Smith+Nephew

LEOS◊ LARGE

Cannulated Screw System

Surgical Technique

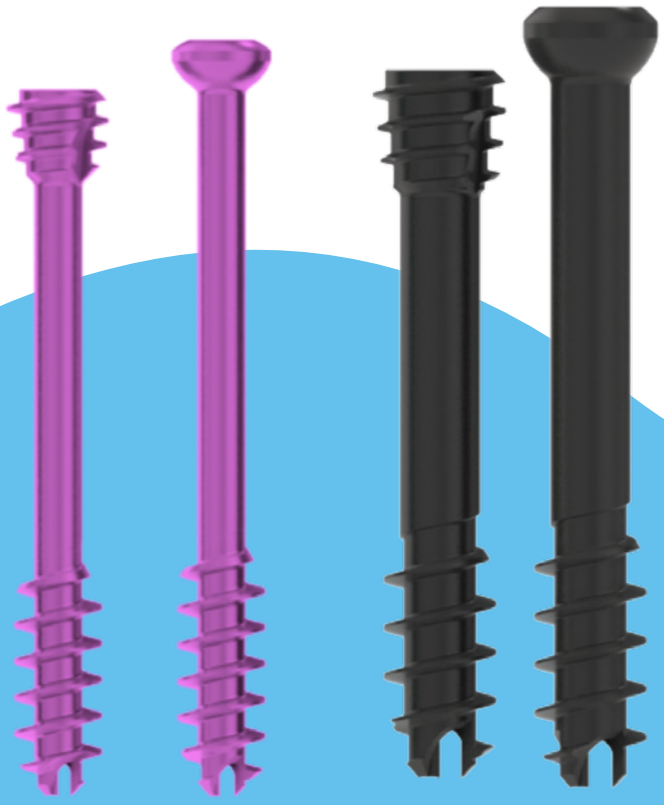
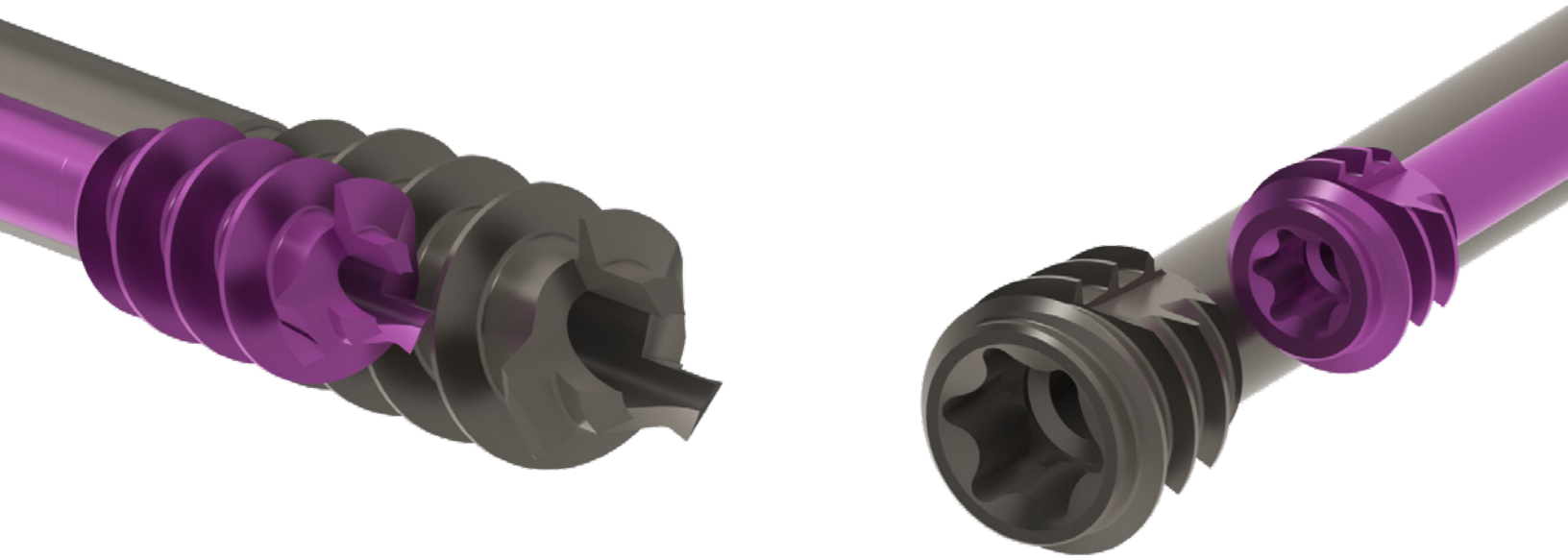


Table of contents

Nota Bene

The following technique is for informational and educational purposes only. It is not intended to serve as medical advice. It is the responsibility of treating physicians to determine and utilize the appropriate products and techniques according to their own clinical judgment for each of their patients. For more information on the product, including its indications for use, contraindications, and product safety information, please refer to the product's label and Instructions for Use found at LEOS-eIFU.info.



