Aesculap® activ® C

Cervical Disc Prosthesis
Surgical Technique

Aesculap Spine

B BRAUN
SHARING EXPERTISE

activ® C

Cervical Disc Prosthesis

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activ® C

General Information
Product Characteristics – Basic Information activ® C

Intended use

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

The activ® C 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 activ® C intervertebral disc prosthesis is available in six different sizes (XS, S, M, L, XL and XXL) and up to three different heights (5 mm, 6 mm and 7 mm). activ® C intervertebral disc prosthesis are supplied fully pre-assembled.

Therapy goals with activ® C

- 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

Technical requirements

- Sufficient decompression of neural structures
- Correct midline positioning
- Sagittal and anterior-posterior balancing ensured
- Best approximation to the preoperative segmental center of rotation
- Maximal coverage of the vertebral endplates
- Excellent adaptation to the endplate anatomy to prevent migration and dislocation
- Anchoring structures for primary stability designed to prevent vertebral body fractures
- Large bone-implant contact area for rapid osteointegration supported by osteoconductive Plasmapore®- coating
- Avoid surgically induced trauma of vertebral bodies and neuro-vascular structures

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 activ® C 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)
- Acceptable 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

Indications with questionable prognosis

- Preoperative segmental kyphosis or "straight neck"
- Narrow hard disc
- Acute myelopathy with MRI signal changes
- Osteophytic and sclerotic changes of the vertebral bodies
- Anterior or posterior longitudinal ligament ossifications

Specific contraindications

- Spondylarthrosis
- Chronic degenerative spinal stenosis
- Spinal deformities
- Segmental mobility less than 2° in flexion and extension
- Segmental instability
- Vertebral body fractures
- Facet joint degeneration
- Chronic myelopathy
- Osteoporosis
- Metal (CoCrMo) allergy

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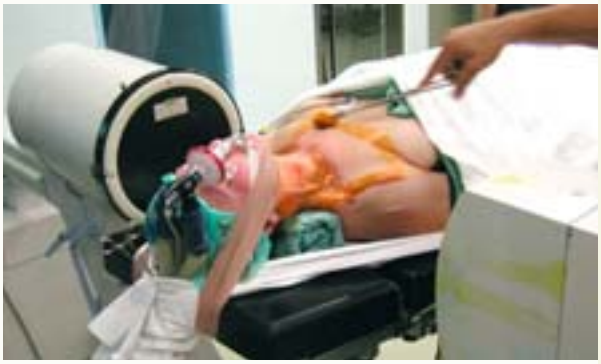
A) Approach

A.1

A.1 Patient positioning

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

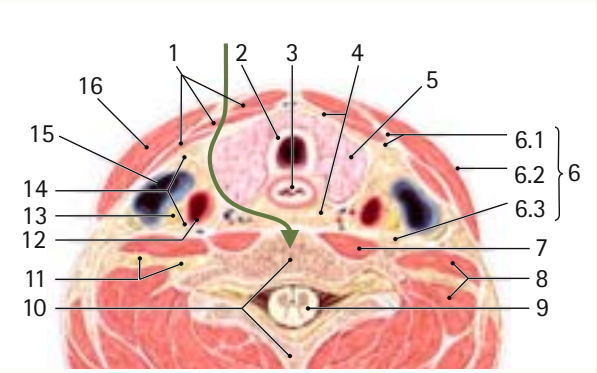
- Positioning of the patients neck in neutral position – not in hyperlordosis which is routinely used for anterior fusion techniques
- If necessary, adjustment of the operating position according to a preoperative X-ray of the patient standing in neutral position
- Fixed position of the head, the cervical spine and the patient
- Radiographic visibility of the treated segments in lateral and AP view



Note:
Positioning of the patients neck in hyperlordosis can result in an inappropriate position of the prosthesis. Intra-operatively, the alignment of the prosthesis and the spinal segment can wrongly appear as "correct".
As soon as the spine returns to a neutral position in postoperative daily life, the segment and the prosthesis can fall into a kyphotic position.

A.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 M. longus colli
8 Mm. scaleni
9 Spinal cord
10 Cervical vertebrae VI
11 Plexus brachialis
12 A. carotis communis
13 N. vagus
14 Vagina carotica
15 V. jugularis interna
16 M. sternocleidomastoideus

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A) Approach

A.2 Approach

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

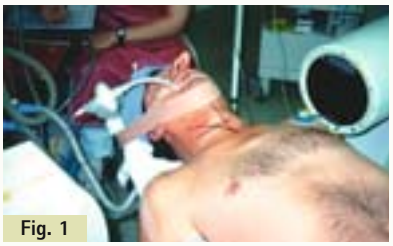

Fig. 1

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

Fig. 2

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).

Fig. 3

Platysma cut, Gelpi distractor over SCM

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

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

Fig. 4

Subcutaneous preparation along the SCM

Fig. 5

Right side belly of longus colli muscle

CASPAR wound distractor in position

Aesculap offers new CASPAR retractor blades, which are completely radiolucent.
New PEEK materials provide enough biomechanical stability and, with feature of radiolucency, excellent visibility in both, lateral and AP fluoroscopic view (Fig. 1).

This ensures a safe and placement of the prosthesis without additional steps as removal of retractors.

The new CASPAR retractor blades are suitable with the existing CASPAR retractor systems (Fig. 2).

The surgeon has the free choice to combine the CASPAR retractor with either metal, titanium or the new radiolucent retractor blades (Fig. 1 + 3).

