



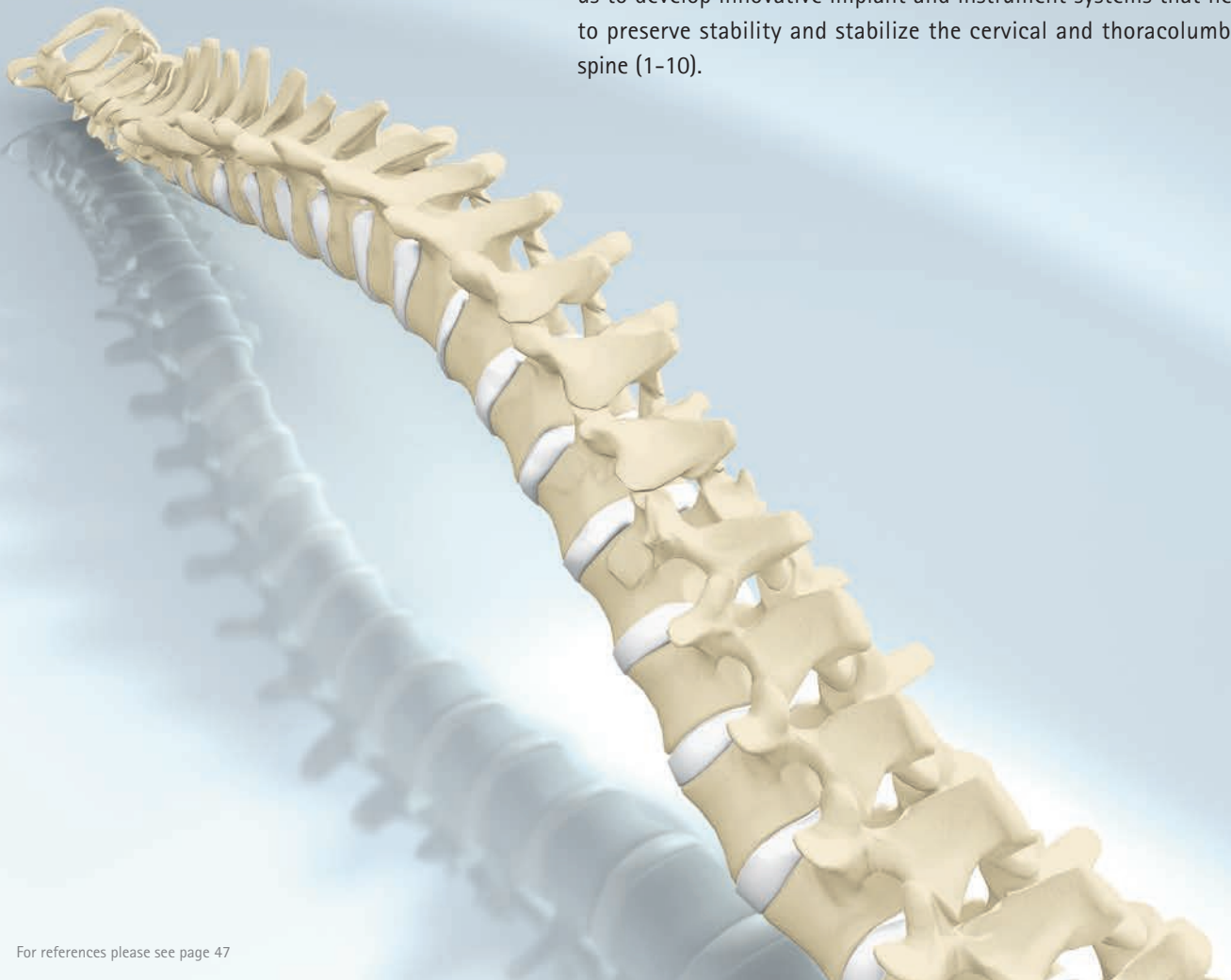
DEGENERATIVE
SPINAL DISORDERS

AESCULAP® activC®
CERVICAL DISC PROSTHESIS
SURGICAL TECHNIQUE

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 degenerative spinal disorders is dedicated to protecting the spinal column and preserving its stability. We support spine surgeons with durable, reliable products and partner services for safe procedures and good clinical outcomes (1-10). 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 (1-10).



AESCU LAP[®] CERVICAL SPINE

PORTFOLIO OVERVIEW

IMPLANT SYSTEMS

anterior

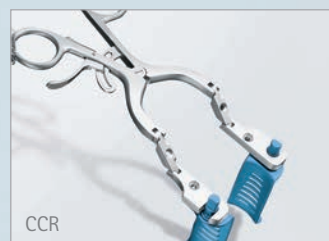


INSTRUMENT SYSTEMS

anterior



anterior/posterior



AESCULAP® activC®

CONTENT





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D REPOSITIONING / REVISION

E OVERVIEW

PRODUCT CHARACTERISTICS AND BASIC INFORMATION



➤ INTENDED USE

The activC® intervertebral disc prosthesis is used for replacing intervertebral discs in the cervical spine. The prosthesis restores the disc height and the segmental mobility.

The activC® intervertebral disc prosthesis consists of two components:

- Superior prosthesis plate with spikes for anchoring in the vertebral body.
- Inferior prosthesis plate with integrated polyethylene inlay and central anchoring fin for fixation in the vertebral body.

The prosthesis plates and the polyethylene inlay together form a ball & socket-joint. The polyethylene inlay is anchored to form-fit in the inferior prosthesis plate. The activC® intervertebral disc prosthesis is available in six different sizes (XS, S, M, L, XL and XXL) and up to two different heights (5 mm and 6 mm). activC® intervertebral disc prosthesis are supplied fully pre-assembled.

➤ BENEFITS AND FEATURES

- Osteoconductive Plasmapore® coating for rapid osseointegration.
- Anatomically shaped prosthesis plates.
- Balanced motion pattern.
- Reduced risk of vertebral split.
- No ruptures of elastomeric structures.

➤ THERAPY GOALS WITH activC®

- Preserve the segmental motion.
- Restore the disc and the foraminal height.
- Restore the physiological shape of the cervical spine.
- Restore the function of the cervical spine.
- Remedy of pain sensation and neurological deficits.
- Easy operation with minimal discomfort for the patient.
- Fast mobilisation of the patient.

➤ INDICATIONS

- Symptomatic cervical discopathy with neck and/or arm pain with or without neurological deficit concordant with MRI of disc pathology.
- Soft disc prolapse.

➤ PRE-CONDITIONS FOR activC® IMPLANTATIONS

- Unsuccessful conservative treatment.
- Preoperative disc height of approx. 3 mm or more (this minimum height can differ depending on individual, gender-specific and ethnologic varieties).
- Suitable quality of joint complex.
- Sufficient segmental motion preoperatively.
- Monosegmental or multisegmental disc pathology.
- Understanding of the patient about the illness, the proposed surgical measures and the necessary rehabilitation measures.

➤ TECHNICAL REQUIREMENTS

- Sufficient decompression of neural structures.
- Correct midline positioning.
- Ensure sagittal and anterior-posterior balancing.
- Good approximation to the preoperative segmental center.
- Large coverage of vertebral endplates.
- Adaptation to the endplate anatomy to prevent migration and dislocation.
- Good anchorage for primary and secondary stability.
- Large bone-implant contact area for rapid osteointegration.
- Avoid surgically induced trauma of vertebral bodies (vertebral split) and neuro-vascular structures.

AESFULAP® activC®

B | APPROACH



B.1. PATIENT POSITIONING

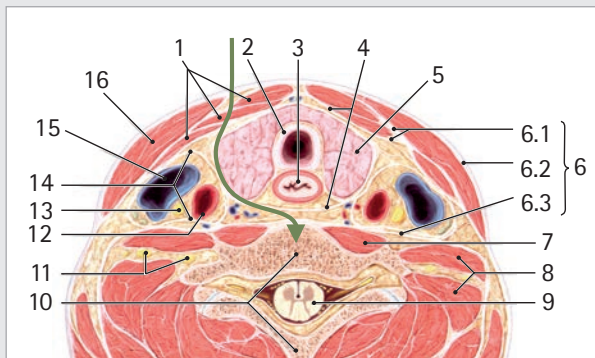
The following rules & conditions should be followed when positioning the patient:

- Position the patient's neck in **neutral position** – not in hyperlordosis which is routinely used for anterior fusion techniques.
- If necessary, adjust the neck position to match the pre-operative X-ray of the patient standing in neutral position.
- Fixed position of the head, the cervical spine and the patient.
- Radiographic visibility of the treated segments in lateral and AP view.

