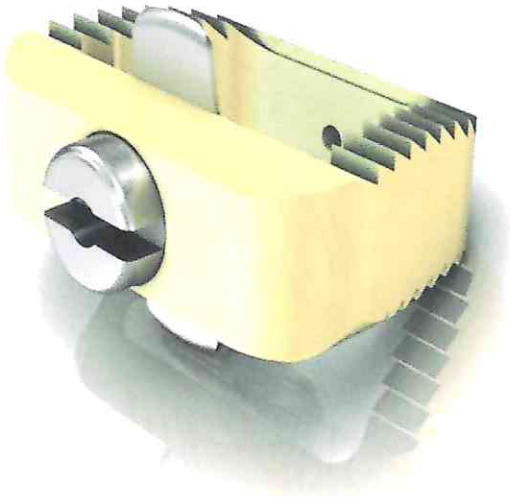
TO-HRCC-A20

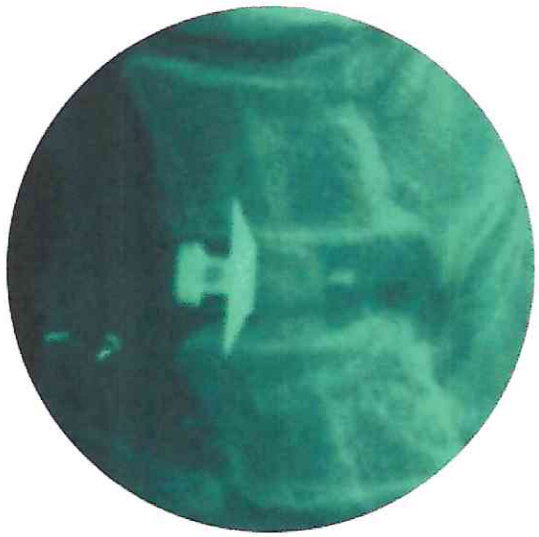
SURGICAL TECHNIQUE

HRCC

cervical locking cage

Class IIb





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Life matters, We care

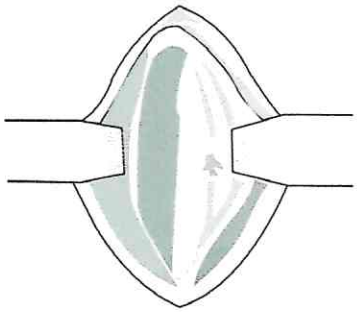
Manufacturer : EUROSPINE SARL 3 Avenue des Dahlias, 94240 L'Hay les Roses, France. TEL: +33 1 46 86 60 07,
Fax: +33 1 46 86 66 52 Email: company@eurospine.com site: www.eurospine.com

Introduction 1

Anterior arthrodesis of the cervical spine is an indication for the HRC Locking CageTM cervical.
The use of cages allows the re-establishment of the disc height and opening of the conjugaison holes. A blade in TA6V-Eli inside HRC Locking CageTM cervical is designed to enhance the immediate stabilisation of the cage, as soon as it is implanted.
The Cage HRCC is delivered as sterile or alternatively, not sterile.

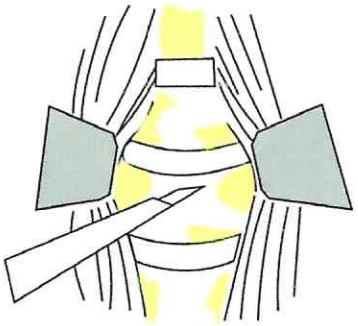
Incision 2

Perform an anterior incision over the concerned segment.
Preparation of the muscles laterally considering the anatomical conditions.



Preparation 3

Ligature of the arteries and veins.
Locate and expose the ventral area of the cervical spine.



Discectomy 4

Make a complete discectomy using a rongeur.
Resection of the anterior and posterior osteophytes considering the longitudinale posterior ligament.

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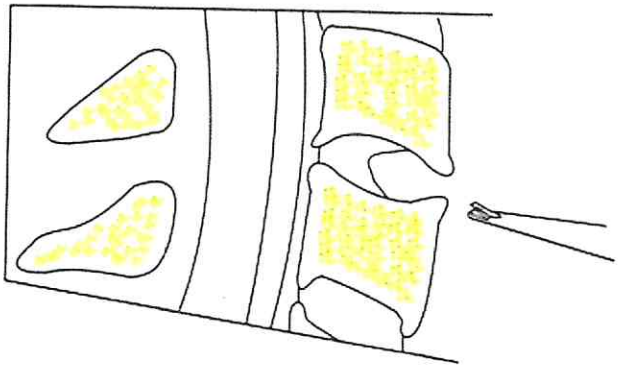
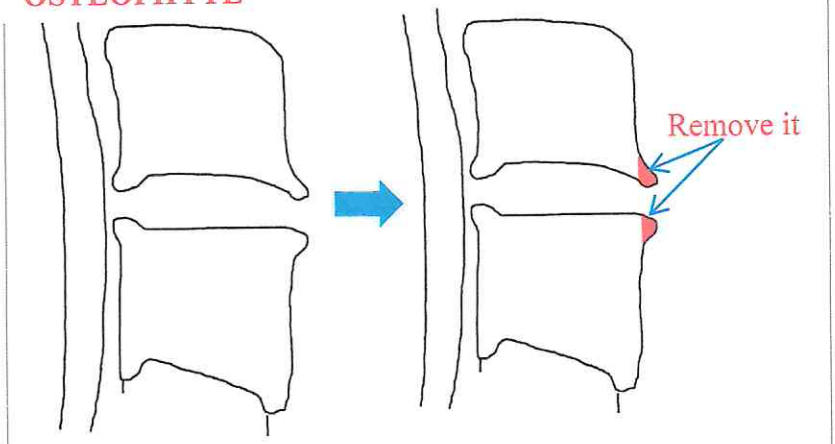


