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A-dec 541 Duo Delivery System and 545 Assistant's Instrumentation

INSTALLATION GUIDE

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541 12 O'Clock Duo Delivery System



545 12 O'Clock Assistant's Instrumentation



Product Models and Versions Covered in This Document

Models	Versions	Description
545	A	Assistant's Instrumentation
541	B	Delivery System
411	A	Dental Chair
311/511	A/B	Dental Chair
591/5562/5580/5662	A	Dental Furniture

86.0763.00 Rev B

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Before You Begin

The instructions for installing the A-dec 541 Duo Delivery System and the A-dec 545 Assistant's Instrumentation are nearly the same. Minor differences are highlighted in the instructions.

Before starting the installation:

- Check with local building and code authorities about installation requirements specific to your location.
- Check that the manual air shut-off valve is installed.
- For information about dimensions, range of motion, and placing the utilities, see the following:
  - *A-dec 541 Duo Delivery System and 545 Assistant's Instrumentation Pre-Installation Guide* (p/n 86.0034.00)
  - *A-dec Inspire® Dental Furniture Pre-Installation Guide* (p/n 86.0528.00)
  - *Preference Collection® Dental Furniture Pre-Installation Guide* (p/n 86.0142.00)

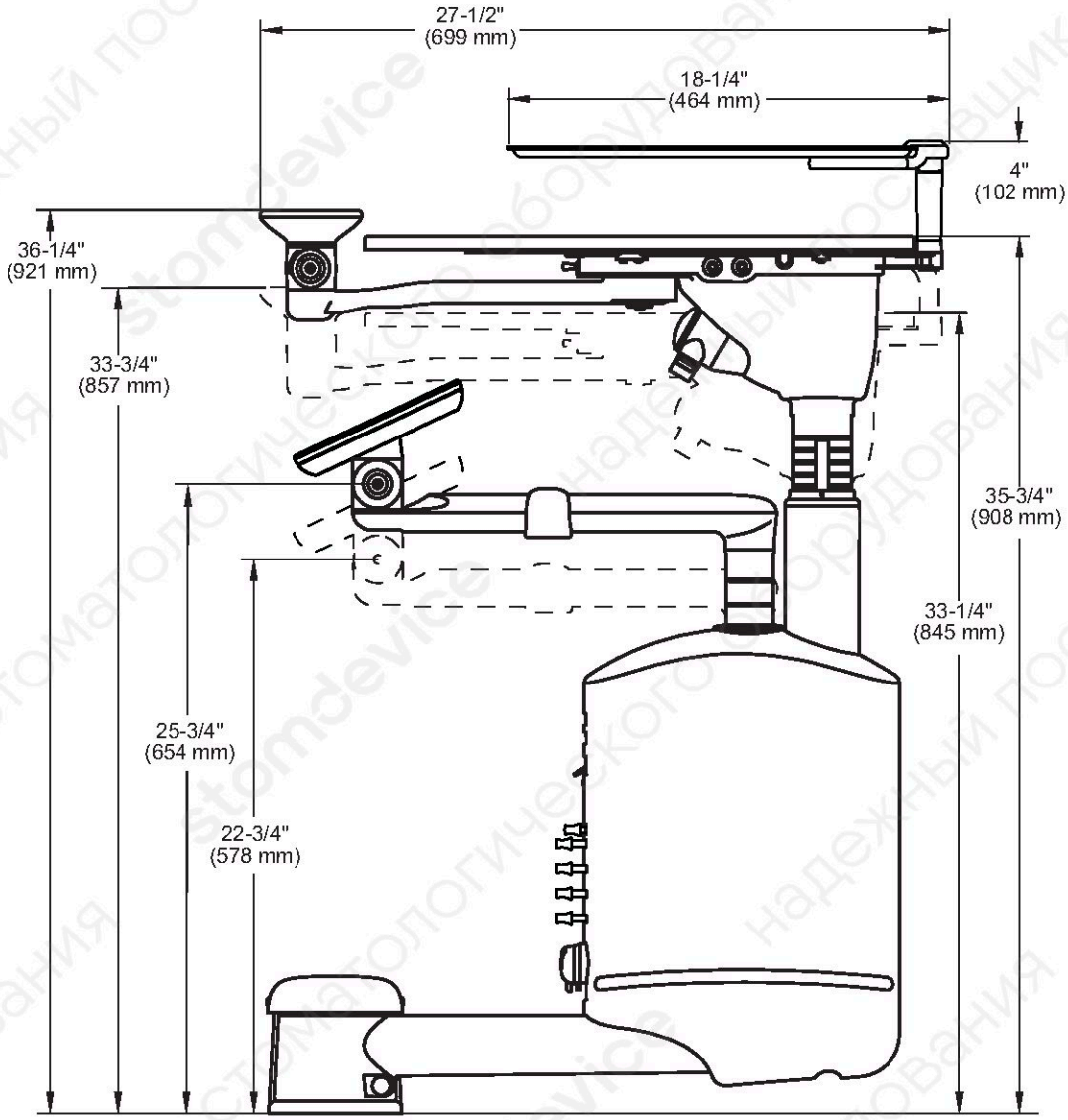
Recommended Tools

- Diagonal cutters
- Hex key set
- Torpedo level
- Anti-static wrist strap
- Phillips head screwdriver
- Drill and drill bits
- Needle-nose pliers
- 3/4" socket (deep well) with 6" extension
- Voltmeter

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Range of Motion Measurements



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Install the Delivery System

Install the Delivery System Mount

To install the 541/545 delivery system mount, refer to the *A-dec 541/545 Delivery System Mount Installation Guide* (p/n 86.0003.00) that ships with the mount.

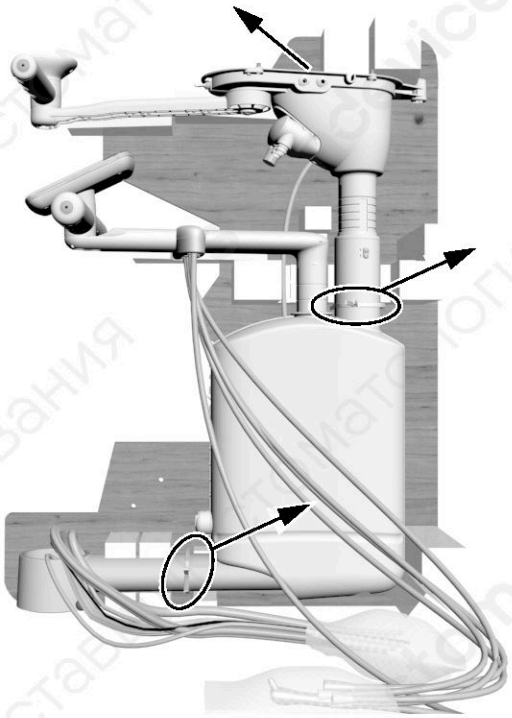
Unpack the Delivery System

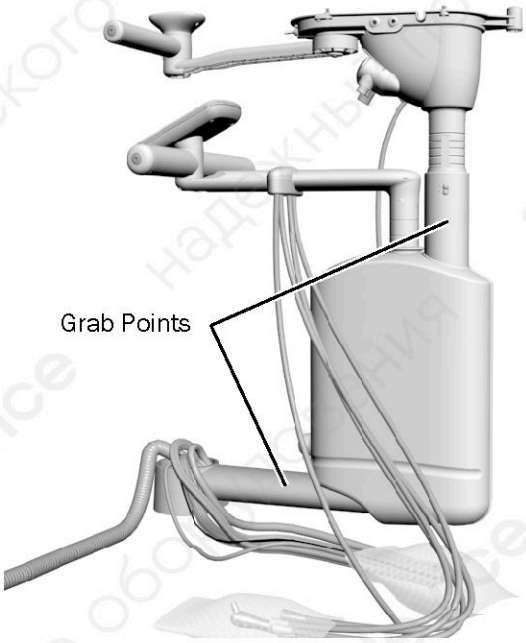
Recommended Tool

- Diagonal cutters

1 If installing on a cabinet, ensure the cabinet doors are not installed to provide clear access.

2 Cut the cable ties and remove the assembly from the pallet and box.





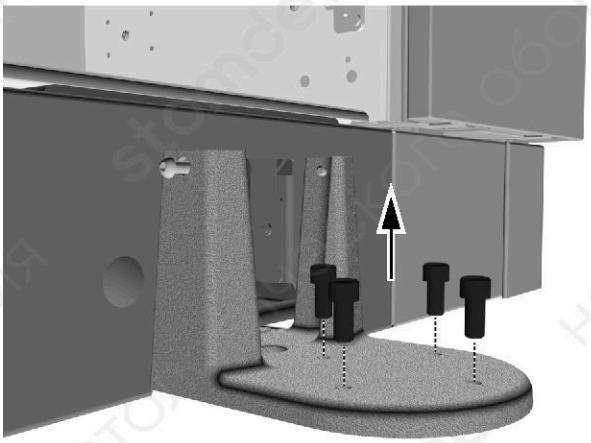
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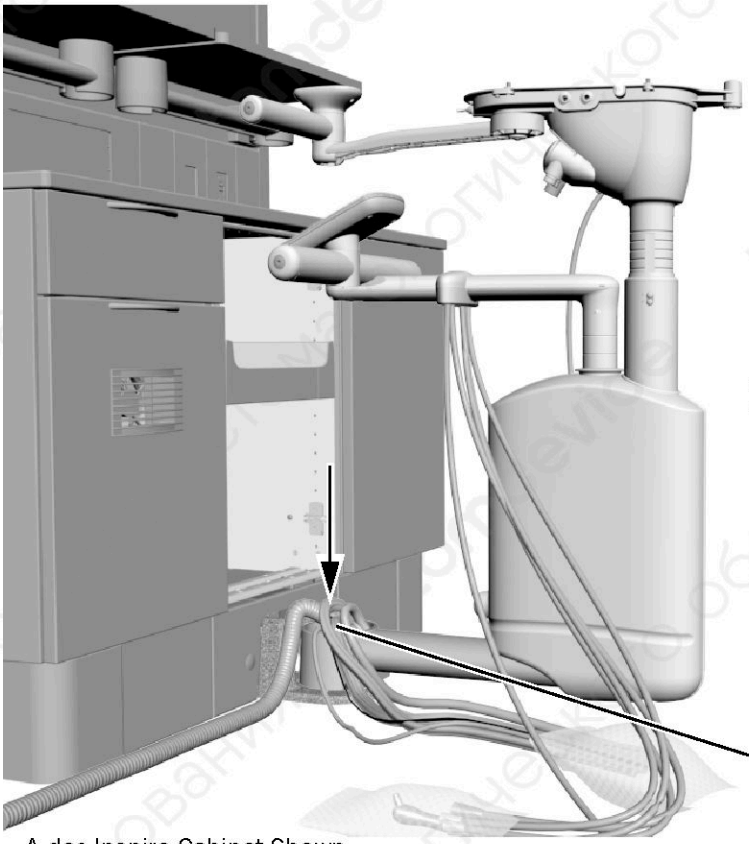
Install and Level the Arm Assembly

