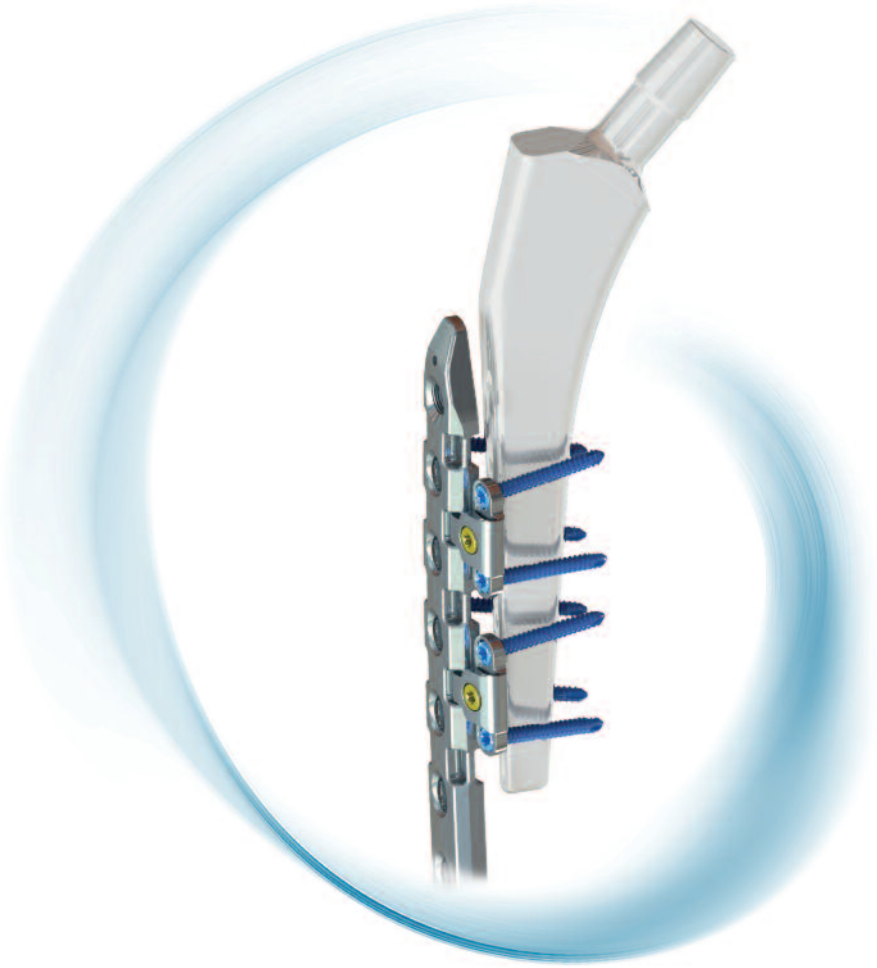
LOQTEQ®

Distal Lateral Femur Plate PP



Surgical Technique

LOQTEQ®

Distal Lateral Femur Plate PP

Disclaimer

This surgical technique is exclusively intended for medical professionals, especially physicians, and therefore may not be regarded as a source of information for non-medical persons. The description of this surgical technique does not constitute medical advice or medical recommendations nor does it convey any diagnostic or therapeutic information on individual cases. Therefore, the attending physician is fully responsible for providing medical advice to the patient and obtaining the informed consent of the patient which this surgical technique does not supersede.

The description of this surgical technique has been compiled by medical experts and trained staff of aap mplantate AG with utmost diligence and to the best of their knowledge. However, aap Implantate AG excludes any liability for the completeness, accuracy, currentness, and quality of the information as well as for material or immaterial damages arising from the use of this information.

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The **Distal Lateral Femur Plate 4.5 PP** (periprosthetic) is part of the LOQTEQ® anatomical plating system and features a new technology for plate fixation around an intramedullary implant.

Special LOQTEQ® hinges that can be attached to the side of the plate increase the flexibility of application as well as stability in the treatment of periprosthetic fractures.

The LOQTEQ® Distal Lateral Femur Plate 4.5 has been optimized for periprosthetic (PP) fracture treatment by adding lateral cutouts to accomodate hinges. It still features excellent anatomical fit and can be inserted using proven surgical techniques, including minimally invasive ones. The hinges were specifically developed for treating these fractures and can be attached to various locations on the plate, distally or proximally. They remain moveable in a 45° range and are anchored in the bone using 3.5 mm locking screws in a variable angle (±15°). Thus, they can adapt to a wide variety of anatomies, and the plates can be securely fixed around prostheses or nails, particularly in osteoporotic bone. Cerclage buttons for cable or wire cerclages complete the set.

Before use, please carefully read the instructions for use and the surgical technique.

Material

The LOQTEQ® implants and instruments are manufactured using high-quality materials, which have been proven to be successful in medical technology for decades. The anatomical plates and bone screws are made of titanium alloy.

All materials employed comply with national and international standards. They are characterized by good biocompatibility, a high degree of safety against allergic reactions and good mechanical properties. LOQTEQ® implants feature an excellent, highly polished surface.

