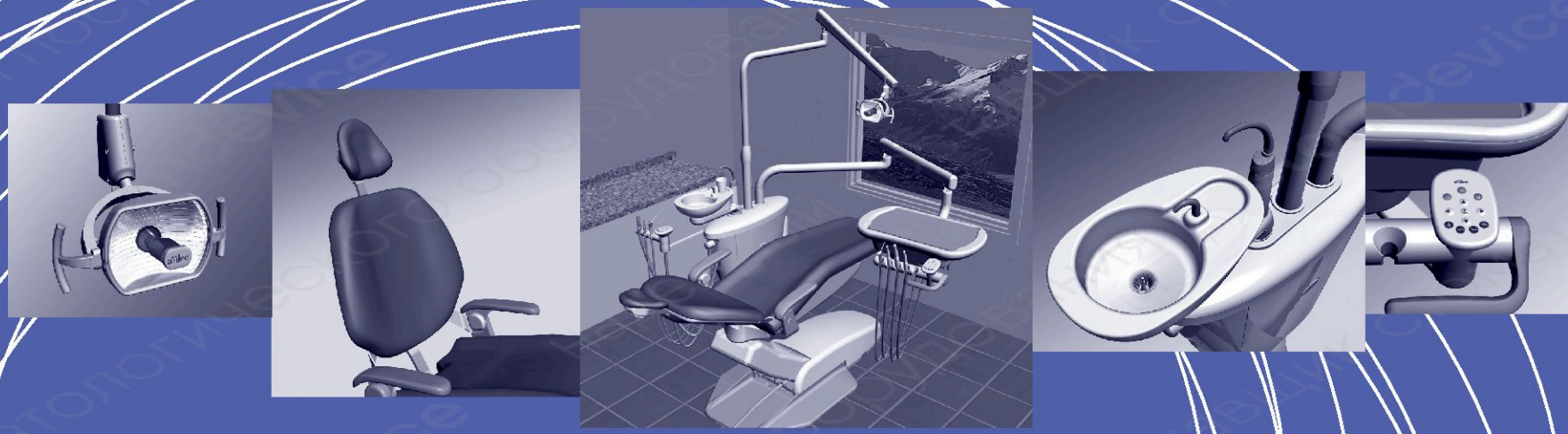
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Instructions for Use

A-dec 200

Dental Unit

Manufactured by A-dec (Hangzhou) Dental Equipment Co., Ltd.

https://stomdevice.ru - стоматологическое и зуботехническое оборудование с доставкой по России и СНГ

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Intended Use

A-dec 200 dental unit is intended to be used for diagnostic and therapeutic treatment in stomatology health care.

Contraindication

None.

Regulatory Information

Regulatory information mandated by agency requirements. See A-dec 200 Specifications and Warranty section.

Product Service

Product service is available through your local authorized A-dec dealer. For service information, or to locate an authorized dealer, contact A-dec at 1.800.547.1883 in the USA and Canada or 1.503.538.7478 worldwide, or visit www.a-dec.com.

Installation and Instructions for Use, Maintenance and Notice

See “A-dec 200 Reference Section”.

Storage Condition and Method

The packaged product should be stored in a well-ventilated room with a relative humidity lower than 90%.

Transportation Condition and Method

The packaged product should be transported by specialist logistics companies.

Date of Manufacture

Reference product label.

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Software Revisions

Software is not field upgradable. Consult A-dec for questions about compatibility, upgradability, or software revision (which is derived from the assembly revision shown on the barcode label). See the following list for software revisions:

Part Number	Board Name	Software Revision	Version of Issued Software
43.0000.XX	Standard Touchpad	1.XXXX	1
43.0114.XX	A-dec 300 Deluxe Touchpad	1.XXXX	1
43.0043.XX	Dental Light Relay	1.XXXX	1
43.0137.XX	Cuspidor	1.XXXX	1
43.0253.XX	QVIOLS	1.XXXX	1
61.3771.XX	200 Chair	1.XXXX	1



NOTE The format of the software revision number is Y.XXXX where Y denotes a major revision and XXXX denotes a minor revision.

Transporting the Dental System

When transporting the dental system:

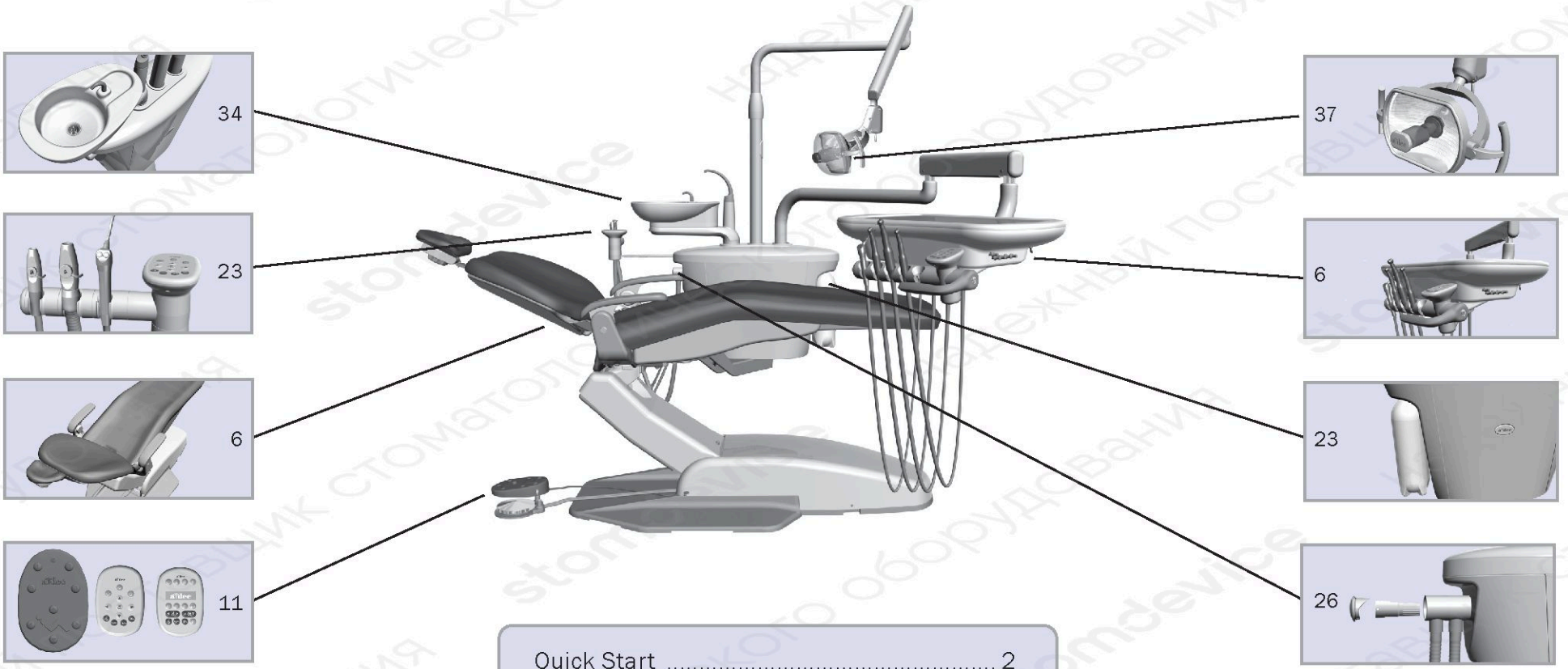
- Chair base should be fully down, and the chair back should be fully up.
- Chair body should be secured to the chair baseplate.
- Delivery system should be over the seat.
- Upholstery should be detached, and the light and the upholstery should be centered and secured above the chair.
- Delivery system and light should be secured to prevent movement.
- Dental system should be secured to the transporting vehicle.

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Content Map

Product Composition
Dental unit mainly includes dental chair, support center (self-contained water system, solids collector), delivery system (instrument holder, syringe), cuspidor, dental light, assistant's instrumentation (touchpad, HVE, saliva ejector), and foot control and footswitch.



Quick Start 2
Reference 5
Specifications 42
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Warranty 56

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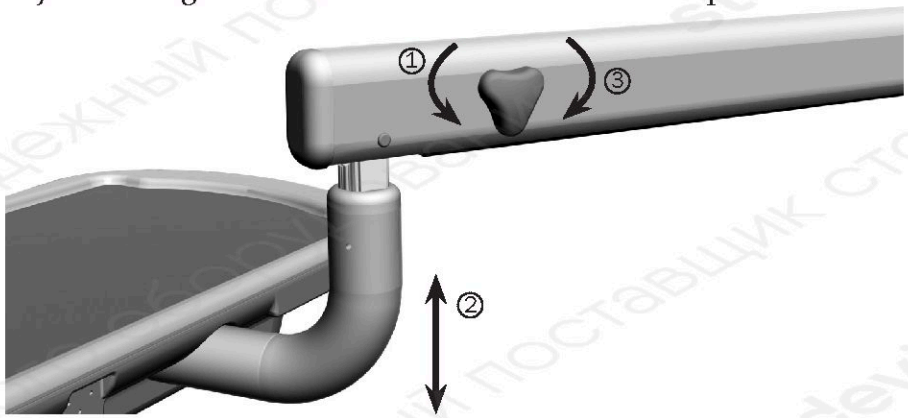
Quick Start

Turn the system* on.



* *If your chair includes an A-dec 300 delivery system, see the instructions for use that came with that system.*

Turn the knob counterclockwise to disengage the flexarm brake and adjust the height. Turn the knob clockwise to lock the position.



Check the water bottle and fill if near empty.

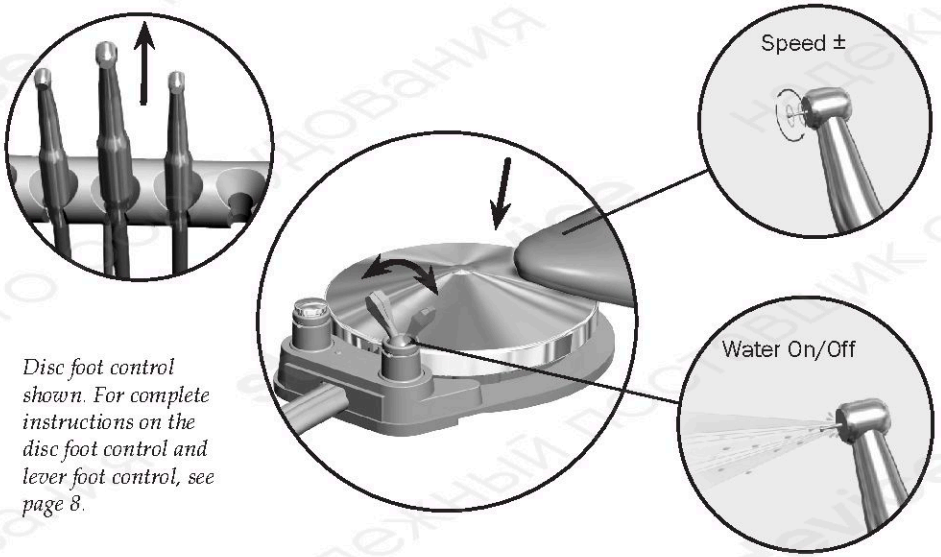


For more instructions on the self-contained water system, see page 24.



A-dec ICX® Waterline Treatment Tablets

Lift to activate the handpiece. Flip the foot control toggle to turn the water coolant on or off. Step on the disc to operate.

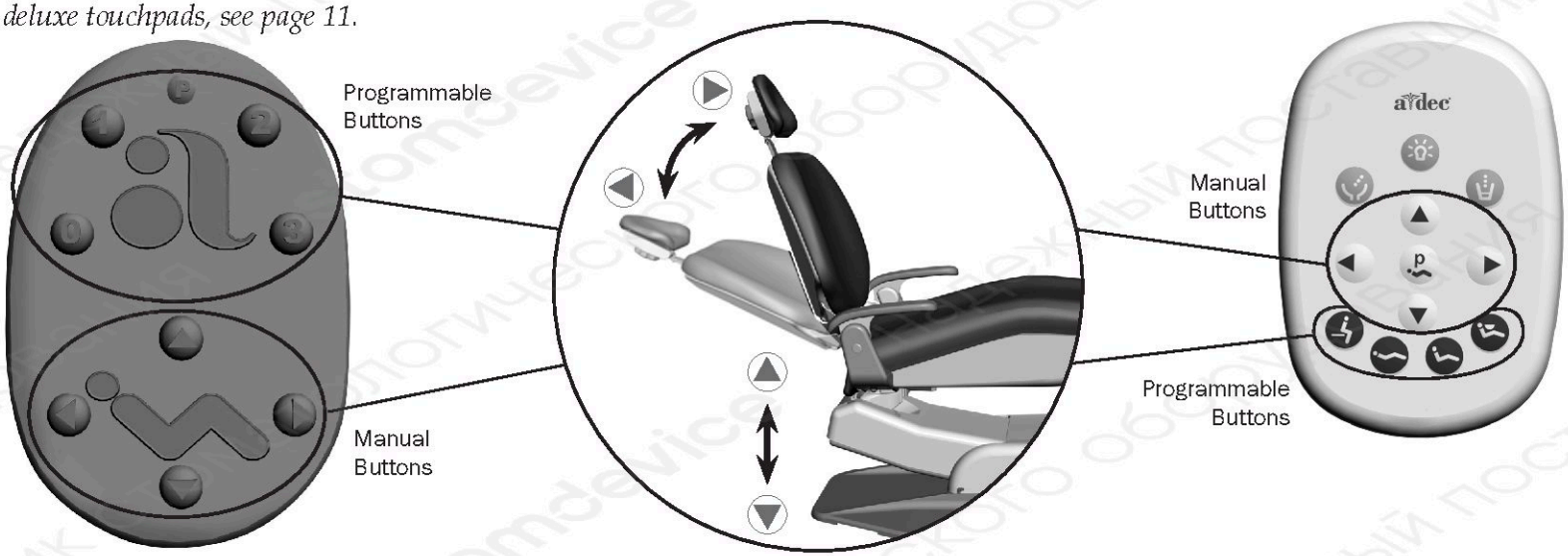


Disc foot control shown. For complete instructions on the disc foot control and lever foot control, see page 8.

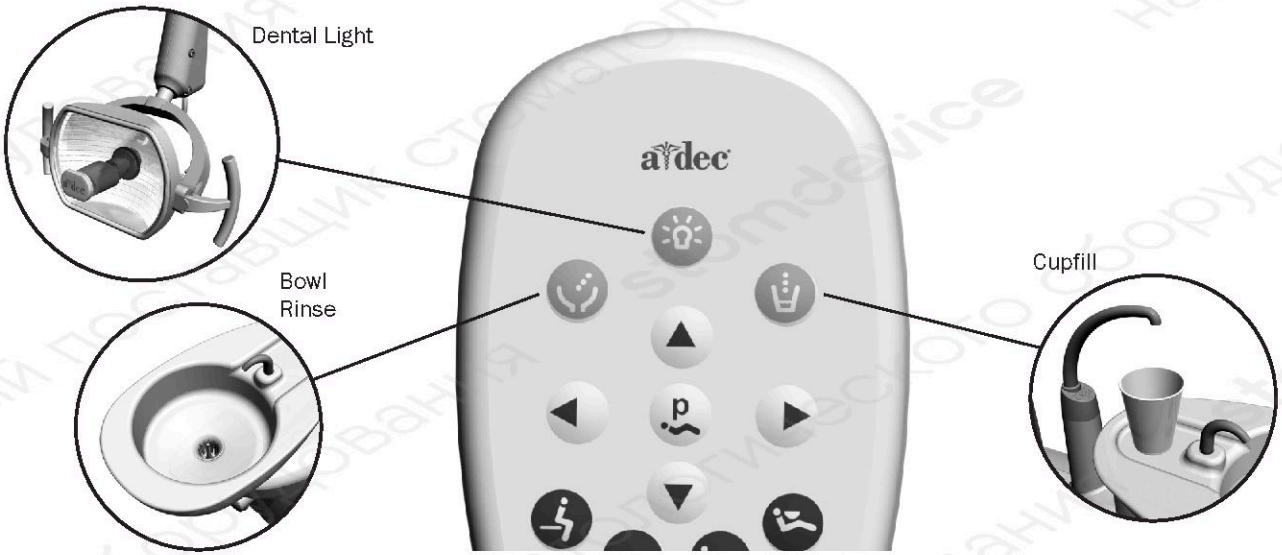
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Use the manual or programmable buttons to position the chair (standard touchpad shown). *For complete programming instructions for the standard and deluxe touchpads, see page 11.*

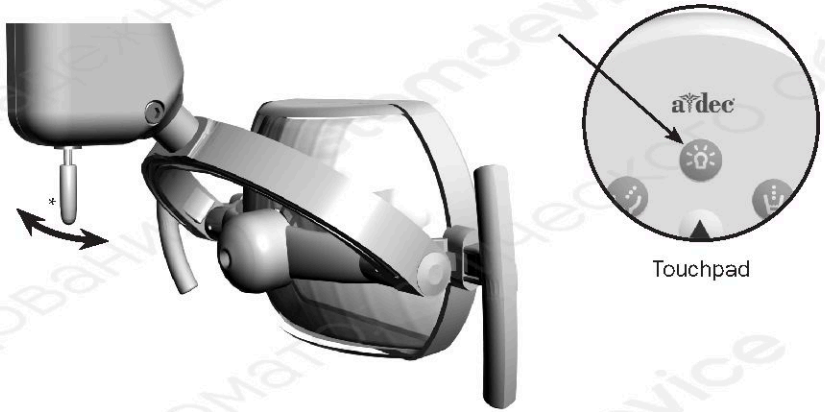


Use the touchpad to activate the dental light and cuspidor functions. *For complete programming instructions, see pages 34 and 35.*



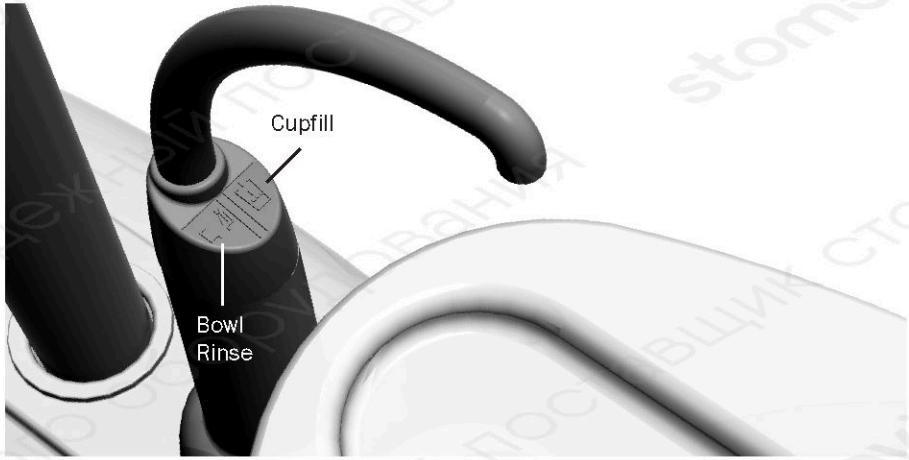
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Flip the dental light toggle switch or press the dental light button on the touchpad to turn the light on high or low intensity*.



