SureLock Distal Targeting Device.
C-arm guided targeting for proximal femoral nail antirotation, proximal femoral nail and trochanteric fixation nail.
# Table of Contents

**Introduction**
- SureLock Distal Targeting Device 2

**Surgical Technique**
- Preoperative Planing 3
- Calibration of SureLock Targeting Device (Before Nail Insertion) 4
- Preparation for Use of the SureLock Targeting Device 7
- Standard Technique – Aiming Procedure 10
- Alternative Technique – Aiming Procedure 17

**Product Information**
- Instruments 23
- Set List 25

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*Image intensifier control*
SureLock Distal Targeting Device

The SureLock device is designed to facilitate distal locking of Synthes proximal femoral nails antirotation, proximal femoral nails and titanium trochanteric fixation nails, by providing:

- Simple, precise targeting
- Reduced exposure to radiation
- Increased working space

Historically, distal locking of intramedullary nails with an aiming device has been challenging; once inserted, the nail follows the bow of the medullary canal and may be deformed in different planes.

The SureLock system addresses nail deflection in a simple and effective manner. The design of the SureLock aiming arm and its specific techniques allow accurate distal locking for long proximal femoral nails antirotation, long proximal femoral nails and long trochanteric fixation nails.

Important: Two different techniques are described in this brochure: The standard technique decreases the amount of radiation to the surgeon and patient. It relies on more accuracy and requires more steps than the alternative technique.
Preoperative Planning

1
Attach SureLock labels

*Instrument*

018.000.629 SureLock Labels for C-arm

*Ensure that the scale provided is attached to the C-arm, to facilitate exact orbital C-arm movements.*

*Note:* The scale is only useful when using the SureLock device according to the standard technique.

2
Patient positioning

Position the patient supine on the fracture table. Ensure that the femoral head, shaft and distal femur can be obtained with the C-arm in both planes. Reduce the fracture.

3
Select nail sizes

Determine the appropriate nail length and diameter, according to the System Technique Guide.

*Important:* The SureLock device must be calibrated before nail insertion.
Calibration of SureLock Targeting Device (Before Nail Insertion)

1. Assemble nail and instrument

**Instruments**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>03.010.200</td>
<td>SureLock Aiming Arm for Antegrade Femoral Nails</td>
</tr>
<tr>
<td>03.010.201</td>
<td>SureLock Connector, left, for long Proximal Femoral Nails (PFN, TFN and PFNA)</td>
</tr>
<tr>
<td>03.010.202</td>
<td>SureLock Connector, right, for long Proximal Femoral Nails (PFN, TFN and PFNA)</td>
</tr>
<tr>
<td>03.010.203</td>
<td>Adjustment Knob for SureLock</td>
</tr>
</tbody>
</table>

Assemble the nail on the insertion handle.

Attach the appropriate connector (for left leg or right leg) to the insertion handle (1).

Slide the SureLock aiming arm into the SureLock connector. The aiming arm’s mating pins will guide the assembly through the connector (use the “RIGHT” pin for the right leg and the “LEFT” pin for the left leg).

Insert the second nutted pin of the aiming arm into the slot of the connector (2).

**Note:** Do not tighten the fixation screw yet (3).
Attach the adjustment knob to the aiming arm, ensuring that the aiming arm is straight. (This corresponds to the zero position.)
Calibration of SureLock Targeting Device
(Before Nail Insertion)

2
Calibration

Instruments

<table>
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<tr>
<th>Part Number</th>
<th>Item Description</th>
</tr>
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<tbody>
<tr>
<td>03.010.204</td>
<td>Calibration Pin Ø 12.0 mm</td>
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<tr>
<td>321.160</td>
<td>Combination Wrench Ø 11.0 mm</td>
</tr>
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Insert the calibration pins through the two distal holes of the SureLock aiming arm. Adjust the aiming arm length to precisely align the calibration pins with the distal nail holes.

Note: If the nail does not line up with the device, the free-hand distal locking technique will have to be used.

Tighten the fixation screw securely using the combination wrench. The SureLock device is now calibrated and ready for use.

Remove the SureLock device from the insertion handle.
Preparation for Use of the SureLock Targeting Device

1 Nail insertion

Please refer to the System Technique Guide for the following steps:

- Opening the femur
- Reaming, if desired or required
- Inserting the nail
- Proximal locking

When proximal locking is completed, remove the standard aiming arm from the insertion handle.

2 Attach calibrated SureLock device

Reattach the calibrated SureLock device to the insertion handle.
Position C-arm for distal locking

Move the C-arm distally, toward the end of the nail.

Position the C-arm at an angle of 30°– 40° relative to the axis of the distal locking holes.

**Note:** This C-arm position avoids the contralateral limb, keeps the surgeon out of the radiation beam and allows more space for power tools.

Rotate the C-arm orbitally into approximately the same plane as the nail, insertion handle and aiming arm assembly.
4 Verify C-arm image orientation

Check that the C-arm images are correct: “Left” or “Right” symbol on the SureLock aiming arm must be visible in the appropriate orientation.

Examples:
– “L” must be oriented correctly for a left leg.
– If necessary flip (mirror) or rotate the image.
1 Identify markings

Identify the following under image intensification:

- Peripheral line
- Median line
- Scale
- Peripheral circle
- Dot
- Peripheral circle

If these markings are not visible in the image, adjust the position of the C-arm and make a new image.
Align C-arm with nail and aiming arm

Orbitally rotate the C-arm until the dots are overlying the median line (control under image).

