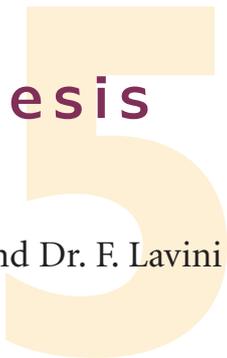
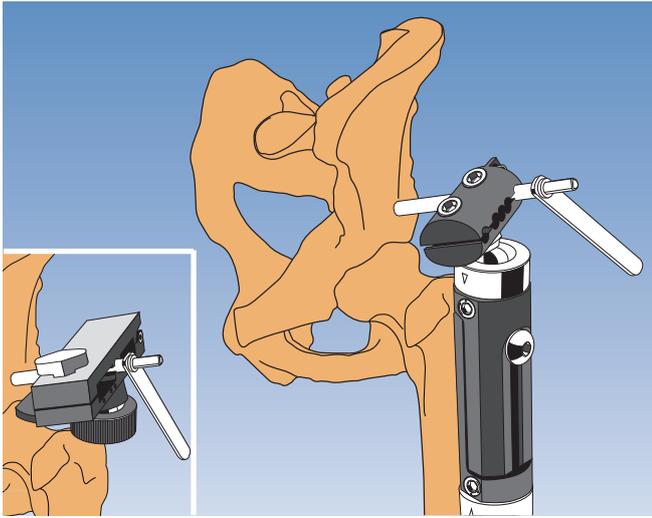


Arthrodesis

Joint Fusion

By Dr. S. Agostini and Dr. F. Lavini

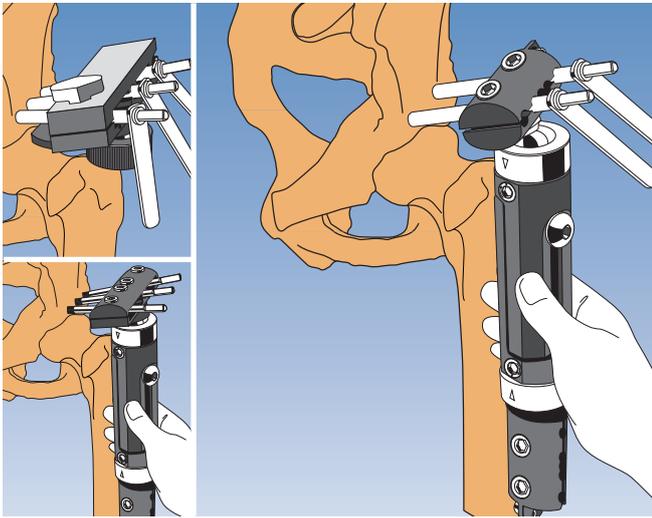




ARTHRODESIS OF THE HIP

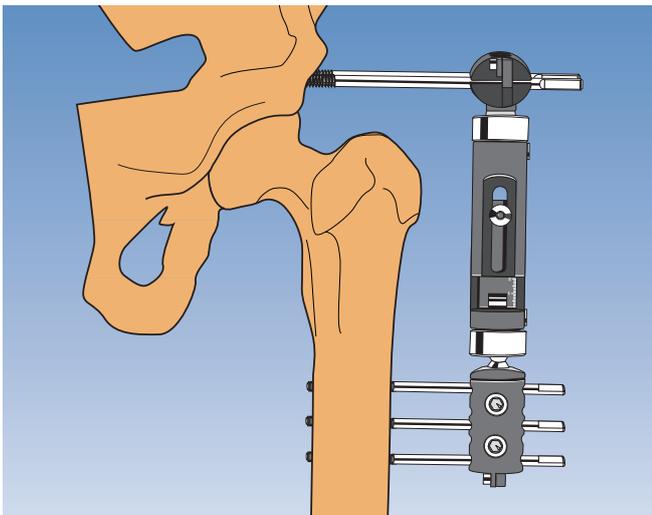
Apply the ProCallus Fixator to the lateral aspect of the thigh. Insert two or three screws in the ilium using either a Trauma-Garches clamp, a Torbay-Garches clamp or a T-clamp. Use three screws in the lateral face of the femoral diaphysis. When using the T-clamp proximally, insert the most posterior screw first, in the region immediately above the acetabulum. When using the Trauma-Garches or Torbay-Garches clamps, insert the central screw first, in the region immediately above the acetabulum. In this latter situation, use the appropriate clamp template for screw positioning. Under image intensification, insert the first screw parallel to the roof of the acetabulum.

