

# Trochanteric Nail System

Product and Competitive Overview



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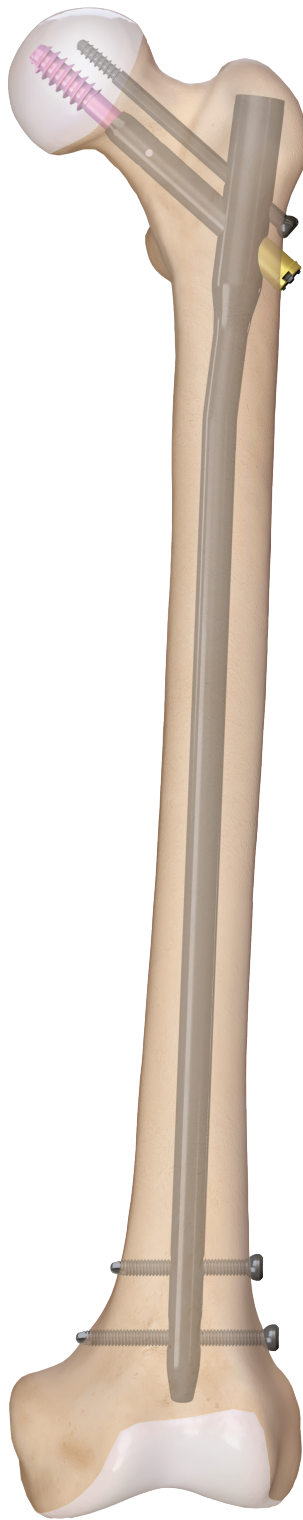
# Trochanteric Nail System

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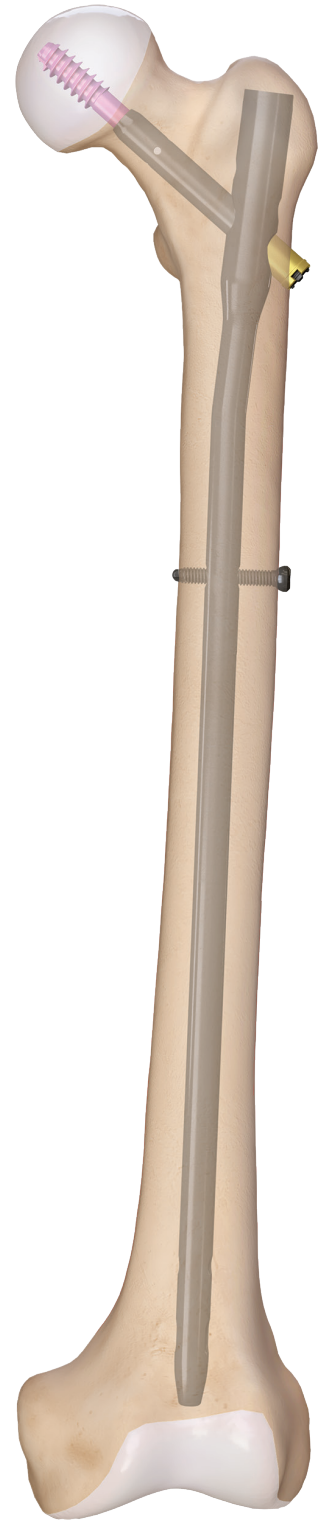
Short Nail



Long Nail



ES Nail



# Trochanteric Nail System

## Product Overview

With an aging population more active than ever, the rate of hip fractures and surgical fixation with trochanteric nails is expected to see tremendous growth. Current trochanteric fracture treatments can have lateral lag screw irritation, lag screw cut out, workflow inefficiencies, and loss of rotational reduction. The Arthrex trochanteric nail introduces unique technologies such as the **telescoping lag screw** and the **ES nails** to address these issues. The system consists of three nail types—short nail, long nail, and the innovative ES nail.

## ES Trochanteric Nail Product Overview

The ES trochanteric nail is intended to treat stable and unstable proximal fractures of the femur including pertrochanteric, intertrochanteric, and high subtrochanteric fractures and combinations of these fractures. Patients with shaft fractures should not be treated with the ES trochanteric nail. The ES hole is located 15 cm distal to the proximal edge of the nail in the same location as the more proximal distal locking hole of the short nail.

