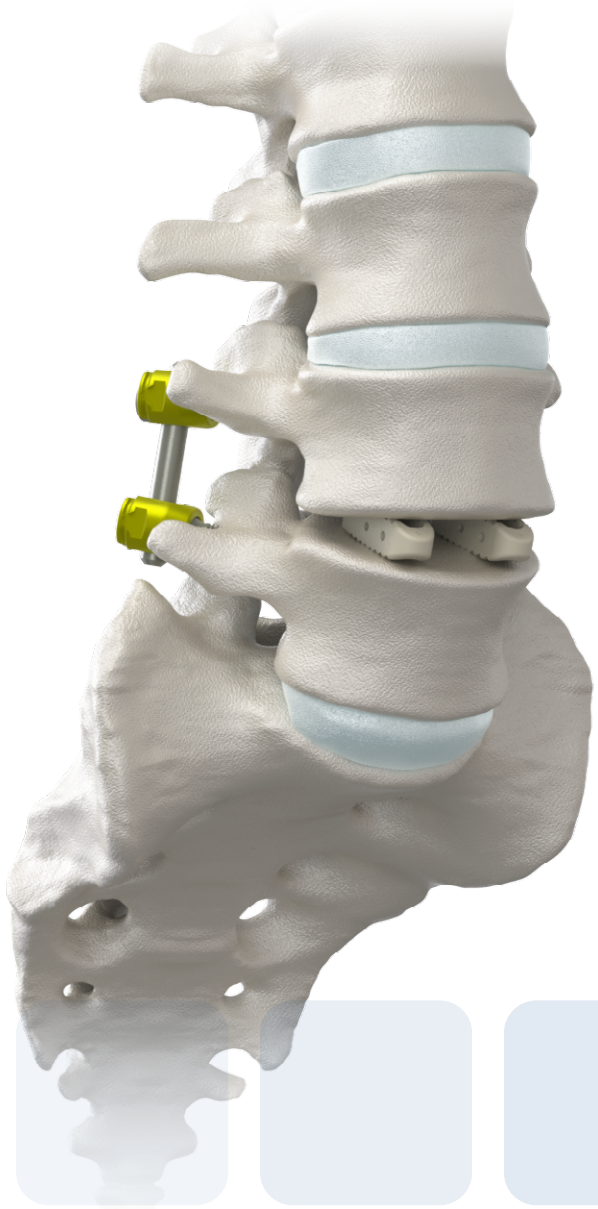


HumanTech Spine

ADONIS®

Posterior Lumbar Interbody Fusion

PLIF

ADONIS®-PLIF cages are indicated for posterior lumbar and lumbosacral vertebral body fusion. The implants are designed to adapt to vertebral body anatomy to reliably restore the sagittal and frontal alignment of the spine, providing stability and optimal conditions for fusion of the following indications:

- herniated vertebral disc
- hard vertebral disc herniation
- mechanical instabilities
- calcification of the posterior longitudinal ligament
- osteochondrosis
- spinal canal stenosis

ADONIS®-PLIF 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
- Significantly increased extraction forces
- Extremely high friction coefficient

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.

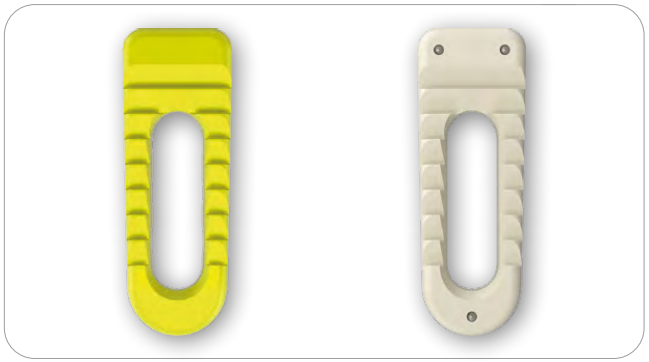
• **PEEK**
This material is biocompatible and characterised by elasticity similar to that of bone. Another advantage is the fact that the material does not cause artefacts.

