



A-dec 532/533 Delivery System

INSTALLATION GUIDE



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A-dec 532 Delivery System



A-dec 533 Delivery System

Product Models and Versions Covered in this Document

Models	Versions	Description
511	B	Dental Chair
532, 533	B	Delivery System

Before You Begin



CAUTION When removing or replacing covers, take care not to damage any wiring or tubing. Verify that the covers are secure after replacing them.



ATTENTION Circuit boards are sensitive to static electricity. Electrostatic Discharge (ESD) precautions are required when touching a circuit board or making connections to or from the circuit board. Circuit boards should be installed only by an electrician or qualified service person.



NOTE Information that is critical to a successful installation is shaded like this note throughout the guide.

- Verify that manual air and water shut-offs are installed.
- Purge any debris from air and water lines.
- Check with local building and code authorities about installation requirements specific to your location.

Recommended Tools

- | | | |
|---|--------------------|-----------------------------|
| • Hex key set | • Umbilical snake | • Phillips head screwdriver |
| • 3/8", 7/16", and 5/8" sockets and ratchet | • Sleeve pusher | • Level |
| • Shipping strap from the 511 dental chair | • Diagonal cutters | • Anti-static wrist strap |
| • Torque wrench | • Tape measure | |

Install the Delivery System

Install the Delivery System Rigid Arm



NOTE If you are installing both Traditional and Continental delivery systems at one customer location, be sure to keep the rigid arms with the system they are intended for. The posts of the rigid arms for Continental delivery systems are taller than the posts of the rigid arms for Traditional delivery systems.



NOTE If the system includes an A-dec 372L/572L dental light or A-dec 482/381 monitor mount, install the delivery system first, then use the installation instructions that ship with the light/monitor mount for that module's installation.



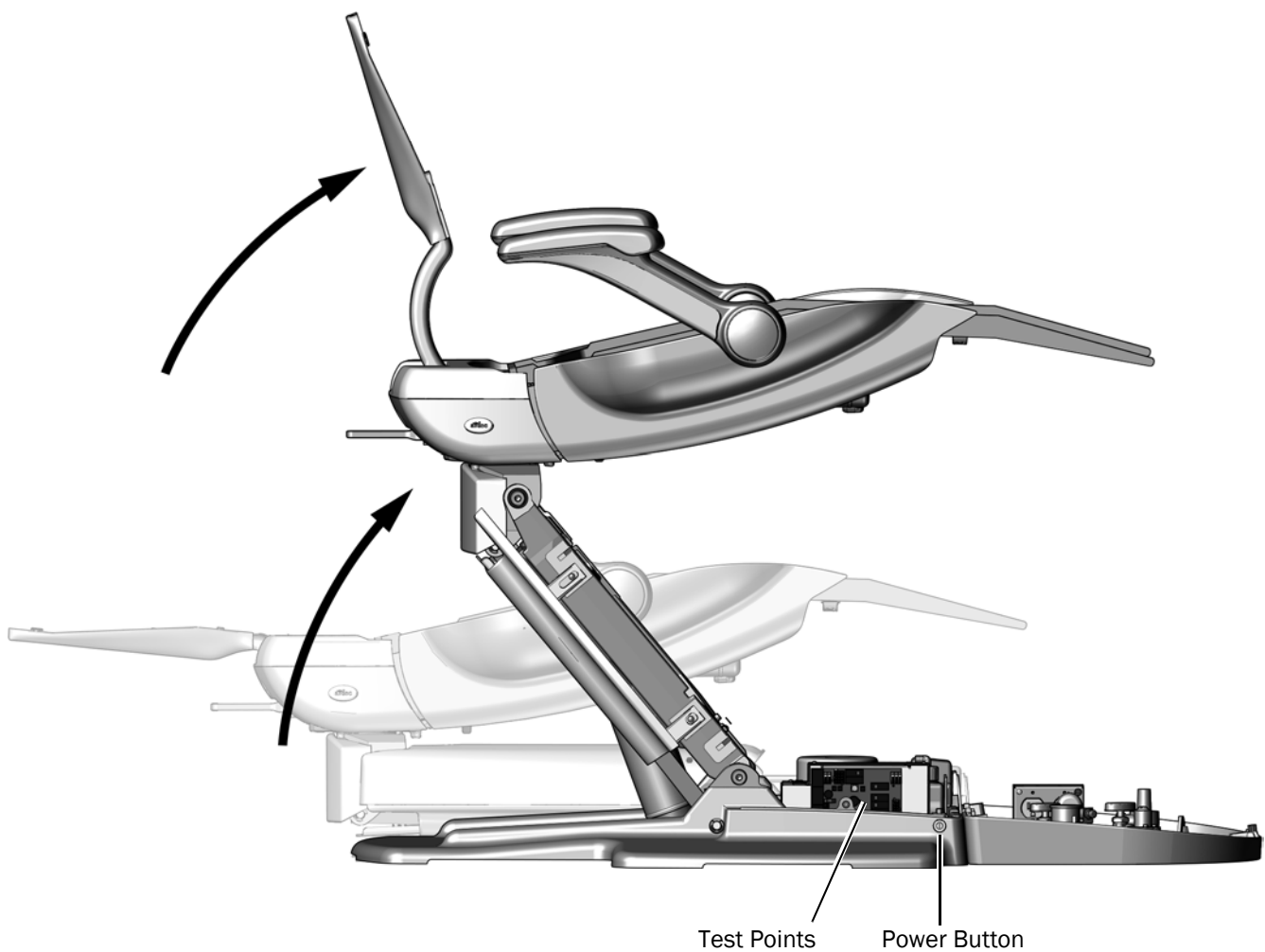
NOTE If the delivery system is added to a system that already has an A-dec 372L/572L dental light or A-dec 482/381 monitor mount system installed, first uninstall the light/monitor mount and discard the front mount, then install the delivery system and reinstall the light/monitor mount.

Recommended Tools

- Shipping strap from the A-dec 511
- Torque wrench with 5/8" socket and ratchet
- Hex key
- Tape measure

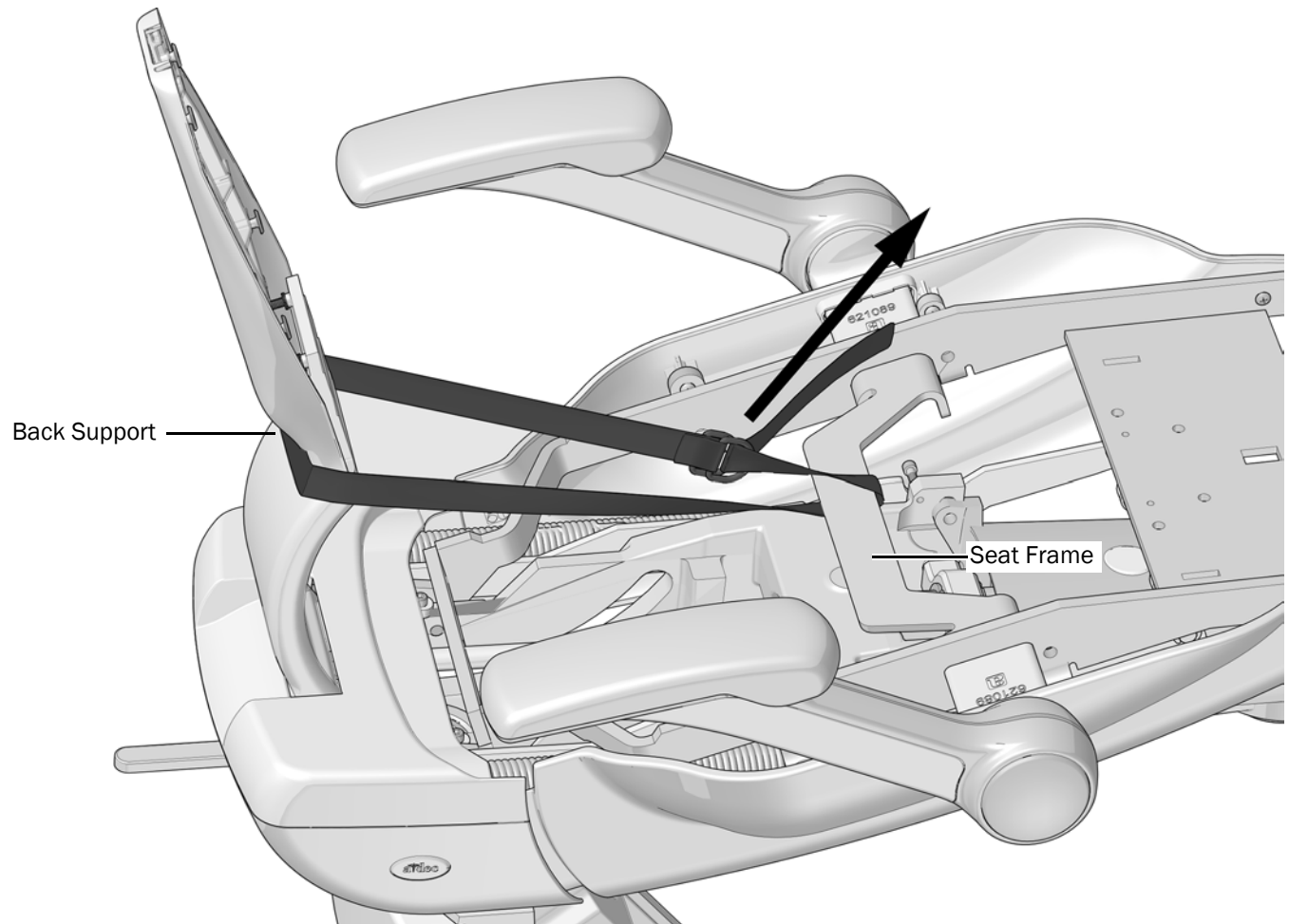
Task 1.

- 1** Turn on the power to the chair.
- 2** Use the test points to fully raise the chair base and chair back.



Task 2.

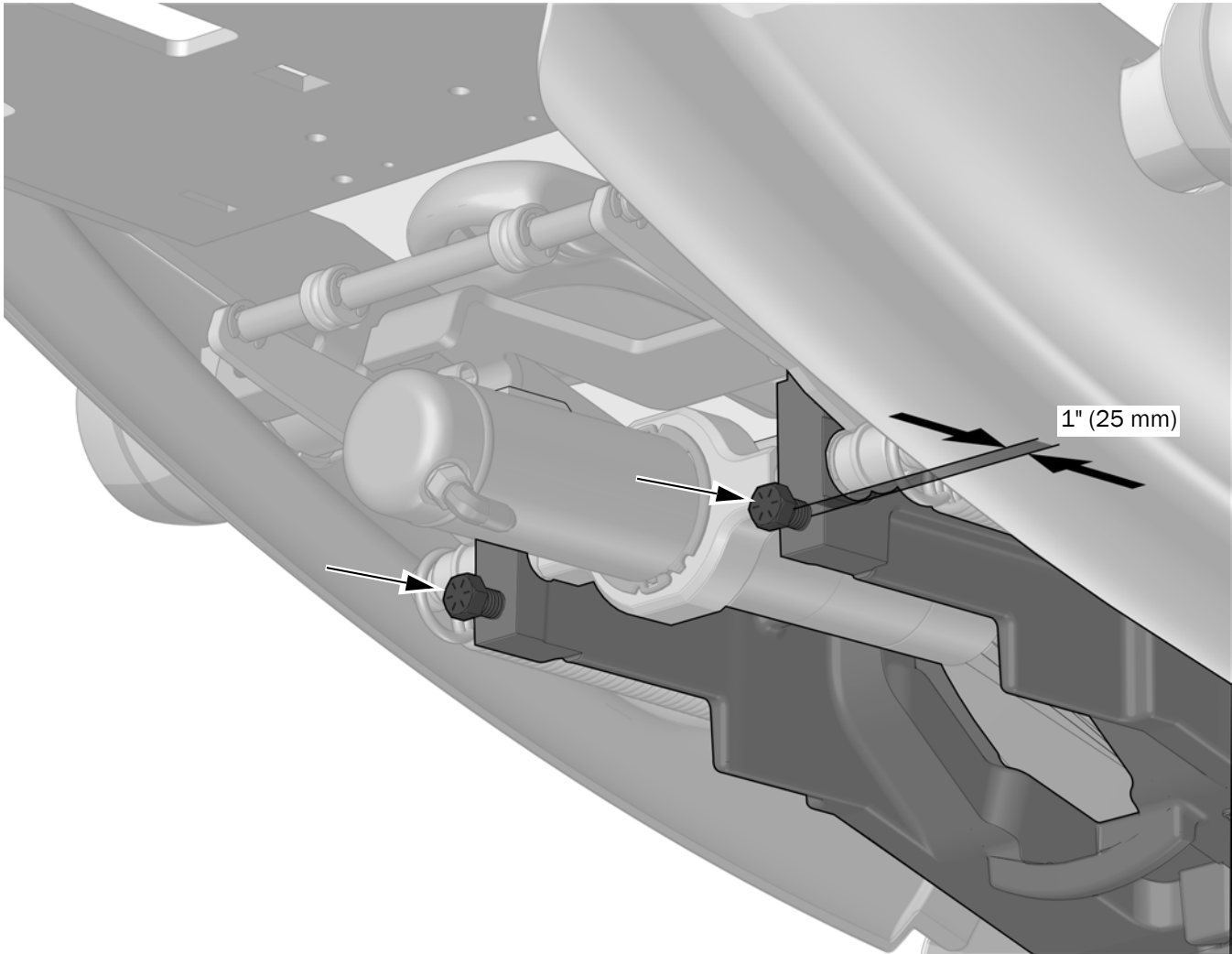
To provide better access to the upper structure, use the shipping strap from the A-dec 511 dental chair to lift and secure the seat frame.

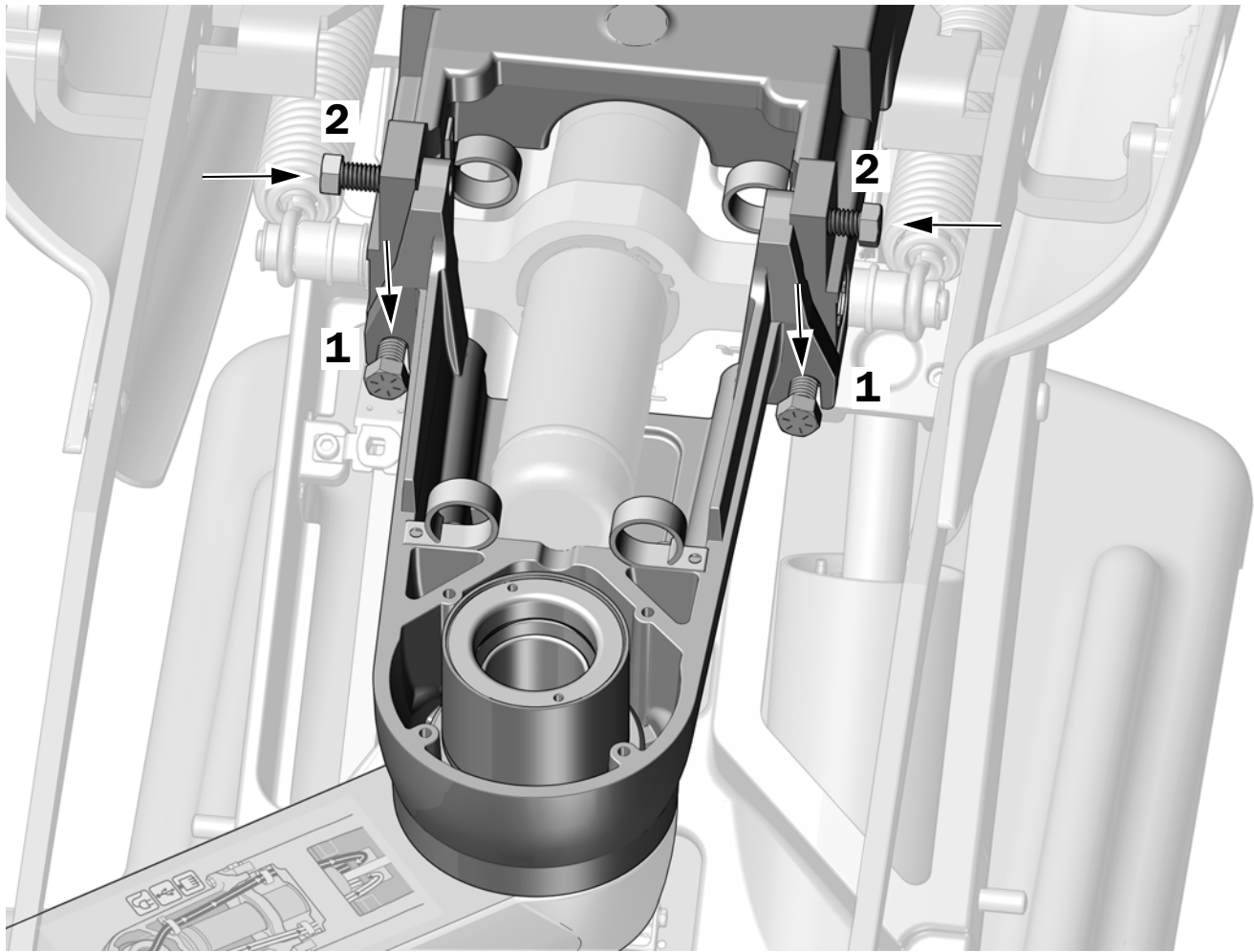


- 1** Route the shipping strap up through the seat frame and around the back support where it is secured to the chair back.
- 2** Thread the strap between the two loops and tighten to lift and hold the seat frame.

Task 3.

- 1 Screw two bolts into the front of the upper structure until the head of the bolts are approximately 1" (25 mm) from the upper structure.



Task 4.

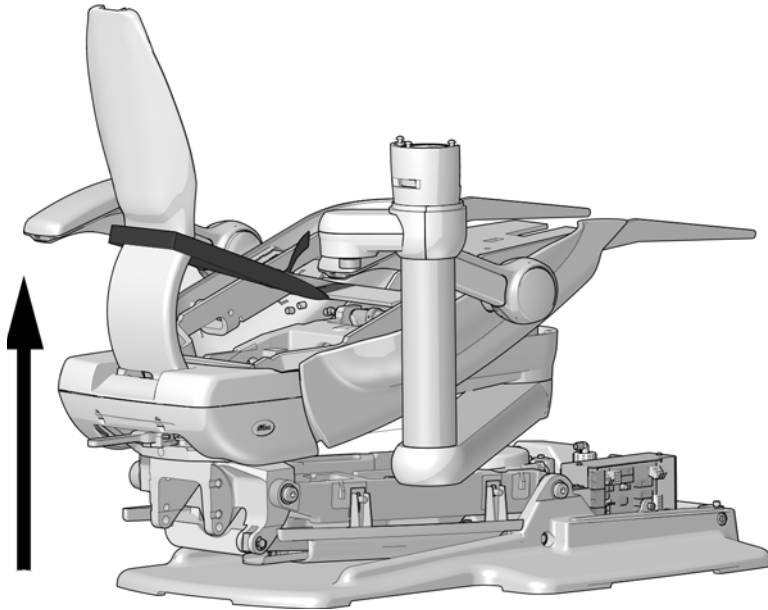
- 1** Set the rigid arm/front mount assembly onto the two bolts in the front of the upper structure.
- 2** Align the holes in the top of the front mount with the holes in the upper structure and use a 5/8" socket and ratchet to install two bolts through the holes.
- 3** Use a torque wrench with a 5/8" socket to securely tighten all four bolts with 50 ft-lbs (68 Nm) of torque.

