

OVERFIX[®]

— SPINE —

SURGICAL TECHNIQUE

Cellent CERES 3.5 Occipito-Cervical Fixation System





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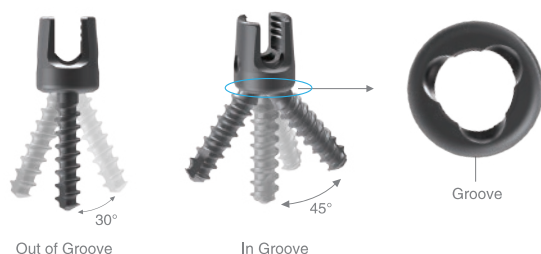
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Cellent CERES 3.5

OCCIPITO-CERVICAL FIXATION SYSTEM



FEATURES



Multi-axial Screw

- Allows for 60 degree rotating, or 30 degree in any direction
- Rotating saddle reduces rod contouring



Lateral Connector

- Easy to place of non-linear screws
- Allow for increased angle of screw insertion

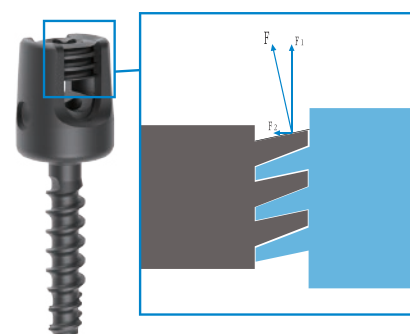


Low profile crosslink



Occipital plate

- Two occipital plate options available for surgeon



Set Screw

- Reverse threads reduce profile and improves cross-threading resistance
- Allows for independent placement and easy surgery
- Internal set screw optimizes placement and visualization

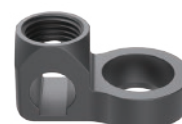


Titanium Rod

- $\Phi 3.5$ titanium rod with reliable strength
- Easily contours to meet individual anatomy



Parallel rod connector



Occipital connector



Hooks

INDICATIONS

Instability in occipitocervical segment or upper cervical

- Rheumatoid Arthritis.
- Deformity.
- Trauma.
- Tumor.

Instability in low cervical

- Trauma.
- Tumor.
- Latrogenic instability following laminectomy.

CONTRAINDICATIONS

- Not apply for internal fixation because of deformity or destroy of pedicle or lateral mass of vertebrae
- Not apply for internal fixation before infection control of cervical spine
- Not apply for posterior fixation because of fewer segment(<3)of anterior spinal cord compression for cervical degeneration and other diseases other diseases
- Anterior cervical spinal cord or root compression because of certebrae fracture, disc destroy and anterior instability, must perform operations anterior approach to get stabilization

The following surgical technique describes the application of the Posterior Pedicle screw system - CTS3.5 utilizing cervical lateral mass screw fixation for illustrative purposes.

SURGICAL TECHNIQUE

1. PATIENT POSITION AND EXPOSURE

The patient is placed in a prone position to avoid oppression of a particular area.

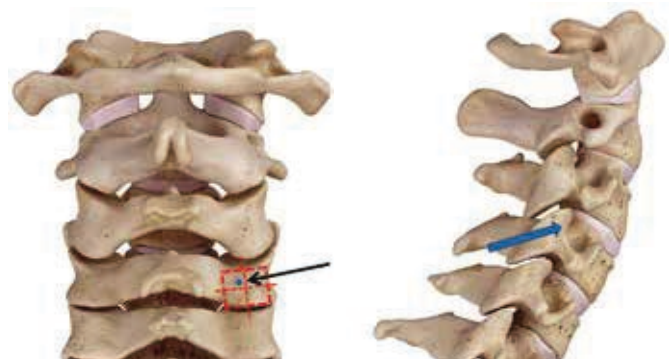
Placed head on a padded holder or secured with tripod pins. Sterile drapes have to be applied to the neck and back. The incision from the midline of the appropriate spinal segment and separate till exposes spinous processes.



