

Snowmass™

Anterior Cervical Plate

SURGICAL TECHNIQUE GUIDE



Surgeon Driven Innovation

LANX®

The **Snowmass™ Anterior Cervical Plate System** is intended for the surgical treatment and correction of traumatic and pathologic conditions of the cervical spine. It consists of titanium alloy plates and screws with comprehensive instrumentation.

Many important features were incorporated into the Snowmass Anterior Cervical Plate System:

1. **Low Profile Plate Thickness** (2.4mm).
2. **Large Graft Window** for increased visualization.
3. **Pre-contoured Plates** for levels 1,2,3 and 4.
4. **Fixed and Variable Screws** are available in self-drilling and self-tapping designs.
5. **Quick-locking Bushing** secures screw in a single step.
6. **Simple, intuitive instrumentation.**

Consulting Surgeon:
Christopher Kauffman, M.D.
University Medical Center
Lebanon, Tennessee



Surgical Approach

Prior to sterilization, review and inspect all instrumentation and implants. Replace or add any needed components for the planned surgery. The primary surgeon must be fully experienced with the required cervical instrumentation techniques.

Prep, position and drape the patient in the usual fashion. A standard anterior cervical approach is performed. The appropriate level discectomy and/or corpectomy is completed and bone graft is placed.

Plate Placement

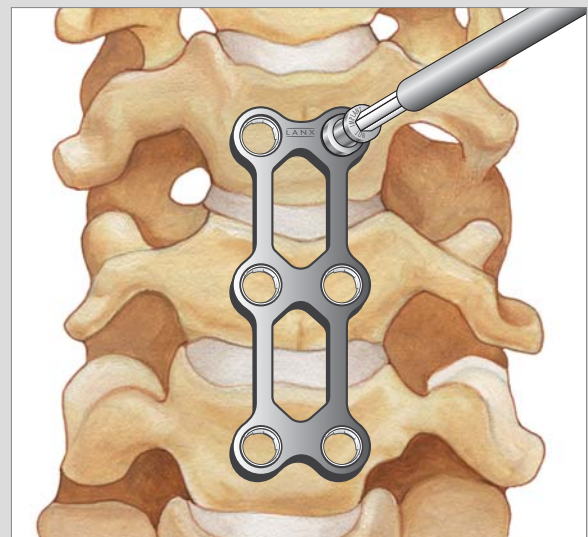
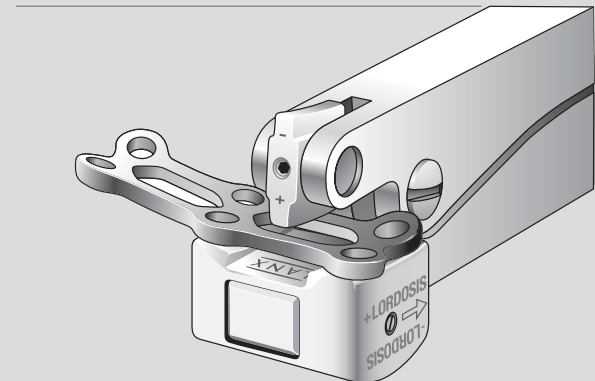
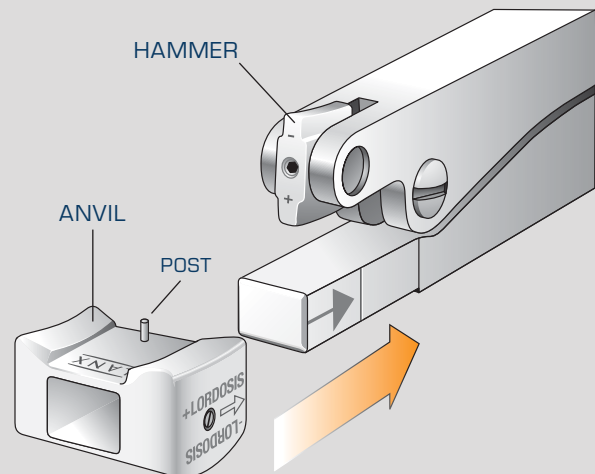
1. Select an appropriate plate and place against the anterior cervical spine to determine the correct length and contour. If additional plate contouring is desired, the **Plate Bender (4404-1008)** is used. The removable **Anvil (4404-1008-01)** must be attached to the Plate Bender in the correct orientation. This allows the surgeon to either increase or decrease lordosis as needed.

