



# Ascent<sup>®</sup>

Posterior Occipital Cervico-Thoracic  
(POCT) System



## Ascent Operative Technique

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## INTRODUCTION

The Ascent POCT System allows surgeons to address complicated fusion cases from the base of the skull to the thoracic region. While the occipital plate enables fixation to the occiput, the detailed engineering of the multi-axial screws and cross connectors simplify the procedure. The multi-axial screws feature 66° of angulation which minimizes rod contouring. The multi-plane adjustable cross connectors are pre-assembled and utilize a drop-in design for easy insertion.



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Posterior Occipital Cervico-Thoracic  
(POCT) System



## 1. PRE-OPERATIVE PLANNING AND PATIENT POSITIONING

Preoperative planning is critical in the preparation for spinal surgery.

A complete radiographic evaluation (A/P and lateral films) of the patient should be completed for proper diagnosis prior to surgery.

Carefully place the patient in the prone position following induction of anesthesia.

## 2. EXPOSURE AND PEDICLE IDENTIFICATION

Incise the skin and subcutaneous tissue longer than the planned fusion. Once bleeding is controlled, deepen the exposure through the fascia level and dissect laterally to the transverse processes.

In general, the entrance of the pedicle is located at the intersection of a horizontal line parallel to the upper 1/3 of the transverse process and a vertical line through the middle of the superior facet.



Fig. 3a

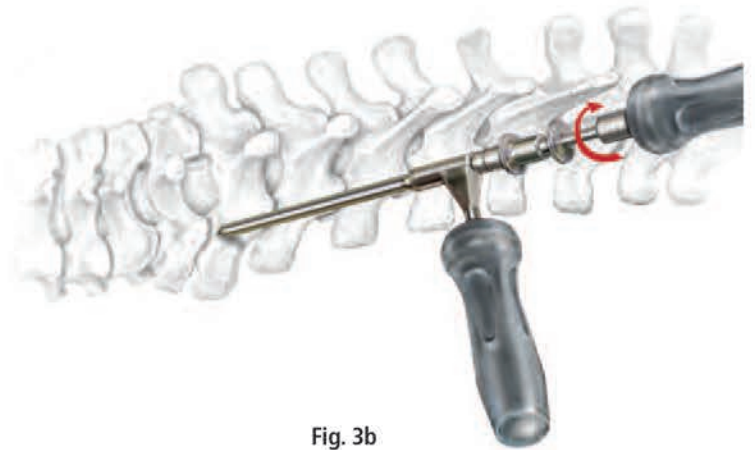


Fig. 3b

### 3. PEDICLE PREPARATION AND SCREW LENGTH SELECTION

#### Bone Awl

Penetrate the cortex of the bone with the bone awl. (Fig. 3a)

#### DRILL

Slide the adjustable drill stop over the drill. Place the appropriate drill securely into the modular handle. Set the drill stop to the appropriate drilling depth (between 6-30mm in 2mm increments).

Insert the drill into the drill guide and drill to the appropriate depth. (Fig. 3b) A positive stop on the drill stop will prevent over-drilling.

X-rays may be helpful in the intraoperative assessment of appropriate pedicle depth and screw length.



Fig. 4



Fig. 5

#### 4. BONE PROBE

Use the bone probe to elongate the hole to the desired depth in the pedicle canal.

**Warning:**

If resistance is felt while advancing the probe, the position in the pedicle canal should be evaluated via radiograph. When advancing the probe, a change in resistance is a warning that the wall of the pedicle is in danger of being perforated.

A laminectomy can be performed to visualize and feel the medial, cephalad and caudad aspect of the pedicle.

#### 5. EVALUATION

**Sounders**

Use the straight sounder or the curved sounder to evaluate the condition of the cortical wall of the pedicle. Apply the appropriate probe and externally or internally palpate the wall or canal of the pedicle to ensure the wall is not perforated.





Fig. 6

## 6. DEPTH GAUGE

Check the final screw position by placing a series of K-wires or X-ray markers (not provided) in the pedicle canals and taking a lateral and A/P X-ray. Use the depth gauge to confirm the depth of the pilot hole.



Fig. 7

## 7. TAP

Place the tap securely into the modular handle. Tap to the appropriate depth.



Fig. 8

## 8. SCREW INSERTION

Place the multi-axial screw driver securely into the modular handle. Attach the appropriate multi-axial screw to the multi-axial screw driver.

