PERLA® TL

THORACOLUMBAR FIXATION

C O N T E N T

CONCEPT AND DESIGN

Since 2005 Spineart has been true to the philosophy : quality, innovation, simplicity, by developing highly performing systems for the treatment of spinal pathologies.

PERLA® TL is a complete Posterior Thoraco-Lumbar Fixation System incorporating smart technologies and simplified instrumentation.

This system offers a complete range of spinal implants delivered sterile with an intuitive instrumentation.

The two first sets provide with straightforward instrumentation for degenerative cases while the long construct add-on sets bring PERLA® TL further for more demanding deformity pathologies. Among others:

- Brand-new tower reducers with unilateral / bilateral clip-on versions, long run, powerful reduction and quick release for per-op flexibility
- Exclusive 25D semi-polyaxial screw for an optimized control of the vertebral rotation
- Extensive range of implants including hooks, Z-Rods and rod connectors

AT A GLANCE

DUAL CORE AND DUAL LEAD THREAD SCREW DESIGN

for an optimized pullout strength and a faster insertion

BRAND-NEW TOWER REDUCER

with unilateral / bilateral clip-on versions, powerful 45mm reduction and quick release for intra-op flexibility

EXCLUSIVE DEFORMITY-DEDICATED 25D SCREW

with Semi-polyaxiality for a controlled correction and an easy rod-capture

NAVIGATION COMPATIBLE

with dedicated instrumentation

INDICATIONS

PERLA® TL System

The PERLA® TL Posterior Thoraco-lumbar Fixation System is intended to provide immobilization and stabilization of spinal segments in skeletally mature patients as an adjunct to fusion in the treatment of the following acute and chronic instabilities or deformities of the thoracic, lumbar, and sacral spine:

- degenerative disc disease;
- spondylolisthesis;
- fracture;
- dislocation;
- scoliosis;
- kyphosis;
- spinal tumor;
- and failed previous fusion (pseudarthrosis).

When used for posterior non-cervical pedicle screw fixation in pediatric patients, the PERLA® TL Posterior Thoraco-lumbar Fixation System is indicated as an adjunct to fusion to treat adolescent idiopathic scoliosis. The PERLA® TL Posterior Thoraco-lumbar Fixation System is intended to be used with autograft and/or allograft. Pediatric pedicle screw fixation is limited to a posterior approach.

When used in conjunction with TEKTONA® HV US bone cement system, the PERLA®TL system is intended to restore the integrity of the spinal column even in the absence of fusion for a limited period of time, in patients whom life expectancy is of insufficient duration to permit achievement of fusion in advanced stage of thoracic and lumbar spine tumors. The PERLA®TL 35mm to 60mm lengths Screws augmented used with TEKTONA® HV US bone cement system are intended to be used at spinal levels where the structural integrity is not severely compromised.

TEKTONA® HV US Bone Cement

TEKTONA® HV US Bone Cement is indicated for the treatment of pathological fractures of the vertebral body using a vertebroplasty or kyphoplasty procedure. Painful vertebral compression fractures may result from osteoporosis, benign lesions (hemangioma), and malignant lesions (metastatic cancers, myeloma).

When used in conjunction with PERLA®TL system, TEKTONA® HV US Bone Cement is intended to restore the integrity of the spinal column even in the absence of fusion for a limited time in patients with advanced stage tumors involving the thoracic and lumbar spine in whom life expectancy is of insufficient duration to permit achievement of fusion. PERLA®TL Screws augmented with TEKTONA® HV US Bone Cement are for use at spinal levels where the structural integrity of the spine is not severely compromised.

CONTRAINDICATIONS

Include but not limited to:

- mental illness.
- infection.
- severely damaged bone structures that could prevent stable implantation of the implant.
- neuromuscular or vascular disorders or illness.
- inadequate activity.
- pregnancy
- bone tumor in the region of implant.

For further information and recommended directions for the use of bone cement, please refer to instructions for use of TEKTONA® HV US bone cement.

Please refer to the PERLA® TL – PERLA® TL MIS Instructions for Use for complete system description, indications, contraindications, precautions and warnings.

Refer to Tecres specific Instructions for Use for cement related contraindications, potential adverse events and warnings when using this specific cement.

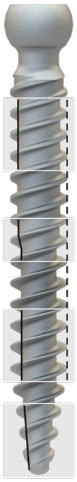
TECHNICAL FEATURES

DUAL CORE & DUAL LEAD THREAD SCREW DESIGN

Cortical bone thread

Transition zone

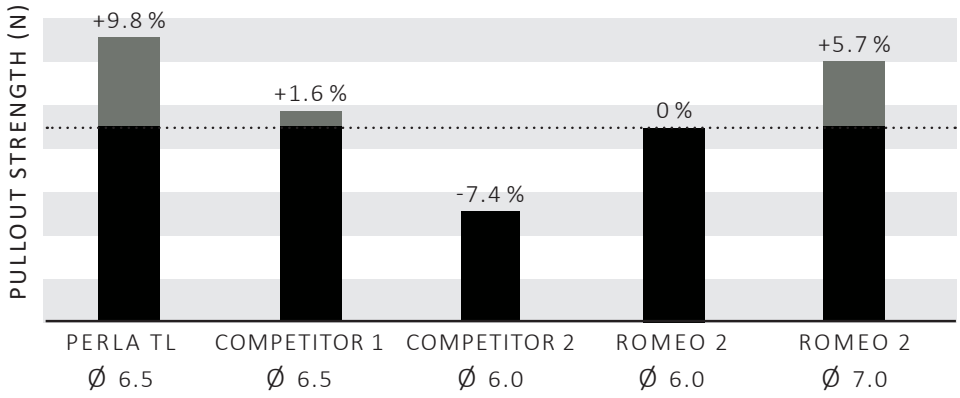
Cancellous bone thread



Constant external diameter

The **Dual Core** creates a constant external diameter with a variable thread depth. This allows a better adaptation to the vertebra anatomy and improved bone purchase and pull-out strength: deeper threads for cancellous bone and shorter thread for cortical bone.
The **Dual Lead Thread** allows for a faster insertion compared to a single thread screw, reducing fatigue.

PULLOUT STRENGTH IN PCF 15 BONE MODEL*



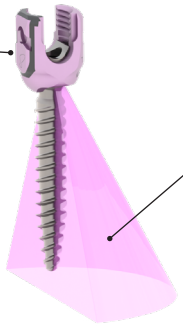
*Results of external testing from LNE (France's National Metrology and Testing Laboratory) per ASTM F543-17

TECHNICAL FEATURES

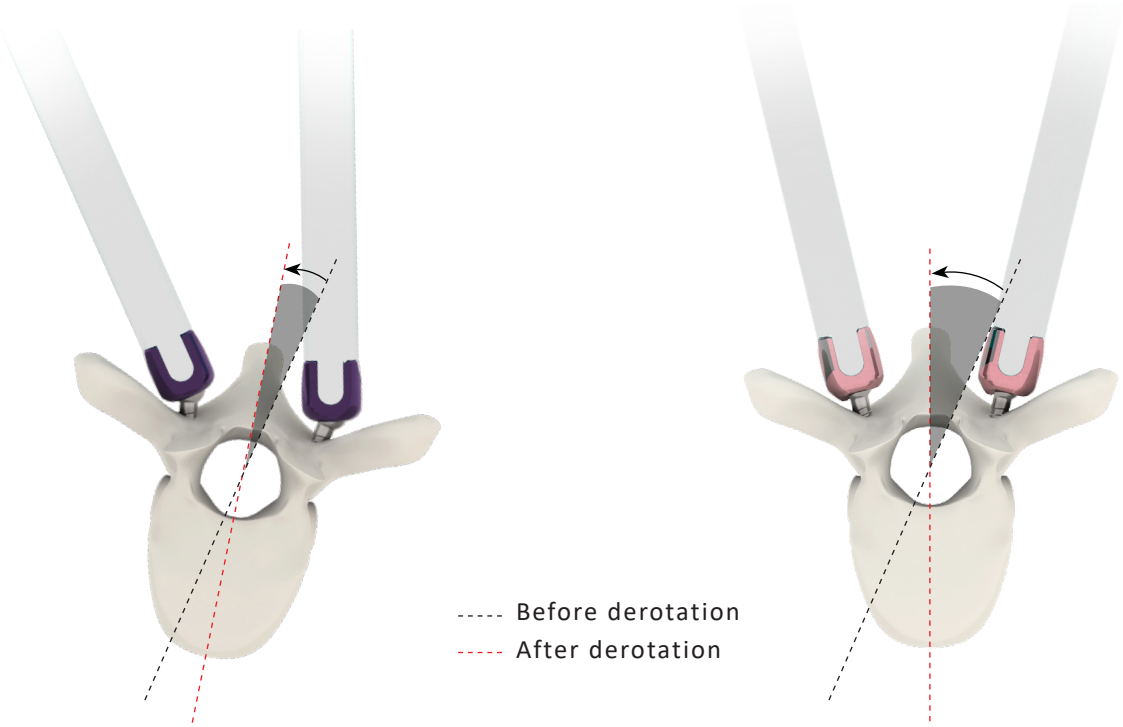
DEFORMITY COMBO: 25D SCREW + NEW TOWER REDUCER

The 25D Semi-Polyaxial Screw is designed to help you during the challenges of deformity correction. While its mobile side allows an easy rod capture, the constraint side gives a direct control of the vertebra mobilization for an optimized amplitude of correction.

Laser-marked constraint side
for an optimized amplitude of correction



25° Mobile side
for an easy rod capture



Derotation with standard polyaxial screws

Part of the mobilization lost by the polyaxiliaty of the screw

Amplitude of correction limited

Derotation with PERLA® TL 25D screws

Direct mobilization of the vertebra during maneuvers thanks to the constraint side

Optimized amplitude of correction

TECHNICAL FEATURES

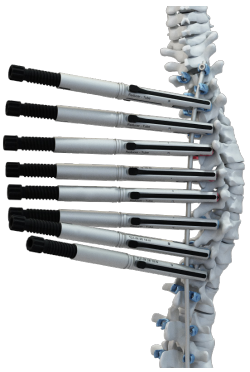
DEFORMITY COMBO: 25D SCREW + NEW TOWER REDUCER

The brand-new Tower Reducer combines in a **slim design,** a powerful **45mm reduction** and a **quick release system** for more intra-op flexibility. The **unilateral clip-on version** can be used as a lever arm for lateral rod persuasion , improved reduction visibility and when bone or tissue make difficult the connection on both sides of the screw head. Also, the Tower interconnection system allows segmental and multi-segmental correction strategies.

- Slim design
- 45mm reduction
- Quick release system
- Bilateral / Unilateral versions
- Strong multi-point connection

Segmental

Unilateral



VERTEBRAL DEROTATION

VERTEBRAL TRANSLATION

Combined, the 25D Screw and the Reducer make an optimized yet versatile combo for your deformity correction strategy.

TECHNICAL FEATURES

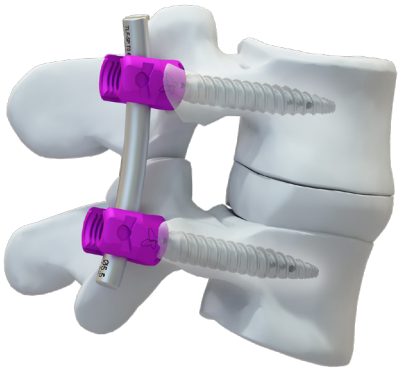
DOUBLE ROD DIAMETER COMPATIBILITY

—— Ø6 rod
------ Ø5.5 rod

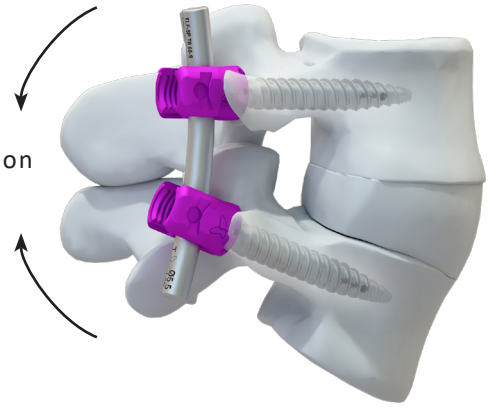
The PERLA® TL screw head is compatible with both Ø5.5 and Ø6 rods, for versatility in treating a wide range of pathologies.

UNIPLANAR SCREW FOR SAGITTAL PLANE CORRECTION

Distraction maneuver



Compression maneuver



The PERLA® TL Uniplanar Sagittal screws are used at the transition of each curve to restore sagittal alignment. Its restricted motion in the cephalad/caudal plane allows a direct mobilization of the vertebra, facilitating sagittal plane correction maneuvers.

TECHNICAL FEATURES

NAVIGATION COMPATIBLE

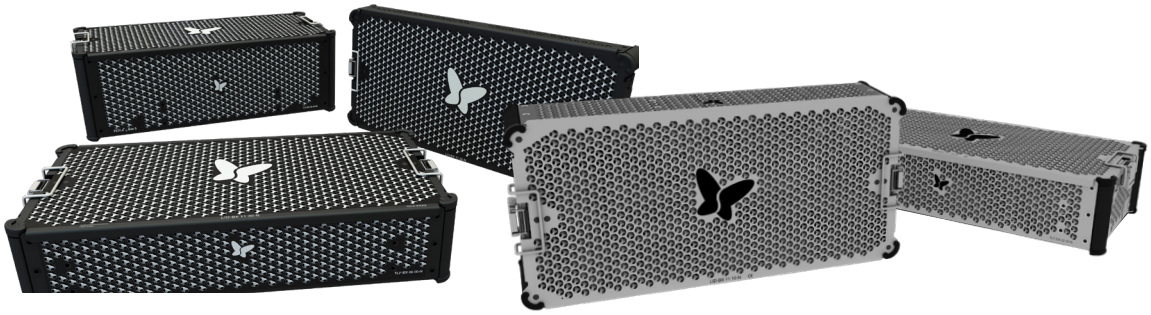
Taps and screwdrivers are available in a version compatible with Navigation platforms.

EXTENSIVE RANGE OF IMPLANTS

Complete range of screws, hooks, rods, cross connectors and rod connectors to provide versatile options to treat numerous pathologies from T1 to the pelvis.

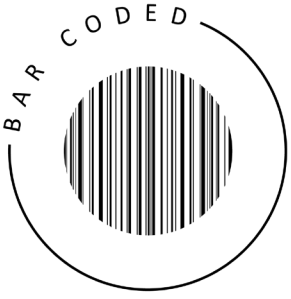
TECHNICAL FEATURES

COMPLETE INSTRUMENTATION

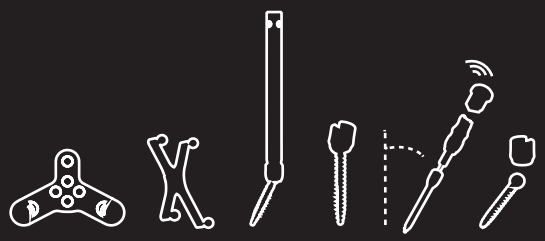


From degenerative to long construct cases, find the adapted instrumentation to the situation.

SAFETY



PERLA® TL implants are sterile-packed and barcoded ensuring sterility and traceability.



PERLA® PLATFORM

Make it yours

Offering a full spine posterior fixation solution,
the PERLA® PLATFORM partners with you, the way you need it.