Decortication of the paraspinal musculature under subperiosteal. Peeling outwards to expose facet joints and intertransverse. Remove joint capsules of the zygapophyseal joints in the fusion segment. Be mindful that to protect the proximal joint capsule.

2. SCREW INSERTION POSITION

Preoperative CT scan photos and X-ray radiographs were used to identify anatomic differences. Use Intraoperative perspective to assist placement screws at lateral cervical spine. The optimal insertion point is at the center and the upper 1mm place.



3. DRILLING

Use Adjustable Drill Bit (12010009/12010010) or Awl (12016010) to exposure pedicle entry point; If choose Adjustable Drill Bit (12010009 /12010010) to create a pathway into the pedicle, it have to fit with the Drill Guide (12010007) and Adjustable Drill Bit Stop (12010006). Adjust depending on the depth of the trajectory. The drilling bit has a scale that can be a reference. (The angle reference for the screw insertion: the angle of sagittal view about 45°, the angle of camber about 25°)



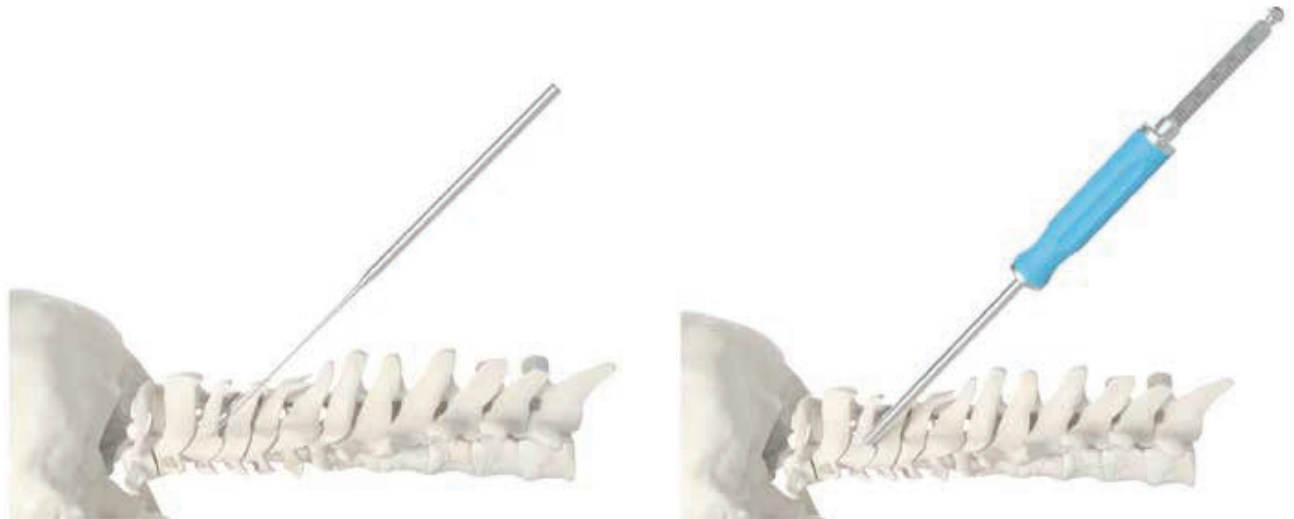
4. AWL INSERTION (If last step chosen by Awl)

Use Pedicle Probe -Ø2.4(12010003) to create a pathway into the pedicle. The correct rotational insertion of the instrument allows the Pedicle Probe -Ø2.4(12010003) to follow a path of minimum resistance without damaging the pedicle walls.