Note: Use long screw guides for these proximal screws.

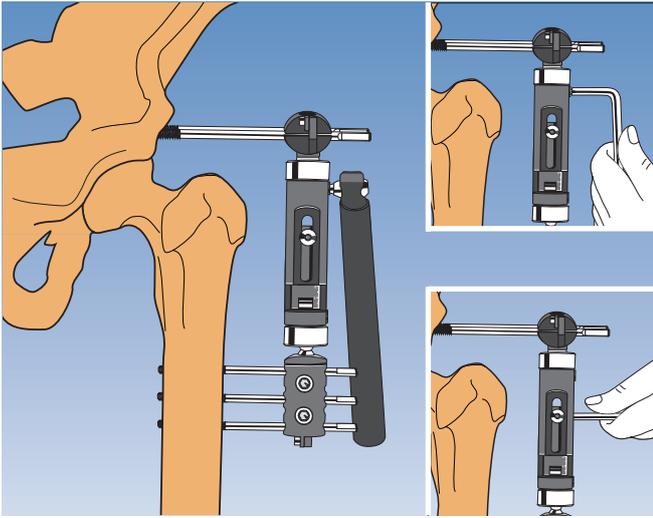


When using the T-clamp, insert the second screw in the 4th seat anterior to the first screw, so that a third intermediate screw may be applied if necessary. When using the Trauma-Garches or Torbay-Garches clamps, insert the remaining two outer screws slightly convergent to the middle screw. Remove the clamp template and replace it with the definitive fixator.

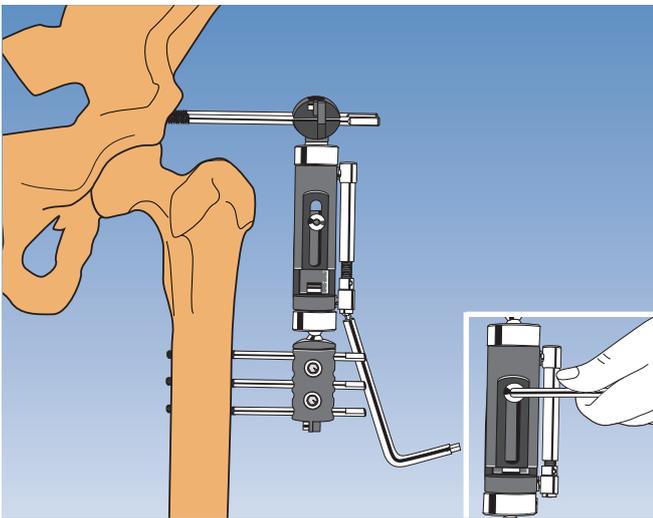
Note: OsteoTite screws are advised for this indication, particularly in the pelvis.



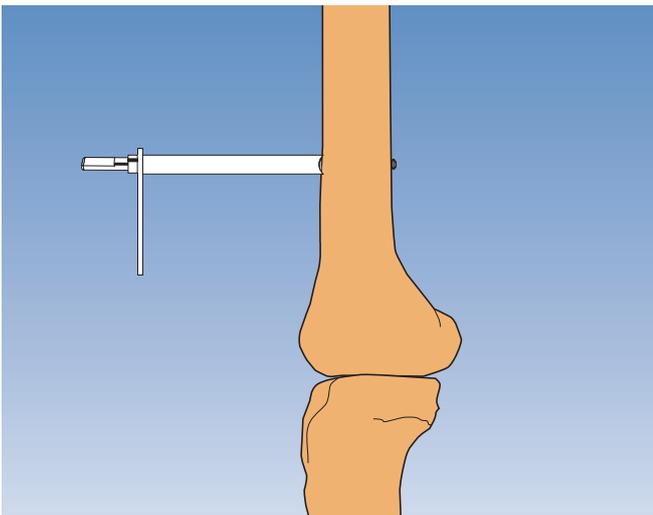
With the fixator body open by 2 cm to allow for subsequent compression, insert the three femoral screws. Prior to insertion of these screws, place the limb in the envisaged fusion position (15° of hip flexion, 5°-10° of abduction and about 10° of external rotation). Use screw seats 1, 3 and 5 in the clamp for maximal stability.