ANATOMY

OCT | Thoraco-lumbar-pelvis | Thoraco-lumbar

APPROACH

Open | MIS

TECHNIQUE

K-wire | K-wire / Cement | K-wire / K-wireless / Cement | Modularity

TECHNOLOGY

Navigation compatible

IMPLANTS

All implants are designed and suitable for all surgical indications above-mentioned

POLYAXIAL SCREWS

DIAMETER/ LENGTH	Ø4.5	Ø5.5	Ø6.5
L25	TLF-PS 45 25-S	TLF-PS 55 25-S	TLF-PS 65 25-S
L30	TLF-PS 45 30-S	TLF-PS 55 30-S	TLF-PS 65 30-S
L35	TLF-PS 45 35-S	TLF-PS 55 35-S	TLF-PS 65 35-S
L40	TLF-PS 45 40-S	TLF-PS 55 40-S	TLF-PS 65 40-S
L45	TLF-PS 45 45-S	TLF-PS 55 45-S	TLF-PS 65 45-S
L50		TLF-PS 55 50-S	TLF-PS 65 50-S
L55			TLF-PS 65 55-S
L60			TLF-PS 65 60-S
L70			TLF-PS 65 70-S
L80			TLF-PS 65 80-S
L90			TLF-PS 65 90-S

DIAMETER/ LENGTH	Ø7.5	Ø8.5	Ø9.5	Ø10.5
L25				
L30	TLF-PS 75 30-S	TLF-PS 85 30-S	TLF-PS 95 30-S	
L35	TLF-PS 75 35-S	TLF-PS 85 35-S	TLF-PS 95 35-S	TLF-PS 15 35-S
L40	TLF-PS 75 40-S	TLF-PS 85 40-S	TLF-PS 95 40-S	TLF-PS 15 40-S
L45	TLF-PS 75 45-S	TLF-PS 85 45-S	TLF-PS 95 45-S	TLF-PS 15 45-S
L50	TLF-PS 75 50-S	TLF-PS 85 50-S	TLF-PS 95 50-S	TLF-PS 15 50-S
L55	TLF-PS 75 55-S	TLF-PS 85 55-S	TLF-PS 95 55-S	TLF-PS 15 55-S
L60	TLF-PS 75 60-S	TLF-PS 85 60-S	TLF-PS 95 60-S	TLF-PS 15 60-S
L70	TLF-PS 75 70-S	TLF-PS 85 70-S	TLF-PS 95 70-S	TLF-PS 15 70-S
L80	TLF-PS 75 80-S	TLF-PS 85 80-S	TLF-PS 95 80-S	TLF-PS 15 80-S
L90	TLF-PS 75 90-S	TLF-PS 85 90-S	TLF-PS 95 90-S	TLF-PS 15 90-S
L100	TLF-PS 75 10-S	TLF-PS 85 10-S	TLF-PS 95 10-S	TLF-PS 15 10-S
L110	TLF-PS 75 11-S	TLF-PS 85 11-S	TLF-PS 95 11-S	TLF-PS 15 11-S
L120	TLF-PS 75 12-S	TLF-PS 85 12-S	TLF-PS 95 12-S	TLF-PS 15 12-S

Polyaxial screw allows for an easy insertion of the rod by giving angulation to the screw head. This angulation eases the rod insertion and connection.

IMPLANTS

REDUCTION SCREWS

DIAMETER/ LENGTH	Ø4.5	Ø5.5	Ø6.5
L25	TLF-SS 45 25-S	TLF-SS 55 25-S	TLF-SS 65 25-S
L30	TLF-SS 45 30-S	TLF-SS 55 30-S	TLF-SS 65 30-S
L35	TLF-SS 45 35-S	TLF-SS 55 35-S	TLF-SS 65 35-S
L40	TLF-SS 45 40-S	TLF-SS 55 40-S	TLF-SS 65 40-S
L45	TLF-SS 45 45-S	TLF-SS 55 45-S	TLF-SS 65 45-S
L50		TLF-SS 55 50-S	TLF-SS 65 50-S
L55			TLF-SS 65 55-S
L60			TLF-SS 65 60-S
L70			TLF-SS 65 70-S
L80			TLF-SS 65 80-S
L90			TLF-SS 65 90-S

DIAMETER/ LENGTH	Ø7.5	Ø8.5	Ø9.5	Ø10.5
L25				
L30	TLF-SS 75 30-S	TLF-SS 85 30-S	TLF-SS 95 30-S	
L35	TLF-SS 75 35-S	TLF-SS 85 35-S	TLF-SS 95 35-S	TLF-SS 15 35-S
L40	TLF-SS 75 40-S	TLF-SS 85 40-S	TLF-SS 95 40-S	TLF-SS 15 40-S
L45	TLF-SS 75 45-S	TLF-SS 85 45-S	TLF-SS 95 45-S	TLF-SS 15 45-S
L50	TLF-SS 75 50-S	TLF-SS 85 50-S	TLF-SS 95 50-S	TLF-SS 15 50-S
L55	TLF-SS 75 55-S	TLF-SS 85 55-S	TLF-SS 95 55-S	TLF-SS 15 55-S
L60	TLF-SS 75 60-S	TLF-SS 85 60-S	TLF-SS 95 60-S	TLF-SS 15 60-S
L70	TLF-SS 75 70-S	TLF-SS 85 70-S	TLF-SS 95 70-S	TLF-SS 15 70-S
L80	TLF-SS 75 80-S	TLF-SS 85 80-S	TLF-SS 95 80-S	TLF-SS 15 80-S
L90	TLF-SS 75 90-S	TLF-SS 85 90-S	TLF-SS 95 90-S	TLF-SS 15 90-S
L100	TLF-SS 75 10-S	TLF-SS 85 10-S	TLF-SS 95 10-S	TLF-SS 15 10-S
L110	TLF-SS 75 11-S	TLF-SS 85 11-S	TLF-SS 95 11-S	TLF-SS 15 11-S
L120	TLF-SS 75 12-S	TLF-SS 85 12-S	TLF-SS 95 12-S	TLF-SS 15 12-S

The reduction screw is a polyaxial screw where longer screw head offers to the surgeon more capability to reduce the spine (15mm), more specifically in spondylolisthesis indications.
When the rod is properly sited in the screw, the tabs must be removed, and the implant will be strictly similar to a polyaxial screw.

IMPLANTS

25D SCREWS

DIAMETER/ LENGTH	Ø4.5	Ø5.5	Ø6.5
L25	TLF-DS 45 25-S	TLF-DS 55 25-S	TLF-DS 65 25-S
L30	TLF-DS 45 30-S	TLF-DS 55 30-S	TLF-DS 65 30-S
L35	TLF-DS 45 35-S	TLF-DS 55 35-S	TLF-DS 65 35-S
L40	TLF-DS 45 40-S	TLF-DS 55 40-S	TLF-DS 65 40-S
L45	TLF-DS 45 45-S	TLF-DS 55 45-S	TLF-DS 65 45-S
L50		TLF-DS 55 50-S	TLF-DS 65 50-S
L55			TLF-DS 65 55-S
L60			TLF-DS 65 60-S
L70			TLF-DS 65 70-S
L80			TLF-DS 65 80-S
L90			TLF-DS 65 90-S

25D screw is a semi-polyaxial screw with a polyaxial side and a controlled side. It helps the surgeon controlling coronal deformation while keeping an easy rod insertion. Suitable mainly for deformity.

MONOAXIAL SCREWS

DIAMETER/ LENGTH	Ø4.5	Ø5.5	Ø6.5	Ø7.5	Ø8.5	Ø9.5
L25	TLF-MS 45 25-S	TLF-MS 55 25-S	TLF-MS 65 25-S			
L30	TLF-MS 45 30-S	TLF-MS 55 30-S	TLF-MS 65 30-S	TLF-MS 75 30-S	TLF-MS 85 30-S	TLF-MS 95 30-S
L35	TLF-MS 45 35-S	TLF-MS 55 35-S	TLF-MS 65 35-S	TLF-MS 75 35-S	TLF-MS 85 35-S	TLF-MS 95 35-S
L40	TLF-MS 45 40-S	TLF-MS 55 40-S	TLF-MS 65 40-S	TLF-MS 75 40-S	TLF-MS 85 40-S	TLF-MS 95 40-S
L45	TLF-MS 45 45-S	TLF-MS 55 45-S	TLF-MS 65 45-S	TLF-MS 75 45-S	TLF-MS 85 45-S	TLF-MS 95 45-S
L50		TLF-MS 55 50-S	TLF-MS 65 50-S	TLF-MS 75 50-S	TLF-MS 85 50-S	TLF-MS 95 50-S
L55			TLF-MS 65 55-S	TLF-MS 75 55-S	TLF-MS 85 55-S	TLF-MS 95 55-S
L60			TLF-MS 65 60-S	TLF-MS 75 60-S	TLF-MS 85 60-S	TLF-MS 95 60-S
L70			TLF-MS 65 70-S	TLF-MS 75 70-S	TLF-MS 85 70-S	TLF-MS 95 70-S
L80			TLF-MS 65 80-S	TLF-MS 75 80-S	TLF-MS 85 80-S	TLF-MS 95 80-S
L90			TLF-MS 65 90-S	TLF-MS 75 90-S	TLF-MS 85 90-S	TLF-MS 95 90-S
L100				TLF-MS 75 10-S	TLF-MS 85 10-S	TLF-MS 95 10-S
L110				TLF-MS 75 11-S	TLF-MS 85 11-S	TLF-MS 95 11-S
L120				TLF-MS 75 12-S	TLF-MS 85 12-S	TLF-MS 95 12-S

Monoaxial screw gives a strong monobloc anchorage to the construct and gives to the surgeon a powerful pivot when reduction is needed for instance.

IMPLANTS

CANNULATED FENESTRATED SAGITTAL SCREWS

DIAMETER/ LENGTH	Ø4,5MM	Ø5,5MM	Ø6,5MM	Ø7,5MM	Ø8,5MM
L25**	MPF-SS 45 25-S	MPF-SS 55 25-S	MPF-SS 65 25-S		
L30**	MPF-SS 45 30-S	MPF-SS 55 30-S	MPF-SS 65 30-S	MPF-SS 75 30-S	MPF-SS 85 30-S
L35	MPF-SS 45 35-S	MPF-SS 55 35-S	MPF-SS 65 35-S	MPF-SS 75 35-S	MPF-SS 85 35-S
L40	MPF-SS 45 40-S	MPF-SS 55 40-S	MPF-SS 65 40-S	MPF-SS 75 40-S	MPF-SS 85 40-S
L45	MPF-SS 45 45-S	MPF-SS 55 45-S	MPF-SS 65 45-S	MPF-SS 75 45-S	MPF-SS 85 45-S
L50		MPF-SS 55 50-S	MPF-SS 65 50-S	MPF-SS 75 50-S	MPF-SS 85 50-S
L55		MPF-SS 55 55-S	MPF-SS 65 55-S	MPF-SS 75 55-S	MPF-SS 85 55-S
L60		MPF-SS 55 60-S	MPF-SS 65 60-S	MPF-SS 75 60-S	MPF-SS 85 60-S

The Cannulated Fenestrated Sagittal Screw is an uniplanar screw with a constraint of the head in the sagittal plane and mobility on the coronal plane. This allows the screw to perform compression and distraction.

This screw also features a cannula and perforations (also called fenestrations) that can be used for cement injection into the body of the vertebrae, in order to improve the pull out resistance. This implant is for all the indications mentionned in the IFU, mainly in case of poor bone quality.

The PERLA® TL Cannulated Fenestrated Polyaxial Screws are indicated to be used in conjunction with TEKTONA® HV Bone Cement to augment fixation in vertebrae with compromised bone quality.

Refer to the TEKTONA® HV Bone Cement Instructions for Use for complete information.

IMPLANTS

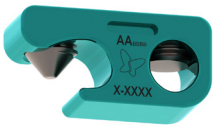
ROD CONNECTOR PARALLEL OPEN/CLOSE	TLF-PC OP CL-S
ROD CONNECTOR PARALLEL OPEN/CLOSE OFFSET	TLF-PC OC OF-S

ROD CONNECTOR PARALLEL OPEN/OPEN	TLF-PC OP OP-S
ROD CONNECTOR PARALLEL OPEN/OPEN OFFSET	TLF-PC OO OF-S

ROD CONNECTOR AXIAL OPEN/CLOSE	TLF-AC OP CL-S

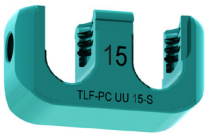
ROD CONNECTOR PARALLEL CLOSE/ CLOSE 11MM	TLF-PC CC 11-S
ROD CONNECTOR PARALLEL CLOSE/ CLOSE 15MM	TLF-PC CC 15-S

ROD CONNECTOR PARALLEL OPEN/CLOSE 11MM	TLF-PC OC 11-S
ROD CONNECTOR PARALLEL OPEN/CLOSE 15MM	TLF-PC OC 15-S



ROD CONNECTOR PARALLEL T-SHAPE OPEN/OPEN 11MM	TLF-PC OO 11-S
ROD CONNECTOR PARALLEL T-SHAPE OPEN/OPEN 15MM	TLF-PC OO 15-S

ROD CONNECTOR PARALLEL W-SHAPE OPEN/OPEN 11MM	TLF-PC UU 11-S
ROD CONNECTOR PARALLEL W-SHAPE OPEN/OPEN 15MM	TLF-PC UU 15-S



Rod Connectors can be used to extend an existing construct, to adapt the construct to an offset or to mix different rod diameters within a single construct by connecting two rods axially or in parallel. The Rod Connectors can feature various types of connecting areas to make easier the surgical gesture in various situations. The user will choose the most adapted connector in function of the type of connections.

IMPLANTS

LATERAL CONNECTORS		
LENGTH	**CLOSE**	**OPEN**
L15	TLF-LC CL 15-S	TLF-LC OP 15-S
L20	TLF-LC CL 20-S	TLF-LC OP 20-S
L30	TLF-LC CL 30-S	TLF-LC OP 30-S
L40	TLF-LC CL 40-S	TLF-LC OP 40-S
L50	TLF-LC CL 50-S	TLF-LC OP 50-S
L60	TLF-LC CL 60-S	TLF-LC OP 60-S

The lateral connector is intended to link the longitudinal union rod which is part of the construct, to a screw located laterally relative to the rod. It comprises a closed or open head that can receive the longitudinal posterior union rod. The surgeon will choose the appropriate design (close or open) in function of the configuration (i.e., the close design will be easier to use if the connector is connected to the end of the rod. On the other hand, the open design will be easier to use when the connector is placed between two screws).

SETSCREWS	
SETSCREW (PACKED WITH SCREW)	TLF-SC 00 00-S
SETSCREWS (PACKED X2)	TLF-SC 02 00-S

There is no size selection. Setscrew is the same for screws, hooks and connectors. Differenciation is about the quantity of setscrew per box.

IMPLANTS

TRANSVERSE ROD CONNECTORS	
L20	ELL-TR 00 20-S
L30	ELL-TR 00 30-S
L40	ELL-TR 00 40-S
L50	ELL-TR 00 50-S
L60	ELL-TR 00 60-S
L70	ELL-TR 00 70-S
L80	ELL-TR 00 80-S

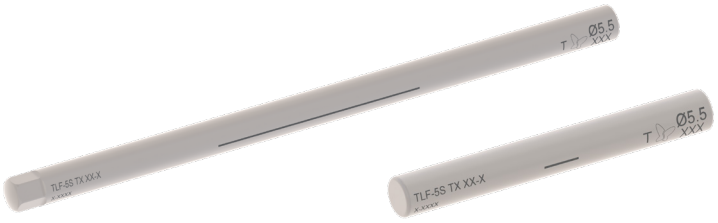
TRANSVERSE CONNECTOR HOOK Ø5,5	TLF-TC 05 50-S

MULTIAXIAL CROSS CONNECTORS		
LENGTH	**STRAIGHT**	**PREBENT**
L30 TO L31	TLF-CC-MU 30-S	
L31 TO L33	TLF-CC-MU 31-S	TLF-CC MP 31-S
L33 TO L36	TLF-CC MU 33-S	TLF-CC MP 33-S
L36 TO L43	TLF-CC MU 36-S	TLF-CC MP 36-S
L43 TO L55	TLF-CC MU 43-S	TLF-CC MP 43-S
L55 TO L80	TLF-CC MU 55-S	TLF-CC MP 55-S

CROSS CONNECTORS MONOBLOC	
L18	TLF-CC ST 18-S
L21	TLF-CC ST 21-S
L24	TLF-CC ST 24-S
L27	TLF-CC ST 27-S
L30	TLF-CC ST 30-S

The transverse and cross connectors implants are being used to connect 2 longitudinal rods to strengthen the overall construct. The length will be chosen with the caliper. The shape and the type of cross connector will be chosen in function of the anatomy of the patient and the instrumented level.