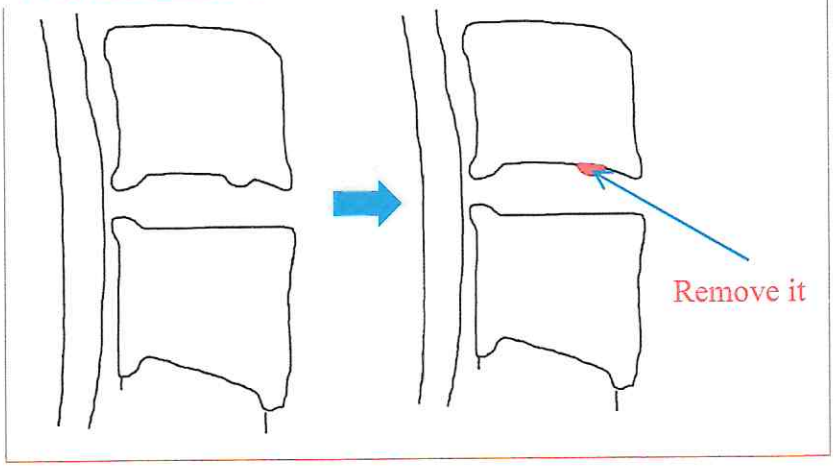
IMPORTANT 5

The osteophytes and bone protuberance have to be removed completely in order to achieve a correct positioning of the cage and the blade.

OSTEOPHYTE

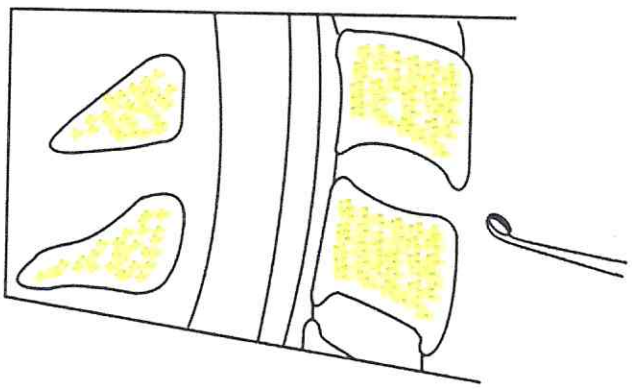


PROTUBERANCE



Preparation of the vertebral plates 6

Slightly scratch the endplates of the vertebral bodies by means of a curette without damaging it.
Preparation of the cartilage zones on the two endplates.



Distraction

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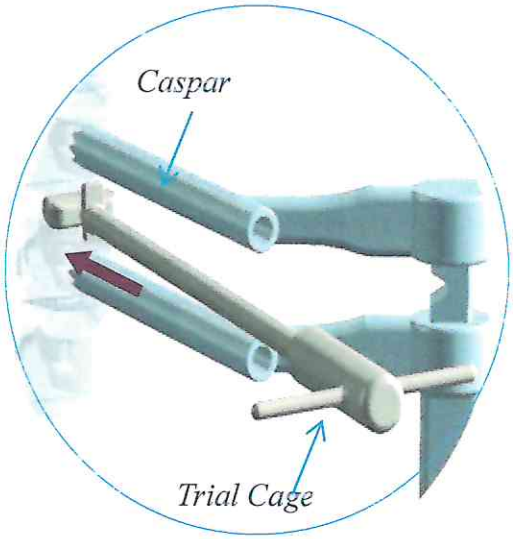
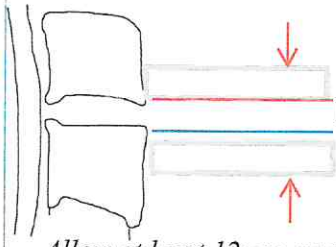
The distraction is done by a Caspar (spreader) distractor (the doctor decides the stage at which the distractor should be installed/used). When the adequate height is achieved the surgeon can insert the corresponding trial cage without forcing.

Important:

Appropriate placement of the Caspar's pin is essential to allow sufficient space for the rotation of the cage's locking blade.

ATTENTION : Do not ever hammer HRCC instrument and cage.





Allow at least 12mm away from the bone edge and the Caspard pin.

Trial cages

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Pay particular attention to the choice of the size !

