the vertical plane. The plate was designed such that the anterior edge of the implant parallels the anterior cortical margin at the metaphyseal level. Similarly, the posterior edge of the implant is curved to mimic the posterior anatomic curvature extending from the epiphyseal to the metaphyseal region.

Use clinical examination and radiographic imaging to confirm that the plate is properly oriented on the condyle under a lateral image (3).

Secure the plate position by using either reduction forceps or by inserting at least one guide wire through the Kirschner wire holes in the plate head before inserting the first screw in the distal segment.







Optional technique to determine plate position

Instruments	
324.215	Wire Guide 5.0, percutaneous, for Guide Wire ∅ 2.5 mm

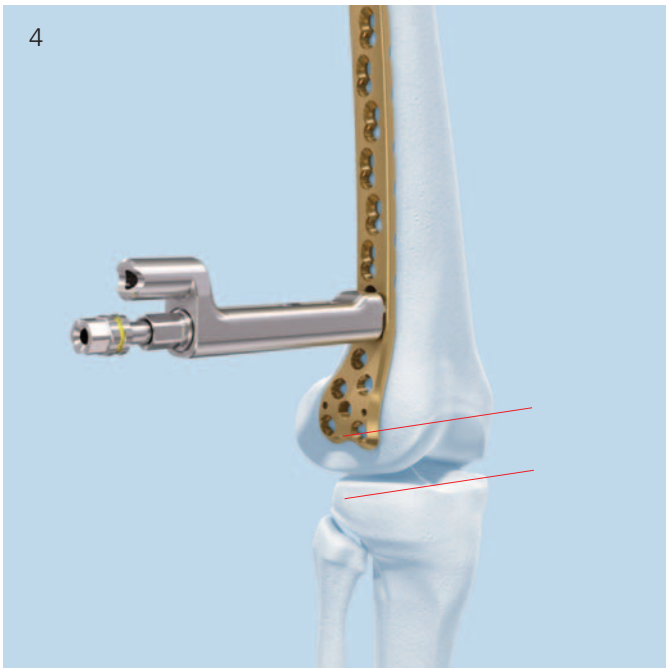
When using the plate as a reduction tool, proper plate placement with respect to the distal segment must be ensured prior to proceeding.

Place a wire across the femoral condyles at the level of the knee to indicate the joint axis. Place a second wire across the patellofemoral joint on the troclear surface (4,5).

Secure the plate position by using either reduction forceps or by inserting at least one guide wire before inserting the first screw into the distal segment. Wires can also be inserted through one of the plate head holes by using a wire guide threaded at zero degrees in relation to the plate.

Important: Before proceeding, confirm plate head placement.

4



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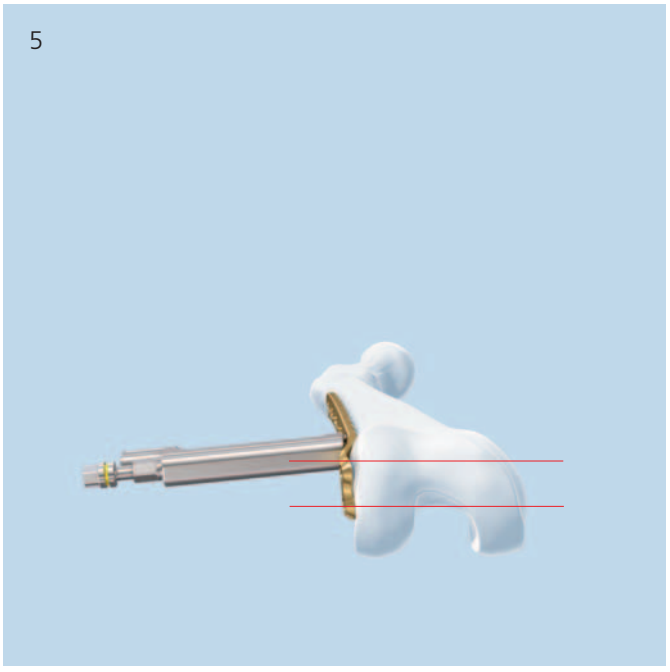

4

Secure aiming arm to plate distally and make incision

Instruments	
03.231.003	Aiming Arm for VA-LCP Condylar Plate 4.5/5.0, left
or	
03.231.004	Aiming Arm for VA-LCP Condylar Plate 4.5/5.0, right
321.160	Combination Wrench ∅ 11.0 mm

Reattach the aiming arm to the insertion handle. (1)

Finger-tighten the connection bolt to secure the aiming arm to the insertion handle. Using the combination wrench, tighten the nut on the locking bolt to compress the insertion handle to the plate. The insertion handle should be securely attached to the plate. (2)

Locate the hole in the aiming arm that corresponds with the most proximal combi-hole in the plate. The aiming arm is numbered to facilitate locating the most proximal hole in the plate. Make a skin incision at this location. The incision should be in line with the direction of future trocar and cannula insertion.

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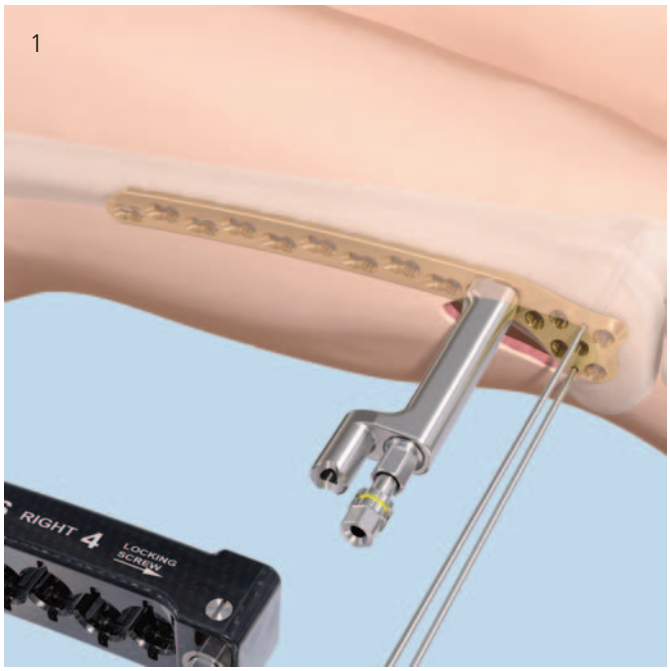

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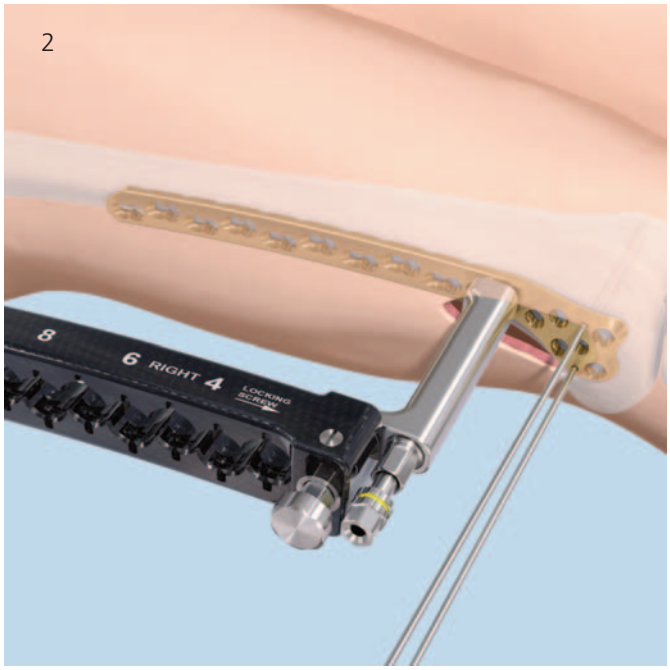


Alternative instrument for making incision

Instrument	
03.120.016	Scalpel Handle for Periarticular Aiming Arm Instruments

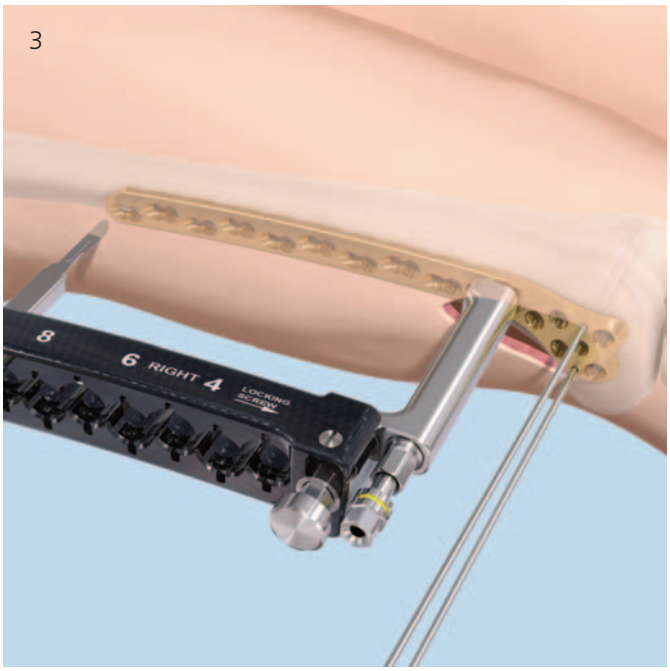
Attach a No. 1, 1 mm blade to the scalpel handle. The scalpel handle will pass through the aiming arm holes and assist in performing a minimally invasive and accurate incision. (3)

The scalpel handle is designed such that the blade is offset with respect to the handle. It should be inserted, backed out, rotated 180 degrees, and reinserted. The goal is to create an incision through the skin, IT band, and vastus lateralis fascia that is larger than the cannula that is to be inserted. An adequate incision must be made in order to prevent soft tissue impingement when inserting the cannula.

Remove the scalpel from the aiming arm.

Note: Always remove the scalpel blade before storage in the case.

3



Note: For clear visualization, soft tissue is not shown in the following steps.

5

Insert trocar

Instruments	
03.120.015	Trocar with Handle for No. 03.120.014
03.231.007	Guide Sleeve for Aiming Arm Instruments, for VA-LCP Condylar Plate 4.5/5.0

Insert the trocar with handle into a guide sleeve (1). Align the self-retaining features until the trocar snaps into place within the guide sleeve.

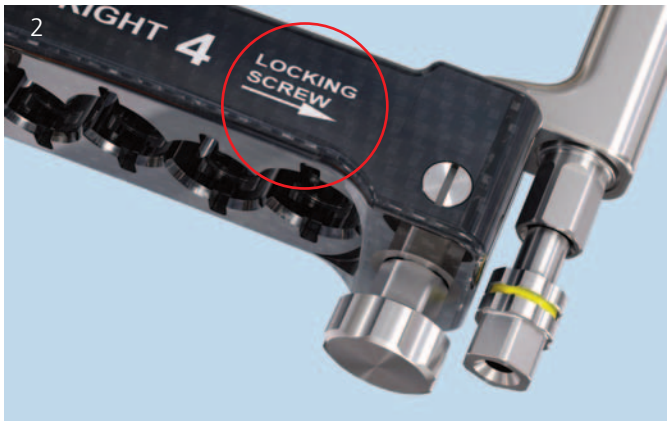
1

Orient the arrow on the guide sleeve in the direction of the "LOCKING" arrow on the aiming arm, (2) and then use the assembled trocar and guide sleeve to push down to the plate through the incision. (3)

Push the assembly completely down, aligning the self-retaining features, until it snaps completely into the aiming arm. Take care not to place excessive pressure on the guide sleeve as deflection can occur between the guide sleeve and the plate in the face of excessive pressure. The potential for this is increased with longer plates inserted through small incisions in larger patients.

Remove the trocar with handle by depressing its release mechanism and pulling it away from the guide sleeve.