Recommended Tools

- 5/16" hex key
- Torpedo level

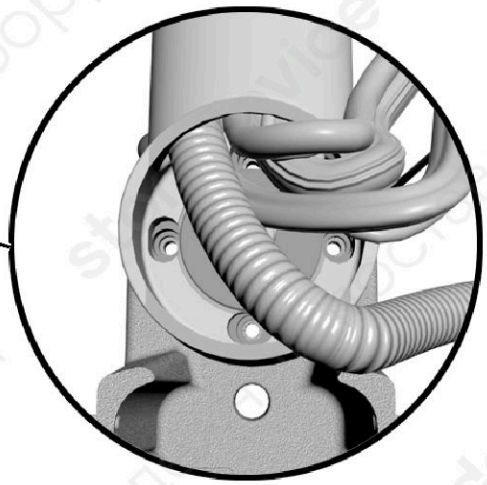


1 Use a 5/16" hex key to remove the four screws from the mount. Keep the screws to install the arm assembly.



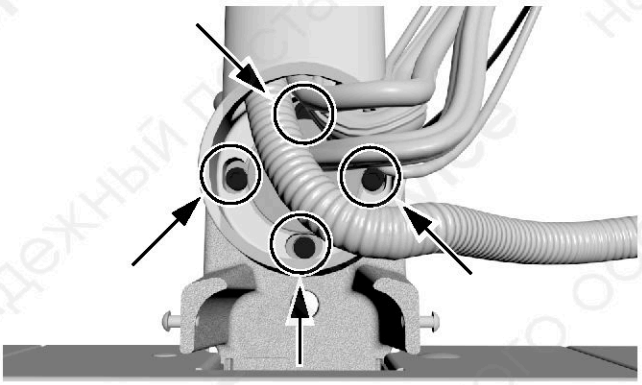
A-dec Inspire Cabinet Shown

2 Set the arm assembly on the mount. Make sure you can access the mount holes.



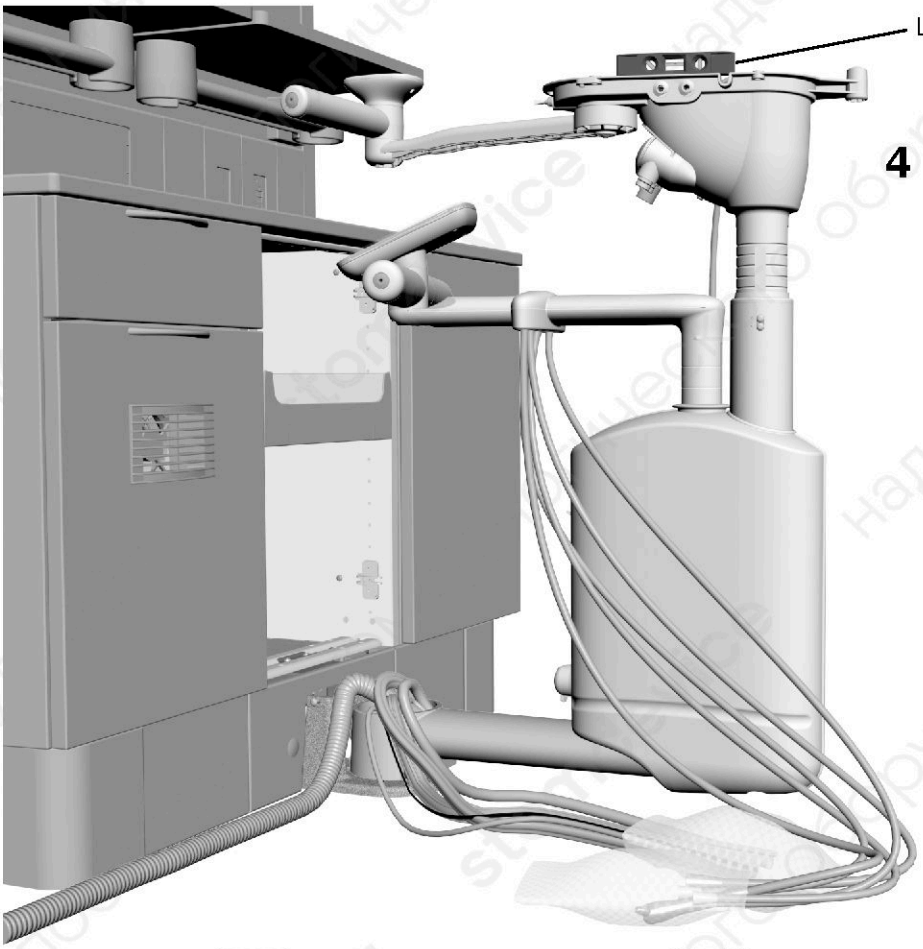
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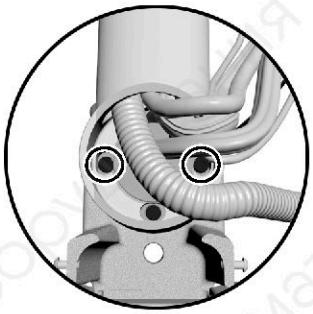


3 Use a 5/16" hex key to loosely install the four screws that you removed from step 1 in the mount holes.

TIP You may need to rotate the assembly to access all of the screws.



4 Place a level on the work surface casting.





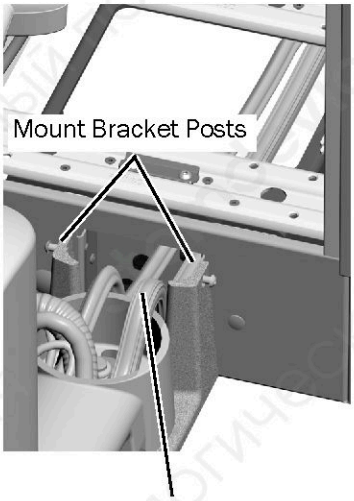
5 Level the hub by loosening and tightening the side-to-side mounting screws, as necessary.

Rotate the assembly and check the level. Loosen and tighten the front-to-back mounting screws, as necessary.

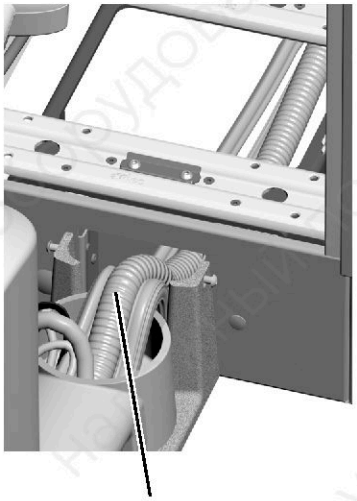
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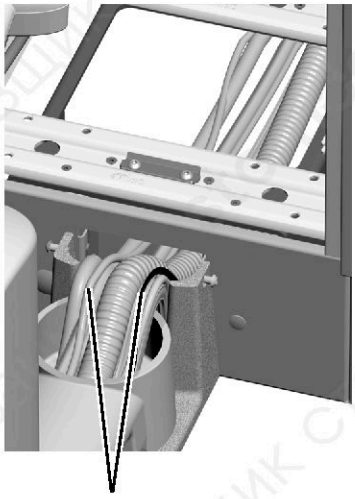
Route the Delivery System Cables and Tubing



1 Route the regulator assembly cable between the mount bracket posts and into the cabinet.



2 Route the vacuum line next.



3 Route the rest of the cables. Ensure all tubing and cables are completely tucked between the posts and are straight, not crossed.

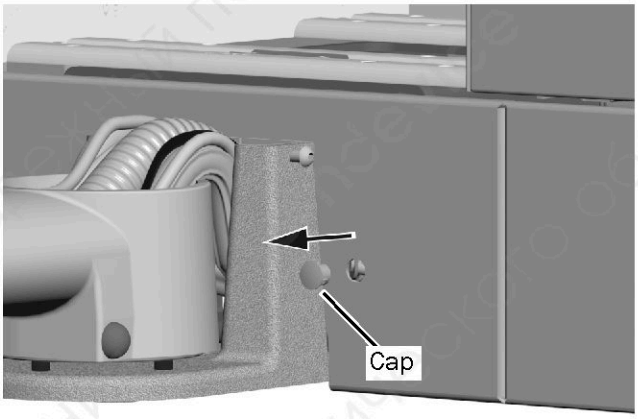
Install the Water Bottle

To install the remote mount water bottle, use the instructions that ship with the water bottle.

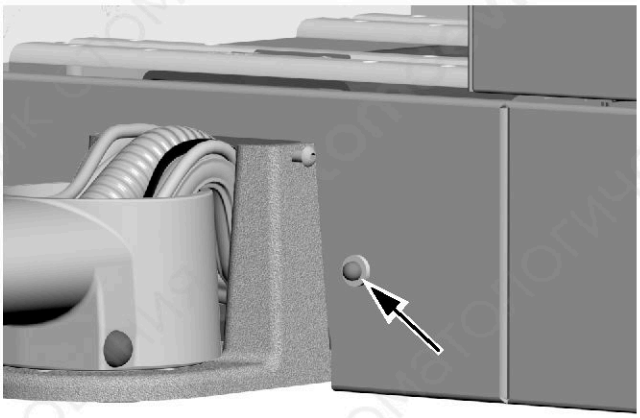
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Install the Indicator Light (300 W Power Supply only)



1 Remove the cap from the indicator light opening in the cabinet.



2 Insert the indicator light into the opening.

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Connect the Wires and Data Line



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.

Complete the instructions for your system's configuration.

300 W Stand-Alone Power Supply 10
A-dec 511 Dental Chair 12
A-dec 311/411 Dental Chair 14
Inspire, Preference, or Other Cabinets 16

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Connect the Wires to a 300 W Stand-Alone Power Supply

Complete the instructions for the product you are installing.

