




LISS PLT. The less invasive stabilization system for proximal tibia fractures.

Technique Guide



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-  Stardrive
-  Hex drive
-  Image intensifier control

Warning

This description is not sufficient for immediate application of the instrumentation. Instruction by a surgeon experienced in handling this instrumentation is highly recommended.

Less Invasive Stabilization System LISS



Anatomically precontoured low profile plates with optimized anatomical screw position

- Reduced soft tissue problems
- No need for plate contouring

Angular stability

- Prevents screw loosening as well as primary and secondary loss of reduction.
- Allows early functional mobilization.
- As an internal fixator, the plate preserves bone vascularization.
- Improved purchase in osteoporotic bone.

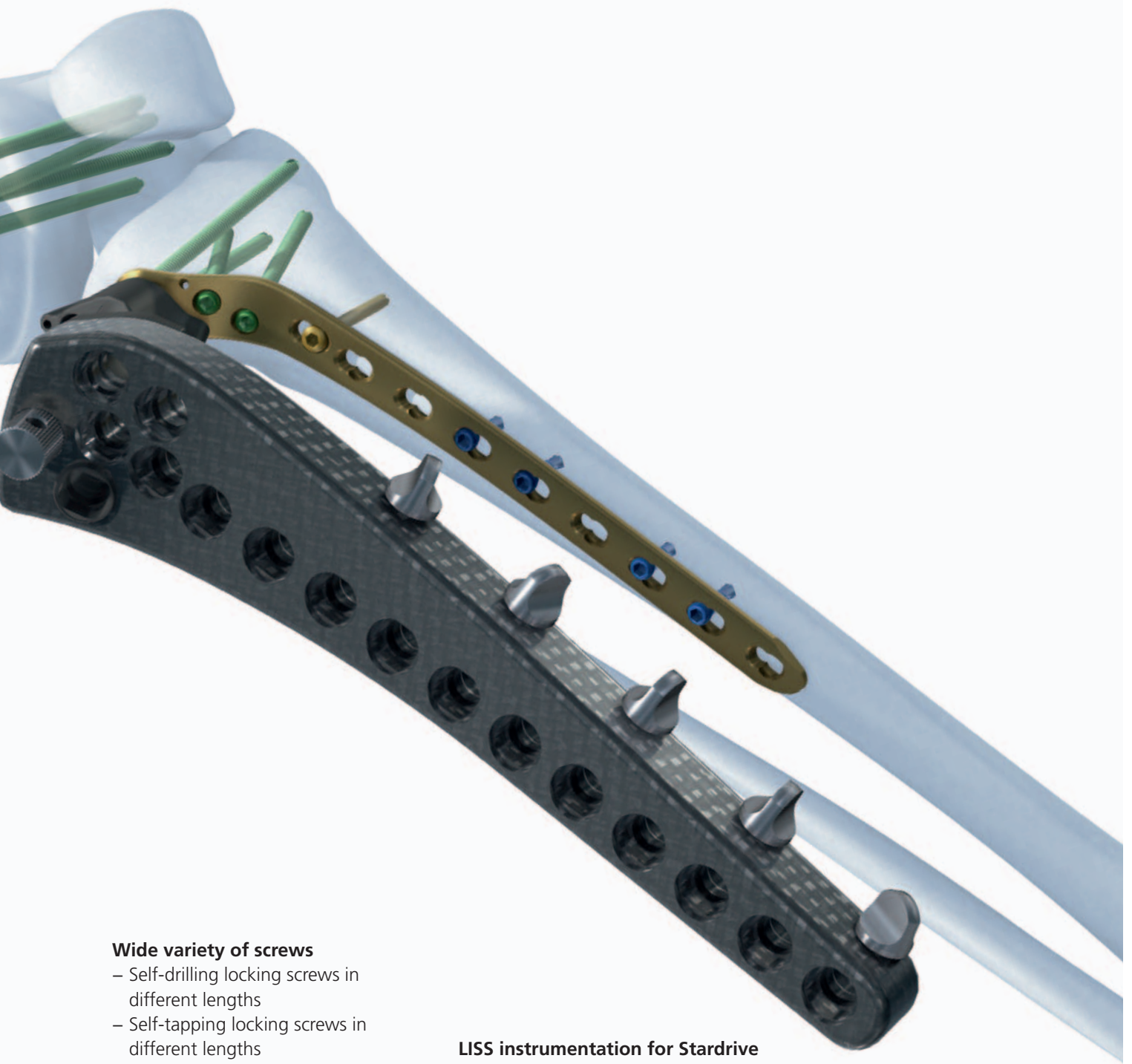
Less invasive procedure

- A radiolucent handle facilitates the insertion of the plate as well as accurate and hassle-free percutaneous placement of the screws.
- Additional instrumentation facilitate indirect reduction.



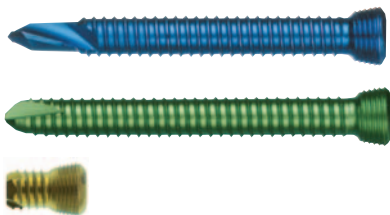
Wide variety of plates

- LCP DF and PLT with combi-holes in the shaft
- Left and right versions
- Five lengths with 5, 7, 9, 11 and 13 combi-holes in the shaft
- Available in stainless steel and TAN



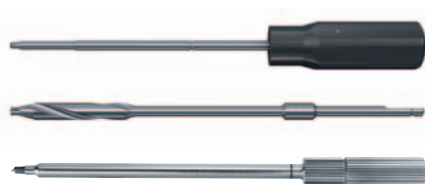
Wide variety of screws

- Self-drilling locking screws in different lengths
- Self-tapping locking screws in different lengths
- Special locking screws with blunt tip for periprosthetic fractures
- All screws with Stardrive or Hex drive
- Available in stainless steel and TAN



LISS instrumentation for Stardrive and Hex drive

The torque-limiting screwdriver, the screwdriver shaft and the cleaning instrument are available for screws with Stardrive and Hex drive.



In 1958, the AO formulated four basic principles, which have become the guidelines for internal fixation:¹

Anatomic reduction

Fixation of extra- and intra-articular proximal tibia fractures with the precontoured LCP PLT plates allow for anatomic reduction.

Stable fixation

Locking holes allow fixation with locking screws for angular stability. A fixed-angle construct is advantageous in osteoporotic bone and multifragment fractures where traditional screw purchase is compromised.

Preservation of blood supply

The LISS approach with its proven success preserves the blood supply through a minimally invasive surgical technique and minimal bone-to-plate contact.

Early, active mobilization

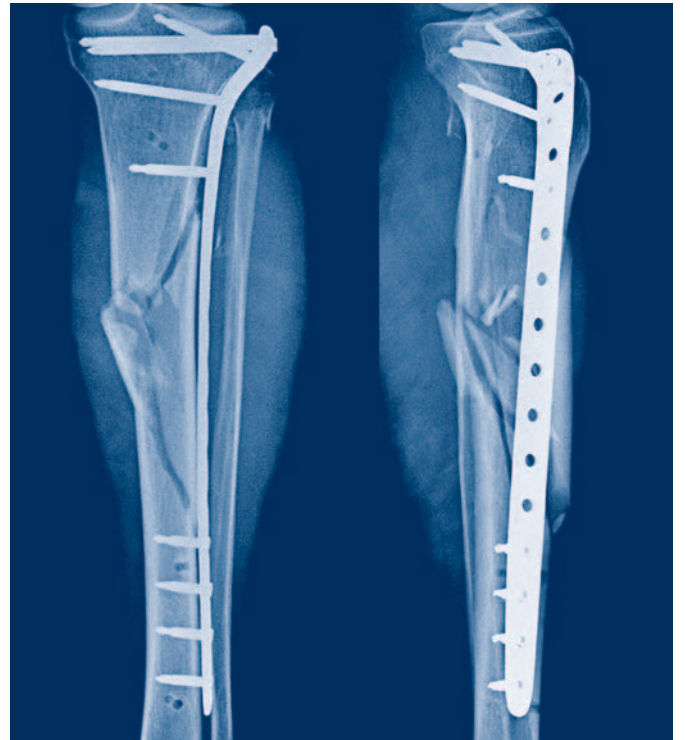
LISS provides stable fracture fixation with minimal trauma to the vascular supply. This helps improve the environment for bone healing, accelerating the patient's return to previous mobility and function.

