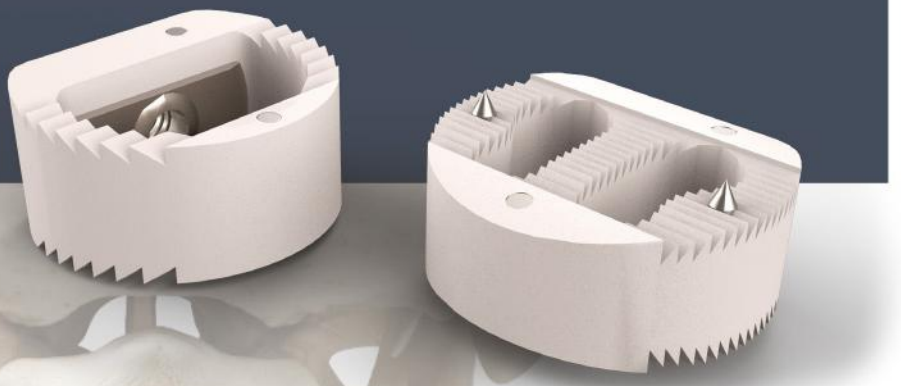
SURGICAL TECHNIQUE

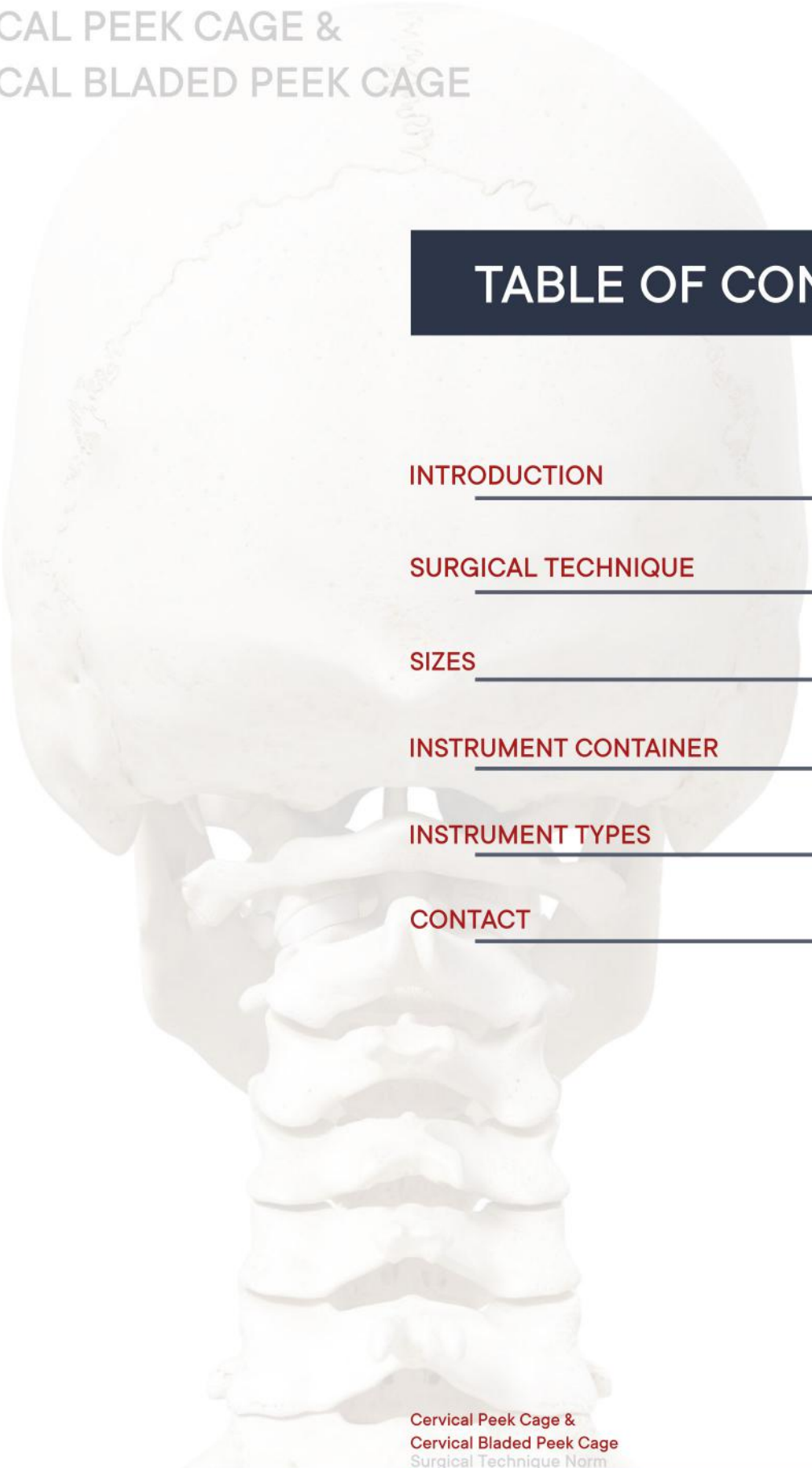
POLAR
POLAR-b



CERVICAL PEEK CAGE &
CERVICAL BLADED PEEK CAGE

norm
A proof of innovative ideas ...

CERVICAL PEEK CAGE &
CERVICAL BLADED PEEK CAGE



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norm
A proof of innovative ideas ...

CERVICAL PEEK CAGE &
CERVICAL BLADED PEEK CAGE

INTRODUCTION

POLAR Features

- *Not lesion persistent that produced by peek material compatible with MR*
- *Best fit with anatomic structure*
- *Tantalum marker*
- *Implantable with Smith-Robinson Technic*
- *Strong fixation by superior and inferior area with threaded surface and two titanium pins*

POLAR-b Features

- *Locking blade mechanism*
- *Tantalum marker*
- *Threaded surface*
- *2 angle for compatibility with anatomy*
- *Provide saving of time and facility with applications method*
- *Large graft area*

CERVICAL PEEK CAGE &
CERVICAL BLADED PEEK CAGE

INTRODUCTION

Indications

-SL anterior cervical intersomatic fusion cages are designed for the treatment of softand hard disc degenerative conditions, in combination with anterior cervical plates. Traumatic disc lesions and revision surgery for pseudarthrosis can also be addressed.

Contraindications

a) Absolute contra indications:

1. Infection or inflammation of the cervical spine
2. Distant infection sites, with potential hematogenous spread to the implant
3. Metastases of the cervical spine
4. Patients with an immature skeleton
5. Patients with neuromuscular diseases, limited available bone at the cervical spine

b) Conditions that increase the risk of failure:

1. Patients with poor compliance
2. Severe osteoporosis: additional posterior cervical fixation may be required
3. Metabolic disorders of bone
4. Osteomalacia
5. Pathological obesity
6. Pregnancy
7. Senility, mental illness, alcoholism or drug abuse
8. Poor health conditions with regard to wound healing (e.g., skin ulceration, terminal diabetes mellitus, alcoholism, drug abuse, or malnutrition)

CERVICAL PEEK CAGE &
CERVICAL BLADED PEEK CAGE

POLAR POLAR-b

SURGICAL TECHNIQUE

1
Patient positioning

Position the patient in a restored physiological lordosis.

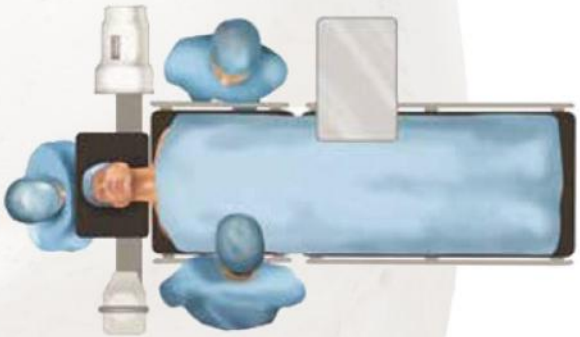


Figure 1a

2
Exposure

Patient positioning is critical to ensure proper orientation and alignment of the device.
The position should be maintained throughout the surgery, and rotation of the head should be prevented.

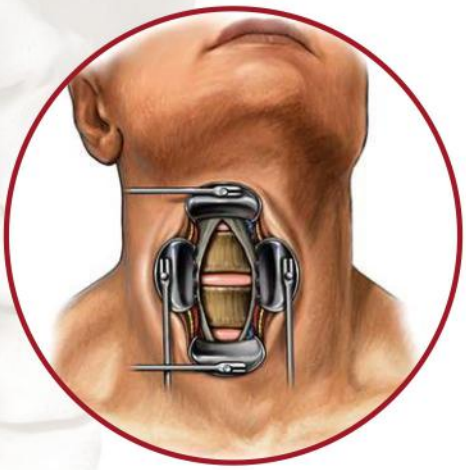


Figure 2a

CERVICAL PEEK CAGE &
CERVICAL BLADED PEEK CAGE

POLAR POLAR-b

SURGICAL TECHNIQUE

3

Caspar Pin Placement

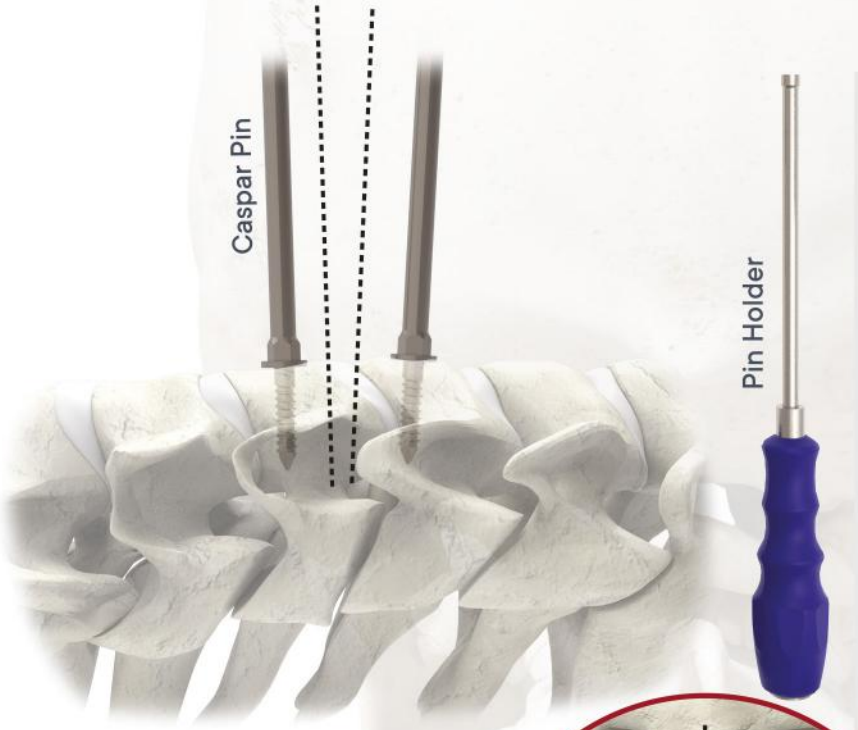


Figure 3a

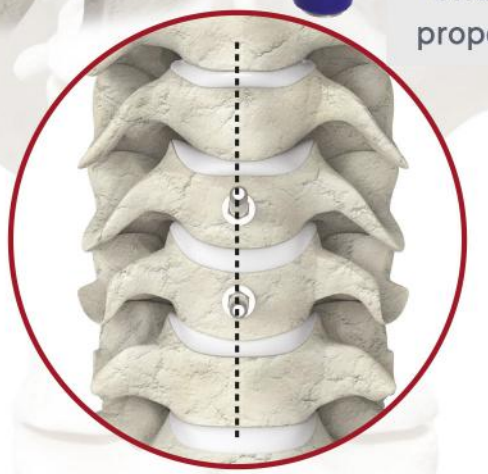


Figure 3b

Insert the Caspar Pin (CPC010) using the Pin Holder (CPC008). It is important to place the pins in the following manner:

- No less than 5 mm from each endplate so as not to interfere with future instrumentation
- Centered on midline in the coronal plane
- Parallel with the vertebral endplates to ensure parallel distraction
- Under fluoroscopy to confirm proper positioning

CERVICAL PEEK CAGE &
CERVICAL BLADED PEEK CAGE

POLAR POLAR-b

SURGICAL TECHNIQUE

4

Caspar Retractor Placement

Rotate the knob on the Caspar Retractor (CPC009) to distract to the desired height for performing the discectomy; ratcheting mechanism maintains height.

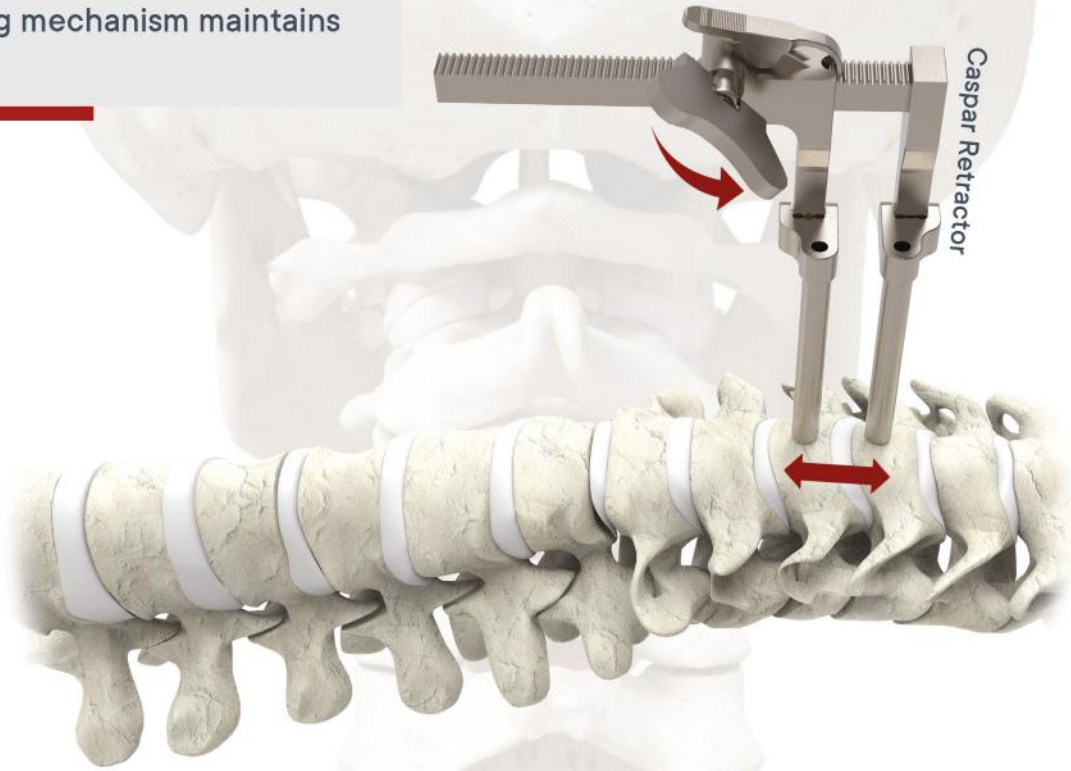


Figure 4a

CERVICAL PEEK CAGE &
CERVICAL BLADED PEEK CAGE

POLAR POLAR-b

SURGICAL TECHNIQUE

4

Caspar Retractor Placement

Perform a complete discectomy of the disc space between the uncinate processes and back to the posterior ligament. Take care to decompress the foramen bilaterally and respect the bony endplates. Caspar Retractor (CPC009)

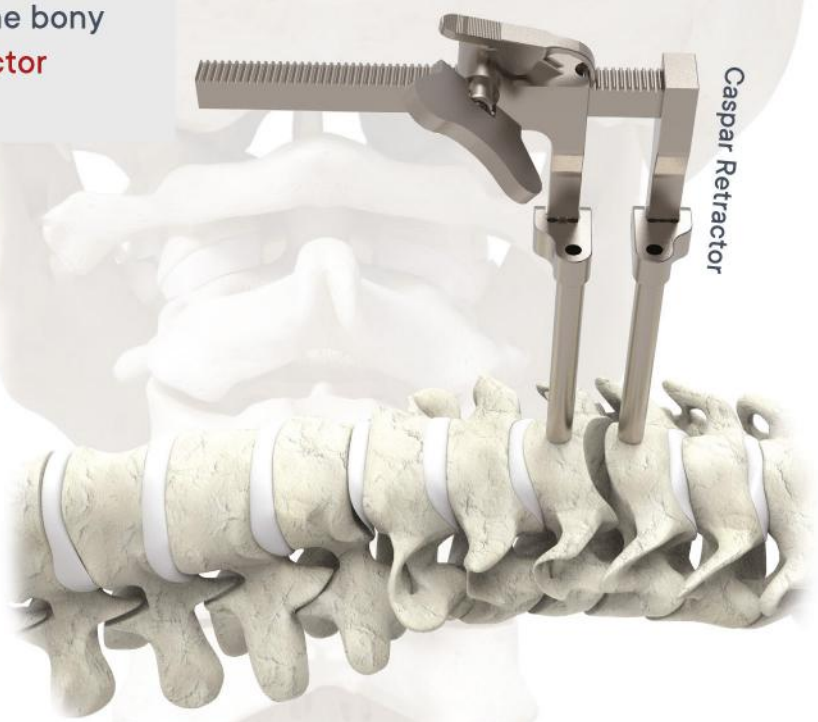


Figure 4a

CERVICAL PEEK CAGE &
CERVICAL BLADED PEEK CAGE

POLAR POLAR-b

SURGICAL TECHNIQUE

5

Trialing

Trials, 4 mm (CPC002), 5 mm (CPC003), 6 mm (CPC004), 7 mm (CPC005), 8 mm (CPC006) are placed into the disc space intra-operatively to determine the appropriate implant height and size of footprint. The goal is to select the largest footprint possible and the smallest height necessary. The implant should cover the majority of the vertebral body end plate. Undersized implants lead to increased risk of implant subsidence.