System features

The comprehensive Smith+Nephew LEOS◊ Cannulated Screw System was designed to provide compression.[1] The compression screw exhibits the following:

- Multiple thread length options between headed and headless implants
- Tapered head to deliver compression for headless implants[1]
- Cannulation to allow for precise insertion using a K-wire[1]
- Self-drilling and self-tapping features[1]

Overview

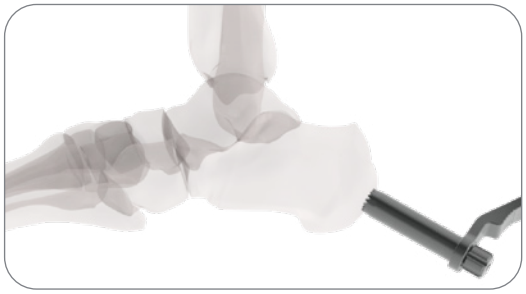
The LEOS Cannulated Screw System includes both headed and headless screws and accompanying instrumentation as outlined in the below tables:

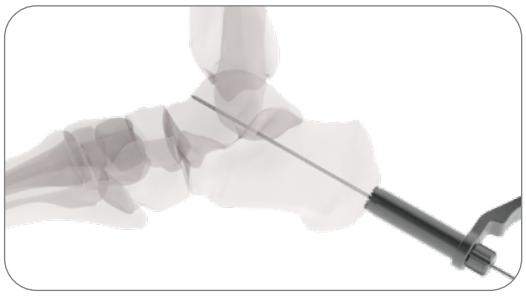
5.5mm Implant details

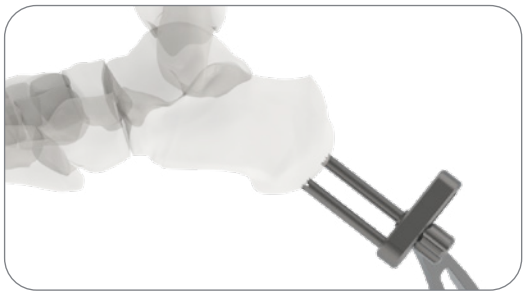
	Headless		Headed		
	Short thread	Long Thread	Short thread	Long Thread	Full Thread
					
Part Number	763455xxSH	763555xxLG	76315530SH	763255xxLG	763355FT
Thread Diameter	5.5				
K-wire	1.6				
Drill	3.0				
Driver	T15				
Screw Lengths	30-90	40-90	30-90	40-90	30-90
Thread Length	1/3, Max 16mm	2/3, Max 32mm	1/3, Max 16mm	2/3, Max 32mm	Full

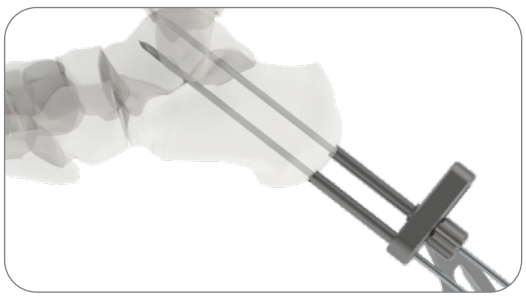
7.0mm Implant details

	Headless		Headed		
	Short thread	Long Thread	Short thread	Long Thread	Full Thread
					
Part Number	76347xxxSH	76357xxxLG	76317xxxSH	76327xxxLG	76337xxxFT
Thread Diameter	7.0				
K-wire	2.8				
Drill	5.0				
Driver	T30				
Screw Lengths	40-120				
Thread Length	1/3, Max 16mm	2/3, Max 32mm	1/3, Max 16mm	2/3, Max 32mm	Full









Surgical technique

Preparation and K-wire insertion

Dissect a clean approach to the desired region of the bone where the screw will be inserted.

Select the appropriate K-wire and wire guide for the chosen screw diameter and indication (See page 3 table).

When using the Tissue Protector as the chosen guide, select appropriate wire sleeve combination and assemble in outer sleeve.

Align Wire Guide

Insert the percutaneous sleeve assembly through the incision down to bone. Align the guide in the desired direction for the screw insertion.