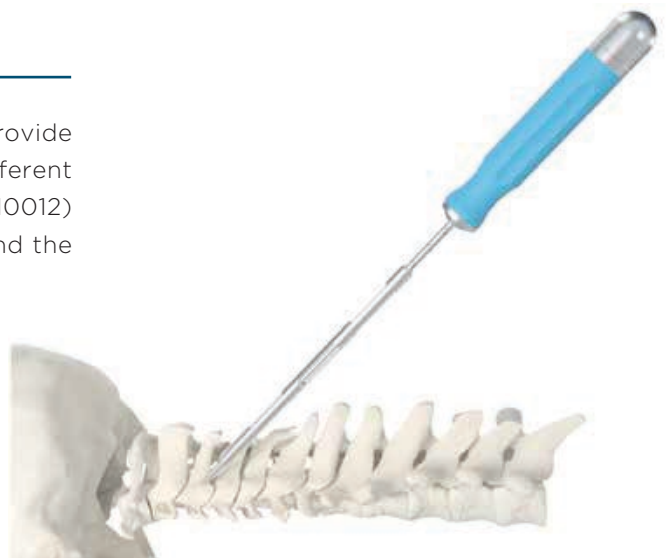
5. PEDICLE ENTRANCE

Once have opened the channel of the pedicle, use Pedicle Feeler (12010012) to ensure that every side of pedicle pathway and the end of the pathway have not been destroyed. Use Depth Gauge (12010011) to determine the length of the screw.



6.TAP THREAD (Optional)

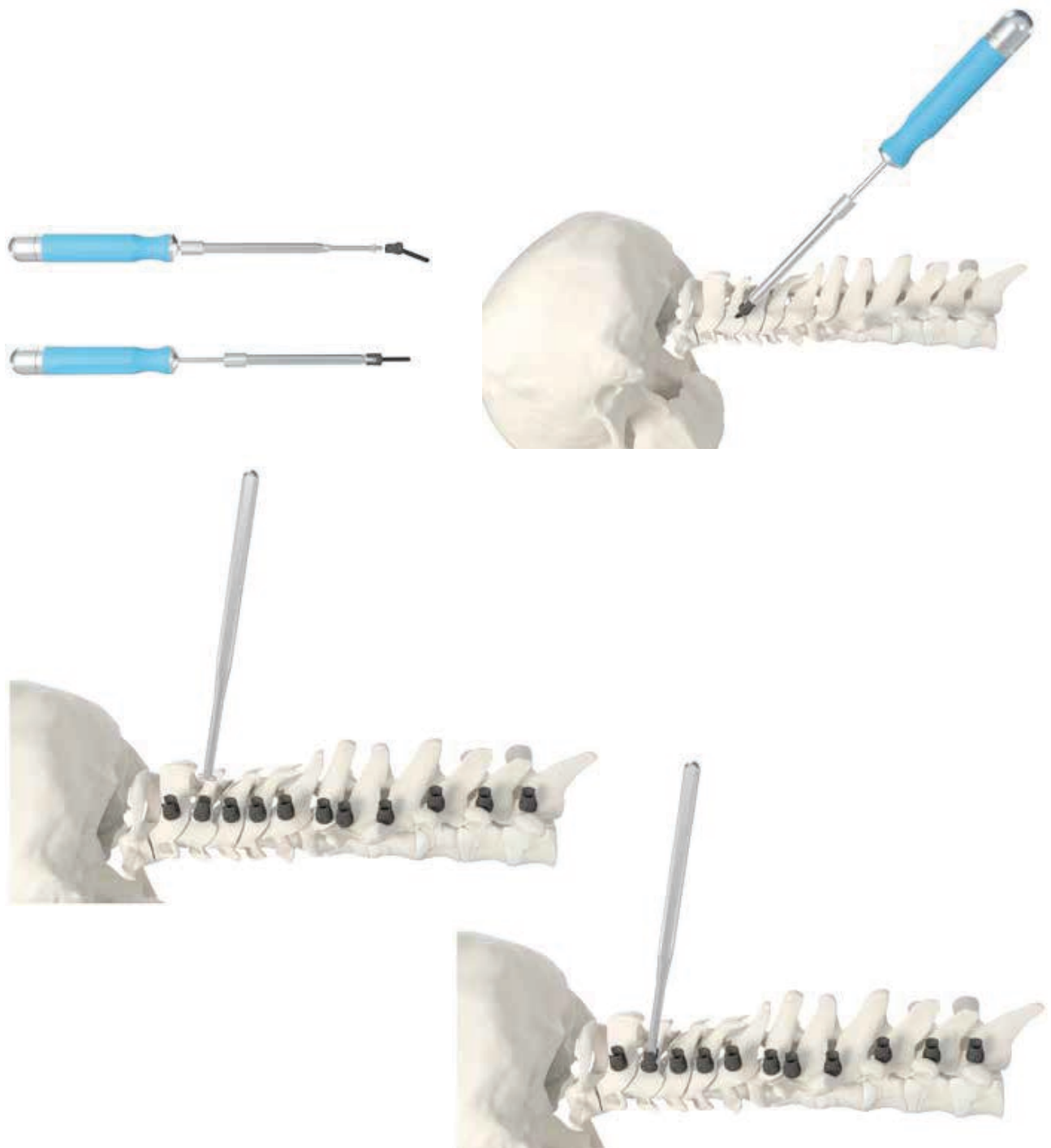
Use the bone taps to create the bone canal. We provide three Tap, specification chosen according to different conditions. After tapping, use Pedicle Feeler (12010012) to re-check that every side of pedicle pathway and the end of the pathway have not been destroyed.