* *This switch does not change light intensity on chairs with a touchpad. For more information, see page 37.*

Control cupfill and bowl rinse functions from the cuspidor tower.

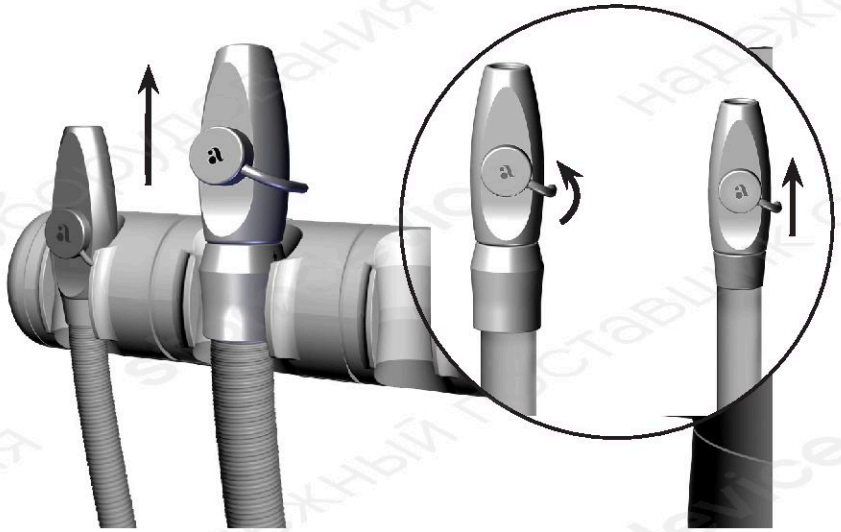


To install the A-dec syringe tip, push in the tip until you feel two clicks. Press both buttons simultaneously for the air/water spray.*



* *For detailed instructions on syringe usage and maintenance, refer to the A-dec Quick-Disconnect Syringes Instructions For Use, p/n 85.0680.00.*

Lift from the holder and open the valve to activate vacuum instruments (A-dec instruments shown). *For instructions on Dürr and A-dec instruments, see pages 28 through 33.*



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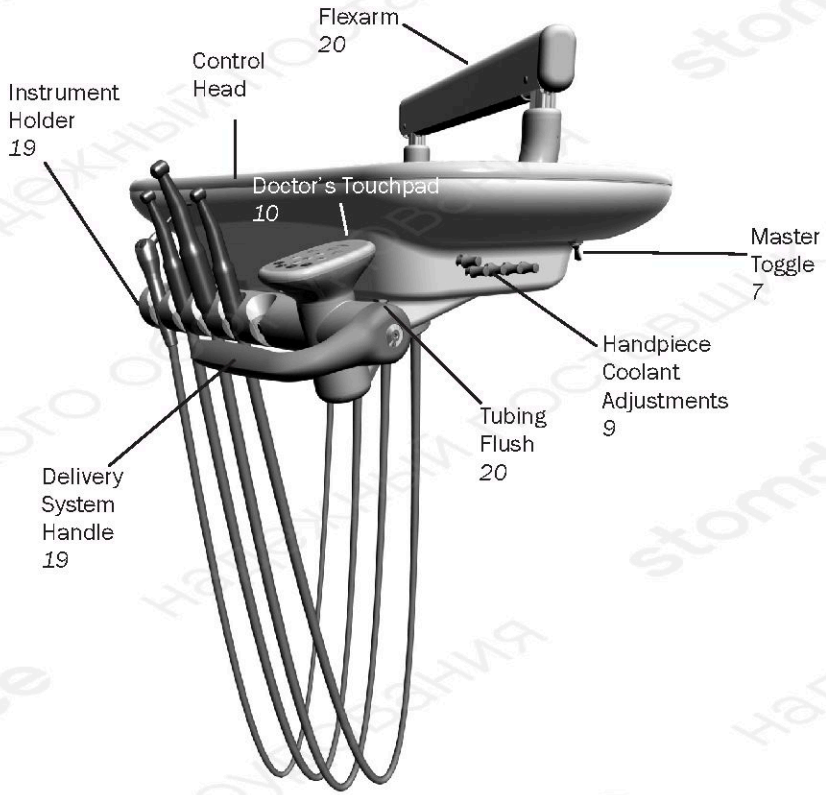
A-dec 200 Reference Section

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Assistant's Instrumentation 23
Cuspidor 34
Dental Light 37
Specifications 42
Electromagnetic Compatibility (EMC) 52
Warranty 56

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Dental Chair and Delivery System





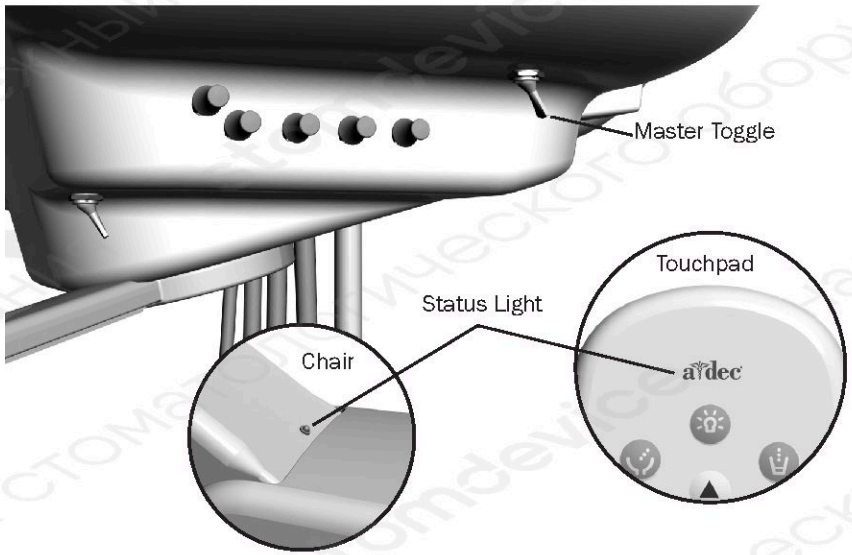


Note: If your chair includes an A-dec 300 delivery system, see the instructions for use that came with that system.

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Power and System Status

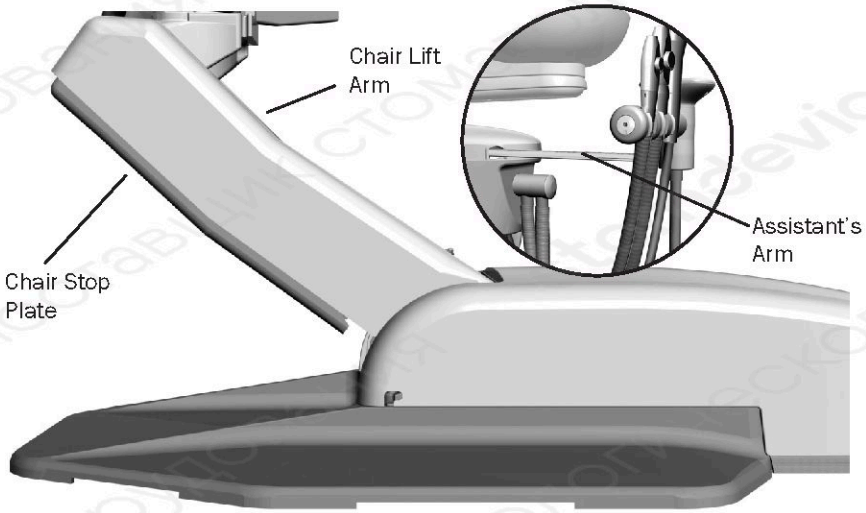


NOTE A-dec recommends that you perform a shock treatment on the dental unit waterlines before you use the system for the first time. For more information, see "Waterline Maintenance" on page 25.

The chair and system power is controlled by the master toggle on the delivery system. To save energy, turn the power off at the end of the work day and during longer periods of non-use. The power should always be turned off before service.

When the A-dec logo on the touchpad or the status light on the chair lift arm illuminates, the system is on and ready for use. If the status light blinks, the stop switch has been activated.

Safety Features



A-dec dental chairs and systems include several features designed to improve safety. Activated stop switches may halt the chair or prevent it from moving. To help ensure uninterrupted chair motion:

- remove any potential obstructions under the chair and attached modules
- avoid pressing the foot control disc or lever
- keep handpieces properly seated in their holders

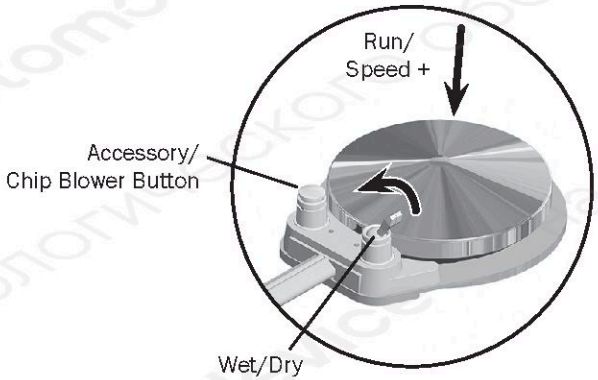
If the Chair Stops Unexpectedly

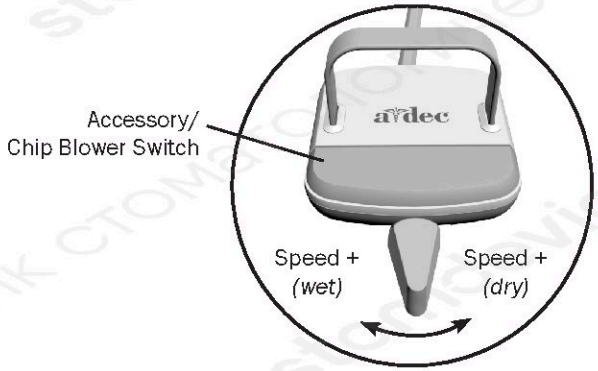
For detailed guide of installation (including connection methods, fastening methods, power supply, maintenance interface, wiring diagram, torque for mounting equipment, etc.) see the A-dec 200 Installation Guide (p/n 86.0004.00).

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Handpiece Activation and Operation





To activate a handpiece, lift it from the holder. Use the foot control to perform the desired handpiece operation.

Control	Operation	Procedure
Disc Foot Control	Run a handpiece.	Press on the disc. Push down to increase speed.
	Run a handpiece with or without water coolant.	Move the wet/dry toggle toward the blue dot for wet operation or away from the blue dot for dry operation. Then press on the disc.
	Run the optional accessory or chip blower.	Press the accessory/chip blower button.*
	Operate the intraoral camera.	Press on the disc to capture an image.*
Lever Foot Control	Run a handpiece with water coolant.	Move the lever to the left. Move farther to increase speed.
	Run a handpiece without water coolant.	Move the lever to the right. Move farther to increase speed.
	Run the optional accessory or chip blower.	Press the accessory/chip blower switch.*
	Operate the intraoral camera.	Move the lever to the left or right to capture an image.*

** Contact your authorized A-dec dealer for questions about the operation or configuration of your integrated A-dec accessories.*

For handpiece coolant adjustments, see page 9.

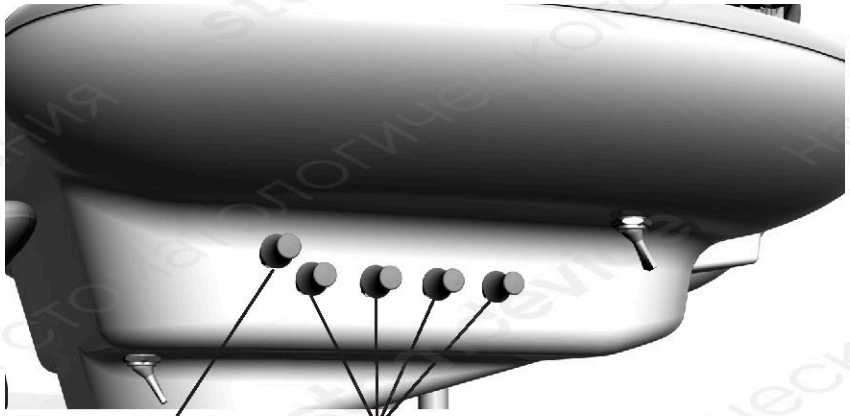
NOTE The lever foot control function can be reversed by a technician (change left direction to dry, right direction to wet). For more details, contact your authorized A-dec dealer.

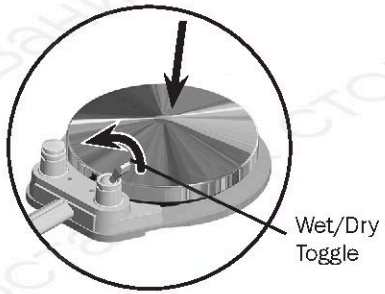
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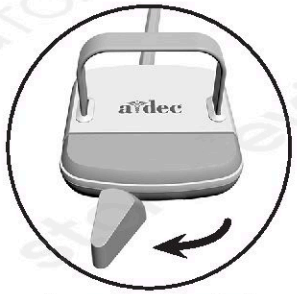
Handpiece Coolant Adjustments

The air coolant knob on your delivery system simultaneously adjusts air flow to all handpiece positions. Each water coolant knob adjusts water flow to a single position. Use the following process to adjust for the desired handpiece coolant atomization:





Disc Foot Control



Lever Foot Control

1. Insert a bur into the handpiece you are adjusting.

CAUTION When performing this procedure, do not attempt to completely shut off the water or air flow. The adjustment knobs are not designed to completely shut off flow and can damage the control block if you apply too much force.

2. Turn the air coolant adjustment knob clockwise until coolant flow stops.
3. Lift the handpiece from the holder and do one of the following:
   - On a disc foot control: flip the wet/dry toggle to water (toward the blue dot) and press the disc all the way down.
   - On a lever foot control: move the lever all the way to the left.
4. Locate the water coolant adjustment knob for the handpiece position you are adjusting and turn it clockwise until coolant flow stops.
5. Slowly turn the water coolant adjustment knob counterclockwise until water droplets are expelled from every water port on the handpiece head. Return the handpiece to the holder.
6. Repeat steps 3 through 5 for each handpiece.
7. To set the air coolant for the system, lift the handpiece from the holder.
8. Turn the air coolant adjustment knob counterclockwise until you achieve the desired atomization at the cutting surface of the bur.

CAUTION Do not continue turning the air coolant adjustment knob counterclockwise after the air coolant stops increasing. The stem may come out of the control block.

9. If you require more water coolant, increase the water output in step 5 as needed.

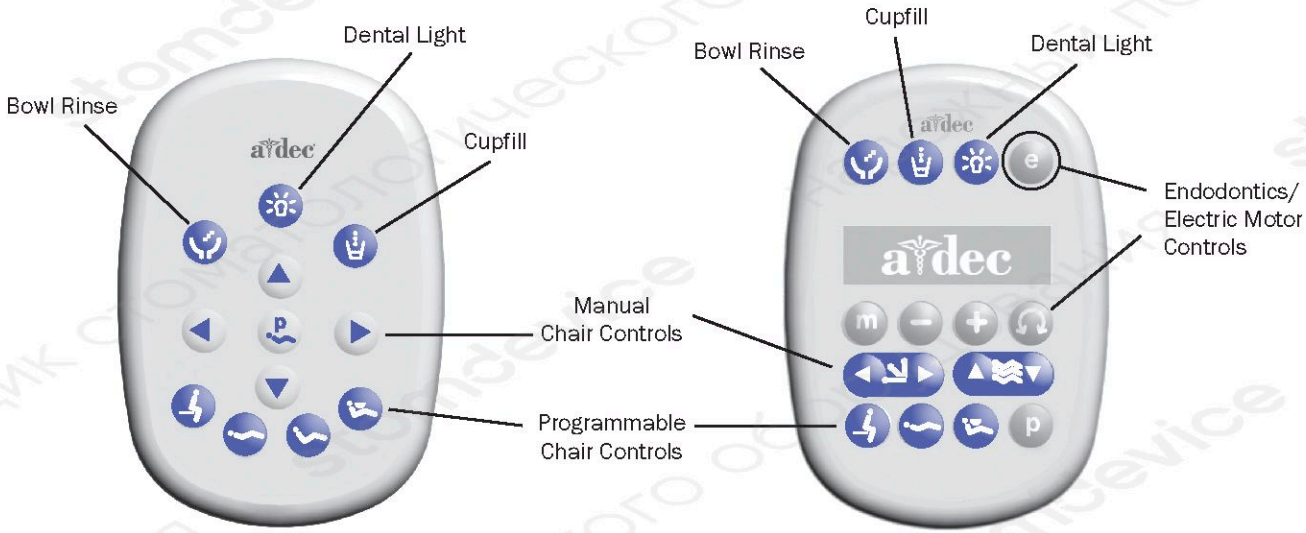
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Touchpad Controls

The A-dec touchpad and footswitch control chair movement in the same way. See pages 11 and 12 for information about your footswitch controls.

Basic Touchpad Functions

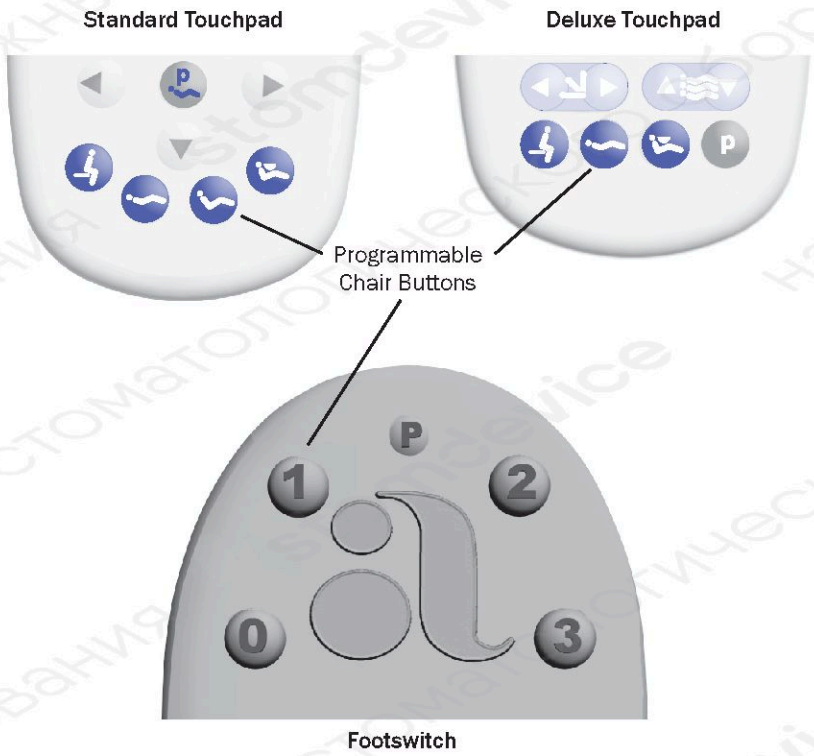
Your A-dec 200 system may include a standard or deluxe touchpad, or both. The standard touchpad operates the chair, cuspidor, and dental light functions. The deluxe touchpad adds functions for electric motors and other integrated clinical devices. Both touchpads provide manual and programmable controls.