REF	Designation	width
HRCCIFS4	*Monobloc Trial Cage 4*	*16,7mm*
HRCCIFS5	*Monobloc Trial Cage 5*	
HRCCIFS6	*Monobloc Trial Cage 6*	
HRCCIFS7	*Monobloc Trial Cage 7*	
HRCCIFS8	*Monobloc Trial Cage 8*	
HRCCIFS9	*Monobloc Trial Cage 9*	

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OPTIONAL: LARGE CAGES

Attention : the use of large cages is strictly reserved for large vertebrae after the most complete discectomy.

REF	Designation	width
HRCCIFL4	*Monobloc Trial Cage 4 Large*	*18,7mm*
HRCCIFL5	*Monobloc Trial Cage 5 Large*	
HRCCIFL6	*Monobloc Trial Cage 6 Large*	
HRCCIFL7	*Monobloc 7 Trial Cage Large*	
HRCCIFL8	*Monobloc Trial Cage 8 Large*	
HRCCIFL9	*Monobloc Trial Cage 9 Large*	

Assessment

When inserting the trial cage, the safeguard of the instrument must come into contact with the anterior face of vertebral bodies. The correct depth of the trial cage is given by the safeguard of the instrument. In this position, the blade of the cages is located ~4 mm (minimum) back from the anterior edge.

An x-ray inspection is recommended.

First, introduce the holder (a) into the rotator (b), then screw in the coresponding guard (C) as indicated below. After removing the trial cage, Screw the corresponding cage onto holder/rotator. (See Annex 1)

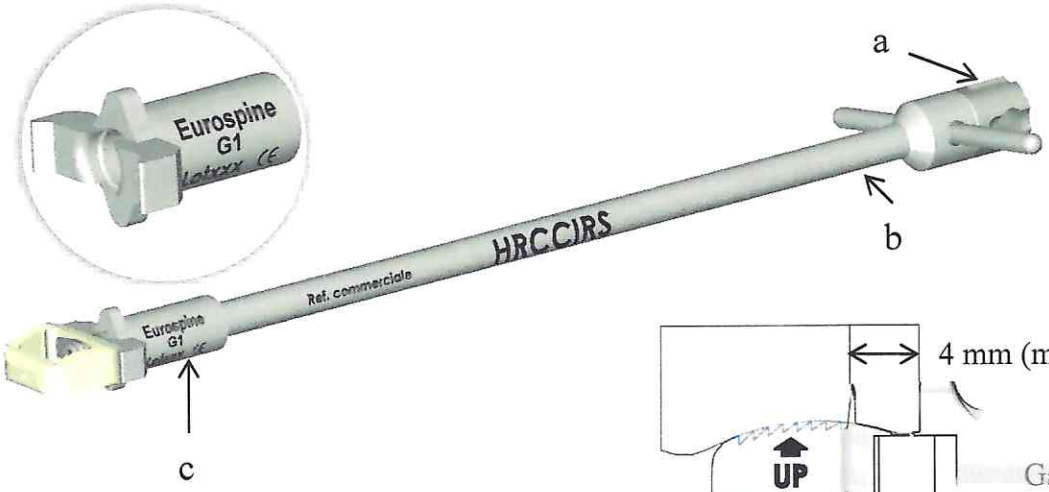
ATTENTION : Do Not ever tighten excessively the Holder.

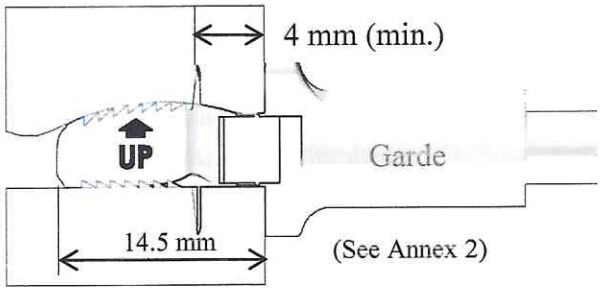
If Normal cage :

use safeguard ***G1*** *for sizes 5, 6, 7, 8, 9*
(or old réf. HRCCIRS)

If Large cage :

use safeguard ***G1L*** *for sizes 5, 6, 7, 8, 9*



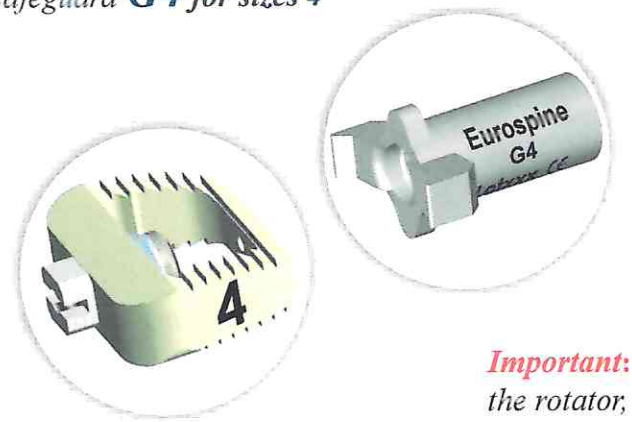


If Normal cage :

use safeguard ***G4*** *for sizes 4*

If Large cage :

use safeguard ***G4L*** *for sizes 4*



Important: *Do not use the implant/holder without the rotator, because the safeguard of the rotator provides a protective stop against any accidential compression.*

