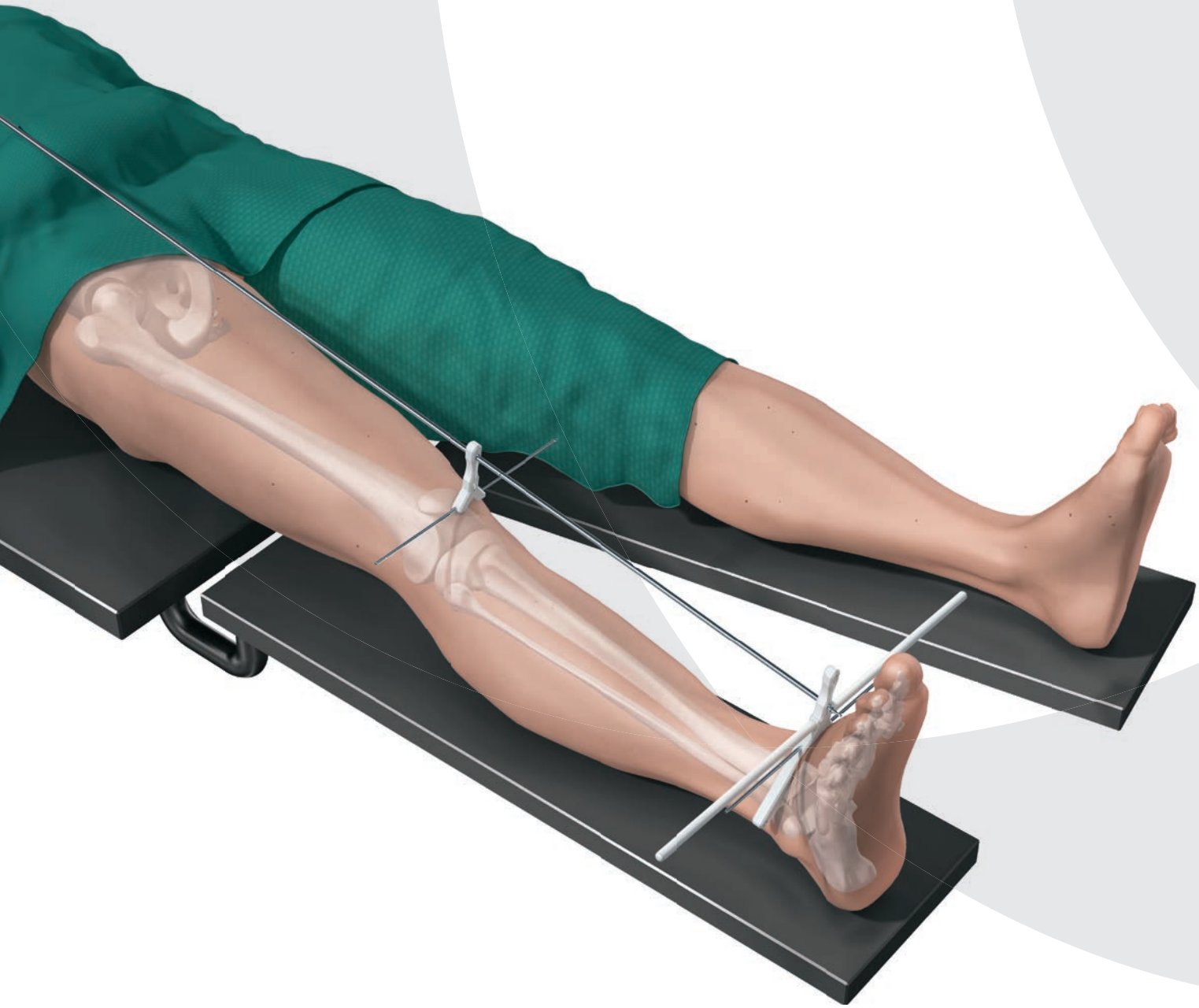
For intraoperatively confirming correction of the mechanical leg axis

Alignment Rod

Surgical Technique



DePuy Synthes

PART OF THE Johnson & Johnson FAMILY OF COMPANIES

Image intensifier control

This description alone does not provide sufficient background for direct use of DePuy Synthes products. Instruction by a surgeon experienced in handling these products is highly recommended.

