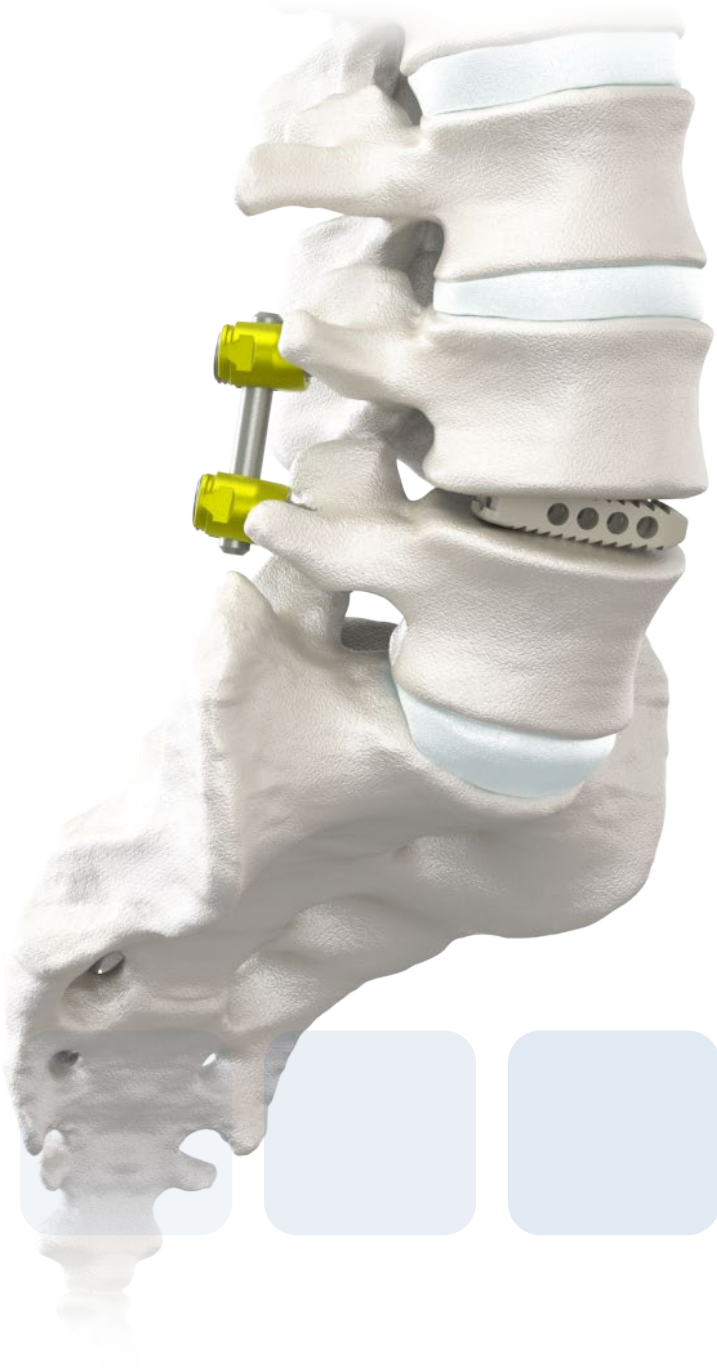

HumanTech Spine

ADONIS®

Unilateral Lumbar Interbody Fusion

UniLIF

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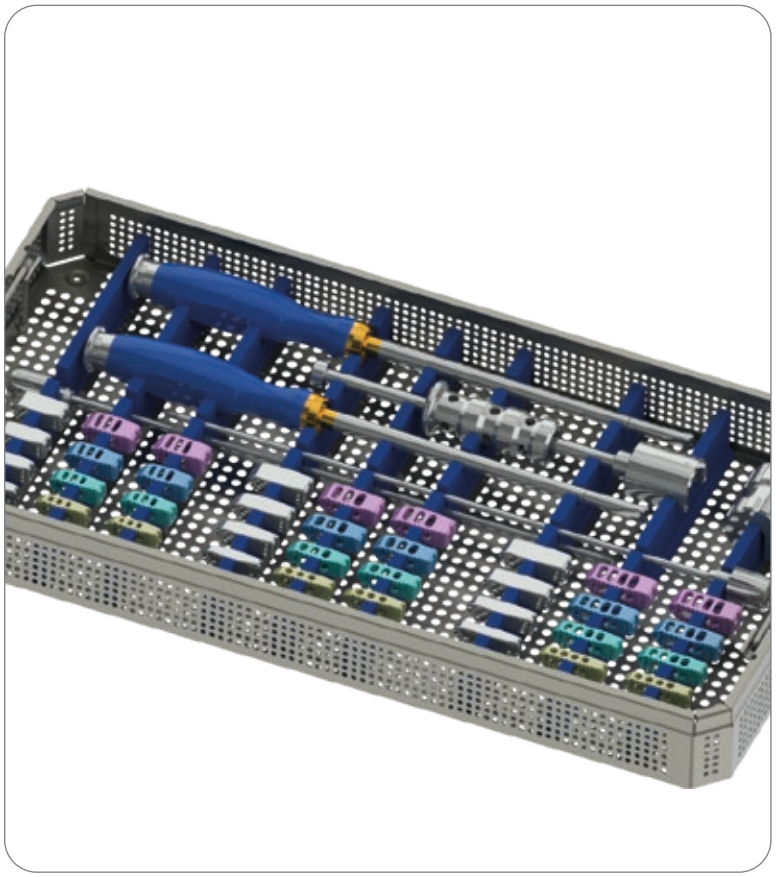


The German family company HumanTech Spine, based in Baden Württemberg, develops, manufactures and sells high-quality, innovative spine systems worldwide.