¹ Müller ME, Allgöwer M, Schneider R, Willenegger H (1991) AO Manual of Internal Fixation. 3rd Edition. Berlin: Springer

Indications

LCP PLT is indicated for the stabilization of fractures of the proximal tibia. These include:

- Proximal shaft fractures
- Metaphyseal fractures
- Intra-articular fractures
- Periprosthetic fractures



Case 1

Female, 40 years old, single fracture 41-C3



Preoperative



Postoperative



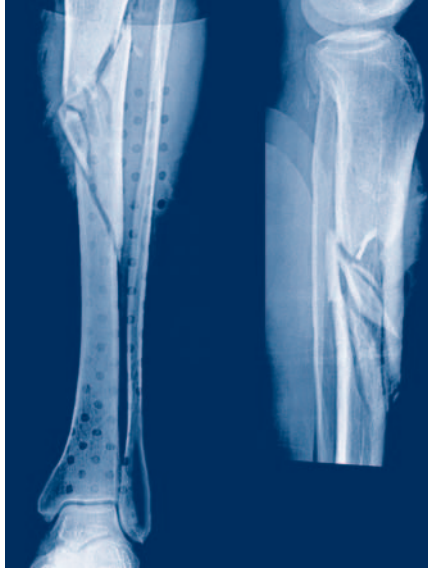
Follow-up after 3 months



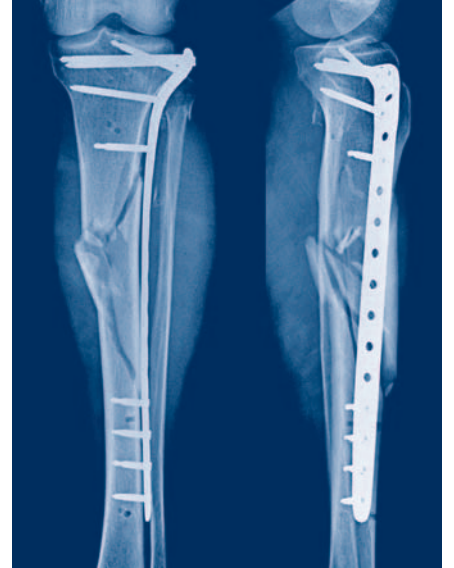
Follow-up after 5 months

Case 2

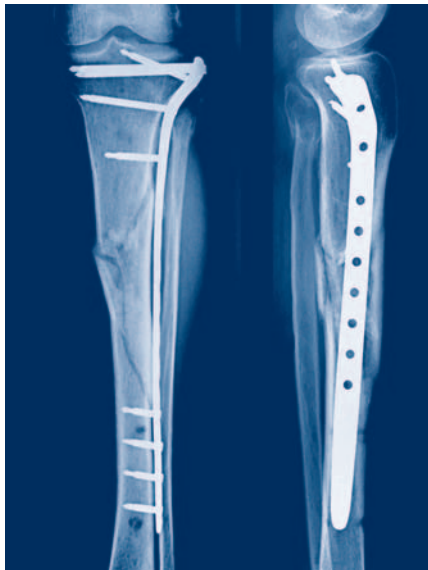
Male, 61 years old,
fragmented wedge fracture
42-B3



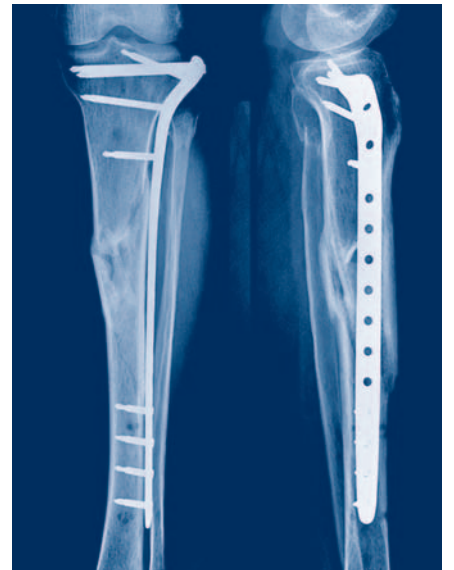
Preoperative



Postoperative



Follow-up after 4 months



Follow-up after 7 months

Preoperative Planning

Use an antero-posterior as well as a lateral x-ray image of the injured limb and an image of the knee joint. X-ray images of the other limb might be useful for comparison.

Use the x-ray templates for LCP PLT (Art. No. 034.000.310 for right and 034.000.305 for left tibia) to determine the length of the plate and the position of the screws.

Preoperative planning of lag screws may be necessary.

Note: The screws in holes A and C point towards the articular surface of the knee. For hole A, the tip of a 40 mm long screw and for hole C, the tip of a 75 mm long screw will lie approximately at the same level as the top of the plate.

LCP Proximal Lateral Tibia, right

	Titanium	St. Steel	Holes	Length (mm)
432.220	222.220	5	140	
432.222	222.222	7	180	
432.224	222.224	9	220	
432.226	222.226	11	260	
432.228	222.228	13	300	

1:10 Magnification

For use only with the Original AO/ASIF System of Instruments and Implants.

SYNTHES
Synthes GmbH
Königsplatz 8
CH-4002 Solothurn
www.synthes.com

CE 0123

LCP Proximal Lateral Tibia, left

	Titanium	St. Steel	Holes	Length (mm)
432.221	222.221	5	140	
432.223	222.223	7	180	
432.225	222.225	9	220	
432.227	222.227	11	260	
432.229	222.229	13	300	

1:10 Magnification

For use only with the Original AO/ASIF System of Instruments and Implants.

SYNTHES
Synthes GmbH
Königsplatz 8
CH-4002 Solothurn
www.synthes.com

CE 0123

Preparation

1

Prepare required sets

Sets

01.120.040	Set for LISS Instruments and Insertion Handle, for DF and PLT Plates
or	
01.120.041	Set for LISS Instruments Stardrive and Insertion Handle, for DF and PLT Plates

01.120.412	Plate Set LCP PLT 4.5/5.0 (Stainless Steel)
or	
01.120.414	Plate Set LCP PLT 4.5/5.0 (Titanium Alloy/TAN)

01.200.011	Locking Screws \varnothing 5.0 mm and Standard Screws \varnothing 4.5/6.5 mm (Stainless Steel) in Sterilizing Tray
or	
01.200.012	Locking Screws \varnothing 5.0 mm and Standard Screws \varnothing 4.5/6.5 mm (Titanium) in Sterilizing Tray
or	
01.200.013	Locking Screws Stardrive \varnothing 5.0 mm and Standard Screws \varnothing 4.5/6.5 mm (Stainless Steel) in Sterilizing Tray
or	
01.200.014	Locking Screws Stardrive \varnothing 5.0 mm and Standard Screws \varnothing 4.5/6.5 mm (TAN) in Sterilizing Tray

Optional set

01.120.457	Large Fragment Instrument Set
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Power Tools

511.701	Compact Air Drive
or	
530.100	Power Drive

511.750	Quick Coupling
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511.790	Quick Coupling for Kirschner Wires
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2

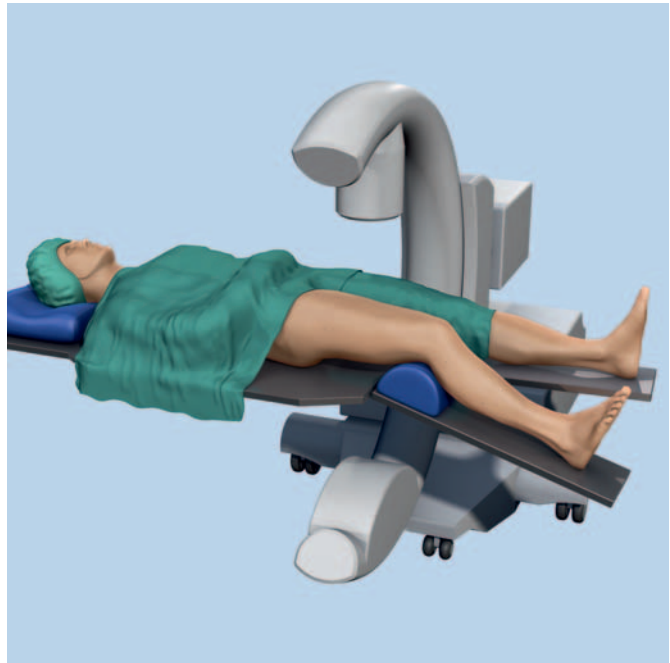
Position the patient

Position the patient supine on a radiolucent table. The leg should be freely movable. The contralateral leg can be placed in an obstetric leg holder.

Ensure that both a lateral and AP x-ray of the proximal tibia can be obtained in this position.

Support the knee with towels to flex it into the appropriate position.

Note: The use of a fracture table has not proven to be very helpful.

