



SPINE SURGERY

AESCULAP® PROSPACE® TITANIUM POSTERIOR LUMBAR INTERBODY FUSION SYSTEM SURGICAL MANUAL

AESCULAP® THORACOLUMBAR SPINE

PROTECTING AND PRESERVING SPINAL STABILITY

Modern lifestyle has resulted in increasing physical inactivity among people all over the world. Of the many medical problems associated with this, spinal disorders are among the most critical. This is even more significant as the spinal column is one of the most important structures in the human body.

It supports and stabilizes the upper body and is the center of our musculoskeletal system, which gives the body movement. Our work in the field of spine surgery is dedicated to protecting the spinal column and preserving its stability. We support spine surgeons with durable, reliable products and partner services for reliable procedures and good clinical outcomes (1-7).

Our philosophy of sharing expertise with healthcare professionals and patients allows us to develop innovative implant and instrument systems that help to preserve stability and stabilize the cervical and thoracolumbar spine.

RELIABLE PARTNER IN SPINE SURGERY

Discover our comprehensive product portfolio by clicking on this area.



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A | GENERAL INFORMATION

PHILOSOPHY

PROSPACE® TITANIUM PLIF implants are used for stabilization of the lumbar and thoracic spine through posterior approach, monosegmental and multisegmental.

Always implant two implants per layer (PLIF technique). Always use PROSPACE[®] TITANIUM implants in conjunction with an internal fixator.

PROSPACE® TITANIUM TLIF implants are used for stabilization of the lumbar and thoracic spine through transforaminal approach, monosegmental and multisegmental.

Always use PROSPACE[®] TITANIUM TLIF in conjunction with an internal fixator.

PROSPACE® TITANIUM IS DESIGNED TO DELIVER

- PRIMARY STABILITY (2).
- RESTORATION OF THE NATURAL DISC HEIGHT AND LORDOSIS (1).



A | GENERAL INFORMATION

IMPLANT MATERIAL





The heart of this implant is a solid titanium alloy core (Ti6Al4V acc. to ISO 5832-3). The core is mantled with the proven PLASMAPORE[®] coating to increase the contact area between implant and endplate. PLASMAPORE[®] is a pure titanium coating (Ti/ISO 5832-2) which allows ingrowth of bone due to its balanced relationship between pore depth, porosity and roughness (2, 4, 8, 10).

Using a special manufacturing procedure, the implant surface is sprayed with pure titanium powder. Molten titanium particles settle on the core of the implant where they cool rapidly, building a firm form-lock between coating and core (Fig. 1).

In this way, each layer of the coating is built up and a favorable surface for bone ingrowth is created (2, 4, 8, 10) (Fig. 1/2).

AIM OF THE PLASMAPORE® COATING

I Primary Stability

The increased surface roughness of the PLASMAPORE[®] coating contributes to the primary stability of the motion segment (2).

I Secondary Stability

Bone growth into the coating is enabled due to the supportive features of PLASMAPORE[®], which leads to bone fusion between the adjacent vertebras with the implant (2, 4, 8, 10).

The coating concept, which has been proven as a result of many years of use in the field of hip prosthetics, is widely used in spinal surgery (2, 9, 11, 12).

IMPLANT FEATURES









PLASMAPORE® COATING

- High primary stability due to roughened surface which increases migration resistance and mechanical strength (2).
- High secondary stability due to bone ongrowth and ingrowth into the PLASMAPORE[®] structure (2, 4, 8, 10).

IMPLANT DESIGN

Lordotic implant design for restoration of the natural lordosis and spinal balance.

IMPLANT VARIETY

Adequate range of sizes to enable the choice of implant size to fit the patient.

INSTRUMENT DESIGN

- Specifically designed and clearly arranged instruments.
- I Inserter attaches with implant via screw thread connection.

B | SURGICAL MANUAL



B.1. BONE RESECTION

Using an osteotome and a KERRISON bone punch the bone resection is performed to get access to the intervertebral space.

