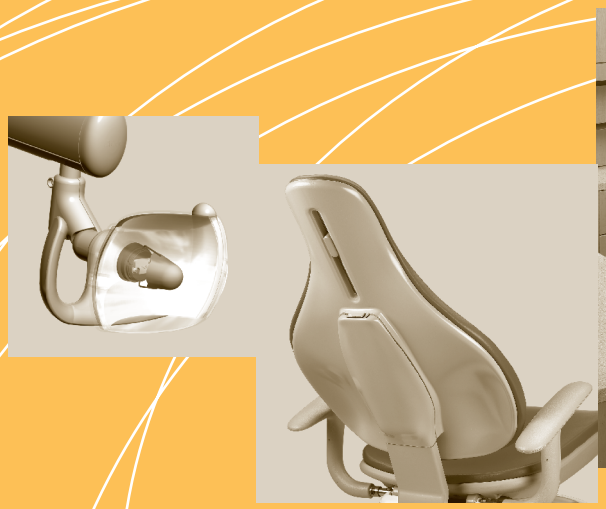

A-dec 300™ Service Guide

a-dec®

A-DEC 300™ SERVICE GUIDE

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Comments and Feedback

If you have any feedback or comments about this document, contact us at:

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Product Service

For service information, contact your local authorized A-dec dealer. To find your local dealer, go to www.a-dec.com.

Regulatory Information

Regulatory information is provided with A-dec equipment as mandated by agency requirements. This information is delivered in the equipment's *Instructions for Use* or the separate *Regulatory Information and Specifications* document. If you need this information, please go to the Document Library at www.a-dec.com.

CONTENTS

CHAPTER 6: ASSISTANT'S INSTRUMENTATION

CHAPTER 7: UTILITY AREAS

CHAPTER 8: MONITOR MOUNT

CHAPTER 9: A-DEC DENTAL LIGHTS

CHAPTER 10: TROUBLESHOOTING

1

INTRODUCTION

Welcome to the *A-dec 300 Service Guide*. This guide provides a complete review of the A-dec 300 systems, including the chair, programming, delivery system, assistant's instrumentation, cuspidor and support center, utilities, the monitor mount, and Dental lights.

This guide is intended for newly trained and seasoned service technicians responsible for maintaining A-dec products. Technicians should understand basic operation and maintenance of dental and medical equipment, as well as how to use flow diagrams.

Inside This Guide

This guide contains A-dec 300 product information including:

- Adjustments and maintenance
- Service and usage
- Flow diagrams
- Troubleshooting
- Exploded parts breakdown of assemblies

Document Conventions

This document contains special formatting, note styles, and symbols to help identify important instructions or component status.

The formatting conventions are designed to make information quick and easy to find and understand. *Italic* type is used for document names and to indicate emphasis. **Bold** type is used for new terms, glossary terms, and section headings.

Regulatory Symbols

NOTE Notes indicate additional information, and when it is important that instructions are followed.

CAUTION Cautions indicate when failure to follow instructions could result in damage to product or minor injury.

TIP Tips indicate tips or tricks to make installation, use, or maintenance easier.

WARNING Warning indicates potential severe injury or death if instructions are not followed properly.

WARNING Danger indicates warnings of certain electrical shock.

Get Support

Customer Service

For questions not addressed in this document, contact A-dec Customer Service using contact information for your region.

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OrderNet/Partner Resources websites: www.a-dec.biz.

A-dec published documentation: From www.a-dec.com or www.a-dec.biz, click Document Library in the upper right corner to browse through electronic copies of A-dec documentation.

Other Sources of Information

Other A-dec documents cover a wide range of reference information.

Genuine A-dec Parts Catalog

The *Genuine A-dec Service Parts Catalog,* p/n 85.5000.00, provides part number and ordering information for A-dec serviceable parts. This catalog details service parts for current products and products which are no longer manufactured, but still in use. Refer to this catalog for additional details on parts found in the service guide.

A-dec 300 System Pre-Installation Guide

The *A-dec 300 System Pre-Installation Guide,* p/n 86.0095.00, contains technical specifications for installing the A-dec 300 chair and systems.

A-dec Illustrated Parts Breakdown

The *A-dec Illustrated Parts Breakdown* (IPB), p/n 85.0851.00, contains illustrated, exploded views of assemblies with part numbers and descriptions for associated parts for products produced before A-dec 300.

A-dec Service Guides

The *A-dec Service Guide, Volume I*, p/n 85.0812.00, provides troubleshooting, servicing, and functional information for Radius, Performer, and Cascade chairs, delivery systems, and accessories.

The *A-dec Service Guide, Volume II*, p/n 85.0816.00, provides troubleshooting, servicing, and functional information for A-dec 500® and clinical products.

Electronic Documentation

The latest versions of A-dec documents are available as electronic documents (PDF files) on the A-dec website (www.a-dec.com). Documents (including installation instructions, service guides, and other technical information) can be viewed or downloaded. On the website, select Document Library in the upper-right corner of the page. Check this location for current detail on products and technical information.

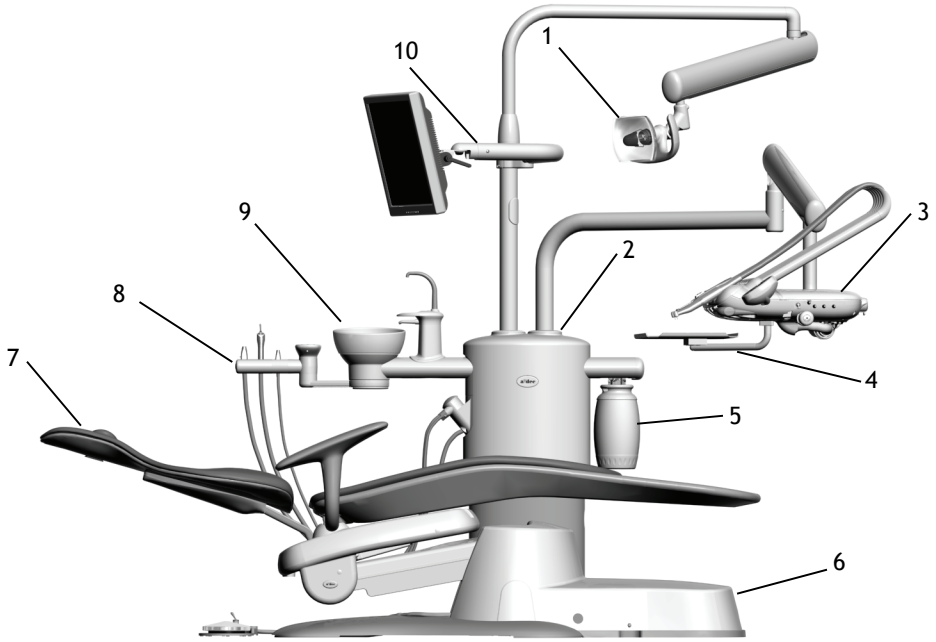
OrderNet

OrderNet is a simple, convenient online ordering system that is available 24 hours. Use OrderNet to place quick orders for service parts. Also, use OrderNet to configure product and prepare proposals. Order acknowledgments are emailed as soon as you place your order.

A-dec 300 Systems

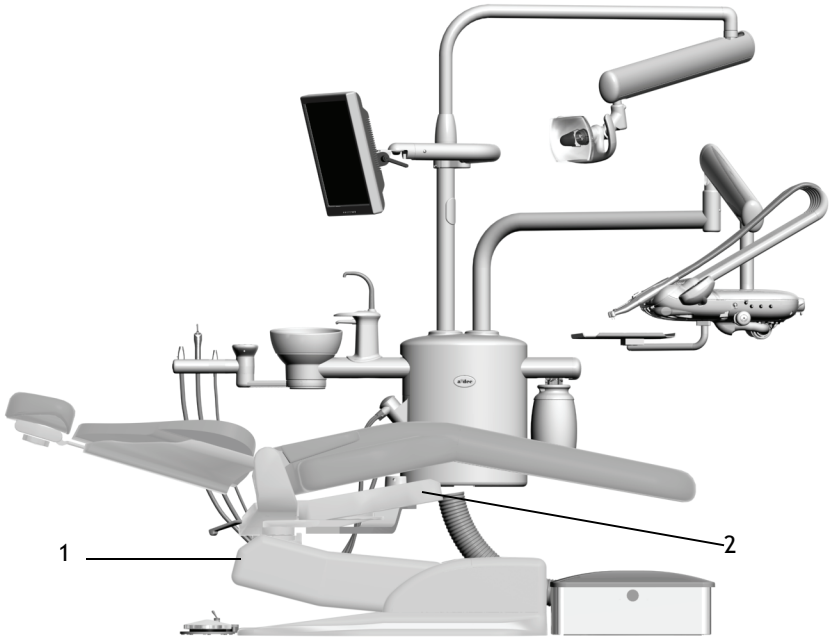
A-dec 300 systems can be configured in a variety of ways, including the dental chair, Continental® or Traditional delivery system with or without tray holders, telescoping- or cuspidor-mounted assistant's instrumentation, a glass-bowl cuspidor, dental light, and support-side monitor mount.

Figure 1. A-dec 300 Chair Base Mount Systems



Item	Description	Item	Description
1	A-dec 371 Dental Light	6	Utility Cover
2	Model 361 Support Center	7	A-dec 311 Chair
3	Model 335 or 334 Delivery System (335 is shown)	8	Models 352 or 353 Assistant's Instrumentation (353 is shown)
4	Tray Holder	9	Model 361 Cuspidor
5	Self-Contained Water Bottle	10	Monitor Mount

Figure 2. A-dec 300 2" Post Systems



Item	Description
1	Any chair that is capable of accepting a chair adapter for 2" post system may be used. Examples include the A-dec 511, Cascade, Decade, Performer, and Priority.
2	The 2" post systems include the same modules as the chair base mount systems (see Figure 1), but they are mounted to the chair adapter instead of the chair base mount.

Serial and Model Numbers

Product serial and model number information can be found on the serial/model number labels. When you contact customer service, the serial number helps identify the product and when it was manufactured.

Use Table 1 and Figure 3 to reference how to identify serial/model number information.

Table 1. Month Identification Table

Letter	Month	Letter	Month
A	January	G	July
B	February	H	August
C	March	I	September
D	April	J	October
E	May	K	November
F	June	L	December

Figure 3. Serial Number Label Example

(1) The REF number is the model number. (2) The first letter of the serial number indicates the month the product was manufactured. The first digit of the serial number is the year of manufacture (for example, L8 = December 2008).

Service Tools

Recommended Tools

This table lists the types of tools available from A-dec for servicing A-dec equipment and their recommended use:

Table 2. Recommended Tools

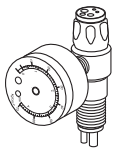
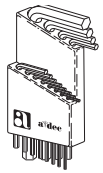
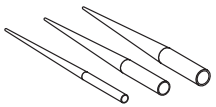
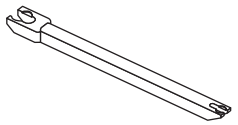
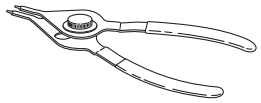
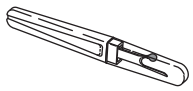
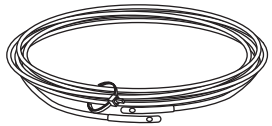
Tool	Task	Part Illustration	Part Number
Drive air pressure gauge	Adjusting handpiece drive air pressure, 0-60 psi (4.13 bar) This gauge does not fit the Borden 3-hole coupler		50.0271.00
Hemostat	• Troubleshooting or repairing a unit • Stopping air or water flow through tubing		009.008.00
Hex key set	Servicing or installing A-dec equipment (plastic case included)		009.018.00
Loctite®	Installing threaded fasteners to prevent loosening		060.001.00 (Red 271) 060.002.00 (Blue 242)
O-ring tools	Replacing O-rings during quick field repairs (fits the four smallest O-ring sizes)		009.013.00

Table 2. Recommended Tools (continued)

Tool	Task	Part Illustration	Part Number
Panel mount gauge	• Checking air/water pressure • Checking inline pressure gauge for testing purposes		026.118.00
A-dec Silicone lubricant	Lubricating internal moving parts such as O-rings, oral evacuator valves, and bushings **CAUTION** Use only A-dec Silicone lubricant or the O-rings may be damaged.		98.0090.01
Sleeve tool	Aiding in securing 1/4" tubing sleeves and 1/8" uni-clamps		98.0072.00
Snap ring tool	Installing and removing internal and external snap rings (fits all snap rings used in A-dec equipment)		009.007.00
Tubing stripper	Separating the extruded air and water lines in vinyl tubing		009.035.00
Umbilical stringer	Routing additional tubing or wiring through existing umbilical assemblies (12’ [3.66 mm] stringer with threading holes on both ends)		009.015.00
Valve test syringe	Testing of pilot operated valves; used to apply a static pressure of 5-75 psi (.34-5.17 bar)		98.0050.01

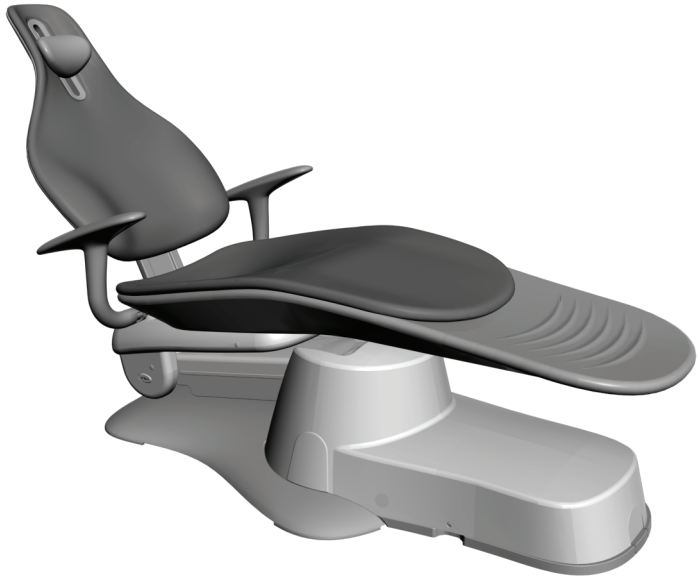
2

DENTAL CHAIR

This section provides detailed information related to service, maintenance, and adjustment of the A-dec 311 dental chair. For information on service parts, see the *Genuine A-dec Service Parts Catalog* or contact A-dec Customer Service. (See "Get Support" on page 2.)

Contents

Figure 4. A-dec 311 Dental Chair



Product Overview

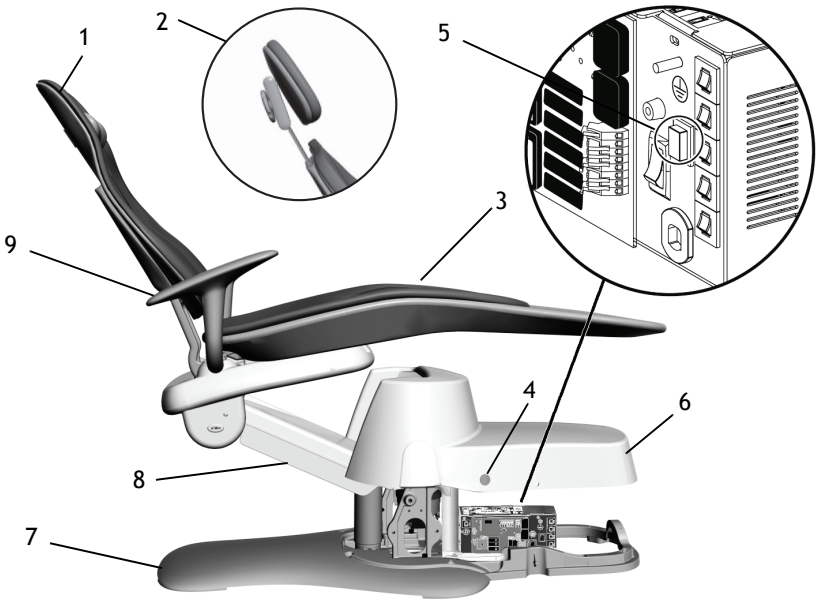
A-dec 311 Chair

The A-dec 311 dental chair consists of a stable base, an ergonomically synchronized seat and back support, adjustable headrest or neck support, and positionable arm support. A footswitch and/or touchpad(s) control the chair movement.

A hydraulic pump, electro-mechanical actuator, and position sensor manage chair movement.

Up to four programmable positions support easy positioning for chair entry, treatment, and chair exit.

Figure 5. A-dec 311 Chair Features



Item	Description
1	Thin-Line Back With Patient-Adjustable Neck Support
2	Thin-Line Back with Double-Articulating Headrest
3	Seat Upholstery/Toeboard
4	Status Light
5	Mains On/Off Button
6	Utility Area/Utility Cover
7	Baseplate
8	Chair Lift Arm
9	Two-Position Armrest

A-dec 311 Chair Specifications

Load Capacity

Patient Load: 300 lbs. (136 kg) maximum

Equipment Module/Accessory Load: 160 lbs. (73 kg) @ 2′ (610 mm) maximum (chair base mount; maximum off-center load)

NOTE Specifications are subject to change without notice.

WARNING If the chair has been unbolted and removed, ensure the chair is bolted to the floor after it is reinstalled. For instructions, see Anchor the Chair, page 12.

Mains On/Off Button

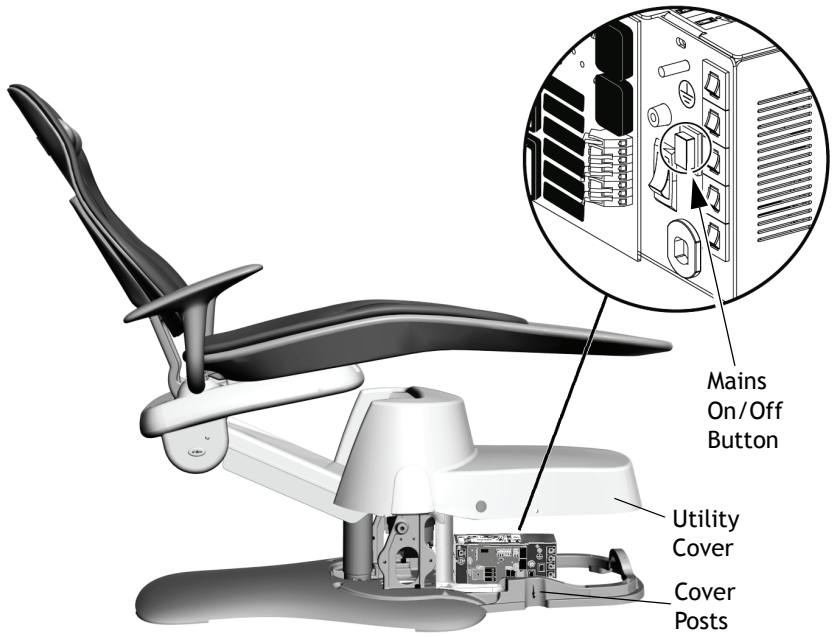
Chair power is controlled by the Mains On/Off button on the power supply (see Figure 6). This button provides power to the chair, as well as any attached modules (including delivery system, dental light, cuspidor, and other support systems).

To access the button and power supply, pull the utility cover out at the cover posts and lift the cover off. The button can remain in the On position overnight, although you may choose to turn it off during longer periods of non-use.

WARNING The button should always be turned off before service.

WARNING The utility cover needs to be securely replaced when servicing is complete. Verify that the cover is correctly re-attached and secured into place.

Figure 6. Mains On/Off Button



Anchor the Chair

Use the anchor bolt or masonry anchor with the cleat to re-anchor the chair to the floor. Select the procedure for your type of flooring structure.

WARNING Anchoring the chair to the floor is required for mechanical stability. Failure to anchor properly could result in serious injury, damage, or death.

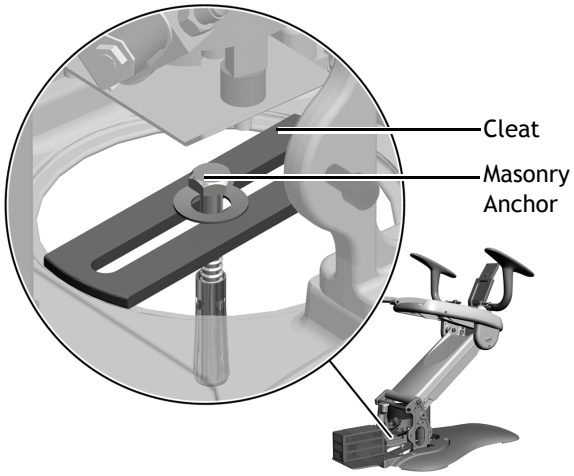
To re-anchor the chair to a concrete floor:

1. Return the chair to the position that it was originally anchored.
2. Plug in the chair and press the Mains On/Off button on the lower right of the power supply to turn it on.

CAUTION Electric components are static sensitive and require handling precautions.

