

PROLIANT[®] Surgical Technique
Lumbar Pedicle Screw System

**DETAILED OPERATIVE TECHNIQUE
LOCATE AND PREPARE THE PEDICLE**

Identify the pedicle and the entry hole location. The pedicle is typically located at the intersection of the superior articular facet and the midline of the transverse process. Create an entry hole for the pedicle screw by using the Awl to puncture the cortex. With the Awl, penetrate the cortex by using a downward twisting force (Figure 1).

PROBE THE PEDICLE

The Straight or Curved Pedicle Probe is used to create the screw path through the pedicle and into the vertebral body. Both of these instruments include depth markings at the tip of the instrument (Figure 2).

ENSURE THE INTEGRITY OF THE PEDICLE WALL

After the pedicle has been cannulated, the pedicle may now be sounded. Using the Straight Tester, verify the integrity of the interior pedicle walls by palpating the cephalad edge, the medial wall and the inferior edge, as well as the deepest portion of the opening (Figure 3).

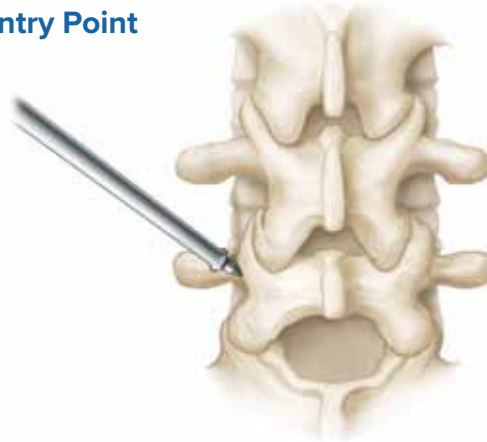
GUIDE PIN INSERTION (OPTIONAL)

Guide Pins are available and may be inserted to confirm the pedicle location under visualization if desired (Figure 4).

TAPPING (OPTIONAL)

All Proliant screws are self-tapping. However, if pre-tapping is desired, Taps are available in various sizes which correspond to the diameters of the Polyaxial Screws (Table 1). The Proliant Taps are undersized by .75mm, however if additional undertapping is desired a smaller diameter within the same group may be used. Attach the appropriately sized Tap to the Ratcheting Straight or T-Handle, slide on the Tissue Protector Sleeve and proceed to tap the Screw entry hole by rotating the handle clockwise. The Tissue Protector Sleeve may be used to determine tapping depth (Figure 5).

**Figure 1
Establish Pedicle
Entry Point**



**Figure 2
Probe the Pedicle**



**Figure 3
Ensure Integrity of
Pedicle Wall**

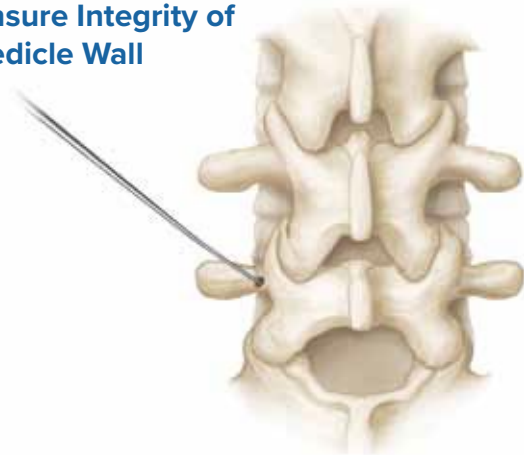


Table 1. Taps

Tap	Outer Diameter	Screw Compatibility				
		4.5	5.5	6.5	7.5	8.5
4.5mm Tap	3.75mm	X				
5.5mm Tap	4.75mm	X	X			
6.5 U Tap	4.75mm			X	X	X
6.5mm Tap	5.75mm			X	X	X
7.5mm Tap	6.75mm				X	X
8.5mm Tap	7.75mm					X

Figure 4
Mark the Pedicle



Figure 5
Tap the Pedicle

LOAD POLYAXIAL SCREW

After determining the appropriate Screw length, attach the Ratcheting Straight or T-Handle to the Retaining Polyaxial Screwdriver. Insert the Retaining Screwdriver into the inner hexalobe of the Screw and lock it by rotating the central locking wheel clockwise (Figure 6).



Figure 6
Load the Pedicle Screw

INSERT POLYAXIAL SCREW

The Polyaxial Screws may now be inserted into pedicle to the pre-determined depth. Turn the Ratcheting Handle clockwise to insert the Screw (Figure 7). Once the Screw is fully inserted, disengage the Screw from the Retaining Polyaxial Screwdriver by turning the central locking wheel counter-clockwise. Repeat the steps for all remaining Pedicle Screws.

REDUCTION SCREWS

If necessary, Reduction Polyaxial Screws are also available and can be inserted using the Retaining Polyaxial Screwdriver. The Retaining Polyaxial Screwdriver is inserted into the Screw tulip and tightened by rotating the central locking wheel clockwise.

ROD SELECTION

After the Polyaxial Screws have been placed, the desired length of the Rod should be selected. The Curved Rods are in pre-cut lengths ranging from 40mm to 110mm. The Rod should extend no less than 2mm beyond the outer edges of the proximal Screw bodies of the most superior and most inferior Pedicle Screws. Straight Rods are also available in either 200mm or 300mm.