Figure 5a

Figure 5b

CERVICAL PEEK CAGE &
CERVICAL BLADED PEEK CAGE

POLAR

SURGICAL TECHNIQUE

6a

Implant Insertion

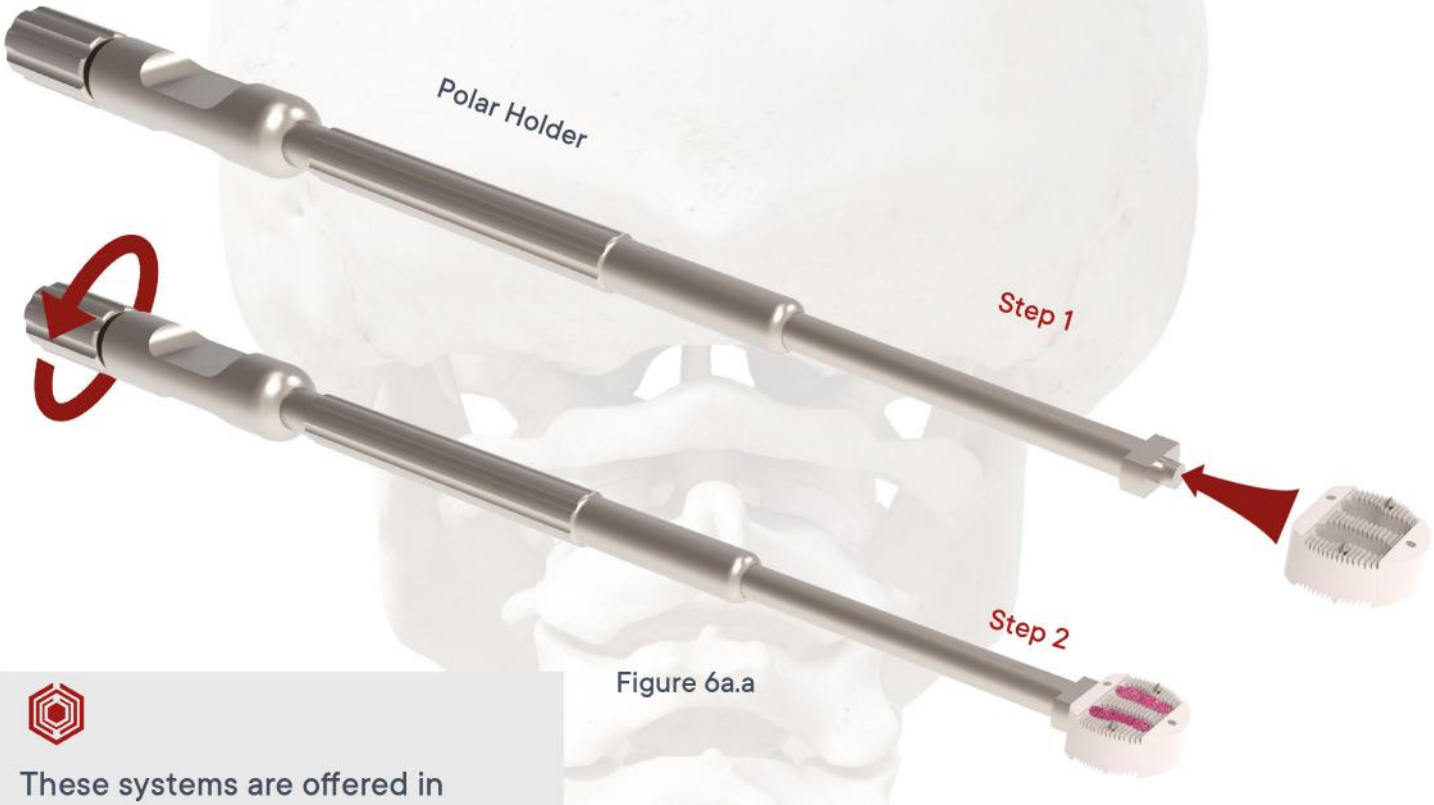


Figure 6a.a

These systems are offered in multiple sizes and lordotic angles, with a central opening that allows for increased graft volume. Polar Holder (CPC001)

Figure 6a.b

CERVICAL PEEK CAGE &
CERVICAL BLADED PEEK CAGE

POLAR

SURGICAL TECHNIQUE

6a

Implant Insertion

Polar is inserted into the disc space under fluoroscopy. The Polar Holder (CPC001) has a preset depth feature to allow the surgeon placed the implant properly into the disc space. Hammer (CPC011), Caspar Retractor (CPC009)

Figure 6a.b

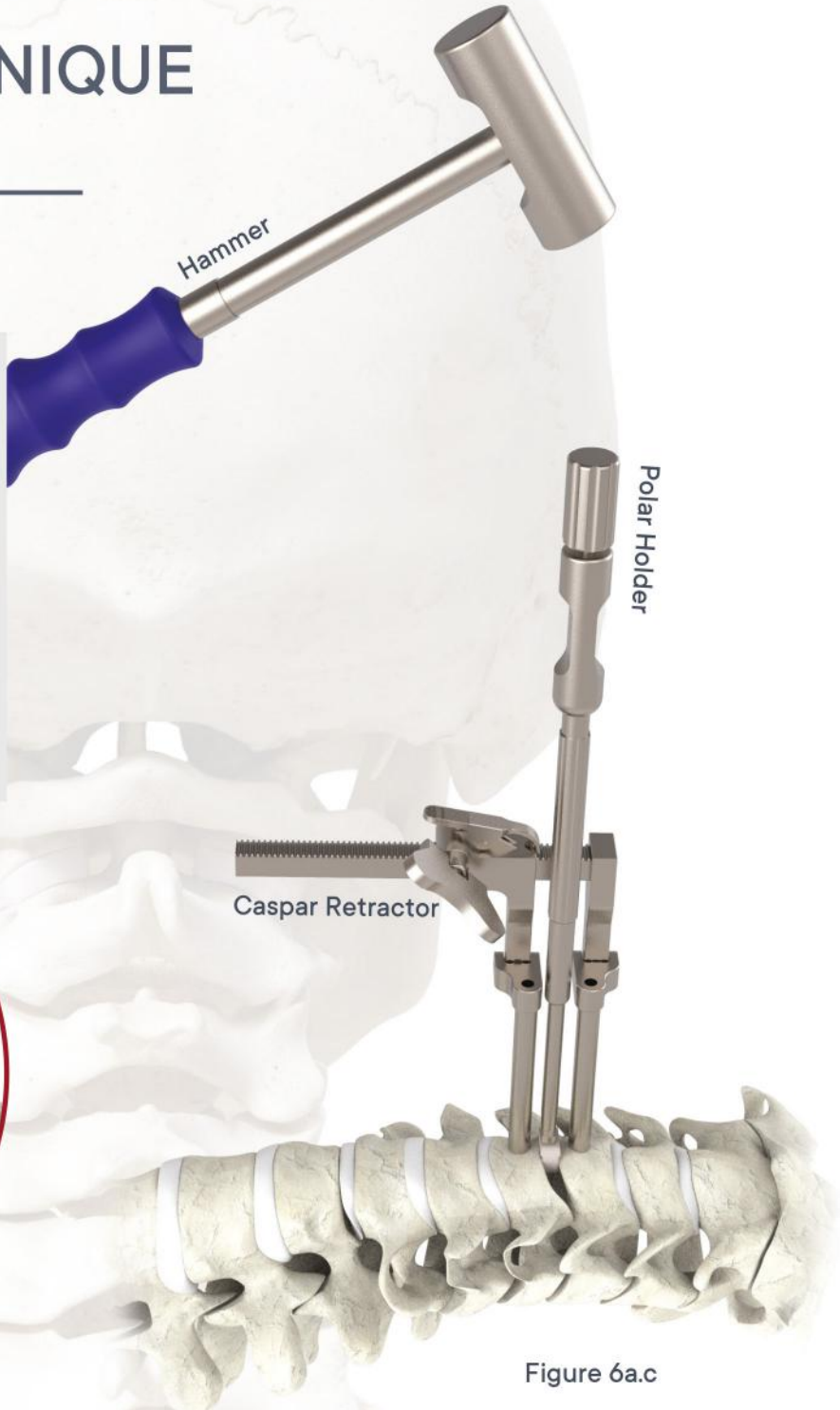


Figure 6a.c

CERVICAL PEEK CAGE &
CERVICAL BLADED PEEK CAGE

POLAR

SURGICAL TECHNIQUE

6a

Implant Insertion

A lateral x-ray may be used to confirm placement of the Polar. Once the implant is positioned appropriately, the Polar Holder (CPC001) can be disengaged.

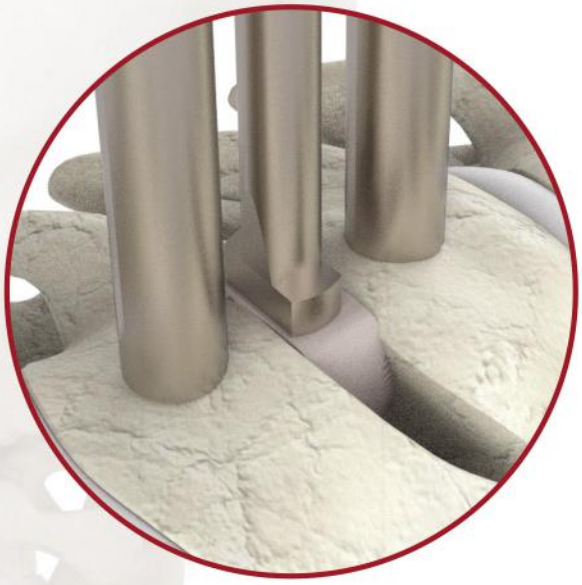


Figure 6a.d

Figure 6a.e

CERVICAL PEEK CAGE &
CERVICAL BLADED PEEK CAGE

POLAR-b

SURGICAL TECHNIQUE

6b

Implant Insertion

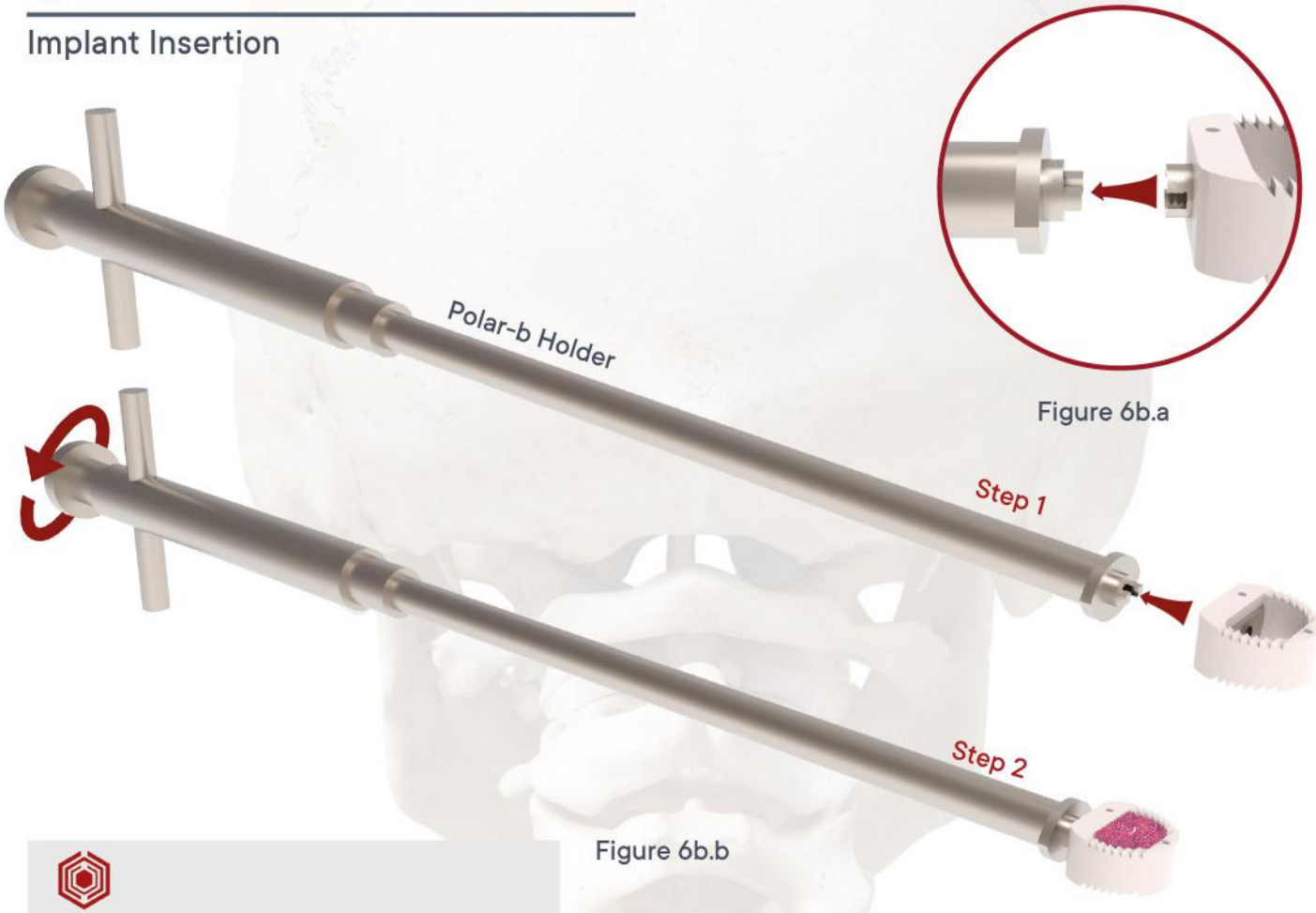


Figure 6b.a

Figure 6b.b

These systems are offered in multiple sizes and lordotic angles, with a central opening that allows for increased graft volume.
Polar-b Holder (BCPC001)

CERVICAL PEEK CAGE &
CERVICAL BLADED PEEK CAGE

POLAR-b

SURGICAL TECHNIQUE

6b

Implant Insertion

Step 1: The posterior part of the **Polar-b Holder (BCPC001)** is rotated clockwise to fix the implant. (Figure 6b.b)
Step 2: Insertion is done with a **Hammer (CPC011)**. (Figure 6b.d)
Step 3: The blade is fixed by turning the back of the **Polar-b Holder (BCPC001)**. (Figure 6b.f)

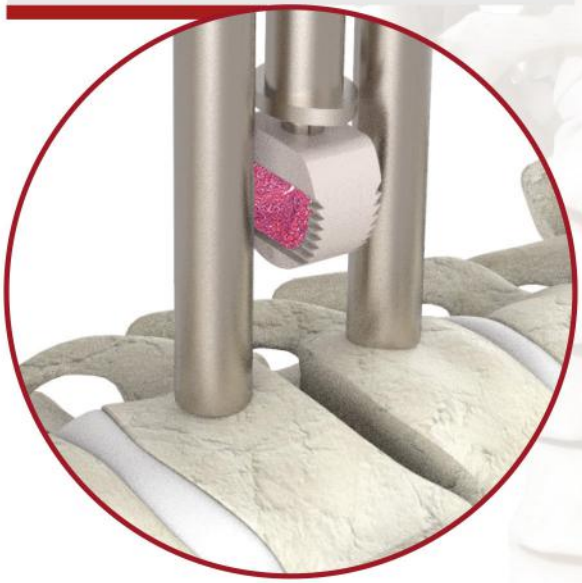


Figure 6b.c

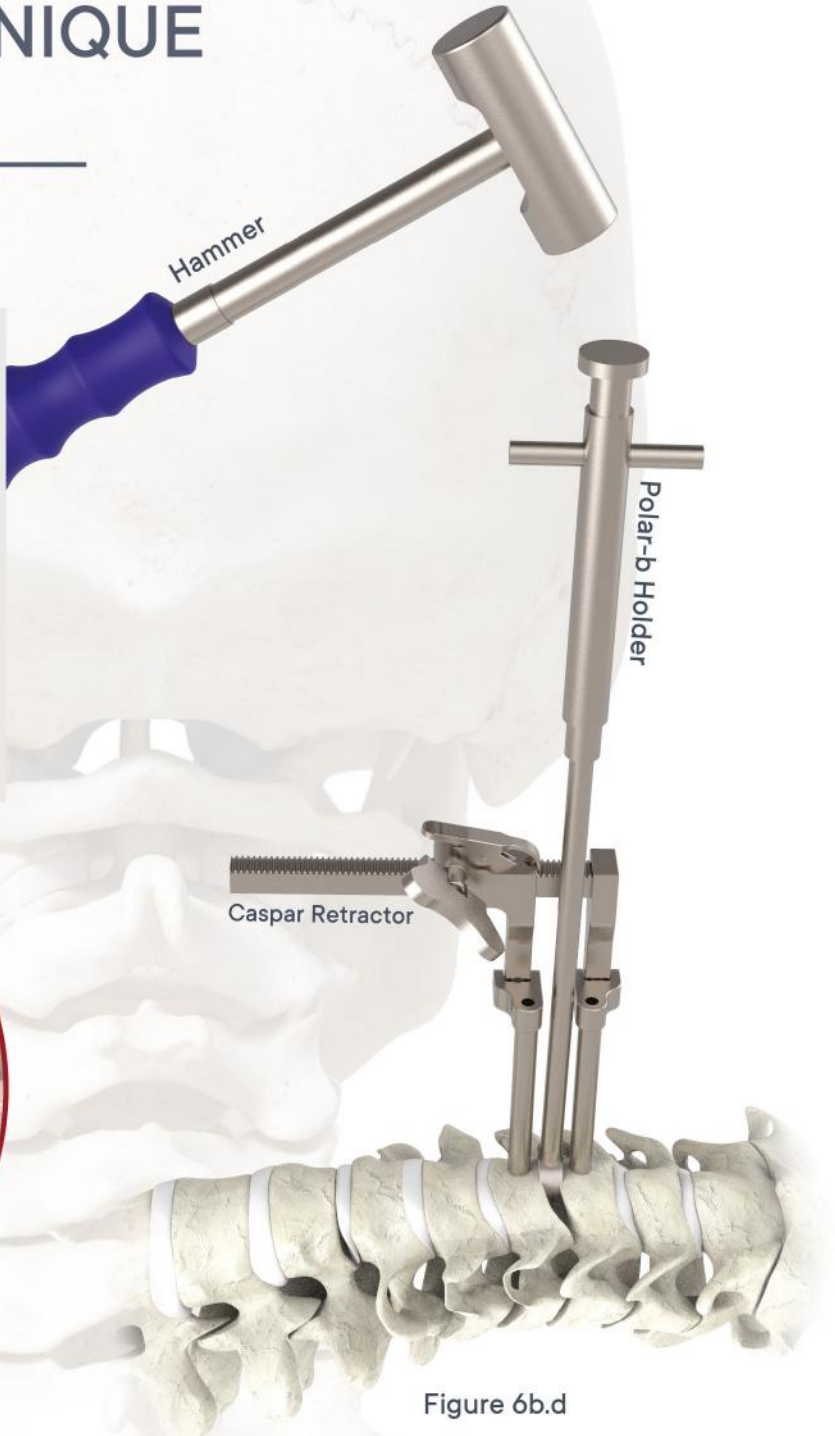


Figure 6b.d

CERVICAL PEEK CAGE &
CERVICAL BLADED PEEK CAGE

POLAR-b

SURGICAL TECHNIQUE

6b

Implant Insertion

A lateral x-ray may be used to confirm placement of the Polar-b. Once the implant is positioned appropriately, the Polar-b Holder (BCPC001) can be disengaged.