When the ES hole is used, the ES trochanteric nail approximately doubles the torsional rigidity of a distally locked long nail and provides more rigidity than an unlocked long trochanteric nail.<sup>1</sup> Furthermore, the ES nail extends through the isthmus of the bone, greatly reducing any “end of implant” stress risers, potential “pendulum” effects, and the risk of periprosthetic fractures to which a short nail may be subject.<sup>1</sup> Thus, the ES nail combines the mechanical advantage of a long nail with the ease of use of a short nail.

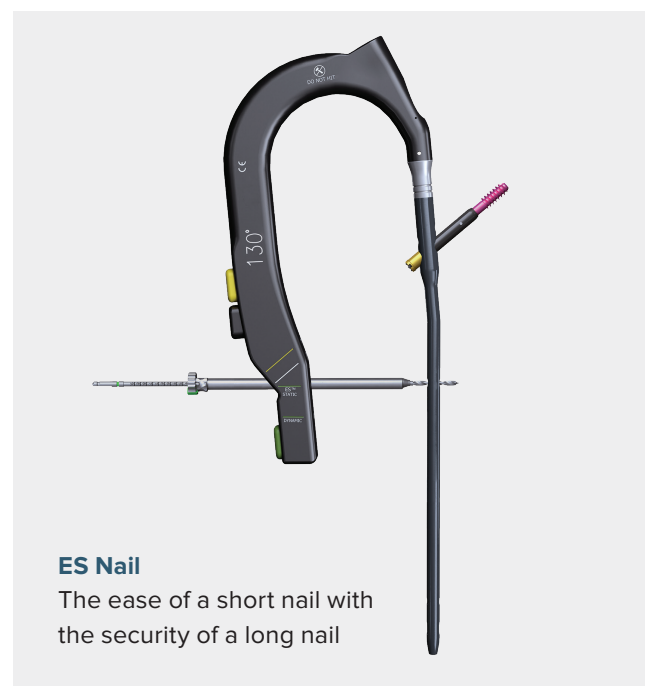
### Features and Benefits:

#### ■ Advantages over a short nail include:

- Eliminates stress riser at the end of a short nail
- Decreases periprosthetic fracture rate
- Increases rotational rigidity
- Increases load sharing due to intramedullary contact distal to the ES hole

#### ■ Advantages over a long distally locked nail include:

- Simple technique, ES hole is distally targeted
- No hassle of freehand distal interlocking screws
- Increases torsional rigidity by locking the ES hole<sup>1</sup>



#### ■ Advantages over an unlocked long nail:

- Eliminates inherent rotational and distal AP motion created by the long nail “lever arm”
- Increases torsional rigidity by locking the ES hole<sup>1</sup>
- Has an option of locking the ES hole as well as distal holes (in special circumstances)