Note:

- Positioning of the patient's neck in hyperlordosis can result in an inappropriate position of the prosthesis. Intra-operatively, the alignment of the prosthesis and the spinal segment can give the false impression of correct positioning and alignment. After turning the neck into an upright position (neutral) the segment could then fall into kyphosis.





B.2. APPROACH

Standard antero-lateral approach allows a precise view of all anterior parts of the cervical spine that are affected during a discectomy and the implantation of a disc prosthesis.

- 1 Infrahyal muscles
- 2 Trachea
- 3 Esophagus
- 4 Visceral fascia
- 5 Thyroid
- 6 Fascia cervicalis
 - 6.1 Lamina pretrachealis
 - 6.2 Lamina superficialis
 - 6.3 Lamina prevertebralis
- 7 Musculus longus colli
- 8 Musculus scaleni
- 9 Spinal cord
- 10 Cervical vertebrae VI
- 11 Plexus brachialis
- 12 Arteria carotis communis
- 13 Nervus vagus
- 14 Vagina carotica
- 15 Vena jugularis interna
- 16 Musculus sternocleidomastoideus

AESCULAP® activC®

B | APPROACH



Fig. 1

Subaxial cervical spine can be approached from the right or left side according to the surgeon's choice (Fig. 1). Due to the anatomical position of recurrent nerves most surgeons approach the upper part of the cervical spine from the right side and lower parts (i.e. means C5/6 and C6/7) from the left side. Currently only horizontal "cosmetic" skin incision targeted with fluoroscopy is reasonable (Fig. 2).



Fig. 2

Platysma muscle is cut in cross direction along its fibers in order to approach the sheet of sternocleidomastoid muscle – SCM (Fig. 3).



Fig. 3 Platysma cut, Gelpi distractor over SCM

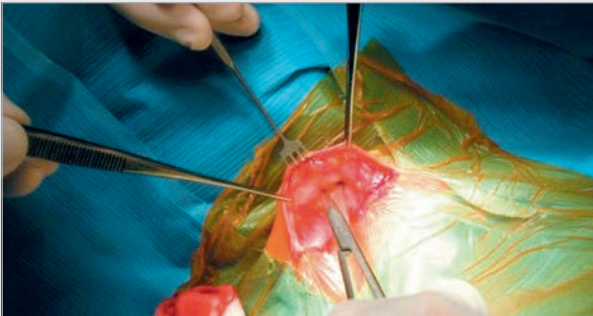


Fig. 4 Subcutaneous preparation along the SCM

Medial sheet is sharply cut and the anterior spine approach is completed between neuromuscular bundle (V. jugularis, A. carotis, N. vagus) and the visceral organs (trachea and esophagus) (Fig. 4).

Cutting of pre-vertebral lamina allows sharp dissection of medial longus colli muscle walls.

This step is important to achieve firm (regarding esophagus) anchorage of CASPAR® wound distractor beneath the muscle mass (Fig. 5).



Fig. 5 Right side belly of longus colli muscle

AESCU LAP[®] activC[®]

B | APPROACH



CASPAR[®] wound distractor in position

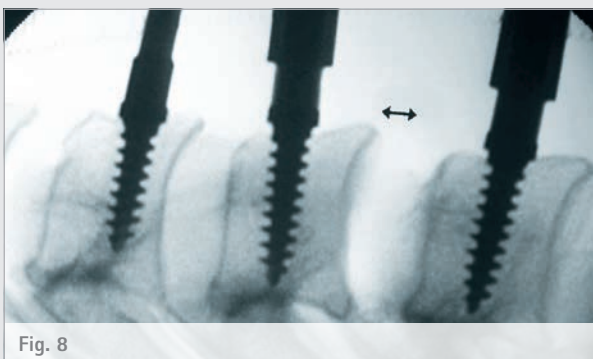
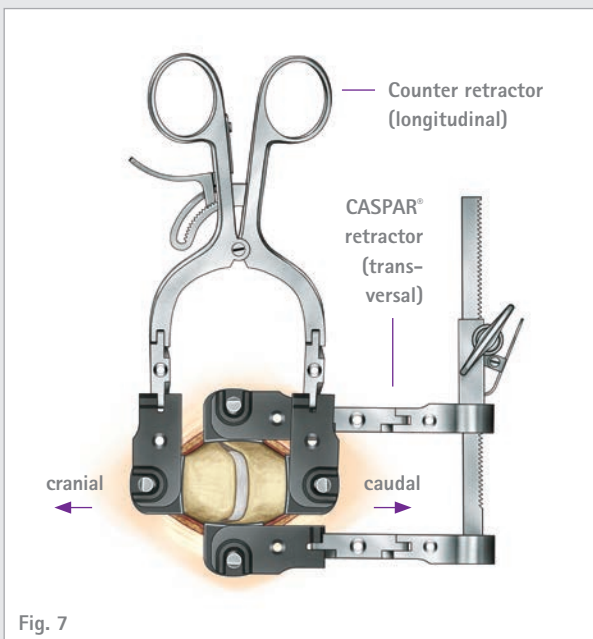
AESCU LAP[®] offers radiolucent CASPAR[®] retractor blades.

The PEEK material, which the retractor blades are made of, provides enough biomechanical stability and the feature of radiolucency offers excellent visibility in both lateral and AP fluoroscopic view (Fig. 6).

This allows the placement of the prosthesis without any additional steps such as the removal of retractor blades.

The radiolucent CASPAR[®] retractor blades are compatible with the existing CASPAR[®] retractor systems (Fig. 7).

The surgeon has free choice in combining the CASPAR[®] retractor with either metal, titanium or the radiolucent retractor blades (Fig. 6 + 8).



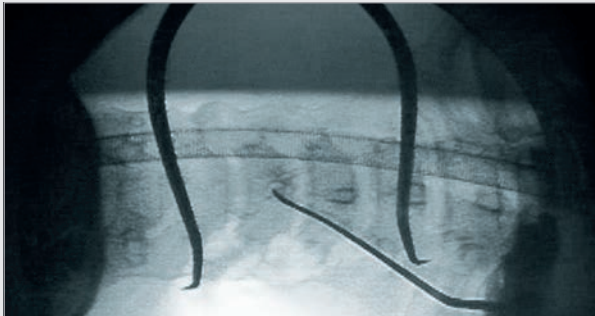


Fig. 9 AP Fluoroscopy: Probe tip localised in midline

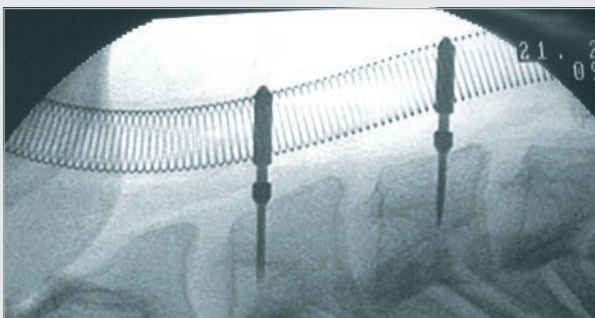


Fig. 10 Lateral Fluoroscopy: Position of the midline marking pins

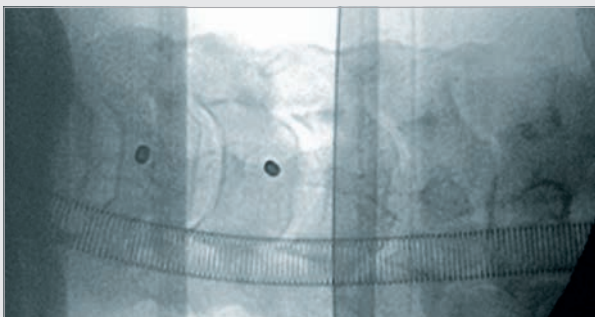


Fig. 11 AP Fluoroscopy: Position of the midline marking pins

C.1. MIDLINE MARKING

Determination of midline

The midline of vertebral body in sagittal plane is usually determined using the following anatomic landmarks:

- position of the longus colli muscles,
- symmetry of anterior vertebral surface,
- midline between uncinatate processes.

Most reliable is midline determination in antero-posterior (AP) X-rays according to:

- position of spinous processes,
- midline between uncinatate processes.

Midline has to be permanently marked by:

- bone chisel or high speed drill marking,
- midline pin introduction,
- CASPAR® distraction screws. CASPAR® screw midline marking can be combined with the use of midline marking pins. After verification of the midline position, the pins can be removed and replaced by the CASPAR® screws, using the same bone holes.

