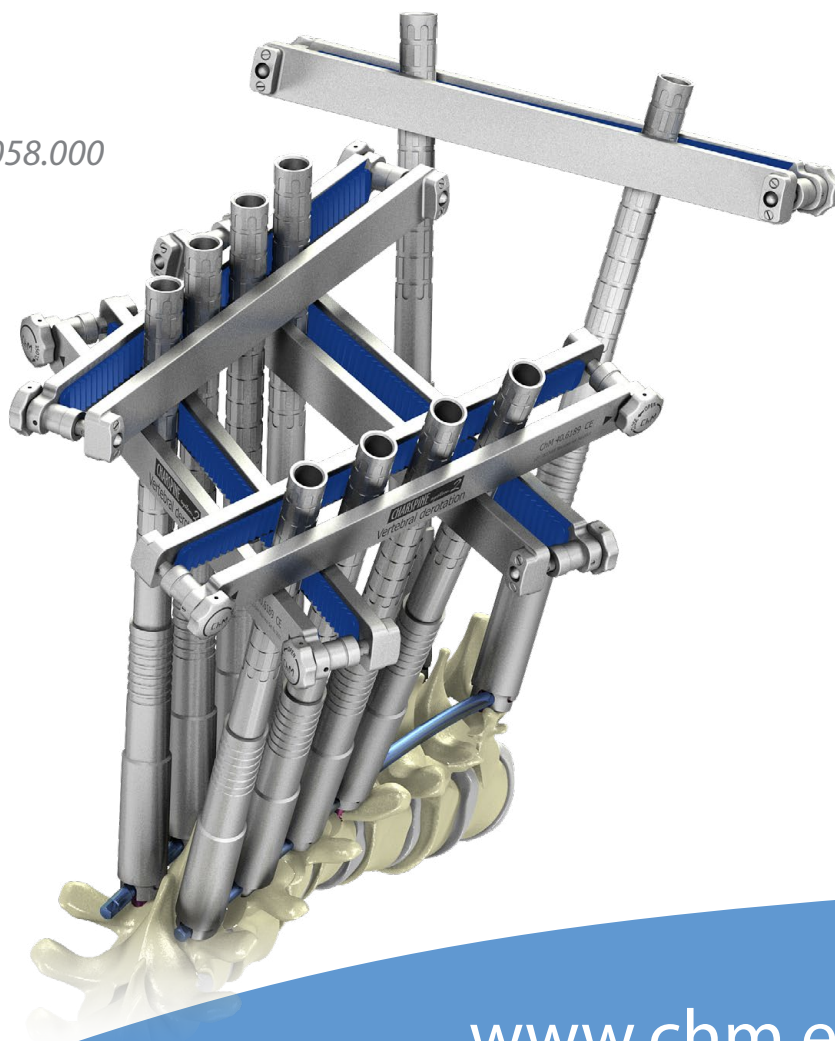




CHARSPINE *system 2*

## CHARSPINE2 VD DIRECT VERTEBRAL BODY DEROTATION

- INSTRUMENT SET 40.8058.000
- SURGICAL TECHNIQUE



## SYMBOLS DESCRIPTIONS



Caution - pay attention to the particular proceeding.



Perform the activity with X-Ray control.



Information about the next stages of the proceeding.



Proceed to the next stage.



Return to the specified stage and repeat the activity.



Before using the product, carefully read the Instructions for Use supplied with the product. It contains, among others, indications, contraindications, side effects, recommendations and warnings related to the use of the product.



The above description is not a detailed instruction of conduct. The surgeon decides about choosing the operating procedure.

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Document No ST/82

Date of issue 05.06.2018

Review date P-001-18.11.2019

*The manufacturer reserves the right to introduce design changes.*

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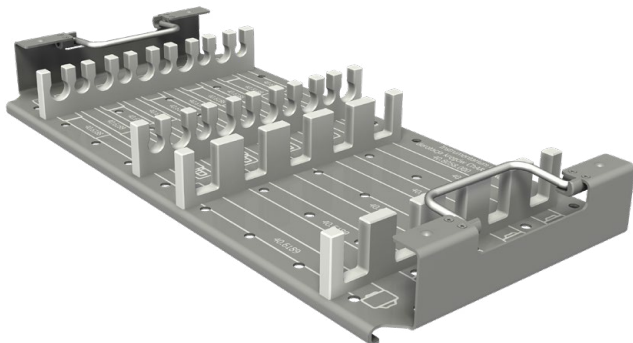


## 1. INTRODUCTION

The **CHARSPINE2 VD** set of vertebral body derotation instrumentation, designed by the team of **ChM** specialists, has been developed to meet the challenges surgeons face in the treatment of complex deformations and to broaden the application of known and clinically proven **CHARSPINE2** bar stabilization system. The new system provides solutions to surgeons when treating spinal deformities (*scoliosis*). **CHARSPINE2 VD** utilizes the direct vertebral derotation technique that allows for three-dimensional correction of spinal disorders. The system consists of sleeves and clamps that can be combined into blocks in any way ensuring the most effective correction of deformity. The **CHARSPINE2 VD** instrument set has been especially designed for and is fully compatible with **CHARSPINE2** bar stabilization system.