If **Increasing** the lordosis, insert the Anvil with **+ LORDOSIS** towards the plate. Make sure the arrow on the Anvil is inserted towards the arrow on the Plate Bender. The Hammer is also moved so the **+** is towards the plate to be bent.

To **Decrease** lordosis (flatten the plate), rotate the Hammer with the **-** towards the plate and place the Anvil with **- LORDOSIS** upward.

The post on the Anvil is always positioned in the rear and used to properly align the plate between the Hammer and Anvil. Do not place the plate over the post.

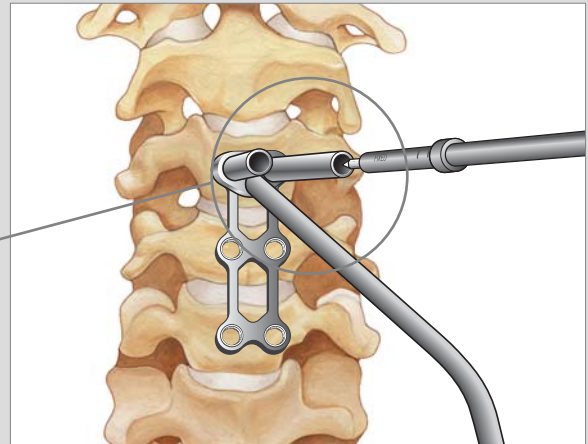
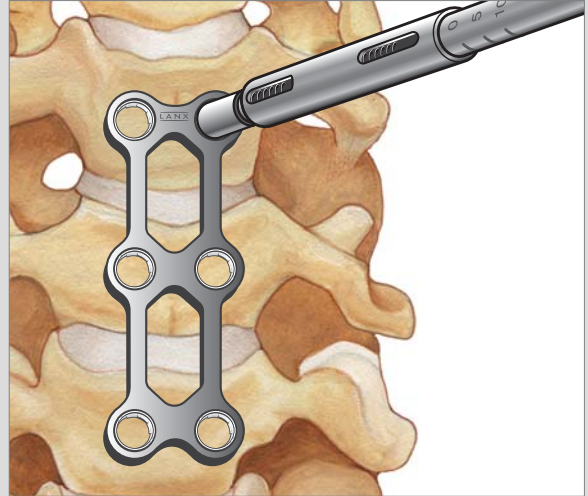
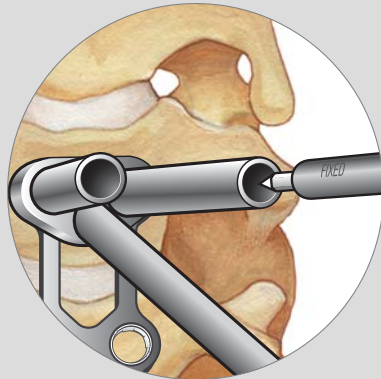
2. **Temporary Fixation Pins (4404-1109)** are inserted using the **Hex Driver** and screwed into position. Single-Use Only.



Preparing Screw Holes

Self-Drilling and Self-Tapping Screws are available in the set. When using the Self-Tapping Screws, the Anterior Cortex may be penetrated with either an Awl or the Drill. There are two Awls available in the instrument tray, the **Variable Awl (4404-1002)** and the **Fixed Awl (4404-1202)**.

1. The Variable Awl has a spring-loaded distal tip that can protrude up to 10mm. The trajectory of the Variable Awl should be in line with the desired screw angle.
2. The Fixed Awl penetrates 8mm in depth and is used with the Fixed Drill Guides.



Screw Trajectories

Nominal Screw Trajectories are the screw angle built into the plate. All angles are in respect to perpendicular to the plate.

Fixed Screws:

Fixed Screws go in the nominal trajectory **ONLY**.

