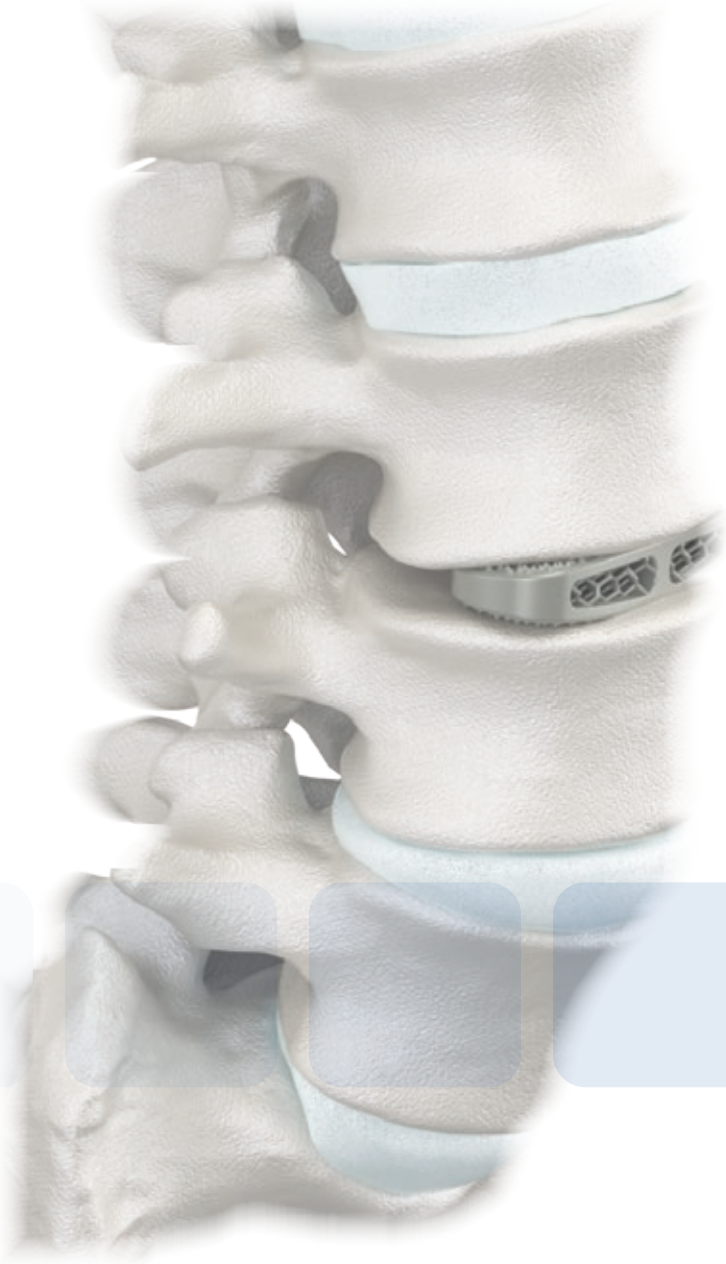
HumanTech Spine



ADONIS®

Lateral lumbar interbody fusion

LLIF

Table of Contents

The german family company HumanTech Spine is based in Baden Württemberg and develops, manufactures and sells high-quality and innovative spinal 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. 15000m^2, where our complete product portfolio is manufactured. Our high-tech production facilities as well as the most advanced, environmentally friendly production and logistics processes guarantee high-quality and on-time processes for production and delivery.

Our independent medical division has two main focuses (Spine and Dental) and was founded in 2010. It is now well represented and respected in the national and international markets. Together with renowned spinal surgeons, our development team breaks new ground every day to ensure that every patient receives uncompromising high-quality care. The design of our systems is aimed at providing maximum user-friendliness, security and integrity.

That's why HumanTech Spine is regarded as a reliable partner in the area of the vertebral column, as well as research, development, production and marketing. We also offer advanced training by members of our HumanTech Academy. Our one-stop source. This is how we ensure that our quality is 100% 'Made in Germany'.

ADONIS®-LLIF cages are indicated for lumbar and lumbosacral vertebral body fusion using a direct lateral approach. The direct lateral approach is a minimally invasive approach, which avoids direct exposure of the anterior vessels as well as posterior nerves and bone structures. The implants have been developed to adapt to the anatomy of the vertebral bodies and ensure reliable restoration of the sagittal and frontal alignment of the vertebral column, as well as to provide stability and optimal conditions for fusion with the following indications:

- Herniated disc
- Hard herniated disc
- Mechanical instability
- Calcification of posterior longitudinal ligament
- Osteochondrosis
- Spinal stenosis

ADONIS®-LLIF is an interbody device system produced with a 3D printing process. The titanium alloy Ti-6Al-4V is the basic material used for the implants. The system offers the following product-specific advantages:

Anatomical

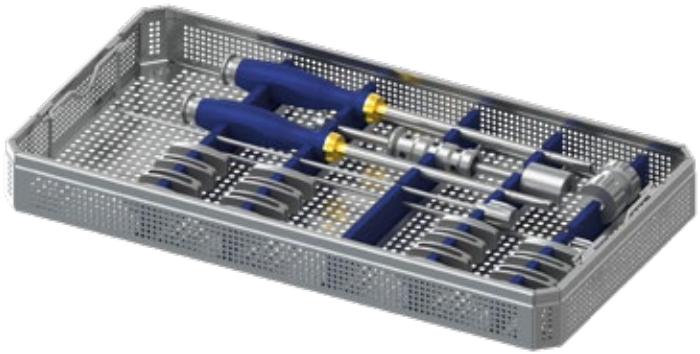
- Geometry analogous to the anatomy in cross-section as well as the sagittal profile
- Generous support surface
- Conical anterior implant tip for easier implant insertion

Stable

- Cranially convex contact surfaces for safe and permanent seating accuracy
- High coefficient of friction thanks to pyramid-shaped spikes integrated into the surface

Fillable

- Large openings with a honeycomb grid structure for optional filling and rapid fusion

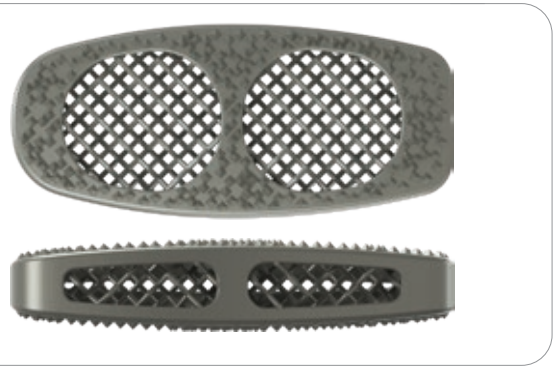


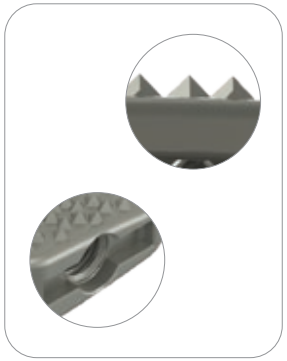
Made in Germany

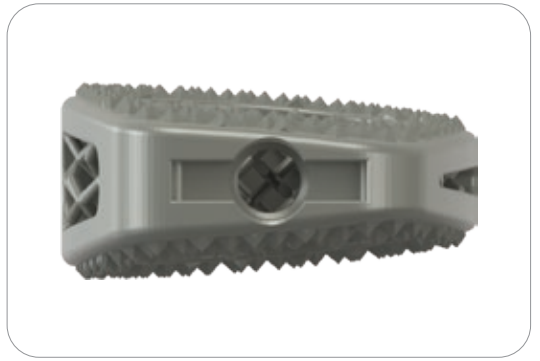
ADONIS® -LLIF

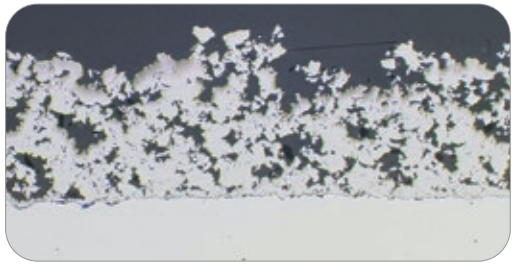
Interbody device system

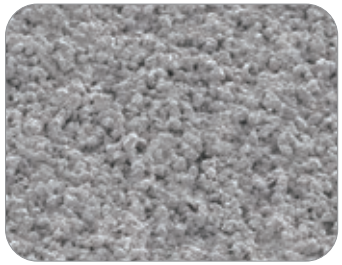
product specific advantages of our products