## 2. INSTRUMENTS

Instrument set for **CHARSPINE2 VD** vertebral derotation - 40.8058

	Name	Catalogue no.	Pcs
	Derotational clamp	40.6189.000	5
	Derotational sleeve	40.6188.000	10
	Stand for instrument set for <b>CHARSPINE2 VD</b>	40.8059.000	1



All the other instruments (*except for the ones mentioned above*) described in this surgical technique are included in the instrument set for **CHARSPINE2** spine stabilizer in the version [40.8060] or [15.0907.001].

### 3. SURGICAL TECHNIQUE

#### 3.1. SCREWS SELECTION

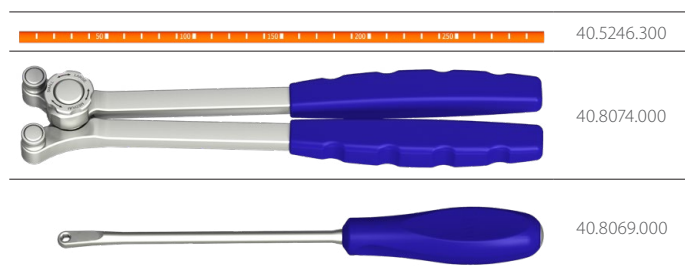
Surgical posterior approach to the thoracolumbar spine and instructions for transpedicular screws insertion have been described in a separate surgical technique No. ST/63 for **CHARSPINE2** thoracolumbar stabilization system.

The selection of appropriate screws is a key factor to ensure the success of the derotation procedure. Monoaxial screws guarantee the highest stability, however, due to possible difficulties with fitting the rod, polyaxial or uniplanar screws may be required. For scoliosis correction, the use of reduction screws should be considered since the screws significantly facilitate the bar placement.

The transpedicular screws should be inserted at each level of the concave site of the scoliosis, whereas on the convex side - the screws should be inserted at both ends of the scoliosis arch and at its apex.

#### 3.2. ROD CONTOURING

When all the screws are placed in the pedicles, use e.g. rod trial 6/300 [40.5246.300] to measure the length of the rod and define its required curvature. The trial is available as an additional accessory of **CHARSPINE2** system. Contour the rod with adjustable rod bender [40.8074] which is a standard instrument of **CHARSPINE2** system (refer to **CHARSPINE2** surgical technique).



**NOTE:** To order the rod trial, contact your sales representative or ChM Sales Department.

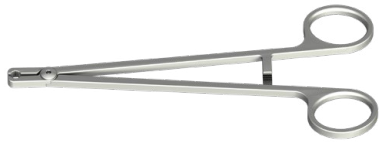


**NOTE:** Contour the convex rod with less kyphosis to push down on the convex side of the vertebral bodies, thus displacing them anteriorly and decreasing the rib prominence. Contour the concave rod with extra kyphosis to pull the apical vertebrae dorsally out of the chest, correct apical lordosis and decrease the rib prominence.

