INSTRUCTIONS FOR USE

A-dec 500® 12 O’Clock Systems
For A-dec 541 Delivery System and 545 Assistant’s Instrumentation
A-DEC  500™ 12 O’CLOCK SYSTEM

Model 541 Duo Delivery System

Model 545 Assistant’s Instrumentation

Instructions For Use
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Identification of Symbols

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="UL logo" /></td>
<td>Recognized by Underwriters Laboratories Inc. with respect to electric shock, fire and mechanical hazards only in accordance with UL 60601-1 (2601-1) and under mutual recognition agreement with CAN/CSA C22.2, No. 601.1.</td>
</tr>
<tr>
<td><img src="image" alt="UL logo" /></td>
<td>Classified by Underwriters Laboratories Inc. with respect to electric shock, fire and mechanical hazards only in accordance with UL 60601-1 (2601-1) and under mutual recognition agreement with CAN/CSA C22.2, No. 601.1.</td>
</tr>
<tr>
<td><img src="image" alt="UL logo" /></td>
<td>UL listed to UL 61010A-1, BS EN 61010-2-010 and Canadian (CAN/CSA C22.2, No. 1010.1-92) safety standards.</td>
</tr>
<tr>
<td><img src="image" alt="CE logo" /></td>
<td>Conforms to applicable European Directives (refer to Declaration of Conformity).</td>
</tr>
<tr>
<td><img src="image" alt="Protective earth" /></td>
<td>Protective earth (ground).</td>
</tr>
<tr>
<td><img src="image" alt="Functional earth" /></td>
<td>Functional earth (ground).</td>
</tr>
<tr>
<td><img src="image" alt="Attention" /></td>
<td>Attention, consult accompanying documents. No user serviceable parts. Attention, line voltage. Only licensed electrician should remove cover.</td>
</tr>
<tr>
<td><img src="image" alt="Type B" /></td>
<td>Type B applied part.</td>
</tr>
<tr>
<td><img src="image" alt="Class II" /></td>
<td>Class II equipment.</td>
</tr>
<tr>
<td><img src="image" alt="Caution" /></td>
<td>Caution: Metal surfaces can be hot during and following the dry cycle.</td>
</tr>
</tbody>
</table>

Classification of Equipment (EN-60601-1)

<table>
<thead>
<tr>
<th>Type/Mode</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Types of shock protection</td>
<td>CLASS I EQUIPMENT: Dental chairs, dental lights, and power supplies  CLASS II EQUIPMENT: Chair, wall, and cart-mounted delivery systems</td>
</tr>
<tr>
<td>Degree of shock protection TYPE B APPLIED PART: Delivery systems only</td>
<td></td>
</tr>
<tr>
<td>Degree of protection against water ingress</td>
<td>ORDINARY EQUIPMENT: All products</td>
</tr>
<tr>
<td>Mode of operation</td>
<td>CONTINUOUS OPERATION: All models except dental chairs  CONTINUOUS OPERATION WITH INTERMITTENT LOADING: Dental chairs - 5% duty cycle</td>
</tr>
<tr>
<td>Flammable Gases:</td>
<td>Not suitable for use in the presence of a flammable anesthetic mixture with air, oxygen, or nitrous oxide, where such gasses may accumulate in concentration (closed space).</td>
</tr>
</tbody>
</table>

Electrical Rating

<table>
<thead>
<tr>
<th>Type</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volts:</td>
<td>100/110-120/220-240 VAC</td>
</tr>
<tr>
<td>Frequency:</td>
<td>50-60 Hz</td>
</tr>
<tr>
<td>Current:</td>
<td>As configured and specified in equipment manual (products labeled 15A or greater require dedicated circuit, identified in distribution panel).</td>
</tr>
</tbody>
</table>

Environmental Specifications

<table>
<thead>
<tr>
<th>Temperature/Humidity</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage/Transportation</td>
<td>Temperature: -40°C to 70°C (-40°F to 158°F)  Relative humidity: 80% for up to 31°C, decreasing linearly to 50% at 40°C</td>
</tr>
<tr>
<td>Operating</td>
<td>Temperature: 10°C to 40°C (50°F to 104°F)  Relative humidity: 80% for up to 31°C, decreasing linearly to 50% at 40°C.</td>
</tr>
<tr>
<td>Indoor Use:</td>
<td>Altitude up to 2,000m (6,563 ft.), installation category II, pollution degree 2. (UL 61010A-1 and CAN/CSA C22.2, No. 1010.1-92 only).</td>
</tr>
</tbody>
</table>
Warranty

A-dec warrants all products against defects in materials or workmanship for one year from time of delivery. A-dec’s sole obligation under the warranty is to provide parts for the repair, or at its option, to provide the replacement product (excluding labor). The buyer shall have no other remedy. All special, incidental, and coincidental damages are excluded.