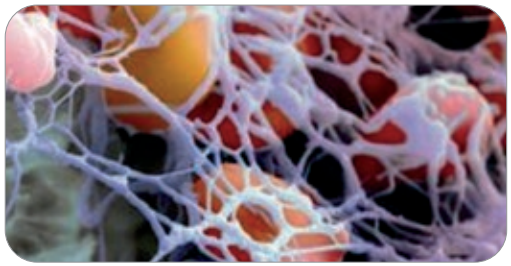


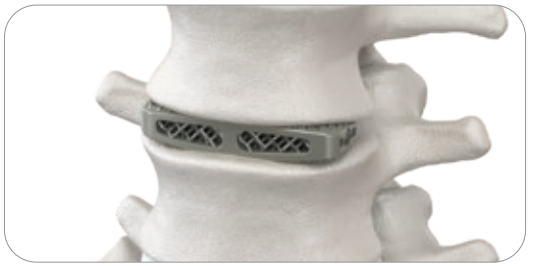


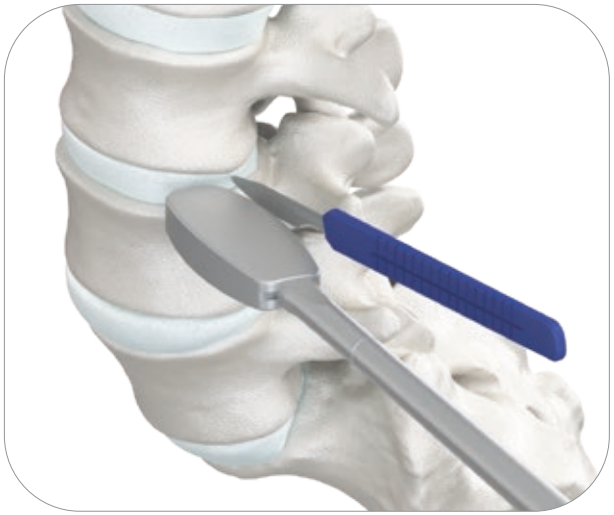




Anatomical
Stable
Fillable

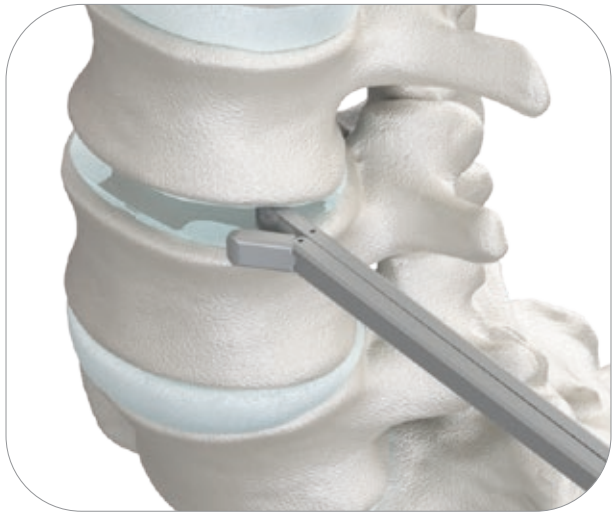






Lateral access

The patient is positioned in a lateral position and the correct disc plane is determined with an image converter. The segment to be operated on is exposed with a retroperitoneal approach.
In order to gain access to the intervertebral disc space, the fibrous ring is cut rectangularly according to the width of the implant. The window width can be checked with a trial implant (LLIF Trial).



Preparation of the intervertebral disc space I

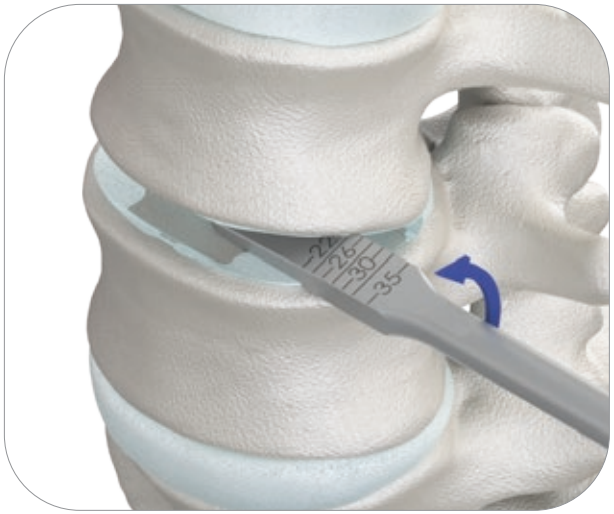
The disc material and the cartilaginous layer of the endplates must be removed to expose the bony endplate structure.

Attention:
Care must be taken to ensure that the endplates of the adjacent vertebral bodies remain intact. Damage to the endplates or excessive wear of the endplates can lead to sintering in of the implant and loss of segmental stability.

Preparation of the disc space II

Comment:
It is important that the nucleus and inner annulus are removed in order to avoid this material being displaced into the spinal canal during implantation and to avoid influencing bone ingrowth.

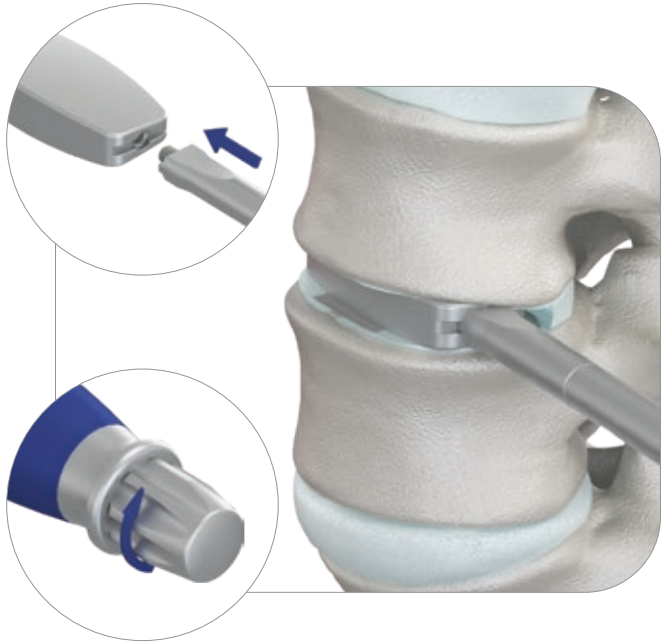
Note:
Appropriate preparation instruments (such as curettes in various designs and sharp spoons) are included in the optional disc evacuation set.