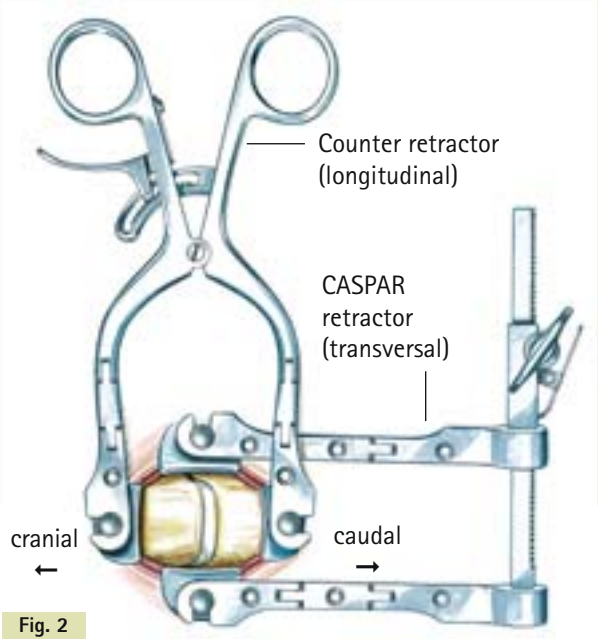

Fig. 2

Fig. 1

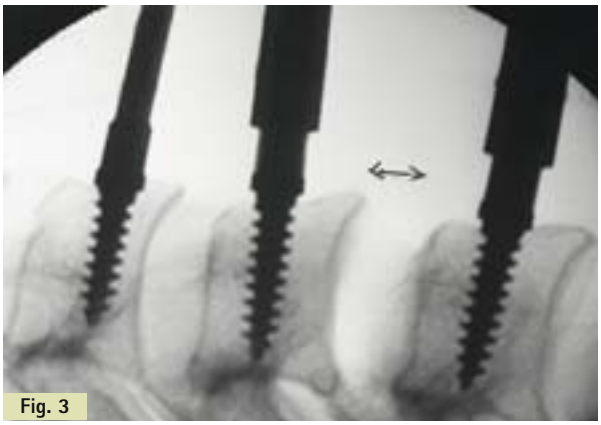

Fig. 3

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B) Instrumentation

B.1 Midline marking

Determination of midline

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

- position of the longus colli muscles
- symmetry of anterior vertebral surface
- midline between the processi uncinati

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

- position of spinous processes
- midline between uncinate processes

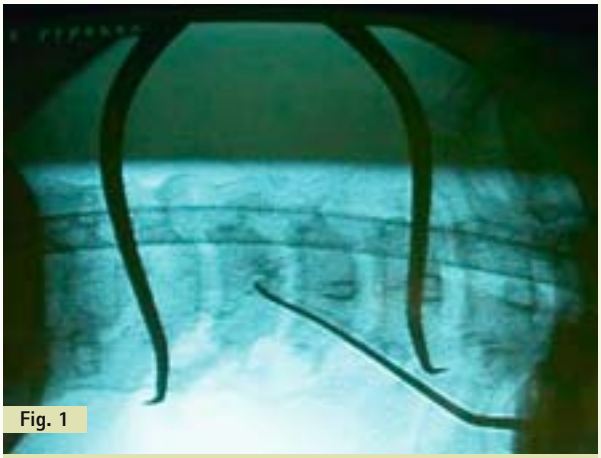

Fig. 1
AP Flouroscopy: Probe tip localised in midline

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.

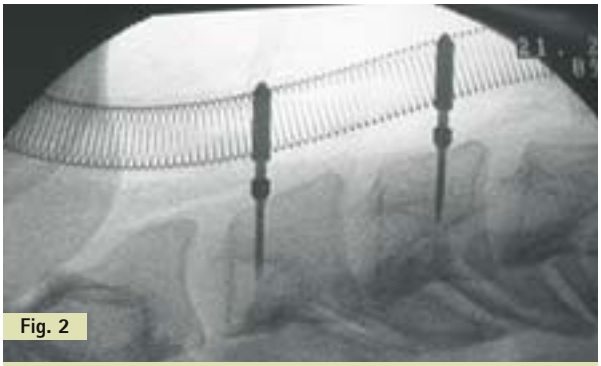

Fig. 2
Lateral Flouroscopy: Position of the midline marking pins

Note:
A final check of midline should be done after placing the trial implant into the disc space. The trail 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 15.

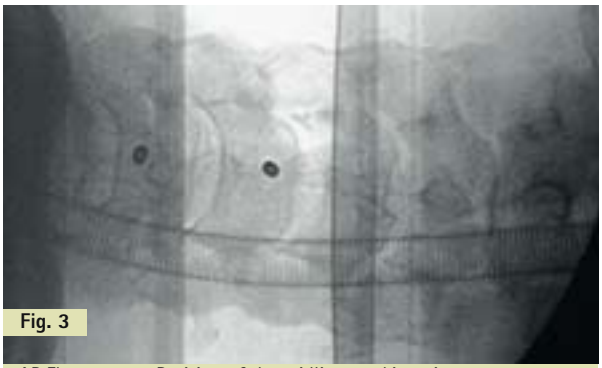

Fig. 3
AP Flouroscopy: Position of the midline marking pins

B.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

Rongeur

FF532R
FF533R

Punch

FF772R
FF773R

Curette

FK835R

Sharp spoon

FK774R

Raspatory

CASPAR vertebral body elevator

FF917R

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B) Instrumentation

B.2 Preparation of disc space

Preparation of the vertebral body endplates and osteophytes with motor unit and reamer attachments – Hi-Line XS angled handpiece XL-1 GB771R

Burrs, cutters, reamers or drills can be used for foraminal decompression or cutting off the posterior osteophytes. Bone preparation should be limited to minimal extend in order to avoid creation of too much bone powder which can serve as focal point for later ossifications. Preparation of posterior uncus should be limited to one third of total structure to avoid instability of the segment. The activ® C set includes the motor handpiece Hi-Line XS angled XL-1 (GB771R). Various attachments are available for this handpiece, which can be used for preparation and necessary bone removal. The motor handpiece Hi-Line XS angled XL-1 (GB771R) can be combined with various electric or pneumatic motors.
For more information, see page 22/23.