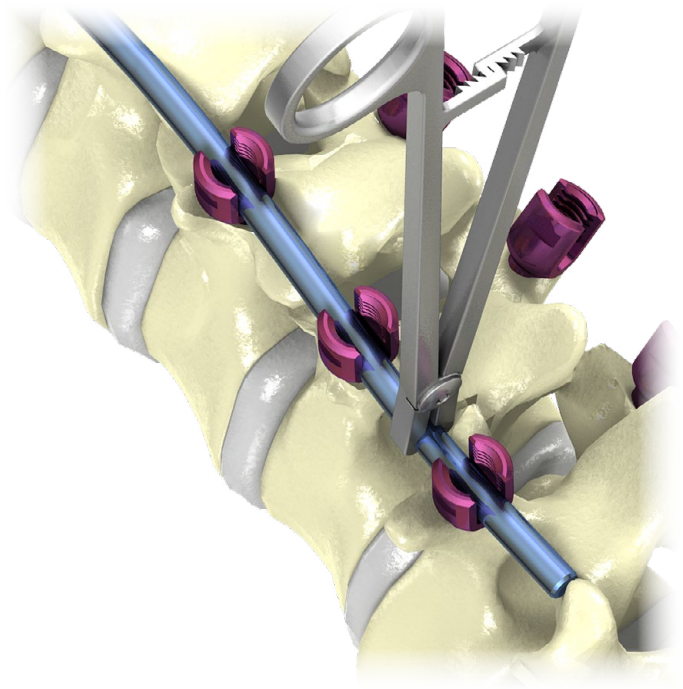


### 3.3. ROD FIXATION

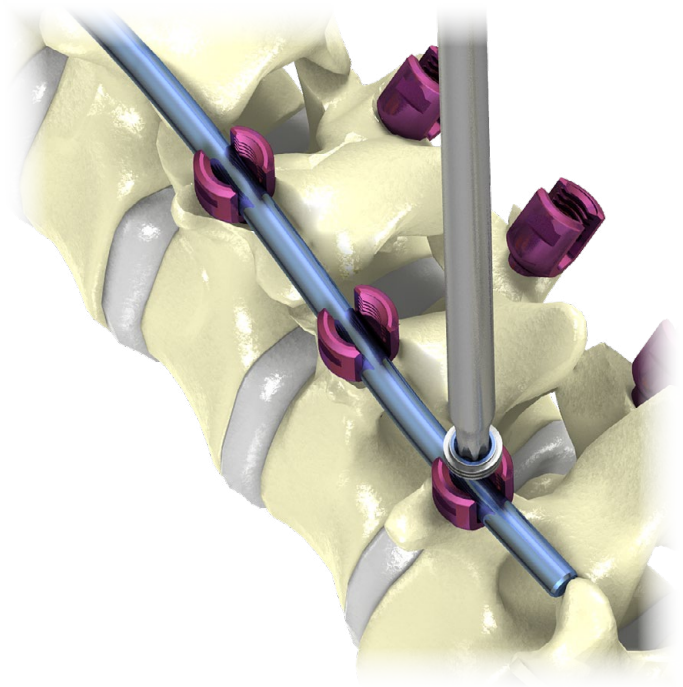
The rod contoured as desired should be placed in the socket of the transpedicular screw. To do so, use pliers for rod **[40.8109]**.



40.8109.000



Lock the rod using locking screw **[3.6160]** that should be placed in the head of the transpedicular screw.







**NOTE:** The locking screw may be mounted on the screwdriver tip only from the upper side of the screw (the locking screw design eliminates any errors related to the mounting).



The upper surface of the screw is colour-marked for easier identification.

The locking screw is mounted on the tip of the screwdriver T30 [40.8111], then it is inserted into the cut-out on the screw head and slightly tightened up in a clockwise direction. The inserted locking screw should allow the rod to move freely in the socket. Plies for rod and screwdriver T30 are included in **CHARSPINE2** stabilizer set.



Should it be difficult to press the rod to the screw cut-out bottom, use rod impactor [40.8068], fork persuader [40.8100], or screw persuader [40.8096] (please, refer to **CHARSPINE2** surgical technique).



40.8111.000



40.8068.000



40.8100.000



40.8096.000

### 3.4. ROD ROTATION

Having inserted locking screws, rotate the rods until they are positioned as intended in the sagittal plane. For rotation, use holding forceps ([40.6202] or [40.4516] depending on the instrument set version) that are a part of CHARSPINE2 set. If the rod has original hexagonal ends, an eye wrench [40.8069] can also be used. Afterwards, pre-tighten the locking screws.