Written notice of breach of warranty must be given to A-dec within the warranty period. The warranty does not cover damage resulting from improper installation or maintenance, accident or misuse. The warranty does not cover damage resulting from the use of cleaning, disinfecting or sterilization chemicals and processes. The warranty also does not cover light bulbs. Failure to follow instructions provided in the A-dec Instructions For Use (operation and maintenance instructions) may void the warranty.

A-dec warrants A-dec dental chair cylinders, both lift and tilt for ten years from the date of purchase of the chair or the cylinder. This warranty is retroactive to A-dec chair cylinders already in the field. The warranty covers chair cylinders A-dec finds to have manufacturing irregularities. Stool cylinders are covered under A-dec’s one-year warranty.

No other warranties as to merchantability or otherwise are made. For service information, contact your local authorized A-dec dealer. Check with local codes and ADA (Americans with Disabilities Act) requirements for installation of this product.

---

![CAUTION](https://example.com/caution.png)

**CAUTION** Federal law restricts this device to sale by or on the order of a dentist, physician, or any other practitioner licensed by the law of the state in which he or she practices to use or order the use of this device.

---

Equipment Alterations Policy

Certain modifications or alterations of A-dec equipment which expand the use of A-dec equipment beyond its design and intent, or which override any safety features of A-dec equipment may jeopardize doctor, patient or staff safety. Field modifications that alter the electrical and/or mechanical safety of A-dec dental devices are in conflict with Underwriters Laboratory (UL) construction file requirements and are not sanctioned by A-dec. Examples of field modifications that diminish safety design include, but are not limited to: rendering access to the line voltage without the use of tools, modification of supporting elements that increase or shift loading characteristics, and the addition of any powered device that exceeds the design limits of the dental system. The use of accessory equipment not complying with the equivalent safety requirements of A-dec equipment may lead to a reduced level of safety of the resulting
About This Document

Welcome to the A-dec 500 12 O’Clock Systems Instructions for Use. This guide provides an easy-to-use source of technical information for operating and maintaining your A-dec 541 and 545 12 O’clock Systems.

Before using your A-dec 541 and 545 12 O’clock Systems, make note of all cautions and warnings. Read the component descriptions, and become familiar with the locations of features and controls.

This document contains the following information:

• Module descriptions
• Feature descriptions
• Adjustments
• Maintenance tasks

Intended Audience

This guide is intended for doctors and dental staff.

system. It is the responsibility of the equipment distributor and the installer to assure that the installation complies with all building code requirements. The responsibility to determine whether a modification or alteration of A-dec equipment falls within these constraints is with the person(s) who initiates, approves and/or performs such modification or alteration. A-dec will not respond to inquiries on an individual basis. This person(s) will be deemed to have assumed all associated risks with such alteration or modification and will hold A-dec harmless from resulting claims, including product liability claims. Additionally, such modification or alteration voids A-dec’s warranty and may invalidate UL or other regulatory agency approval.
INTRODUCTION

This guide contains information on the A-dec 500® 12 O’Clock System:

• Features
• Operating instructions
• Adjustments
• Programming
• Maintenance
• Specifications

About the A-dec 541 and 545 12 O’clock Systems

The A-dec 541 and 545 12 O’clock Systems features two different models (see Figure 1):

• A-dec Model 541 Duo Delivery System
• A-dec Model 545 Assistant’s Instrumentation

Figure 1  A-dec 541 and 545 12 O’clock Systems Models
The A-dec 541 and 545 12 O’clock Systems standard configuration for both Model 541 and 545 has:

- Height-adjustable round worksurface
- Multi-position assistant’s instrument holder
- Autoclavable saliva ejector
- Autoclavable syringe
- Autoclavable HVE (choice of single/dual)
- 2-liter self-contained water system with quick-disconnect water bottle
- Solids collector
- Standard multi-function touchpad (optional)

In addition to the Assistant’s Instrumentation features, the A-dec Model 541 Duo Delivery System also has:

- Four handpiece control block positions
- Control center with room to house integrated ancillary equipment
- Multi-voltage intraoral light source
- Wet/dry foot control with chip blower/accessory button
- Height-adjustable, multi-position doctor’s instrument holder
- Choice of standard or deluxe multi-function touchpad (or no touchpad)
- Autoclavable syringe (option of warm water syringe)

The A-dec Model 541 and Model 545 are floor-mounted delivery systems that install with a variety of Preference Collection® and Preference Slimline™ cabinets.

Optional tray and instrumentation holders are available. Both mount on the round worksurface.

Customer Service

For service information, contact your local authorized A-dec dealer.

Serial Numbers

When you call, please include the serial number for the product (see Figure 2). The serial number for the A-dec 541 and 545 12 O’clock Systems is located on the worksurface housing.