Our traditional group of companies, which was founded in 1948, is a reliable employer for around 500 employees and has a production area of approx. 15000 m², in which our complete product portfolio is manufactured. Our high-tech production facilities as well as the most modern, environmentally friendly production and logistics processes guarantee high-quality and in-time production and delivery processes.

The independent medical division with a focus on Spine and Dental was founded in 2010 and is now well-known represented on the national and international markets. Together with renowned spinal surgeons, our development team breaks new ground every day to ensure that every patient receives uncompromisingly high quality care. The design of our systems follows the goal of maximum user-friendliness, security and completeness.

That is why HumanTech Spine counts as a reliable partner in the field of spine - in research, development, production and marketing as well as in advanced training through our HumanTech Academy. All from a single source. This is how we ensure our quality promise 100% Made in Germany.

The UniLIF technique works with unilateral access to the intervertebral disc space. As a result, the UniLIF procedure provides unilateral posterior access to a "360°" fusion, which offers, among other things, the following advantages over the PLIF technique:

- Preservation of the vertebral arch
- Preservation of the contralateral facet
- Minimal dural retraction
- Reduced risk of intradural scarring
- Revision strategy – only unilateral scarring

ADONIS®-UniLIF is an intelligent and, by virtue of the associated set of instruments, highly rational interbody device system that is a widely recognised and accepted product line offering the following benefits:

Anatomical

- The geometry is identical to the patient's own sectional and sagittal anatomy
- Generous contact surface – reduced risk of migration

Stable

- Antegrade toothing for stable anchoring
- Contact surfaces for secure and permanent high-precision seating
- Significantly increased extraction forces

Fillable

- Large filling aperture for rapid fusion
- The conically shaped geometry of the cage which runs to the centre of the implant holds the filling material in the cage and increases the filling volume

Modular

Thanks to the choice of 2 materials:

• **Titanium alloy Ti6Al4V**
The titanium alloy Ti6Al4V has proven to be particularly biocompatible.

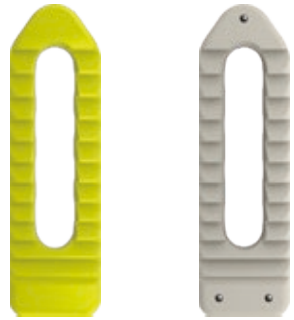
• **PEEK**
This material is biocompatible and is characterised by elasticity similar to that of bone. Another advantage is the fact that the material does not cause artefacts.

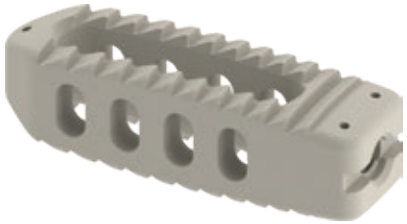
Made in Germany

ADONIS® -UniLIF

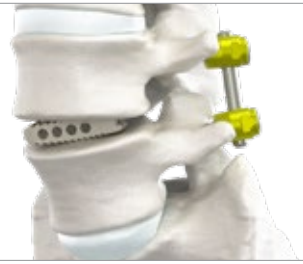
Interbody Device System

Product-specific benefits





- Anatomical
- Stable
- Fillable
- Modular



ADONIS®-UniLIF Titan

ADONIS®-UniLIF Titanium is a solid titanium interbody device system, making it a universally recognised product line for lumbar and lumbosacral indications. Combined with reliable and simple instrumentation, ADONIS®-UniLIF Titanium becomes the solution for lumbar and lumbosacral interbody fusion.

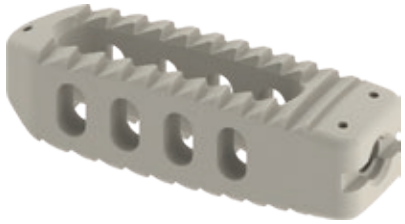
Only titanium alloy Ti6Al4V (DIN EN ISO 5832-3) is used. The titanium cages are available both as sterile-packed implants and in non-sterile form, stored directly in the implant tray.