B.2. REVEALING THE DISC SPACE

- I The dura and upper nerve root are carefully retracted in the desired direction using the nerve root retractors (Fig. 1).
- In order to make room for the insertion of the distractor, resection of disc material is now carried out using rongeurs and forceps.



B.3. RESTORATION OF DISC HEIGHT

I The desired distraction can be set using the distractors, available in heights from 7-13 mm in 1 mm increments (Fig. 3). The distractors are inserted one after the other on alternate sides of the disc until the desired distraction is obtained.





B.4. CLEANING OF THE INTERVERTEBRAL SPACE

- Besides rongeurs and curettes, reamers and rasps are available to prepare the intervertebral space. The reamer is connected to the T-Handle. Turning the instrument will remove disc material (Fig. 4). Using the rasps the cartilaginous endplates are refreshed.
- When contralateral side is cleaned the distractor stays in place to maintain the height on the side already prepared.
 Alternatively, the PROSPACE[®] Spacer PEEK/Radiolucent can be used for this purpose (Fig. 5).

INFORMATION

Make certain that the endplates of the neighboring vertebral bodies are not weakened, in order to minimize the risk of migration. Make certain that the implant bed is properly prepared to avoid damage to the implant when it is driven in. Use the nerve retractors to protect the dura during insertion.

B.5. INSERTION OF PROSPACE® TITANIUM

- Depending on the particular level or anatomy, either a straight (0°) or a lordotic (5° or 8°) implant can be inserted.
- I The implant is connected to the inserter by engaging the thread. With the impactor the implant position can be corrected. Ensure that the pins at the inserter are connected to the openings at the implant (Fig. 6).

INFORMATION

It is recommended to position $\mathsf{PROSPACE}^\circ$ 2-3 mm in front of the posterior rim.

B | SURGICAL MANUAL





B.6. INSERTION ON THE CONTRA-LATERAL SIDE

- I The described operative steps are now repeated for the contra-lateral side. Bone material can be packed between both implants (Fig. 1).
- I The implants get jammed by release of distraction as well as by compression with the posterior instrumentation.
- I X-ray control to verify the position of the implants.

B.7. POSTERIOR STABILIZATION

- Additional posterior stabilization of the motion segment (e. g. using AESCULAP[®] Ennovate[®]) should be performed (Fig. 2).
- Subsequent segmental compression with posterior instrumentation allows loading of the anterior column and restoration of sagittal alignment.
- Final X-ray.

INFORMATION

If necessary to reattach the cage a revision instrument is available.

Thoracolumbar pedicle screw system shown in images is the AESCULAP* $\mathsf{S}^{\mathsf{4*}}$ Spinal System.

For more information visit www.bbraun.com/ennovate

C | IMPLANT & INSTRUMENT OVERVIEW



| Article No. | Size (Height x Width x Length) | Angle |
|-------------|--------------------------------|-------|
| FJ230T | 7 x 7 x 16 mm | 0° |
| FJ231T | 9 x 7 x 16 mm | 0° |
| FJ232T | 7 x 7 x 19 mm | 0° |
| FJ233T | 9 x 7 x 19 mm | 0° |
| FJ234T | 7 x 7 x 22 mm | 0° |
| FJ235T | 8 x 7 x 22 mm | 0° |
| FJ236T | 9 x 7 x 22 mm | 0° |
| FJ237T | 9 x 9 x 22 mm | 0° |
| FJ238T | 10 x 8 x 22 mm | 0° |
| FJ239T | 11 x 7 x 24 mm | 0° |
| FJ240T | 11 x 9 x 24 mm | 0° |
| FJ242T | 9 x 7 x 26 mm | 0° |
| FJ241T | 13 x 9 x 26 mm | 0° |
| FJ252T | 7 x 7 x 19 mm | 5° |
| FJ253T | 9 x 7 x 19 mm | 5° |
| FJ254T | 7 x 7 x 22 mm | 5° |
| FJ255T | 8 x 7 x 22 mm | 5° |
| FJ256T | 9 x 7 x 22 mm | 5° |
| FJ257T | 9 x 9 x 22 mm | 5° |
| FJ258T | 10 x 8 x 22 mm | 5° |
| FJ259T | 11 x 7 x 24 mm | 5° |
| FJ260T | 11 x 9 x 24 mm | 5° |
| FJ261T | 13 x 9 x 26 mm | 5° |