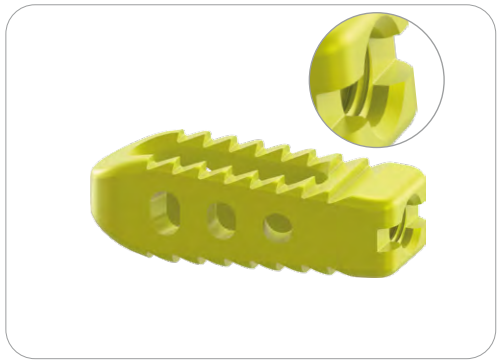
Made in Germany

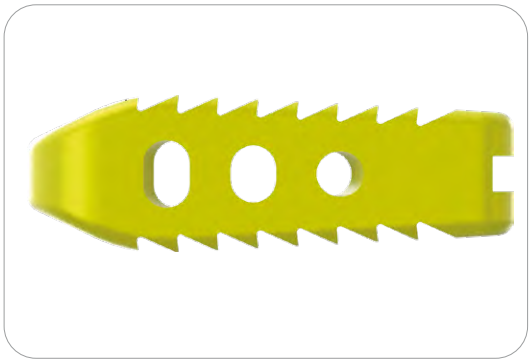
ADONIS® -PLIF

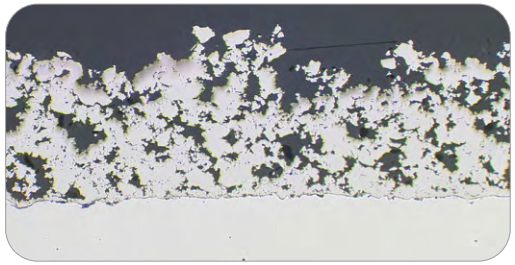
Interbody Device System

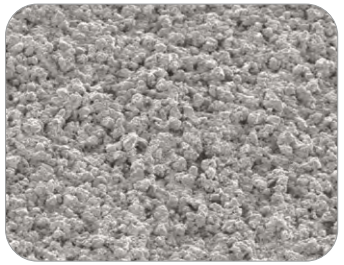
Product-specific benefits



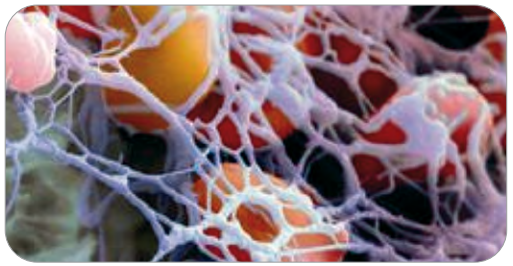








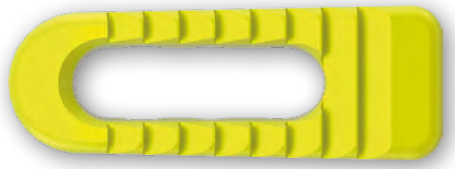
- Anatomical
- Stable
- Fillable
- Modular



ADONIS®-PLIF Titanium

ADONIS®-PLIF 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®-PLIF 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®-PLIF PEEK

ADONIS®-PLIF PEEK is an implant made of biocompatible PEEK-Optima® for the lumbar and lumbosacral interbody fusion is used for degenerative disc diseases and instabilities.

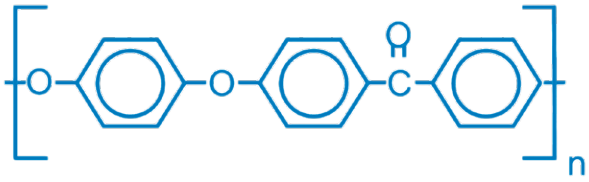
PEEK-OPTIMA® is a polyaromatic, semicrystalline thermoplastic, based on the formula (-C6H4-O-C6H4-O-C6H4-CO-)n, commonly known as polyetheretherketone. The radiotranslucent material allows quick and easy assessment of the bone structure and the fusion process. X-ray markers serve to verify positioning.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

PEEK

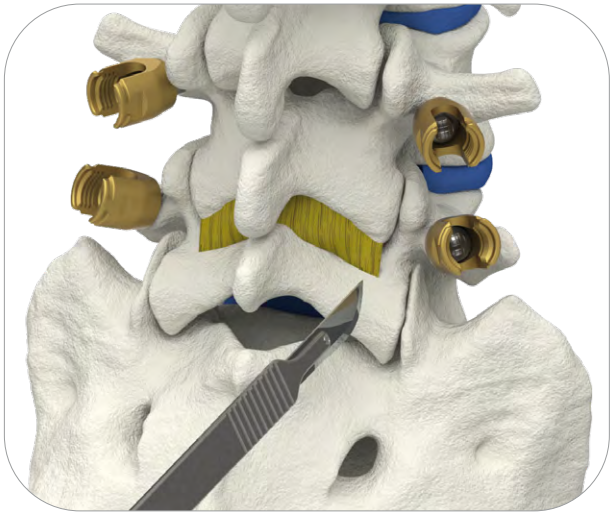
PEEK properties

- PEEK is radiotranslucent and does not produce artefacts
- Position verification using X-ray markers
- Anatomical shape and toothed surface
- The semi-circular shape ensures maximum contact area
- It can optionally be filled with bone or bone replacement material for improved bone grafting
- Fixed connection to the insertion instrument

PEEK-OPTIMA® is a polyaromatic, semi-crystalline thermoplastic, which is based on the basic formula (-C6H4-O-C6H4-O-C6H4-CO-)n and which is generally known as polyetheretherketone.



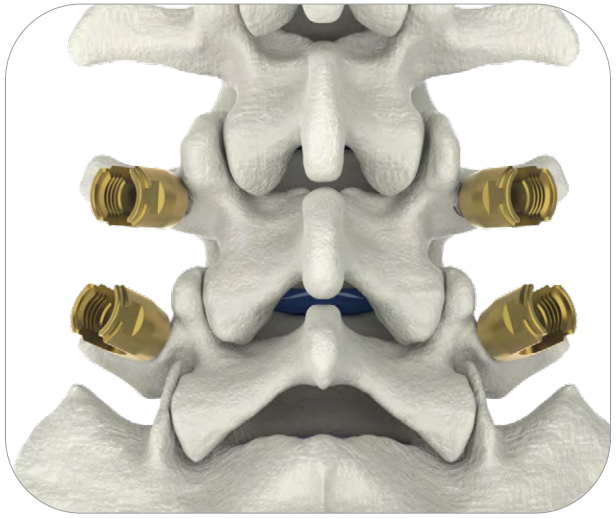
ADONIS® -PLIF
Interbody Device System



Preparation of the access

Incise the skin at the centre line, preparation in lateral direction and location of the spinous process and the plate of the respective segment or segments.