A-dec 541. 10
A-dec 545. 11

A-dec 541



1. Connect the four-position connector to the power supply.
2. Connect the six-position connector to the power supply.
3. Connect the indicator light connector to the power supply.
4. Connect the two-position connector to the 24 VAC isolated lead.

Next Step If the system includes a data line, see "Connect the Data Line to an Inspire, Preference, or Other Cabinet" on page 16.

Otherwise, see "Connect the Tubing" on page 17.

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A-dec 545



1 Connect the six-position connector to the power supply.

2 Connect the indicator light connector to the power supply.

NOTE Do not connect the 24 VAC isolated lead.

Next Step If the system includes a data line, see "Connect the Data Line to an Inspire, Preference, or Other Cabinet" on page 16.

Otherwise, see "Connect the Tubing" on page 17.

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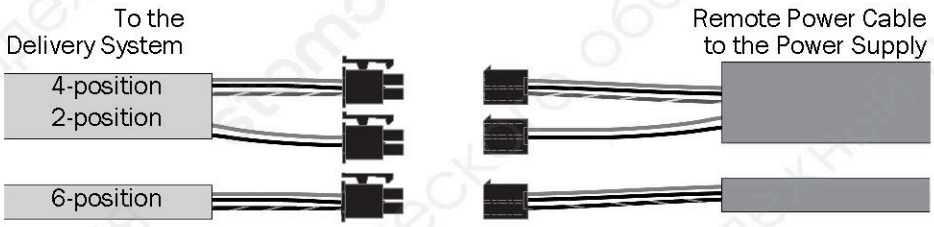
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Connect the Wires and Data Line to an A-dec 511 Dental Chair

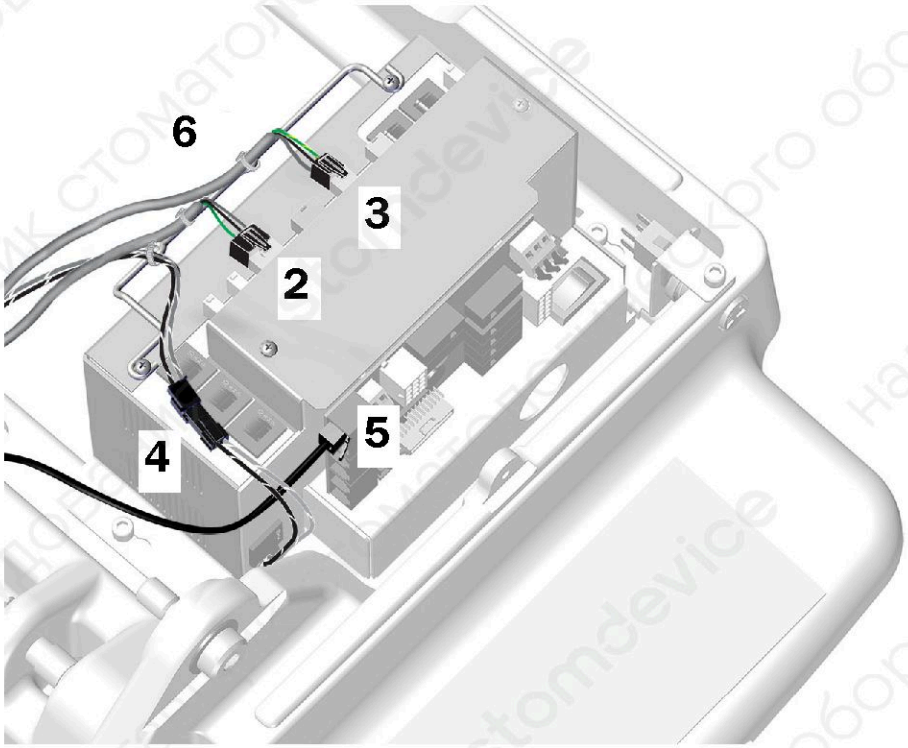
Complete the instructions for the product you are installing.

A-dec 541 12
A-dec 545 13

A-dec 541



1 Connect the four-position, two-position, and 6-position connectors from the delivery system to the connectors on the remote power cable.



2 Connect the remote power cable's six-position connector to the power supply.

3 Connect the remote power cable's four-position connector to the power supply.

4 Connect the remote power cable's two-position connector to the 24 VAC isolated lead.

5 Plug in the data line, if included. It does not matter which port the line plugs into.

6 Use cable ties to secure the wires to the bail.

Next Step See "Connect the Tubing" on page 17.

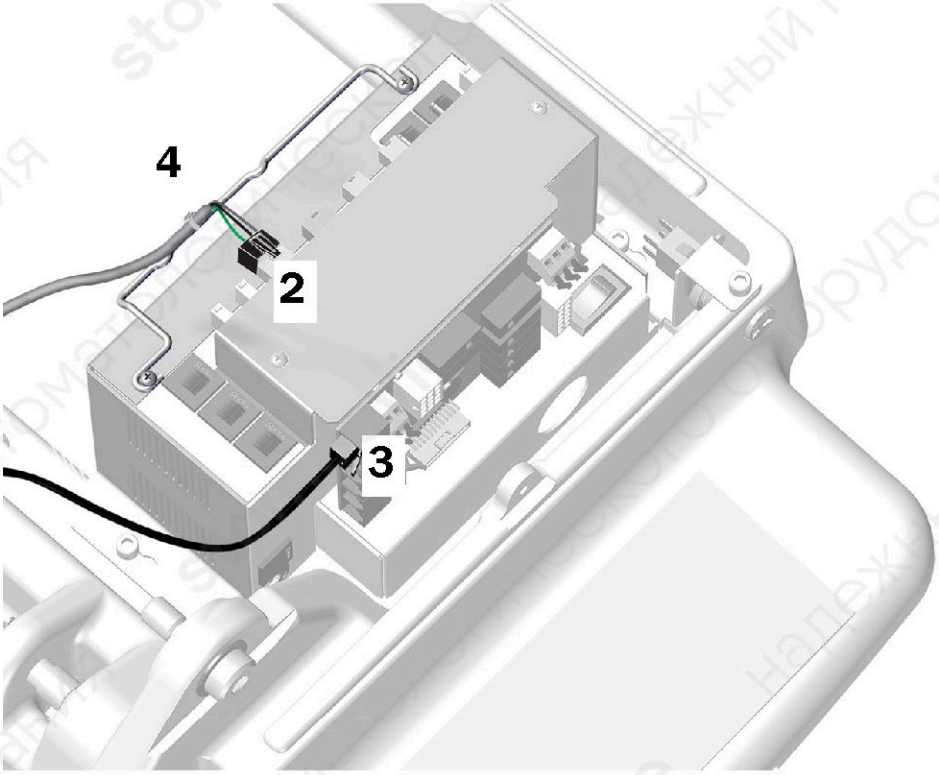
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A-dec 545



1 Connect the 6-position connector from the delivery system to the connector on the remote power cable.



2 Connect the remote power cable's six-position connector to the power supply.

3 Plug in the data line, if included. It does not matter which port the line plugs into.

4 Use cable ties to secure the wires to the bail.

Next Step See "Connect the Tubing" on page 17.

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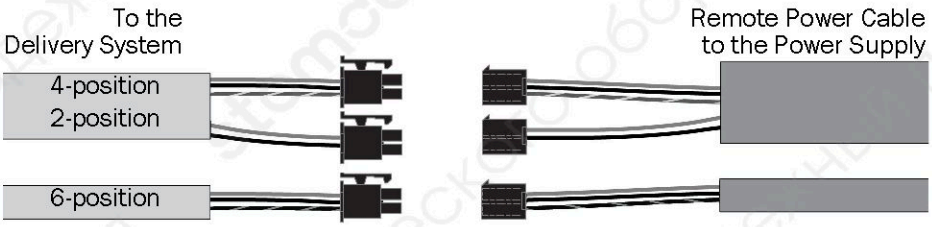
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Connect the Wires and Data Line to an A-dec 311/411 Dental Chair

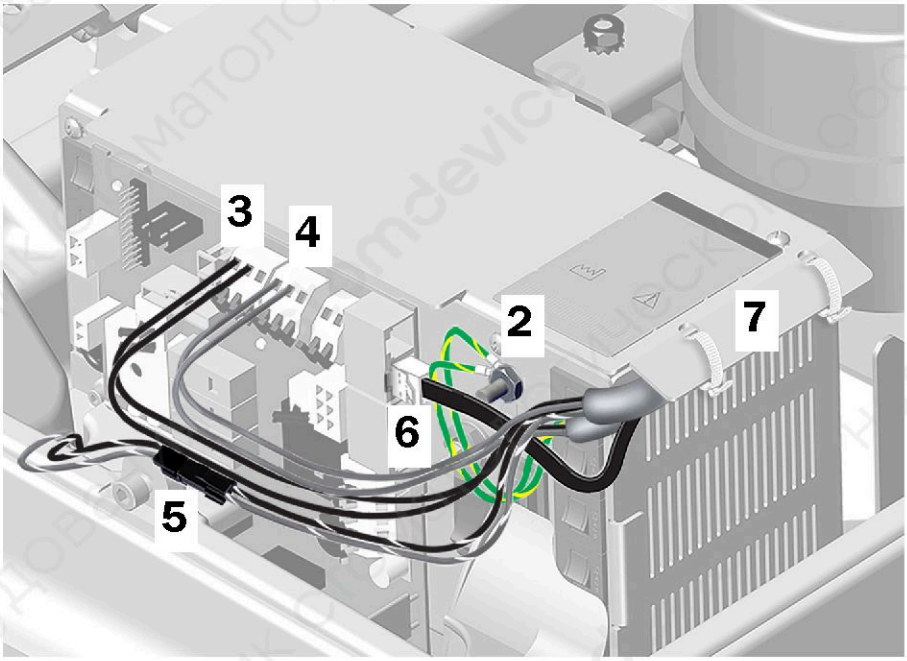
Complete the instructions for the product you are installing.

A-dec 541. 14
A-dec 545. 15

A-dec 541



1 Connect the four-position, two-position, and six-position connectors from the delivery system to the connectors on the remote power cable.



2 Attach both ground wires.

3 Connect both black wires to 0 V.

4 Connect both gray wires to 24 V.

5 Connect the remote power cable's two-position connector to the 24 VAC isolated lead.

6 Plug in the data line, if included. It does not matter which port the line plugs into.

7 Use cable ties to secure the wires and data line under the lip.

Next Step See "Connect the Tubing" on page 17.