2



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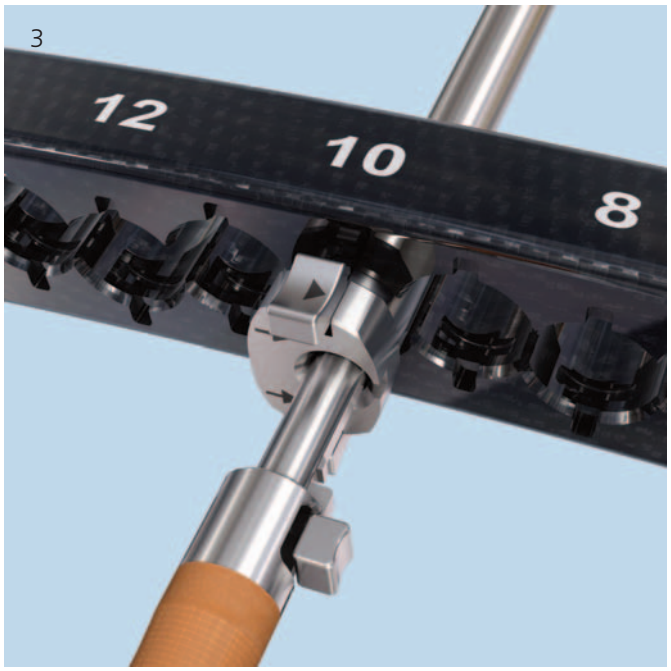

6

Secure aiming arm to plate proximally

Instruments	
03.120.022	Handle for Nos. 324.203 and 324.215
324.215	Wire Guide 5.0, percutaneous, for Guide Wire ∅ 2.5 mm
03.120.026	Guide Wire ∅ 2.5 mm, with drill tip, length 300 mm, Cobalt-chrome alloy (CoCrMo)
or	
338.002	Guide Wire ∅ 2.5 mm, with drill tip, length 300 mm, Stainless Steel

To ensure precise targeting using the aiming arm, it is important to secure the aiming arm to the plate proximally by inserting a guide wire ∅ 2.5 mm.

Thread the handle into the wire guide (1). Insert the handle and wire guide assembly through the guide sleeve, and securely thread it into the most proximal plate hole (2). Turn the handle counterclockwise to disengage and remove it from the guide sleeve.

Note: Be sure to securely tighten the wire guide to the plate to achieve a stable construct between the aiming arm and the plate.

Insert a guide wire ∅ 2.5 mm into the bone through the percutaneous wire guide only after appropriate length and rotation have been achieved through the fracture site (3). Small changes in coronal and sagittal plane alignment will still be possible after this step.

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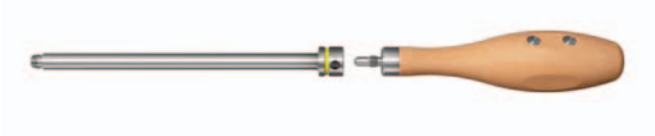

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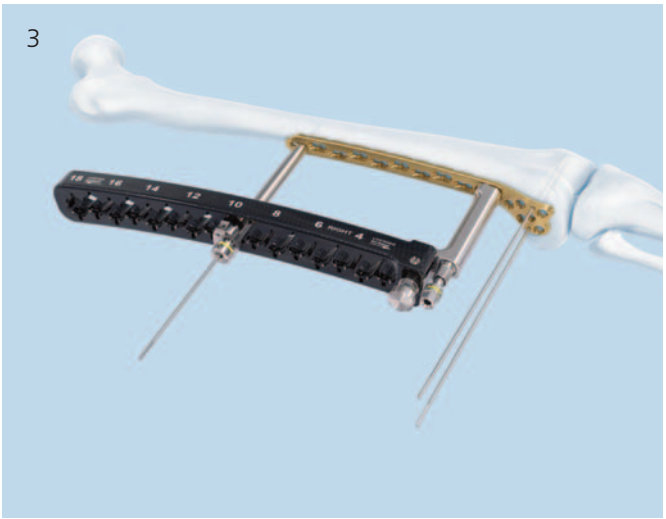

If necessary, to assist in aligning the aiming arm with the plate, the trocar with handle and guide sleeve can be inserted into the most distal hole of the proximal fragment (4). The trocar assembly may assist in securing the wire guide into the most proximal hole in the plate so that a guide wire can be inserted to secure the aiming arm to the plate.

4

Alternative instruments for proximal fixation

Instruments	
324.203	Drill Guide ∅ 4.3 mm, percutaneous, with thread
324.213	Drill Bit ∅ 4.3 mm, percutaneous, calibrated, length 300/200 mm, for Quick Coupling

Using the drill bit ∅ 4.3 mm, drill through the threaded drill guide ∅ 4.3 mm to the far cortex, leaving the drill bit in place to stabilize the proximal portion of the plate on the bone.

7

Use pull reduction device (optional)

Instruments	
03.231.007	Guide Sleeve for Aiming Arm Instruments, for VA-LCP Condylar Plate 4.5/5.0
324.203	Drill Guide, percutaneous, with thread
03.120.023	Pull Reduction Device for Percutaneous Drill Guide ∅ 4.3 mm, with Nut
321.160	Combination Wrench ∅ 11.0 mm

Additional correction can be completed before placement of screws in both main fracture fragments. The pull reduction device (1) is placed through the guide sleeve and plate holes to pull or push bone fragments relative to the plate. This instrument can be used for:

- Minor varus/valgus adjustment (approximately 2°–4°)
- Coronal plane translational adjustments
- Stabilization of plate-bone orientation during insertion of the first screws
- Alignment of segmental fractures
- Predrilling dense or thick cortical bone before placing a VA locking screw ∅ 5.0 mm

Note: The pull reduction device must be used with a threaded drill guide ∅ 4.3 mm and a guide sleeve.

Thread the nut for pull reduction device over the tip of the pull reduction device.

When the pull reduction device has been attached to a power tool (quick coupling), insert it through a drill guide ∅ 4.3 mm that has been threaded into the plate.

With the nut in its highest position possible, begin power insertion of the pull reduction device. Stop insertion before the end of the threaded portion meets the plate surface. (2)

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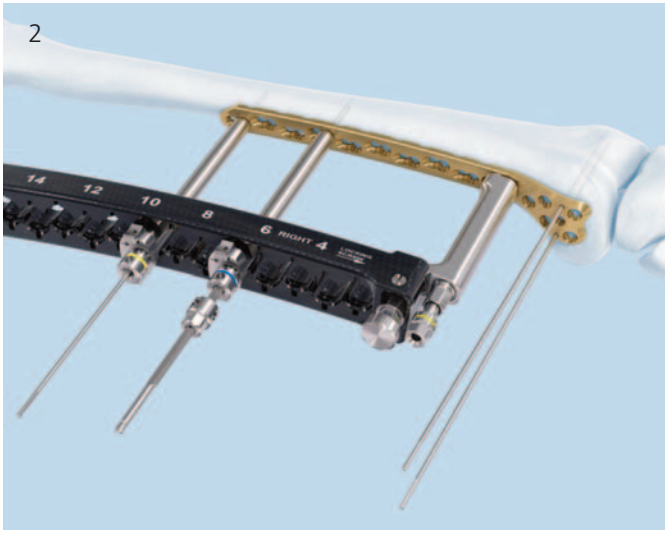


Note: Attempting to advance beyond this point may damage the thread in the bone.

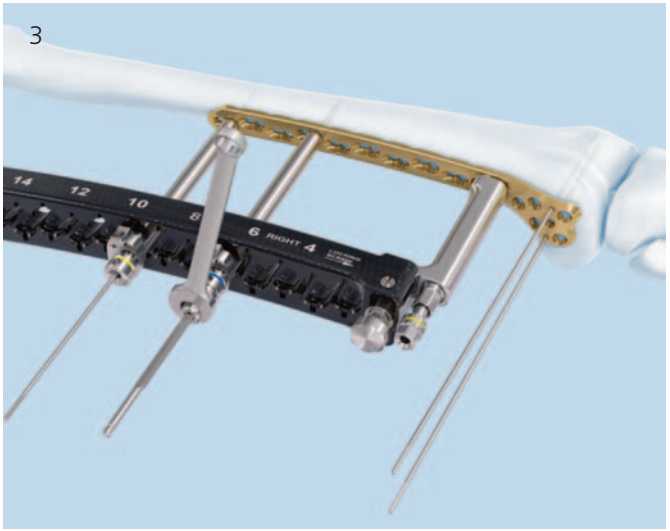
Remove the power tool and begin tightening the nut toward the drill guide, while monitoring progress under radiographic imaging. (3)

Stop when the desired reduction is achieved. If the plate is properly positioned distally parallel to the anterior half of the lateral femoral condyle, it will be slightly internally rotated with respect to the shaft proximally. This has the potential to create minor sagittal plane changes when using this technique for coronal plane alignment.

The pull reduction device is 4.3 mm in diameter and calibrated for screw length measurement to allow later placement of a VA locking screw ∅ 5.0 mm in the same hole.

Note: A combination wrench may be used to facilitate tightening and loosening of the nut.

3



Screw Insertion in Plate Head

1

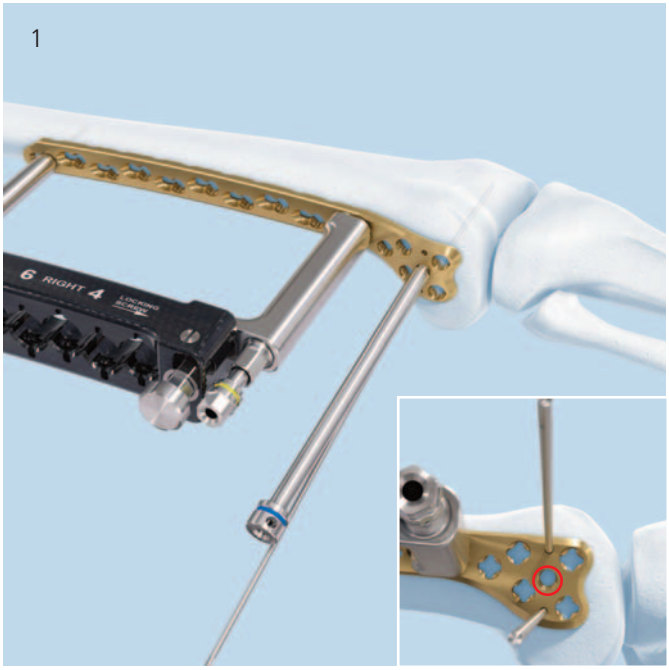
Insert screw in central head hole

Option A. Insert solid VA locking screw ∅ 5.0 mm

Instruments	
324.203	Drill Guide ∅ 4.3 mm, percutaneous, with thread
324.213	Drill Bit ∅ 4.3 mm, percutaneous, calibrated, length 300/200 mm, for Quick Coupling
314.119	Screwdriver Shaft Stardrive 4.5/5.0, T25, self-holding, for AO/ASIF Quick Coupling
03.231.013	T-Handle with Torque Limiting Function, 6 Nm
03.231.015	Screwdriver Shaft Stardrive, T25, length 180 mm, for Hexagonal Coupling 6.0 mm

The central plate head hole is a fixed-angle hole which accepts VA locking screws ∅ 5.0 mm, however only in a non-angled position. Although screws may be inserted in any order, it is usually advantageous to start with the central screw. (1)

Note: If required, lag screw reduction of a fragment must be accomplished before inserting locking screws into the fragment. Lag screw reduction can be accomplished using a cortex screw ∅ 4.5 mm in the central hole of the plate head. Alternatively, a cannulated conical screw ∅ 5.0 mm or for interfragmentary compression a screw nut ∅ 5.0 mm with a cannulated conical screw ∅ 5.0 mm can be used. Conical and cortex screws may be replaced with locking screws after reduction is complete.