** Optional : In case surgeon decides to push the blade further backwards, then he can use the optional guards G2 or G3 (for cage sizes 5 to 9 only, see Annex3).*

Insertion of the bone substitute

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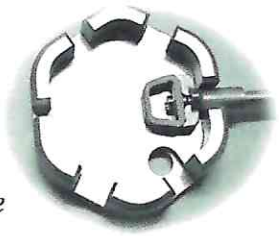
Put up the cage on the instrument then Insert the instrument into the slot marked "HRCC".
The cage is to be filled up by bone graft or bone substitute.
We recommend to use custom fit bone substitute specifically manufactured for each size of HRC cervical cage.
Note: For standard filling base (Ref. SOC), there are several positions for different portfolios.
Attention : here, just use HRCC position of the filling base .



If filling base : SOC

If filling base HRCAIE

Insertion of the implant and locking

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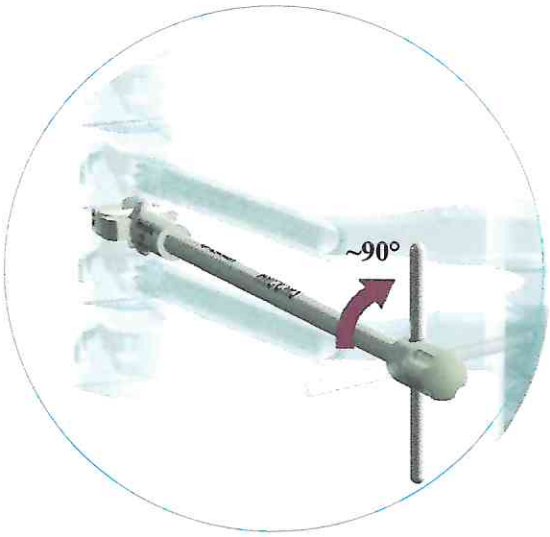
Example with cage filled with custom fit bone substitute (See Annex 3)

Correctly position the cage : insertion of the cage with the curved part upside (arrow ⇧) is done under distraction of the Caspar spreader without forcing.
The safeguard of the instrument must to lie flat on the anterior face of vertebral bodies, as done with the trial cage.

To ensure a safe and controlled position of the cage, put the implant under compression by closing the Caspar spreader.
Then, turn the implant holder/rotator clockwise until the rotator's handle lies perpendicular (about 90 degree of turn) to the end plates of the vertebral bodies.

Insertion of the implant

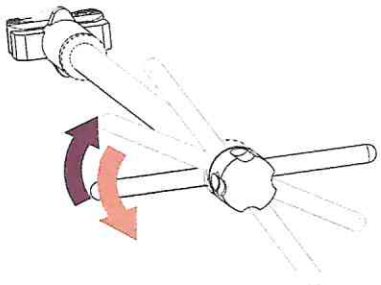


Locking of implant

Carry out x-ray inspection.

IMPORTANT

If a patient with hard bone (of endplates), it is Mandatory to engage the blade gradually by making multiple "Rotations & Returns".



Assessment 12

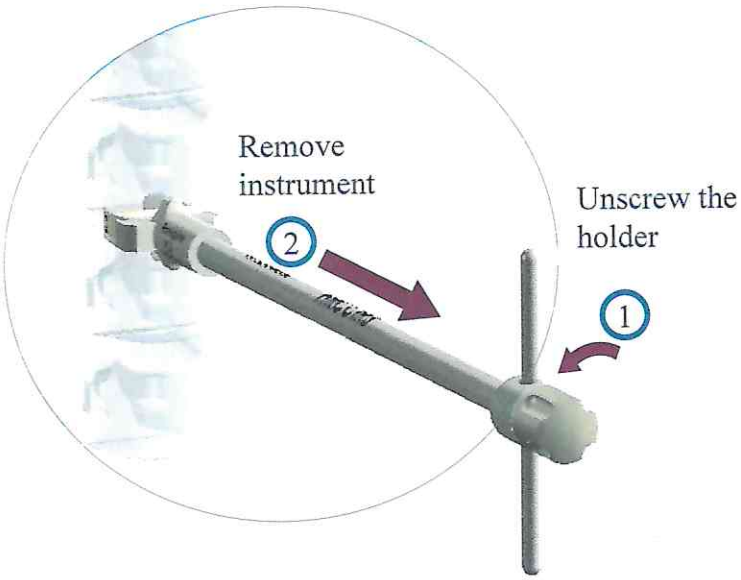
Once the blade is engaged into the bone, remove the distractor.