Install the Delivery System

Recommended Tools

- Torque wrench with 5/32" hex key
- Umbilical snake

Task 1.



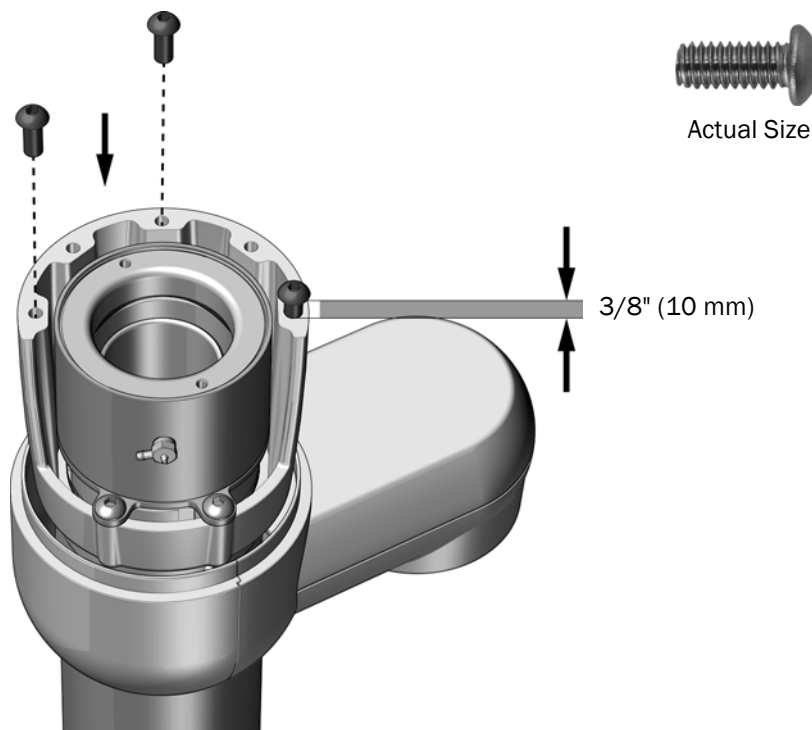
- 1 Turn on the power to the chair.
- 2 Use the test points to fully raise the chair.



CAUTION Failure to turn off or disconnect the power before you begin this procedure can lead to electrical shock.

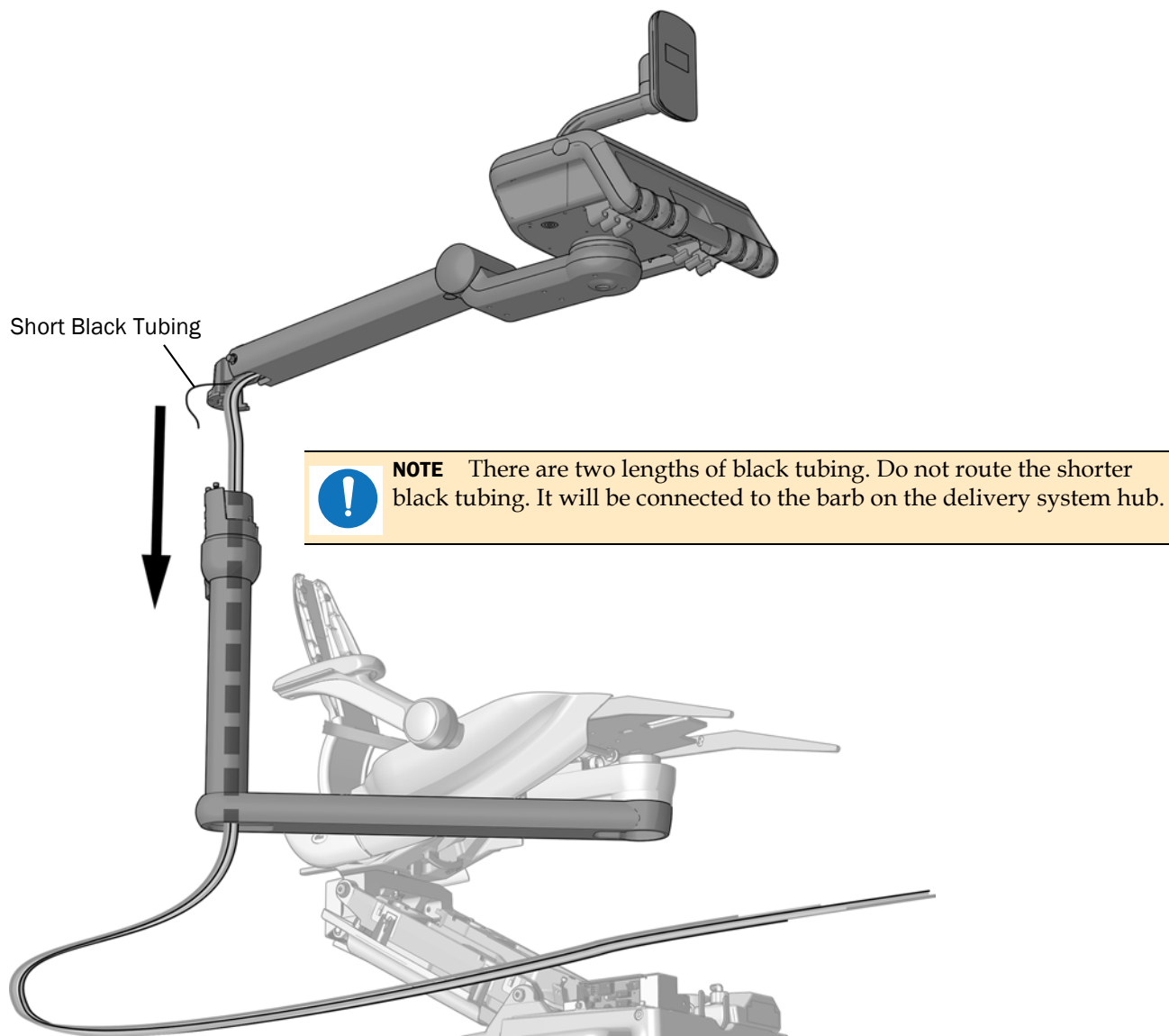
- 3 Turn off power to the chair.

Task 2.



- 1** Use a $5/32"$ hex key to install three screws from the kit, one in each hole on the end and one in the middle hole. Install the screws until the head of the screws are approximately $3/8"$ (10 mm) from the hub. Do not tighten the screws all the way down.

Task 3.

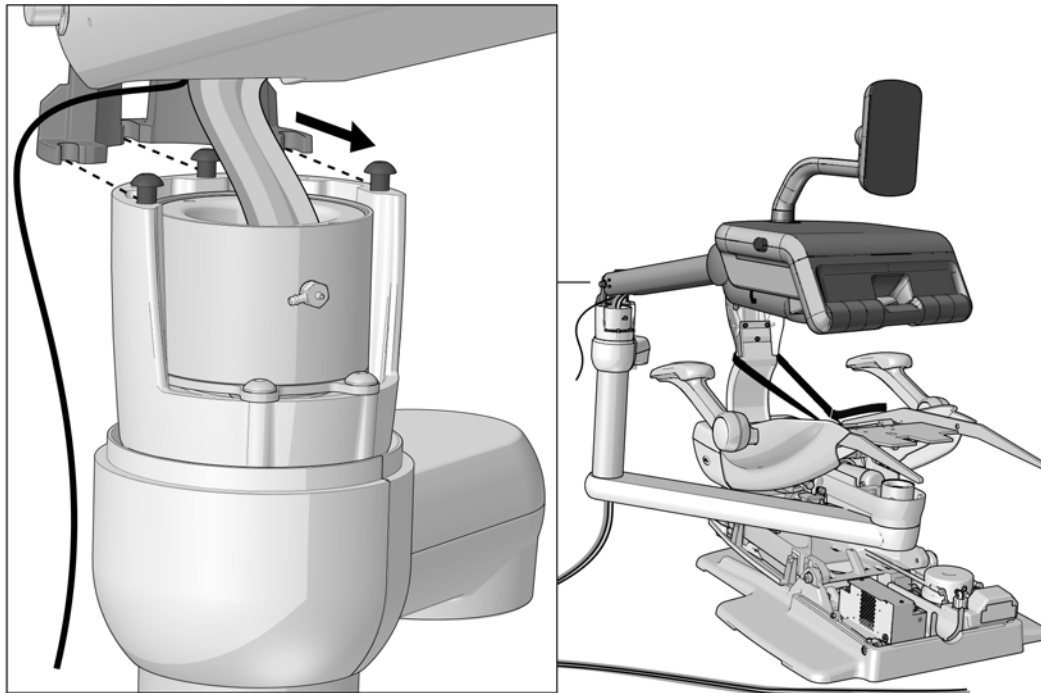


NOTE Do not remove or replace the USB cable. It has been designed to last the life of the system.

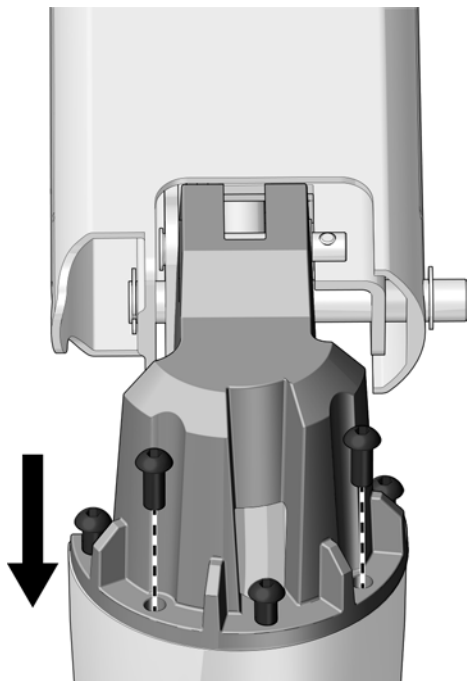


CAUTION If the umbilical starts twisting when it's pulled down through the rigid arm, rotate it back to keep it straight.

- 1** Position the delivery system rigid arm so its post is near the head of the chair on the patient's right side.
- 2** Route the umbilical down through the rigid arm.

Task 4.

- 1** Slide the hub of the delivery system's flexarm into place on the hub of the rigid arm so that the screws on the rigid arm go into the slots in the flexarm.

Task 5.

- 1** To secure the flexarm to the rigid arm, insert two screws into the holes in the hub and use a torque wrench with a 5/32" hex key to tighten all 5 screws with 60 in-lbs (6.8 Nm) of torque.

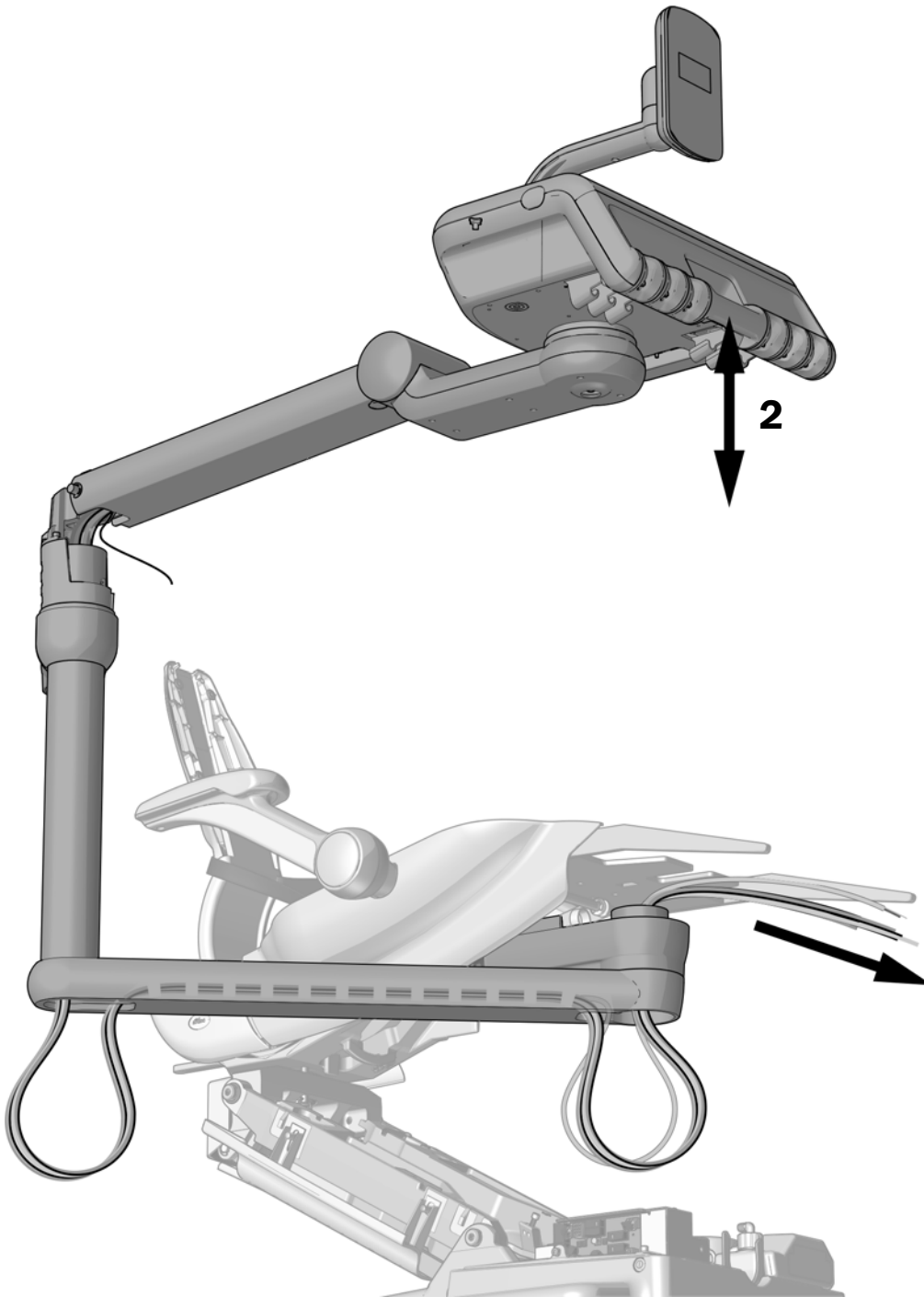


NOTE Make sure the bottom of the flexarm is flush with the top of the rigid arm hub.

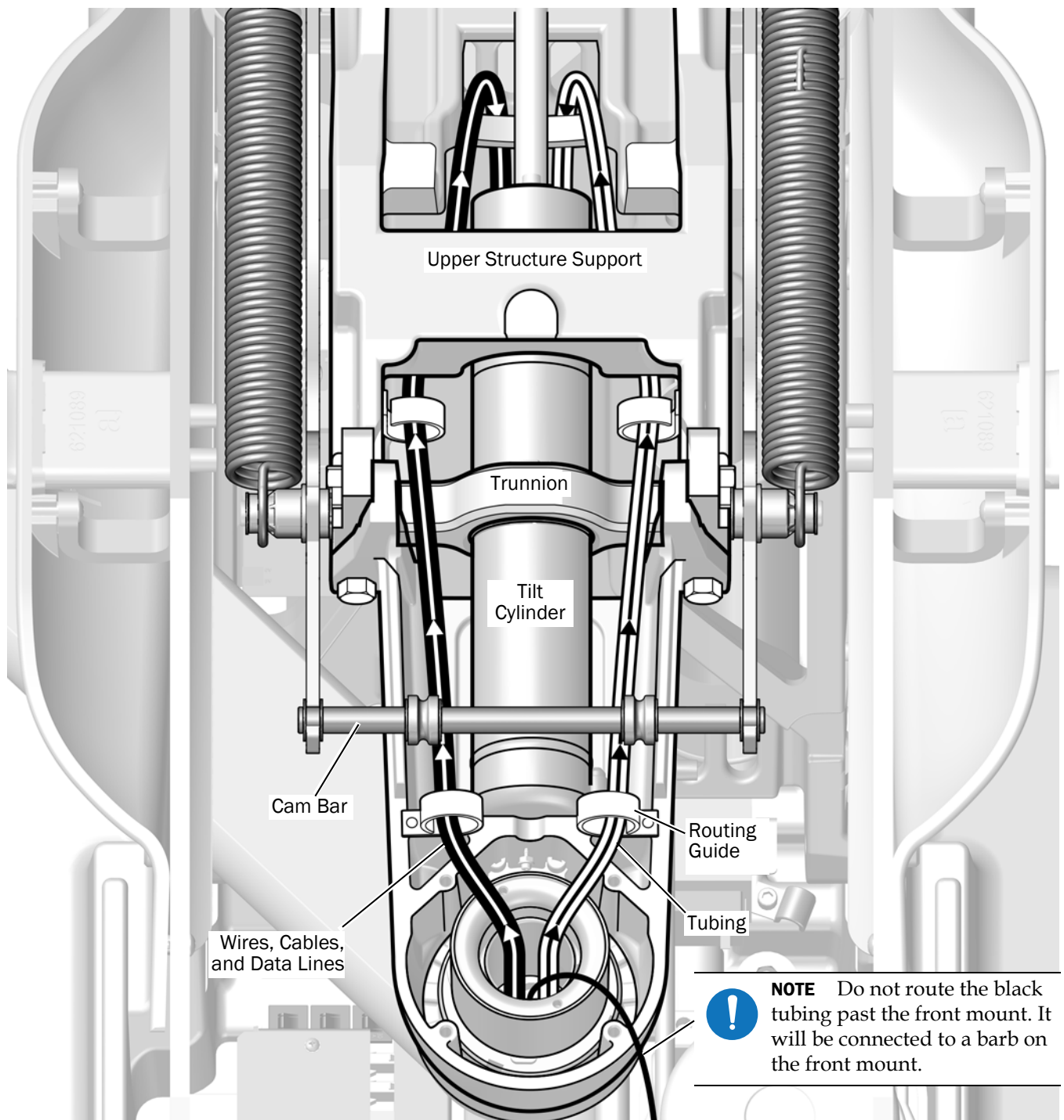


TIP Slightly lift the control head when securing the flexarm to reduce the tension on the screws.

Task 6.