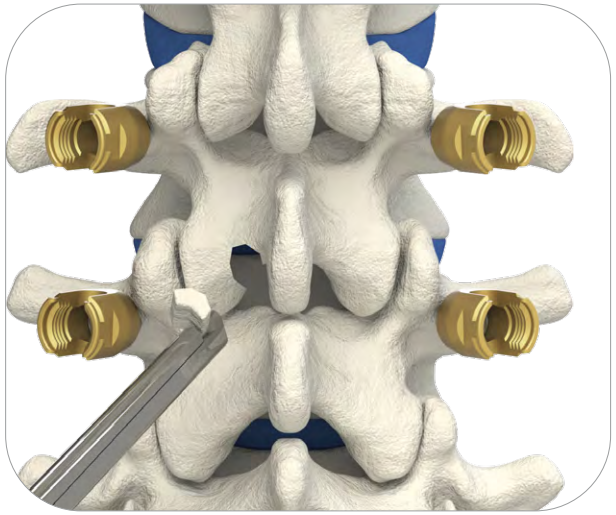
The ligamentum flavum is removed from the front of the lamina.



Inserting the pedicle screws

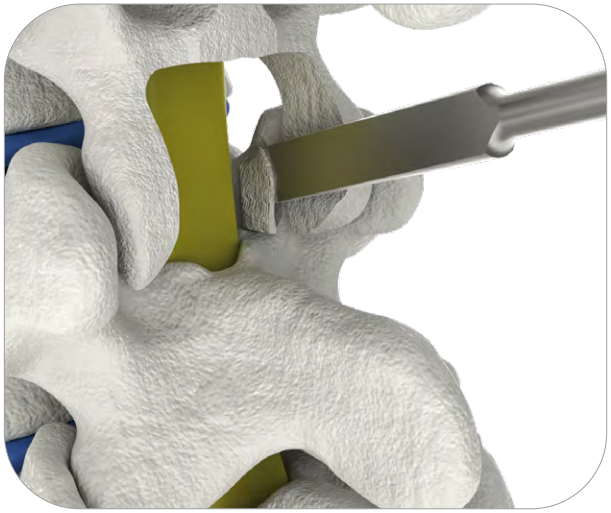
For stabilisation, an additional dorsal fixation (e.g. with the VENUS® screw rod system) is necessary. The additional stabilisation can be done either before or after the insertion of the cages, depending on the individual surgical methodology.

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



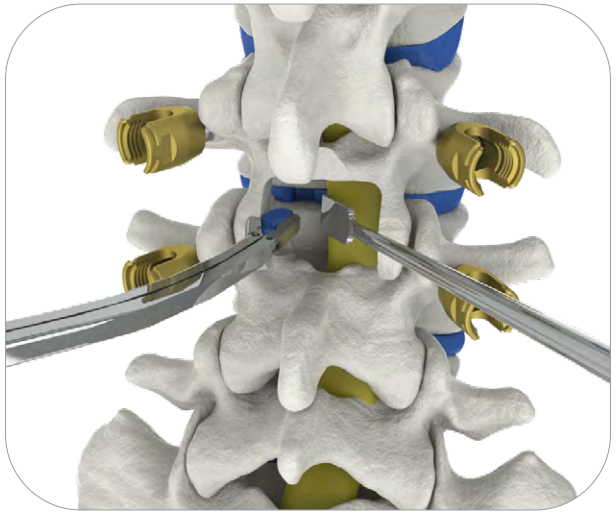
Preparation of the aperture for the posterior approach

A laminectomy is carried out on the medial side of the facet. Retain as much as possible of the facets. The dura mater must be held back to open an aperture of approx. 13 mm in the intervertebral space.



Final access to the disc

The superior articular process is resected to expose the intervertebral foramen.
Prepare the pedicle by removing the overhanging superior articular process with a punch to gain final access to the disc. Complete meticulous haemostasis must be ensured at the entry point of the disc space. Above all, proceed with caution around 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.

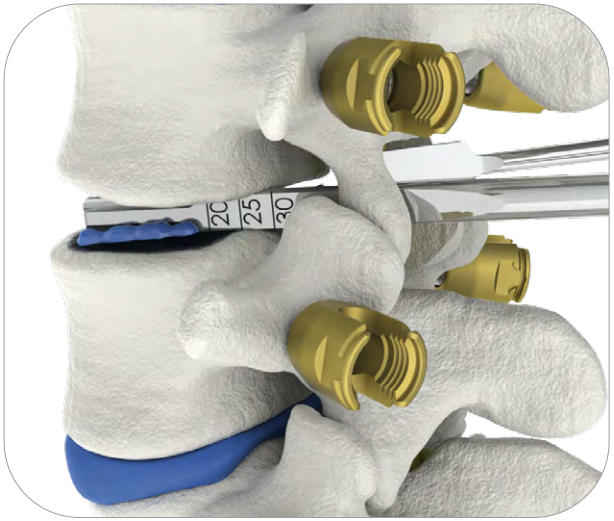
Note:
Corresponding preparation instruments such as curettes in various embodiments and sharp spoons are included in the optionally available Disc Evacuation Set.