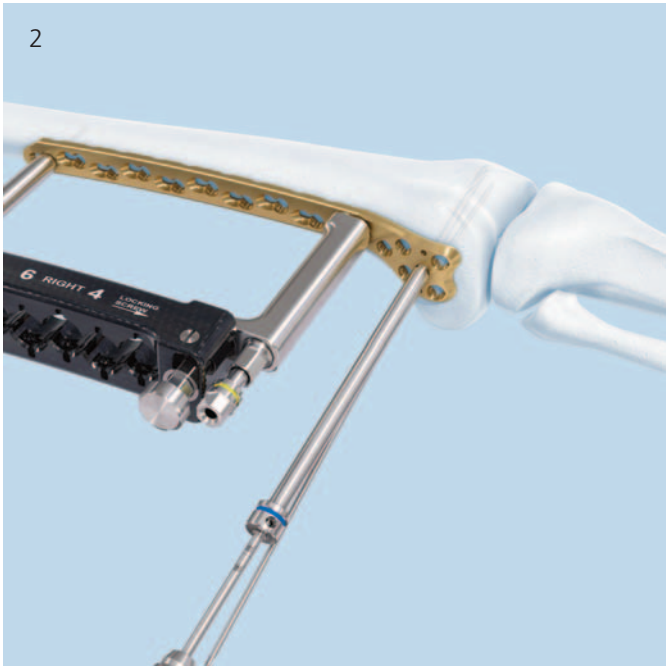


Insert a threaded drill guide ∅ 4.3 mm into the central head hole of the plate (1). Insert the drill bit ∅ 4.3 mm through the drill guide, parallel to the joint axis and perpendicular to the anterior half of the lateral femoral condyle.[2,3]

Advance the drill bit until it reaches the medial wall of the femoral condyle. Read the measurement from the calibrated drill bit ∅ 4.3 mm. (2)

Remove the drill bit and drill guide.

2



[2] Karunakar MA, JF Kellam (2004)
[3] Maier A, J Cordey, P Regazzoni (2000)

Alternative instruments for drilling central hole

323.042	LCP Drill Sleeve 5.0, for Drill Bits ∅ 4.3 mm
310.430	LCP Drill Bit ∅ 4.3 mm with Stop, length 221 mm, 2-flute, for Quick Coupling
319.100	Depth Gauge for Screws ∅ 4.5 to 6.5 mm, measuring range up to 110 mm

As an alternative to the percutaneous drill guide and drill bit ∅ 4.3 mm, the LCP drill sleeve and LCP drill bit from the LCP Large Fragment Instrument Set can be used (3). Read the measurement from the calibrated drill bit ∅ 4.3 mm.

Alternatively, the depth gauge can be used for screw length measuring after removal of the threaded drill guide ∅ 4.3 mm.

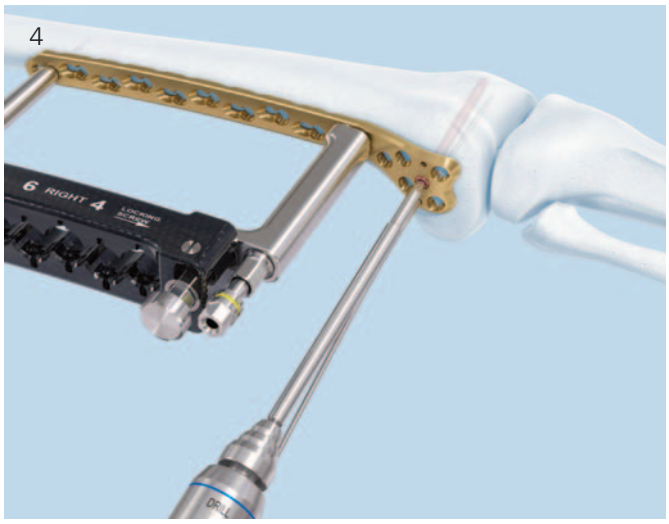
Note: Due to the difference in the placement of the head of a locking screw compared to a cortex screw, care should be taken when determining screw length with the depth gauge.

Insert the appropriate length variable angle screw. The VA locking screw ∅ 5.0 mm may be inserted using power equipment and the screwdriver shaft Stardrive T25. (4)

Important: Confirm screw position and length prior to final tightening with the T-handle with torque limiting function 6 Nm. Final tightening must be done by hand using the screwdriver shaft Stardrive T25 for hexagonal coupling 6.0 mm, together with the T-handle with torque limiting function 6 Nm. (5)

3

4



5

Option B. Insert cannulated VA locking screw ∅ 5.0 mm

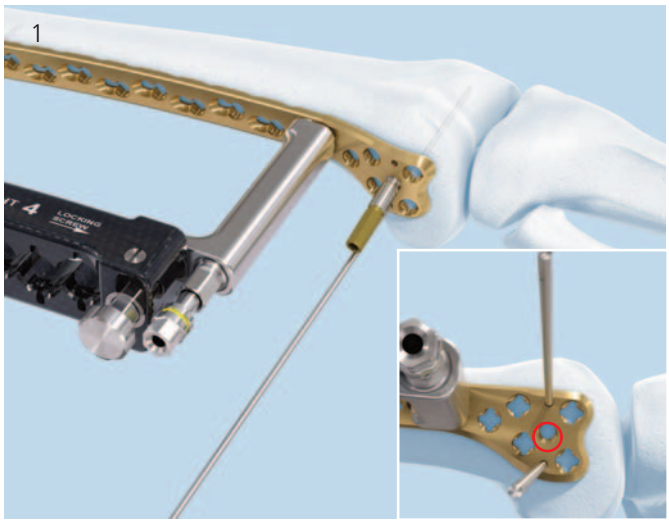
Instruments	
324.174	Wire Guide 5.0, for Guide Wire ∅ 2.5 mm
310.243	Guide Wire ∅ 2.5 mm, with drill tip, length 200 mm, Stainless Steel
319.701	Measuring Device for Cannulated Locking Screws and Cannulated Conical Screws ∅ 5.0 and 7.3 mm
314.230	Screwdriver Shaft, hexagonal, cannulated
338.490	Quick Coupling for Small Air Drill
03.231.013	T-Handle with Torque Limiting Function, 6 Nm
03.231.016	Screwdriver Shaft, hexagonal ∅ 4.0 mm, cannulated, length 180 mm, for Hexagonal Coupling ∅ 6.0 mm

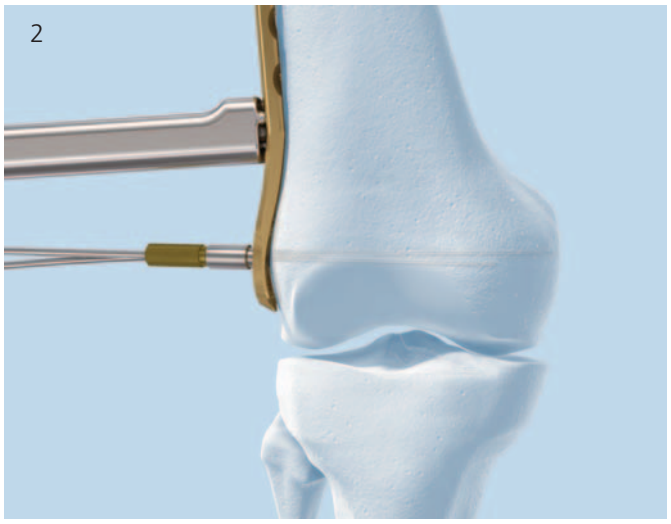
Note: All articles of the above list except the last two can be found in the Periarticular Instrument Set.

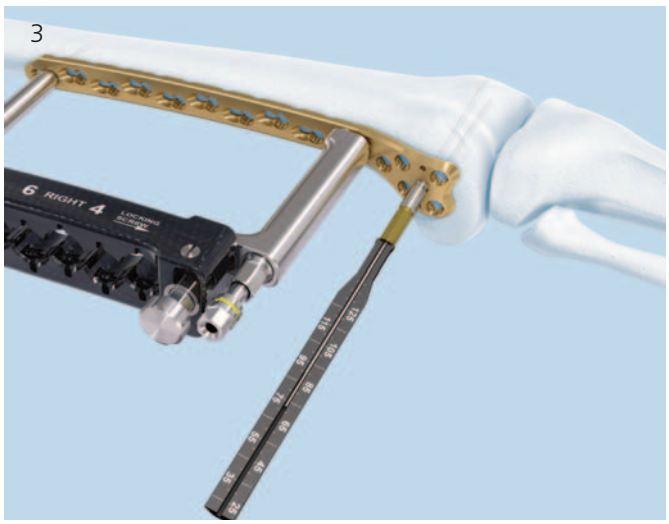
Insert a guide wire ∅ 2.5 mm through the preassembled wire guide, parallel to the joint axis and perpendicular to the anterior half of the lateral femoral condyle. (1)

Advance the guide wire through the wire guide until it reaches the medial wall of the femoral condyle. (2)

Measure for screw length using the measuring device for cannulated locking screws. For proper screw length measurement the measuring device must contact the end of the wire guide. This will place the tip of the screw at the tip of the guide wire. (3)





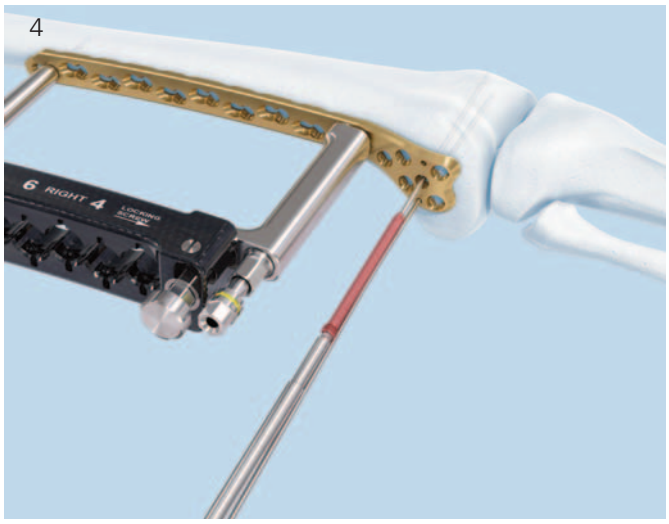


Remove the wire guide and insert the appropriate length VA cannulated locking screw ∅ 5.0 mm over the guide wire and into the bone (4). Remove the guide wire. The VA cannulated locking screw ∅ 5.0 mm may be inserted using power equipment, the cannulated hexagonal screwdriver shaft and quick coupling.

Important: Confirm screw position and length prior to final tightening with the 6 Nm T-handle with torque limiting function. Final tightening must be done by hand using the cannulated hexagonal screwdriver shaft for hexagonal coupling 6.0 mm, together with the T-handle with torque limiting function 6 Nm. (5)

Technique tip: The self-drilling, self-tapping flutes of the VA cannulated locking screw ∅ 5.0 mm make predrilling and pre-tapping unnecessary in most cases. In dense bone, the lateral cortex can be predrilled, if necessary.

4



5

2

Insert screws in remaining head holes

Option A. Insert solid VA locking screws ∅ 5.0 mm

Instruments	
03.122.040	VA Double Drill Sleeve ∅ 4.3 mm
324.213	Drill Bit ∅ 4.3 mm, percutaneous, calibrated, length 300/200 mm, for Quick Coupling
319.100	Depth Gauge for Screws ∅ 4.5 to 6.5 mm, measuring range up to 110 mm
314.119	Screwdriver Shaft Stardrive 4.5/5.0, T25, self-holding, for AO/ASIF Quick Coupling
03.231.013	T-Handle with Torque Limiting Function, 6 Nm
03.231.015	Screwdriver Shaft Stardrive, T25, length 180 mm, for Hexagonal Coupling 6.0 mm
Alternative instrument for drilling	
310.430	LCP Drill Bit ∅ 4.3 mm with Stop, length 221 mm, 2-flute, for Quick Coupling

As an alternative to the percutaneous drill bit ∅ 4.3 mm, the LCP drill bit from the LCP Large Fragment Instrument Set can be used.

For predrilling the holes for the solid VA locking screw ∅ 5.0 mm that surround the central hole in the plate head, the VA double drill sleeve ∅ 4.3 mm can be used together with the drill bit ∅ 4.3 mm. (1)

The VA double drill sleeve allows either off-axis drilling (funnel end) or fixed-angle drilling (straight end) to ensure that the drill bit follows the normal trajectory of the locking hole.

For off-axis drilling, insert the drill bit through the cone-shaped end of the drill sleeve at the desired angle (1). The drill sleeve inserts coaxially into the variable angle locking hole and the tip keys into the cloverleaf design of the hole.

