





Longhead Screw Reposition System

System

VENUS[®] Reduction longhead screws complement the innovative design feature of the standard screws in an optimal way. They allow the correction and stabilization of the spine in particular complex anatomical relationships. The screw has a removable extension of the screw head with its inner thread. Based on that, an easy approximation of the spine, at the desired sagittal or axial profile, is made possible.

Therefore VENUS[®] Reductionsystem allows among others a reposition of threedimensional deformities, inclusive kyphosis or spondylolisthesis. The transparent and well-arranged instrumentation increases the safety in handling for known surgery techniques, with demonstrably high biomechanical stability.

The extensive range of longhead screws maximize the surgeon's intraoperative flexibility. To adapt to a variety of surgical conditions, several unique features are integrated.

The VENUS[®] Reductionsystem allows the surgeon enhanced precision with fast and more secure implantation and offers the following outstanding product-specific benefits:

safe

- Quick and soft adaption of the rods
- · Effective like a repostition instrument
- Gently correction
- Adaption of over-contoured rods possible
- Top-loading system for easy working

anatomic

- Low profile
- Self-tapping thread design without traumatising grooves

transparent

- Colour-coded screws
- · Clearly laid out and simple instrumentation

stable

- Increased stability at reduced risk
- · Immediate and long-term stability
- Tension-free installation due to polyaxial connection
- Load-optimized screws shaft design

flexible

- Versatile application and techniques
- · Large selection of implants
- Different spinal segments
- · Optimum adaptability to anatomy
- Compatible with all VENUS® implants













Product-specific Advantages



- anatomic ٠
- transparent ٠
- stable .
- flexible ٠
- safe •







Surgical Technique



Preparing the Pedicle

Set the pedicle insertion point. Open the pedicle canal using the Awl.

Note:

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The Awl is available with and without stop and also in cannulated form. The variants of the Awl without stop should be used only for the initial preparation of the pedicle. The deeper the preparation is carried out, the larger the core hole will be at the entry point.



Probing

Probing the pedicle canal. Insert the Pedicle Probe carefully into the pecicle canal, by using half rotation steps with slight pressure.

Note:

There are two versions of the pedicle awl available, straight and curved



Tapping

All pedicle screws are self-tapping. However, we recommend using taps in cases where the bone structure is very strong. These are available for all screw diameters.

Note:

For 6T screws we offer special taps to prepare cancellous and cortical thread. We always recommend using the tap that corresponds to the diameter of the pedicle screw.



Inserting the Standard Pedicle Screws I

First, insert the screwdriver tip (inner shaft) into the screw head and attach it to the outer hexagon of the threaded shaft. Then connect the outer guide to the screw head by screwing it into the inner thread of the screw head.

When using the Polyaxial Screw Driver, you must push the locking adapter forward and lock it into the connection geometry. You must also check the button of the locking adapter. (See user information of the Polyaxial Screw Driver.)



Inserting the Standard Pedicle Screws II

When using the Polyaxial Screw Inserter, secure the pedicle screw and then feed the guide wire over the screw head. The screw is screwed into the pedicle canal.

Note:

If desired, use the Reposition Screw Driver afterwards to correct the depth of engagement.



Inserting the Longhead Screws

In specific situations, such as Spondylolisthesis, it might be indicated to use reduction screws. The extended screwhead allows the reduction and facilitates the connection between rod and screw in difficult anatomic and surgical conditions. Insert the screws the same way as the standard pedicle screws.

Note:

Mount the inner shaft of the Reduction System into the screwdriver-guide of the standard system.

Surgical Technique



Cutting the Rod

Set the rod length. A Phantom Rod is contained in the instruments to make it easier to set the rod length. Widen the Rod Cutter so that the rod holders stay open. Depending on the relative diameter, slide the rod through the appropriate holder. With short, sharp pressure, shorten the rod to the intended point.



Bending of the Rod

The Rod Bender is designed for different rod diameters. Pullout the central bending roll and turn it to the qualified bending radius at the bending wheels.

Note:

Do not bend titanium rods in a see-saw methode.



Insertion of the Rod

Introduce the rod in the screwheads using Rod Holder or Rod Inserter and eventually with support of fingertips. Finetune the rod outline and bend the rod to the appropriate radius. If necessary, use the Rod Pusher or Rocker to place the rod into position.

Note:

The insertion of the rod must be made without pressure, to avoid the early collapse of the long sides.



Fixing of the Rod

Fix the rod in the segments above and below. The related segment with the reduction screw remains initially unfixed. When indicated, there could be done a distraction between the segments above and below, in order to liberalize the related segment generously.



Reduction / Reposition

In order to implement the reposition process as smooth and stress-relieved as possible, the rod must be inserted at least at the upper end of the reduction screw. If necessary use the Rocker to achieve this position with a smooth traction.

Note:

To protect the screw flanks against breaking off:

Attach the Long Head Sleeve and simultaneously guide it during the screw-in process of the setscrew. Carefully screw-in the setscrew under visual control. If necessary X-ray control, until the rod is form-fit inserted in the screwhead.



Insertion of the Setscrew

Once the rod is correctly positioned in the screw head, fix the rod in the screw head with the set screw using the Set Screw Inserter. To prevent crossthreading while screwing in the set screw, first screw in a counterclockwise direction until you clearly feel the thread "click into" the screw head. Then continue to screw in the set screw.