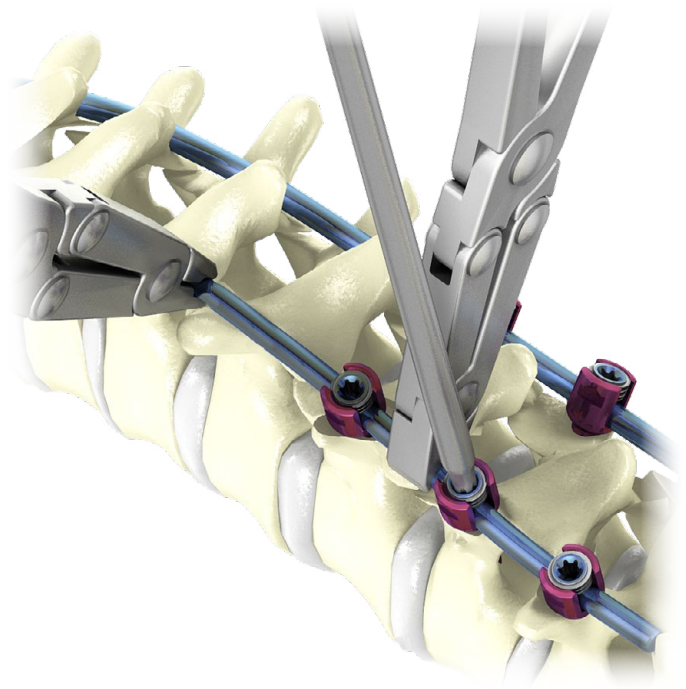
40.6202.000



40.4516.000



40.8069.000



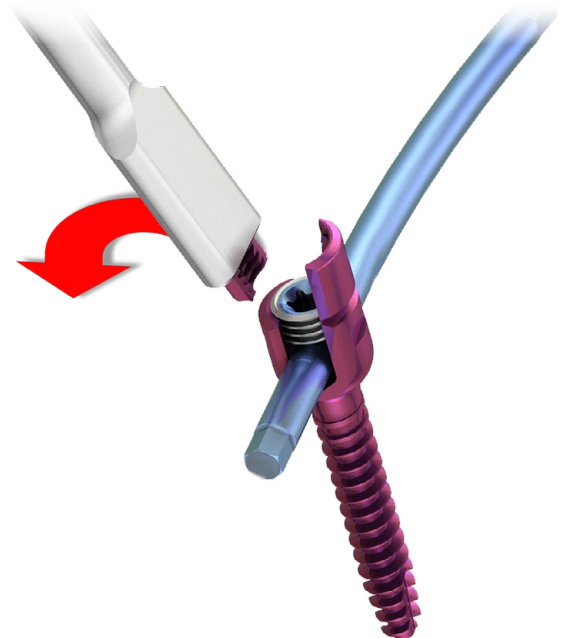
### 3.5. DIRECT DEROTATION



**NOTE:** If reduction screws are used, firstly, break the arms off using the reduction screw device [40.8108] and then attach the derotation sleeves.