Distraction

To gain access to the disc for a thorough discectomy, a distraction of the intervertebral disc space is necessary. A distraction can be achieved by one of the following methods:
- Distraction via pedicle screws
- Distraction via the spinous processes
- Distraction via retractors
  (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.

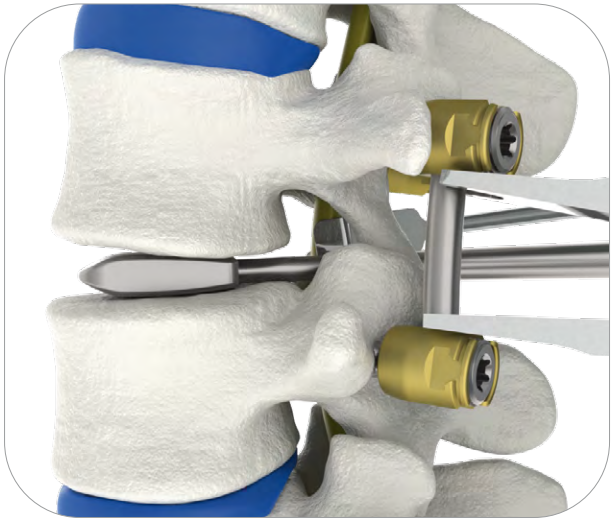
Note:
The sharp and blunt spreaders (Reamer Distractor sharp and blunt) are available in various dimensions according to implant heights in the optionally available Disc Evacuation Set.



Further distraction of the intervertebral disc space

Further distraction of the intervertebral disc space prior to the insertion of the cage can be achieved by sequentially inserting the distractors into the cleared and prepared disc space until optimal tension is achieved by means of the distractors between the two vertebral bodies.

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



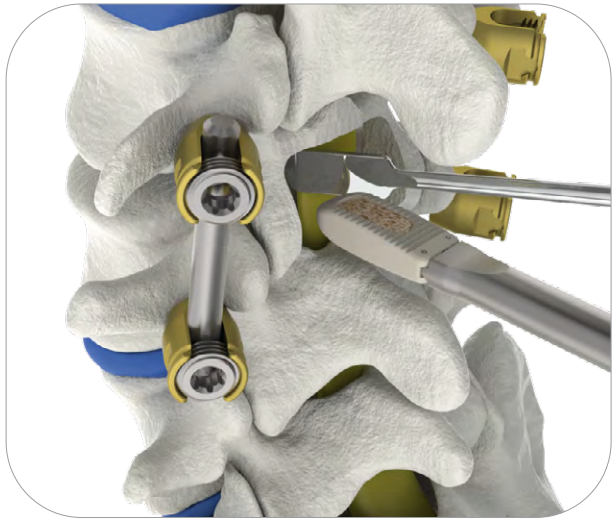
Determine the implant size I

The correct implant size can be determined under X-ray monitoring using the trial implants (PLIF 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.

Determine implant size II

The trial implant should sit in the intervertebral space with a light press-fit and can be removed with the Extractor Handle or 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.



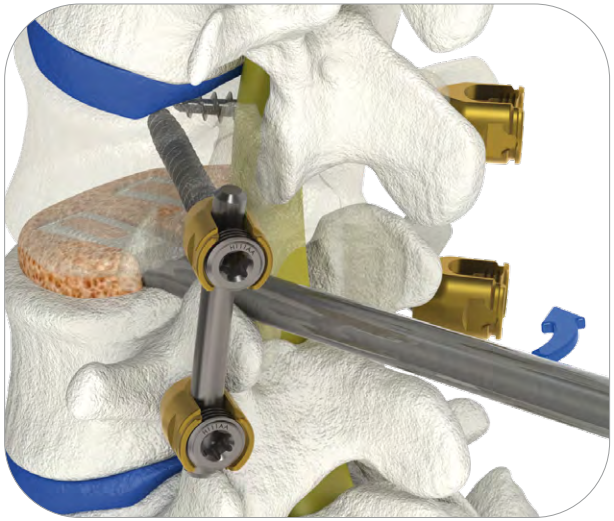
Insertion of the cage I

The implant corresponding to the trial implant is selected and the bar of the PLIF Inserter is positioned in the groove of the implant. The inner part of the insertion instrument is screwed into the implant in order to fix it to the Cage Inserter. Subsequently, the cage can be filled with bone graft or bone substitute material.

For a solid interbody fusion, the disc space should be filled with as much bone graft or bone substitute as possible.