Distraction

Distraction is essential for restoring the disc height and the initial stability of the implant. For this purpose, the sharp or blunt spreader (Reamer Distractor sharp or blunt) can be inserted horizontally into the intervertebral space and rotated by 90 degrees.

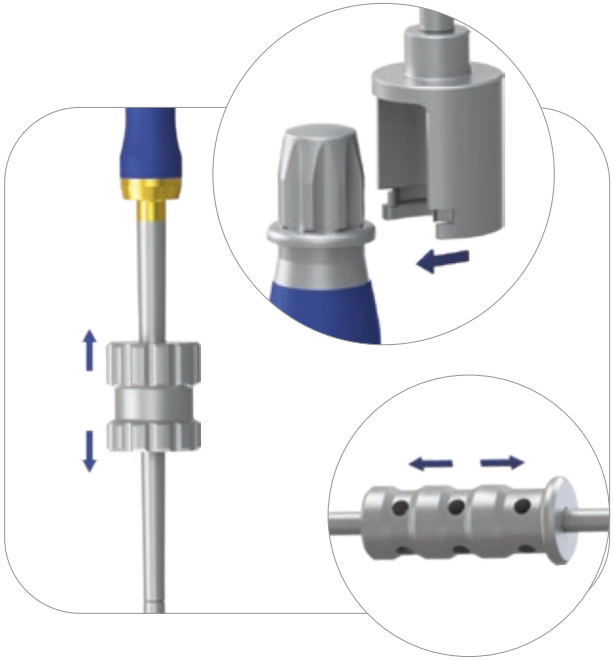
Comment:
The sharp and blunt spreaders (Reamer Distractor sharp or blunt) are included in the optional disc evacuation set in various dimensions according to the implant heights.



Determining the implant size I

With the help of trial implants (LLIF Trial), the implant size to be selected can be determined under radiographic control. In order to connect the trial implant to the insertion instrument (PLIF inserter) the bar of the insertion instrument must be positioned in the slot of the trial implant. The insertion instrument is fixed to the trial implant by screwing the inner part of the insertion instrument into the trial implant. The trial implant is then inserted into the intervertebral disc space, if necessary with light hammer blows. If the fit is not satisfactory, the next size of trial implant should be used. The trial implant must sit with a slight press fit in the intervertebral space so that it can be removed with the Extractor Handle or the Slap Hammer.

Comment:
Correct alignment of the trial must be ensured if the use of angled implants is intended.
The trial implants indicate the height of the implant without the spikes intended for additional primary fixation.



Determining the implant size II

Comment:
Care must be taken to ensure that the inner part of the insertion instrument is screwed in smoothly, otherwise the threads can be damaged. The alignment of the instruments to one another must be corrected if necessary. To avoid tilting while screwing in the inner part, first turn it counter-clockwise until the thread clicks clearly into place. The inner part is then screwed completely into the trial implant.

Removal of the implant from the sterile packaging – removal of the outer blister from the transport box

The implants are provided in sterile packaging. In order to mount the implant on the insertion instrument, the packaging of the implant corresponding to the trial implant must be selected. Then the flap of the transport box that is closed with the label is opened and the blister inside is removed. This blister is the sterile barrier.

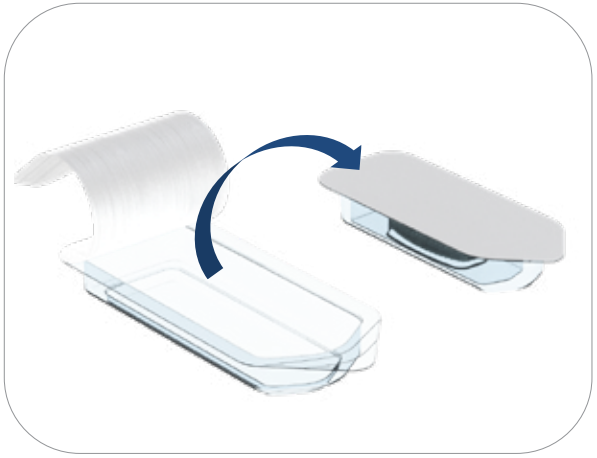
Attention:

The implants may only be used if the label on both the outer and the inner packaging are intact. If the packaging is damaged or has already been opened, sterility is not guaranteed and the implant must not be used.