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Touchpad Controls *(continued)*



WARNING Ensure that the patient is positioned safely before using the manual or programmable chair controls. Never leave the patient unattended while the chair is in motion. Always take extra care with small children and patients with limited mobility.

To stop the chair at any point during programmed movement, push any chair positioning button on the footswitch or touchpad.

Programmable Chair Positions

You can operate the chair manually or by using the programmed presets from the footswitch or optional touchpad. See page 3 for manual controls. The programmable buttons vary depending on which device you use to control the chair:

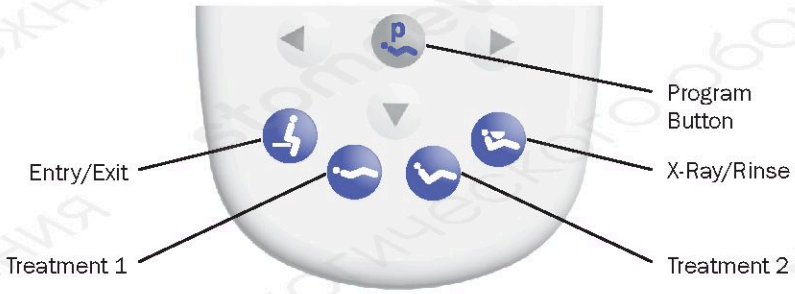
Footswitch/Touchpad	Description and Action
0 /	**Entry/Exit:** Positions the chair for patient entry/exit. On systems with a doctor's touchpad, also turns the dental light off.
1 /	**Treatment 1:** Positions the chair base and back down. On systems with a doctor's touchpad, also turns the dental light on.
2 /	**Treatment 2*:** Positions the chair base down and back up. On systems with a doctor's touchpad, also turns the dental light on.
3 /	**X-Ray/Rinse:** Moves the chair to either x-ray or rinse position. Press again to move the chair to the previous position. On systems with a doctor's touchpad, also turns the dental light off or back on.

**The deluxe touchpad does not include a Treatment 2 button.*

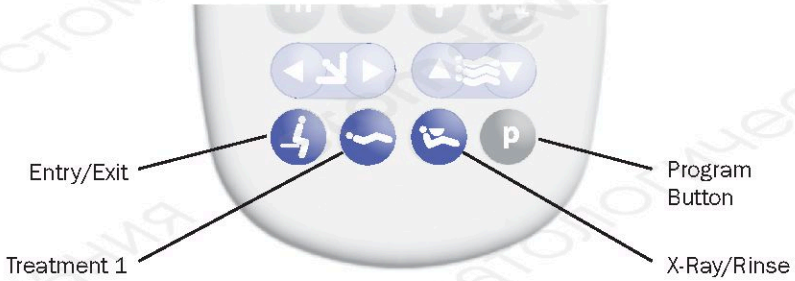
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Touchpad Controls *(continued)*

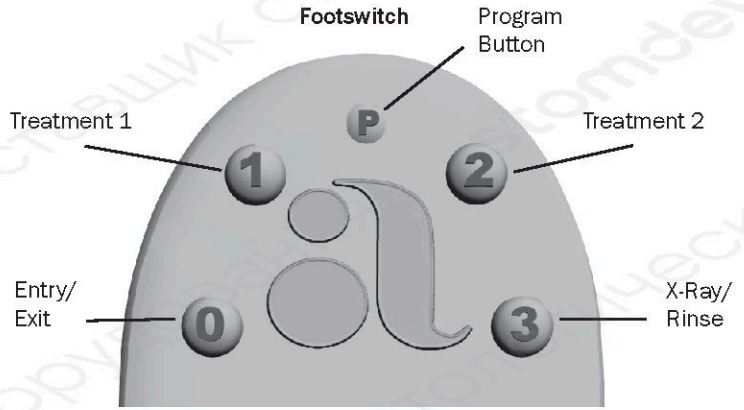
Standard Touchpad



Deluxe Touchpad



Footswitch



Reprogram Entry/Exit, Treatment 1 and 2 Buttons

To change the factory preset chair positions assigned to the entry/exit and treatment buttons (, , *):

1. Use the manual controls to position the chair as desired.
2. Press and release or . One beep indicates that the programming mode is on.
3. Within five seconds, press the chair position button you wish to reprogram (for example, press). Three beeps confirm that the new setting is programmed into memory.

Note: The deluxe touchpad does not include a Treatment 2 button.

X-Ray/Rinse Chair Position

The x-ray/rinse button ( ) is preset to move the chair and patient into an upright position for x-rays or cuspidor access. A second press of returns the chair to the previous position (back only).

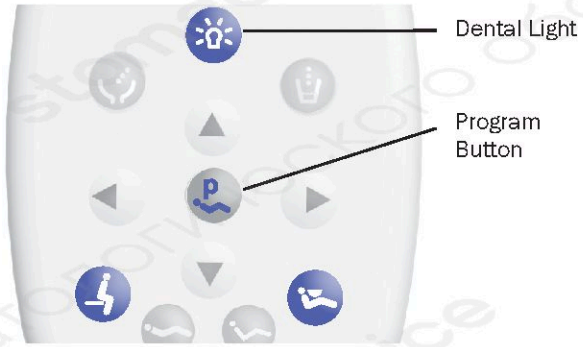
If you'd like to change this function to an additional programmable chair position, contact your authorized A-dec dealer.

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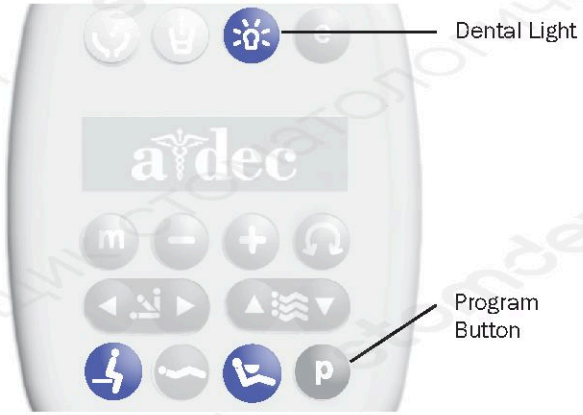
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Touchpad Controls *(continued)*

Standard Touchpad



Deluxe Touchpad



Dental Light Auto On/Off Feature

The auto on/off feature turns the A-dec light on once the chair reaches a preset treatment position.

When you press or , the dental light turns off and the chair moves to that preset position.

To disable the auto on/off feature, press and hold the program button (or) and at the same time for three seconds until you hear one beep.

To enable the auto on/off feature, press and hold or and at the same time for three seconds until you hear three beeps.

For more information about dental light functions, see page 37 and your dental light Instructions for Use.

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Electric Handpiece Settings *(deluxe touchpad only)*



Standard Mode

To activate the electric motor, lift the handpiece from the holder. The touchpad screen displays the previous settings used for that handpiece position. Standard mode provides four factory preset speeds for electric motors:

Memory Setting	Factory Preset Speed
m1	2,000 rpm
m2	10,000 rpm
m3	20,000 rpm
m4	36,000 rpm

You can reprogram these memory settings with your own specific preset speeds. A total of eight customized settings per handpiece is possible (four in standard mode and four in endodontics mode).

To program the handpiece setting:

1. Press ⊕ or ⊖ until the rpm setting you want displays on the touchpad screen.
2. Press Ⓟ to save it to memory. One beep sounds.
3. Press Ⓜ to display the m1 through m4 memory settings. When the desired memory setting displays, press Ⓟ. Three beeps confirm the setting.

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Electric Handpiece Settings *(deluxe touchpad only) (continued)*



Endodontics (Endo) Mode

In addition to handpiece speed adjustments, the endo mode allows you to change a number of settings based on the specific file and desired handpiece behavior. Icons on the touchpad screen reflect the settings.

NOTE For more information regarding speed and torque limits for a specific file, consult the file manufacturer.

To program the handpiece setting:

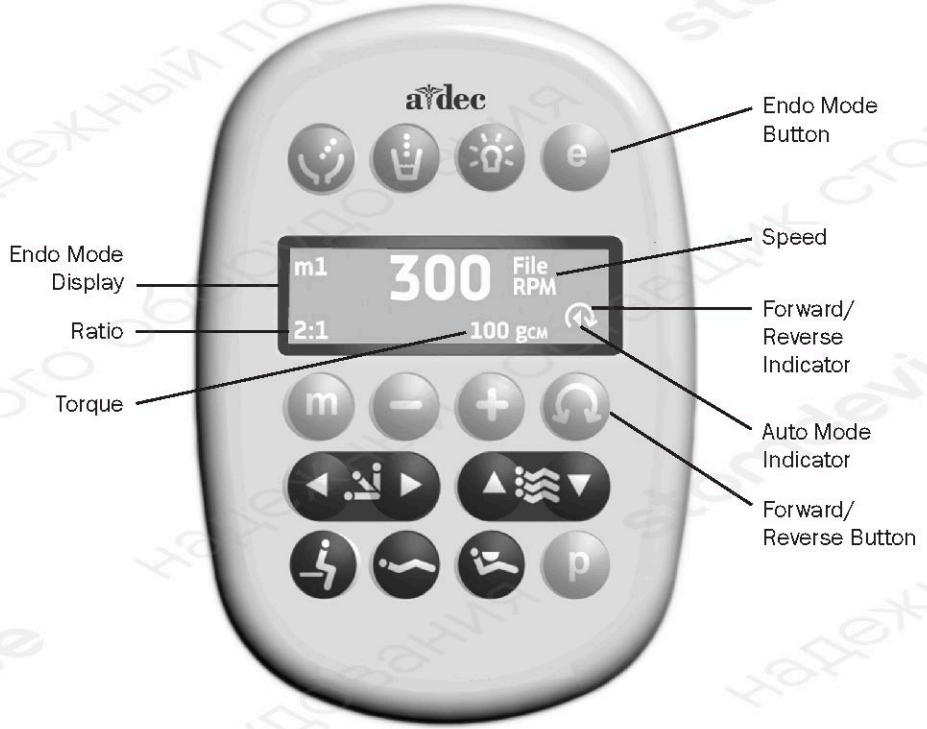
1. Lift the handpiece from the holder.
2. If the touchpad screen does not display the endo mode, press e.
3. To change settings in endo mode, press + or −. A white reverse video box displays on the touchpad screen.
4. Use the chair positioning buttons to move from setting to setting on the touchpad screen.
5. Use + or − to change the setting as desired.
6. To set the speed limit, torque limit, or ratio into memory, press P. One beep sounds.
7. Press m to display the m1 through m4 memory settings. When the desired memory setting displays, press P. Three beeps confirm the setting.

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Electric Handpiece Settings *(deluxe touchpad only) (continued)*

Endo Mode Touchpad Screen Icons

Icon	Setting	Description
300 File RPM	Speed	Setpoint for file speed limit. For more information, consult your file manufacturer.
1.00 Ncm	Torque	Setpoint for file torque limit. For more information, consult your file manufacturer.
300 gcm	Torque Units	Toggles between newton centimeters (N·cm) and gram centimeters (g·cm). Adjusting this setting for one handpiece changes it for all handpiece settings. *Note: 1 N·cm = 102 g·cm.*
VD – 79M 2:1	Ratio	Sets the handpiece ratio. For more information, consult your handpiece manufacturer.
	Auto Modes	Adjusting this setting for one handpiece changes it for all handpiece settings. The auto mode indicator displays inside of the forward/reverse indicator.
	Auto Stop	• When the file reaches the torque limit, the motor shuts off.
	Auto Reverse	• When the file reaches the torque limit, the motor stops and reverses direction.
	Auto Forward	• When the file reaches the torque limit, the motor stops, reverses 3 turns, then changes back to forward again *Note: If the file is stuck, the auto forward cycle repeats three times before the motor stops.*



Forward/Reverse Button

The forward/reverse button changes the electric motor's direction. The system defaults to the forward position when you return the motor to the holder or turn off the system. In reverse mode, the screen icon flashes continuously.

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Electric Handpiece Settings *(deluxe touchpad only) (continued)*



Other Handpiece and Accessory Settings

See your authorized A-dec dealer to change any of these handpiece and accessory settings, if applicable:

- **Auto-Off Delay** – determines how long the handpiece light remains on if the foot control is released. The default setting is 5 seconds.
- **On When Selected** – specifies whether the handpiece light turns on or remains off when the handpiece is removed from the holder. The default setting is on.
- **On in Endo** – specifies whether the handpiece light turns on or off when the endo mode is selected. The default setting is off, which is recommended to reduce heat and extend bulb life.
- **Ultrasonic Colors** – for Acteon® ultrasonic instruments, specifies whether color-coded tip categories are on or off. The default is on.
- **Voltage Adjustment** – allows for customized light output voltage for each handpiece position. The default setting is 3.2 VDC.

Touchpad Help Messages

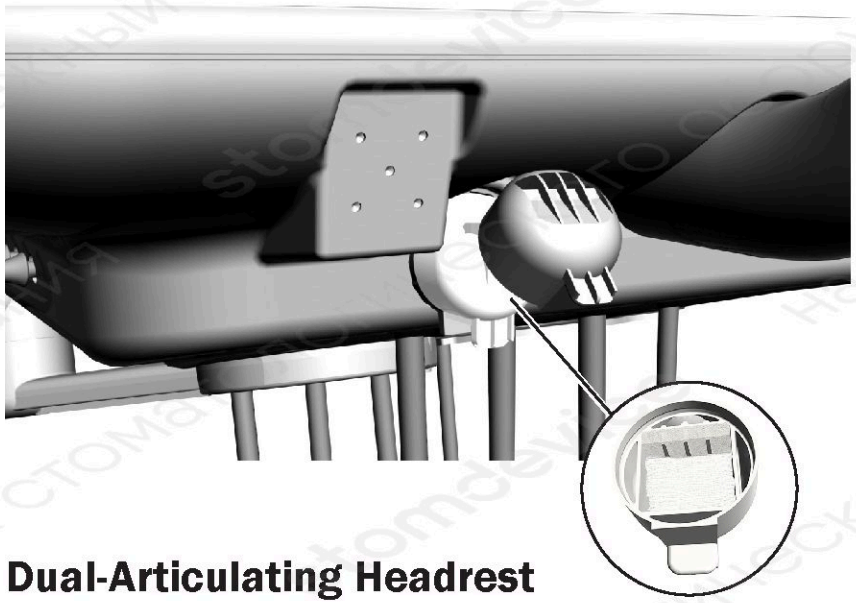
The deluxe touchpad screen displays help messages for disabled operations. When a help message appears, record the screen message and the function you were performing in case service is required.

Screen Message	Conditions to Generate Message
Power loss during use. Settings may have changed. Press a button to continue.	The touchpad powered-on and found that the touchpad powered-off with a handpiece out of a holder. This message alerts the doctor that any changes made to the handpiece setup before the outage may not have been saved and the current settings may not be what is expected.
This touchpad is not calibrated. Call for service. Press any button.	The air pressure sensor in the touchpad is not calibrated. This appears only when the user enters the Air Pressure display screen. The touchpad will still function, but the handpiece speed may not function correctly.
This button is disabled.	The user pressed a button that was disabled using the EN/DIS jumper on the chair circuit board.
Too many handpieces in use: —Control Head —Assistant's	Too many handpieces are withdrawn or are not fully seated in the control head or assistant's holders.
Too many handpieces in use: —Control Head —Assistant's	Too many handpieces are withdrawn or are not fully seated in the control head or assistant's holders. The numbers correspond to the specific holder positions that are withdrawn.
Chair will not move while Foot Control is in use.	The foot control disc is pressed and the user tried to move the chair or the user is moving the chair and the foot control gets pressed.
Chair in Factory Default mode.	This appears while the jumper on the chair circuit board is in the factory default position, whether the routine is running or not.
Chair in Factory Default mode—RUNNING.	This appears when the factory default routine is running.
Chair in Factory Default mode—PASSED.	This appears when the factory default routine is successfully completed.
Chair in Factory Default mode—FAILED.	Factory default mode did not complete successfully. Troubleshoot as needed.
Chair in Enable/Disable mode.	This appears when the jumper on the chair circuit board is in the enable/disable position.
Chair is already at that position.	The chair was already at Position X and the user pressed the Position X button.
Function halted by additional button press.	The chair was in the process of moving to Position X and the user pressed a chair motion button, which causes the chair movement to stop.
Chair back reached time limit. Please wait.	The A-dec 311 and A-dec 411 chair back duty cycle is limited to 50 percent. The user has been moving the chair back too often and needs to wait before trying again.

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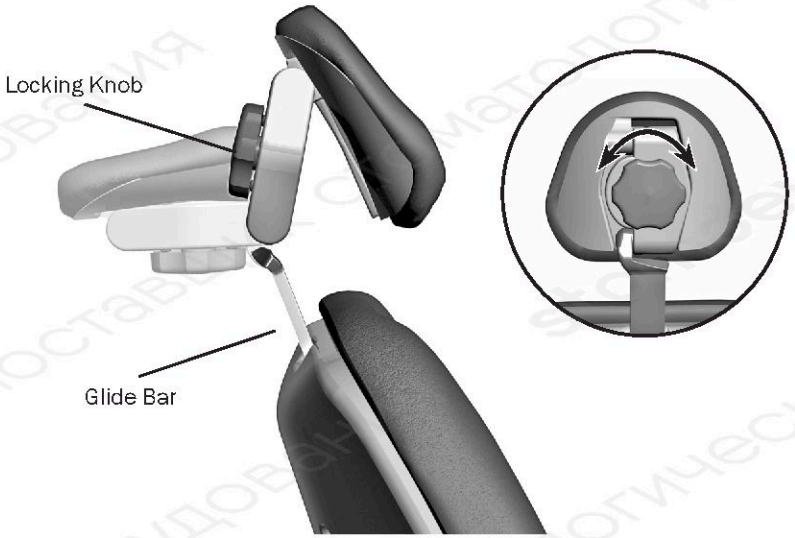
Oil Collector



Service the oil collector on the delivery system once a week for normal use and more often for heavier use. To service:

1. Unsnap the oil collector cover located under the control head and discard the old gauze. Do not remove the foam muffler attached to the inside of the cover.
2. Fold a new gauze pad (51 mm x 51 mm [2" x 2"]) into quarters and place inside the cover.
3. Snap the oil collector cover closed.