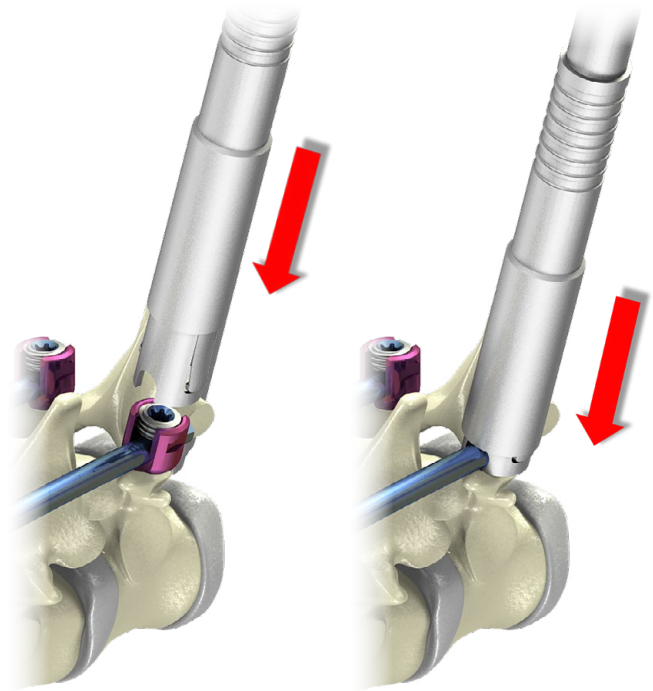


40.8108.000

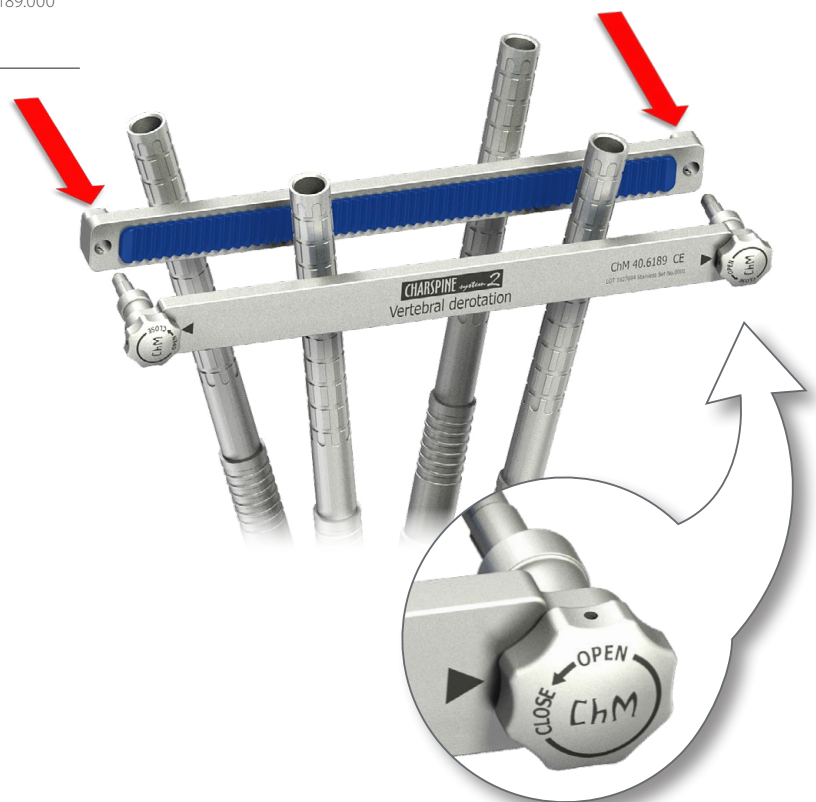


### 3.6. SEGMENTAL TECHNIQUE

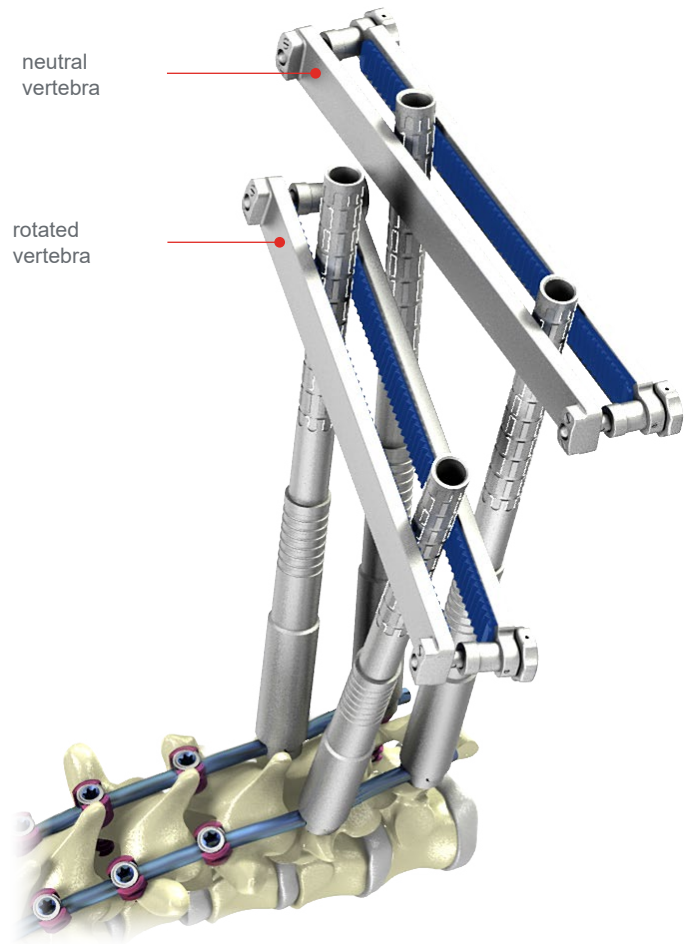
Derotation should start from navigating the first neutral (*non-rotated*) vertebral body located below the deformity and the first rotated vertebra. Insert the derotation sleeves onto the above-mentioned transpedicular screws as illustrated. Install the derotation sleeve on the screw and then slide the outer sleeve down to lock the lock.



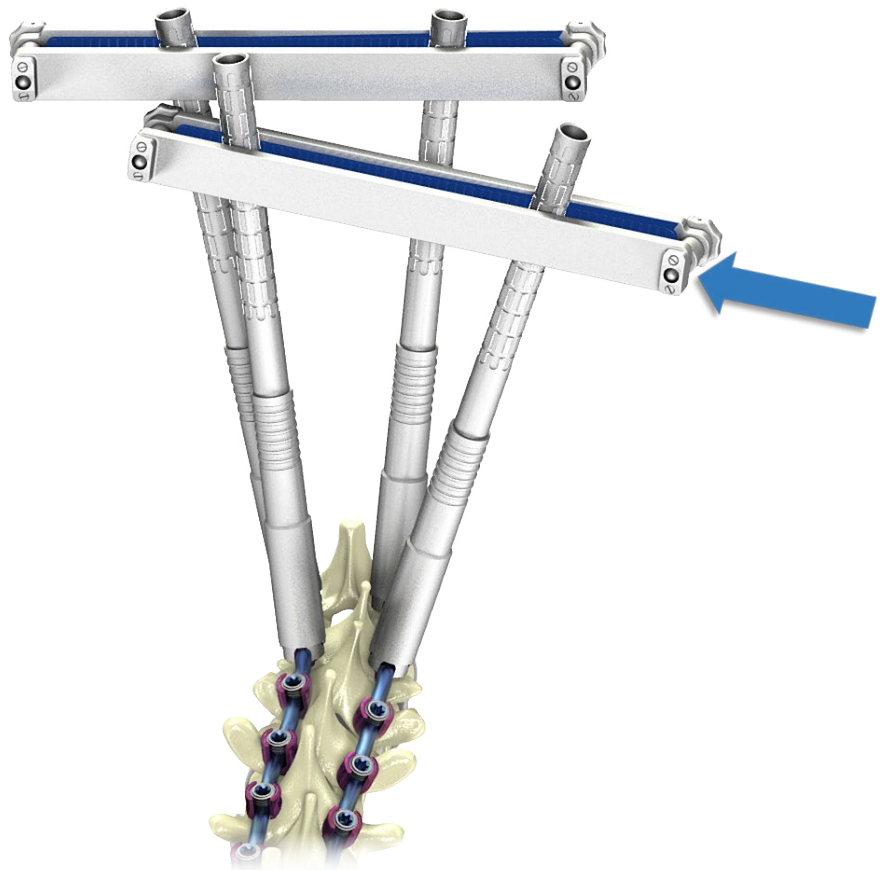
The sleeves located on the same levels should be linked together with derotation clamps, creating two separate frames. The frames are put together as shown in the illustration.