With the limb in the fusion position, lock cams and micromovement locking nut using the 6 mm Allen wrench. Finally, lock the cams with the torque wrench.



Attach the compression-distraction unit and exert 5-7 mm of compression, until good contact is felt between the joint surfaces. Avoid excessive compression in order to limit stress on the screws. Confirm contact between the two surfaces by X-ray. Finally, tighten the central body locking nut.

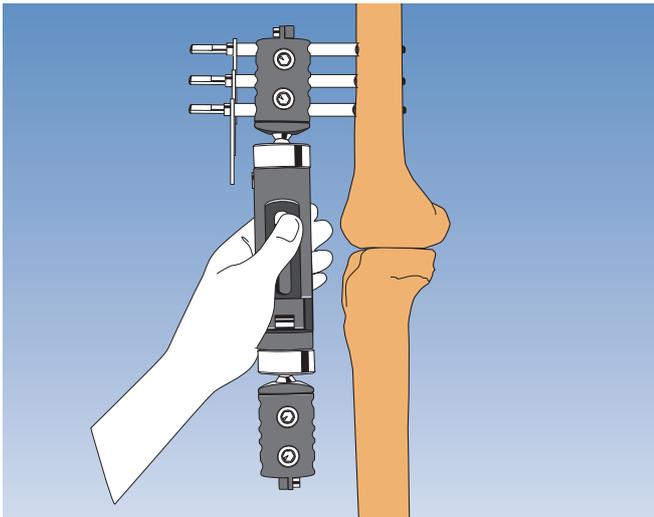


ARTHRODESIS OF THE KNEE

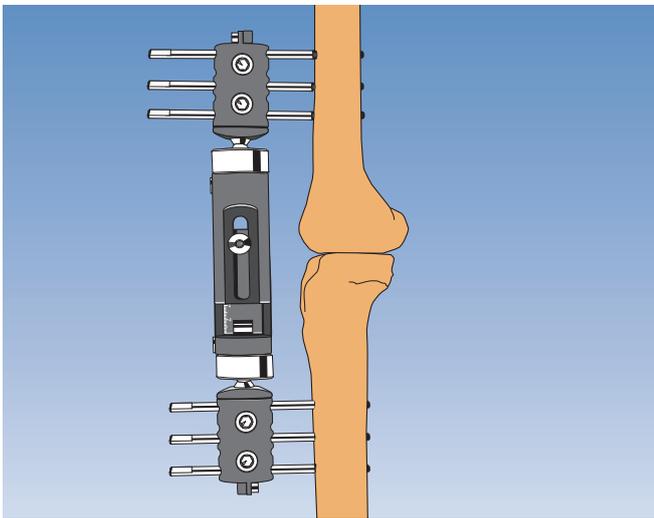
Apply the ProCallus Fixator to the anterior aspect of the limb. Insert three screws into the distal femur and three screws into the proximal tibia.

Make a short (1 cm) longitudinal incision in the skin of the anterior surface of the femur, in the metaphyseal region, or in the diaphysis, depending upon the quality of the bone. Separate the fibres of the quadriceps muscle by blunt dissection down to the bone and insert the most distal screw of the femoral group.

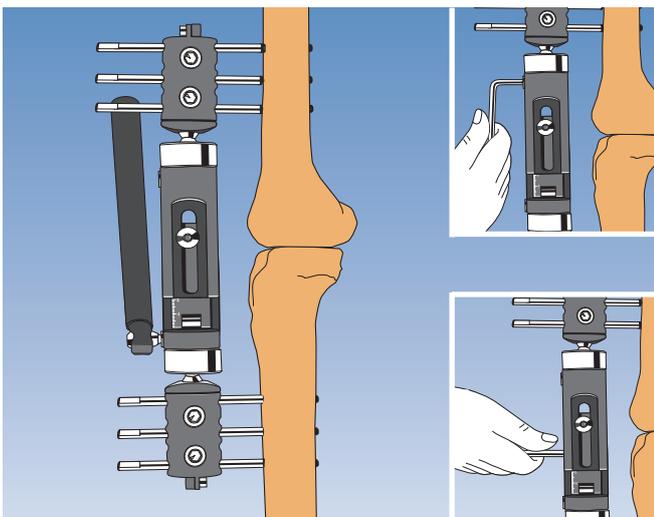
Note: OsteoTite screws are advised for this indication, in the femur and the tibia.