Figure 2 Serial Number Labeling

(A) The REF number is the model number. (B) The first letter of the serial number is the month the product was manufactured. (C) The first digit of the serial number is the year of manufacture. For example, 4 is 2004.
### Table 1  Key to Month of Manufacture

<table>
<thead>
<tr>
<th>Letter</th>
<th>Month</th>
<th>Letter</th>
<th>Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>January</td>
<td>G</td>
<td>July</td>
</tr>
<tr>
<td>B</td>
<td>February</td>
<td>H</td>
<td>August</td>
</tr>
<tr>
<td>C</td>
<td>March</td>
<td>I</td>
<td>September</td>
</tr>
<tr>
<td>D</td>
<td>April</td>
<td>J</td>
<td>October</td>
</tr>
<tr>
<td>E</td>
<td>May</td>
<td>K</td>
<td>November</td>
</tr>
<tr>
<td>F</td>
<td>June</td>
<td>L</td>
<td>December</td>
</tr>
</tbody>
</table>
FEATURES

This section describes the following A-dec 541 and 545 12 O’clock Systems features:

• Assistant’s Instrumentation
• Doctor’s Instrumentation (Model 541 only)
• Round Worksurface
• Foot Control (standard, Model 541 only)
• Touchpad (optional)
• Self-contained water system with quick-disconnect water bottle
• Tray holder (optional)
• Flex-holder (optional)
• Autoclavable warm water syringe (optional)

Figure 3  A-dec 541 and 545 12 O’clock Systems Features

(A) Assistant’s Instrumentation; (B) Round Worksurface; (C) Doctor’s Instrumentation
Assistant’s Instrumentation

Available with Model 541 and 545, A-dec’s standard assistant’s instrumentation package includes:

• Autoclavable syringe, autoclavable QD syringe for International market
• HVE
• Saliva ejector

Optional instruments may include an additional HVE.

The solids collector is part of the standard package and is located under the round worksurface housing.

The assistant’s vacuum instruments are fully autoclavable and have quick disconnect attachments, easily removed for cleaning.

Doctor’s Instrumentation

Only available with Model 541, A-dec’s standard doctor’s instrumentation package includes:

• a delivery system to supply and regulate air and water used to operate dental handpieces, syringes and accessories
• four handpiece control block positions (three wet, one dry)

Round Worksurface

The round worksurface offers flexible positioning of instrumentation and is height adjustable. The standard package comes with laminate, and is also available in solid surface.

Power On/Off Button

The Master On/Off toggle controls the power to the delivery system. The toggle is located under the round worksurface, opposite the optional tray mount.

Handpiece Holder Positions

Activate Handpiece
Each handpiece automatically activates when you lift it from its holder. Press the foot control to operate the activated handpiece.

Handpiece Lockout
When a handpiece is removed from the holder and the foot control is pressed, the dental chair does not operate.
Flex-Holder
The optional flex-holder is a convenient holder position for additional accessories. The holder can mount on the round worksurface.

![Optional Flex-Holder](image)

Foot Control

Only available with the Model 541, the foot control regulates drive air to the active handpiece. It provides an air signal that activates air coolant and water coolant flow. The foot control is equipped with a wet/dry toggle and with a chip blower/accessory button.

NOTE  The foot control has additional functionality when used with a deluxe touchpad or an A-dec Intraoral Camera.

Chip Blower/Accessory Button
The chip blower/accessory button operates as either a chip blower or an accessory button. The chip blower function sends a jet of air through the handpiece without activating the handpiece bur.

The accessory button function operates integrated accessory devices. For more details, see your authorized A-dec dealer.

Wet/Dry Toggle
Use the wet/dry toggle to shut off the water coolant to a handpiece without moving your hands from the oral cavity.
Optional Touchpads

The A-dec 500 12 O’Clock system touchpads centralize treatment room controls into one touch surface. Some touchpad buttons have indicators to alert you if the operation is functioning (see Figure 5.)

Self-contained Water System

The self-contained water system supplies doctor’s and assistant’s syringes. It uses a 2-liter, quick disconnect water bottle, and mounts in a variety of locations.
OPERATION

This section describes how to:

- Operate the 12 O’clock system
- Use the touchpad to operate the:
  - Chair
  - Cuspidor
  - Dental Light
  - Handpieces
- Adjust the 12 O’clock system:
  - Height and positioning
  - Air pressure and water flow
  - Instrumentation holder adjustment and positioning

System Operations

You can activate the system using the master on/off toggle. The foot control and optional touchpad (Standard or Deluxe) allow you to control delivery system functions with a minimum of touch surfaces.

Master On/Off Toggle

- Flip the toggle to the right to turn the unit on.
- Flip the toggle to the left to turn the unit off.