7. PEDICLE SCREW INSERTION

When the pedicle pathway prepared, and the proper screw diameter and length determined the screw can be inserted into the pedicle by a Screwdriver (12010016).

When the remaining screws had been implanted, before to implanting the rod, using an Alignment Tool (12010017) to adjust the head of the multi-axial screw is calibrated in a uniform direction.



8. ROD CONTOURING

Once all the screws are inserted, the appropriate length rod is determined. Use the Rod Template (12010018) to more accurately determine the appropriate rod length and circular measure.



9. ROD LINKAGE

Multi-axial screws allow a 5mm bends in the inner/outer direction without the need for additional bending. Transverse Connector can be used depending on the need to increase the inner/outer direction offset.



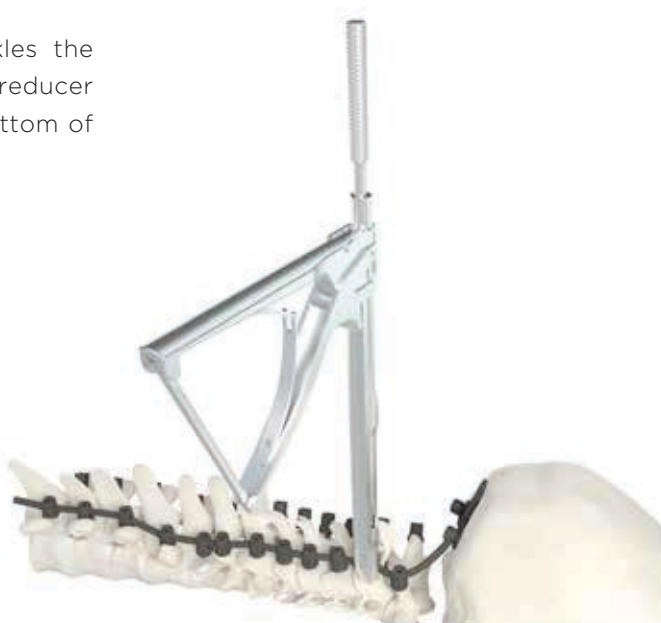
10. SET SCREW PRE-TIGHTENING

The Rod Holder (12010021) can be used to help place the titanium rod into the grooves of the implant. Pre-screwdriver (12010028) can be used to hold the set screw for temporary locking. Countertorque (12010029) and Rod Reducer (12010022) will help to press the rod which is not fully seated at the bottom into the groove.