Remove the drill bit and drill sleeve and use the depth gauge to measure for screw length. (2)

Note: Due to the difference in the placement of the head of a locking screw compared to a cortex screw, care should be taken when determining screw length with the depth gauge.

For fixed-angle drilling, insert the drill bit through the straight end of the drill sleeve. (3)

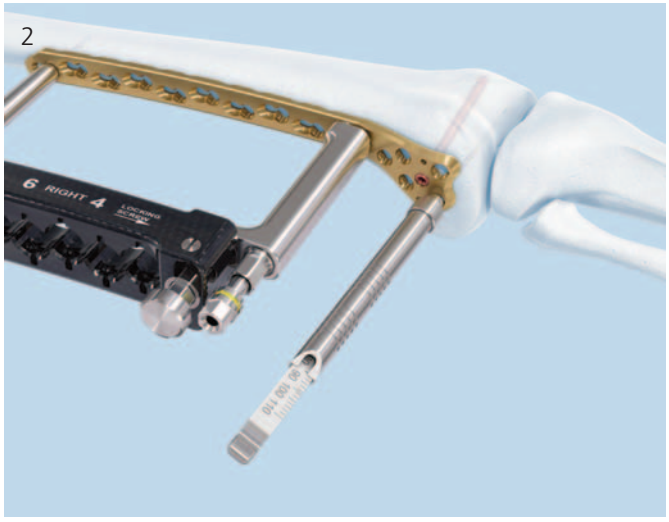
Read the measurement from the calibrated drill bit.

Notes: When drilling, the tip of the VA drill guide should remain fully seated in the hole.

Take into consideration that the most posterior distal screw may be positioned distal to Blumensaat's line, requiring a unicondylar screw.

1

2



3

Alternative instruments for off-axis drilling

Instruments	
03.231.008	VA Drill Guide ∅ 4.3 mm, long
395.911	Handle for Drill Sleeve

As an alternative to the VA double drill sleeve, the VA drill guide ∅ 4.3 mm with spherical head can be used for off-axis drilling with the percutaneous drill bit ∅ 4.3 mm. Insert the VA drill guide with spherical head and thread it into the drill sleeve handle until tight.

For off-axis drilling, the spherical tip of the VA drill guide should be gently pressed into the variable angle hole to ensure the lip of the VA drill guide stops on the edge of the variable angle hole to prevent drilling beyond 15 degrees. Insert the drill bit ∅ 4.3 mm through the VA drill guide at the desired angle. (4)

Drill and determine screw length from the drill bit calibration aligned with the top of the VA drill guide. Remove the drill bit and drill guide. (4)

Insert the appropriate length variable angle screw. The VA locking screw ∅ 5.0 mm may be inserted using power equipment and the screwdriver shaft Stardrive T25.

Important: Confirm screw position and length prior to final tightening with the T-handle with torque limiting function 6 Nm. Final tightening must be done by hand using the screwdriver shaft Stardrive T25 for hexagonal coupling 6.0 mm, together with the T-handle with torque limiting function 6 Nm. (5)

4

5

Option B. Insert cannulated VA locking screws ∅ 5.0 mm

Instruments	
03.231.019	VA Wire Guide ∅ 2.5 mm, long
395.911	Handle for Drill Sleeve
310.243	Guide Wire ∅ 2.5 mm, with drill tip, length 200 mm, Stainless Steel
03.231.017	Direct Measuring Device for VA Screws ∅ 5.0 mm, cannulated, for VA-LCP Condylar Plate 4.5/5.0
314.230	Screwdriver Shaft, hexagonal, cannulated
03.231.013	T-Handle with Torque Limiting Function, 6 Nm
03.231.016	Screwdriver Shaft, hexagonal ∅ 4.0 mm, cannulated, length 180 mm, for Hexagonal Coupling ∅ 6.0 mm

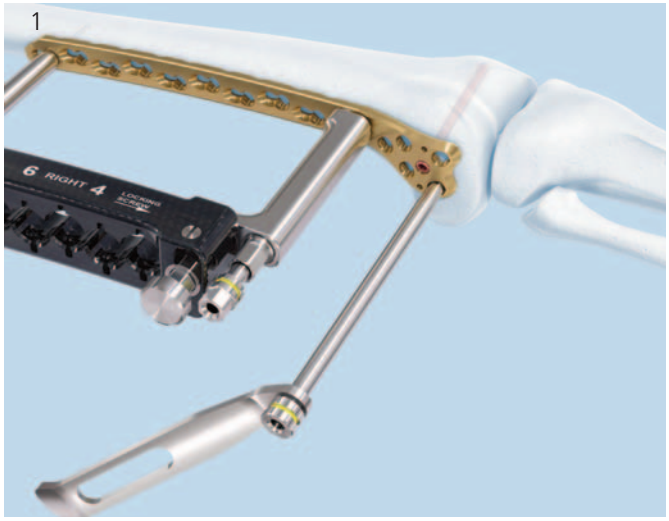
Note: The guide wire and cannulated screwdriver shaft can be found in the Periarticular Instrument Set.

For insertion of VA cannulated locking screws ∅ 5.0 mm into the variable angle locking holes surrounding the central hole in the plate head, use the VA wire guide ∅ 2.5 mm with spherical head for off-axis drilling of the guide wire ∅ 2.5 mm.

Insert and thread the VA wire guide into the drill sleeve handle until tight.

For off-axis drilling, press the spherical tip of the VA wire guide gently into the variable angle hole to ensure the lip of the wire guide stops on the edge of the variable angle hole to prevent drilling beyond 15 degrees (1). Insert the guide wire through the VA wire guide at the desired angle. (2)

1



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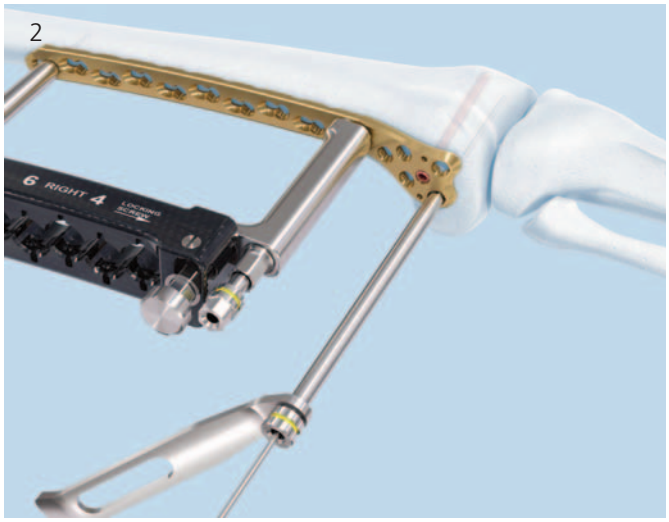


Alternative instrument for fixed angle screw insertion

Instrument	
324.215	Wire Guide 5.0, percutaneous, for Guide Wire ∅ 2.5 mm

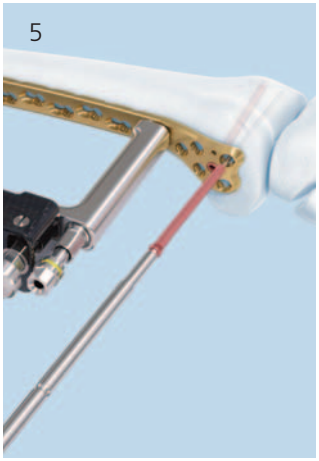
3

If fixed-angle insertion of a screw is desired, use a threaded wire guide ∅ 2.5 mm to precisely align the drill bit to a normal trajectory. (3)

Remove the wire guide and measure for screw length using the direct measuring device for VA cannulated screws ∅ 5.0 mm. For proper screw length measurement, place the direct measuring device firmly into the plate hole. This will place the tip of the screw at the tip of the guide wire. (4)

4

5



Note: Take into consideration that the most posterior distal screw may be positioned distal to Blumensaat's line, requiring a unicondylar screw.

Insert the appropriate length VA cannulated locking screw over the guide wire and into the bone (5). Remove the guide wire.

The VA cannulated locking screw ∅ 5.0 mm may be inserted using power equipment together with the cannulated hexagonal screwdriver shaft and quick coupling.

6

Important: Confirm screw position and length prior to final tightening with the T-handle with torque limiting function 6 Nm. Final tightening must be done by hand using the cannulated hexagonal screwdriver shaft for hexagonal coupling 6.0 mm together with the T-handle with torque limiting function 6 Nm. (6)

Screw Insertion in Plate Shaft

1

Insert cortex screws ∅ 4.5 mm

Instruments	
03.120.015	Trocar with Handle for No. 03.120.014
03.231.007	Guide Sleeve for Aiming Arm Instruments, for VA-LCP Condylar Plate 4.5/5.0
03.120.017	Drill Sleeve ∅ 3.2 mm, for neutral position, for Periarticular Aiming Arm Instruments
324.212	Drill Bit ∅ 3.2 mm, percutaneous, calibrated, length 300/200 mm, for Quick Coupling
314.560	Screwdriver Shaft, hexagonal, large, ∅ 3.5 mm, length 165 mm, for Quick Coupling
03.400.102 and 03.400.112	Screwdriver Shaft 3.5, hexagonal, Stardrive T25 Handle for Screwdriver Shaft 3.5, hexagonal, Stardrive T25

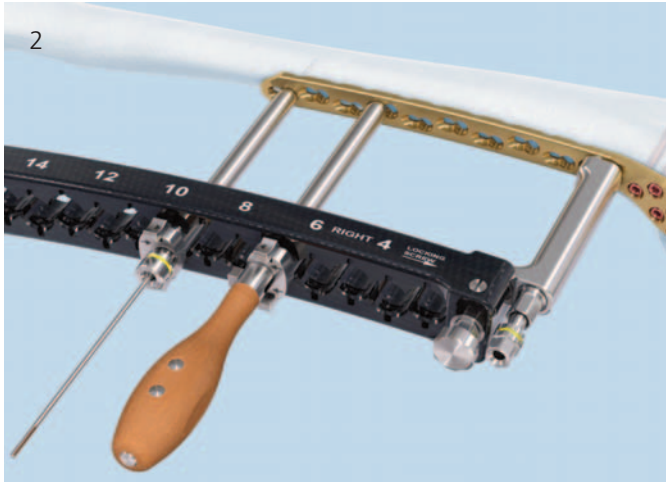
Choose an aiming arm hole and make an appropriate incision through it. Optionally the scalpel handle can be used.

As described above in step 5, assemble a trocar with handle and guide sleeve. Orient the arrow on the guide sleeve in the direction of the "CORTEX" arrow on the aiming arm. (1)

Use the assembled trocar and guide sleeve to stab down to the plate through the aiming arm hole and incision. Push the assembly completely down until it snaps into the self-retaining feature of the aiming arm. (2)

1

2

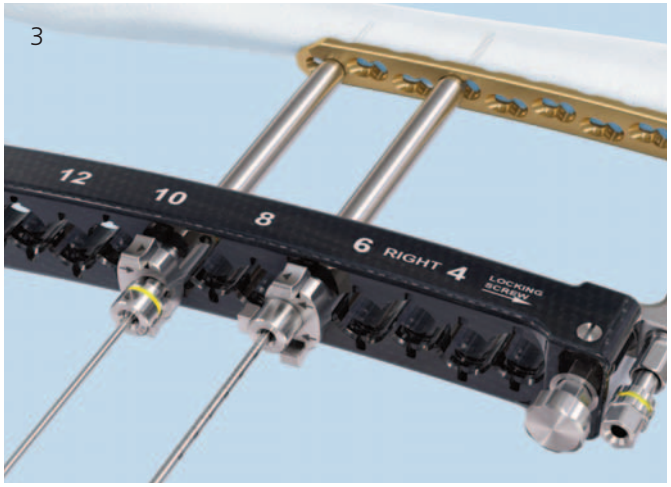


Remove the trocar by depressing the release mechanism and pulling it away from the guide sleeve.