Dual-Articulating Headrest



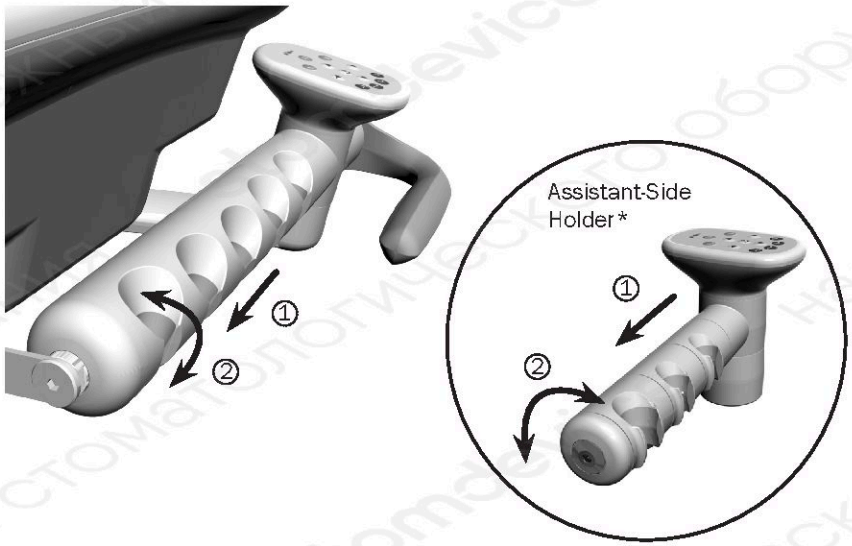
The locking knob allows you to secure the headrest in a full range of positions. Release the headrest by turning the locking knob counterclockwise. Then adjust the headrest for a proper fit. Lock the headrest in the desired position by turning the knob clockwise. For height adjustment, slide the headrest and glide bar up or down.

WARNING If the glide bar has exceeded its maximum recommended working height, a warning will be visible on the patient's side of the glide bar. Do not use the headrest in a position where this warning is visible.

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Instrument Holder Adjustment

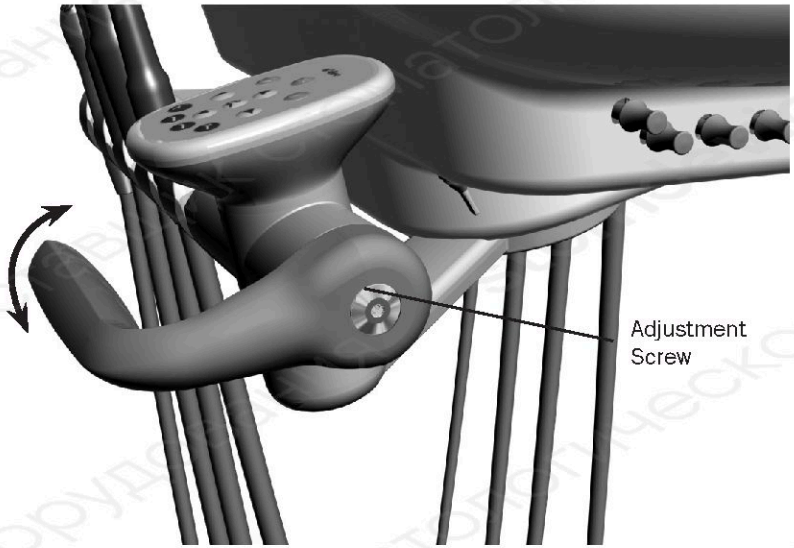


CAUTION Twisting the holder without pulling it away from the adjacent one will damage the mechanism.

The instrument holders rotate independently to allow customized positioning for each handpiece. Pull the holder slightly away from the adjacent one, rotate to the desired position, and then release.

** If your assistant-side instrumentation includes the auto-air feature, the holder rotates as a complete set.*

Delivery System Handle Adjustment

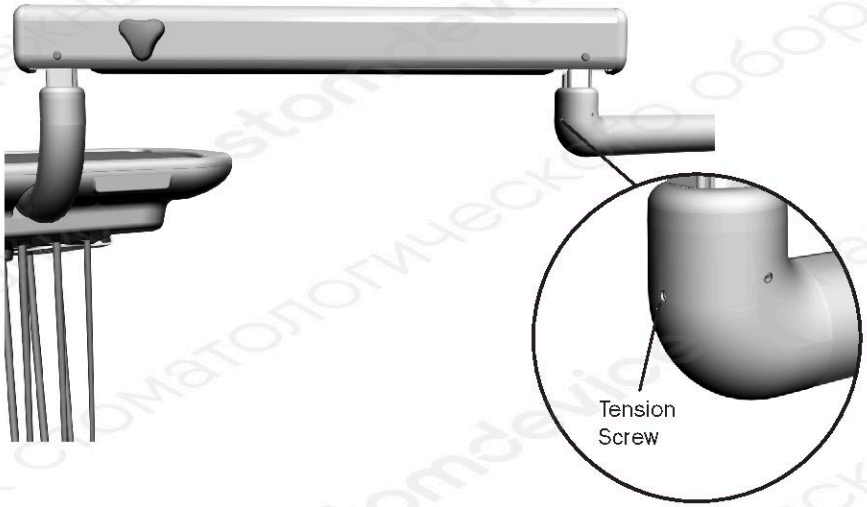


CAUTION Make sure the handle is flush against the holder before you tighten the adjustment screw to prevent damage to the mechanism.

Use a 5/32" hex key to adjust the handle position. Turn the adjustment screw counterclockwise to loosen, position the handle, and then tighten the screw to secure the handle in place.

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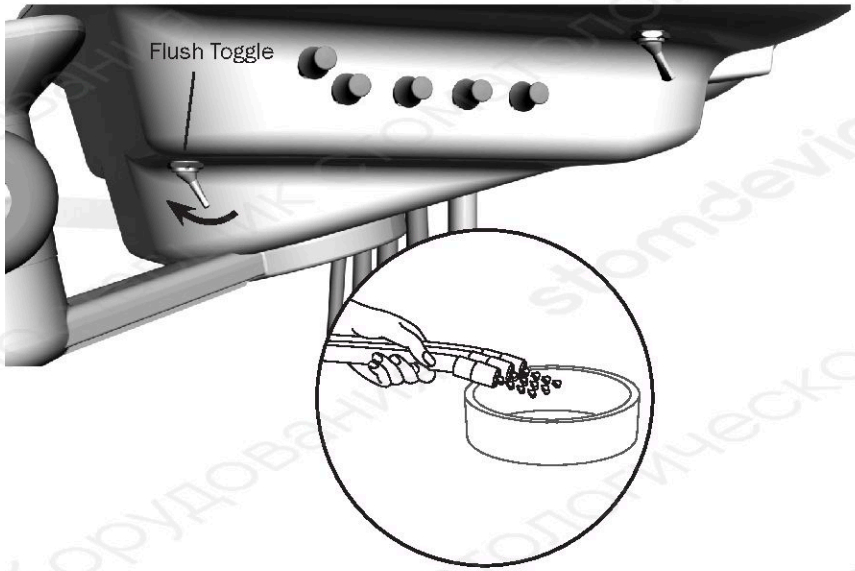
Tension Adjustments



Flexarm Rotation

If the control head flexarm begins to drift right or left, use a 3/32" hex key to adjust the tension setscrew. Turn the screw clockwise to tighten or counterclockwise to loosen the tension.

Cleaning and Asepsis Recommendations



Handpiece Tubing Cleaning and Care

Use the handpiece tubing flush system to move more water through the tubing in less time than using the foot control. To flush the tubing after each patient:

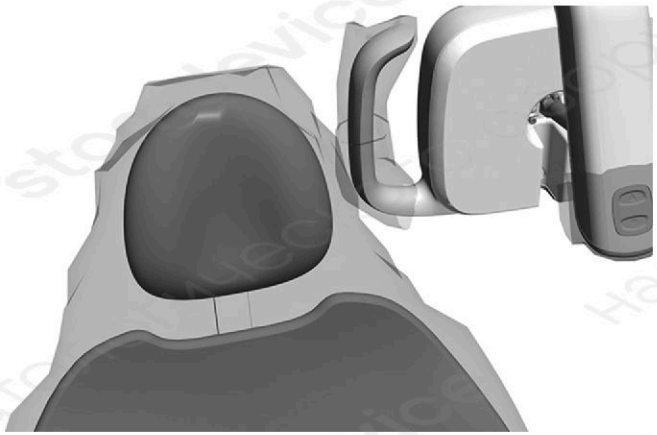
1. Disconnect the handpieces.
2. Hold all of the handpiece tubing that uses water coolant over a sink, cuspidor bowl, or basin.
3. Locate the flush toggle under the control head (next to the air/water coolant adjustment keys).
4. Pull the toggle toward the handpiece holder for 20–30 seconds.

NOTE Discharge all tubing air and water lines for 20-30 seconds after each patient.

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Barrier Protection



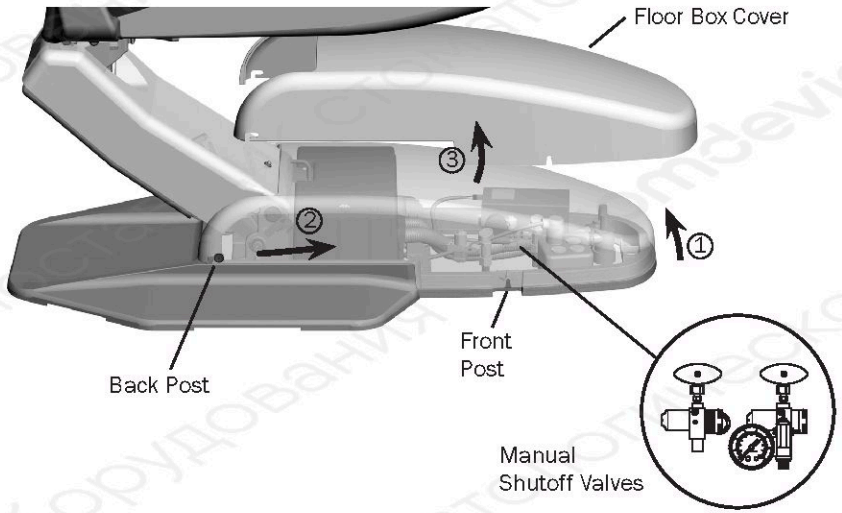
A-dec recommends barrier protection for all applicable touch and transfer surfaces. Touch surfaces are areas that come into contact with hands and become potential cross-contamination points during dental procedures. Transfer surfaces are areas that come into contact with instruments and other inanimate objects.

In the USA, barriers must be produced under the Current Good Manufacturing Practice (CGMP) as specified by the U.S. Food and Drug Administration (USFDA). For regions outside the USA, refer to the medical device regulations specific to your location.

NOTE For proper use and disposal of barriers, see the instructions provided by the barrier manufacturer.

IMPORTANT For recommendations on cleaning and chemical disinfection of touch and transfer surfaces (where barrier protection is not applicable or when barriers are compromised), please see the *A-dec Equipment Asepsis Guide* (p/n 85.0696.00).

Additional Periodic System Maintenance



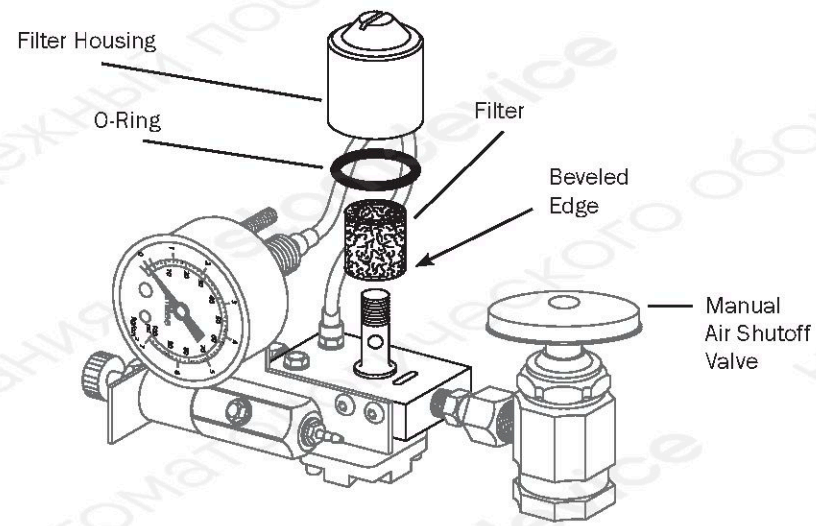
Utilities and Shutoff Valves

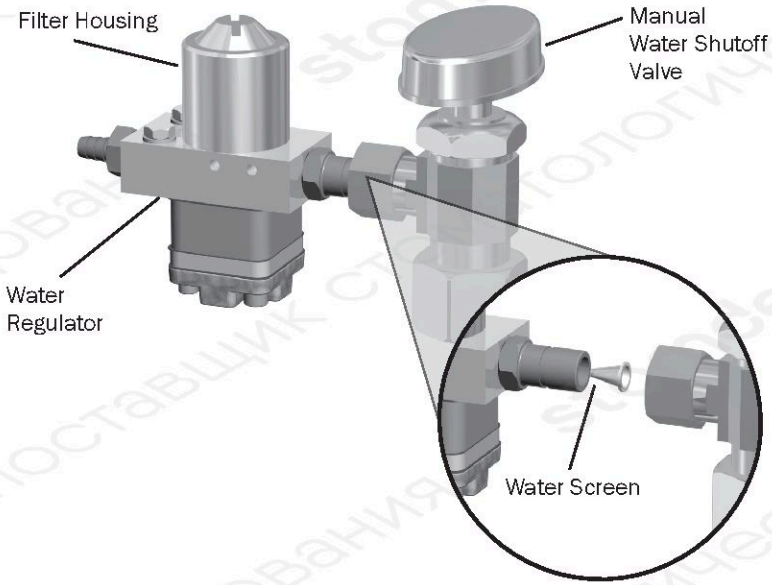
The utilities for your system are located under the chair floor box. To access the utilities, pull the floor box cover up at the front posts (1), then forward (2) and up (3) to slide the cover off the back posts.

The manual shutoff valves control the air and water to the system. To prevent leaks, these valves should remain fully open (turned counterclockwise), except while your system is being serviced.

Air and water pass through separate filters before entering the regulators. Replace these filters when they become clogged and cause restricted flow.

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To check for a clogged air or water filter:

1. Turn on the master toggle.
2. While watching the air pressure gauge, press the syringe air button. If the system air pressure drops by more than 15 psi, replace the air filter.
3. While watching the cuspidor, press the bowl rinse button. If the bowl rinse water pressure fades or if the water flow stops, replace the water filter.

CAUTION To ensure proper delivery system operation, install the filter with the beveled edge facing the manifold.

To inspect and replace the filter:

1. Turn off the master toggle and close the shutoff valves (turn clockwise).
2. Bleed the system of air and water pressure by operating the syringe buttons until air and water no longer flow.
3. Using a standard screwdriver, remove the filter housing from the air or water pre-regulator assembly and remove the filter.
4. Replace the filter if it is clogged or discolored. Install the filter with the beveled edge facing the manifold.

The Effective Size, Material and Maintenance of Filter

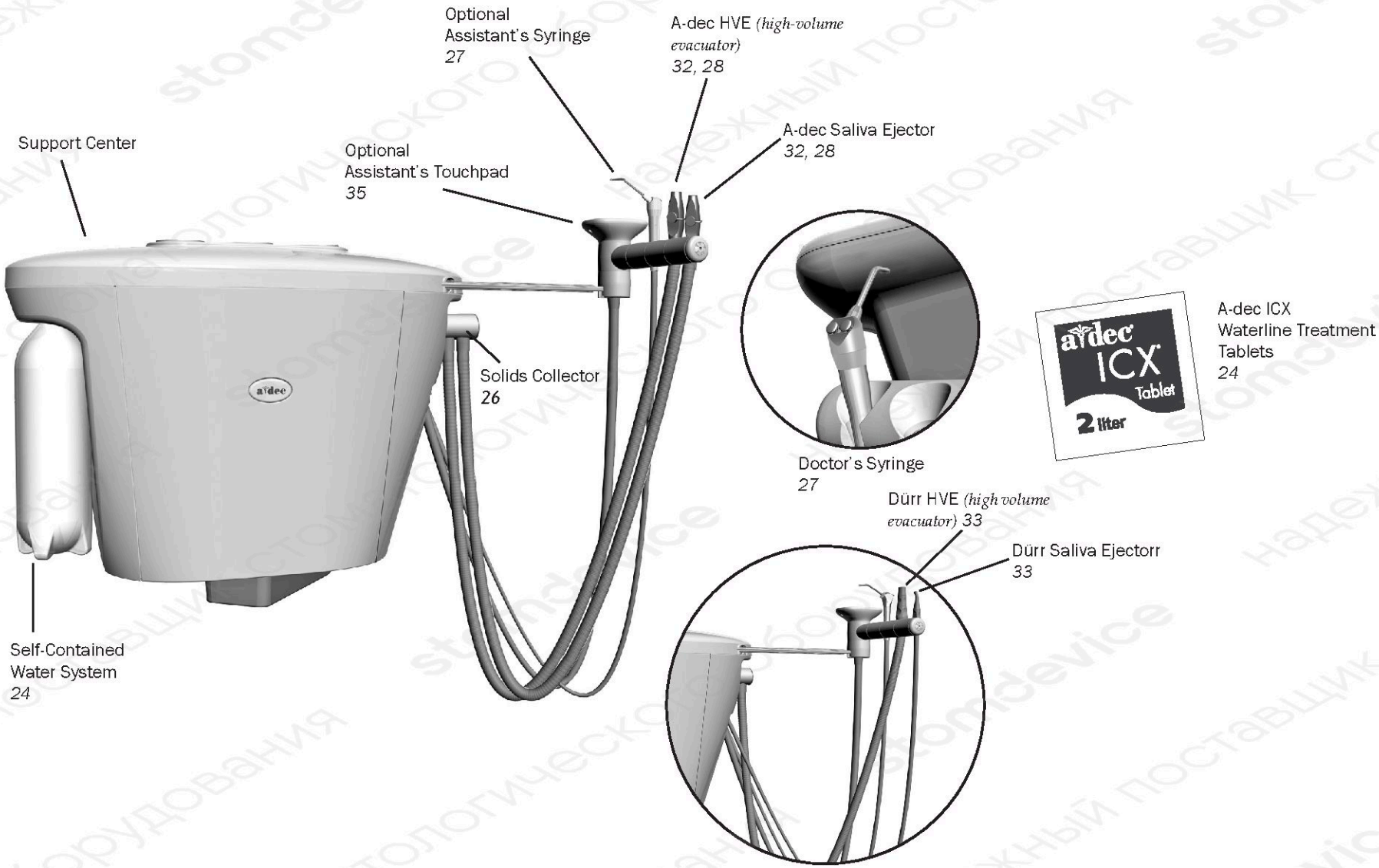
The filter is manufactured of 50 Micron Polypropylene or Polyethylene. They are to be replaced annually or after 1500 hours of clinical use,

If required by the customer, information on the materials used to the waterline can be provided.