TITANIUM

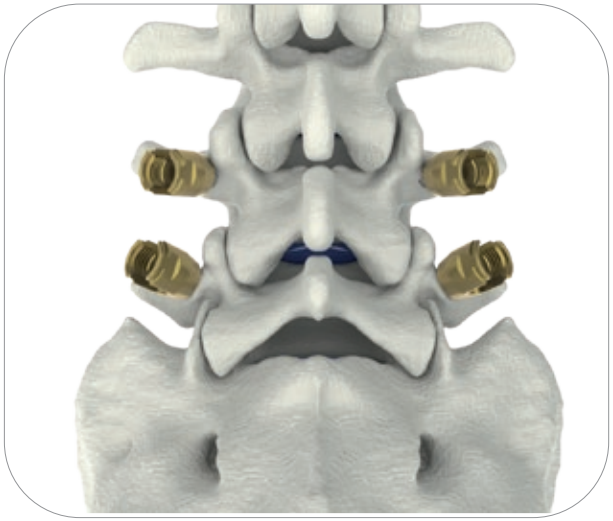
ADONIS®-UniLIF PEEK

ADONIS®-UniLIF PEEK is an implant made from biocompatible PEEK-Optima® for the thoracolumbar and lumbosacral interbody fusion used to treat degenerative disc diseases and instabilities.

PEEK-OPTIMA® is a polyaromatic, semicrystalline thermoplastic, based on the formula$[\text{-C6H4-O-C6H4-O-C6H4-CO-}]_n$, commonly known as polyetheretherketone. The radiotranslucent material allows quick and easy assessment of the bone structure and the fusion process. X-ray markers serve to verify positioning. A mechanical stability of 3.6 GPa allows for optimal load transmission between the implant material and natural bone.



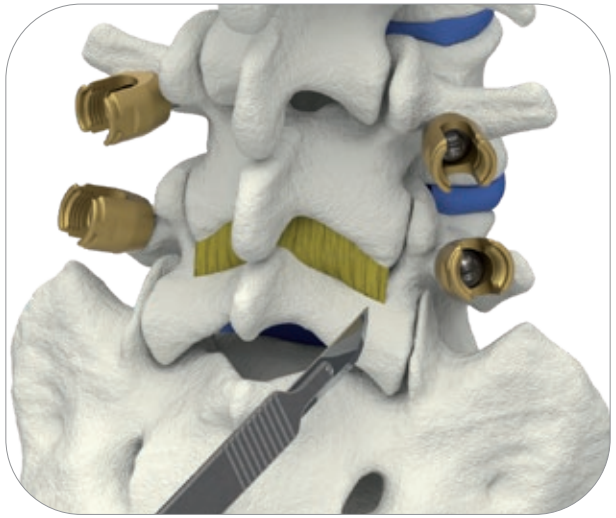
PEEK



Inserting the pedicle screws

For stabilisation, an additional dorsal fixation (e.g. with the VENUS® screw rod system) is necessary. The additional stabilisation can be done either before or after the insertion of the cages, depending on the individual surgical methodology.

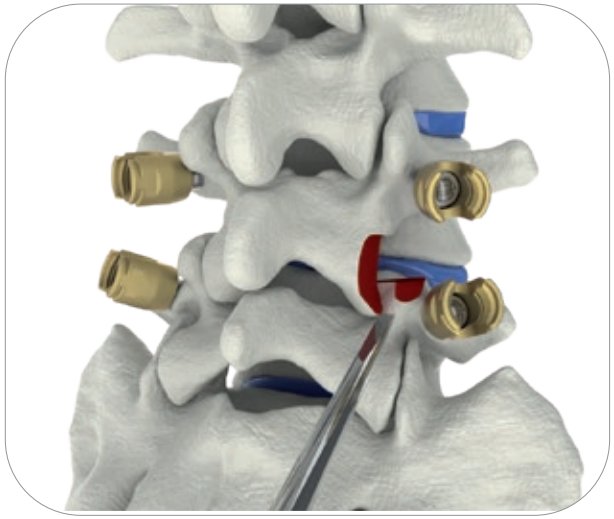
Details can be found in the respective surgical technique of the dorsal system used.



Removal of the ligamentum flavum

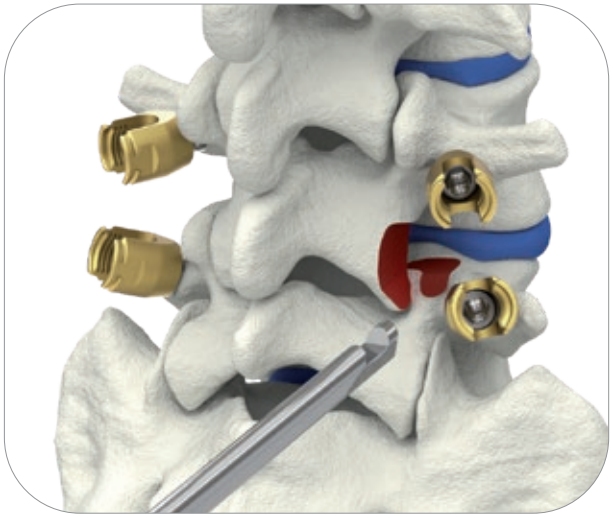
To gain transforaminal access to the disc space, a unilateral facetectomy is performed. Often, the site is targeted for access according to the location of the disease or the presence of scar tissue.

The ligamentum flavum is removed from the front of the lamina.