IMPLANTS

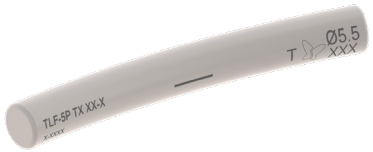


STRAIGHT RODS*

	Ø5.5mm		Ø6mm	
LENGTH	**TITANIUM ALLOY**	**COBALT CHROMIUM**	**TITANIUM ALLOY**	**COBALT CHROMIUM**
L30	TLF-5S T0 30-S		TLF-6S T0 30-S	
L35	TLF-5S T0 35-S		TLF-6S T0 35-S	
L40	TLF-5S T0 40-S		TLF-6S T0 40-S	
L45	TLF-5S T0 45-S		TLF-6S T0 45-S	
L50	TLF-5S T0 50-S		TLF-6S T0 50-S	
L55	TLF-5S T0 55-S		TLF-6S T0 55-S	
L60	TLF-5S T0 60-S		TLF-6S T0 60-S	
L70	TLF-5S T0 70-S		TLF-6S T0 70-S	
L80	TLF-5S T0 80-S		TLF-6S T0 80-S	
L90	TLF-5S T0 90-S		TLF-6S T0 90-S	
L100	TLF-5S T1 00-S	TLF-5S C1 00-S	TLF-6S T1 00-S	TLF-6S C1 00-S
L110	TLF-5S T1 10-S	TLF-5S C1 10-S	TLF-6S T1 10-S	TLF-6S C1 10-S
L120	TLF-5S T1 20-S	TLF-5S C1 20-S	TLF-6S T1 20-S	TLF-6S C1 20-S
L140	TLF-5S T1 40-S	TLF-5S C1 40-S	TLF-6S T1 40-S	TLF-6S C1 40-S
L160	TLF-5S T1 60-S	TLF-5S C1 60-S	TLF-6S T1 60-S	TLF-6S C1 60-S
L180	TLF-5S T1 80-S	TLF-5S C1 80-S	TLF-6S T1 80-S	TLF-6S C1 80-S
L200	TLF-5S T2 00-S	TLF-5S C2 00-S	TLF-6S T2 00-S	TLF-6S C2 00-S
L240	TLF-5S T2 40-S	TLF-5S C2 40-S	TLF-6S T2 40-S	TLF-6S C2 40-S
L280	TLF-5S T2 80-S	TLF-5S C2 80-S	TLF-6S T2 80-S	TLF-6S C2 80-S
L350	TLF-5S T3 50-S	TLF-5S C3 50-S	TLF-6S T3 50-S	TLF-6S C3 50-S
L500	TLF-5S T5 00-S	TLF-5S C5 00-S	TLF-6S T5 00-S	TLF-6S C5 00-S
L550	TLF-5S T5 50-S	TLF-5S C5 50-S	TLF-6S T5 50-S	TLF-6S C5 50-S

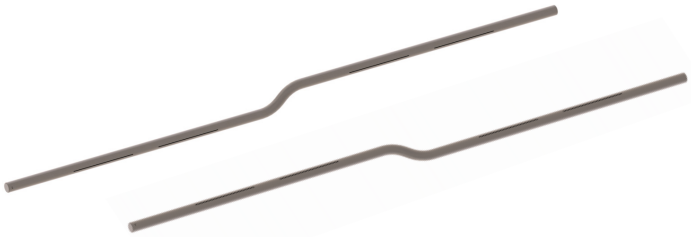
*Hexagonal tip starting from L100

IMPLANTS



RODS PRE-BENT - TITANIUM ALLOY		
LENGTH	**Ø5.5mm**	**Ø6mm**
L30	TLF-5P T0 30-S	TLF-6P T0 30-S
L35	TLF-5P T0 35-S	TLF-6P T0 35-S
L40	TLF-5P T0 40-S	TLF-6P T0 40-S
L45	TLF-5P T0 45-S	TLF-6P T0 45-S
L50	TLF-5P T0 50-S	TLF-6P T0 50-S
L55	TLF-5P T0 55-S	TLF-6P T0 55-S
L60	TLF-5P T0 60-S	TLF-6P T0 60-S
L70	TLF-5P T0 70-S	TLF-6P T0 70-S
L80	TLF-5P T0 80-S	TLF-6P T0 80-S
L90	TLF-5P T0 90-S	TLF-6P T0 90-S
L100	TLF-5P T1 00-S	TLF-6P T1 00-S
L110	TLF-5P T1 10-S	TLF-6P T1 10-S
L120	TLF-5P T1 20-S	TLF-6P T1 20-S
L130	TLF-5P T1 30-S	TLF-6P T1 30-S

IMPLANTS



PREBENT RODS - COBALT CHROMIUM

LENGTH	ANGULATION	Ø5.5mm	Ø6mm
L550	40°	TLF-R4 55 50-S	TLF-R4 65 50-S
	60°	TLF-R6 55 50-S	TLF-R6 65 50-S
	80°	TLF-R8 55 50-S	TLF-R8 65 50-S

Z RODS KITS

		TITANIUM ALLOY	
Ø	LENGTHS	BOX REFERENCES*	BOX COMPOSITION*
Ø5.5mm	L150+150	**TLF-5Z T3 00-S**	TLF-5Z T3 0L-S
			TLF-5Z T3 0R-S
	L150+300	**TLF-5Z T4 50-S**	TLF-5Z T4 5L-S
			TLF-5Z T4 5R-S
Ø6mm	L150+150	**TLF-6Z T3 00-S**	TLF-6Z T3 0L-S
			TLF-6Z T3 0R-S
	L150+300	**TLF-6Z T4 50-S**	TLF-6Z T4 5L-S
			TLF-6Z T4 5R-S

The longitudinal rods are intended to connect the different anchoring implants (pedicle screws or hook), in order to correct, maintain, and stabilize fusion of the instrumented vertebrae.

The rod template will help the surgeon to select the appropriate length and to shape the rod.
A range of pre-bent rod is also available for simple curvatures.

For more complex curvature, the straight rods can be shaped with the rod bender.

The Z-rods have a z-shape bending, helping the surgeon to extend existing constructs especially for revision surgery. Each box of Z-rods is composed of left and right version.

The long straight rods are provided with hexagonal end-tip which allows easier maneuvers.

The rods feature a longitudinal line to help the user to visualize the curvature during implantation.

*Each box reference includes left and right rods which can't be ordered separately

IMPLANTS

HOOK LAMINAR LUMBAR XS	TLF-HO LL XS-S
HOOK LAMINAR LUMBAR SMALL	TLF-HO LL SM-S
HOOK LAMINAR LUMBAR MEDIUM	TLF-HO LL ME-S
HOOK LAMINAR LUMBAR LARGE	TLF-HO LL LA-S

HOOK LAMINAR LUMBAR EXTENDED	TLF-HO LL EX-S

HOOK PEDICULAR XS	TLF-HO PE XS-S
HOOK PEDICULAR SMALL	TLF-HO PE SM-S
HOOK PEDICULAR MEDIUM	TLF-HO PE ME-S
HOOK PEDICULAR LARGE	TLF-HO PE DI-S

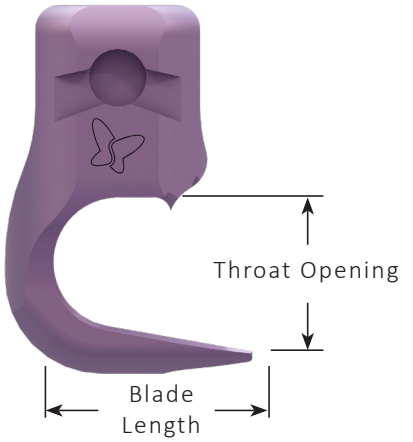
HOOK LAMINAR THORACIC SUPRA	TLF-HO LT SU-S

HOOK LAMINAR THORACIC INFRA	TLF-HO LT IN-S

HOOK OFFSET LEFT MEDIUM	TLF-HO OF LE-S
HOOK OFFSET LEFT LARGE	TLF-HO OF LL-S
HOOK OFFSET RIGHT MEDIUM	TLF-HO OF RI-S
HOOK OFFSET RIGHT LARGE	TLF-HO OF RL-S

HOOK ANGLED LEFT SMALL	TLF-HO AN LS-S
HOOK ANGLED LEFT MEDIUM	TLF-HO AN LE-S
HOOK ANGLED RIGHT SMALL	TLF-HO AN RS-S
HOOK ANGLED RIGHT MEDIUM	TLF-HO AN RI-S

IMPLANTS



				LENGTH (mm)		
HOOK TYPE	**REFERENCE**	**DESIGNATION**	**SIZE**	**BLADE WIDTH**	**THROAT OPENING**	**BLADE LENGTH**
PEDICULAR	TLF-HO PE XS-S	HOOK PEDICULAR XS	XS	8	5	10
	TLF-HO PE SM-S	HOOK PEDICULAR SMALL	S	8	6,5	10
	TLF-HO PE ME-S	HOOK PEDICULAR MEDIUM	M	8	8	10
	TLF-HO PE DI-S	HOOK PEDICULAR	L	8	9,52	12,3
LAMINAR LUMBAR	TLF-HO LL XS-S	HOOK LAMINAR LUMBAR XS	XS	6	6	10
	TLF-HO LL SM-S	HOOK LAMINAR LUMBAR SMALL	S	6	7,4	10
	TLF-HO LL ME-S	HOOK LAMINAR LUMBAR MEDIUM	M	7	8	11
	TLF-HO LL LA-S	HOOK LAMINAR LUMBAR LARGE	L	7	9,5	11
	TLF-HO LL EX-S	HOOK LAMINAR LUMBAR EXTENDED	L	7	9,5	11
LAMINAR THORACIC	TLF-HO LT IN-S	HOOK LAMINAR THORACIC INFRA	-	5	12	12,5
	TLF-HO LT SU-S	HOOK LAMINAR THORACIC SUPRA	-	6	8,2	11
ANGLED	TLF-HO AN RS-S	HOOK ANGLED RIGHT SMALL	S	6	6,5	10,4
	TLF-HO AN RI-S	HOOK ANGLED RIGHT	M	6	8	10,4
	TLF-HO AN LS-S	HOOK ANGLED LEFT SMALL	S	6	6,5	10,4
	TLF-HO AN LE-S	HOOK ANGLED LEFT	M	6	8	10,4
OFFSET	TLF-HO OF RI-S	HOOK OFFSET RIGHT	S	6	7,4	10,4
	TLF-HO OF RL-S	HOOK OFFSET RIGHT LARGE	L	6	9,5	10,4
	TLF-HO OF LE-S	HOOK OFFSET LEFT	S	6	7,4	10,4
	TLF-HO OF LL-S	HOOK OFFSET LEFT LARGE	L	6	9,5	10,4

Same size as the ROMEO®2 version

IMPLANTS

Hooks are an alternative solution to screws, allowing a direct anchorage on posterior elements of a vertebrae. It can be used for all indications, mainly in deformity. The hook range features different shapes and sizes adapted to different part of the anatomy and to various patient statures:

Pedicular hook : 4 sizes of implant exist and can be implanted on the pedicle of the patient. Size selection will be done according to the anatomy of the patient.

Laminar hooks : 5 different kinds of laminar hooks are provided : Laminar lumbar, lumbar extended, laminar thoracic, angled and offset. This is up to the surgeon's strategy to use either one or the other kind of hook, knowing that each hook has a dedicated place according to the anatomy of the patient :

• The laminar lumbar hooks can be placed on the laminae of the patient, in the lumbar region of the spine. Then according to the X-ray or a scan, and the surgeon habits, he will choose between the four sizes available.

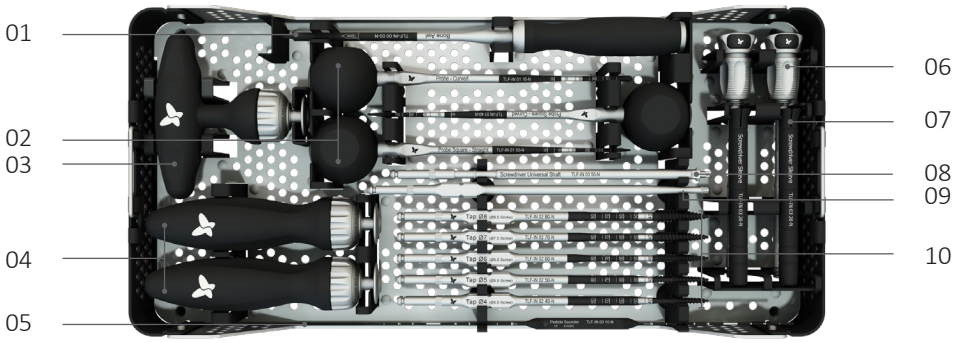
• The laminar lumbar extended, is also the same as above but can be more specifically used when the anatomy of the patient shows a difference of level : the lower lumbar area is in the lordosis curvature and can ask for a higher head of hook to compensate this difference of height and allow the surgeon to connect more smoothly all implants.

• The thoracic hooks (supra or infra) are being used only on the thoracic area, either placed on the superior (supra) part or the inferior (infra) part of the lamina of the patient.

• The laminar angled and offset hooks are being used on the laminae and will be chosen by the surgeon if the anatomy of the patient shows a misalignment of the laminae. This type of hooks allows the surgeon to compensate alignment discrepancies by giving different offset in the axis of the hook's heads.

INSTRUMENTS

DEGENERATIVE SET - BOX 1 INSERT



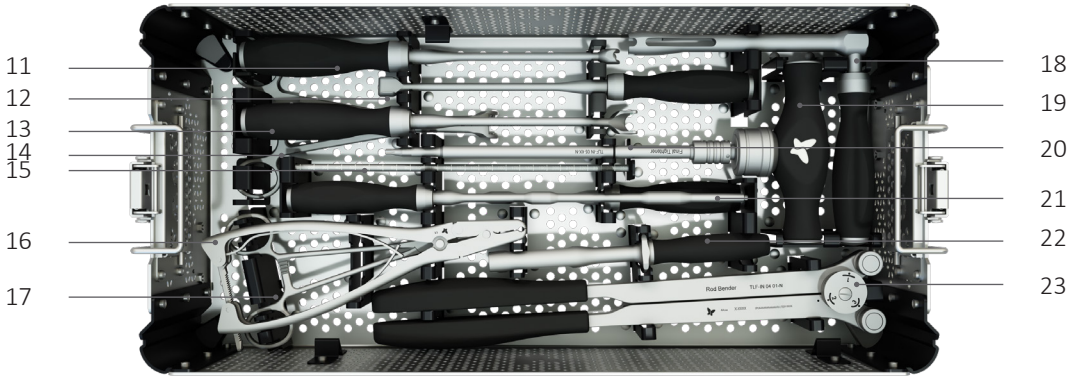
#	DESCRIPTION	REFERENCE
	PERLA TL BOX 1 - INSERT	TLF-BX 01 10-N
	PERLA TL BOX 1 - INSERT (UPDATED VERSION)	TLF-BX 01 11-N
	UNIVERSAL LID	LID-BX 11 10-N
01	BONE AWL	TLF-IN 00 00-N
02	PROBE SQUARE - CURVED	TLF-IN 01 40-N
02	PROBE SQUARE - STRAIGHT	TLF-IN 01 50-N
• 02	PROBE - CURVED	TLF-IN 01 10-N
• 02	PROBE SMALL - CURVED	TLF-IN 01 20-N
• 02	PROBE BLUNT - STRAIGHT	TLF-IN 01 30-N
03	T-HANDLE RATCHET	HAN-SB RF TE-N
04	STRAIGHT HANDLE RATCHET	HAN-SB RF ST-N
05	PEDICLE SOUNDER	TLF-IN 00 10-N
06	SCREWDRIVER TUBE	TLF-IN 03 10-N
• 06	LOCKING SCREWDRIVER TUBE	TLF-IN 23 10-N
07	SCREWDRIVER SLEEVE	TLF-IN 03 20-N
• 07	SCREWDRIVER PROTECTION SLEEVE	TLF-IN 03 60-N

#	DESCRIPTION	REFERENCE
08	SCREWDRIVER UNIVERSAL SHAFT	TLF-IN 03 50-N
• 08	SCREWDRIVER SHAFT MS-PS	TLF-IN 03 30-N
• 08	SCREWDRIVER SHAFT SS	TLF-IN 03 40-N
• 08	LOCKING SCREWDRIVER SHAFT MS-PS	TLF-IN 23 30-N
• 08	LOCKING SCREWDRIVER SHAFT SS	TLF-IN 23 40-N
• 08	CANNULATED LOCKING SCREWDRIVER SHAFT MS-PS	TLF-IN 23 60-N
09	T25 SCREWDRIVER SHAFT	TLF-IN 03 00-N
10	TAP Ø4 (Ø4.5 SCREW)	TLF-IN 02 40-N
10	TAP Ø5 (Ø5.5 SCREW)	TLF-IN 02 50-N
10	TAP Ø6 (Ø6.5 SCREW)	TLF-IN 02 60-N
10	TAP Ø7 (Ø7.5 SCREW)	TLF-IN 02 70-N
10	TAP Ø8 (Ø8.5 SCREW)	TLF-IN 02 80-N
• 10	TAP Ø9 (Ø9.5 SCREW)	TLF-IN 02 90-N
• 10	TAP Ø10 (Ø10.5 SCREW)	TLF-IN 02 10-N