3. Move the jumper in the Testpoint Header in P3 on the chair circuit board to the Base Up position. Once the chair is raised, return the jumper to the Spare position.
4. Turn off the chair and unplug it.
5. Place the cleat in the large circle in the chair base (see Figure 7).
6. From the left front of the chair, place the bolt through the washer and cleat and into the hole.
7. Use a 9/16" socket and ratchet to tighten the screw against the cleat until it firmly holds the chair to the floor.
8. Plug in the chair.

Figure 7. Masonry Anchor/Cleat Used to Anchor Chair to Concrete Floor



To re-anchor the chair to a wood floor:

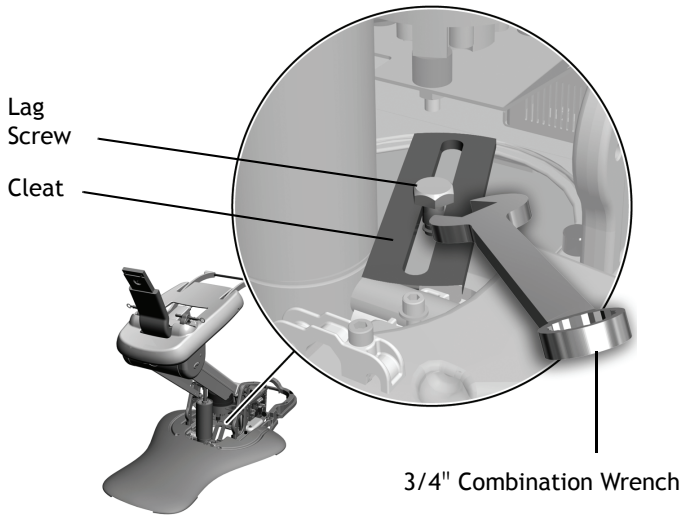
1. Return the chair to position so that the hole is positioned on the right rear edge of the circle in the chair base.
2. Plug in the chair and press the Mains On/Off button on the lower right of the power supply to turn it on.

CAUTION Electric components are static sensitive and require handling precautions.

---

3. Move the jumper in the Testpoint Header in P3 on the chair circuit board to the Base Up position. Once the chair is raised, return the jumper to the Spare position.
4. Place the cleat in the large circle in the chair base.
5. From the right rear of the chair, place the lag screw through the cleat and into the hole.
6. With your fingers, start the lag screw as far as you can; then use a 3/4" socket and ratchet with a small extension to tighten the lag screw until it is almost flush against the cleat.
7. Move the chair into position and use a 3/4" combination wrench to tighten the lag screw against the cleat until it firmly holds the chair to the floor (see Figure 8).
8. Plug in the chair.

Figure 8. Lag Screw and Cleat Used to Anchor the Chair to a Wooden Floor



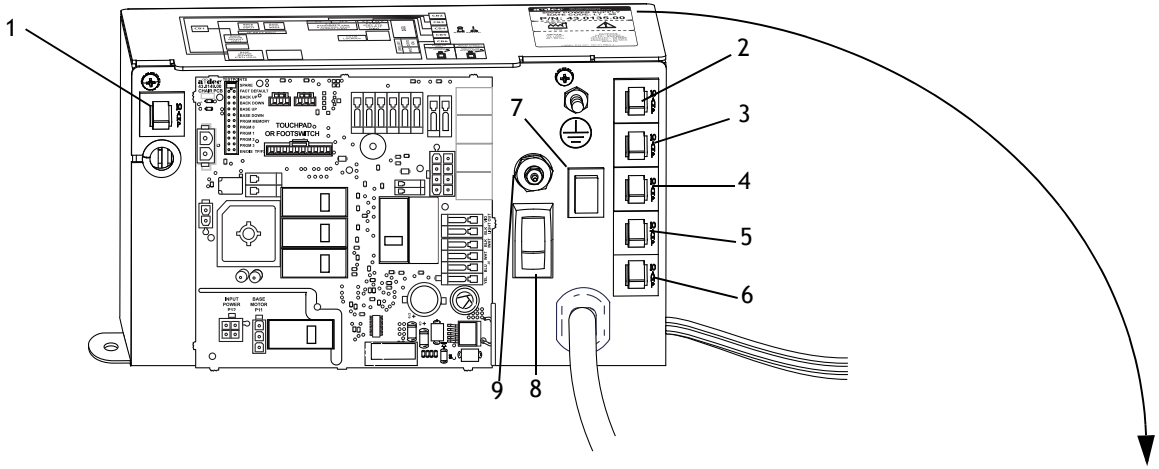
Chair Power Supply

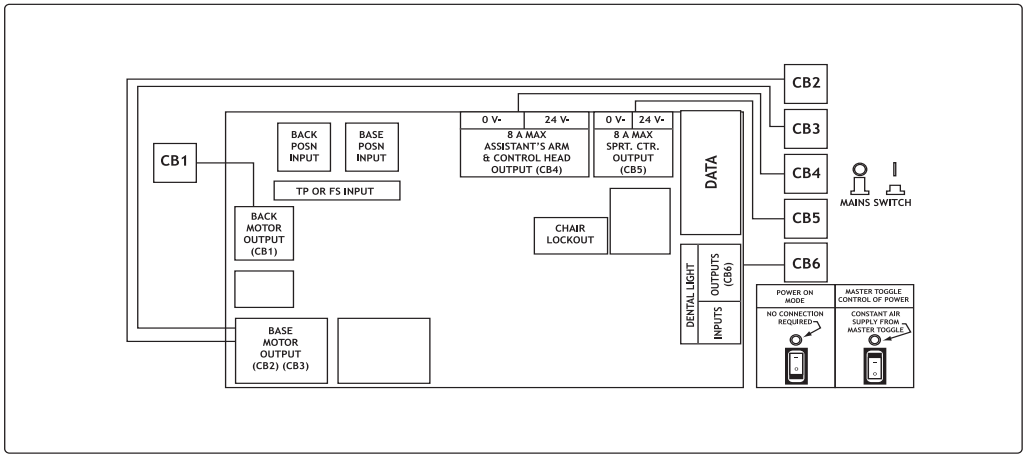
A 300-watt power supply comes standard with the A-dec 311 chair. It is located in the motor pump area of the chair. There is a circuit breaker for each mains. Power supplies are available in voltages of 100VAC, 110-120VAC, or 220-240VAC.

Table 3. Power Supply Circuit Breaker Function

Item	Circuit Breaker/Switch	Function/Description
1	CB 1	Back motor and chair circuit board
2	CB 2	Mains
3	CB 3	Mains
4	CB 4	Assistant's arm and control head (delivery system)
5	CB 5	Support Center
6	CB 6	Dental Light
7	Mains On/Off Button (switch)	Turns on or off the mains power supply to the system
8	Pilot Air Bypass Switch	Bypasses air connection (item 9) when no master toggle is present and no air connection is present the pilot air connection (item 9), use the Mains On/Off button (item 7) to disconnect power
9	Pilot Air Connection for Master Toggle	Connect pilot air of master toggle. The master toggle will disable power. Use the Mains On/Off button (item 7) to disconnect power

Figure 9. Chair Power Supply Circuit Breaker Identification





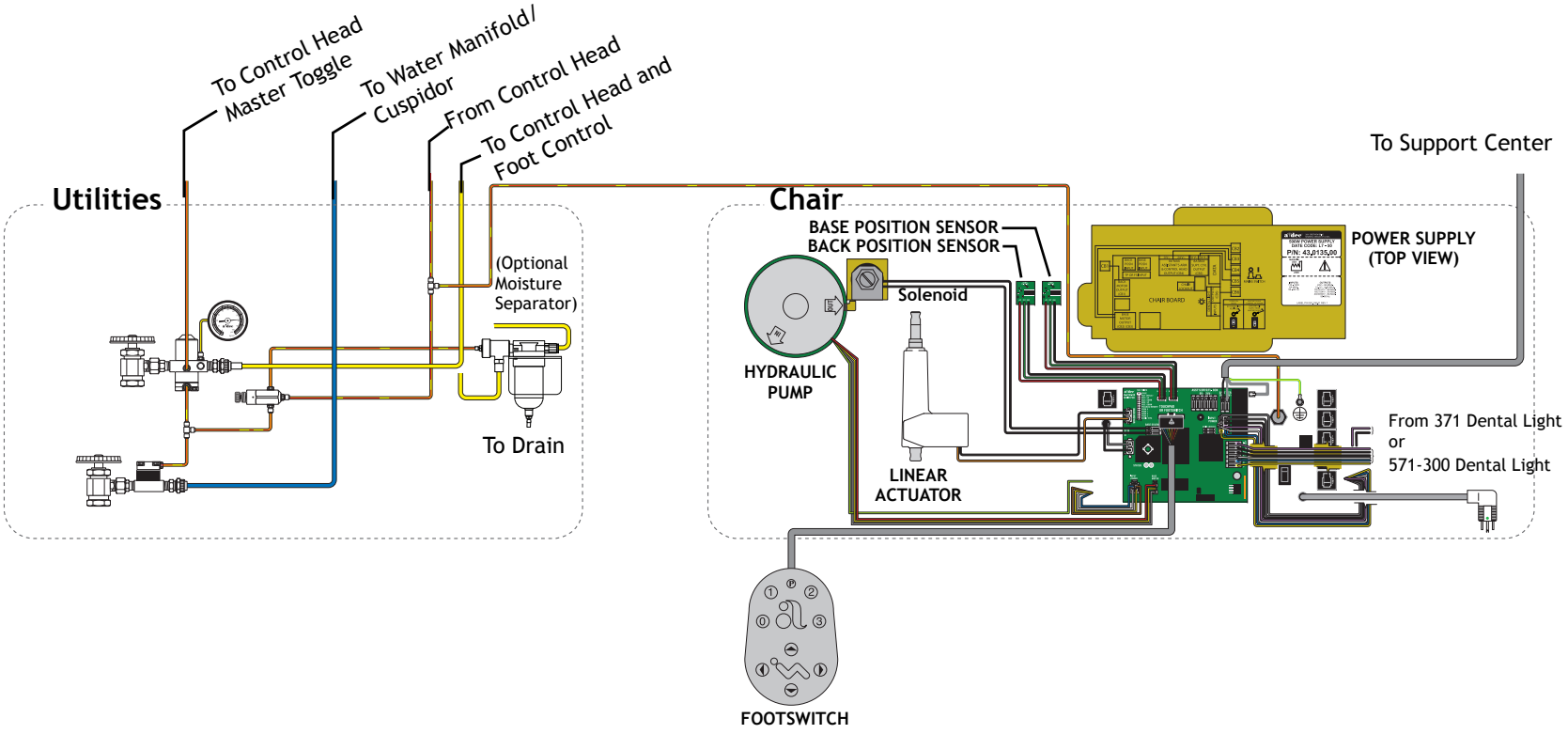
This diagram of the power supply is available on top of the power supply housing.

Flow Diagram

Chair Flow Diagram

This flow diagram details both electrical and plumbing information for servicing and troubleshooting the A-dec 311 chair. The entire flow diagram is located on the inside of the support center cover. This diagram includes the air electric switch, motor pump connections, and position sensors.

Figure 10. Chair Flow Diagram



Service/Usage Information

Utility Covers

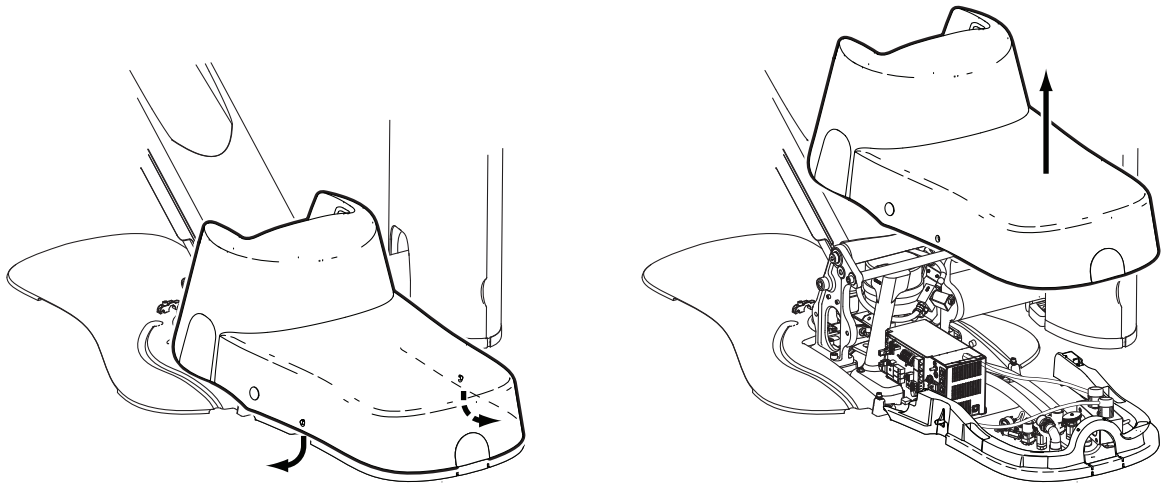
To access the Mains On/Off button and power supply, pull the utility cover out at the cover posts and lift the cover off (see Figure 11). The Mains On/Off button can remain in the On position overnight, although you may choose to turn it off during longer periods of non-use.

DANGER Turn off the power to the system before you continue with this procedure. Failure to do so can result in electrical shock.

WARNING Turn off the power to the system before you continue with this procedure. Failure to do so can result in product damage, serious injury, and/or death.

WARNING The utility cover needs to be securely replaced when service is complete. Verify that the cover is correctly re-attached and secured into place.

Figure 11. A-dec 311 Utility Cover



A-dec 311 Dental Chair Circuit Board Components

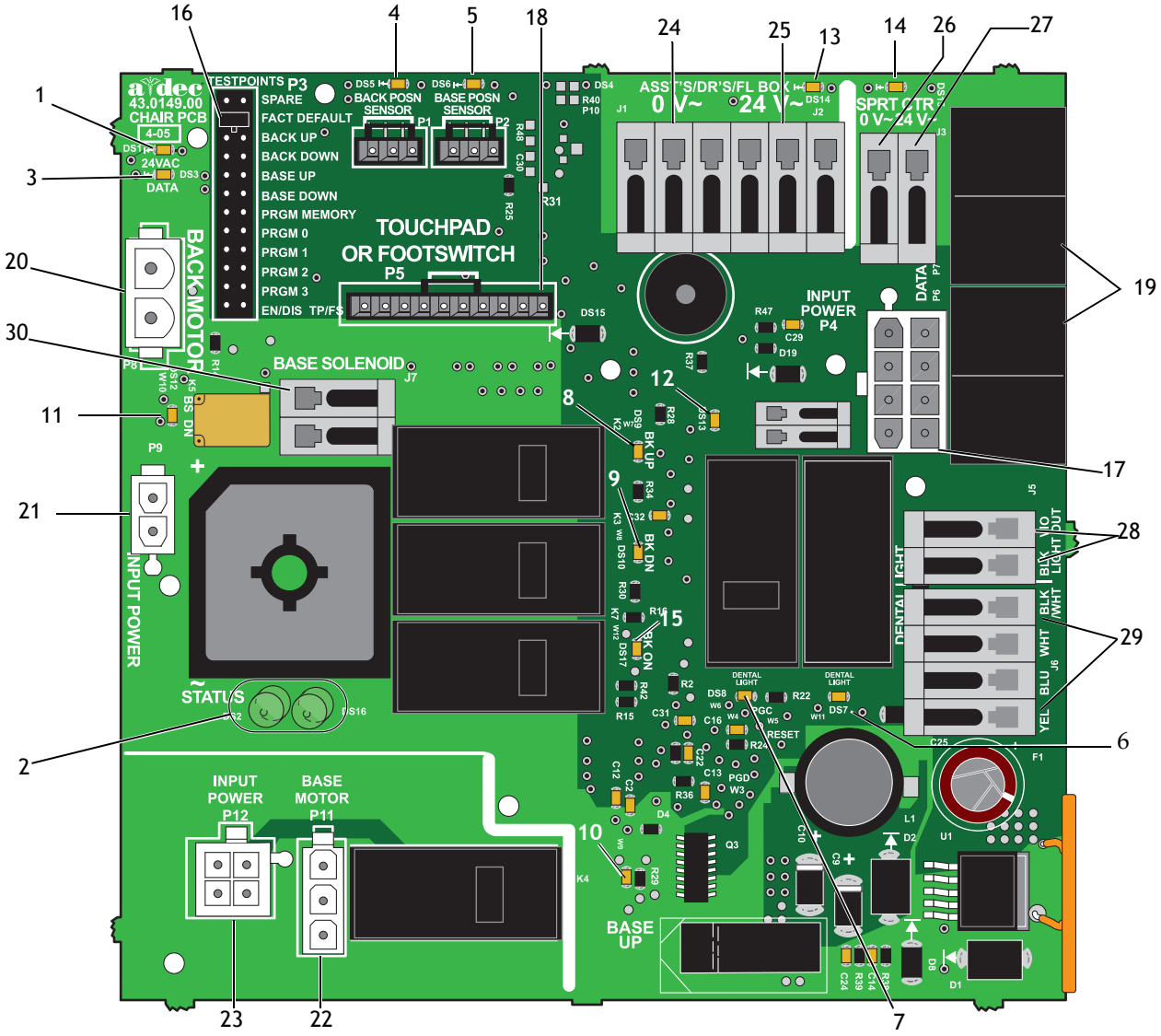
Part Number: 90.1177.00

Item	Description	Item	Description
1	DS1 - AC Power LED (CB1)	16	P3 - Testpoints Header
2	DS2 and DS16 - Status LEDs	17	P4 - Input Power Connector
3	DS3 - Data LED	18	P5 - Cascade Touchpad or Footswitch Connector
4	DS5 - Back Position Sensor LED and P1 Connector	19	P6 and P7 - Data Ports
5	DS6 - Base Position Sensor LED and P2 Connector	20	P8 - Back Motor Connector
6	DS7 - Dental Light LED and Relay K6	21	P9 - Input Power Connector
7	DS8 - Dental Light LED and Relay K1	22	P11 - Base Motor Connector
8	DS9 - Back Up LED and Relay K2	23	P12 - Input Power Connector
9	DS10 - Back Down LED and Relay K3	24	J1 - ØVAC Terminal Strip (Output) For Assistant's, Doctor's and Floor Box
10	DS11 - Base Up LED and Relay K4	25	J2 - 24VAC Terminal Strip (Output) For Assistant's, Doctor's and Floor Box
11	DS12 - Base Down LED and Relay K5	26	J3 - ØVAC Terminal Strip (Output) for Support Center
12	DS13 - Chair Lockout out LED and Terminal Strip J4	27	J3 - 24VAC Terminal Strip (Output) for Support Center
13	DS14 - AC Power LED (CB4)	28	J5 - Dental Light Output Terminal Strip
14	DS15 - AC Power LED (CB5)	29	J6 - Dental Light Input Terminal Strip
15	DS17 - Back ON LED and Relay K7	30	J7 - Base Solenoid Terminal Strip

See page 21 to reference the LED identification table.

See page 238 for chair circuit board diagnostics.

Figure 12. A-dec 311 Dental Chair Circuit Board Components



Factory Default Routine

After installing a new chair, chair circuit board, or position sensor, run the factory default. The factory default does the following:

- Sets the base and back limits
- Calculates new presets based on actual range of motion of the chair
- Verifies that the position sensors are working correctly

CAUTION Circuit boards and position sensors are static-sensitive and require ESD handling precautions.

Start the Factory Default Routine

To start the factory default routine on the chair board, place the jumper into the Factory Default position on the Testpoint Header, P3 (see Figure 13).

When running the factory default routine, the chair:

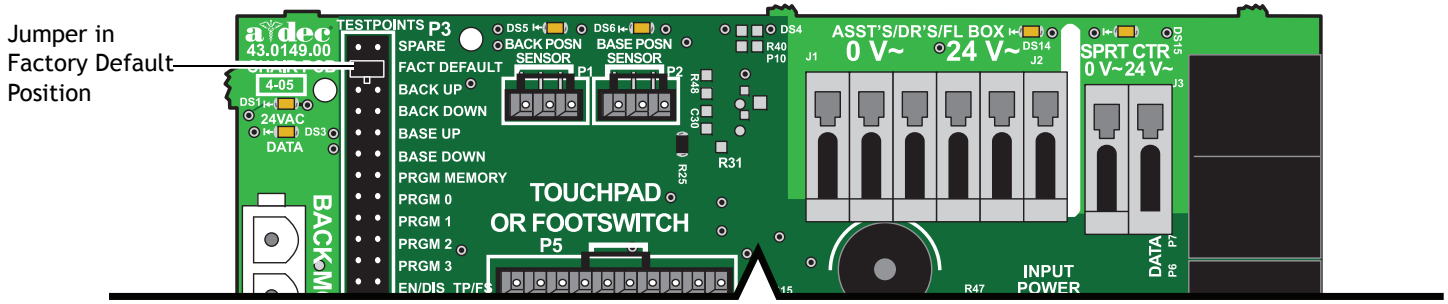
1. Moves base down.
2. Moves base up.
3. Moves back down.
4. Moves back up.
5. Moves base and back to mid position.
6. Moves back and base down.
7. Moves base and back to mid position.
8. Moves base and back to Entry/Exit.