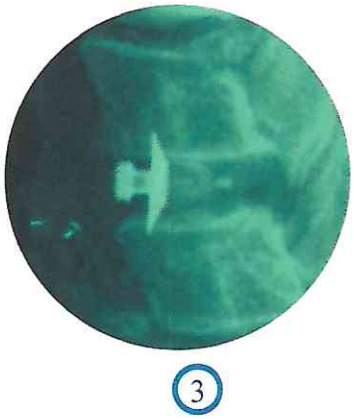
If in doubt about the stability of the cage, it is possible to pull slightly on implant holder/ rotator to test initial stability of the cage.

In case of instability, turn back the blade in its initial position and use an anterior plate's fixation.

Instrument removal and Final checks 13

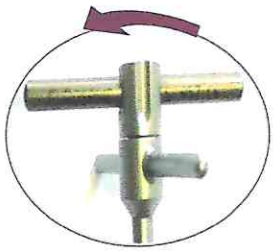
1. *Unscrew the holder,*
2. *Remove holder & rotator,*
3. *Carry out a x-ray inspection*
4. *To prescribe for the patient a surgical collar (or neck brace) during the first weeks post-operatory.*





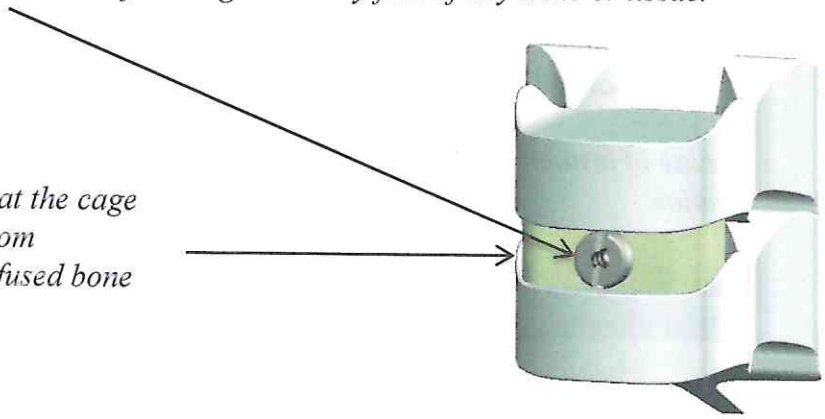
X-ray : HRCC cage

Note: in case of difficulty to untighten the holder (due to wet gloves for example) just insert untightening rod into the hole of holder as shown, to help unscrew the holder.

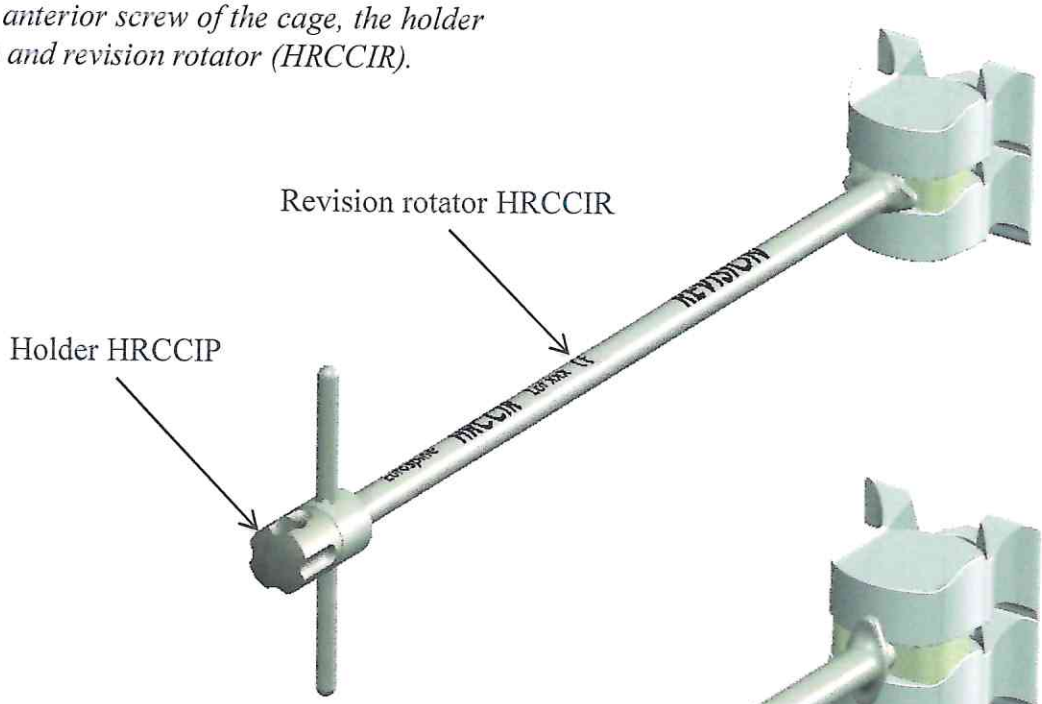


Make sure that the anterior screw of the cage is totally free of any bone or tissue.