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Assistant's Instrumentation and Support Center



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Self-Contained Water System



CAUTION Do not overtighten the water bottle or you may damage the components. A pressurization sound is normal and may be heard up to 2 minutes after the system is turned on.

WARNING Use only A-dec self-contained water bottles. Do not use other bottles, including glass or plastic beverage bottles. Do not use damaged bottles. These can pose a serious safety hazard while pressurized. A-dec plastic water bottles cannot withstand heat sterilization. Attempting to do so will damage the bottle and your sterilizer.

CAUTION Use caution when using the self-contained water system with accessories that require an uninterrupted water supply (e.g., scalers), as these could get damaged without a continuous water source. Do not use saline solutions, mouth rinses, or any chemical solutions not specified in this guide in your A-dec self-contained water system. These may damage the system components and cause your dental unit to fail.

The 2-liter self-contained water bottle supplies water to handpieces, syringes, and the cuspidor cupfill. For proper installation:

1. To remove the bottle, turn off the master toggle, and rotate the bottle to the left.
2. Empty any remaining water from the bottle.

WARNING Avoid touching the A-dec ICX waterline treatment tablet with unprotected skin. For more details, please refer to the instructions for use provided with the ICX tablets (p/n 86.0613.00).

3. Following the ICX instructions for use, place an ICX tablet in the bottle and fill with water.
4. Insert the bottle so the A-dec logo is in front, facing away from the chair*.

**For left-handed configurations, the A-dec logo should face toward the chair.*

5. Rotate the bottle to the right 1-½ turns. Do not overtighten.
6. Turn on the master toggle. A pressurization sound may be heard up to 2 minutes after the system is turned on.

How to Choose Treatment Water

The correct water to use in the A-dec self-contained water system depends on the quality of your municipal water. It's important to choose a source that consistently provides good water quality. For guidance, refer to the regulations specific to your location.

Tap Water

If you have confidence in the quality of your municipal water supply, consider using tap water in your self-contained water bottle.

Bottled Water

If you have concerns about the quality of your municipal water supply, use bottled water from a commercial source.

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Softened Water

In areas with hard water, greater than 200 mg/L as calcium carbonate (11.7 grains per gallon, 2.0 mmol/L), A-dec recommends the use of a water softener to prevent the build up of mineral deposits that may impact the functionality of your delivery system.

WARNING A-dec does not recommend the regular use of distilled, deionized, reverse osmosis, or other ultra-pure water types. Long-term use of these water types may damage the delivery system and degrade the system performance.

Waterline Maintenance

A-dec recommends that you perform a shock treatment on the dental unit waterlines before you use the system for the first time.

For on-going waterline maintenance, A-dec recommends a three-part protocol: continuous use of A-dec ICX® waterline treatment tablets, A-dec recommends that you monitor the water quality and perform a shock treatment per one to three months. Shock the waterlines whenever test results exceed water quality action level.

IMPORTANT For complete details on how to maintain good water quality in your system, see the instructions for use provided with ICX and your self-contained water bottle:

A-dec ICX	p/n 86.0613.00
A-dec Self-Contained Water System	p/n 86.0609.00
Waterline Maintenance Guide	p/n 85.0983.00

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Solids Collector



DANGER Infectious waste may be present. Follow asepsis protocol to prevent cross contamination.

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

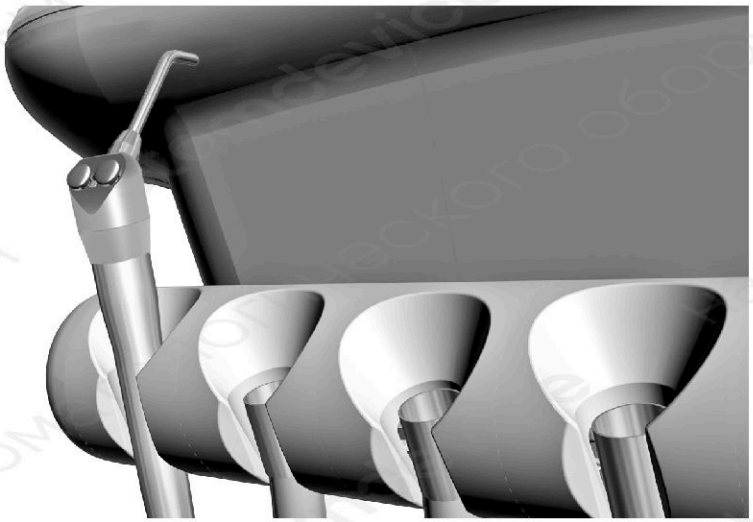
To ensure proper suction from the central vacuum and to maintain proper treatment room asepsis, discard and replace the solids collector screen at least twice a week. To replace the screen:

1. Turn off the vacuum.
2. Remove the solids collector cap.
3. Remove the solids collector screen.
4. Discard the screen according to your local regulations.
5. Insert the new screen in the collector and replace the cap.

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Syringe Tip Cleaning and Sterilization



WARNING Use only A-dec syringe tips in A-dec syringes. A-dec syringe tips have been engineered and manufactured for use with A-dec syringes. Using syringe tips manufactured by a company other than A-dec may result in syringe tip ejection. Tip ejection may result in ingestion or aspiration of the tip, requiring immediate medical attention.

All syringe tips are considered critical items and must be heat sterilized or disposed of after each use.

Precleaning

Always preclean the syringe tips before sterilization.

1. Remove the tip from the syringe.
2. Immerse the tip in a holding solution until ready for ultrasonic cleaning.
3. Clean the tip ultrasonically. Follow the manufacturer's instructions that came with the ultrasonic cleaning device.
4. Purge all cleaning agents from the tip before sterilization.

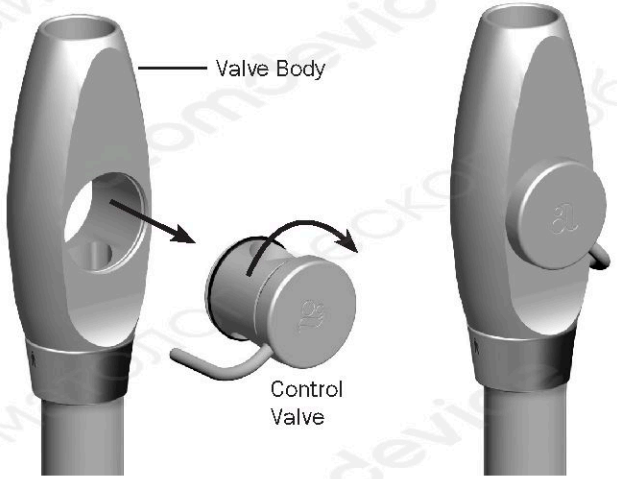
Sterilization

1. Follow these steps to sterilize syringe tips:
2. Rinse the syringe tips in clear water.
3. Flush with isopropyl alcohol or equivalent sterilant-disinfectant solution.
4. Heat sterilize using a steam autoclave for at least 4 minutes at a dwell temperature of 134°C (273°F).

IMPORTANT For detailed instructions on syringe usage, flow adjustment, and maintenance, see the *A-dec Quick-Disconnect Syringes Instructions For Use* (p/n 85.0680.00).

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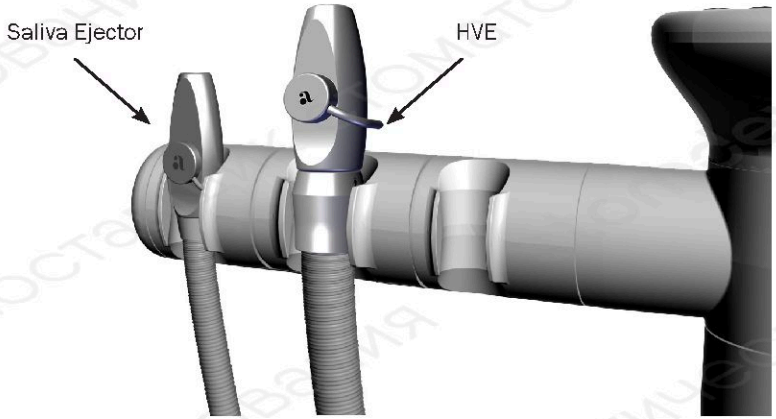
A-dec HVE/Saliva Ejector Left/Right Conversion



NOTE Be sure to reinstall the valve on the same side of the valve body. Otherwise, the HVE or saliva ejector will not operate properly.

To convert the A-dec HVE and saliva ejector for left-handed operation, push the control valve out of the valve body, rotate the control valve 180°, and push it back into place.

A-dec Air Vacuum System (AVS)



The AVS option on the A-dec HVE and saliva ejector includes a self-contained air vacuum generator.

To activate the HVE or saliva ejector, lift the instrument from the holder.

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A-dec HVE/Saliva Ejector Valve Body Assembly Asepsis



NOTE Vacuum lines should be cleaned at the end of each day by evacuating a detergent or water-based detergent-disinfectant through the system.

If you use barriers to protect the main body of the HVE and saliva ejector, replace the barriers after each patient. Clean and disinfect these instruments at the end of each day or after each patient if the barriers have been compromised. If you do not use barriers, or if you perform oral surgery, always clean and disinfect these instruments after each patient.

Disinfection

To disinfect the A-dec HVE and saliva ejector valve body assembly without disconnection from the vacuum system:

1. Remove the vacuum tip from the HVE or saliva ejector.
2. Disinfect the valve body assembly with an intermediate-level, hospital-grade disinfectant. Follow the disinfectant manufacturer's instructions for use.
3. Operate the HVE and the saliva ejector valves several times to verify that they rotate smoothly.

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A-dec HVE/Saliva Ejector Valve Body Assembly Asepsis *(continued)*



NOTE A-dec valve body assemblies are heat tolerant for sterilization. Users may sterilize at their discretion.

Routine Maintenance and Sterilization

To routinely maintain and sterilize the A-dec HVE and saliva ejector when disconnected from the vacuum system (frequency determined by the user):

1. Turn off the vacuum or open the control valve before disconnecting the HVE or saliva ejector.
2. Remove the vacuum tip from the HVE or saliva ejector. Discard disposable vacuum tips.
3. Remove the HVE or saliva ejector valve body assembly from the vacuum line by pulling it away from the tubing at the tailpiece.
4. Disassemble the valve body assembly by pushing the control valve out of the HVE or saliva ejector valve body.
5. Inspect the O-rings. Remove and discard if damaged.
6. Clean undamaged O-rings with a soft brush, mild dishwashing liquid, and water. O-rings may be cleaned in place or removed and cleaned at the discretion of the user.
7. Clean all exterior and interior surfaces of the valve body and control valve with the brushes provided with the product (or equivalent), mild dishwashing liquid, and water. Lumens or channels of the valve body must be cleaned with a brush of the proper length and diameter. The brush must be long enough to extend through the lumen.
8. Rinse thoroughly with water.

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A-dec HVE/Saliva Ejector Valve Body Assembly Asepsis *(continued)*



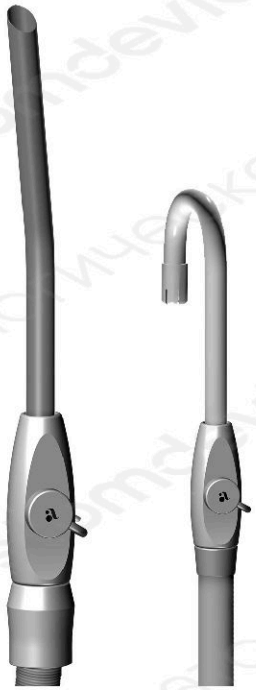
9. Disinfect the valve body components with an intermediate-level, hospital-grade disinfectant.
10. Allow the components to dry completely.
11. Sterilize the valve body assembly components at 132-134°C (270-273°F) for 4 minutes in a pre-vacuum sterilizer or 6 minutes in a gravity displacement sterilizer.

CAUTION Use only silicone lubricant when lubricating the black O-rings in A-dec instrumentation. Petroleum-based products will cause permanent damage to the black O-rings.

12. Prior to use, replace O-rings as needed, lubricate O-rings with A-dec silicone lubricant, and reassemble the valve body assembly.
13. Reinstall the valve body assembly on the tubing tailpiece.
14. Operate the HVE and the saliva ejector control valves several times to verify that they rotate smoothly.

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HVE/Saliva Ejector Tip Asepsis



NOTE Select tips that are compatible with your HVE and saliva ejector openings. See "HVE and Saliva Ejector Openings for Tips" on page 42 for specifications.

Disposable Tips

CAUTION Disposable HVE and saliva ejector tips are not sterilizable and should not be reused.

Replace disposable HVE and saliva ejector tips after each use.

Sterilizable Tips

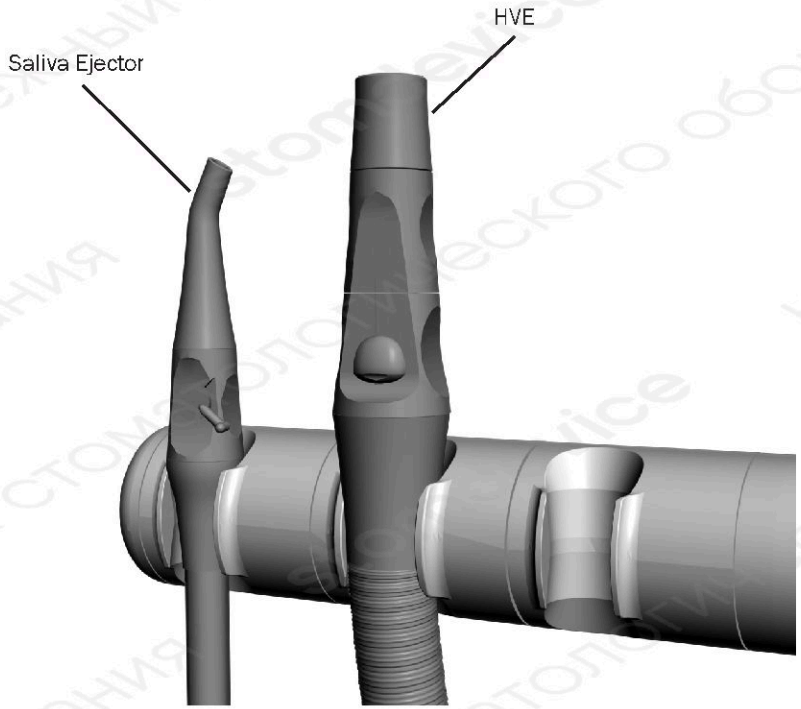
Heat sterilize stainless steel HVE tips after each use. To clean and sterilize a stainless steel HVE tip:

1. Remove the tip from the HVE.
2. Clean and rinse the tip, then allow it to dry completely.
3. Sterilize the tip at 132-134°C (270-273°F) for 4 minutes in a pre-vacuum sterilizer or 6 minutes in a gravity displacement sterilizer.

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Dürr HVE and Saliva Ejector Asepsis



CAUTION Disposable HVE and saliva ejector tips are not sterilizable and should not be reused.

If you use barrier film to protect the main body of the Dürr HVE and saliva ejector, clean and sterilize these instruments weekly, or more frequently as needed. If you do not use barrier film, or if you perform oral surgery, clean and sterilize these instruments after each patient.

To clean and sterilize the HVE and saliva ejector:

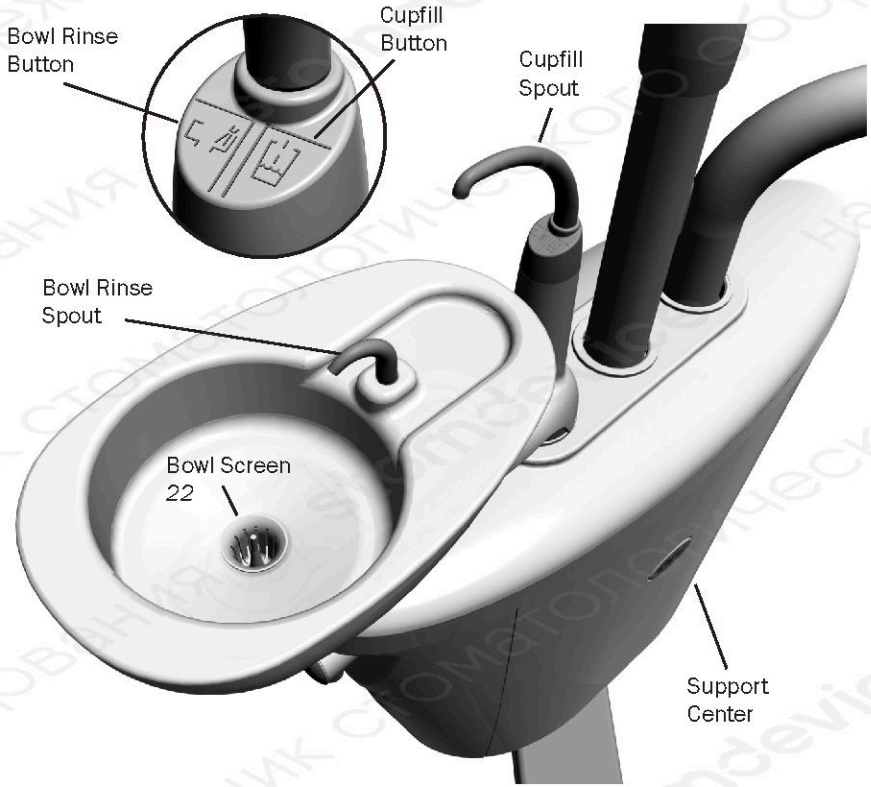
1. Turn off the vacuum.
2. Remove the tip from the HVE or saliva ejector.
3. Remove the HVE or saliva ejector valve body by pulling it away from the tubing at the tailpiece.
4. Clean and rinse the valve body using a mild detergent, water, and a brush.
5. Allow the instruments to dry completely.
6. Heat sterilize the instruments using a steam autoclave for at least 6 minutes at a dwell temperature of 134°C (273°F).

CAUTION Use only petroleum-based lubricant on red O-rings in Dürr instrumentation. Silicone lubricants will cause permanent damage to the red O-rings.

7. Apply a light coat of petroleum-based lubricant on the red O-ring seal.
8. Reinstall the valve body on the tubing tailpiece.
9. Verify that the HVE and the saliva ejector operate and rotate smoothly.

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Cuspidor



The cuspidor cupfill and bowl rinse functions depend on your specific configuration.

Standard Cuspidor

Press and hold the cupfill button on the cuspidor for the desired amount of water. Release the button to stop the flow.