Processing, Reprocessing, Care and Maintenance
For general guidelines, function control and dismantling of multi-part instruments, as well as processing guidelines for implants, please contact your local sales representative or refer to:
http://emea.depuysynthes.com/hcp/reprocessing-care-maintenance
For general information about reprocessing, care and maintenance of Synthes reusable devices, instrument trays and cases, as well as processing of Synthes non-sterile implants, please consult the Important Information leaflet (SE_023827) or refer to:
http://emea.depuysynthes.com/hcp/reprocessing-care-maintenance

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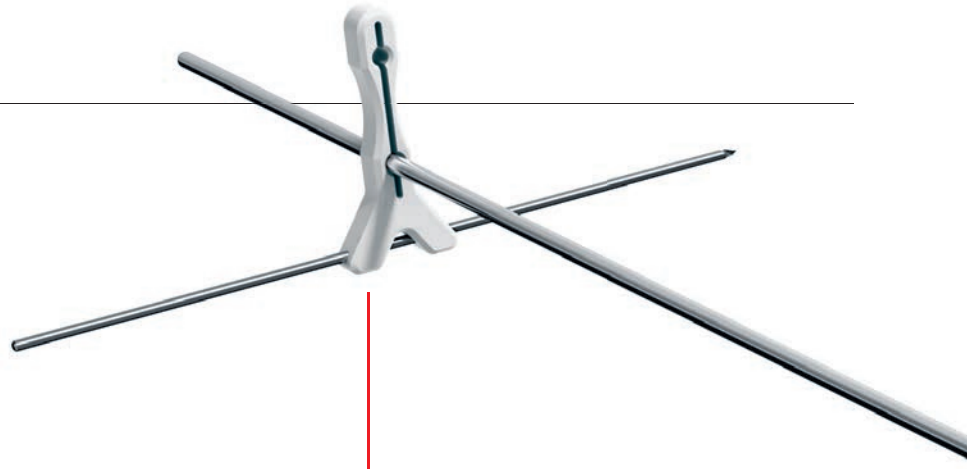
Alignment Rod. For intraoperatively confirming correction of the mechanical leg axis.

Alignment Rod

The Alignment Rod is designed to confirm correction of the mechanical axis of the leg. It consists of a metal rod and two stands (large and small). The alignment rod is used with an image intensifier to ensure the accuracy of surgery.



Small Stand
The small stand is designed for the knee joint. It is adjusted to the position of the joint line and can be used to check the orientation of the knee joint line and the mechanical axis of the leg.
It accepts a 2.0 mm Kirschner Wire for reference during image intensification.
The small stand does not have handles.

Alignment Rod
The metal rod consists of three sections that can be assembled for adaptation to individual leg lengths during surgery.
Threaded connections facilitate stable assembly of the individual parts. After surgery, the rod can be disassembled into its three shorter lengths for reprocessing and storage.

Handles
Handles attach to the large stand to hold the alignment rod in the correct position, without hand exposure to the X-ray beam. The handles may be connected to the stand either parallel or perpendicular to the rod.

Large Stand
The large stand, with its triangular shape, allows placement over the ankle joint. Two holes in the upper part of the stand allow the metal rod to be placed in two different positions.

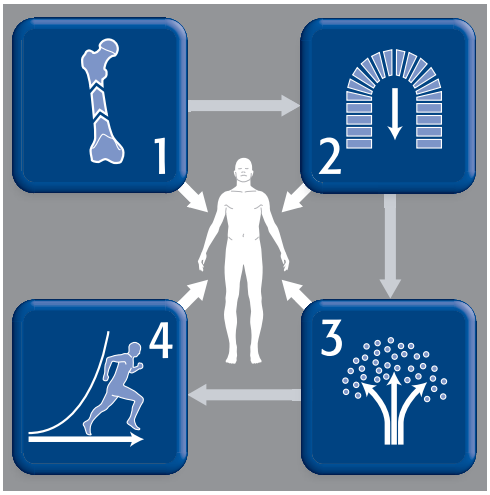
Kirschner Wire
To check the ankle joint line, a 2.0 mm Kirschner Wire can be inserted into the stand at a right angle to the metal rod as reference during image intensification.