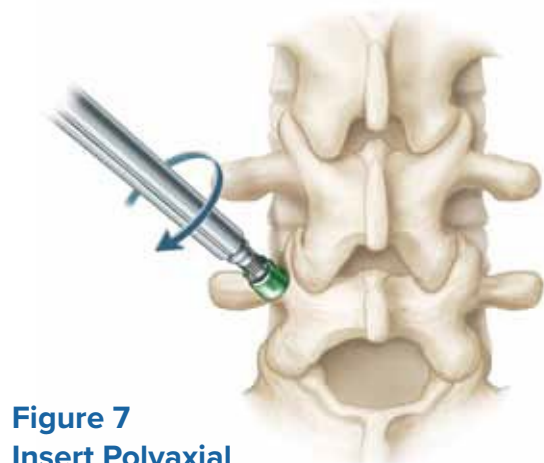


Figure 7
Insert Polyaxial Screw

ROD BENDER

The French Rod Bender is primarily used for curving or bending Straight Rods. If needed, it can also be used to increase or decrease the lordosis in the Curved Rod (Figure 8).

The degree of lordosis can be varied by adjusting the center button. A small, medium or large radius may be selected by pulling out the large center knob while rotating the knob as desired. The Rod should seat fully into the tulip of the Pedicle Screw. Note: In-Situ Benders may also be used to bend the Rod once it is placed within the construct.

ROD PLACEMENT AND TIGHTENING

After the Rod has been contoured as desired, it is then placed into the Polyaxial Screw housing with the Rod Holder (Figure 9). The Polyaxial Screw allows up to 60 degrees of angulation, and the EZ Set Tulip Head allows the Screw to be placed in any angle and stay in that location as the Rod is inserted.

Once the Rod has been placed, load a Set Screw on each end of the double-ended Set Screw Starter and provisionally tighten each Screw.

ROD REDUCTION

To assist with the reduction of the Rod into the Screw, there are several instruments that are available.

- 1) The Rod Pusher helps to persuade the Rod into the Screw head, without capturing the Screw head.
- 2) The Pistol Grip Rod Persuader is inserted over the Rod and Screw, and the Ratcheting Handle allows the Rod to be slowly reduced.
- 3) The Cylinder Style Rod Persuader is used to fully capture the Polyaxial Screw head in place, while the Ratcheting Handles reduce the Rod (Figure 10).

After the Rod is fully reduced into the Screw head, it can be provisionally tightened using the Set Screw Starter as described above.



Figure 8
French Rod Bender

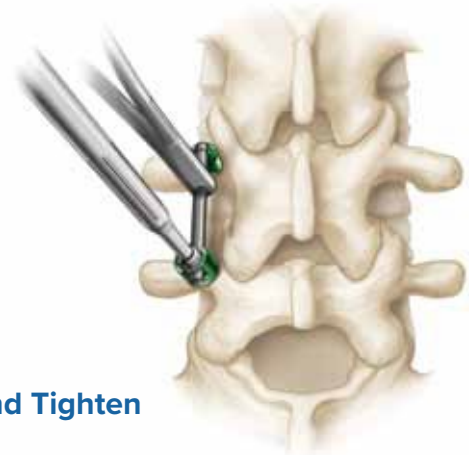


Figure 9
Place Rod and Tighten

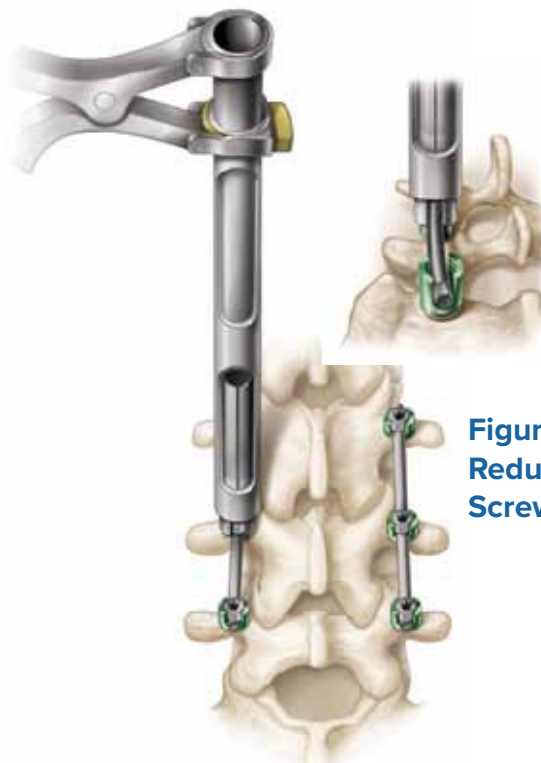


Figure 10
Reduce Rod into Screw

DEROTATION, COMPRESSION AND DISTRACTION (OPTIONAL)

After all of the Set Screws have been provisionally inserted into the Screw housing, the De-rotator may be used to rotate the contoured Rod into the desired position. While the Rod is held in place with the De-rotator, the Set Screws are tightened using the Set Screwdriver attached to the T-Handle Torque Limiting Driver (Figure 11).

The Compressor or Distractor can also be used to apply final compression or distraction to the construct. Once the desired compression or distraction is accomplished, the Set Screws can be tightened using the Set Screwdriver attached to the T-Handle Torque Limiting Driver (Figure 12).

Counter TORQUE AND FINAL TIGHTENING

After any desired derotation, compression and distraction have been performed, the Set Screwdriver should be attached to the T-Handle Torque Limiting Driver and inserted through the Counter Torque for final tightening of the Set Screws (Figure 13). The Set Screw should be rotated clockwise until the T-Handle clicks, indicating the necessary torque has been applied.