**Technique tips**
In relation to the peripheral/median lines:
- If the dots are lower, rotate the C-arm up
- If the dots are higher, rotate the C-arm down
- Each scale graduation on the SureLock aiming arm corresponds to 2° of the C-arm orbital rotation

If the dots and median line are not clearly visible, orbitally rotate the C-arm so that the relationship between the peripheral lines and peripheral circles is symmetrical.

**Notes**
- Be exact (up to 0.5°).
- Do not consider the nail position at this step of the procedure.
- Do not change the height of the C-arm; rotate only.
Standard Technique – Aiming Procedure

3 Align the aiming arm with the nail

- Compensate for nail deflection in the AP plane by turning the adjustment knob to raise or lower the aiming arm until the median line is visible in the center of the nail’s locking holes.

  Each full turn of the adjustment knob raises or lowers the aiming arm by 6 mm (every graduation on the knob = 1 mm).

  **Tips**
  - If the locking holes are not visible, align the median line with the nail tip instead.
  - Use the nail diameter as a reference to calculate the amount of correction needed.

- Ensure that the dots or circles and the lines are still aligned. If not, go back to step 2.

**Note:** The SureLock aiming arm scale does not give guidance on distance – it is only calibrated for the rotation of the C-arm.
4
Insert locking screws

Instruments

<table>
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<tr>
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<tbody>
<tr>
<td>356.708</td>
<td>Screwdriver, hexagonal, Ø 3.5 mm, for AFN</td>
</tr>
<tr>
<td>03.010.061</td>
<td>Drill Bit Ø 4.2 mm, calibrated, length 340 mm, 3-flute, for Quick Coupling, for No. 03.010.065</td>
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<tr>
<td>03.010.063</td>
<td>Protection Sleeve 12.0/8.0, length 188 mm</td>
</tr>
<tr>
<td>03.010.065</td>
<td>Drill Sleeve 8.0/4.2, for No. 03.010.063</td>
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<tr>
<td>03.010.070</td>
<td>Trocar Ø 4.2 mm, for No. 03.010.065</td>
</tr>
<tr>
<td>03.010.072</td>
<td>Depth Gauge for Locking Screws, measuring range up to 110 mm, for No. 03.010.063</td>
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Carefully perform a stab skin incision through the most distal hole of the SureLock aiming arm. Insert the protection sleeve /drill sleeve / trocar assembly through the aiming arm. Remove the trocar.
Standard Technique – Aiming Procedure

Check again that the dots and the median line overlie perfectly or that the circles and peripheral lines are perfectly symmetrical.

Ensure that the sleeves are centered in the most distal nail hole. If needed, remove the sleeves, make a downward or upward incision perpendicular to the existing incision to reposition the sleeves correctly.

Drill for the first distal locking screw, leaving the drill bit in place.
Use the same technique to drill through the second hole in the SureLock aiming arm. Measure for screw length and insert the appropriate locking screw according to standard technique guide.

Remove the drill bit from the most distal hole and repeat the same steps to insert the second locking screw.
Standard Technique – Aiming Procedure

5

Remove SureLock device

Remove the SureLock device from the insertion handle and continue surgery according to standard technique.
Alternative Technique –
Aiming Procedure

Preparation for use of SureLock

Refer to pages 3 through 9 for:
– Preoperative Planning
– Calibration
– C-arm set-up

Adjust C-arm intensity

If the image is too dark, change the intensity of the C-arm until the locking holes in the nail are clearly visible.

1
Insert sleeve assembly

Instruments

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Insert the protection sleeve/drill sleeve assembly through the most proximal hole of the aiming arm to the soft tissues.
Alternative Technique – Aiming Procedure

2

Align aiming arm with nail

**Instrument**

018.000.630  SureLock Template for Screen

Compensate for nail deflection in the AP plane by turning the adjustment knob to raise or lower the aiming arm until the protection sleeve/drill sleeve assembly is pointing precisely at the nail’s locking hole.

**Note:** For more precision, use a template with parallel lines on the screen.
3
Insert locking screws

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Remove sleeve assembly.

Carefully perform a stab skin incision through the most proximal hole of the SureLock aiming arm.

Insert the protection sleeve/drill sleeve / trocar assembly through the aiming arm and advance to the bone. Remove the trocar.
Alternative Technique – Aiming Procedure

Check again that the sleeve assembly is pointing precisely at the nail’s locking hole, using the central line on the template as a reference.

Drill for the first distal locking screw, leaving the drill bit in place.

Drill through the second locking hole, measure for screw length and insert the appropriate locking screw according to standard technique guide.
Remove the drill bit from the most proximal hole and repeat the same steps to insert the second locking screw.
Alternative Technique – Aiming Procedure

4 Remove SureLock device

Remove the SureLock device from the insertion handle and continue surgery according to the standard technique guide.
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<td>SureLock Labels for C-arm</td>
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<tr>
<td>018.000.630</td>
<td>SureLock Template for screen</td>
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</tbody>
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SureLock Distal Targeting Device for TFN Instrument Set (01.010.201)

**Vario Case**
68.010.201  Vario Case for SureLock, without Contents, without Lid
689.530    Lid (Stainless Steel), extra-large, for Vario Case

**Instruments**
03.010.061  Drill Bit \( \varnothing \) 4.2 mm, calibrated, length 340 mm, 3-flute, for Quick Coupling, for No. 03.010.065
03.010.063  Protection Sleeve 12.0\( / \)8.0, length 188 mm
03.010.065  Drill Sleeve 8.0\( / \)4.2, for No. 03.010.063
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018.000.629 SureLock Labels for C-arm
018.000.630 SureLock Template for screen

Note: For additional information, please refer to package insert.