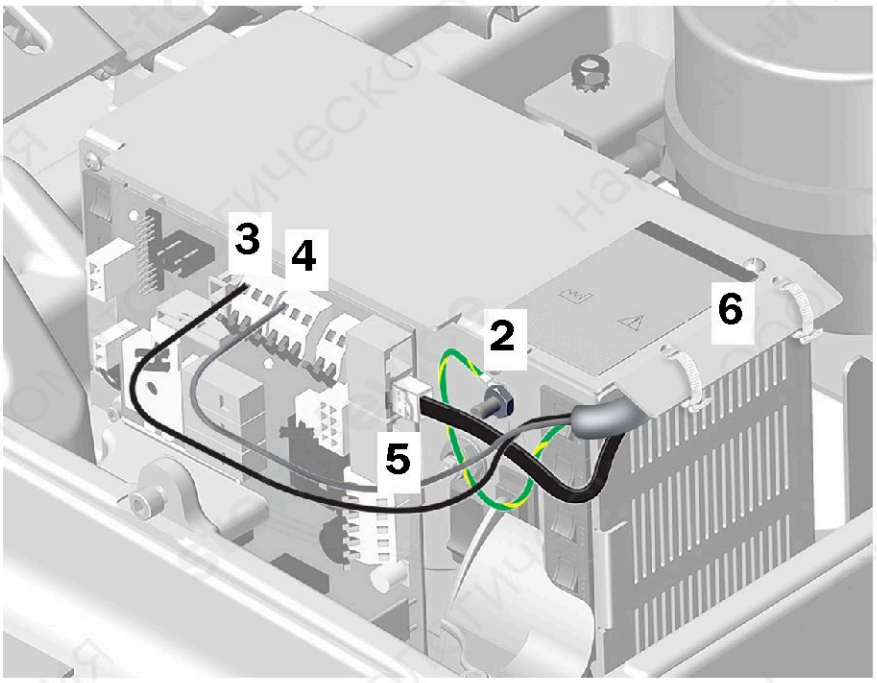
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A-dec 545



1 Connect the six-position connector from the delivery system to the connector on the remote power cable.



2 Attach the ground wire.

3 Connect the black wire to 0 V.

4 Connect the gray wire to 24 V.

5 Plug in the data line, if included. It does not matter which port the line plugs into.

6 Use cable ties to secure the wires and data line under the lip.

Next Step See "Connect the Tubing" on page 17.

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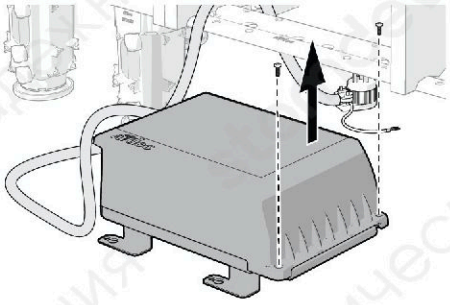
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Connect the Data Line to an Inspire, Preference, or Other Cabinet

A-dec Inspire Distribution Box

Recommended Tool

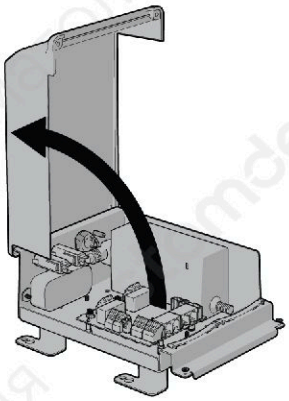
- Phillips head screwdriver



TIP To provide easier access for making connections, position the distribution box outside of the cabinet

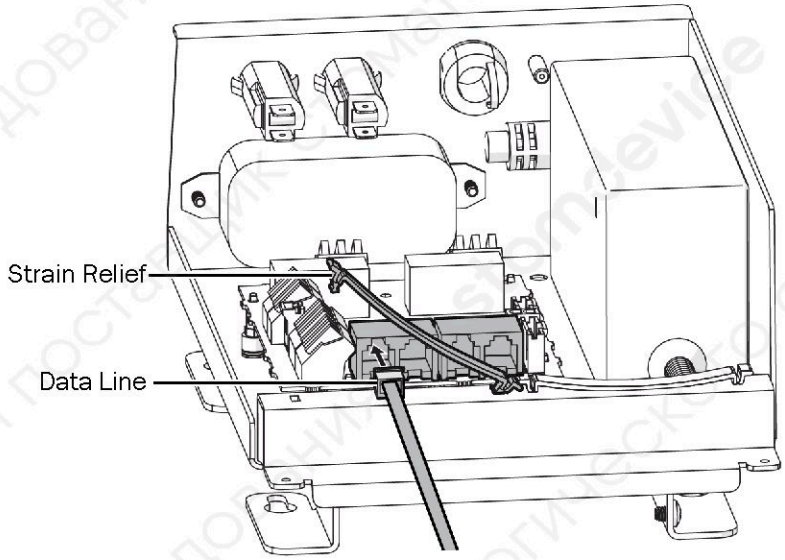
1 Use a Phillips head screwdriver to loosen the two screws securing the lid.

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.



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

2 Remove the cover.



3 Plug in the data line. It does not matter which data port the line plugs into.

4 Secure the data line under the strain relief.

Preference or Other Cabinets and Chairs

Use a cable splitter to connect the data line to a Preference cabinet or non-A-dec cabinets or chairs.

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Connect the Tubing

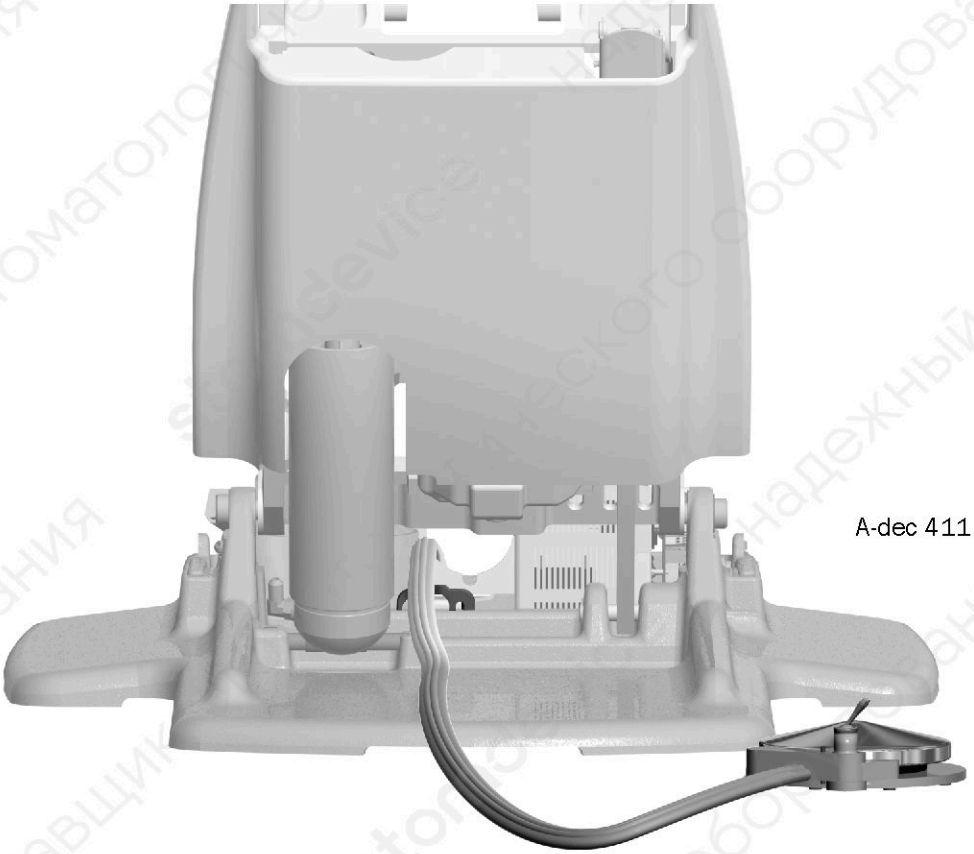
Install the Foot Control (541 only)

NOTE The installation procedure for a disk foot control and lever foot control is the same.