Note:

- A final check of midline should be done after placing the trial implant into the disc space. The trial implant is part of the guiding system for preparation of the keel space. Therefore, the final position of the trial implant will determine also the final position of the prosthesis itself.

For more information of trial implant positioning see page 21.

C.2. PREPARATION OF DISC SPACE

The discectomy is performed according to the standard procedures.

The endplate cartilage has to be removed completely, but care should be taken to avoid any damage to the integrity of bony endplates.

Decompression of neural elements has to be done precisely and completely (microsurgical technique).

In lateral soft disc prolapse the posterior longitudinal ligament can be preserved as tension band on asymptomatic side and in the midline.

Instruments for discectomy:

- Rongeur,
- Punch,
- Curette,
- Sharp spoon,
- Raspatory,
- CASPAR® vertebral body elevator.



FF532R
FF533R



FF772R
FF773R



FK835R



FK774R



FF917R

Preparation of the vertebral body endplates and osteophytes

Disc & Bone Preparation, foraminal decompression, preparation of posterior rim, any osteophytes, the unco-vertebral joint as well as preparation of the PLL can be done either manually or with power systems. Bone preparation should be limited to minimal extent in order to avoid creation of too much bone powder which can serve as focal point for later ossifications. Preparation of posterior unco should be limited to one third of total structure to avoid instability of the segment.

The activC® set does not automatically include any power tools. For power-supported preparation AESCULAP® is able to provide any needed power tool and equipment. Various burrs, drills and reamers can be combined with the power systems.

At the same time, AESCULAP® provides a wide range of manual tools for bone and soft tissue preparation, to offer each surgeon an adequate solution for each individual patient and situation.



Fig. 12



Fig. 13



Fig. 14

C.3. CASPAR® DISTRACTOR – LOCKABLE VERSION FOR activC®

CASPAR® distractor

Once the midline has been determined and the disc compartment prepared (partial discectomy) the CASPAR® screws for the distractor are inserted.

Note:

- For fusion procedures the CASPAR® screws are usually applied centrally in lateral alignment and the distraction force transmitted by means of their shafts.

This is different for activC® implantation – the CASPAR® distractor is serving as a distraction holding device. The self-locking mechanism is assuring its stability and maintaining the parallelity of vertebral endplates.

Maximal distraction force is created by means of distraction forceps and the interbody distance enlargement is passively followed by longitudinal shift of distractor.

New requirements for use of the CASPAR® distractor for activC®:

- initial screw hole is created by awl or with the midline marking pins,
- screws are self-tapping,
- available in 12, 14, 16, 18 mm length,
- screws are positioned under X-ray control,
- screws are introduced near to the opposite cortex (almost bicortically),
- introduction is perpendicular to the posterior vertebral wall,
- screws are introduced in distal 1/3 of the target vertebral body,
- to create more space for implantation offset screws are available,
- distractor is equipped with a self-locking mechanism.

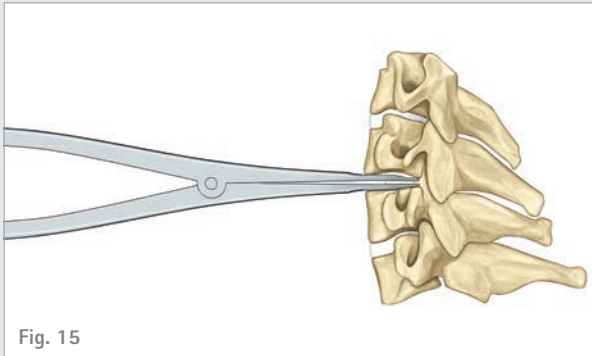


Fig. 15

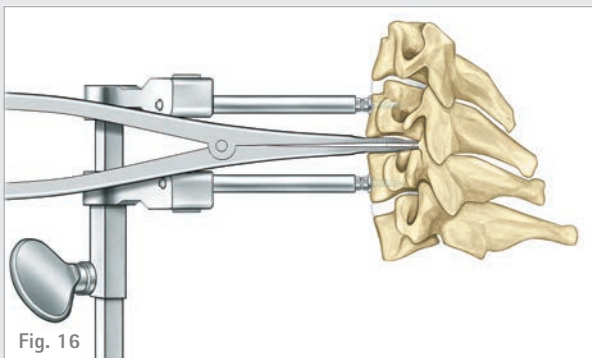


Fig. 16



Fig. 17

C.4. DISTRACTION FORCEPS

Distraction forceps

The distraction forceps (Fig. 15) is used for distracting the treated segment.

The forceps is applied to the posterior part of intervertebral space under fluoroscopic control (Fig. 16). The distraction is created gradually in parallel fashion. Step by step distraction is allowing relaxation of the ligaments. Target space height of treated segment should be compared with adjacent ones to avoid overdistraction of the segment. Careful observation of appropriate joint fissure enlargement can be helpful. The forceps is equipped with a locking mechanism to hold the distance. CASPAR® self-locking distractor is passively adapted to the reached distraction.

The PLL should be preserved as far as possible, but only if there are no noticeable sclerotic or osteophytic changes. Excessive distraction can lead to instability of the segment. Instability, in turn, can result in malposition (kyphosis), consequent defects at the facets and adjacent segments or myelopathy.

activC Disc Prosthesis
color code and dimension table

SIZE	HS	HF
XS	ES051K	ES050K
S	ES052K	ES051K
M	ES053K	ES052K
L	ES054K	ES053K
XL	ES055K	ES054K
XXL	ES056K	ES055K

Fig. 18



Fig. 19



Fig. 20



Fig. 21 open

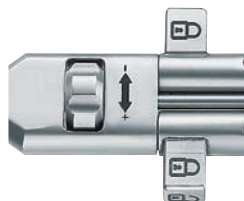


Fig. 22 locked



Fig. 23

C.5. TRIAL IMPLANT

Inserting the trial implant – verifying the required size of the disc implant

Basic information of trial implant

Presetting

- ▮ 12 sizes of trial implants (Fig. 19) corresponding with 12 sizes of activC® prostheses.
- ▮ Size of used trial can be predefined by preop. CT or MRI measurements.
- ▮ Size of used trial is defined by the size of intervertebral space.
- ▮ Trial should cover as much endplate surface as possible.
- ▮ Correct antero-posterior and midline positioning of trial is crucial.

Description of trial implant (see Fig. 19)

- ▮ All trials are color coded and marked according to the cranial/ caudal orientation.
- ▮ Adaptable depth stop.
- ▮ Two parallel radiomarkers in the depth stop.
- ▮ Locking mechanism.
- ▮ Trial groove indicating the midline visually or fluoroscopically.
- ▮ Ridge on upper surface of depth stop indicating midline.

Description of trial holder (Fig. 20)

- ▮ Trial holder locking mechanism.

Open (Fig. 21) the locking latch of the application instrument FW870 (Fig. 20).

Mount (Fig. 23) the trial implant FW874R ff. (Fig. 19).

Close the locking latch (Fig. 22, 23).

The set includes two application instruments to support a speedy surgical procedure if different sizes need to be tried.

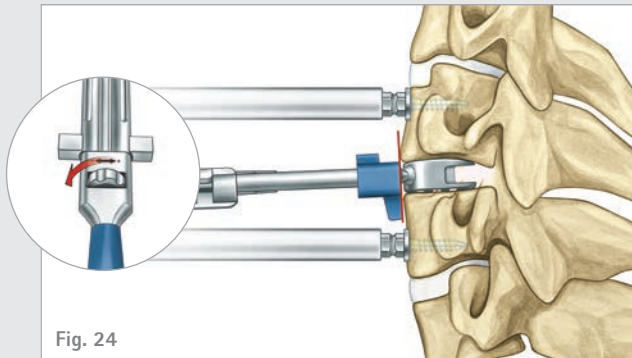


Fig. 24

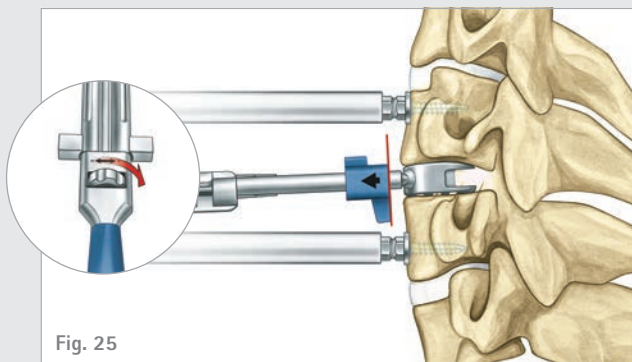


Fig. 25

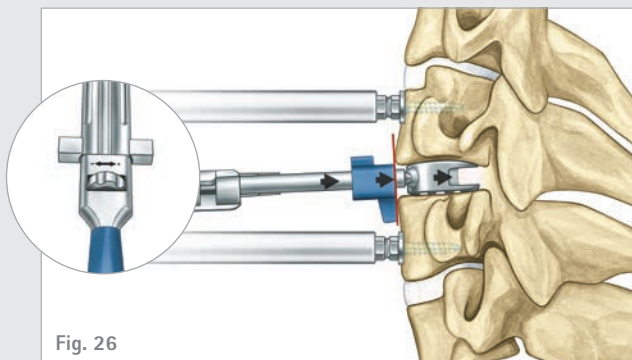


Fig. 26



Fig. 27

Using the safety stop

Adjust the safety stop position in AP direction with the adjusting wheel (Fig. 24 + 26). Move the safety stop forward by turning the adjusting wheel counterclockwise (Fig. 24).