Indications/Contraindications

Indications

LOQTEQ® Distal Lateral Femur Plate PP

Stabilization of distal femur fractures, including: distal shaft fractures, supracondylar fractures, Intra-articular fractures, periprosthetic fractures, non-union, fractures in the osteoporotic bone

LOQTEQ® VA Hinge

Stabilization of femur fractures, including periprosthetic femur shaft fractures: Vancouver B & Vancouver C, prevention of lateral screw pullout in osteoporotic bone, fractures around intramedullary implants

LOQTEQ® Cerclage button

Application with single and multiple line wires to stabilize fractures in combination with plates for long bone fixations

Contraindications

- Acute and chronic osteomyelitis at or close to the surgical field;
- Soft tissue infections in or surrounding the affected area;
- Allergies against the implant material;
- High risk patient for anesthesia;
- Severe soft tissue swelling impacting normal wound healing;
- Insufficient soft tissue coverage;
- Fractures in children and adolescents with epiphyseal plates not yet ossified

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Processing (Sterilization & Cleaning)

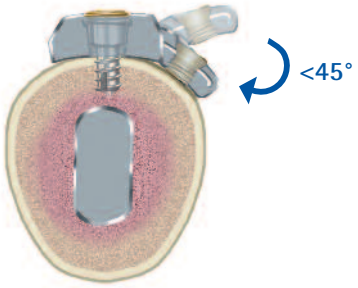
LOQTEQ® implants are supplied non-sterile.

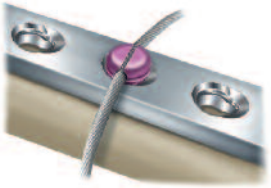
Implants and instruments that are supplied in non-sterile condition must be sterilized before use.
For this purpose, please refer to the Instructions for Use enclosed with plates, instruments, and trays.

Never use damaged implants.

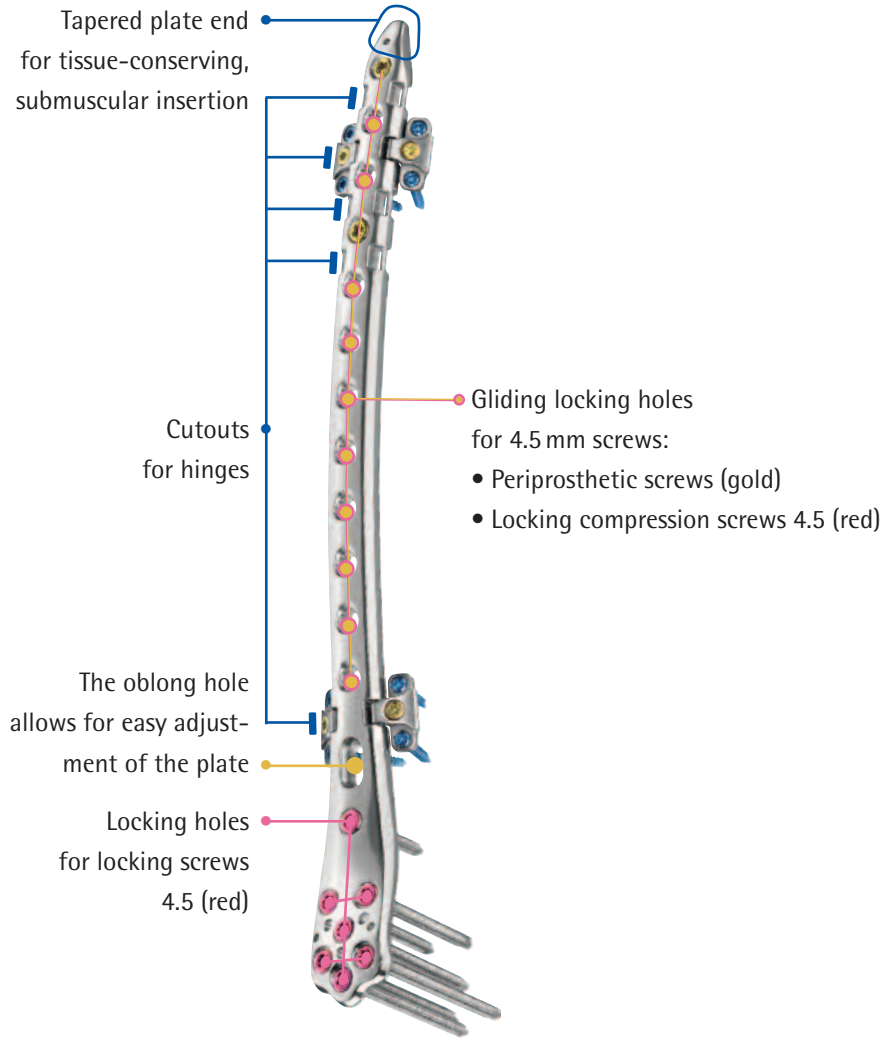
Features & Benefits

- Proven design, modified by special distal and proximal cutouts
- Hinges anchored laterally at the plate, moveable in a 45° range
- 3.5 mm locking screws (±15°) for flexible anchoring around an intramedullary implant
- Inserts for cables or cerclage wires 1.6 to 2.2 mm in diameter
- High plate profile at the diaphysis for stability
- Anatomical fit and low profile in the condylar area minimize the risk of soft tissue irritation
- Component trays available for minimally invasive insertion