Insertion of the cage II

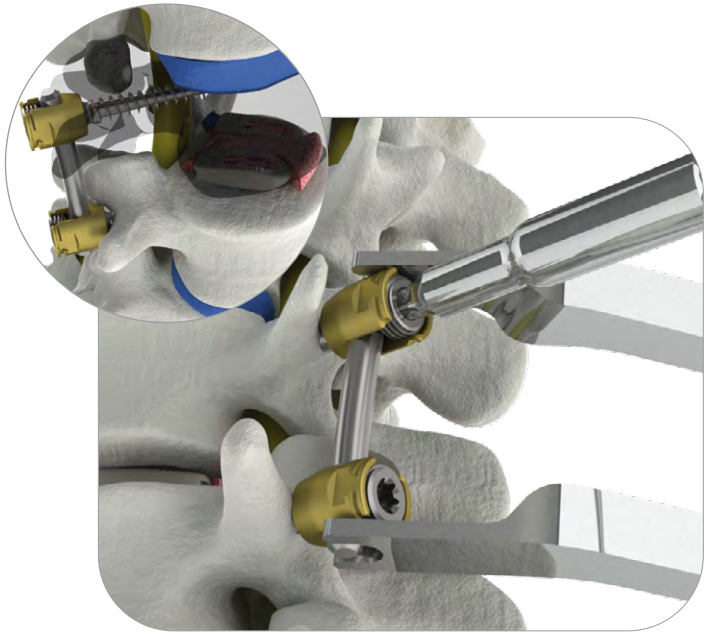
Note:
To avoid damaging the implant, the implant must be firmly connected to the insertion instrument. It must be ensured that the screwing-in of the inner part is carried out smoothly, since otherwise deformations of the threads can occur. If necessary, the alignment of the instrument to the implant 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.



Adjustment of the cage position

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 PLIF Inserter 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.

The second implant is then positioned in the same way.



Final compression

The final compression must be done via the dorsal instrumentation.

AP view
of a centrally positioned PLIF cage

Sagittal view
of a centrally positioned PLIF cage

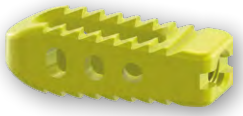
Positioning of the markers

To ensure the cages are positioned correctly, they must be placed in a central position after insertion into the disc space. The six tantalum beads in the PLIF PEEK cages illustrated are used for a fluoroscopic view of the implant position. This allows the exact location of the cages to be assessed by X-ray images. In the PLIF 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 markers in a rectangular arrangement show the outer dimensions of the cage. In PLIF PEEK implants, the four posterior and two anterior markers are visible on the X-ray in implants placed centrally within the disc space.

AP X-ray view
of a centrally positioned PLIF cage

Sagittal X-ray view
of a centrally positioned PLIF cage

Titanium sterile



STERILE

Item no.	Name	Length	Width 1	Width 2	Height	Angle
1701050407-S	Adonis PLIF Ti 26x09x07 sterile	26	9	10	7	0 °
1701090407-S	Adonis PLIF Ti 26x09x07 6° sterile					6 °
1701050507-S	Adonis PLIF Ti 28x09x07 sterile	28				0 °
1701090507-S	Adonis PLIF Ti 28x09x07 6° sterile					6 °
1701090408-S	Adonis PLIF Ti 26x09x08 m 6° sterile	26	9	10	8	6 °
1701100408-S	Adonis PLIF Ti 26x09x08 m 9° sterile					9 °
1701090508-S	Adonis PLIF Ti 28x09x08 m 6° sterile	28				6 °
1701050409-S	Adonis PLIF Ti 26x09x09 sterile	26	9	10	9	0 °
1701090409-S	Adonis PLIF Ti 26x09x09 6° sterile					6 °
1701100409-S	Adonis PLIF Ti 26x09x09 9° sterile					9 °
1701050509-S	Adonis PLIF Ti 28x09x09 sterile	28				0 °
1701090509-S	Adonis PLIF Ti 28x09x09 6° sterile					6 °
1701100509-S	Adonis PLIF Ti 28x09x09 9° sterile					9 °
1701050410-S	Adonis PLIF Ti 26x09x10 sterile	26	9	10	10	0 °
1701090410-S	Adonis PLIF Ti 26x09x10 6° sterile					6 °
1701100410-S	Adonis PLIF Ti 26x09x10 9° sterile					9 °
1701090510-S	Adonis PLIF Ti 28x09x10 6° sterile	28				6 °
1701100510-S	Adonis PLIF Ti 28x09x10 9° sterile					9 °
1701050411-S	Adonis PLIF Ti 26x09x11 sterile	26	9	10	11	0 °
1701090411-S	Adonis PLIF Ti 26x09x11 6° sterile					6 °
1701100411-S	Adonis PLIF Ti 26x09x11 9° sterile					9 °
1701050511-S	Adonis PLIF Ti 28x09x11 sterile	28				0 °
1701090511-S	Adonis PLIF Ti 28x09x11 6° sterile					6 °
1701100511-S	Adonis PLIF Ti 28x09x11 9° sterile					9 °