Insert multi-axial screw into the prepared pedicle until it is positioned to the correct level. The screw should extend approximately 50% to 80% into the vertebral body and should not create soft tissue impingement at closure.

## SCREW ADJUSTERS

Use the screw adjuster to adjust the sagittal height of the multi-axial screw and the screw head adjuster to align the saddles of the multi-axial screw.

At the cephalad aspect of the construct, the screws should not impinge upon the facet joint.



Fig. 9a

## 9a. ROD CONTOURING AND CUTTING

Determine the rod contour and length required with the rod template. (Fig. 9a)





Fig. 9b

### 9b. ROD CUTTER

Once the correct length is established, use the rod cutter to cut rod to the desired requirements. (Fig. 9b)

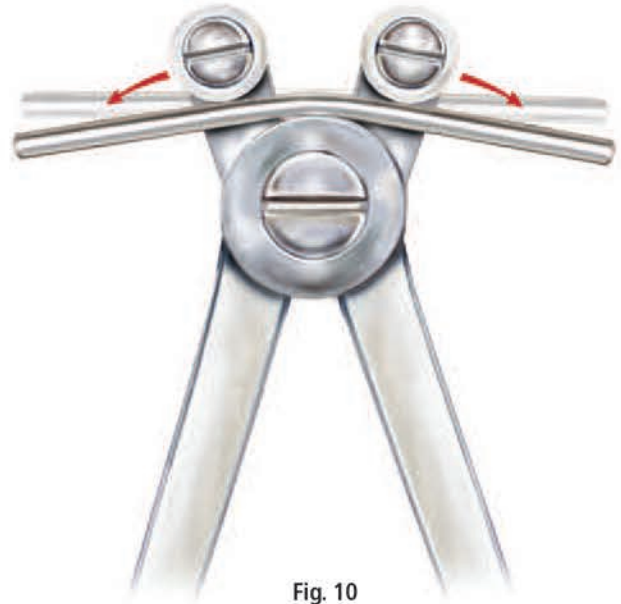


Fig. 10

### 10. ROD BENDER

Utilizing the rod bender, create the correct contour, referencing the rod template as a guide.



Fig.11

## 11. ASSEMBLY

Utilizing the rod bender, create the correct contour, referencing the rod template as a guide.



Fig. 12

## 12. SET SCREW PLACEMENT

Use the set screw holder to position and tighten the set screw on the multi-axial screw. Seat the rod fully in the screw saddle with the aid of the rod pusher.

## ROD REDUCTION

The rod reducer is used to seat the rod into the screw saddle for subsequent set screw placement.



Fig. 13

### 13. FINAL TIGHTENING

Position the counter torque wrench over the multi-axial screw. Place the torque limiting driver securely into the hex of the set screw. Turn the torque limiting driver clockwise to tighten the set screw to 22 in-lbs.



Fig. 14

### 14. CROSS CONNECTORS

Cross connectors provide additional torsional rigidity to the construct by bridging the parallel rods. Position the cross connector template directly over the rods and measure the distance across the rods.

#### AXIAL ROD CONNECTOR

The Ascent POCT System can be linked to any Orthofix Spinal Implants 5.5mm rod-based thoracolumbar system (such as the SFS or Firebird System) using the axial rod connector or the parallel rod connector.



Fig. 15

### 15. CROSS CONNECTOR

Select the appropriate cross connector and position on the rods. Lock the cross connectors into position using the cross connector torque limiting driver.

An audible click will indicate when the final torque of 12 in-lb is achieved.