Cerclage button



Preparation

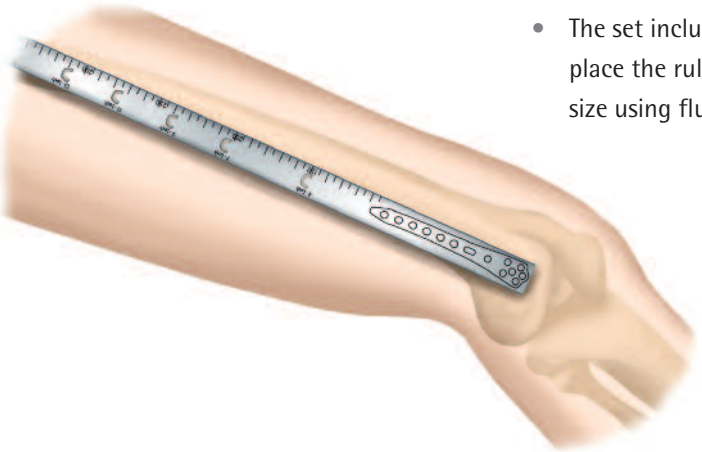
- In addition to this surgical technique, the following items are needed to surgically treat periprosthetic femoral fractures:

INSTRUMENTS	ART.-NO.
LOQTEQ® VA Periprosthetic	IC 6980-00
LOQTEQ® Large Fragment, Tray B, Instruments MIS for DF	IC 6944-20/-25

IMPLANTS NON-STERILE	ART.-NO.
LOQTEQ® Periprosthetic, Implant Set DF 4.5	IC 6980-20

Preoperative planning

- The fracture situation and optimal plate position are evaluated and the suitable plate selected based on a recent X-ray or CT image.



- The set includes a ruler to determine plate length. For this purpose, place the ruler on the injured leg and determine the required plate size using fluoroscopy.

◆ NOTE:
The ruler is marked only on one side and can be used on both sides (left and right). The end to be placed distally is marked with the image of a plate.

- In the example, a 13-hole plate is shown.

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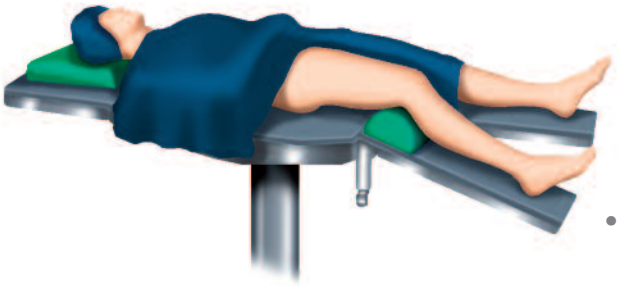
Patient positioning



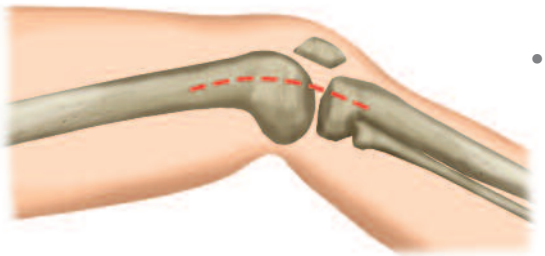
- The patient is positioned supine on a radiolucent operating table. Alternatively, the patient may be placed in a lateral position or positioned on an extension table.

- It is recommended to have fluoroscopic imaging in AP and lateral views available for the duration of the surgery.

Approach

- The approach depends on the selected surgical technique. In the distal femur, an open (OA) or minimally invasive (MIS) approach may be used.

- (OA) For open surgery, the incision is determined by the fracture site and the length of the plate.



- (MIS) Incision of 6-10 cm, depending on soft tissue situation. The plate can be placed through the small incision between the periosteum and the vastus lateralis.

Reduction and primary fixation

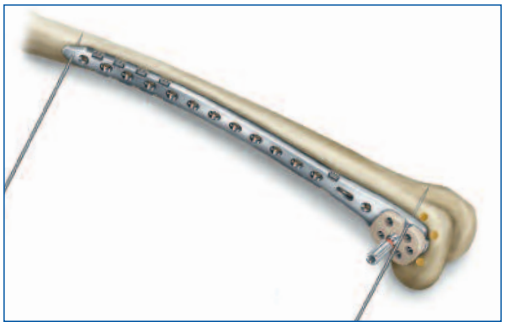
- Reduce the fragments and temporarily hold them in place using conventional aids, such as K-wire, reduction forceps, or temporary cerclage.