Press the bowl rinse button on the cuspidor once for a 30-second rinse. For continuous rinse, hold the button down. When you release the button, the water will continue to flow for 15 additional seconds.

Cuspidor with Doctor's Touchpad

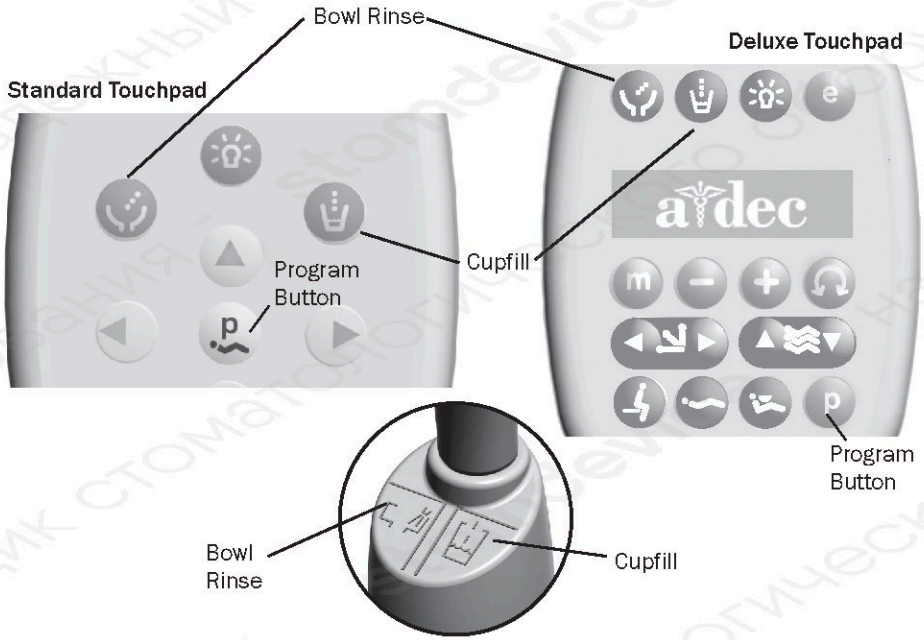
If your system includes a doctor's touchpad, you can use the buttons on the touchpad or the cuspidor to operate and program bowl rinse and cupfill functions:

Button	Description and Action
/	**Cupfill Button:** • Press and release the cupfill button for a timed operation. The factory preset is a 2.5-second fill. • Press and hold the cupfill button for manual operation.
/	**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.

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Programming *(only systems with doctor's touchpad)*

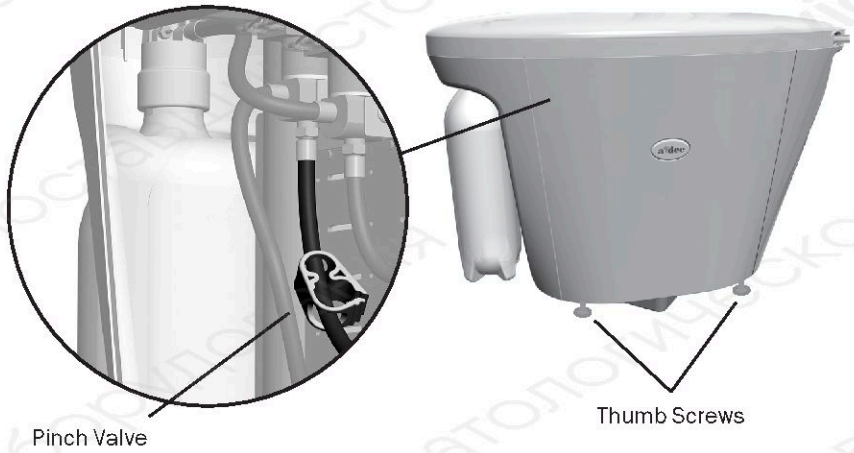


TIP Press twice in less than two seconds to activate the continuous operation mode. Press the button once to end the continuous bowl rinse mode.

To reprogram the timed cupfill or bowl rinse functions:

1. Press the program button the touchpad or press and hold both the cupfill and bowl rinse buttons on the cuspidor. Release them when you hear one beep.
2. Press and hold the cupfill or bowl rinse button for the desired time.
3. Release the button. You'll hear three beeps confirming the program has changed.

Bowl Rinse Flow Adjustment



Adjustments to the cuspidor bowl rinse flow are made inside the support center. To make an adjustment:

1. Loosen the two thumb screws at the bottom of the support center and carefully pull the cover out.
2. With the cuspidor bowl rinse on, tighten or loosen the pinch valve to adjust the flow.
3. For the best rinsing action, adjust the flow pattern by rotating the bowl rinse spout.

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Cleaning and Maintenance



Cuspidor Bowl

CAUTION Do not remove the spouts when cleaning the cuspidor. This will help prevent cleaning solutions from damaging the equipment and contaminating the cupfill water.

CAUTION Do not empty the solids collector or bowl screens into your cuspidor. Doing so could plug the cuspidor drain. After cleaning, always install the bowl screen in the cuspidor bowl drain to prevent debris from plugging the drain.



DANGER Infectious waste may be present. Follow asepsis protocol to prevent cross contamination.

The contoured spouts and smooth bowl of the cuspidor provide for quick and easy cleaning. Remember to empty and clean the bowl screen every time you clean the cuspidor.



Bowl Screen

Gravity Drain Cleaning

At the end of each day, flush the cuspidor to remove debris from the flexible drain tubing. If the cuspidor is not flushed regularly, debris may build up and impair draining. To flush the cuspidor, run the bowl rinse for about 60 seconds.

Maintenance Parts

For replacement cuspidor bowl screens, order p/n 75.0032.02.

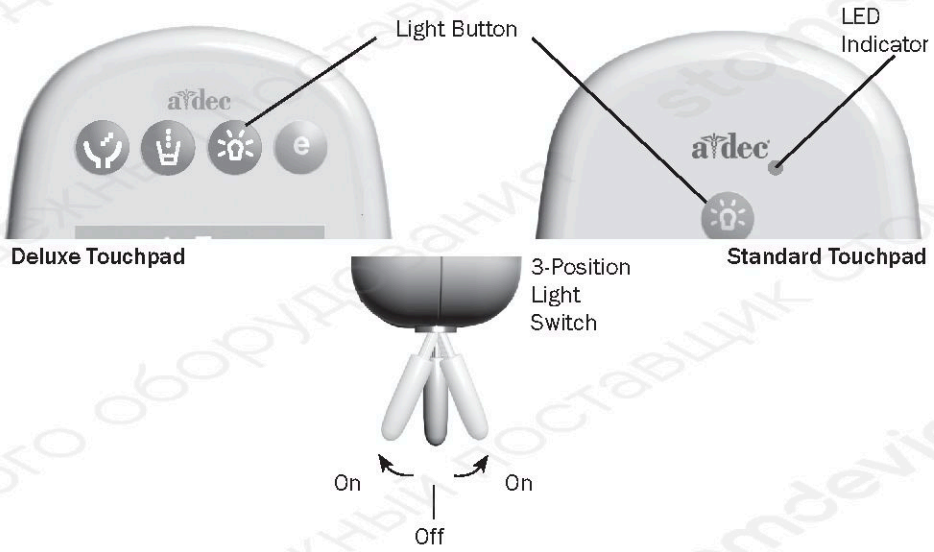
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Dental Light



Note: If your chair includes a different style of dental light, see the instructions for use that came with the dental light.



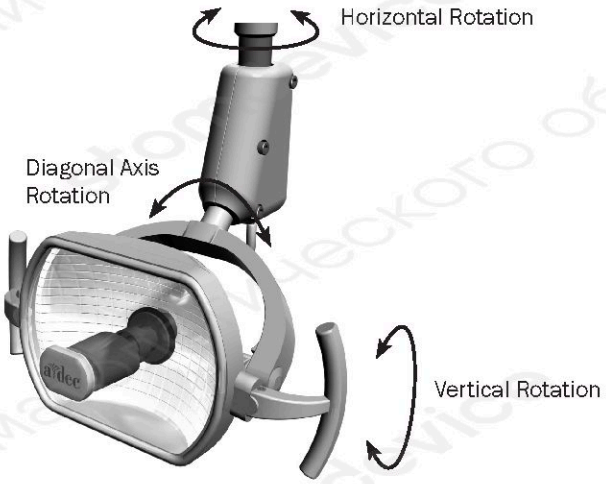
WARNING Take appropriate precautions when operating and maintaining the dental light. Avoid contact with components that may become hot when the light is on. To avoid burns, touch only the light handles and switches during operation. Always turn off the light and allow it to cool completely before maintenance or service.

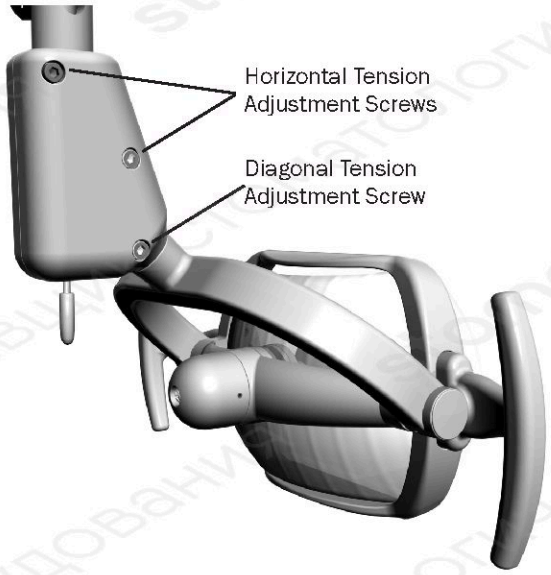
The A-dec 200 dental light can be operated from the manual 3-position switch or the optional touchpad. The dental light is always off when the manual switch is in the center location. To turn the light on from the touchpad, press and release the dental light button. Press and hold the button to turn the light off.

The dental light features two intensities: high and composite (low). For systems without a touchpad, flip the 3-position switch to either side of center to select the intensity. On the touchpad, press the light button to choose the intensity. When the light is in the composite setting, the LED indicator on the standard touchpad flashes.

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Rotation Adjustments





WARNING Always turn off the dental light and allow it to cool completely before maintenance or service.

If the light head is difficult to position, moves too easily, or tends to slip out of position, you can adjust the horizontal, diagonal, and vertical rotation tension.

Horizontal Rotation

1. Use a hex key to make left/right rotation adjustments, beginning with the top screw on both sides of the switch housing.
2. If the light head moves too easily, or tends to drift out of position, increase the tension by turning the screws right.
3. If the light is difficult to move, loosen the tension by turning the screws left.

Diagonal Axis Rotation

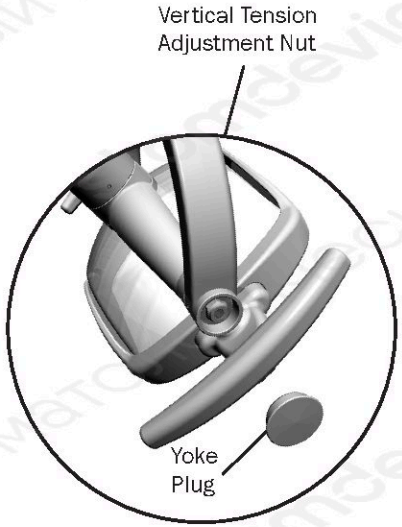
For diagonal axis rotation, adjust the screws at the bottom of the switch housing.

1. If the light head moves too easily, or tends to drift out of position, increase the tension by turning the screw right.
2. If the light head is difficult to move, loosen the tension by turning the screw left.
3. To eliminate all movement in the diagonal axis, tighten the adjustment screw until it is tight.

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Rotation Adjustments *(continued)*

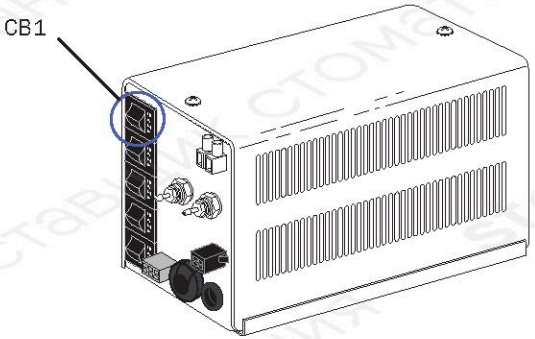


Vertical Adjustment

For vertical rotation tension, follow these steps:

1. Remove the yoke plug on one side of the light.
2. Using a 5/16" nut driver, turn the adjustment nut clockwise to increase tension or counterclockwise to decrease tension.
3. Reinstall the yoke plug.

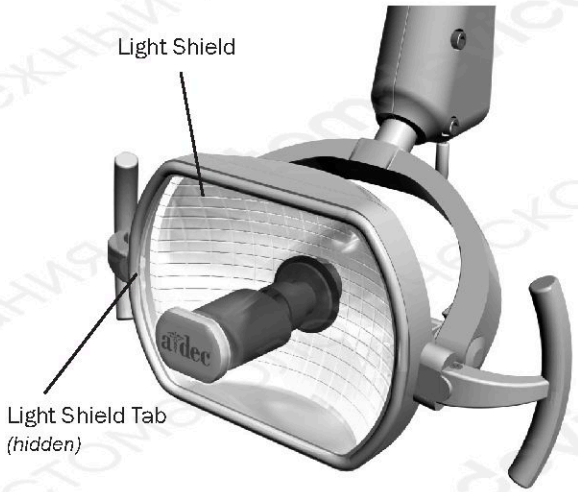
Circuit Breaker Location

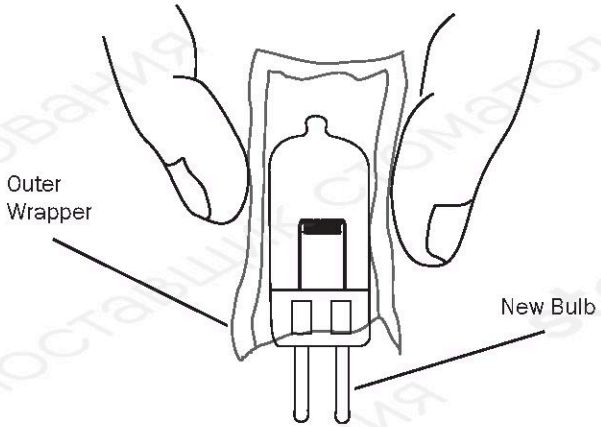


Under abnormal conditions, the circuit breaker interrupts the flow of electricity. If the circuit breaker should trip, reset it by pushing the circuit breaker button on the power supply. The power supply is located in the utilities area under the floor box cover.

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Bulb Replacement





Follow these steps when replacing the dental light bulb:

WARNING To avoid burning your fingers, allow the bulb to cool before removing. Never operate the dental light with the light shield removed. The clear shield contains UV blocking additives and is also your protection in the unlikely event that the bulb shatters.

CAUTION Take care when handling the bulb. The bulb base is fragile and can break under excessive pressure. Do not remove the outer wrapper when handling the new bulb. Finger oils can affect light performance and severely limit bulb life. If you should inadvertently touch the bulb, gently clean it with cotton dampened with isopropyl or ethyl alcohol.

CAUTION Do not install the light shield if it has a broken tab. A broken tab can cause the light shield to fall off and lead to product damage or injury.

1. Turn the light off and allow it to cool.
2. Hold the light shield and gently squeeze one side while pulling the shield away from the dental light. Set the light shield aside.
3. Using a gauze pad or cloth to protect your fingers, carefully pull the old bulb from its socket. Discard the bulb.
4. Holding the new bulb in its outer wrapper, carefully insert the bulb pins into the socket. A small section of each pin is still visible when the bulb is fully seated.
5. Remove and discard the outer wrapper. Then reinstall the light shield.
6. Verify the operation of the light by turning it on and operating it at each intensity setting.

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Dental Light Shield Maintenance



CAUTION Use only soap and water to clean the shield. Do not allow alcohol-based solutions or other chemical disinfectants to come into contact with the dental light shield. These solutions and chemicals will shorten its life.

WARNING To avoid burning your fingers, allow the dental light to cool before removing the light shield. Never operate the light with the shield removed. The clear shield contains UV blocking additives and is also your protection in the unlikely event that the bulb shatters.

For optimal performance and maximum life of your dental light shield, use only soap and water to clean the shield. Do not use alcohol-based solutions. Follow these steps to remove and clean the shield:

1. Turn off the light and allow it to cool completely.
2. Hold the light shield and gently squeeze one side while pulling the shield away from the dental light.
3. Use a small amount of mild, non-abrasive liquid soap and warm water to clean the shield.
4. Rinse and dry with a non-abrasive, lint-free cloth.
5. Ensure that the shield is completely dry before reinstalling it and turning on the dental light.

If the shield becomes scratched or damaged, replacements are available from your authorized A-dec dealer.

Contact your authorized A-dec dealer for available dental light maintenance parts.

Common Dental Light Replacement Parts

Description	Part Number	
Bulb	041.709.00	
Light Shield	97.0411.00	

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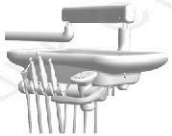
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Specifications



Maximum Chair Capacity

Patient Load:	181 kg (400 lb)
Delivery Load :	3.6 kg (8 lb)





Minimum Air, Water, and Vacuum Service Requirements

Air:	70.80 L/min (2.50 scfm) at 551 kPa (80 psi)
Water:	5.68 L/min (1.50 gpm) at 276 kPa (40 psi)
Vacuum:	
• Wet:	212 L/min (12 scfm) at 27 kPa (8" of mercury)
• Dry/Semidry:	340 L/min (12 scfm) at 12 kPa (3.5" of mercury)

Dürr and A-dec HVE and Saliva Ejector Opening for Tips

HVE:	11 mm (0.435") *(HVEs may also be altered to accommodate 15 mm tips)*
Saliva Ejector:	6 mm (0.24")

3080mm*2086mm*2312mm (depth*width*height)

A-dec recommended to leave at least 700mm of space on both sides of the dental chair, 900mm for the patient's headrest (lowest seat) and 300mm for the patient's foot (the highest seat).



Dental Light Operating Specifications

Focal Range:	305 mm - 686 mm (12" - 27")
Bulb:	Quartz Halogen Xenon, single-end
Lamp Rating:	17V/ 95W
Color Temperature:	4800 Kelvin *(nominal; at high intensity)*
Light Pattern:	230 mm x 110 mm at 700 mm (9" x 4.3" at 27.6")

Nominal Light Intensity

Composite:	5,500 lux (511 fc)
High:	20,000 lux (1394 fc)
Heat Output:	325 BTU/hour

NOTE Specifications are subject to change without notice. Requirements may vary depending on your location. For more information, contact your authorized A-dec dealer.