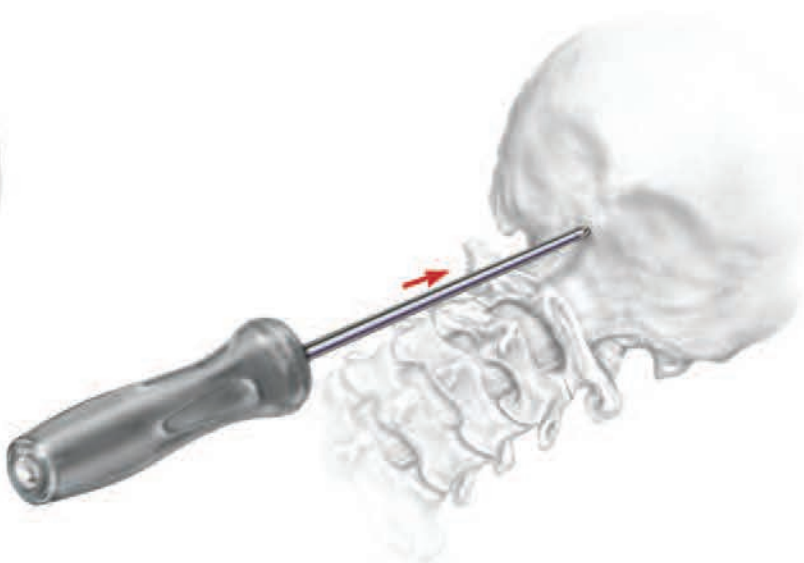
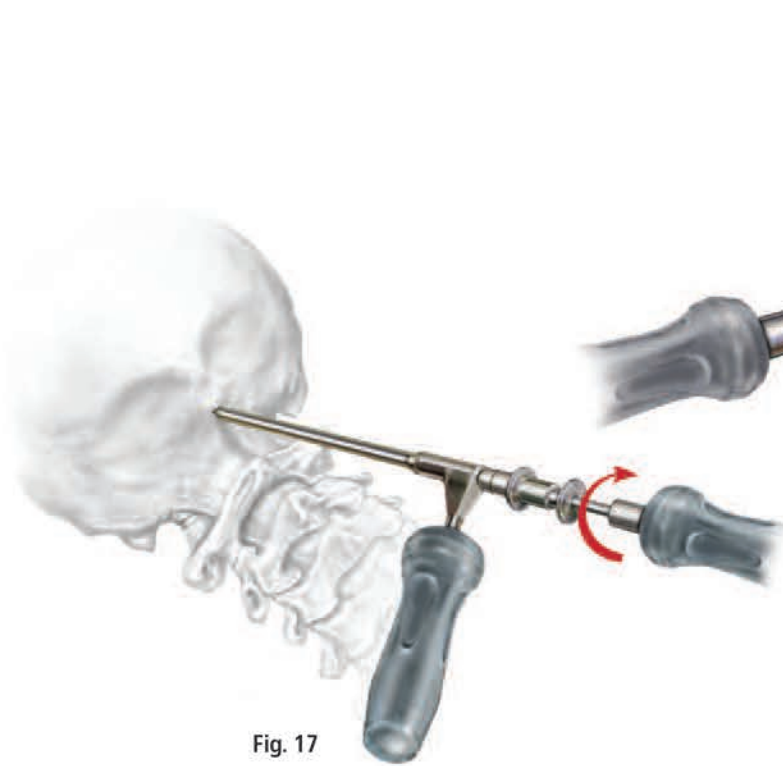


Fig. 16

### 16. OCCIPITAL ANCHOR PLATE POSITIONING

The exterior occipital protuberance (EOP) and the nuchal line may be used as a guide for plate position and placement. Position the occipital plate below the EOP and the superior nuchal lines.



## 17. OCCIPUT PREPARATION

Bone Awl - Penetrate the cortex of the occiput using the bone awl.

## 18. DRILL

Slide the adjustable drill stop over the drill. Place the appropriate drill securely into the modular handle. Set the drill stop to the appropriate drilling depth (between 6-14mm in 2mm increments).

Occipital screws should be placed bicortical to obtain adequate fixation.





Fig. 19

### 19. TAP

Place the tap securely into the modular handle. Tap to the appropriate depth.



Fig. 20

### 20. OCCIPITAL BONE SCREW INSERTION

Place the occipital anchor plate into its previously determined position. Attach the appropriate length occipital bone screw to the occipital bone screw driver. Insert the occipital bone screw into the prepared hole locking the occipital anchor plate into position.

Place remaining screws using the same technique.