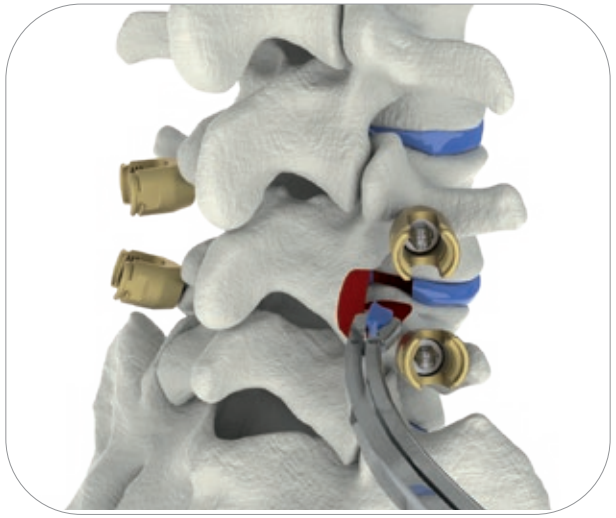
Preparation of the window for the transforaminal approach

The lower articular process is resected. The capsule part of the ligamentum flavum is now visible and can be separated. Now the upper articular process is resected to expose the foramen intervertebralis.



Final access to the disc

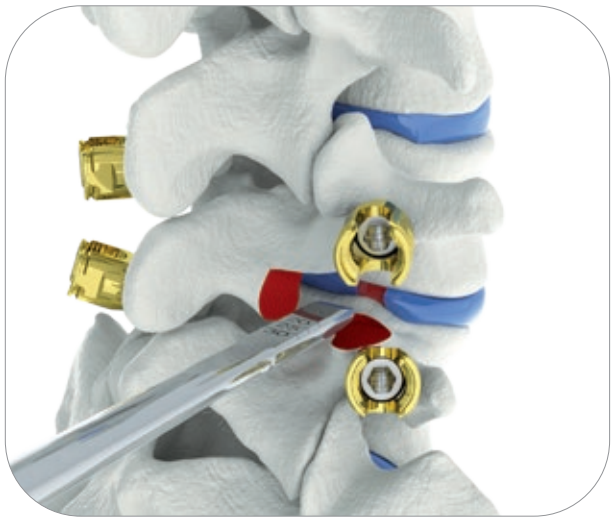
The pedicle is prepared by removing the overhanging upper articular process to gain final access to the disc. Complete meticulous haemostasis must be ensured at the entry point of the disc space. Care should primarily be taken to observe the exiting nerve root and the lateral part of the dural sac. These structures can be protected at every stage of the operation with a dissector or nerve root retractor. A box-shaped cut in the annulus creates a window into the intervertebral disc space.



Preparation of the intervertebral disc space

Remove the disc material and the cartilaginous layer of the endplates to expose the bony endplate structure.
Improper preparation can result in weakening of the endplates and collapse of the cage.

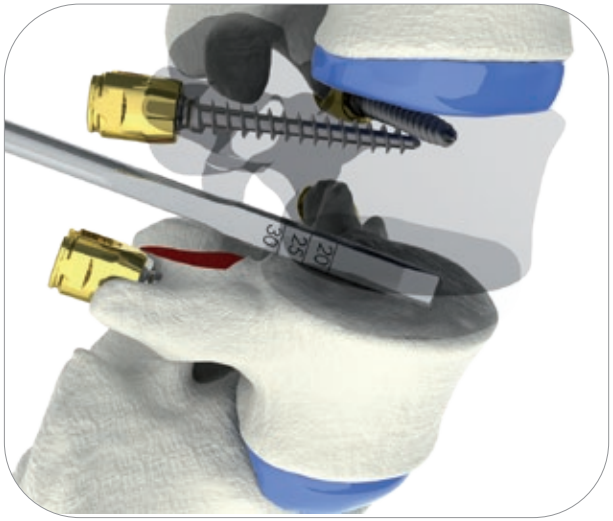
Note:
Corresponding preparation instruments such as curettes in various embodiments and sharp spoons are included in the optionally available Disc Evacuation Set.



Initial distraction

An initial distraction of the intervertebral space is required to obtain access to the intervertebral disc for a radical discectomy. A distraction can be achieved by one of the following methods:
• Distraction via pedicle screws
• Distraction via the spinous processes
• Distraction via spreader (Reamer Distractor, sharp or blunt)
The start spreader is inserted horizontally into the collapsed intervertebral disc space and then rotated 90 degrees to achieve distraction.