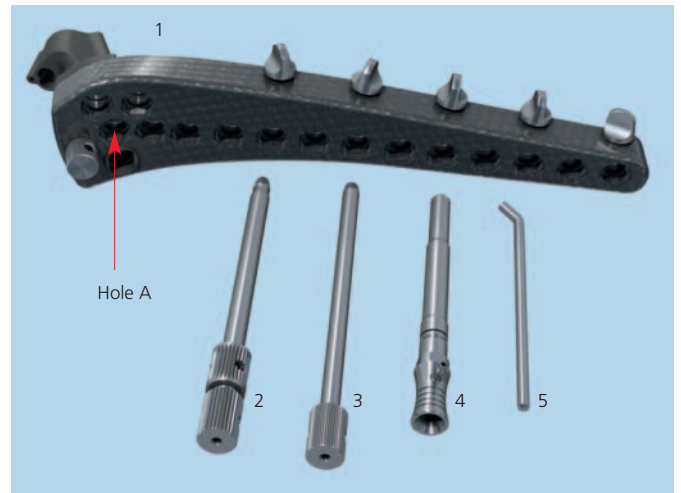


3

Assemble the insertion instruments

Instruments

324.003 or 324.004	LISS Insertion Guide for Proximal Tibia, left LISS Insertion Guide for Proximal Tibia, right	1
324.043	Fixation Bolt for LISS Insertion Guide	2
324.044	Stabilization Bolt for LISS Insertion Guide	3
324.022	Drill Sleeve for LISS Insertion Guide	4
321.170	Pin Wrench \varnothing 4.5 mm	5



Insert the fixation bolt in hole A of the insertion guide.

Place the insertion guide on the three-point locking mechanism of the plate.

Thread the fixation bolt into the plate. Thread the nut of the fixation bolt and lightly tighten it with the pin wrench.

For a more stable fixation between the plate and the insertion guide during insertion, introduce the stabilization bolt with the drill sleeve through hole C and thread it into the plate.



Hole A Hole C

Note: To prevent tissue ingrowth and facilitate implant removal, close the unoccupied screw holes by means of screw hole inserts prior to inserting the plate. Use the torque-limiting screwdriver. The optimum torque is reached after one click.



4

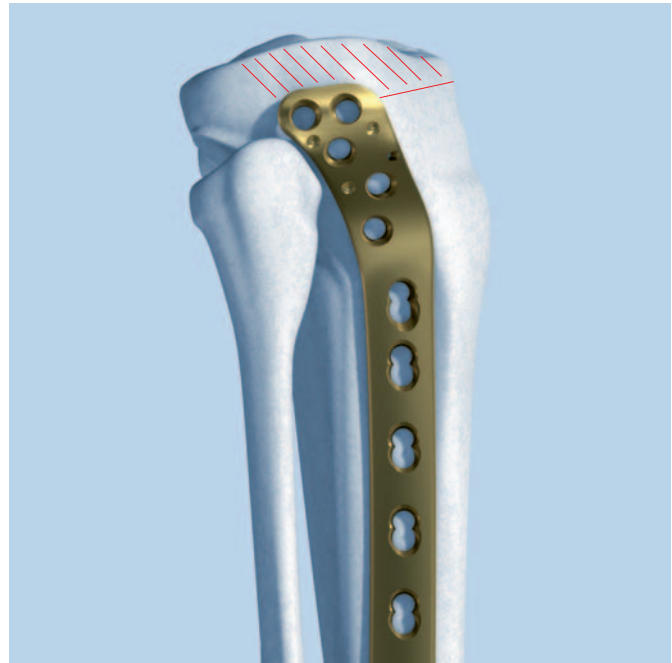
Reduce the fracture

If the fracture is intra-articular, first reconstruct and stabilize the whole joint. Use lag screws to achieve compression between the articular fragments. Cannulated screws have proven to be very convenient for this.

Take care to ensure that these additional screws do not collide with the locking screws inserted through the insertion guide. The figure shows the possible zone for lateral lag screws in the condyle.

The fracture can be aligned manually by traction, with a temporary knee-bridging external fixator or with a distractor.

- Intra-operative x-ray or image-intensifier control is recommended to check reduction.



The red hatched area indicates the possible zone for lag screws.

5

Surgical approaches

Depending on requirements, it is possible to perform either a curved (120° hockey stick) or a straight skin incision from Gerdy's tubercle about 50 mm in a distal direction (see figure).

Approximately half a centimeter from the tibial ridge, detach the anterior tibial muscle from the bone, retract it and insert the plate in the space between the periosteum and the muscle. To allow correct positioning of the proximal part of the plate, it is important to adequately dissect the muscle attachment site.

For complex intra-articular fractures, an anterolateral arthrotomy that provides good control of the reduction may be preferred.



Lateral approach: straight (full line) or curved incision (dashed line).

Plate Insertion

1

Insert LISS

Instruments

Assembled Insertion Guide

324.027 Trocar, length 162 mm, for No. 324.022

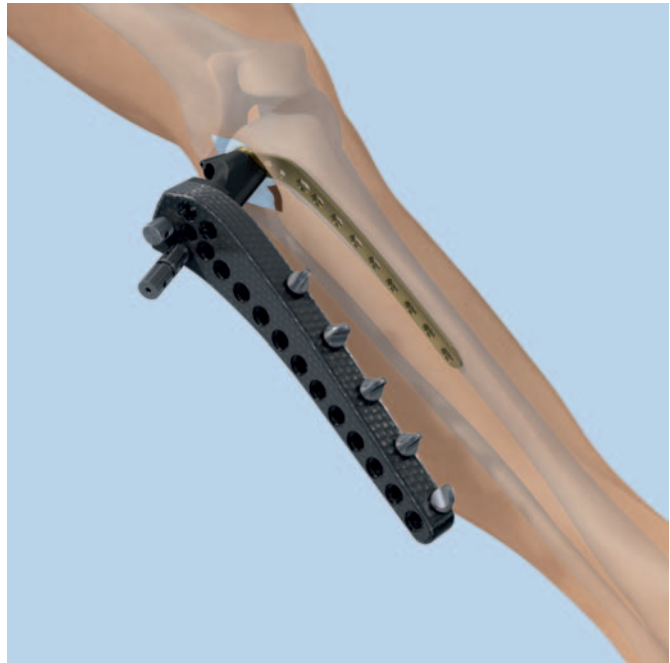
Insert the plate between the anterior tibial muscle and the periosteum.

Slide the plate in the distal direction with its distal end in constant contact with the bone. Position the proximal end of the plate against the lateral condyle. Carefully find the correct position of the plate on the condyle.

Check that the plate is positioned properly, distally on the anterolateral side of the tibia and proximally on the lateral condyle.

The plate must lie flat against the condyle. Due to its weight, the insertion guide has a tendency to tilt dorsally. Should it be problematic to find the correct position of the plate on the condyle, further release the proximal soft tissues by increasing the opening.

Important: The screw in hole D is oriented towards the posterior side of the medial condyle. Excessive internal rotation of the insertion guide must therefore be avoided as this screw might endanger the popliteal artery.



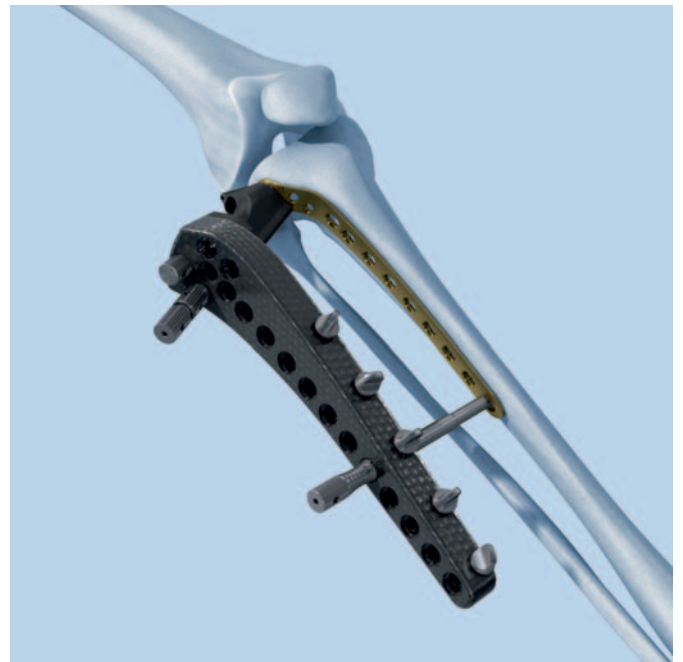
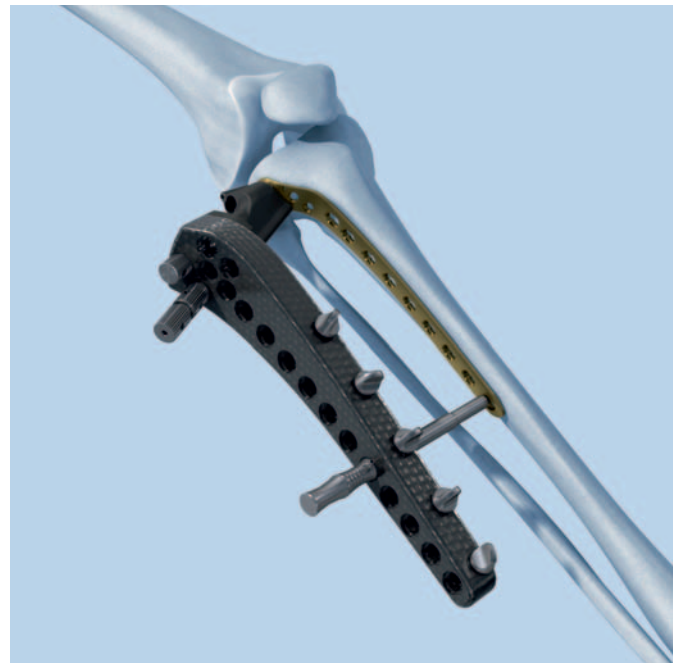
Once the plate is properly aligned with the bone, remove the drill sleeve and the stabilization bolt from hole C. Insert the trocar in the drill sleeve through the most distal hole of the plate. Perform a stab incision and insert the drill sleeve and the trocar down to the plate. Check the correct position of the distal part of the plate, either with the image intensifier or by direct palpation.