K-wire Insertion

Insert the appropriately sized K-wire through the wire sleeve and into bone to the desired depth. Confirm positioning under fluoroscopy.

Once positioning is confirmed, remove wire sleeve.

When using the parallel wire guide as the chosen guide, select correct size per corresponding K-wire (See page 3 table) and adjust the spacing between wire sleeves to the desired distance between implants.

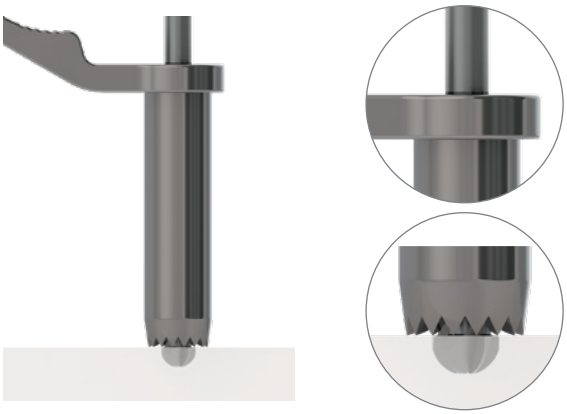
Align Wire Guide

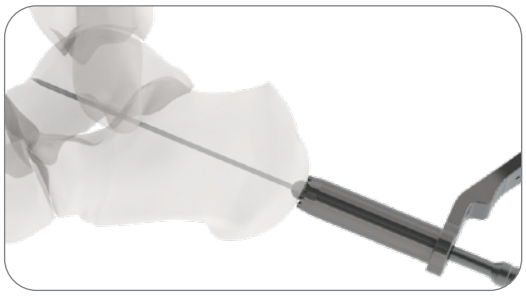
Align the wire guide in the desired direction of screw insertion. Adjust wire sleeve to desired distance between implants.

K-wire Insertion

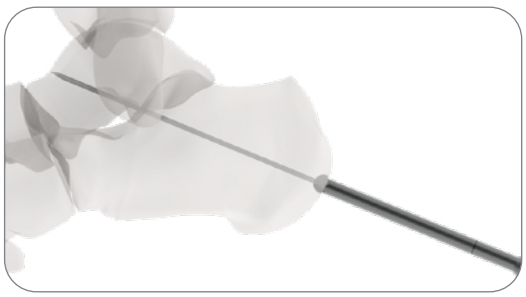
Insert the appropriately sized K-wire through the wire sleeve and into bone to the desired depth. Confirm positioning under fluoroscopy.

Once positioning is confirmed, remove wire sleeve.





With Tissue Protector



Without Tissue Protector

Headed Countersink (Optional)

Select the correct countersink for the chosen screw diameter and indication for headed implants.

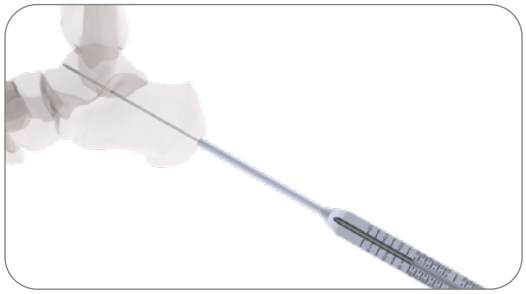
Advance the countersink tip into the bone by applying pressure and repeatedly rotating the countersink construct back and forth until the flat of the countersink head is flush with the bone.

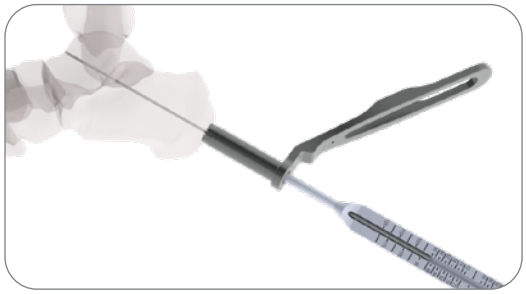
Note: When using the Tissue Protector as the chosen guide, the laser marked band on the countersink corresponds to the depth of the head of the countersink. Rotate the countersink construct back and forth until the black line on the shaft is reached.

Note: When choosing a headed screw approach, measurement using a depth gauge must occur after use of headed countersink to indicate the correct screw length.

Note: The head of the countersink represents the height of the screw head.

Note: Be aware that the K-wire may extend beyond the T-Handle, posing a risk of cutting the surgeon or damaging their gloves.





Determine screw length

Insert Depth Gauge

Feed the distal end of the depth gauge over the K-wire and place it flush against the bone.