Move the safety stop backward by turning the adjusting wheel clockwise (Fig. 25).

Initially, move the safety stop in a forward position as much as possible. Under X-ray control, tap the trial implant into the disc compartment until the safety stop touches the vertebral body from anterior (Fig. 24 + 27). Inspect the size (depth and height) of the trial implant under X-ray control. If necessary, turn the adjusting wheel clockwise to move the safety stop more backward and propel the trial implant further posterior (Fig. 26).

After final position is reached release the distraction to see the actual angulation of the segment or remove the distractor completely for better view. Unlock the trial holder and remove it. Be aware of trial position change!

Note:

- Introduce the trial in distracted position.
- Do not overdistract.
- It is not necessary to introduce the trial too far posterior because the activC® center of rotation is located already posterior.
- Respect the midline and sagittal midplane.

Correct sizing, antero-posterior and midline positioning of trial is crucial for a successful result of the activC® implantation. Once the keel groove has been reamed, the position of the prosthesis will be determined and cannot be changed anymore.



Fig. 28 Lateral Fluoroscopy



Fig. 29 AP Fluoroscopy

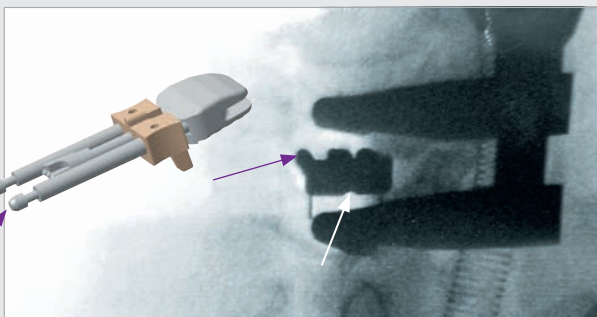


Fig. 30 Final position check

X-ray control of final trial position

Lateral fluoroscopy (Fig. 28)

- The trial is fitting to the shape of intervertebral space.
- Two parallel radiomarkers in depth stop are visible as one line.
- Whole cervical spine picture is confirming good alignment.
- The space is not overdistracted.

Anterior-posterior fluoroscopy (Fig. 29)

C-arm may be swiveled towards caudal.

The trial is in the midline if the lower groove (white arrow) is

- in line with dorsal processes,
- in the middle of the pedicular structures,
- in symmetrical contact with both unciniate processes.

The position of the trial implant has to be corrected until the described symmetric situation is achieved.

This step determines the final position of the prosthesis, since the trial implant is part of the guiding system for keel space preparation.

Note:

- Checking the prosthesis position with a trial implant is absolutely essential, as no correction will be possible after drilling the keel space and implantation of the prosthesis.

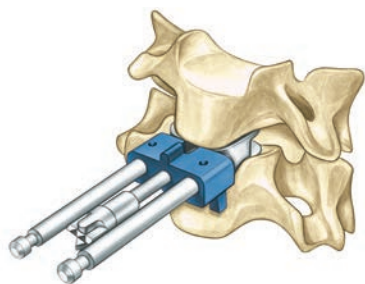


Fig. 31



Fig. 32



Fig. 33



Fig. 34



Fig. 35

C.6.1. MOTOR-POWERED PREPARATION OF THE KEEL GROOVE

Preparing the keel groove

- No distraction is applied.
- The trial implant remains in the disc space (Fig. 31).
- Mount the reamer guide FW871R (Fig. 32) on the trial implant with the same technique as the trial holder (Fig. 33, 34, 35).



Fig. 36

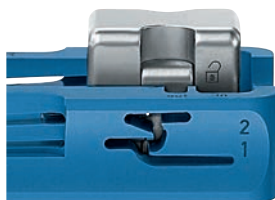




Fig. 37



Fig. 38

Mounting the guide block on the motor handpiece

- Put the guide block (Fig. 36-38) on the Hi-Line XL motor handpiece and push it through towards the rear end of the handpiece.
- Push down the locking bolt so that the edges of the locking bolt and the guide block are in line and the arrow on the locking bolt points to the symbol . Now the guide can be pushed fully back to 1 mm in front of the blue rubber ring.
- Release the locking bolt (which will snap out automatically). The arrow on the locking pin points to the symbol  (Fig. 36).

Note:



- The guide block does not sit properly if the arrow points to a position between the two symbols  and . The guide block has to sit firmly on the handpiece. The guide block can still be turned freely, but cannot be shifted back and forth anymore.

Fig. 36-38:

The guide block, the motor handpiece and the guide instrument FW871R together form the reamer system for preparing the keel bed.

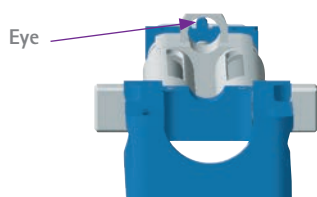


Fig. 39



Fig. 40

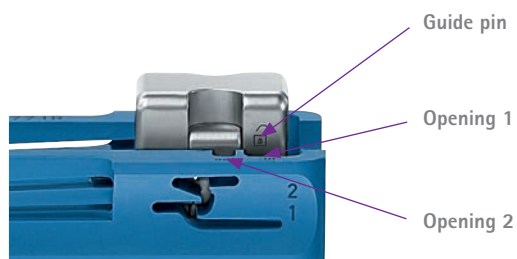


Fig. 41

Mounting the motor handpiece on the guiding instrument

- Insert the reamer into the handpiece (only use GE700SU).
- The motor handpiece GB771R with the reamer tip is pushed through the eye at the front end of the reamer guide (Fig. 39 + 40).
- The pins on the guide block have to be inserted into opening 1 (the larger opening further backwards) of the reamer guide (Fig. 41).
- After completion of the reaming procedure, the motor with the guide block is removed through opening 2.