Secure the position of the drill sleeve with the fixation screw of the insertion guide. Replace the trocar with the stabilization bolt. Thread the stabilization bolt into the plate to close the frame.

Notes

- When using a 13 hole plate, perform a careful soft tissue dissection down to the plate for holes 10 to 13 before inserting the trocar and drill sleeve, in order to visualize the superficial peroneal nerve. Alternatively, it is also possible to perform a blunt dissection from ventral to dorsal to avoid the superficial peroneal nerve.
 - Due to soft tissues around the stabilization bolt, it will be difficult to change the position of the plate/handle assembly once the bolt has been inserted.
-



2

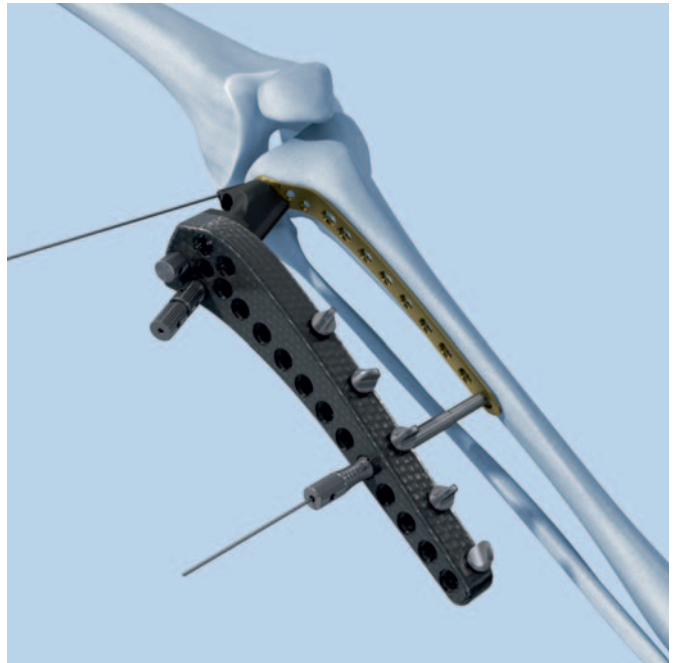
Fixate LISS temporarily with Kirschner wires

Instrument

292.699	Kirschner Wire \varnothing 2.0 mm with threaded tip
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For preliminary fixation of the plate, use a 2.0 mm Kirschner wire through the most proximal Kirschner wire hole of the insertion guide (guided only through the aluminium foot part of the insertion guide) and through the stabilization bolt.

Carefully check the position of the plate and the length of the reduced injured limb. Once the reduction has been successfully completed and the plate has been positioned correctly, the locking screws can be inserted.



Alternative technique

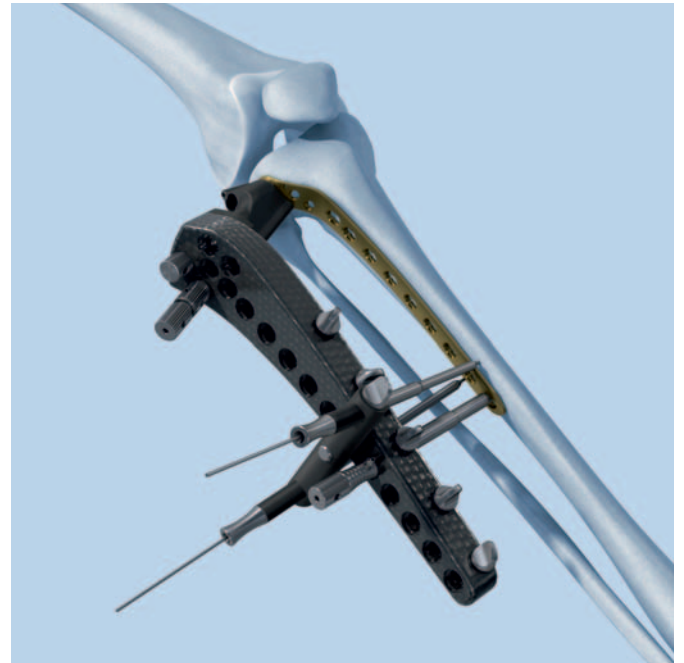
Instruments

324.048	Aiming Device for Kirschner Wires, for LISS Insertion Guide
324.034	Centering Sleeve for Kirschner Wire, length 184 mm, for No. 324.048
292.699	Kirschner Wire \varnothing 2.0 mm with threaded tip

If necessary, it is possible to use 2.0 mm Kirschner wires for the preliminary fixation on both sides of the plate. Use the aiming device for Kirschner wires to insert the wires on the ventral and dorsal side of the plate. The distance between bone and plate should be kept as short as possible when inserting the wires, as they are convergent. After the insertion of the Kirschner wires, the distance between plate and bone can no longer be reduced.

After removing the Kirschner wire sleeves and the aiming device, proximal/distal displacement and adjustment of the position of the plate can be carried out. At the same time, the lateral Kirschner wires prevent the plate from migrating into the sagittal plane. Once the correct position is determined, the plate can be locked temporarily with a Kirschner wire through the fixation bolt.

Note: The aiming device can be used from hole 3 to hole 13.



A Insertion of Self-drilling, Monocortical Locking Screws

Screw placement depends on the type of fracture. The position of the screws should be chosen in accordance with established biomechanical principles for internal fixation. The screws should be inserted close to and remote from the fracture gap in the main fragments. Use at least four screws per fracture side.

Length and rotation are defined as soon as one screw has been inserted in each main fragment. Ante- and recurvatum deformities can still be adjusted, but varus or valgus deformities can hardly be corrected. For this reason, it is recommended to start inserting the first screw in the proximal fragment.

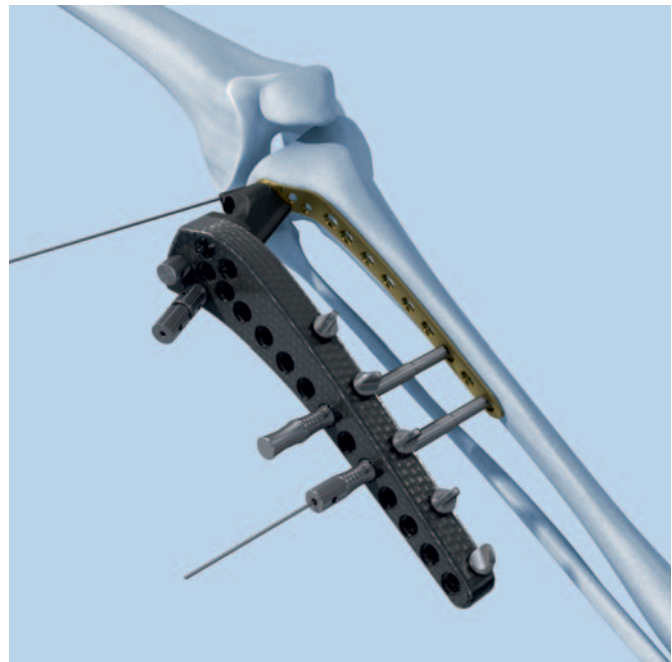
Important: If a screw has to be removed and reinserted, use the torque-limiting screwdriver and not the power tool.

1 Make stab incision

Instruments

324.022	Drill Sleeve for LISS Insertion Guide
324.027	Trocar, length 162 mm, for No. 324.022

Make a stab incision and insert the trocar through the drill sleeve.