Locking screws already inserted in the transpedicular screws of rotated vertebrae (*above the neutral one*) should be loosened, yet not completely unscrewed. Locking screws of neutral vertebrae must remain pre-tightened.



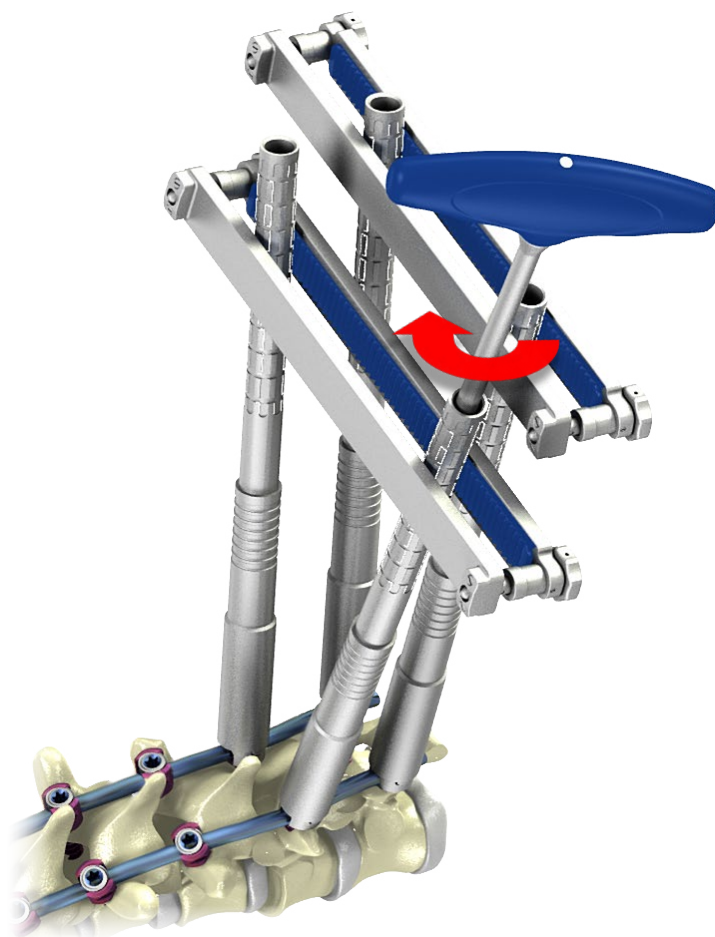
Afterwards, a direct derotation of the first rotated vertebra should be performed. The frame locked on the neutral vertebra will be the reference point for the rotated vertebra and will act as a counter force for forces occurring during derotation.



After derotation, the locking screws located in the rotated vertebra should be pre-tightened with screwdriver T30[40.8111].



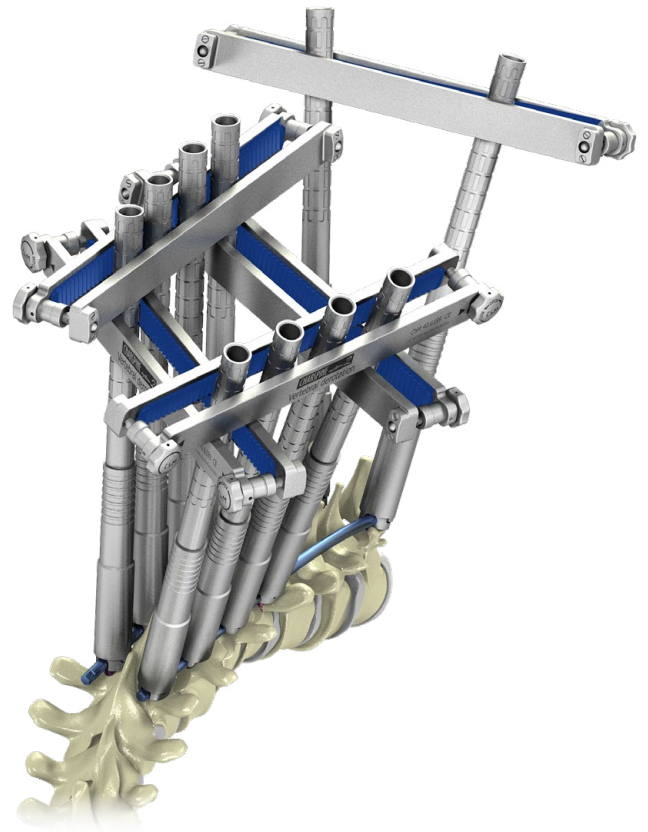
The rotated vertebra will now act as a neutral vertebra and the whole procedure should be repeated moving one segment higher.