AO Principles

In 1958, the AO formulated four basic principles, which have become the guidelines for internal fixation[1,2].

Anatomic reduction
Fracture reduction and fixation to restore anatomical relationships.

Early, active mobilization
Early and safe mobilization and rehabilitation of the injured part and the patient as a whole.



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

Preservation of blood supply
Preservation of the blood supply to soft tissues and bone by gentle reduction techniques and careful handling.

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

Surgical Technique

Note: **The alignment rod should only be used by surgeons who are familiar with the principles of correct limb alignment.**

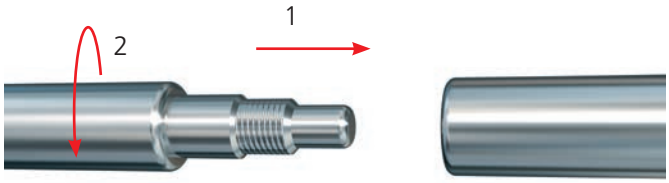
Note: **For more information please refer to the Tomo-Fix surgical technique: DSEM/TRM/0115/0288.**

Preparation for surgery

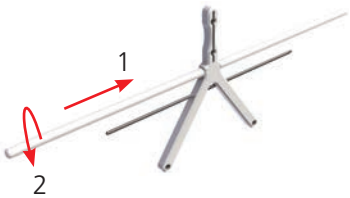
Required instruments

03.108.030	Alignment Rod
03.108.031	Stand, large, for Alignment Rod, with handles
03.108.032	Stand, small, for Alignment Rod
292.210	Kirschner Wire ∅ 2.0 mm with trocar tip, length 280 mm, Stainless Steel

- Preassemble the metal rod to the appropriate length



- Attach handles to the large stand in the desired position



- Insert the preassembled metal rod into the desired positioning holes of the two stands

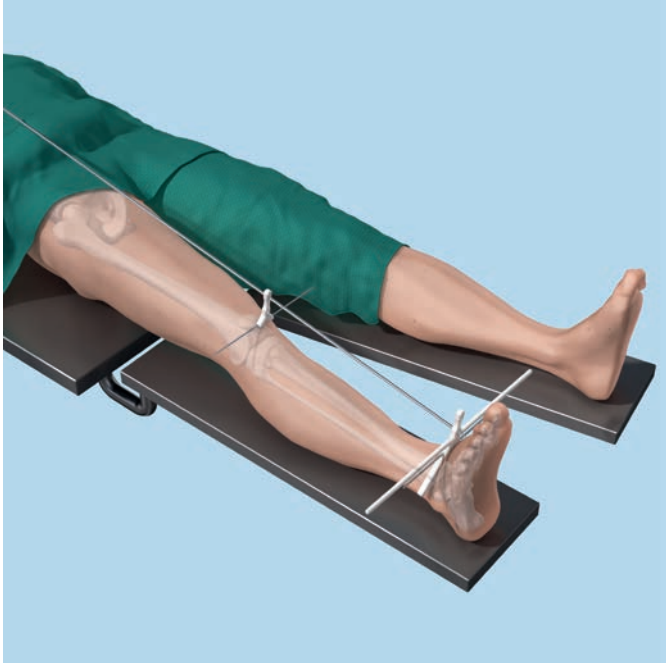
- Insert Kirschner Wires into the joint line holes of each stand

- Position the patient supine on a radiolucent table. Visualization of the complete leg with the image intensifier should be possible in the AP- and lateral views.

Use during surgery
After performing the osteotomy or reducing the fracture, use the alignment rod to confirm that the mechanical axis of the limb has been restored.