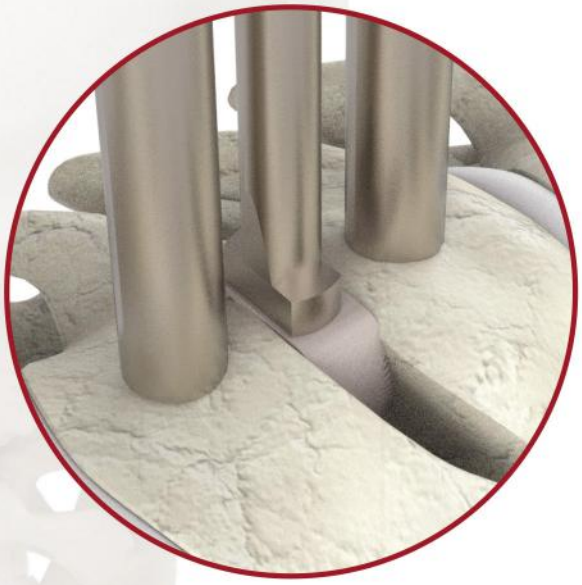


Figure 6b.e

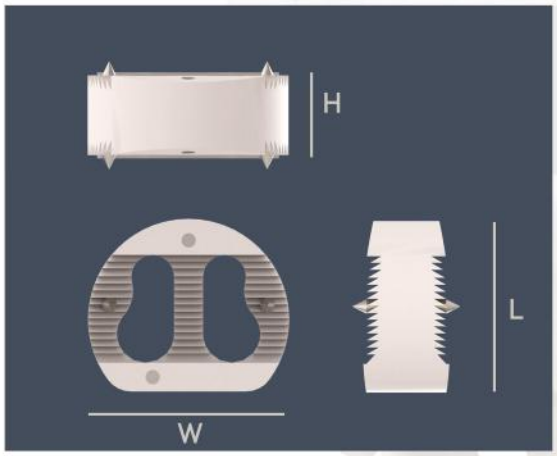
Figure 6b.f

CERVICAL PEEK CAGE &
CERVICAL BLADED PEEK CAGE

POLAR

SIZES

Information



POLAR

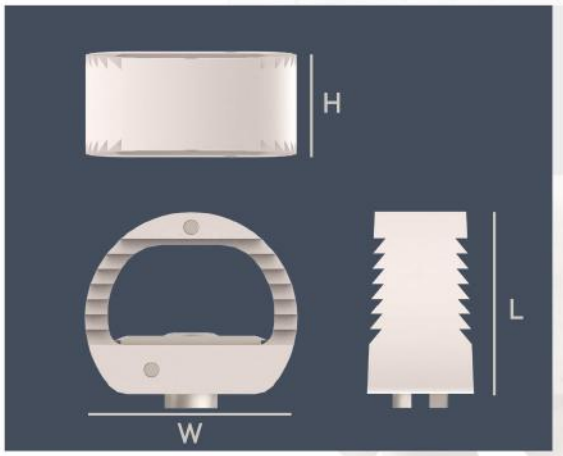
Catalogue No.	Width	Length	Height
NCPC041214	14 mm	12 mm	4 mm
NCPC041216	16 mm	12 mm	4 mm
NCPC041414	14 mm	14 mm	4 mm
NCPC041416	16 mm	14 mm	4 mm
NCPC051214	14 mm	12 mm	5 mm
NCPC051216	16 mm	12 mm	5 mm
NCPC051414	14 mm	14 mm	5 mm
NCPC051416	16 mm	14 mm	5 mm
NCPC061214	14 mm	12 mm	6 mm
NCPC061216	16 mm	12 mm	6 mm
NCPC061414	14 mm	14 mm	6 mm
NCPC061416	16 mm	14 mm	6 mm
NCPC071214	14 mm	12 mm	7 mm
NCPC071216	16 mm	12 mm	7 mm
NCPC071414	14 mm	14 mm	7 mm
NCPC071416	16 mm	14 mm	7 mm
NCPC081214	14 mm	12 mm	8 mm
NCPC081216	16 mm	12 mm	8 mm
NCPC081414	14 mm	14 mm	8 mm
NCPC081416	16 mm	14 mm	8 mm

CERVICAL PEEK CAGE &
CERVICAL BLADED PEEK CAGE

POLAR-b

SIZES

Information



POLAR-b

Catalogue No.	Width	Length	Height
NCPCB41214	14 mm	12 mm	4 mm
NCPCB5121	14 mm	12 mm	5 mm
NCPCB6121	14 mm	12 mm	6 mm
NCPCB71214	14 mm	12 mm	7 mm
NCPCB81214	14 mm	12 mm	8 mm
NCPCB41216	16 mm	12 mm	4 mm
NCPCB51216	16 mm	12 mm	5 mm
NCPCB61216	16 mm	12 mm	6 mm
NCPCB71216	16 mm	12 mm	7 mm
NCPCB81216	16 mm	12 mm	8 mm
NCPCB41414	14 mm	14 mm	4 mm
NCPCB51414	14 mm	14 mm	5 mm
NCPCB61414	14 mm	14 mm	6 mm
NCPCB71414	14 mm	14 mm	7 mm
NCPCB81414	14 mm	14 mm	8 mm
NCPCB41416	16 mm	14 mm	4 mm
NCPCB51416	16 mm	14 mm	5 mm
NCPCB61416	16 mm	14 mm	6 mm
NCPCB71416	16 mm	14 mm	7 mm
NCPCB81416	16 mm	14 mm	8 mm

CERVICAL PEEK CAGE &
CERVICAL BLADED PEEK CAGE

POLAR *POLAR-b*

INSTRUMENT CONTAINER

Container

This container is made of wiremesh stainless steel. It has a hight stability, low weight and good sterilization feature.

CERVICAL PEEK CAGE &
CERVICAL BLADED PEEK CAGE

POLAR *POLAR-b*

INSTRUMENT CONTAINER

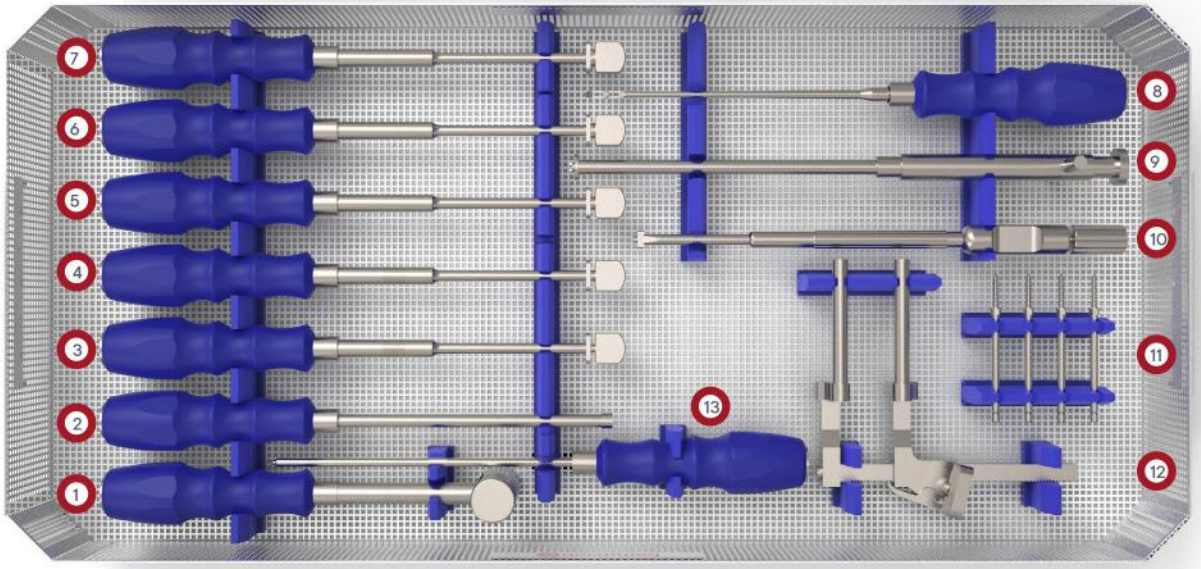
Container

This container is made of wiremesh stainless steel. It has a hight stability, low weight and good sterilization feature.

CERVICAL PEEK CAGE &
CERVICAL BLADED PEEK CAGE

POLAR *POLAR-b*

INSTRUMENT TYPES



Set No.	Catalogue No.	Description	Piece
01	CPC011	Hammer	1
02	CPC008	Pin Holder	1
03	CPC002	Trial 4 mm	1

CERVICAL PEEK CAGE &
CERVICAL BLADED PEEK CAGE

POLAR *POLAR-b*

INSTRUMENT TYPES







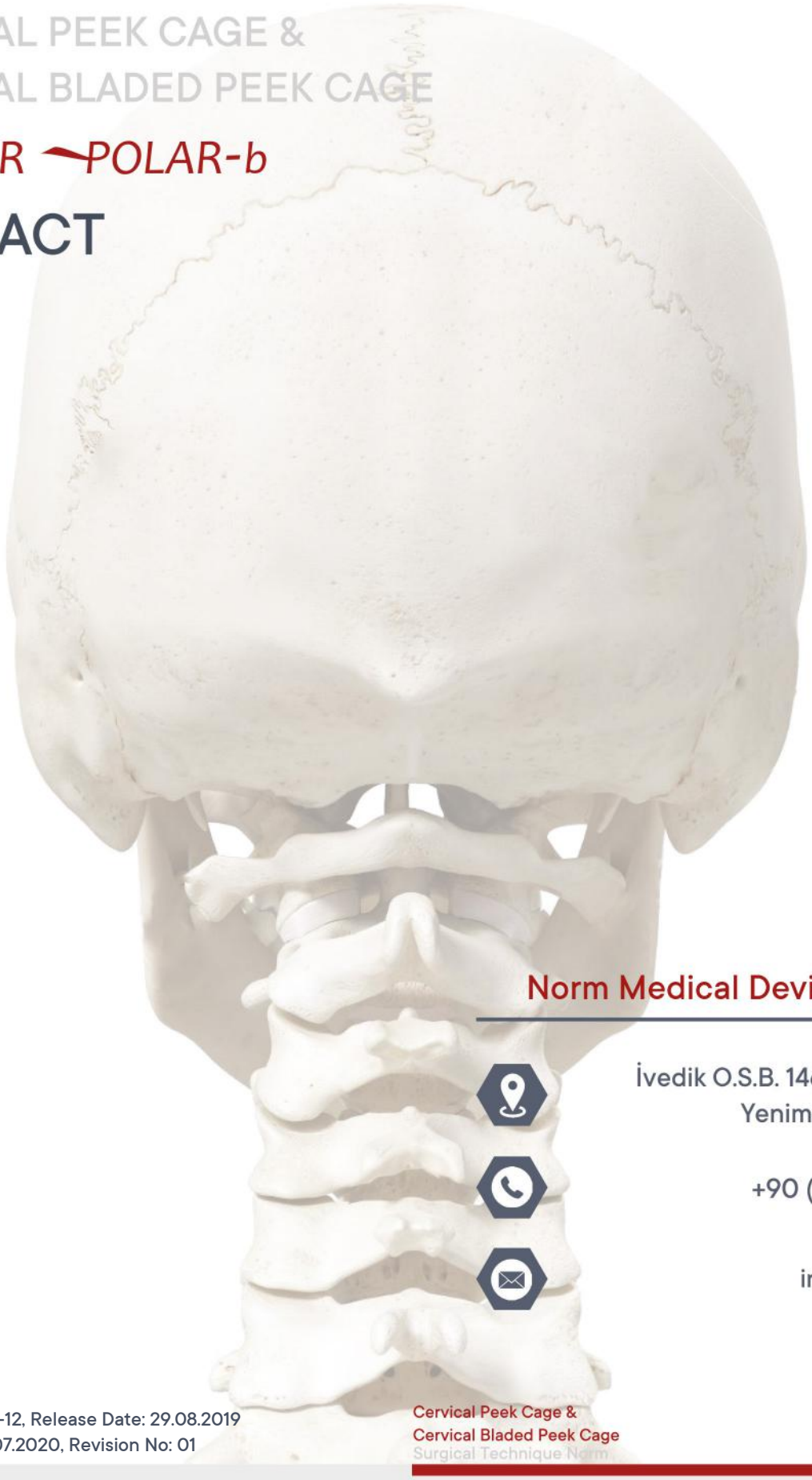


Set No.	Catalogue No.	Description	Piece
04	CPC003	Trial 5 mm	1
05	CPC004	Trial 6 mm	1
06	CPC005	Trial 7 mm	1
07	CPC006	Trial 8 mm	1
08	CPC007	Cervical Reamer	1
09	BCPC001	Polar-b Holder	1
10	CPC001	Polar Holder	1
11	CPC010	Caspar Pin	4
12	CPC009	Caspar Retractor	1
13	CPC012	Cervical Awl	1

CERVICAL PEEK CAGE &
CERVICAL BLADED PEEK CAGE

POLAR POLAR-b

CONTACT



Norm Medical Devices Co. Ltd.

İvedik O.S.B. 1468 Cad. No : 193
Yenimahalle/ANKARA

+90 (312) 284 00 80

info@normltd.net

No: NORM-F12-CT-12, Release Date: 29.08.2019
Revision Date: 29.07.2020, Revision No: 01

SURGICAL TECHNIQUE

Alligator
Alligator-*exp*

PLIF peek cage

norm
A proof of innovative ideas ...

Alligator
Alligator-exp
PLIF peek cage

TABLE OF CONTENTS

Alligator
Alligator-exp
PLIF peek cage
INTRODUCTION

Alligator Features

- *Tantalum marker*
- *Bulleted anterior profile facilitates cage insertion into the intervertebral space*
- *Open design of the upper and lower surfaces allows optimum graft surface to improve bone fusion*
- *Retaining teeth and biconvex profile prevent migration*
- *Revolutionary instrumentation to ensure safety and efficiency during posterior lumbar*

Alligator-exp Features

- *Don't allow any lesional problems*
- *Implanted from posterior approach for following indications; Mechanical instability, Spondylolisthesis*
- *Threaded surface feature facilities a strong fixation by superior and inferior area*
- *Height can be increased by 1 mm at least*

Alligator
Alligator-exp
PLIF peek cage
INTRODUCTION

Indications

Indications are lumbar and lumbosacral pathologies in which segmental spondylodesis is indicated, for example:

- *Degenerative disc diseases and spinal instabilities*
- *Revision procedures for post-discectomy syndrome*
- *Pseudarthrosis or failed spondylodesis*
- *Degenerative spondylolisthesis*
- *Isthmic spondylolisthesis*

Contraindications

- *Vertebral body fractures*
- *Spinal tumors*
- *Major spinal instabilities*
- *Primary spinal deformities*

Alligator
Alligator-exp
PLIF peek cage
SURGICAL TECHNIQUE

1
Patient positioning

Position the patient in a restored physiological lordosis.

Figure 1a

2
Exposure

The PLIF approach can be performed using standard open or minimally invasive techniques. The laminae and articular processes are exposed laterally to the base of the transverse processes.

Figure 2a

Alligator
Alligator-exp
PLIF peek cage
SURGICAL TECHNIQUE

3

PLIF Site Preparation

Lumbar Reamer (LPC008) can be used to complete the resection in areas of reduced access or to clear an area for additional bone graft insertion.