Install the Foot Control on a Chair

Recommended Tool

- 3/16" hex key

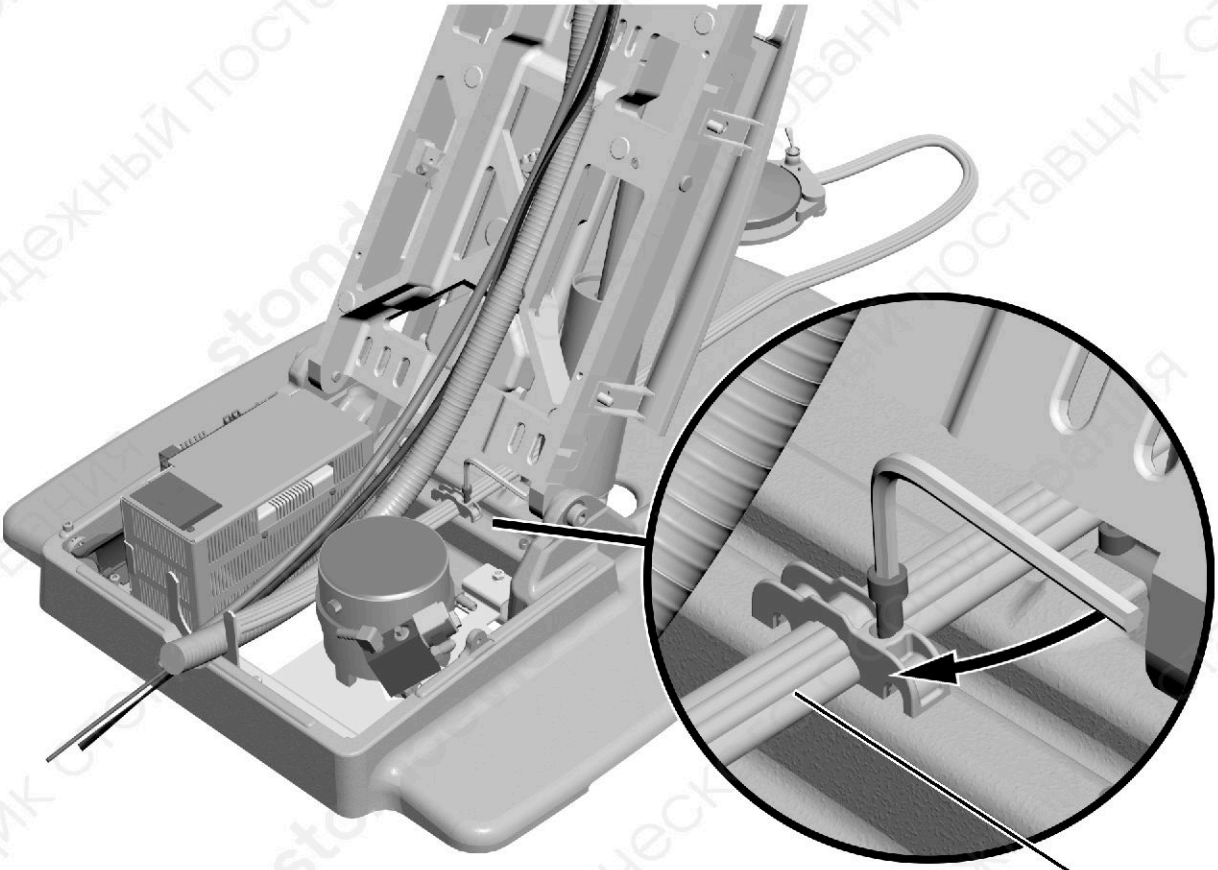


A-dec 411 Dental Chair

1 From the back of the chair, route the foot control tubing over the strain relief and behind the power supply.

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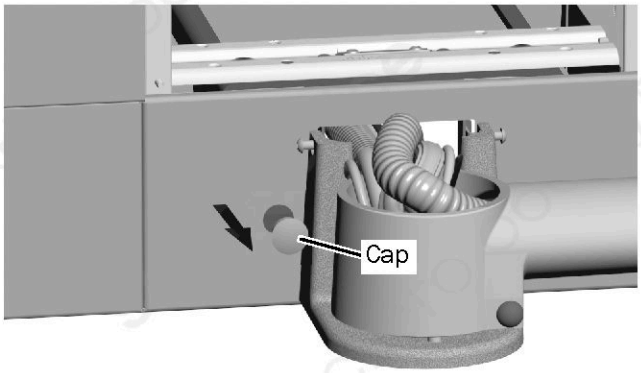
2 Use a 3/16" hex key to secure the foot control tubing to the chair base in the strain relief.

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

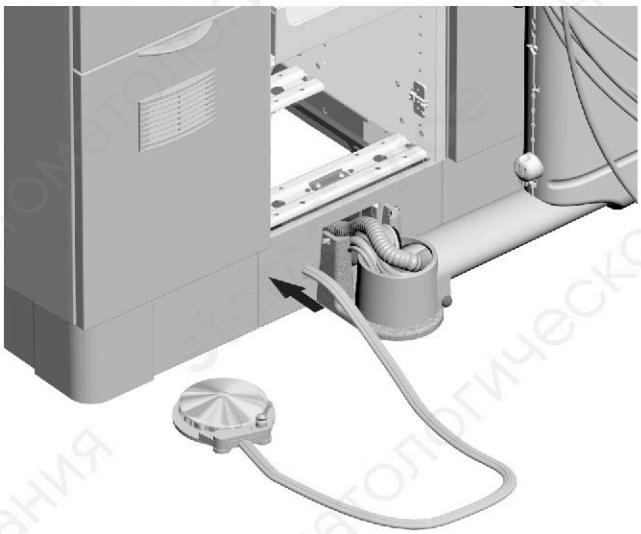
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Install the Foot Control on a Cabinet



1 Remove the cap from the foot control opening in the cabinet.



2 Route the foot control tubing through the subbase.

NOTE A-dec provides sufficient tubing length for a remote mount foot control, but an extension may be needed.

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Install the Foot Control on a Wall

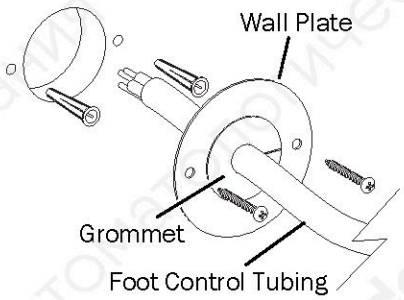
Recommended Tools

- Drill and drill bits
- Phillips head screwdriver

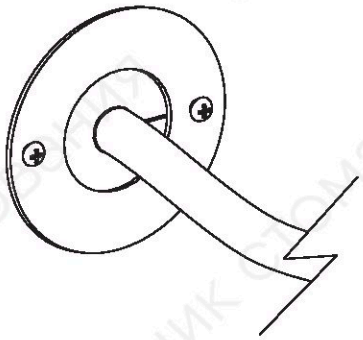
Use the foot control wall plate template, available in the *541/545 Delivery Systems Stand Alone Applications Template* (p/n 85.0050.00).

1 Drill a 2-1/8" (54 mm) hole and two 1/4" (7 mm) holes as shown in the foot control wall plate template.

2 Install the tubing through the grommet. Push the grommet and tubing through the wall plate.



3 Use a Phillips head screwdriver and the screws provided in the wall plate kit to attach the cover plate to the wall.



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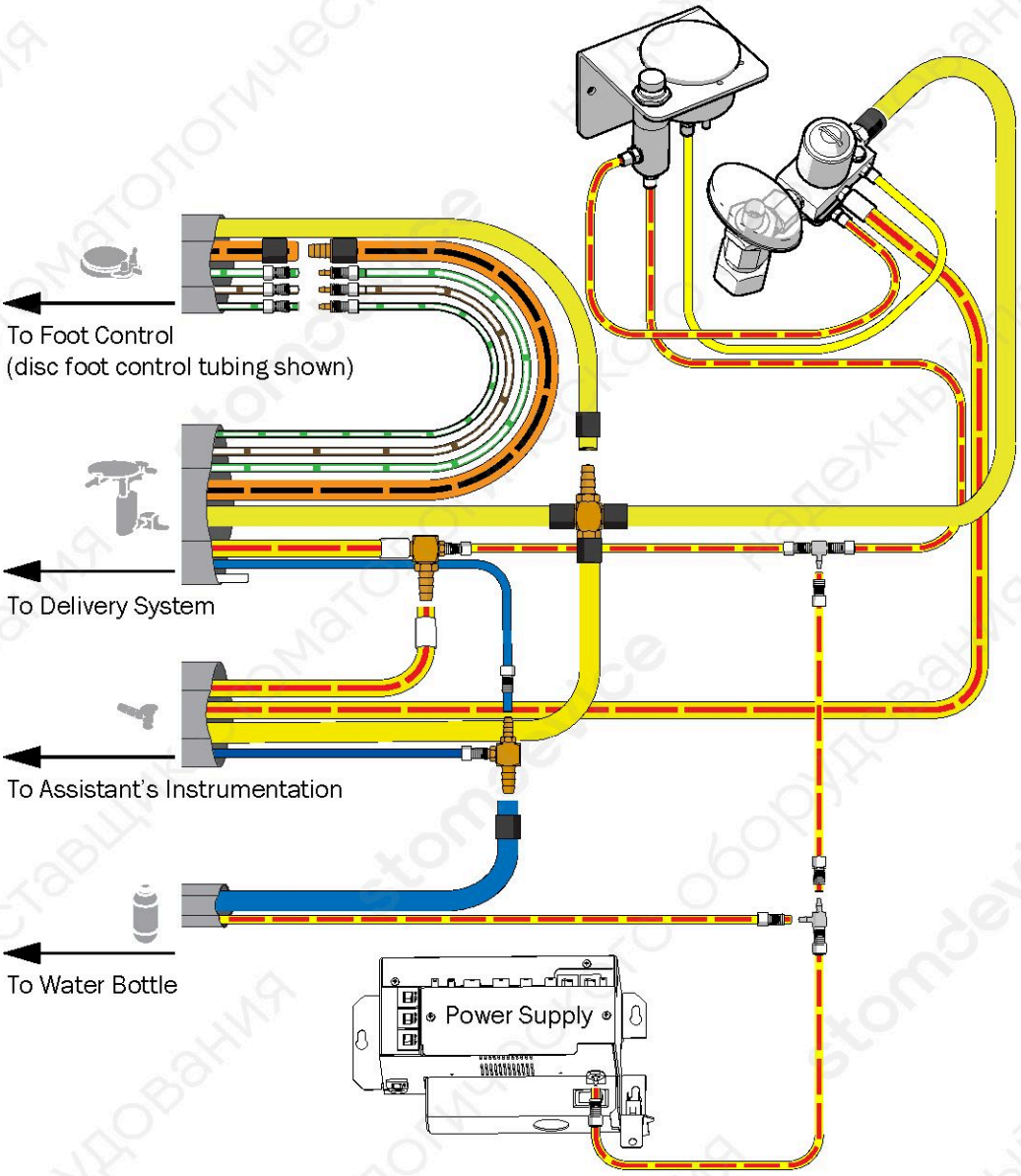
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Connect the Tubing (541)

Connect the tubing according to the following flow diagram.

NOTE To connect to an A-dec 511 power supply, use the quick disconnects from the kit.

NOTE To connect the pilot air tubing to an A-dec 311/411 dental chair, see *Connect an A-dec 342, 541, or 542 Delivery System or A-dec 545 Assistant's Instrumentation to an A-dec 311 or 411 Dental Chair Installation Guide* (p/n 86.0160.00).