The implants must not be used if the expiration date has been exceeded.

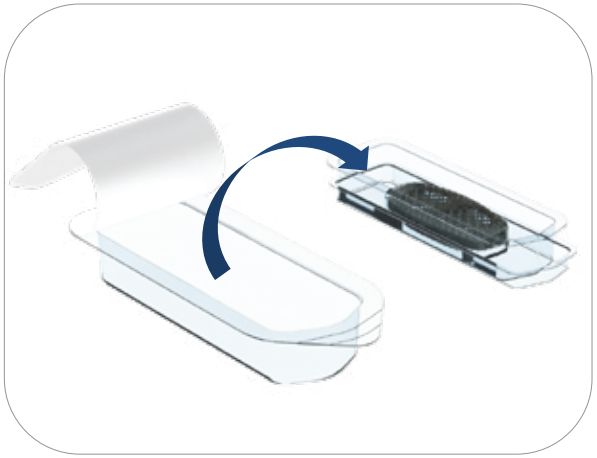
The sterile packaging must only be opened immediately before the implant is inserted.

When removing the implant from the sterile packaging, the rules of asepsis must be observed.



Removal of the implant from the sterile packaging - removal of the inner insert from the outer blister

After removing the outer blister from the transport box, the sealed Tyvek lid of the blister is opened completely (starting at the front flap) and the inner blister is taken into the aseptic work area.

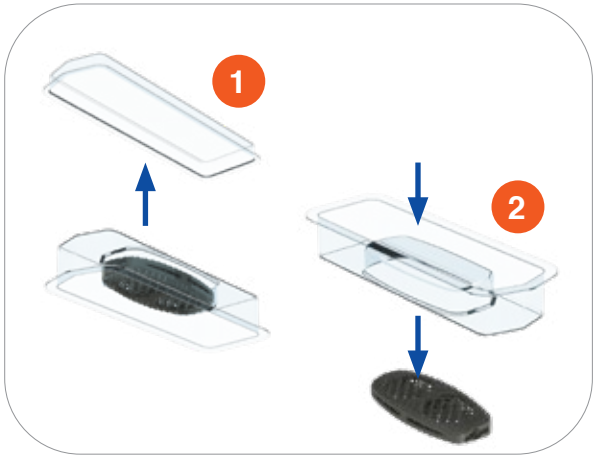


Removal of the implant from the sterile packaging - removal of the skin insert from the inner blister

The sealed Tyvek lid of the inner blister is opened (starting at the front flap). The skin insert in the inner blister, which is used to hold the implant, is then removed from the inner blister together with the corresponding insert.

Note:

The skin insert prevents the sterile items from moving in the inner blister of the sterile packaging during transport. The bottom insert provides additional protection for the sterile barrier.



Removal of the implant from the sterile packaging - removal of the implant from the skin insert

The insert is detached from the skin insert (1) and the implant is removed from the skin insert (2).

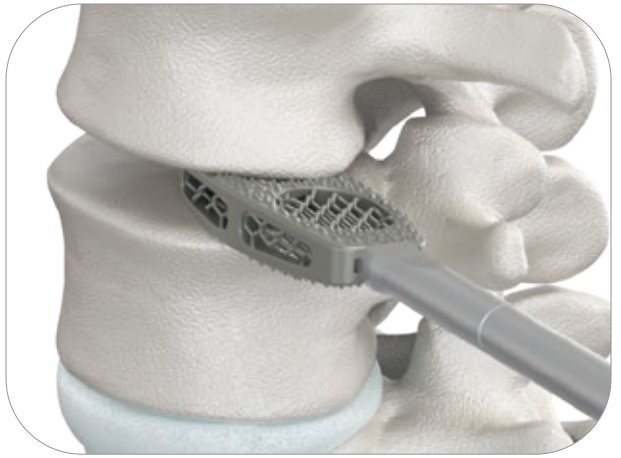
Preparation of the implant

The unpacked implant corresponding to the trial implant is selected and the bar of the of the insertion instrument (PLIF Inserter) is positioned in the slot of the implant. The insertion instrument is fixed to the implant by screwing the inner part of the insertion instrument into the implant. Filling with bone material and/or bone substitute is possible.