Insert the drill sleeve ∅ 3.2 mm for neutral position into the guide sleeve, while aligning the self-retaining features, until it snaps into place. (3)

Use the percutaneous drill bit ∅ 3.2 mm to drill and determine screw length from the drill bit calibration aligned with the top of the drill guide. (4)

3



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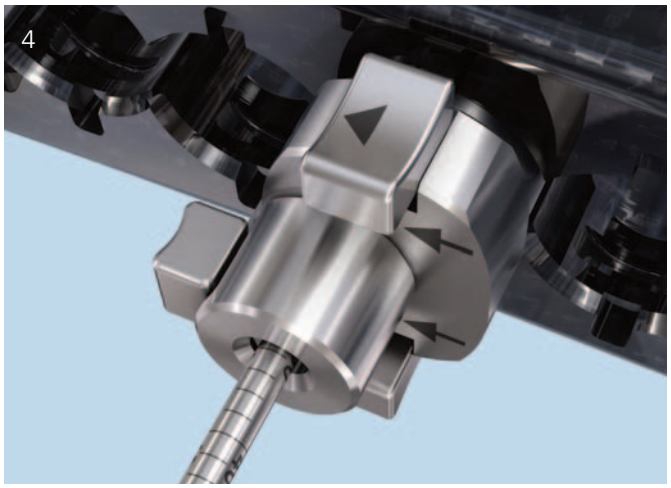


Alternative instrument for measuring

Instrument	
324.208	Direct Measuring Device, percutaneous

Place the percutaneous direct measuring device over the drill bit and against the end of the drill sleeve. Determine screw length from the end of the drill bit. (5)

Remove the drill bit and drill sleeve and insert the cortex screw using the hexagonal screwdriver shaft with power tool and the screwdriver shaft with handle. (6)

Repeat this process to insert as many cortex screws ∅ 4.5 mm as necessary into the plate shaft.

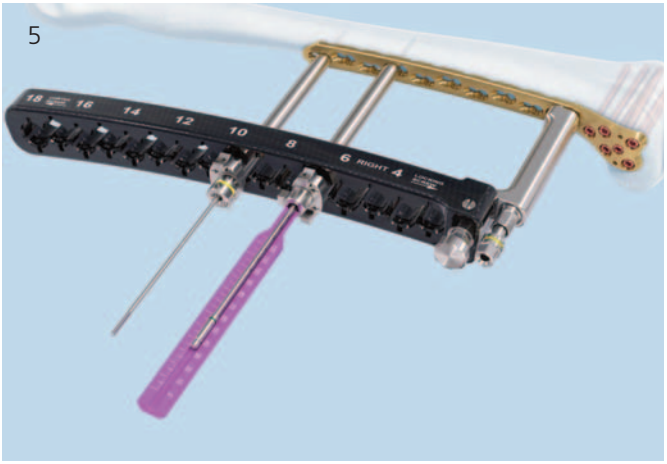
Optional instrument

Instrument	
03.231.002	Stopper for Aiming Arm, for VA-LCP Condylar Plate 4.5/5.0

Mark each screw location in the aiming arm using a stopper for reference as screw insertion proceeds. (7)

Important: All of the cortex screw ∅ 4.5 mm must be inserted before insertion of locking screws.

5



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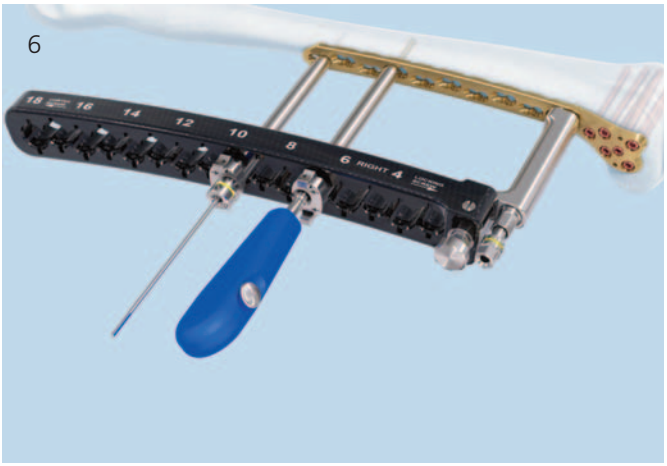

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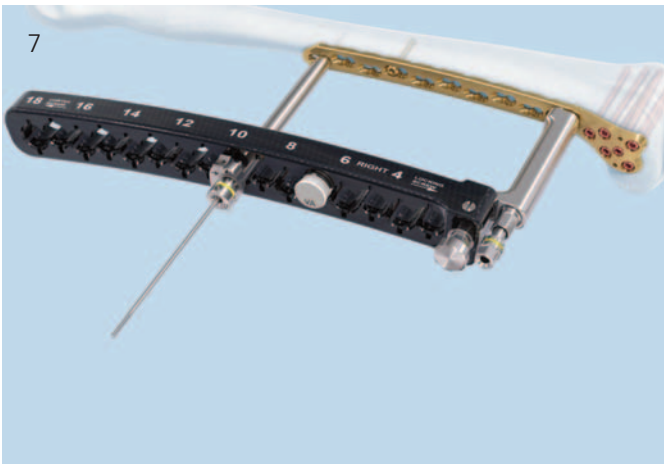


2

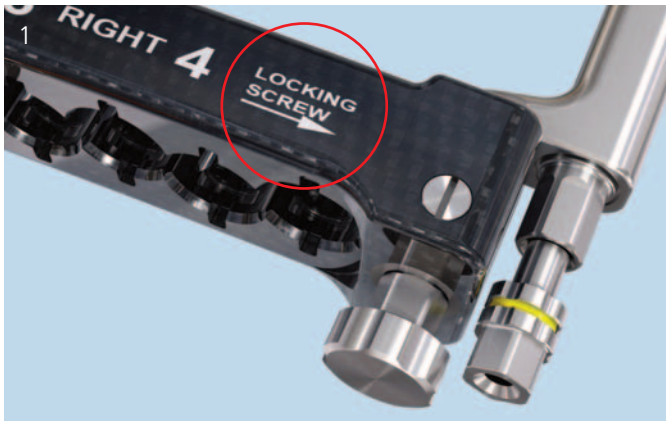
Insert fixed-angle VA locking screws ∅ 5.0 mm

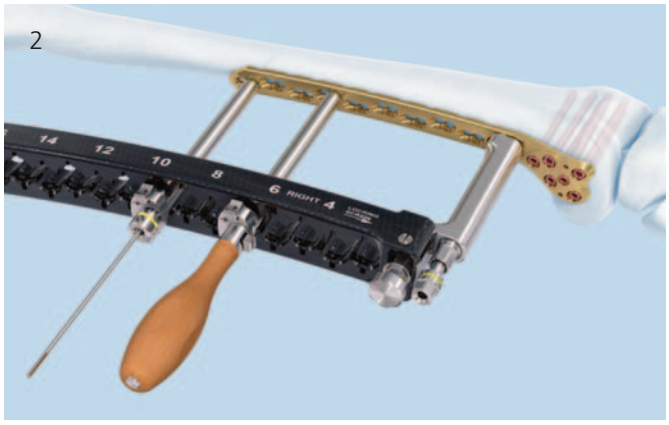
Option A. Insert solid VA locking screws ∅ 5.0 mm

Instruments	
03.120.015	Trocar with Handle for No. 03.120.014
03.231.007	Guide Sleeve for Aiming Arm Instruments, for VA-LCP Condylar Plate 4.5/5.0
03.120.022	Handle for Nos. 324.203 and 324.215
324.203	Drill Guide ∅ 4.3 mm, percutaneous, with thread
324.213	Drill Bit ∅ 4.3 mm, percutaneous, calibrated, length 300/200 mm, for Quick Coupling
03.120.029	Hexagonal Pin Wrench ∅ 4.0 mm with ball tip
314.119	Screwdriver Shaft Stardrive 4.5/5.0, T25, self-holding, for AO/ASIF Quick Coupling
03.231.013	T-Handle with Torque Limiting Function, 6 Nm
03.231.015	Screwdriver Shaft Stardrive, T25, length 180 mm, for Hexagonal Coupling 6.0 mm

Choose an aiming arm hole through which to make an incision. Create an incision. Optionally the scalpel handle can be used.

Assemble a trocar with handle and guide sleeve. Orient the arrow on the guide sleeve in the direction of the "LOCKING" arrow on the aiming arm (1), and then use the assembled trocar and guide sleeve to stab down to the plate through the chosen aiming arm hole with corresponding incision. Push the assembly completely down until it snaps into the self-retaining feature of the aiming arm (2).



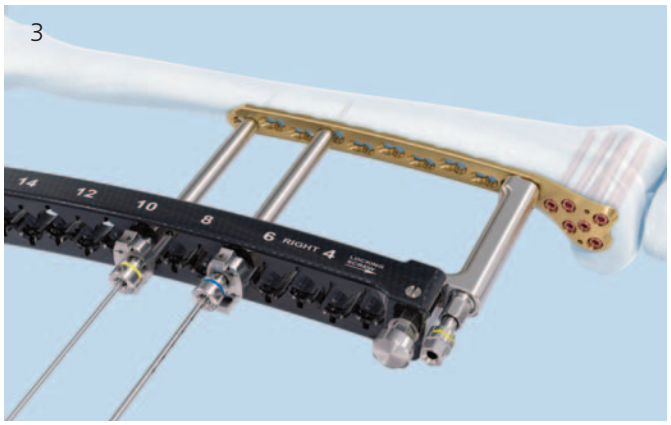


Remove the trocar by depressing its release mechanism and pulling it away from the guide sleeve.

Thread the handle into the percutaneous drill guide ∅ 4.3 mm. Insert the drill guide through the guide sleeve, and thread it into the plate. Turn the handle counterclockwise to disengage and remove it from the drill guide.

Drill using the percutaneous drill bit ∅ 4.3 mm (3). Determine screw length from the drill bit calibration aligned with the top of the drill guide (4).

3



4

Alternative Instrument for measuring

Instrument	
324.208	Direct Measuring Device, percutaneous

Place the percutaneous direct measuring device over the drill bit and against the end of the drill bit. Determine screw length from the end of the drill bit.

Remove the drill bit and drill guide.

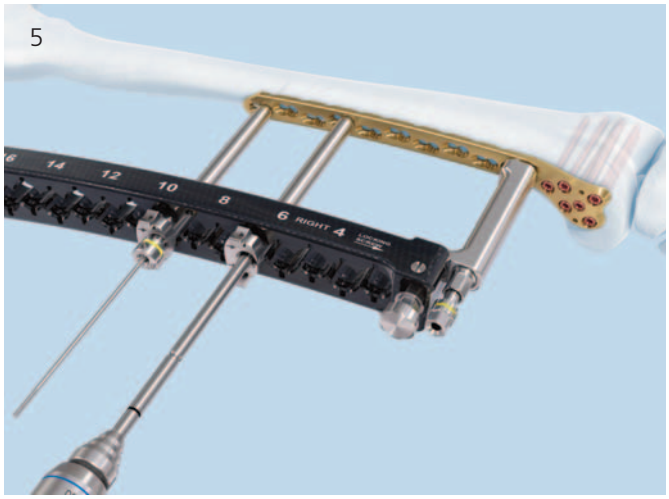
Technique tip: Use the tip of the handle as a pin wrench to loosen the percutaneous drill guides from the plate. Alternatively, the pin wrench can be used.

Insert the appropriate length variable angle screw. The VA locking screw ∅ 5.0 mm may be inserted using power equipment and the screwdriver shaft Stardrive T25. (5)

Important: Confirm screw position and length prior to final tightening with the T-handle with torque limiting function 6 Nm. Final tightening must be done by hand using the screwdriver shaft Stardrive T25 for hexagonal coupling 6.0 mm, together with the T-handle with torque limiting function 6 Nm. (6)

Insert as many VA locking screw ∅ 5.0 mm as necessary into the plate shaft. Mark each screw location in the aiming arm using a stopper for reference as screw insertion proceeds.