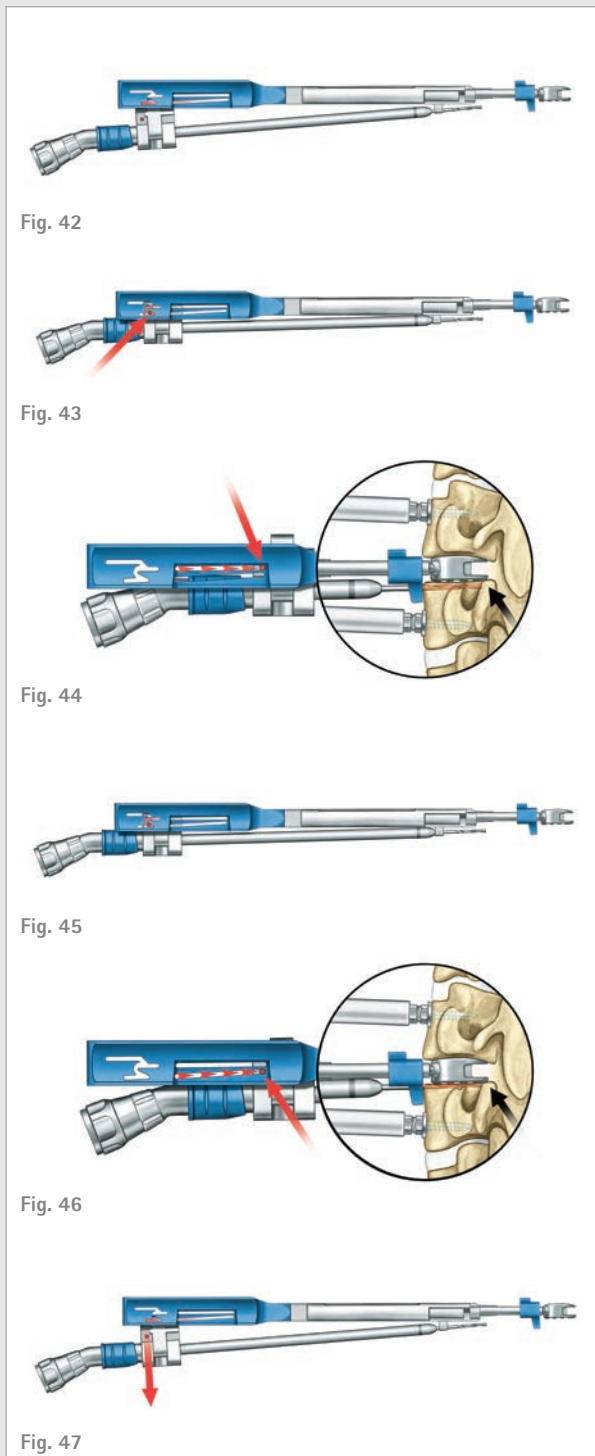


Fig. 42

Fig. 43

Fig. 44

Fig. 45

Fig. 46


Fig. 47

Reaming the keel groove

- Before starting preparation of keel groove make sure that the trial implant is still in the same position.
- Respect strictly the sagittal midplane in the beginning and during reaming.
- The pins of the guiding block are inserted into the larger opening (Fig. 42).
- Push the reamer (the guiding pins gliding in the upper groove) towards the vertebral body (Fig. 42 + 43). A first burr hole is applied at a distance of approx. 1 mm below the trial implant (Fig. 44).
- During pulling out, the pins are automatically guided by the loop mechanism (Fig. 45) of the reamer guide and are led into the second groove (Fig. 44). A second burr hole is now applied directly under the trial implant (Fig. 46).
- The precise guide mechanism ensures that the two burr holes create together the keel groove.
- The motor handpiece is released through opening 2 (Fig. 47).

Note:

- The reamer guide ensures that the drill will stop approx. 1.5 mm before the posterior edge of the trial implant (where the prosthesis will be placed finally). This ensures that the reamer cannot damage any soft tissue.

 shows the position of the guide pin during the keel preparation procedure

AESCULAP® activC®

C | INSTRUMENTATION



Fig. 48

GB771R



Fig. 49

GD676



Fig. 50

GD672



Fig. 51

GD675



Fig. 52

GD670



Fig. 53

GD668

C.6.2. POWER SYSTEM FOR MOTOR-DRIVEN PREPARATION OF THE KEEL GROOVE

- Only Hi-Line XS motor handpiece GB771R (Fig. 48) can be used for reaming the keel bed.

Note:

- The Hi-Line XS motor handpiece GB771R (Fig. 48) cannot be replaced by any other handpiece because its dimensions are matched to the activC® reamer guide (FW871R), the guide block and the trial implants (FW874R - FW888R) (Fig. 36 - 38). No other motor handpiece can be used for this procedure.

- As a standard combination, AESCULAP® offers the microspeed uni Hi 150 (GD676) with extra cable (GD672) or the micro-speed uni XS Hi (GD675) with integrated cable.

- Both motors are powered through the microspeed uni control unit (GD670).
- And controlled by the microspeed uni pedal switch (GD668).

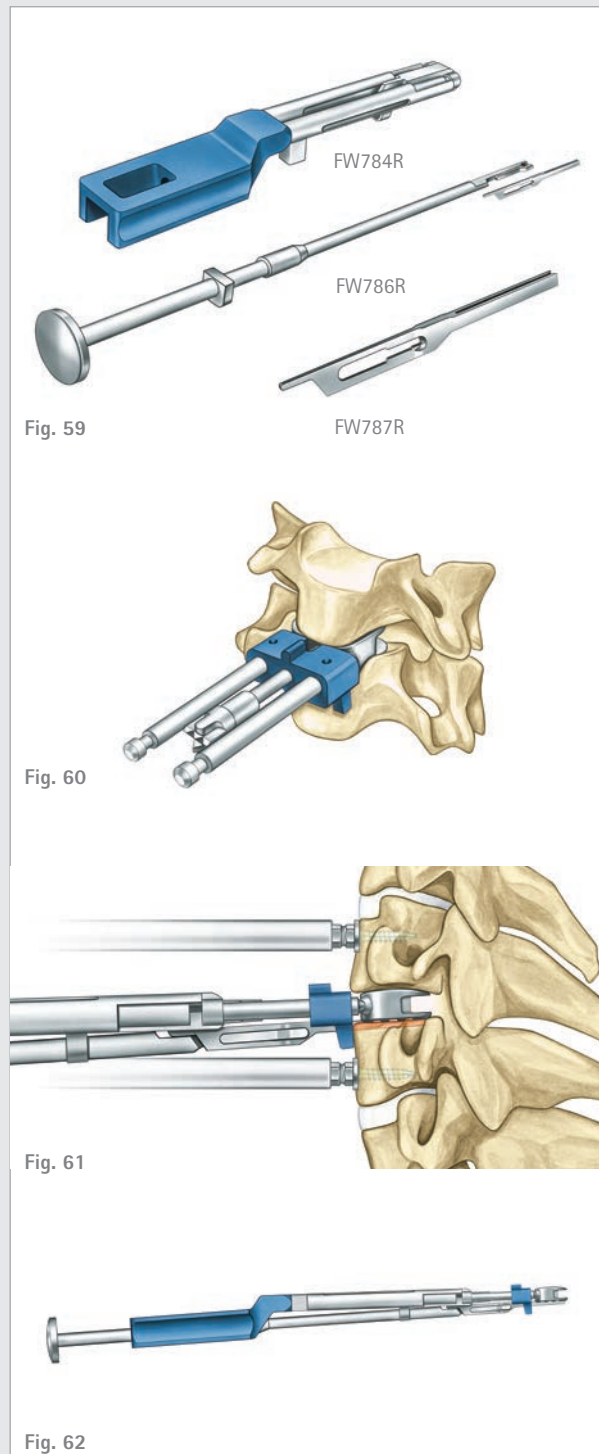
Pneumatic motor system

- As an alternative combination, AESCULAP® offers the HiLAN XS pneumatic motor with hand control GA529 (Fig. 54) or the GA740 motor with pedal switch GA521 (Fig. 55).

- For the pneumatic hose system, three different connection types are available, which can be ordered separately or together as a set (for use with compressed air or nitrogen (6-10 bar)).

AESCULAP®-Dräger system	GA505R	(Fig. 56)
Schrader system	GA506R	(Fig. 57)
DIN system	GA507R	(Fig. 58)





C.6.3. MANUAL PREPARATION OF THE KEEL GROOVE

- Principles and technique of manual preparation of the keel groove of the activC® implant is the same as the motor-powered preparation.
- For the manual preparation a special chisel guide FW784R is available. This instrument guides the chisel holder FW786R and chisel FW787R (Fig. 59).
- After verification of height and size, the trial implant remains in the disc space (Fig. 60). The chisel guide is mounted onto the trial implant and the connection is locked (Fig. 61).
- Instead of using the motorhandpiece, the assembly of chisel holder FW786R and chisel FW787R is attached to the chisel guide.
- After a final midline and position check, the chisel is impacted into the bone (Fig. 62) and the keel groove prepared.
- Chisel guide and trial implant are removed and the keel preparation inspected.



Fig. 63



Fig. 64



Fig. 65

DB327R



Fig. 66

FL146R

C.6.4. PREPARATION OF THE KEEL GROOVE

Inspecting the keel groove

- Fig. 63 shows burr hole no. 1 in lateral X-ray view.
- Fig. 64 shows burr hole no. 2 in lateral X-ray view.
- The latter runs immediately next to the trial implant. Both burr holes end 1.5 mm in front of the posterior edge of the trial implant (of any size).
- Inspect the keel groove visually.

Cleaning the keel groove

- Remove any bone particles with the hook DB327R (Fig. 65) to avoid compaction of bone particles in the keel groove which could lead to keel slippage and to avoid transport of bone particles into the dura region.
- If necessary break the cortical edge of the keel groove with the same instrument.
- Check if the keel groove is deep enough and far enough to the posterior. If not, prepare the keel groove to the affordable depth and length.
- For cutting of bone bridges in disproportionate inferior planes the chisel FL146R can be used (Fig. 66).