• : OPTIONAL

INSTRUMENTS

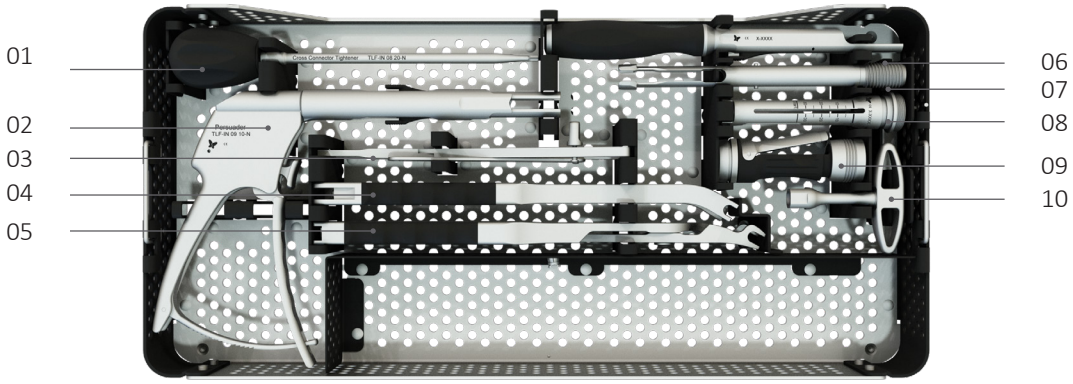
DEGENERATIVE SET - BOX 1 BASE



	#	DESCRIPTION	REFERENCE
		PERLA TL BOX 1 - BASE	TLF-BX 01 00-N
		PERLA TL BOX 1 - BASE (UPDATED VERSION)	TLF-BX 01 01-N
	11	ROD PUSHER	TLF-IN 04 30-N
	12	HEAD ALIGNER	TLF-IN 08 00-N
	13	ROCKER	TLF-IN 04 20-N
•	14	ROCKER (ROMEO®2)	ELL-IN 00 05-N
	15	ROD TEMPLATE L250	TLF-IN 10 25-N
	16	ROD HOLDER	TLF-IN 04 50-N
	17	IMPLANT HOLDER	ELL-IN 01 04-N
	18	COUNTER TORQUE	TLF-IN 05 30-N
	19	FINAL TIGHTENER	TLF-IN 05 41-N
	20	SETSCREW TIGHTENER	TLF-IN 05 20-N TLF-IN 05 21-N
	21	SETSCREW HOLDER	TLF-IN 05 10-N
•	21	SETSCREW HOLDER DOUBLE	TLF-IN 05 50-N
	22	SETSCREW TUBE	TLF-IN 05 00-N
	23	ROD BENDER	TLF-IN 04 01-N
•	23	ROD BENDER EXTENSION	TLF-IN 04 10-N
•	23	ROD BENDER - SHORT	TLF-IN 04 60-N

INSTRUMENTS

DEGENERATIVE SET - BOX 2



	#	DESCRIPTION	REFERENCE
		PERLA TL BOX 2 - CORTICAL BASE	TLF-BX 02 00-N
		PERLA TL BOX 2 - MANIPULATION INSERT	TLF-BX 02 10-N
		PERLA TL BOX 2 (SINGLE LEVEL VERSION)	TLF-BX 02 01-N
		UNIVERSAL LID	LID-BX 11 10-N
	01	CROSS CONNECTOR TIGHTENER	TLF-IN 08 20-N
	02	PERSUADER	TLF-IN 09 10-N
	03	CROSS CONNECTOR CALIPER	TLF-IN 08 10-N
	04	DISTRACTOR	TLF-IN 07 10-N
	05	COMPRESSOR	TLF-IN 07 00-N
	06	HOOK HOLDER / TAB BREAKER	TLF-IN 08 30-N
	07	QR REDUCER - INNER TUBE	ELL-IN 32 34-N
	08	QR REDUCER - OUTER TUBE	ELL-IN 31 34-N
	09	QR REDUCER - HANDLE	ELL-IN 33 34-N
•	10	QR REDUCER - T-HANDLE	HAN-SS TY 14-N
•		REDUCER - PUSHER	TLF-IN 16 00-N
•		REDUCER - TUBE	TLF-IN 26 10-N
•		REDUCER - T-HANDLE	TLF-IN 17 10-N
•		REDUCER - RESCUE DISCONNECTOR	TLF-IN 16 90-N

• : OPTIONAL

INSTRUMENTS

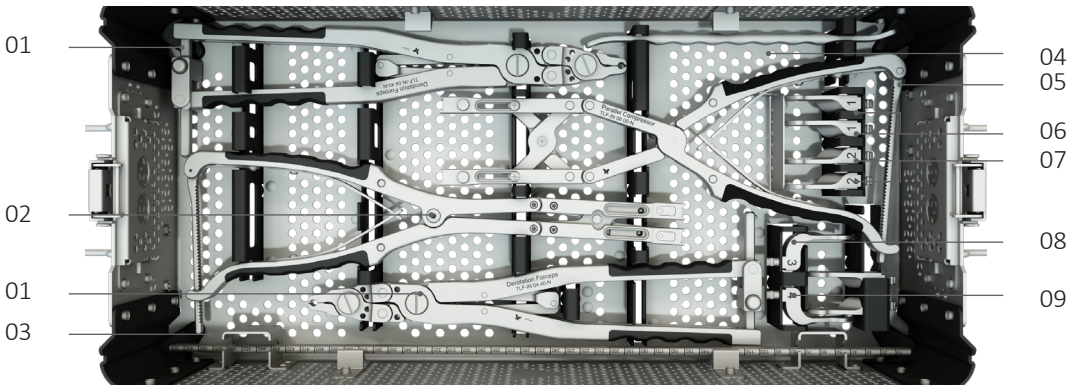
LONG CONSTRUCT SET – BOX 5 INSERT

#	DESCRIPTION	REFERENCE
	PERLA TL BOX 5 - INSERT	TLF-BX 05 10-N
	PERLA TL BOX 5 - MIDDLE INSERT	TLF-BX 05 20-N
	PERLA TL BOX 5 - INSERT (UPDATED VERSION)	TLF-BX 05 11-N
	UNIVERSAL LID	LID-BX 11 30-N
01	CORONAL BENDER – LEFT	TLF-IN 15 40-N
02	CORONAL BENDER – RIGHT	TLF-IN 15 30-N
03	SAGITTAL BENDER – RIGHT	TLF-IN 15 10-N
04	SAGITTAL BENDER – LEFT	TLF-IN 15 20-N
• 05	C-CHISEL	TLF-IN 21 00-N
06	SHORT SCREWDRIVER TUBE	TLF-IN 33 10-N
06	SHORT SCREWDRIVER SLEEVE	TLF-IN 33 20-N
07	J-HOOK	TLF-IN 19 00-N
08	COUNTER TORQUE - ROD CONNECTOR ADAPTOR	TLF-IN 05 35-N
09	PROBE SMALL CURVED	TLF-IN 01 20-N

• : OPTIONAL

INSTRUMENTS

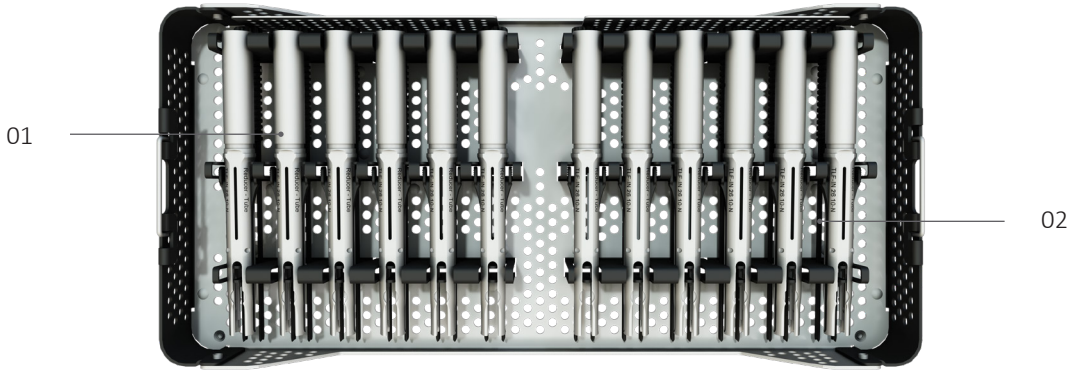
LONG CONSTRUCT SET – BOX 5 BASE



#	DESCRIPTION	REFERENCE
	PERLA TL BOX 5 - BASE	TLF-BX 05 00-N
	PERLA TL BOX 5 - BASE (UPDATED VERSION)	TLF-BX 05 01-N
01	DEROTATION FORCEPS	TLF-IN 04 40-N
02	PARALLEL DISTRACTOR	TLF-IN 06 50-N
03	ROD TEMPLATE L500	TLF-IN 10 50-N
04	HEXAGONAL WRENCH	ELL-IN 00 33-N
05	PARALLEL COMPRESSOR	TLF-IN 06 00-N
06	END TIP 1 - STRAIGHT	TLF-IN 06 10-N
07	END TIP 2 - STRAIGHT	TLF-IN 06 20-N
08	END TIP 3 - OFFSET	TLF-IN 06 30-N
09	END TIP 4 - OFFSET	TLF-IN 06 40-N

INSTRUMENTS

REDUCERS SET – BOX 6 INSERT

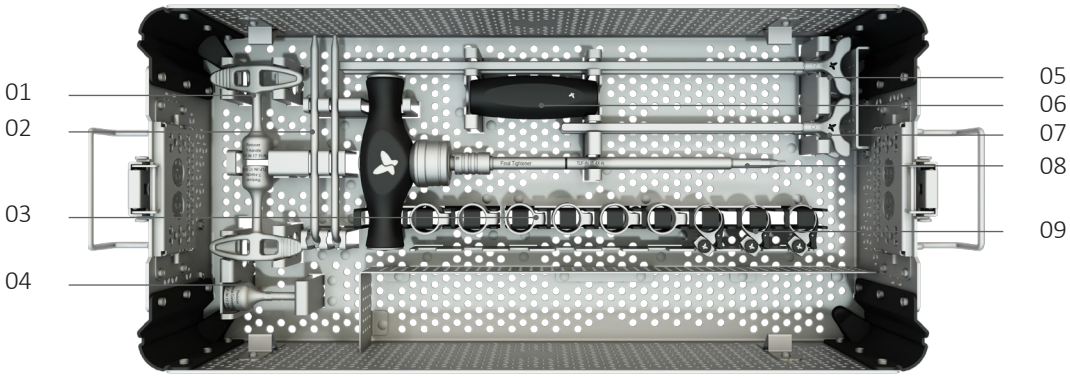


#	DESCRIPTION	REFERENCE
	PERLA TL BOX 6 -INSERT	TLF-BX 06 10-N
	PERLA TL BOX 6 -INSERT (UPDATED VERSION)	TLF-BX 06 11-N
	UNIVERSAL LID	LID-BX 11 30-N
01	REDUCER - TUBE	TLF-IN 26 10-N
• 01	REDUCER - UNILATERAL TUBE	TLF-IN 26 20-N
02	REDUCER - PUSHER	TLF-IN 16 00-N

• : OPTIONAL

INSTRUMENTS

REDUCERS SET – BOX 6 BASE

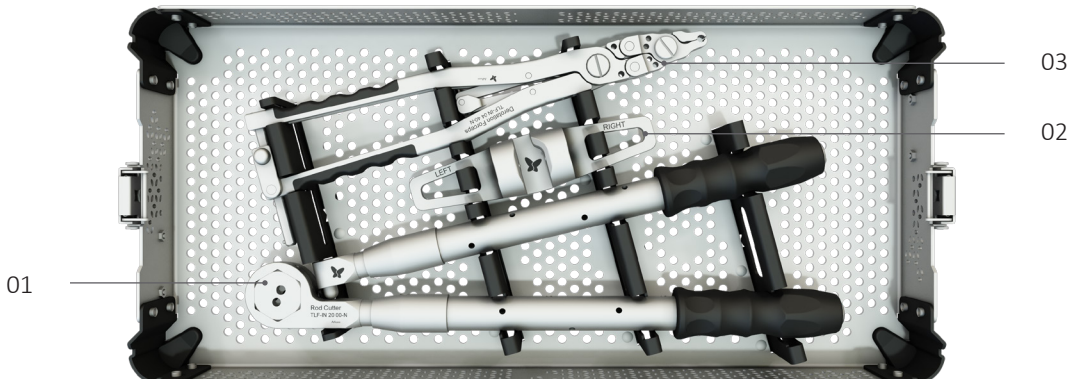


	#	DESCRIPTION	REFERENCE
		PERLA TL BOX 6 - BASE	TLF-BX 06 00-N
		PERLA TL BOX 6 - BASE (UPDATED VERSION)	TLF-BX 06 01-N
	01	REDUCER - T-HANDLE	TLF-IN 17 10-N
	02	REDUCER - RESCUE DISCONNECTOR	TLF-IN 16 90-N
•	03	REDUCER LINK - HOOK RING	TLF-IN 18 00-N
	04	REDUCER - HEXA CONNECTOR	TLF-IN 17 20-N
•	05	REDUCER LINK - ROD L350	TLF-IN 18 35-N
•	06	REDUCER - STRAIGHT HANDLE	TLF-IN 17 00-N
•	07	REDUCER LINK - ROD L180	TLF-IN 18 18-N
•	08	FINAL TIGHTENER	TLF-IN 05 41-N
•	09	REDUCER LINK - RING	TLF-IN 18 10-N
		SETSCREW TIGHTENER	TLF-IN 05 21-N

• : OPTIONAL

INSTRUMENTS

ROD CUTTER SET – BOX 7

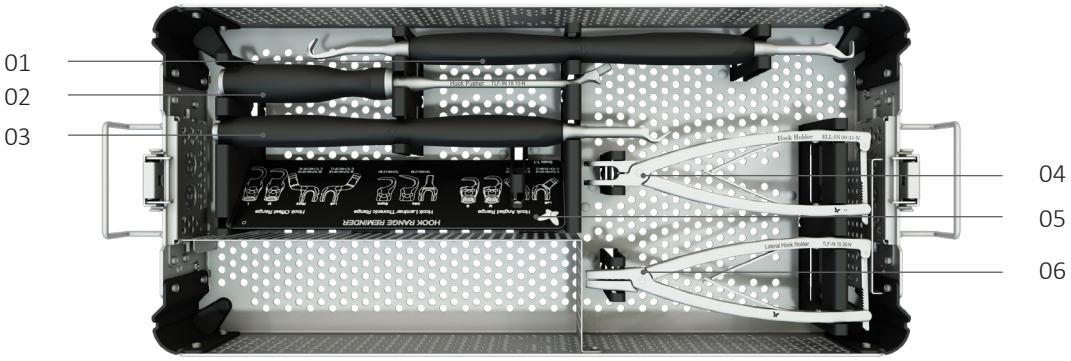


	#	DESCRIPTION	REFERENCE
		PERLA TL BOX 7 - ROD CUTTER	TLF-BX 07 00-N
		UNIVERSAL LID	LID-BX 11 30-N
	01	ROD CUTTER	TLF-IN 20 00-N
	02	ROD CUTTER - TABLE TOP ADAPTOR	TLF-IN 20 10-N
•	03	DEROTATION FORCEPS	TLF-IN 04 40-N

• : OPTIONAL

INSTRUMENTS

HOOK SET – BOX 8



#	DESCRIPTION	REFERENCE
	PERLA TL BOX 8 - HOOK INSTRUMENTS	TLF-BX 08 00-N
	UNIVERSAL LID	LID-BX 11 30-N
01	LAMINA PREPARER	ELL-IN 00 30-N
02	HOOK PUSHER	TLF-IN 19 10-N
03	PEDICLE PREPARER	ELL-IN 00 29-N
04	HOOK HOLDER	ELL-IN 00 31-N
05	HOOK RANGE REMINDER	TLF-IN 19 20-N
06	LATERAL HOOK HOLDER	TLF-IN 19 30-N

INSTRUMENTS

PREPARATION

BONE AWL	TLF-IN 00 00-N

TAP Ø4 (Ø4.5 SCREW)	TLF-IN 02 40-N
TAP Ø5 (Ø5.5 SCREW)	TLF-IN 02 50-N
TAP Ø6 (Ø6.5 SCREW)	TLF-IN 02 60-N
TAP Ø7 (Ø7.5 SCREW)	TLF-IN 02 70-N
TAP Ø8 (Ø8.5 SCREW)	TLF-IN 02 80-N