GB771R

GA529

GA740R

GA519

HiLAN XS components available for the new motor handpiece

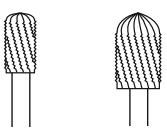
Rosen burr

Ø	1.0 mm	1.4 mm	1.8 mm	2.3 mm	2.7 mm	3.1 mm	4.0 mm	5.0 mm	6.0 mm
I	GE401R	GE402R	GE403R	GE404R	GE405R	GE406R	GE407R	GE408R	GE409R
II	GE501R	GE502R	GE503R	GE504R	GE505R	GE506R	GE507R	GE508R	GE509R
III			GE603R	GE604R	GE605R	GE606R	GE607R	GE608R	GE609R
XLI				GE704R		GE706R	GE707R	GE708R	GE709R

Olive burr

Ø	1.8 mm	2.3 mm	3.1 mm
I	GE431R	GE434R	GE435R
II	GE531R	GE534R	GE535R
III	GE631R	GE634R	GE635R
XLI			GE702R

Cylindrical burr



Ø	4.0 mm	6.0 mm
I		
II	GE544R	GE546R
III	GE644R	GE646R
XLI	GE711R	GE712R

B.3 CASPAR distractor – new lockable version for activ® C

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 activ® C 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 activ® C:

- 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 distant 1/3 of the target vertebral body
- to create more space for implantation offset screws are available
- distractor is equipped with self locking mechanism

Fig. 1

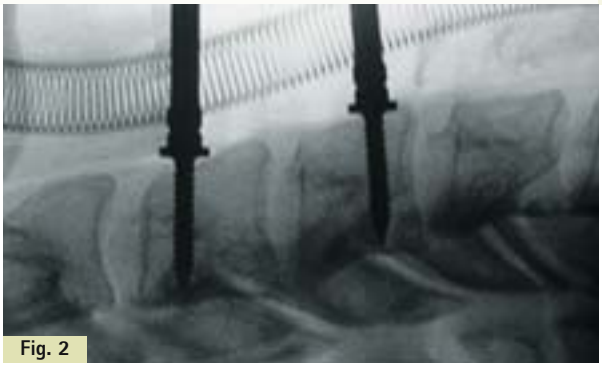


Fig. 2


Fig. 3

B.4 Distraction forceps

Distraction forceps

The distraction forceps (Fig. 1) is used for distracting the treated segment. The forceps is applied to the posterior part of intervertebral space under fluoroscopical control (Fig. 2). The distraction is created gradually in parallel fashion. Step by step distraction is allowing relaxion of the ligaments. Target space height of treated segment should be compared with adjacent ones to avoid over-distraction of the segment. Careful observation of appropriate joint fissure enlargement can be helpful. The forceps is equipped with locking mechanism to hold the distance. CASPAR self-locking distractor is passively adapted to the reached distraction.

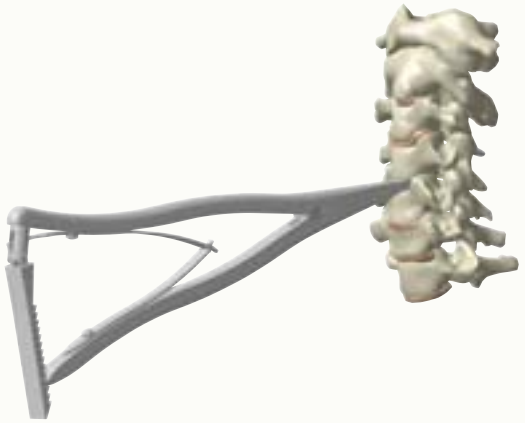


Fig. 1

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.

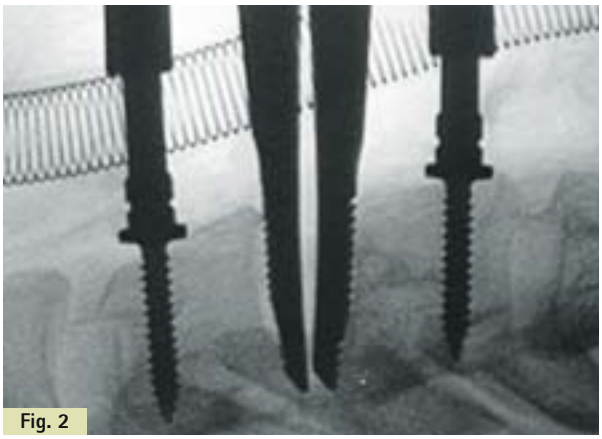


Fig. 2

B.5 Trial implant

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

Presetting

- 15 sizes of trial implants (Fig. 2) corresponding with 15 sizes of activ® C prostheses
- Size of used trial can be predefined by preop. CT or MRI measurements
- Size of used trial is defined by the size of inter-vertebral space
- Trial should cover as much endplate surface as possible
- Correct antero-posterior and midline positioning of trial is crucial

Fig. 1

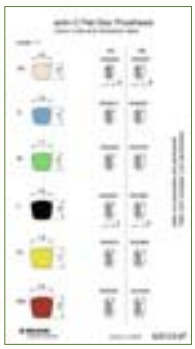


Fig. 2

Description of trial implant (see Fig. 2)

- All the trials are color coded and marked according 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

Fig. 3

Fig. 4 open

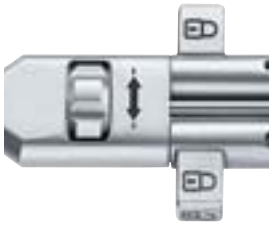


Fig. 5 locked

Description of trial holder (Fig. 3)

- Trial holder locking mechanism

Open (Fig. 4) the locking latch of the application instrument FW870 (Fig. 3).
Mount (Fig. 6) the trial implant FW874R ff. (Fig. 2).
Close the locking latch (Fig. 5, 6).

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

Fig. 6

B.5 Trial implant

Using the safety stop

Adjust the safety stop position in AP direction with the adjusting wheel (Fig. 1 + 3). Move the safety stop forwards by turning the adjusting wheel counterclockwise (Fig. 1 + 2).
Move the safety stop backwards by turning the adjusting wheel clockwise (Fig. 3 + 4).
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. 5).
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 backwards and propel the trial implant further posterior.
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!