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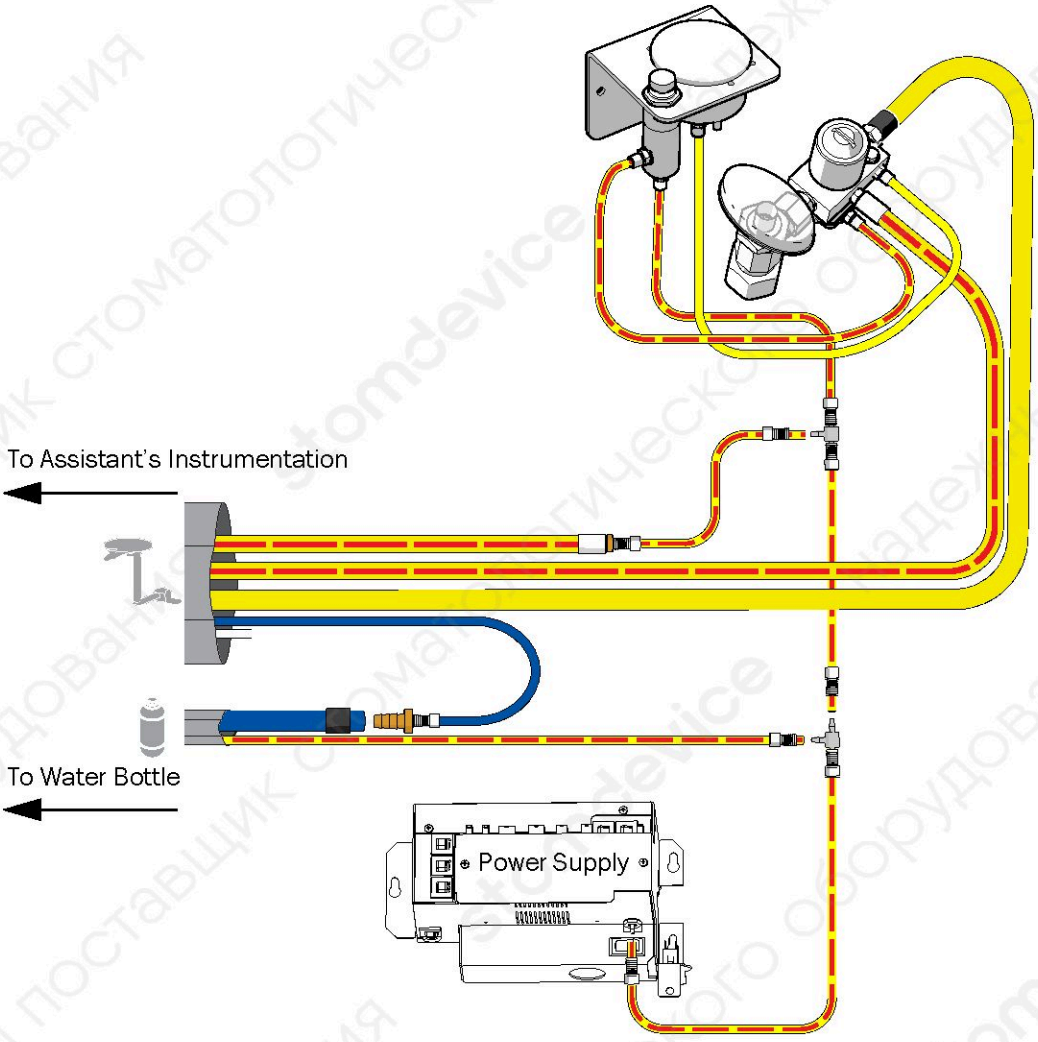
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Connect the Tubing (545)

Connect the tubing according to the following flow diagram.

NOTE To connect to an A-dec 511 power supply, use the quick disconnects from the kit.

NOTE To connect the pilot air tubing to an A-dec 311/411 dental chair, see *Connect an A-dec 342, 541, or 542 Delivery System or A-dec 545 Assistant's Instrumentation to an A-dec 311 or 411 Dental Chair Installation Guide* (p/n 86.0160.00).



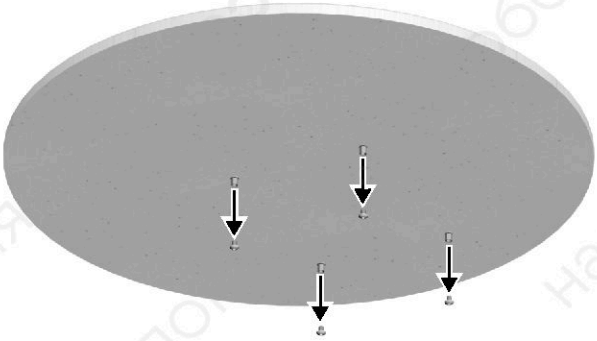
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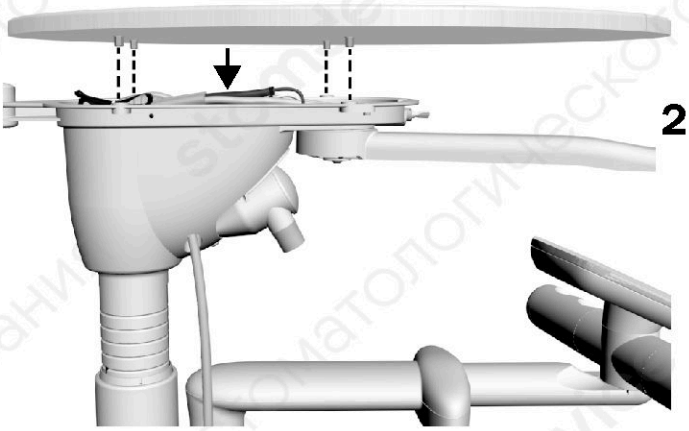
Attach and Level the Round Worksurface

Recommended Tool

- 1/8" hex key

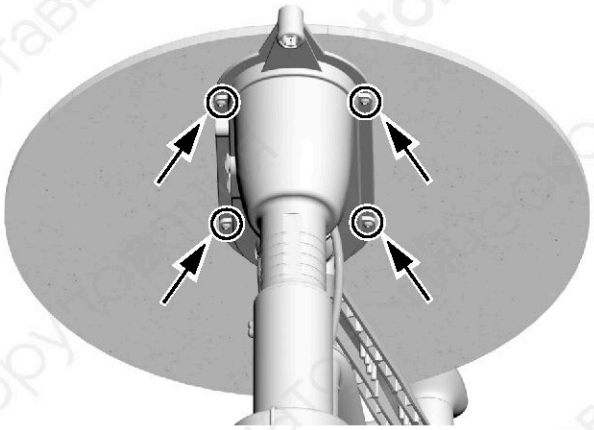


1 Remove the screws from the threaded standoffs underneath the worksurface.



2 Position the worksurface on the worksurface support housing. Align the holes in the support housing with the threaded standoffs on the bottom of the worksurface.

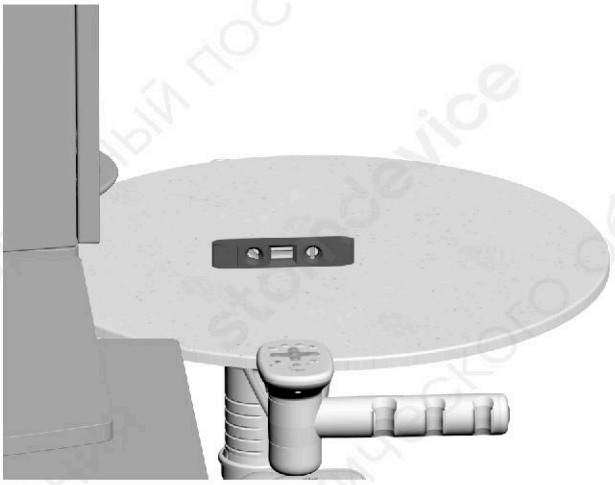
NOTE Keep the tubing out of the way so it is not pinched.



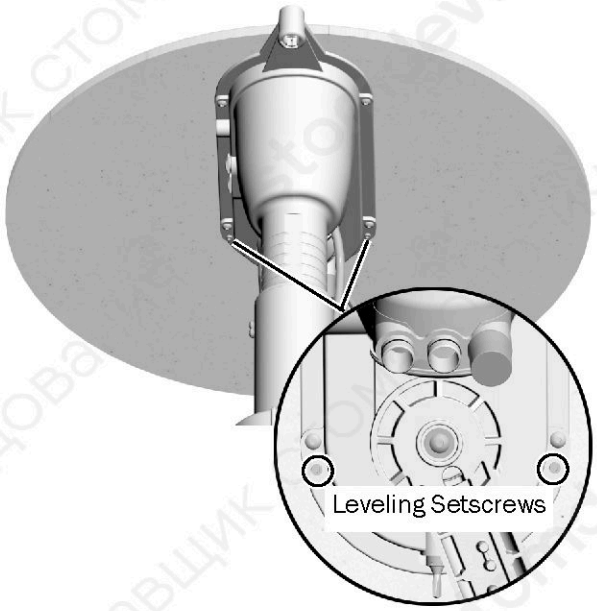
3 Insert the worksurface screws that you removed in step 1. Use a 1/8" hex key to securely tighten them.

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4 Position the worksurface arm in a typical working position and center a level on the round worksurface over the support housing.



5 Use a 1/8" hex key to adjust the two setscrews in the worksurface support housing until the surface is level.

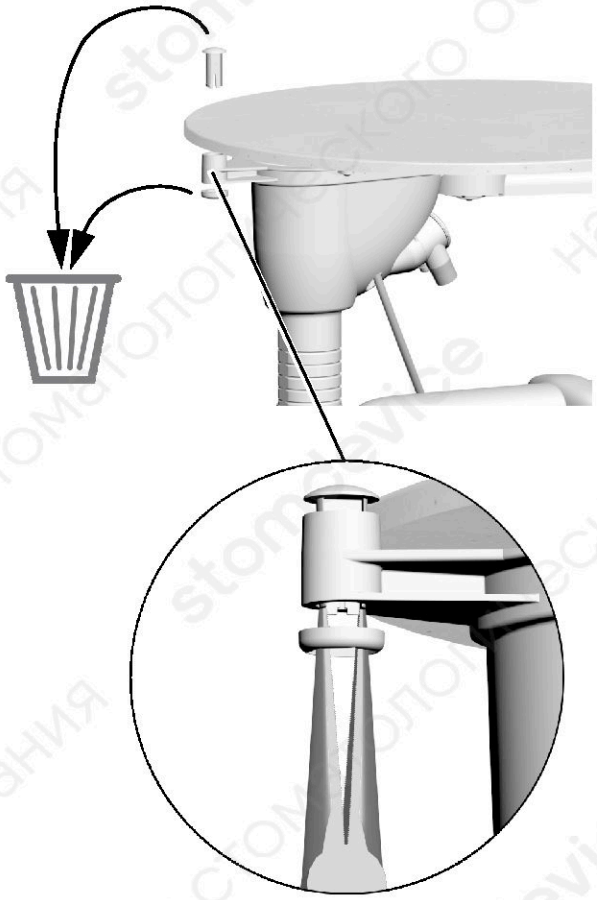
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Install the Tray Holder Mount (optional)

Recommended Tools

- 3/16" hex key
- Needle-nose pliers



1 Remove the tape from the tray holder mount, and then remove and discard the plug and collar.

TIP You may need to use needle-nose pliers to squeeze the bottom of the plug to help remove it.