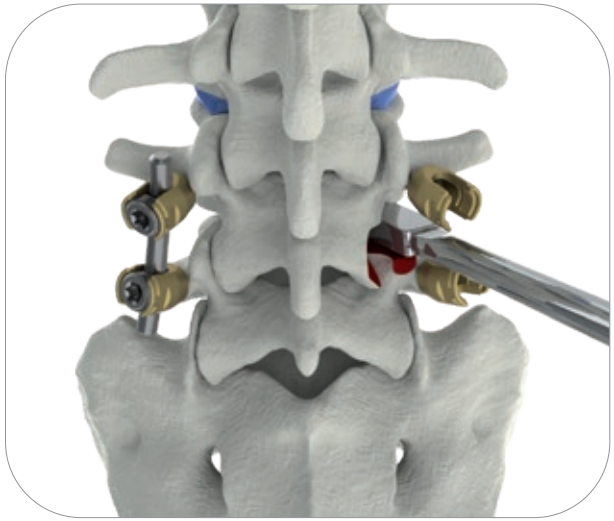
Note:
The sharp and blunt spreaders (Reamer Distractor sharp and blunt) are available in various dimensions according to implant heights in the optionally available Disc Evacuation Set.



Further distraction of the intervertebral disc space

Further distraction of the disc space prior to cage insertion can be achieved by utilising the range of distractors in the cleaned-out and prepared disc space. The distractors are used sequentially until the appropriate annular tension has been achieved.

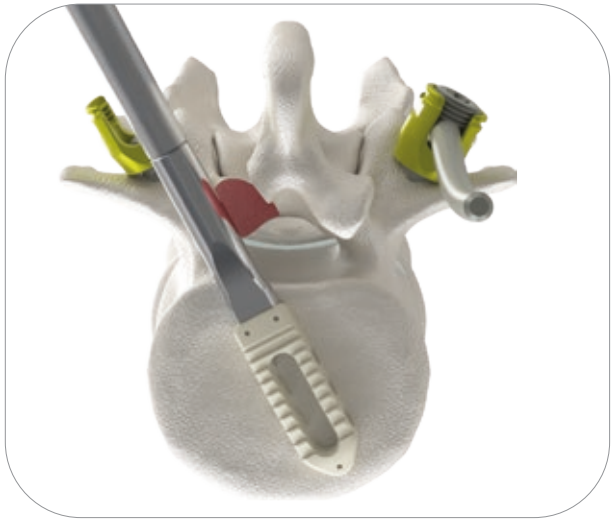
To maintain the distraction, the posterior instrumentation can be locked on the contralateral side.



Determine the implant size

The correct implant size can be determined under X-ray control using the trial implants (UniLIF Trial). To connect the trial implant to the insertion instrument (PLIF inserter), the bar of the insertion instrument must be positioned in the groove of the trial implant. By screwing the inner part of the insertion instrument into the trial implant, the insertion instrument is fixed to the trial implant.
Subsequently, the trial implant is optionally introduced by light hammer taps into the intervertebral disc space. If the seat is unsatisfactory, the next size of the trial implant should be used.
The trial implant must sit with a light press-fit into the intervertebral space and can be removed with the Extractor Handle or the Slap Hammer.

Note:
It must be ensured that the screwing-in of the inner part is carried out smoothly, since otherwise deformations of the threads can occur. If necessary, the alignment of the instruments with each other must be corrected. To avoid jamming when screwing in the inner part, first turn anti-clockwise until there is a clear "snapping in" of the thread. Subsequently, the inner part is screwed fully into the trial implant.



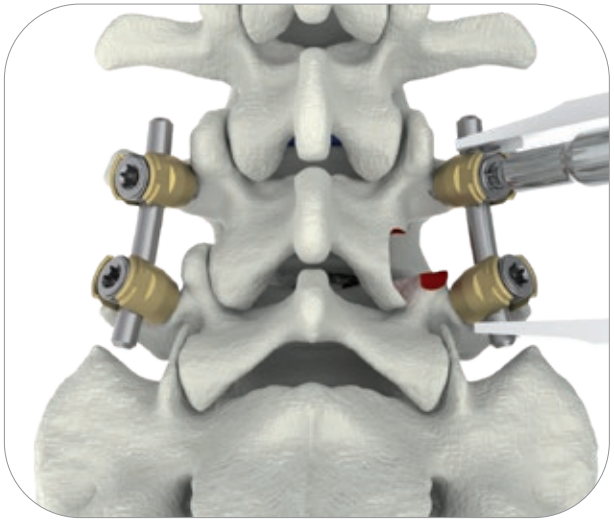
Insertion of the cage

The implant corresponding to the trial implant is selected and the bar of the PLIF Inserter is positioned in the groove of the implant. By screwing the inner part of the insertion instrument into the implant, the insertion instrument is fixed to the implant. Subsequently, the cage can be filled with bone graft. For a solid interbody fusion, the disc space should be filled with as much bone graft or bone substitute as possible.

Note:
To avoid damaging the implant, the implant must be firmly connected to the insertion instrument. It must be ensured that the screwing-in of the inner part is carried out smoothly, since otherwise deformations of the threads can occur. If necessary, the orientation of the instrument to the implant should be corrected. To avoid jamming when screwing in the inner part, first turn anti-clockwise until there is a clear "snapping in" of the thread. Subsequently, the inner part is screwed fully into the implant.