End Holes: 8° Medial, 8° Caudal/Cephalad

Middle Holes: 8° Medial, 0° Caudal/Cephalad

Variable Screw:

Range of Motion: 16° Cone of Angulation

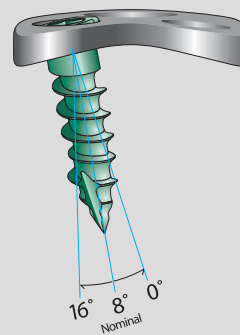
End Holes: 0°–16° Medial

0°–16° Caudal/Cephalad

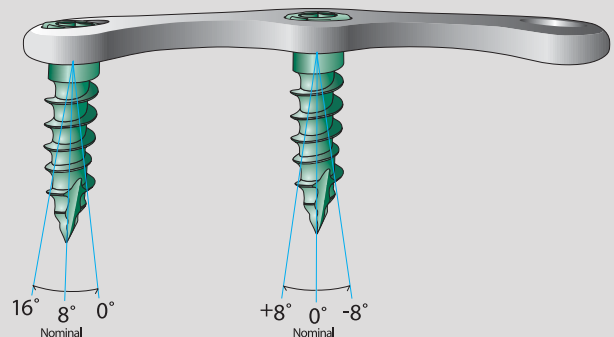
Middle Holes: 0°–16° Medial

-8° to +8° Caudal/Cephalad

MEDIAL/LATERAL VIEW



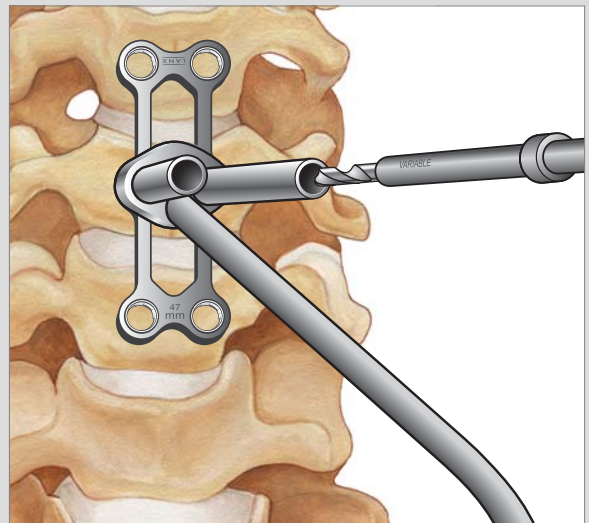
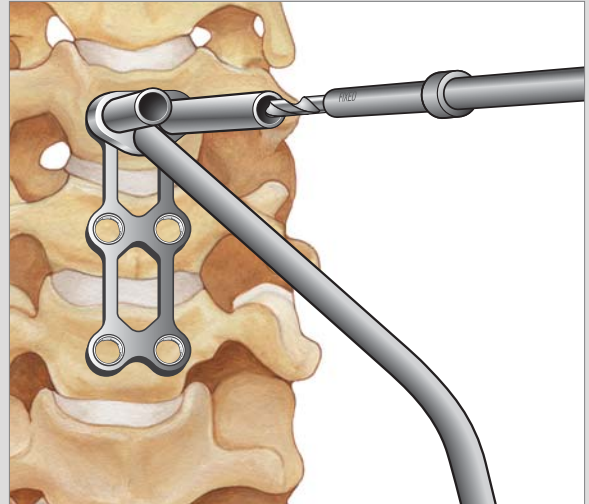
CAUDAL/CEPHALAD VIEW



Drilling for Fixed Angle Screws

There are separate Fixed Angled Drill Guides for either the **END (4404-1205)** or the **MIDDLE (4404-1206)** holes in the plate. These guides can be used for drills, taps or screws.

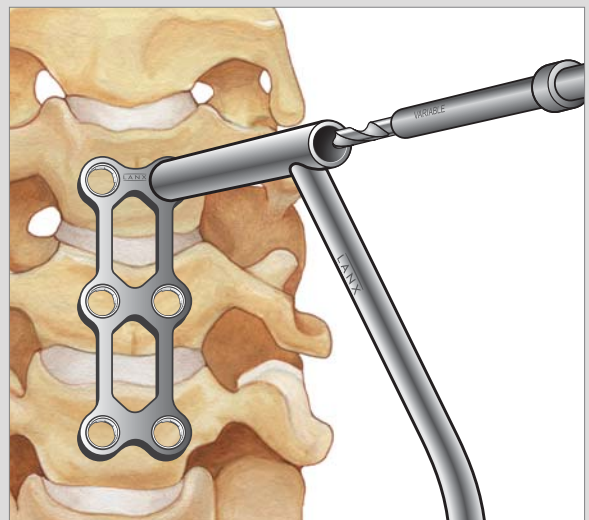
1. The END Fixed Angle Drill Guide is used for drilling the caudal and cephalad screw holes. It can only be seated on the plate in one orientation. The END Fixed Angle Drill Guide is set at 8 degrees caudal/cephalad and 8 degrees medial.
2. The MIDDLE Fixed Angled Drill Guide is 0 degrees caudal/cephalad with an 8 degrees medial trajectory.