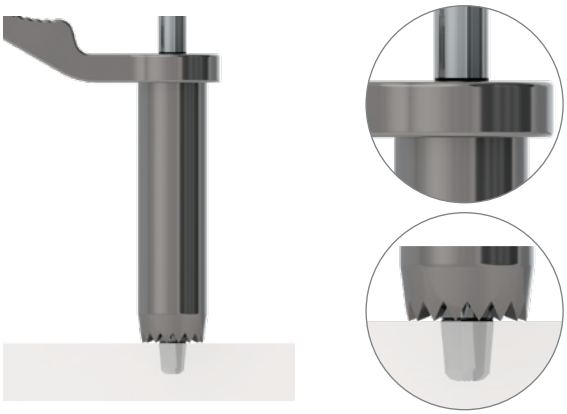
When using Tissue Protector as the chosen guide, insert the depth guage through the outer sleeve.

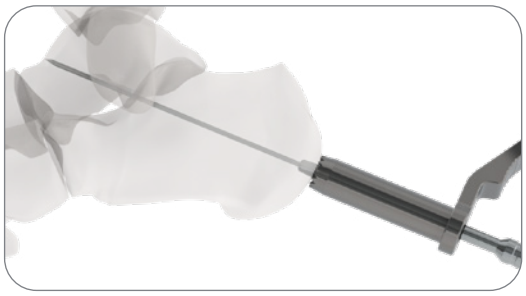
Record measurement

Record the measurement at the proximal end of the K-wire to determine the depth.

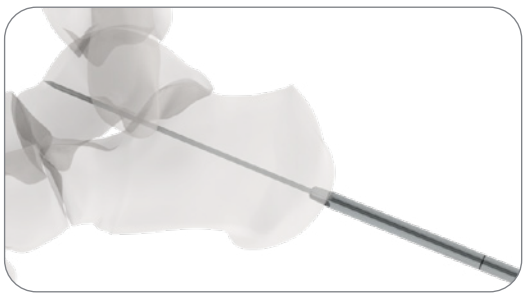
Notes:

- Wire may be further advanced after measurement is taken to ensure wire remains in bone for remaining steps of procedure.
- When measuring for screw length, take into account any possible compression that may occur as this will affect final screw position.
- When a headed countersink is used first, the depth gauge should be seated in the countersink hole.





With Tissue Protector



Without Tissue Protector

Headless Countersink (Optional)

Select the correct countersink for the chosen screw diameter and indication for headless implants.

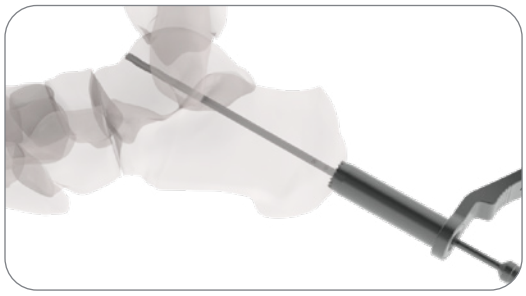
Advance the countersink tip into the bone by applying pressure and repeatedly rotating the countersink construct back and forth until the black line on the countersink head is reached.

Note: When using the Tissue Protector as the chosen guide, the laser marked band on the countersink corresponds to the depth of the head of the countersink. Rotate the countersink construct back and forth until the black line on the shaft is reached.

Note: When using a headless screw approach, measurement using a depth gauge must occur prior to use of headless countersink to indicate the correct screw length.

Note: The laser etch (groove under fluoroscopy) on the head of the countersink represents the height of the screw head.

Note: Be aware that the K-wire may extend beyond the T-Handle, posing a risk of cutting the surgeon or damaging their gloves.



Drill (Optional)

Select the correct drill size for the chosen screw diameter (See page 3 table). Select the correct drill guide for the chosen screw diameter.

Note: When using Tissue Protector or drill guide as chosen guide, insert drill through outer sleeve.

Drill Bone

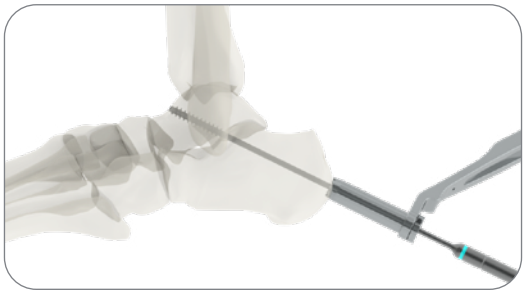
Place the appropriate cannulated drill over the guide wire and advance the drill until depth is achieved.