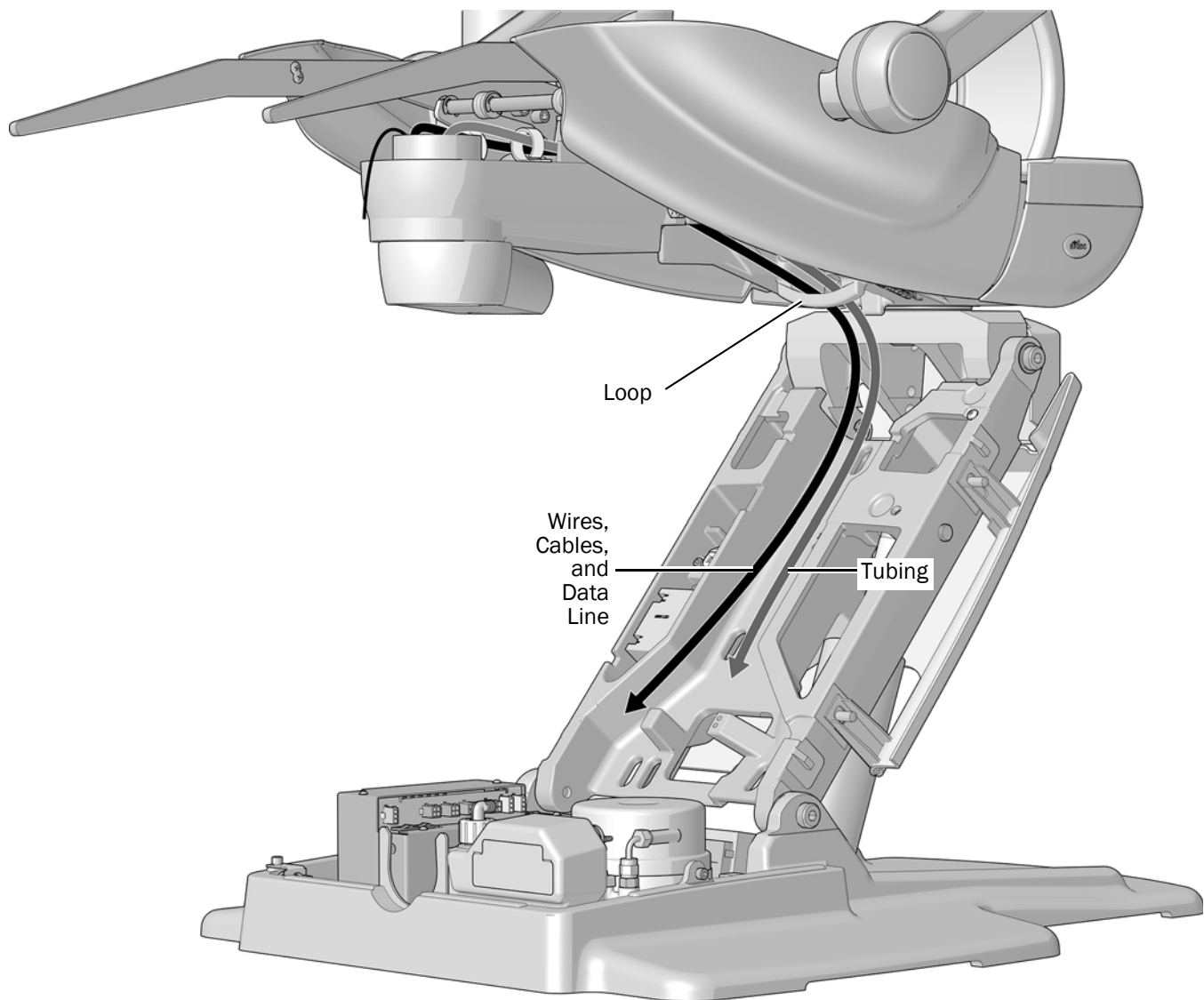


- 1** Route the umbilical through the rigid arm and up through the hole in the front mount.
- 2** Push the control head all the way down then back up to ensure there is enough play in the umbilical so that the control head can move easily.
- 3** Route the water bottle umbilical up through the hole in the front mount.

Task 7.

- 1** Route the wires, cables, and data line as shown on the left, through the routing guides, and under the upper structure.
- 2** Route the tubing, except the small black tubing, as shown on the right, through the routing guides, and under the upper structure.

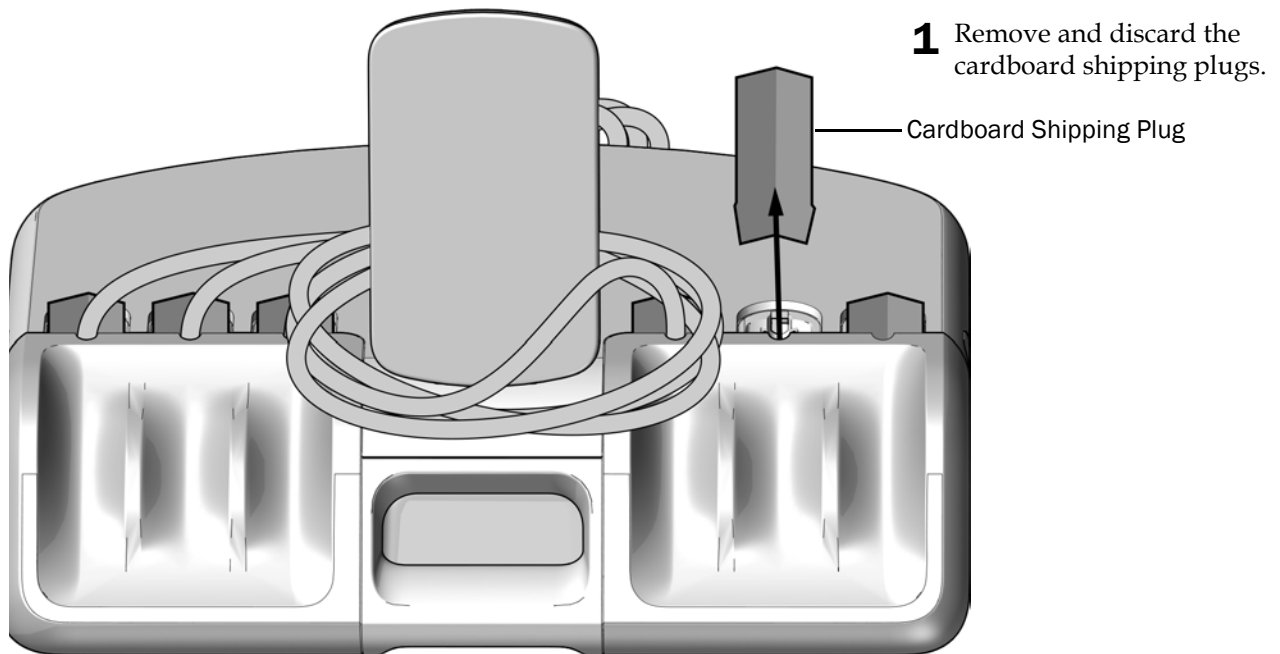
Task 8.



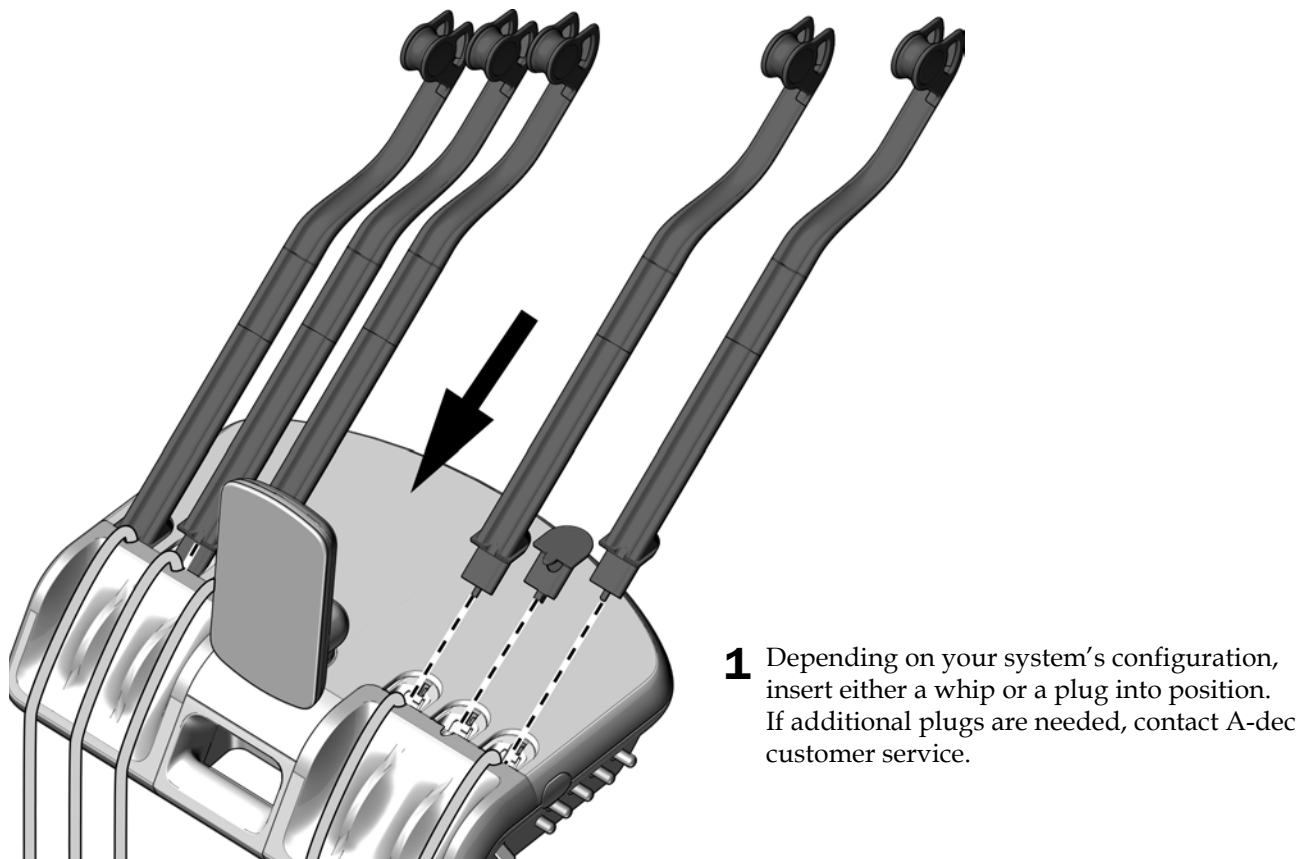
- 1** Route everything behind the loop and down the lift arm.
Keep the wires, cables, and data lines to the left and tubing to the right.
- 2** Remove the shipping strap from the seat frame and back support.

Install the Continental Whips (Continental only)

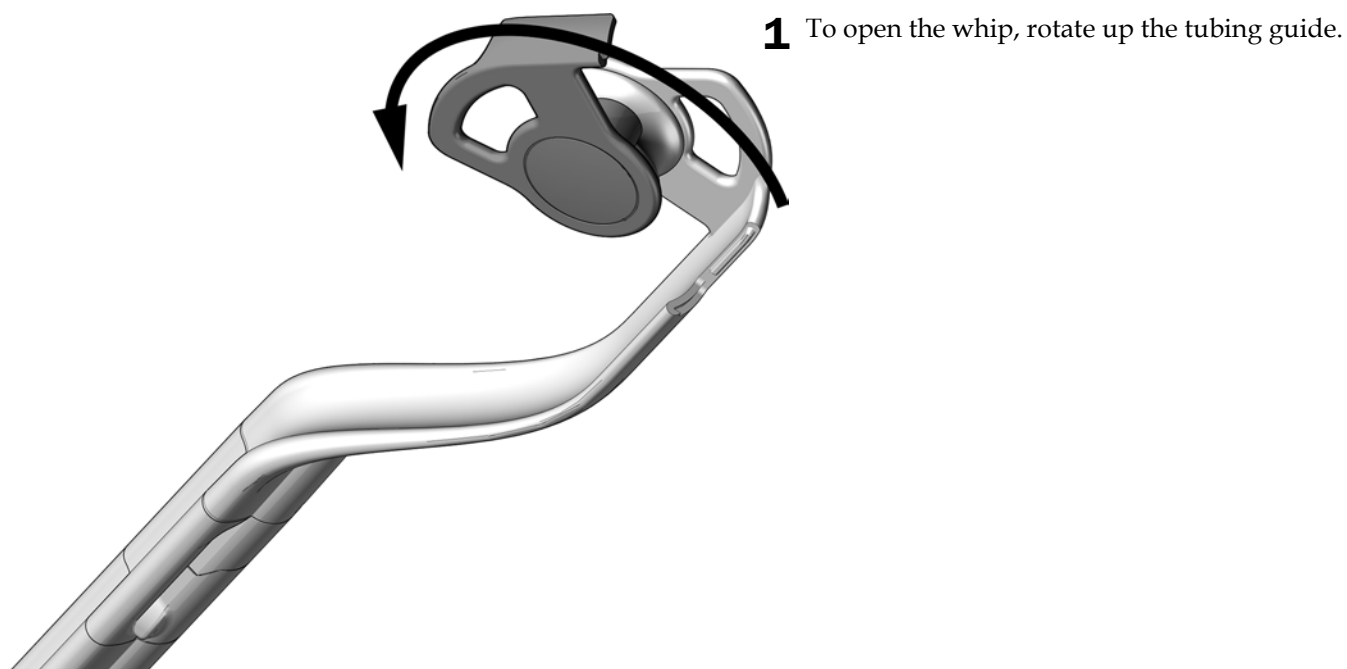
Task 1.



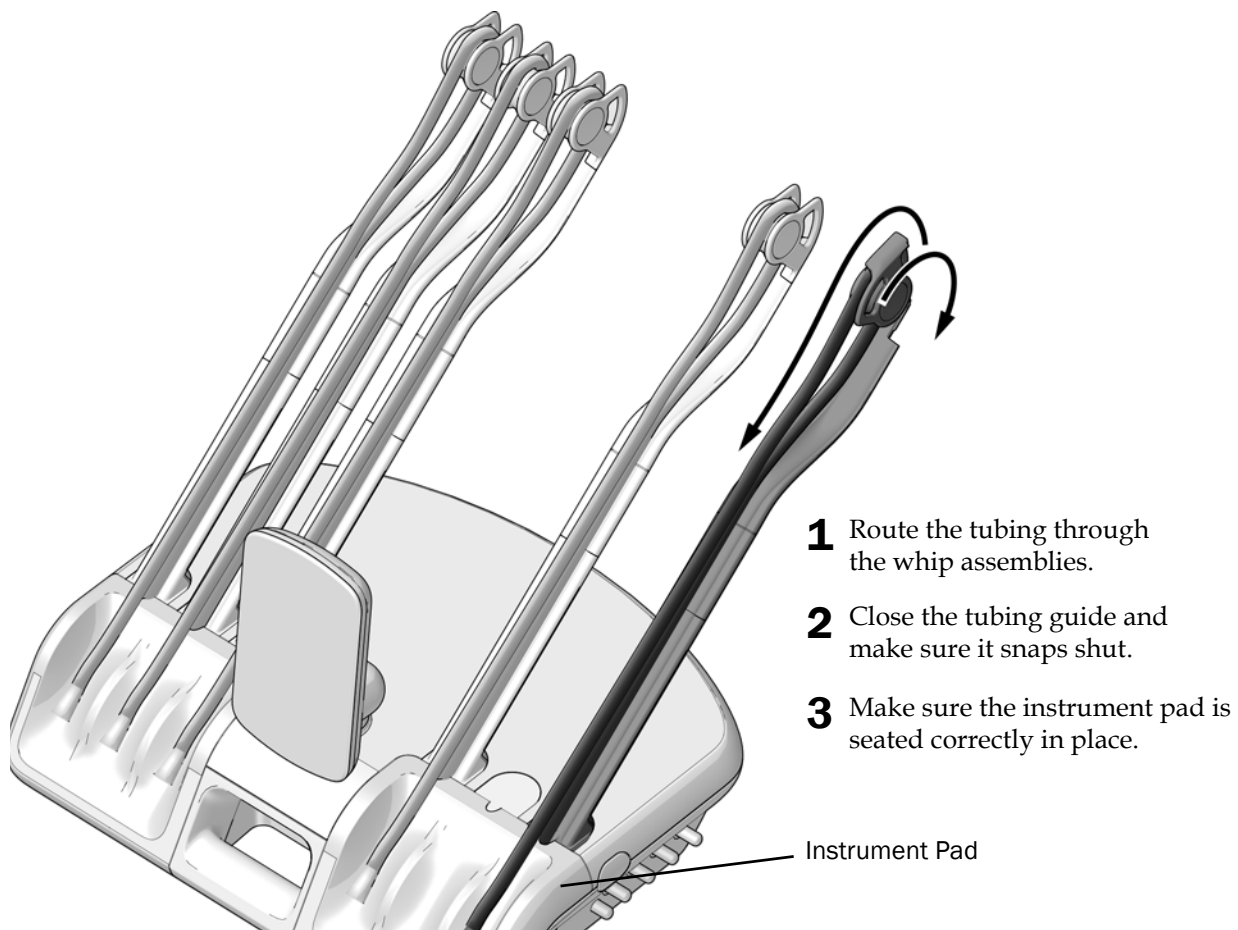
Task 2.