2

Determine screw length

Instruments

324.055	Centering Sleeve for Kirschner Wires
324.037	LISS Measuring Device for Kirschner Wires
292.699	2.0 mm Kirschner wire, length 280 mm

To determine the length of the condylar screws, use the measuring device with a 2.0 mm Kirschner wire, placed through the centering sleeve in the drill sleeve.

- Using image intensification, insert the Kirschner wire to the desired depth leaving at least 5 mm between the tip of the Kirschner wire and the medial cortex. Measure the screw length over the Kirschner wire using the measuring device for Kirschner wires, leaving the centering sleeve in place, and round down to the nearest screw length. This will ensure that the tip of the screw will not protrude through the medial cortex.



Important: To improve the visualization of the condyle, the drill sleeves for the two most proximal holes (holes D and E) are guided through the aluminium foot part of the insertion guide only. To prevent rotation of the drill sleeve, it is therefore necessary to hold it with two fingers during insertion and removal of the Kirschner wire as well as during insertion and removal of the two most proximal screws.

- ① Orient the C-arm obliquely in order to visualize correctly where the Kirschner wire exits from the anteromedial or posteromedial cortex.

Use screws of 26 mm or 18 mm length in the shaft region.

Options

- In case of very thick cortex, pre-drill by using the Pulling Device (324.033) or the Drill Bit \varnothing 4.3 mm (310.423).
 - The insertion of the initial screw tends to push the bone medially, especially in case of dense bone and/or unstable reductions. The pulling device helps to solve this problem (see page 27).
-

3

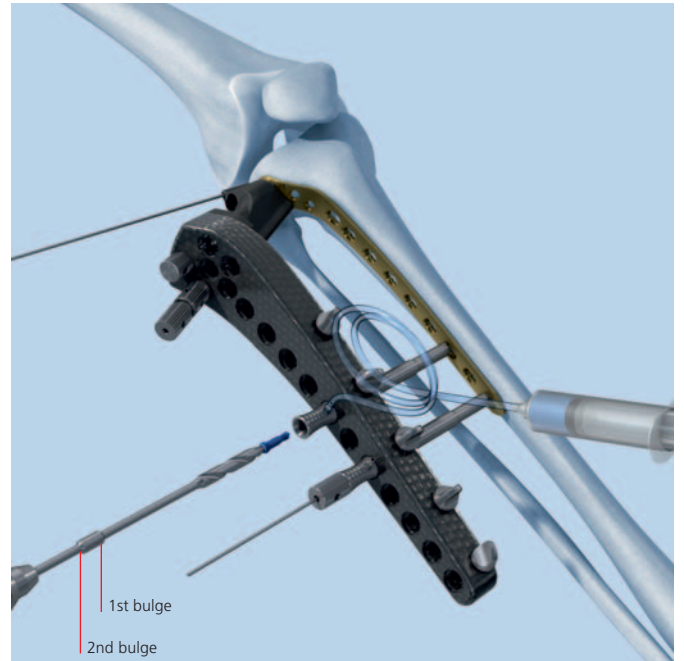
Insert self-drilling locking screws

Instruments

511.771	Torque Limiter, 4 Nm
● 324.050 or ● 324.250	Screwdriver Shaft 3.5, hexagonal, length 158 mm Screwdriver Shaft Stardrive, T25, length 158 mm
● 324.052 or ● 314.163	Torque-limiting Screwdriver 3.5, hexagonal Torque-limiting Screwdriver Stardrive, T25
324.019	Stopper

To insert the locking screw using a power tool, fit a torque limiter to the power tool and insert the screwdriver shaft into the torque limiter.

Insert the locking screw into the plate hole through the drill sleeve for LISS insertion guide. To insert the screw, start the power tool slowly, increase the speed and then reduce it again before the screw is fully tightened. Advance the screw into the bone until the second bulge of the screwdriver disappears in the drill sleeve.

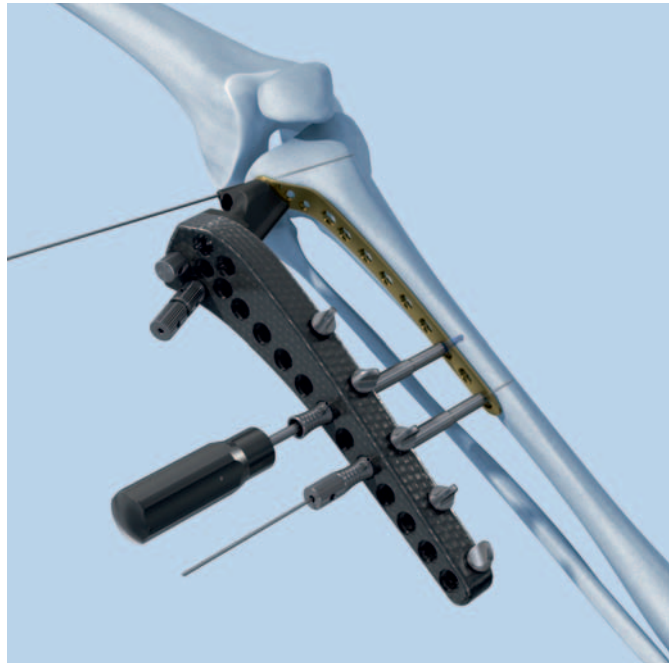


Tighten the screw manually with the torque-limiting screwdriver. The optimum torque is reached after one click.

Insert a stopper into the LISS insertion guide after screw insertion.

Notes

- Do not lock the screws at full speed to reduce the risk of stripping the screw head. This can make it difficult to remove the implant.
 - In order to achieve an excellent interface between screw and bone and to prevent a medial migration of the bone, use the power tool without high axial forces (3 to 5 kg).
 - To prevent heat necrosis, it is important to cool the screw with saline solution during the drilling procedure through the drill sleeve.
 - If the screw is difficult to insert or stops advancing prior to locking to the plate, remove the screw and clean the cutting flutes using a Kirschner wire. The screw can be re-used if the socket has not been damaged.
 - Should the screwdriver be difficult to remove after insertion, disconnect it from the power tool and remove the drill sleeve. After reconnecting the screwdriver to the power tool, withdraw the screwdriver from the screw.
-



B Insertion of Self-tapping, Bicortical Locking Screws

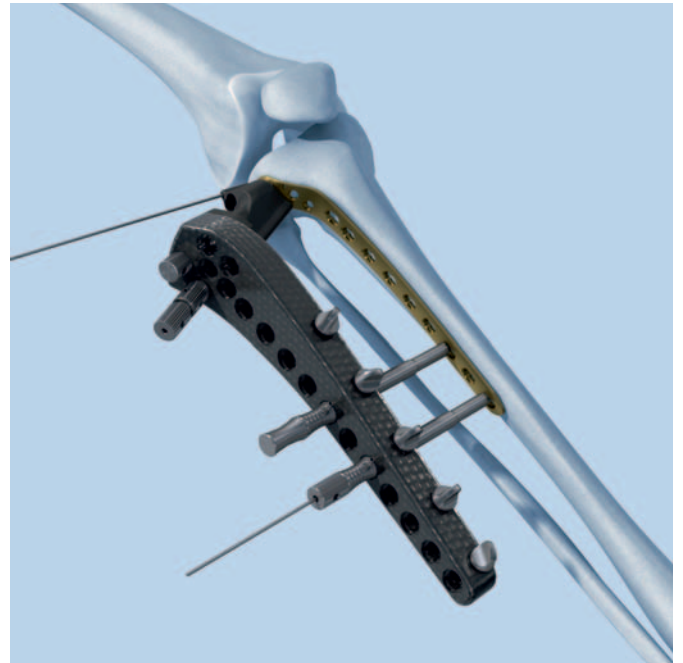
1

Make stab incision

Instruments

324.022	Drill Sleeve for LISS Insertion Guide
324.027	Trocar, length 162 mm, for No. 324.022

Make a stab incision and insert the trocar through the drill sleeve for LISS insertion guide.



2

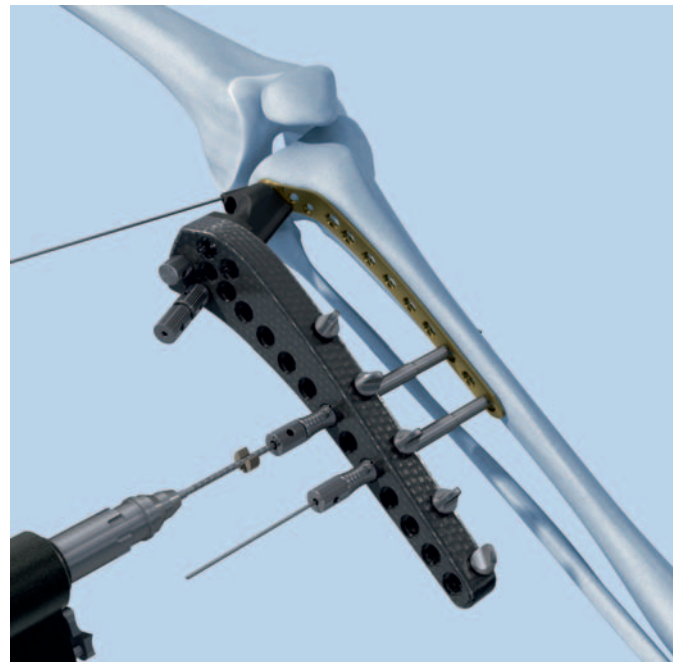
Predrill screw hole

Instruments

324.007	Drill Sleeve 7.2/4.3, length 130 mm
310.423	Drill Bit \varnothing 4.3 mm, length 280 mm

Remove the trocar and thread the drill sleeve 7.2/4.3 into the plate hole through the drill sleeve for LISS Insertion guide.