Figure 3a

Figure 3b

Alligator
Alligator-exp
PLIF peek cage
SURGICAL TECHNIQUE

3

Determine Implant Size

Impact an appropriately sized Trial Implant with the etch representing the axial canal positioned cranial/caudal. Hammer (LPC009)

Trial 7 mm (LPC002), Trial 8 mm (LPC003), Trial 9 mm (LPC004), Trial 10 mm (LPC005), Trial 11 mm (LPC006), Trial 12 mm (LPC007)

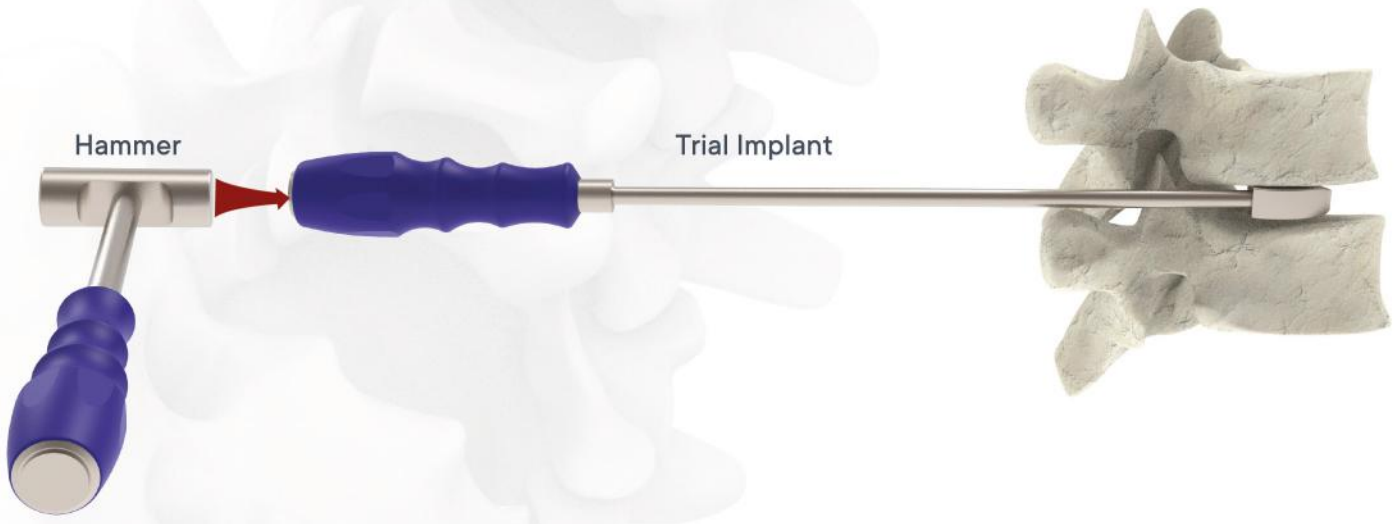


Figure 4a

Alligator

PLIF peek cage

SURGICAL TECHNIQUE

4a

Implant Insertion

These parts allow easy grip of the implant. Alligator Holder (LPC001)

Figure 4a.a

Figure 4a.b

Alligator

PLIF peek cage

SURGICAL TECHNIQUE

4a

Implant Insertion

These systems are offered in multiple sizes and lordotic angles, with a central opening that allows for increased graft volume. Alligator Holder (LPC001), Hammer (LPC009)

Figure 4a.c

Figure 4a.d

Alligator

PLIF peek cage

SURGICAL TECHNIQUE

4a

Implant Insertion

Once inserted, the posterior end of the cage should lie between 2mm-4mm anterior to the posterior vertebral body wall. Alligator Holder (LPC001) is then release. (Figure 4a.e)

Figure 4a.e

Alligator-exp

PLIF peek cage

SURGICAL TECHNIQUE

4b

Implant Insertion

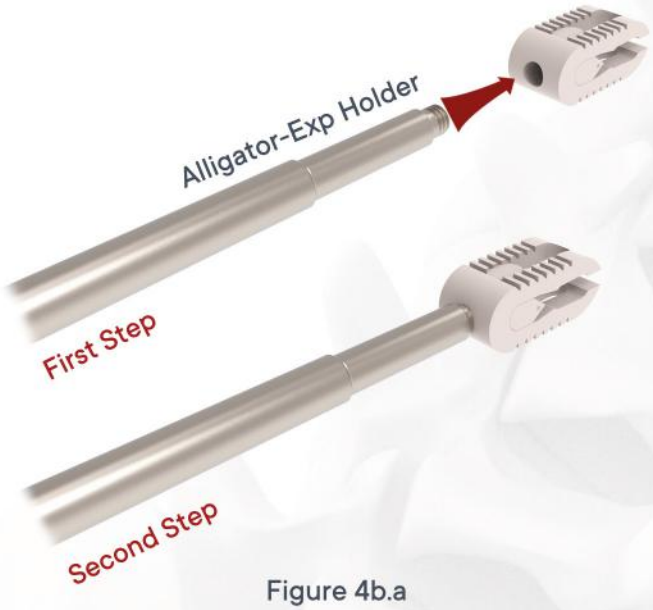


Figure 4b.a

Step 1: Alligator-Exp is fixed at the end of **Alligator-Exp Holder (ELPC001).** (Figure 4b.a)

Step 2: Alligator-Exp placed between vertebrae. (Figure 4b.b)
Hammer (LPC009)

Figure 4b.b

Alligator-exp

PLIF peek cage

SURGICAL TECHNIQUE

4b

Implant Insertion

Figure 4b.c

Figure 4b.d

Step 3: After insertion, the rear part is turned clockwise and the part is moved forward. **Alligator-Exp Holder (ELPC001)** (Figure 4b.e)

Figure 4b.e

Alligator-exp

PLIF peek cage

SURGICAL TECHNIQUE

4b

Implant Insertion Preparation

Once inserted, the posterior end of the cage should lie between 2mm-4mm anterior to the posterior vertebral body wall. Alligator-Exp Holder (ELPC001) is then unscrewed. (Figure 4a.e)

Figure 4b.f

Alligator-exp

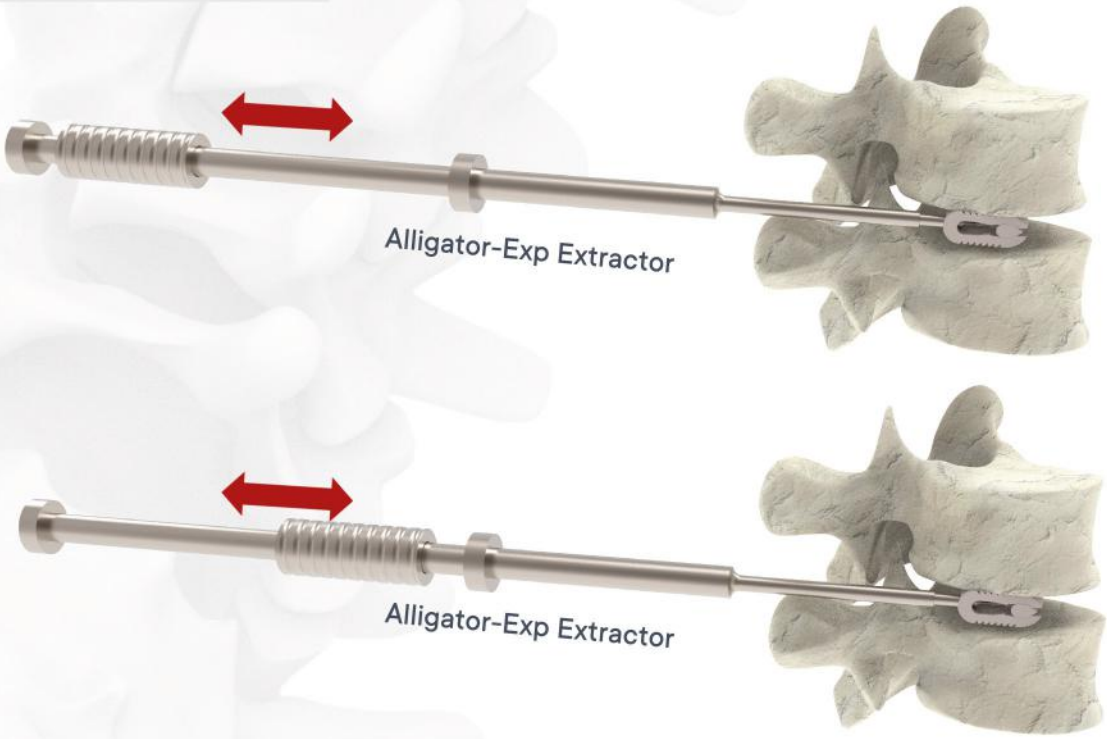
PLIF peek cage

SURGICAL TECHNIQUE

5

Removal

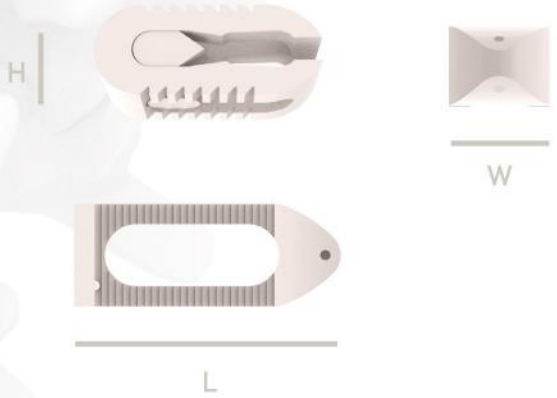
For removal step, Alligator-Exp Extractor (ELPC002) is placed behind Alligator-Exp implant. Retracts by sliding impact. (Figure 5a)



Alligator
Alligator-exp
PLIF peek cage
SIZES OF IMPLANTS

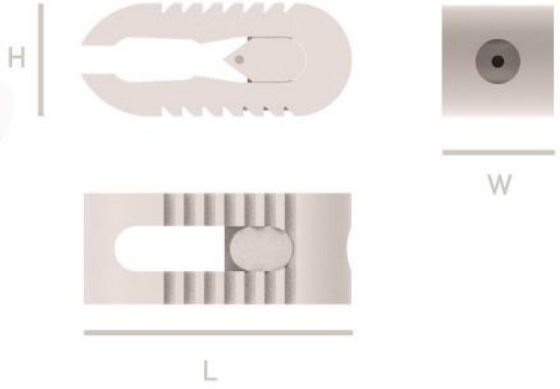
Alligator PLIF peek cage

Catalogue No.	Width	Length	Height
NVPCD2206	10 mm	22 mm	6 mm
NVPCD2207	10 mm	22 mm	7 mm
NVPCD2208	10 mm	22 mm	8 mm
NVPCD2209	10 mm	22 mm	9 mm
NVPCD2210	10 mm	22 mm	10 mm
NVPCD2211	10 mm	22 mm	11 mm
NVPCD2212	10 mm	22 mm	12 mm
NVPCD2406	10 mm	24 mm	6 mm
NVPCD2407	10 mm	24 mm	7 mm
NVPCD2408	10 mm	24 mm	8 mm
NVPCD2409	10 mm	24 mm	9 mm
NVPCD2410	10 mm	24 mm	10 mm
NVPCD2411	10 mm	24 mm	11 mm
NVPCD2412	10 mm	24 mm	12 mm



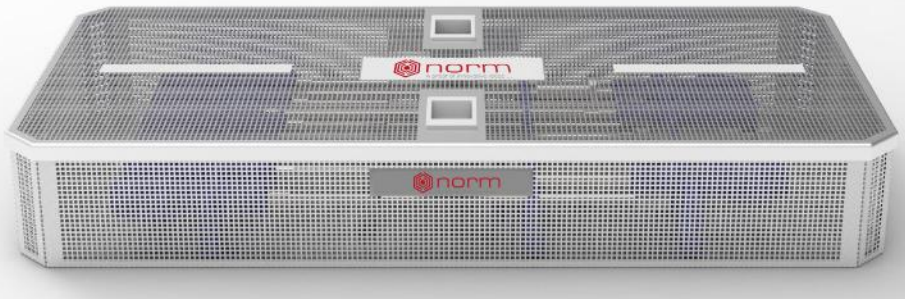
Alligator-exp PLIF expandable peek cage

Catalogue No.	Width	Length	Height
NEPC1007	10 mm	24 mm	7 mm
NEPC1008	10 mm	24 mm	8 mm
NEPC1009	10 mm	24 mm	9 mm
NEPC1010	10 mm	24 mm	10 mm
NEPC1011	10 mm	24 mm	11 mm
NEPC1012	10 mm	24 mm	12 mm



Alligator
Alligator-exp
PLIF peek cage
INSTRUMENT CONTAINER

This container is made of wiremesh stainless steel. It has a hight stability, low weight and good sterilization feature.



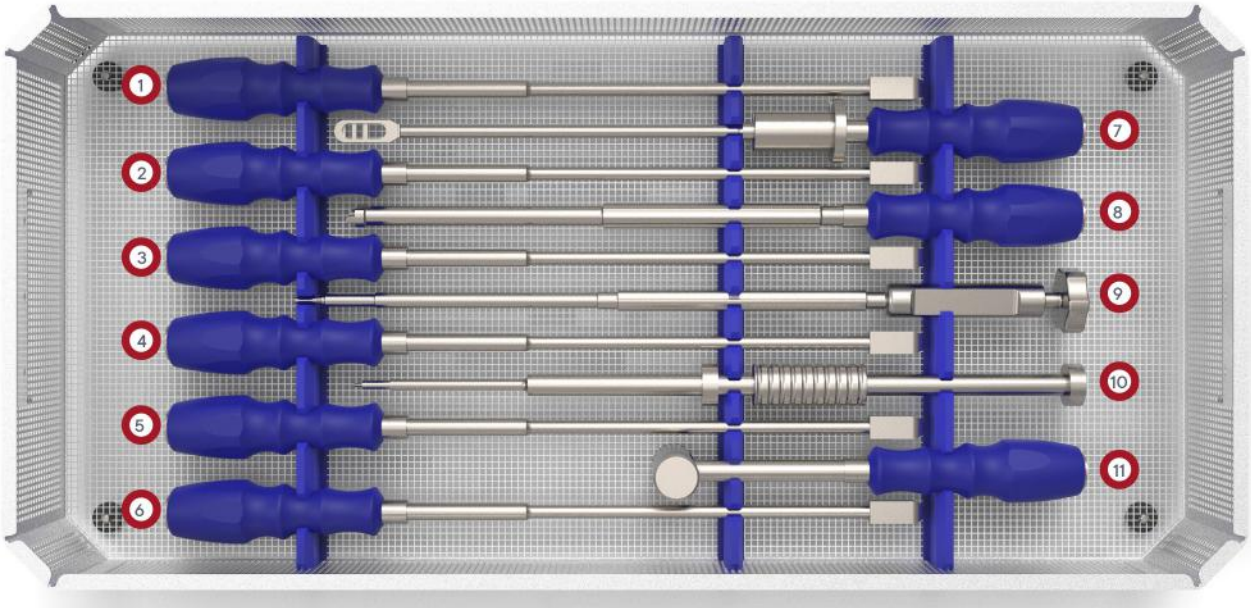
Container

Alligator
Alligator-exp
PLIF peek cage
INSTRUMENT CONTAINER

This container is made of wiremesh stainless steel. It has a hight stability, low weight and good sterilization feature.

Container

Alligator
Alligator-exp
PLIF peek cage
INSTRUMENT TYPES



Set No.	Catalogue No.	Description	Piece
01	LPC002	7 mm Trial	1
02	LPC003	8 mm Trial	1
03	LPC004	9 mm Trial	1

Alligator
Alligator-exp
PLIF peek cage
INSTRUMENT TYPES

	Set No.	Catalogue No.	Description	Piece
	04	LPC005	10 mm Trial	1
	05	LPC006	11 mm Trial	1
	06	LPC007	12 mm Trial	1
	07	LPC008	Lumbar Reamer	1
	08	LPC001	Alligator Holder	1
	09	ELPC001	Alligator-Exp Holder	1
	10	ELPC002	Alligator-Exp Extractor	1
	11	LPC009	Hammer	1

Alligator
Alligator-exp
PLIF peek cage
CONTACT

Norm Medical Devices Co. Ltd.