5



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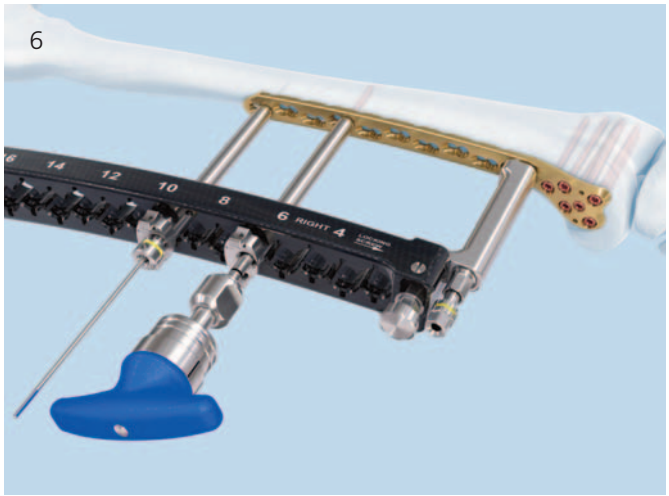


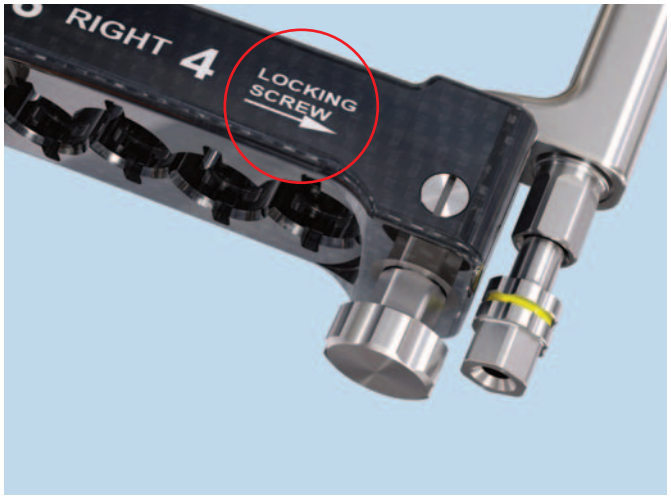
Option B. Insert cannulated VA locking screws ∅ 5.0 mm

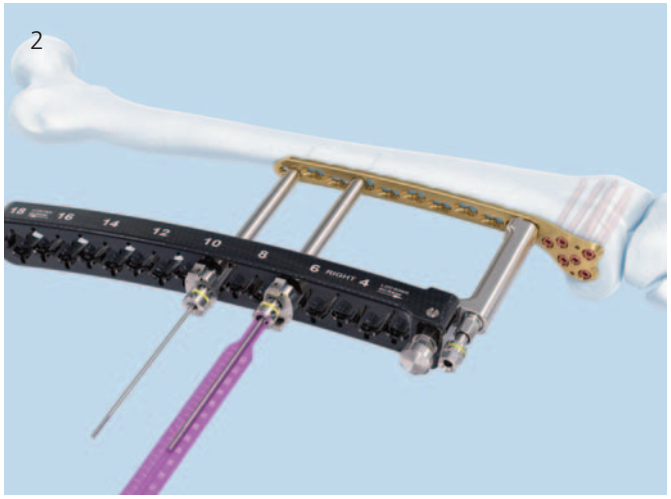
Instruments	
03.120.015	Trocar with Handle for No. 03.120.014
03.231.007	Guide Sleeve for Aiming Arm Instruments, for VA-LCP Condylar Plate 4.5/5.0
324.215	Wire Guide 5.0, percutaneous, for Guide Wire ∅ 2.5 mm
03.120.026	Guide Wire ∅ 2.5 mm, with drill tip, length 300 mm, Cobalt-chrome alloy (CoCrMo)
or 338.002	Guide Wire ∅ 2.5 mm, with drill tip, length 300 mm, Stainless Steel
324.208	Direct Measuring Device, percutaneous
314.230	Screwdriver Shaft, hexagonal, cannulated
03.231.013	T-Handle with Torque Limiting Function, 6 Nm
03.231.016	Screwdriver Shaft, hexagonal ∅ 4.0 mm, cannulated, length 180 mm, for Hexagonal Coupling ∅ 6.0 mm

Choose an aiming arm hole and make an incision through it. Use the trocar as described above.

Remove the trocar, insert a percutaneous wire guide ∅ 2.5 mm into the guide sleeve and insert a guide wire ∅ 2.5 mm through the wire guide.

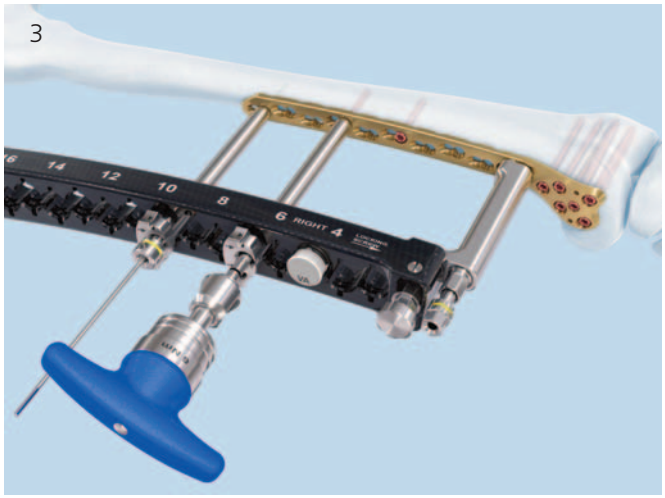
Measure for screw length using the direct measuring device. Place the direct measuring device over the guide wire and against the end of the wire guide. Determine screw length from the end of the wire and remove the wire guide. (2)





Insert the appropriate length VA cannulated locking screw ∅ 5.0 mm over the guide wire and into the bone (3). Remove the guide wire.

The VA cannulated locking screw ∅ 5.0 mm may be inserted using power equipment together with the cannulated hexagonal screwdriver shaft and quick coupling.



Important: Confirm screw position and length prior to final tightening with the T-handle with torque limiting function 6 Nm. Final tightening must be done by hand using the cannulated hexagonal screwdriver shaft for hexagonal coupling 6.0 mm, together with the T-handle with torque limiting function 6 Nm. (3)

Optional Instrument for drilling

Instrument	
310.634	Drill Bit ∅ 4.3 mm, cannulated, length 200 mm, with Quick Coupling

The self-drilling, self-tapping flutes of the VA cannulated locking screws ∅ 5.0 mm make predrilling and pretapping unnecessary in most cases. In dense bone, the lateral cortex can be predrilled, if necessary.

3

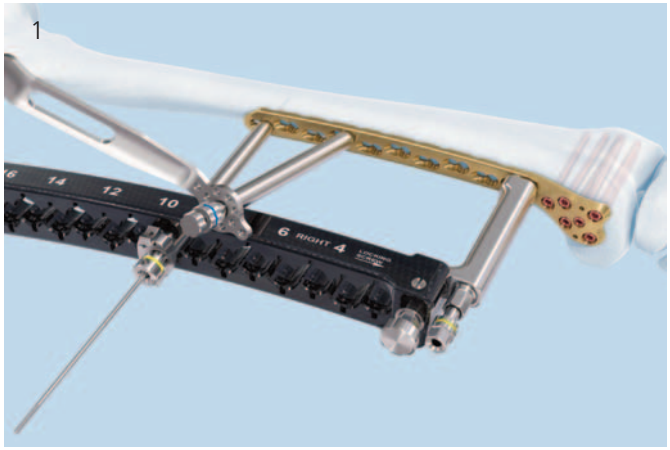
Insert variable angle VA locking screws ∅ 5.0 mm

Option A. Insert solid VA locking screws ∅ 5.0 mm

Instruments	
03.231.010	Protection Sleeve for VA Drill Guide ∅ 4.3 mm, long
03.231.008	VA Drill Guide ∅ 4.3 mm, long
03.231.009	Trocar for VA Drill Guide ∅ 4.3 mm, long
324.213	Drill Bit ∅ 4.3 mm, percutaneous, calibrated, length 300/200 mm, for Quick Coupling
03.400.102	Screwdriver Shaft 3.5, hexagonal, Stardrive T25
03.400.112	Handle for Screwdriver Shaft 3.5, hexagonal, Stardrive T25
03.231.013	T-Handle with Torque Limiting Function, 6 Nm
03.231.015	Screwdriver Shaft Stardrive, T25, length 180 mm, for Hexagonal Coupling 6.0 mm

Choose an aiming arm hole and make an incision through it.

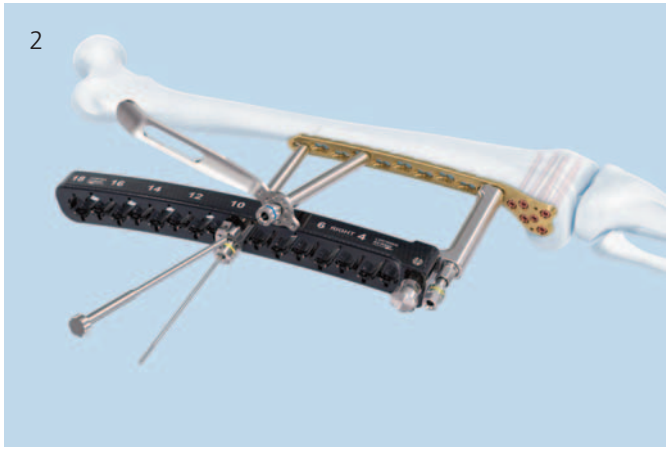
For off-axis insertion of the VA locking screw ∅ 5.0 mm, insert the VA drill guide ∅ 4.3 mm with spherical head into the protection sleeve. Insert the trocar into the VA drill guide ∅ 4.3 mm. Insert the trocar/drill guide/protection sleeve assembly to the plate through the previously created incision. (1)



Depending on the desired angle, the trocar/drill guide/protection sleeve assembly can be placed through the aiming arm hole, or it can be placed outside of the aiming arm.

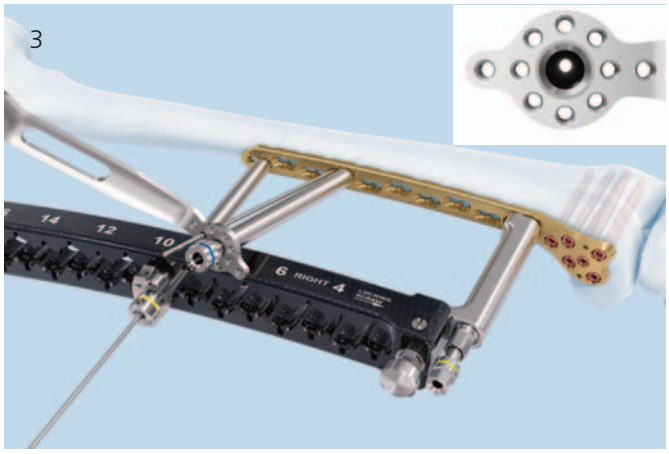
The spherical tip of the VA drill guide should be gently pressed into the variable angle hole to ensure the lip of the drill guide stops on the edge of the variable angle hole to prevent drilling beyond 15°.

Remove the trocar from the assembly. (2)



Optional Instruments for protection sleeve fixation

Instruments	
03.120.026	Guide Wire ∅ 2.5 mm, with drill tip, length 300 mm, Cobalt-chrome alloy (CoCrMo)
or	
338.002	Guide Wire ∅ 2.5 mm, with drill tip, length 300 mm, Stainless Steel



Find the desired angle and insert a guide wire ∅ 2.5 mm into one of the wire holes around the central hole of the protection sleeve (3). The variable angle drill guide and protection sleeve assembly is now provisionally fixed at the desired angle. Depending on the guide wire location, the wire may need to be cut to allow room for drilling.

Note: If the guide wire is inserted into one of the two outside holes, there is no need to cut the wire before drilling. If the guide wire is inserted into one of the immediate holes around the drill guide then the wire must be cut to allow room for the drill bit.