Method 1: If the rod is not fully seated into the bottom of the screw head. Use a Countertorque (12010029) to fully seat the rod and use a Pre-screwdriver (12010028) to insert the set screw.



Method 2: The Rod Reducer (12010022) buckles the bottom of the screw head, presses the Rod reducer (12010022) handle to press the Rod into the bottom of the U-shaped groove of the screw.



11. HOOKS INSERTION (Optional)

Use Laminar Elevator (12010001) to prepare the lamina and remove the ligamentum flavum. You can also peel carefully by using the Hook Holder (12010025). When implanting a hook, it may be necessary to have a limited resection of the lower end of the upper vertebral body. If the ligamentum flavum is calcified or the lamina overlaps, a high-speed drill can be used. Select the appropriate hook is based on the thickness of the lamina and use the Hook Holder to install it.

Based on the position of the Hook, use Rod Template (12010018) to determine the rod's curvature and length, cut the rod, and bend the rod in the shape of the spine. Use Rod Holder (12010021) is to implant the rod.



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OCCIPITO-CERVICAL FIXATION SYSTEM

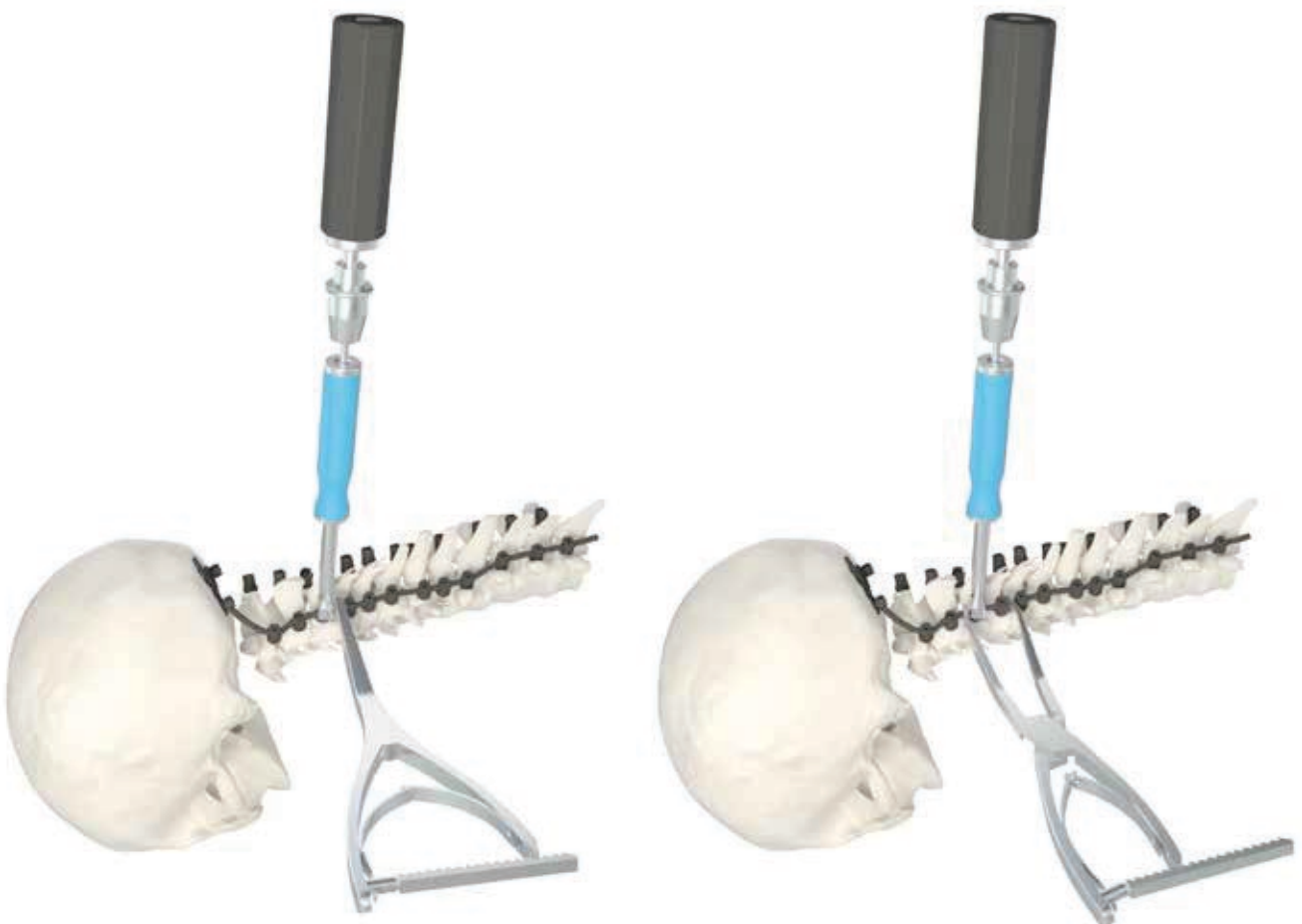


Implant the set screw, but do not tighten. If necessary, use the guide on the Hook Holder (12010025) to insert the Set Screw Driver (12010027) and tighten the set screw.



12. COMPRESSION/DISTRACTION

The correction can be performed by compression on the concave side of the sagittal plane and distraction on the convex side of the sagittal plane. Compression or distraction operation should be performed after all set screws are implanted but before the final tighten.