Comment:

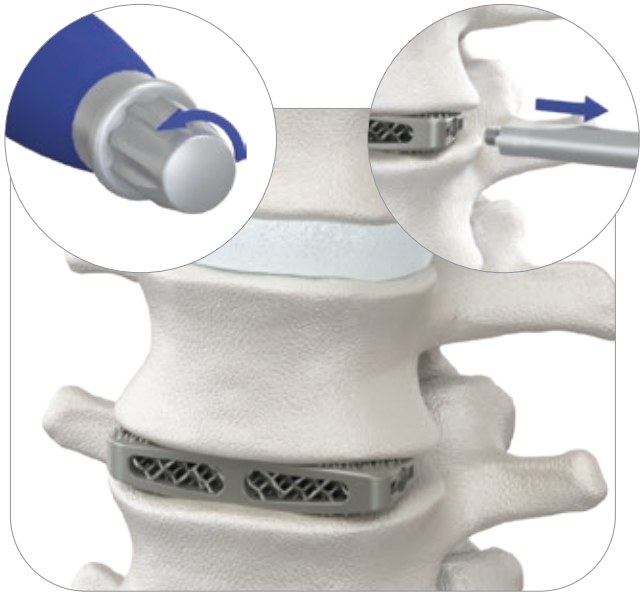
To avoid damage to the implant, it must be firmly connected to the insertion instrument.

Care must be taken to ensure that the inner part is screwed in smoothly, otherwise the threads can be damaged. The alignment of the instrument to the implant may need to be adjusted. To avoid tilting while screwing in the inner part, first turn it counter-clockwise until the thread clicks clearly into place. The inner part is then screwed completely into the trial implant.



Insertion of the implant

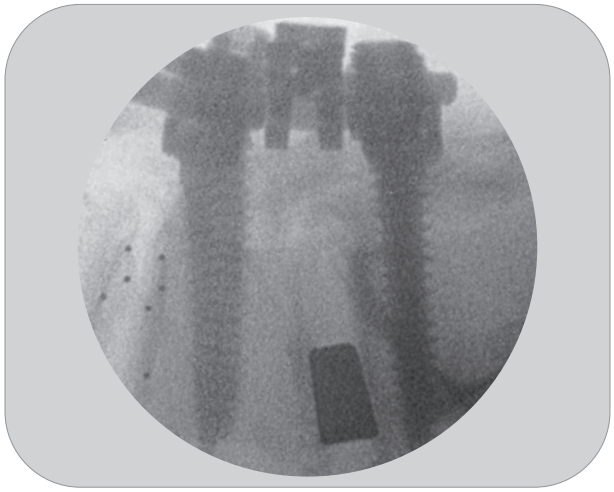
The implant is placed in the intervertebral space and the position of the implant is checked under radiographic control. The implant is moved with light hammer blows. The implant must be seated in the intervertebral space with a slight fit.



Remove the instruments and check the implant's fit

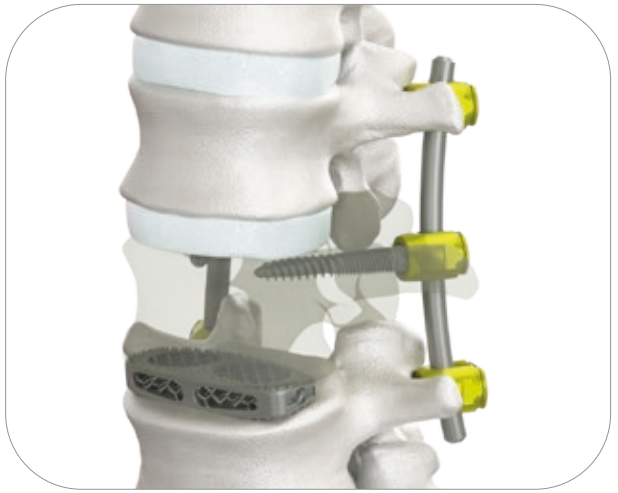
After the implant has been correctly positioned, the insertion instrument can be carefully removed so that the implant remains in the optimal position. To do this, loosen the inner part of the insertion instrument by turning it counterclockwise and then pull the insertion instrument off the implant.

The optimal implant seat is exactly centered between the endplate margins. Depending on the size of the vertebra, the anterior margin of the implant is approx. 3 mm from the anterior margin of the adjacent vertebra.



Radiographic inspection

The position of the cage in relation to the vertebral bodies must be checked from the anterior and lateral aspects.



Additional fixation

Additional dorsal fixation (e.g. with the VENUS® screw rod system) is necessary for stabilization. Details can be found in the description of the surgical technique for the relevant dorsal system.

Titanium, sterile

STERILE

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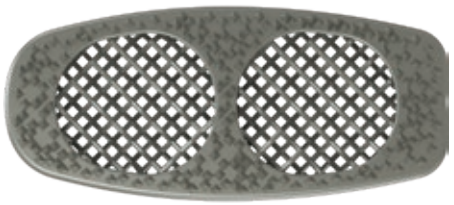