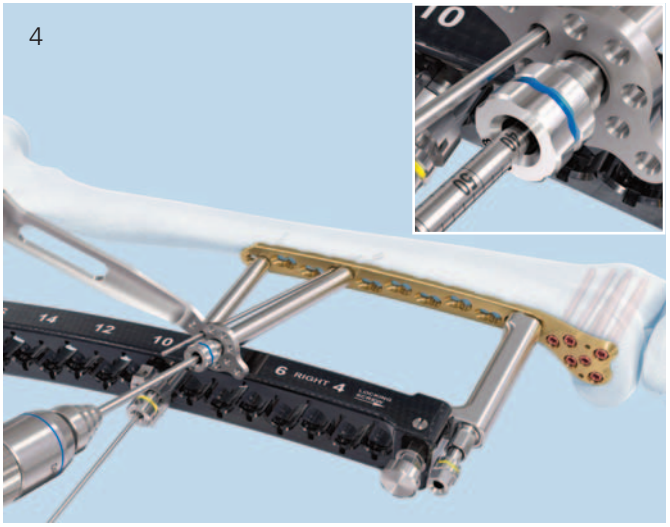
Insert the percutaneous drill bit ∅ 4.3 mm through the VA drill guide and drill to the desired depth. (4)

Determine screw length from the drill bit calibration at the top of the drill guide. (4)

Remove the drill bit and the drill guide and insert the appropriate VA locking screw ∅ 5.0 mm through the protection sleeve. (5)

Note: For initial insertion of VA locking screws ∅ 5.0 mm it is recommended to use the hexagonal Stardrive screwdriver shaft with handle.

Important: Confirm screw position and length prior to final tightening with the T-handle with torque limiting function 6 Nm. Final tightening must be done by hand using the T25 Stardrive screwdriver shaft for hexagonal coupling 6.0 mm and the T-Handle with torque limiting function 6 Nm. (6)



Option B. Insert cannulated VA locking screws ∅ 5.0 mm

Instruments	
03.231.010	Protection Sleeve for VA Drill Guide ∅ 4.3 mm, long
03.231.019	VA Wire Guide ∅ 2.5 mm, long
03.120.026	Guide Wire ∅ 2.5 mm, with drill tip, length 300 mm, Cobalt-chrome alloy (CoCrMo)
or	
338.002	Guide Wire ∅ 2.5 mm, with drill tip, length 300 mm, Stainless Steel
324.208	Direct Measuring Device, percutaneous
314.230	Screwdriver Shaft, hexagonal, cannulated
03.231.013	T-Handle with Torque Limiting Function, 6 Nm
03.231.016	Screwdriver Shaft, hexagonal ∅ 4.0 mm, cannulated, length 180 mm, for Hexagonal Coupling ∅ 6.0 mm

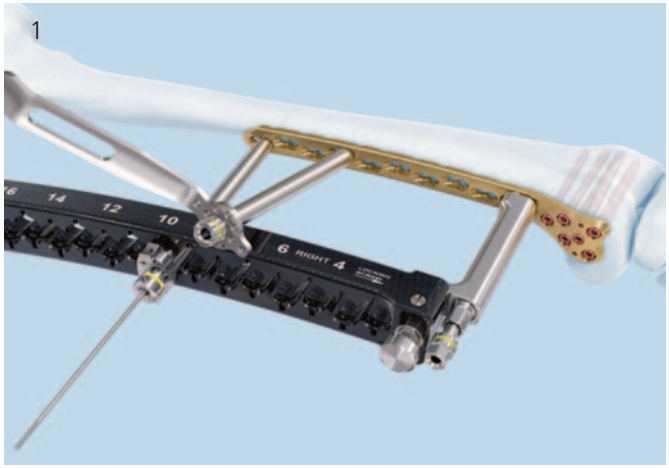
Choose an aiming arm hole and make an incision through it.

For off-axis insertion of VA cannulated locking screws ∅ 5.0 mm, insert the VA wire guide ∅ 2.5 mm with spherical head into the protection sleeve. (1)

Depending on the desired angle, the wire guide/protection sleeve assembly can be placed through the aiming arm hole or outside of the aiming arm.

The spherical tip of the variable angle wire guide should be gently pressed into the variable angle hole to ensure the lip of the wire guide stops on the edge of the hole to prevent drilling beyond 15°. (1)

Insert the guide wire ∅ 2.5 mm through the wire guide at the desired angle. (2)



Measure for screw length using the direct measuring device. Place the direct measuring device over the guide wire and against the end of the wire guide. Determine screw length from the end of the wire. (3)

Remove the wire guide and protection sleeve.

Insert the appropriate length VA cannulated locking screw ∅ 5.0 mm over the guide wire and into the bone (4). Remove the guide wire.

The VA cannulated locking screw ∅ 5.0 mm may be inserted using power equipment together with the cannulated hexagonal screwdriver shaft and quick coupling.

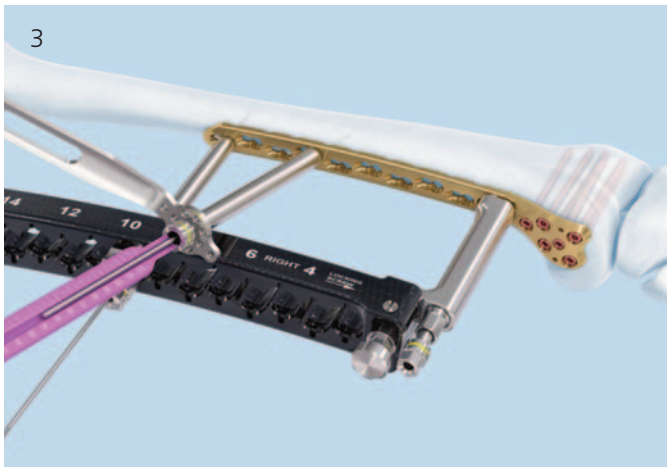
Important: Confirm screw position and length prior to final tightening with the T-handle with torque limiting function 6 Nm. Final tightening must be done by hand using the cannulated hexagonal screwdriver shaft for hexagonal coupling 6.0 mm together with the T-handle with torque limiting function 6 Nm. (5)

Optional Instrument for drilling

Instrument	
310.634	Drill Bit ∅ 4.3 mm, cannulated, length 200 mm, with Quick Coupling

The self-drilling, self-tapping flutes of the VA cannulated locking screws ∅ 5.0 mm make predrilling and pretapping unnecessary in most cases. In dense bone, the lateral cortex can be predrilled, if necessary.

3



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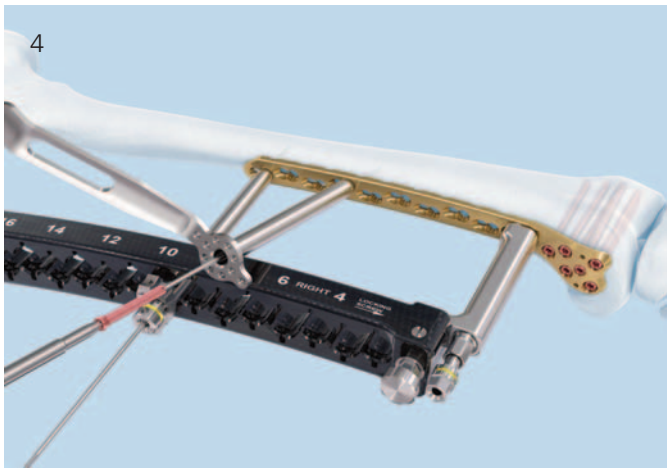

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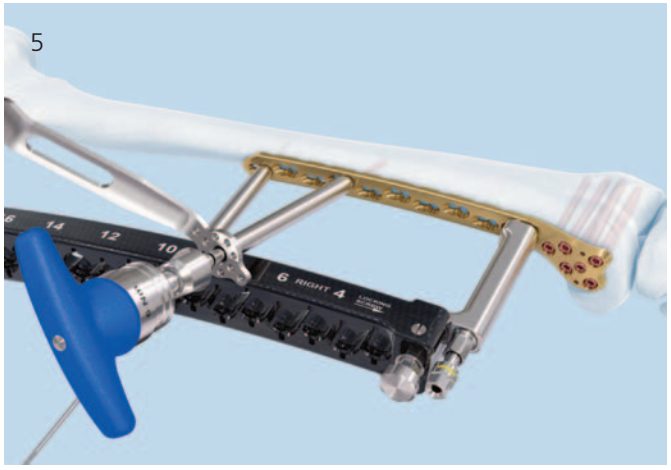


Instrument Removal

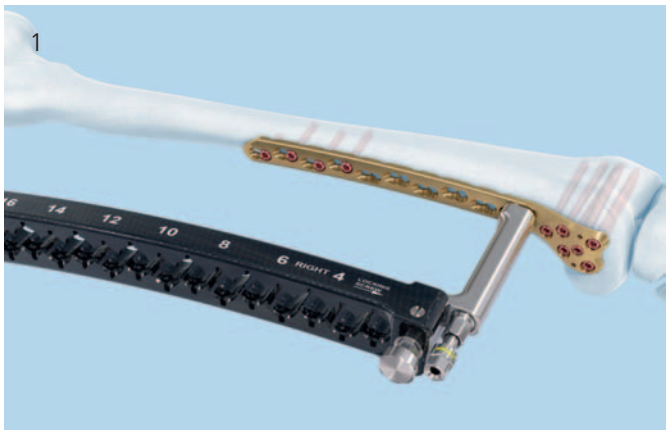
Instruments

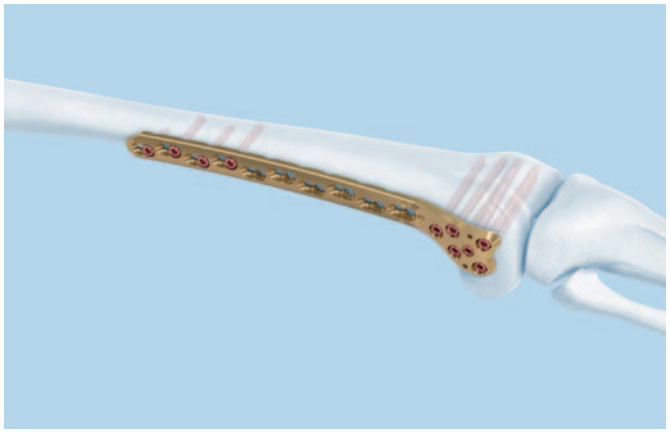
321.160	Combination Wrench ∅ 11.0 mm

Remove all guide sleeves. Turn the connecting bolt on the aiming arm counterclockwise to loosen and remove the aiming arm from the insertion handle. Use the combination wrench to loosen the nut on the locking bolt for the insertion handle and remove the locking bolt. (1)

If desired, insert an appropriate screw into the first combihole in the plate shaft.

Note: This hole is often located immediately adjacent to or in the fracture zone. Because of this, it has the potential to maximize stress concentration in the implant and adversely affect strain in the fracture gap. With most fracture patterns in this region, it is preferable to leave this hole unfilled.





Plates

VA-LCP Condylar Plates 4.5/5.0

Stainless steel	Titanium alloy	Holes	Length (mm)	Side
02.124.406	04.124.406	6	159 mm	right
02.124.407	04.124.407	6	159 mm	left
02.124.408	04.124.408	8	195 mm	right
02.124.409	04.124.409	8	195 mm	left
02.124.410	04.124.410	10	231 mm	right
02.124.411	04.124.411	10	231 mm	left
02.124.412	04.124.412	12	267 mm	right
02.124.413	04.124.413	12	267 mm	left
02.124.414	04.124.414	14	303 mm	right
02.124.415	04.124.415	14	303 mm	left
02.124.416	04.124.416	16	339 mm	right
02.124.417	04.124.417	16	339 mm	left
02.124.418	04.124.418	18	375 mm	right
02.124.419	04.124.419	18	375 mm	left

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

Additionally available (only sterile packed):

Stainless steel	Titanium alloy	Holes	Length (mm)	Side
02.124.420S	04.124.420S	20	411 mm	right
02.124.421S	04.124.421S	20	411 mm	left
02.124.422S	04.124.422S	22	447 mm	right
02.124.423S	04.124.423S	22	447 mm	left

Screws

VA locking screw ∅ 5.0 mm

May be used in the fixed-angle central plate head hole and all variable angle locking holes, including the locking portion of the combi-holes.