Item no.	Name	Length	Width 1	Width 2	Height	Angle
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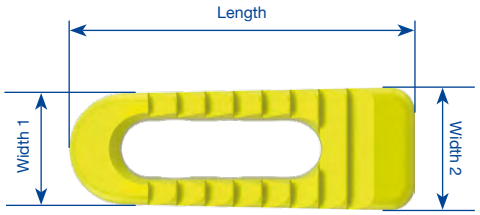
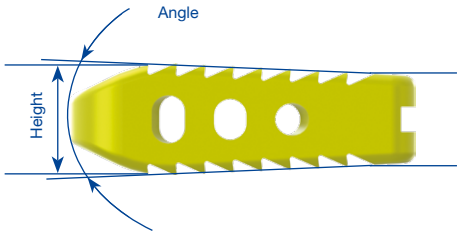
1701090512-S	Adonis PLIF Ti 28x09x12 m 6° sterile	28				6 °
1701050413-S	Adonis PLIF Ti 26x09x13 sterile	26	9	10	13	0 °
1701090413-S	Adonis PLIF Ti 26x09x13 6° sterile					6 °
1701100413-S	Adonis PLIF Ti 26x09x13 9° sterile					9 °
1701050513-S	Adonis PLIF Ti 28x09x13 sterile	28				0 °
1701090513-S	Adonis PLIF Ti 28x09x13 6° sterile					6 °
1701100513-S	Adonis PLIF Ti 28x09x13 9° sterile					9 °
1701050415-S	Adonis PLIF Ti 26x09x15 sterile	26	9	10	15	0 °
1701090415-S	Adonis PLIF Ti 26x09x15 6° sterile					6 °
1701100415-S	Adonis PLIF Ti 26x09x15 9° sterile					9 °
1701050515-S	Adonis PLIF Ti 28x09x15 sterile	28				0 °
1701090515-S	Adonis PLIF Ti 28x09x15 6° sterile					6 °
1701100515-S	Adonis PLIF Ti 28x09x15 9° sterile	28				9 °

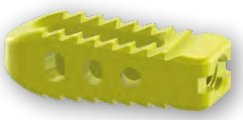
available soon

available soon





Titanium non-sterile



Item no.	Name	Length	Width 1	Width 2	Height	Angle
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1701090407	Adonis PLIF Ti 26x09x07 6°					6 °
1701050507	Adonis PLIF Ti 28x09x07	28				0 °
1701090507	Adonis PLIF Ti 28x09x07 6°					6 °
1701090408	Adonis PLIF Ti 26x09x08m 6°	26	9	10	8	6 °
1701100408	Adonis PLIF Ti 26x09x08m 9°					9 °
1701090508	Adonis PLIF Ti 28x09x08m 6°	28				6 °
1701050409	Adonis PLIF Ti 26x09x09	26	9	10	9	0 °
1701090409	Adonis PLIF Ti 26x09x09 6°					6 °
1701100409	Adonis PLIF Ti 26x09x09 9°					9 °
1701050509	Adonis PLIF Ti 28x09x09	28				0 °
1701090509	Adonis PLIF Ti 28x09x09 6°					6 °
1701100509	Adonis PLIF Ti 28x09x09 9°					9 °
1701050410	Adonis PLIF Ti 26x09x10	26	9	10	10	0 °
1701090410	Adonis PLIF Ti 26x09x10 6°					6 °
1701100410	Adonis PLIF Ti 26x09x10 9°					9 °
1701090510	Adonis PLIF Ti 28x09x10 6°	28				6 °
1701100510	Adonis PLIF Ti 28x09x10 9°					9 °
1701050411	Adonis PLIF Ti 26x09x11	26	9	10	11	0 °
1701090411	Adonis PLIF Ti 26x09x11 6°					6 °
1701100411	Adonis PLIF Ti 26x09x11 9°					9 °
1701050511	Adonis PLIF Ti 28x09x11	28				0 °
1701090511	Adonis PLIF Ti 28x09x11 6°					6 °
1701100511	Adonis PLIF Ti 28x09x11 9°					9 °

Item no.	Name	Length	Width 1	Width 2	Height	Angle
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1701090512	Adonis PLIF Ti 28x09x12m 6°	28				6 °
1701050413	Adonis PLIF Ti 26x09x13	26	9	10	13	0 °
1701090413	Adonis PLIF Ti 26x09x13 6°					6 °
1701100413	Adonis PLIF Ti 26x09x13 9°					9 °
1701050513	Adonis PLIF Ti 28x09x13	28				0 °
1701090513	Adonis PLIF Ti 28x09x13 6°					6 °
1701100513	Adonis PLIF Ti 28x09x13 9°					9 °
1701050415	Adonis PLIF Ti 26x09x15	26	9	10	15	0 °
1701090415	Adonis PLIF Ti 26x09x15 6°					6 °
1701100415	Adonis PLIF Ti 26x09x15 9°					9 °
1701050515	Adonis PLIF Ti 28x09x15	28				0 °
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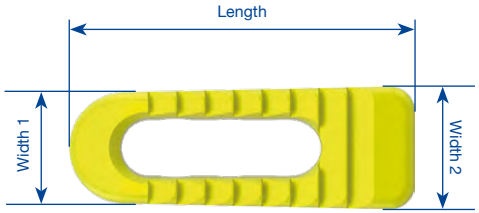
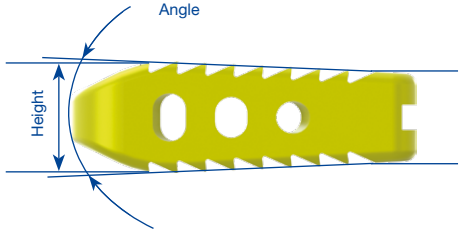
1701100515	Adonis PLIF Ti 28x09x15 9°	28				9 °