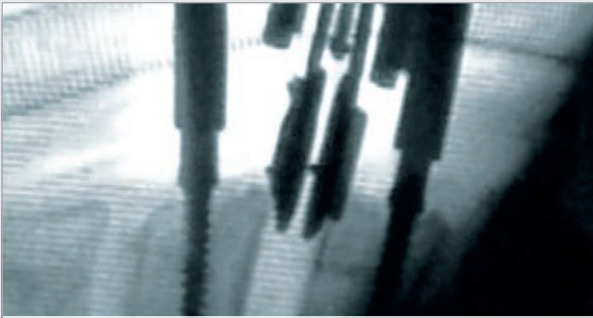


Fig. 67



Fig. 68



Fig. 69



Fig. 70

C.7. IMPLANTATION

activC® prosthesis (available in 12 sizes) is implanted corresponding to the used trial implant.

- Apply slight distraction with the CASPAR® distractor.
- Remove the trial with trial holder.
- Attach the appropriate prosthesis to the insertion instrument.
- Introduce the activC® under lateral fluoroscopic control (Fig. 67 + 68).
- Detach the insertion instrument (Fig. 69).
- Check the final position in AP and lateral view.
- Correct the position if necessary.
- Release distraction (Fig. 69).
- Check the position in lateral fluoroscopic view again (Fig. 70).



Fig. 71

FW863R (height 5)



Fig. 72

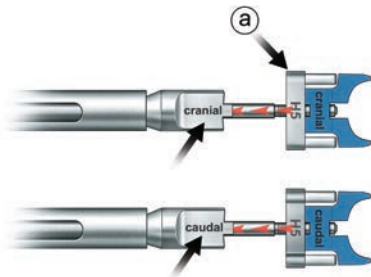


Fig. 73

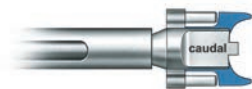


Fig. 74



Fig. 75



Fig. 76

Insertion instrument

- The distance yokes are available in 2 different heights: 5 mm and 6 mm (Fig. 71) FW863R and FW864R.
- The insertion instrument is available for two different heights (Fig. 72):
 - FW866R 5 mm height (with distance yoke FW863R),
 - FW857R 6 mm (with distance yoke FW864R).
- For functional reasons, the distance yoke is asymmetric. It is important that the markings "cranial" and "caudal" on the distance yokes and on the insertion instrument are in agreement (see Fig. 74).
- The yoke is introduced into the insertion instrument (Fig. 73).
- The yoke can be mounted and dismounted by pressing the "clean" button (Fig. 75).
- Fig. 76 shows the insertion instrument with yoke, ready for use.

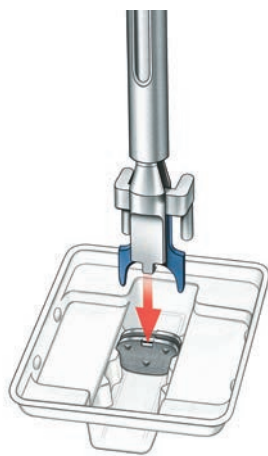


Fig. 77



Fig. 78

FW866R/FW857R



Fig. 79

FW945R

Connecting the insertion instrument to the prosthesis

- The activC® prosthesis is supplied fully assembled. The prosthesis is bedded in a special recess in the inner plastic packaging (Fig. 77).
- In this position, the insertion instrument can be attached to the prosthesis safely and easily. The hooks at the front end of the insertion instrument are inserted into the corresponding eyes of the prosthesis plates. The distance yoke sits between the two prosthesis plates and ensures that the prosthesis plates are kept parallel during insertion (Fig. 78).
- The insertion instrument is tightened on the prosthesis by turning the locking sleeve. The locking mechanism can be tightened and loosened with wrench FW945R (Fig. 79).
- The safety stop can be moved to fully anterior by turning the adjusting wheel counterclockwise.
- This is the recommended position at the beginning of the implantation as it prevents slipping or penetration of the prosthesis.



Fig. 80

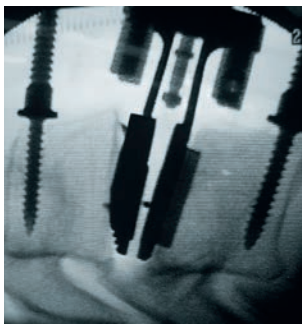


Fig. 81

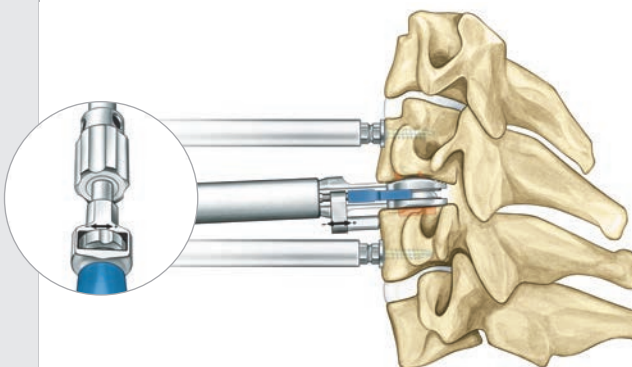


Fig. 82

- The prosthesis is carefully inserted into the disc compartment by guiding the keel into the prepared keel groove (Fig. 80).
- X-ray control should be maintained while tapping the prosthesis into the disc space (Fig. 80, 81).
- The axis of the disc space has to be respected.
- The safety stop is moved posterior by turning the adjusting wheel clockwise. This allows further propelling of the prosthesis.