Three beeps confirm the routine is complete.

Once the routine completes, place the jumper into the Spare position on P3.

NOTE The jumper must remain in the factory default position to complete the factory default routine. The status LEDs on the standard and deluxe touchpads and the chair circuit board double blink while the factory default routine is running and after the routine is complete. When the routine is complete, three beeps sound. If the routine stops prematurely, one beep sounds.

Figure 13. Circuit Board with Jumper in Factory Default Position



Chair Circuit Board LED Identification

Table 4 describes the LEDs on the chair circuit board.

Table 4. LED Identification

LED	Status	Description
DS1, DS14, and DS15 - AC power LED	Off	No 24 VAC power, tripped circuit breaker, power supply turned off
	Green, steady	24VAC present
DS2 and DS16- Status LED	Off	System is not functioning, no power, or circuit board has failed
	Blue, steady	Normal operation
	Blue, single blink	Duty cycle limit of chair back has been exceeded
	Blue, double blink	Jumper is in factory mode
DS3 - Data LED	Off	No DCS communication, not connected to the DCS, or DCS has failed
	Green, steady	Detects active DCS
	Green, blinking	Valid DCS Message
DS13 - Chair lockout	Off	Open, (normal)
	Red, on	Closed, (activated)
DS5, DS6 - Chair position sensors	Off	Position Sensor: • Not connected or bad connection • Moving in wrong direction, or • Limited range of motion
	Yellow, steady	Normal operation
	Yellow, fast blink	Upper end of travel
	Yellow, slow blink	Lower end of travel
DS9, DS10, DS11, DS12, DS17- Chair relay LEDs	Off	Relay is off
	On	Relay is on
DS7, DS8 - Dental light relay LEDs	Off	Relay is off
	On	Relay is on

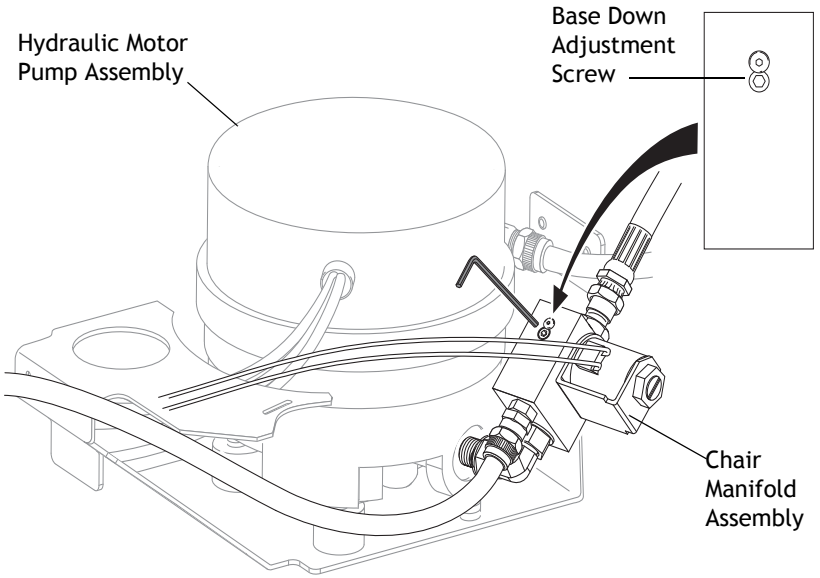
Chair Drive System

The hydraulic chair system controls the base movement of the chair. An electro-mechanical tilt actuator controls the back movements.

The chair seat travels vertically from a low point of 13.75" (349 mm) to a high point of 29.5" (749 mm) above the floor (see Figure 14).

Figure 14. Chair Drive Operation

Figure 15. Manifold Adjustment



Use a 3/32" hex key to adjust the base down adjustment screw. Turning the screw to the right slows down the base down speed. Turning the screw to the left speeds up the base down speed.

NOTE Make sure that you do not over tighten the adjustment screw. If the screw is too tight, the chair may not move.

Hydraulic Fluid Replenishment

Follow the steps below to add hydraulic fluid.

CAUTION If the hydraulic cylinder should need replacing, or if there has been a significant loss of hydraulic fluid, contact A-dec Customer Service for instructions. (See "Get Support" on page 2). The steps to replace the hydraulic cylinder are complicated and specific.

1. Raise the chair.
2. Use a 3/16" hex key to remove the fill plug from the top of the hydraulic cylinder.
3. Fill hydraulic fluid to the plug thread level (see Figure 16).

NOTE It may be difficult to measure exactly to the thread level. You may want an absorbent towel available to soak up some of the fluid if it seems too full.

4. Replace the fill plug.
5. Lower the chair fully. The overflow bottle will capture any excess fluid.
6. Raise the chair.
7. Remove the overflow bottle from the bracket.
8. Empty the overflow bottle (see Figure 17).
9. Return the overflow bottle to the bracket.

Figure 16. Fill Hydraulic Fluid to Plug Thread Level

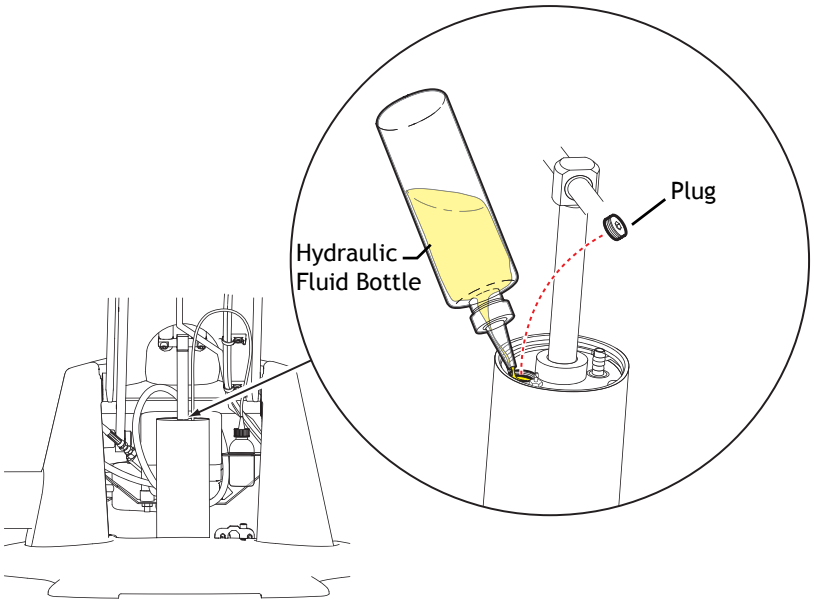
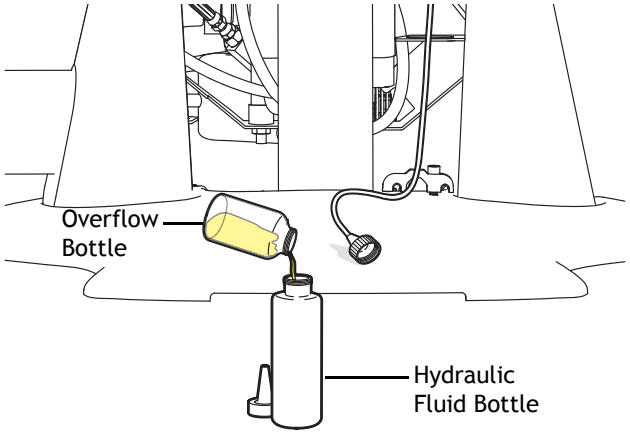


Figure 17. Empty Overflow Bottle



Capacitor Replacement

The hydraulic system used for the chair's base movement is operated using a motor capacitor, located in the power supply of the chair. There are three specific capacitors for different line voltage ranges (see Table 5). The chair motor capacitor can be replaced within the power supply (see Figure 18).

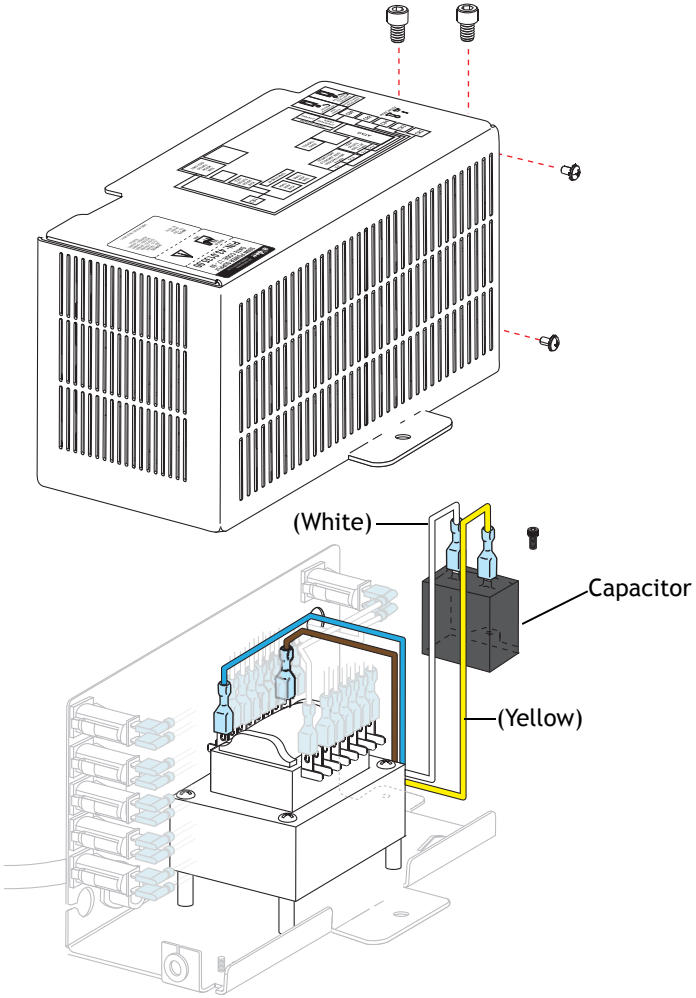
DANGER Turn off the power to the system before you continue with this procedure. Failure to do so can result in electrical shock.

WARNING Turn off the power to the system before you continue with this procedure. Failure to do so can result in product damage, serious injury, and/or death.

Table 5. Chair Input Voltages

Mains Chair Input Voltage	A-dec Capacitor Part Number
100 VAC	90.1198.00
110 - 120 VAC	90.1199.00
220 - 240 VAC	90.1200.00

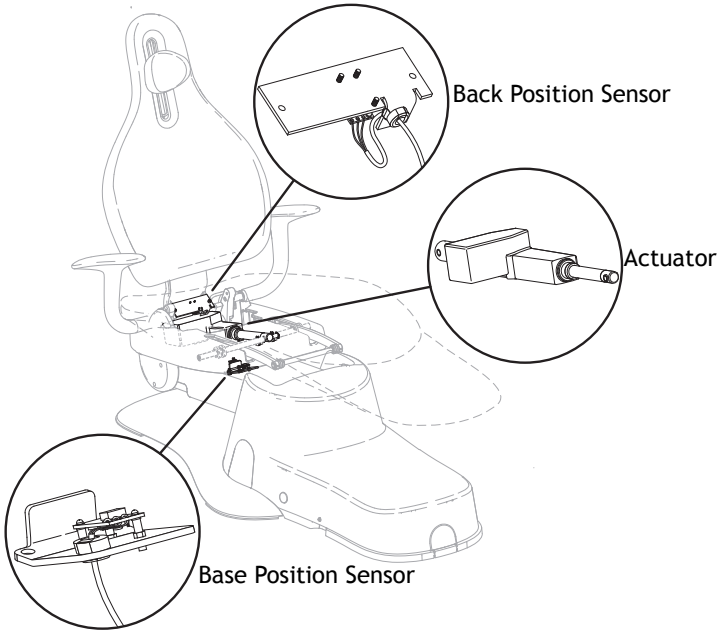
Figure 18. Chair Capacitor



Motor Driven Electro-Mechanical Actuator

The back-up and back-down movements are controlled with an electro-mechanical tilt actuator, which is located under the seat of the chair.

Figure 19. Motor Driven Electro-Mechanical Actuator and Position Sensors



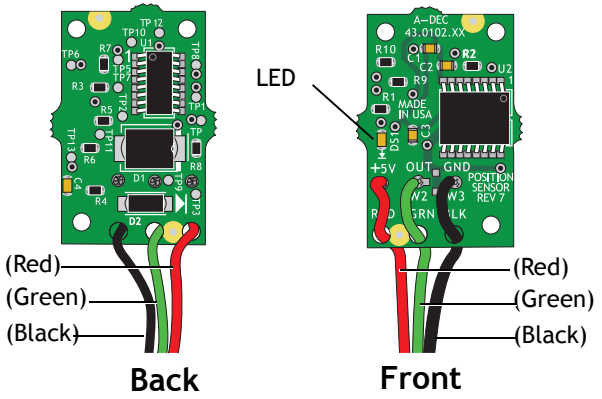
Position Sensor

The position sensor circuit boards provide positioning data to the chair board. There is a position sensor for the back and a position sensor for the base.

CAUTION The position sensors can be inadvertently installed upside down. Improper installation will limit the chair's functionality.

A diagnostic LED is provided on the chair board for each position sensor. Refer to Chair Circuit Board LED Identification, page 21 for information. An additional LED, indicating power, is present on each position sensor circuit board (see Figure 20).

Figure 20. LED on Position Sensor Circuit Board



Factory Default Routine

If a position sensor or chair board are replaced, run the factory default. See Factory Default Routine, page 20 for information.

Limp Along Feature

There are two position sensors, one for the base of the chair and one for the back of the chair. If there is a problem or malfunction with a position sensor, the limp along feature allows the operator to move the chair in the up direction for one to three second intervals by pushing the manual control buttons on the touchpad or footswitch. Refer to Chair Circuit Board LED Identification, page 21 for further information. When in limp along mode, presets will not function.

Solenoid

Part Number: 62.0317.00 21.6 VDC

How to Test the Solenoid

The solenoid is energized during the Base Down function. To check for a failed solenoid, check for coil resistance using a magnetic pull or volt/ohm meter test.

NOTE If the solenoid is warm, the resistance reads higher.

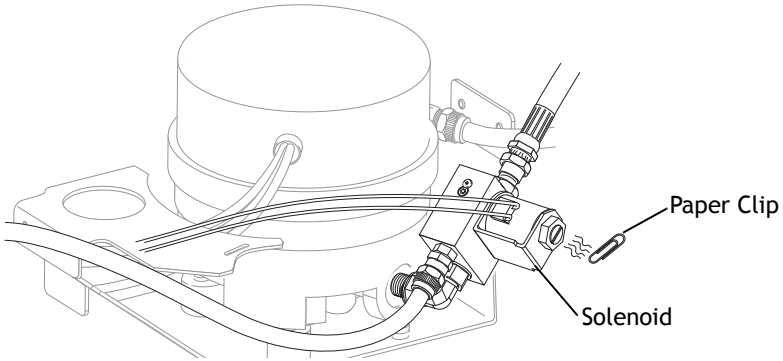
Magnetic Pull Test for Coil Resistance

1. Hold a paper clip loosely in your hand.
2. Activate the solenoid by pressing Base Down on the footswitch or touchpad.

NOTE The solenoid should be on when the solenoid relay and LED (K5 and DS12) are on.

3. If there is a pull on the paper clip, the solenoid is being energized.

Figure 21. Magnetic Pull Test



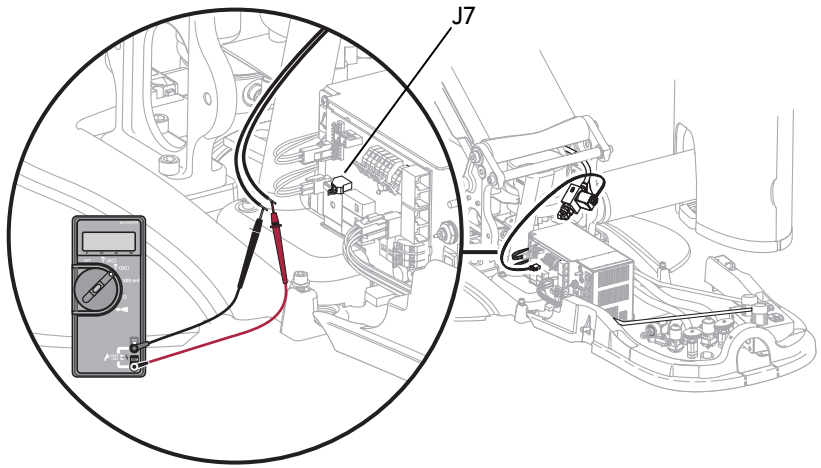
Volt/Ohm Meter Test for Coil Resistance

DANGER Turn off the power to the system before you continue with this procedure. Failure to do so can result in electrical shock.

WARNING Turn off the power to the system before you continue with this procedure. Failure to do so can result in product damage, serious injury, and/or death.

1. Disconnect the solenoid power at the chair board's base solenoid terminal strip (J7).
2. Place one Ohm meter probe on each of the solenoid wires. Solenoid = 38 Ohms (Ω) ± 4 Ohms (Ω)

Figure 22. Measuring Solenoid with Ohm Meter



Solenoid Replacement

CAUTION The circuit board is static sensitive. ESD precautions are required. The circuit board should be installed by an electrician or qualified service personnel.

WARNING Lower the chair base to the mechanical limit before removing the solenoid.

Replace the Solenoid.

When replacing a solenoid wipe up any oil and replace existing O-rings on the solenoid base.

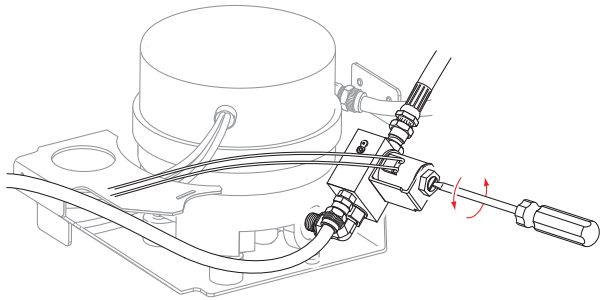
1. Remove the utility cover(s).
2. To minimize pressure in the hydraulic system, lower the chair base to the mechanical limit.

DANGER Turn off the power to the system before you continue with this procedure. Failure to do so can result in electrical shock.

WARNING Turn off the power to the system before you continue with this procedure. Failure to do so can result in product damage, serious injury, and/or death.

3. Disconnect the solenoid from the chair circuit board, terminal strip J7.
4. Remove the failed solenoid with a screw driver (see Figure 23).
5. Wipe up any oil and replace existing O-rings on the solenoid base.

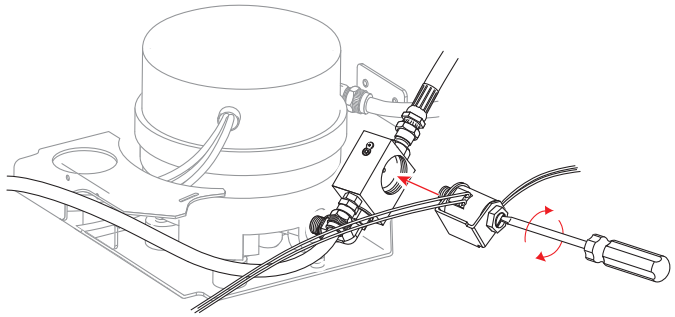
Figure 23. Remove the Failed Solenoid



Install the New Solenoid.

1. Install the new solenoid (see Figure 24).
2. Reconnect the solenoid to the chair circuit board, terminal strip J7. It does not matter which solenoid wire goes into which terminal. The solenoid will work either way.
3. Turn on the system power.
4. Cycle the chair up and down to ensure there are no leaks.
5. Reinstall the utility cover.

Figure 24. Install the New Solenoid



Adjustments

The chair features one of two choices of backrest: a thin-line back with patient-adjustable neck support or a thin-line back with double-articulating headrest.

Patient-Adjustable Neck Support

Backrests with the integrated, neck support cushion (see Figure 25) allow for easy adjustment. The neck support can be repositioned in the track (see Figure 26).

To reposition, place your thumb against the neck support armature and pull the cushion out from the track. Flip the cushion around and snap back into the track. The cushion includes a graphic on the back that depicts proper orientation for shorter or taller patients.