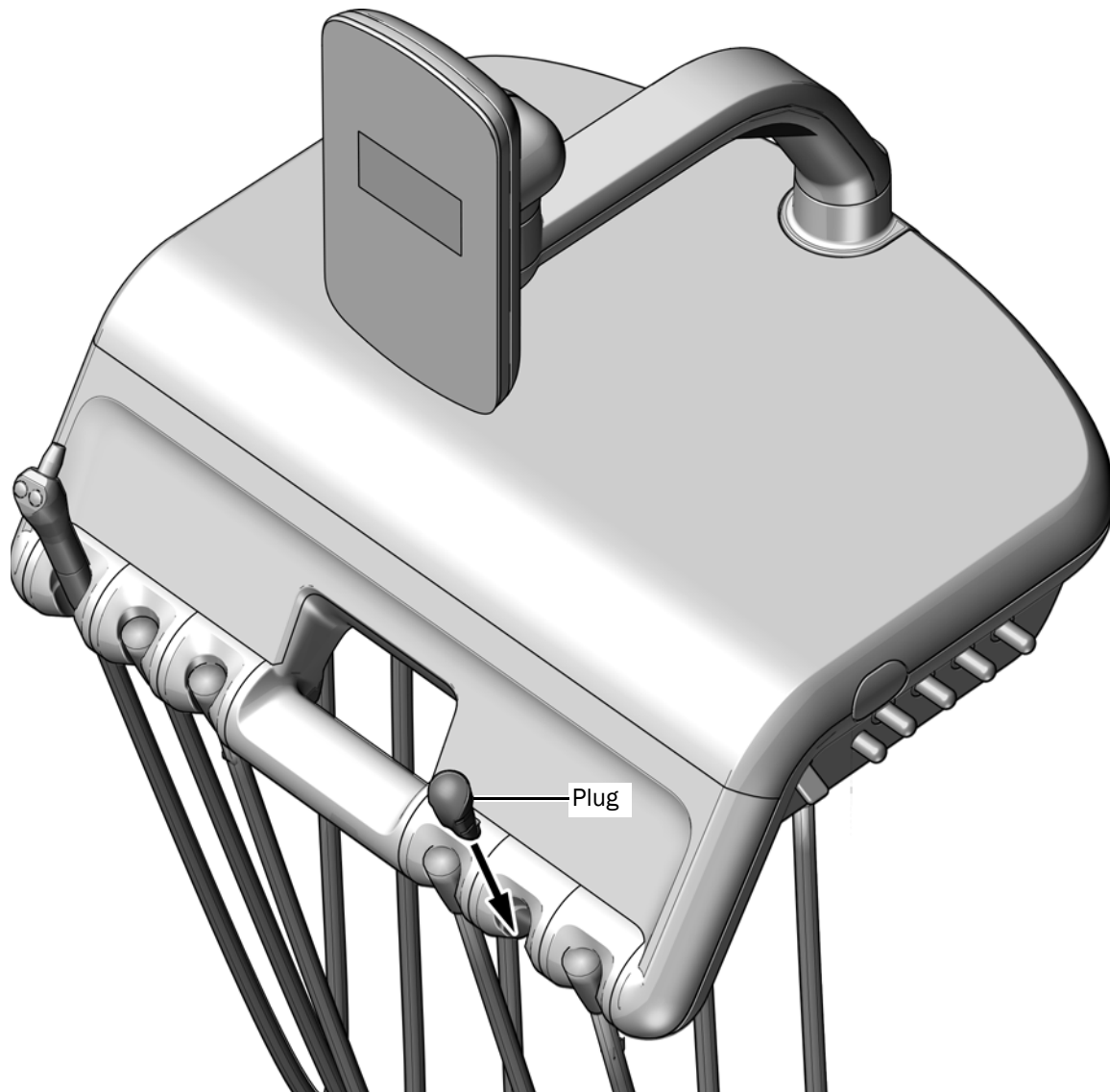
Task 3.



Task 4.



Install Traditional Plugs (Traditional only)



- 1** If a position does not include tubing, insert a plug.
If additional plugs are needed, contact A-dec customer service.

Install the Upper Tray Holder Mount (optional)

The instructions for installing an upper tray holder mount are the same whether it is installed on the left or the right.

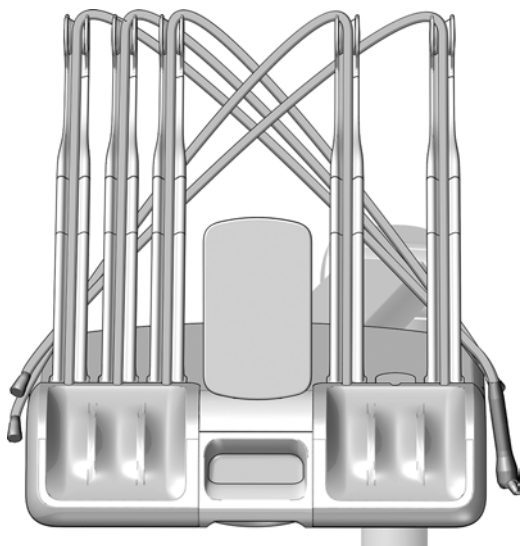
Recommended Tools

- Phillips head screwdriver
- 5/32" hex key



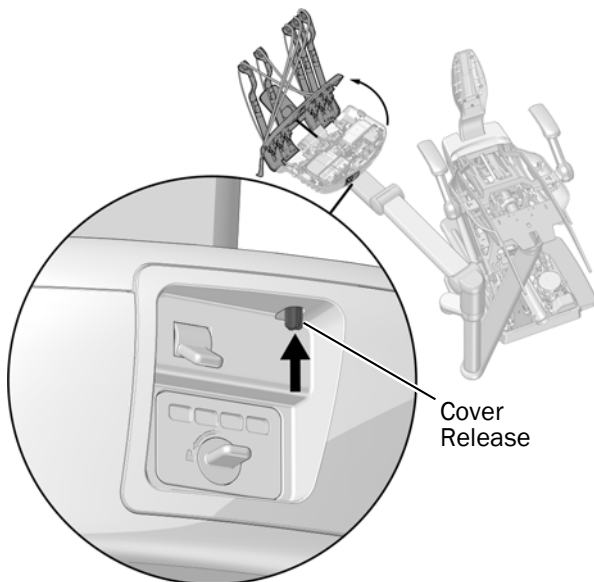
ATTENTION Circuit boards are sensitive to static electricity. Electrostatic Discharge (ESD) precautions are required when touching a circuit board or making connections to or from the circuit board. Circuit boards should be installed only by an electrician or qualified service person.

Task 1. Continental Delivery Systems only



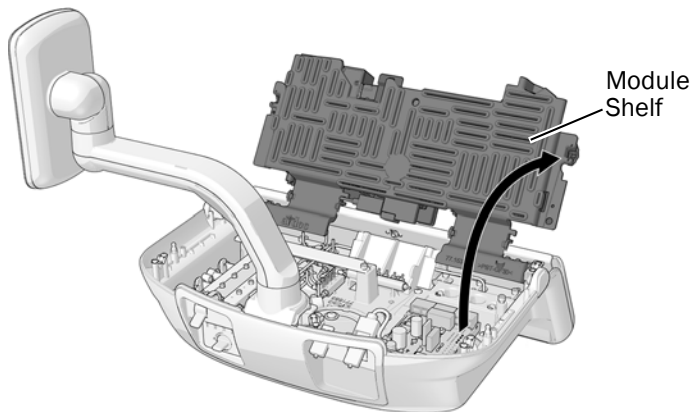
- 1** To avoid damaging syringes or handpieces when the cover is opened, lay each tubing behind the whips on the opposite side of the control head.

Task 2.

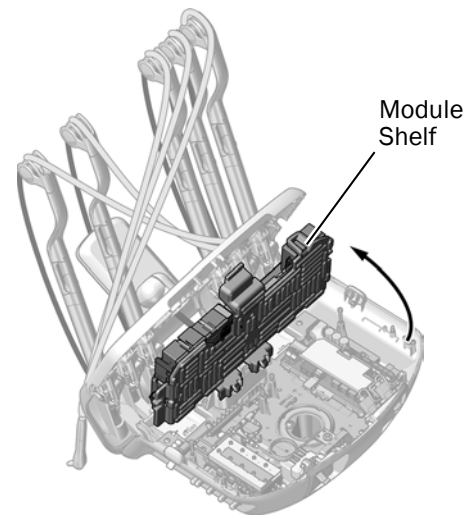


- 1** Turn off power to the system.
- 2** From the back of the control head, push up the cover release then open the control head.

Task 3.



Traditional Delivery System

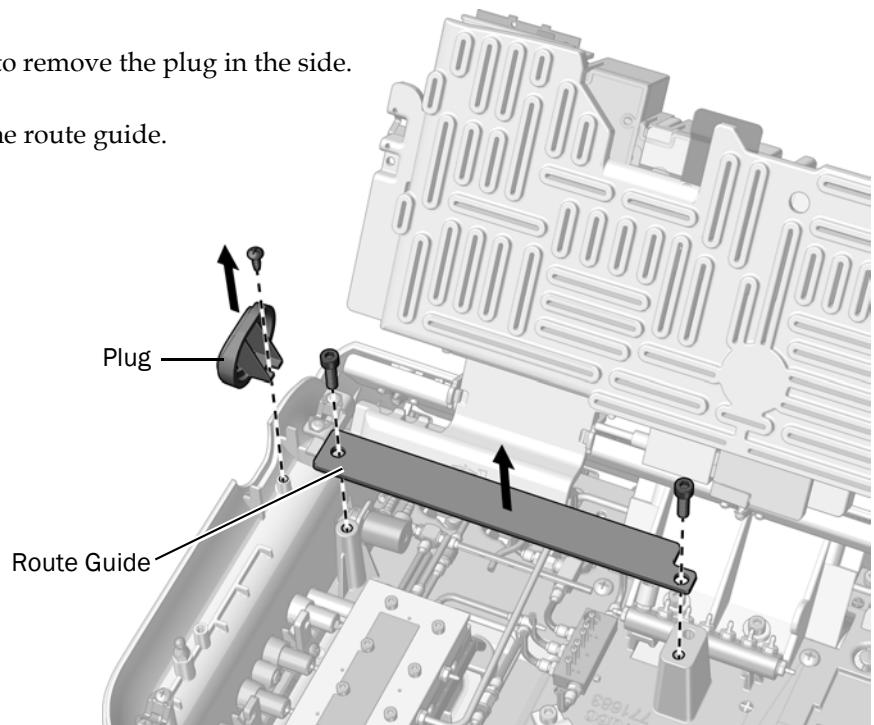


Continental Delivery System

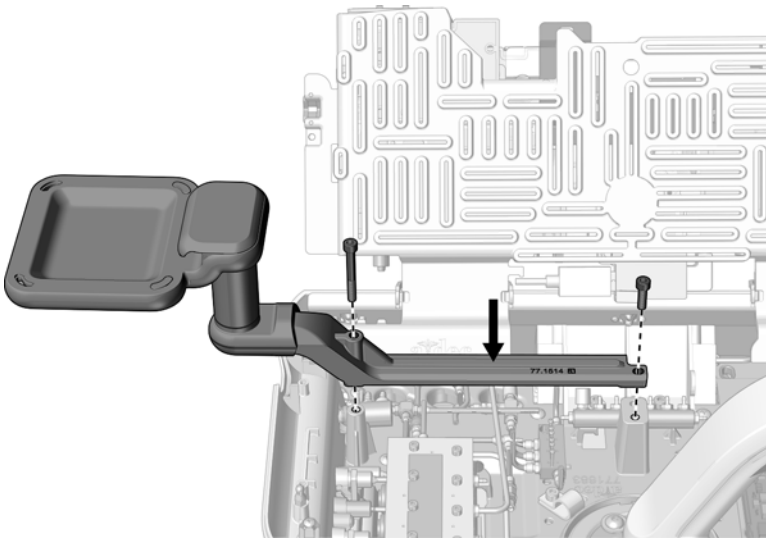
- 1** Lift up the module shelf.

Task 4.

- 1** Use a Phillips head screwdriver to remove the plug in the side.
- 2** Use a 5/32" hex key to remove the route guide.



Task 5.



CAUTION When installing the tray holder mount, take care not to pinch any wiring or tubing between the mount and control head.

- 1** Make sure all tubing and wiring are routed beneath the tray holder mount.
- 2** Use a hex key and two screws to secure the mount to the control head.

Install the Lower Tray Holder Mount (Continental only, optional)

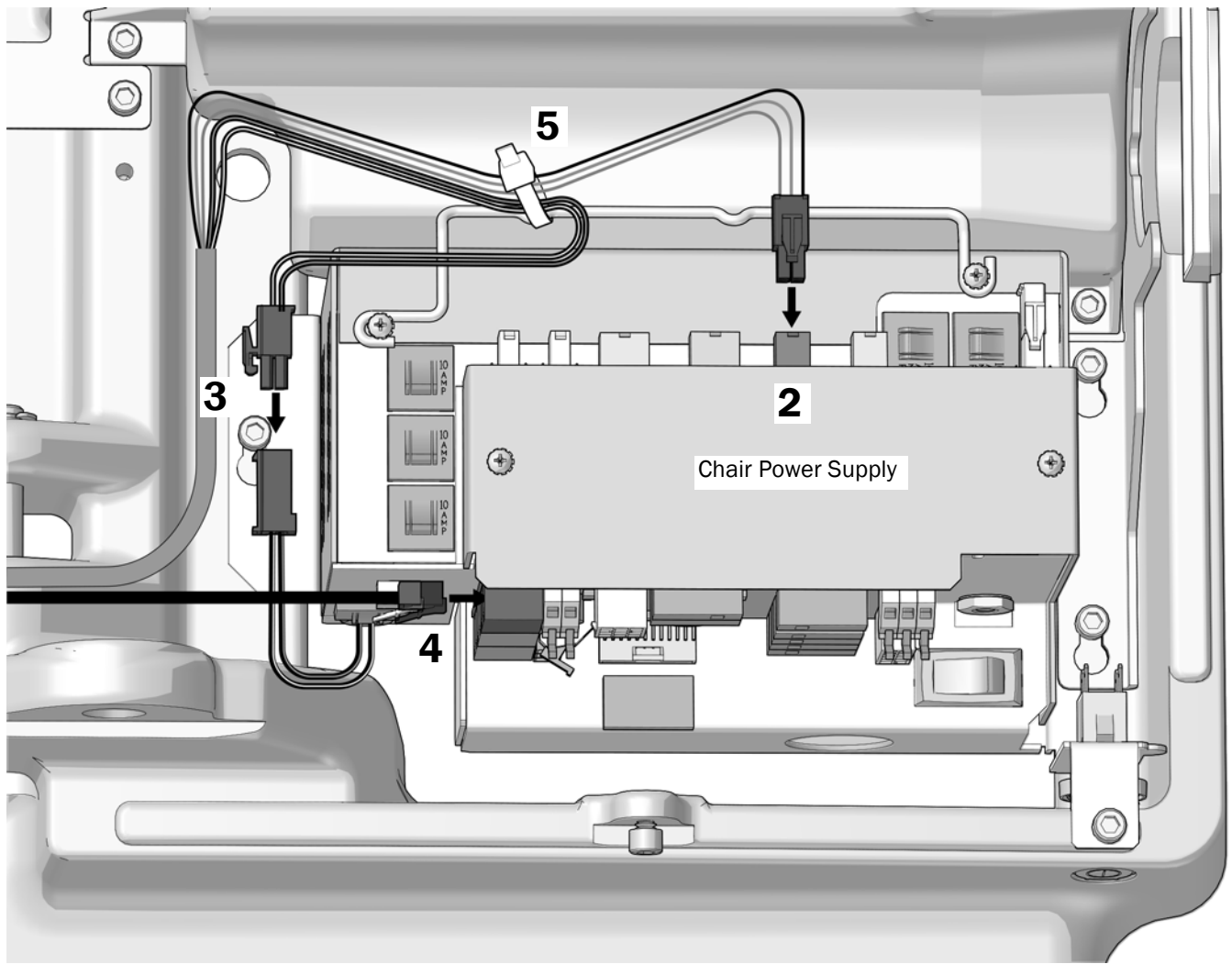
Recommended Tool

- 5/32" hex key



- 1** Use a hex key and three mounting screws to attach the tray holder mount to the bottom of the control head.

Connect the Wires and Data Lines



CAUTION Failure to turn off or disconnect the power before you begin this procedure can lead to product damage and result in serious injury or death.

- 1** Turn off the power to the system.
- 2** Connect the four-pin connector to the Assistant's Arm & Control Head connection.
- 3** Connect the two-position black connector to the black 24 VAC isolated lead.
- 4** Plug the data line into any data port.
- 5** Secure the wiring to the rail with cable ties.

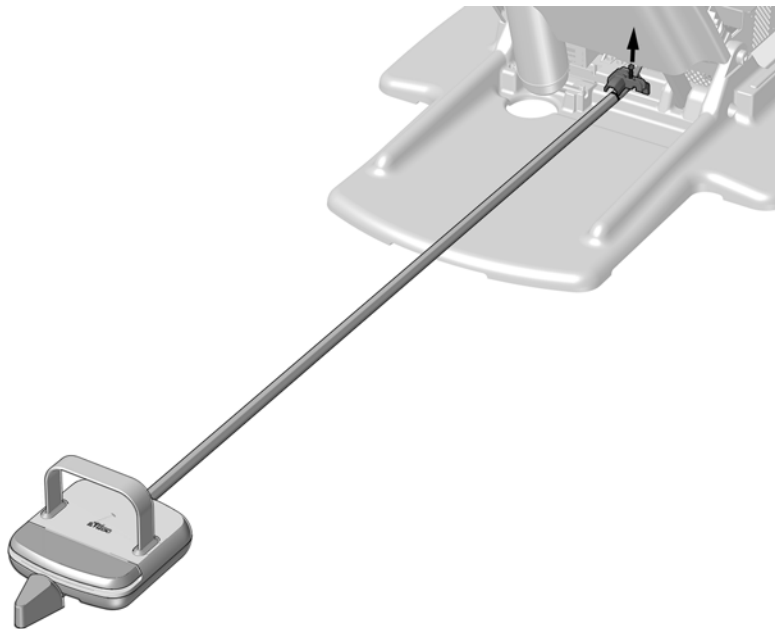
Connect the Tubing

Install the Foot Control

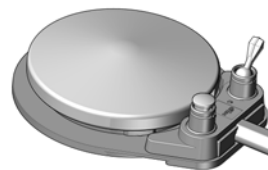
Recommended Tool

- 3/16" hex key

Task 1.



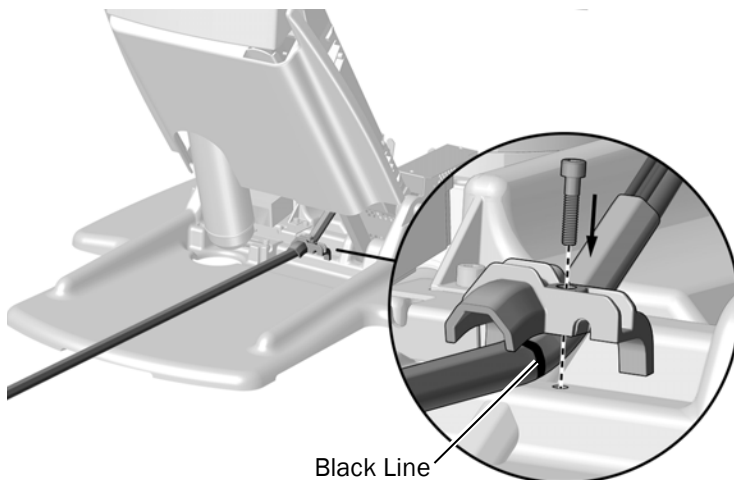
Lever Foot Control



Disc Foot Control

- 1** Use a 3/16" hex key to remove the strain relief.
- 2** From the back of the chair, route the foot control tubing over the strain relief's location to the front of the chair.

Task 2.