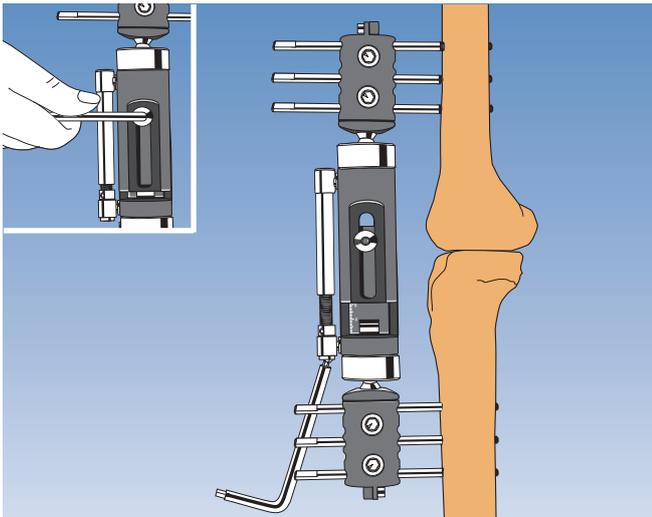
Leaving the screw guide in place, apply the fixator to this screw and insert the remaining femoral screws in screw seats 3 and 5.



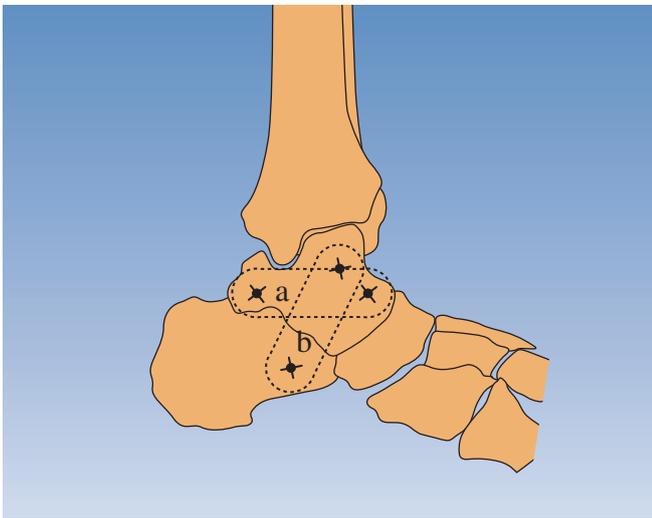
With the fixator body open by 2 cm to allow for subsequent compression, insert the three tibial screws in the diaphysis of the tibia, in an anterior position, just medial to the tibial crest. Prior to insertion of these screws, place the limb in the envisaged fusion position (approximately 5° of flexion). Use screw seats 1, 3 and 5 in the clamp for maximal stability.



With the limb in the fusion position, lock the cams and micromovement locking nut using the 6 mm Allen wrench. Finally, lock the cams with the torque wrench.

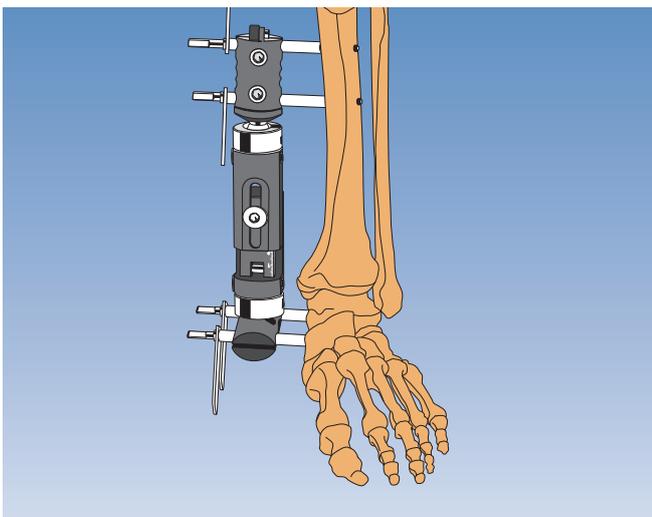


Attach the compression-distraction unit and exert 5-7 mm of compression, until good contact is felt between the joint surfaces. Avoid excessive compression in order to limit stress on the screws. Confirm contact between the two surfaces by X-ray. Finally, tighten the central body locking nut.