PEDICLE SOUNDER	TLF-IN 00 10-N

PROBE SMALL - CURVED	TLF-IN 01 20-N

PROBE SQUARE - CURVED	TLF-IN 01 40-N

PROBE SQUARE - STRAIGHT	TLF-IN 01 50-N

PREPARATION – OPTIONAL

PROBE - CURVED	TLF-IN 01 10-N

PROBE BLUNT - STRAIGHT	TLF-IN 01 30-N

TAP Ø9 (Ø9.5 SCREW)	TLF-IN 02 90-N
TAP Ø10 (Ø10.5 SCREW)	TLF-IN 02 10-N

MARKER RIGHT	ELL-IN 00 24-N
MARKER LEFT	ELL-IN 00 25-N

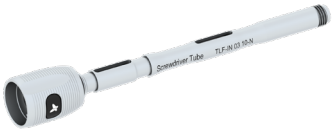
INSTRUMENTS

SCREW INSERTION

T25 SCREWDRIVER SHAFT	TLF-IN 03 00-N

SCREWDRIVER SLEEVE	TLF-IN 03 20-N

SCREWDRIVER TUBE	TLF-IN 03 10-N



SCREWDRIVER UNIVERSAL SHAFT	TLF-IN 03 50-N

HEAD ALIGNER	TLF-IN 08 00-N

SHORT SCREWDRIVER TUBE	TLF-IN 33 10-N

SHORT SCREWDRIVER SLEEVE	TLF-IN 33 20-N

SHORT UNIVERSAL SCREWDRIVER SHAFT	TLF-IN 33 50-N

INSTRUMENTS

SCREW INSERTION – OPTIONAL

SHORT SCREWDRIVER SHAFT SS	TLF-IN 33 40-N

SHORT SCREWDRIVER SHAFT MS-PS	TLF-IN 33 30-N

SCREWDRIVER SHAFT MS-PS	TLF-IN 03 30-N

SCREWDRIVER SHAFT SS	TLF-IN 03 40-N

SCREWDRIVER PROTECTION SLEEVE	TLF-IN 03 60-N

LOCKING SCREWDRIVER TUBE	TLF-IN 23 10-N

LOCKING SCREWDRIVER SHAFT MS-PS	TLF-IN 23 30-N
CANNULATED LOCKING SCREWDRIVER SHAFT MS-PS	TLF-IN 23 60-N

LOCKING SCREWDRIVER SHAFT SS	TLF-IN 23 40-N

INSTRUMENTS

HOOK PREPARATION AND INSERTION

PEDICLE PREPARER	ELL-IN 00 29-N

LAMINA PREPARER	ELL-IN 00 30-N

HOOK HOLDER	ELL-IN 00 31-N

HOOK PUSHER	TLF-IN 19 10-N

J-HOOK	TLF-IN 19 00-N

HOOK RANGE REMINDER	TLF-IN 19 20-N

LATERAL HOOK HOLDER	TLF-IN 19 30-N

ROD CONNECTOR - PREPARATION

C-CHISEL	TLF-IN 21 00-N

INSTRUMENTS

ROD SELECTION AND CONTOURING

ROD HOLDER	TLF-IN 04 50-N

IMPLANT HOLDER	ELL-IN 01 04-N

ROD TEMPLATE L250	TLF-IN 10 25-N
ROD TEMPLATE L500	TLF-IN 10 50-N

ROD BENDER	TLF-IN 04 01-N
ROD BENDER - SHORT	TLF-IN 04 60-N

CORONAL BENDER - RIGHT	TLF-IN 15 30-N

SAGITTAL BENDER - RIGHT	TLF-IN 15 10-N

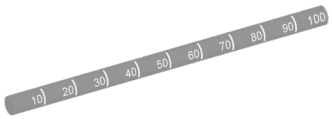
CORONAL BENDER - LEFT	TLF-IN 15 40-N

SAGITTAL BENDER - LEFT	TLF-IN 15 20-N

INSTRUMENTS

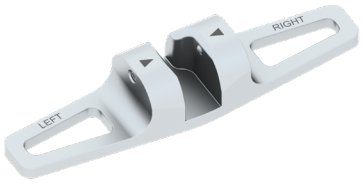
ROD SELECTION AND CONTOURING - OPTIONAL

ROD TEMPLATE L100	TLF-IN 10 10-N



ROD CUTTING

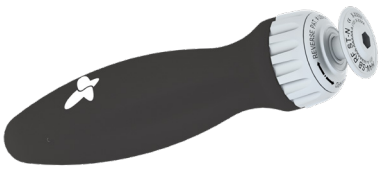
ROD CUTTER - TABLE TOP ADAPTOR	TLF-IN 20 10-N



ROD CUTTER	TLF-IN 20 00-N

HANDLE

STRAIGHT HANDLE RATCHET	HAN-SB RF ST-N



T-HANDLE RATCHET	HAN-SB RF TE-N

INSTRUMENTS

ROD REDUCTION

ROCKER	TLF-IN 04 20-N

SETSCREW TUBE	TLF-IN 05 00-N

ROD PUSHER	TLF-IN 04 30-N

PERSUADER	TLF-IN 09 10-N

QR REDUCER	OUTER TUBE - ELL-IN 31 34-N INNER TUBE - ELL-IN 32 34-N HANDLE - ELL-IN 33 34-N

ROD REDUCTION - OPTIONAL

ROCKER (ROMEO®2)	ELL-IN 00 05-N

REDUCER - UNILATERAL	OUTER TUBE - TLF-IN 16 20-N or TLF-IN 26 20-N PUSHER - TLF-IN 16 00-N

QR REDUCER T-HANDLE	HAN-SS TY 14-N

REDUCER - BILATERAL	OUTER TUBE - TLF-IN 16 10-N or TLF-IN 26 10-N PUSHER - TLF-IN 16 00-N

REDUCER - T-HANDLE	TLF-IN 17 10-N

INSTRUMENTS

APICAL DEROTATION

REDUCER - HEXA CONNECTOR	TLF-IN 17 20-N

REDUCER - BILATERAL	OUTER TUBE - TLF-IN 16 10-N or TLF-IN 26 10-N PUSHER - TLF-IN 16 00-N

REDUCER - RESCUE DISCONNECTOR	TLF-IN 16 90-N

REDUCER - T-HANDLE	TLF-IN 17 10-N

APICAL DEROTATION - OPTIONAL

REDUCER - UNILATERAL	OUTER TUBE - TLF-IN 16 20-N or TLF-IN 26 20-N PUSHER - TLF-IN 16 00-N

REDUCER - LINK ROD L180	TLF-IN 18 18-N
REDUCER - LINK ROD L350	TLF-IN 18 35-N

INSTRUMENTS

SETSCREW INSERTION

SETSCREW HOLDER	TLF-IN 05 10-N

SETSCREW TIGHTENER	TLF-IN 05 20-N TLF-IN 05 21-N

SETSCREW INSERTION – OPTIONAL

SETSCREW HOLDER DOUBLE	TLF-IN 05 50-N

INSTRUMENTS

MANIPULATION MANEUVERS

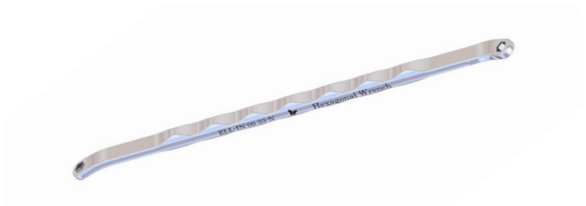
COMPRESSOR TLF-IN 07 00-N

HOOK HOLDER / TAB BREAKER TLF-IN 08 30-N

PARALLEL COMPRESSOR TLF-IN 06 00-N

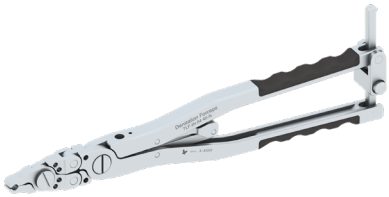
PARALLEL DISTRACTOR TLF-IN 06 50-N

HEXAGONAL WRENCH ELL-IN 00 33-N



DISTRACTOR TLF-IN 07 10-N

DEROTATION FORCEPS TLF-IN 04 40-N



END TIP 1 - STRAIGHT TLF-IN 06 10-N

END TIP 2 - STRAIGHT TLF-IN 06 20-N

END TIP 3 - OFFSET TLF-IN 06 30-N

END TIP 4 - OFFSET TLF-IN 06 40-N

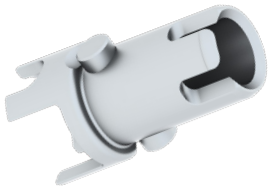
INSTRUMENTS

FINAL TIGHTENING

COUNTER TORQUE	TLF-IN 05 30-N

FINAL TIGHTENER	TLF-IN 05 41-N

COUNTER TORQUE - ROD CONNECTOR ADAPTOR	TLF-IN 05 35-N



CROSS CONNECTOR POSITIONNING

CROSS CONNECTOR CALIPER	TLF-IN 08 10-N

CROSS CONNECTOR TIGHTENER	TLF-IN 08 20-N

SURGICAL TECHNIQUE

_STEP 1

PEDICLE PREPARATION

After having determined the entry point of the pedicle, perforate the outer cortex with the **Bone Awl** and open the pedicle canal with the **Probe**.

The probes are LASER marked to determine the appropriate length of the screws.

⚠ **WARNING:** When implanting a Ø4.5mm Screw, it is mandatory to use the **Probe Small - Curved**.

INSTRUMENT	REFERENCE
BONE AWL	TLF-IN 00 00-N
PROBE BLUNT - STRAIGHT	TLF-IN 01 30-N
PROBE SQUARE - CURVED	TLF-IN 01 40-N
PROBE SQUARE - STRAIGHT	TLF-IN 01 50-N
PROBE - CURVED	TLF-IN 01 10-N
PROBE SMALL - CURVED	TLF-IN 01 20-N

_STEP 2

PEDICLE SOUNDING

Insert the **Pedicle Sounder** to verify integrity of the screw path.

Markers can be used to check proper path orientation under x-ray.

INSTRUMENT	REFERENCE
PEDICLE SOUNDER	TLF-IN 00 10-N
MARKER RIGHT	ELL-IN 00 24-N
MARKER LEFT	ELL-IN 00 25-N

_STEP 3

HOLE TAPPING

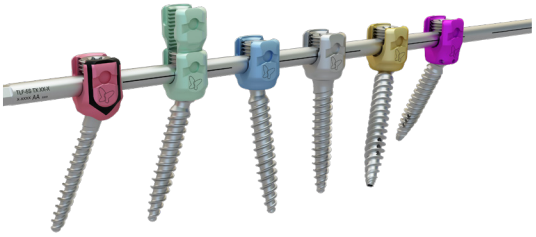
Taps are available and may be utilized to prepare the pedicle hole.

Select the **Tap** undersized by 0.5mm to the chosen screw diameter, connect it to the selected handle and advance the **Tap** into the pedicle hole.

⚠ **CAUTION:** Always undersize the **Tap** compared to the screw that will be inserted.

INSTRUMENT	REFERENCE
TAP Ø4 (Ø4.5 SCREW)	TLF-IN 02 40-N
TAP Ø5 (Ø5.5 SCREW)	TLF-IN 02 50-N
TAP Ø6 (Ø6.5 SCREW)	TLF-IN 02 60-N
TAP Ø7 (Ø7.5 SCREW)	TLF-IN 02 70-N
TAP Ø8 (Ø8.5 SCREW)	TLF-IN 02 80-N
TAP Ø9 (Ø9.5 SCREW)	TLF-IN 02 90-N
TAP Ø10 (Ø10.5 SCREW)	TLF-IN 02 10-N

_STEP 4



SCREW SELECTION

PERLA® TL offers a full range of screws to better adapt to the surgical needs:

1. **Polyaxial screw**, with a 60° conical range of motion.
2. **Reduction screw**, also called spondylo screw. With a 60° conical range of motion, it allows for a 15mm reduction capacity.
3. **25D screw** with a semi-polyaxiality has a controlled side and a polyaxial side. This screw is designed to facilitate apical vertebrae derotation while keeping easy rod introduction.
4. **Monoaxial screw**, with a monobloc design.
5. **Cannulated / Fenestrated Screw**, with a 60° conical range of motion, a cannula and lateral perforations

NOTE: All screws work with the **Screwdriver Universal Shaft**. Polyaxial, 25D and Monoaxial screws work with the **Screwdriver Shaft MS-PS**. Reduction screw works with **Screwdriver Shaft SS**.

NOTE 2: The 25D screws can selectively be implanted in the vertebrae that need to be directly derotated. For example, apical vertebrae that will need coronal and axial corrections.

NOTE 3: Before proceeding with rod placement in the upper level, the 25D screw head orientation must be checked. The laser mark must be oriented toward the convexity of the curve.

INSTRUMENT	REFERENCE
SCREWDRIVER UNIVERSAL SHAFT	TLF-IN 03 50-N
SCREWDRIVER SHAFT MS-PS	TLF-IN 03 30-N
SCREWDRIVER SHAFT SS	TLF-IN 03 40-N
SHORT SCREWDRIVER SHAFT MS-PS	TLF-IN 33 30-N
SHORT SCREWDRIVER SHAFT SS	TLF-IN 33 40-N
SHORT UNIVERSAL SCREWDRIVER SHAFT	TLF-IN 33 50-N

_STEP 5

SCREWDRIVER ASSEMBLY

1. Insert the **Screwdriver Universal Shaft**, **Screwdriver shaft MS-PS** (blue ring) or **Screwdriver Shaft SS** (green ring) into the **Screwdriver Tube**
2. Insert the **Screwdriver Sleeve** or the **Screwdriver Protection Sleeve** onto the previous assembly
3. Connect the instrument to the **Straight Handle Ratchet** or the **T-Handle Ratchet**

NOTE: a shorter version dedicated to thoracic area is also available. Assembly steps are the same.

INSTRUMENT	REFERENCE
SCREWDRIVER SLEEVE	TLF-IN 03 20-N
SCREWDRIVER TUBE	TLF-IN 03 10-N
SCREWDRIVER UNIVERSAL SHAFT	TLF-IN 03 50-N
SCREWDRIVER PROTECTION SLEEVE	TLF-IN 03 60-N
SCREWDRIVER SHAFT MS-PS	TLF-IN 03 30-N
SCREWDRIVER SHAFT SS	TLF-IN 03 40-N
STRAIGHT HANDLE RATCHET	HAN-SB RF ST-N
SHORT SCREWDRIVER SLEEVE	TLF-IN 33 20-N
SHORT SCREWDRIVER TUBE	TLF-IN 33 10-N
SHORT UNIVERSAL SCREWDRIVER SHAFT	TLF-IN 33 50-N
SHORT SCREWDRIVER SHAFT MS-PS	TLF-IN 33 30-N
SHORT SCREWDRIVER SHAFT SS	TLF-IN 33 40-N

_STEP 5 (OPTION)

01

02

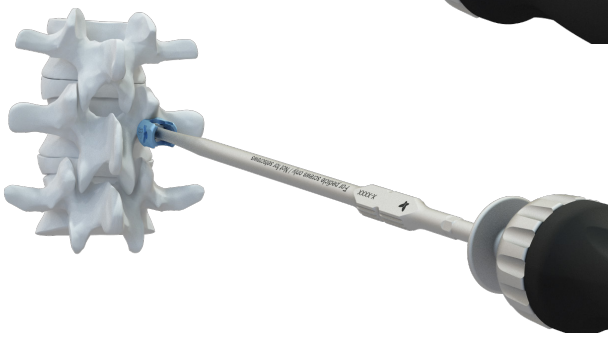
03

LOCKING SCREWDRIVER ASSEMBLY

1. Insert the **Locking Screwdriver Shaft MS-PS** (blue ring) or **Locking Screwdriver Shaft SS** (green ring) into the **Locking Screwdriver Tube**. Make sure to align black lines from both instruments to ensure an easy assembling
2. Insert the **Screwdriver Sleeve** onto the previous assembly
3. Connect the instrument to the **Straight Handle Ratchet** or the **T-Handle Ratchet**.