Use an image intensifier with laser light localizer (parallax-free).

Precaution: **Position the leg for an exact AP image and ensure that all measurements are performed with the same leg rotation.**



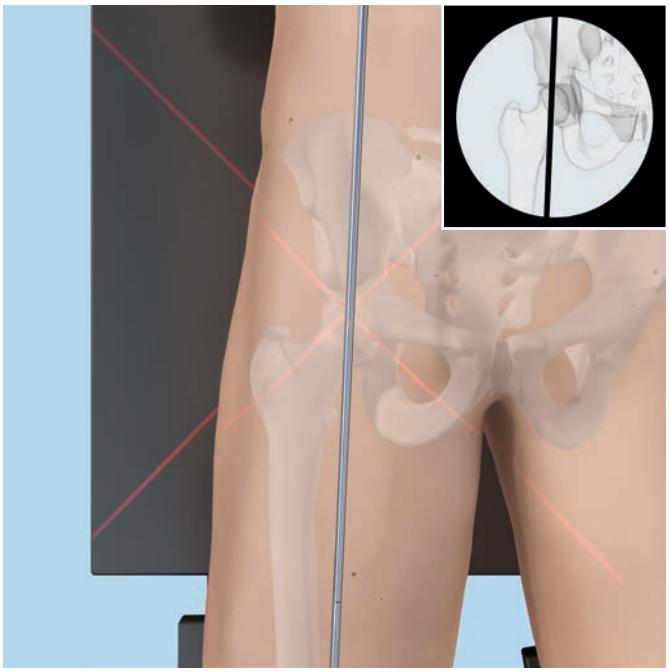
1. Placement

Place the preassembled alignment rod over the leg. Ensure positioning the stands in approximately the right positions over the ankle and knee joint. To avoid measuring errors make sure that the only contact between rod and limb is in the hip region.

2. Proximal placement

Align the proximal end of the metal rod with the center of the femoral head. Check it with an image intensifier.

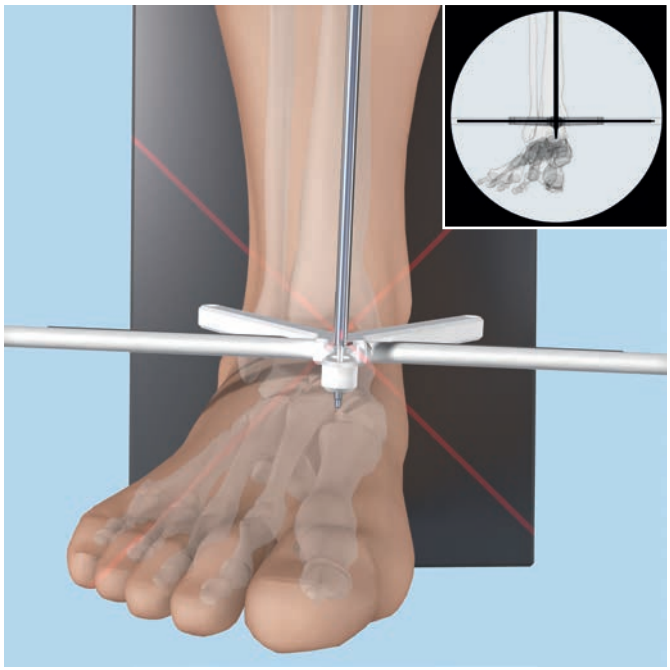
Note: **Mark the skin at this point to allow making additional measurements without using the image intensifier to continuously relocate the center of the femoral head.**