Carefully drill the screw hole using the 4.3 mm drill bit.



3

Determine screw length

Slide the stop ring down to the drill sleeve to make reading easier.

Read the drilled depth directly from the laser mark on the drill bit. Remove both drill bit and drill sleeve 7.2/4.3.

Note: Replacement stop rings can be ordered from the local Synthes representative.

Option: The insertion of the initial screw tends to push the bone medially, especially in case of dense bone and/or unstable reductions. The pulling device helps to solve this problem (see page 27).



4

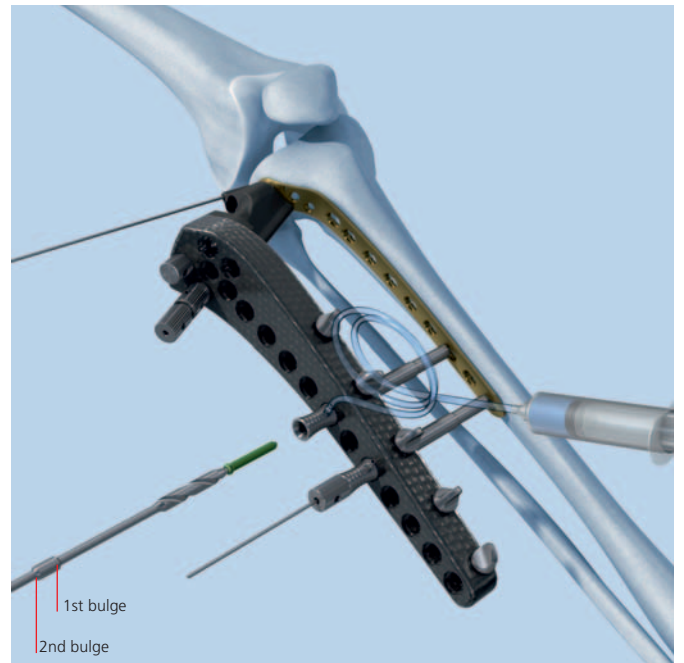
Insert self-tapping locking screws

Instruments

511.771	Torque Limiter, 4.0 Nm
324.050	Screwdriver Shaft 3.5, hexagonal
or	
324.250	Screwdriver Shaft Stardrive, T25
324.052	Torque-limiting Screwdriver 3.5, hexagonal
or	
314.163	Torque-limiting Screwdriver Stardrive, T25
324.019	Stopper

Choose a self-tapping locking screw according to the measured length. To insert the locking screw using a power tool, fit a torque limiter to the power tool and insert the screwdriver shaft into the torque limiter.

Insert the locking screw into the plate hole through the drill sleeve for LISS Insertion guide. To insert the screw, start the power tool slowly, increase the speed and then reduce it again before the screw is fully tightened. Advance the screw into the bone until the second bulge of the screwdriver disappears in the drill sleeve.

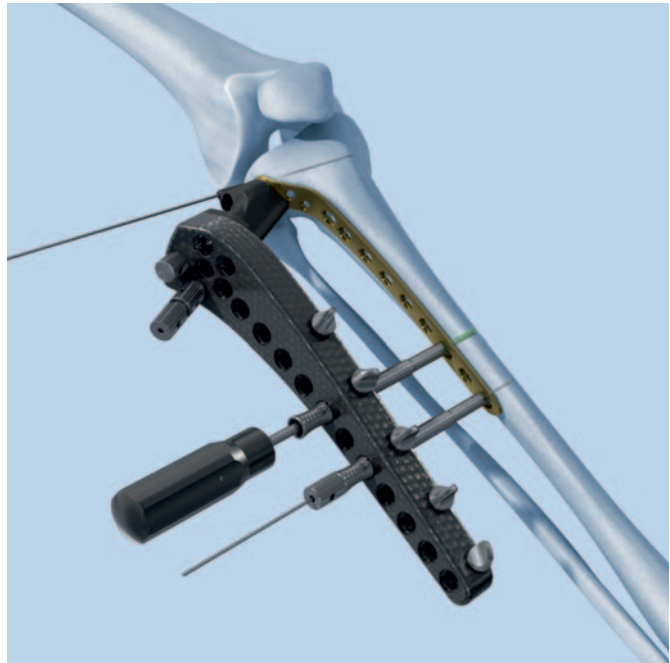


Tighten the screw manually with the torque-limiting screwdriver. After one click, the optimum torque is reached.

Insert a stopper into the LISS insertion guide after screw insertion.

Notes

- To reduce the risk of stripping the screw head do not lock the screws at full speed. This can make it difficult to remove the implant.
 - For long screws and thick cortical bone, ensure sufficient cooling during insertion.
-



Option: Manual insertion

Instruments

● 324.052	Torque-limiting Screwdriver 3.5, hexagonal or
● 314.163	Torque-limiting Screwdriver Stardrive, T25
324.019	Stopper

Insert and lock the screw with the torque-limiting screwdriver through the drill sleeve for LISS insertion guide.

Insert a stopper into the LISS insertion guide after screw insertion.

Option: Pulling Device (“Whirly Bird”)

Instrument

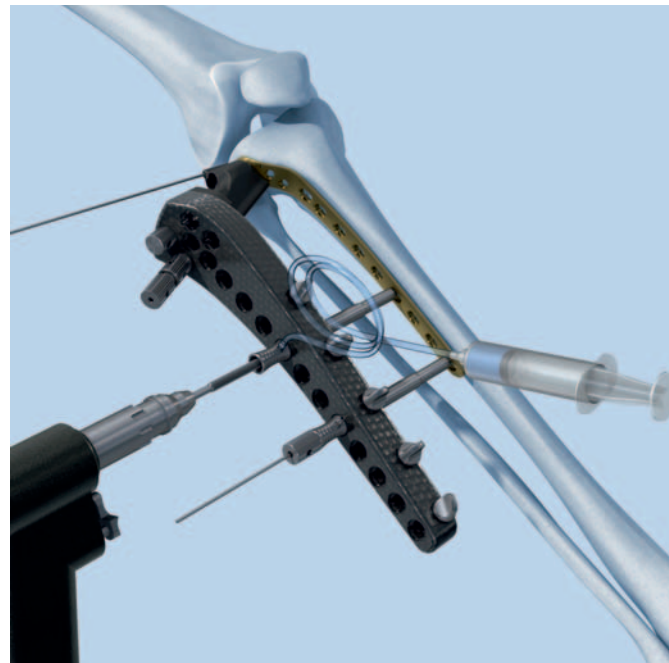
324.033	Pulling Device, length 240 mm
324.022	Drill Sleeve for LISS Insertion Guide

The insertion of the initial screw tends to push the bone medially, especially in case of dense bone and/or unstable reductions. The pulling device helps to solve this problem.

Insert the pulling device without the knurled nut through the drill sleeve into the neighbouring hole of the first permanent screw.

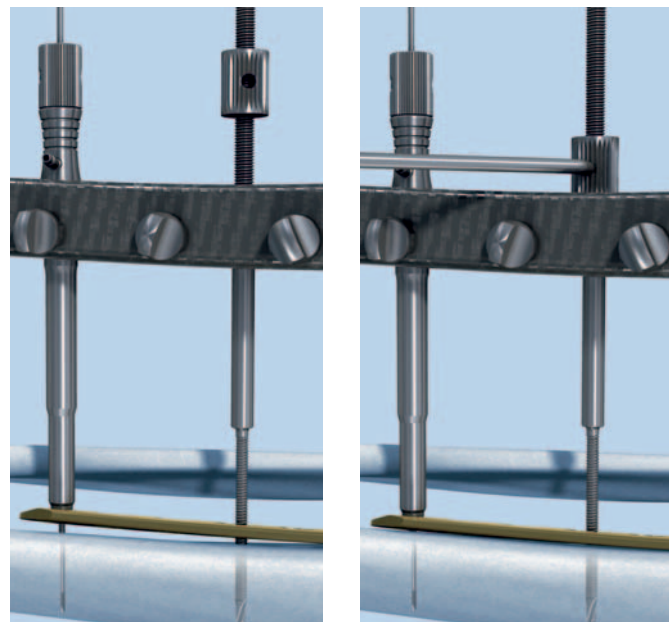
Stop the power tool before the entire screw length of the pulling device is inserted.