İvedik O.S.B. 1468 Cad. No : 193
Yenimahalle/ANKARA

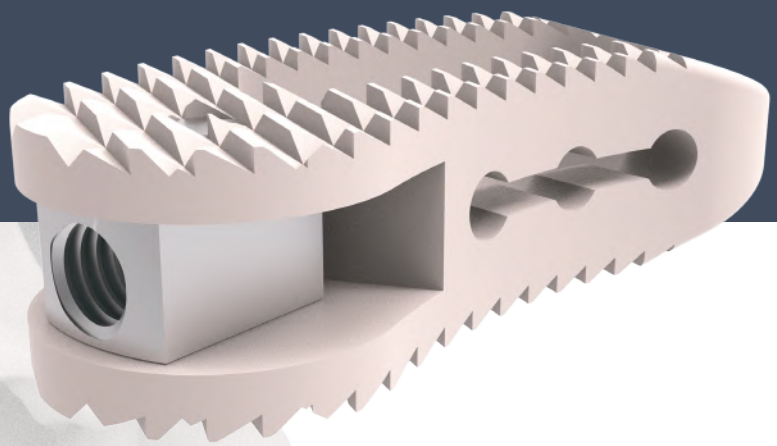
+90 (312) 284 00 80

info@normltd.net

No: NORM-F12-CT-11, Release Date: 27.03.2020
Revision Date: -, Revision No: 00

SURGICAL TECHNIQUE

Twisty



TLIF peek cage

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Twisty TLIF peek cage

TABLE OF CONTENTS

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Twisty TLIF peek cage

INTRODUCTION

Twisty Features

- *The cage and the holder are initially lined up to facilitate entry*
- *The wedge like profile makes the cage insertion process a straight forward and easy task*
- *The biocompatibility and mechanical properties are perfectly suited for interbody applications*
- *The cage is moved to its final location with minimal effort with movable titanium part*
- *Allow for a higher volume of bone grafting material resulting in good fusion*
- *Tantalum marker*

Twisty TLIF peek cage

INTRODUCTION

Indications

Indications are lumbar and lumbosacral pathologies in which segmental spondylodesis is indicated,for example:

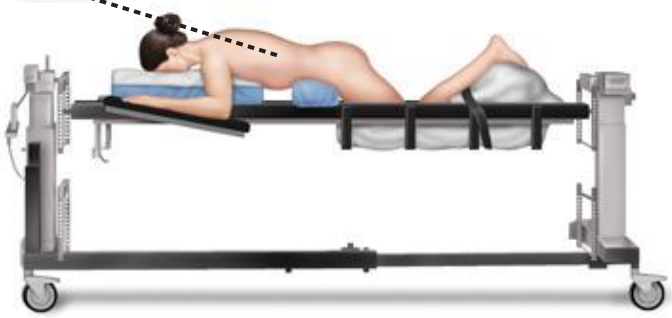
- *Degenerative disc diseases and spinal instabilities*
- *Revision procedures for post-discectomy syndrome*
- *Pseudarthrosis or failed spondylodesis*
- *Degenerative spondylolisthesis*
- *Isthmic spondylolisthesis*

Contraindications

- *Vertebral body fractures*
- *Spinal tumors*
- *Major spinal instabilities*
- *Primary spinal deformities*

ACCESS AND EXPOSURE

Position the patient in a restored physiological lordosis.



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Twisty TLIF peek cage
SURGICAL TECHNIQUE

1
TLIF Site Preparation

Angled curettes can be used to complete the resection in areas of reduced access or to clear an area for additional bone graft insertion.

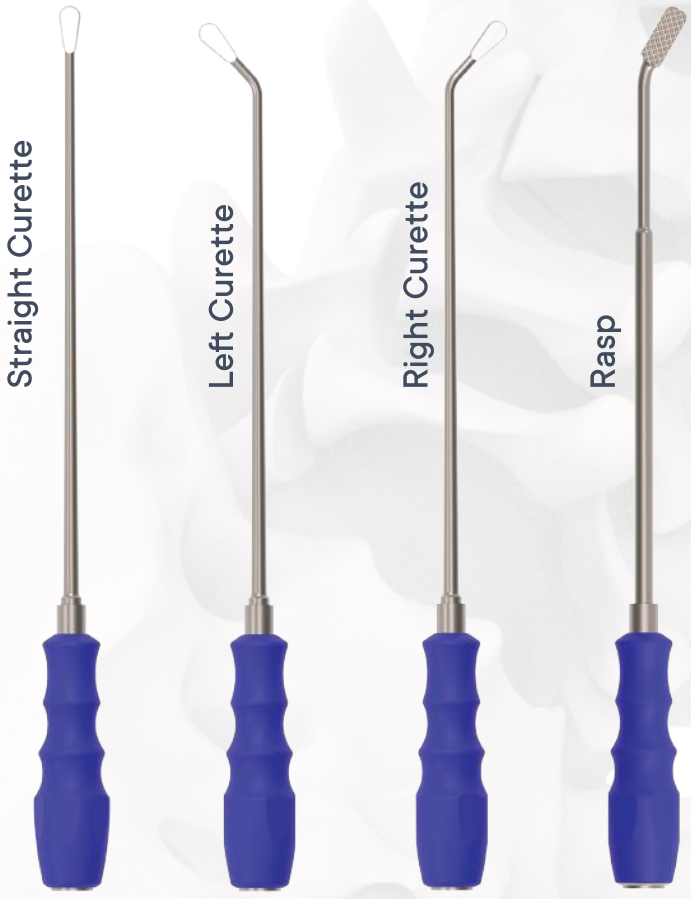
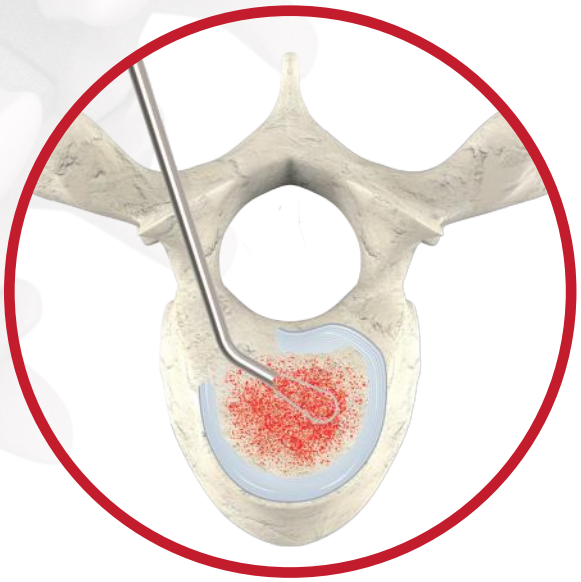


Figure 1a



Straight Curette (NMBC003), Left Curette (NMBC004), Right Curette (NMBC00), Rasp (NMBC012)

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Twisty TLIF peek cage
SURGICAL TECHNIQUE

2
Determine Implant Size

Figure 2a

Impact an appropriately sized Trial Implant (NMBC009) with the etch representing the axial canal positioned cranial/caudal.
Hammer (NMBC013)

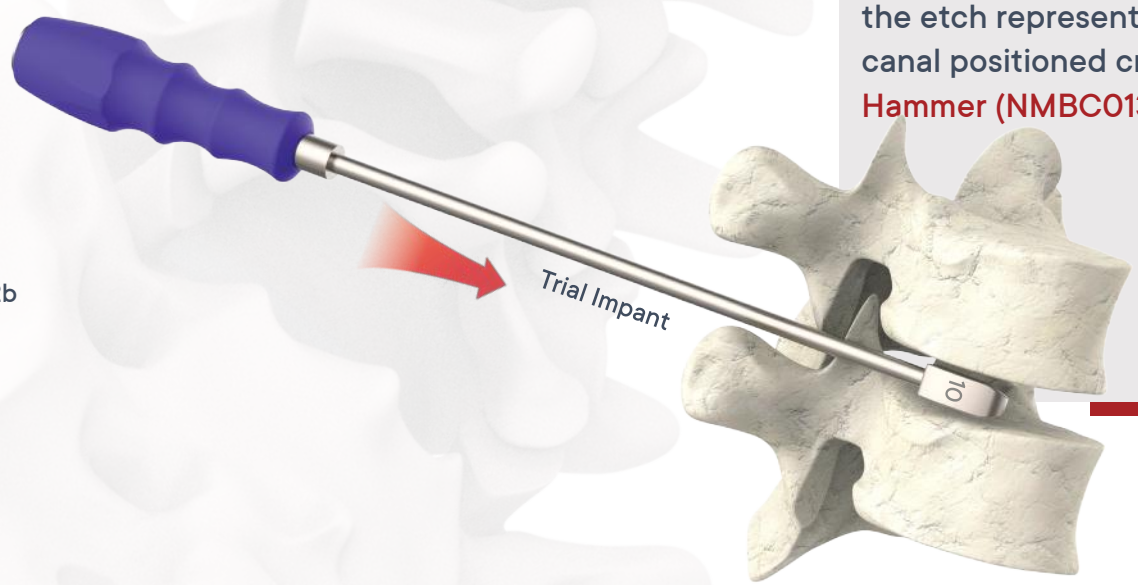
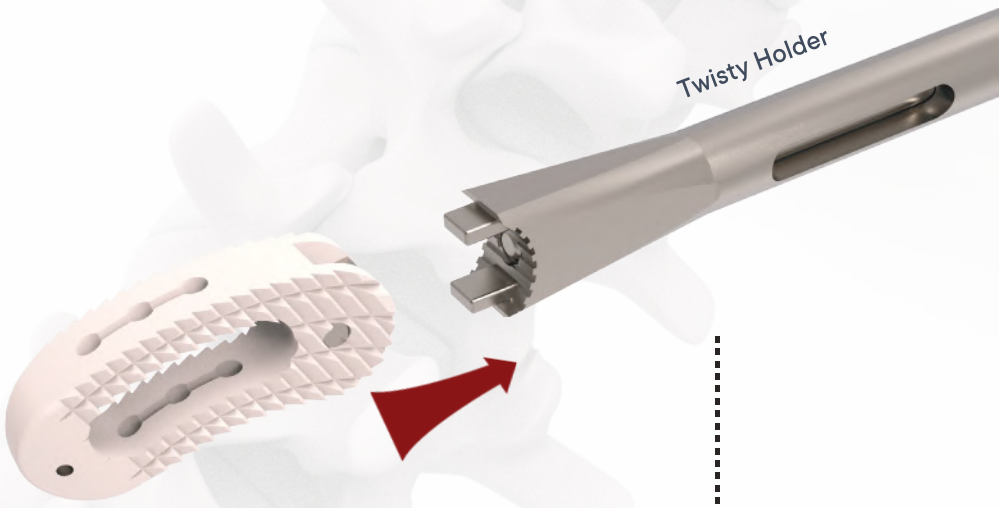


Figure 2b

Twisty TLIF peek cage
SURGICAL TECHNIQUE

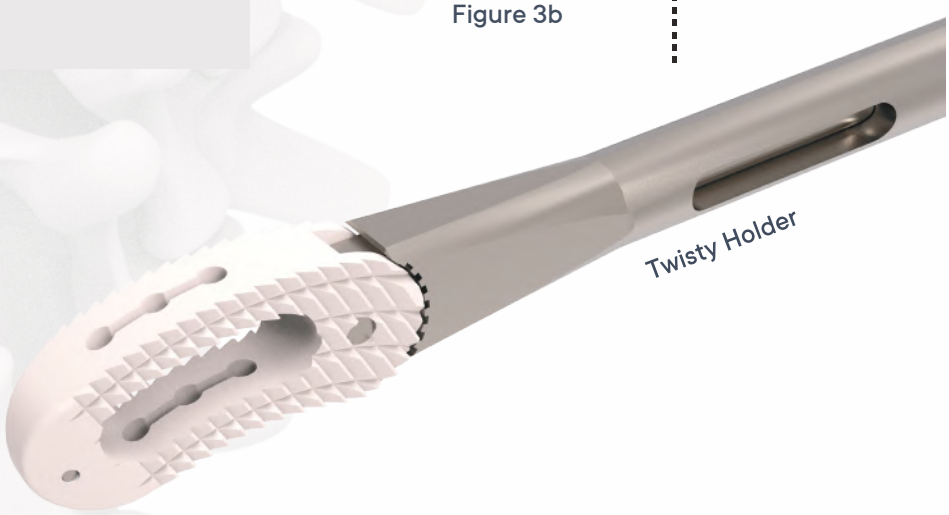
3
Implant Insertion

Figure 3a



These parts allow easy grip of the implant.
Twisty Holder (NMBC001)

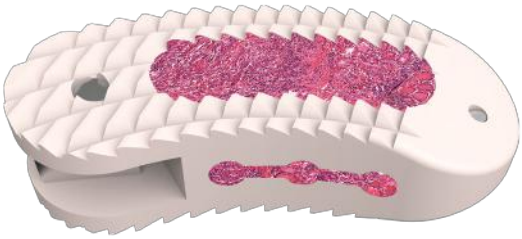
Figure 3b



Twisty TLIF peek cage
SURGICAL TECHNIQUE

3
Implant Insertion

Figure 3c



These systems are offered in multiple sizes and lordotic angles, with a central opening that allows for increased graft volume.

STEP 1

Figure 3d

Be sure to fix it firmly

One or one and a half turn on clockwise to fix the implan.
Twisty Holder (NMBC001)

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Twisty TLIF peek cage
SURGICAL TECHNIQUE

3
Implant Insertion

STEP 2

Figure 3e

Insert the implant vigorously

STEP 3

Figure 3f

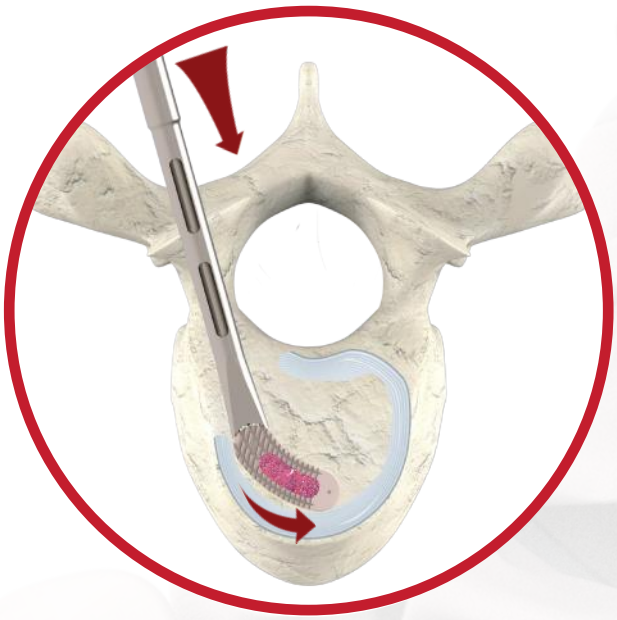
Turn one or a half turn counter-clockwise to loosen the implant

Twisty TLIF peek cage
SURGICAL TECHNIQUE

3
Implant Insertion

STEP 4

Figure 3g



Continue to impact gently and progressively into the disc space until the implant reaches desired positioning

At this position, the implant is designed to rotate on the rail as the leading edge contacts the ventral annulus

NOTE:

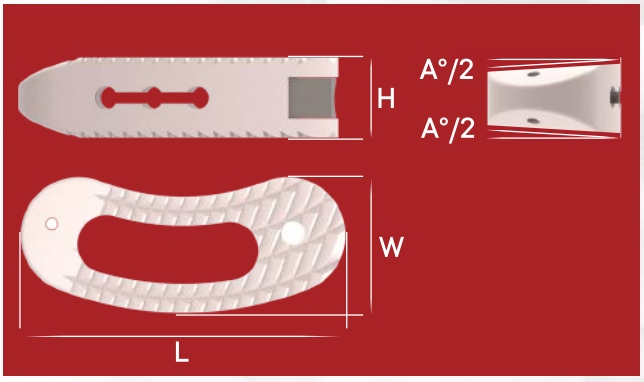
When deemed medically necessary, for intraoperative rescue, use a Twisty Holder to remove

Twisty TLIF peek cage

SIZES OF IMPLANTS

TWISTY TLIF PEEK CAGE

Catalogue No.	Width	Length	Height
NMBC2407	10 mm	24 mm	7 mm
NMBC2408	10 mm	24 mm	8 mm
NMBC2409	10 mm	24 mm	9 mm
NMBC2410	10 mm	24 mm	10 mm
NMBC2411	10 mm	24 mm	11 mm
NMBC2412	10 mm	24 mm	12 mm
NMBC2413	10 mm	24 mm	13 mm
NMBC2807	10 mm	28 mm	7 mm
NMBC2808	10 mm	28 mm	8 mm
NMBC2809	10 mm	28 mm	9 mm
NMBC2810	10 mm	28 mm	10 mm
NMBC2811	10 mm	28 mm	11 mm
NMBC2812	10 mm	28 mm	12 mm
NMBC2813	10 mm	28 mm	13 mm
NMBC3207	10 mm	32 mm	7 mm
NMBC3208	10 mm	32 mm	8 mm
NMBC3209	10 mm	32 mm	9 mm
NMBC3210	10 mm	32 mm	10 mm
NMBC3211	10 mm	32 mm	11 mm
NMBC3212	10 mm	32 mm	12 mm
NMBC3213	10 mm	32 mm	13 mm