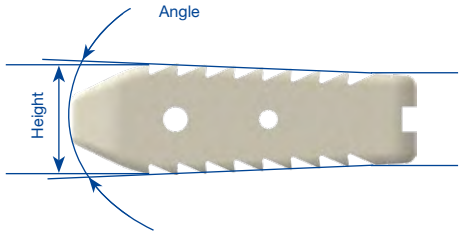


PEEK

STERILE

Item no.	Name	Length	Width 1	Width 2	Height	Angle
1701040407	Adonis PLIF PEEK 26x09x07	26	9	10	7	0 °
1701041007	Adonis PLIF PEEK 26x09x07 6°	26				6 °
1701040507	Adonis PLIF PEEK 28x09x07	28				0 °
1701041107	Adonis PLIF PEEK 28x09x07 6°	28				6 °
1701040607	Adonis PLIF PEEK 30x09x07	30				0 °
1701040707	Adonis PLIF PEEK 32x09x07	32				0 °
1701040409	Adonis PLIF PEEK 26x09x09	26	9		9	0 °
1701041009	Adonis PLIF PEEK 26x09x09 6°	26				6 °
1701041209	Adonis PLIF PEEK 26x09x09 9°	26				9 °
1701040509	Adonis PLIF PEEK 28x09x09	28				0 °
1701041109	Adonis PLIF PEEK 28x09x09 6°	28				6 °
1701041309	Adonis PLIF PEEK 28x09x09 9°	28				9 °
1701040609	Adonis PLIF PEEK 30x09x09	30				0 °
1701040709	Adonis PLIF PEEK 32x09x09	32				0 °
1701040410	Adonis PLIF PEEK 26x09x10	26	9		10	0 °
1701041010	Adonis PLIF PEEK 26x09x10 6°	26				6 °
1701040411	Adonis PLIF PEEK 26x09x11	26	9		11	0 °
1701041011	Adonis PLIF PEEK 26x09x11 6°	26				6 °
1701041211	Adonis PLIF PEEK 26x09x11 9°	26				9 °
1701040511	Adonis PLIF PEEK 28x09x11	28				0 °
1701041111	Adonis PLIF PEEK 28x09x11 6°	28				6 °
1701041311	Adonis PLIF PEEK 28x09x11 9°	28				9 °
1701040611	Adonis PLIF PEEK 30x09x11	30				0 °
1701040711	Adonis PLIF PEEK 32x09x11	32				0 °

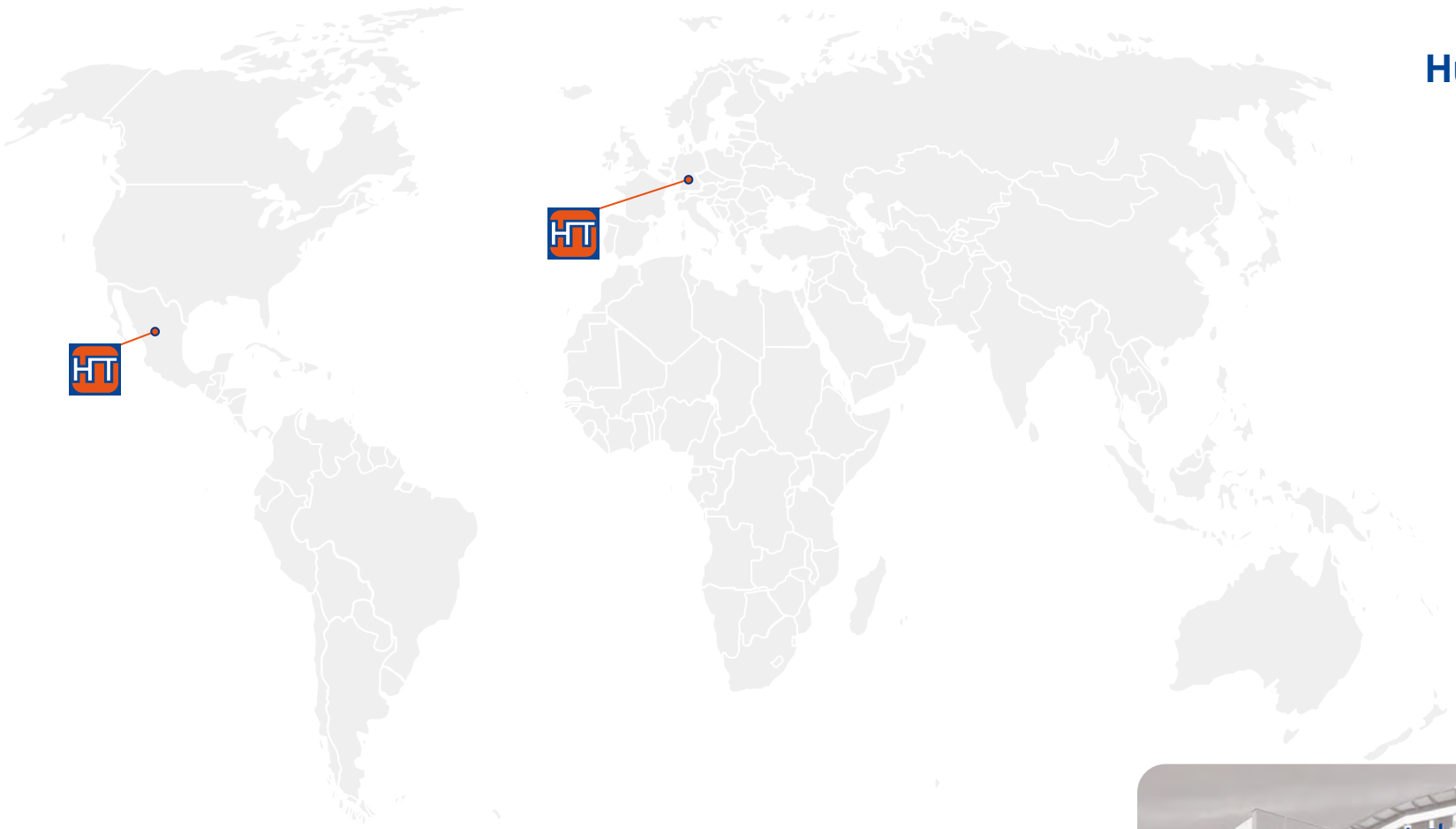
Item no.	Name	Length	Width 1	Width 2	Height	Angle
1701040413	Adonis PLIF PEEK 26x09x13	26	9	10	13	0 °
1701041013	Adonis PLIF PEEK 26x09x13 6°	26				6 °
1701041213	Adonis PLIF PEEK 26x09x13 9°	26				9 °
1701040513	Adonis PLIF PEEK 28x09x13	28				0 °
1701041113	Adonis PLIF PEEK 28x09x13 6°	28				6 °
1701041313	Adonis PLIF PEEK 28x09x13 9°	28				9 °
1701040613	Adonis PLIF PEEK 30x09x13	30				0 °
1701040713	Adonis PLIF PEEK 32x09x13	32				0 °
1701040415	Adonis PLIF PEEK 26x09x15	26	9		15	0 °
1701041015	Adonis PLIF PEEK 26x09x15 6°	26				6 °
1701041215	Adonis PLIF PEEK 26x09x15 9°	26				9 °
1701040515	Adonis PLIF PEEK 28x09x15	28				0 °
1701041115	Adonis PLIF PEEK 28x09x15 6°	28				6 °
1701041315	Adonis PLIF PEEK 28x09x15 9°	28				9 °
1701040615	Adonis PLIF PEEK 30x09x15	30				0 °
1701040715	Adonis PLIF PEEK 32x09x15	32				0 °