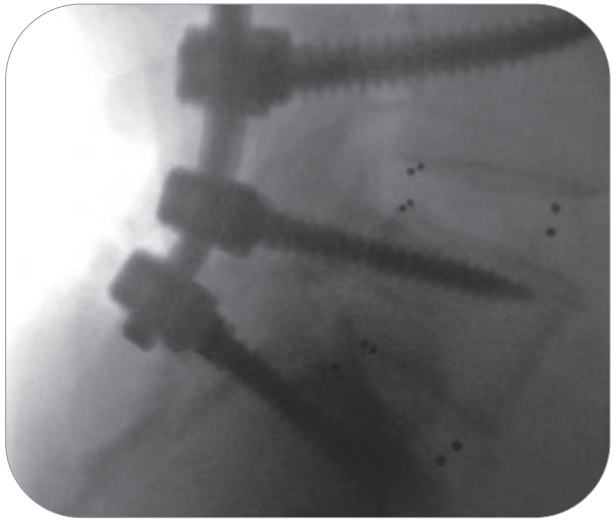
Positioning the cage

After the implant has been correctly positioned, the insertion instrument can be removed, so that the implant remains in its optimum position. To do this, loosen the inner part of the insertion instrument by turning it anti-clockwise and then remove the insertion instrument from the implant. In order to correct the position of the implant, the insertion instrument may also be used. The position of the cages must be checked with respect to the vertebral bodies from the anterior and lateral directions. The X-ray markers inserted in the PEEK implants allow a precise intraoperative radiological assessment of the position.



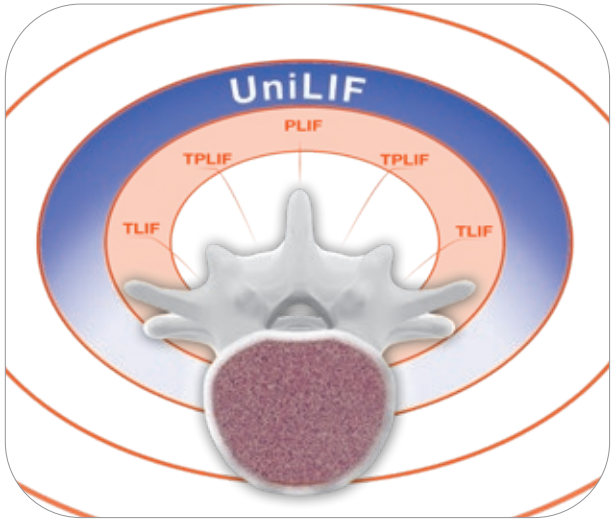
Final compression

The final compression must be done via the dorsal instrumentation.



Final structure/X-rays

Final check on the structure with X-ray control images taken in two planes. Cleanse the surgical area and close the wound.



Application Area

ADONIS®-UniLIF implants are indicated for use in unilateral surgical procedures. In such surgery, an ADONIS®-UniLIF implant can be inserted into the prepared disc space, either by way of the PLIF method or the TLIF method, or alternatively in the whole area in-between. This is possible for open surgery or minimally invasive methods.

AP view
of a centrally positioned UniLIF cage

Sagittal view
of a centrally positioned UniLIF cage

Positioning the markers

To ensure the correct positioning of the cage, the cage must be brought into a central position once it has been inserted into the intervertebral disc space. The six tantalum beads in the UniLIF PEEK cage shown are used for the fluoroscopic representation of the implant's position. This allows the exact location of the cage to be assessed by X-ray images. In the UniLIF PEEK cage, two markers are located medially at the anterior implant end and four are placed to form a rectangle at the posterior implant end. The four rectangular markers show the outer dimensions of the cage. In UniLIF PEEK implants, the four posterior and two anterior markers are visible on the X-ray in an implant placed centrally within the disc space.

AP X-ray view
of a centrally positioned UniLIF cage

Sagittal X-ray view
of a centrally positioned UniLIF cage

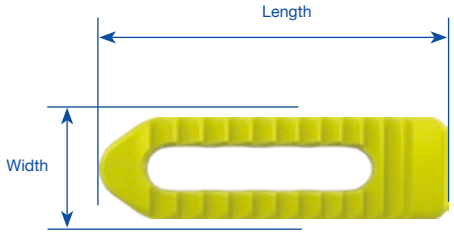
Titanium sterile

STERILE

Item no.	Name	Length	Width	Height	Angle
2001053007-S	Adonis Uni-LIF Ti 30x11x07 0° sterile	30	11	07	0 °
2001053009-S	Adonis Uni-LIF Ti 30x11x09 0° sterile			09	
2001053011-S	Adonis Uni-LIF Ti 30x11x11 0° sterile			11	
2001053013-S	Adonis Uni-LIF Ti 30x11x13 0° sterile			13	
2001053015-S	Adonis Uni-LIF Ti 30x11x15 0° sterile			15	
2001023007-S	Adonis Uni-LIF Ti 34x11x07 0° sterile	34	11	07	0 °
2001023009-S	Adonis Uni-LIF Ti 34x11x09 0° sterile			09	
2001023011-S	Adonis Uni-LIF Ti 34x11x11 0° sterile			11	
2001023013-S	Adonis Uni-LIF Ti 34x11x13 0° sterile			13	
2001023015-S	Adonis Uni-LIF Ti 34x11x15 0° sterile			15	
2001083007-S	Adonis Uni-LIF Ti 38x11x07 0° sterile	38	11	07	0 °
2001083009-S	Adonis Uni-LIF Ti 38x11x09 0° sterile			09	
2001083011-S	Adonis Uni-LIF Ti 38x11x11 0° sterile			11	
2001083013-S	Adonis Uni-LIF Ti 38x11x13 0° sterile			13	
2001083015-S	Adonis Uni-LIF Ti 38x11x15 0° sterile			15	