Figure 11
Derotate of Rod



Figure 12
**Compression/
Distraction**

Figure 13
**Final Tightening of
Set Screws**

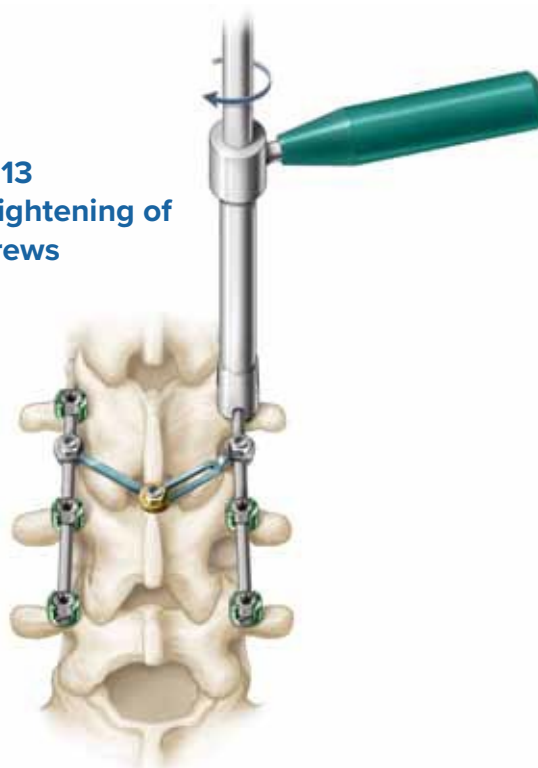


Figure 14
Apply Cross Connector

CROSS CONNECTOR PLACEMENT

A Cross Connector may now be used if desired. Cross Connectors are available in sizes ranging from 30 to 40mm in 5mm increments and in 40 to 70mm in 10mm increments.

The Cross Connector is attached to the Rods either by hand or by using the Cross Connector Nut Starter. The Cross Connector Nut Starter snaps around the arm of the Cross Connector underneath the connector nut (Figure 14). This leaves the nut and rod clamp portion of the Connector free to rotate for proper positioning over the construct. The Connector is pushed down until the rod clamp mechanism clicks onto the Rod. Once positioned onto both Rods, attach the Cross Connector Torque Limiting Wrench to the Nut Driver. Place the Cross Connector Counter Torque onto the Cross Connector Nut that is positioned on either rod. Insert the Nut Driver into the Cross Connector Counter Torque and rotate clockwise until the handle clicks, indicating that the necessary torque has been applied. Repeat this step to tighten the Cross Connector Nut on the second rod. Lastly, place the Cross Connector Counter Torque on the central nut of the Cross Connector, and use the Nut Driver to tighten this nut (Figure 15).

Note: It is important to ensure that the nuts on both of the rods are tightened prior to tightening the central nut.

SCREW REMOVAL

The Reversible Polyaxial Screwdriver is available for removal and readjustment of the Polyaxial Screws. To accomplish this, the Reversible Polyaxial Screwdriver must first be attached to the Screw by placing the driver shaft at the same angle as the Screw that was initially placed into the pedicle. Next, the Reversible Polyaxial Screwdriver needs to be secured tightly onto the Screw by rotating the central locking wheel clockwise. Now the Screw may be backed out by holding the shaft and turning the handle counterclockwise.



Figure 15
Final Tightening of
Cross Connectors

Proliant Implant Listing

Catalog Number

Part Description

05-050-00-4530 Proliant 5.5mm Polyaxial Screw, 4.5mm x 30mm
 05-050-00-4535 Proliant 5.5mm Polyaxial Screw, 4.5mm x 35mm
 05-050-00-4540 Proliant 5.5mm Polyaxial Screw, 4.5mm x 40mm
 05-050-00-4545 Proliant 5.5mm Polyaxial Screw, 4.5mm x 45mm



05-050-00-5535 Proliant 5.5mm Polyaxial Screw, 5.5mm x 35mm
 05-050-00-5540 Proliant 5.5mm Polyaxial Screw, 5.5mm x 40mm
 05-050-00-5545 Proliant 5.5mm Polyaxial Screw, 5.5mm x 45mm
 05-050-00-5550 Proliant 5.5mm Polyaxial Screw, 5.5mm x 50mm
 05-050-00-5555 Proliant 5.5mm Polyaxial Screw, 5.5mm x 55mm



05-050-00-6535 Proliant 5.5mm Polyaxial Screw, 6.5mm x 35mm
 05-050-00-6540 Proliant 5.5mm Polyaxial Screw, 6.5mm x 40mm
 05-050-00-6545 Proliant 5.5mm Polyaxial Screw, 6.5mm x 45mm
 05-050-00-6550 Proliant 5.5mm Polyaxial Screw, 6.5mm x 50mm
 05-050-00-6555 Proliant 5.5mm Polyaxial Screw, 6.5mm x 55mm



05-050-00-7535 Proliant 5.5mm Polyaxial Screw, 7.5mm x 35mm
 05-050-00-7540 Proliant 5.5mm Polyaxial Screw, 7.5mm x 40mm
 05-050-00-7545 Proliant 5.5mm Polyaxial Screw, 7.5mm x 45mm
 05-050-00-7550 Proliant 5.5mm Polyaxial Screw, 7.5mm x 50mm
 05-050-00-7555 Proliant 5.5mm Polyaxial Screw, 7.5mm x 55mm



05-050-00-8535 Proliant 5.5mm Polyaxial Screw, 8.5mm x 35mm
 05-050-00-8540 Proliant 5.5mm Polyaxial Screw, 8.5mm x 40mm
 05-050-00-8545 Proliant 5.5mm Polyaxial Screw, 8.5mm x 45mm
 05-050-00-8550 Proliant 5.5mm Polyaxial Screw, 8.5mm x 50mm
 05-050-00-8555 Proliant 5.5mm Polyaxial Screw, 8.5mm x 55mm



05-050-04-0000 Proliant Set Screw for 5.5mm rod



05-050-02-5540 Proliant 5.5mm Polyaxial Reduction Screw, 5.5mm x 40mm
 05-050-02-5545 Proliant 5.5mm Polyaxial Reduction Screw, 5.5mm x 45mm
 05-050-02-5550 Proliant 5.5mm Polyaxial Reduction Screw, 5.5mm x 50mm