Caution!

Be sure to only screw in the set screw loosely; the final torque is applied using the Set Screw Driver.



Removal of the flanks

Break the long flanks using the Reduction Crown Breaker by slipping the Reduction Crown Breaker over the flanks. The flanks break after several lever movements (mediallateral) at the designated breaking point. Preferably break the flank in direction of the spine middle. The Reduction Crown Breaker is designed in this way, that the float remains in the instrument. The special screwhead design avoids a burr formation at the points of break.

Surgical Technique



Compression / Distraction

Position the Compressor or Distractor on the screw heads and carry out the compression or distraction procedure until the desired position has been achieved. To ensure the compression or distraction result, tighten with the Set Screw Driver.

Note:

The set screws must not be fully tightened during this manoeuvre. If need be, loosen the set screws carefully using the Set Screw Driver.



Transverse Connector

Attach а Transverse Connector Hook with the help of the Transverse Connector Inserter, Connect the second hook with the Transverse Connector Rod which is inserted via the Transverse Connector Rod Holder and attach it to the second rod of the construction. Align the elements and connect the Transverse Connector Hooks using the Transverse Connector Rod. Screw the set screws all the way into the Transverse Connector Hook using the Set Screw Driver.



Final Tightening

The Counter Holder is guided over the screw head and pushed all the way onto the rod. Ensure that the notches at the distal end of the Counter Holder take up the inserted rod. Couple the Set Screw Driver and the Torque Driver. Place the combined instruments through the fitted Counter Holder. Tighten the set screw in a clockwise direction. Follow the same approach for all other set screws.

Note:

The full torque of 12 Nm is reached when you hear a clicking sound in the Torque Driver. To ensure the maximum stability, care must be taken, that the final torque with the Torque Driver is only applied, when all repositioning and correction maneuvers were finished.



Final Construction

A spinal correction is usually a combination of many different techniques or maneuvers. The advantage of longhead screws is that the correction takes place slowly and distributes the forces over multiple segments. The resulting construction has the same biomechanical strength as a standard fixation.



Final Check

Final control of the construction by X-Ray in two levels. Cleaning the surgery area and closure of the wound.



Implants

Reduction Screws

Art.No.	Description	
4000034825	2T Reduction Screw 04.8x25mm	
4000034830	2T Reduction Screw 04.8x30mm	
4000034835	2T Reduction Screw 04 8x35mm	
4000034840	2T Reduction Screw 04 8x40mm	
4000034845	2T Reduction Screw 04 8x45mm	
4000035525	2T Reduction Screw 05.5x25mm	
4000035530	2T Reduction Screw 05 5x30mm	
4000035535	2T Reduction Screw 05 5x35mm	
4000035540	2T Reduction Screw 05 5x40mm	
4000035545	2T Reduction Screw 05.5x45mm	
4000035550	2T Reduction Screw 05 5x50mm	
4000035555	2T Reduction Screw 05.5x55mm	
4000036525	2T Reduction Screw 06 5x25mm	
4000036530	2T Reduction Screw 06 5x30mm	
4000036535	2T Reduction Screw 06.5x35mm	
4000036540	2T Reduction Screw 06.5x4Omm	
4000036545	2T Reduction Screw 06.5x45mm	
4000036550	2T Reduction Screw 06 5x50mm	
4000036555	2T Reduction Screw 06 5x55mm	

Art.No.	Description	
4000037235	2T Reduction Screw 07 2x35mm	
4000037240	2T Reduction Screw 07 2x40mm	
4000037245	2T Reduction Screw 07 2x45mm	
4000037250	2T Reduction Screw 07.2x5Omm	
4000037255	2T Reduction Screw 07 2x55mm	
4000037260	2T Reduction Screw 07 2x60mm	
4000037280	2T Reduction Screw 07.2x8Omm	
40000372100	2T Reduction Screw 07.2x100mm	

Instruments

Art.No.	Description	
1005104830	Reduction Screw 6T 4,8x30mm	00
1005104835	Reduction Screw 6T 4,8x35mm	
1005104840	Reduction Screw 6T 4,8x40mm	
1005105530	Reduction Screw 6T 5,5x30mm	
1005105535	Reduction Screw 6T 5,5x35mm	
1005105540	Reduction Screw 6T 5,5x40mm	6
1005105545	Reduction Screw 6T 5,5x45mm	
1005105550	Reduction Screw 6T 5,5x50mm	
1005105555	Reduction Screw 6T 5,5x55mm	
1005106535	Reduction Screw 6T 6,5x35mm	
1005106540	Reduction Screw 6T 6,5x40mm	LQ.
1005106545	Reduction Screw 6T 6,5x45mm	
1005106550	Reduction Screw 6T 6,5x50mm	
1005106555	Reduction Screw 6T 6,5x55mm	
1005107240	Reduction Screw 6T 7,2x40mm	
1005107245	Reduction Screw 6T 7,2x45mm	
1005107250	Reduction Screw 6T 7,2x50mm	
1005107255	Reduction Screw 6T 7,2x55mm	

Art.No.	Description
1005010041	Long Head Sleeve
1005010040	Reduction Crown Breaker
1005010039	Shaft Reduction Screw Driver (ab Index 08)
055061	Polyaxial Screw Driver
1005010039	Shaft Reduction Screw Driver (bis Index 07) optional
055061	Polyaxial Screw Inserter optional



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