#### ■ Advantages over a compression hip screw:

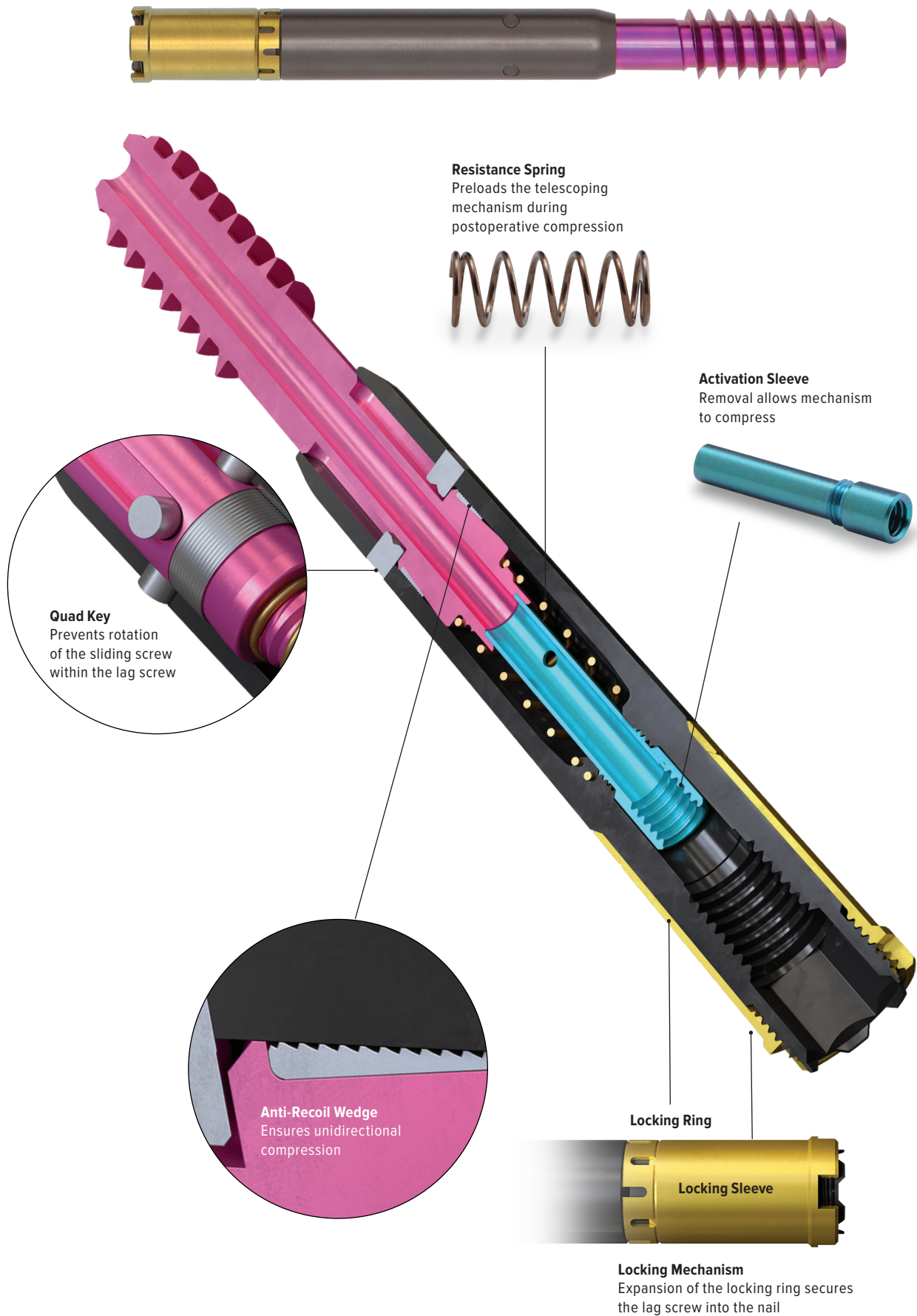
- Mechanically superior<sup>2</sup>
  - Decreases moment arm
  - Load sharing, not load bearing
  - Decreases soft-tissue dissection
- Decreased periprosthetic fracture rate

### References

1. Test report T0209. Stress analysis of the aos extended short trochanteric nail vs. the short and long trochanteric nails. Advanced Orthopaedic Solutions; September 2006.
2. Wheelless CR III. Intramedullary hip screw for intertrochanteric fractures. In: *Wheelless' Textbook of Orthopaedics*. Data Trace; 2021. Accessed September 10, 2021. [www.wheellessonline.com](http://www.wheellessonline.com)

# Telescoping Lag Screw

Healing Without Protrusion



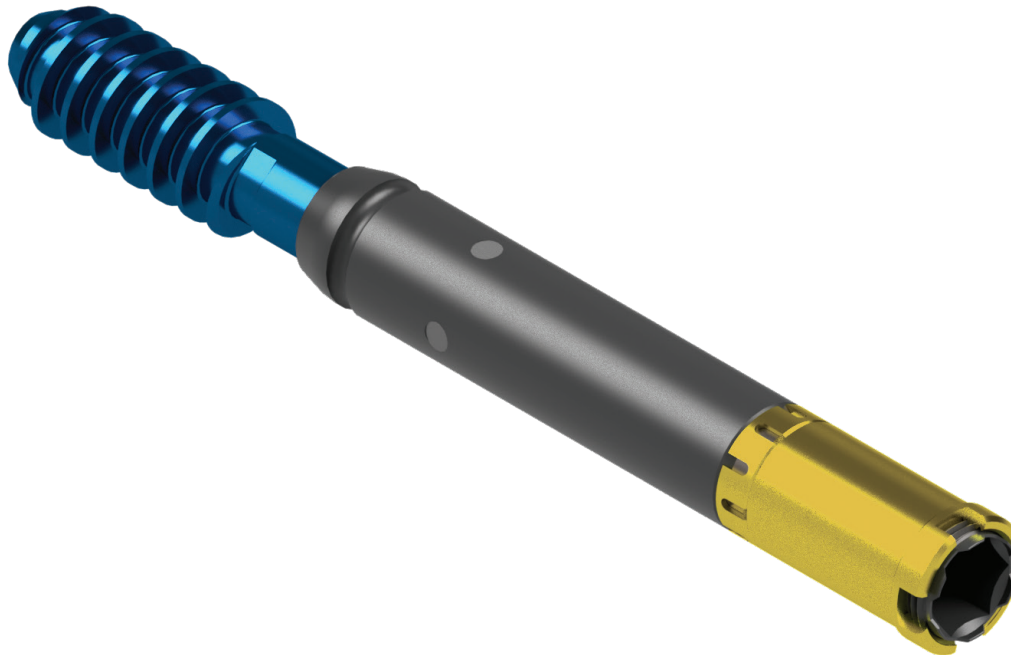
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# Telescoping Lag Screw, Left Side