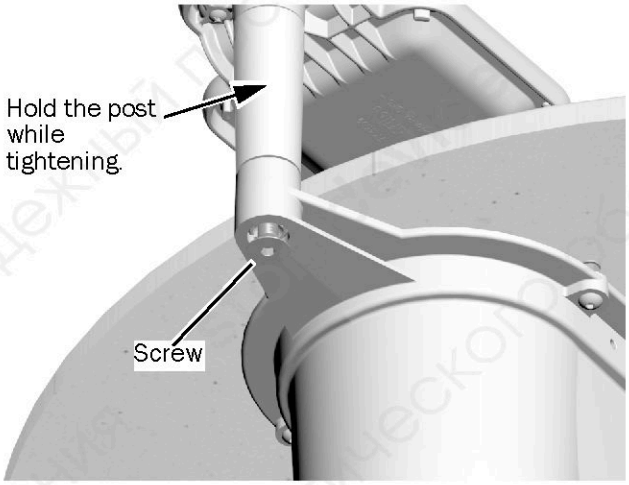


2 Insert the tray holder mount into the work surface support.

NOTE Leave the screw in the bottom of the tray holder mount as you insert it.

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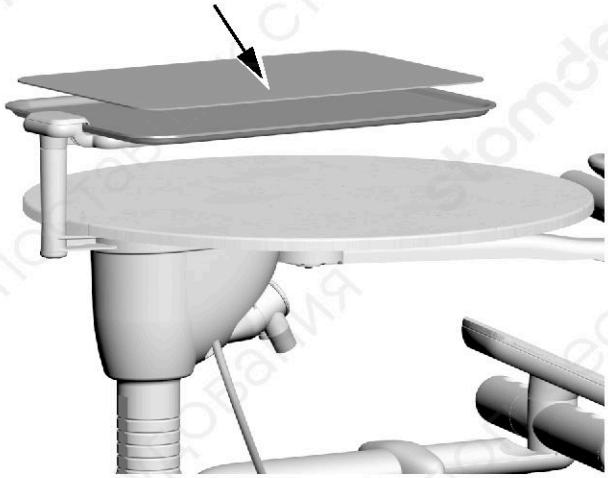


3 Use a 3/16" hex key to tighten the screw on the bottom of the tray holder mount. Tighten the screw until the tray holder mount cannot rotate (the tray holder should be able to).

NOTE When fully tightened, the screw is not fully flush against the tray holder mount.



4 Install the tray holder on the tray holder mount.

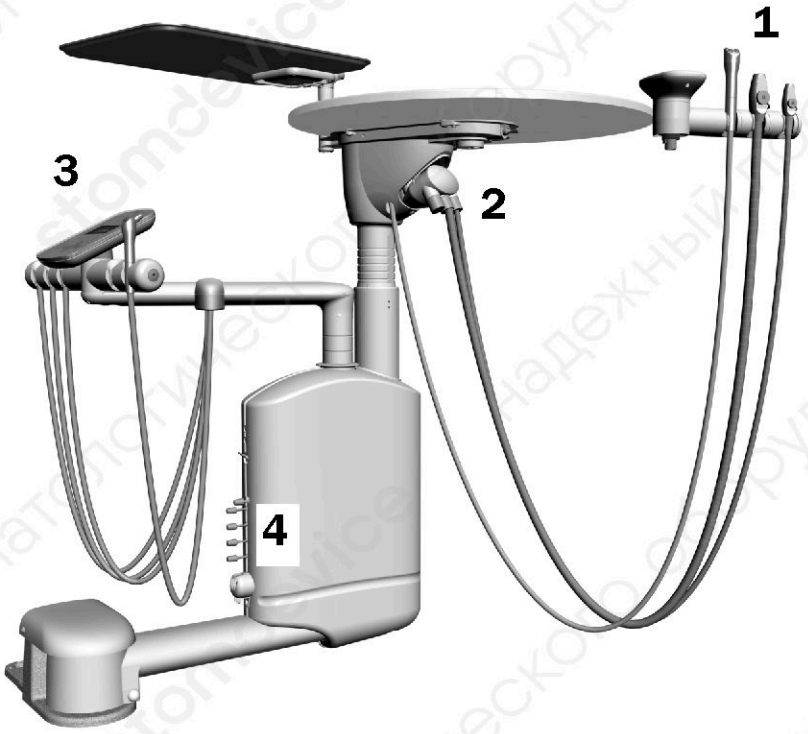


5 Place the pad on the tray holder.

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Complete the Installation



1 Place the assistant's instrumentation in the assistant's holder.

2 Attach the assistant's instrumentation tubing to the vacuum canister.

3 **541 only**: Place the syringe and handpiece tubing in the doctor's holder.

4 **541 only**: Install the adjustment knobs.

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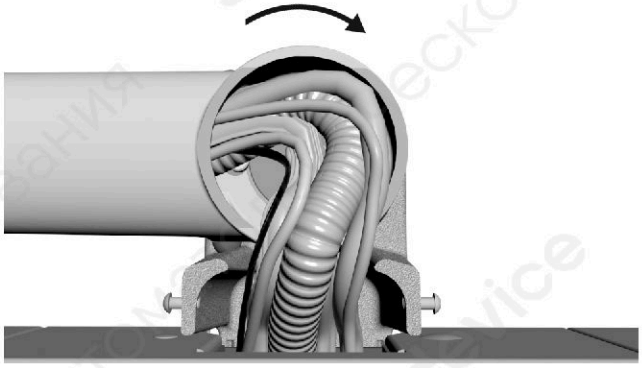
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Adjust the System

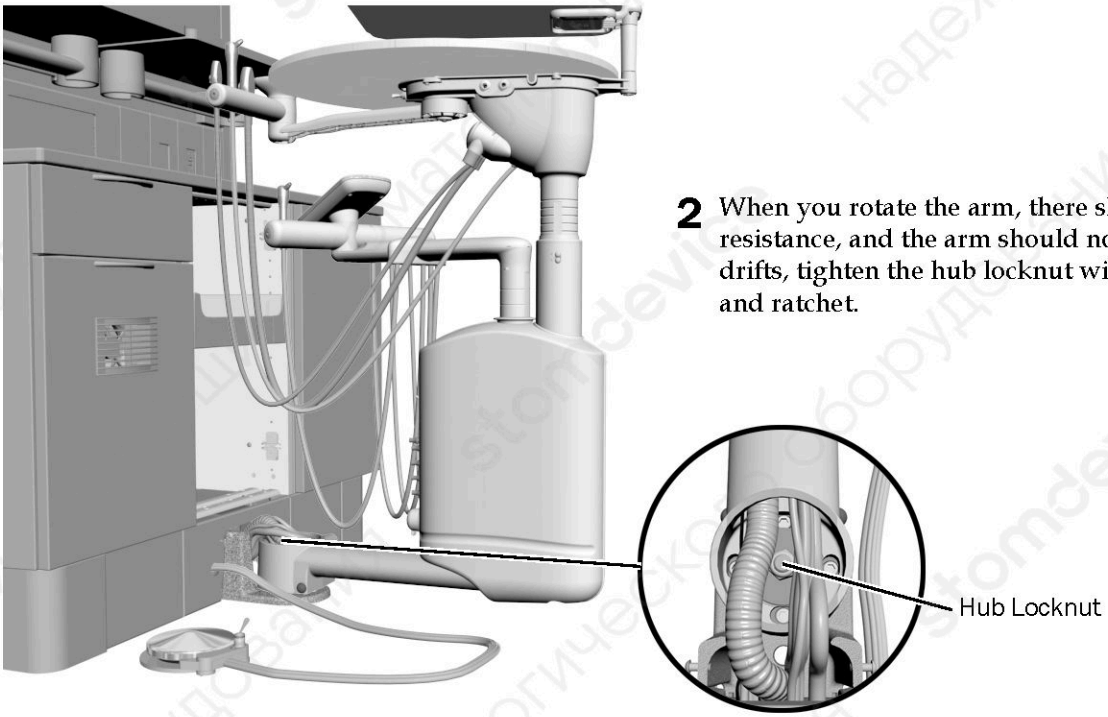
Adjust the Rotation Tension

Recommended Tool

- 3/4" socket (deep well) with 6" extension



1 Ensure there is enough slack in the tubing to rotate the assembly.

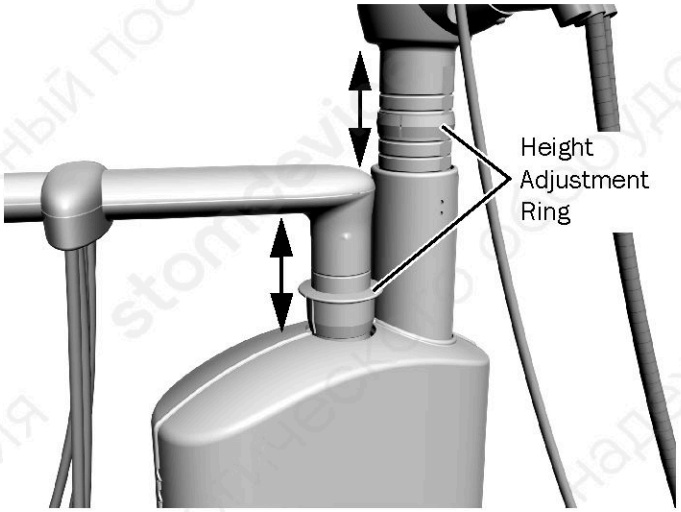


2 When you rotate the arm, there should be slight resistance, and the arm should not drift. If the arm drifts, tighten the hub locknut with a 3/4" socket and ratchet.