Instruments
ADONIS®-PLIF

Item no.	Name	
1701012607	PLIF Trial 26x09x07	
1701012609	PLIF Trial 26x09x09	
1701012610	PLIF Trial 26x09x10	
1701012611	PLIF Trial 26x09x11	
1701012613	PLIF Trial 26x09x13	
1701012615	PLIF Trial 26x09x15	
1701011007	PLIF Trial 26x09x07 6°	
1701011009	PLIF Trial 26x09x09 6°	
1701011010	PLIF Trial 26x09x10 6°	
1701011011	PLIF Trial 26x09x11 6°	
1701011013	PLIF Trial 26x09x13 6°	
1701011015	PLIF Trial 26x09x15 6°	
1701011209	PLIF Trial 26x09x09 9°	
1701011210	PLIF Trial 26x09x10 9°	
1701011211	PLIF Trial 26x09x11 9°	
1701011213	PLIF Trial 26x09x13 9°	
1701011215	PLIF Trial 26x09x15 9°	
1701012807	PLIF Trial 28x09x07	
1701012809	PLIF Trial 28x09x09	
1701012811	PLIF Trial 28x09x11	
1701012813	PLIF Trial 28x09x13	
1701012815	PLIF Trial 28x09x15	
1701011107	PLIF Trial 28x09x07 6°	
1701011109	PLIF Trial 28x09x09 6°	
1701011110	PLIF Trial 28x09x10 6°	
1701011111	PLIF Trial 28x09x11 6°	
1701011113	PLIF Trial 28x09x12 6°	

Item no.	Name	
1701011115	PLIF Trial 28x09x15 6°	
1701011309	PLIF Trial 28x09x09 9°	
1701011310	PLIF Trial 28x09x10 9°	
1701011311	PLIF Trial 28x09x11 9°	
1701011313	PLIF Trial 28x09x13 9°	
1701011315	PLIF Trial 28x09x15 9°	
1701013007	PLIF Trial 30x09x07	
1701013009	PLIF Trial 30x09x09	
1701013011	PLIF Trial 30x09x11	
1701013013	PLIF Trial 30x09x13	
1701013015	PLIF Trial 30x09x15	
1701010000	PLIF-Inserter	
1701010600	Extractor Handle	Optional
1801010002	Slap Hammer	



Manufacturing and Sales

HumanTech Spine GmbH

Gewerbestr. 5
D-71144 Steinenbronn

Germany

Phone: +49 (0) 7157/5246-71
Fax: +49 (0) 7157/5246-66
sales@humantech-spine.de
www.humantech-spine.de

Sales Latin America

HumanTech Mexico, S. DE R.L. DE C.V.

Rio Mixcoac No. 212-3
Acacias del Valle
Del. Benito Juárez
C.P. 03240 Mexico, D.F.
Mexico

Phone: +52 (0) 55/5534 5645
Fax: +52 (0) 55/5534 4929
info@humantech-solutions.mx
www.humantech-spine.de

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