Drilling for Variable Angle Screws

A **Variable Angle Drill Guide (4404-1304)** is used when it is necessary to vary the screw angle at each hole. The Variable Angle Drill Guide allows for individual screw trajectory but should be directed no more than 8 degrees from nominal.

Note: The Fixed and Variable Drills are not interchangeable with the Drill Guides. Use only the labeled “Fixed” Drills with the Fixed Drill Guides and the “Variable” Drills with the Variable Drill Guide.

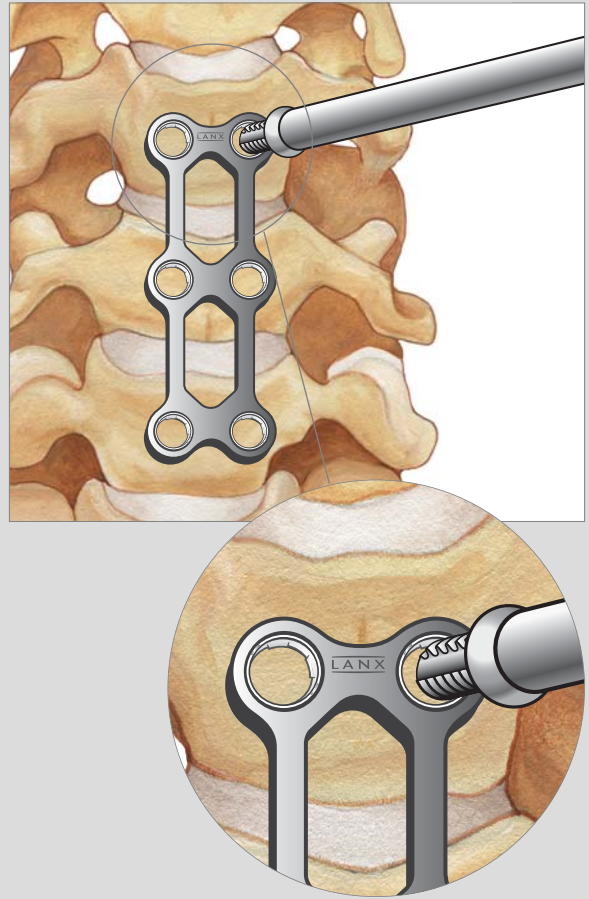


Tapping

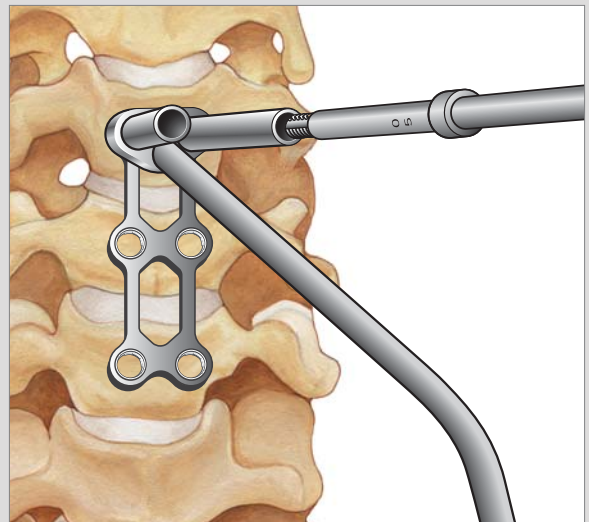
The Snowmass Anterior Cervical Plate System provides Self-Tapping and Self-Drilling Screws, which can be used at the discretion of the surgeon.

The instrument tray contains 2 taps, one for Variable Angle Screws and the other for Fixed Angle Screws.

The **Variable Tap (4404-1003)** will not penetrate beyond 10mm.