13. SCREWS FINAL TIGHTEN

Set screw Driver-quick connect (12010031) can be attached to Torque Limit Handle (12010032) and composed as anti-torque wrench. Combine with Counter-torque (12010029) will finally tighten the set screw.



IMPLANTS

Cancellous Multi Axial Screws



Product Code	D	L
50603508	Φ3.5	8
50603510	Φ3.5	10
50603512	Φ3.5	12
50603514	Φ3.5	14
50603516	Φ3.5	16
50603518	Φ3.5	18
50603520	Φ3.5	20
50603522	Φ3.5	22
50603524	Φ3.5	24
50603526	Φ3.5	26
50603528	Φ3.5	28
50603530	Φ3.5	30
50603532	Φ3.5	32
50603534	Φ3.5	34
50604008	Φ4.0	8
50604010	Φ4.0	10
50604012	Φ4.0	12
50604014	Φ4.0	14
50604016	Φ4.0	16
50604018	Φ4.0	18
50604020	Φ4.0	20
50604022	Φ4.0	22
50604024	Φ4.0	24
50604026	Φ4.0	26
50604028	Φ4.0	28
50604030	Φ4.0	30

Cortex Multi Axial Screws



Product Code	D	L
50614020	Φ4.0	20
50614022	Φ4.0	22
50614024	Φ4.0	24
50614026	Φ4.0	26
50614028	Φ4.0	28
50614030	Φ4.0	30
50614032	Φ4.0	32
50614034	Φ4.0	34
50614036	Φ4.0	36
50614038	Φ4.0	38
50614040	Φ4.0	40
50614042	Φ4.0	42
50614044	Φ4.0	44
50614046	Φ4.0	46
50614048	Φ4.0	48
50614050	Φ4.0	50
50614052	Φ4.0	52

Cortex Shaft Screws



Product Code	D	L
50623526	Φ3.5	26
50623528	Φ3.5	28
50623530	Φ3.5	30
50623532	Φ3.5	32
50623534	Φ3.5	34
50623536	Φ3.5	36
50623538	Φ3.5	38
50623540	Φ3.5	40

Cortex Occipital Screws



Product Code	D	L
50633506	Φ3.5	6
50633508	Φ3.5	8
50633510	Φ3.5	10
50633512	Φ3.5	12
50633514	Φ3.5	14
50633516	Φ3.5	16
50633518	Φ3.5	18
50634006	Φ4.0	6
50634008	Φ4.0	8
50634010	Φ4.0	10
50634012	Φ4.0	12
50634014	Φ4.0	14
50634016	Φ4.0	16
50634018	Φ4.0	18
50634020	Φ4.0	20