## Healing Without Protrusion

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Uses the same technology as the standard telescoping lag screw with the addition of counterclockwise threads that may prevent loss of reduction during insertion in left-sided hip fractures by counteracting the forces of the iliopsoas and capsule.



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## Trochanteric Nail System Product Value

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- Intraoperative
  - Reduces OR time
  - Patented Arthrex ES hole is targeted through the jig
    - Eliminates distal targeting freehand technique
  - Unique instrumentation
    - Reduces multiple surgical step redundancies versus competitive systems
- Reduces C-arm fluoroscopy
  - Targeting jig eliminates excessive fluoroscopy during surgery
- Reduces OR personnel
  - Targeted ES hole eliminates need for additional x-ray technician in the OR for perfect circles
- Postoperative
  - Patented Arthrex telescoping lag screw eliminates lateral protrusion
    - May reduce post-op discomfort caused by lateral irritation
    - May reduce need for second surgery lag screw removal due to lateral pain
  - Patented Arthrex ES nail may help reduce post-op periprosthetic fractures

## Product Comparisons

### Lag Screws

	Arthrex	Stryker	DePuy Synthes	Zimmer Biomet	Smith & Nephew	Globus Medical
	<b>Telescoping Lag Screw</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<b>Lag Screw Diameter</b>	10.5 mm	N/A	N/A	N/A	N/A	N/A
<b>Lag Screw Length</b>	85 mm-120 mm (5 mm increments)	N/A	N/A	N/A	N/A	N/A
	<b>Solid Locking Lag Screw</b>	<b>Gamma3 Lag Screw, Gamma3 RC Lag Screw</b>	<b>TFNA Helical Blades, TFNA Screws</b>	<b>Lag Screw</b>	<b>Trigen Intertan Lag and Compression Screw</b>	<b>Lag Screw</b>
<b>Lag Screw Diameter</b>	10.5 mm	10.5 mm	10.35 mm	10.5 mm	11 mm lag screw, 7 mm compression screw	10.5 mm
<b>Lag Screw Length</b>	70 mm-120 mm (5 mm increments)	70 mm-130 mm (5 mm increments)	70 mm-130 mm (5 mm increments)	70 mm-130 mm (5 mm increments)	70 mm-125 mm (5 mm increments)	70 mm-130 mm

### Anti-Rotation Screws

	Arthrex	Stryker	DePuy Synthes	Zimmer Biomet	Smith & Nephew	Globus Medical
	<b>Anti-rotation Screw</b>	<b>N/A</b>	<b>N/A</b>	<b>Anti-rotation Screw</b>	<b>N/A</b>	<b>N/A</b>
<b>Anti-rotation Screw Diameter</b>	5 mm	N/A	N/A	5 mm	N/A	N/A
<b>Anti-rotation Screw Length</b>	60 mm-110 mm (5 mm increments)	N/A	N/A	50 mm-110 mm (5 mm increments)	N/A	N/A