Insertion of the plate
Summary

- Below, the insertion of the LOQTEQ® Distal Lateral Femur Plate PP is summarized, both for the open approach and for the minimally invasive technique. Both are described in detail in the following surgical techniques:
  - Surgical Technique (WM 2005-76)
    »LOQTEQ® Distal Lateral Femur Plate 4.5 – open approach«
  - Surgical Technique (WP 20P050 EN)
    »LOQTEQ® Distal Lateral Femur Plate 4.5 – minimally invasive«

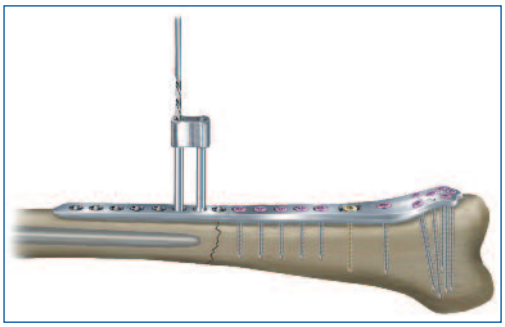
Open Approach

1 Attach the aiming device with short drill guide (red) in the central hole



2 Insert the plate and temporarily fix it using K-wire.

3 Insert screws in the joint and diaphyseal area: place red drill guide, drill with drill stop, read off drilling depth, insert screw and tighten with torque limiter 3.5 Nm; alternatively measure with depth gauge without drill guide



4 Perform fracture compression with LOQTEQ® screws, if needed

◆ NOTE:

Depending on the fracture pattern, locking screws (red) or periprosthetic screws (gold) are used for the plate holes at the diaphysis.

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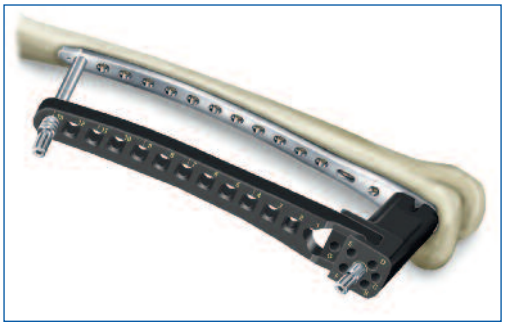
Minimally invasive technique (MIS)

- For this surgical technique, the MIS instrument set Distal Femur Plate (IC 6944-20/-25) is needed.

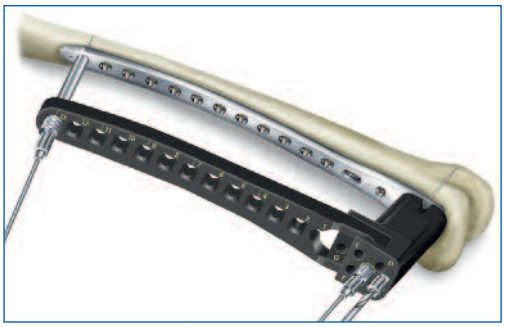
◆ **Note:**

The MIS targeting frames are optimized for distal femoral plates with up to 13 holes. When using longer plates, a proximal approach must be used by placing local incisions.

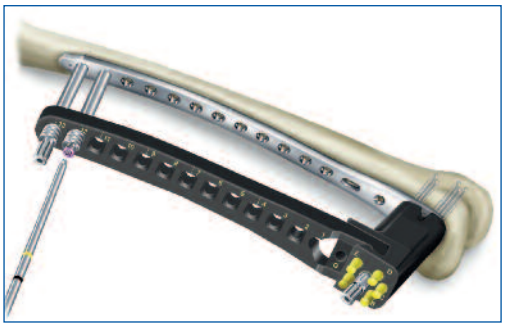
1. Attaching the handle to the plate (affix the stabilization bolt and fixing nut to the plate through the central hole A)
2. Inserting the plate in the patient
3. Connection of targeting frame to handle



4. Proximal stabilization (tissue protection sleeve and long drill guide with thread to stabilize the frame)
5. Temporary fixation with K-wires



6. Insert the screws at the plate head (long drill guides with thread, drill, measure, screw in using power tool to the yellow marking of the drill, finally tighten manually with torque limiter 3.5 Nm)



7. Insert the screws at the diaphysis (long drill guides red, drill, measure, screw in using power tool to the black marking of the drill, finally tighten manually with torque limiter 3.5 Nm)

Notes on hinge use

1. To ensure optimal stability, LOQTEQ® hinges must generally be placed paired in opposing cutouts.

2. Do not offset hinges or place them on one side only. Doing so weakens the system and can lead to implant damage and bone injury.

3. If necessary, 2 pairs of hinges placed directly next to each other can further increase stability.

4. Both locking holes in the hinges must be used.

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Insertion of the hinges

INSTRUMENTS	ART.-NO.
Seating tool for VA hinges	IU 2530-00
LOQTEQ® VA hinge	PA 3580-00-2
Screwdriver Duo, T15, quick coupling	IU 7825-56
Large handle, cannulated, quick coupling	IU 7706-00
Handle with quick coupling, with torque limiter 2.0 Nm	IU 7707-20

- Following complete plate fixation, decide on hinge positioning and/or confirm the results of preoperative planning. Place incisions in the appropriate places for inserting the hinges.

◆ NOTE:
Due to the positioning of the cutouts in the plate, hinges can be placed distally or proximally of the fracture zone.