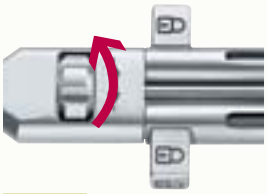


Fig. 1

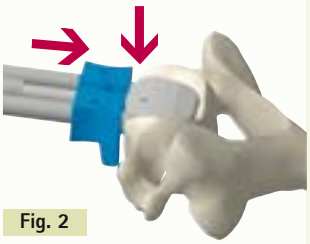


Fig. 2

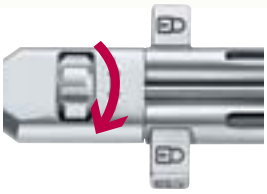


Fig. 3

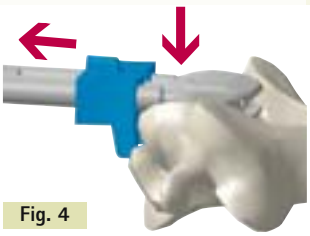


Fig. 4

Note:

- Introduce the trial in distracted position
- Do not over-distract
- It is not necessary to introduce the trial too far posterior because the activ® C 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 activ® C implantation.
Once the keel groove has been reamed, the position of the prosthesis will be determined and cannot be changed anymore.

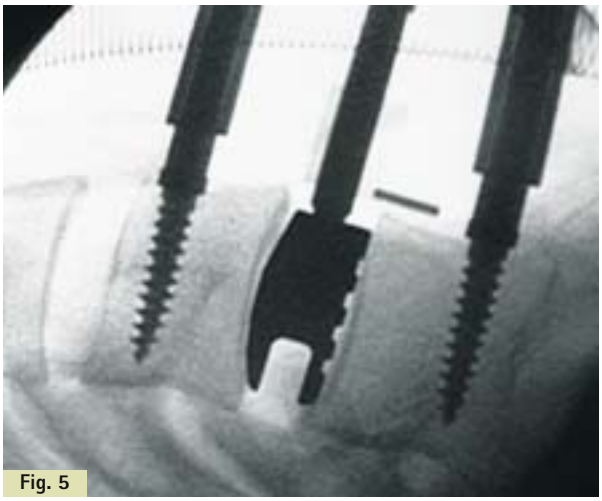


Fig. 5

X-ray control of final trial position

Lateral fluoroscopy (Fig. 1)

- 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

Fig. 1
Lateral Flouroscopy

Anterior-posterior fluoroscopy (Fig. 2)

C-arm may be swiveled towards caudal.
The trial is in the midline if the lower groove (green arrow) is

- in line with dorsal processi
- in the middle of the pedical structures
- in symmetrical contact with both uncinate processi

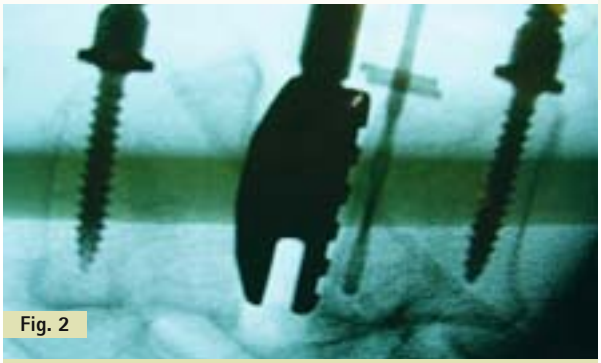


Fig. 2
AP Flouroscopy

The position of the trial implant has to be corrected till 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 the trial implant is absolutely essential, as no correction will be possible after drilling the keel space and implantation of the prosthesis.

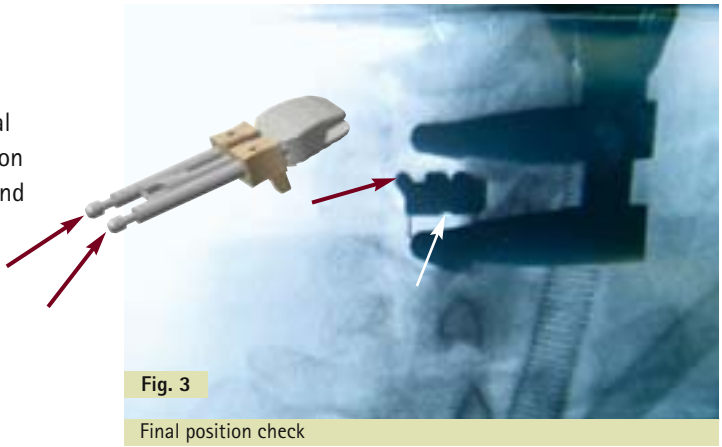


Fig. 3
Final position check

B.2 Preparation of keel groove

Preparing the keel groove

- No distraction is applied
- The trial implant remains in the disc space (Fig. 1).
- Mount the reamer guide FW871R (Fig. 2) on the trial implant with the same technique as the trial holder (Fig. 3, 4, 5).

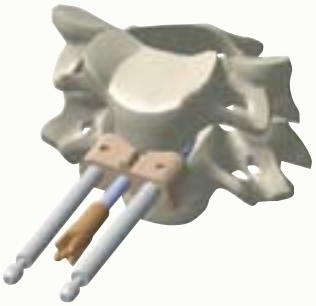


Fig. 1

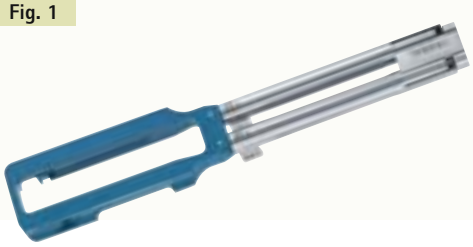


Fig. 2

Fig. 3

Fig. 4

Fig. 5

Mounting the guide block on the motor handpiece

- Put the guide block (Fig. 1–3) 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. 1)

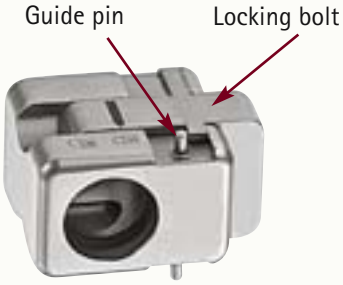


Fig. 1

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 can not be shifted back and forth anymore.

Fig. 2

Fig. 1–3: The guide block, the motor handpiece and the guide instrument FW871R together form the reamer system for preparing the keel bed.