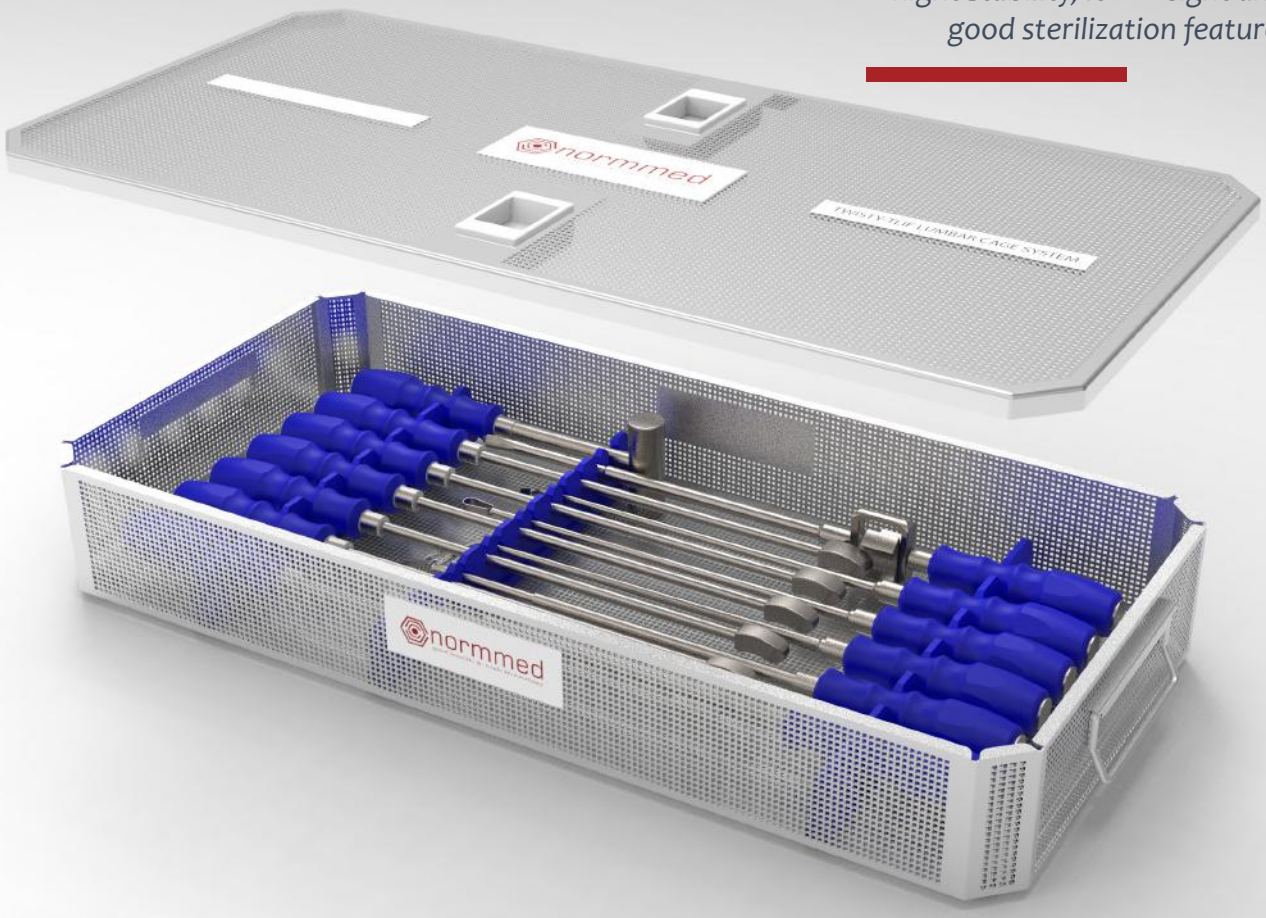


TWISTY TLIF PEEK CAGE ANGLED

Catalogue No.	Width	Length	Height	Angle
NMBCA24074	10mm	24 mm	7 mm	4°
NMBCA24084	10mm	24 mm	8 mm	4°
NMBCA24094	10mm	24 mm	9 mm	4°
NMBCA24104	10mm	24 mm	10 mm	4°
NMBCA24114	10mm	24 mm	11 mm	4°
NMBCA24124	10mm	24 mm	12 mm	4°
NMBCA24134	10mm	24 mm	13 mm	4°
NMBCA24088	10mm	24 mm	8 mm	8°
NMBCA24098	10mm	24 mm	9 mm	8°
NMBCA24108	10mm	24 mm	10 mm	8°
NMBCA24118	10mm	24 mm	11 mm	8°
NMBCA24128	10mm	24 mm	12 mm	8°
NMBCA24138	10mm	24 mm	13 mm	8°
NMBCA28074	10mm	28 mm	7 mm	4°
NMBCA28084	10mm	28 mm	8 mm	4°
NMBCA28094	10mm	28 mm	9 mm	4°
NMBCA28104	10mm	28 mm	10 mm	4°
NMBCA28114	10mm	28 mm	11 mm	4°
NMBCA28124	10mm	28 mm	12 mm	4°
NMBCA28134	10mm	28 mm	13 mm	4°
NMBCA28088	10mm	28 mm	8 mm	8°
NMBCA28098	10mm	28 mm	9 mm	8°
NMBCA28108	10mm	28 mm	10 mm	8°
NMBCA28118	10mm	28 mm	11 mm	8°
NMBCA28128	10mm	28 mm	12 mm	8°
NMBCA28138	10mm	28 mm	13 mm	8°
NMBCA32074	10mm	32 mm	7 mm	4°
NMBCA32084	10mm	32 mm	8 mm	4°
NMBCA32094	10mm	32 mm	9 mm	4°
NMBCA32104	10mm	32 mm	10 mm	4°
NMBCA32114	10mm	32 mm	11 mm	4°
NMBCA32124	10mm	32 mm	12 mm	4°
NMBCA32134	10mm	32 mm	13 mm	4°
NMBCA32088	10mm	32 mm	8 mm	8°
NMBCA32098	10mm	32 mm	9 mm	8°
NMBCA32108	10mm	32 mm	10mm	8°
NMBCA32118	10mm	32 mm	11 mm	8°
NMBCA32128	10mm	32 mm	12 mm	8°
NMBCA32138	10mm	32 mm	13 mm	8°

Twisty TLIF peek cage
INSTRUMENT CONTAINER

This container is made of wiremesh stainless steel. It has a hight stability, low weight and good sterilization feature.



Container

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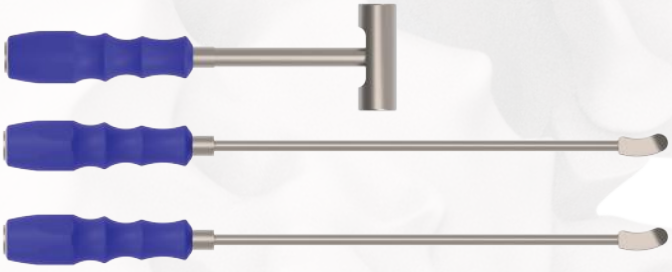
Twisty TLIF peek cage
INSTRUMENT TYPES



Set No.	Catalogue No.	Description	Piece
01	NMBC013	Hammer	1
02	NMBC011	Trial 12 mm	1
03	NMBC010	Trial 11 mm	1

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Twisty TLIF peek cage
INSTRUMENT TYPES










Set No.	Catalogue No.	Description	Piece
04	NMBC009	Trial 10 mm	1
05	NMBC008	Trial 9 mm	1
06	NMBC007	Trial 8 mm	1
07	NMBC006	Trial 7 mm	1
08	NMBC001	Holder	1
09	NMBC004	Left Currete	1
10	NMBC003	Straight Currete	1
11	NMBC005	Right Currete	1
12	NMBC012	Rasp	1
13	NMBC002	Pusher	1

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Twisty TLIF peek cage

CONTACT

NORMMED MEDICAL AND MACHINERY
INDUSTRY TRADE LIMITED COMPANY

İvedik O.S.B. 1468 Cad. No : 193
Yenimahalle/ANKARA

+90 312 395 61 84

info@normmed.com.tr

No: F12-CT-21, Release Date: 12.07.2019
Revision Date: 16.04.2021, Revision No: 02

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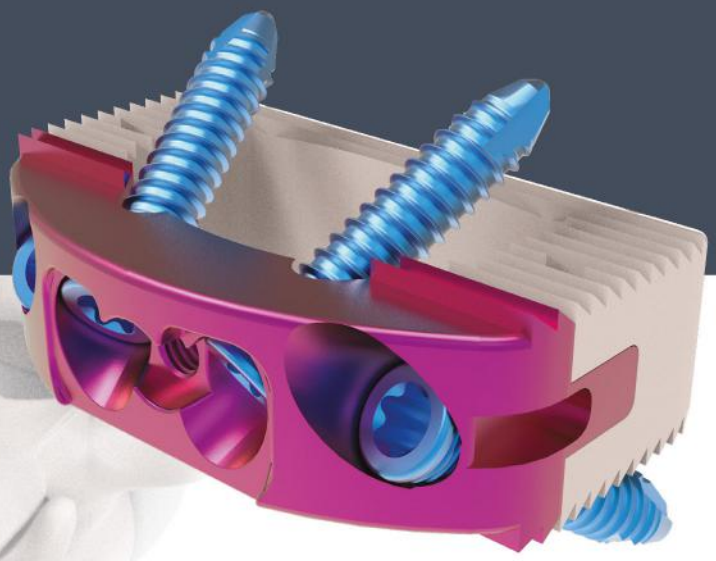
SURGICAL TECHNIQUE

ESA



Anterior Lumbar

ALIF Peek Cage

norm

A proof of innovative ideas ...

ESA

Anterior Lumbar
ALIF Peek Cage

TABLE OF CONTENTS

ESA

Anterior Lumbar

ALIF Peek Cage

INTRODUCTION

ESA Features

- *The ideal combination of optimized stability, improved imaging properties, and operational sim plicity, the ESA is a unique interbody device offering an intuitive approach to ALIF proce dures.*
- *Enhanced stability is provided by combining the benefits of the divergent bone screw design*
- *Locking Screw Design: It has been shown that implants with divergent screw designs offer more stability than implants with convergent screw designs in lateral bending, extension, and axial rotation*
- *Unique Implant Design: Medial screw hole orientation provides ease of use to the surgeon as surgical instruments cross the midline of the incision and do not encounter soft tissue*
- *Accessible Insertion Angle: 35° screw insertion angle allows for ease in screw insertion*
- *Comprehensive Array of Flexible Instrumentation: Intuitively designed to accommodate steep angles and further assist with ease in screw insertion*
- *Simple Bone Screw Insertion: Bone screws are self-centering, self-drilling, and self-tapping for fast insertion.*

ESA

Anterior Lumbar

ALIF Peek Cage

INTRODUCTION

Indications

Lumbar and lumbosacral pathologies which may require anterior segmental arthrodesis, including

- *Localised symptomatic degenerative disc disease*
- *Revision surgery for failed decompression syndrome*
- *Pseudoarthrosis*

Contraindications

- *Spinal fractures*
- *Spinal tumour*
- *Osteoporosis*
- *Infection*

ESA

Anterior Lumbar

ALIF Peek Cage

SURGICAL TECHNIQUE

1

Patient positioning

For an anterior approach to the lower lumbar levels position the patient in a slight Trendelenburg position. (Figure 1a)

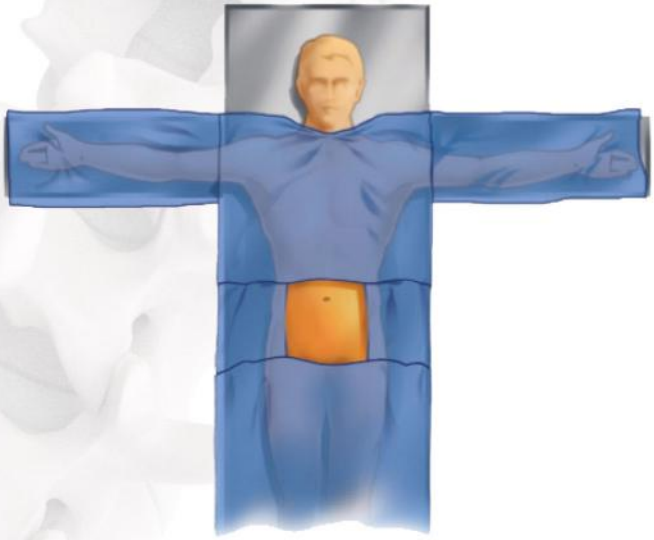


Figure 1a

2

Exposure

The surgical approach depends on the level to be treated. Locate the correct operative level and incision site by taking a lateral fluoroscopic view while holding a straight metal instrument on the side of the patient. It is recommended to expose the operative level through a standard retroperitoneal approach. However other approaches may be indicated based on the patient's anatomy and pathology. (Figure 2a)

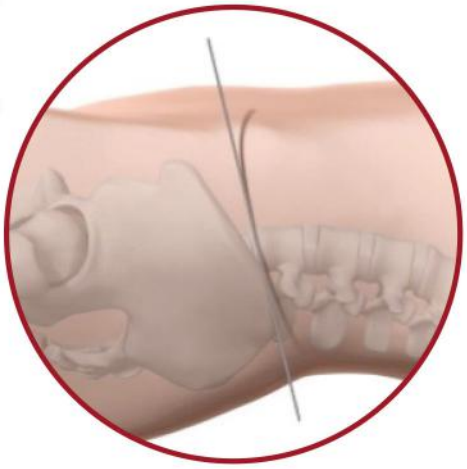


Figure 2a

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Anterior Lumbar

ALIF Peek Cage

SURGICAL TECHNIQUE

3

Prepare Disc Space

Remove disc material through an incision in the annulus fibrosus. Excise the disc material and remove the cartilaginous endplates to expose the underlying bony vertebral endplates. Adequate preparation of the endplates without compromising the structural integrity is important to enable the access of an appropriate vascular supply to the bone graft to enable fusion. Once the endplates have been prepared, complete additional surgical procedures. (Figure 3a)

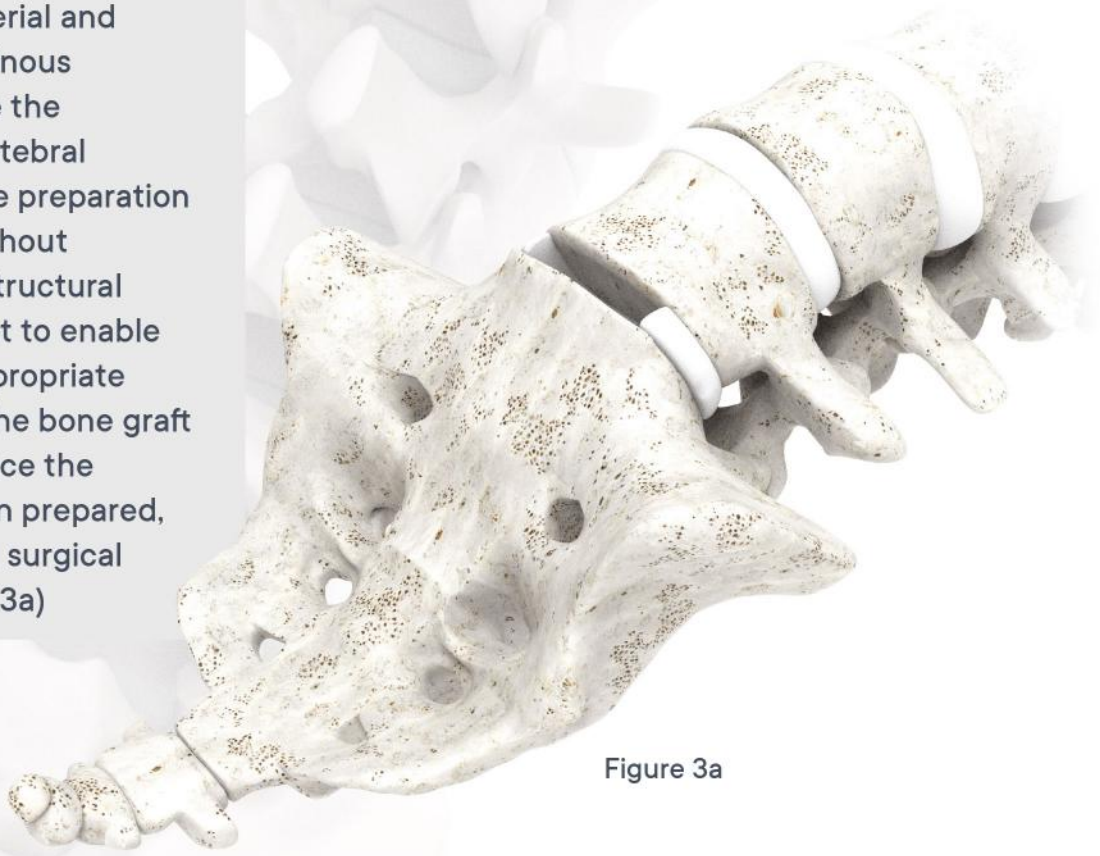


Figure 3a

ESA

Anterior Lumbar

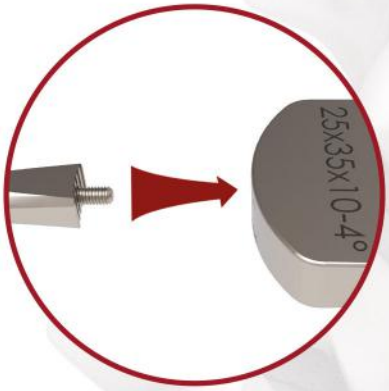
ALIF Peek Cage

SURGICAL TECHNIQUE

4

Connect Trial Implant to Trial Implant Holder

Figure 4a



Step 1:

Step 2:

Figure 4b

Select the trial implant corresponding to the footprint size determined by the footprint trialing. Select the height and angle corresponding to that considered appropriate based on preoperative planning, the anatomical features evident after disc clearance and endplate preparation, and the requirements in order to restore normal spinal alignment and disc height. Mount the chosen trial implant on the Trial Holder (ALF008). Secure it by turning the knob on the back of the Trial Holder (ALF008).
(Figure 4a, 4b)

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Anterior Lumbar

ALIF Peek Cage

SURGICAL TECHNIQUE

5

Insert Trial Implant

Controlled light hammering on the Trial Holder (ALF008) may be required to position the trial implant between the vertebral bodies to the desired depth. (Figure 5a)

NOTE:

If the trial spacer is too large, preventing insertion with an appropriate amount of force, repeat using an incrementally smaller trial spacer or different angle.