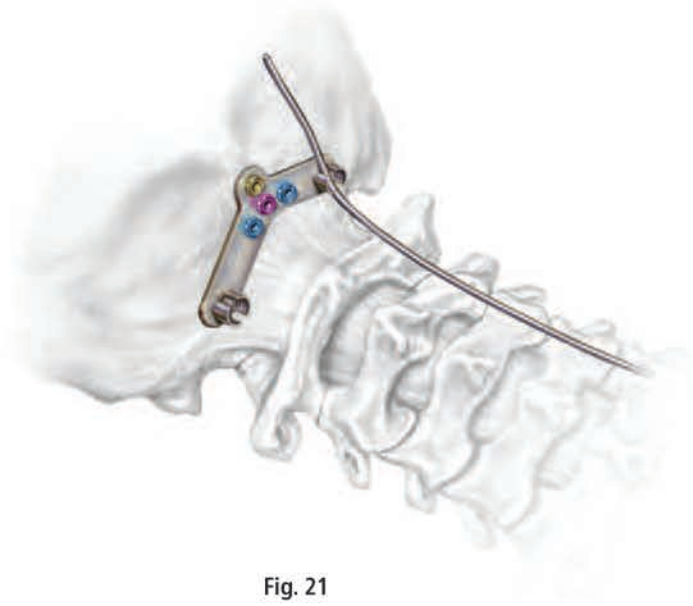


Fig. 21

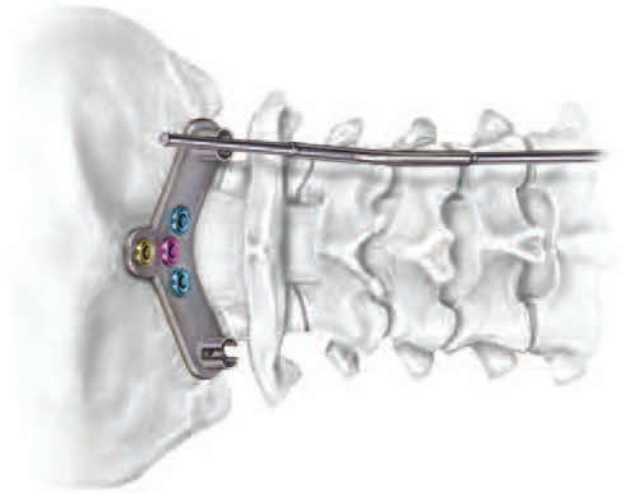


Fig. 22

## 21. OCCIPITAL-CERVICAL ROD

Determine the appropriate occipito-cervical lordotic length with the rod template.

### ROD CUTTER

Once the correct length is established, use the rod cutter to cut the rod to the desired requirements

## 22. CONSTRUCT ASSEMBLY

Once positioning is achieved, place the rod in the saddle of the occipital anchor plate.



Fig. 23



Fig. 24

### 23. FINAL TIGHTENING

Use the set screw holder to position the set screw on the occipital anchor plate.

Position the counter torque wrench over the set screw and rod. Place the torque limiting driver securely into the hex of the set screw. Turn the torque limiting driver clockwise to tighten the set screw to 22 in-lb.

### 22. IMPLANT REMOVAL

To remove set screws from multi-axial screws or the saddles on the occipital plate, use **Set Screw Driver 65-1064** attached to **Handle (36-1011 or 52-1011)**.

To remove set screws from cross connectors, use the **Driver (HD2060787)** attached to **Extension (EX201076)** and **Handle (MA101000-A or TA101000)** from the Evolution-C kit.

To remove set screws from hooks, use the **Driver (57-0027)** attached to **Handle (36-1011 or 52-1011)**.

### 24. SONGER SPINAL CABLE SYSTEM

The Songer Spinal Cable System, to be used with the Ascent POCT System, allows for wire/cable attachment to the posterior spine.

**ASCENT POSTERIOR OCCIPITAL CERVICO-THORACIC SYSTEM****IMPLANTS****Multi-Axial Screws**

65-3310	3.5mm x 10mm Multi-Axial Screw
65-3312	3.5mm x 12mm Multi-Axial Screw
65-3314	3.5mm x 14mm Multi-Axial Screw
65-3316	3.5mm x 16mm Multi-Axial Screw
65-3318	3.5mm x 18mm Multi-Axial Screw
65-3320	3.5mm x 20mm Multi-Axial Screw
65-3322	3.5mm x 22mm Multi-Axial Screw
65-3324	3.5mm x 24mm Multi-Axial Screw
65-3326	3.5mm x 26mm Multi-Axial Screw
65-3328	3.5mm x 28mm Multi-Axial Screw
65-3330	3.5mm x 30mm Multi-Axial Screw
65-3410	4.0mm x 10mm Multi-Axial Screw
65-3412	4.0mm x 12mm Multi-Axial Screw
65-3414	4.0mm x 14mm Multi-Axial Screw
65-3416	4.0mm x 16mm Multi-Axial Screw
65-3418	4.0mm x 18mm Multi-Axial Screw
65-3420	4.0mm x 20mm Multi-Axial Screw
65-3422	4.0mm x 22mm Multi-Axial Screw
65-3424	4.0mm x 24mm Multi-Axial Screw
65-3426	4.0mm x 26mm Multi-Axial Screw
65-3428	4.0mm x 28mm Multi-Axial Screw
65-3430	4.0mm x 30mm Multi-Axial Screw