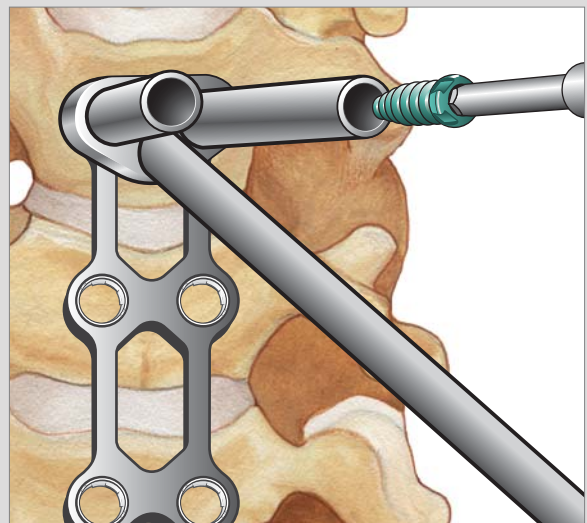
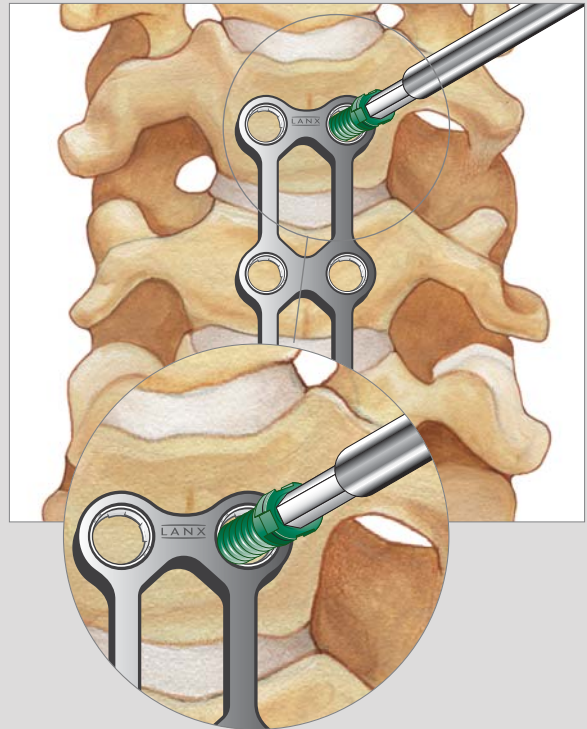
The **Fixed Tap (4404-1203)**, which fits down the Fixed Drill Guides, will not penetrate the cervical vertebrae beyond 11mm.



Inserting Screws

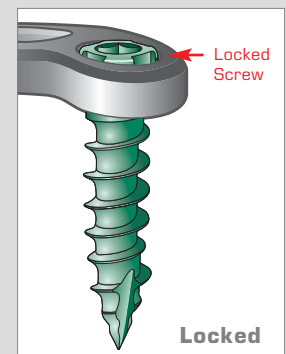
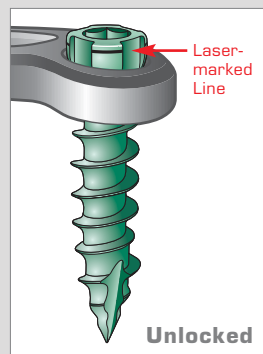
1. The **Hex Driver (4404-1101)** is used to insert the screws through the plate and into the vertebral body. The screw is held by a taper fit between the Hex Driver and the screw head.
2. Insert the screw into the previously-prepared screw hole, but do not tighten into the plate bushing. Screws should be inserted and lightly tightened, alternating proximally, distally and contralaterally until all screws have been placed.
3. Confirm correct alignment, placement and trajectory of the screw with radiographs before locking the screws into the plate.

Tip: If the Hex driver sticks in the screw head, gently "wiggle to disengage".



Locking the Screws

The screws are locked into the plate upon an **audible click**, **tactile feel** and/or **visual observation** that the laser-marked line on the side of screw head is recessed below the plate surface.