Titanium non-sterile

Item no.	Name	Length	Width	Height	Angle
2001053007	Adonis Uni-LIF Ti 30x11x07 0°	30	11	07	0 °
2001053009	Adonis Uni-LIF Ti 30x11x09 0°			09	
2001053011	Adonis Uni-LIF Ti 30x11x11 0°			11	
2001053013	Adonis Uni-LIF Ti 30x11x13 0°			13	
2001053015	Adonis Uni-LIF Ti 30x11x15 0°			15	
2001023007	Adonis Uni-LIF Ti 34x11x07 0°	34	11	07	0 °
2001023009	Adonis Uni-LIF Ti 34x11x09 0°			09	
2001023011	Adonis Uni-LIF Ti 34x11x11 0°			11	
2001023013	Adonis Uni-LIF Ti 34x11x13 0°			13	
2001023015	Adonis Uni-LIF Ti 34x11x15 0°			15	
2001083007	Adonis Uni-LIF Ti 38x11x07 0°	38	11	07	0 °
2001083009	Adonis Uni-LIF Ti 38x11x09 0°			09	
2001083011	Adonis Uni-LIF Ti 38x11x11 0°			11	
2001083013	Adonis Uni-LIF Ti 38x11x13 0°			13	
2001083015	Adonis Uni-LIF Ti 38x11x15 0°			15	



PEEK

STERILE

Item no.	Name	Length	Width	Height	Angle
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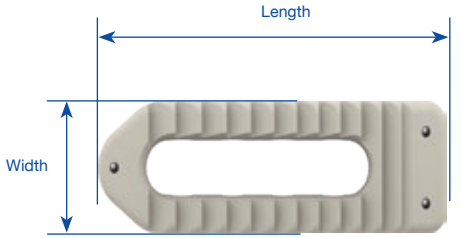
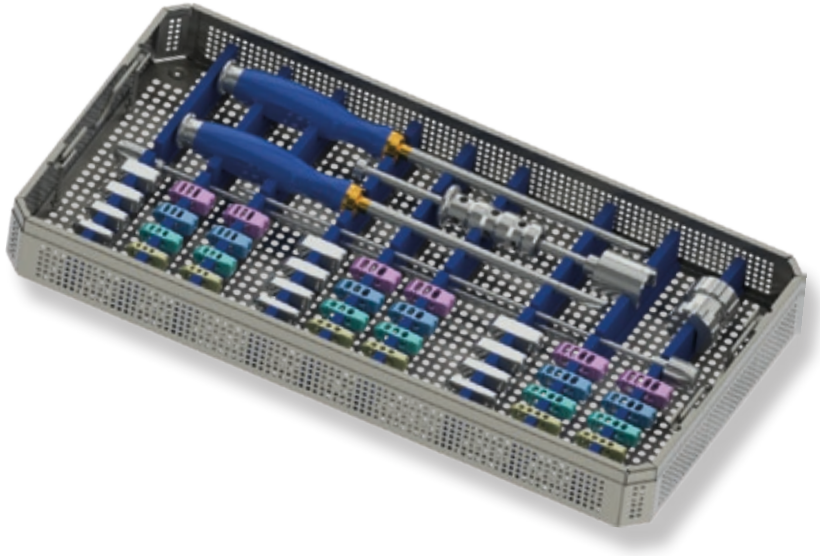
2001043009	Adonis Uni-LIF PEEK 30x11x09 0°			09	
2001043011	Adonis Uni-LIF PEEK 30x11x11 0°			11	
2001043013	Adonis Uni-LIF PEEK 30x11x13 0°			13	
2001043015	Adonis Uni-LIF PEEK 30x11x15 0°			15	
2001073007	Adonis Uni-LIF PEEK 34x11x07 0°	34	11	07	0 °
2001073009	Adonis Uni-LIF PEEK 34x11x09 0°			09	
2001073011	Adonis Uni-LIF PEEK 34x11x11 0°			11	
2001073013	Adonis Uni-LIF PEEK 34x11x13 0°			13	
2001073015	Adonis Uni-LIF PEEK 34x11x15 0°			15	
2001093007	Adonis Uni-LIF PEEK 38x11x07 0°	38	11	07	0 °
2001093009	Adonis Uni-LIF PEEK 38x11x09 0°			09	
2001093011	Adonis Uni-LIF PEEK 38x11x11 0°			11	
2001093013	Adonis Uni-LIF PEEK 38x11x13 0°			13	
2001093015	Adonis Uni-LIF PEEK 38x11x15 0°			15	