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C | INSTRUMENTATION



Fig. 83

♀, directly post-OP, lateral

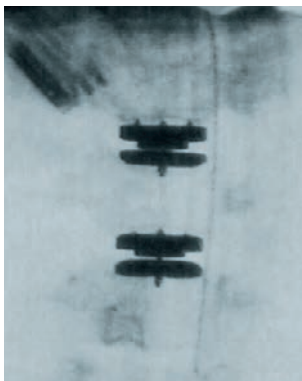


Fig. 84

♀, directly post-OP, AP-view



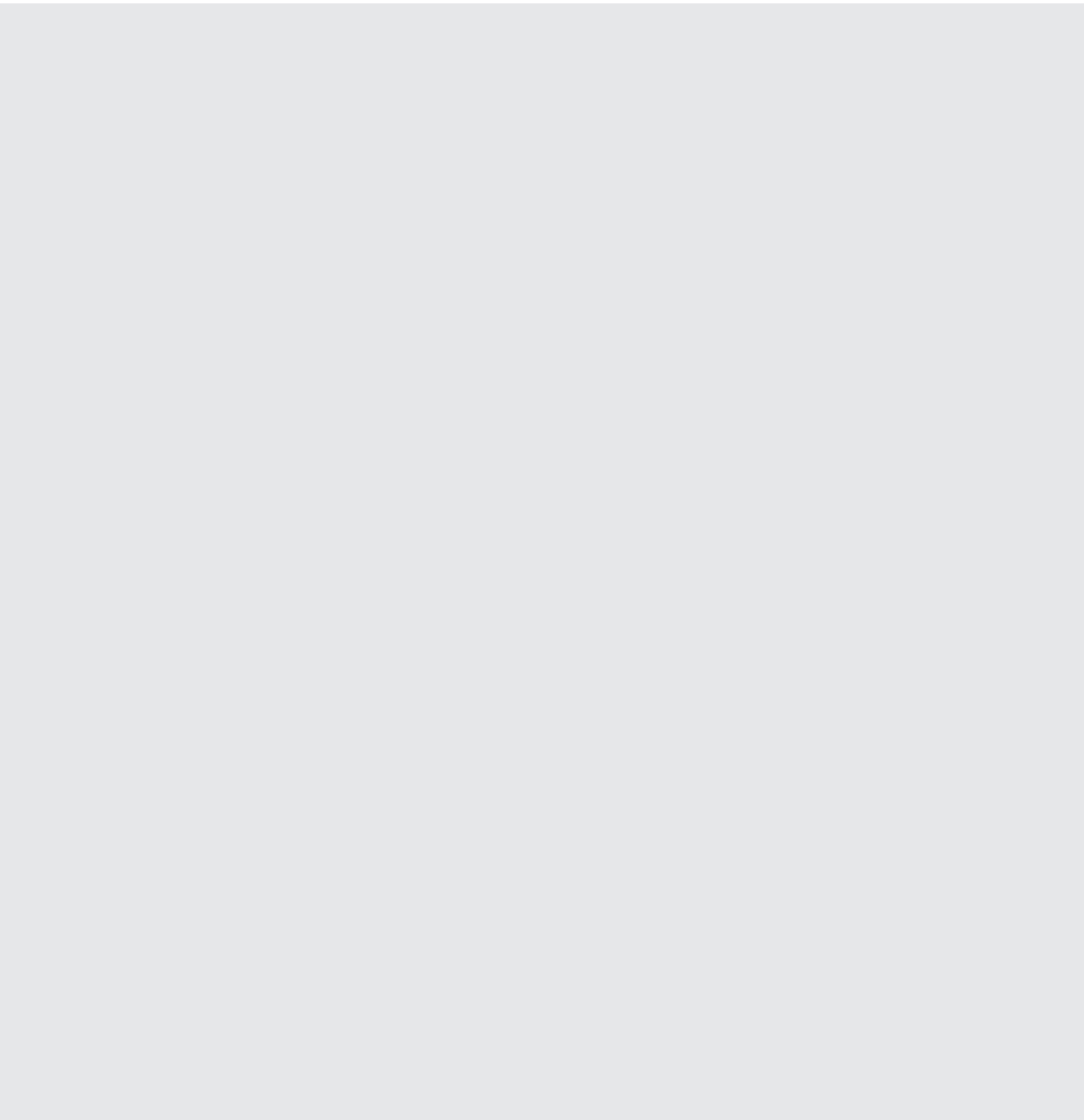
Fig. 85

♀, 1 year post-OP, lateral

- Both prosthesis plates should reach the same distance from corresponding posterior vertebral walls.
- Good fit and good contact between implant and vertebral endplate should be achieved.
- The insertion instrument is removed and the final position is inspected under lateral and AP X-ray. If the position of the prosthesis is unsatisfactory at this stage, it can be corrected with the appropriate correction instruments.

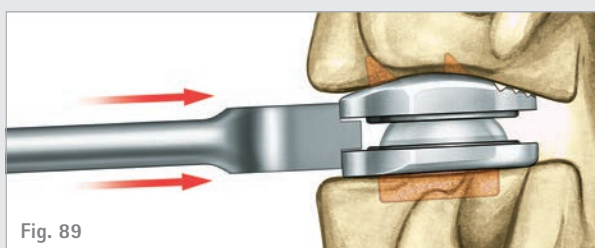
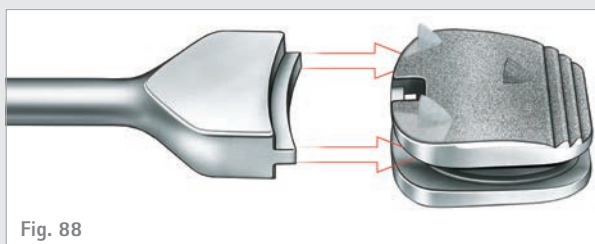
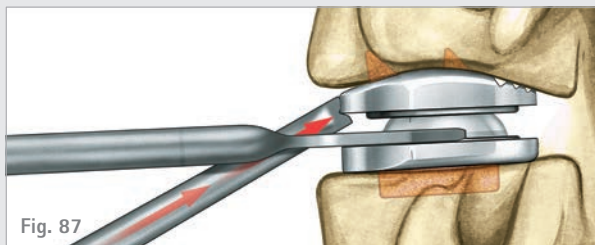
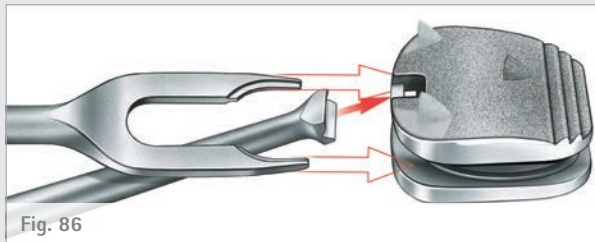
Note:

- Depending on degree of degeneration and associated sclerotization of endplates or the condition of the patient's bone, the spikes of activC® could be inserted only partial directly post-OP. The spikes will migrate into the bone within a few weeks through the biomechanical impact of weight and movement.



AESCULAP® activC®

D | REPOSITIONING/REVISION



Intraoperative

- The activC® set comes with two different impaction systems. One is to impact only one of the two prosthesis plates at a time (impactor FW783R with two forks FW781R and FW782R as stabilizer of the implant during the impaction – Fig. 86 + 87). The other two instruments are to impact both prosthesis plates at the same time.
- Due to the anatomical inclination of the disc space, it is not unusual, that the superior prosthesis plate has to be corrected and impacted more posteriorly. FW783R is intended to impact one plate. The two forks FW781R and FW782R for the heights 5 mm and 6 mm are intended to avoid lateral luxation/ malposition and to stabilize the prosthesis and hold them in place while impacting the superior plate (Fig. 87).
- FW897R for height 5 mm and FW898R for heights 6/7 mm are intended to manipulate both prosthesis plates simultaneously to the same extent and into the same direction (Fig. 88 + 89).

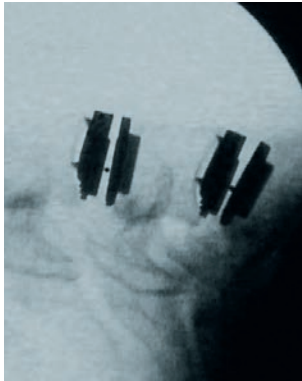


Fig. 90



Fig. 91

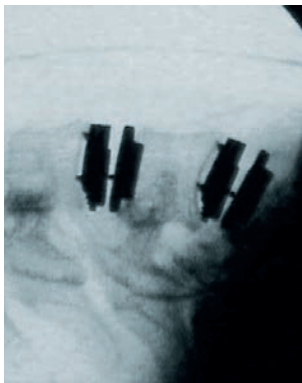


Fig. 92

Impaction and correction of superior prosthesis plate/ Lordotisation of prosthesis

- Fig. 90, 91, 92 show an example where the upper prosthesis plate is corrected towards posterior. Fig. 92 shows the prosthesis plates in ideal position.



Fig. 93

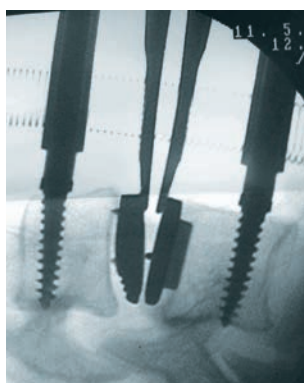


Fig. 94

Use of the distraction forceps to penetrate the spikes into the vertebral endplates

If the spikes did not penetrate the cortical endplate of the vertebral body, this can be achieved with the distraction forceps:

- Put the distraction forceps between the two prosthesis plates.
- Push the superior plate against the vertebral endplate until the spikes penetrate the bone.
- Do not overdistract the segment during this process.

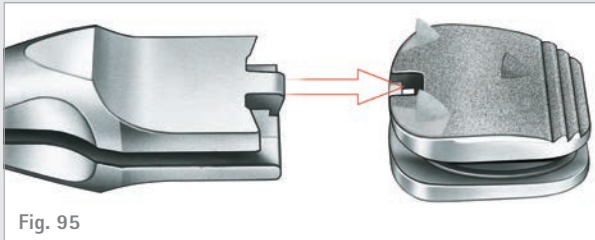


Fig. 95

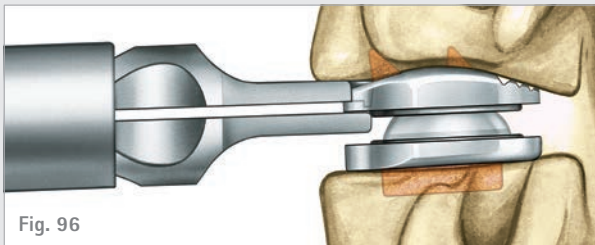


Fig. 96



Fig. 97

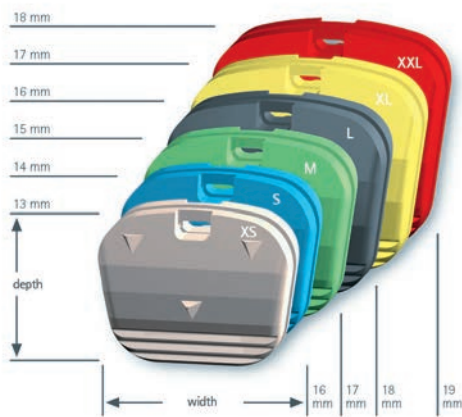
Postoperative

- The revision instrument FW868R (Fig. 95) can be fixed to one prosthesis plate. With the hook and the counter plate, the prosthesis plate can be attached as firmly as with the insertion instrument (Fig. 96).
- This allows manipulation and repositioning in either anterior or posterior direction, as well as in the plane of rotation.
- The revision instrument also allows a revision of the prosthesis.
- Usually the superior plate is explanted first, then the inferior plate.
- Postoperatively, the two prosthesis plates first have to be loosened with chisel FL146R (Fig. 97).
- After that, the two plates can be revised one after the other with the revision instrument.