Figure 25. Neck Support Adjustments

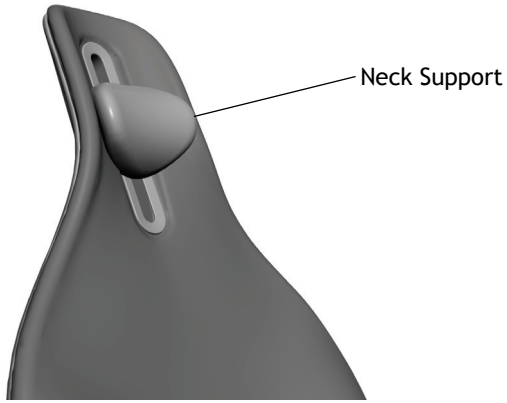
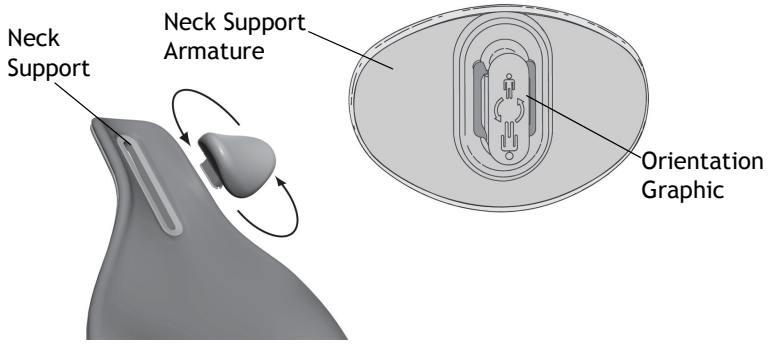


Figure 26. Reposition Neck Support



Double-Articulating Headrest

Backrests with the double-articulating headrest offer flexibility in positioning (see Figure and Figure 28).

Headrest Adjustment

The double-articulating headrest offers a “glide” feature, as well as manual articulation (see Figure 28). The locking knob allows you to adjust the headrest for a full range of positions.

Release the headrest by turning the locking knob to the left, then adjust the headrest for a proper fit. Lock the headrest in the desired position by turning the knob to the right. For minor height adjustment, slide the headrest cushion up and down. For additional height adjustment, reposition the glide bar.

Glide Bar Tension Adjustment

A double-articulating headrest may be difficult to move or may drift downward because of the amount of tension on its glidebar. To adjust the tension, use a 1/8" hex key and turn the tension adjustment screw to the right to increase friction or to the left to decrease friction.

WARNING When the glide bar has reached 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.

Figure 27. Double-Articulating Headrest

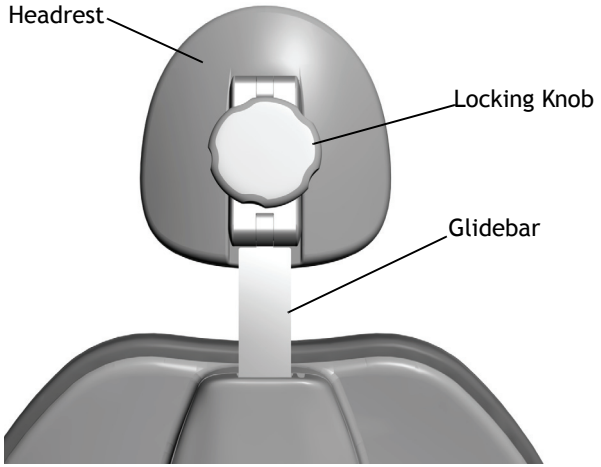
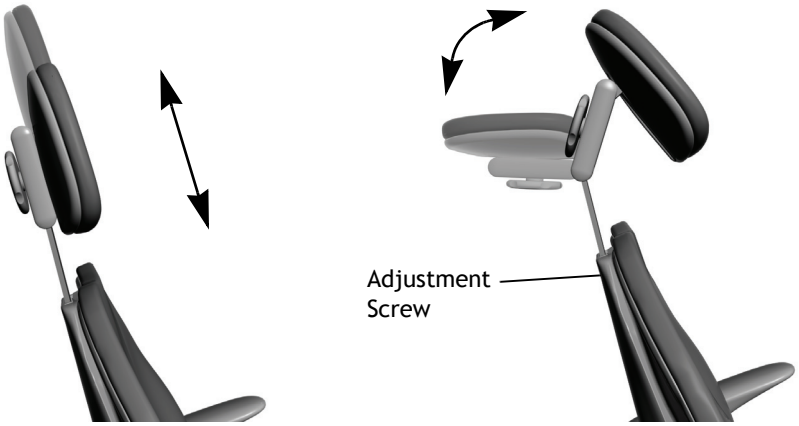


Figure 28. Double-Articulating Headrest Positioning



Illustrated Parts Breakdown — A-dec 311 Chair

This section contains illustrated parts breakdowns specific to the A-dec 311 Chair.

Part Identification

In this section, you will find serviceable components tables that correspond to the illustrations. The tables identify all parts and kits, including those that are not for sale. Parts that are not for sale are indicated with the symbol shown below:

† — Indicates that the individual part is not available for sale. These parts are typically part of a kit and/or larger assembly that is for sale.

Contents

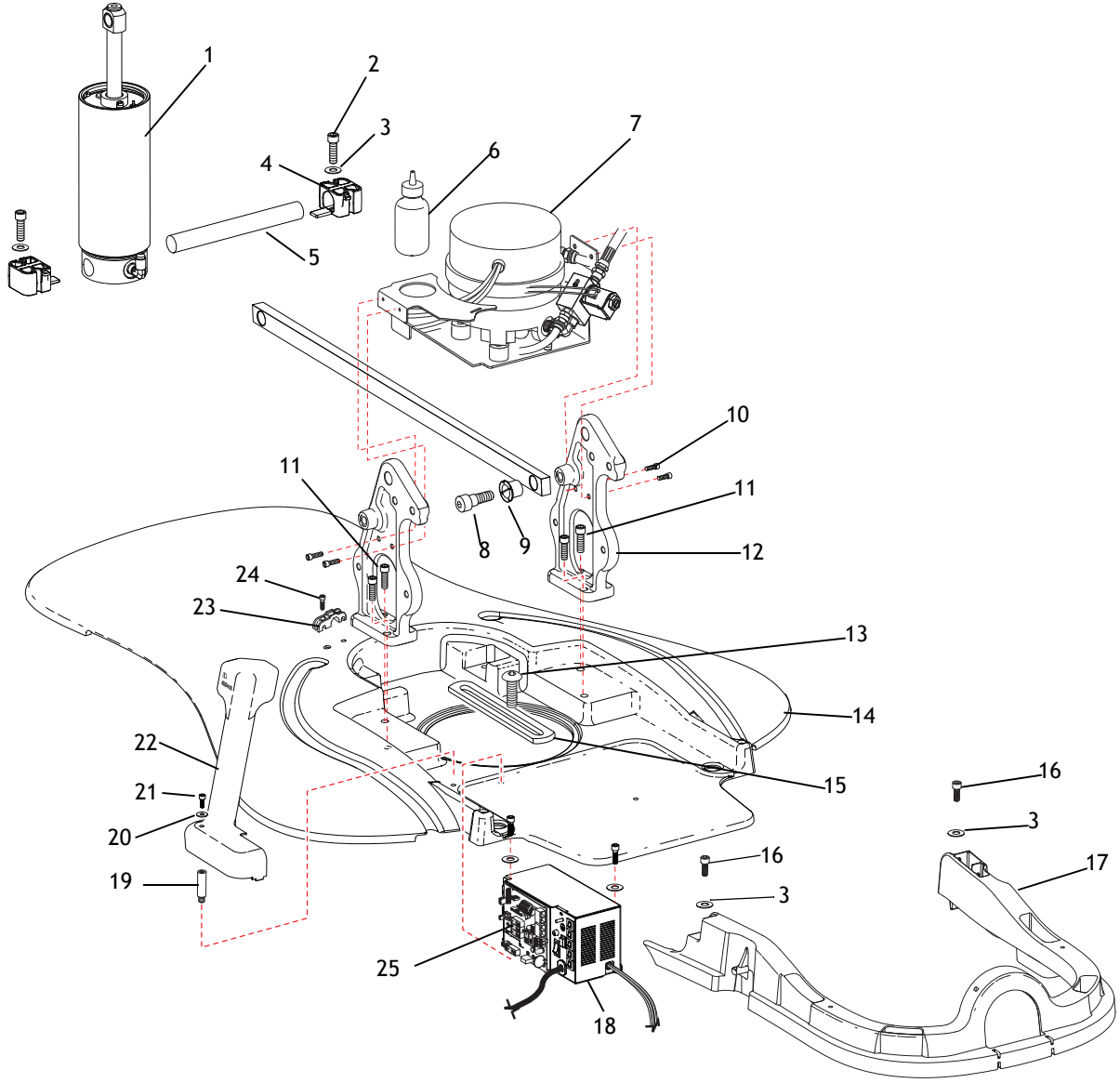
Lower Chair Assembly

Item	Part Number	Description	Item	Part Number	Description
1	62.0368.00†	Lift cylinder*	13	90.1161.00	Mounting kit
2	002.082.03	Screw, socket head, 1/4-20 x 1-1/2", stainless steel	14	62.0265.01†	Base plate
3	004.043.00	Washer	15	62.0285.00†	Cleat
4	62.0376.00	Bearing block	16	001.089.00	Socket head screw, 1/4-20 x 5/8" stainless steel
5	62.0377.00	Pin, lower lift cylinder	17	62.0300.00	Stiffener
6	62.0626.00	Bottle	18	90.1179.00** 90.1179.00** 90.1180.00**	Power supply, 300 W, 120 VAC, kit Power supply, 300 W, 100 VAC, kit Power supply, 300 W, 240 VAC kit
7	61.3126.00† 61.3127.00†	Hydraulic motor pump assembly, 100/110-115V Hydraulic motor pump assembly, 240V	19	037.046.00	Stand off pin
8	001.164.00	Shoulder bolt, socket, 1/2-13 x 5/8 x 5/8"	20	004.197.00	Washer
9	016.164.00	Flanged bearing	21	002.135.01	Socket head screw, 10-32x1/2", patch, stainless steel
10	002.135.01	Screw, socket head, patch, 10-32x1/2", stainless steel	22	62.0415.00	Cover, motor pump wires
11	002.042.01	Screw, socket head, 3/8-16x1-1/2" zinc	23	62.0131.00	Strain relief
12	62.0271.00†	Tower, lift arm, left/right	24	002.120.00	Screw, socket head, patch, 1/4 - 20 x 1"
			25	90.1177.00	Chair circuit board, kit

† Indicates that the individual part is not available for sale
* Replace with p/n 90.1083.01
** Kits are available for changing the capacitor on the power supply

Part Number	Description	
90.1198.00	Motor cap, 311 Chair, 100 V, kit	Replaces motor capacitor in 100VAC, 110-120VAC, 220-240VAC A-dec 300 Power Supplies 100V
90.1199.00	Motor cap, 311 Chair,120V, kit	Replaces motor capacitor in 100VAC, 110-120VAC, 220-240VAC A-dec 300 Power Supplies 120V
90.1200.00	Motor cap, 311 Chair, 240V, kit	Replaces motor capacitor in 100VAC, 110-120VAC, 220-240VAC A-dec 300 Power Supplies 230V

Figure 29. Lower Chair Assembly

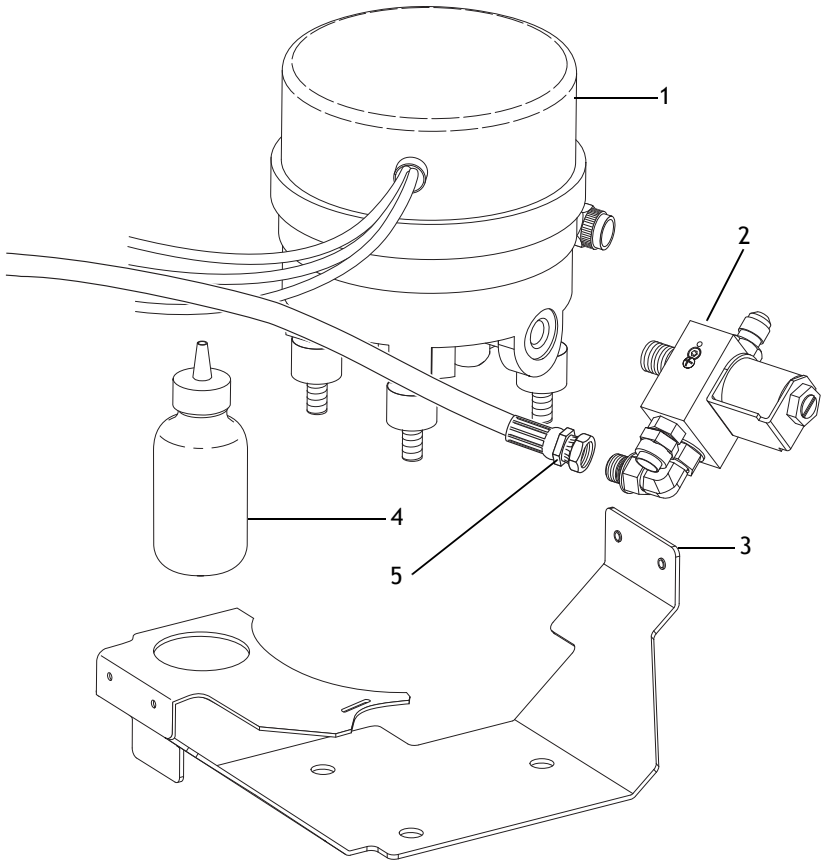


Hydraulic Hose and Manifold Assembly

Item	Part Number	Description
1	61.3126.00† 61.3127.00†	Motor pump assembly (100/115 V) Motor pump assembly (240 V)
2	62.0402.01	Manifold assembly kit
3	62.0380.00†	Motor pump tray
4	62.0626.00	Overflow bottle
5	62.0394.00	Hydraulic hose assembly, straight 90°, 13" long

† Indicates that the individual part is not available for sale

Figure 30. Solenoid Assembly

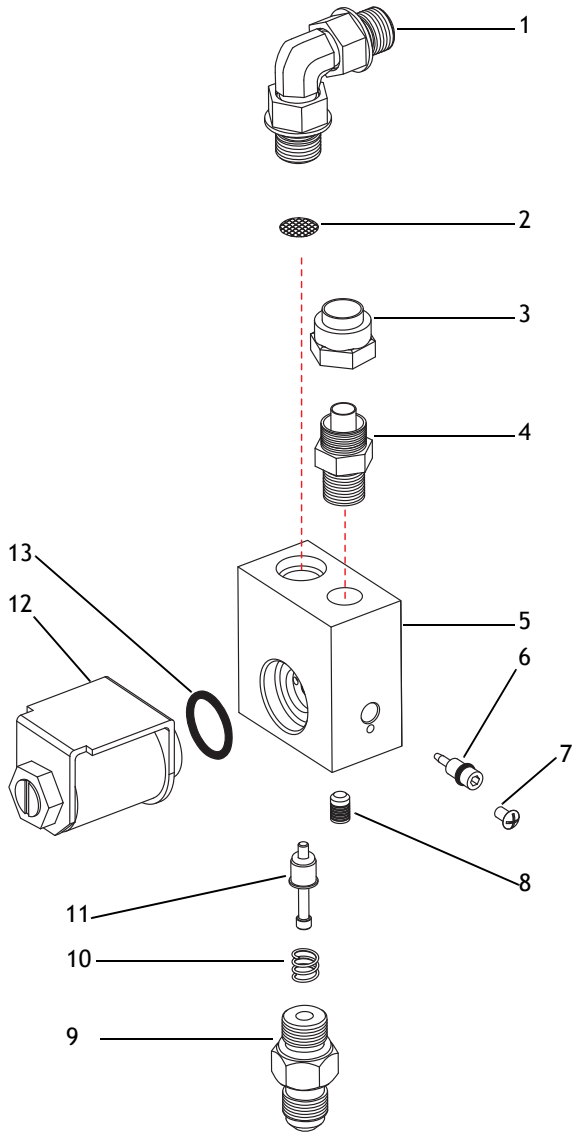


Manifold Assembly

Item	Part Number	Description
1	021.111.00†	Elbow with o-rings, 7/16"
2	61.0464.00	Manifold screen, inlet
3	022.014.01	Nut, with sleeve, 3/8" poly
4	022.065.00	Adaptor, 3/8" poly x 1/8" MPT
5	62.0389.00†	Manifold
6	61.0460.00	Flow adjustment screw, with o-ring
7	002.118.02	Screw, button head socket, patch, 4-40x3/16", package of 5
8	018.057.00	Plug, 3/16" expanding
9	022.049.00	Straight fitting with o-ring
10	013.044.00	Spring, compression, .250 OD x .40 FL
11	61.0461.01	Stem, with o-rings, check valve
12	62.0317.00	Solenoid assembly
13	030.015.02	O-ring AS568-015, .551ID X.070W, package of 10

† Indicates that the individual part is not available for sale.

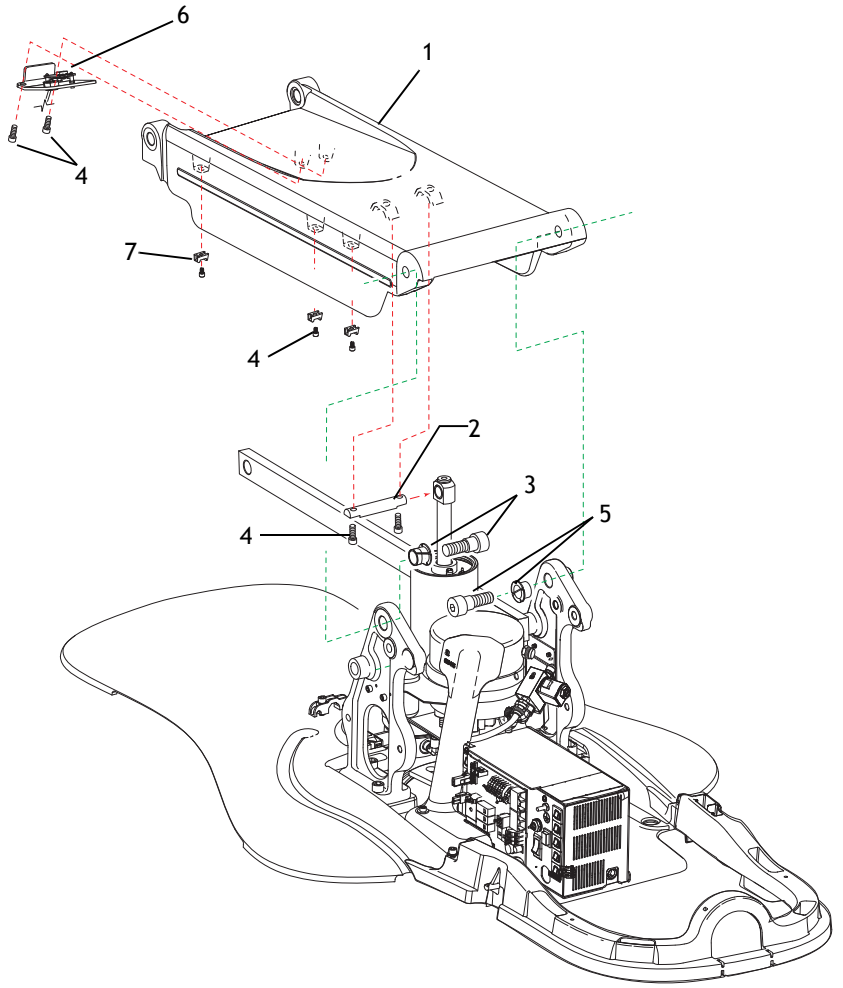
Figure 31. Manifold Assembly



Upper Assembly — Liftarm

Item	Part Number	Description
1	62.0244.00	Lift arm
2	001.164.00	Shoulder bolt, socket, 1/2 - 13 x 5/8" x 5/8"
3	001.165.00	Screw, socket shoulder, 1/2 - 13 x 5/8" x 5/8"
4	002.010.00	Screw, socket head, 1/4-20 x 5/8", stainless steel
5	016.165.00	Brg, flange, nylon, 5/8" IDx5/8 Lg
6	90.1183.00	Position sensor, lift, kit
7	025.072.00	Mounting block, cable tie, 1/4" screw