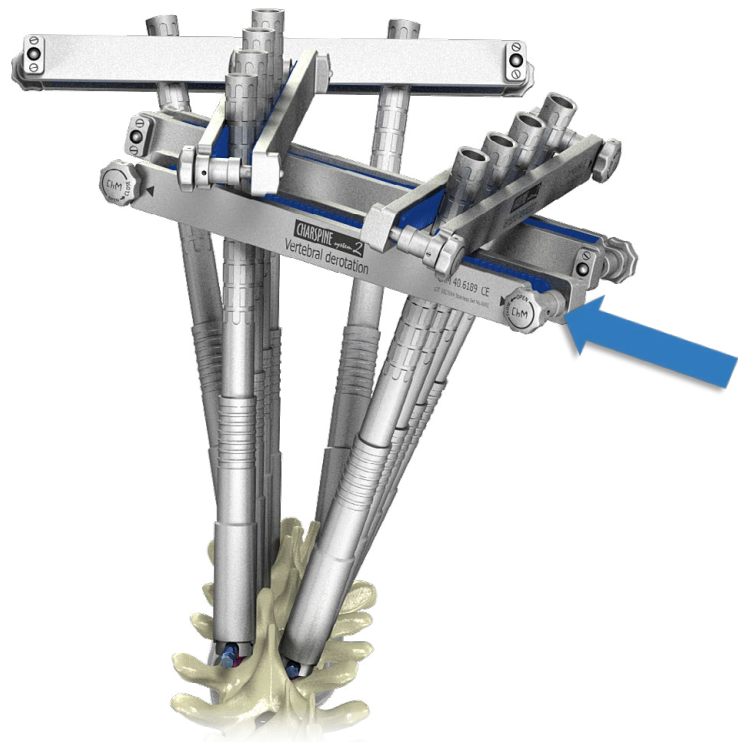


### 3.7. EN BLOCK TECHNIQUE

Derotation sleeves should be placed on deformity apical screws and on the first neutral (*non-rotated*) vertebra located below the deformity. The sleeves on the neutral vertebra are to be linked together with the derotation clamp to form a frame. The sleeves located on the rotated vertebrae should also be linked together with the clamp as illustrated, forming a single frame covering several levels. Locking screws should be loosened but not removed. The locking screws in transpedicular screws of the neutral vertebra should be pre-tightened.



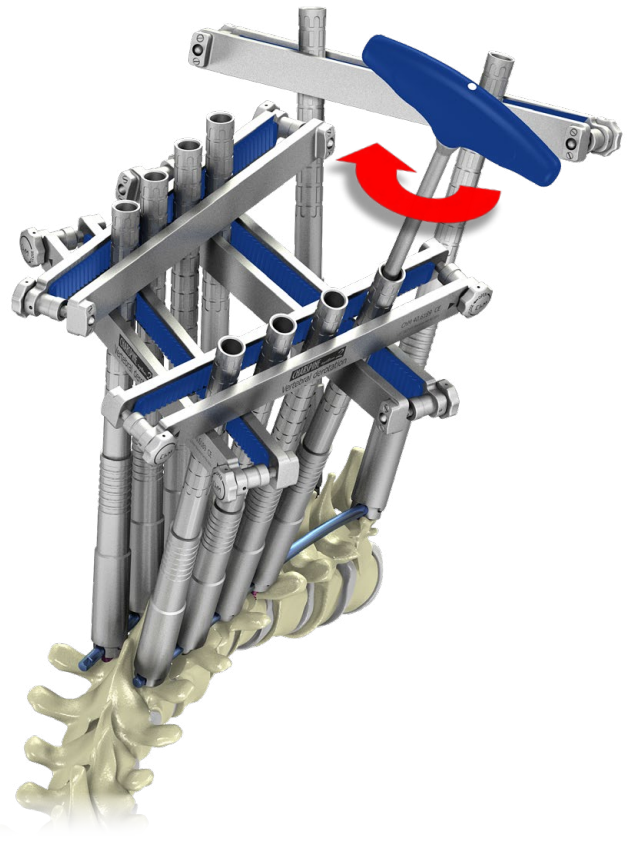
Derotation is performed by turning the frame locked on the rotated vertebrae until reaching the neutral position. The frame on the neutral vertebra is used as counter force for the forces that occur.