Fig. 3

B.6 Preparation of the keel groove

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. 1 + 2)
- The pins on the guide block have to be inserted into opening 1 (the larger opening further backwards) of the reamer guide (Fig. 3)
- After completion of the reaming procedure, the motor with the guide block is removed through opening 2

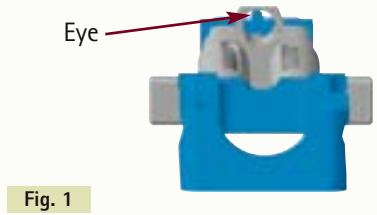


Fig. 1

Fig. 2

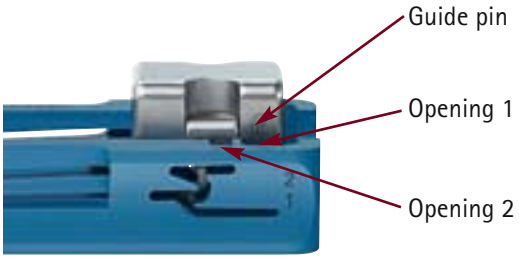


Fig. 3

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 are pushed towards the vertebral body through the first groove (angled cranial). A first burr hole is applied at a distance of approx. 1 mm below the trial implant (Fig. 1)
- When pulling out, the pins are automatically caught by the loop mechanism (Fig. 2) of the reamer guide and are guided into the second groove (angled caudal) (Fig. 3). A second burr hole is now applied directly under the trial implant (Fig. 3)
- The precise guide mechanism ensures that the two burr holes unite to the keel groove
- The motor handpiece is released through opening 2 (Fig. 4)

Fig. 1

Fig. 2

Fig. 3

Fig. 4

Note:
The reamer guide provides a posterior stop approx. 1.5 mm before the burr reaches the posterior edge of the trial implant (where the prosthesis will sit in the end). In this way it is ensured that the reamer cannot damage any soft tissue.

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

B.6 Preparation of the keel groove

Inspecting the keel groove

- Fig. 1 shows burr hole no. 1 in lateral X-ray view
- Fig. 2 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

Fig. 1

Cleaning the keel groove

- Remove any bone particles with the hook DB251R (Fig. 3). 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. 4)

Fig. 2

Fig. 3 DB251R

Fig. 4 FL146R

Motor system

- Only Hi-Line XS motor handpiece GB771R (Fig. 1) can be used for reaming the keel bed
- As a standard combination, Aesculap offers the HiLAN XS pneumatic motor with hand control GA529 (Fig. 2)

Note:
The Hi-Line XS motor handpiece GB771R (Fig. 1) can not be replaced by any other handpiece because its dimensions are matched to the activ® C reamer guide (FW871R), the guide block and the trial implants (FW874R – FW888R) (Fig. 3). No other motor handpiece can be used for this procedure.

- As an alternative to the HiLAN XS pneumatic motor, any uni motor or the new microspeed EC models (built from 10/2005) can be used
- These motors are fitted with the combi coupling (see next page) required for combining with the Hi-Line XS handpiece
- 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 -800/N2-800):

Dräger system	GA505R	(Fig. 4)
Schrader system	GA506R	(Fig. 5)
DIN system	GA507R	(Fig. 6)

Fig. 1 GB771R

Fig. 2 GA529

Fig. 3 FW871R

Fig. 4 GA505R

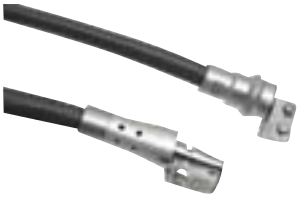


Fig. 5 GA506R

Fig. 6 GA507R

B.6 Preparation of the keel groove

Options of motor system

Hi-Line XS handpieces can be used either with the HiLAN pneumatic motor (Fig. 2) or with the microspeed EC (new) and uni motors (Fig. 3).

Precondition:

- All motors must be fitted or upgraded with the new combi coupling (Fig. 4)
- HiLAN and microspeed EC motors are supplied with this combi coupling since autumn 2002. Motors shipped before that time can be upgraded by ATS technical service
- HiLAN XS and microspeed uni motors are fitted with a combi coupling as standard (Fig. 1)

Fig. 1

Fig. 2

HiLAN XS

GA740R

Fig. 3

HiLAN new
Microspeed EC new
microspeed uni

GA529

Fig. 4

HiLAN old
microspeed EC old
(without combi coupling)

GA519

B.7 Implantation

activ® C prosthesis (available in 15 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 activ® C under lateral fluoroscopic control (Fig. 1 + 2)
- Detach the insertion instrument (Fig. 3)
- Check the final position in AP and lateral view
- Correct the position if necessary
- Release distraction (Fig. 3)
- Check the position in lateral fluoroscopic view again (Fig. 4)


Fig. 1


Fig. 2

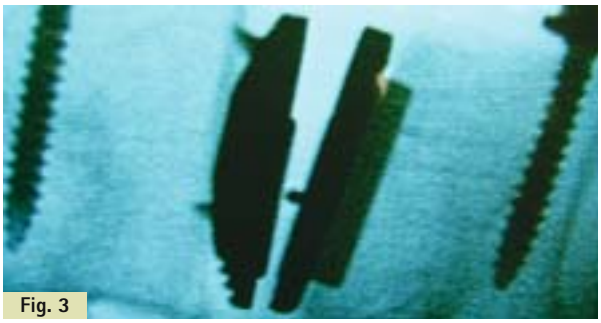


Fig. 3


Fig. 4

B.7 Implantation

Insertion instrument

- The distance yoke are available in 3 different heights: 5, 6, 7 mm (Fig. 1) FW863R, FW864R and FW865R

Fig. 1 FW863R (height 5)

- The insertion instrument is available for two different heights:
  FW866R 5 mm height (with distance yoke FW863R)
  FW857R 6 and 7 mm (with distance yoke FW864R, FW865R)

Fig. 2

- 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. 4)

Fig. 3

- The insertion instrument (Fig. 2) is available in two sizes:
  FW866R for 5 mm hight
  FW857R for 6 and 7 mm hight
- The yoke is introduced into the insertion instrument (Fig. 3)

Fig. 4

- The yoke can be mounted and dismounted by pressing the "clean" button (Fig. 5)