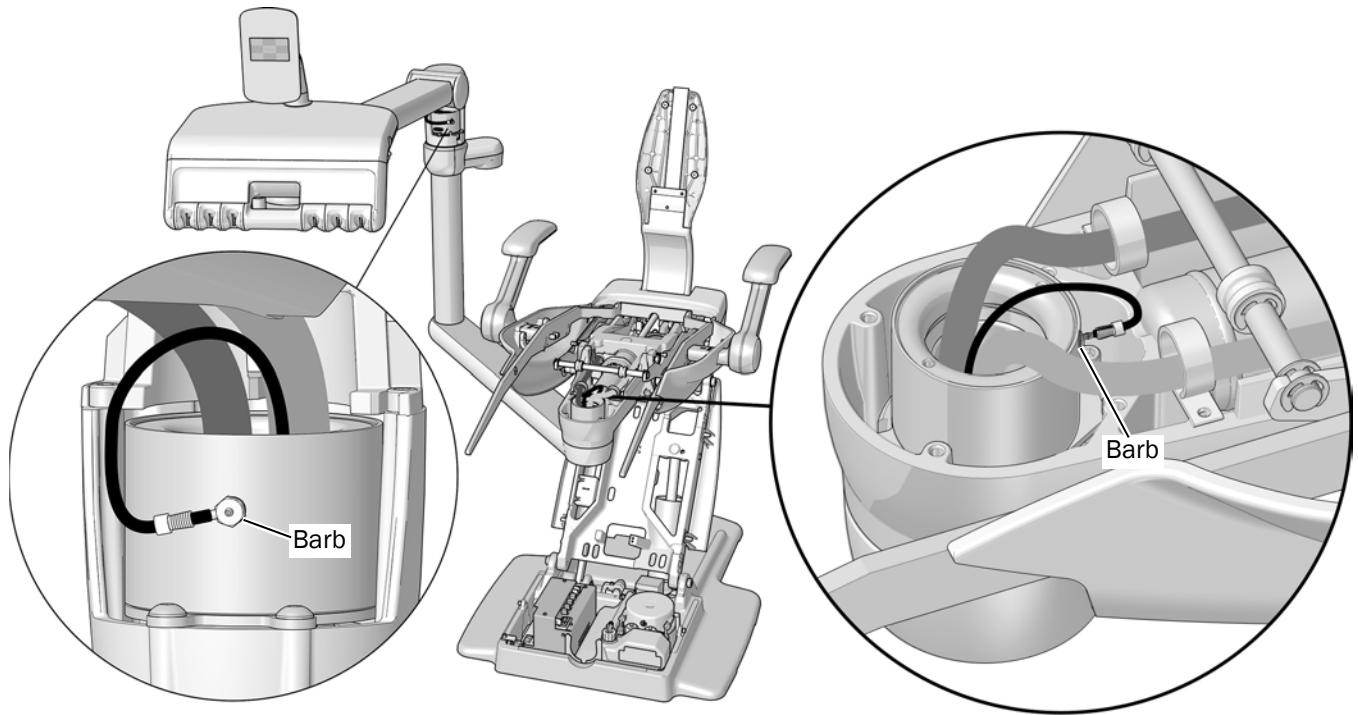
NOTE For proper positioning, ensure the ridges on the foot control tubing face up to match the grooves in the strain relief.

- 1** To ensure the correct amount of tubing in the pump area and behind the chair, position the tubing so the black line on its sheath is covered by the strain relief.
- 2** Use a 3/16" hex key to install the strain relief and secure the foot control tubing.

Connect the Brake Tubing

Recommended Tools

- Sleeve pusher
- Diagonal cutter



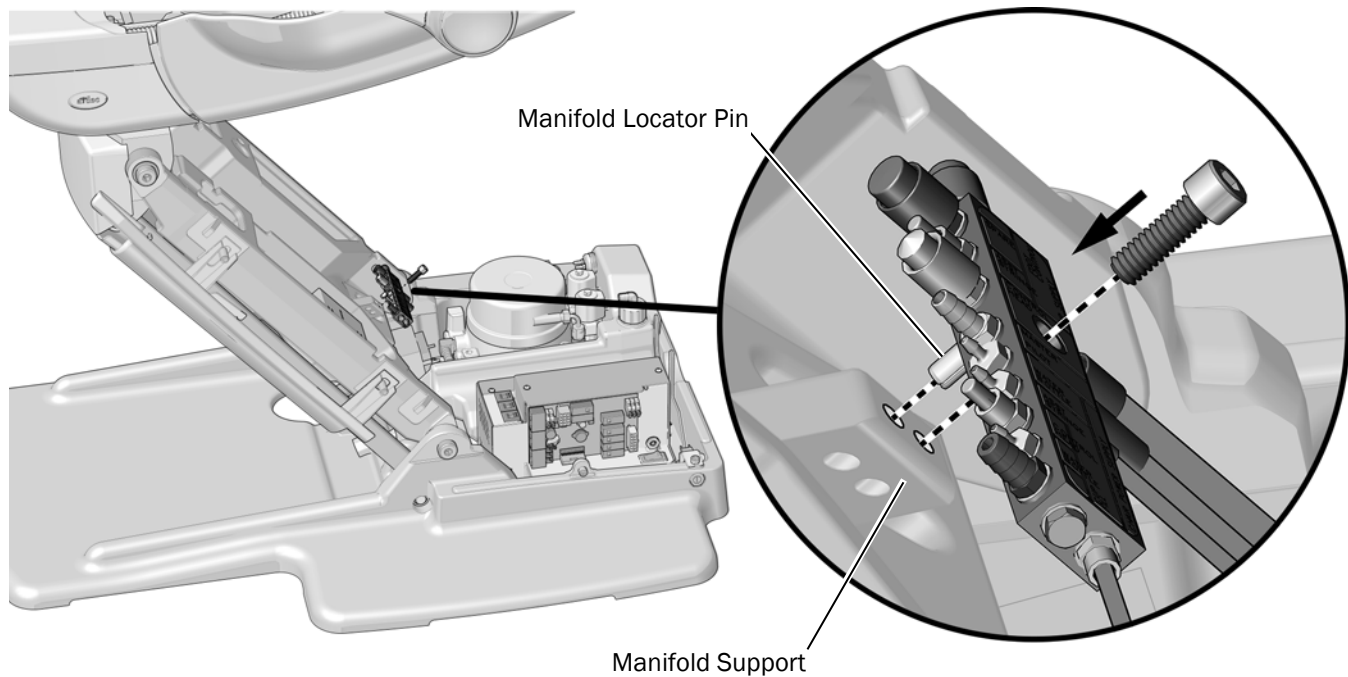
1 Connect the tubing to the barb where the flexarm meets the rigid arm.

2 Connect the tubing to the barb on the front mount toward the head of the chair.

Install the Manifold

Recommended Tool

- 3/16" hex key



- 1** Place the manifold locator pin (on the back side of the manifold) in the hole on the manifold support on the lift arm.
- 2** Use a hex key and the mounting screw, from the kit, to secure the manifold.

Prepare and Connect the Tubing

Recommended Tools

- Diagonal cutters
- Sleeve pusher

- 1** Strip and remove 3 feet (914 mm) of the sheath from around the water bottle tubing.
- 2** Connect tubing for all modules according to the flow diagram on the following page.



READ THIS! If you are connecting a lever foot control, follow the installation instructions that shipped with the foot control instead of the foot control connections in this section.



← To Delivery System

Advanced Air Tubing

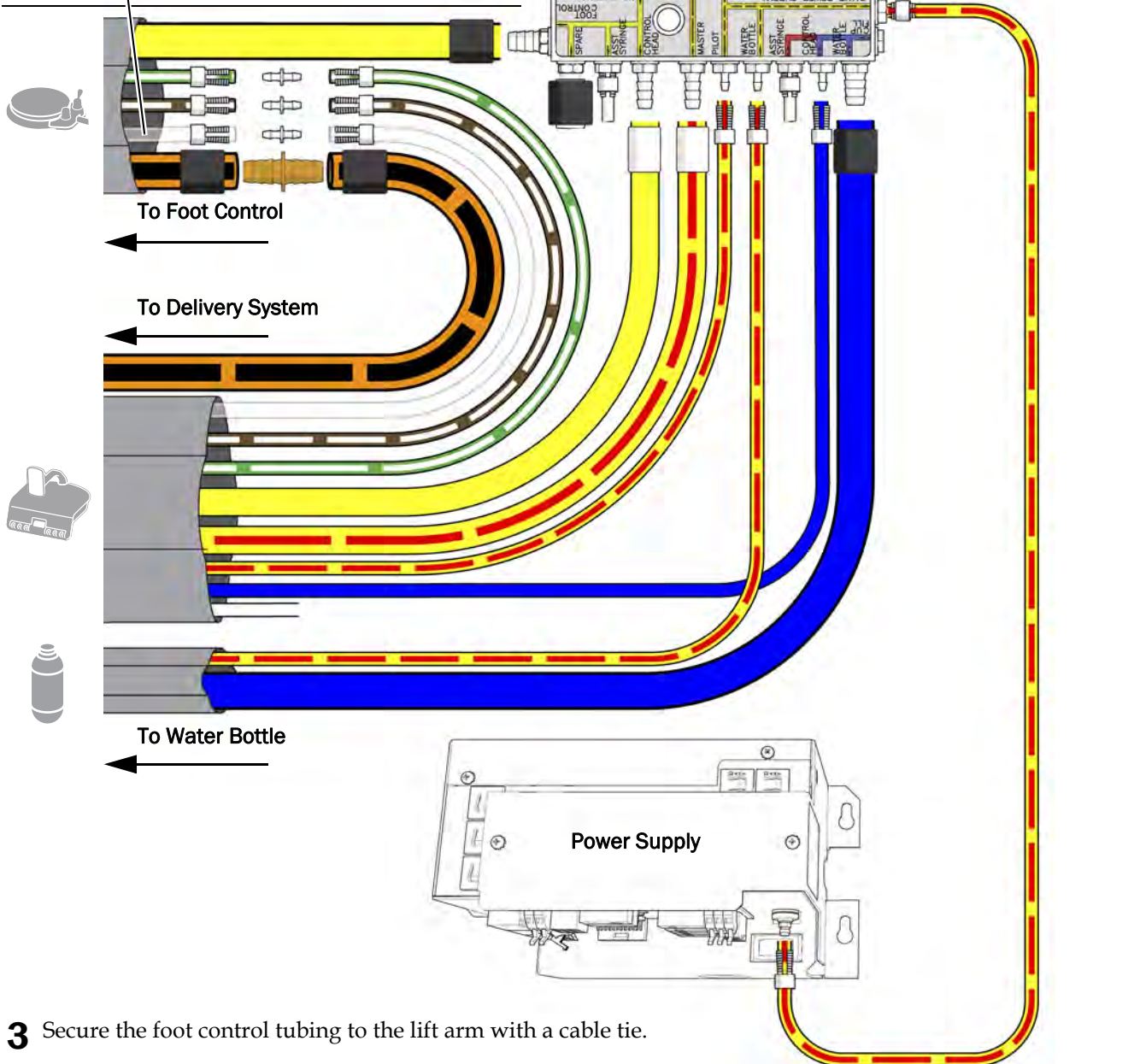
To Floor Box →



CAUTION Do not cut the Advanced Air tubing. Its full length is needed for a successful installation.



NOTE The lever foot control uses a green with short dash tubing instead of the clear tubing used with the disc foot control.



3 Secure the foot control tubing to the lift arm with a cable tie.

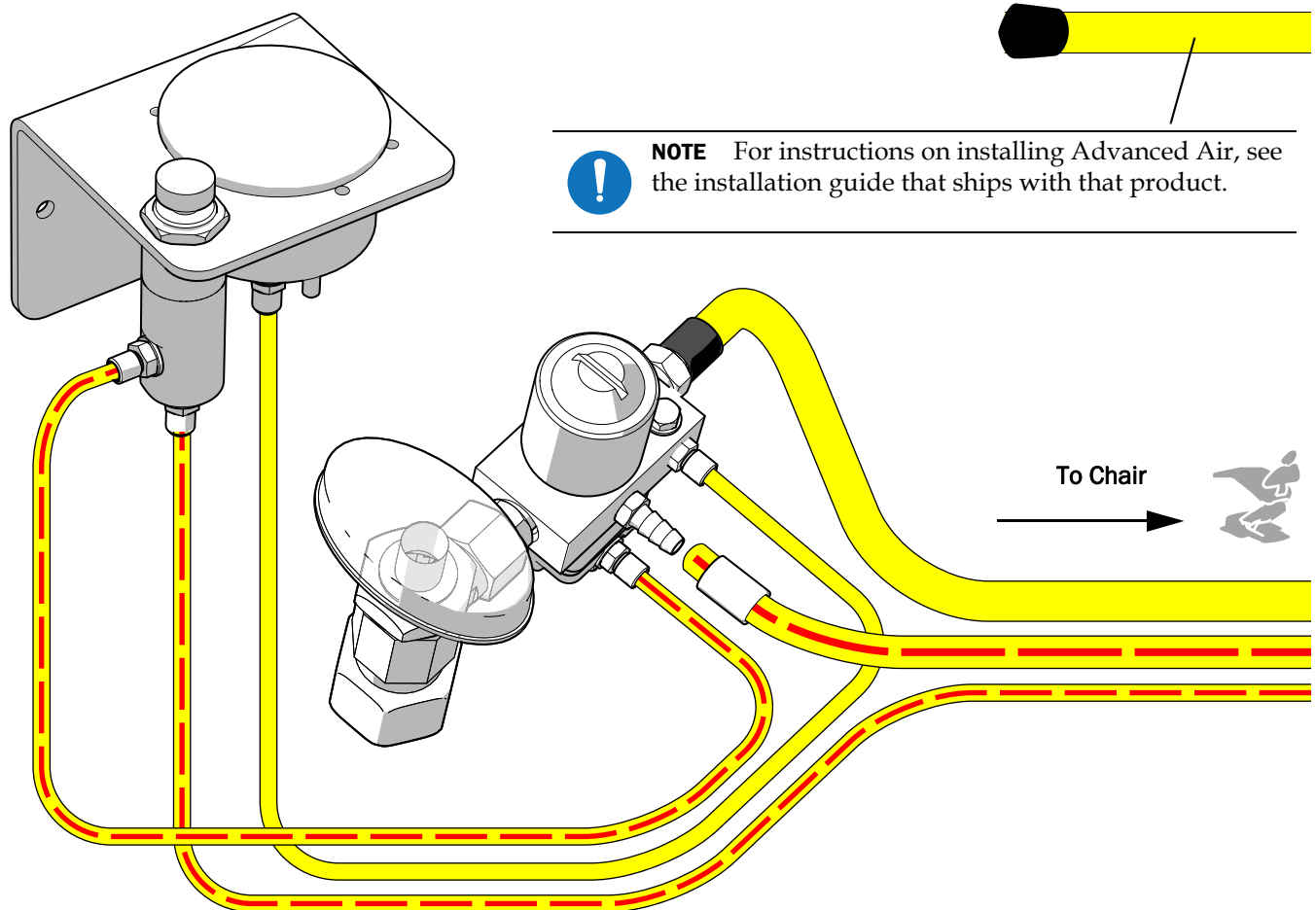
Connect the Floor Box Utilities

Recommended Tools

- Diagonal cutters
- Sleeve pusher



NOTE For instructions on installing the floor box, see *A-dec 511 Dental Chair Installation Guide* (p/n 86.06480.00).



NOTE For instructions on installing Advanced Air, see the installation guide that ships with that product.



NOTE Once the connections are made, ensure that the foot control tubing is not routed over the hydraulic reservoir.

Install the Moisture Separator (optional)

To install the moisture separator, follow the directions included in the moisture separator kit.

Prepare and Adjust the System

Secure the Wires and Tubing

- 1 Attach the bail to the lift arm casting to retain all the wires and tubing. Pressing the center of the bail makes it easier to install.

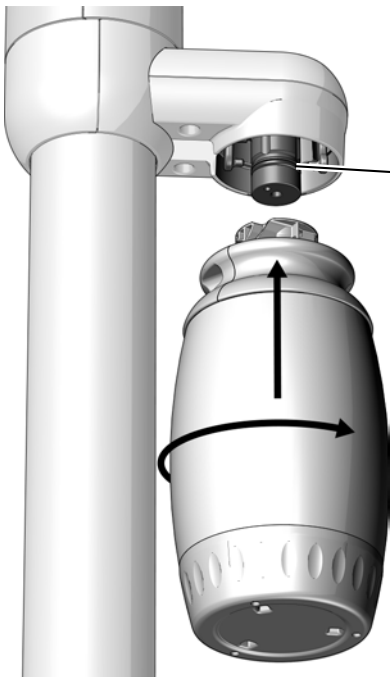
Bail



Install the Water Bottle



IMPORTANT A-dec recommends that the dental team perform a shock treatment on the dental unit waterlines before they use the system for the first time, and establish an ongoing waterline maintenance program. For more information, see the *Waterline Maintenance Guide* (p/n 85.0983.00) and *A-dec Self-Contained Water System Instructions For Use* (p/n 86.0609.00).

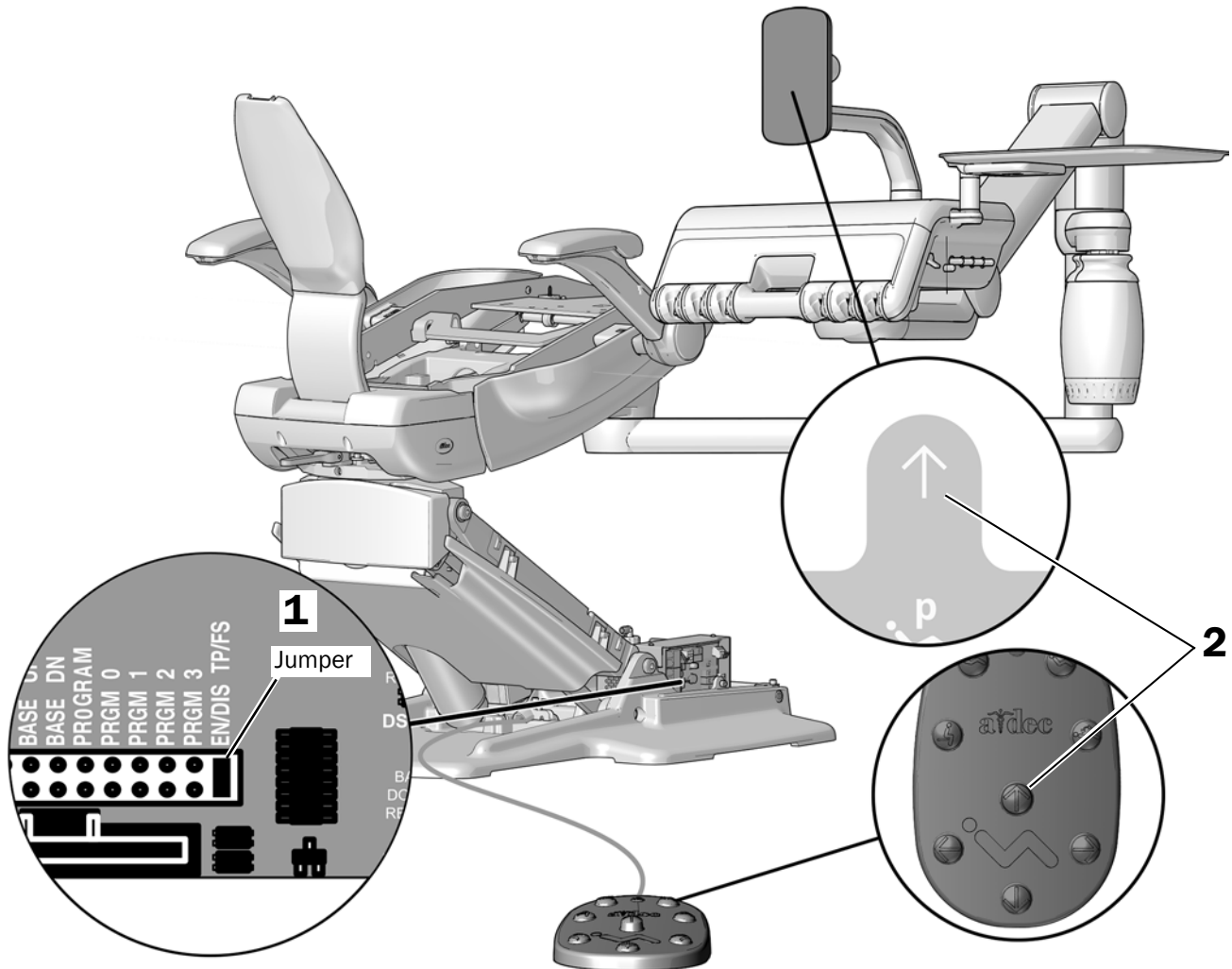


- 1 Apply A-dec silicone lubricant on the receptacle O-ring.
- 2 Push the water bottle up onto the water bottle receptacle and turn it to the right.