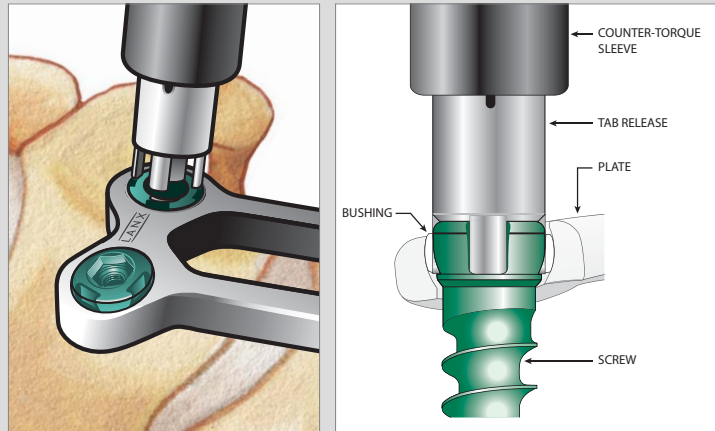


Removing the Screws

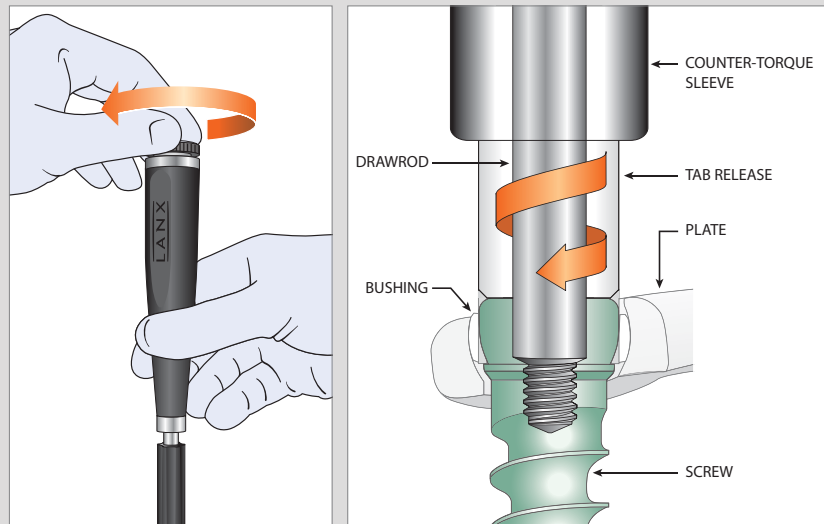
The **Screw Remover Tool (4404-1012)** comes assembled in the instrument tray and is made of five components: Instrument Body Handle, Drawrod, Counter-Torque Sleeve, Tab Release and Hex Driver Tip.



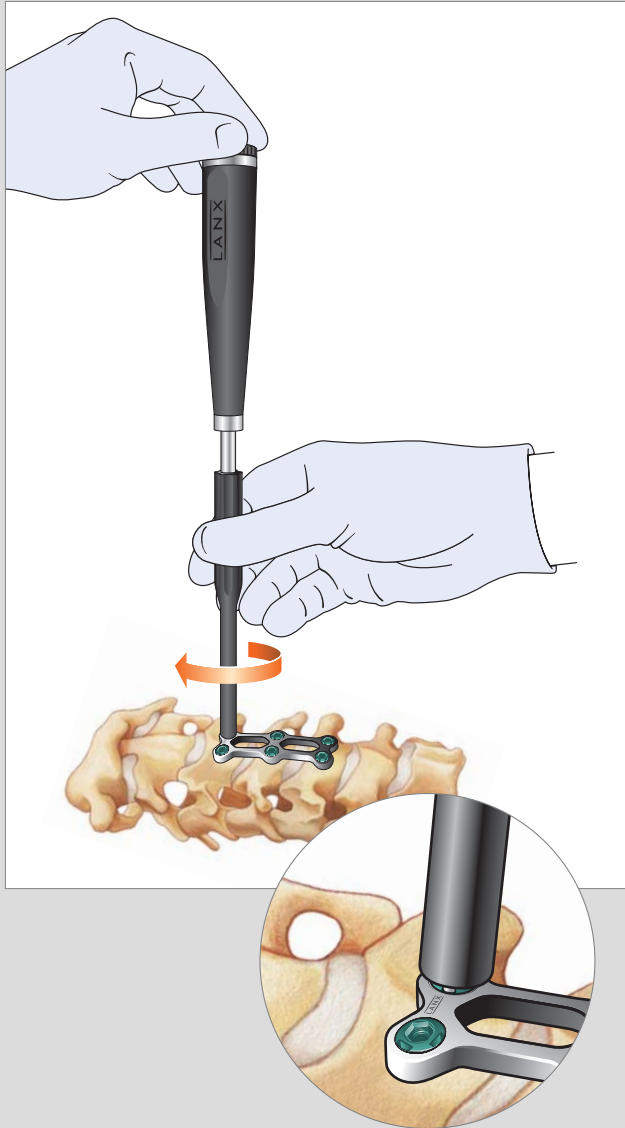
1. Align the tabs of the **Tab Release** with the slots on the screw head.