NOTE To prolong the life of your equipment, turn the power off when it is not in use.
Foot Control

- To turn the water coolant off, use your foot to flip the wet/dry toggle.
- To turn the water coolant back on, flip the wet/dry toggle again.

**NOTE** On a deluxe touchpad, the wet/dry toggle operates as a three-way switch with the air and water coolant buttons.

Operate Touchpad

A-dec touchpads control multiple chair and delivery system functions:

- Standard Touchpad — chair, light, cuspidor controls and auxiliary equipment
- Deluxe Touchpad — chair, light, cuspidor, air/water coolant, electric handpiece, scaler, multiple users and auxiliary equipment

Status Icon

The A-dec logo on the Deluxe touchpad indicates the system status:

- Solid blue — normal operation and power is on.
- Blinking — chair stop plate or cuspidor limit switch is active. The icon returns to solid blue once you remove any obstructions.
Chair Positions

The chair direction arrows on the touchpad allow you to manually move the chair base up/down and back up/down. Table 2 lists and describes the direction arrows:

Table 2 Chair Direction

<table>
<thead>
<tr>
<th>Icon</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>🖤</td>
<td>Back down</td>
</tr>
<tr>
<td>🖤</td>
<td>Base down</td>
</tr>
<tr>
<td>🖤</td>
<td>Back up</td>
</tr>
<tr>
<td>🖤</td>
<td>Base up</td>
</tr>
</tbody>
</table>

Position Buttons

Chair position buttons are factory preset to automatically move the chair (see Figure 8).

Figure 8 Chair Position Touchpad Buttons

(A) Chair Direction Arrow; (B) Chair Position Button; (C) Program Button

Table 3 lists and describes the factory presets:

Table 3 Chair Position Factory Presets

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>🖤</td>
<td>Position 1. Automatically positions the chair base and back and turns on the dental light.</td>
</tr>
<tr>
<td>🖤</td>
<td>Position 2. Automatically positions the chair base and back and turns on the dental light.</td>
</tr>
<tr>
<td>🖤</td>
<td>Position 3 (x-ray/rinse). Automatically positions the chair base and back for either x-ray or rinse. Toggles between the two positions and the last manual setting and turns off the dental light.</td>
</tr>
</tbody>
</table>
**Customize Chair Positions 0-2**  
To customize the chair positions:

1. Use the manual controls to adjust the chair position as desired.
2. Press and release the Program button. One beep indicates programming mode.
3. Press the chair position button you wish to reset (for example, Position 1). Three beeps indicate the new setting is programmed in memory.

**Customize Chair Position 3**  
Position 3 functions either as a toggle between x-ray/rinse position and last position or as a programmable position. To customize:

1. Press and hold the program button and the Position 3 button simultaneously for three seconds. Three beeps confirm the x-ray/rinse position is now inactive, and the chair is available for programming.
2. Press the manual chair controls (arrow icons) to position the chair to the desired operating position.
3. Press and release the program button. One beep confirms programming mode.
4. Within 3 seconds, press the Position 3 button. Three beeps indicate the new setting is programmed in memory.

**NOTE** If you change Position 3 to a programmable position, it operates the same as Positions 1 and 2.

To reactivate the x-ray/rinse function:

Press and hold the program button and the Position 3 button simultaneously for three seconds. Three beeps confirm the x-ray/rinse position is now active.

**Cuspidor Functions**  
The cup fill function controls water flow from the cuspidor into a cup (see Figure 9).

**Figure 9 Cup Fill Button**

- Press the cup fill button for a timed operation. The factory preset is a 2.5 second fill.
- Press and hold the cup fill button for manual operation.
**Bowl Rinse**
Bowl rinse provides rinse water for the cuspidor bowl.

*Figure 10 Bowl Rinse Button*

- Press the bowl rinse button for a timed operation. The factory preset is a 30 second rinse.
- Press and hold the bowl rinse button for manual operation.

---

**NOTE** If you press the bowl rinse button twice in less than two seconds, it switches to continuous operation mode. Press the button once to end the continuous bowl rinse mode.

---

**Customize Cup Fill and Bowl Rinse**
To program the cup fill and bowl rinse timing:

1. Press and release the Program button. One beep indicates programming mode.
2. Press and hold the cup fill or bowl rinse button for the desired time.
3. Release the button. Three beeps confirm the setting.

---

**NOTE** If you have a Standard touchpad and wish to use the Auxiliary (A1/A2) buttons, automated cup fill and bowl rinse features are not available.

---

**Dental Light**
The dental light button on the touchpad functions as a three-way switch. You can turn the dental light on or off from either the touchpad or the dental light.

*Figure 11 Dental Light Button*

Press the dental light button to toggle between two intensity settings. The dental light toggles between composite-medium intensity or composite-high intensity settings. When the dental light is in composite mode, the indicator light next to the button blinks (see Figure 12).