05-050-02-6540 Proliant 5.5mm Polyaxial Reduction Screw, 6.5mm x 40mm
 05-050-02-6545 Proliant 5.5mm Polyaxial Reduction Screw, 6.5mm x 45mm
 05-050-02-6550 Proliant 5.5mm Polyaxial Reduction Screw, 6.5mm x 50mm



05-050-02-7540 Proliant 5.5mm Polyaxial Reduction Screw, 7.5mm x 40mm
 05-050-02-7545 Proliant 5.5mm Polyaxial Reduction Screw, 7.5mm x 45mm
 05-050-02-7550 Proliant 5.5mm Polyaxial Reduction Screw, 7.5mm x 50mm

Proliant Implant Listing

Catalog Number

Part Description

05-052-01-0040	Rod, 5.5mm x 40mm, Curved
05-052-01-0045	Rod, 5.5mm x 45mm, Curved
05-052-01-0050	Rod, 5.5mm x 50mm, Curved
05-052-01-0055	Rod, 5.5mm x 55mm, Curved
05-052-01-0060	Rod, 5.5mm x 60mm, Curved
05-052-01-0065	Rod, 5.5mm x 65mm, Curved
05-052-01-0070	Rod, 5.5mm x 70mm, Curved
05-052-01-0075	Rod, 5.5mm x 75mm, Curved
05-052-01-0080	Rod, 5.5mm x 80mm, Curved
05-052-01-0090	Rod, 5.5mm x 90mm, Curved
05-052-01-0100	Rod, 5.5mm x 100mm, Curved
05-052-01-0110	Rod, 5.5mm x 110mm, Curved



05-052-00-0200	Rod, 5.5mm x 200mm, Straight
05-052-00-0300	Rod, 5.5mm x 300mm, Straight



05-054-00-3035	Proliant 5.5mm Cross Connector, 30mm-35mm
05-054-00-3540	Proliant 5.5mm Cross Connector, 35mm-40mm
05-054-00-4050	Proliant 5.5mm Cross Connector, 40mm-50mm
05-054-00-5060	Proliant 5.5mm Cross Connector, 50mm-60mm
05-054-00-6070	Proliant 5.5mm Cross Connector, 60mm-70mm



27152	Straight Probe
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05-059-10-0000	Curved Probe
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28254	Straight Tester
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28256	Guide Pin
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28257	Guide Pin, Grooved
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28258	Depth Gauge
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28277	Ratchet Straight Handle
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28278