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Adjust the Worksurface and Instrumentation Arm Height



1 Lift the upper part of the vertical post.

2 Slide the height adjustment ring to the desired position.

3 Lower the vertical post onto the ring.

Adjust the Handpiece Drive Air Pressure (541 only)



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

1 Locate the hole directly under the control head and pull the covers away from each other to remove them.

2 Lift the handpiece from the holder. A handpiece must be attached to the tubing to read the pressure.

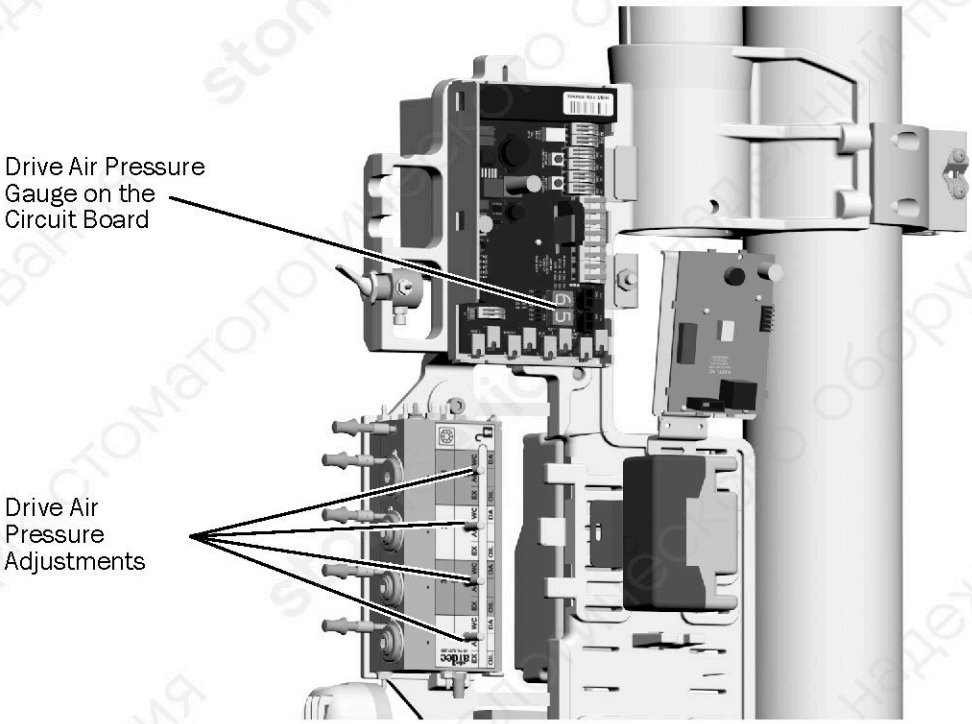
3 Make sure the water coolant is turned off.

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4 With the handpiece running, check the drive air pressure gauge on the circuit board.

NOTE Pressure can also be measured with a handpiece pressure gauge or with a deluxe touchpad or deluxe plus touchpad. To check the pressure through the touchpad, press and hold — and + at the same time while making the adjustments.



CAUTION Do not turn the drive air adjustment stem too far. The stem may come completely out.

5 Adjust the drive air pressure for the activated handpiece to meet the manufacturer's specifications. Turn the stem clockwise to decrease pressure.

The control head gauge indicates the drive air pressure in psi (14.5 psi equals 1 bar).

NOTE When adjusting the drive air pressure, take into account where it is measured. Pressure is greater at the control head, as read through the control head gauge or touchpad, than at the handpiece.

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Adjust the Intraoral Light Source (541 only)

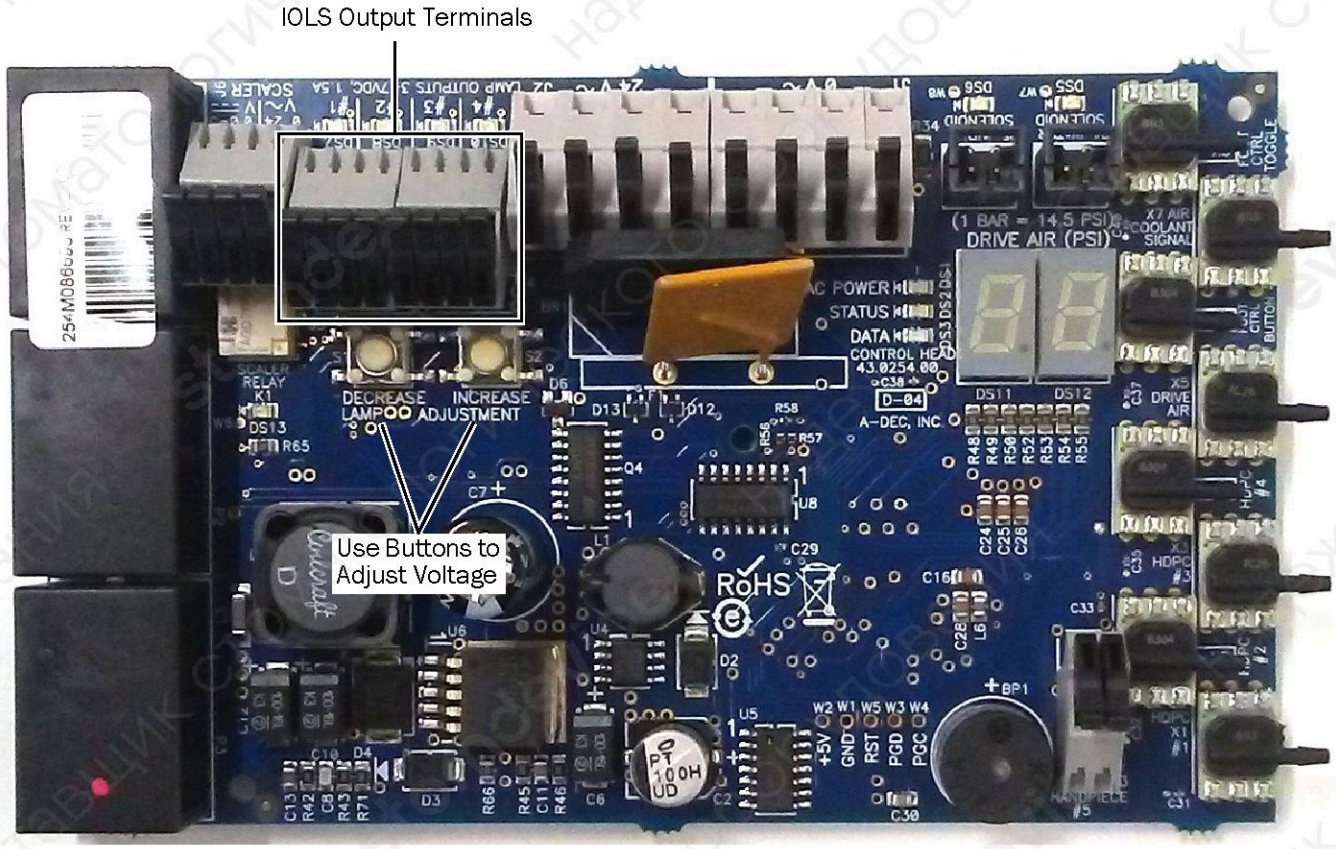
Recommended Tool

- Voltmeter

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.

1 Remove the covers. For details, refer to step 1 on page 29.

2 Set the voltmeter to DC voltage and place its probes on the IOLS output terminals for the handpiece you're adjusting.



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

3 Use the buttons behind the terminal to adjust the voltage according to the following table.

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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 x 0.006 x 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 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			

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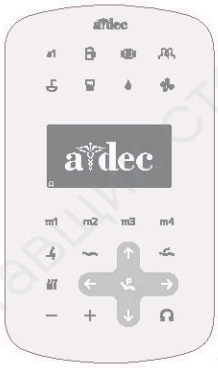
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Customize Handpiece Touchpad Settings

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.

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.

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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 →.
3. Press → again to select **Handpieces**.
4. Press ↓ to select **Intraoral Lt Source,** then press → on the **Handpiece Setup** screen.
5. Lift the desired handpiece from the holder.
6. Press ↑ or ↓ to move to the desired setting on the **Light Source Setup** screen. With the setting highlighted, press — or + to specify the setting, then press →. 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 ← 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 →.
3. Press ↓ to select **Touchpad,** then press →.
4. Press ↑ or ↓ to select **Contrast Adjust** or **Help Messages** on the **Touchpad Setup** screen, then press →:
   - **Contrast Adjust:** Press — or + to adjust the contrast. Press → to save the setting. Three beeps confirm the setting.
   - **Help Messages:** Press — or + to turn **On** or **Off** the help messages. Press → to save the setting. Three beeps confirm the setting.
5. When settings are complete, press ← 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.

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Test the System

After you have completed the installation, use the following checklist to test the delivery system; then follow up with the customer.

Delivery System

- The handpieces function properly and are set to the doctor's preferences:
  - Water coolant, air coolant, and spray.
  - Handpiece tubing flush.
  - Handpiece holder valves and switches.
  - Handpiece drive air pressure.
- Foot control operates properly.

Utilities

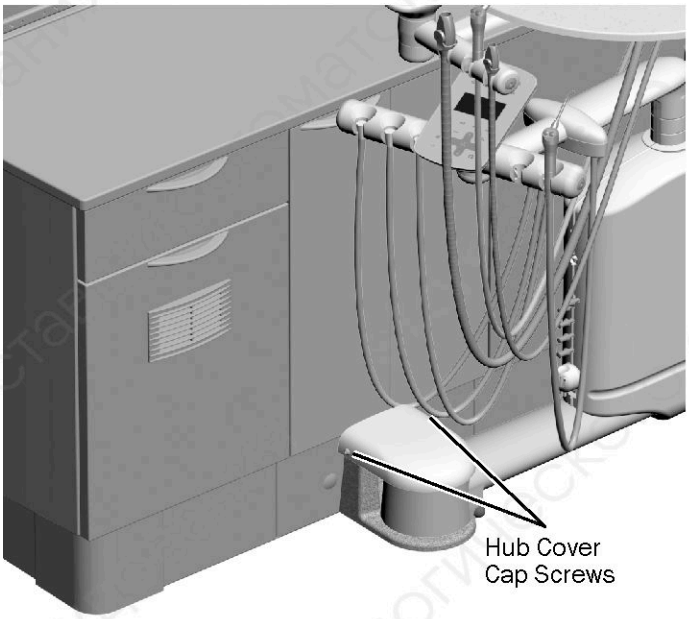
- Regulated air pressure to the delivery system is at 80 psi (552 kPa).
- If the system includes a floor box, it is free of air and water leaks.
- Tubing and connections are not kinked and are free of air and water leaks.
- Excess tubing and wires are coiled and stored away from moving parts.

Attach the Hub Mount Cover and Cabinet Doors

Recommended Tool

- 5/32" hex key

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



1. Remove the cap screws from the sides of the hub.
2. Use the cap screws and a 5/32" hex key to secure the cover on the hub mount.
3. Reinstall the cabinet doors.

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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.

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86.0763.00 Rev B
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