*Figure 12 Dental Light Composite Mode*

(A) Dental Light Composite Mode Blinking Indicator
**Dental Light Auto Feature**

The dental light has an auto on/off feature. When you use a programmed chair position (1 or 2), the dental light turns on when the chair reaches operating position. Press Position 0 (entry/exit) or Position 3 (x-ray/rinse) and the dental light automatically turns off.

**NOTE**  If you change Position 3 to a programmable position, it operates the same as Positions 1 and 2.

To activate/deactivate:

- Press and hold the program and light button simultaneously for three seconds. One beep confirms the factory preset is off.
- Press and hold the program and light button simultaneously for three seconds. Three beeps confirming the factory preset is on.

**Handpiece Settings (Deluxe Touchpad Only)**

**Standard Mode**

Activate the electric motor by withdrawing the handpiece from the holder. The settings that appear are the ones last used for that handpiece position.

The electric handpiece allows you to choose a precise pre-set speed or to “feather” up to that speed. Table 4 lists the factory presets for electric handpieces:

**Table 4  Electric Motor, Air and Water Coolant Presets (Standard Mode)**

<table>
<thead>
<tr>
<th>Memory Button</th>
<th>Preset Speed</th>
<th>Air Coolant</th>
<th>Water Coolant</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1</td>
<td>2,000 RPM</td>
<td>On</td>
<td>On</td>
</tr>
<tr>
<td>M2</td>
<td>10,000 RPM</td>
<td>On</td>
<td>On</td>
</tr>
<tr>
<td>M3</td>
<td>20,000 RPM</td>
<td>On</td>
<td>On</td>
</tr>
<tr>
<td>M4</td>
<td>40,000 RPM</td>
<td>On</td>
<td>On</td>
</tr>
</tbody>
</table>

**Program the A-dec Touchpad in Standard Mode.** The A-dec Deluxe touchpad allows you to program four memory buttons with your specific RPM setting. The total range is 300-40,000 RPM. Each button can retain one setting per handpiece per operator A/B, so that a total of 16 customized settings per handpiece is possible (8 in standard mode plus 8 in endodontic mode). To specify a setting for an operator, toggle the A/B operator button before changing a setting. The display screen indicates the operator status (see Figure 13).
To change your handpiece setting:

1. Press the minus (-) and plus (+) buttons to adjust the RPM. The RPM values appear in the display screen (see Figure 14).
2. If desired, use the toggle buttons on the touchpad to change air and water settings.
3. To place the setting into memory (optional), press the Program button, then press the memory button you want to set. Three beeps confirm the setting.
**Forward/Reverse Button.** The forward/reverse toggle button changes the handpiece direction. The system defaults to the forward position when you return the handpiece to the holder or turn off the system (see Figure 15). In reverse mode, the screen icon flashes continuously.

**NOTE** You can also use the foot control as a forward/reverse toggle. When the motor has stopped, tap the accessory (chip/air) button to change the direction.

![Figure 15 Forward/Reverse Button](image)

(A) Forward/Reverse Indicator; (B) Forward/Reverse Toggle Button

**Endodontics Mode**

In addition to handpiece speed adjustments, the endodontics mode allows you to change a number of settings based on the specific file and desired handpiece behavior. Icons in the touchpad window reflect the settings (see Figure 16).

**NOTE** For more information regarding speed limit and torque limit for a specific file, consult the file manufacturer.
OPERATION | Operate Touchpad

**Figure 16** Endodontics Mode Touchpad Screen

(A) Memory Setting Indicator; (B) Water Coolant Indicator; (C) Air Coolant Indicator; (D) Operator Mode Indicator; (E) Memory Button; (F) Endodontics Mode Toggle Button; (G) File Speed Limit; (H) Warning Beep Indicator; (J) Endodontics Light Indicator; (K) File Torque Unit Indicator; (L) File Torque Limit; (M) Forward/Reverse Indicator; (N) Handpiece Ratio Setting; (O) Torque Mode Indicator; (P) Forward/Reverse Toggle Button

**Program the A-dec Touchpad in Endodontics Mode.** To change a setting:

1. Withdraw the handpiece from the holder.
2. If the touchpad window is not in endodontics mode, press the endodontics mode toggle button (see Figure 16). The endodontics screen appears.
3. Use the + or - button to activate the endodontics change mode. A white reverse video box appears.
4. Use the chair positioning buttons to move from setting to setting in the touchpad window.
5. Use the + and - buttons to change the setting as desired.
6. To place the speed limit, torque limit and ratio into memory (optional), press the Program button, then the memory button you want to set. Three beeps confirm the setting.
Table 5 lists and defines the touchpad window icons for Endodontics mode:

Table 5  Endodontics Mode Settings

<table>
<thead>
<tr>
<th>Icon</th>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>300</td>
<td>Speed</td>
<td>Setpoint for file speed limit. For more information, consult your file manufacturer.</td>
</tr>
<tr>
<td>1,00</td>
<td>Torque</td>
<td>Setpoint for file torque limit. For more information, consult your file manufacturer.</td>
</tr>
<tr>
<td>300</td>
<td>Torque Units</td>
<td>Toggles between Ncm (Newton centimeters) and gcm (Gram centimeters). Adjusting this setting for one handpiece changes it for all handpiece settings. <strong>Note:</strong> 1 Ncm=102 gcm</td>
</tr>
<tr>
<td>VD</td>
<td>Ratio</td>
<td>Sets the handpiece ratio. For more information, consult your handpiece manufacturer.</td>
</tr>
<tr>
<td>Air</td>
<td>Air Coolant</td>
<td>On/Off—when active, supplies air coolant to the handpiece.</td>
</tr>
<tr>
<td>Water</td>
<td>Water Coolant</td>
<td>On/Off—when active, supplies water coolant to the handpiece.</td>
</tr>
<tr>
<td>Light</td>
<td>Light Source</td>
<td>Enables/Disables endodontics handpiece light source.</td>
</tr>
<tr>
<td>Auto off</td>
<td>Torque Mode</td>
<td>Adjusting this setting for one handpiece changes it for all handpiece settings. This icon appears with the forward/reverse indicator.</td>
</tr>
<tr>
<td></td>
<td>Auto reverse</td>
<td>• Auto-off—the motor shuts off when the file speed reaches the torque limit.</td>
</tr>
<tr>
<td></td>
<td>Auto forward</td>
<td>• Auto-reverse—the motor stops and reverses direction when the file reaches the torque limit.</td>
</tr>
<tr>
<td></td>
<td>Beeper</td>
<td>• Auto-forward—when the file reaches the torque limit, the motor stops, reverses 3 turns, then changes back to forward again. <strong>Note:</strong> If the file is stuck, this cycle repeats three times before the motor stops.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>On/Off—when active, warning beep sounds when you approach torque limit and double beeps when the file auto-reverses. Adjusting this setting for one handpiece changes it for all handpiece positions.</td>
</tr>
</tbody>
</table>

**NOTE** The A-dec/W&H WD-79M endodontics attachment has a special feature due to its ball-bearing design. Its life-long efficiency factor is stable and known, therefore the A-dec endodontics system is able to control and display file torque very accurately. All other handpieces have unknown life-long efficiency factors and therefore stated torque values are approximate.
Other System Choices
Additional system choices are available. Consult your dealer to globally change to any of these setting options:

- **Auto-Off Delay** – The amount of time the handpiece remains lit when idle. The default is 5 seconds. Stepping on the foot control refreshes the delay and the lamp relights. The light stays on as long as you depress the foot control.
- **Light Source Auto-On/-Off** — When active, the handpiece light automatically turns on when you lift the handpiece from the holder. Default in standard mode is On; in endodontics mode is Off.
- **Voltage** — Depending on your brightness preference and the bulb manufacturer’s usage guidelines, the voltage setting adjustment for each handpiece light source.

Adjustments
Both A-dec Model 541 and Model 545 12 O’Clock systems have an arm you can adjust for efficient operation and comfort. You can also adjust handpiece controls and instrumentation positioning.

Work Surface and Instrumentation Arm Height
To adjust the height of the work surface and the instrumentation arm:

1. Lift the upper part of the vertical post (see Figure 17).
2. Slide the height adjustment ring to the desired position.
3. Lower the vertical post onto the ring.

*Figure 17 Adjust Worksurface and Arm Height*
Removing System Covers

To perform some adjustments on a Model 541 Duo Delivery System, you must remove the control center covers (see Figure 18). To remove:

1. Locate the hole directly under the delivery system.
2. Pull the covers apart.

To replace:

1. Position the covers over the delivery system.
2. Snap together.

![Figure 18 Remove System Covers](image)

Handpiece Control Adjustments

Handpiece Control Adjustments

The Model 541 Duo Delivery system supplies and regulates air and water to operate dental handpieces, syringes and ancillary devices. You can adjust the delivery system water coolant flow, air flow and air pressure.

NOTE Make sure you have water in the water bottle before adjusting the water coolant flow.

Water Coolant Flow

The water coolant flow control adjusts the water coolant flow to each handpiece. Use the adjustment key or a hex key to complete the adjustments (see Figure 19):

1. Lift the handpiece from the holder.
2. Locate the coolant water flow controls.
3. Turn the water coolant on.
4. Insert an adjustment key into the water coolant flow control for the handpiece being adjusted.
5. Press the foot control to activate the handpiece.
6. Adjust the water coolant flow to fit user’s needs (normally 1-2 drops per second):
   - Turn the control to the right to decrease flow.
   - Turn the control to the left to increase flow.