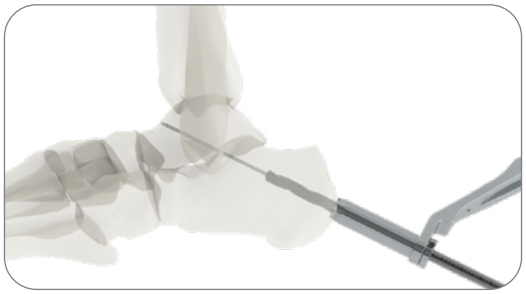
Drill is calibrated to display drilled length from the near cortex to the tip of the drill and must be read from the top of the Tissue Protector or drill guide.

Confirm depth with fluoroscopy.

Notes:

- Drilling is optional due to the self-drilling flute feature of implant tips.
- Drilling is beneficial for dense bone, as the axial force of self-drilling could distract the fragments of the compression site temporarily.
- When drilling under power, use power adapter for compatibility between Large AO and Hall-Jacobs connections.





Tap/Over-Drill (Optional)

Optional tap may be used for desired indications. Select the correct tap size for the chosen screw diameter and indication (See page 3 table).

Optional over-drill may be used for desired indications. Select the correct over-drill size for the chosen screw diameter and indication.

Note: When using the Tissue Protector as the chosen guide, insert tap or over-drill through Outer Sleeve.

Tap

Advance the tap through the bone until flush with the tip of the inserted K-wire. Fluoroscopy should be continuously used to ensure correct alignment and depth.

Over-drill

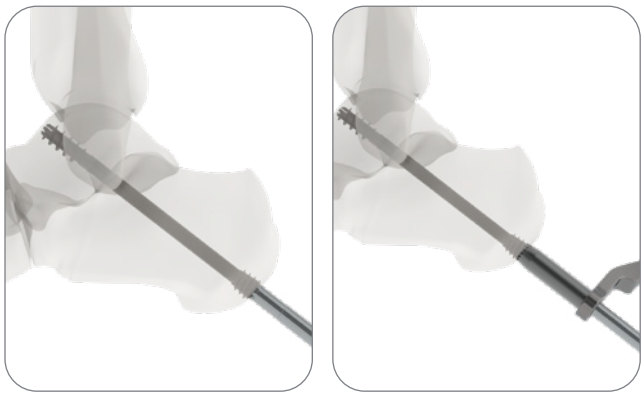
Advance the over-drill through the bone to the distal pole of the desired compression region. Fluoroscopy should be continuously used to ensure correct alignment and depth.

Over-drill depth markings may be read from the top of the Tissue Protector.

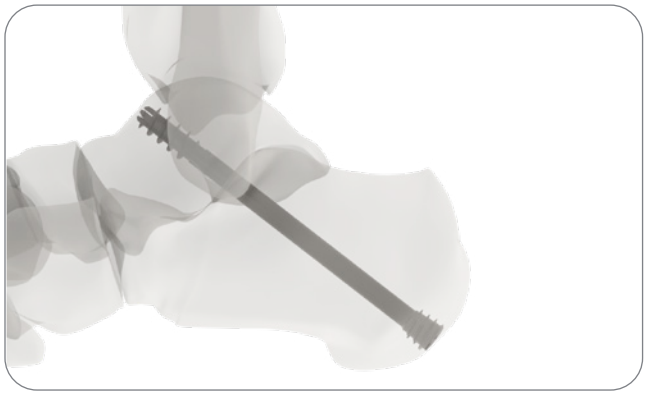
Back the tap or over-drill out of the bone once the desired depth is reached.

Notes:

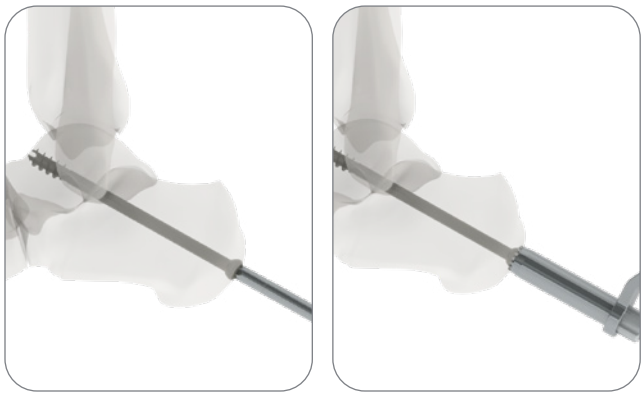
- Drilling and tapping are optional due to the self-drilling flute feature of these screws.
- Drilling and tapping are beneficial for dense bone, as the axial force of self-drilling could distract the fragments of the compression site temporarily.
- Over-drilling is optional for a lag screw approach.
- When drilling under power, use power adapter for compatibility between Large AO and Hall-Jacobs connections.
- Be aware that the K-wire may extend beyond the T-Handle, posing a risk of cutting the surgeon or damaging their gloves.