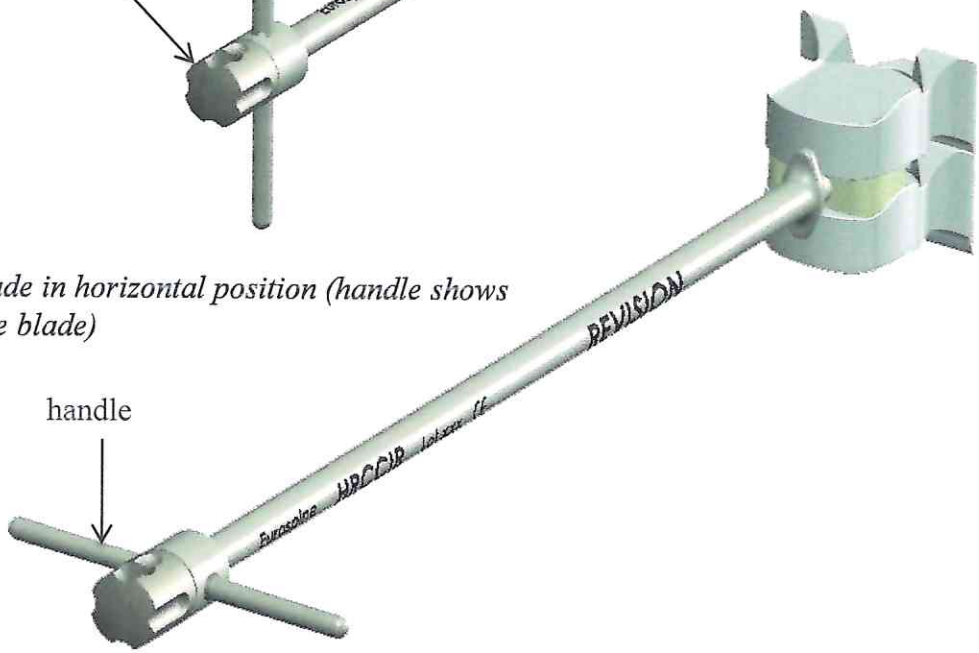
Make sure that the cage is released from surrounding fused bone and tissue.



Put on the anterior screw of the cage, the holder (HRCCIP) and revision rotator (HRCCIR).



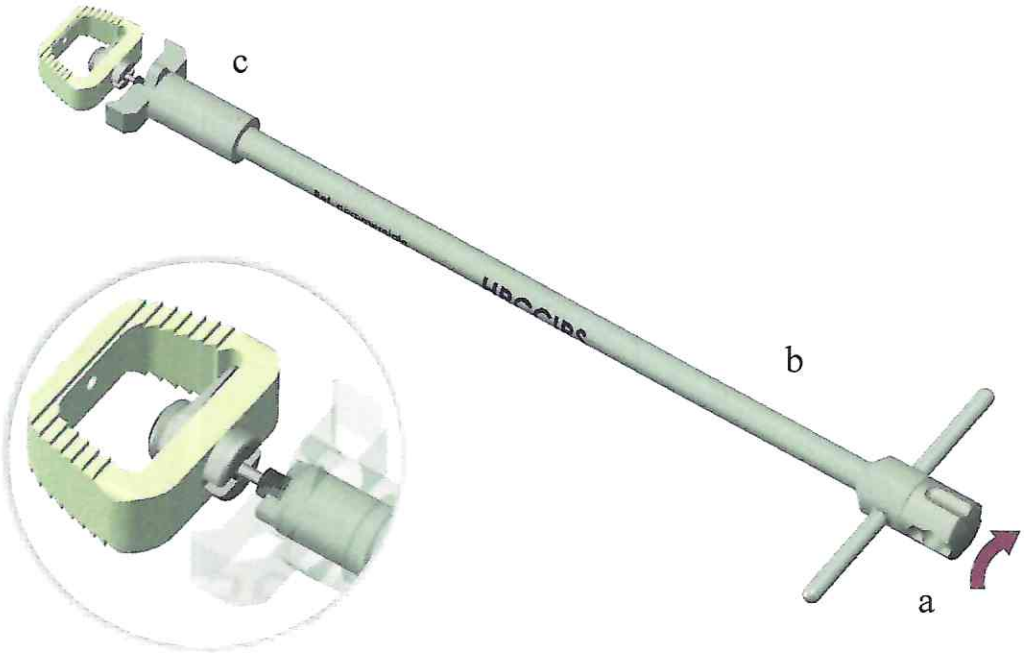
Turn back the blade in horizontal position (handle shows the position of the blade)



Remove back gently the cage by taking special care of surrounding tissues.

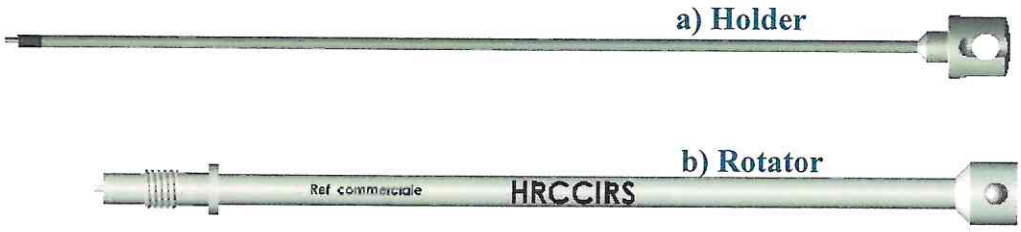
Annexes

To assemble the cage on the instruments : *First, introduce the holder (a) into the rotator (b), then screw coresponding safeguard (C). Screw the corresponding cage onto holder/rotator.*



Attention : Do not tighten hard the holder (a).