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Electrical Rating

A-dec Product	Frequency (Hz)	Voltage Range (VAC)	Maximum Current (Amps)
Dental Chairs			
A-dec 200	50	220	Input = 10 Chair circuit board output = 2 Amps max
Delivery Systems, Assistant's Instrumentation, and Cuspidors			
Systems with 300 W Power Supply	50	220	Input = 1.4
Halogen Dental Lights *(Chair-Mounted)*			
A-dec 200	50	12.1/17	5.5
Power Supplies			
300 W Power Supply	50	220	1.4
Miscellaneous (The following devices are not included in the product registration)			
Bitewing X-Ray Viewer	50-60	24	0.5
Monitor Mounts 38x, 48x, and 58x	50-60	100-240	10

WARNING To avoid risk of electric shock, this equipment must only be connected to a supply mains with a protective earth (ground). Connection of extension cords or multiple socket outlets to the dental system could reduce the overall safety of the dental system and is not allowed.

NOTE For products that are permanently connected to fixed wiring (no power cord plug), a switch or circuit breaker shall be used to disconnect the product from mains power. Mains connections shall be made by qualified personnel in compliance with local building and electrical codes.

Environmental Specifications

Temperature/Humidity	Specification
Storage/Transportation Temperature	-29 °C to 50 °C (-20 °F to 122 °F) - Relative humidity: 10 - -90%.
Operating Temperature	5 °C to 40 °C (41 °F to 104 °F) - Relative humidity: ≤80%.
Indoor Use	Altitude up to 2,000 m (6,563'), installation category II, pollution degree 2.

Classification of Equipment (IEC-60601-1)

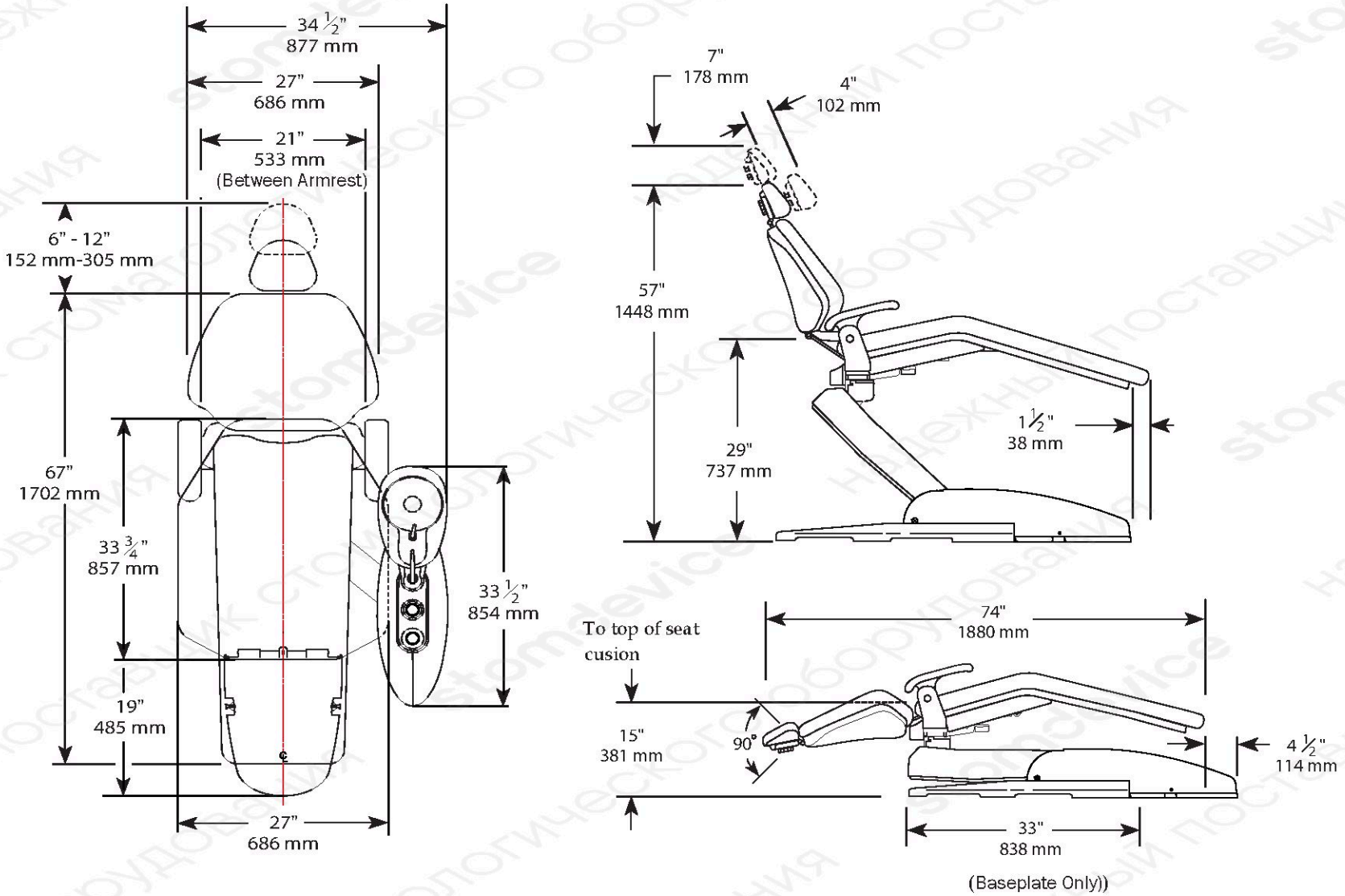
Type/Mode	Classification
Types of Shock Protection	CLASS I EQUIPMENT: All A-dec products with mains voltage.
Degree of Shock Protection	TYPE B APPLIED PART: All A-dec products with Applied Parts. Note: For ancillary devices, refer to the Instructions for Use that came with the product.
Degree of Protection Against Water Ingress	Footswitch: IPX1. All other products: IPX0.
Mode of Operation	CONTINUOUS OPERATION Note: For ancillary devices, refer to the Instructions for Use that comes with the product.
Flammable Gasses	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).

NOTE Allowable mains voltage fluctuations ± 10% of rated voltage.

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Equipment Dimension

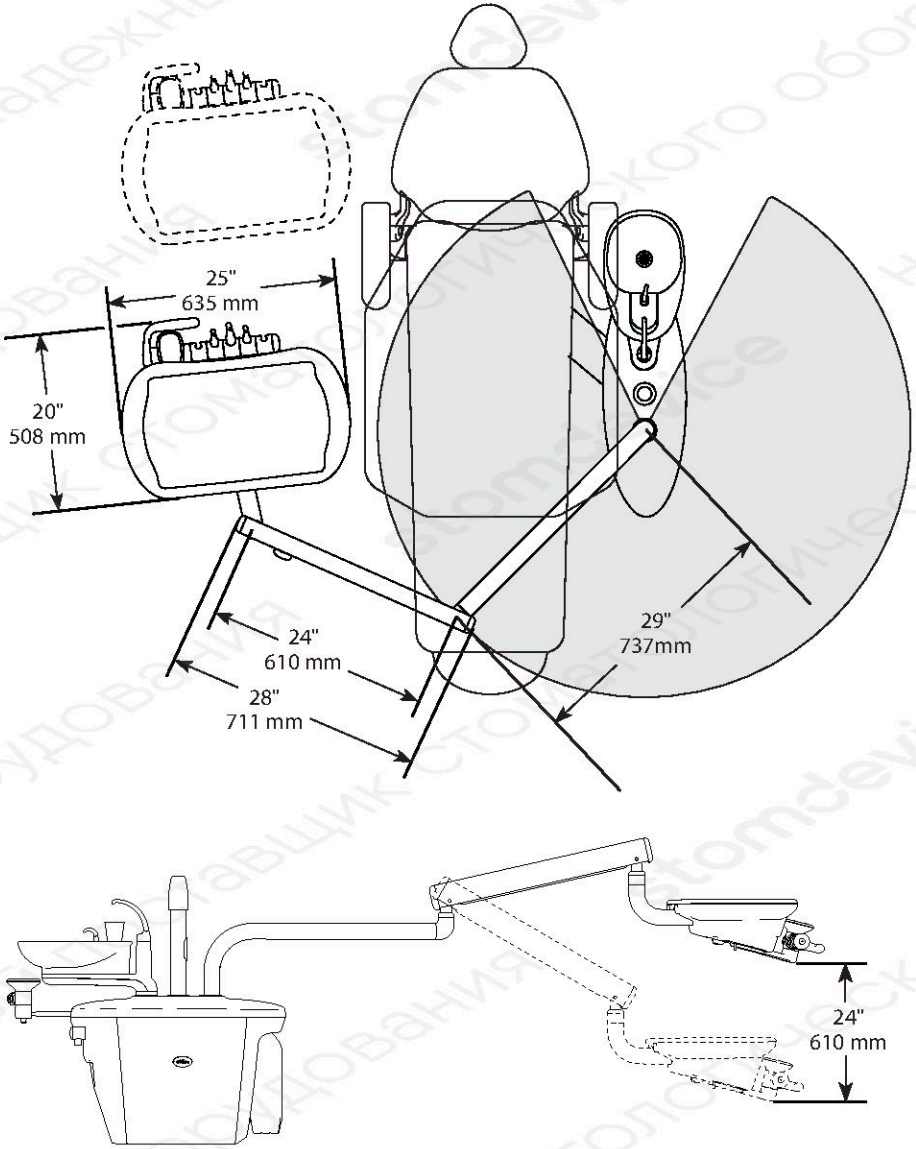
Dental Chair



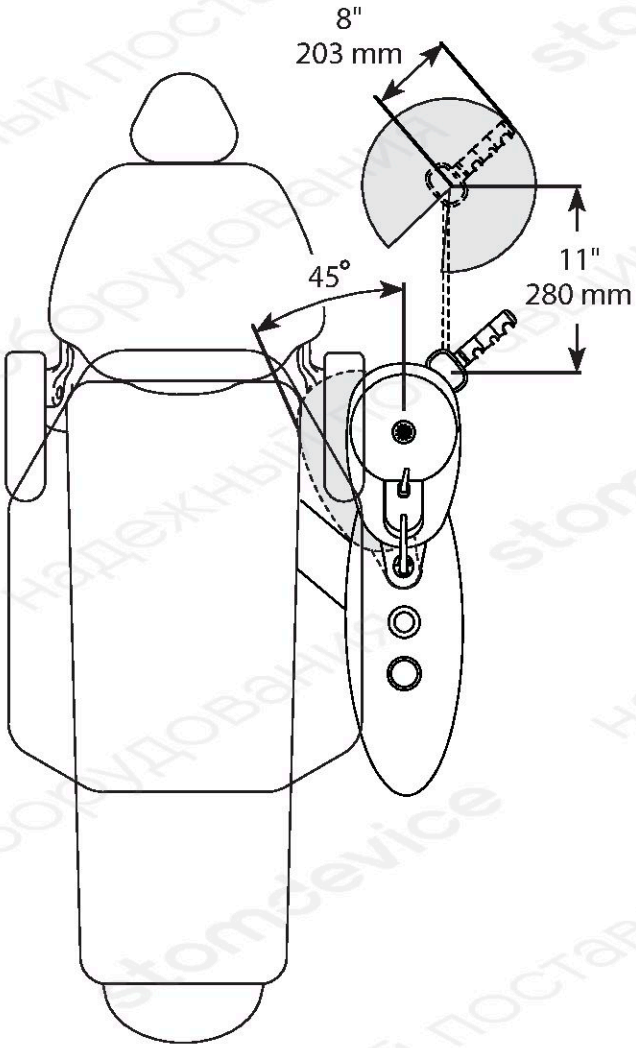
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A-dec 200 Delivery System; Plan View

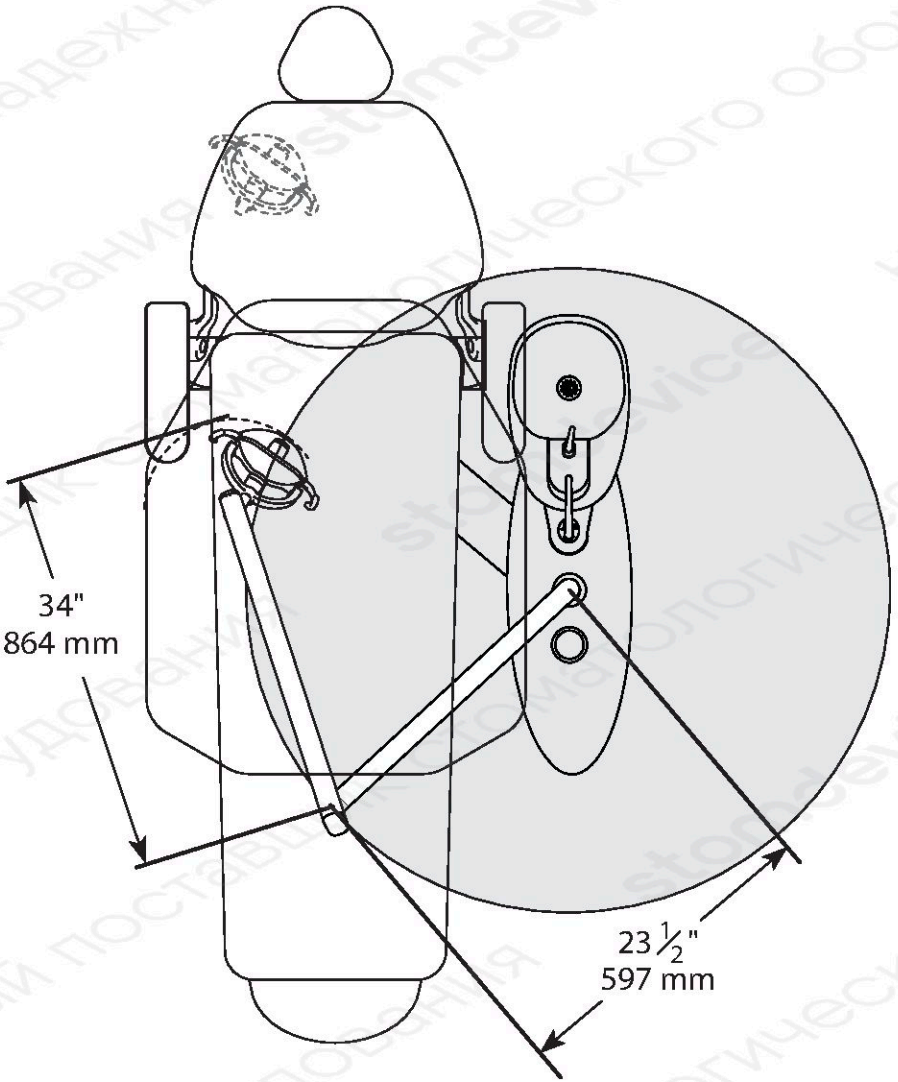


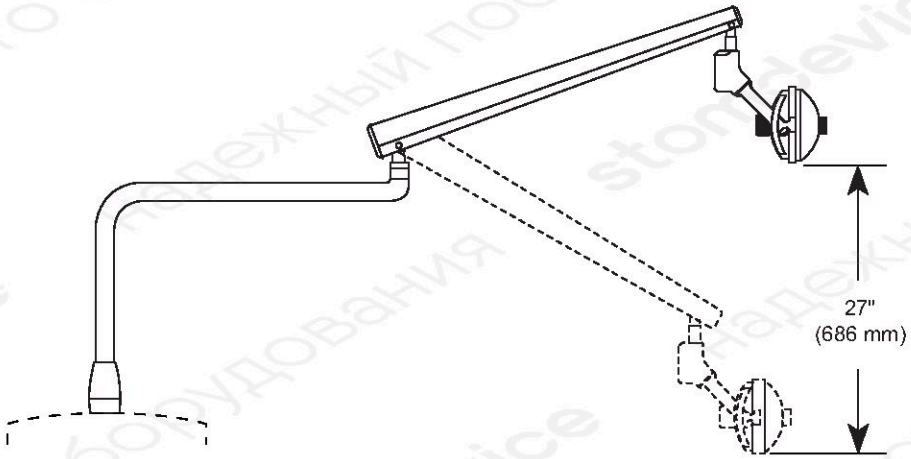
A-dec 200 Chair with Support Center, Cuspidor, and Assistant's Instrumentation; Plan View



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A-dec 200 Dental Light; Plan View with Elevation

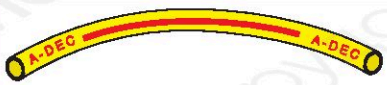




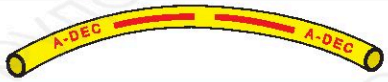
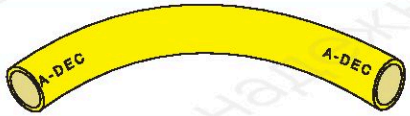
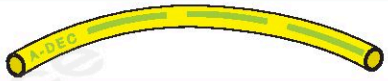
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A-dec tubing

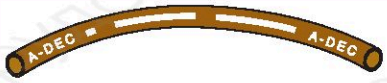
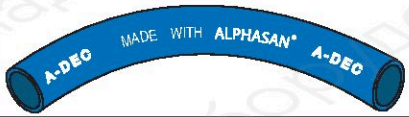
Tubing Function	Description	Tubing color/Tracer	Part Number
Chip blower/accessory button	Chip blower air - 1/8" OD, brown/white long dash		036.014.02
Air coolant signal	Air coolant signal air from foot control; signal air for cuspidor cupfill and vacuum actuator - 1/8" OD, green/ white long dash		036.006.03
Unregulated air	Unregulated air to flexarm brake - 1/8" OD, black		036.020.03
Water coolant signal air	Signal air (clear) from foot control valve to wet/dry toggle - 1/8" OD, clear		024.015.04
Water supply, cold water (regulated)	Oral cavity water - 1/8" OD, blue		036.004.03
Oral cavity water - 1/8" OD, blue	Syringe water, with/without water heater - 1/8" OD, red		036.005.03
Unregulated air, master air	Continuous, filtered, unregulated air - 1/8" OD from the air filter regulator to the master toggle, yellow/red stripe		036.013.03

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Tubing Function	Description	Tubing color/Tracer	Part Number
Pilot air	Filtered unregulated air controlled by master toggle - 1/8" OD, yellow/red dash		036.009.04
Regulated air	Continuous, filtered, regulated air - 1/8" OD, yellow		036.003.03
Miscellaneous	Miscellaneous line for use with A-dec authorized accessories - 1/8" OD, white		036.019.03
Hydraulic fluid	Low pressure hydraulic system supply for chair - 3/8" OD, clear		036.035.00
Regulated Air Supply	Regulated air - 1/4" OD		036.103.03
Regulated Air Supply	Regulated air - 3/8" OD		036.031.02
Regulated Air (40 psi)	Regulated air at 40 psi to pressurize the water bottle - 1/8" OD		036.044.03
Drive Air	Drive air for pressure gauge - 1/8" OD		036.010.03
Drive Air	Drive air for foot control - 1/4" OD		036.052.03
Drive Air	handpiece drive air (clear) - 1/4" OD		036.066.03

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Tubing Function	Description	Tubing color/Tracer	Part Number
Chip Blower	Air for chip blower - 1/8" OD		036.014.02
Signal Air, Water Coolant	Signal air/water coolant from foot control, signal air for cuspidor bowl rinse - 1/8" OD signal		036.018.03
Water Supply	Regulated water, water to bowl rinse - 1/4" OD		036.053.03
Water Supply	Unregulated water - 3/8" OD		036.033.02
Return Water	Return water, tank water heater, water to gravity drain drip tube from syringes - 1/8" OD		036.011.03

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Service Parts

Below are the most common repair parts for the A-dec 200. See the A-dec 200 Service Reference (p/n86.0324.06) and the A-dec 200 Installation Guide (p/n 86.0004.06) for a complete list.