| PROSPACE® TITANIUM IMPLANTS | Article No. | Size (Height x Width x Length) | Angle |
|-----------------------------|-------------|--------------------------------|-------|
| | FJ274T | 7 x 7 x 22 mm | 8° |
| | FJ275T | 8 x 7 x 22 mm | 8° |
| | FJ276T | 9 x 7 x 22 mm | 8° |
| | FJ277T | 9 x 9 x 22 mm | 8° |
| | FJ278T | 10 x 8 x 22 mm | 8° |
| | FJ279T | 11 x 7 x 24 mm | 8° |
| | FJ280T | 11 x 9 x 24 mm | 8° |
| | FJ282T | 9 x 7 x 26 mm | 8° |
| | FJ281T | 13 x 9 x 26 mm | 8° |

Implant materials

ISOTAN[®]_F Titanium forged alloy (Ti6Al4V/ISO 5832-3) PLASMAPORE[®] Pure titanium (Ti/ISO 5832-2)

C | IMPLANT & INSTRUMENT OVERVIEW

| PROSPACE® TI R50 IMPLANTS | Article No. | Size (Height x Width x Length) | Angle |
|---------------------------|-------------|--------------------------------|-------|
| | SJ832T | 7 x 7 x 19 mm | 0° |
| | SJ833T | 9 x 7 x 19 mm | 0° |
| | SJ834T | 7 x 7 x 22 mm | 0° |
| | SJ835T | 8 x 7 x 22 mm | 0° |
| | SJ836T | 9 x 7 x 22 mm | 0° |
| | SJ837T | 9 x 9 x 22 mm | 0° |
| | SJ838T | 10 x 8 x 22 mm | 0° |
| | SJ839T | 11 x 9 x 22 mm | 0° |
| | SJ840T | 12 x 9 x 22 mm | 0° |
| | SJ841T | 13 x 9 x 22 mm | 0° |
| | SJ852T | 7 x 7 x 19 mm | 5° |
| | SJ853T | 9 x 7 x 19 mm | 5° |
| | SJ854T | 7 x 7 x 22 mm | 5° |
| | SJ855T | 8 x 7 x 22 mm | 5° |
| | SJ856T | 9 x 7 x 22 mm | 5° |
| | SJ857T | 9 x 9 x 22 mm | 5° |
| | SJ858T | 10 x 8 x 22 mm | 5° |
| | SJ859T | 11 x 9 x 22 mm | 5° |
| | SJ860T | 12 x 9 x 22 mm | 5° |
| | SJ861T | 13 x 9 x 22 mm | 5° |

| PROSPACE® TITANIUM TLIF IMPLANTS | Article No. | Size (Height x Width x Length) | Angle |
|----------------------------------|-------------|--------------------------------|-------|
| | FJ216T | 7 x 9 x 34 mm | 0° |
| | FJ217T | 9 x 9 x 34 mm | 0° |
| | FJ218T | 11 x 9 x 34 mm | 0° |
| | FJ219T | 13 x 9 x 34 mm | 0° |