2. Turn the top wheel of the Drawrod clockwise. This captures the inner threads of the cervical screw and secures it to the Screw Remover Tool.

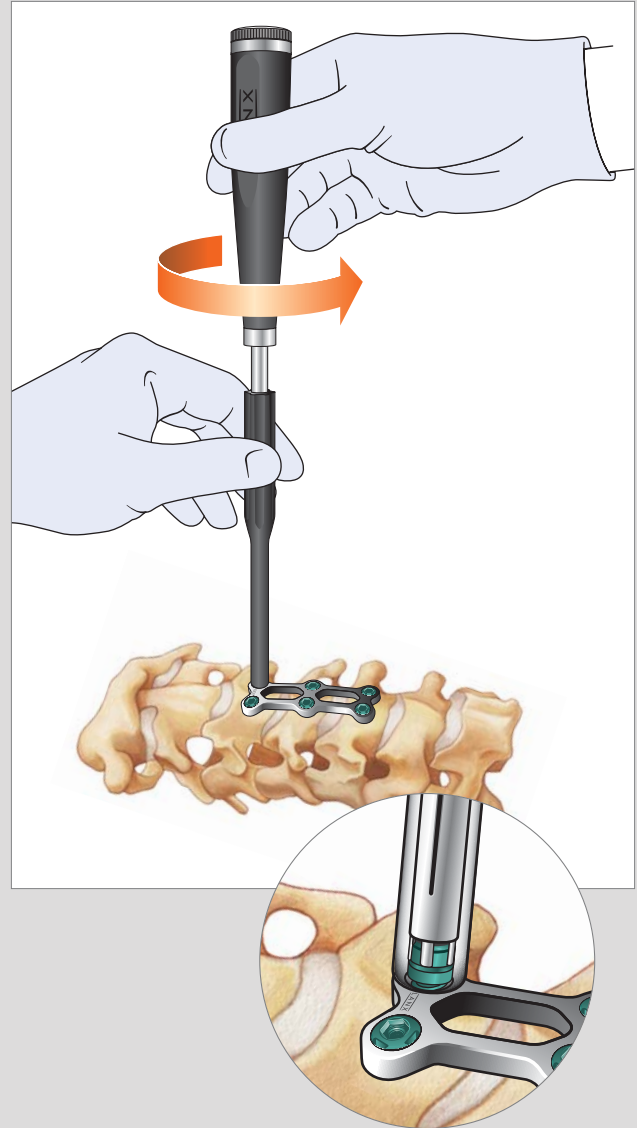


3. Turn the Counter-Torque Sleeve clockwise until it touches the plate.



4. While holding the Counter-Torque Sleeve stationary, turn the Instrument Body Handle counter-clockwise to remove the screw.

**The Tab Releases are single-surgery use.
The Hex Driver Tips are replaceable.**



Important: Review the package insert for a comprehensive list of warnings, cautions, contraindications, risks and product description.