Figure 5a

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Anterior Lumbar

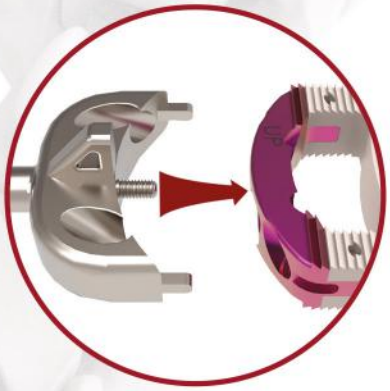
ALIF Peek Cage

SURGICAL TECHNIQUE

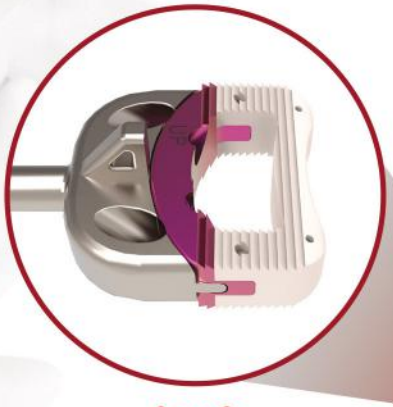
6

Implant Preparation

Dock the keyed connection interface of the assembled Inserter (25x35 ALF002, 29x40 ALF004) into the corresponding docking feature on the implant. After the Inserter (25x35 ALF002, 29x40 ALF004) has been positioned, secure it by turning the coupling clockwise to tighten the coupling screw. I-Handle (ALF009) (Figure 6a, 6b)



Step 1:



Step 2:

Figure 6a

Figure 6b

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Anterior Lumbar

ALIF Peek Cage

SURGICAL TECHNIQUE

6

Implant Preparation

Fill the ımplant in the Packing Block (ALF011) with the graft material until it protrudes from its cavities in order to ensure optimal contact with the vertebral endplates. Use the Tamp (ALF005) to firmly pack autograft material into the implant. Do not use excessive force to compress or impact the graft into the implant as this may interfere with vascular integration and bony healing. (Figure 6c, 6d)

Figure 6c

Figure 6d

ESA

Anterior Lumbar

ALIF Peek Cage

SURGICAL TECHNIQUE

7

Implant Insertion

Figure 7a

Controlled and light hammering on the Inserter (25x35 ALF002, 29x40 ALF004) may be required to advance the implant into the intervertebral disc space. Use fluoroscopic imaging during implant insertion to assess implant positioning. (Figure 7a)

ESA

Anterior Lumbar

ALIF Peek Cage

SURGICAL TECHNIQUE

7

Implant Insertion

Figure 7b

In case the implant needs to be repositioned use the Impactor (25X35 ALF001, 29x40 ALF018) to manually manipulate the implant position. If necessary, a Hammer (ALF022) can be used to fixation I-Handle (ALF009) (Figure 7b, 7c)

Figure 7c

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Anterior Lumbar

ALIF Peek Cage

SURGICAL TECHNIQUE

8

Assemble Block Guide

Figure 8a

Figure 8b

Attach a Block Guide Fixing Screw (ALF016) to the Block Guide (25x35 ALF008, 29x40 ALF019). Next, attach a Block Guide (25x35 ALF008, 29x40 ALF019) to the Block Guide Holder (ALF007). Secure Block Guide (25x35 ALF008, 29x40 ALF019) by turning the knob on the back of the Block Guide Holder (ALF007).
(Figure 8a, 8b and 8c)

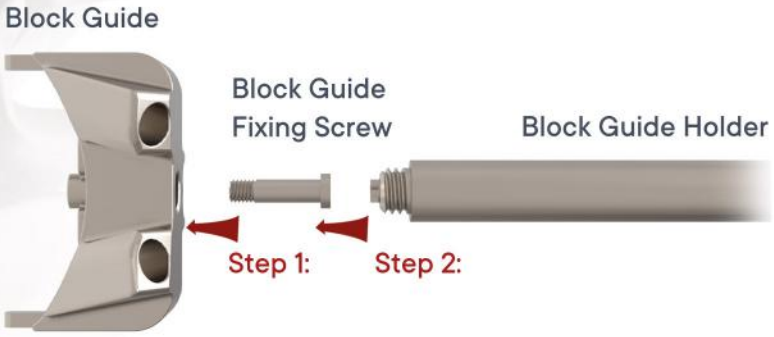

Figure 8c

ESA

Anterior Lumbar

ALIF Peek Cage

SURGICAL TECHNIQUE

9

Screw Preparation

Attach a T-Handle (ALF010) to the Flexible Driver (ALF003). Next, attach a Modular Awl Bit Ø2.9 (ALF013) to the Flexible Driver (ALF003). Then thread the thread lock sleeve all the way down on the screwdriver tip. (Figure 9a, 9b)

Figure 9a

Figure 9b

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Anterior Lumbar

ALIF Peek Cage

SURGICAL TECHNIQUE

9

Screw Preparation - Awl

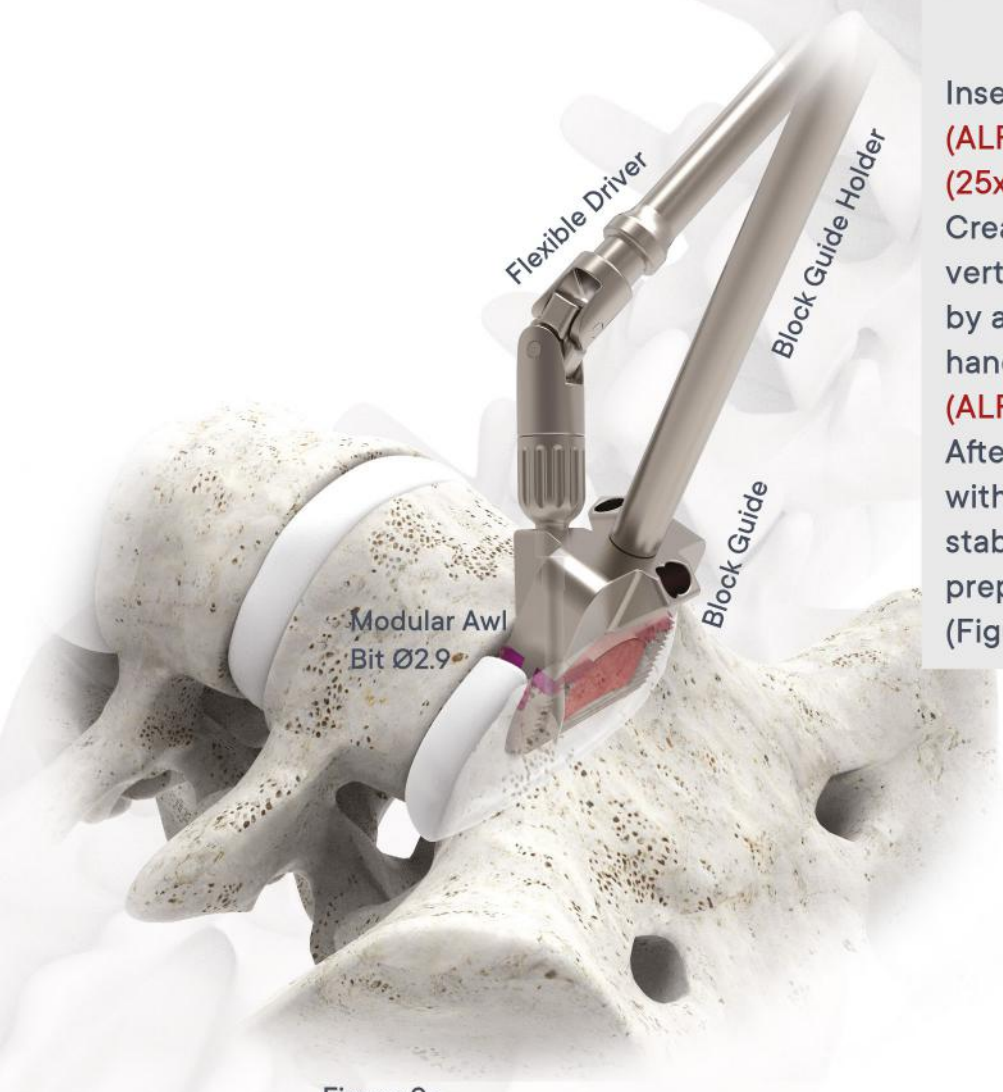

Figure 9c

Insert the Modular Awl Bit Ø2.9 (ALF013) into the Block Guide (25x35 ALF008, 29x40 ALF019). Create a pilot hole in the vertebral body for screw insertion by applying pressure on the handle of the Flexible Driver (ALF003) with rotational motions. After the first pilot hole continue with insertion of the first screw to stabilize the implant before preparing any other holes. (Figure 9c)

ESA

Anterior Lumbar

ALIF Peek Cage

SURGICAL TECHNIQUE

9

Screw Preparation - Drilling (Optional)

Attach a T-Handle (ALF010) to the Flexible Driver (ALF003). Next, attach a Modular Drill Bit Ø3.2 (ALF014) to the Flexible Driver (ALF003). Then thread the thread lock sleeve all the way down on the screwdriver tip. (Figure 9d, 9e)

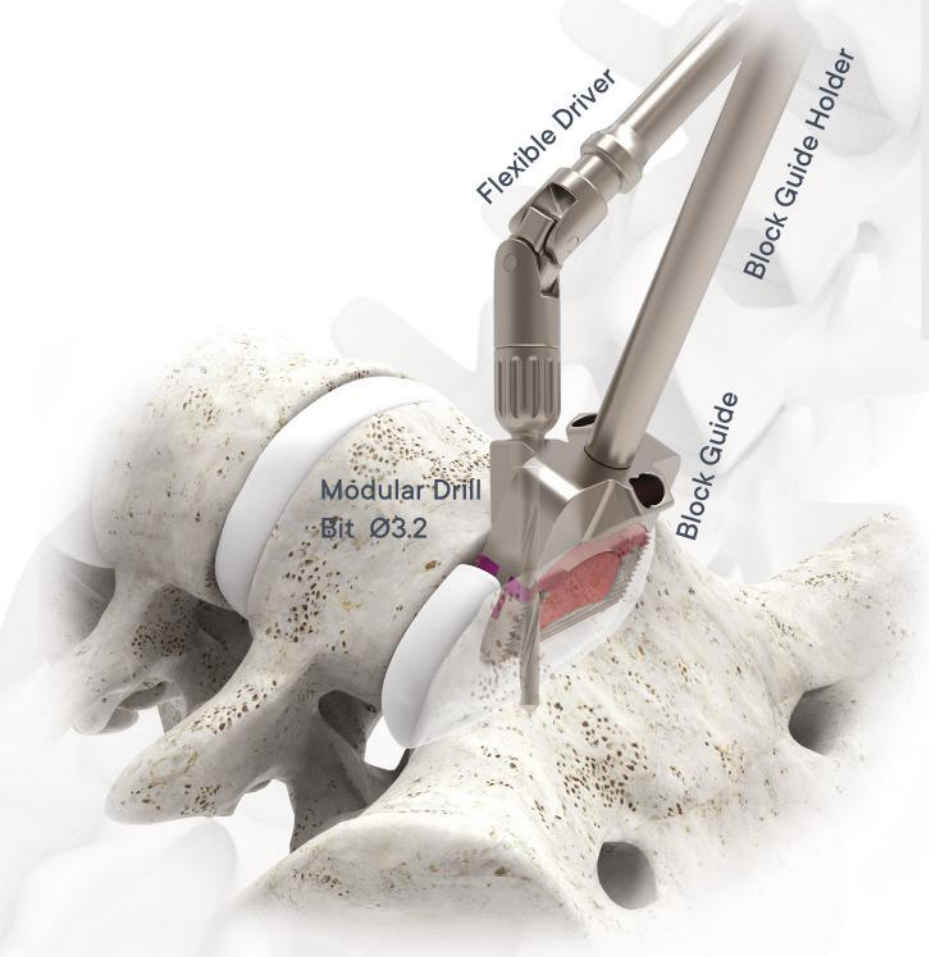

Figure 9d

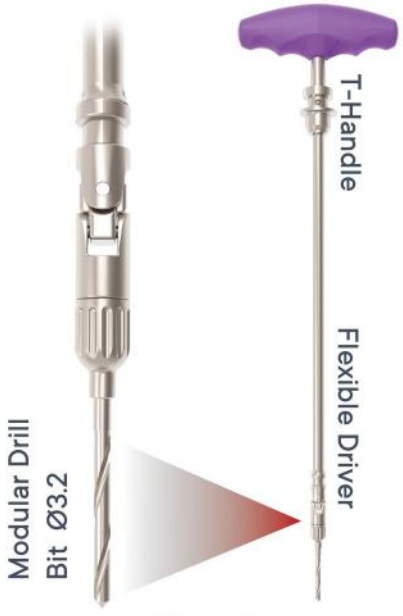

Figure 9e

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Anterior Lumbar

ALIF Peek Cage

SURGICAL TECHNIQUE

10

Screw Selection

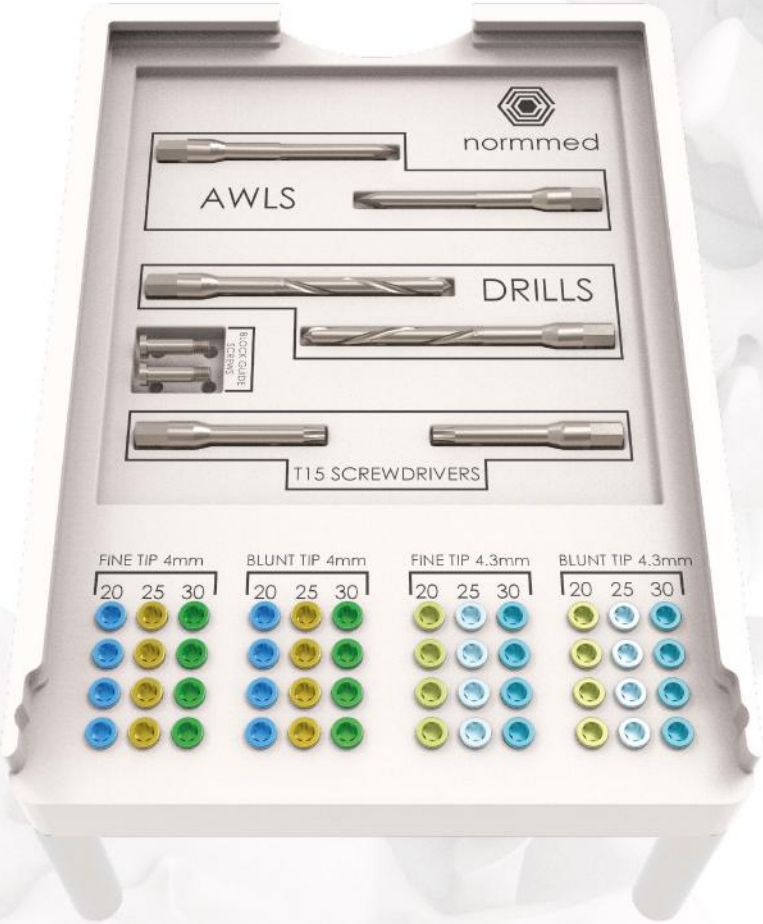
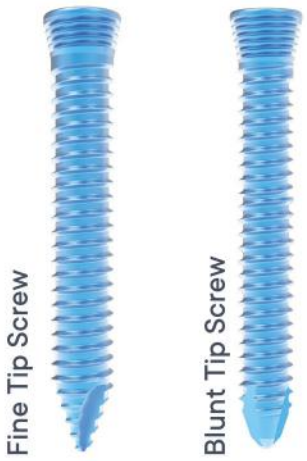


Figure 10a

Select an appropriate screw type and length based on patient anatomy and clinical requirements. For a two-level procedure, proper consideration should be given to the screw length on the common vertebral body to prevent screw interference. (Figure 10a)



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SURGICAL TECHNIQUE

11

Screw Insertion

Figure 11a

Figure 11b

Attach a T-Handle (ALF010) to the Flexible Driver (ALF003). Next, attach a Modular T15 Driver Bit (ALF015) to the Flexible Driver (ALF003). Then thread the thread lock sleeve all the way down on the screwdriver tip. Guiding Forceps (ALF023)
(Figure 11a, 11b and 11c)