C | IMPLANT & INSTRUMENT OVERVIEW

SJ880 - PROSPACE® TITANIUM INSTRUMENTATION

| INSTRUMENTS | Article No. | Description | Quantity |
|---|-------------|--------------------------------------|----------|
| | SJ033R | T-Handle | 2 |
| | FJ804R | T-Handle Long | 2* |
| | SJ807R | PROSPACE [®] Reamer Ø 7 mm | 1 |
| | SJ808R | PROSPACE [®] Reamer Ø 8 mm | 1 |
| | SJ809R | PROSPACE [®] Reamer Ø 9 mm | 1 |
| | SJ810R | PROSPACE [®] Reamer Ø 10 mm | 1 |
| | SJ811R | PROSPACE [®] Reamer Ø 11 mm | 1 |
| | SJ812R | PROSPACE [®] Reamer Ø 12 mm | 1 |
| | SJ813R | PROSPACE [®] Reamer Ø 13 mm | 1 |
| ······ | SJ817R | PROSPACE [®] Rasp 7 mm | 1 |
| ······································ | SJ818R | PROSPACE [®] Rasp 8 mm | 1 |
| | SJ819R | PROSPACE [®] Rasp 9 mm | 1 |
| () () () () () () () () () () () () () (| SJ820R | PROSPACE [®] Rasp 10 mm | 1 |
| | SJ821R | PROSPACE [®] Rasp 11 mm | 1 |
| ······································ | SJ822R | PROSPACE [®] Rasp 12 mm | 1 |
| | SJ823R | PROSPACE® Rasp 13 mm | 1 |



SJ874R PROSPACE" TITANIUM – Prepraration Tray

| INSTRUMENTS | Article No. | Description | Quantity |
|-------------|-------------|--|----------|
| | SJ882R | Bone Curette Straight | 1 |
| | SJ883R | Box Curette Straight | 1 |
| | SJ884R | Curette Teardrop Shape Small | 1 |
| | SJ885R | Curette Teardrop Shape Large | 1 |
| | FJ698R | Bone Curette 20° Left Angled 6.3/350 mm | 1 |
| | FJ699R | Bone Curette 20° Right Angled 6.3/350 mm | 1 |
| | SJ874R | PROSPACE® TITANIUM Tray for Preparation Instruments | 1 |
| | JH217R | Lid for PROSPACE® Trays | 1 |

C | IMPLANT & INSTRUMENT OVERVIEW

SJ880 - PROSPACE® TITANIUM INSTRUMENTATION

| INSTRUMENTS | Article No. | Description | Quantity |
|-------------|-------------|--|----------|
| | FJ051R | Retractor S | 1 |
| | FJ052R | Retractor M | 1 |
| Ban - | FJ053R | Retractor L | 1 |
| | FJ054R | Retractor XL | 1 |
| | SJ217R | Distractor Metal 7 mm | 1 |
| | SJ218R | Distractor Metal 8 mm | 1 |
| | SJ219R | Distractor Metal 9 mm | 1 |
| | SJ220R | Distractor Metal 10 mm | 1 |
| | SJ221R | Distractor Metal 11 mm | 1 |
| | SJ222R | Distractor Metal 12 mm | 1 |
| | SJ223R | Distractor Metal 13 mm | 1 |
| | SJ217P | PROSPACE [®] Spacer PEEK/Radiolucent 7 mm | 1 |
| | SJ218P | PROSPACE [®] Spacer PEEK/Radiolucent 8 mm | 1 |
| ī | SJ219P | PROSPACE [®] Spacer PEEK/Radiolucent 9 mm | 1 |
| ī | SJ220P | PROSPACE [®] Spacer PEEK/Radiolucent 10 mm | 1 |
| | SJ221P | PROSPACE [®] Spacer PEEK/Radiolucent 11 mm | 1 |
| | SJ222P | PROSPACE [®] Spacer PEEK/Radiolucent 12 mm | 1 |
| | SJ223P | PROSPACE [®] Spacer PEEK/Radiolucent 13 mm | 1 |



SJ881R PROSPACE® TITANIUM – Implantation Tray

| INSTRUMENTS | Article No. | Description | Quantity |
|-------------|-------------|---|----------|
| | SJ805R | PROSPACE [®] TITANIUM Insertion Instrument | 1 |
| | SJ806R | PROSPACE [®] TITANIUM Revision Instrument | 1 |
| | FJ039R | Impactor | 1 |
| | FW869R | Slotted Hammer | 1 |
| | SJ881R | PROSPACE [®] TITANIUM Tray for Implantation Instruments | 1 |
| | JH217R | Lid for PROSPACE® Trays | 1 |

AESCULAP[®] PROSPACE[®] TITANIUM REFERENCE

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