Modular T-Handle

28279

Ratchet T-Handle

05-059-00-0000

Counter Torque, Cross Connector

05-059-01-4500

Proliant Tap, 4.5mm

05-059-01-4555

Proliant Tap Sleeve

05-059-01-5500

Proliant Tap, 5.5mm

05-059-02-5500

Proliant Tap, 6.5mm

05-059-02-6500

Proliant Tap, 6.5mm

05-059-01-6585

Proliant Tap Sleeve

05-059-02-7500

Proliant Tap, 7.5mm

05-059-02-8500

Proliant Tap, 8.5mm



05-059-14-0001

Proliant Head Turner

05-059-27-0000

Compressor

05-059-28-0000

In-situ Bender, Left, 5.5mm

05-059-29-0000

In-situ Bender, Right, 5.5mm

05-059-42-0000

Bone Awl

05-059-46-0000

Cross Connector Nut Starter

05-059-50-0000

Tab Breaker, Reduction Screw



Proliant Instrument Listing

Catalog Number

Part Description

05-059-02-0000 Cross Connector Nut Driver



05-059-03-0000 Cross Connector Torque Limiting Driver Handle



05-059-10-0000 Curved Probe



05-059-12-0000 Proliant Screwdriver, Hexalobe



05-059-12-0001 Proliant Retaining Screwdriver



05-059-13-0000 Torque Limiting T-Handle, Hudson



05-059-14-0000 Counter Torque



05-059-15-0000 Proliant Reversible Screwdriver



05-059-16-0000 Persuader, Cylinder Style



05-059-17-0000 Persuader, Pistol Grip



05-059-18-0000 Proliant Set Screw Starter



05-059-19-0000 Proliant Set Screwdriver



05-059-20-0000 Rod Pusher, 5.5mm



05-059-22-0000 Rod Holder, 5.5mm



05-059-24-0000 De-rotator



05-059-25-0000 Rod Bender, French Style

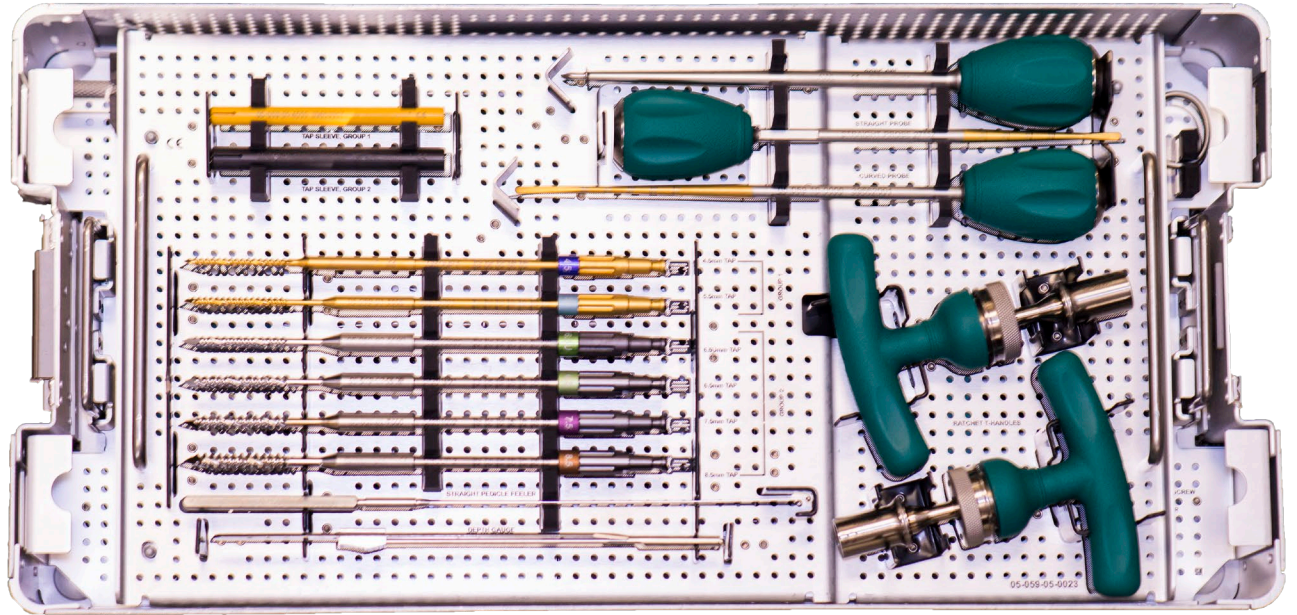


05-059-26-0000 Distractor

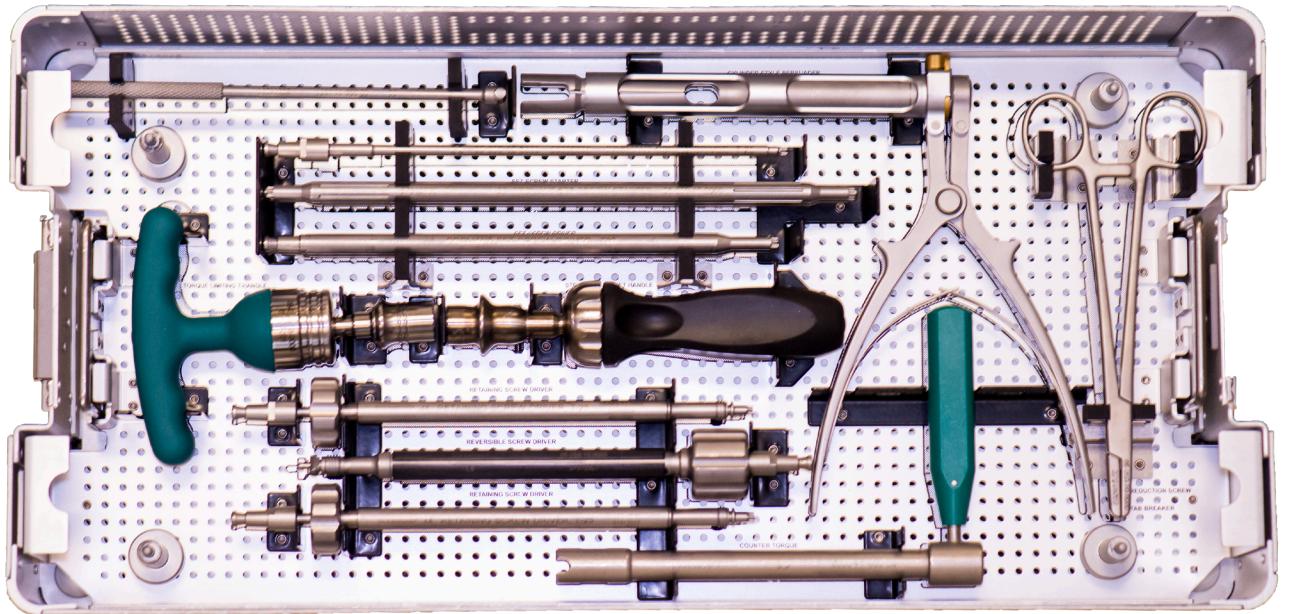


Proliant LE Part Numbers

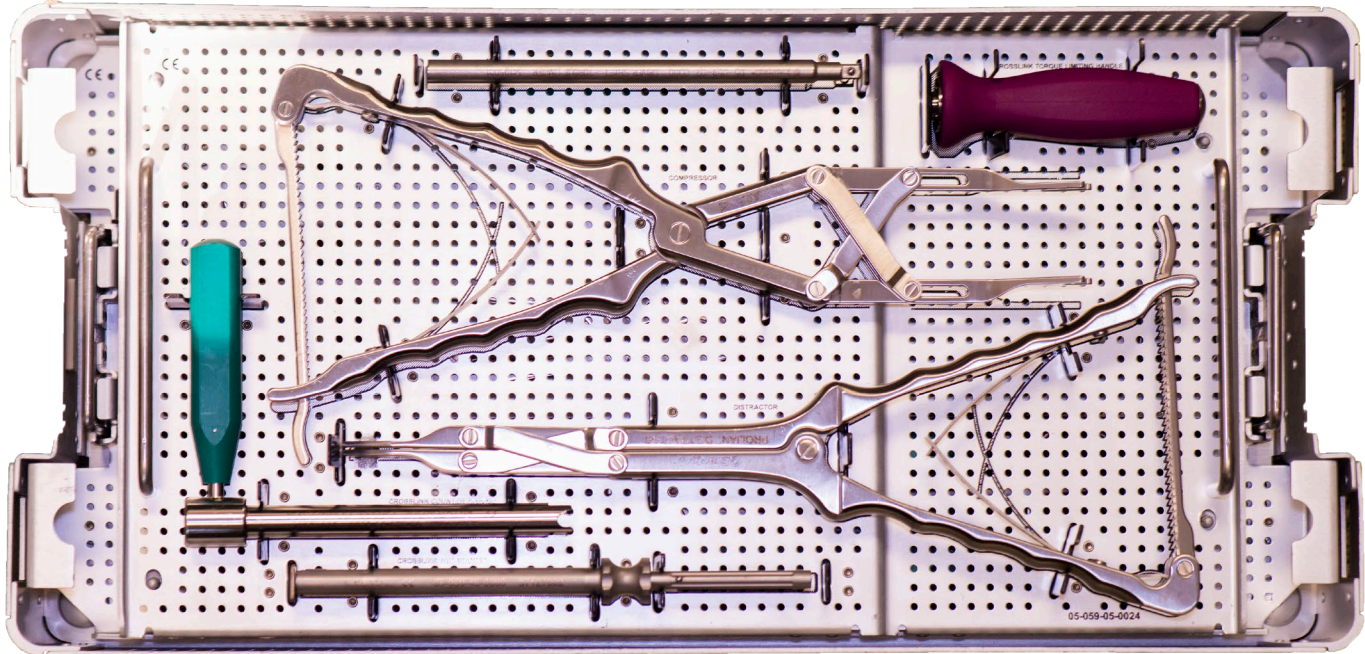
Part Number	Part Description		