Figure 19  Adjust Water and Air Coolant Flow

(A) Flush Toggle; (B) Air Coolant Key; (C) Water Coolant Flow Key

Air Coolant Flow

The air coolant flow control adjusts the air coolant flow to all handpieces. Use the adjustment key or a hex key to complete the adjustment (see Figure 19).

NOTE  Adjusting the air coolant for one handpiece sets it for all of the positions.

Adjust Air Coolant. To adjust the air coolant:

1. Lift the handpiece from the holder.
2. Locate the air coolant control.
3. If your system has a deluxe touchpad, use it to verify air coolant is on.
4. Insert an adjustment key, or hex key into the air coolant flow control.

**CAUTION** Do not turn the drive air or air coolant adjustment keys left beyond where the air coolant no longer increases. The stem may come completely out.

5. Press the foot control to activate the handpiece.
6. Adjust the air coolant flow to fit user’s needs:
   - Turn the control to the right to decrease flow.
   - Turn the control to the left to increase flow.

**Drive Air Pressure**

The digital drive air pressure gauge is located inside the control head. The gauge indicates, in psi, the drive air pressure as it leaves the control block to the active handpiece. The drive air pressure controls adjust the drive air pressure for each handpiece (see Figure 20).

**NOTE** Use a handpiece pressure gauge attached to the handpiece tubing for exact drive air measurement. One bar equals 14.5 psi.
Adjust Drive Air Pressure Controls. To adjust the drive air pressure, complete these steps for each handpiece:

1. Lift handpiece tubing
2. Locate the drive air pressure gauge and controls inside the control head. See “Removing System Covers” on page 20 for more information on cover removal.
3. Press the foot control.
4. With the handpiece running, watch the gauge and adjust the handpiece dynamic drive air pressure to meet manufacturer’s specifications.
   - Turn the control to the right to decrease flow.
   - Turn the control to the left to increase flow.

NOTE Adjust the drive air pressure to meet the handpiece manufacturer’s dynamic drive air pressure specification. Refer to your handpiece documentation for the dynamic drive air pressure specification.

Instrumentation Holder Positioning

The A-dec 541 and 545 12 O’clock Systems instrumentation holders offer horizontal and vertical positioning. Each holder rotates for independent angle adjustment.

Figure 21 Position Instrumentation Holder
Position Individual Holders
You can customize the position of each holder on the holder assembly arm:

1. Pull holder slightly away from the adjacent holder.
2. Twist to the desired position and release (see Figure 22).

Figure 22  Position Individual Holders

Instruments
For information on the operation, care and maintenance of A-dec’s autoclavable syringe, refer to the Autoclavable Syringe Instructions for Use (P/N 85.0680.00).

Autoclavable HVE and Saliva Ejector
The autoclavable HVE and saliva ejector are equipped with a quick disconnect to remove the valve body from the tubing for cleaning and autoclaving.

Left/Right Hand Conversion of the Autoclavable HVE and Saliva Ejector
To convert the HVE or saliva ejector to one side or the other:

1. Push the control valve out of the valve body. Press on the small diameter side (see Figure 23).
2. Rotate the control valve 180°, then push back in place.

Figure 23  Left/Right Hand Conversion of the Autoclavable HVE and Saliva Ejector

(A) Cannula Opening; (B) Control Valve; (C) Valve Body; (D) Tailpiece
MAINTENANCE

The following components of the A-dec 541 and 545 12 O’clock Systems can be maintained:

• Touch and transfer surfaces
• Handpieces and tubing
• Solids Collector
• Oil Collector
• Water system

Touch and Transfer Surfaces

Touch surfaces are areas that humans contact and are potential cross-contamination points during dental procedures. The touch surface locations on A-dec 500 12 O’clock products include the touchpads, round worksurface and switches.

Transfer surfaces are areas that contact instruments and other inanimate objects and are potential cross-contamination points. The primary transfer surfaces on the A-dec 500 12 O’clock products include instrument pad and trays.

A-dec recommends barrier protection for all applicable touch and transfer surfaces. Barriers must be FDA market-cleared barrier plastic.

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NOTE  Cover-All™ barrier film or any other FDA market-cleared barrier film is suitable for this application. Refer to your national regulatory authorities for barrier recommendations specific to your locale. Remove and discard barrier plastic after each patient treatment.

For touch and transfer surfaces where barrier protection is not applicable or when barriers are compromised, please refer to A-dec’s Equipment Asepsis Owner’s Guide (P/N 86.0609.00) for recommendations on proper cleaning and chemical disinfection.
Handpieces and Syringe Tubing

This section discusses methods for maintaining handpieces and tubing.