Figure 32. Upper Chair - LIftarm Assembly

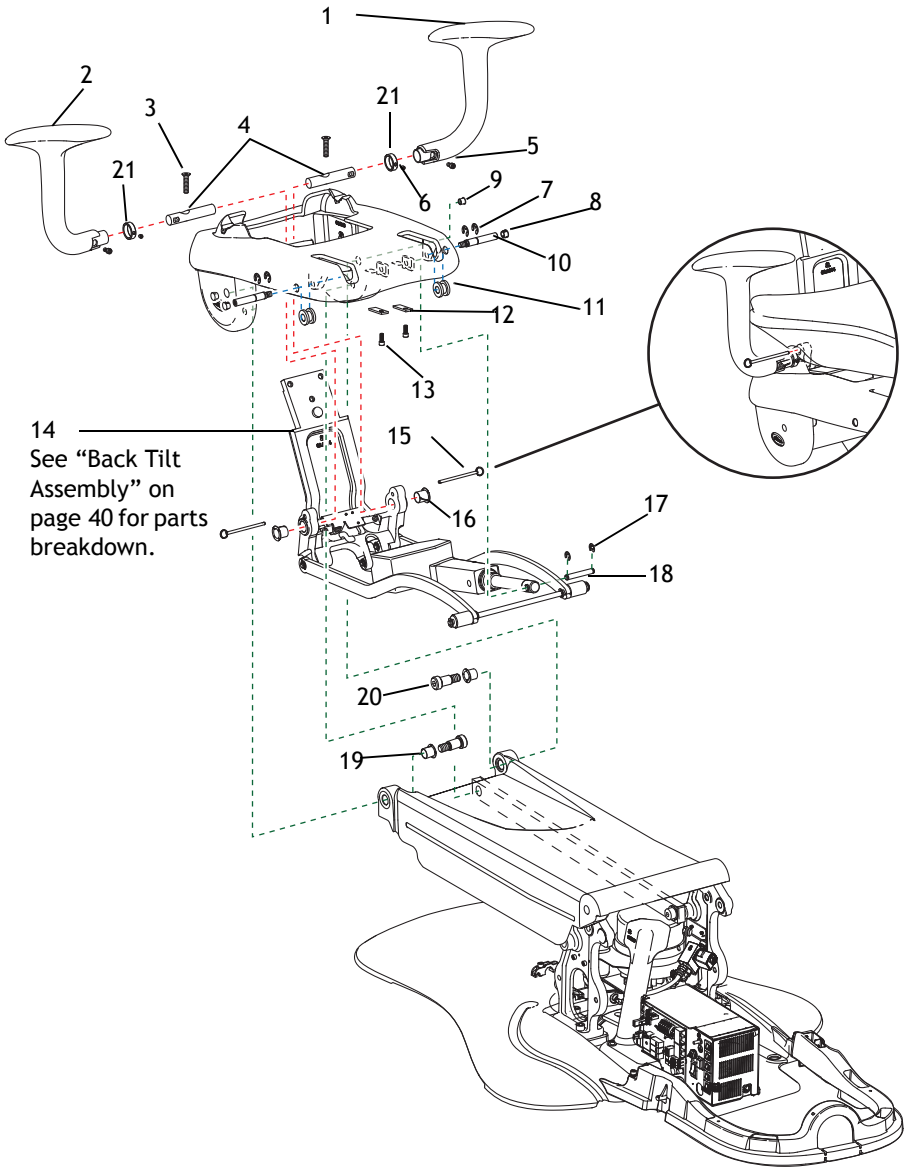


Upper Chair Assembly — Backrest/Seat

Item	Part Number	Description
1	90.1223.00	Armrest, left, kit
2	90.1222.00	Armrest, right, kit
3	001.263.00	Screw, flat head socket, 5/16-18 x 1-1/2"
4	62.0339.00	Pivot pin, back
5	001.264.00†	Screw, socket cup head, 1/4-28 x 1/2"
6	007.056.00	Setscrew
7	010.031.01	E-ring
8	018.050.00	Hole plug, 7/16" diameter, white
9	018.002.06	Hole plug, 1/2" diameter, white 2
10	62.0309.00	Bolt, cam
11	62.0311.00	Roller, cam
12	62.0367.00	Retainer
13	001.089.00	Screw
14		Back tilt assembly - see page 40
15	62.0358.00	Pin, seat upholstery
16	016.047.00†	Bearing, flange
17	010.040.01	E-ring
18	62.0315.00†	Pin, toeboard
19	016.165.00	Bearing, flange
20	001.165.00	Screw, socket shoulder
21	62.0393.00†	Collar

† Indicates that the individual part is not available for sale

Figure 33. Upper Chair Backrest/Seat Assembly

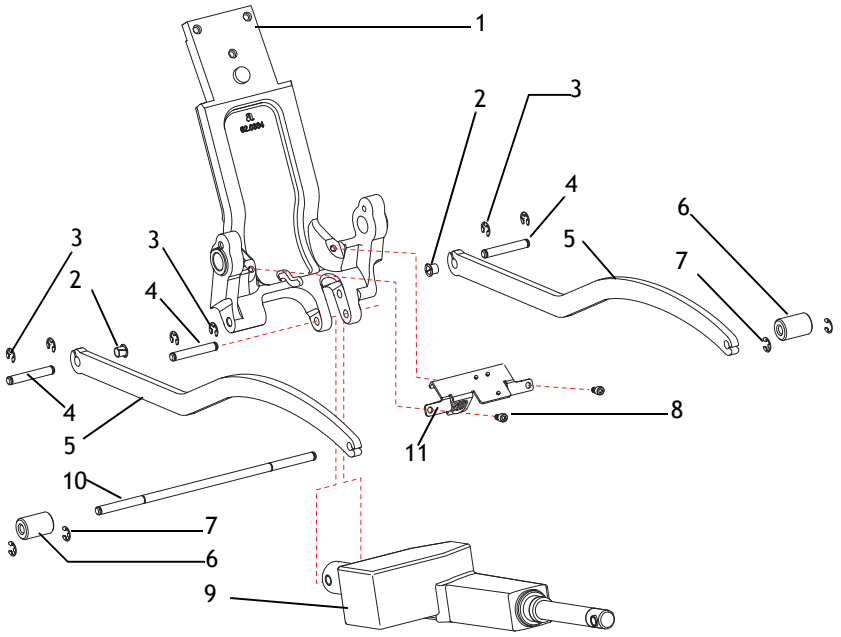


Back Tilt Assembly

Item	Part Number	Description
1	62.0352.00†	Back pivot
2	016.162.00	Bearing, flange
3	010.040.01	E-ring
4	62.0315.00†	Pin, toeboard, short
5	62.0290.00†	Seat lift cam
6	62.0351.00	Roller
7	010.040.01	E-ring
8	002.010.00	Screw, socket head, patch, 1/4 - 20 x 3/8"
9	62.0226.00	Tilt actuator assembly
10	62.0263.00†	Trolley pin, long
11	90.1183.00	Tilt position sensor

† Indicates that the individual part is not available for sale

Figure 34. Back Tilt Assembly Showing Tilt Actuator and Inclinometer

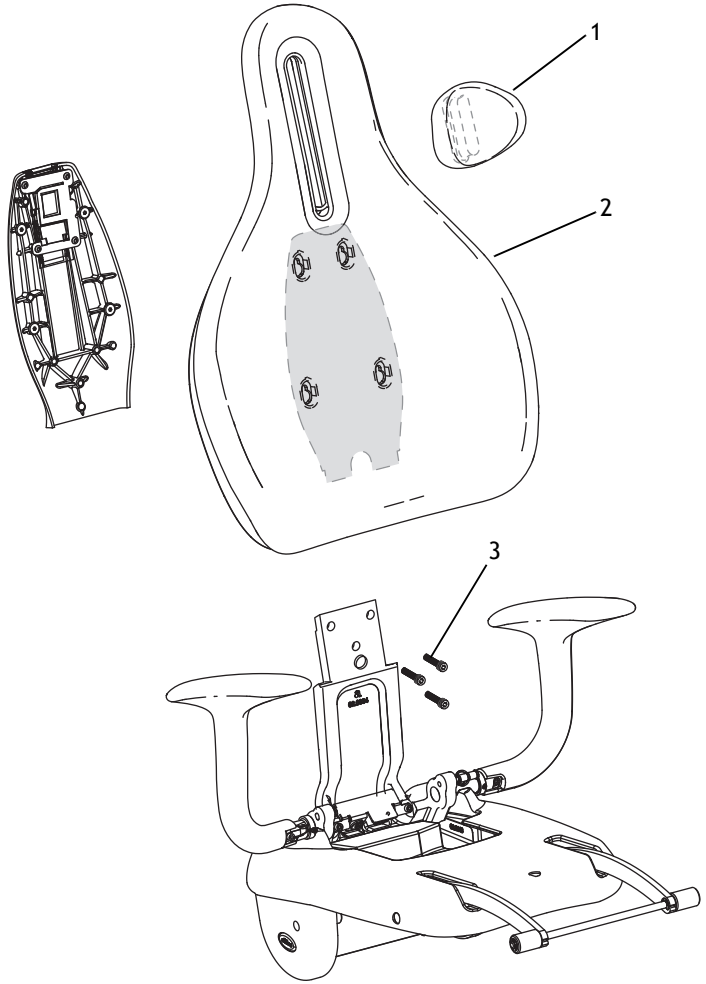


One-Piece Thin-Line Back Assembly

Item	Part Number	Description
1	62.0405.00†	Neckrest assembly
2	62.0341.xx†	Back assembly
3	001.089.00	Socket head screw, 1/4-20 x 5/8" stainless steel

† Indicates that the individual part is not available for sale

Figure 35. One-Piece Thin-Line Back Assembly

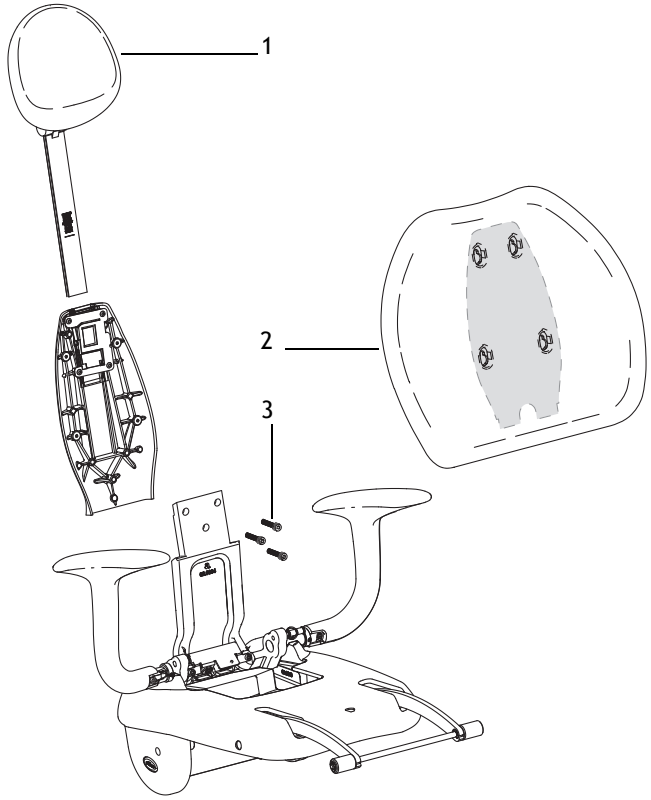


Two-Piece Thin-Line Back Assembly/Double Articulating Headrest

Item	Part Number	Description
1	62.0631.01	Double articulating headrest, kit
2	62.0342.xx †	Back assembly
3	001.089.00	Socket head screw, 1/4-20 x 5/8" stainless steel

† Indicates that the individual part is not available for sale.

Figure 36. Two-Piece Thin-Line Back and Double Articulating Headrest



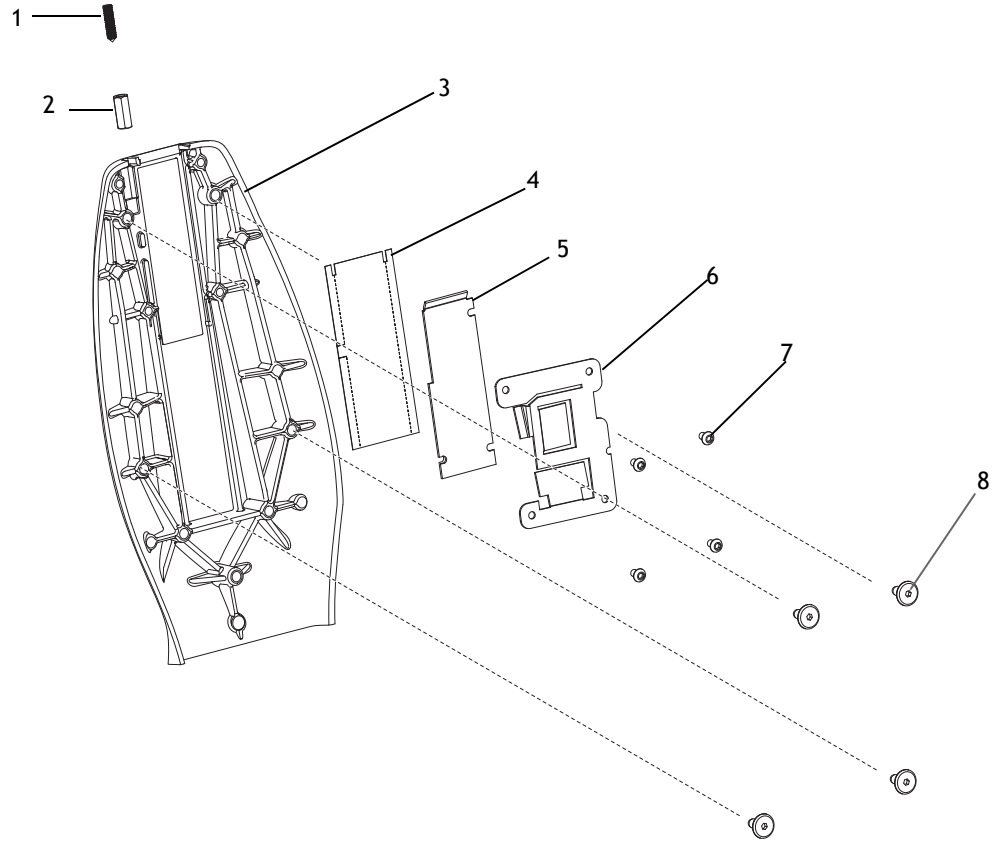
Backrest Assembly

Part Number: 90.1099.02

Item	Part Number	Description	Item	Part Number	Description
1	007.158.00	Setscrew, cone point, 1/4-20 x 1" stainless steel	5	62.0103.00	Upper wear pad
2	006.144.00	Coupling	6	90.0719.00†	Bracket
3	62.0048.02†	Support, back	7	005.138.01	Screw, button head socket,10-32x5/16" patch
4	62.0102.00	Lower wear pad	8	001.244.00	Screw, JCB, socket, 1/4-20 x 15mm, stainless steel

† Indicates that the individual part is not available for sale

Figure 37. Backrest Assembly



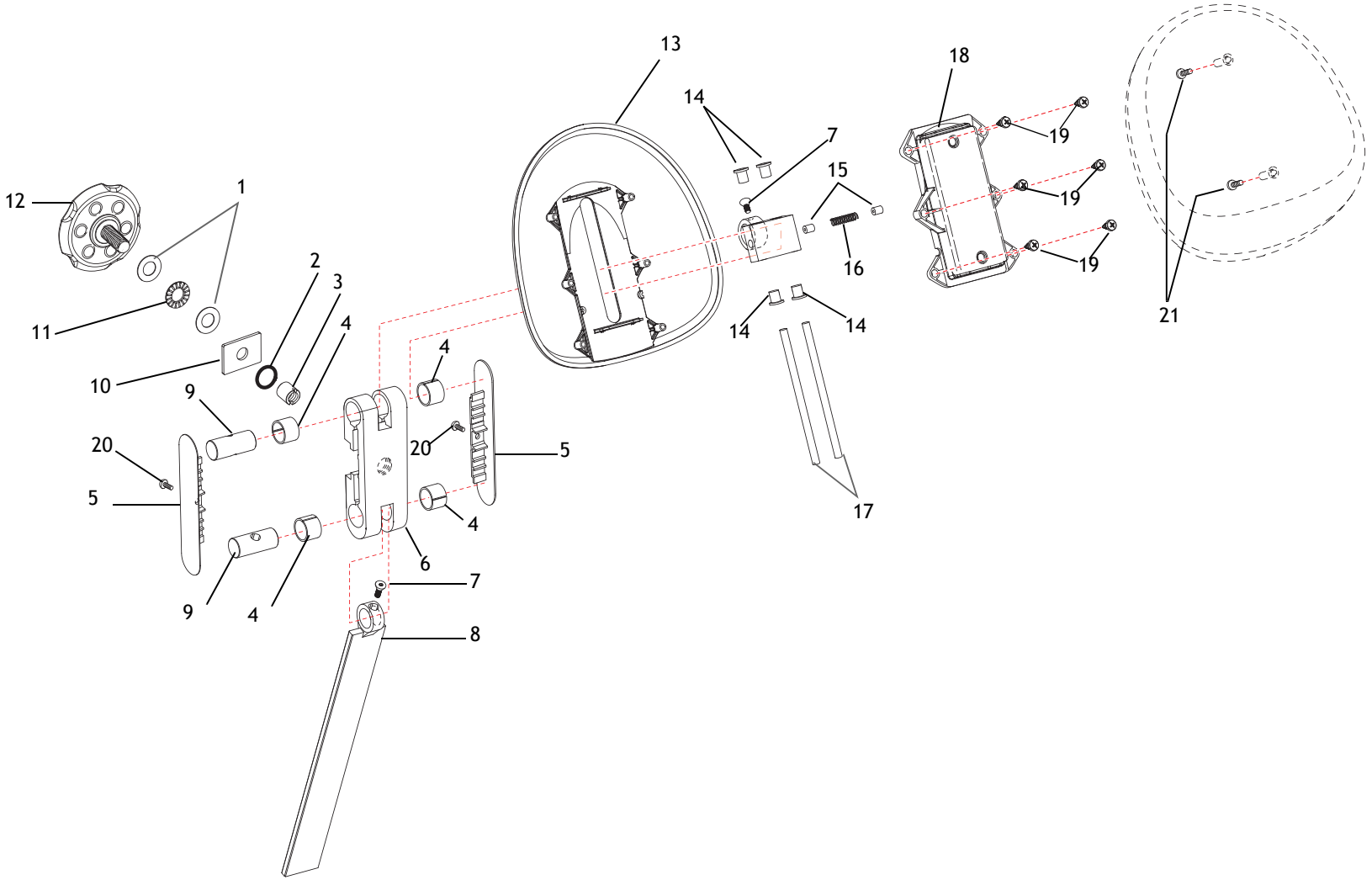
A-dec 300 Double Articulating Headrest Assembly

Part Number: 62.0631.00

Item	Part Number	Description
1	004.136.00*	Thrust washer
2	030.012.02*	O-ring, package of 10
3	014.015.00†	Threaded insert
4	62.0428.00†	Bushing
5	62.0429.00	Side cap
6	62.0411.00†	Pivot block
7	002.089.01	Flat head screw, socket, 10-32 x 1/2"
8	62.0418.00†	Glide bar assembly
9	62.0423.00†	Pivot pin
10	62.0643.00†*	Clamp plate
11	016.033.00*	Bearing, thrust, needle
12	62.0427.00†*	Knob assembly
13	62.0417.00†	Cover
14	016.169.00†	Sleeve bearing
15	037.045.00†	Standoff
16	013.030.00	Spring
17	62.0413.00†	Rail
18	62.0414.00†	Armature
19	003.123.00	Screw, TFS, Phillips head, 10-14 x .38 stainless steel
20	001.191.00	Screw, 10-32 x 3/8, truss head Phillips
21	005.110.00	Screw, button head socket, 10-32 x 1/2" with patch

† Indicates that the individual part is not available for sale
* Replace with kit 90.1221.00

Figure 38. A-dec 300 Double Articulating Headrest Assembly



3

PROGRAMMING

The A-dec 300 touchpad centralizes treatment room controls into one touch surface. Some touchpad buttons have indicators to alert you if the operation is functioning. A-dec touchpads control multiple chair and delivery system functions:

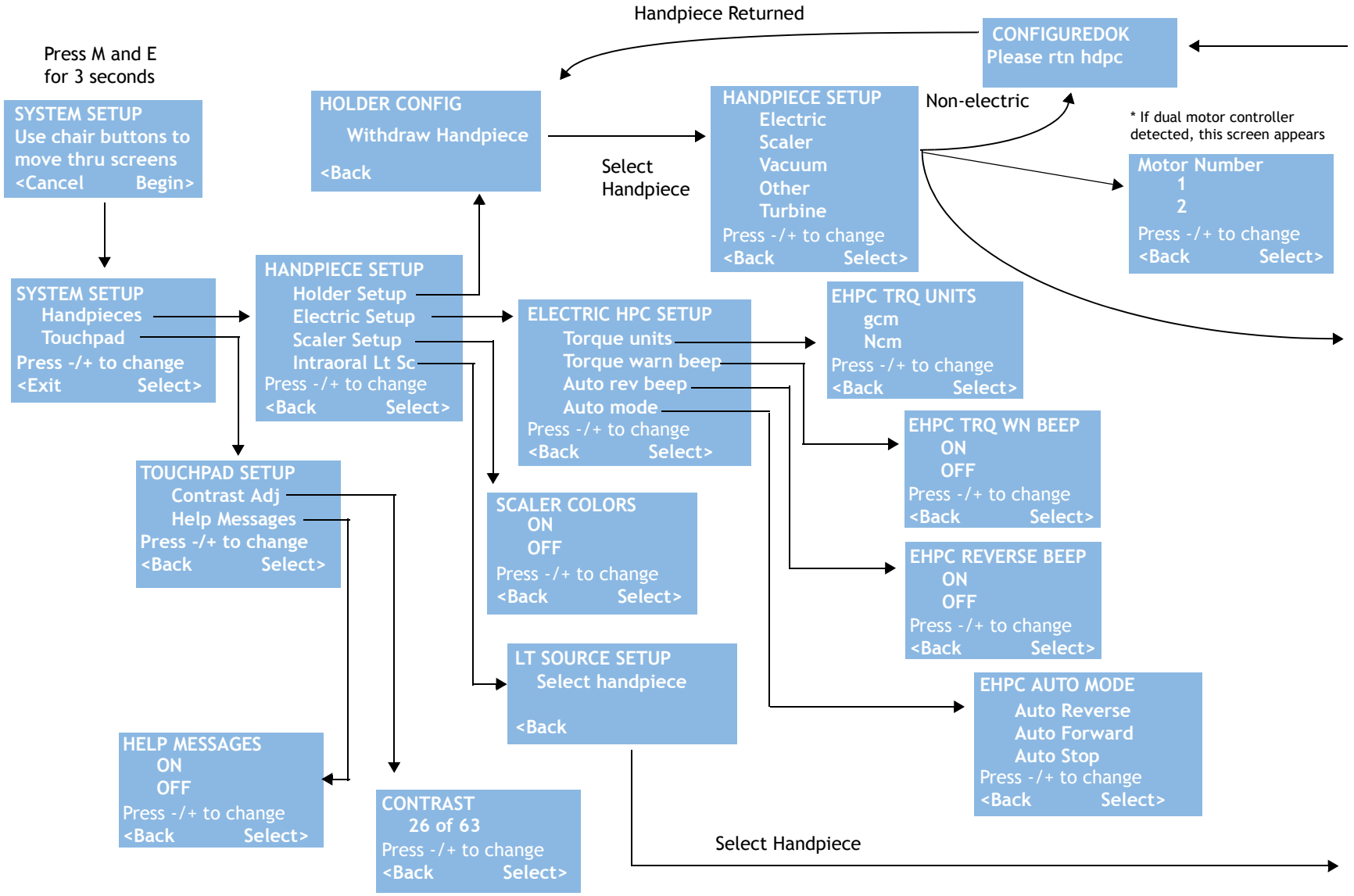
- Standard Touchpad—chair, light, cuspidor controls and auxiliary equipment
- Deluxe Touchpad—chair, light, cuspidor, electric handpiece, scaler, and auxiliary equipment

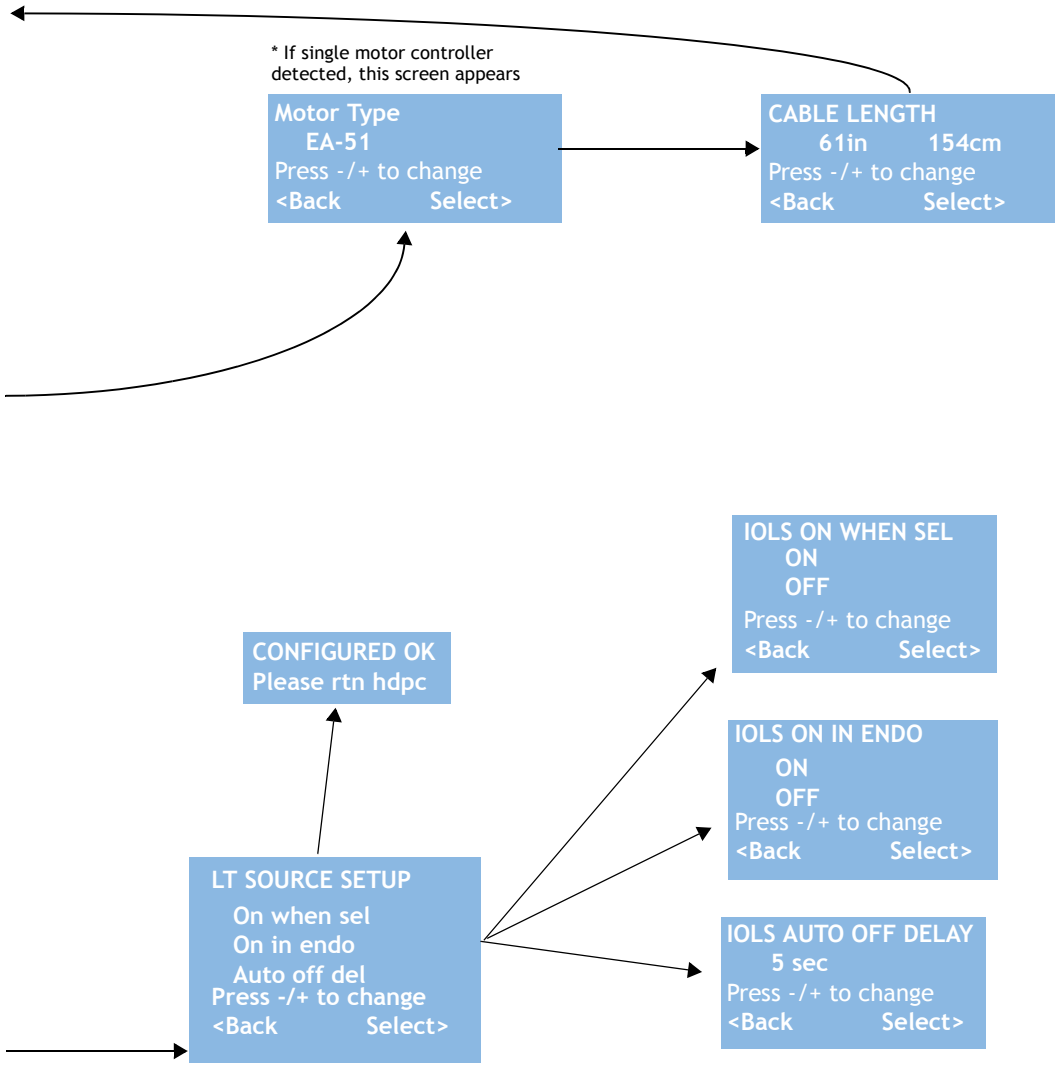
Contents

NOTE Later versions of the A-dec 300 touchpad menus may use terms that differ from this document. For example, the word "scaler" may be replaced with "ultrasonic."

Figure 39. Standard and Deluxe Touchpads

Touchpad Setup Flowchart





NOTE Later versions of the A-dec 300 touchpad menus may use terms that differ from this document. For example, the word "scaler" may be replaced with "ultrasonic."

Touchpad Options

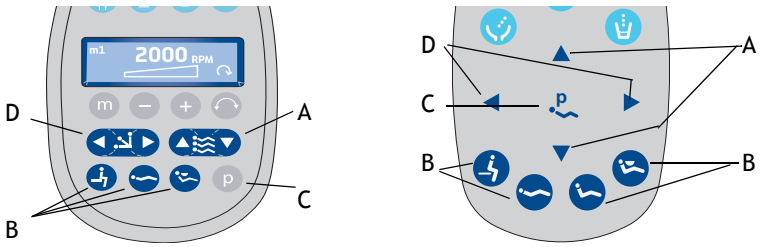
The A-dec logo on the touchpad indicates the system status. If it appears as solid blue, the system is on and ready for use.

To display the deluxe touchpad circuit board's revision on the display screen, press and hold e when first turning on the touchpad.

Chair Positions

The chair direction arrows on the standard and deluxe touchpads allow you to manually move the chair base up/down and back up/down. Table 6 lists the icons and the action of each icon.

Figure 40. Chair Position Touchpad Buttons



(A) Chair Base Direction Arrows; (B) Chair Preset Buttons; (C) Program Buttons; (D) Chair Back Direction Arrows

Table 6. Chair Direction

Deluxe Icons	Standard Icons	Action
		Back Down
		Back Up
		Base Down
		Base Up

Chair Preset Position Buttons

Chair position buttons are factory preset to automatically move the chair (see Figure 40).

Table 7. Chair Preset Positions

Button	Description
	Entry/Exit: Automatically positions chair for entry/exit and turns off dental light.
	Treatment 1: Automatically positions the chair base and back down and turns on the dental light.
	Treatment 2 (*Standard touchpad only*): Automatically positions the chair base and back and turns on the dental light.
	X-ray/Rinse: Automatically positions the chair for either x-ray or rinse. Toggles between the x-ray/rinse and the last position, and turns off the dental light.

Program Chair Positions

To program chair preset buttons Entry/Exit, Treatment 1, and Treatment 2:

1. Move the chair into the desired position.
2. Press and release p. One beep indicates programming mode.
3. Press the preset button you want to program, and you hear three beeps confirming the button has been set.

Customize the X-Ray/Rinse Button

The X-ray/Rinse button functions as either x-ray/rinse or as another fully programmable preset position (Treatment 3). To change the function:

1. Press and hold buttons p and at the same time for three seconds.
   - One beep indicates the button can be configured as Treatment 3.
   - Three beeps indicate that the X-ray/Rinse button has been configured as the x-ray/rinse function (toggles between x-ray/rinse and the previous position).
2. Program the preset position as instructed under "Program Chair Positions" on page 50.

TIP If the X-ray/Rinse button is changed to a preset position, it operates the same as treatment buttons 1 and 2.

Cuspidor Cupfill and Bowl Rinse

The cupfill controls water flow from the water bottle into a cup. The bowl rinse provides water for the cuspidor. Table 8 describes the cupfill and bowl rinse buttons.

Table 8. Cupfill and Bowl Rinse Functions

Button	Description
	**Cupfill Button:** Controls water flow from the water bottle into a cup. • Press 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:** Provides rinse water for the cuspidor bowl. • 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.

Customize Cupfill and Bowl Rinse

To change the timing for the cupfill and bowl rinse:

1. Press and release p. One beep indicates the programming mode is ready.

NOTE You can manually change the timing for the cupfill and bowl rinse without a touchpad. At the cuspidor, press and hold both the Cupfill and Bowl Rinse buttons located near the spout. One beep indicates the programming mode is ready.

2. Press and hold the Cupfill ( ) or Bowl Rinse ( ) button for the desired amount of time.
3. Release the button. Three beeps confirm the setting.

TIP If you press the Bowl Rinse button twice in less than two seconds, the operation changes to continuous rinse mode. Press the button once to end the continuous bowl rinse mode.

Dental Light

The Dental Light button on the touchpad allows you to turn the dental light on or off, and change intensity.

Figure 41. Dental Light Button

Press to toggle between intensity settings. Press the button to turn on the light, and hold the button to turn off the light.

- **371 Dental Light:** Toggles between high intensity and composite.
- **571-300 Dental Light:** Toggles between either high or medium intensity and composite, depending on the selection of the intensity setting on the light.

To turn off the dental light, hold down for two seconds.

Dental Light Auto Feature

The dental light has an auto on/off feature. When you use a programmed chair position, the dental light turns on when the chair back reaches operating position.

Press ( ) or ( ) and the dental light automatically turns off.

TIP If x-ray/rinse is changed to a programmable position, the dental light auto feature operates the same as the treatment buttons 1 and 2.

To deactivate the auto light feature, press and hold p and at the same time for three seconds. One beep confirms the dental light auto feature is off.

To activate the auto light feature, press and hold p and at the same time for three seconds. Three beeps confirm the dental light auto feature is on.

Electric Handpiece Operation (Deluxe Touchpad Only)

If electric handpieces are used, handpieces can be programmed in standard or endodontics mode.

- **Standard Mode:** Handpieces are always 100 percent torqued for electric handpieces. Table 9 lists the factory presets for electric handpieces.
- **Endodontics Mode:** If you have a motor controller that supports endodontics, you can program handpieces in this mode. Endodontics mode allows you to control torque, ratio settings, and direction.

Table 9. Electric Motor Presets (Standard Mode)

Memory Setting	Preset Speed
m1	2,000 RPM
m2	10,000 RPM
m3	20,000 RPM
m4	40,000 RPM

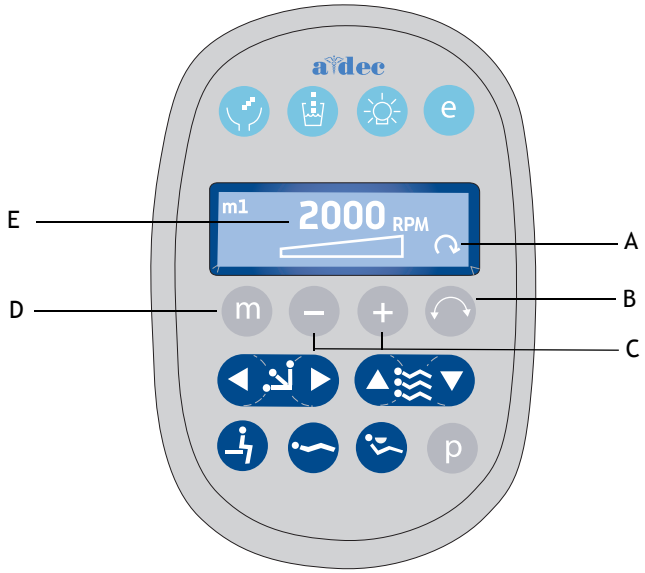
Standard Mode Setup

Program the Electric Handpieces in Standard Mode

You can program memory settings on the Deluxe touchpad for specific RPMs. To program the handpiece settings.

1. Lift the handpiece from the holder.
2. To adjust the RPM, press the minus (-) or plus (+) buttons. The RPM values increase or decrease on the screen (see Figure 42.).
3. To place the setting into memory (optional), press p. One beep sounds.
4. To toggle through memory settings (m1 through m4), press m.
5. When the desired memory setting is selected, press p. Three beeps confirm the setting.

Figure 42. Program Handpiece Standard Mode Settings



Item	Description
A	Forward/Reverse Indicator (forward is shown)
B	Forward/Reverse Button
C	Minus and Plus Buttons
D	Memory Button
E	RPM Value

Forward/Reverse Button

Use the forward/reverse button to change 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 (see Figure 42.). In reverse mode, the screen icon flashes continuously.

Endodontics Mode

Program Electric Handpieces in Endodontics Mode

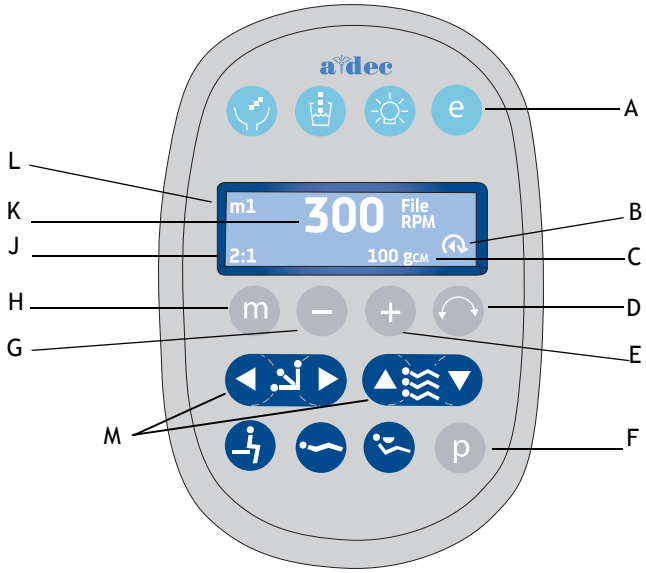
The endodontics mode allows you to change a number of settings based on the specific file and desired handpiece behavior.

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

To program the endodontics memory settings:

1. Lift the handpiece from the holder.
2. If the touchpad is not in endodontics mode, press e.
3. To change settings in endodontics mode, press the minus (-) or plus (+) buttons. You will see a white reverse video box in the touchpad window.
4. To move from setting to setting in the touchpad window, press the chair positioning buttons.
5. To change the settings, press the minus (-) or plus (+) button.
6. To program the speed limit, torque limit, and ratio into memory, press p (one beep sounds), then press m to toggle through the memory locations (m1 through m4).
7. Once the desired memory setting is selected, press p. Three beeps confirm the setting.

Figure 43. Endodontics Mode Touchpad Screen

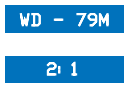


Item	Description	Item	Description
A	Endodontics Mode Button	G	”Minus” Button
B	Forward/Reverse Indicator (with auto-mode indicator inside arrow)	H	Memory Button
C	File Torque Unit Indicator	J	Handpiece Ratio Setting
D	Forward/Reverse Button	K	Speed Limit Indicator
E	”Plus” Button	L	Memory Setting Indicator
F	Program Button	M	Positioning Buttons

Endodontics Mode Settings

The table below lists and defines the touchpad window icons for endodontics mode.

Table 10. Endodontics Mode Settings

Icon	Setting	Description
	Speed	Setpoint for file speed limit. For more information, consult your file manufacturer.
	Torque	Setpoint for file torque limit. For more information, consult your file manufacturer.
	Torque Units	Toggles between Ncm (Newton centimeters) and gcm (Gram centimeters). Adjusting this setting for one handpiece changes it for all handpiece settings. **Note:** 1 Ncm=102 gcm
	Ratio	Sets the handpiece ratio. For more information, consult your handpiece manufacturer.
	Endodontics Handpiece Auto Mode	Adjusting this setting for one handpiece changes it for all handpiece settings. This icon appears within forward/reverse indicator. **Auto-off**—the motor shuts off when the file reaches the torque limit. **Auto-reverse**—the motor stops and reverses direction when the file reaches the torque limit. **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, this cycle repeats three times before the motor stops.

CAUTION 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.

Technician Touchpad Setup Options

The Deluxe touchpad allows service technicians access to adjust handpiece and touchpad settings for user preferences.

Using Touchpad Buttons for Navigation

Chair button functions become navigation buttons while you are in setup mode. You will use the back up (▶) and back down (◀) buttons to navigate the setup screens.

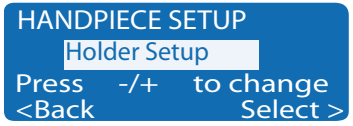
Holder Setup

You can set up how handpieces are configured for each handpiece holder.

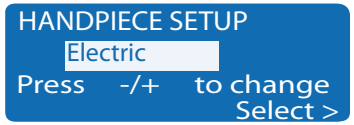
To set up handpiece holders:

1. From the deluxe touchpad main screen, press and hold m and e at the same time for three seconds, then press ▶ to begin. You see the **System Setup** screen.
2. Press minus (-) or plus (+) to select **Handpieces**, and press ▶.

3. From the **Handpiece Setup** screen, press the minus (-) or plus (+) to select **Holder Setup**, and press ▶.



4. Lift the desired handpiece from the holder.
5. From the **Handpiece Setup** screen, press minus (-) or plus (+) to select the handpiece type.



Handpiece types include:

- Electric
- Scaler
- Vacuum
- Other
- Turbine

6. Press ▶. Three beeps confirm the setup for the handpiece is complete.
7. Return the handpiece to the holder.
8. Repeat steps 4 through 7 to set up each handpiece.
9. When you are finished setting up handpieces, press ◀ until you see the A-dec logo.

Light Source Setup

You can set up various intraoral light source options if a Quad Voltage Intraoral Light Source (QVIOLS)is installed. (For information, see Quad Voltage Intraoral Light Source (QVIOLS), page 92.)

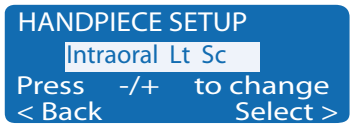
The following options are available:

- **On When Selected:** Specify whether the intraoral light source turns on or remains off when the handpiece is removed from the holder.
- **Auto Off Delay**: Determine how long the light remains on when the foot control is released. This time is reset when you use the drive air again or replace and pick up the handpiece. The factory setting is five seconds.
- **On in Endo:** Specify whether the intraoral light source turns on or off when in endodontics mode. Because most endodontics handpieces do not have light pipes, it is recommended that Off is selected to reduce heat and to extend bulb life.

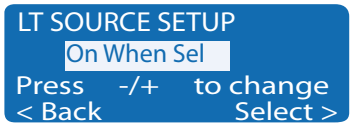
To set up the light source:

1. From the Deluxe touchpad main screen, press and hold m and e at the same time for three seconds, then press ▶ to begin. You see the **System Setup** screen.
2. Press minus (-) or plus (+) to select **Handpieces**, and press ▶.

3. From the **Handpiece Setup** screen, press minus (-) or plus (+) to select **Intraoral Lt Sc.** and press ▶.



4. Lift the desired handpiece from the holder.
5. From the **Lt Source Setup** screen, press minus (-) or plus (+) to select the desired option, for example, **On When Sel**, and press ▶.



6. Specify other light source options for the handpiece by pressing minus (-), plus (+), and ▶ to move through the screens. Once the setup is complete, three beeps confirm the setting.
7. Return the handpiece to the holder.
8. Repeat steps 3 through 7 to configure each handpiece.
9. When you are finished setting up handpieces, press ◀ until you see the A-dec logo.

Scaler Setup

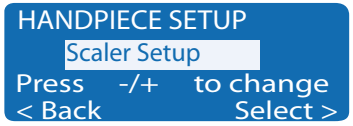
NOTE Later versions of the A-dec 300 touchpad menus may use terms that differ from this document. For example, the word "scaler" may be replaced with "ultrasonic."

You can select whether to display the names of the scaler colors on the screen. If you select On, the name of the colors displays on the screen. If you select Off, the name of the colors will not display on the screen.