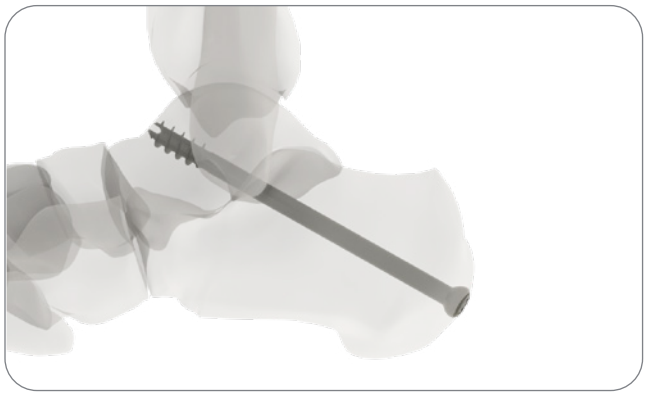
Headless Screw insertion



K-wire removed



Headed Screw insertion



K-wire removed

Insert screw and apply compression

Select the correct driver size for the chosen screw diameter (See page 3 table). Pass the screw over the K-wire, then use the driver to advance the screw into position.

Compression is applied by continuously rotating the driver clockwise until all screw threads have passed into the distal fragment. Compression cannot be achieved if the screw threads bridge the fracture or joint line.

Fluoroscopy should be used continuously to ensure correct positioning of the screw. Use a two-finger approach when driving the screw in order to prevent over-tightening or stripping.

Advance the screw into the bone until the head of the screw sits just below the surface of the bone. Lastly, remove the K-wire.

Note: When using the Tissue Protector as the chosen guide, insert the driver and implant through the Outer Sleeve.

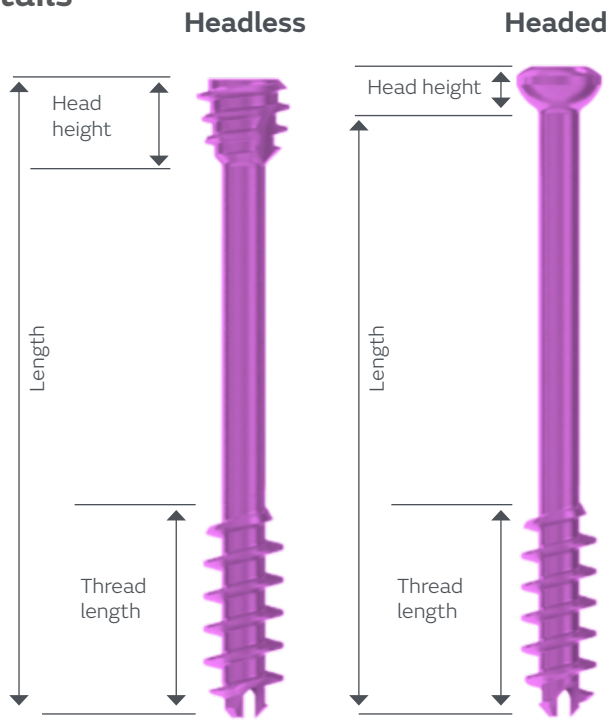
Implant removal (if required)

The implant may be removed by using the drivers indicated in the page 3 table. Clear any tissue overgrowth from the screw head recess and insert the driver. Next, turn the driver counterclockwise.

If alignment is difficult, a K-wire may be inserted through the screw cannula to facilitate driver alignment.

Note: Be aware that the K-wire may extend beyond the T-Handle, posing a risk of cutting the surgeon or damaging their gloves.