Handpiece Tubing Cleaning and Care

Flush Tubings Independently or Together
Use the handpiece tubing flush system to move more water through the tubings in less time than using the foot control. After each patient:

1. Disconnect the handpieces before flushing the tubings.
2. Gather handpiece tubings that use water coolant and hold them over a sink, cuspidor bowl or basin.
3. Hold the tubings so that the water is directed away from you and into the receptacle (see Figure 24).

Figure 24  Flush Tubings

4. Locate the toggle.
5. Hold the toggle down for 20 - 30 seconds.
6. Release the toggle.
7. Replace the tubings in their holders.

Syringe Asepsis

Steam autoclave air/water syringes between patients. Use the following protocol:

• Air/Water Syringe: Steam autoclave at 275°F (135°C), 4 minutes holding time

NOTE  Discharge each handheld device with air and water lines for 20-30 seconds between each patient to reduce the risk of cross-contamination as a result of potential bio-burden retraction.
HVE and Saliva Ejector Asepsis

1. Turn OFF the central vacuum.
2. Remove the body from the tubing by pulling it apart at the tailpiece.
3. Remove the control valve.
4. Clean and rinse the valve body and control valve. Use a mild detergent, water and the provided brushes.
5. Allow the instruments to dry completely.
6. Heat sterilize the valve body and control valve for six minutes. Use:
   - Steam autoclave
   - Chemical vapor (275°F [135°C] maximum temperature)
7. Apply a light coat of A-dec silicone lubricant on the O-ring seals of the control valve

CAUTION Use only A-dec silicone lubricant on instrumentation O-rings. Petroleum products cause permanent damage to the O-rings

8. Reinstall the control valve in the valve body and the body on the tubing tailpiece.
9. Operate the HVE and the saliva ejector valves several times to verify that they rotate smoothly.

Tip Specifications

Select tips that are compatible with HVE and saliva ejector cannula openings. A-dec tip specifications are:

- **HVE Cannula Opening:**
  - Standard A-dec HVE dimensions: 0.435” ±0.006” (11.5 ± 0.15 mm)
  - A-dec 15mm HVE: .592” (14.8 mm)

- **Saliva Ejector Cannula Opening:**
  - A-dec Saliva Ejector dimensions: 0.265” ± 0.006” (6.73 ± 0.15 mm)

NOTE If not using A-dec tips, select a tip that is compatible with your HVE and saliva ejector cannula opening.
HVE Tip Sterilization

A-dec recommends heat sterilization of HVE stainless steel tips by:

- steam autoclave
- chemical vapor (275°F [135°C] maximum temperature; four minutes at temperature)

Replace disposable tips between patients.

Sterilization

1. Remove the HVE tip from the HVE valve body.
2. Clean and rinse the HVE tip. Use a mild detergent and water.
3. Allow the tip to completely dry.
4. Sterilize the tip using one of the recommended methods.

Replace Bulb for Fiber-Optic Tubing

Maintenance on the fiber-optic 5-hole silicone tubing includes replacing the bulb.

To replace:

1. Remove handpiece.
2. Pull back the metal handpiece nut.
3. Slide back the metal portion of the handpiece terminal.
4. Replace the bulb.
5. Reinsert the metal portion of the terminal into the plastic portion.
6. Slide nut over terminal.

Figure 25 Bulb Replacement

(A) Metal Portion of Handpiece Terminal; (B) Plastic Portion of Handpiece Terminal; (C) Bulb
Solids Collector

The solids collector aids in preventing solids from entering the central vacuum system.

To ensure proper suction from the central vacuum and maintain proper treatment room asepsis, discard and replace the solids collector screen at least twice a week.

For replacement screens, contact your Authorized A-dec Dealer and reference Pinnacle P/N 5512.

Replace Solids Collector Screen
1. Turn off vacuum or open the HVE control valve.
2. Remove the solids collector cap.
3. Remove the solids collector screen.
4. Discard the screen according to your local regulations.

**CAUTION** Do not empty the screen into your cuspidor. Doing so could plug the drain.

5. Insert new screen in the collector and replace the cap.

Figure 26  Replace Solids Collector Screen

(A) Solids Collector Screen
Oil Collector

Service the oil collector on the delivery system once a week for normal usage. Service more often for heavier use.

To service:

1. Unsnap the oil collector cover on the front of the unit.
2. Discard the old gauze.
3. Fold a square gauze pad into quarters and place inside the cover.
4. Snap the oil collector cover closed.

Waterline Treatment

For recommended treatment of your dental unit waterlines, refer to the A-dec Water System/Water Treatment Owner’s Guide (P/N 86.0609.00)

Asepsis

For recommended asepsis instructions, refer to the A-dec Equipment Asepsis Owner’s Guide (P/N 85.0696.00).
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