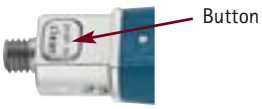


Fig. 5

- Fig. 6 shows the insertion instrument with yoke, ready for use

Fig. 6

Connecting the insertion instrument to the prosthesis

- The activ® C prosthesis is supplied fully assembled. The prosthesis is bedded in a special recess in the inner plastic packaging (Fig. 1)
- In this position, the insertion instrument can be attached to the prosthesis safely and with ease. The hooks at the front end of the insertion instrument are inserted in 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. 2)
- The insertion instrument is tightened on the prosthesis by turning the locking sleeve. The locking mechanism can be tightened and loosened (Fig. 4) with wrench FW945R (Fig. 3)
- The safety stop can be moved to fully anterior by turning the adjusting wheel counterclockwise (Fig. 4)
- This is the recommended position at the beginning of the implantation as it prevents slipping or penetration of the prosthesis

Fig. 1

Fig. 2

Fig. 3

FW945R

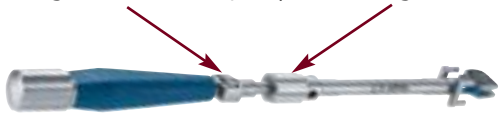


Fig. 4

B.7 Implantation

- The prosthesis is carefully inserted in the disc compartment by guiding the keel into the prepared keel groove (Fig. 1)
- X-ray control should be maintained while tapping the prosthesis into the disc space (Fig. 1, 2)
- The axis of the disc space has to be respected
- The safety stop is moved towards posterior by turning the adjusting wheel clockwise. This allows further propelling of the prosthesis

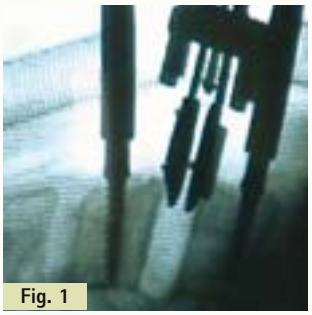


Fig. 1

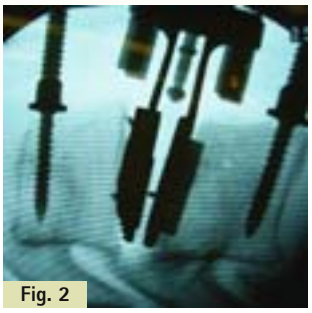


Fig. 2

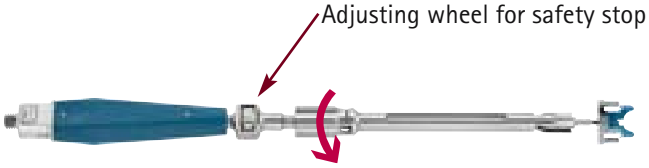


Fig. 3

- Both prosthesis plates should reach the same distance from corresponding posterior vertebral walls
- Good fit and maximal 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

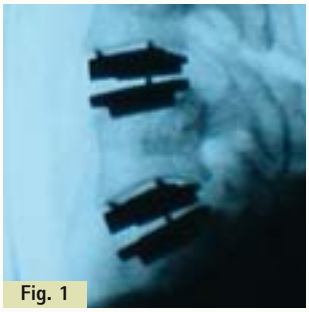


Fig. 1

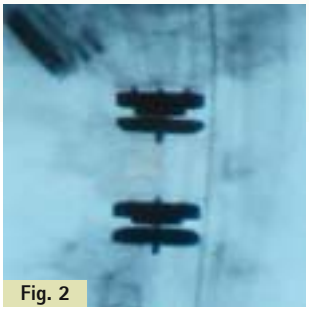


Fig. 2

activ® C

C) Repositioning / Revision

C

Intraoperative

- The activ® C set includes four different impactors
- FW895R for height 5 mm and FW896R for heights 6/7 mm have a hook at the frontal end, which can be attached to the prosthesis plates (Fig. 1)
- Each of these impactors can be used for manipulating just one prosthesis plate
- The hook allows manipulation towards anterior or posterior (Fig. 2)
- The correction to anterior is supported by the rod with impaction plate (Fig. 2) at the rear end of the two impactors and the slotted hammer included in the set (Fig. 3)
- FW897R for height 5 mm and FW898R for heights 6/7 mm include a ridge / nose to provide a better grip to the prosthesis (Fig. 4)
- With these impactors, both prosthesis plates can be manipulated simultaneously

Fig. 1 FW895R

Fig. 2

Fig. 3

Fig. 4 FW898R

Impaction and correction of superior prosthesis plate / Lordotisation of prosthesis

- Fig. 1, 2, 3 show an example where the upper prosthesis plate is corrected towards posterior. Fig. 3 shows the prosthesis plates in ideal position

Fig. 1

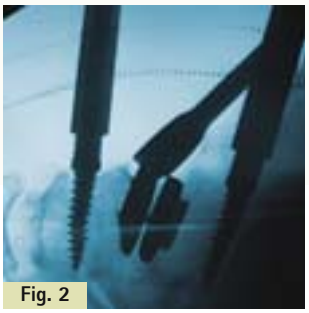


Fig. 2

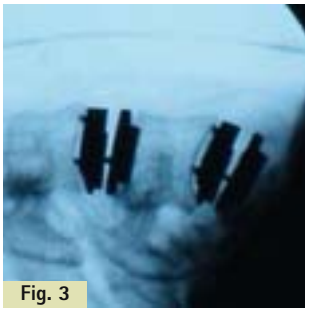


Fig. 3

activ® C

C) Repositioning / Revision

C

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 till the spikes penetrate the bone
- Do not over-distract the segment during this process

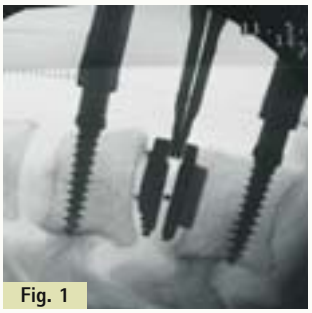


Fig. 1

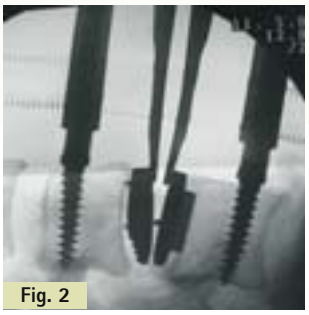


Fig. 2

Postoperative

- The revision instrument FW868R (Fig. 1) 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. 2)