Set the Maximum Chair Height

If there is a risk of the delivery system striking cabinets or walls, reset the maximum chair height to limit the forward travel of the chair.

Task 1.



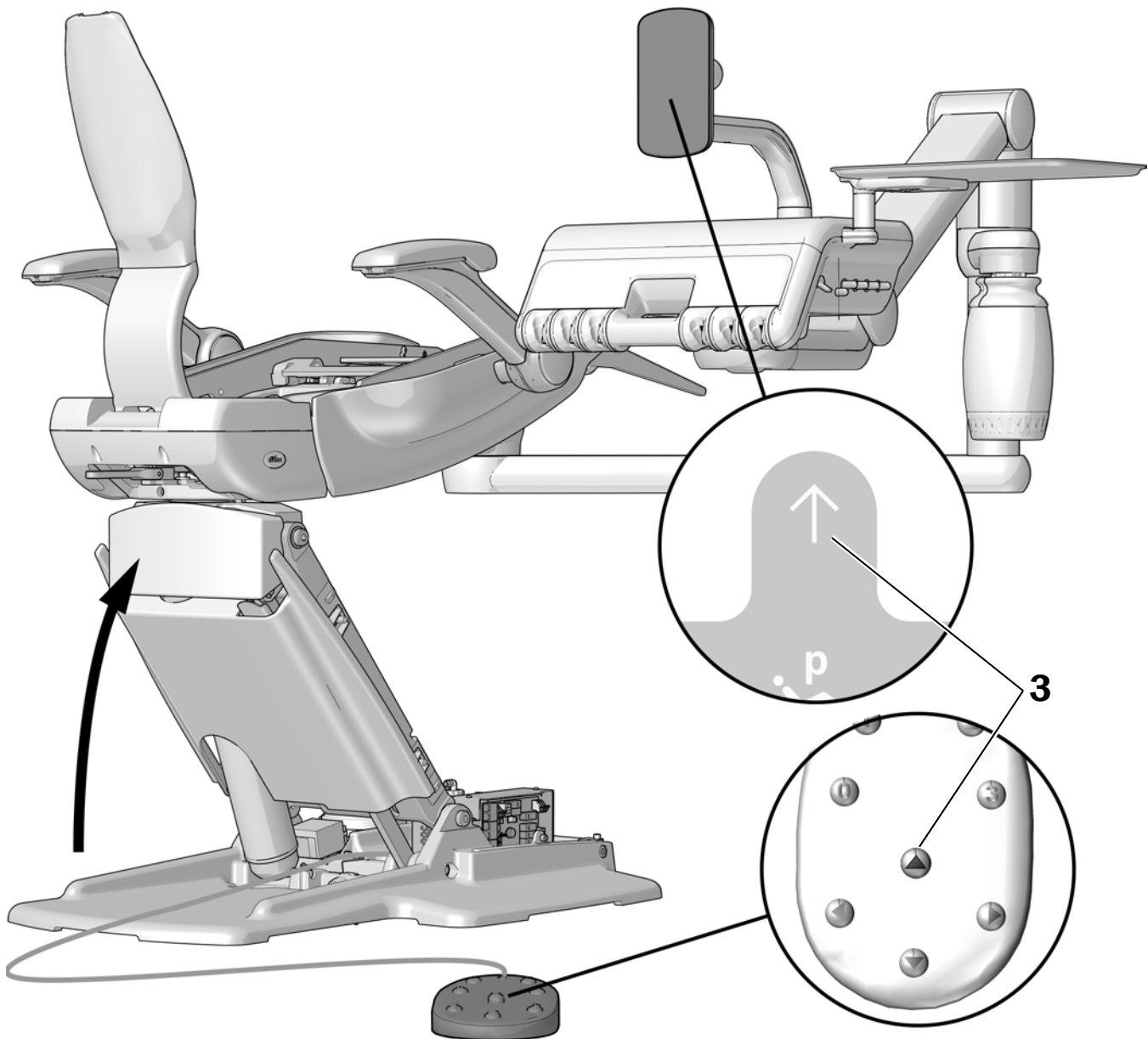
- 1** Place a jumper in the EN/DIS TP/FS position.



NOTE For information on how to use the jumpers with the test points, see *Chair Circuit Board Test Point Reference* (p/n 86.0680.00).

- 2** Press and hold the Base Up button for three seconds until you hear one beep. This disables the factory setting.
- 3** Remove the jumper from the EN/DIS TP/FS position.

Task 2.



- 1** Move the chair base to the desired upper limit of travel.
- 2** Place a jumper in the **EN/DIS TP/FS** position.
- 3** Press and hold the Base Up button for three seconds until you hear three beeps.
- 4** Return the jumper to the **SPARE** position.

Adjust the Flexarm Counterbalance

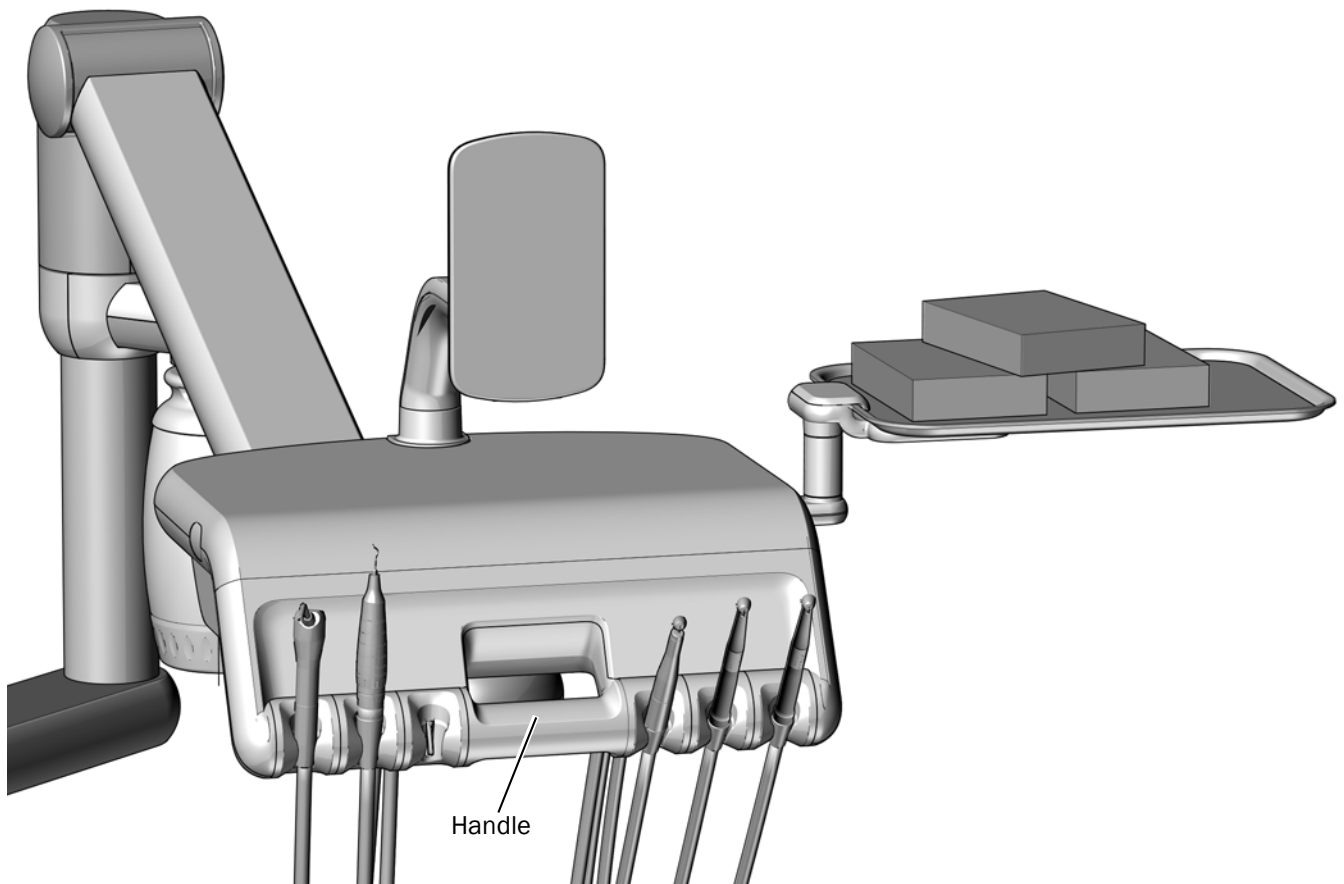
Recommended Tool

- 3/8" socket and ratchet with extension

With the control head fully loaded for normal use and in the fully lowered position, it should rise a few inches by itself when you grab the handle and unlock the brake.

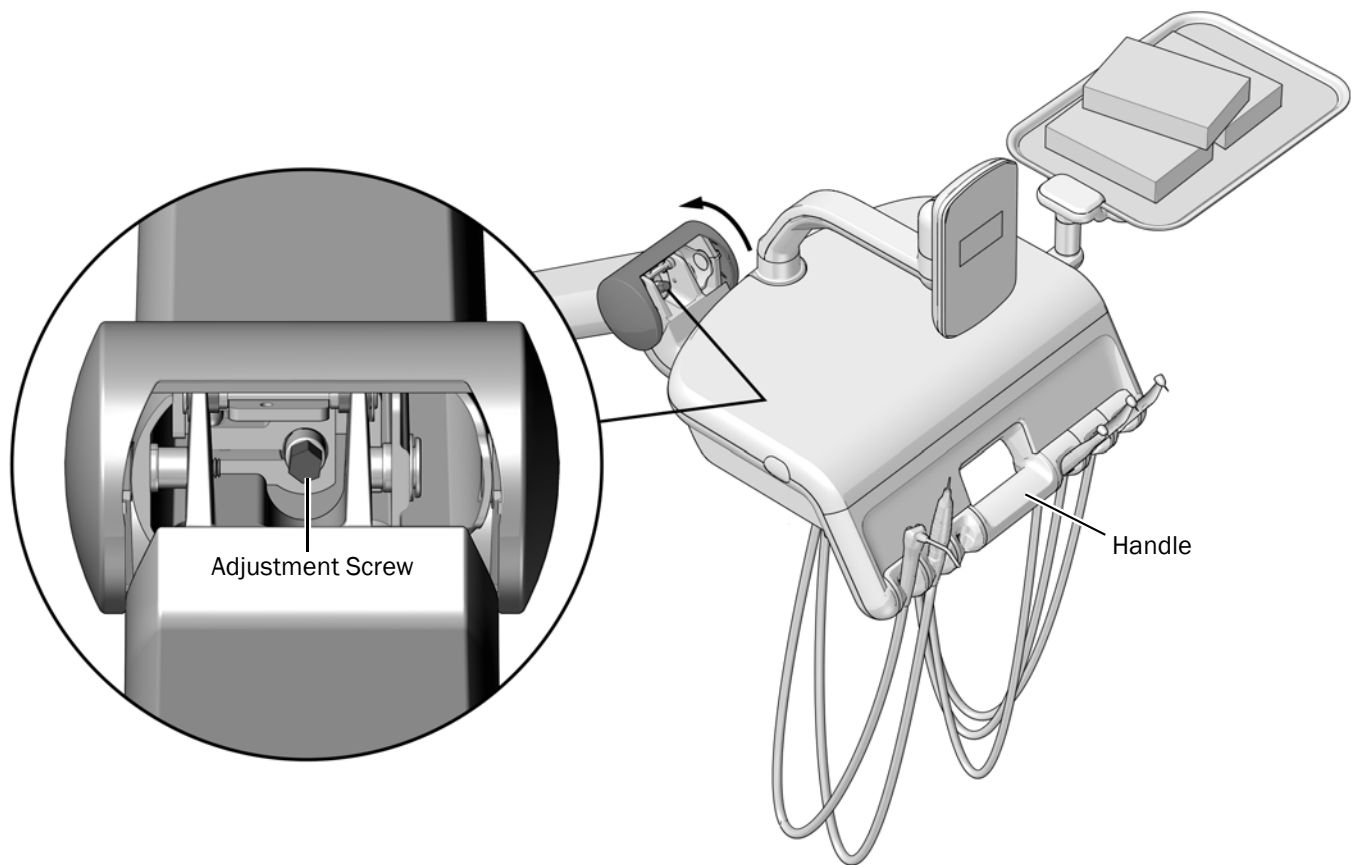
If necessary, adjust the flexarm counterbalance to achieve this performance.

Task 1.



- 1** Turn on the power to the system.
- 2** Lower the chair and the control head all the way down.
- 3** Load the control head for normal use.
- 4** Hold the handle to release the brake.
 - If the control head rises a few inches by itself, you are finished.
 - If the control head does not rise a few inches by itself, continue with Task 2.

Task 2.

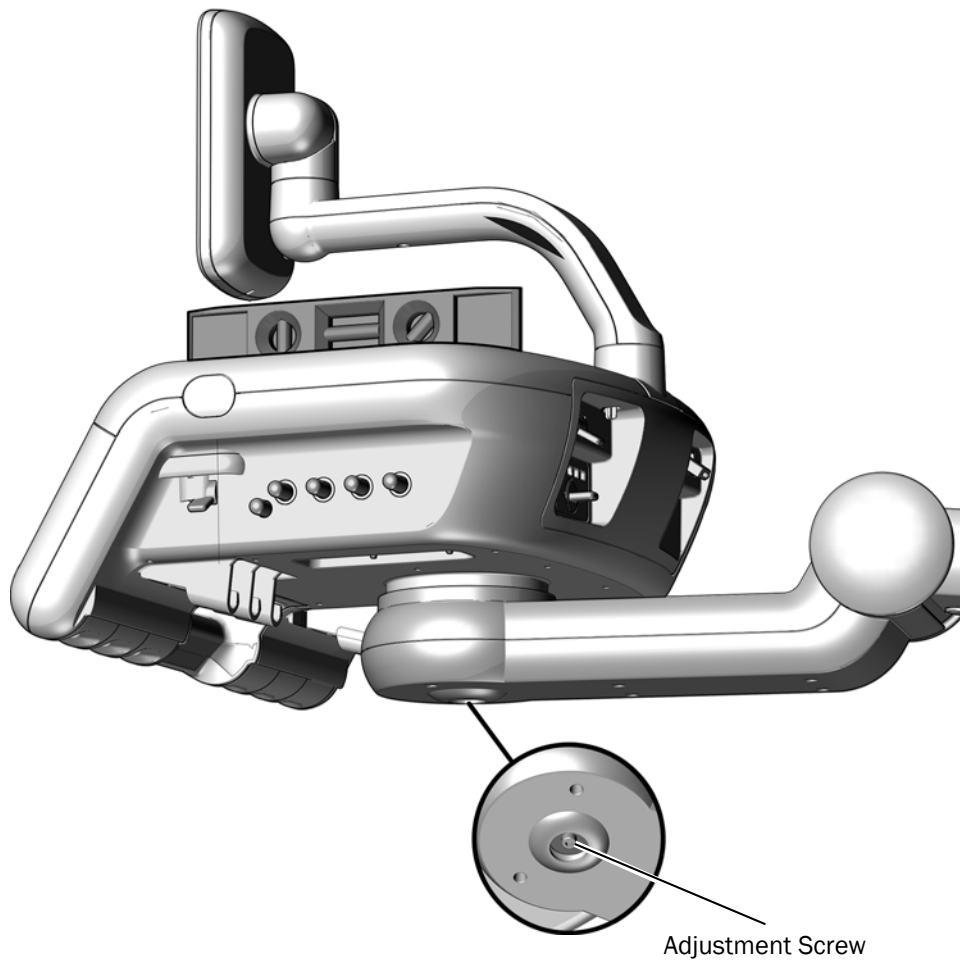


- 1** Rotate the cover to access the adjustment screw.
- 2** Raise the control head all of the way up.
- 3** Hold the handle to keep the brake released, then use a 3/8" socket and ratchet with extension to adjust the screw. Clockwise increases the tension.
- 4** Fully lower the control head, then grasp and hold the handle to test if it rises a few inches.
- 5** Repeat steps 2 through 4 until the control head rises a few inches by itself when it is fully lowered and the brake is released.

Level the Control Head

Recommended Tools

- 3/16" hex key
- Level



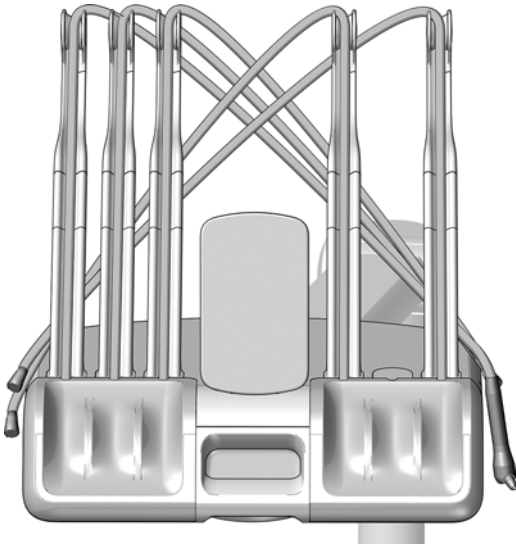
- 1** Place the control head in its normal operating position.
- 2** Place a level on the control head.
- 3** Use a 3/16" hex key to loosen the adjustment screw.
- 4** Moving the level from side to side and front to back, adjust the control head.
- 5** Tighten the adjustment screw.