After performed correction, the locking screws should be pre-tightened with screwdriver T30 [40.8111].



**NOTE:** To facilitate the derotation procedure, push down the rib prominence.

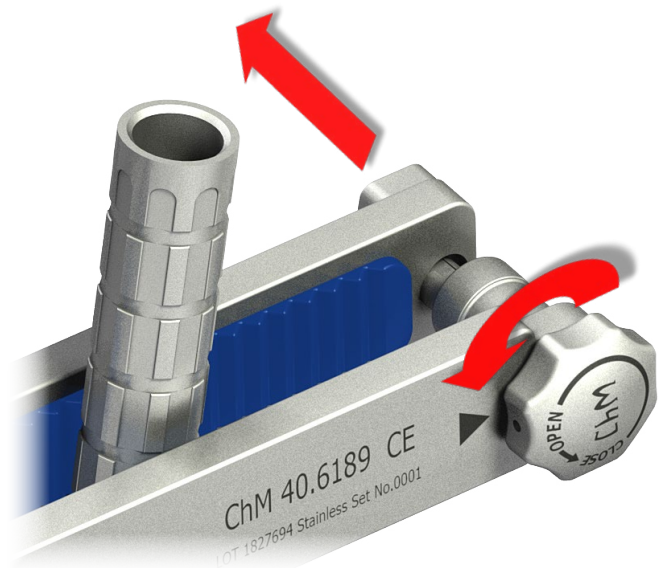


### 3.8. FRAME DISASSEMBLY

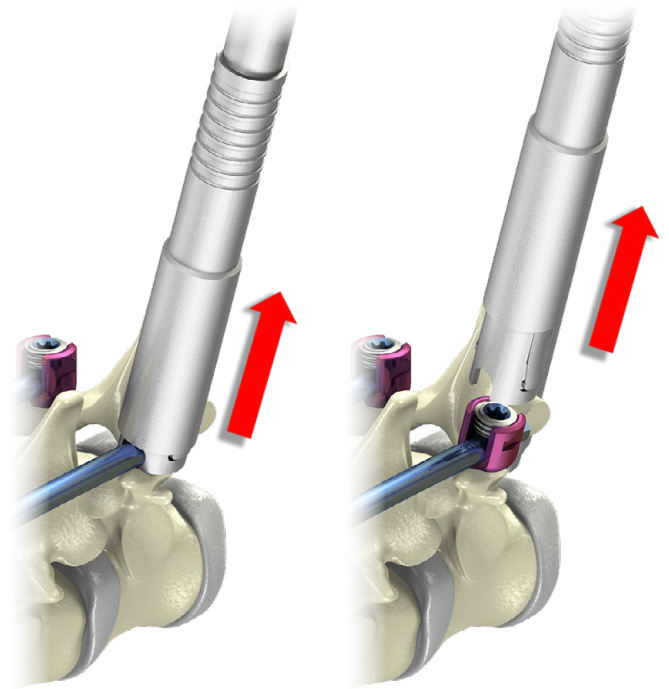
To disassemble the frame, start by removing the clamps, turning one of the knobs counterclockwise. If clamp removal is not yet possible, unlock the other knob.



Should it be necessary to reassemble the derotation clamp on the sleeves, both parts of the clamp must first be completely disconnected. This will ensure that the locking mechanism functions correctly when reinstalling.

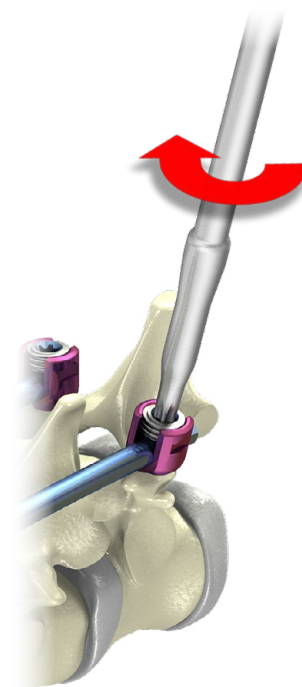


Then remove the derotation sleeves by sliding the outer sleeve upwards.



### 3.9. FINAL TIGHTENING

Tighten finally the locking screw with the help of T-type torque handle 12Nm [40.8087] and screwdriver tip T30 [40.8084].







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