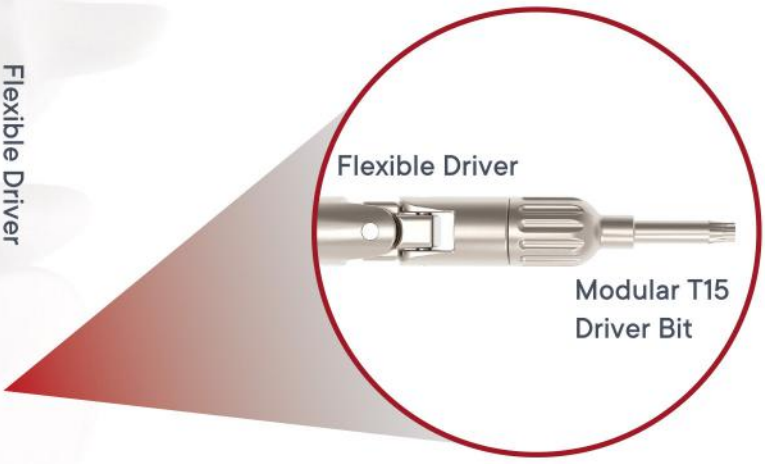

Figure 11c

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SURGICAL TECHNIQUE

11

Screw Insertion

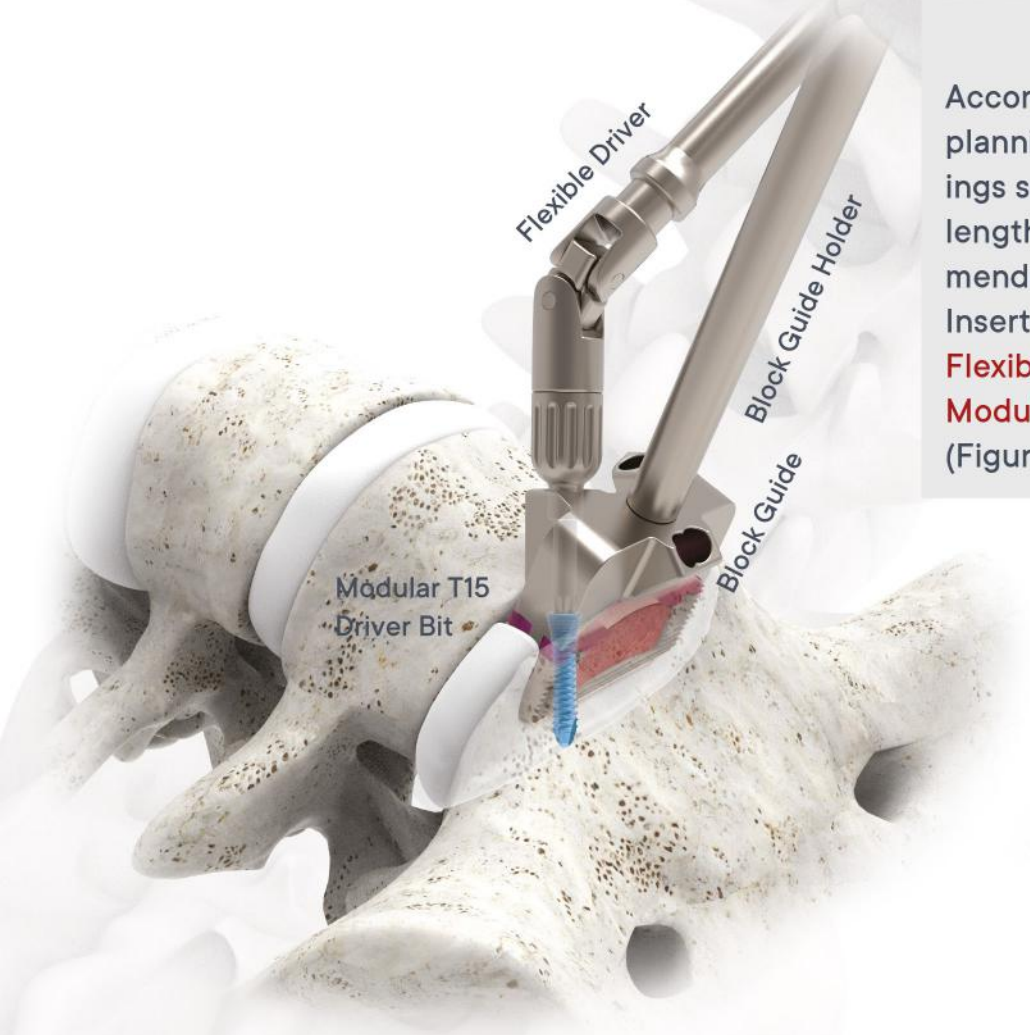

Figure 11c

According to the preoperative planning and intraoperative findings select the appropriate screw length (20 mm screws are recommended for use in most cases). Insert the screws with the Flexible Driver (ALF003) and Modular T15 Driver Bit (ALF015). (Figure 11c)

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SURGICAL TECHNIQUE

12

Verify Implant Positioning

The optimal position for the implant is centered within the periphery of the vertebral body and achieving appropriate fit and fill of the disc space. Verify the location of the implant relative to the vertebral bodies in the AP and lateral directions under fluoroscopy. (Figure 12a)

Figure 12a

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SURGICAL TECHNIQUE

13

Remove Implant

Figure 13a

Completely separate the end-plate fusion areas prior to implant removal. An osteotome may be required to mobilize the implant if bony healing and integration has commenced. Carefully remove the implant from disc space by pulling on the trial implant holder. Controlled, light hammering with a Slap Hammer (ALF020) may be required to remove the implant from the disc space. I-Handle (ALF009), Inserter (25x35 ALF002, 29x40 ALF004) (Figure 13a)

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IMPLANT TYPES

Catalogue No.	Description	Piece
NALCSF4020	Norm Alif Cage Fine Tip Secrew Ø4.00x20mm	4
NALCSF4025	Norm Alif Cage Fine Tip Secrew Ø4.00x25mm	4
NALCSF4030	Norm Alif Cage Fine Tip Secrew Ø4.00x30mm	4
NALCS4020	Norm Alif Cage Secrew Ø4.00x20mm	4
NALCS4025	Norm Alif Cage Secrew Ø4.00x25mm	4
NALCS4030	Norm Alif Cage Secrew Ø4.00x30mm	4
NALCSF4320	Norm Alif Cage Fine Tip Secrew Ø4.30x20mm	4
NALCSF4325	Norm Alif Cage Fine Tip Secrew Ø4.30x25mm	4
NALCSF4330	Norm Alif Cage Fine Tip Secrew Ø4.30x30mm	4
NALCS4320	Norm Alif Cage Secrew Ø4.30x20mm	4
NALCS4325	Norm Alif Cage Secrew Ø4.30x25mm	4
NALCS4330	Norm Alif Cage Secrew Ø4.30x30mm	4

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IMPLANT TYPES

Catalogue No.	Length	Height	Width	Lordotic Angle	Piece
NALC25351004	25	10	35	4°	1
NALC25351204		12		4°	1
NMLC25351404		14		4°	1
NALC25351604		16		4°	1
NALC25351804		18		4°	1
NALC25352004		20		4°	1
NALC25351009		10		9°	1
NALC25351209		12		9°	1
NALC25351409		14		9°	1
NALC25351609		16		9°	1
NALC25351809		18		9°	1
NALC25352009		20		9°	1
NALC25351014		10		14°	1
NALC25351214		12		14°	1
NALC25351414		14		14°	1
NALC25351614		16		14°	1
NALC25351814		18		14°	1
NALC25352014		20		14°	1

Thickness 10mm

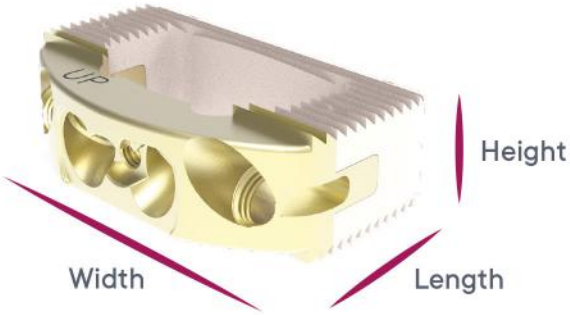
Thickness 12mm

Thickness 14mm

Thickness 16mm

Thickness 18mm

Thickness 20mm



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IMPLANT TYPES

Catalogue No.	Length	Height	Width	Lordotic Angle	Piece
NALC29401004	29	10	40	4°	1
NALC29401204		12		4°	1
NALC29401404		14		4°	1
NALC29401604		16		4°	1
NALC29401804		18		4°	1
NALC29402004		20		4°	1
NALC29401009		10		9°	1
NALC29401209		12		9°	1
NALC29401409		14		9°	1
NALC29401609		16		9°	1
NALC29401809		18		9°	1
NALC29402009		20		9°	1
NALC29401014		10		14°	1
NALC29401214		12		14°	1
NALC29401414		14		14°	1
NALC29401614		16		14°	1
NALC29401814		18		14°	1
NALC29402014		20		14°	1

Thickness 10mm

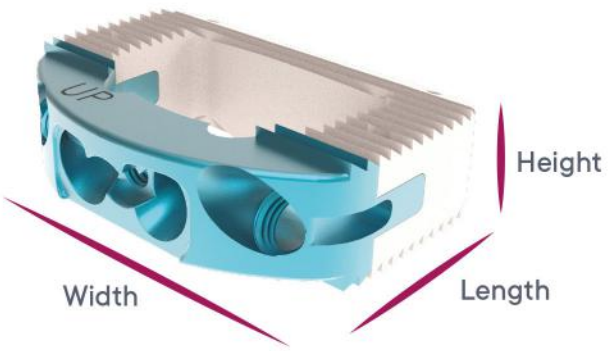
Thickness 12mm

Thickness 14mm

Thickness 16mm

Thickness 18mm

Thickness 20mm



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INSTRUMENT CONTAINER

This container is made of wiremesh stainless steel. It has a hight stability, low weight and good sterilization feature.

Container

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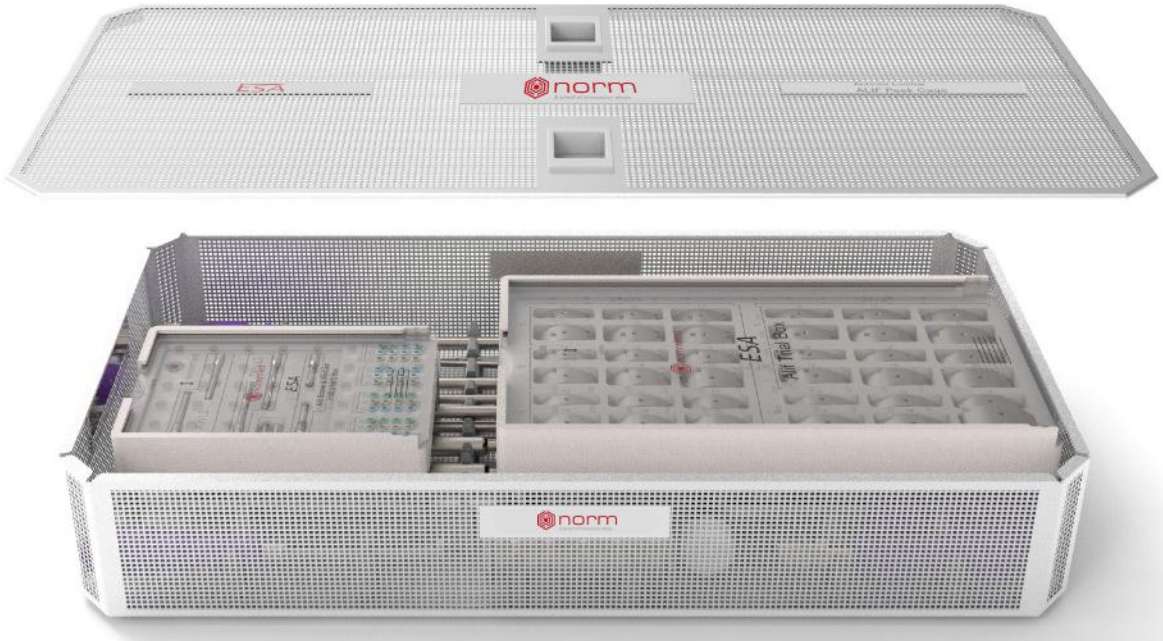
INSTRUMENT CONTAINER



Container

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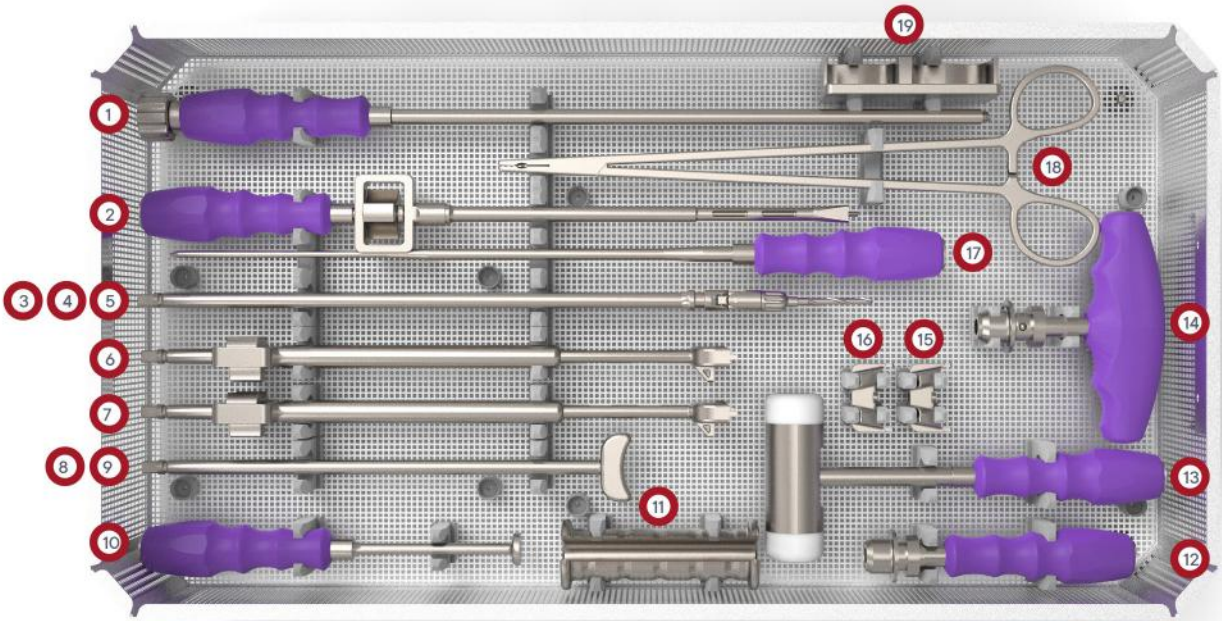
INSTRUMENT TYPES



Set No.	Catalogue No.	Description	Piece
01	ALF007	Block Guide Holder	1
02	ALF006	Trial Holder	1
03	ALF003	Flexible Driver with Modular Drill Bit Ø3.2	1

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INSTRUMENT TYPES

Set No.	Catalogue No.	Description	Piece
04	ALF003	Flexible Driver with Modular Awl Bit Ø2.9	1
05	ALF003	Flexible Driver with Modular T15 Driver Bit	1
06	ALF002	Inserter 25x35	1
07	ALF004	Inserter 29x40	1
08	ALF001	Impactor 25x35	1
09	ALF018	Impactor 29x40	1
10	ALF005	Tamp	1
11	ALF020	Slap Hammer	1
12	ALF009	I-Handle	1

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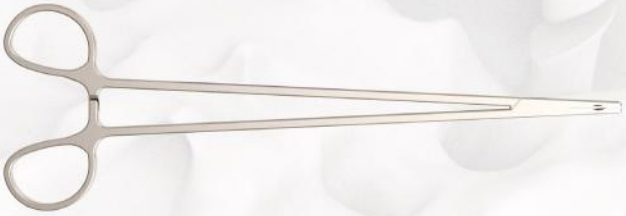
INSTRUMENT TYPES



Set No.	Catalogue No.	Description	Piece
13	ALF022	Hammer	1
14	ALF010	T-Handle	1
15	ALF008	Block Guide 25x35	1
16	ALF019	Block Guide 29x40	1
17	ALF021	Straight Screwdriver	1
18	ALF023	Guiding Forceps	1
19	ALF011	Packing Block	1

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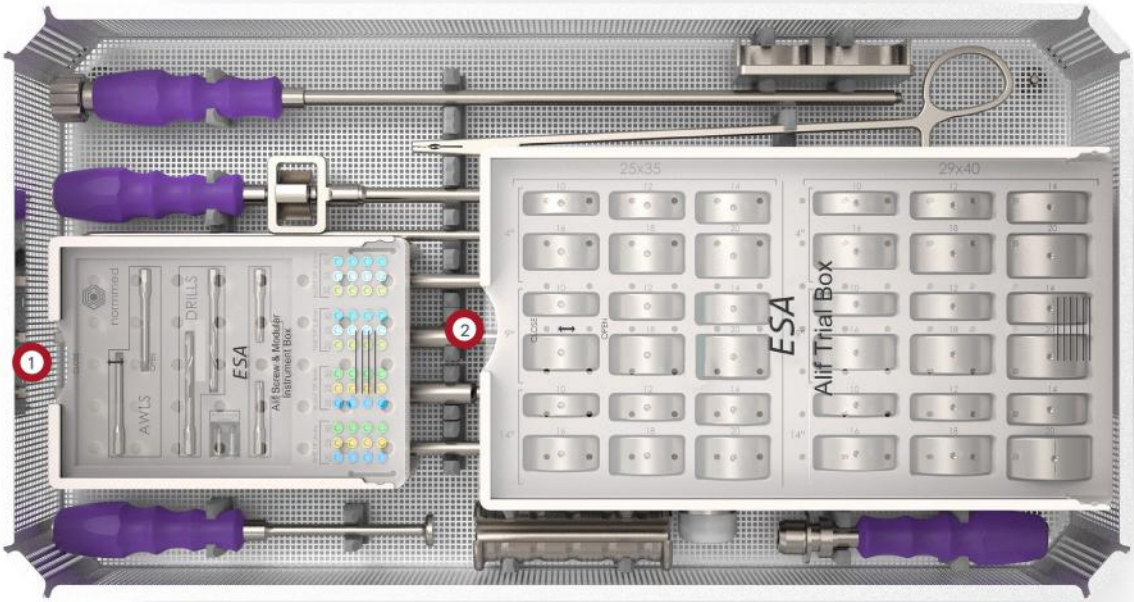
INSTRUMENT TYPES



Set No.	Catalogue No.	Description	Piece
01	ALF012	Screw and Modular Instrument Box	1

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INSTRUMENT TYPES

Set No.	Catalogue No.	Description	Piece
02	ALF017	Trial Box	1

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CONTACT

Norm Medical Devices Co. Ltd.

İvedik O.S.B. 1468 Cad. No : 193
Yenimahalle/ANKARA

+90 (312) 284 00 80

info@normltd.net

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