INSTRUMENT	REFERENCE
LOCKING SCREWDRIVER SHAFT MS-PS	TLF-IN 23 30-N
LOCKING SCREWDRIVER SHAFT SS	TLF-IN 23 40-N
LOCKING SCREWDRIVER TUBE	TLF-IN 23 10-N
SCREWDRIVER SLEEVE	TLF-IN 03 20-N
STRAIGHT HANDLE RATCHET	HAN-SB RF ST-N
T-HANDLE RATCHET	HAN-SB RF TE-N

_STEP 6



SCREW INSERTION

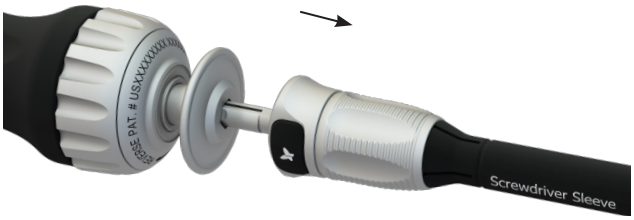
Insert the tip of the screwdriver assembly into the screw hexalobe recess. Turn the **Screwdriver Tube** or the **Locking Screwdriver Tube** clockwise to secure the screw.

Place the tip of the screw into the entry site. Align the screwdriver assembly with the prepared hole and rotate it clockwise to advance the screw.

Once the screw is inserted turn the **Screwdriver Tube** or the **Locking Screwdriver Tube** counterclockwise to release the screwdriver from the screw.

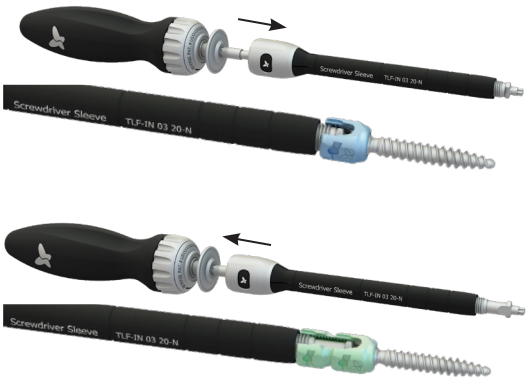
If necessary, adjust the screw depth with the **T25 Screwdriver Shaft**.

Note 1



NOTE 1: For the **Locking Screwdriver** push down the locking nut of the **Locking Screwdriver Tube** to lock the connection with the screw.
Press the black button to unlock the connection.

Note 2



NOTE 2: For **Screwdriver Universal Shaft** user, press the black button on the **Screwdriver Tube** to slide it up for reduction screw or slide it down for low top screws.

Note 3

NOTE 3: For standard screwdriver assembly with a **Protection Sleeve**, once the screw attached to the instrument, slide the sleeve up to cover the nut by pressing its grey button.

NOTE 4: Confirm screw positioning using lateral and A/P radiograph of fluoroscopy.

NOTE 5: manipulation of the **short screwdriver** is the same than the standard non-locking one.

INSTRUMENT	REFERENCE
SCREWDRIVER TUBE	TLF-IN 03 10-N
SHORT SCREWDRIVER TUBE	TLF-IN 33 10-N
SCREWDRIVER PROTECTION SLEEVE	TLF-IN 03 60-N
SHORT SCREWDRIVER PROTECTION SLEEVE	TLF-IN 33 60-N
SCREWDRIVER SHAFT MS-PS	TLF-IN 03 30-N
SHORT SCREWDRIVER SHAFT MS-PS	TLF-IN 33 30-N
SCREWDRIVER SHAFT SS	TLF-IN 03 40-N
SHORT SCREWDRIVER SHAFT SS	TLF-IN 33 40-N
SCREWDRIVER UNIVERSAL SHAFT	TLF-IN 03 50-N
SHORT SCREWDRIVER UNIVERSAL SHAFT	TLF-IN 33 50-N
T25 SCREWDRIVER SHAFT	TLF-IN 03 00-N
LOCKING SCREWDRIVER SHAFT MS-PS	TLF-IN 23 30-N
LOCKING SCREWDRIVER SHAFT SS	TLF-IN 23 40-N
LOCKING SCREWDRIVER TUBE	TLF-IN 23 10-N

_STEP 6 (OPTION)

SCREW INSERTION – ILIAC FIXATION

After performing desired osteotomy of the iliac crest, determine the entry point of the iliac screw, initiate the pilot hole with the **Bone Awl**.

Penetrate into the cancellous bone with the **Probe**.

INSTRUMENT	REFERENCE
BONE AWL	TLF-IN 00 00-N
PROBE BLUNT - STRAIGHT	TLF-IN 01 30-N
PROBE SQUARE - CURVED	TLF-IN 01 40-N
PROBE SQUARE - STRAIGHT	TLF-IN 01 50-N
PROBE - CURVED	TLF-IN 01 10-N

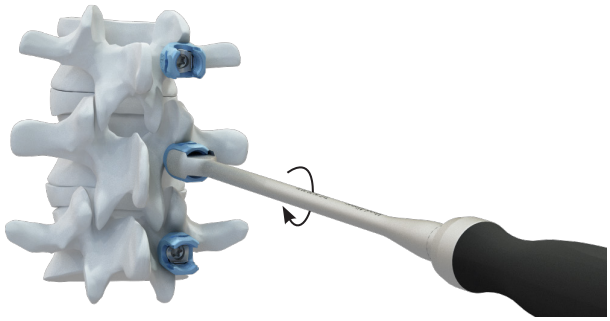
Connect the screw to the **Screwdriver** and proceed to implantation.

Once the screw is implanted, a lateral connector will help to align with the rod. Take the lateral connector with the **Implant Holder**, place it inside the screw head. Secure it with a setscrew introduced with the **Setscrew Holder** or **Setscrew Holder Double**.

If a lateral connection is not needed, link the rod directly to the screw seated in the iliac bone.

INSTRUMENT	REFERENCE
IMPLANT HOLDER	ELL-IN 01 04-N
SETSCREW HOLDER	TLF-IN 05 10-N
SETSCREW HOLDER DOUBLE	TLF-IN 05 50-N

_STEP 7

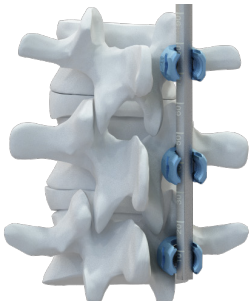


SCREW HEAD ADJUSTMENT

Set the orientation of the head with the **Head Aligner**.

INSTRUMENT	REFERENCE
HEAD ALIGNER	TLF-IN 08 00-N

_STEP 8



ROD SELECTION

Choose the appropriate length of rod with the **Rod Template**.

INSTRUMENT	REFERENCE
ROD TEMPLATE L250	TLF-IN 10 25-N
ROD TEMPLATE L500	TLF-IN 10 50-N

_STEP 9

ROD CUTTING

In some situation the selected rod will need to be cut to optimize its size to the construct.

Extend the **Rod Cutter** handles by pulling them until you hear the click.

Mark on the rod the cutting line you measured. Place the rod into the hole adapted to its diameter. A laser marking on the **Rod Cutter** indicates where is located the cutting point of the instrument. Make sure to align it with your cutting line mark.
Then push on the handles to perform the cut.

NOTE: The instrument can be used with two hands or siting on a table. In the second option connect the **Rod Cutter – Table Top Adaptor** to the Rod Cutter to bring more stability to the instrument.

INSTRUMENT	REFERENCE
ROD CUTTER	TLF-IN 20 00-N
ROD CUTTER – TABLE TOP ADAPTOR	TLF-IN 20 10-N

_STEP 10

ROD CONTOURING

Contour the rod if needed with the **Rod Bender** or **Rod Bender - Short** to fit in the screw head. Pull and turn the wheel to select the appropriate radius. Align the dot from the handle with the one from the desired position.
From position 1 for a light bending to position 3 for a strong one.

NOTE: PERLA® TL rods are ø5.5mm and ø6mm.

⚠ **WARNING:** Once bent, rods should not be de-contoured.

⚠ **WARNING:** Repeated bending can weaken the rod.

INSTRUMENT	REFERENCE
ROD BENDER	TLF-IN 04 01-N
ROD BENDER - SHORT	TLF-IN 04 60-N

_STEP 10 - BIS

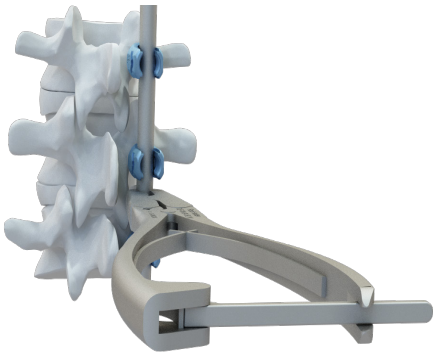
ROD CONTOURING

For rod contouring with a large radius you can use the **Sagittal Benders**.

Place the rod in the holes of the adapted size and then proceed to the bending.

INSTRUMENT	REFERENCE
SAGITTAL BENDER - RIGHT	TLF-IN 15 10-N
SAGITTAL BENDER - LEFT	TLF-IN 15 20-N

_STEP 11



ROD PLACEMENT

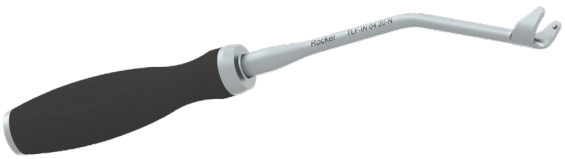
Insert a rod into the implant head using the **Implant Holder**. If a stronger holding is required, use the **Rod Holder**.

INSTRUMENT	REFERENCE
IMPLANT HOLDER	ELL-IN 01 04-N
ROD HOLDER	TLF-IN 04 50-N

_STEP 12

A.

B.



C.

D.

E.

F.

ROD REDUCTION / SETSCREW INSERTION

Multiple instrument options are available for rod reduction (see table). The use of one of these instruments is **MANDATORY**.
They facilitate the insertion of setscrew due to the persuasion of the rod into the screw head.

Start inserting the setscrews from the caudal part of the construct. The setscrews should not be firmly locked at this stage, to allow movement of the rod in the screw heads.

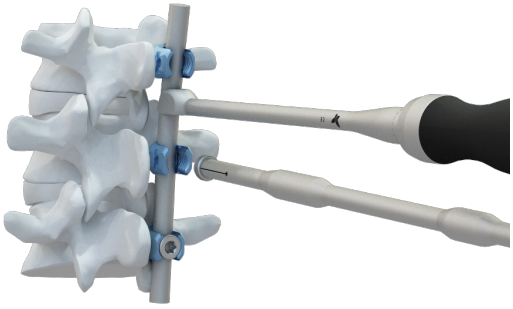
Attach a setscrew to the **Setscrew Holder** or **Setscrew Holder Double** end tip.

Introduce the setscrew into the implant head by rotating the holder clockwise. To facilitate setscrew insertion, rotate the holder counterclockwise a quarter turn or until the set screw «drops» in the head.

NOTE : Make sure to clear the space around the screw head to optimize the interaction with the rod reduction instruments.

INSTRUMENT	**REFERENCE**
A. ROD PUSHER	TLF-IN 04 30-N
B. ROCKER	TLF-IN 04 20-N
C. QR REDUCER	
OUTER TUBE	ELL-IN 31 34-N
INNER TUBE	ELL-IN 32 34-N
HANDLE	ELL-IN 33 34-N
D. PERSUADER	TLF-IN 09 10-N
E. SETSCREW TUBE	TLF-IN 05 00-N
F. REDUCER	
REDUCER - PUSHER	TLF-IN 16 00-N
REDUCER - TUBE	TLF-IN 16 10-N or TLF-IN 26 10-N
REDUCER - UNILATERAL TUBE	TLF-IN 16 20-N or TLF-IN 26 20-N
SETSCREW HOLDER	TLF-IN 05 10-N
SETSCREW HOLDER DOUBLE	TLF-IN 05 50-N

_STEP 12-A

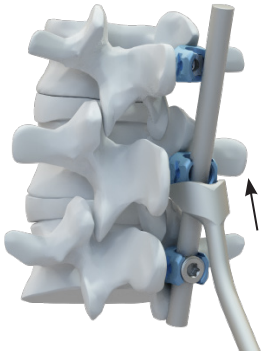


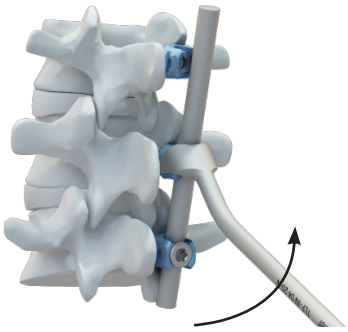
ROD REDUCTION - ROD PUSHER

Place the **Rod Pusher** on the rod to push it in the screw head. Then use the **Setscrew Holder** to insert the setscrew.

INSTRUMENT	REFERENCE
ROD PUSHER	TLF-IN 04 30-N
SETSCREW HOLDER	TLF-IN 05 10-N

_STEP 12-B





ROD REDUCTION - ROCKER

Slide the **Rocker** on the lateral groove of the screw head to connect it to the notch.

Then swing the instrument in order to reduce the rod into the screw head.

Insert the setscrew with the **Setscrew Holder**.

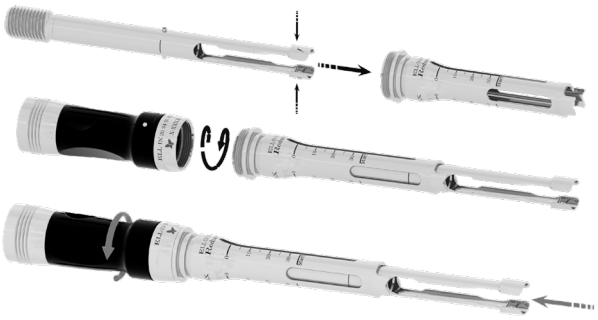
Slide the **Rocker** on the lateral groove to disconnect it from the screw head.

NOTE: The ROMEO®2 “hemostat“ version is available in option.

INSTRUMENT	REFERENCE
ROCKER	TLF-IN 04 20-N
SETSCREW HOLDER	TLF-IN 05 10-N

_STEP 12-C

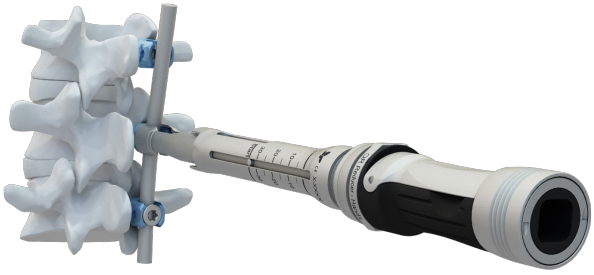
ROD REDUCTION - QR REDUCER



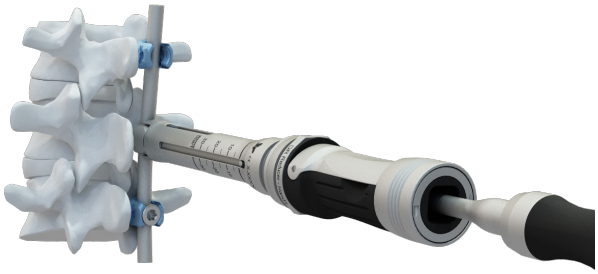
Insert the **Inner Tube** into the **Outer Tube**. The extremity of the **Inner Tube** has to be slightly squeezed to ease the insertion.

Connect the **Handle** to the tube. Firmly screw the locking ring of the handle.

Push the **Inner Tube** into the **Handle** and turn the **Handle** clockwise to engage the thread. The engagement of the tube thread into the **Handle** must be carefully performed. **DO NOT** force. The assembling procedure is finished when the position marker of the **Inner Tube** is aligned with the “START“ laser marking of the **Outer Tube**.



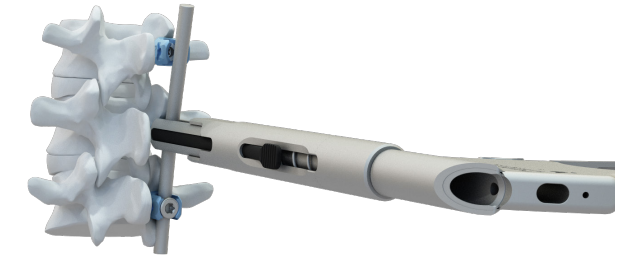
Connect the instrument to the screw head then persuade the rod into it by turning the **Handle**. If additional force is required to seat the rod, you can use the **QR Reducer T-Handle** by sliding it onto the top of the **QR Reducer** to finish the reduction.