ARTHRODESIS OF THE ANKLE

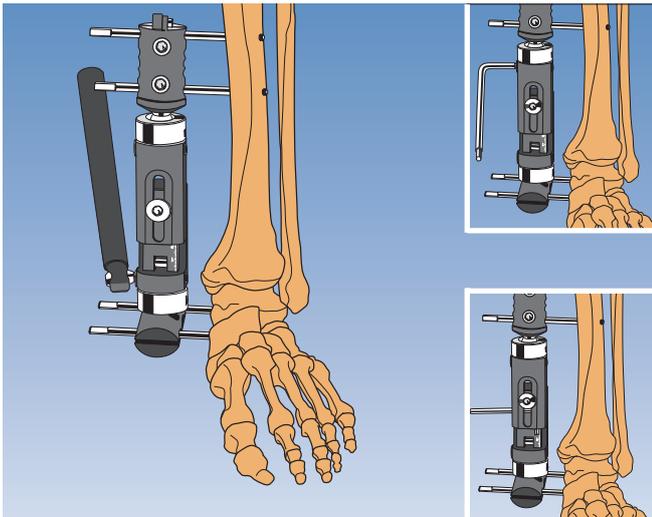
Apply the ProCallus Fixator to the medial side of the tibia. Expose the tibio-talar joint via an anterior incision. Open the joint and clean the articulating surfaces down to cancellous bone using an osteotome or forceps. Insert the distal screws first. Either a T-clamp (a) or a straight clamp (b) may be used, depending upon the surgeon's preference.



Use of the T-Clamp for Talar Placement of the Distal Screws

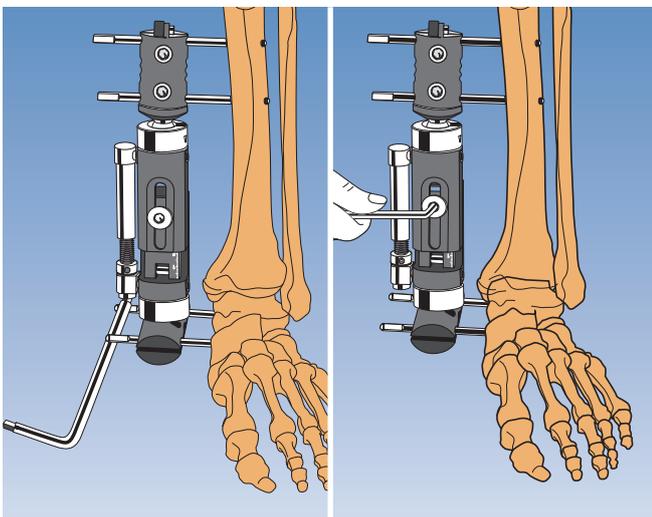
Insert the first screw through the neck of the talus. Leaving the screw guide in place, apply the fixator to this screw and insert the second talar screw posteriorly in the 4th or 5th seat of the clamp. With the fixator body open by 2 cm to allow for subsequent compression, insert the two proximal screws. Use screw seats 1 and 5 in the clamp for maximal stability.

Note: If the patient is heavy, consider the use of three screws proximally, or the use of OsteoTite screws. If the patient is osteoporotic, always use OsteoTite screws.

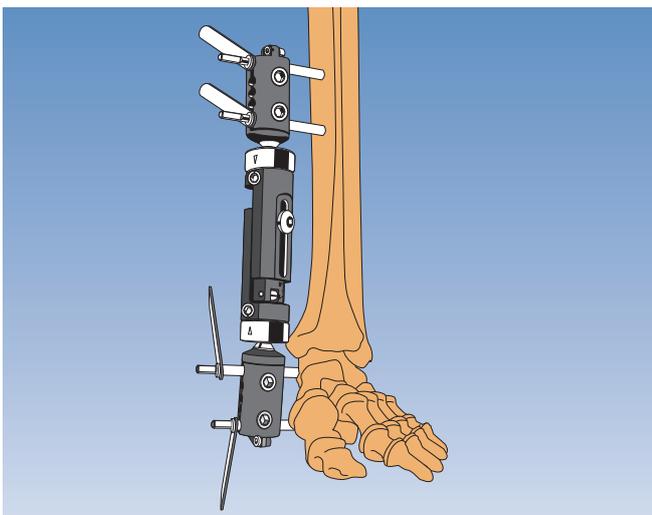


Place the foot and the ankle joint at right angles to the tibia (neutral position) and lock the cams and micromovement locking nut of the fixator using the 6 mm Allen wrench.