Remove the power tool and the drill sleeve.



Screwing the knurled nut onto the pulling device allows the bone to pull towards the plate. Since the tip of this instrument has a diameter of 4.0 mm, replacing it by a 5.0 mm locking screw still ensures good purchase in the bone.

Note: It is important to monitor the advance of the screw tip carefully when inserting the pulling device. Stop the power tool before the pulling device is seated on the plate. Failure to do so may result in stripping the thread in the bone.



Implant Removal

Instruments

324.003 or 324.004	LISS Insertion Guide for Proximal Tibia, left LISS Insertion Guide for Proximal Tibia, right
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324.043	Fixation Bolt for LISS Insertion Guide
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324.022	Drill Sleeve for LISS Insertion Guide
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324.044	Stabilization Bolt for LISS Insertion Guide
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324.027	Trocar, length 162 mm, for No. 324.022
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● 324.050 or ★ 324.250	Screwdriver Shaft 3.5, hexagonal, length 158 mm Screwdriver Shaft Stardrive, T25, length 158 mm
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● 324.052 or ★ 314.163	Torque-limiting Screwdriver 3.5, hexagonal Torque-limiting Screwdriver Stardrive, T25
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Remove the implant only after complete consolidation of the fracture. Remove in reverse order to the implantation.



First, make the incision for the insertion guide in the path of the old scar, and mount the insertion guide (see step 1 on page 14).

Make stab incisions and use the torque-limiting screwdriver to unlock all screws manually. In a second step, completely remove all screws with a power tool.

Note: If a 13 hole plate has to be removed, perform a careful soft-tissue dissection down to the plate for holes 10 to 13 before inserting the trocar and drill sleeve, in order to visualize the superficial peroneal nerve.

Option: Clean screw heads with cleaning instrument

Instruments

	324.053	Cleaning Instrument, hexagonal
	or	
	324.253	Cleaning Instrument, Stardrive, T25

The cleaning instrument helps to clean the recess of the screw heads. After placing the drill sleeve, insert the cleaning instrument carefully. Insert the stiletto with threaded tip and turn clockwise. Remove the cleaning instrument. Unlock all screws manually with the torque-limiting screwdriver. In a second step, completely remove all screws with a power tool.

If the screws cannot be removed with the screwdriver, please consult the separate Synthes publication "Screw Extraction Set: Instruments for removing Synthes screws" (Art. No. 036.000.918), which explains in detail how screws with damaged recess as well as how broken and jammed screws can be removed.

After removing all screws, remove the plate. Should the plate remain stuck when all screws have been removed, take the insertion guide away and use the fixation bolt to loosen the plate.

Note: Never use the cleaning instrument as a screwdriver.

Tips

If it is difficult to perform a correct reduction, improve the access by increasing the soft-tissue opening.

Bending and twisting the plate is not recommended as it may result in a misalignment between the holes of the insertion guide and the corresponding plate holes.

Should the plate lie too ventral or too dorsal, the screws cannot be centered in the medullary canal. This position may compromise screw purchase (see illustration).

Both screwdriver shaft and torque-limiting screwdriver are equipped with a self-holding mechanism. Apply slight pressure on pick-up to ensure that the screwdriver shaft penetrates the recess of the screw head.

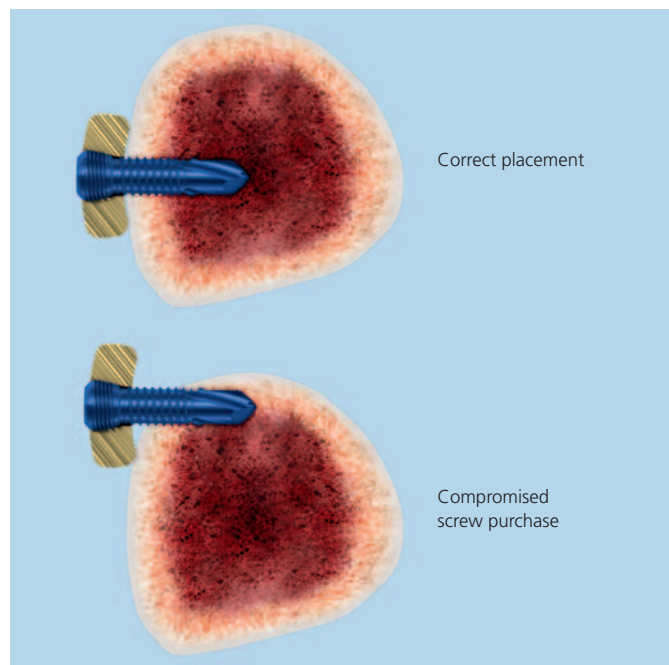
Should the screwdriver be difficult to remove after insertion, disconnect it from the power tool and remove the drill sleeve. After reconnecting the screwdriver to the power tool, withdraw the screwdriver from the screw.

Standard 4.5 mm cortex screws can be used through the insertion guide if required. Note that cortex screws cannot be inserted through the drill sleeve for LISS insertion guide.

Hole A serves to lock the insertion guide to the implant. This hole cannot be used for the insertion of a screw as long as the fixation bolt is attached. If a screw has to be inserted in hole A, remove the fixation bolt – with the stabilization bolt still in place – and attach it in an adjacent hole. Place the drill sleeve in hole A (pre-drill if necessary) and insert the appropriate screw. If all holes are occupied by a screw, the screw in hole A can be inserted by free-hand technique. Use the direction given by the fixation bolt prior to removal of the insertion guide to determine the correct direction for insertion.

To ensure stability of the construct, the most distal screw should be inserted last, just before removing the insertion guide. Remove the stabilization bolt and insert the screw through the drill sleeve.

If hole A is unoccupied, it must be closed with a Screw Hole Insert (422.390) to facilitate the application of the insertion guide for removing the implant.



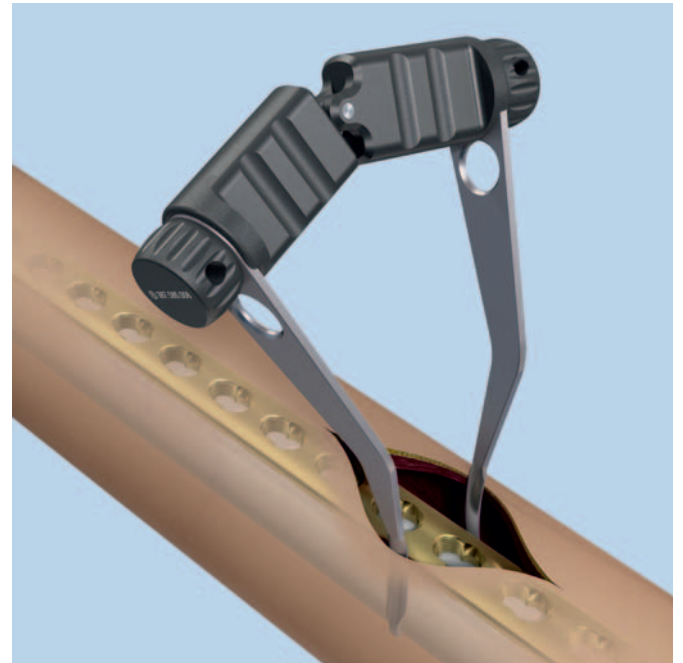
Instruments for Minimally Invasive Osteosynthesis

Hohmann Retractor Holder

The Hohmann retractor holder was developed to support minimally invasive, percutaneous plate osteosynthesis. Its unique design enables the easy and reliable percutaneous insertion of plates. These characteristics make the Hohmann retractor holder the ideal instrument for use in combination with modern implant systems such as LCP and LISS.

- The Hohmann retractor holder allows better visualization of the inserted plate.
- Serves as a guide for the inserted plate.
- Ensures that the inserted plate is centered on the bone.

For additional information see the separate Synthes publication on the Hohmann retractor holder (Art. No. 036.000.219).