5.5mm Implant details



Thread length:
Short Thread = 1/3 Total Length
Max 16mm

Long Thread = 2/3 Total Length
Max 32mm

Full Thread = Total Length – set height for head

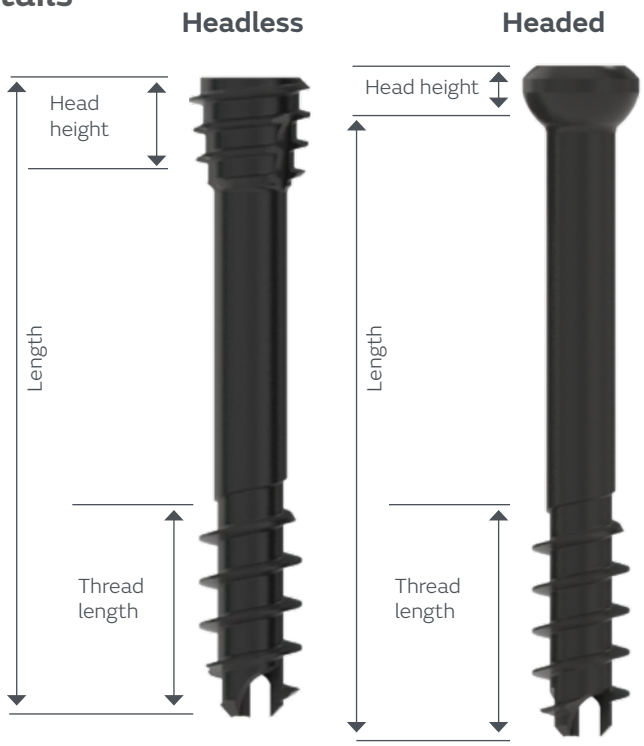
Head Height:
Headless= 5.89mm
Headed= 3.15mm

Washers:
For use with Headed Implants

Part number	Description
76308856	5.5mm Washer

Part Number					Working length
Headless		Headed			
Short thread	Long thread	Short thread	Long thread	Full thread	
76345530SH	—	76315530SH	—	76335530FT	30mm
76345535SH	—	76315535SH	—	76335535FT	35mm
76345540SH	76355540LG	76315540SH	76325540LG	76335540FT	40mm
76345542SH	76355542LG	76315542SH	76325542LG	76335542FT	42mm
76345544SH	76355544LG	76315544SH	76325544LG	76335544FT	44mm
76345546SH	76355546LG	76315546SH	76325546LG	76335546FT	46mm
76345548SH	76355548LG	76315548SH	76325548LG	76335548FT	48mm
76345550SH	76355550LG	76315550SH	76325550LG	76335550FT	50mm
76345552SH	76355552LG	76315552SH	76325552LG	76335552FT	52mm
76345554SH	76355554LG	76315554SH	76325554LG	76335554FT	54mm
76345556SH	76355556LG	76315556SH	76325556LG	76335556FT	56mm
76345558SH	76355558LG	76315558SH	76325558LG	76335558FT	58mm
76345560SH	76355560LG	76315560SH	76325560LG	76335560FT	60mm
76345565SH	76355565LG	76315565SH	76325565LG	76335565FT	65mm
76345570SH	76355570LG	76315570SH	76325570LG	76335570FT	70mm
76345574SH	76355574LG	76315574SH	76325574LG	76335574FT	74mm
76345578SH	76355578LG	76315578SH	76325578LG	76335578FT	78mm
76345582SH	76355582LG	76315582SH	76325582LG	76335582FT	82mm
76345586SH	76355586LG	76315586SH	76325586LG	76335586FT	86mm
76345590SH	76355590LG	76315590SH	76325590LG	76335590FT	90mm

7.0mm Implant details



Thread length:
Short Thread = 1/3 Total Length
Max 16mm

Long Thread = 2/3 Total Length
Max 32mm

Full Thread = Total Length – set height for head

Head Height:
Headless= 7.76mm
Headed= 4.55mm

Washers:
For use with Headed Implants

Part number	Description
76308876	7.0mm Washer

Part Number

Headless		Headed			Working length
Short thread	**Long thread**	**Short thread**	**Long thread**	**Full thread**	
76347040SH	76357040LG	76317040SH	76327040LG	76337040FT	40mm
76347042SH	76357042LG	76317042SH	76327042LG	76337042FT	42mm
76347044SH	76357044LG	76317044SH	76327044LG	76337044FT	44mm
76347046SH	76357046LG	76317046SH	76327046LG	76337046FT	46mm
76347048SH	76357048LG	76317048SH	76327048LG	76337048FT	48mm
76347050SH	76357050LG	76317050SH	76327050LG	76337050FT	50mm
76347052SH	76357052LG	76317052SH	76327052LG	76337052FT	52mm
76347054SH	76357054LG	76317054SH	76327054LG	76337054FT	54mm
76347056SH	76357056LG	76317056SH	76327056LG	76337056FT	56mm
76347058SH	76357058LG	76317058SH	76327058LG	76337058FT	58mm
76347060SH	76357060LG	76317060SH	76327060LG	76337060FT	60mm
76347065SH	76357065LG	76317065SH	76327065LG	76337065FT	65mm
76347070SH	76357070LG	76317070SH	76327070LG	76337070FT	70mm
76347072SH	76357072LG	76317072SH	76327072LG	76337072FT	72mm
76347074SH	76357074LG	76317074SH	76327074LG	76337074FT	74mm
76347076SH	76357076LG	76317076SH	76327076LG	76337076FT	76mm
76347078SH	76357078LG	76317078SH	76327078LG	76337078FT	78mm
76347080SH	76357080LG	76317080SH	76327080LG	76337080FT	80mm
76347082SH	76357082LG	76317082SH	76327082LG	76337082FT	82mm
76347084SH	76357084LG	76317084SH	76327084LG	76337084FT	84mm