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05-050-10-4530	PRO,LE, SCREW, MONO, 4.5 x 30	05-050-12-5540	PRO,LE, CONNECTOR, OFFSET, 40
05-050-10-4535	PRO,LE, SCREW, MONO, 4.5 x 35	05-050-12-5550	PRO,LE, CONNECTOR, OFFSET, 50
05-050-10-4540	PRO,LE, SCREW, MONO, 4.5 x 40	05-050-12-5560	PRO,LE, CONNECTOR, OFFSET, 60
05-050-10-4545	PRO,LE, SCREW, MONO, 4.5 x 45	05-050-12-5599	PRO,LE, CONNECTOR, OFFSET, 100
05-050-10-4550	PRO,LE, SCREW, MONO, 4.5 x 55	05-050-12-7001	PRO,LE, CONNECTOR, R TO R INLINE
05-050-10-4555	PRO,LE, SCREW, MONO, 4.5 x 55	05-050-12-7002	PRO,LE, CONNECTOR, SIDE BY SIDE
05-050-10-4560	PRO,LE, SCREW, MONO, 4.5 x 60	05-052-02-0200	PRO,LE, ROD, COCR, STRAIGHT, 200
05-050-10-5525	PRO,LE, SCREW, MONO, 5.5 x 25	05-052-02-0300	PRO,LE, ROD, COCR, STRAIGHT, 300
05-050-10-5530	PRO,LE, SCREW, MONO, 5.5 x 30	05-052-02-0480	PRO,LE, ROD, COCR, STRAIGHT, 480
05-050-10-5535	PRO,LE, SCREW, MONO, 5.5 x 35	05-052-12-0040	PRO,LE, ROD, COCR, CURVED, 40
05-050-10-5540	PRO,LE, SCREW, MONO, 5.5 x 40	05-052-12-0045	PRO,LE, ROD, COCR, CURVED, 45
05-050-10-5545	PRO,LE, SCREW, MONO, 5.5 x 45	05-052-12-0050	PRO,LE, ROD, COCR, CURVED, 50
05-050-10-5550	PRO,LE, SCREW, MONO, 5.5 x 50	05-052-12-0055	PRO,LE, ROD, COCR, CURVED, 55
05-050-10-5555	PRO,LE, SCREW, MONO, 5.5 x 55	05-052-12-0060	PRO,LE, ROD, COCR, CURVED, 60
05-050-10-5560	PRO,LE, SCREW, MONO, 5.5 x 60	05-052-12-0065	PRO,LE, ROD, COCR, CURVED, 65
05-050-10-6525	PRO,LE, SCREW, MONO, 6.5 x 25	05-052-12-0070	PRO,LE, ROD, COCR, CURVED, 70
05-050-10-6530	PRO,LE, SCREW, MONO, 6.5 x 30	05-052-12-0075	PRO,LE, ROD, COCR, CURVED, 75
05-050-10-6535	PRO,LE, SCREW, MONO, 6.5 x 35	05-052-12-0080	PRO,LE, ROD, COCR, CURVED, 80
05-050-10-6540	PRO,LE, SCREW, MONO, 6.5 x 40	05-052-12-0090	PRO,LE, ROD, COCR, CURVED, 90