HOW TO CLEAN AFTER USE : *To clean efficiently, please simultaneously pull & unscrew the Guards to disassemble them as shown below and then clean each one individually.*



Guard G1

Guard G4

Garde G1L

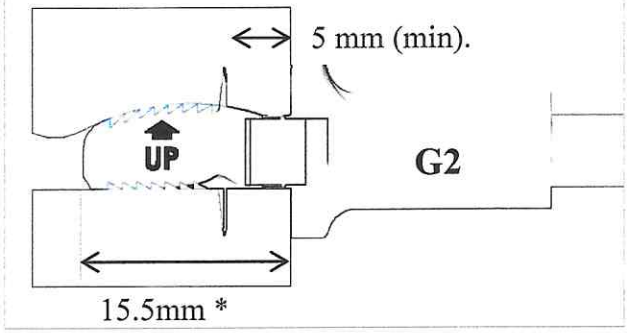
Garde G4L

In a special case when the surgeon needs to push the cage one or two more millimeters in anterio-posterior direction, Eurospine offer two optional guards named G2 (+1mm) and G3 (+2mm) which can be used for normal cages size 5 to 9 only.

These optional guards are only delivered upon request to surgeons, specifically trained for the use.

Use Guards G2 and G3 for normal cages of size from 5 to 9 only.

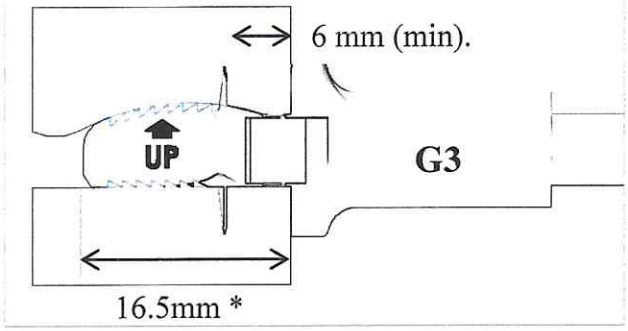
Guard G2



If G2 is used, the cage will be positionned at ~5mm behind the anterior face of vertebral body.

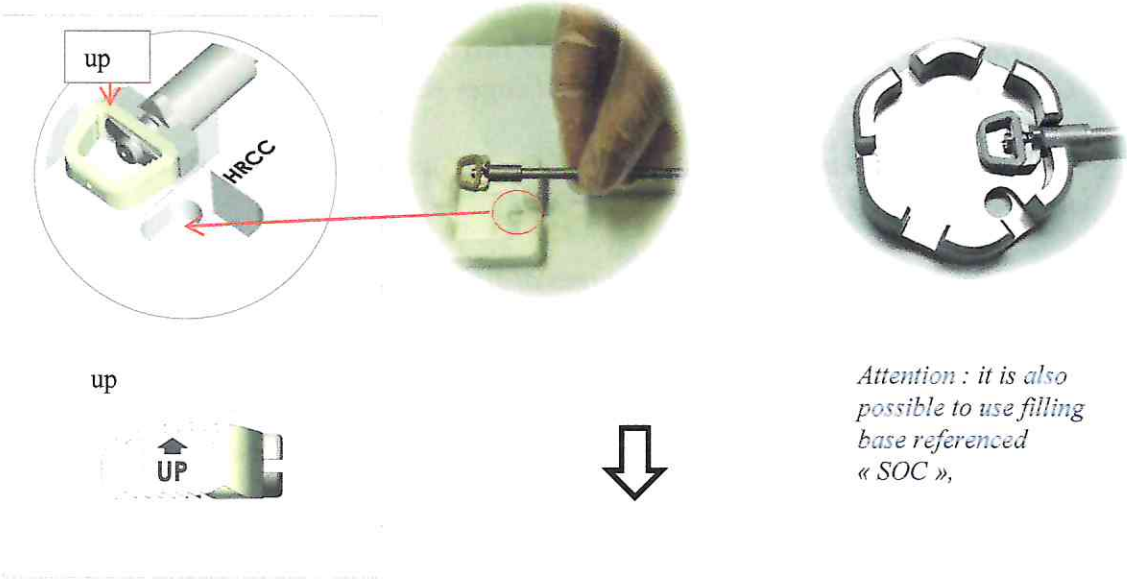
** Attention : Osteophytes must be removed*