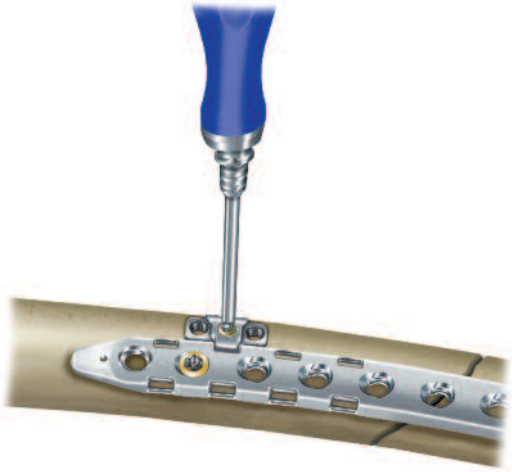
- LOQTEQ® VA hinges are supplied in pairs and pre-assembled, i.e. with fixation screws in place.

◆ NOTE:
If the hinge is difficult to click in place, the fixation screw may have been firmly tightened and should be temporarily loosened.

- A specially developed seating instrument can facilitate the placement and possible repositioning of the hinges: the hinge is held in the hole region on one side and then fixed in place on the other side by closing the forceps. For this purpose, point the forceps with the curved ends up, slightly open them, and put the hinge in place. In the process, the opening of the hinge must face downward and the fixation screw forward.

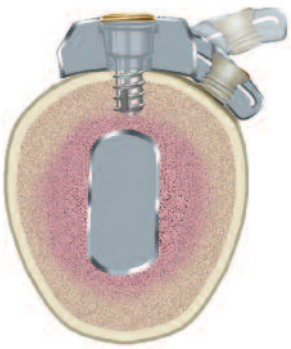
- After it is seated, the hinge remains slightly moveable on the plate to ensure that it can be adapted to the given anatomy (bone diameter). Now, a slight tightening of the fixing screw prevents the hinge from being released unnoticed during alignment. It is particularly important to do so in bones of very small diameter.

- A slight distance to the bone can optimize the later fixation of the hinges with locking screws by guiding the screw into the cortical bone rather than in the direction of the cement layer or implant.



- To prevent soft-tissue irritation, protecting the tissue should be a priority when placing and aligning the hinges.

- After setting the desired angle, the hinge is securely fixed relative to the plate. For this purpose, tighten the fixing screw (gold) using a screwdriver.



◆ **Caution:**

Finally, the fixing screw must be tightened using the torque limiter 2.0 Nm. This prevents later loosening and coming off from the hinge.

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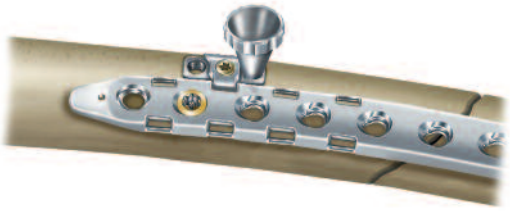
Hinge fixation

INSTRUMENTS	ART.-NO.
LOQTEQ® VA hinge	PA 3580-00-2
Drill guide LOQTEQ® VA with thread, drill ø2.7, 0°-15°	IU 8166-70
Drill guide LOQTEQ® VA with handle, drill ø2.7, 0° to 15°, long	IU 8166-61
Twist drill ø2.7, L 200, coil 50, quick coupling	IU 7427-20
Depth gauge for screws ø3.5-4.0, up to L 90 mm	IU 7904-20
Screwdriver Duo, T15, quick coupling	IU 7825-56
Large handle, cannulated, quick coupling	IU 7706-00
Handle with quick coupling, with torque limiter 2.0 Nm	IU 7707-20

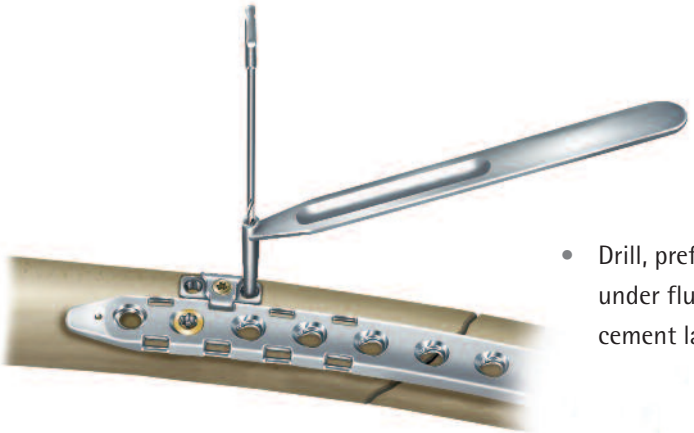
- The hinges are anchored in the bone using two 3.5 mm variable-angled locking screws each. Starting from the predetermined angle (0°), an angulation of up to 15° is possible in all directions. This 30° cone in connection with the moveable hinge allows optimal anchoring of the screws in osteoporotic bone as well.

◆ **Caution:**

A deviation of more than 15° from the axis of the respective locking hole in the hinges should be avoided as it may prevent the screws from locking correctly, which can result in the screws loosening.



- Two drill guides are offered for variable-angled drilling: a threaded funnel-shaped version and a drill guide with handle for free choice of angle.



- Drill, preferably with freehand drill guide and drill bit ø2.7 (blue) under fluoroscopic monitoring. Drill as close as possible to the cement layer or prosthesis stem.

◆ **Caution:**

Bending of the drill during the drilling process must be avoided since in conjunction with the drill guides, the drill may be considerably deformed or even broken.