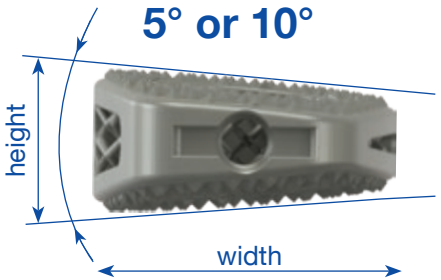

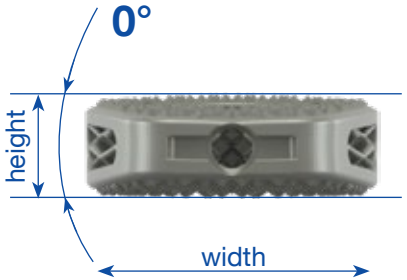

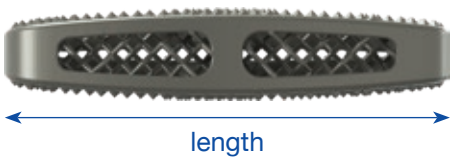

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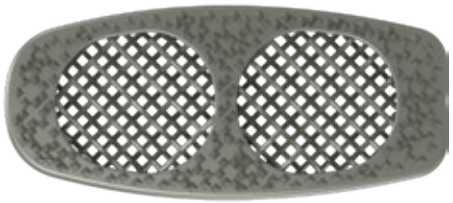

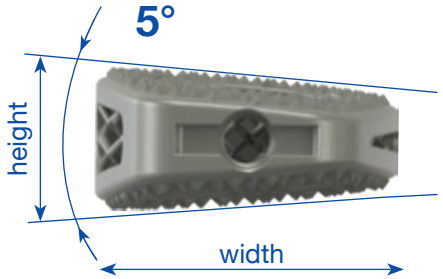

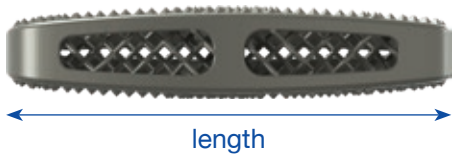

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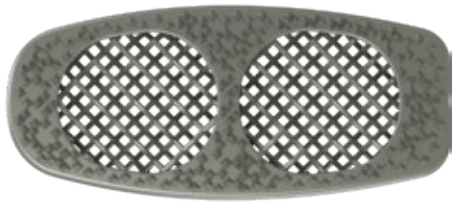
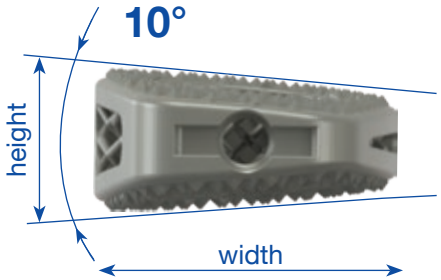
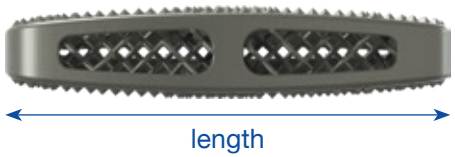
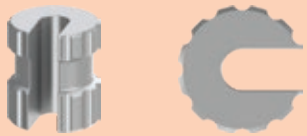






Instruments ADONIS®-LLIF

Item no.	Designation
2407025009	LLIF Trial 50x22x09 5°
2407025011	LLIF Trial 50x22x11 5°
2407025013	LLIF Trial 50x22x13 5°
2407025015	LLIF Trial 50x22x15 5°
2407025509	LLIF Trial 55x22x09 5°
2407025511	LLIF Trial 55x22x11 5°
2407025513	LLIF Trial 55x22x13 5°
2407025515	LLIF Trial 55x22x15 5°
2405025009	LLIF Trial 50x22x09 10°
2405025011	LLIF Trial 50x22x11 10°
2405025013	LLIF Trial 50x22x13 10°
2405025015	LLIF Trial 50x22x15 10°
2405025509	LLIF Trial 55x22x09 10°
2405025511	LLIF Trial 55x22x11 10°
2405025513	LLIF Trial 55x22x13 10°
2405025515	LLIF Trial 55x22x15 10°

Item no.	Designation	Figure
1701010000	PLIF Inserter	
1701010600	Extractor Handle	
1801010002	Slap Hammer	

optional

Instruments ADONIS®-LLIF

Item no.	Designation
2406014509	LLIF Trial 45x18x09 0°
2406014511	LLIF Trial 45x18x11 0°
2406014513	LLIF Trial 45x18x13 0°
2406014515	LLIF Trial 45x18x15 0°
2406015009	LLIF Trial 50x18x09 0°
2406015011	LLIF Trial 50x18x11 0°
2406015013	LLIF Trial 50x18x13 0°
2406015015	LLIF Trial 50x18x15 0°
2406015509	LLIF Trial 55x18x09 0°
2406015511	LLIF Trial 55x18x11 0°
2406015513	LLIF Trial 55x18x13 0°
2406015515	LLIF Trial 55x18x15 0°
2406024509	LLIF Trial 45x22x09 0°
2406024511	LLIF Trial 45x22x11 0°
2406024513	LLIF Trial 45x22x13 0°
2406024515	LLIF Trial 45x22x15 0°
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2406025509	LLIF Trial 55x22x09 0°
2406025511	LLIF Trial 55x22x11 0°
2406025513	LLIF Trial 55x22x13 0°
2406025515	LLIF Trial 55x22x15 0°