Fig. 1

- This allows manipulating 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

Fig. 2

- 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. 3)

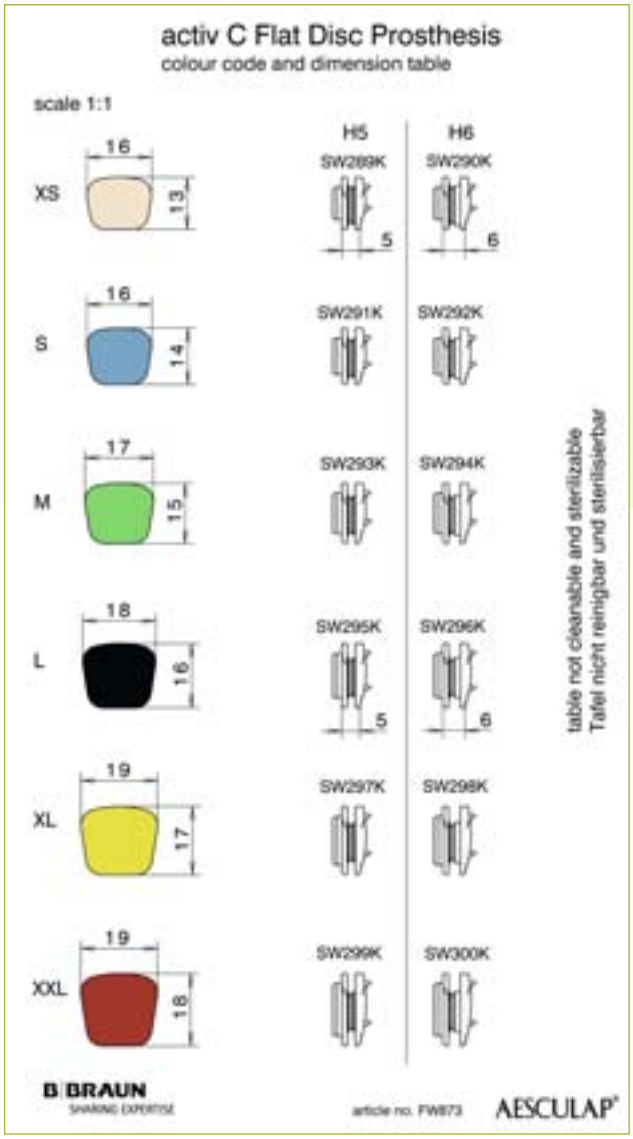
Fig. 3

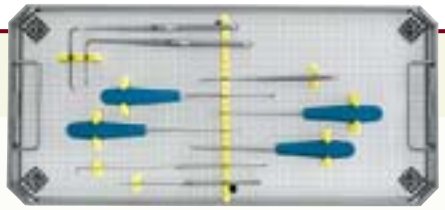
- After that, the two plates can be revised one after the other with the revision instrument

activ® C

D) Overview

Implants – sizes and article numbers



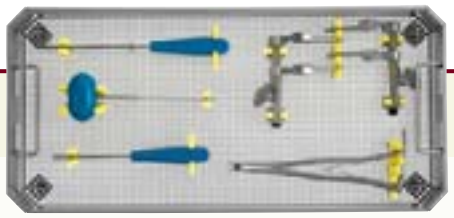


Discectomy set

Article	Designation	Quantity per set	Illustration
FF772R	KERRISON punch 2 mm, thin foot	1	
FF773R	KERRISON punch 3 mm, thin foot	1	
FF532R	CASPAR rongeur	1	
FF533R	CASPAR rongeur	1	
DO463R	OBWEGESER wound hook	1	
DO465R	OBWEGESER wound hook	1	
FK390R	KRAEMER raspatory	1	
FK774R	CASPAR sharp spoon	1	
FK835R	CASPAR curette	1	
FW872R	activ® C drop-shaped curette	1	
FF917R	CASPAR vertebral body elevator	1	
BT090R	CASPAR nerve hook	1	
FD398R	KRAYENBUEHL nerve hook	1	

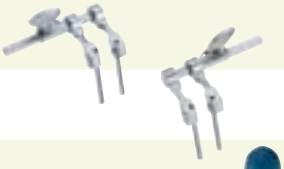
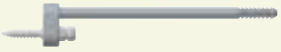
activ® C

D) Overview



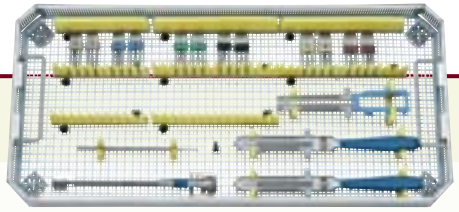
D

Distractor set

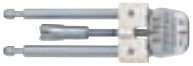
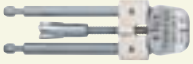
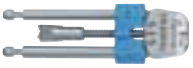
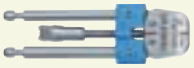
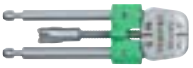
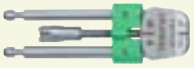
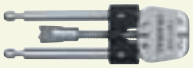
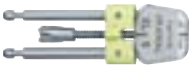
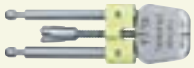
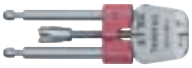
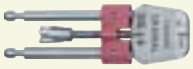
Article	Designation	Quantity per set	Illustration
FJ835R	ABC pin extraction instrument	1	
FJ833RS*	ABC temporary fixation pin*	*	
FW850R	activ® C screwdriver for lockable distraction screws	1	
FW848R	activ® C distractor for lockable screws, right	1	
FW849R	activ® C distractor for lockable screws, left	1	
FW899R	activ® C center punch for distraction screws	1	
FW860R	activ® C distraction forceps	1	
FW861SU**	activ® C distraction screw 12 mm**	**	
FW862SU**	activ® C distraction screw 14 mm**	**	
FW855SU**	activ® C distraction screw 16 mm**	**	
FW856SU**	activ® C distraction screw 18 mm**	**	
FW851SU**	activ® C offset distraction screw 12 mm**	**	
FW852SU**	activ® C offset distraction screw 14 mm**	**	
FW853SU**	activ® C offset distraction screw 16 mm**	**	
FW854SU**	activ® C offset distraction screw 18 mm**	**	