Adjust the Control Head Rotation Tension

Recommended Tool

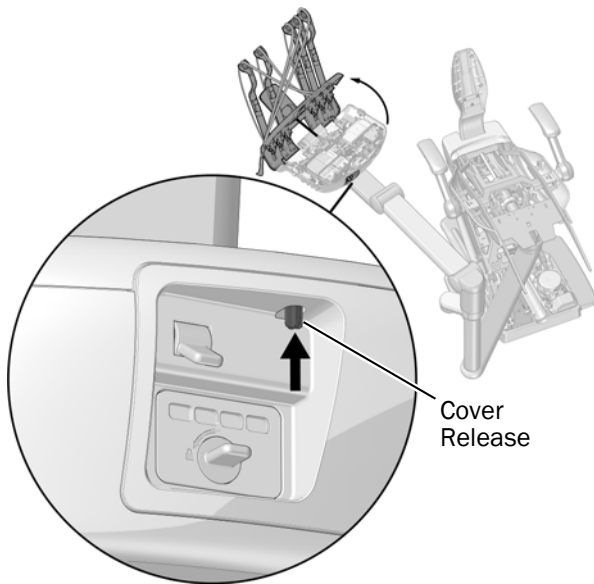
- 5/32" hex key

Task 1. Continental Delivery Systems only



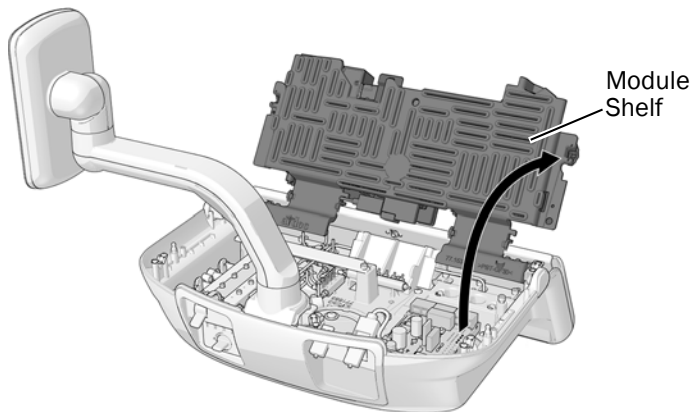
- 1** To avoid damaging syringes or handpieces when the cover is opened, lay each tubing behind the whips on the opposite side of the control head.

Task 2.

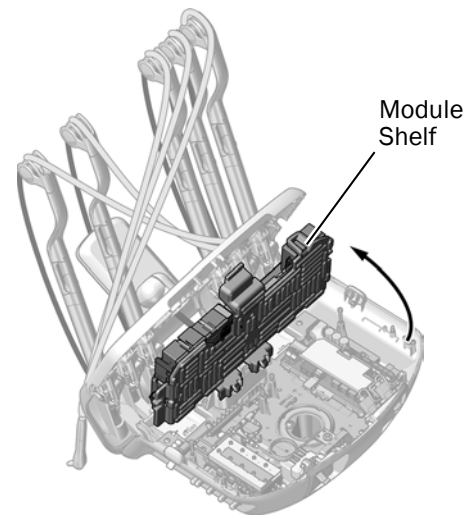


- 1** Turn off power to the system.
- 2** From the back of the control head, push up the cover release then open the control head.

Task 3.



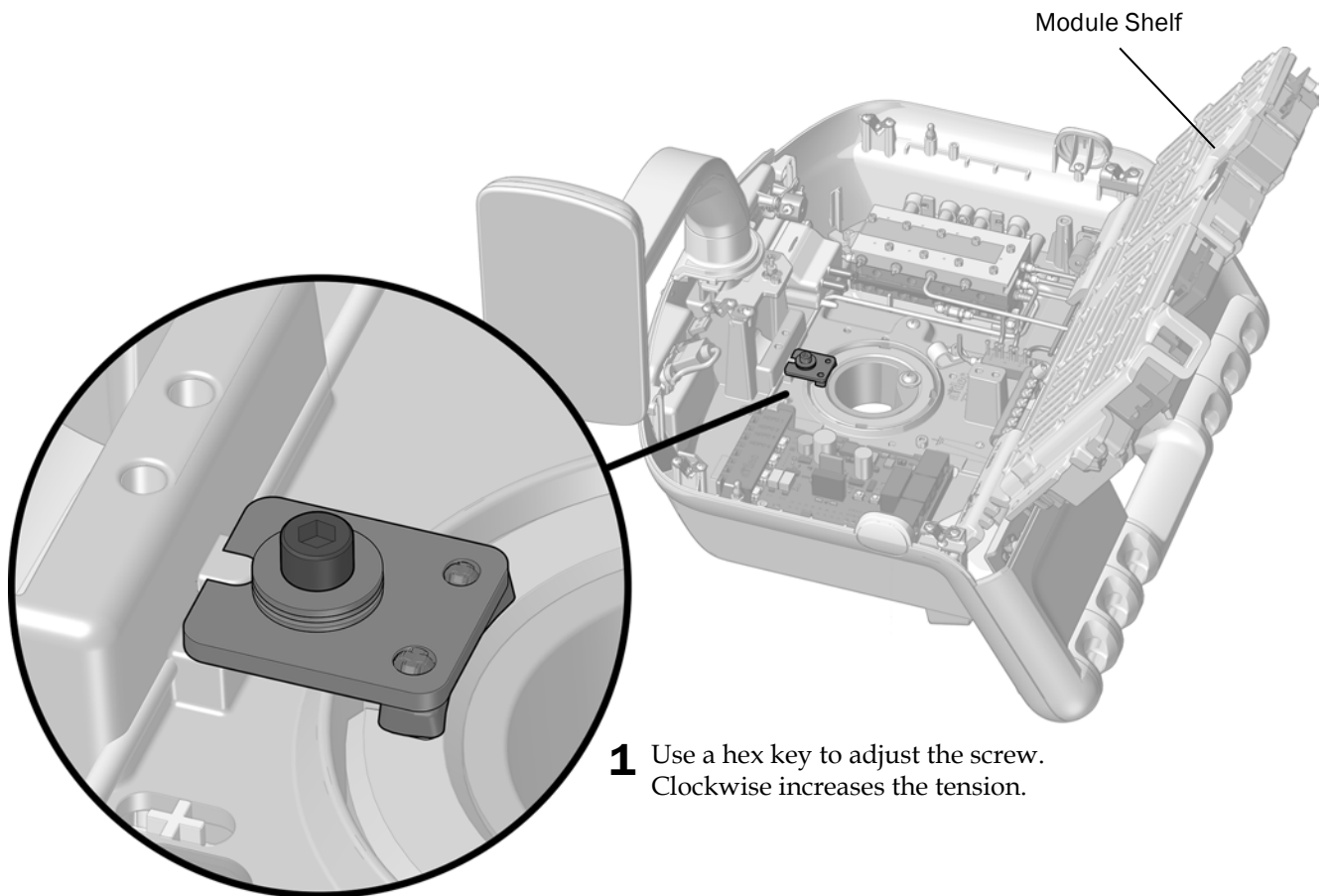
Traditional Delivery System



Continental Delivery System

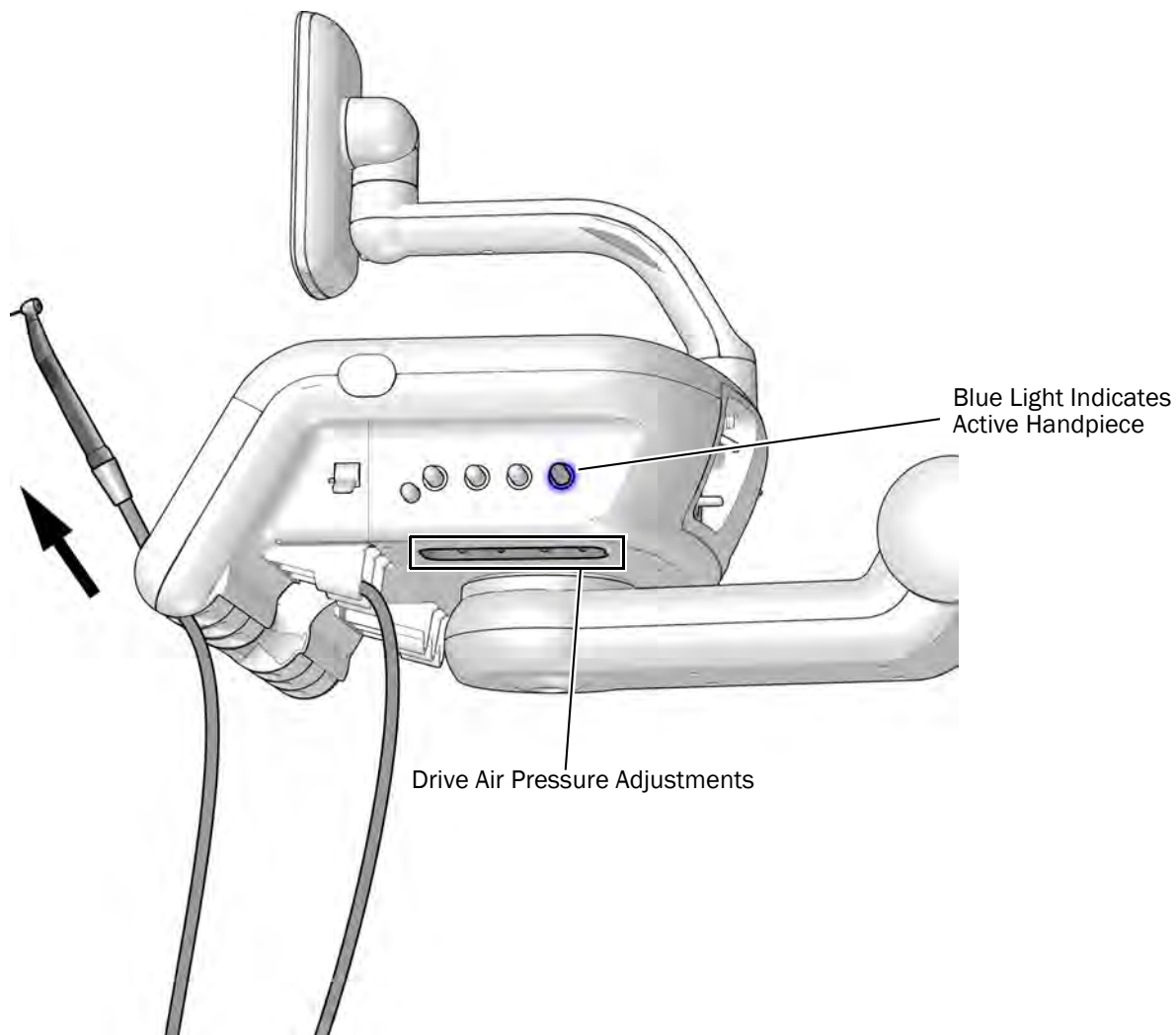
- 1** Lift up the module shelf.

Task 4.



- 1** Use a hex key to adjust the screw. Clockwise increases the tension.

Adjust the Handpiece Drive Air Pressure



- 1** Make sure the water coolant is turned off at the foot control.
- 2** To show the drive air pressure on the deluxe plus touchpad, touch — and + at the same time. A handpiece must be attached to the tubing to read the pressure.
- 3** Lift the handpiece from the holder or pull the whip forward.
- 4** A blue light around the water coolant adjustment knob indicates which handpiece is active. Locate the corresponding drive air pressure adjustment stem under the control head.
- 5** Fully press the foot control to run the handpiece and adjust the drive air pressure. Adjust the pressure to meet the manufacturer's specifications.



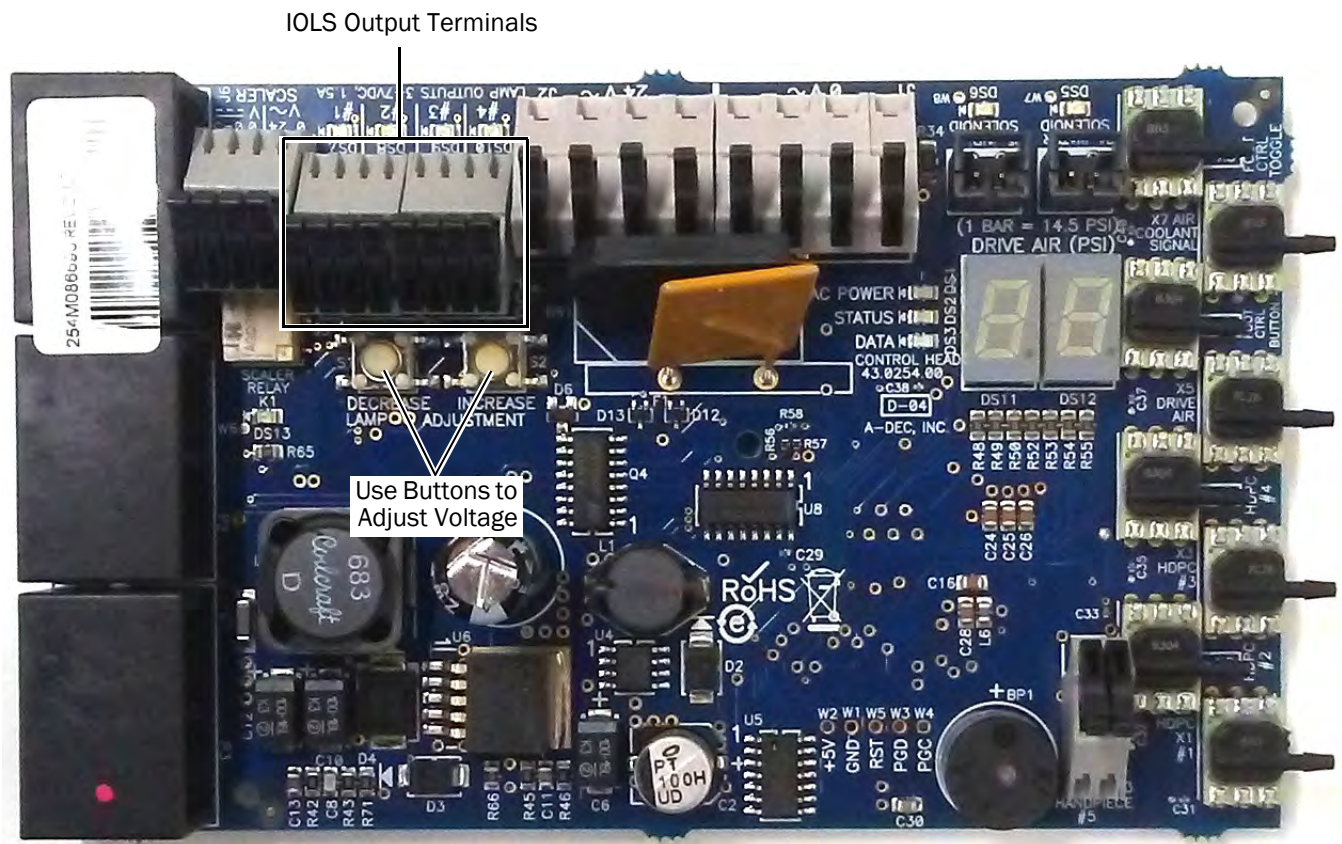
NOTE Pressure can also be measured with a handpiece pressure gauge. When adjusting the drive air pressure, take into account where it is measured. Pressure is greater at the control head, as read through the deluxe plus touchpad, than at the handpiece.

Adjust the Intraoral Light Source

Recommended Tool

- Voltmeter

1. Open the control head cover and lift the module shelf.
2. Set the voltmeter to DC voltage and place its probes on the IOLS output terminals for the handpiece you're adjusting.



3. Lift the handpiece from its holder and turn the light on.



CAUTION If your settings are outside of these recommended settings, you risk damaging the bulb in the handpiece.

4. Use the buttons behind the terminal to adjust the voltage according to the table on page 38.



CAUTION The values in the following table are valid only for fiber optics with 26 AWG wires, 750 mA loads, and the recommended 3.2 VDC at the bulb. For fiber optics powered with 26 AWG wires and other ratings, use the equation $T = (Z \times 0.006 \times Y) + X$ where:

T = Terminal strip voltage (VDC)

X = Desired voltage at bulb (VDC)

Y = Rated lamp/load current (in Amps)

Z = Length of 26 AWG wire (inches) from terminal strip to bulb

For devices with a wire gauge other than 26 AWG, please contact A-dec Customer Service.

Length and Voltage Table for A-dec|W&H, Bien Air, or Other Bulbs Rated at 3.2 V

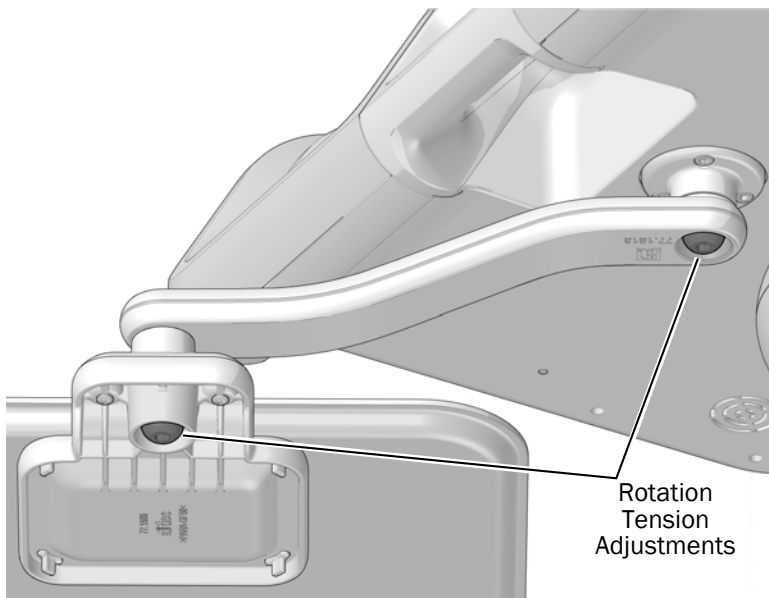
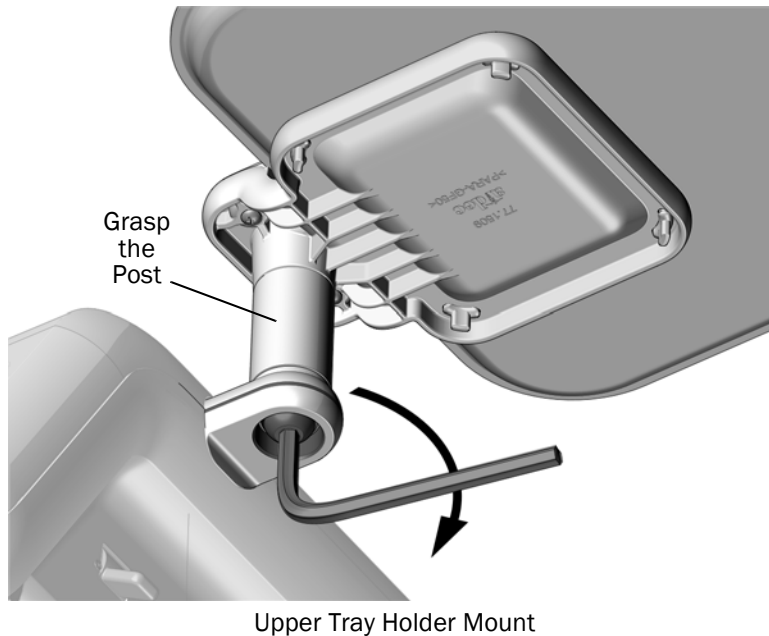
Wire length in A-dec tubing		Voltage at terminal strip resulting in recommended 3.2 V at the bulb	Wire length in A-dec tubing		Voltage at terminal strip resulting in recommended 3.2 V at the bulb
(in)	(cm)	VDC +/- .02	(in)	(cm)	VDC +/- .02
48	122	3.40	108	274	3.69
54	137	3.43	114	290	3.72
60	152	3.46	120	305	3.75
66	168	3.49	126	320	3.78
72	183	3.52	132	335	3.81
78	198	3.55	138	351	3.84
84	213	3.58	144	366	3.87
90	229	3.61	150	381	3.90
96	244	3.64	156	396	3.93
102	259	3.67			

Adjust the Tray Holder Mount Rotation Tension

Recommended Tool

- 7/32" hex key

- 1** Upper Tray Holder Mount only - Firmly grasp the post.
- 2** Use a hex key to adjust the tray holder mount rotation tension. Clockwise increases the tension.