Finally, lock the cams with the torque wrench.



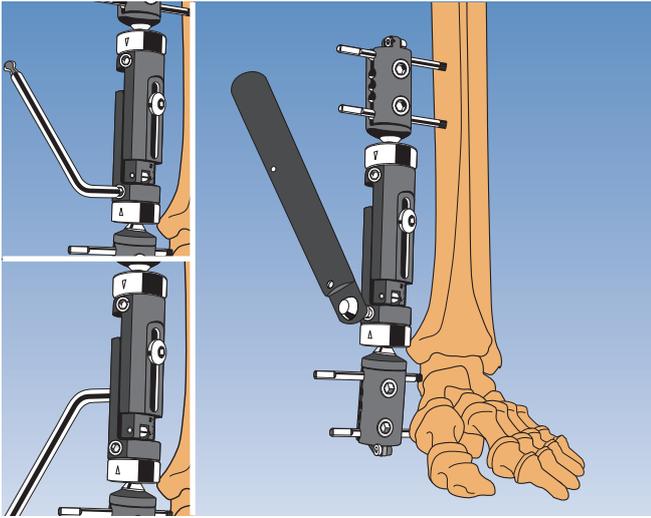
Attach the compression-distraction unit and exert compression, until good contact is felt between the joint surfaces. Avoid excessive compression in order to limit stress on the screws. Confirm contact between the two surfaces by X-ray. Finally, tighten the central body locking nut.



Use of the Straight Clamp for Talo-Calcaneal Placement of the Distal Screws

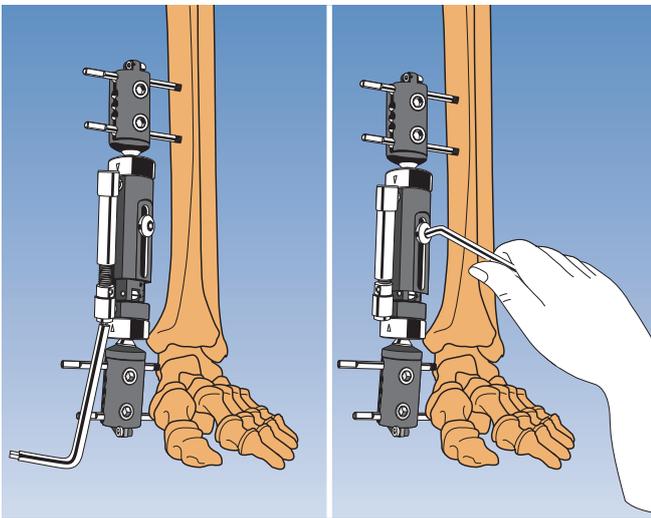
Insert the first screw through the body of the talus, anterior to the medial malleolus. Leaving the screw guide in place, apply the fixator to this screw and insert the second screw through the calcaneum, a little posterior to the first screw, avoiding the neurovascular bundle.

With the fixator body open by 2 cm to allow for subsequent compression, insert the two proximal screws. Use screw seats 1 and 5 in the clamp for maximal stability.



Place the foot and the ankle joint at right angles to the tibia (neutral position) and lock the cams and micromovement locking nut of the fixator using the 6 mm Allen wrench.

Finally, lock the cams with the torque wrench.



Attach the compression-distraction unit and exert compression, until good contact is felt between the joint surfaces. Avoid excessive compression in order to limit stress on the screws. Confirm contact between the two surfaces by X-ray. Finally, tighten the central body locking nut.

The Orthofix Quality System has been certified to be in compliance with the requirements of:

- Medical Devices Directive 93/42/EEC, Annex II - (Full Quality System)
- International Standards ISO 13485 / ISO 9001 for external fixator devices, implants for osteosynthesis and related instruments.



See "Orthofix External Fixation System" instruction leaflet (PQ EXF) prior to use.

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