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

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



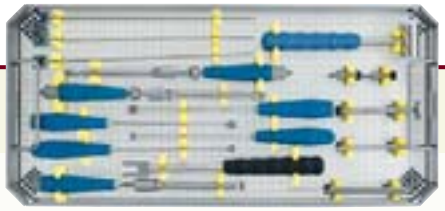
activ® C set

Article	Designation	Quantity per set	Illustration
FW789R	Trial implant **FLAT** Size XS, H 5 mm	1	
FW790R	Trial implant **FLAT** Size XS, H 6 mm	1	
FW791R	Trial implant **FLAT** Size S, H 5 mm	1	
FW792R	Trial implant **FLAT** Size S, H 6 mm	1	
FW793R	Trial implant **FLAT** Size M, H 5 mm	1	
FW794R	Trial implant **FLAT** Size M, H 6 mm	1	
FW795R	Trial implant **FLAT** Size L, H 5 mm	1	
FW796R	Trial implant **FLAT** Size L, H 6 mm	1	
FW797R	Trial implant **FLAT** Size XL, H 5 mm	1	
FW798R	Trial implant **FLAT** Size XL, H 6 mm	1	
FW799R	Trial implant **FLAT** Size XXL, H 5 mm	1	
FW800R	Trial implant **FLAT** Size XXL, H 6 mm	1	
FW870	activ® C handle trial implants	2	
FW871R	activ® C reamer guide with guidance block	1	
GB771R*	activ® C Hi-Line XS handpiece angled XL-1	1	
DB251R	activ® C bone hook for clearing out the keel bed	1	

* Handpiece GB771R can be put on either tray FW837R (see this page) or tray FW889R (see page 35).

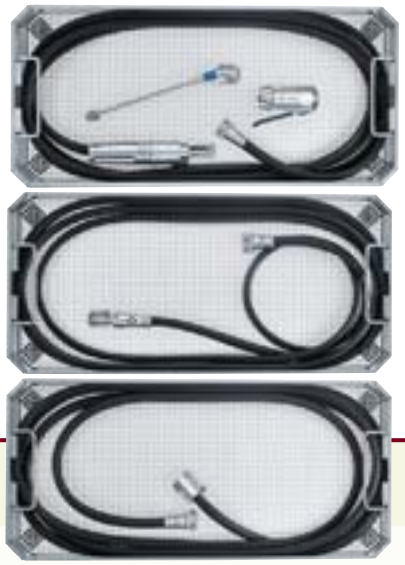
activ® C

D) Overview



activ® C set

Article	Designation	Quantity per set	Illustration
FW863R	activ® C spacer for implant height 5 mm	1	
FW864R	activ® C spacer for implant height 6 mm	1	
FW865R	activ® C spacer for implant height 7 mm	1	
FW866R	activ® C insertion instr. (with rinsing conn.) height 5 mm	1	
FW857R	activ® C insertion instr. (with rinsing conn.) height 6/7 mm	1	
FW945R	activ® C wrench for opening / closing the insertion instr.	1	
FW867R	activ® C repositioning instrument	1	
FW895R	activ® C impactor for height 5 mm for 1 plate	1	
FW896R	activ® C impactor for height 6/7 mm for 1 plate	1	
FW897R	activ® C impactor for height 5 mm for 2 plates	1	
FW898R	activ® C impactor for height 6/7 mm for 2 plates	1	
DX545R	activ® C hammer 135 g	1	
FW869R	activ® C slotted hammer	1	
FL146R	activ® C small chisel	1	
FW868R	activ® C revision instrument	1	



D

activ® C motor set

Article	Designation	Quantity per set	Illustration
GB771R*	Hi-Line XS handpiece angled XL-1*	1	
GA529	HiLAN pneumatic motor with hand control	1	
GA505R	CA-hose Dräger	1	
GA506R	CA-hose Schrader	1	
GA507R	CA-hose DIN	1	
GE700SU**	activ® C reamer**	**	

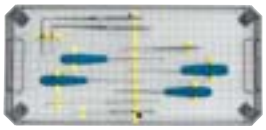
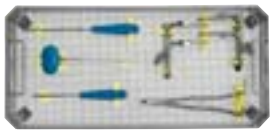
* Handpiece GB771R can be put on either tray FW889R (see this page) or tray FW837R (see page 35).

** in sterile packaging, single-use, not in storage tray; quantity per pack: 1x

activ® C

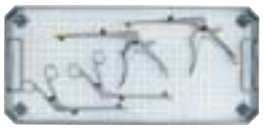
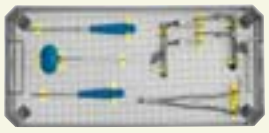
D) Overview

activ® C storage

Article	Designation	Quantity per set	Illustration
FW892R*	Tray for discectomy set top*	1	
FW893R*	Tray for discectomy set middle*	1	
FW894R*	Tray for discectomy set bottom*	1	
FW837R*	Tray for implantation set top*	1	
FW838R*	Tray for implantation set bottom*	1	
FW889R*	Tray CA-tube Dräger*	1	
FW890R*	Tray CA-tube Schrader*	1	
FW891R*	Tray CA-tube DIN*	1	

* Trays under article numbers listed above excl. contents.

activ® C additional parts

Article	Designation	Quantity per set	Illustration
FW873	Table for color codes and size estimation activ® C	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	
TE926*	Packing template tray for implantation set top*	1	
TE927*	Packing template tray for implantation set bottom*	1	
TE919*	Packing template DL-tube Dräger*	1	
TE920*	Packing template DL-tube Schrader*	1	
TE921*	Packing template DL-tube DIN*	1	

* These articles are provided automatically with the trays.

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A Division of KEIR SURGICAL LTD.
1.800.663.4525 | 604.261.9596
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