05-050-10-6545	PRO,LE, SCREW, MONO, 6.5 x 45	05-052-12-0100	PRO,LE, ROD, COCR, CURVED, 100
05-050-10-6550	PRO,LE, SCREW, MONO, 6.5 x 50	05-052-12-0110	PRO,LE, ROD, COCR, CURVED, 110
05-050-10-6555	PRO,LE, SCREW, MONO, 6.5 x 55		
05-050-10-6560	PRO,LE, SCREW, MONO, 6.5 x 60		
05-050-10-7540	PRO,LE, SCREW, MONO, 7.5 x 40		
05-050-10-7545	PRO,LE, SCREW, MONO, 7.5 x 45		
05-050-10-7550	PRO,LE, SCREW, MONO, 7.5 x 50		
05-050-10-7555	PRO,LE, SCREW, MONO, 7.5 x 55		
05-050-10-7560	PRO,LE, SCREW, MONO, 7.5 x 60		
05-050-10-7565	PRO,LE, SCREW, MONO, 7.5 x 65		
05-050-10-7570	PRO,LE, SCREW, MONO, 7.5 x 70		
05-050-10-7575	PRO,LE, SCREW, MONO, 7.5 x 75		
05-050-10-7580	PRO,LE, SCREW, MONO, 7.5 x 80		
05-050-10-7585	PRO,LE, SCREW, MONO, 7.5 x 85		
05-050-10-7590	PRO,LE, SCREW, MONO, 7.5 x 90		
05-050-10-8540	PRO,LE, SCREW, MONO, 8.5 x 40		
05-050-10-8545	PRO,LE, SCREW, MONO, 8.5 x 45		
05-050-10-8550	PRO,LE, SCREW, MONO, 8.5 x 50		
05-050-10-8555	PRO,LE, SCREW, MONO, 8.5 x 55		
05-050-10-8560	PRO,LE, SCREW, MONO, 8.5 x 60		
05-050-10-8565	PRO,LE, SCREW, MONO, 8.5 x 65		
05-050-10-8570	PRO,LE, SCREW, MONO, 8.5 x 70		
05-050-10-8575	PRO,LE, SCREW, MONO, 8.5 x 75		
05-050-10-8580	PRO,LE, SCREW, MONO, 8.5 x 80		
05-050-10-8585	PRO,LE, SCREW, MONO, 8.5 x 85		
05-050-10-8590	PRO,LE, SCREW, MONO, 8.5 x 90		
05-050-12-0001	PRO,LE, HOOK, LAMINA, NARROW, SM		
05-050-12-0003	PRO,LE, HOOK, LAMINA, NARROW, LG		
05-050-12-1001	PRO,LE, HOOK, PEDICLE, SMALL		
05-050-12-1003	PRO,LE, HOOK, PEDICLE, LARGE		
05-050-12-2003	PRO,LE, HOOK, OFFSET, LEFT, LRG		
05-050-12-3003	PRO,LE, HOOK, OFFSET, RIGHT, LRG		
05-050-12-5520	PRO,LE, CONNECTOR, OFFSET, 20		