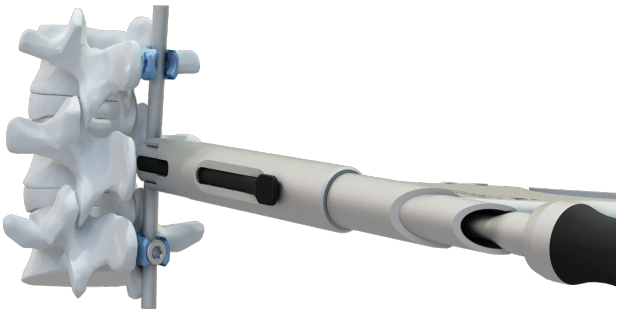


Then use the **Setscrew Holder** to insert the setscrew through the **QR Reducer** into the screw head.

INSTRUMENT	REFERENCE
QR REDUCER	
OUTER TUBE	ELL-IN 31 34-N
INNER TUBE	ELL-IN 32 34-N
HANDLE	ELL-IN 33 34-N
QR REDUCER T-HANDLE	HAN-SS TY 14-N
SETSCREW HOLDER	TLF-IN 05 10-N

_STEP 12-D





ROD REDUCTION - PERSUADER

Press the trigger to ensure that the **Persuader** is fully released.

To connect the **Persuader**, slide its extremity on a screw head.
Press the handle in order to progressively persuade the rod into the screw head.

Once the reduction completed, insert the setscrew through the **Persuader** by using the **Setscrew Holder**.

Press the trigger to release the persuation then press the black buttons on the sides of the barrel to disconnect the **Persuader** from the screw head.

INSTRUMENT	REFERENCE
PERSUADER	TLF-IN 09 10-N
SETSCREW HOLDER	TLF-IN 05 10-N

_STEP 12-E

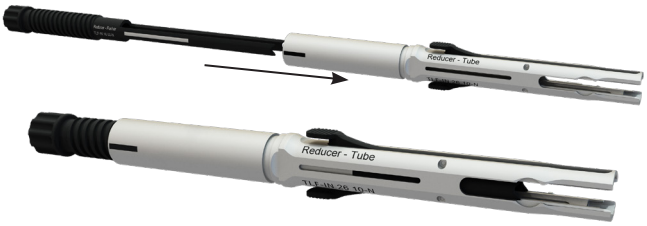
ROD REDUCTION - SETSCREW TUBE

Place the **Setscrew Tube** on the top of the screw. Push down to reduce the rod into the screw head.

Insert the setscrew by sliding it through the **Setscrew Tube** with the **Setscrew Holder**.

INSTRUMENT	REFERENCE
SETSCREW TUBE	TLF-IN 05 00-N
SETSCREW HOLDER	TLF-IN 05 10-N

_STEP 12-F



Note 2

ROD REDUCTION - REDUCER

Slide the **Reducer – Pusher** into the **Reducer – Tube** or **Reducer – Unilateral Tube**. Make sure to align the markings of both instruments to be able to engage the thread.

Connect the assembly to the screw head then persuade the rod by turning clockwise the upper extremity of the **Reducer**. If additional force is required to seat the rod you can use either the **Reducer – Straight Handle**, **Reducer - T-Handle** or **Reducer – Hexa Connector**.

NOTE 1: In situations where the rod is too medial or lateral to the screw head, the **Unilateral Reducer** should be used to align implant and rod and then reduce the rod into the screw head.

Connect the **Unilateral Reducer** to the screw head. The polyaxiality of the screw head can help. Use the **Unilateral Reducer** as a lever to push the rod until it is properly aligned with the screw head. Then perform the persuasion.

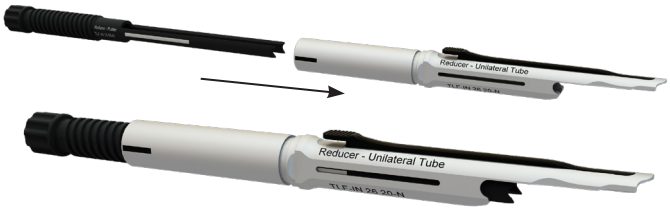
Use the **Setscrew Holder** to insert the setscrew through the **Reducer** into the screw head.

To disconnect the **Reducer**, press the lateral wings.

NOTE 2: If difficulty to disconnect the **Reducer** occurs due to bone fragment or tissue, use the **Reducer - Rescue Disconnector** to force the lateral wings of the **Reducer** to open.

INSTRUMENT	REFERENCE
REDUCER - PUSHER	TLF-IN 16 00-N
REDUCER - TUBE	TLF-IN 16 10-N or TLF-IN 26 10-N
REDUCER - UNILATERAL TUBE	TLF-IN 16 20-N or TLF-IN 26 20-N
REDUCER - STRAIGHT HANDLE	TLF-IN 17 00-N
REDUCER – T-HANDLE	TLF-IN 17 10-N
REDUCER – HEXA CONNECTOR	TLF-IN 17 20-N
REDUCER – RESCUE DISCONNECTOR	TLF-IN 16 90-N
SETSCREW HOLDER	TLF-IN 05 10-N

_STEP 12-F BIS



ROD REDUCTION - UNILATERAL REDUCER

In situations where the rod is too medial or lateral to the screw head, the **Unilateral Reducer** should be used to align implant and rod and then reduce the rod into the screw head.

Slide the **Reducer - Pusher** into the **Reducer - Unilateral Tube**- Make sure to align the markings of both instruments to be able to engage the thread.

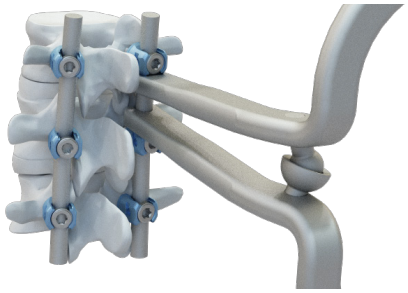
Connect the **Unilateral Reducer** to the screw head. The polyaxiality of the screw head can help. Use the **Unilateral Reducer** as a lever to push the rod until it is properly aligned with the screw head. Then perform the persuasion by turning clockwise the upper extremity of the **Unilateral Reducer**. If additional force is required to seat the rod you can use either the **Reducer – Straight Handle**, **Reducer - T-Handle** or **Reducer – Hexa Connector**.

Use the **Setscrew Holder** to insert the setscrew through the **Unilateral Reducer** into the screw head.

To disconnect the **Unilateral Reducer**, press the lateral wing.

INSTRUMENT	REFERENCE
REDUCER - PUSHER	TLF-IN 16 00-N
REDUCER - UNILATERAL TUBE	TLF-IN 16 20-N or TLF-IN 26 20-N
REDUCER - STRAIGHT HANDLE	TLF-IN 17 00-N
REDUCER – T-HANDLE	TLF-IN 17 10-N
REDUCER – HEXA CONNECTOR	TLF-IN 17 20-N
REDUCER – RESCUE DISCONNECTOR	TLF-IN 16 90-N
SETSCREW HOLDER	TLF-IN 05 10-N

_STEP 13



MANIPULATION MANEUVERS

If necessary at this surgical step **Sagittal Benders** and **Coronal Benders** can be used for additional rod contouring.

Compression or distraction may be performed by using the **Compressor**, **Distractor**, **Parallel Compressor** or **Parallel Distractor**.

Parallel Compressor and **Parallel Distractor** are featuring straight and offset modular end tips.

For modular end tip connection, match the numbers between end tips and **Parallel Compressor** and **Parallel Distractor** extremities.

⚠ **WARNING:** Repeated bending can weaken the rod

⚠ **WARNING:** Once bent, rods should not be de-contoured.

⚠ **WARNING:** Manipulation maneuvers shall be done under intraoperative neurophysiological monitoring.

NOTE: Benders are designed to provide a wide range of bending radius. Move the distal end of the benders to perform larger rod bending.

INSTRUMENT	REFERENCE
SAGITTAL BENDER - RIGHT	TLF-IN 15 10-N
SAGITTAL BENDER - LEFT	TLF-IN 15 20-N
CORONAL BENDER - RIGHT	TLF-IN 15 30-N
CORONAL BENDER - LEFT	TLF-IN 15 40-N
PARALLEL COMPRESSOR	TLF-IN 06 00-N
END TIP 1 - STRAIGHT	TLF-IN 06 10-N
END TIP 2 - STRAIGHT	TLF-IN 06 20-N
END TIP 3 - OFFSET	TLF-IN 06 30-N
END TIP 4 - OFFSET	TLF-IN 06 40-N
PARALLEL DISTRACTOR	TLF-IN 06 50-N

_STEP 14 (OPTIONAL)

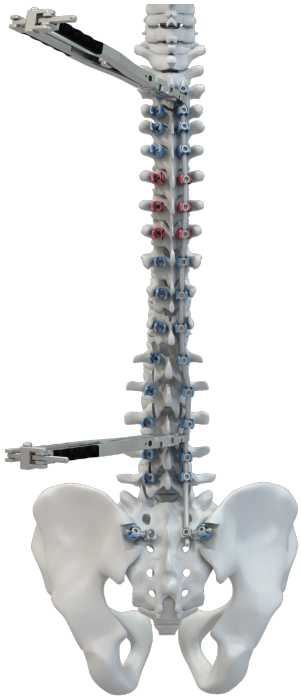
ROD CONNECTOR

Use the **Implant Holder** to place the appropriate parallel or axial Rod Connector.

NOTE: In cases where the bone makes it difficult to place the Rod Connector, the **C-Chisel** can be used to remove it.

INSTRUMENT	REFERENCE
IMPLANT HOLDER	ELL-IN 01 04-N
C-CHISEL	TLF-IN 21 00-N

_STEP 15-A



ROD DEROTATION

In case of a rod bended and placed in the screw heads on the coronal plan you may need to proceed to a rod derotation. The rod will be then axially rotated to restore the sagittal plane balance.

Attach two **Derotation Forceps** to the rod and/or one **Hexagonal Wrench** on the hexagonal end tip of the rod. Derotate the rod to have its curvature moving from the frontal plane to the sagittal plane.

NOTE: Make sure to have all the setscrews slightly loose before performing any rod derotation maneuvers.

Once the derotation of the rod is complete, firmly tighten the setscrews of the most proximal screw.

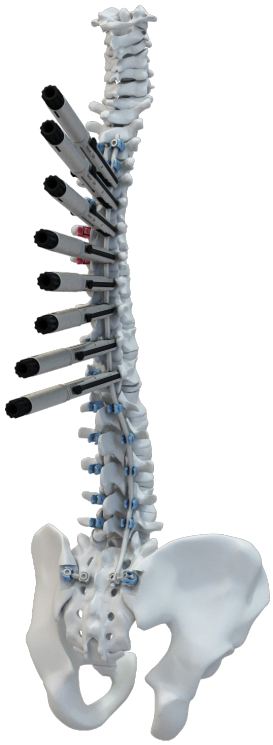
Tightening is achieved with the **Setscrew Tightener** attached to the **T-Handle Ratchet**.

Remove the **Derotation Forceps** and/or **Hexagonal Wrench**.

WARNING: Derotation maneuvers shall be done under intraoperative neurophysiological monitoring.

INSTRUMENT	REFERENCE
DEROTATION FORCEPS	TLF-IN 04 40-N
HEXAGONAL WRENCH	ELL-IN 00 33-N
SETSCREW TIGHTENER	TLF-IN 05 20-N
T-HANDLE RATCHET	HAN-SB RF TE-N

_STEP 15-B



TRANSLATION

In case of a rod bended and placed in the sagittal plan you may need to proceed to a translation.

Translation of vertebrae can be achieved by using the Reducers.

Reducers can be placed on different points of the deformity. As the spine is carefully translated from the distal and proximal ends to the apex of the curve, setscrews are progressively inserted to secure the rod into the screws.

NOTE: If difficulty to disconnect the Reducer occurs due to bone fragment or tissue, use the **Reducer - Rescue Disconnector** to force the lateral wings of the Reducer to open.

WARNING: Translation maneuvers shall be done under intraoperative neurophysiological monitoring.

INSTRUMENT	REFERENCE
REDUCER - PUSHER	TLF-IN 16 00-N
REDUCER - TUBE	TLF-IN 26 10-N
REDUCER – UNILATERAL TUBE	TLF-IN 26 20-N
REDUCER – RESCUE DISCONNECTOR	TLF-IN 16 90-N

_STEP 16

APICAL DEROTATION

Rings and Rods are designed to triangulate with Bilateral and Unilateral Reducers to perform apical vertebral body manipulation with reduced instrumentation ensuring an optimized visualization of the operating site.

⚠ **WARNING:** Derotation maneuvers shall be done under intraoperative neurophysiological monitoring.

_STEP 16-A

APICAL DEROTATION – SEGMENTAL

Position **Reducers** on the 2 screws of the same vertebra. At least, one rod should be introduced but still free to move within the screw head.

Slide two **Reducer Link – Rings** on a **Reducer Link – Rod L180**. Press the black butterfly button on the **Rings** to make the **Rod** slide through them. Then slide the assembly onto the **Reducers** until the click. If necessary, adjust **Rings** distance by pressing the black butterfly button.

You can now perform a segmental derotation. Repeat the same step with other vertebrae if necessary or if you need contrarotational corrective forces

NOTE: If difficulty to disconnect the **Reducer** occurs due to bone fragment or tissue, use the **Reducer - Rescue Disconnector** to force the lateral wings of the Reducer to open.

INSTRUMENT	REFERENCE
REDUCER - PUSHER	TLF-IN 16 00-N
REDUCER - TUBE	TLF-IN 26 10-N
REDUCER – UNILATERAL TUBE	TLF-IN 26 20-N
REDUCER – RESCUE DISCONNECTOR	TLF-IN 16 90-N
REDUCER LINK - RING	TLF-IN 18 10-N
REDUCER LINK – ROD L180	TLF-IN 18 18-N

_STEP 16-B

APICAL DEROTATION – UNILATERAL

Position **Reducers** on desired screws from the same side. A rod must be introduced within the screw heads.

Slide on a **Reducer Link – Rod L350** at least two **Reducer Link – Rings**. The maximum number is the quantity of **Reducers** positioned. Press the black butterfly button on the **Rings** to make the **Rod** slide through them.
Then slide the assembly onto the **Reducers** until the click. If necessary, adjust **Rings** distance by pressing the black butterfly button.

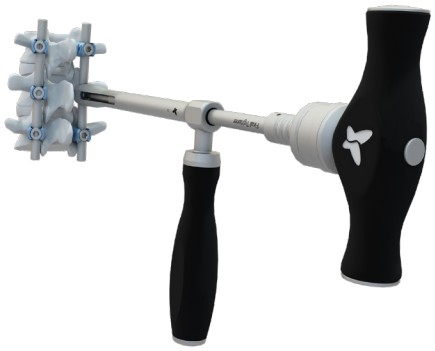
You can now perform a unilateral derotation.

NOTE: If two **Rings** are on the **Rod**, slide them onto the first and last **Reducers**. You can add additional connection afterward by sliding **Reducer Link – Hook Ring** onto the middle-positioned **Reducers**.

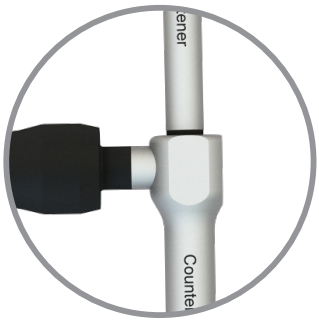
NOTE 2: If difficulty to disconnect the **Reducer** occurs due to bone fragment or tissue, use the **Reducer - Rescue Disconnector** to force the lateral wings of the Reducer to open.

INSTRUMENT	REFERENCE
REDUCER - PUSHER	TLF-IN 16 00-N
REDUCER - TUBE	TLF-IN 26 10-N
REDUCER – UNILATERAL TUBE	TLF-IN 26 20-N
REDUCER – RESCUE DISCONNECTOR	TLF-IN 16 90-N
REDUCER LINK – HOOK RING	TLF-IN 18 00-N
REDUCER LINK - RING	TLF-IN 18 10-N
REDUCER LINK – ROD L350	TLF-IN 18 35-N

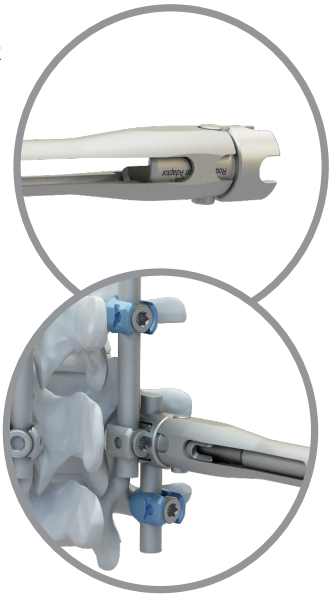
_STEP 17



Note 1



Note 2



FINAL TIGHTENING

Pass the shaft of the **Final Tightener** through the **Counter Torque** and insert the tip into the setscrew recess. Secure the **Counter Torque** around the implant head.