**3.0mm Diameter Rods/Set Screw**

65-2002	Domed Set Screw
65-2060	Occipital Rod
65-2070	70mm Rod
65-2120	120mm Rod
65-2200	200mm Rod

**Lateral Offset and Axial Rod Connector**

65-6310	10mm Lateral Offset Connector
65-6425	3.0mm to 5.5mm Axial Rod Connector

**Hook Implants**

67-3010	4.5mm Laminar Hook
67-3011	6.0mm Laminar Hook

**Occipital Bone Screws and Anchors**

65-2006	6mm Occipital Bone Screw
65-2008	8mm Occipital Bone Screw
65-2010	10mm Occipital Bone Screw
65-2012	12mm Occipital Bone Screw
65-2014	14mm Occipital Bone Screw
65-2040	31mm Occipital Anchor
65-2041	37mm Occipital Anchor
65-2042	45mm Occipital Anchor
65-2043	50mm Occipital Anchor

**Cross Connectors**

65-5320	20mm Cross Connector Assembly
65-5325	25mm Cross Connector Assembly
65-5330	30mm Cross Connector Assembly
65-5335	35mm Cross Connector Assembly
65-5340	40mm Cross Connector Assembly
65-5345	45mm Cross Connector Assembly
65-5350	50mm Cross Connector Assembly

**Cables**

65-2050	Double Loop Cable w/Four (4) Crimps
65-2053	Single Loop Cable w/Two (2) Crimps
65-2056	Crimp Two (2) Pack

## ASCENT POCT SYSTEM

### INSTRUMENTS

#### Disposable Instruments

65-1015 3.5mm Drill Bit

65-1016 4.0mm Drill Bit

65-1055 70mm Trial Rod

65-1056 120mm Trial Rod

65-1057 200mm Trial Rod

55-1072 Cross Connector Bender Left

55-1073 Cross Connector Bender Right

57-0027 Set Screw Driver, (Spline Drive)

57-0047 Set Screw Torque Handle

65-1001 Bone Awl

65-1002 Bone Probe

65-1004 Straight Sounder

65-1005 Curved Sounder

65-1006 Depth Gauge

65-1010 Drill Guide

65-1011 Drill Stop

65-1025 3.5mm Tap

65-1026 4.0mm Tap

65-1030 Modular Handle

65-1037 Multi-Axial Screw Driver

65-1041 Rod Cutter

65-1042 Rod Bender

65-1043 Rod Holder

65-1045 Screw Head Adjuster

65-1048 Compressor

65-1049 Cannulated Rod Pusher

65-1060 Domed Set Screw Holder

65-1062 Screw Adjuster

65-1063 Occipital Screw Driver

65-1064 Domed Set Screw Driver (used w/65-2002)

65-1065 Torque Limiting Driver

65-1066 Counter Torque Wrench

65-1068 Tensioner and Crimper

65-1070 Distractor

65-1071 Rod Reducer

65-1072 Crimp Insertor

65-1074 Cable Cutter

65-1076 Cable Torque Driver

65-1078 Nerve Hook

65-1082 Cross Connector Set Screw Driver

65-1083 Cross Connector Torque Limiting Driver

65-1086 Cross Connector Template 20mm

65-1087 Cross Connector Template 25-30mm

65-1088 Cross Connector Template 35-40mm

65-1089 Cross Connector Template 45-50mm

65-1090 System Case #1

65-1091 System Case #2

65-1092 Cable System Instrument Case #3

67-0001 Hook Holder, Straight

67-0003 Hook Holder, Angled

67-0040 Laminar Elevator



Please visit [Orthofix.com/IFU](https://Orthofix.com/IFU) for full information on indications for use, contraindications, warnings, precautions, adverse reactions and sterilization.

Caution: Federal law (USA) restricts this device to sale by or on the order of a physician. Proper surgical procedure is the responsibility of the medical professional. Operative techniques are furnished as an informative guideline. Each surgeon must evaluate the appropriateness of a technique based on his or her personal medical credentials and experience.



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