Guard G3



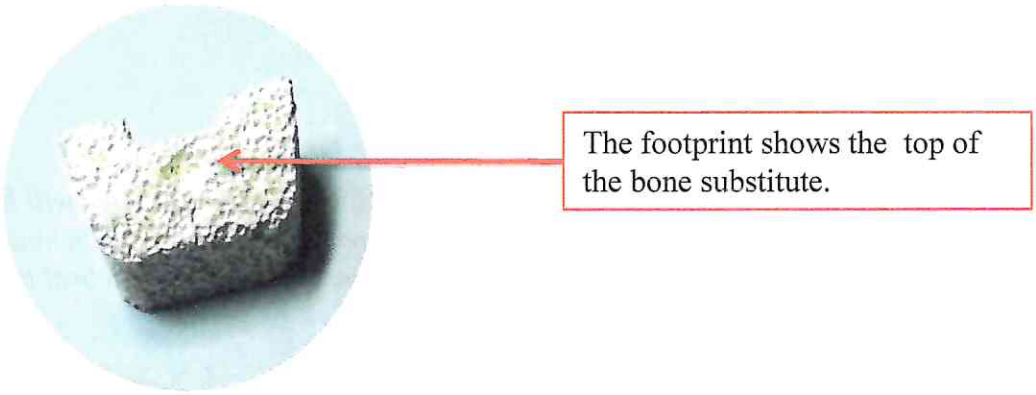
If G3 is used, the cage will be positionned at ~6mm behind the anterior face of vertebral body.

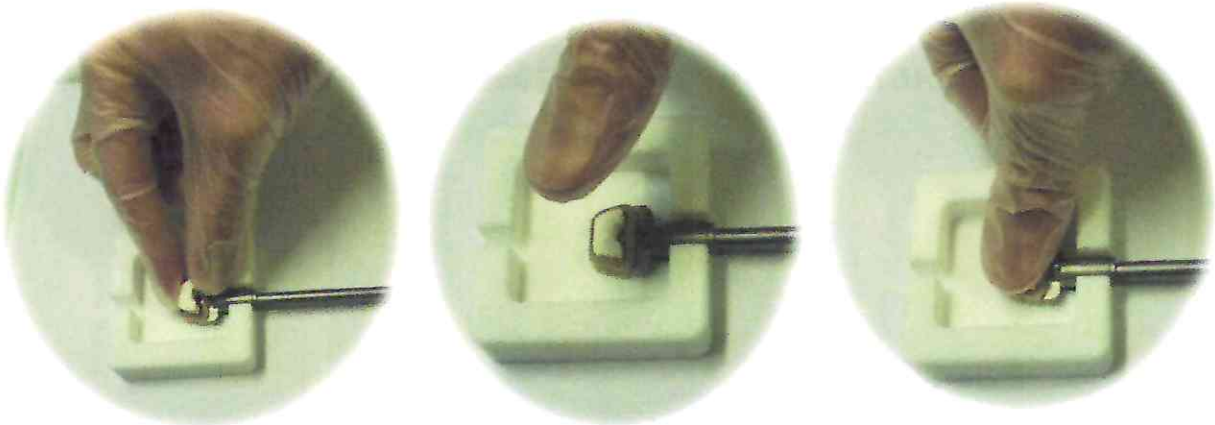
***CAUTION** : Do not ever use G2 and G3 for patient with small morphology.*



Attention : it is also possible to use filling base referenced « SOC »,

Put up the cage on the instruments (HRCCIRS), then place the them in the socket (position HRCC) in the way that the top of the cage is positioned upside, as shown.





Insert the a bone graft substitute in the cage graft room (footprint side up)

REF	Désignation
HRCC4Sd	*Cervical HRC Cage 4*
HRCC5Sd	*Cervical HRC Cage 5*
HRCC6Sd	*Cervical HRC Cage 6*
HRCC7Sd	*Cervical HR Cage 7*
HRCC8Sd	*Cervical HRC Cage 8*
HRCC9Sd	*Cervical HRC Cage 9*

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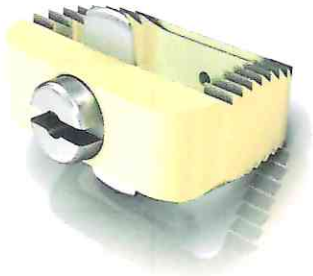
OPTIONAL: LARGE

Warning: the use of large cages is strictly reserved for the patients with large vertebrae + for the most complete discectomy.



REF	Désignation
HRCC4Ld	*Cervical HRC Cage large 4L*
HRCC5Ld	*Cervical HRC Cage large 5L*
HRCC6Ld	*Cervical HRC Cage large 6L*
HRCC7Ld	*Cervical HRC Cage large 7L*
HRCC8Ld	*Cervical HRC Cage large 8L*
HRCC9Ld	*Cervical HRC Cage large 9L*

INSTRUMENT	REF	DESCRIPTION
	HRCCIP HRCCIP-AR	HOLDER 4
	HRCCIR HRCCIR-AR	Rotator
	G1	Gard 1
	G2	Garde (option)
	G3	Gard 3(option)
	G4	Gard 4
	G1L	Gard 1L(option)
	G4L	Gard 4 L(option)
	HRCCIRS	Rotator S4
	HRCCITS	HRC cervical rod to untighten the holder
	SOC	Filling Base