7.0mm Implant details *(continued)*

Part Number					Working length
Headless		Headed			
Short thread	Long thread	Short thread	Long thread	Full thread	
76347086SH	76357086LG	76317086SH	76327086LG	76337086FT	86mm
76347088SH	76357088LG	76317088SH	76327088LG	76337088FT	88mm
76347090SH	76357090LG	76317090SH	76327090LG	76337090FT	90mm
76347095SH	76357095LG	76317095SH	76327095LG	76337095FT	95mm
76347100SH	76357100LG	76317100SH	76327100LG	76337100FT	100mm
76347105SH	76357105LG	76317105SH	76327105LG	76337105FT	105mm
76347110SH	76357110LG	76317110SH	76327110LG	76337110FT	110mm
76347115SH	76357115LG	76317115SH	76327115LG	76337115FT	115mm
76347120SH	76357120LG	76317120SH	76327120LG	76337120FT	120mm

Large set instrumentation

K-wires

Part Number	Description
76308851	1.6 X 229mm K-wire
76308871	2.8 X 229mm K-wire fluted tip

Depth Gauge

Part Number	Description
76308560	229mm Depth Gauge

Drills

Part Number	Description
76308852	3.0 X 229mm Drill Large AO
76308872	5.0 X 229mm Drill Large AO
76308855	5.5 X 229mm Overdrill Large AO
76308875	7.0 X 229mm Overdrill Large AO

Taps

Part Number	Description
76308554	5.5mm Tap
76308575	7.0mm Tap

Countersinks

Part Number	Description
76308553	Countersink 5.5mm Cann HD Screws
76308573	Countersink 7.0mm Cann HD Screws
76308552	Countersink 5.5mm Cann HLESS Screws
76308572	Countersink 7.0mm Cann HLESS Screws

Drivers

Part Number	Description
76308550	T15 Driver Large AO
76308570	T30 Driver Large AO

Drill and Wire guides

Part Number	Description
76308557	Tissue Protector Outer Sleeve 5.5mm
76308551	Wire Insert 5.5mm Cann Screws
76308578	Tissue Protector Outer Sleeve 7.0mm
76308571	Wire Insert 7.0mm Cann Screws
76308555	Parallel Wire Guide 4.0/5.5mm Cann Screws
76308576	Parallel Wire Guide 7.0mm Cann Screws

Handles

Part Number	Description
76308561	Ratcheting Handle Axial Large AO
76308562	T Handle Large AO

Power Adapter

Part Number	Description
71177205	PWR Adapter AO Large

Cleaning Sylets

Part Number	Description
76308544	Cleaning Stylet 5.5mm Screws
76308574	Cleaning Stylet 7.0mm Screws

Trays

Large	
Part Number	**Description**
76309900	LEOS Cannulated Large Screw System Case
76309910	LEOS Cannulated Screw System Lid
76309500	Instrument Tray 5.5/7.0mm
76309710	Caddy 7.0mm HD Cann Screws
76309720	Caddy 7.0mm HLESS Cann Screws
76309730	Lid 7.0mm HLESS Cann Screws
76309740	Lid 7.0mm HD Cann Screws
76309510	Caddy 5.5mm HD Cann Screws
76309520	Caddy 5.5mm HLESS Cann Screws
76309530	Lid 5.5mm HLESS Cann Screws
76309540	Lid 5.5mm HD Cann Screws

Notes

Notes

Notes

Products may not be available in all markets because product availability is subject to the regulatory and/or medical practices in individual markets. Please contact your Smith+Nephew representative or distributor if you have questions about the availability of Smith+Nephew products in your area. For detailed product information, including indications for use, contraindications, precautions and warnings, please consult the product's applicable Instructions for Use (IFU) prior to use.

Smith & Nephew, Inc.
1450 Brooks Road
Memphis, TN 38116
USA

www.smith-nephew.com

42173 V1 71081248 REV0 04/24

Legal Manufacturer:

Tyber Medical
83 S Commerce Way, Suite 310
Bethlehem, PA 18017

www.tybermedical.com

References

1. Tyber Medical Date on file. Memo-X01-08-06A.