P/N	Description	P/N	Description
61.0197.01	Hydraulic Fluid, 1 Pint	035.003.01	O-Ring,.029 ID X .040 Wall, Package 10
38.1780.00	WTR Cartridge ASSY, OTC	024.218.03	Tubing, SE, Gray3, 10 FT
38.1787.01	Diaphragm, Control Block, 4 POSN, Package 5	009.018.00	HLDR, Hex Wrench Set
90.0593.00	Service Kit, FT Control 3	23.1232.01	Valve ASSY, Button, Syringe, Autoclavable, Package 2
98.1138.00	TBG ASSY, Silicone, 4Hole, 60IN, Gray3	23.0872.01	Syringe Tip, Package 5
98.1139.00	TBG ASSY, Silicone, 6Hole, 60IN, Gray3	77.1112.00	Spout, Cup Fill, Cuspidor, No Vent, Gray3
77.1123.01	3 POSN ASST, W/O Touchpad, 200, AHZ	77.0042.04	Spout, Bowl Rinse, W/O-Ring, Gray3
12.1258.00	SE Valve ASSY, Autoclavable, OTC	14.0486.00	Bottle, WTR, 2 Liter
11.1366.00	Vacuum Canister ASSY, Dual, 11 MM, White2	12.0991.00	Drain Seal, Cuspidor

** For the repair parts mentioned above, it is recommended that the user reserve a spare part.*

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Identification of Symbols

These symbols appear on the actual product or are used in documentation to alert the user about cautions, warnings, hazards, or tips.

Symbol	Description
	Protective earth (ground).
	Functional earth (ground).
	Type B applied part.
	Caution: Hot surface.
	Electrical and Electronic Waste. Do not dispose of with domestic waste.
	Date of Manufacture.
	Manufacturer.
135° C	Sterilizable up to the stated temperature.
REF SN or S/N PN or P/N	Model Number (Catalog Number). Serial Number. Part Number.
~ ⎓ ≂	VAC symbol. VDC symbol. VAC/VDC symbol.
	General mandatory action sign. Not a caution. Take note of additional important instructions. e.g., NOTE: Assemble parts as shown.
	Advisable to consult accompanying documents. e.g., IMPORTANT: For more information, see the A-dec Equipment Asepsis Guide (p/n 85.0696.00).
	Mandatory to consult the manual. e.g., IMPORTANT: When installing this light on an A-dec 311 light post, use the instructions that came with the post instead of this guide.

	Caution. Failure to follow instructions could result in damage to product or minor injury. e.g., CAUTION: Do not overtighten the adjustment screw. Overtightening could break the screw.
Danger	Biohazard. Failure to follow instructions could increase risk of infection. e.g., DANGER: Infectious waste may be present. Follow asepsis protocol to prevent cross contamination.
	Danger. Failure to turn off the power before you begin this procedure can lead to electrical shock. e.g., DANGER: Disconnect the main power or shut off the main power before servicing. Failure to turn off the power before you begin this procedure can lead to electrical shock.
	Warning. Failure to turn off the power before you begin this procedure can lead to product damage and result in serious injury or death. e.g., WARNING: Turn off the power before removing the pump cover. Failure to turn off the power before you begin this procedure can lead to product damage and result in serious injury or death.
	Attention. Failure to follow instructions could result in product damage. e.g., 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.
	Single use only. e.g., CAUTION: Disposable HVE and saliva ejector tips are not sterilizable and should not be reused.

	Temperature shipping and storage limits.		Relative humidity shipping and storage limits.
	This side up	Fragile	Keep dry

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Electromagnetic Compatibility (EMC)

Special precautions relating to electromagnetic compatibility (EMC) are required for this device and this device must be installed and used as set forth in the EMC section herein.
This device must be operated with the attached cable and accessories. The cable information is described as below:

Cable Name	Length
Power line	0.6 m (exposed part)
Foot pedal	0.9 m (exposed part)

Except for cables (transducers) offered as spare parts for internal components, the use of other accessories and cables (transducers) may lead to increased emission of the device or system or decreased immunity.
The device or system shall not be put close to or stacked with other devices; if the same must be so put or stacked, please observe and verify whether it operates normally with its configuration adopted.
Basic performance:

Name	Description
Continuous conduction mode	It should be able to move up and down and lean forward and backward normally and open the dental light.
Standby mode	The electric dental chair is placed in the clinic position (the height of the chair is adjusted to the middle and the backrest also to the middle position). At this moment, the chair has no movement.

Guidance and Statement of the Manufacturer - Electromagnetic Emission

This device is expected to be used in the electromagnetic environments as provided below and buyers or users shall make sure it is used in such electromagnetic environments:

Emission Test	Conformity	Electromagnetic Environment - Guidance
RF Emission GB 4824	1 group	This device uses RF energy only for its internal functions and thus it has low RF emission and has a very low possibility to interfere nearby electronic devices.
RF Emission GB 4824	Class B	This device is suitable for use in all facilities, including being used at home and connected to residential public LV power supply networks directly for household use.
Harmonic radiation GB 17625.1	Class A	This device is suitable for use in all facilities, including being used at home and connected to residential public LV power supply networks directly for household use.
Voltage fluctuation/flicker emission GB 17625.2	Conforming	

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Guidance and Statement of the Manufacturer - Electromagnetic Immunity

This device is expected to be used in the electromagnetic environments as provided below and buyers or users shall make sure it is used in such electromagnetic environments:

Immunity Test	Test Level	Conforming Level	Electromagnetic Environment - Guidance
Electrostatic discharge (ESD) GB/T 17626.2	±6kV contact discharge ±8kV air discharge	±6kV (contact) ±8kV air	This device uses RF energy only for its internal functions and thus it has low RF emission and has a very low possibility to interfere nearby electronic devices.
Electrical fast transient burst GB/T 17626.4	±2kV power line ±1kV input /output line	±2kV power line N/A	The quality of the network power supply shall meet the requirements of typical commercial or hospital environments.
Surge GB/T 17626.5	±1kV line to ground ±2kV line to ground	±1kV line to ground ±2kV line to ground	The quality of the network power supply shall meet the requirements of typical commercial or hospital environments.
Voltage sag, short interruption and voltage change on power supply input line GB/T 17626.11	<5% UT, duration: 0.5 period (on UT, > 95% voltage sag) 40% UT, duration: 5 periods (on UT, 60% voltage sag) 70% UT, duration: 25 periods (on UT, 30% voltage sag) <5% UT, duration: 5s (on UT, >95% voltage sag)	<5% UT, duration: 0.5 period (on UT, > 95% voltage sag) 40% UT, duration: 5 periods (on UT, 60% voltage sag) 70% UT, duration: 25 periods (on UT, 30% voltage sag) <5% UT, duration: 5s (on UT, >95% voltage sag)	The quality of the network power supply shall meet the requirements of typical commercial or hospital environments. In case of need of continuous operation of this device during power interruption, UPS or battery is recommended for power supply.
Power frequency magnetic field (50Hz) GB/T 17626.8	3A/m	3A/m	The power frequency magnetic fields shall have the level and characteristics of those used in typical commercial or hospital environments.
Notes: UT refers to AC network voltage before applying the test voltage.			

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Guidance and Statement of the Manufacturer - Electromagnetic Immunity

This device is expected to be used in the electromagnetic environments as provided below and buyers or users shall make sure it is used in such electromagnetic environments:

Immunity Test	Test Level	Conforming Level	Electromagnetic Environment - Guidance
RF conduction GB/T 17626.6 RF radiation GB/T 17626.3	3V (effective value) 150kHz - 80MHz 3V/m 80MHZ-2.5GHZ	3V (effective value) 3V/m	Portable and mobile RF communication instrument shall not be used with a closer distance to any part (including cables) of this device than the recommended isolation distance. Such a distance shall be calculated based on the corresponding formula relevant to the transmitter frequency. Recommended isolation distance $d = 1.2\sqrt{(P)}$ 150kHz-80MHz $d = 1.2\sqrt{(P)}$ 80MHz-800MHz $d = 2.3\sqrt{(P)}$ 800MHz-2.5GHz Wherein: P- the maximum rated output power of transmitter provided by the transmitter manufacturer (unit: W);d - the recommended isolation distance (unit: m). The field intensity of the stationary RF transmitter is determined by the electromagnetic field survey[a] and shall be lower than the conforming level[b] in each frequency range. Interference may exist around the device with the following symbol. 

Note 1: Adopt the formula for higher-frequency band at 80MHz and 800MHz frequency points.

Note 2: The Guidance may not be suitable for all situations and the electromagnetic transmission may be affected by the absorption and reflection of buildings, objects and human bodies.

a The field intensity of a stationary transmitter, such as wireless (cellular/cordless) telephone and ground movable wireless radio station, amateur radio, amplitude modulation and frequency modulation wireless radio and television broadcasting cannot be accurately predicted in theory. In order to evaluate the electromagnetic environment of stationary RF transmitter, the electromagnetic field should be surveyed. If the field strength of the place where the device is located is measured to be higher than the applicable RF above, please observe and verify whether the device operates normally. Take supplementary measures, such as readjusting the direction or position of the device in case that any abnormal performance is observed.

b The field intensity within 150kHz-80MHz shall be lower than 3V/M.

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Recommended Isolation Distance Between the Portable and Mobile RF Communication Instrument and This Device

This device is expected to be used in an electromagnetic environment with controlled RF radiation disturbance. Based on the maximum rated output power of the communication device, buyers or users may prevent electromagnetic interference by maintaining a minimum distance between the portable and mobile RF communication instrument (transmitter) and the device according to the following recommendations.

Maximum Rated Output Power of the Transmitter (W)	Isolation Distance Corresponding to Different Transmitter Frequency/m		
	150kHz - 80MHz $d = 1.2\sqrt{(P)}$	80MHz - 800MHz $d = 1.2\sqrt{(P)}$	800MHz - 2.5GHz $d = 2.3\sqrt{(P)}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

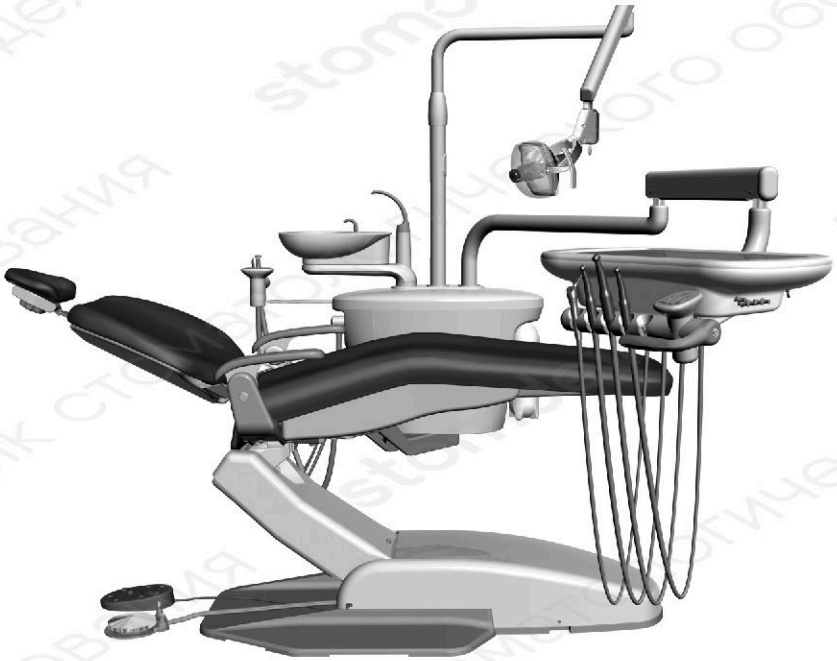
For maximum rated output powers of the transmitter not listed in the above table, the recommended isolation distance is d (unit: m), which can be determined by the formula in the corresponding transmitter frequency column; wherein, P is the maximum rated output (unit: W) of the transmitter provided by the transmitter manufacturer.
Note 1: Adopt the formula for higher-frequency band at 80 MHz and 800MHz frequency points.
Note 2: The Guidance may not be suitable for all situations and the electromagnetic transmission may be affected by the absorption and reflection of buildings, objects and human bodies.

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Warranty

Quality Assurance



A-dec (Hangzhou) Dental Equipment Co., Ltd. (hereinafter referred to as "A-dec (Hangzhou)") warrants that all products will not have any material nor process defect within one year from the date of delivery. The sole responsibility of A-dec (Hangzhou) is to provide maintenance parts or decide whether to provide replacement products (excluding manual services) or not at its own discretion. A-dec (Hangzhou) will not compensate the buyer in any form. All special, occasional and accidental damages are excluded from the scope of this quality assurance. Any written notice concerning the violation of the product's assurance must be submitted to A-dec (Hangzhou) within the product's assurance period. This quality assurance does not cover any product damage caused by improper installation or maintenance, accident or improper use, nor does it cover any damage caused by the use of cleaning, disinfecting or sterilizing chemicals or the production operation. Dental operating lamp bulbs are not covered by this quality assurance either. Failure to comply with the method instructions listed in the Instructions for Use of A-dec (Hangzhou) (i.e. the instructions for operation and maintenance methods) may result in the invalidation of this assurance.

A-dec (Hangzhou) provides a ten-year (starting from the date of purchase of the dental chair or hydraulic cylinder) quality assurance for hydraulic cylinders of lift-type and tilting dental chairs manufactured by A-dec (Hangzhou). This assurance is applicable to hydraulic cylinders of dental chairs manufactured by A-dec (Hangzhou) that have been put into service in the industry. This assurance covers substandard hydraulic cylinders of dental chairs attributed to the manufacturing process found by A-dec (Hangzhou). The cylinders of dental/assistant chairs are covered by the one-year product assurance of A-dec (Hangzhou). A-dec (Hangzhou) does not guarantee the marketability and other aspects of its products. For maintenance information, please contact your local distributor authorized by A-dec (Hangzhou). Please check local specifications concerning the installation of this product.

Expected Service Life

With proper maintenance and service, the service life of A-dec products is: 10 years since the date of manufacture.

At the end of the Service Life*, all products should be inspected by a trained service technician prior to continued use and inspected every year.

**Service Life is the expected functional use limit and is based on product design goals. Service Life does not include normal service "wear and tear" components and is separate from the warranty period; there are no implied or explicit extensions of the warranty period (for more details, see "Warranty" on page 56) Service part availability may vary.*

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Preventive Inspection of A-dec Dental Equipment

Over time, normal wear and tear can affect the performance of the equipment. Periodically inspect the water and air lines for any visible cracks or cuts in the tubing, which can lead to leaks. Inspect for damaged O-rings and loose fittings, and check for any loose screws. To prevent problems from occurring, replace the tubing and O-rings, and tighten the screws and fittings as necessary.

Equipment Alterations Policy

Certain modifications or alterations of A-dec Hangzhou equipment which expand the use of A-dec Hangzhou equipment beyond its design and intent, or which override any safety features of A-dec Hangzhou equipment may jeopardize doctor, patient, or staff safety. Field modifications that alter the electrical and/or mechanical safety of A-dec Hangzhou dental devices are not sanctioned by A-dec Hangzhou. 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 Hangzhou equipment may lead to a reduced level of safety of the resulting 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 Hangzhou equipment falls within these constraints is with the person(s) who initiates, approves and/or performs such modification or alteration. A-dec Hangzhou 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 Hangzhou harmless from resulting claims, including product liability claims. Additionally, such modification or alteration voids A-dec Hangzhou's warranty and may invalidate regulatory agency approval.

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Safety Considerations for Accessory Equipment

The use of accessory equipment not complying with the equivalent safety requirements of this equipment may lead to a reduced level of safety of the resulting system. Caution must be used when connecting medical products to a multiple socket outlet due to the combination of leakage currents between products when the ground connection to the building is broken or disconnected. Consideration relating to the use of accessory equipment shall include evidence that safety certification of the accessory equipment has been performed in accordance to the IEC 60601-1 standard along with any national deviations. Low voltage communication cables (USB, Ethernet, etc.) either supplied by A-dec or installed in the field, shall be routed away from single insulated or non-insulated mains voltage (100 - 240 VAC). Electrical connections to the A-dec Dental System are not permitted unless the combination of the accessory and the A-dec Dental System has been evaluated to the IEC 60601-1 standard along with any national deviations. All configurations shall comply with the system standard IEC 60601-1-1 or IEC 60601-1:2005. Anyone connecting additional equipment to the signal input part or signal output part is configuring a medical system, and is, therefore, responsible to ensure that the system complies with the requirements of the Medical Electrical Systems standard IEC 60601-1-1 or IEC 60601-1:2005. It is not allowed to connect non-medical equipment directly to mains power if the non-medical equipment is intended to be isolated from medical equipment using a medical grade isolation transformer. To comply with IEC 80601-2-60, electric motors must be electrically isolated from all other applied parts. If your A-dec power supply does not include a dedicated 24 VAC isolated output for electric motors, you must replace it with an A-dec power supply that includes a dedicated 24 VAC isolated output. If you have questions or concerns, contact A-dec Customer Service or your local authorized A-dec dealer or distributor.

Decommissioning and Disposal of A-dec Equipment

A-dec dental equipment removed from service should be decommissioned in accordance with local regulatory requirements. Circuit boards and electrical cabling should be recycled as electrical salvage. Aluminum, brass, iron, and steel components should be recycled as metal salvage. Molded plastic components include mold marks indicating the type of plastic and should be recycled accordingly. The cuspidor, waste lines from the cuspidor, and extraction lines should be treated as biologically contaminated materials and handled with appropriate precautions during dismantling. Any material unsuitable for recycling should be disposed of appropriately. For specific questions regarding material type, please contact A-dec Customer Service. For decommissioning information on associated equipment from other manufacturers, refer to the documentation from the manufacturer.

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Product Registration Number: 浙械注准20172171179
Product Standard Number: 浙械注准20172171179

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86.0507.00 Rev F
Rev Date: 2021.07.30
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