SureLock Distal Targeting Device.  
C-arm guided targeting for trochanteric fixation nail.
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© Image intensifier control

Synthes
The SureLock device is designed to facilitate distal locking of Synthes 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 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**

6503 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 *Titanium Trochanteric Fixation Nail 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>
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<tbody>
<tr>
<td>03.010.200</td>
<td>SureLock Aiming Arm</td>
</tr>
<tr>
<td>03.010.201</td>
<td>SureLock Connector, left</td>
</tr>
<tr>
<td>03.010.202</td>
<td>SureLock Connector, right</td>
</tr>
<tr>
<td>03.010.203</td>
<td>Adjustment Knob for SureLock</td>
</tr>
</tbody>
</table>

Assemble the nail on the trochanteric fixation nail insertion handle.

Attach the appropriate connector (for left leg or right leg) to the trochanteric fixation nail insertion handle (Figure 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 (Figure 2).

Note: Do not tighten the fixation screw yet (Figure 3).
Attach the adjustment knob to the aiming arm, ensuring that the aiming arm is straight. (This corresponds to the zero position.)
2 Calibration

Instruments

<table>
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<tr>
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<tr>
<td>03.010.204</td>
<td>Calibration Pin, 12 mm diameter</td>
</tr>
<tr>
<td>321.16</td>
<td>Combination Wrench, 11 mm width across flats</td>
</tr>
</tbody>
</table>

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 freehand distal locking technique, described in the *Titanium Trochanteric Fixation Nail System Technique Guide* 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 trochanteric fixation nail insertion handle.
1

Nail insertion

Please refer to the *Titanium Trochanteric Fixation Nail 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 trochanteric fixation nail aiming arm from the insertion handle.

2

Attach calibrated SureLock device

Reattach the calibrated SureLock device to the trochanteric fixation nail insertion handle.
3

**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.
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
- Scale
- Median line
- 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 intensification).

**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  continued

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>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>03.010.150</td>
<td>Star/HexDrive Screwdriver, T25, 3.5 mm hexagonal, self-retaining</td>
</tr>
<tr>
<td>03.010.061</td>
<td>4.2 mm Three-Fluted Drill Bit, quick coupling, 330 mm, 100 mm calibration</td>
</tr>
<tr>
<td>03.010.063</td>
<td>12.0 mm/8.0 mm Protection Sleeve, 188 mm</td>
</tr>
<tr>
<td>03.010.065</td>
<td>8.0 mm/4.2 mm Drill Sleeve, 200 mm</td>
</tr>
<tr>
<td>03.010.070</td>
<td>4.2 mm Trocar, 210 mm</td>
</tr>
<tr>
<td>03.010.072</td>
<td>Depth Gauge, for Locking Screws to 100 mm</td>
</tr>
</tbody>
</table>

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.
4

Insert locking screws continued

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 trochanteric fixation nail technique.

Remove the drill bit from the most distal hole and repeat the same steps to insert the second locking screw.
5

Remove SureLock device

Remove the SureLock device from the insertion handle and continue surgery according to standard trochanteric fixation nail 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.
**2 Align aiming arm with nail**

**Instrument**

| 6504 | 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**

**Instruments**

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<tr>
<td>03.010.061</td>
<td>4.2 mm Three-Fluted Drill Bit, quick coupling, 330 mm, 100 mm calibration</td>
</tr>
<tr>
<td>03.010.070</td>
<td>4.2 mm Trocar</td>
</tr>
<tr>
<td>03.010.072</td>
<td>Depth Gauge, for Locking Screws to 100 mm</td>
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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 continued

3

Insert locking screws continued

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 trochanteric fixation nail technique.
Remove the drill bit from the most proximal hole and repeat the same steps to insert the second locking screw.
4

Remove SureLock device

Remove the SureLock device from the insertion handle and continue surgery according to the standard trochanteric fixation nail technique.
Instruments

- 03.010.061  4.2 mm Three-Fluted Drill Bit, quick coupling, 330 mm, 100 mm calibration

- 03.010.063  12.0 mm/8.0 mm Protection Sleeve, 188 mm

- 03.010.065  8.0 mm/4.2 mm Drill Sleeve, 200 mm

- 03.010.070  4.2 mm Trocar, 210 mm

- 03.010.072  Depth Gauge, for Locking Screws to 100 mm

- 03.010.150  Star/HexDrive Screwdriver, T25, 3.5 mm hexagonal, self-retaining

- 03.010.200  SureLock Aiming Arm, for Antegrade Femoral Nails
03.010.201  SureLock Connector, left, for Antegrade Femoral Nails

03.010.202  SureLock Connector, right, for Antegrade Femoral Nails

03.010.203  Adjustment Knob for SureLock, for Antegrade Femoral Nails

03.010.204  Calibration Pin, 12 mm diameter

321.16  Combination Wrench, 11 mm width across flats

6503  SureLock Labels for C-arm

6504  SureLock Template for screen
**SureLock Instrument Set (01.010.201)**

**Graphic Case**
- 60.010.002  SureLock Graphic Case

**Instruments**
- 03.010.061  4.2 mm Three-Fluted Drill Bit, quick coupling, 330 mm, 100 mm calibration, 2 ea.
- 03.010.063  12.0 mm/8.0 mm Protection Sleeve 188 mm, 2 ea.
- 03.010.065  8.0 mm/4.2 mm Drill Sleeve, 200 mm, 2 ea.
- 03.010.070  4.2 mm Trocar, 210 mm, 2 ea.
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- 03.010.200  SureLock Aiming Arm, for Antegrade Femoral Nails
- 03.010.201  SureLock Connector, left, for Antegrade Femoral Nails
- 03.010.202  SureLock Connector, right, for Antegrade Femoral Nails
- 03.010.203  Adjustment Knob for SureLock, for Antegrade Femoral Nails, 2 ea.
- 03.010.204  Calibration Pin, 12 mm diameter, 2 ea.
- 321.16  Combination Wrench, 11 mm width across flats
- 6503  SureLock Labels, for C-arm, 1 pkg of 2
- 6504  SureLock Template for screen, 1 pkg of 2

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