◆ **Note:**

Regularly exchange the drills, particularly after contact with cement layer or prosthesis stem.

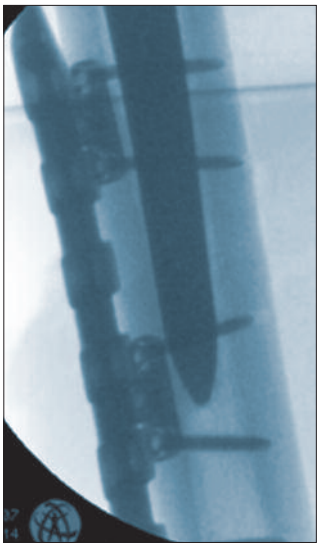
- After drilling, determine screw length using the depth gauge, and apply an appropriate length locking screw 3.5 mm (blue) using the screwdriver. This step should be performed manually only.

- For optimal stability, bicortical anchoring of screws is recommended.

◆ **Note:**
Replace any locking screw that fails to lock into the VA locking holes of the hinge.

- Finally, tighten the screws using the torque limiter 2.0 Nm. Optimal locking should be achieved with an audible and tactile click of the torque limiter 2.0 Nm.

◆ **Note:**
As soon as the head of the screw reaches the thread of the plate hole, it is compulsory to switch to the torque limiter.
In cases of very hard diaphyseal bone, it is necessary to make sure that the screw heads are flush with the plate. In such cases, it is permissible to finish the screw without the torque limiter.



- Finally, confirm the position of the plate and hinges as well as the position and length of the screws using fluoroscopy. Then close the wound.

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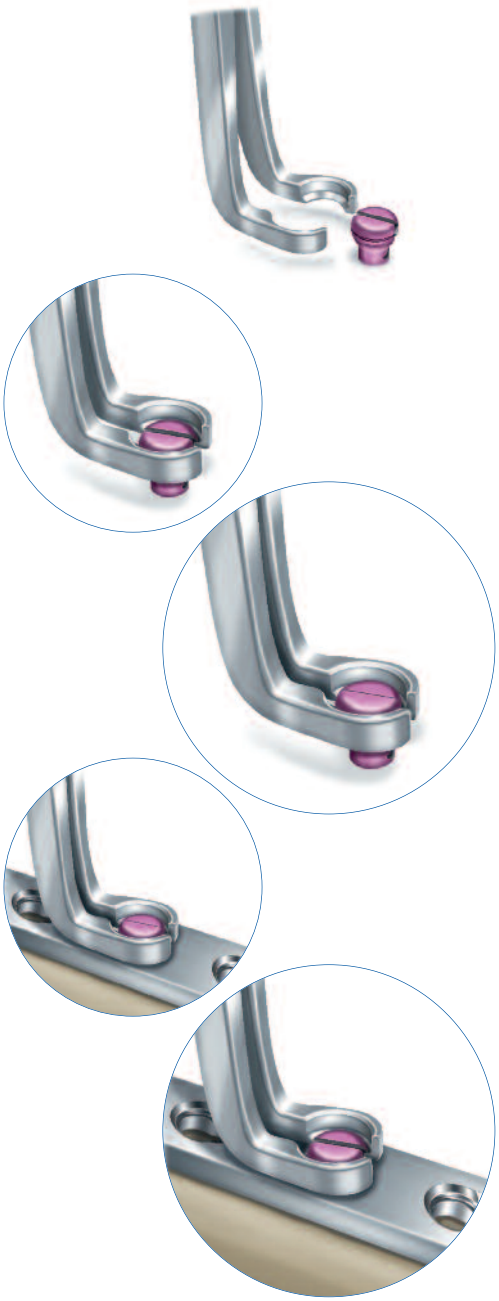


INSTRUMENTS	ART.-NO.
LOQTEQ® Cerclage button, large fragment, 2 pcs./packing	SK 4580-00-2
Seating tool for cerclage button	IU 2540-00

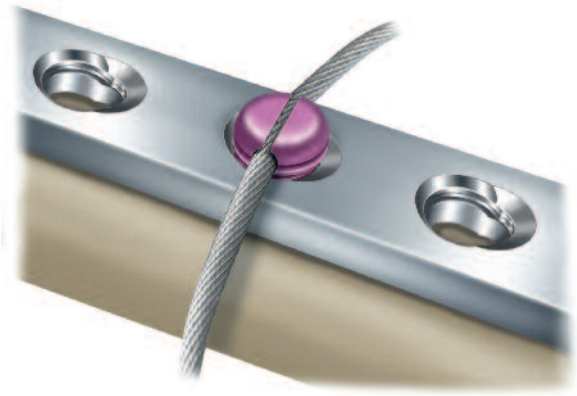
- If necessary, a cable or wire cerclage can additionally stabilize the fracture. Cerglage buttons, suitable for LOQTEQ® gliding locking holes 4.5 fit wires and cables 1.6 to 2.2 mm in diameter and keep them securely positioned.

- The LOQTEQ® cerclage button can be easily inserted either manually or with the aid of a special seating instrument that slightly pinches the cerclage button when grasping it. For this purpose, the guide slot in the cerclage button must be aligned parallel to the instrument. The same applies if a button is to be detached or moved to another plate hole.