NOTE 1 : Confirm black etch line on the **Final Tightener** shaft is flush with the **Counter Torque** barrel. This indicates the instrument tip is fully seated in the set screw recess.

NOTE 2: The final tightening of the axial connectors and the U-shaped and Close side of parallel connectors must be done by using the **Counter Torque - Rod Connector Adaptor** connected to the end tip of the **Counter Torque**. In other case, the counter torque can be postionned aside of the connector.

Rotate the handle of the **Final Tightener** clockwise until it "clicks".

Before closing, proceed final tighten each setscrew and connector of the construct.

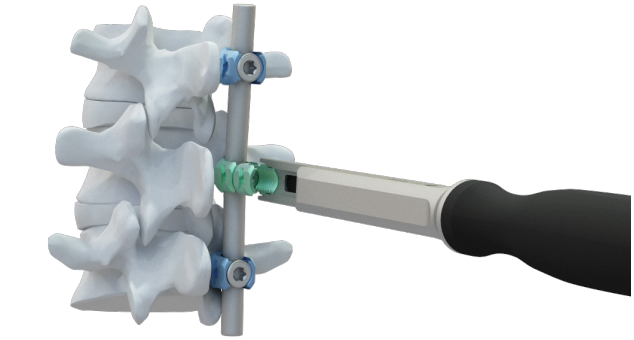
⚠ **WARNING:** The T25 screwdriver shaft must not be used with setscrews. For pedicle screws only.

⚠ **WARNING:** Always use the **Counter Torque** during final tightening to reduce torque transfer to the spine and avoid damage to the driver tip.

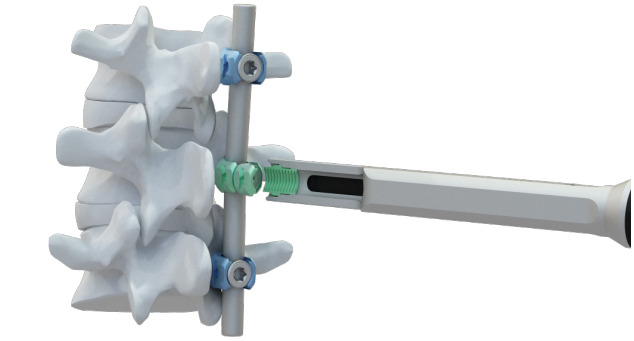
INSTRUMENT	REFERENCE
FINAL TIGHTENER	TLF-IN 05 41-N
COUNTER TORQUE	TLF-IN 05 30-N
COUNTER TORQUE - ROD CONNECTOR ADAPTOR	TLF-IN 05 35-N

_STEP 18

REDUCTION SCREW AND TAB BREAKING

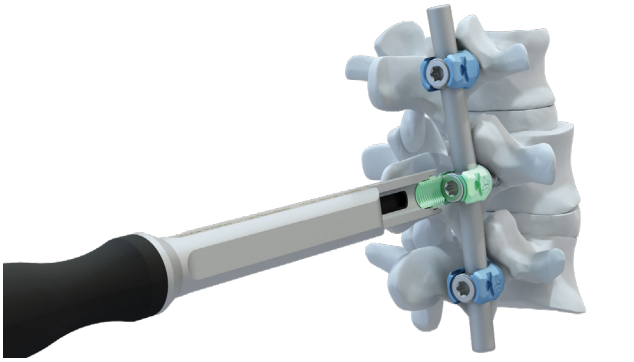


For Reduction Screws, after the Final Tightening, break the tabs with the **Hook Holder/Tab Breaker**.



Slide the instrument on a tab then rock medial / lateral to break the tab.

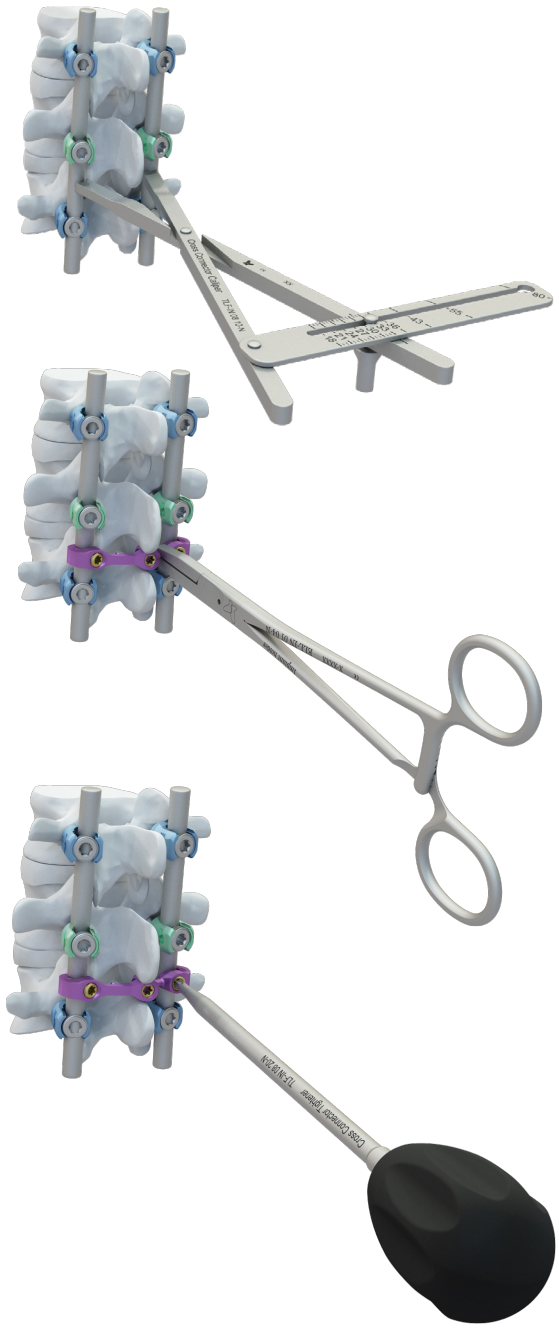
Press the black button on the side of the **Hook Holder/Tab Breaker** to release the broken tab.



Repeat the same steps with the second tab of the Reduction Screw.

INSTRUMENT	REFERENCE
HOOK HOLDER/TAB BREAKER	TLF-IN 08 30-N

_STEP 19



CROSS CONNECTOR

To select the appropriate cross connector size, measure the distance between rods using the **Caliper**. The locking nut secures the **Cross Connector Caliper**. Cross connector length is indicated on the scale.

Use the **Implant Holder** to manipulate the cross connector.

Once the cross connector is positionned, use the **Cross Connector Tightener** to final tighten.

INSTRUMENT	REFERENCE
CROSS CONNECTOR CALIPER	TLF-IN 08 10-N
IMPLANT HOLDER	ELL-IN 01 04-N
CROSS CONNECTOR TIGHTENER	TLF-IN 08 20-N

_STEP 19 - BIS

TRANSVERSE CONNECTOR

For long construct, it is recommended to add transverse connectors to increase the rotational stability of the construct. Hold the transverse hooks with the **Implant Holder** and place them onto the rod. The length of the transverse rod is measured by using the **Caliper**.

NOTE: Transverse Connector is compatible with Ø5.5 rod only

NOTE: For the transverse rod selection, 10mm should be added to the length measured by the caliper.

Hold the transverse rod with the **Implant Holder** to place it into the transverse hooks. Tighten the setscrew of the transverse hooks with the **Cross Connector Tightener**.

INSTRUMENT	REFERENCE
IMPLANT HOLDER	ELL-IN 01 04-N
CROSS CONNECTOR CALIPER	TLF-IN 08 10-N
CROSS CONNECTOR TIGHTENER	TLF-IN 08 20-N

HOOK SELECTION AND INSERTION

The PERLA®TL system is provided with a large range of top-loading hooks. The appropriate hook is chosen by the surgeon based on several criteria such as patient's anatomy, bone quality, correction technique, deformity degree and forces applied.

The **Hook Range Reminder** can help to make the decision by providing an overview of the hook range.

INSTRUMENT	REFERENCE
HOOK RANGE REMINDER	TLF-IN 19 20-N

PEDICULAR HOOK

The blade of the pedicular hook is always directed cephalad and is recommended from T1 to T10.

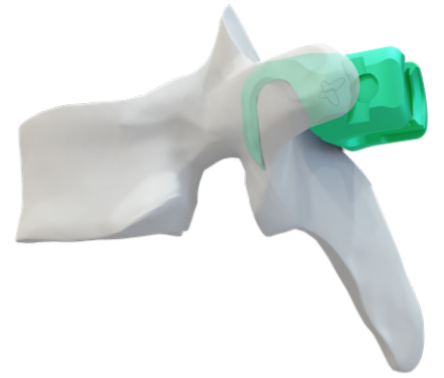
A limited facetectomy may be performed on a portion of the inferior facet to facilitate the insertion of the hook. Use the **Pedicle Preparer** to adapt the pedicular hook site, until a correct stability is achieved.

Attach the selected pedicular hook to the **Hook Holder, Lateral Hook Holder** or the **Hook Holder/ Tab Breaker**.

Using both **Hook Holder, Lateral Hook Holder** or **Hook Holder/Tab Breaker** and **Hook Pusher**, impact the pedicular hook in place. A slight hammering on the **Hook Pusher** will gently impact the hook into the pedicle.

NOTE: A **Hook Range Reminder** is available to display the range of hooks available.

INSTRUMENT	REFERENCE
HOOK PUSHER	TLF-IN 19 10-N
PEDICLE PREPARER	ELL-IN 00 29-N
HOOK HOLDER/TAB BREAKER	TLF-IN 08 30-N
HOOK HOLDER	ELL-IN 00 31-N
HOOK RANGE REMINDER	TLF-IN 19 20-N
LATERAL HOOK HOLDER	TLF-IN 19 30-N



LAMINAR HOOK

Locate the vertebra where the laminar hook will be implanted.

Infralaminar hook is directed cephalad while supralaminar hooks direction is always caudal.

Use the **Lamina Preparer** to adapt the lamina hook site, until a correct stability is achieved.

Attach the selected laminar hook to the **Hook Holder, Lateral Hook Holder** or the **Hook Holder/ Tab Breaker**.

Using both **Hook Holder, Lateral Hook Holder** or **Hook Holder/Tab Breake** and **Hook Pusher,**, insert the hook in place.

NOTE: A **Hook Range Reminder** is available to display the range of hooks available.

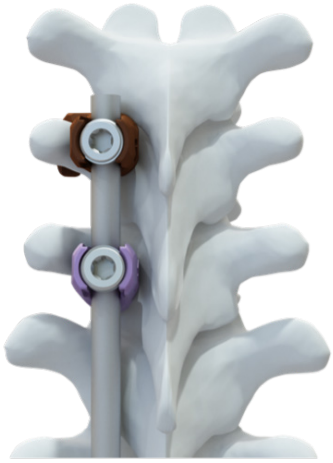
SUPRALAMINAR HOOK

The hook is inserted in a downward rotational movement so that the tip of the blade stays in contact with the anterior surface of the lamina. A small laminotomy may sometimes be necessary to ease the access.

INFRALAMINAR HOOK

The blade of the hook is not interdural but will seat between the anterior surface of the lamina and the ligamentum flavum.

INSTRUMENT	REFERENCE
HOOK PUSHER	TLF-IN 19 10-N
LAMINA PREPARER	ELL-IN 00 30-N
HOOK HOLDER/TAB BREAKER	TLF-IN 08 30-N
HOOK HOLDER	ELL-IN 00 31-N
HOOK RANGE REMINDER	TLF-IN 19 20-N
LATERAL HOOK HOLDER	TLF-IN 19 30-N



TRANSVERSE PROCESS HOOK

Based on the patient's anatomy a Transverse Process Hook may be necessary to facilitate the alignment with pedicle screw heads. It can be directed cephalad or caudal.

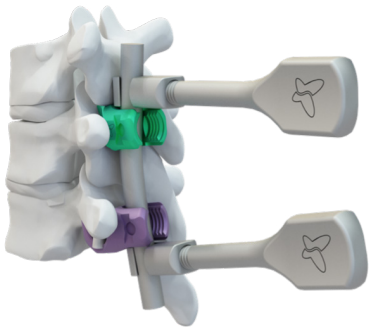
Use the **Lamina Preparer** to dissect around the transverse process.

Attach the selected Transverse Process hook to the **Hook Holder, Lateral Hook Holder** or **Hook Holder/Tab Breaker** and insert it into the space created.

Transverse process hooks are typically used in a pedicle-transverse claw configuration.

NOTE: A **Hook Range Reminder** is available to display the range of hooks available.

INSTRUMENT	REFERENCE
LAMINA PREPARER	ELL-IN 00 30-N
HOOK HOLDER/TAB BREAKER	TLF-IN 08 30-N
HOOK HOLDER	ELL-IN 00 31-N
HOOK RANGE REMINDER	TLF-IN 19 20-N
LATERAL HOOK HOLDER	TLF-IN 19 30-N



HOOK SECURING

If hooks have been used, J-Hooks could be placed on the rod to keep the hooks in place during the reduction maneuvers.

INSTRUMENT	REFERENCE
J-HOOK	TLF-IN 19 00-N
HOOK HOLDER/TAB BREAKER	TLF-IN 08 30-N

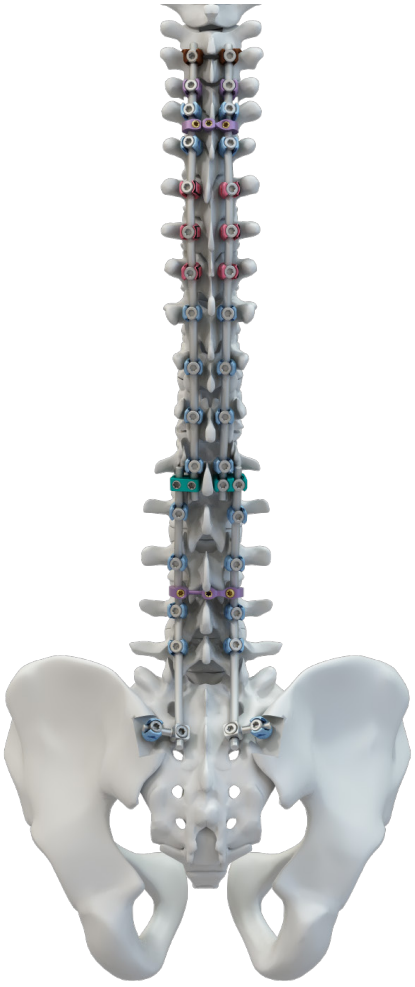
FINAL TIGHTENING

Hooks setscrews are the same than for screws and so the final tightening. Please refer to the Final Tightening step previously detailed in this surgical technique.

INSTRUMENT	REFERENCE
FINAL TIGHTENER	TLF-IN 05 41-N
COUNTER TORQUE	TLF-IN 05 30-N
COUNTER TORQUE – ROD CONNECTOR ADAPTOR	TLF-IN 05 35-N

SURGICAL TECHNIQUE

_FINAL CONSTRUCT



_REVISION

INSTRUMENT	REFERENCE
T-HANDLE RATCHET	HAN-SB RF TE-N
STRAIGHT HANDLE RATCHET	HAN-SB RF ST-N
SETSCREW TIGHTENER	TLF-IN 05 20-N
COUNTER TORQUE	TLF-IN 05 30-N
SCREWDRIVER UNIVERSAL SHAFT	TLF-IN 03 50-N
SCREWDRIVER SHAFT MS-PS	TLF-IN 03 30-N
SCREWDRIVER SLEEVE	TLF-IN 03 20-N
SCREWDRIVER TUBE	TLF-IN 03 10-N
T25 SCREWDRIVER SHAFT	TLF-IN 03 00-N

Loosen and remove all set screws using the **Counter Torque** and the **Setscrew Tightener** connected to the **T-Handle Ratchet**. Remove rods. Fully secure the screwdriver to the screw recess and turn counterclockwise to remove screws.

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