Instruments
for ADONIS®-UniLIF

Item no.	Name	Image
2001013007 2001013009 2001013011 2001013013 2001013015	Uni-LIF Trial 30x11x07mm 0° Uni-LIF Trial 30x11x09mm 0° Uni-LIF Trial 30x11x11mm 0° Uni-LIF Trial 30x11x13mm 0° Uni-LIF Trial 30x11x15mm 0°	
2001014007 2001014009 2001014011 2001014013 2001014015	Uni-LIF Trial 34x11x07 0° Uni-LIF Trial 34x11x09 0° Uni-LIF Trial 34x11x11 0° Uni-LIF Trial 34x11x13 0° Uni-LIF Trial 34x11x15 0°	
2001015007 2001015009 2001015011 2001015013 2001015015	Uni-LIF Trial 38x11x07 0° Uni-LIF Trial 38x11x09 0° Uni-LIF Trial 38x11x11 0° Uni-LIF Trial 38x11x13 0° Uni-LIF Trial 38x11x15 0°	
1701010000	PLIF-Inserter	
1701010600	Extractor Handle	 optional
1801010002	Slap Hammer	



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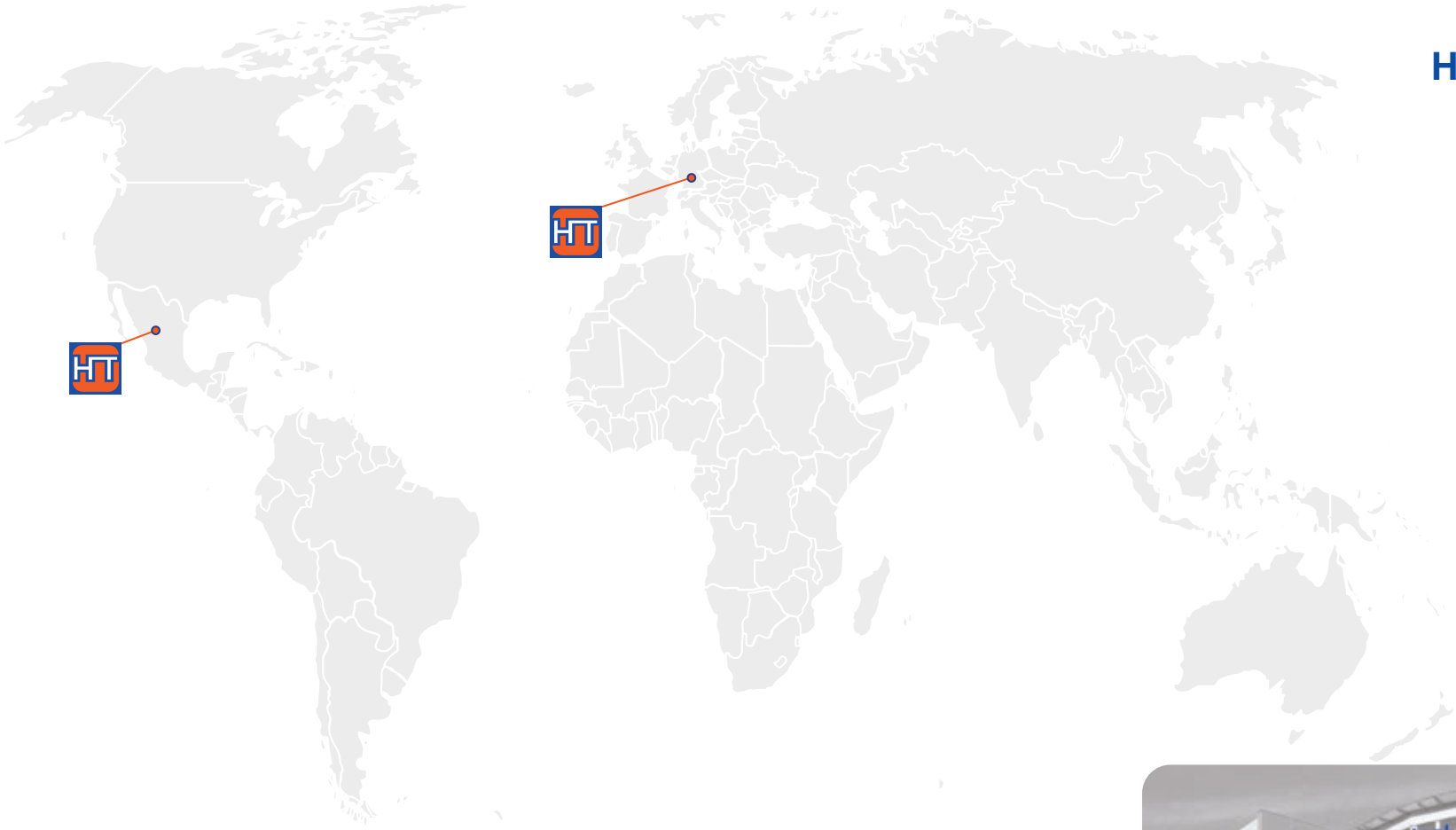

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