– Threaded rounded head
– Self-tapping tip
– Stainless steel or titanium alloy
(02.231.214 – 02.231.300, 04.231.214 – 04.231.300)

VA periprosthetic locking screw ∅ 5.0 mm

May be used in the fixed-angle central plate head hole and all variable angle locking holes, including the locking portion of the combi-holes.

– Threaded rounded head
– Self-tapping flutes
– Blunt tip allows unicortical fixation of fractures when a previously placed implant is present
– Stainless steel or titanium alloy
(02.231.008 – 02.231.020, 04.231.008 – 04.231.020)

VA cannulated locking screw ∅ 5.0 mm

May be used in the fixed-angle central plate head hole and all variable angle locking holes, including the locking portion of the combi-holes.

– Threaded rounded head
– Self-drilling tip
– Stainless steel or titanium alloy
(02.231.620 – 02.231.700, 04.231.620 – 04.231.700)

The following existing screws are compatible with the VA-LCP Condylar Plate 4.5/5.0:

Locking screw ∅ 5.0 mm
Periprosthetic locking screw ∅ 5.0 mm
Cannulated locking screw ∅ 5.0 mm
Cannulated conical screw ∅ 5.0 mm*
Cortex screw ∅ 4.5 mm

* The cannulated conical screw Ø 5.0 mm can only be used in the fixed-angle central plate head hole and cannot be used in the variable angle locking holes.

Important: All non VA locking screws ∅ 5.0 mm must be inserted at zero degrees.

Locking screw ∅ 5.0 mm

May be used in the fixed angle central plate head hole, the surrounding variable angle locking holes in the plate head and the variable angle locking portion of the combi-holes throughout the plate shaft. Screws must be inserted at zero degrees and will provide a locked, fixed-angle screw/plate construct.

– Threaded conical head
– Fully threaded shaft
– Self-tapping tip
– Stainless steel and titanium

Cortex screw ∅ 4.5 mm

May be used in the DCU portion of combi-holes and the central plate head hole to compress the plate to the bone or create axial compression.

– Self-tapping tip
– Stainless steel or titanium

VA Instruments and Aiming Arm Instruments

03.231.001	Insertion Handle for Aiming Arm for VA-LCP Condylar Plate 4.5/5.0	
03.231.002	Stopper for Aiming Arm, for VA-LCP Condylar Plate 4.5/5.0	
03.231.003	Aiming Arm for VA-LCP Condylar Plate 4.5/5.0, left	
03.231.004	Aiming Arm for VA-LCP Condylar Plate 4.5/5.0, right	
03.231.005	Locking Bolt for Aiming Arm Instruments, for VA-LCP Condylar Plates 4.5/5.0	
03.231.006	Locking Nut for Aiming Arm Instruments, for VA-LCP Condylar Plate 4.5/5.0	
03.231.007	Guide Sleeve for Aiming Arm Instruments, for VA-LCP Condylar Plate 4.5/5.0	
03.231.008	VA Drill Guide ∅ 4.3 mm, long	

03.231.009	Trocar for VA Drill Guide ∅ 4.3 mm, long	
03.231.010	Protection Sleeve for VA Drill Guide ∅ 4.3 mm, long	
03.231.013	T-Handle with Torque Limiting Function, 6 Nm	
03.231.015	Screwdriver Shaft Stardrive, T25, length 180 mm, for Hexagonal Coupling 6.0 mm	
03.231.016	Screwdriver Shaft, hexagonal ∅ 4.0 mm, cannulated, length 180mm, for Hexagonal Coupling ∅ 6.0 mm	
03.231.017	Direct Measuring Device for VA Screws ∅ 5.0 mm, cannulated, for VA-LCP Condylar Plate 4.5/5.0	
03.231.018	Handle with Torque Limiting Function, 6 Nm	
03.231.019	VA Wire Guide ∅ 2.5 mm, long	

03.122.040	VA Double Drill Sleeve Ø 4.3 mm	
395.911	Handle for Drill Sleeve	
03.120.015	Trocar with Handle for No. 03.120.014	
03.120.016	Scalpel Handle for Periarticular Aiming Arm Instruments	
03.120.017	Drill Sleeve ∅ 3.2 mm, for neutral position, for Periarticular Aiming Arm Instruments	
03.120.022	Handle for Percutaneous Drill Guide ∅ 4.3 mm, with thread	
03.120.023	Pull Reduction Device for Percutaneous Drill Guide ∅ 4.3 mm, with Nut	
03.120.024	Nut for No. 03.120.023	

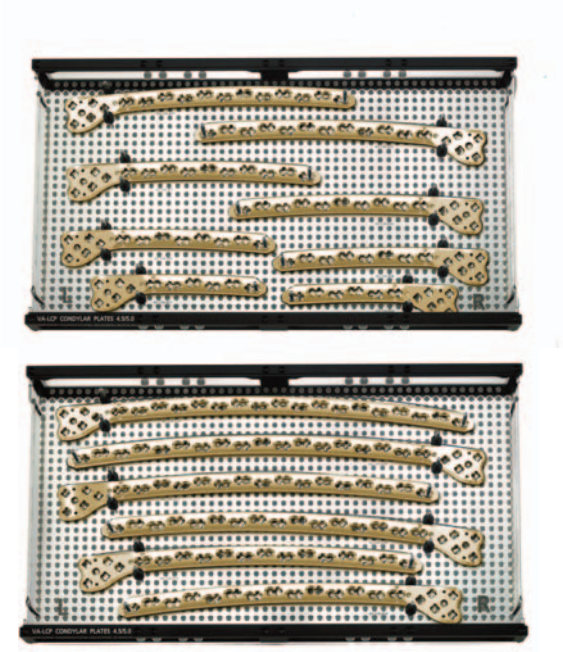
03.120.026	Guide Wire ∅ 2.5 mm, with drill tip, length 300 mm, Cobalt-chrome alloy (CoCroMo)	
03.120.029	Hexagonal Pin Wrench ∅ 4.0 mm with ball tip	
314.119	Screwdriver Shaft Stardrive 4.5/5.0, T25, self-holding, for AO/ASIF Quick Coupling	
314.560	Screwdriver Shaft, hexagonal, large, ∅ 3.5 mm, length 165 mm, for Quick Coupling	
321.160	Combination Wrench ∅ 11.0 mm	
324.203	Drill Guide ∅ 4.3 mm, percutaneous, with thread	
324.208	Direct Measuring Device, percutaneous	
324.212	Drill Bit ∅ 3.2 mm, percutaneous, calibrated, length 300/200 mm, for Quick Coupling	

324.213	Drill Bit ∅ 4.3 mm, percutaneous, calibrated, length 300/200 mm, for Quick Coupling	
324.215	Wire Guide 5.0, percutaneous, for Guide Wire ∅ 2.5 mm	
338.002	Guide Wire ∅ 2.5 mm, with drill tip, length 300 mm, Stainless Steel	

Sets

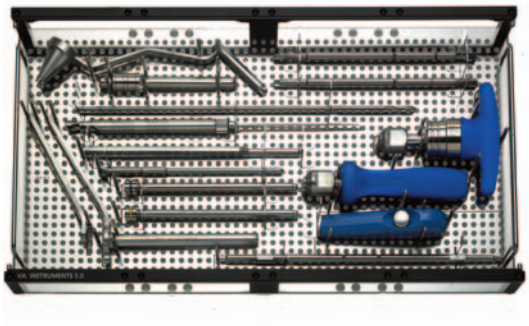
Plates

01.231.030	VA-LCP Condylar Plate 4.5/5.0, Stainless Steel, in Vario Case
or	
01.231.031	VA-LCP Condylar Plate 4.5/5.0, Titanium Alloy, in Vario Case
68.231.001	Vario Case for VA-LCP Condylar Plate 4.5/5.0, size ½, without Contents
68.231.002	Modular Tray 1 for VA-LCP Condylar Plate 4.5/5.0, size ½, without Contents, Vario Case System
68.231.003	Modular Tray 2 for VA-LCP Condylar Plate 4.5/5.0, size ½, without Contents, Vario Case System



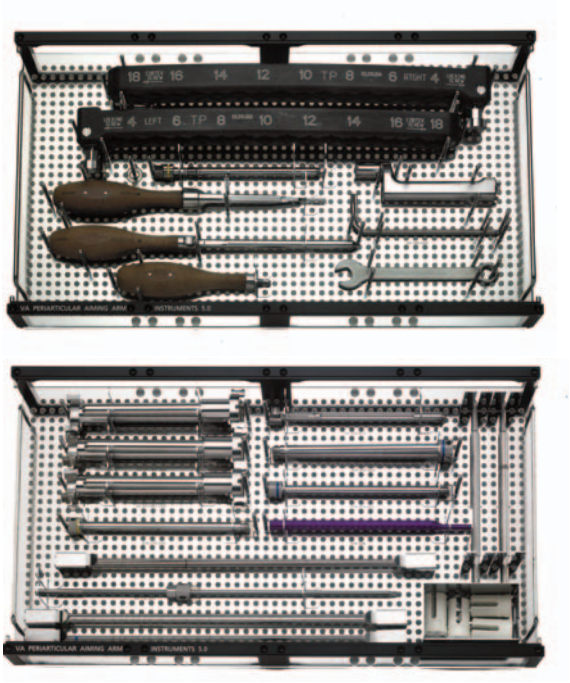
VA Instruments

01.231.032	Instruments for VA-LCP Condylar Plate 4.5/5.0, in Vario Case
68.231.007	Modular Tray for VA Instruments, for VA-LCP Condylar Plate 4.5/5.0, size ½, without Contents, Vario Case System



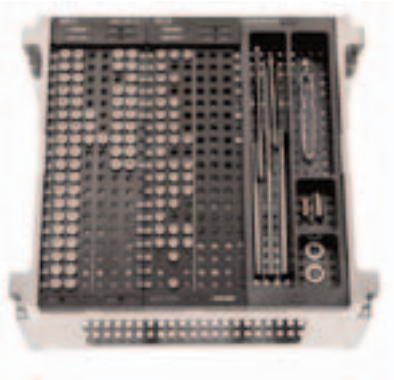
VA Aiming Arm Instruments

01.231.033	VA Periarticular Aiming Arm Instruments for VA-LCP Condylar Plate 4.5/5.0, in Vario Case
68.231.004	Vario Case for VA Periarticular Aiming Arm Instruments, size ½, without Contents
68.231.005	Modular Tray 1 for VA Periarticular Aiming Arm Instruments, size ½, without Contents, Vario Case System
68.231.006	Modular Tray 2 for VA Periarticular Aiming Arm Instruments, size ½, without Contents, Vario Case System



Screws

68.122.054	Modular Screw Rack, with Drawer, Measuring Block and Lid, length 200 mm, height 115 mm, size ½, without Contents, Vario Case System
68.122.050	Modular Insert, for Modular Screw Rack, for Screws ∅ 5.0 mm, size ⅓, without Contents, Vario Case System



Other optional modules

68.122.051	Modular Insert, for Modular Screw Rack, for Screws ∅ 4.5 mm, size ⅓, without Contents, Vario Case System
68.122.052	Modular Insert, for Modular Screw Rack, for Screws ∅ 6.5 mm, size ⅓, without Contents, Vario Case System
68.122.056	Auxiliary Modular Insert, for Modular Screw Rack, size ⅓, without Contents, Vario Case System
68.000.128	Auxiliary Module, size ⅓, height 14 mm,
	for Screw Rack, size ½
68.000.129	Auxiliary Module, size ⅓, height 28 mm, for Screw Rack, size ½

Bibliography

Karunakar, MA, JF Kellam. "Avoiding malunion with 95 degree fixed-angle distal femoral implants." J Orthop Trauma 18 (7) (2004): 443-445.

Maier, A, J Cordey, P Regazzoni. "Prevention of malunions in the rotation of complex fractures of the distal femur using the Dynamic Condylar Screw (DCS): an anatomical graphic analysis using computed tomography on cadaveric specimens." Injury 31(suppl 2) (2000): S-B63-S-B69.

Müller, ME, M Allgöwer, R Schneider, H Willenegger. AO Manual of Internal Fixation. 3rd Edition. Berlin: Springer. 1991.

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