### Short Nails

	Arthrex	Stryker	DePuy Synthes	Zimmer Biomet	Smith & Nephew	Globus Medical
	<b>Trochanteric Short Nail</b>	<b>Gamma3® Trochanteric Nail</b>	<b>TFN-Advanced™ Proximal Femoral Nailing System</b>	<b>Affixus® Hip Fracture Short Nail</b>	<b>Trigen™ Intertan™ Intertrochanteric Nail (Short)</b>	<b>Autobahn® Trochanteric Nail</b>
<b>Length</b>	17 cm, 20 cm	170 mm, 180 mm, 200 mm	170 mm, 200 mm, and 235 mm	18 cm	18 cm, 20 cm	170 mm-480 mm
<b>Proximal Diameter</b>	15.9 mm	15.5 mm	15.66 mm	15.6 mm	15.25 mm × 16.25 mm (trapezoidal profile)	15.5 mm
<b>Distal Diameter</b>	9 mm, 10 mm, 11 mm, 12 mm, 13 mm	170 mm: 10 mm 180 mm: 11 mm 200 mm: 11 mm, 12 mm	9 mm, 10 mm, 11 mm, 12 mm	9 mm, 11 mm, 13 mm	10 mm, 11.5 mm, 13 mm	9 mm, 10 mm, 11 mm, 12 mm, 13 mm, 14 mm, 15 mm
<b>Angle Range</b>	125°, 130°	120°, 125°, 130°	125°, 130°, 135°	125°, 130°	125°, 130°	125°/130°
<b>Proximal Lateral Offset</b>	5°	4°	5°	4°	4°	5°
<b>Radius of Curvature</b>	N/A	N/A	N/A	N/A	N/A	N/A
<b>Distal Locking Options</b>	Two options: static locking hole, oblong hole	170 mm and 180 mm: oblong hole for static or dynamic screw placement 200 mm: one static hole and an oblong hole for static or dynamic screw placement	Static only	Two options: round and oblong	Oblong hole for static or dynamic screw placement	Static and dynamic locking capabilities
<b>Distal Locking Screw Diameter</b>	5 mm	5 mm	5 mm	5 mm	5 mm	5 mm
<b>Distal Locking Screw Lengths</b>	30 mm-50 mm (2 mm increments), 50 mm-120 mm (5 mm increments)	25 mm-60 mm (2.5 mm increments), 65 mm-120 mm (5mm increments)	26 mm-80 mm (2 mm increments) 80 mm-100 mm (5 mm increments)	20 mm-60mm (2mm increments), 50 mm-80mm (5 mm increments)	25 mm-50 mm (5 mm increments)	22.5 mm-110 mm

## Long Nails

	Arthrex	Stryker	DePuy Synthes	Zimmer Biomet	Smith & Nephew	Globus Medical
	<b>Trochanteric Long Nail</b>	<b>Gamma3 Long Nail R1.5 and R2.0</b>	<b>TFN-Advanced Proximal Femoral Nailing System</b>	<b>Affixus Hip Fracture Long Nail</b>	<b>Trigen Intertan Intertrochanteric Nail (Long)</b>	<b>Autobahn Trochanteric Nail</b>
<b>Length</b>	30 cm-42 cm (3 cm increments)	26 cm-48 cm (2 cm increments)	30 cm-48 cm (2 cm increments)	260 mm-460 mm (20 mm increments)	26 cm-46 cm (2 mm increments)	170 mm-480 mm
<b>Proximal Diameter</b>	15.9 mm	15.5 mm	15.66 mm	15.6 mm	15.25 mm × 16.25 mm (trapezoidal profile)	15.5 mm
<b>Distal Diameter</b>	10 mm, 11 mm, 12.5 mm	R1.5: 10 mm, 11 mm, 13 mm, 15 mm R2.0: 11 mm, 13 mm, 15 mm	9 mm, 10 mm, 11 mm, 12mm, and 14 mm	9 mm to 15 mm (2 mm increments)	10 mm, 11.5 mm, 13 mm	9 mm, 10 mm, 11 mm, 12 mm, 13 mm, 14 mm, 15 mm
<b>Angle Range</b>	125°, 130°	120°, 125°, 130°	125°, 130°, 135°	125°, 130°	125°, 130°	125°/130°
<b>Proximal Bend</b>	5°	4°	5°	4°	4°	5°
<b>Radius of Curvature</b>	30 cm, 33 cm: 0.9 m 36 cm: 1.0 m 39 cm, 42 cm: 1.3 m	1.5 m, 2.0 m	1.0 m	1.8 m	1.5 m or 2.0 m	1.3 m
<b>Distal Locking Options</b>	Two options: static locking hole, oblong hole	Two options: static locking hole, oblong hole	2 static and 1 dynamic	Two options: static locking hole, oblong hole	Two options: static locking hole, dynamic	Two options: static locking hole, dynamic
<b>Distal Locking Screw Diameter</b>	5 mm	5 mm	5 mm	5 mm	5 mm	5 mm
<b>Distal Locking Screw Lengths</b>	30 mm-50 mm (2 mm increments), 50 mm-120 mm (5 mm increments)	25 mm-60 mm (2.5 mm increments), 65 mm-120 mm (5mm increments)	26 mm-80 mm (2 mm increments) 80 mm-100 mm (5 mm increments)	20 mm-60 mm (2 mm increments), 50 mm-80 mm (5 mm increments)	25 mm-50 mm (5 mm increments)	22.5 mm-110 mm