Instruments for the Snowmass Anterior Cervical Plate System



4404-1202, Fixed Awl



4404-1203, Fixed Tap



4404-1012, Screw Remover Tool



4404-1012-004, Tab Release - Disposable



4404-1205,
Fixed Drill Guide, END



4404-1206,
Fixed Drill Guide, MIDDLE



4404-1304,
Variable Angle Drill Guide



4404-1002, Variable Awl



4404-1003, Variable Tap



4404-1101, Hex Driver



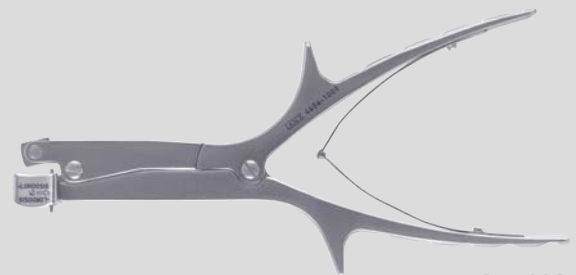
4404-1007, Drill Handle



Variable Drill Bit
4404-1312, 12 mm
4404-1314, 14 mm
4404-1316, 16 mm



Fixed Drill Bit
4404-1412, 12 mm
4404-1414, 14 mm
4404-1416, 16 mm

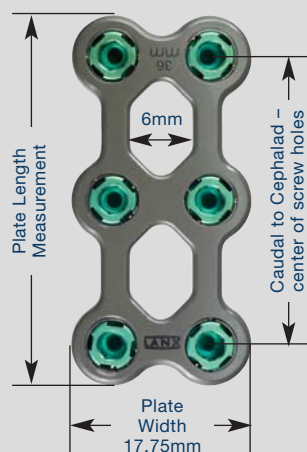


4404-1008
Cervical Plate Bender



4404-1008-01
Anvil

Implants for the Snowmass Anterior Cervical Plate System



Plates:

One Level – 6 sizes:

- 2mm increments (20-30mm)

Two Level – 9 sizes:

- 2mm increments (32-38mm)
- 3mm increments (38-53mm)

Three Level – 9 sizes:

- 3mm increments (53-77mm)

Four Level – 9 sizes: (Special Order)

- 4mm increments (68-92mm)

Plate Measurements:

- Plate Profile: 2.4mm
- Plates are sized by the overall length
- Caudal to Cephalad center of screw holes are the overall length minus 8mm

ONE LEVEL PLATES		TWO LEVEL PLATES		THREE LEVEL PLATES		FOUR LEVEL PLATES*	
Plate Length	Part Number	Plate Length	Part Number	Plate Length	Part Number	Plate Length	Part Number
18mm	4401-1018	32mm	4401-2032	53mm	4401-3053	64mm*	4401-4064
20mm	4401-1020	34mm	4401-2034	56mm	4401-3056	68mm*	4401-4068
22mm	4401-1022	36mm	4401-2036	59mm	4401-3059	72mm*	4401-4072
24mm	4401-1024	38mm	4401-2038	62mm	4401-3062	76mm*	4401-4076
26mm	4401-1026	41mm	4401-2041	65mm	4401-3065	80mm*	4401-4080
28mm	4401-1028	44mm	4401-2044	68mm	4401-3068	84mm*	4401-4084
30mm	4401-1030	47mm	4401-2047	71mm	4401-3071	88mm*	4401-4088
		50mm	4401-2050	74mm	4401-3074	92mm*	4401-4092
		53mm	4401-2053	77mm	4401-3077	96mm*	4401-4096

* Special Order Item

Titanium Screws:

Available in 2 Diameters:

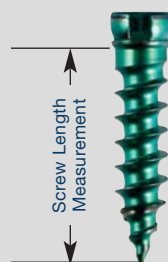
- 4.0mm Primary
- 4.35mm Revision

Available in 3 Screw Lengths:

- 12, 14 and 16mm

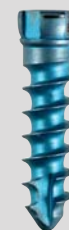
Available in 2 Screw Tip Designs:

- Self-Drilling and Self-Tapping



Self-Drilling

Screw length is measured from underside of plate to tip of the screw (Bone Purchase)



Self-Tapping

4.0mm Fixed, Self-Drilling		4.0mm Variable, Self-Drilling		4.0mm Fixed, Self-Tapping	
Screw Length	Part Number	Screw Length	Part Number	Screw Length	Part Number
12mm	4402-1412	12mm	4402-3412	12mm	4402-2412
14mm	4402-1414	14mm	4402-3414	14mm	4402-2414
16mm	4402-1416	16mm	4402-3416	16mm	4402-2416

4.0mm Variable, Self-Tapping		4.35mm Fixed, Self-Tapping		4.35mm Variable, Self-Tapping	
Screw Length	Part Number	Screw Length	Part Number	Screw Length	Part Number
12mm	4402-4412	12mm	4402-2512	12mm	4402-4512
14mm	4402-4414	14mm	4402-2514	14mm	4402-4514
16mm	4402-4416	16mm	4402-2516	16mm	4402-4516

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Inspired by surgeons, Lanx specializes in systems and implants for all segments of spinal surgery. Integrating leading technology, intellectual property and state-of-the-art engineering, each product is designed to simplify surgery and improve patient outcomes.

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