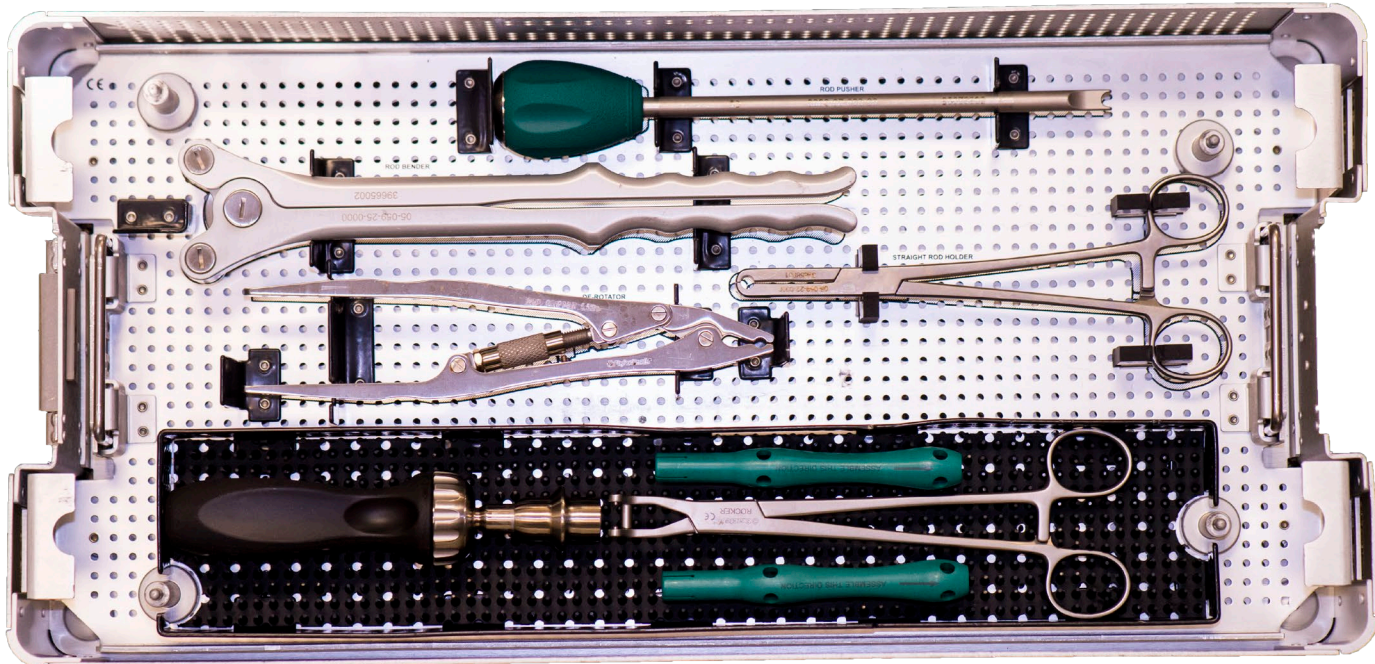
Instrument Tray 1 Top



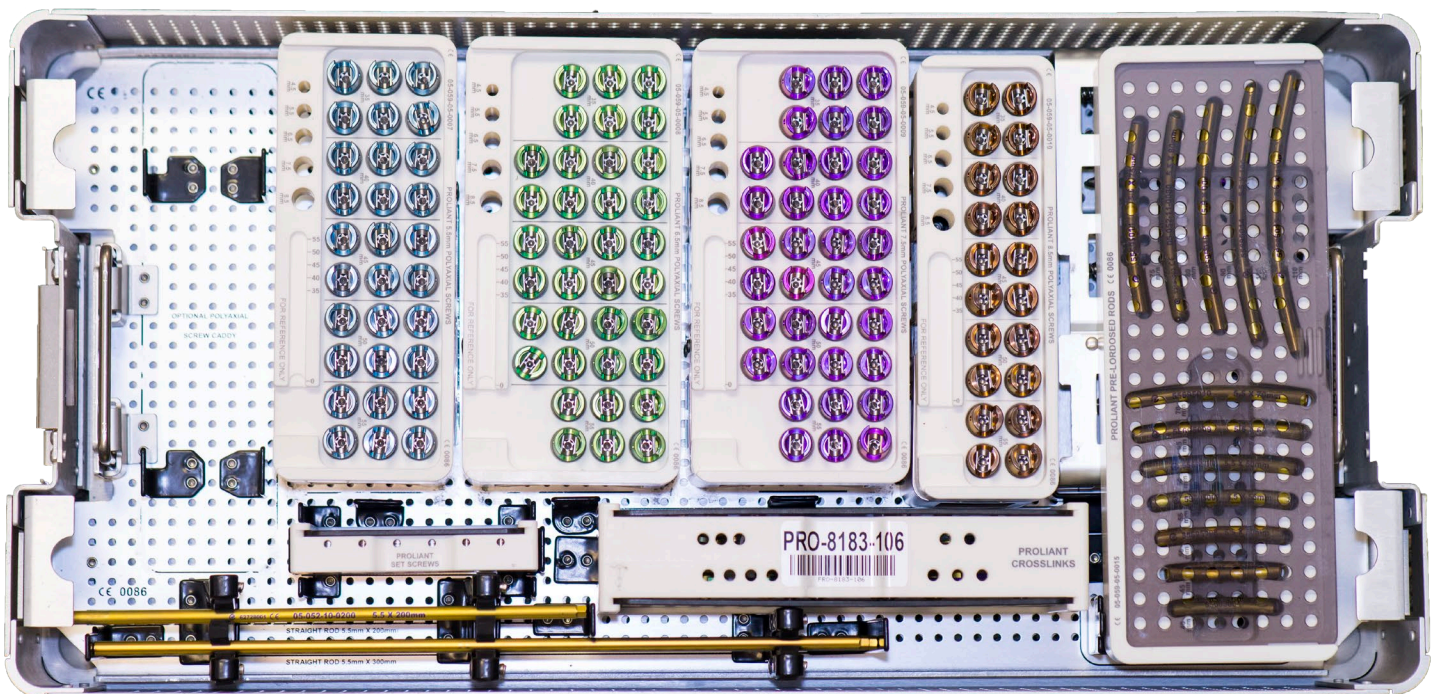
Instrument Tray 1 Bottom



Instrument Tray 2 Top



Instrument Tray 2 Bottom



Implant Tray

Indications for Use

DEVICE DESCRIPTION:

The ChoiceSpine Proliant Posterior Pedicle Screw and Hook Fixation System is a top-loading spinal fixation system including screws, rods, and connectors for fixation to the thoracic, lumbar and sacral spine. Various sizes of the implants are provided. The components are manufactured from titanium alloy (Ti-6Al-4V ELI as described by ASTM F136) with rods being available in both titanium alloy and cobalt chrome alloy (Co-28Cr-6Mo, per ASTM F1537). The Proliant Posterior Pedicle Screw and Hook Fixation System components are provided clean and non-sterile. The products must be steam sterilized by the hospital prior to use.

INDICATIONS FOR USE:

The Proliant Posterior Pedicle Screw and Hook 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 acute and chronic instabilities or deformities of the thoracic, lumbar, and sacral spine.

The Proliant Posterior Pedicle Screw and Hook Fixation System is intended for posterior, noncervical pedicle and non-pedicle fixation for the following indications: (DDD) degenerative disc disease (defined as back pain of discogenic origin with degeneration of the disc confirmed by history and radiographic studies); spondylolisthesis including severe spondylolisthesis (Grade 3 & 4) of L5-S1 vertebra; degenerative spondylolisthesis with objective evidence of neurologic impairment; trauma (i.e., fracture or dislocation); spinal stenosis; curvature (i.e., scoliosis, kyphosis, and/or lordosis); tumor; and failed previous fusion (pseudoarthrosis).

CONTRAINDICATIONS

Contraindications for the Proliant Posterior Pedicle Screw and Hook Fixation System are similar to those of other systems of similar design, and include, but are not limited to:

- Active infectious process in the patient, particularly in or adjacent to the spine or spinal structures
- Morbid obesity
- Pregnancy
- Grossly distorted anatomy (e.g., congenital abnormalities)

and bone abnormalities (e.g., bone absorption, osteopenia, or osteoporosis) preventing safe screw fixation

- Any medical or surgical condition which would preclude the potential benefit of spinal implant surgery
- Suspected or documented metal allergy or intolerance

WARNINGS AND PRECAUTIONS

The Proliant Posterior Pedicle Screw and Hook Fixation System should only be implanted by experienced spinal surgeons with specific training in the use of this pedicle screw spinal system because this is a technically demanding procedure presenting a risk of serious injury to the patient. In addition, based on the fatigue test results, the surgeon should consider the levels of implantation, patient weight, patient activity level, and other patient conditions (e.g., smoking, occupation), which may impact on the performance of the system.

The Proliant Posterior Pedicle Screw and Hook Fixation System has not been evaluated for safety and compatibility in the MR environment. The Proliant Posterior Pedicle Screw and Hook Fixation System has not been tested for heating, migration, or image artifact in the MR environment. The safety of the Proliant Posterior Pedicle Screw and Hook Fixation System in the MR environment is unknown. Scanning a patient who has this device may result in patient injury.



400 Erin Drive, Knoxville, TN 37919 | O: 865.246.3333 | F: 865.246.3334 | choicespine.com

LIT# Proliant STG | REV E | 9/19