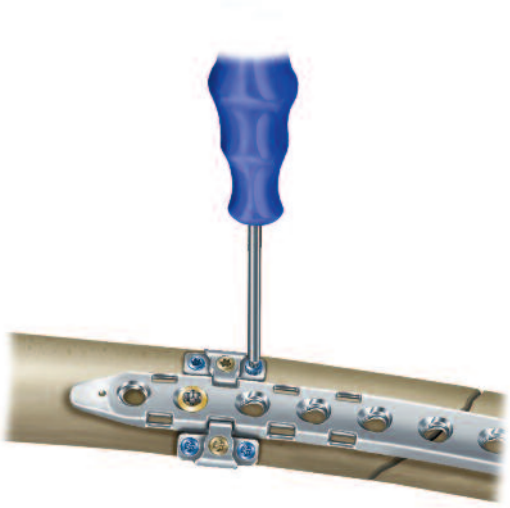
- After insertion into a LOQTEQ® gliding locking hole, the cerclage button remains moveable and can be rotated by 360°.

- A cerclage wire or cable can now be guided through the guide slot of the cerclage button.

◆ **Caution:**
LOQTEQ® cerclage buttons are made of titanium and are therefore usable with wires or cables made of titanium ortitanium alloy.



INSTRUMENTS	ART.-NO.
Explantation screwdriver T15, round handle	IU 7811-15
Explantation screwdriver T25, round handle	IU 7811-25



- The implant should be removed only after complete bone healing.

◆ NOTE:

The screwdrivers T15 (IU 7825-56) und T25 (IU 7835-56) in the set are self-retaining and should not be used for screw explantation.

- Use the corresponding explantation screwdrivers T15 and T25 for safe screw removal. Explantation screwdrivers are not self-retaining; by penetrating further into the screw head, it allows applying greater torque when removing screws. They are not included in the set and should be ordered separately.
- Place an incision on the old scar.
- First remove the cortical screws (blue) in the hinges and loosen the hinge fixing screws (gold). For this purpose, use the T15 explantation screwdriver. After removing the hinges, loosen the screws in the plate with the T25 explantation screwdriver and remove them.

◆ NOTE:

After manually unlocking all screws, removal may be performed using a power tool.

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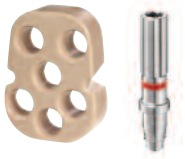
LOQTEQ® VA hinge	PA 3580-00-2

LOQTEQ® Cerclage button, large fragment, 2 pcs./packing	SK 4580-00-2



Aiming device LOQTEQ® Distal Femur Plate, R	IU 8189-01
Aiming device LOQTEQ® Distal Femur Plate, L	IU 8189-02
Fixing screw aiming device LOQTEQ® DF Plate	IU 8189-03

LOQTEQ® Distal Lateral Femur Plate PP

HOLES	LENGTH	LEFT	RIGHT
9	243	PF 4521-09-2	PF 4520-09-2
11	279	PF 4521-11-2	PF 4520-11-2
13	314	PF 4521-13-2	PF 4520-13-2
15	350	PF 4521-15-2	PF 4520-15-2
17	386	PF 4521-17-2	PF 4520-17-2

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LOQTEQ® Cortical Screw 4.5, T25, self-tapping

L 12	SK 4525-12-2
L 14	SK 4525-14-2
L 16	SK 4525-16-2
L 18	SK 4525-18-2
L 20	SK 4525-20-2
L 22	SK 4525-22-2
L 24	SK 4525-24-2
L 26	SK 4525-26-2
L 28	SK 4525-28-2
L 30	SK 4525-30-2
L 32	SK 4525-32-2
L 34	SK 4525-34-2
L 36	SK 4525-36-2
L 38	SK 4525-38-2
L 40	SK 4525-40-2
L 45	SK 4525-45-2
L 50	SK 4525-50-2
L 55	SK 4525-55-2
L 60	SK 4525-60-2
L 65	SK 4525-65-2
L 70	SK 4525-70-2
L 75	SK 4525-75-2
L 80	SK 4525-80-2
L 85	SK 4525-85-2

LOQTEQ® Cortical Screw 3.5, small head, T15, self-tapping

L 12	SK 3526-12-2
L 14	SK 3526-14-2
L 16	SK 3526-16-2
L 18	SK 3526-18-2
L 20	SK 3526-20-2
L 22	SK 3526-22-2
L 24	SK 3526-24-2
L 26	SK 3526-26-2
L 28	SK 3526-28-2
L 30	SK 3526-30-2
L 32	SK 3526-32-2
L 34	SK 3526-34-2
L 36	SK 3526-36-2
L 38	SK 3526-38-2
L 40	SK 3526-40-2
L 45	SK 3526-45-2
L 50	SK 3526-50-2
L 55	SK 3526-55-2
L 60	SK 3526-60-2
L 65	SK 3526-65-2
L 70	SK 3526-70-2
L 75	SK 3526-75-2
L 80	SK 3526-80-2
L 85	SK 3526-85-2