AESCULAP[®] activC[®]

E | OVERVIEW

Implants – sizes and article numbers



activ C Disc Prosthesis colour code and dimension table

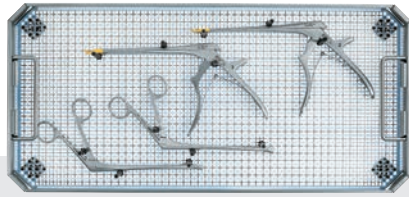
scale 1:1

Size	Dimensions (mm)	H5 Article	H6 Article
XS	16 x 13	SX551K	SX552K
S	16 x 14	SX553K	SX554K
M	17 x 15	SX555K	SX556K
L	18 x 16	SX557K	SX558K
XL	19 x 17	SX559K	SX560K
XXL	19 x 18	SX561K	SX562K

B BRAUN
SHARING EXPERTISE

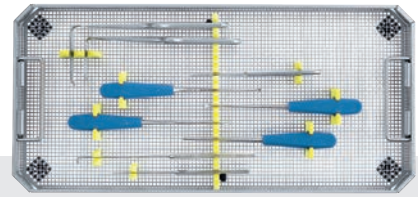
article no. FW873

AESCULAP[®]
















FW892R

Preparation & discectomy tray 2



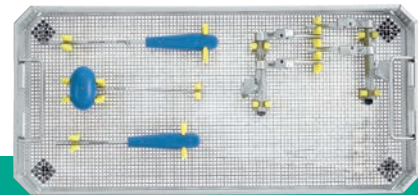
FW892R

Preparation & discectomy tray 1















DISCECTOMY SET	Article No.	Description	Quantity
	FF772R	KERRISON punch 2 mm, thin foot	1
	FF773R	KERRISON punch 3 mm, thin foot	1
	FF532R	CASPAR® rongeur	1
	FF533R	CASPAR® rongeur	1
	D0463R	OBWEGESER wound hook	1
	D0465R	OBWEGESER wound hook	1
	FK390R	KRAEMER raspatory	1
	FK774R	CASPAR® sharp spoon	1
	FK835R	CASPAR® curette	1
	FW872R	activC® drop-shaped curette	1
	FF917R	CASPAR® vertebral body elevator	1
	BT090R	CASPAR® nerve hook	1
	FD398R	KRAYENBUEHL nerve hook	1

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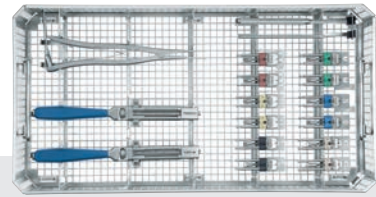
E | OVERVIEW



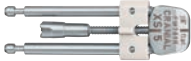
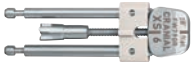
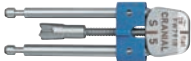
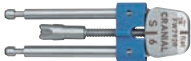
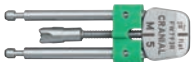
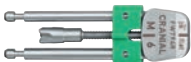


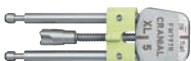
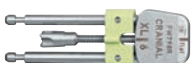
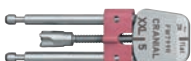
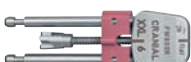




FW894R
Dissectomy tray

DISTRACTOR SET	Article No.	Description	Quantity
	FJ835R	ABC pin extraction instrument	1
	FJ833RS*	ABC temporary fixation pin*	*
	FW850R	activC° screwdriver for lockable distraction screws	1
	FW848R	activC° distractor for lockable screws, right	1
	FW849R	activC° distractor for lockable screws, left	1
	FW899R	activC° center punch for distraction screws	1
	FW861SU**	activC° distraction screw 12 mm**	**
	FW862SU**	activC° distraction screw 14 mm**	**
	FW855SU**	activC° distraction screw 16 mm**	**
	FW856SU**	activC° distraction screw 18 mm**	**
	FW851SU**	activC° offset distraction screw 12 mm**	**
	FW852SU**	activC° offset distraction screw 14 mm**	**
	FW853SU**	activC° offset distraction screw 16 mm**	**
	FW854SU**	activC° offset distraction screw 18 mm**	**

* These articles are sterile disposable products and have to be ordered separately. 1 unit per pack.
** These articles are sterile disposable products and have to be ordered separately. 2 units per pack.

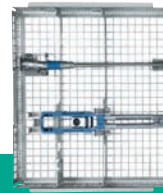


Bottom level
for either tray FW645R/FW647R

activC® TRIAL SET	Article No.	Description	Quantity
	FW789R	Trial implant size XS, H 5 mm	1
	FW790R	Trial implant size XS, H 6 mm	1
	FW791R	Trial implant size S, H 5 mm	1
	FW792R	Trial implant size S, H 6 mm	1
	FW793R	Trial implant size M, H 5 mm	1
	FW794R	Trial implant size M, H 6 mm	1
	FW795R	Trial implant size L, H 5 mm	1
	FW796R	Trial implant size L, H 6 mm	1
	FW797R	Trial implant size XL, H 5 mm	1
	FW798R	Trial implant size XL, H 6 mm	1
	FW799R	Trial implant size XXL, H 5 mm	1
	FW800R	Trial implant size XXL, H 6 mm	1
	FW870	activC® handle trial implants	2
	FW860R	activC® distraction forceps	1
	FL146R	activC® small chisel	1
	DB327R	activC® bone hook for clearing out the keel bed	1

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E | OVERVIEW






Top level
for tray FW647R






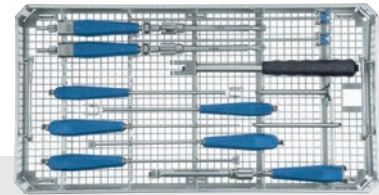
Top level
for tray FW645R

TOP LEVEL FOR TRAY FW647R – MOTOR POWERED KEEL GROOVE PREPARATION














	Article No.	Description	Quantity
	FW871R	activC® reamer guide with guidance block	1
	GB771R	activC® Hi-Line XS handpiece angled XL-1	1
	GE700SU*	activC® reamer*	*

TOP LEVEL FOR TRAY FW645R – MANUAL KEEL GROOVE PREPARATION

	Article No.	Description	Quantity
	FW784R	activC® chisel jig for manual keel preparation	1
	FW786R	activC® chisel holder for manual keel preparation	1
	FW787R*	activC® chisel for manual keel preparation*	*

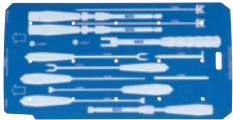


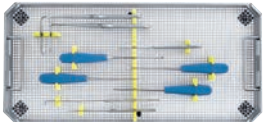
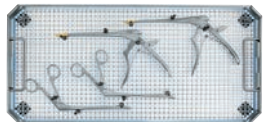
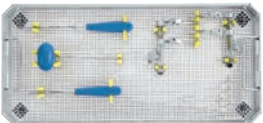


FW643R
tray for implantation

activC® IMPLANTATION SET	Article No.	Description	Quantity
	FW863R	activC® spacer for implant height 5 mm	1
	FW864R	activC® spacer for implant height 6 mm	1
	FW866R	activC® insertion instr. (with rinsing conn.) height 5 mm	1
	FW857R	activC® insertion instr. (with rinsing conn.) height 6/7 mm	1
	FW945R	activC® wrench for opening/closing the insertion instr.	1
	FW867R	activC® repositioning instrument	1
	FW781R	activC® fork for impactor FW783R/ height 5 mm	1
	FW782R	activC® fork for impactor FW783R/ height 6 mm	1
	FW783R	activC® impactor for one plate (together with fork)	1
	FW897R	activC® impactor for height 5 mm for 2 plates	1
	FW898R	activC® impactor for height 6/7 mm for 2 plates	1
	FW869R	activC® slotted hammer	1
	FW868R	activC® revision instrument	1

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E | OVERVIEW

ADDITIONAL PARTS	Article No.	Description	Quantity
	TF012	activC® graphic stencil for FW643R	1
	TF013	activC® graphic stencil for FW645R	1
	TF014	activC® graphic stencil for FW647R	1
	TE923*	Packing template tray for discectomy set top*	1
	TE924*	Packing template tray for discectomy set middle*	1
	TE925*	Packing template tray for discectomy set bottom*	1

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NOTES

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A series of 25 horizontal dotted lines spanning the width of the page, intended for writing or drawing.

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