To set up the scaler:

1. From the Deluxe touchpad main screen, press and hold m and e at the same time for three seconds, and press ▶ to begin. You see the **System Setup** screen.
2. Press minus (-) or plus (+) to select **Handpieces**, and press ▶.

3. From the **Handpiece Setup** screen, press minus (-) or plus (+) to select **Scaler Setup**, and press ▶.



4. Press minus (-) or plus (+) to display On or Off, and press ▶. Three beeps confirm the setting has been programmed.
5. Press ◀ until you see the A-dec logo.

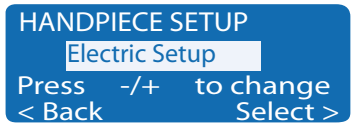
Electric Options Setup

You can change display information and how the functions operate with the electric motor. The following options are available:

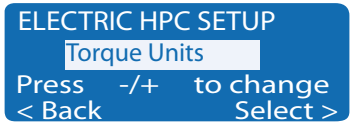
- **Torque Units:** Select how to display the units, either Ncm (Newton centimeters) or gcm (Gram centimeters).
- **Endo Handpiece Auto Mode:** Configure how the electric motor reacts when the torque limit is reached.
  - **Auto Forward:** Motor will stop, reverse three turns, and return forward again.
  - **Auto Reverse:** Motor will reverse.
  - **Auto Stop:** Motor will stop.
- **Auto Reverse Beep:** Select whether to hear three beeps from the touchpad when auto-reversing begins.
- **Torque Warning:** Select whether to turn on the beep sounds when there is a torque warning.

To set up electric options:

1. From the Deluxe touchpad main screen, press and hold m and e at the same time for three seconds; press ▶ to begin. You see the **System Setup** screen.
2. Press minus (-) or plus (+) to select **Handpieces**, and press ▶.
3. From the **Handpiece Setup** screen, press minus (-) or plus (+) to select **Electric Setup**, and press ▶.



4. From the **Electric HPC Setup** screen, press minus (-) or plus (+) to highlight an option, such as **Torque Units**, and press ▶.



5. Specify other electric handpiece options by pressing minus (-), plus (+), and ▶ to move through the screens. Once the setup is complete, three beeps confirm the setting for all handpieces.
6. When all settings are complete, press ◀ until you see the A-dec logo.

Touchpad Setup

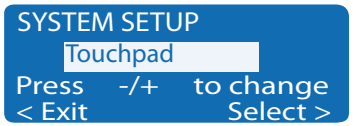
Use the touchpad setup to change the contrast of the touchpad display. You can also specify whether to display help messages in the technical mode help screens.

The help messages are listed in the Troubleshooting section of this document. Refer to Deluxe Touchpad Help Messages, page 242, for definitions of the messages and any related troubleshooting procedures.

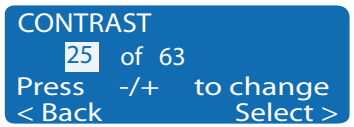
NOTE Help messages should only be set to On for technician use.

To set up touchpad options:

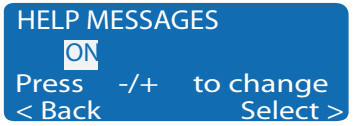
1. From the Deluxe touchpad main screen, press and hold m and e at the same time for three seconds, and press ▶ to begin. You see the **System Setup** screen.
2. Press minus (-) or plus (+) to select **Touchpad**, and press ▶.



3. From the **Touchpad Setup** screen, press minus (-) or plus (+) to highlight **Contrast** or **Help Messages**:
   - Select **Contrast** to adjust the contrast on the screen. Press minus (-) or plus (+) to adjust the contrast.



   - Select **Help Messages** and press minus (-) or plus (+) to turn on or off the technician help messages.



4. Press ▶. Three beeps confirm the setting has been programmed.
5. When settings are complete, press ◀ until you see the A-dec logo.

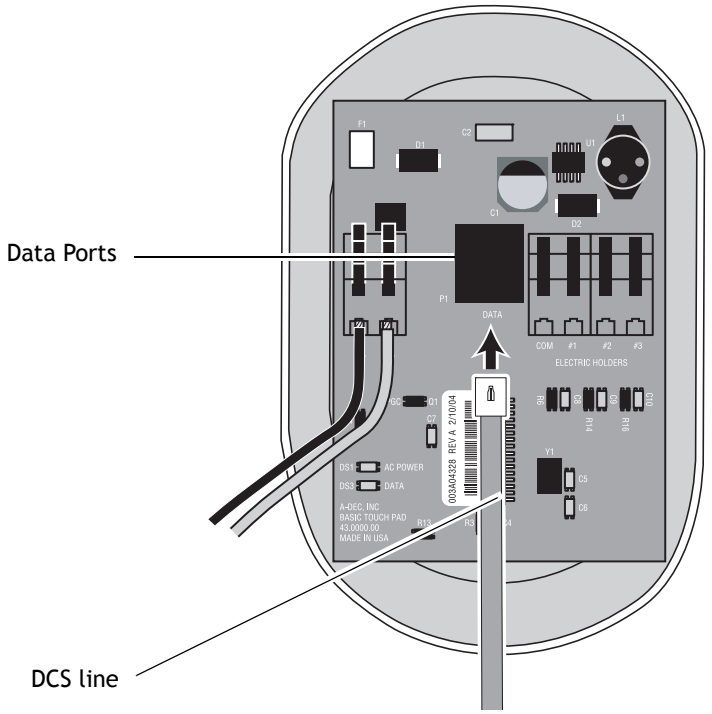
Data Communication System

Data Communication System Features

A-dec 300 equipment uses an electronic communication tool, the Data Communication System (DCS). The DCS allows each module to communicate with the other modules and automatically detects when modules are added. For example, when connecting a cuspidor to the system, the DCS automatically recognizes the cuspidor module without any programming or setting changes.

You can plug any module into the data port on the circuit board. The circuit board recognizes which module has been plugged in and allows operation of that module to begin. Should a module malfunction or fail to work, the DCS maintains service to the rest of the modules. Other modules continue to function in spite of the one that has failed.

Figure 44. DCS Line and Connector



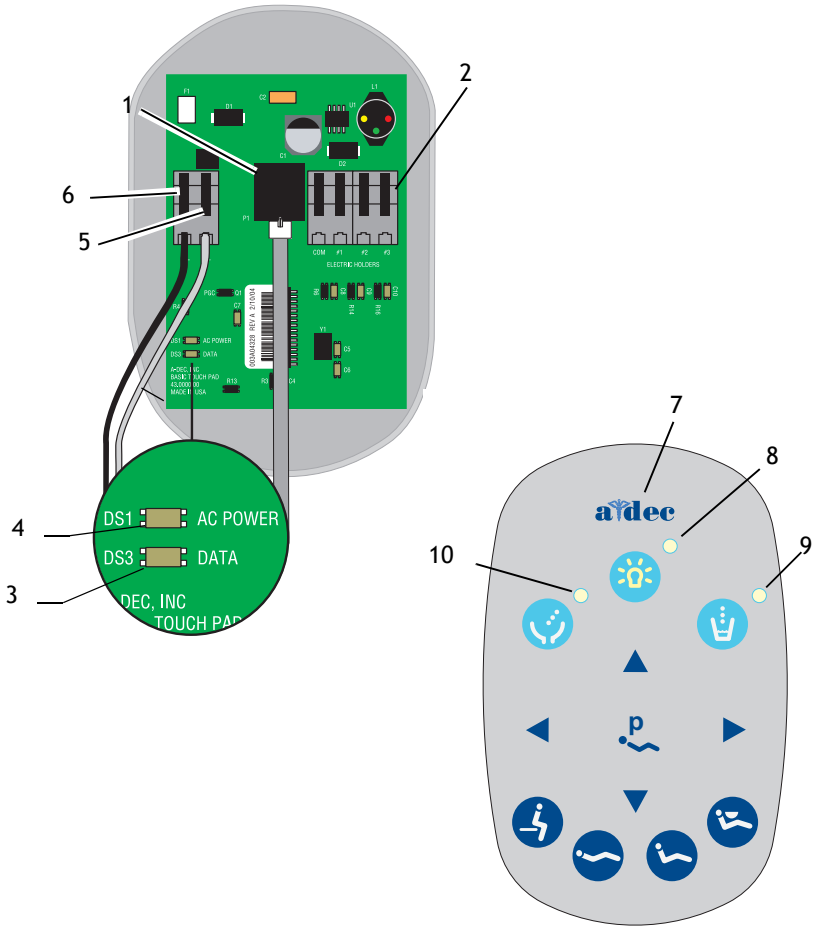
Circuit Board Components

Standard Touchpad

The standard touchpad has three LEDs for communicating status (AC Power, Status, and Data). The touchpad circuit board's Status LED is the A-dec icon, visible on the touchpad. Check the chair circuit board LEDs, as well as the touchpad, when troubleshooting.

Item	Description
1	P1 - Data port (DCS)
2	J2 - Electric holder terminal strip
3	DS3 - Data LED
4	DS1 - AC Power LED
5	J1 - 24VAC terminal strip
6	J1 - Ø VAC terminal strip
7	DS2 - Status LED
8	DS8 - Dental light LED
9	DS9 - Auxiliary 2 and cupfill LED
10	DS7 - Auxiliary 1 and bowl rinse LED

Figure 45. Standard Touchpad Circuit Board Components

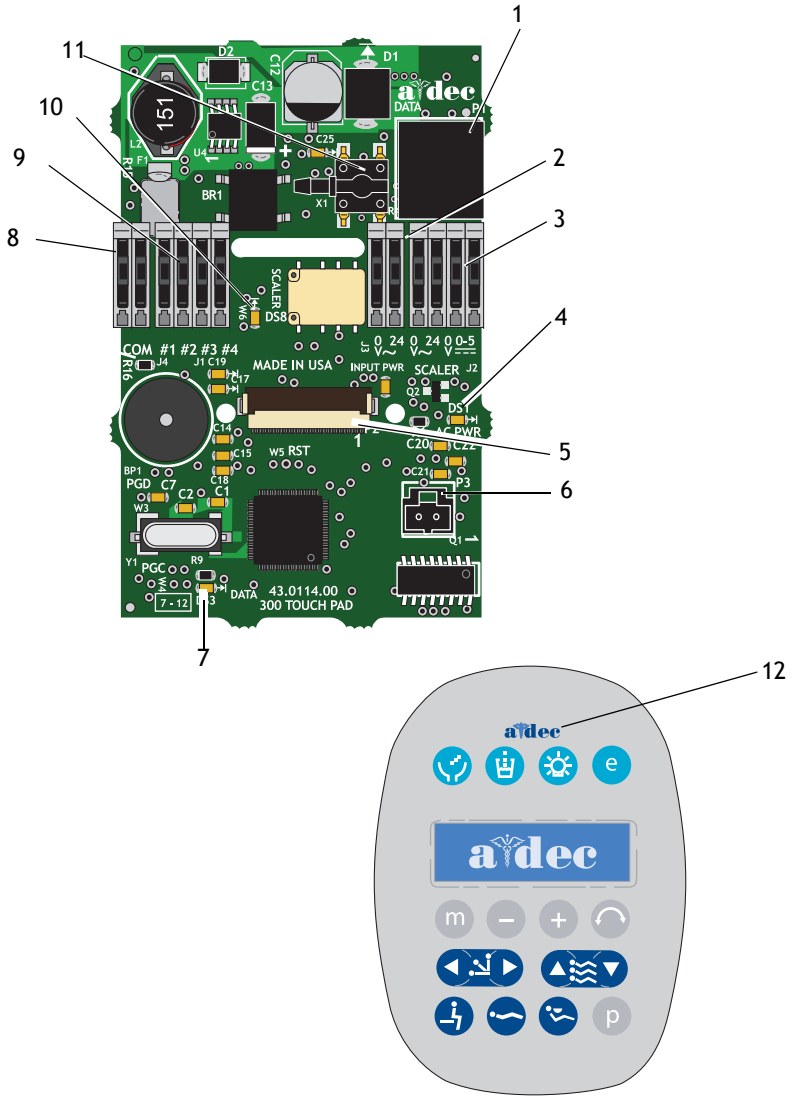


Deluxe Touchpad

Deluxe Touchpad Circuit Board

Item	Description
1	P1 - Data port (DCS)
2	J3 - Ø VAC (Input for Circuit Board) J3 - 24 VAC (Input for Circuit Board)
3	J2 - Scaler Ø VAC J2 - Scaler 24 VAC J2 - Scaler Ø VDC J2 - Scaler Ø-5 VDC
4	DS1 - AC power LED
5	P2 - LCD Connector
6	P3 - LCD Backlight Connector
7	DS3 - Data LED
8	J4 - Common (Black Wire)
9	J1 Switch Input #1 (Brown Wire) J1 Switch Input #2 (Red Wire) J1 Switch Input #3 (Orange Wire) J1 Switch Input #4 (Yellow Wire)
10	DS4 - Scaler Relay LED
11	X1 - Drive Air Transducer
12	DS2 - Status LEDs

Figure 46. Deluxe Touchpad Circuit Board Components

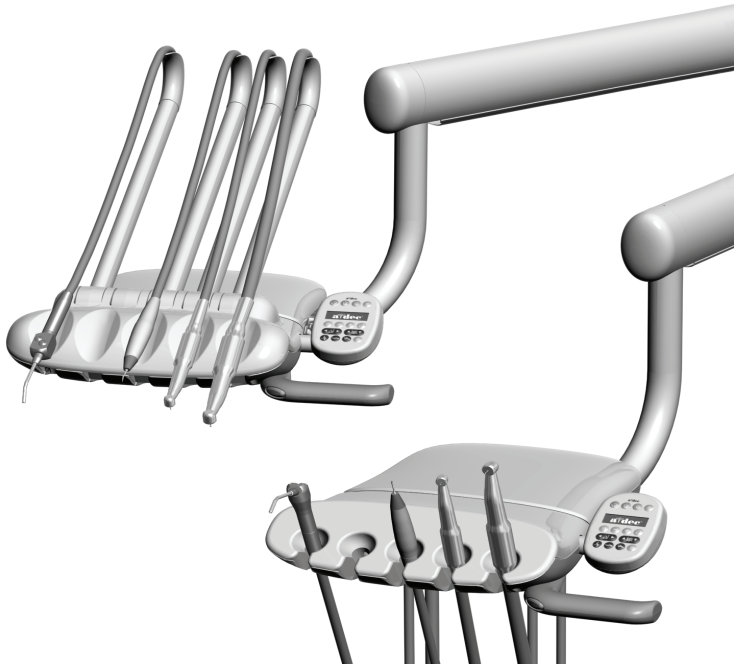


4

DELIVERY SYSTEMS

This section provides information related to service, maintenance, and adjustments of the A-dec 300 delivery systems, including the Traditional (model 334) and Continental (model 335) delivery systems. For information on service parts, see the *Genuine A-dec Service Parts Catalog*, or contact A-dec Customer Service.
(See "Get Support" on page 2.)

Contents



Product Overview

A-dec 300 delivery system options include the Traditional and Continental delivery systems. A-dec 300 delivery systems have been designed to mount on the A-dec 361 Support Center. The support center mounts to either an A-dec 311 chair base mount or one of the 2" post mount adaptors. (The 2" post mount allows A-dec 300 systems to be used on chairs other than the A-dec 311.)

When A-dec 300 modules are mounted to a non A-dec chair, the touchpad and footswitch will not operate the chair, but will control integrated ancillaries.

The A-dec 300 system provides a variety of delivery options for the doctor and the assistant. Delivery systems provide the air and water used to operate the handpieces, syringes and accessories, and electrical power and data control of other modules.

The A-dec 300 standard configuration for both model 334 and 335 has:

- Balanced flexarm with air brake
- Three handpiece control block positions (3-position block is standard)
- Control head with room to house integrated accessories
- Autoclavable syringe (option of warm water syringe)
- Optional touchpad, standard or deluxe

A-dec Tubing

A-dec products use four sizes of outside diameter tubing: 1/8", 1/4", 3/8", and 5/16". A-dec 500 and A-dec 300 products use the 5/16" outside diameter for all high flow air and water applications.

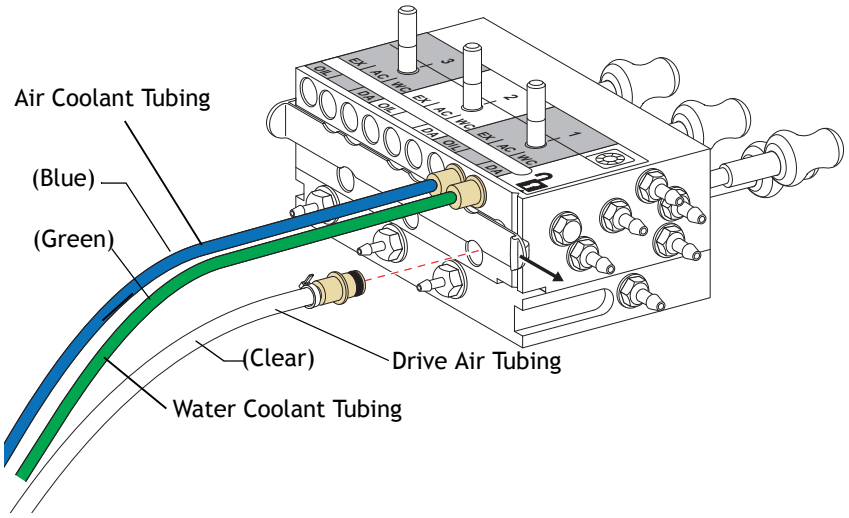
Handpiece Tubing

Starting with the A-dec 500 and now the A-dec 300, A-dec products use silicone handpiece tubing. The silicone handpiece tubing uses a European color code for air (blue) and water (green) that differs from the current U.S. standard.

Table 11. Silicone Handpiece Tubing Cross Reference Table

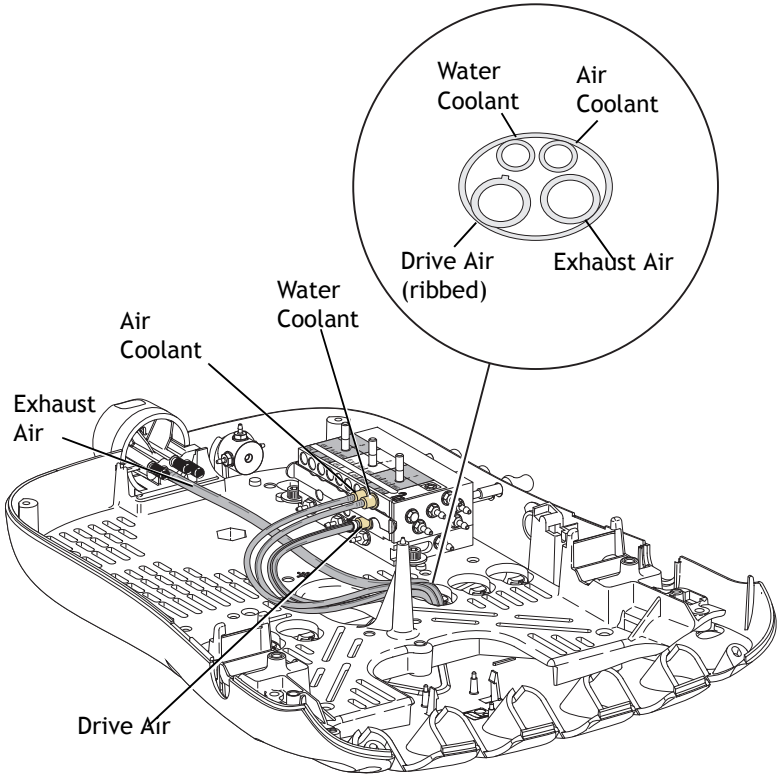
Color	Function
Clear	Drive air
Red	Exhaust
Blue	Air coolant
Green	Water coolant

Figure 47. Silicone Handpiece Tubing Connections



Vinyl handpiece tubing is also available. It is not color coded. Figure 48 shows vinyl tubing identification.

Figure 48. Vinyl Handpiece Tubing Identification



Antimicrobial AlphaSan and Color Tracer Markings

In 2005 A-dec began blending a type of tubing called antimicrobial AlphaSan (*Antimicrobial AlphaSan®*) for use in A-dec products. This type of tubing is used for water lines in A-dec systems. Tubing with the Antimicrobial AlphaSan tracer marking contains antimicrobial properties. Not all tubing used in A-dec products is antimicrobial A-dec tubing.

Figure 49. Tubing with Antimicrobial AlphaSan Tracer Marking

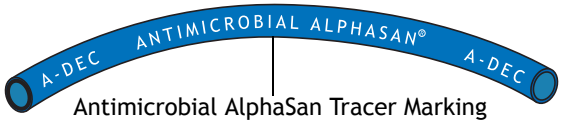


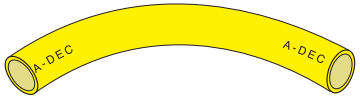
Figure 50. Tubing with Color Tracer Marking

Figure 12 lists functions, descriptions, and part numbers for A-dec Tubing. Identify tubing functions by the tubing color and tracer markings.