3. Distal placement

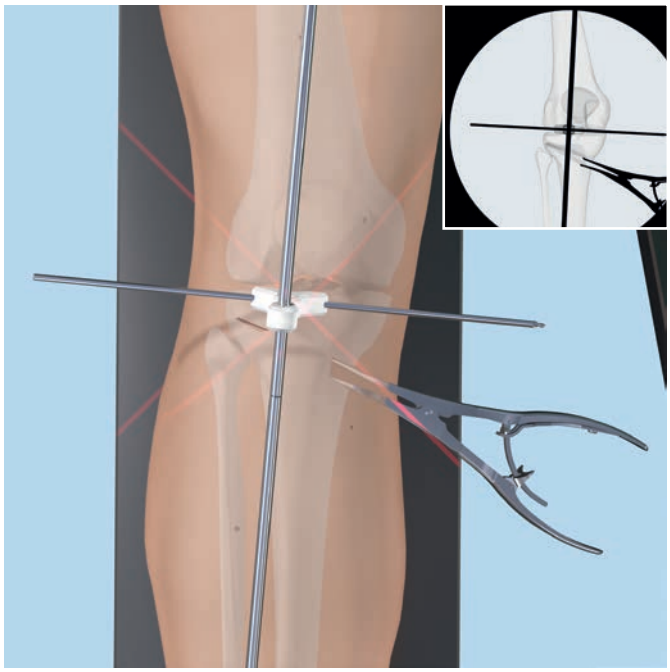
Align the distal end of the metal rod with the center of the ankle joint. Verify with an image intensifier.

Note: **Mark the skin at this point to allow making additional measurements without using the image intensifier to continuously relocate the center of the ankle joint.**



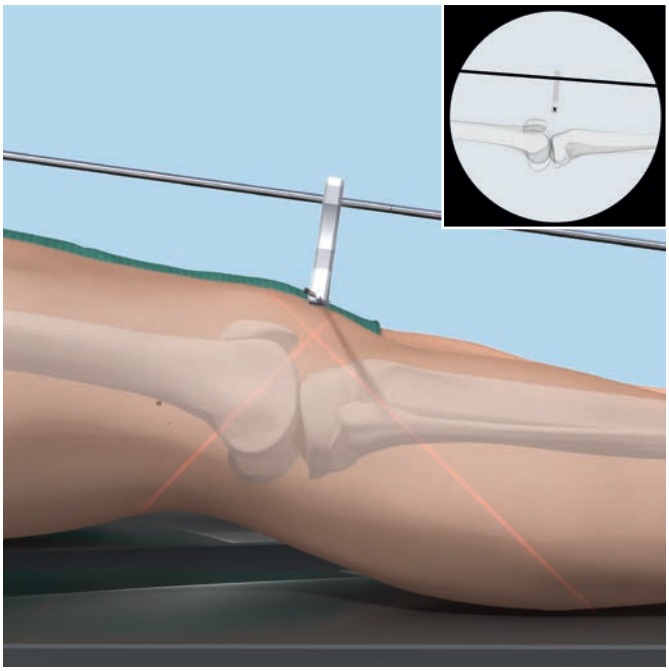
4. Verify knee joint line

Verify that the projected axis line passes the knee joint in accordance with the preoperative plan. Confirm that the knee joint line is oriented correctly (the wire in small stand).



Optional technique

Before performing an osteotomy, the knee must be in full extension; the alignment rod can be used to confirm this position. After placing the two stands over the ap propriate joints, check the rod with the image intensifier. The anterior cortex of femur and tibia should be parallel to the alignment rod.



Product Information

292.210	Kirschner Wire ∅ 2.0 mm with trocar tip, length 280 mm, Stainless Steel
03.108.030	Alignment Rod
03.108.031	Stand, large, for Alignment Rod, with handles
03.108.032	Stand, small, for Alignment Rod

Optional	
02.108.200.10	Guide Wire ∅ 3.0 mm, with thread and drill tip, length 230 mm, Stainless Steel
02.108.200S	Guide Wire ∅ 3.0 mm, with thread and drill tip, length 230 mm, Stainless Steel, sterile
04.108.200.10	Guide Wire ∅ 3.0 mm, with thread and drill tip, length 230 mm, Titanium Alloy (TAV)
04.108.200S	Guide Wire ∅ 3.0 mm, with thread and drill tip, length 230 mm, Titanium Alloy (TAV), sterile

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