## ES Nails

	Arthrex	Stryker	DePuy Synthes	Zimmer Biomet	Smith & Nephew	Globus Medical
	<b>ES Trochanteric Nail</b>	<b>No Comparable Nail</b>	<b>No Comparable Nail</b>	<b>No Comparable Nail</b>	<b>No Comparable Nail</b>	<b>No Comparable Nail</b>
<b>Length</b>	30 cm-42 cm (3 cm increments)	N/A	N/A	N/A	N/A	N/A
<b>Proximal Diameter</b>	15.9 mm	N/A	N/A	N/A	N/A	N/A
<b>Distal Diameter</b>	10 mm, 11 mm, 12.5 mm, 14 mm	N/A	N/A	N/A	N/A	N/A
<b>Angle Range</b>	125°, 130°	N/A	N/A	N/A	N/A	N/A
<b>Proximal Bend</b>	5°	N/A	N/A	N/A	N/A	N/A
<b>Radius of Curvature</b>	30 cm, 33 cm: 0.9 m 36 cm: 1.0 m 39 cm, 42 cm: 1.3 m	N/A	N/A	N/A	N/A	N/A
<b>Distal Locking Options</b>	Two options: static locking hole, oblong hole	N/A	N/A	N/A	N/A	N/A
<b>Distal Locking Screw Diameter</b>	5 mm	N/A	N/A	N/A	N/A	N/A
<b>Distal Locking Screw Lengths</b>	30 mm-50 mm (2 mm increments), 50 mm-120 mm (5 mm increments)	N/A	N/A	N/A	N/A	N/A

## Competitor Information Sources

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### DePuy Synthes

<http://synthes.vo.llnwd.net/o16/LLNWMB8/US%20Mobile/Synthes%20North%20America/Product%20Support%20Materials/Technique%20Guides/DSUSTRM06140109%20Rev%209.pdf>

### Stryker

<http://cdn.stryker.com/SYKGCSDOC-2-50273>

<https://www.strykermeded.com/media/1326/gamma3-rc-lag-screw-operative-technique.pdf>

<https://www.strykermeded.com/media/1310/gamma3-long-nail-r15-and-r20-operative-technique.pdf>

### Zimmer Biomet

<https://www.zimmerbiomet.com/content/dam/zimmer-biomet/medical-professionals/000-surgical-techniques/trauma/affixus-hip-fracture-nail-surgical-technique.pdf>

<https://www.zimmerbiomet.com/medical-professionals/trauma/product/affixus-hip-fracture-nail.html>

### Smith & Nephew

<https://www.smith-nephew.com/professional/products/all-products/trigen-meta-tan/>

[https://www.smith-nephew.com/global/assets/pdf/products/surgical/trigen\\_metatan\\_mb\\_01721v2.pdf](https://www.smith-nephew.com/global/assets/pdf/products/surgical/trigen_metatan_mb_01721v2.pdf)

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### Globus Medical

[https://www.globusmedical.com/wp-content/uploads/2019/11/GMTGD188\\_0518\\_AUTOBAHN\\_TrochNail\\_TechniqueGuide\\_revA.pdf](https://www.globusmedical.com/wp-content/uploads/2019/11/GMTGD188_0518_AUTOBAHN_TrochNail_TechniqueGuide_revA.pdf)





This description of technique is provided as an educational tool and clinical aid to assist properly licensed medical professionals in the usage of specific Arthrex products. As part of this professional usage, the medical professional must use their professional judgment in making any final determinations in product usage and technique. In doing so, the medical professional should rely on their own training and experience, and should conduct a thorough review of pertinent medical literature and the product's directions for use. Postoperative management is patient-specific and dependent on the treating professional's assessment. Individual results will vary and not all patients will experience the same postoperative activity level and/or outcomes.

View U.S. patent information at [www.arthrex.com/corporate/virtual-patent-marking](http://www.arthrex.com/corporate/virtual-patent-marking)

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