Rod



Product Code	D	L
50690000	Φ3.5	80
50690001	Φ3.5	120
50690002	Φ3.5	240
50690100	Φ3.5/Φ5.5	120/170
50690101	Φ3.5/Φ5.5	240/250
50690102	Φ3.5/Φ5.5	190/500



Hooks

Product Code	Specification
50692000	Small
50692100	Large



Cross Link

Product Code	L
50695040	40
50695045	45
50695050	50
50695055	55
50695060	60
50695065	65
50695070	70
50695075	75



Cross Link-C

Product Code	L
50695140	40
50695145	45
50695150	50
50695155	55
50695160	60
50695165	65
50695170	70
50695175	75



Occipital Plates

Product Code	Specification
50691000	3 holes
50691100	4 holes



Set Screw

Product Code	D
50694000	Φ6



Occipital Connector

Product Code	50693300
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Open Transverse Connector

Product Code	50693000
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Close Transverse Connector

Product Code	50693100
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Parallel Rod Connector

Product Code	50693200
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OCCIPITO-CERVICAL FIXATION SYSTEM








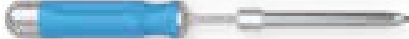
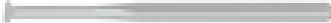

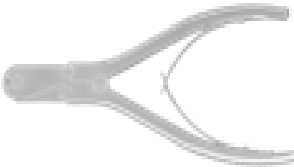
INSTRUMENTS

CODE	DESCRIPTION	PIECES	PICTURE
12010001	Laminar Elevator	1	
12016010	Awl	1	
12010003	Pedicle Probe - $\Phi 2.4$	1	
12010004	Cylinder Pedicle	1	
12010005	Ball Pedicle Marker	1	
12010006	Adjustable Drill Bit Stop	1	
12010007	Drill Guide	1	
12006017	Quick Coupling Handle	1	
12010009	Adjustable Drill Bit - $\Phi 2.4$	1	
12010010	Adjustable Drill Bit - $\Phi 2.9$	1	

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CODE	DESCRIPTION	PIECES	PICTURE
12010011	Depth Gauge	1	
12010012	Pedicle Feeler	1	
12010013	Adjustable Cancellous (occipital) Tap - $\Phi 3.5$	1	
12010014	Adjustable Cancellous Tap - $\Phi 4.0$	1	
12010015	Adjustable Cancellous (occipital) Tap - $\Phi 4.0$	1	
12010016	Screwdriver	2	
12010017	Alignment Tool	1	
12010018	Rod Template	1	
12010019	Rod Cutter	1	

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CODE	DESCRIPTION	PIECES	PICTURE
12010020	Rod Bender	1	
12010021	Rod Holder	1	
12010022	Rod Reducer	1	
12010023	Compression Forceps	1	
12010024	Distraction Forceps	1	
12010025	Hook Holder	1	

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CODE	DESCRIPTION	PIECES	PICTURE
12010026	Clasp Pusher	1	
12010027	Set Screw Driver - $\Phi 3,2$	1	
12010028	Pre-screwdriver	1	
12010029	CounterTorque	1	
12010031	Set Screw Driver - Quick Connect	1	
12010032	Torque Limit Handle	1	
12010891	Instrument Case	1	
12010992	Implant Case	1	

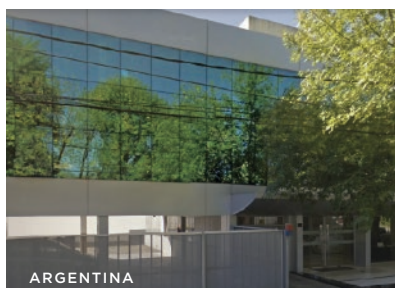
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