Cortical Screw 4.5, T25, self-tapping

L 12	SK 4514-12-2
L 14	SK 4514-14-2
L 16	SK 4514-16-2
L 18	SK 4514-18-2
L 20	SK 4514-20-2
L 22	SK 4514-22-2
L 24	SK 4514-24-2
L 26	SK 4514-26-2
L 28	SK 4514-28-2
L 30	SK 4514-30-2
L 32	SK 4514-32-2
L 34	SK 4514-34-2
L 36	SK 4514-36-2
L 38	SK 4514-38-2
L 40	SK 4514-40-2
L 45	SK 4514-45-2
L 50	SK 4514-50-2
L 55	SK 4514-55-2
L 60	SK 4514-60-2
L 65	SK 4514-65-2
L 70	SK 4514-70-2
L 75	SK 4514-75-2
L 80	SK 4514-80-2
L 85	SK 4514-85-2

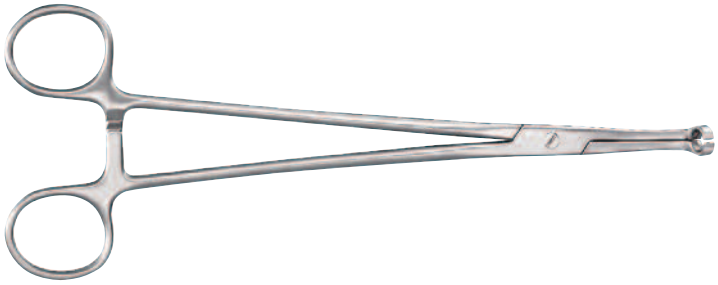
LOQTEQ® Periprosthetic Screw 4.5, T25, self-tapping

L 12	SK 4527-12-2
L 14	SK 4527-14-2
L 16	SK 4527-16-2
L 18	SK 4527-18-2

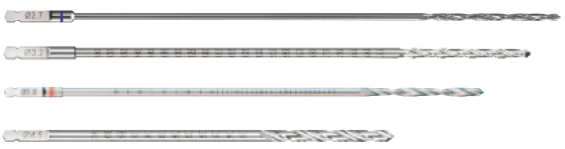
Depth gauge for screws ø3.5-4.0, up to L 90 IS 7904-20

Depth gauge for screws ø4.5-6.5, up to L 100 IS 7905-20

Seating tool for VA hinges IU 2530-00



Seating tool for cerclage button IU 2540-00



Twist drill ø2.7, L 200, coil 50, quick coupling	IU 7427-20
Twist drill ø3.2, L 195, coil 50, quick coupling	IU 7432-30
Twist drill ø3.8, L 220, coil 50, quick coupling	IU 7438-22
Twist drill ø4.5, L 145, coil 50, quick coupling	IU 7445-00

Large handle, cannulated, quick coupling IU 7706-00

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Handle with quick coupling, with torque limiter 2.0 Nm IU 7707-20

Handle with quick coupling, with torque limiter 3.5 Nm IU 7707-35

Screwdriver Duo, T15, quick coupling IU 7825-56

Screwdriver Duo, T25, quick coupling IU 7835-56

Ruler for DF/PP IU 7902-00

Double drill guide ø3.2/4.5, with spring aided centering IU 8117-50

Drill guide LOQTEQ® VA with handle, drill ø2.7, 0° to 15°, long IU 8166-61

Drill guide LOQTEQ® VA with thread, drill ø2.7, 0°-15° IU 8166-70

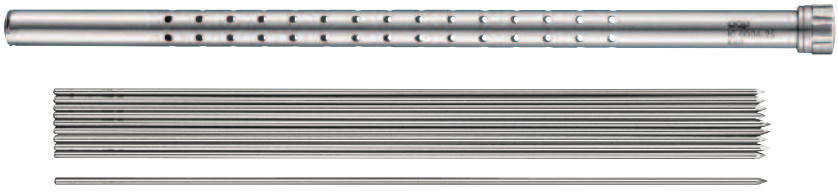
Load drill guide LOQTEQ® 4.5, variable until 2 mm	IU 8167-03
Basic insert for load drill guide LOQTEQ® 4.5	IU 8167-05

Drill guide for gliding hole LOQTEQ® 4.5, I-ø 3.9, red	IU 8167-10

Reduction sleeve for K-wire ø2.0	IU 8167-15

Stop ring for depth measurement, LF	IU 8184-03

LOQTEQ® Screw guide sleeve 4.5, red	IU 8220-45



Caddy for K-wire L 150	IC 0006-15
K-wire with trocar point, ø2.0, L 250	NK 0020-25

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Lorenzweg 5 • 12099 Berlin • Germany

Notes

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Subject to technical modifications,
errors and misprints.

WP 5OP070 EN / 1709

Layout, typesetting:
deSIGN graphic - Wolfram Passlack

Illustrations:
Karen Hilberg

aap Implantate AG
Lorenzweg 5 • 12099 Berlin
Germany

Phone +49 30 75019-0
Fax +49 30 75019-111

customer.service@aap.de
www.aap.de

LOQTEQ®

aap Implantate AG
Lorenzweg 5 • 12099 Berlin
Germany

Phone +49 30 75019-0
Fax +49 30 75019-111

customer.service@aap.de
www.aap.de

(01)04042409391521(10)1709
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