Item no.	Designation
2407014509	LLIF Trial 45x18x09 5°
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2407014513	LLIF Trial 45x18x13 5°
2407014515	LLIF Trial 45x18x15 5°
2407015009	LLIF Trial 50x18x09 5°
2407015011	LLIF Trial 50x18x11 5°
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2407015015	LLIF Trial 50x18x15 5°
2407015509	LLIF Trial 55x18x09 5°
2407015511	LLIF Trial 55x18x11 5°
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2407024509	LLIF Trial 45x22x09 5°
2407024511	LLIF Trial 45x22x11 5°
2407024513	LLIF Trial 45x22x13 5°
2407024515	LLIF Trial 45x22x15 5°

Item no.	Designation
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2405015515	LLIF Trial 55x18x15 10°
2405024509	LLIF Trial 45x22x09 10°
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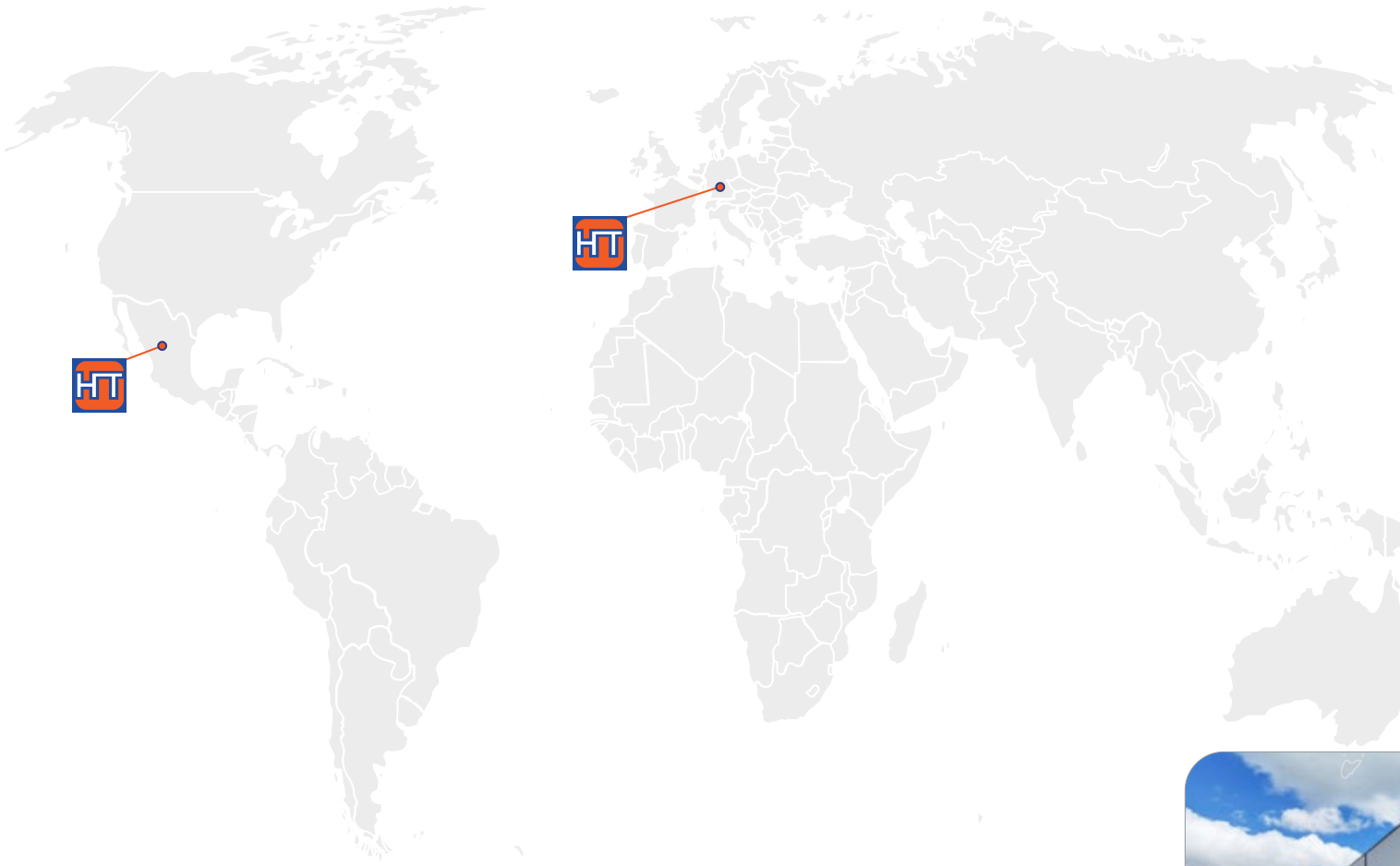

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