Customize Handpiece Touchpad Settings



NOTE Touchpad symbols and icons are proprietary to A-dec Inc.










Technician Touchpad Setup

The deluxe plus touchpad enables service technicians to adjust handpiece and touchpad settings for user preferences for four out of the six holder positions. The other two holders are inactive, are not connected to the control block, and cannot be configured. When you lift a handpiece from an inactive holder, the A-dec logo remains on the touchpad screen instead of changing to information about the handpiece you've lifted.

Holder Setup

You can set up how handpieces are configured for each handpiece holder. Handpiece types include Basic Air, Camera, Electric, Other, Ultrasonic, Vacuum, and Advanced Air.

To set up each handpiece holder:



1. Press and hold  and  at the same time until a **System Setup** screen appears.
2. Press .
3. Press  again to select **Handpieces**.
4. Press  on the **Handpiece Setup** screen to select **Holder Setup**.
5. Lift the desired handpiece from the holder.
6. Press  or  to select the handpiece type on the **Holder Setup** screen.
7. Do one of the following depending on the type of handpiece:
 - **Electric:** For setup instructions, see the installation information that ships with the control module.
 - **All other Types:** Press . Three beeps confirm the setup for the handpiece is complete.
8. Return the handpiece to the holder.
9. Repeat steps 4 through 8 to set up each active handpiece.
10. When you are finished setting up handpieces, press  until you see the A-dec logo.

Intraoral Light Source Setup

The following settings are available:

- **On When Selected:** When enabled, the intraoral light source turns on when the handpiece is removed from the holder. When this feature is turned off, the intraoral light still turns on when you press the foot control.
- **Auto Off Delay:** Determine how long the light remains on when the foot control is released. This time is reset when you use the drive air again.
- **On in Endo:** Specify whether the intraoral light source turns on or off when in Endodontics mode.



To set up the intraoral light source:

1. Press and hold  and  at the same time until a **System Setup** screen appears.
2. Press \rightarrow .
3. Press \rightarrow again to select **Handpieces**.
4. Press \downarrow to select **Intraoral Lt Source**, then press \rightarrow on the **Handpiece Setup** screen.
5. Lift the desired handpiece from the holder.
6. Press \uparrow or \downarrow to move to the desired setting on the **Light Source Setup** screen. With the setting highlighted, press $-$ or $+$ to specify the setting, then press \rightarrow . Three beeps confirm the setting.
7. Return the handpiece to the holder.
8. Repeat steps 5 through 7 to specify each setting for each handpiece.
9. When you are finished setting up the handpieces, press \leftarrow until you see the A-dec logo.

Contrast/Help Messages Setup

Use the touchpad setup to change the contrast of the touchpad display and specify whether to display help messages.

To set up touchpad settings:

1. Press and hold  and  at the same time until a **System Setup** screen appears.
2. Press \rightarrow .
3. Press \downarrow to select **Touchpad**, then press \rightarrow .
4. Press \uparrow or \downarrow to select **Contrast Adjust** or **Help Messages** on the **Touchpad Setup** screen, then press \rightarrow :
 - **Contrast Adjust:** Press $-$ or $+$ to adjust the contrast. Press \rightarrow to save the setting. Three beeps confirm the setting.
 - **Help Messages:** Press $-$ or $+$ to turn **On** or **Off** the help messages. Press \rightarrow to save the setting. Three beeps confirm the setting.
5. When settings are complete, press \leftarrow until you see the A-dec logo.



NOTE For a listing of help messages, see the *Regulatory Information, Specifications, and Warranty* document (p/n 86.0221.00) in the Resource Center at www.a-dec.com.

Test the System

Complete the following checklist, then follow up with the customer.

Delivery System

- Handpieces function properly and are set to doctor preferences, including:
 - Water coolant, air coolant, and spray
 - Handpiece tubing flush
 - Handpiece holder valves and switches
 - Handpiece drive air pressure
- Flexarm air brake functions properly
- Control head is level
- Foot control operates properly

Utilities

- Regulated air pressure to the delivery system is at 80 psi (552 kPa)
- Regulated air pressure to the Advanced Air control module requires 85 psi (586 kPa)
- Floor box is free of air and water leaks
- Tubing and connections are not kinked and are free of air and water leaks
- Excess tubing and wires are coiled and stored away from moving parts

Install the Covers



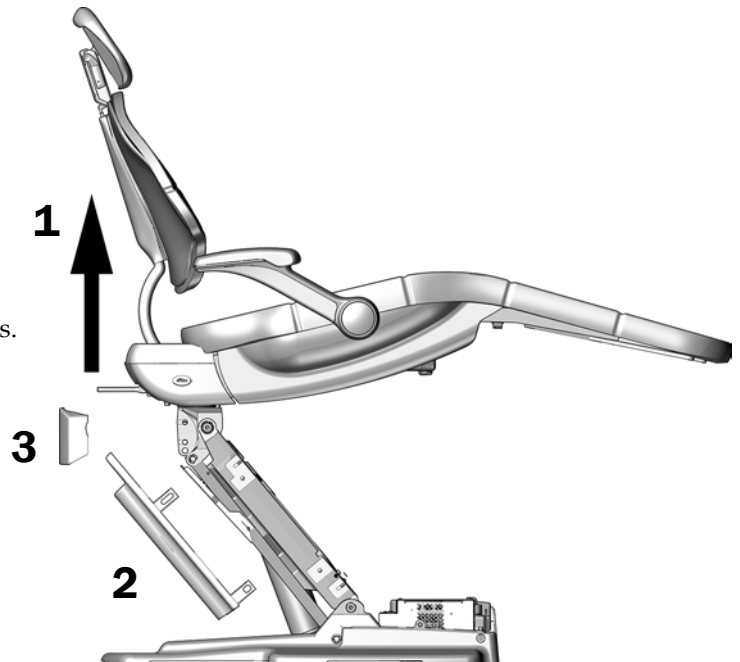
CAUTION When removing or replacing covers, take care not to damage any wiring or tubing. Verify that the covers are secure after replacing them.

Install the Chair and Floor Box Covers

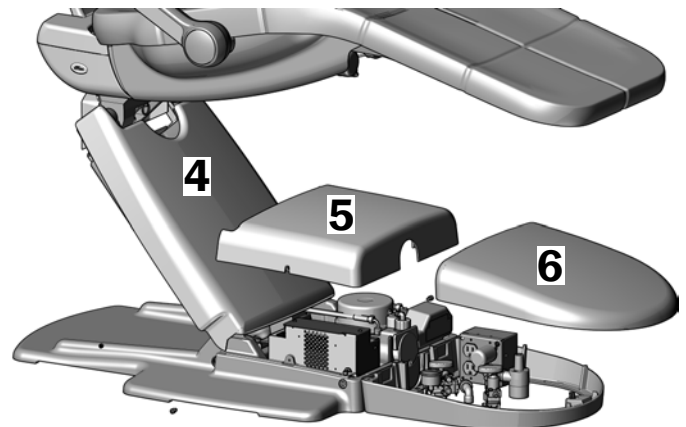
Recommended Tool

- 3/16" hex key

- 1 Raise the chair to full base up.
- 2 Attach the stop plate on the lift arm casting pins.
- 3 Snap the mount cover in place on the chair.



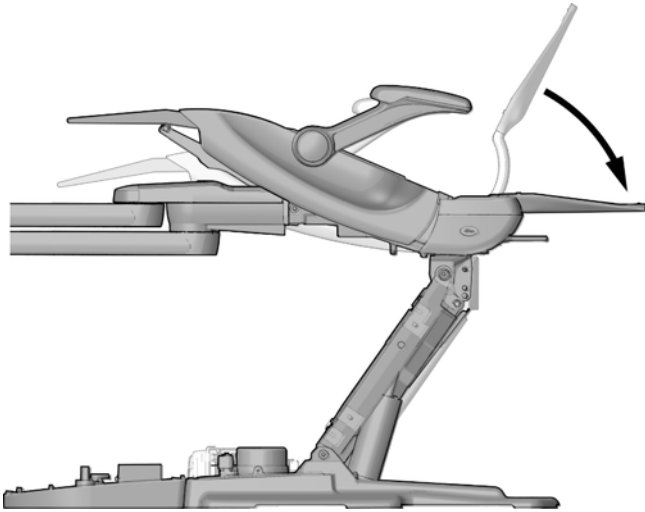
- 4 Snap the lift arm cover onto the casting tabs.
- 5 Use a hex key and two screws to attach the pump cover.
- 6 Snap the floor box cover into place.



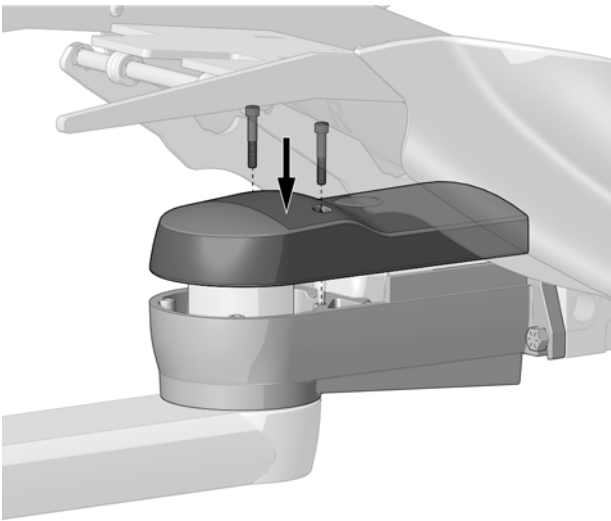
Install the Front Mount Cover

Recommended Tool

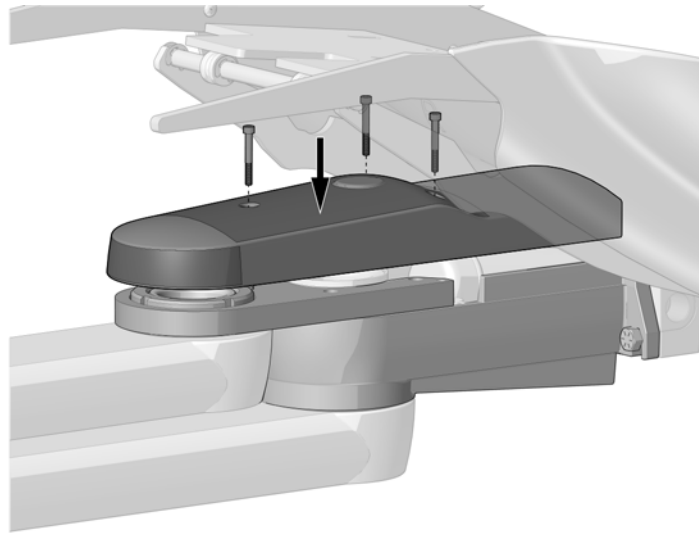
- 3/16" hex key



1 Lower the back all the way down.



Cover for Delivery System Only - 2 Screws



Cover for Delivery System and Dental Light
or Dental Light Only - 3 Screws

2 Align the holes in the front mount cover with the holes in the front mount.

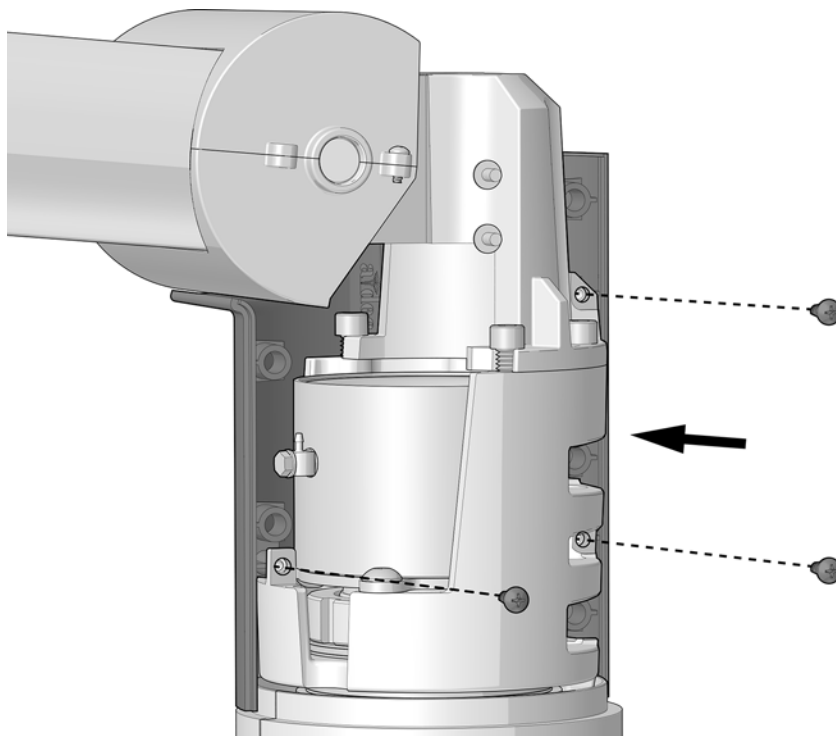
3 Use a hex key and screws from the kit to secure the cover.

Install the Flexarm Hub Covers

Recommended Tool

- Phillips head screwdriver

Task 1.



- 1 Use a Phillips head screwdriver and three screws to install the cover on the right side of the hub when standing at the toe of the chair.

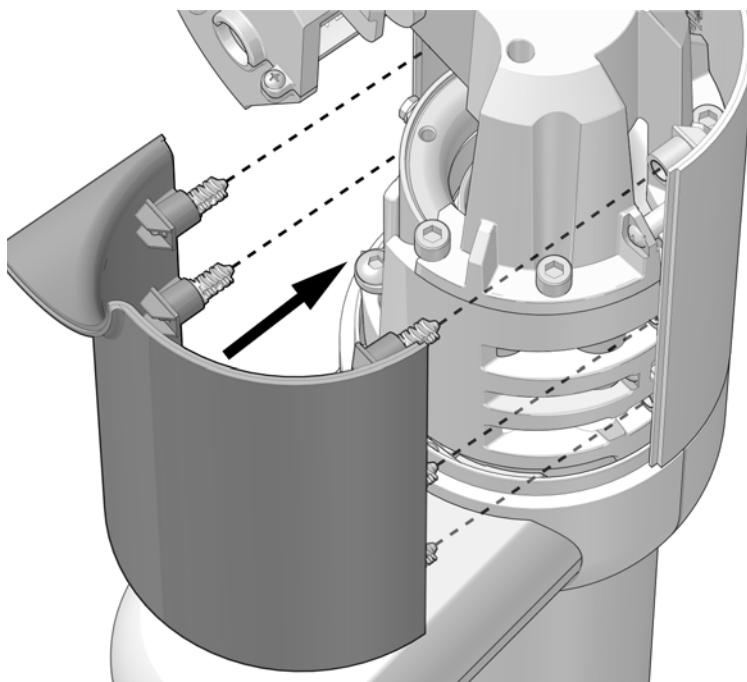


Actual Size



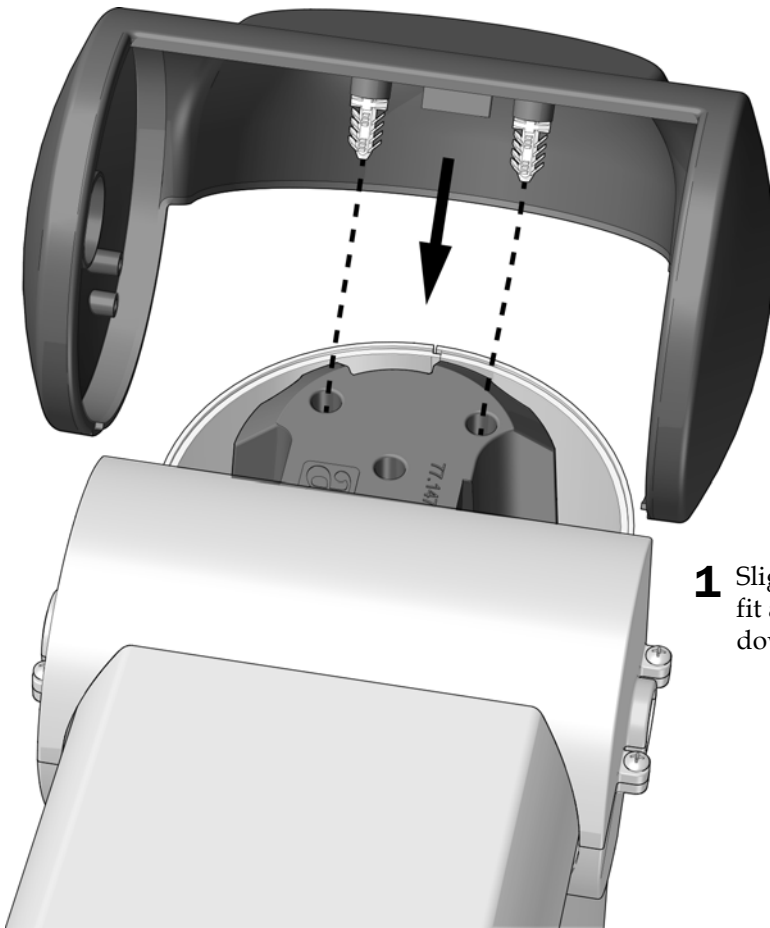
NOTE Be sure the cover is firmly attached for proper look and fit.

Task 2.



- 1 Line up the five stanchions with the holes in the installed cover and snap the covers together around the hub.

Task 3.



- 1** Slightly pull out the sides of the top cover so they fit around the side of the hub and gently press it down so the stanchions go in the holes in the hub.

Regulatory Information and Warranty

For required regulatory information and the A-dec warranty, see the *Regulatory Information, Specifications, and Warranty* document (p/n 86.0221.00) available in the Resource Center at www.a-dec.com.

A-dec Headquarters

2601 Crestview Drive
Newberg, OR 97132 USA
Tel: 1.800.547.1883 Within USA/CAN
Tel: +1.503.538.7478 Outside USA/CAN
Fax: 1.503.538.0276
www.a-dec.com

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