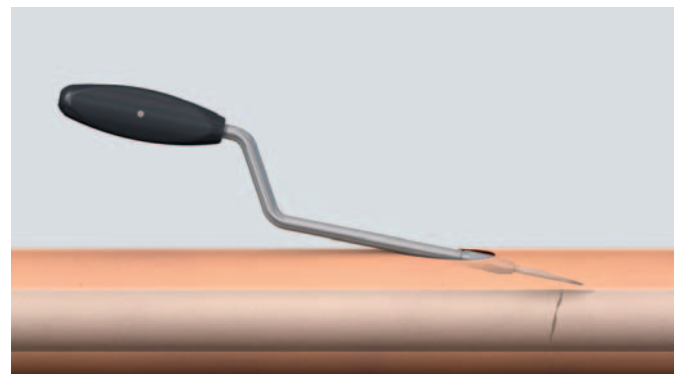


Soft Tissue Retractor

The offset blade facilitates an easy preparation of the epipereosteal cavity for percutaneous plate insertion.

- Adjustable blade for free choice of insertion angle and blade length
- Available in two sizes: for small and large fragment plates

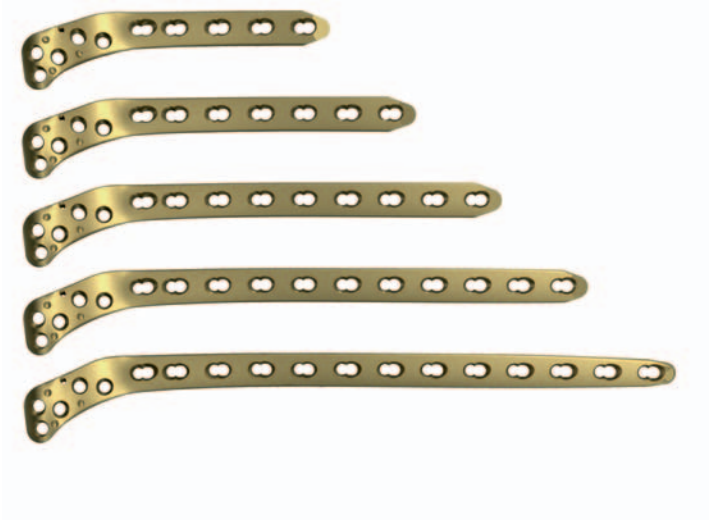
For additional information see the separate Synthes publication on the Soft tissue retractor (Art. No. 036.000.127).



Implants



LCP PLT 4.5/5.0

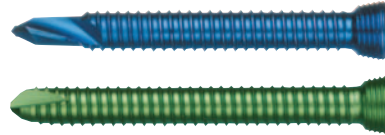
Stainless steel	TAN	Holes	Length (mm)	
222.220	422.220	5	140	right
222.222	422.222	7	180	right
222.224	422.224	9	220	right
222.226	422.226	11	260	right
222.228	422.228	13	300	right
222.221	422.221	5	140	left
222.223	422.223	7	180	left
222.225	422.225	9	220	left
222.227	422.227	11	260	left
222.229	422.229	13	300	left



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

Locking Screws \varnothing 5.0 mm

 Hex	 Stardrive	
X13.414 – X13.490	X12.251 – X12.267	self-drilling, length 14–90 mm
X13.314 – X13.390	X12.201 – X12.227	self-tapping, length 14–90 mm



X=2: stainless steel
X=4: TAN

422.390	Screw Hole Insert \varnothing 5.0 mm
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All screws are available nonsterile and sterile packed. For sterile implants add suffix S to the article number.

Instruments

324.003 LISS Insertion Guide for Proximal Tibia,
left, radiolucent

324.004 LISS Insertion Guide for Proximal Tibia,
right, radiolucent



324.043 Fixation Bolt for LISS Insertion Guide,
length 151 mm



321.170 Pin Wrench Ø 4.5 mm, length 120 mm



324.022 Drill Sleeve for LISS Insertion Guide,
length 130 mm



324.044 Stabilization Bolt for LISS Insertion Guide,
length 156 mm



324.027 Trocar, length 162 mm, for No. 324.022



324.033 Pulling Device Ø 4.0 mm, length 240 mm,
for LISS



310.423 Drill Bit Ø 4.3 mm, length 280 mm,
for LISS



● 324.052 Torque-limiting Screwdriver 3.5,
self-holding, for Locking Screws Ø 5.0 mm










● 314.163 Torque-limiting Screwdriver Stardrive, T25,
self-holding, for Locking Screws Ø 5.0 mm



● 324.050 Screwdriver Shaft 3.5, hexagonal,
length 158 mm

● 324.250 Screwdriver Shaft Stardrive, T25,
length 158 mm

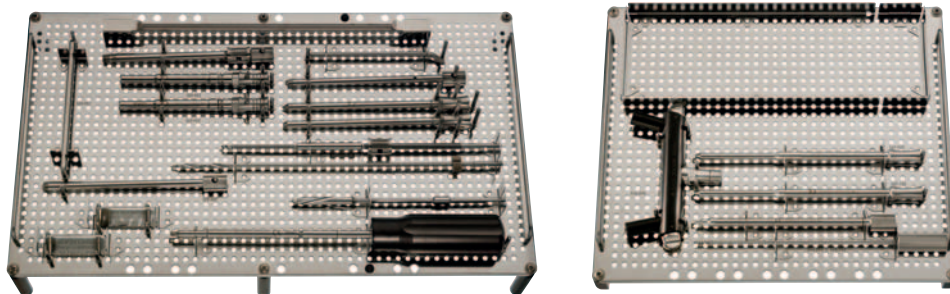
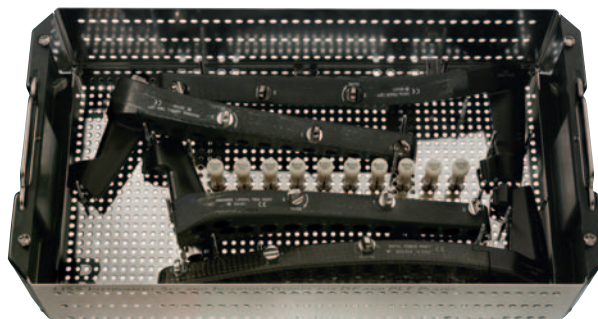


324.055	Centering Sleeve for Kirschner Wire, length 161mm, for No. 324.022	
324.019	Stopper for LISS Insertion Guide	
324.056	X-ray Calibrator, length 50 mm	
324.053	Cleaning Instrument for Screw Head, length 202 mm	
324.253	Cleaning Instrument for Screw Head Stardrive, T25, length 202 mm	
292.699	Kirschner Wire Ø 2.0 mm with threaded tip, length 280 mm, Stainless Steel	
324.037	LISS Measuring Device for Kirschner Wires Ø 2.0 mm, length 121 mm, for No. 292.699	
324.007	Drill Sleeve 7.2/4.3, length 130 mm, for LISS Periprosthetic Screws	
Optional Instruments		
324.048	Aiming Device for Kirschner Wires, for LISS Insertion Guide	
324.034	Centering Sleeve for Kirschner Wire, length 184 mm, for No. 324.048	

Sets

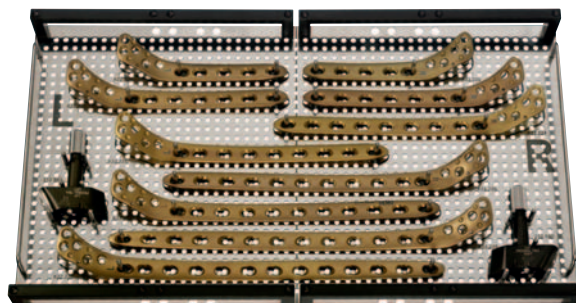
LISS Instruments and Insertion Handle, for DF and PLT Plates in Vario Case

- 01.120.040 Hex
- 01.120.041 Stardrive
- 68.120.040 Vario Case





LCP PLT 4.5/5.0 in Vario Case

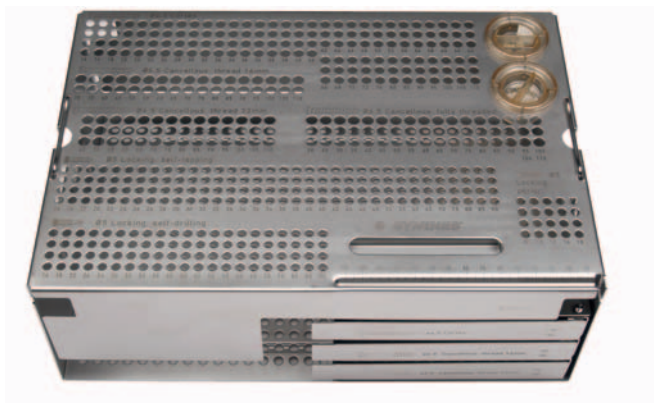
- 01.120.412 Stainless steel
- 01.120.414 TAN
- 68.120.410 Insert



Locking Screws Ø 5.0 mm and Standard Screws Ø 4.5/6.5 mm in Sterilizing Tray

	 Hex	 Stardrive
Stainless steel	01.200.011	01.200.013
Titanium	01.200.012	01.200.014

300.610 Sterilizing Tray



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