Table 12. A-dec Tubing Identification

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

Table 12. A-dec Tubing Identification (continued)

Tubing Function	Description	Tubing Color/Tracer	Part Number
Oral cavity water	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
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
Drive air	Drive air from foot control to delivery system - 5/16" OD, orange		036.115.01
Regulated air	Supplies regulated air to the flush toggle and syringe - 5/16" OD, yellow		036.114.01
Water supply	Water bottle and city water - 5/16" OD, blue		036.116.01

Quick Connect Fittings

A-dec 300 products use quick-connect fittings for some tubing connections. These fittings provide fast, secure, push-on installation of tubing. These quick-connects also make removal of tubing during servicing easy.

Connect Tubing

To connect tubing using the quick-connects:

1. Cut the tubing square, to ensure a secure connection.
2. Push the tubing into the connector until it can go no further.
3. Pull gently on the tubing to verify grip action.

Disconnect Tubing

1. Depressurize the unit.
2. Push and hold the release ring on the fitting connector.
3. Remove the tubing from the connector.

Figure 51. Make a Square Cut

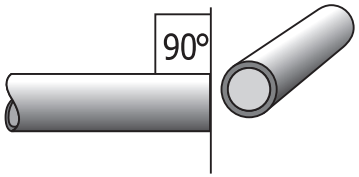


Figure 52. Push Tubing Into the Fitting

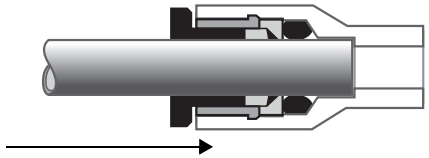
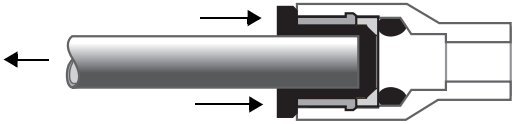


Figure 53. Remove Tubing From the Fitting Connector

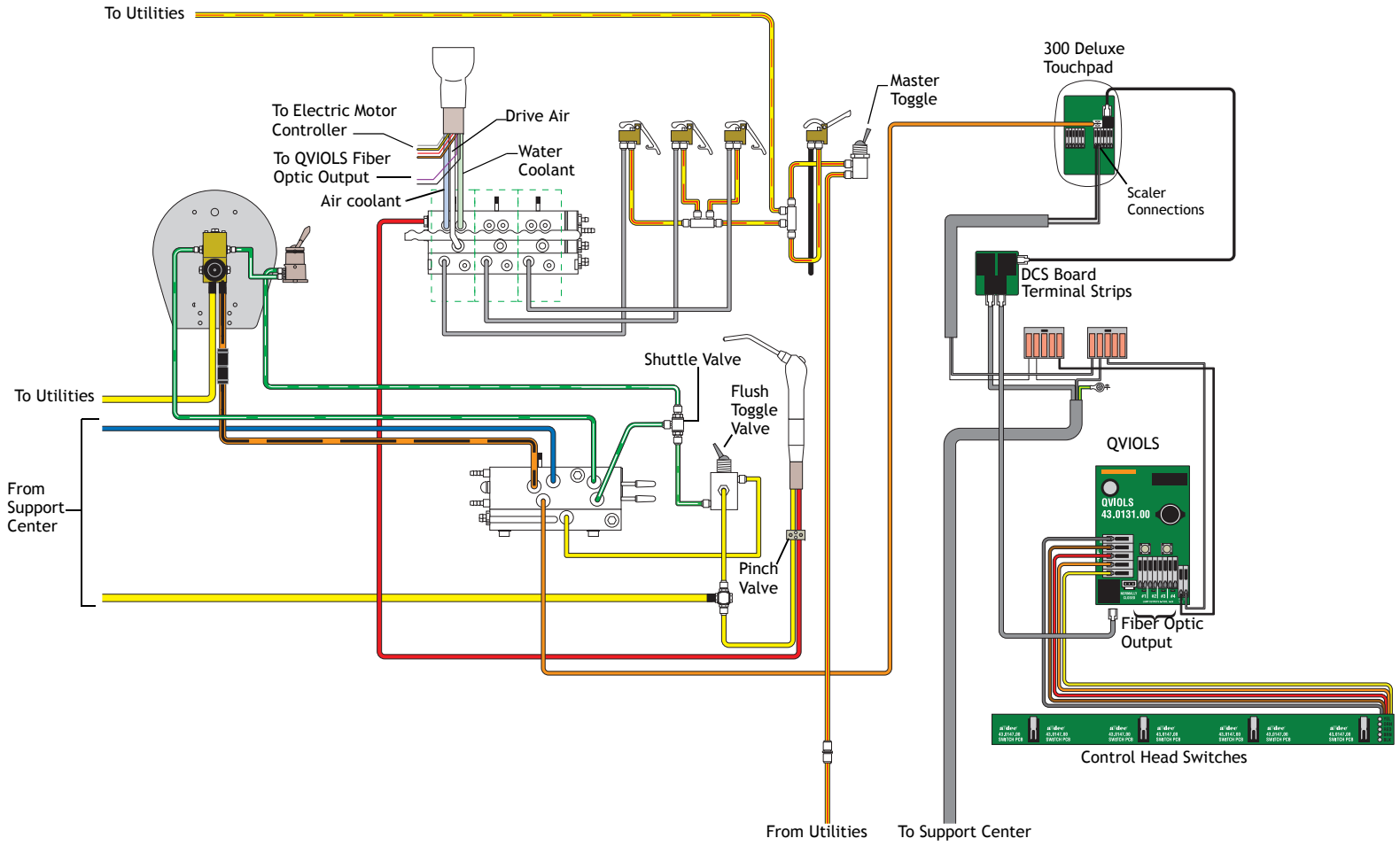


Flow Diagram

Flow Diagram — A-dec Models 334/335 Delivery Systems

This flow diagram details information for servicing and troubleshooting A-dec models 334 and 335 delivery systems. The diagram, located inside the support center, includes plumbing and wiring for the deluxe touchpad, QVIOLS, Electric Motor Controller, and control head switch assembly.

Figure 54. A-dec Models 334 and 335 Delivery Systems Flow Diagram



Adjustments/Maintenance

Covers

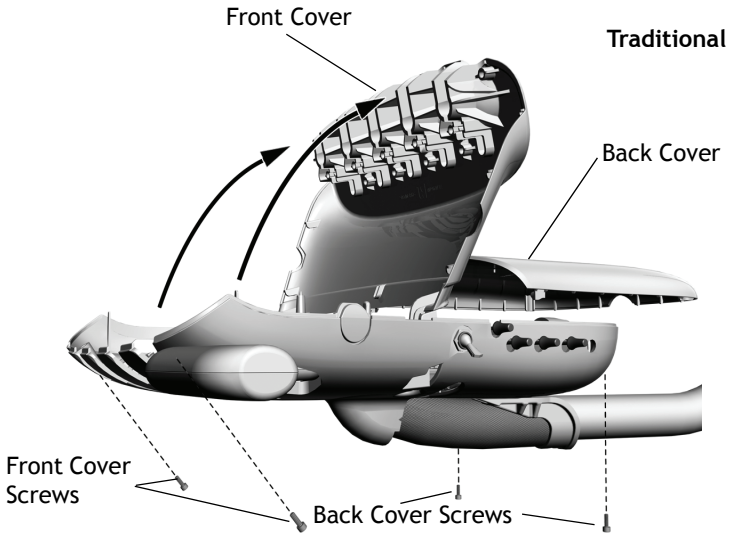
The delivery system covers are designed for easy access to internal components. Access to the Traditional and Continental delivery systems is the same.

To Remove Delivery System Covers

1. Use a 7/64" hex key to remove the screws at the back lower corners to remove the back cover.
2. Use a 7/64" hex key to undo the two screws holding the control head front cover and raise the cover up.

CAUTION Remove handpieces from the delivery system before opening the delivery system front cover.

Figure 55. Open the Covers



Continental Whip Assembly

Continental Whip Tension Adjustment

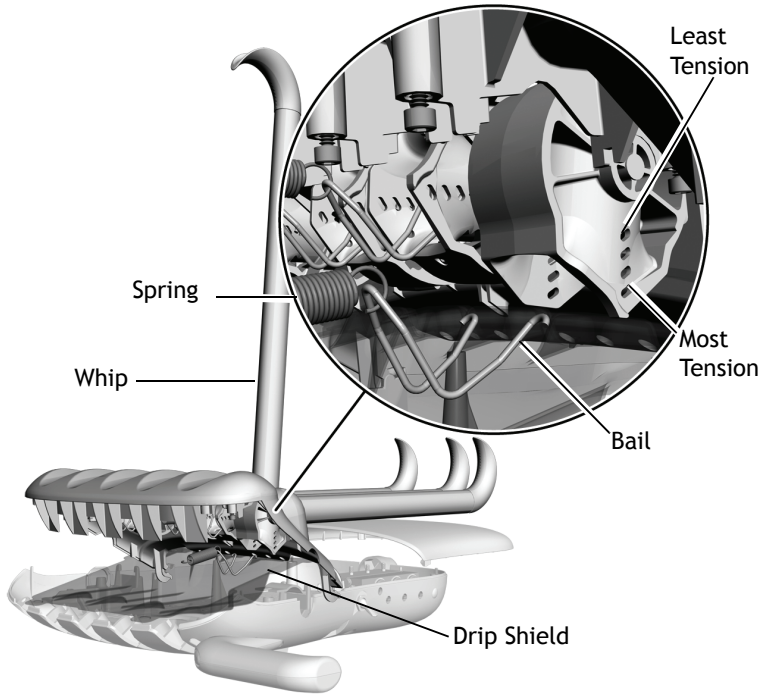
Adjust the whip return tension by placing the bail in one of four different locations (see Figure 56).

1. Remove the control head covers (see on Figure 55 on page 72).
2. Pull out the two tabs on the top of the drip shield out, then pull down the shield.
3. Remove the spring from the front cover and the bail, then pull the whip forward.
4. To remove the bail from the control head, squeeze its sides until its ends clear the holes in the frame holding the bail.
5. Insert the ends of the bail into the holes for the desired whip tension, then replace the spring. Repeat steps 4 through 7 for each whip to be adjusted.
6. Replace the drip shield and control head covers.

Continental Whip Replacement

1. Follow steps 1 through 2 above.
2. On each side of the blank where the whip is to be installed, use a 7/64" hex key to remove the two screws holding the whip retainers, then remove the blank.
3. Insert the whip with the setscrew facing toward the back of the control head.
4. Replace the whip retainers. The axel of the whip should fit cleanly into the curve of the whip retainer.
5. Hook one end of the spring to the bail and the other end to the front of the control head cover.
6. Insert the tubing for the handpiece to be used with this whip. (See ”Handpiece Tubing Replacement” on page 74.)

Figure 56. Whip Assembly with Adjustable Bail Position



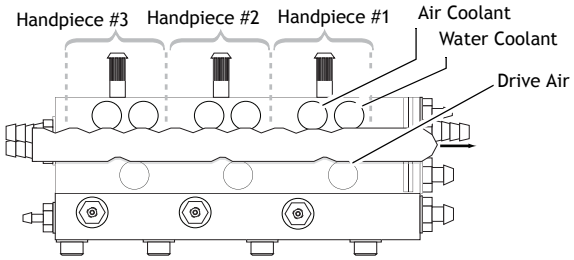
Handpiece Tubing Replacement

1. Remove the back cover from the delivery system.
2. Cut the cable ties of the tubing that you are replacing.
3. Remove the connector from the block.
4. Open the tubing retaining slide on the block; remove the old tubing.
5. Route the new tubing through the tip of the whip for the Continental, and up through the bottom for the Traditional.
6. Feed the tubing through the control head, to the control block.
7. Feed the tubing through the drip shield and place a cable tie to secure the tubing.
8. Connect the handpiece tubing to the control block for the selected handpiece position (see Figure 57).
   - Blue tubing to the air coolant port
   - Green tubing to the water coolant port
   - Clear tubing to the drive air port

NOTE Vinyl tubing is not color coded. For vinyl tubing identification, see Figure 58 on page 74.

9. Push the slide-lock on the control block to the closed position.
10. Replace the delivery system cover.

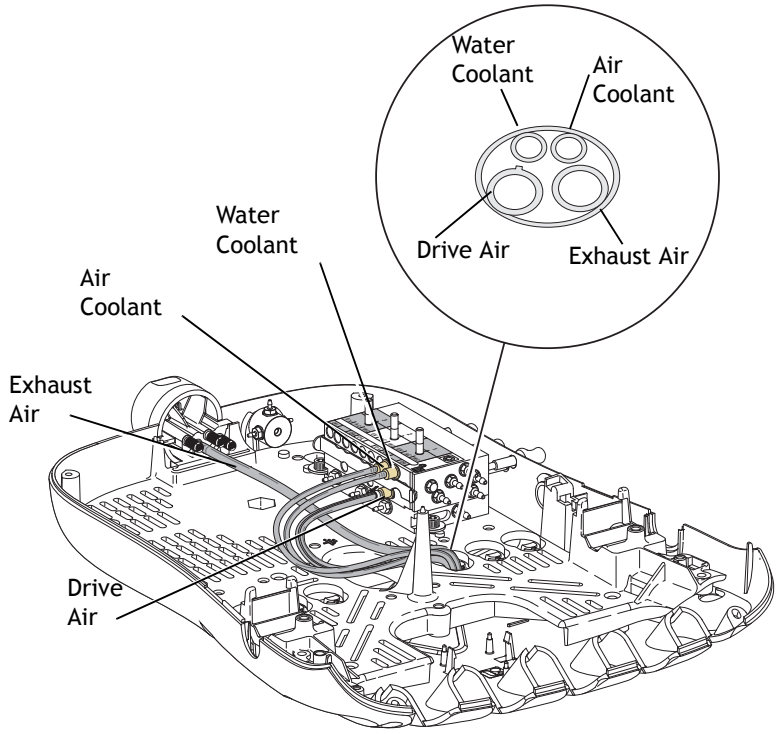
Figure 57. Handpiece Barb Connection



Adjust Tubing Length

1. Adjust the length of the tubing so it drapes with syringe tubing.
2. Insert the tubing in the tubing retainers.
3. For a Traditional control head, cable tie the tubing to the control head structural platform.
4. Install the cable tie to serve as a strain relief: For the Continental, secure the cable tie to the whip assembly; For the Traditional, secure the cable tie to the structural platform.

Figure 58. Vinyl Tubing Identification



Fiber-Optic Handpiece Bulb Replacement

Follow these steps to replace the bulb in your fiber-optic 5-hole silicone or vinyl tubing:

1. Disconnect handpiece and swivel quick-connector from the tubing.
2. Pull back the metal handpiece nut.
3. Slide back the metal portion of the handpiece terminal *(silicone tubing only)*.
4. Replace the bulb.
5. Reinsert the metal portion of the terminal into the plastic portion *(silicone tubing only)*.
6. Carefully slide handpiece nut back over terminal.

Figure 59. Bulb Replacement

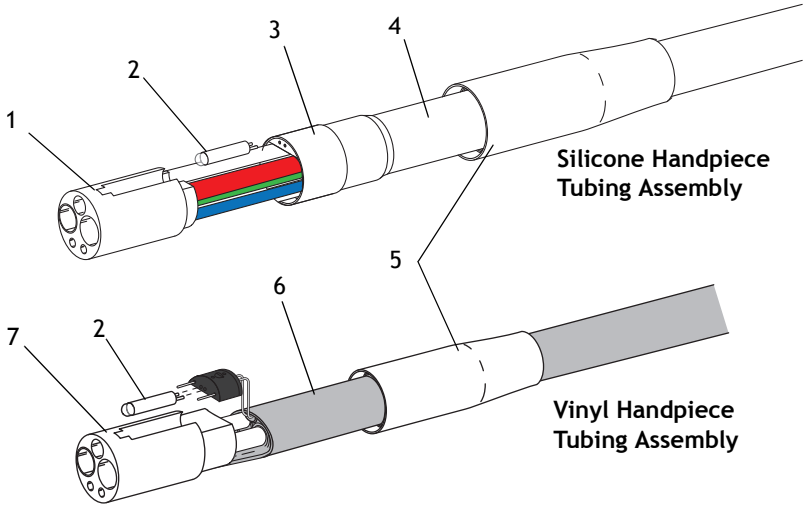


Table 13. Silicone and Vinyl Tubing Components

Item	Description
1	Plastic Handpiece Terminal
2	Bulb
3	Silicone Tubing Metal Portion of Handpiece Terminal
4	Silicone Tubing
5	Metal Handpiece Nut
6	Vinyl Tubing
7	Vinyl Tubing Metal Handpiece Terminal

Tray Holders Adjustments

Continental Tray Holder

Part Number: 77.0942.00 (Standard), 77.0943.00 (Large)

Continental tray holders are mounted in the center of the bottom of the control head.

Figure 60. Continental Tray Holder (Standard)

Traditional Tray Holder

Part Number: 77.0933.00 (Standard), 77.0932.00 (Large)

Traditional tray holders are mounted on the left or right side of the delivery system.

Figure 61. Traditional Tray Holder (Standard)

Tray Holder Rotation

If the tray holder rotation is too tight or too loose, adjust the tray rotation tension.

1. Insert a 1/8" hex key through the mounting bracket. If necessary, rotate the holder or arm until the key slides completely into the mounting bracket.
2. While holding the hex key in the bracket, rotate the tray to the right to increase the tension and to the left to decrease tension.

Figure 62. Adjust Tray Holder Rotation - Traditional Control Head

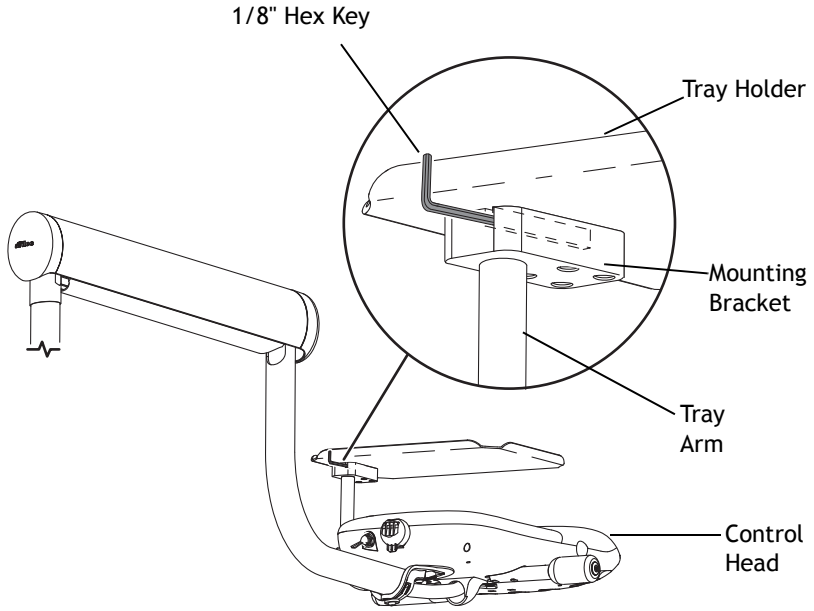
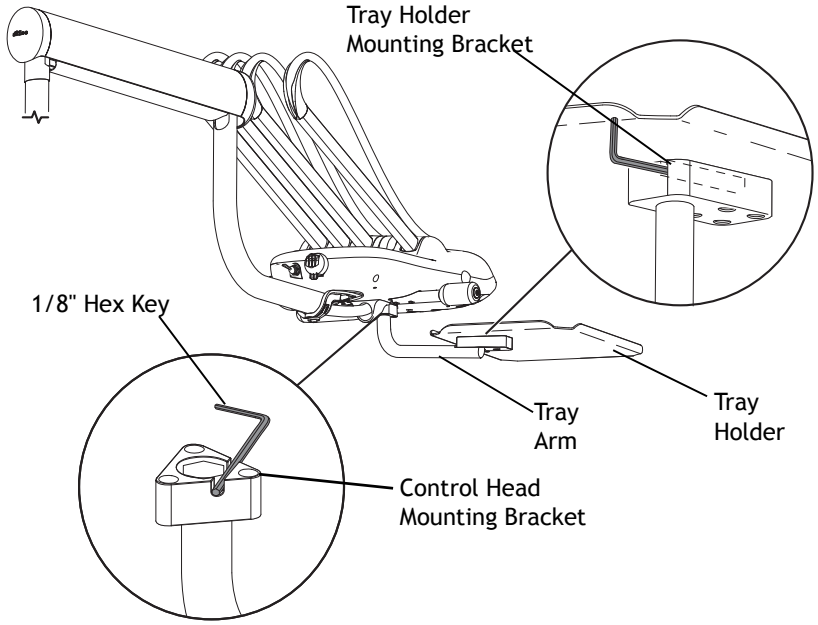


Figure 63. Adjust Tray Holder Rotation - Continental Control Head



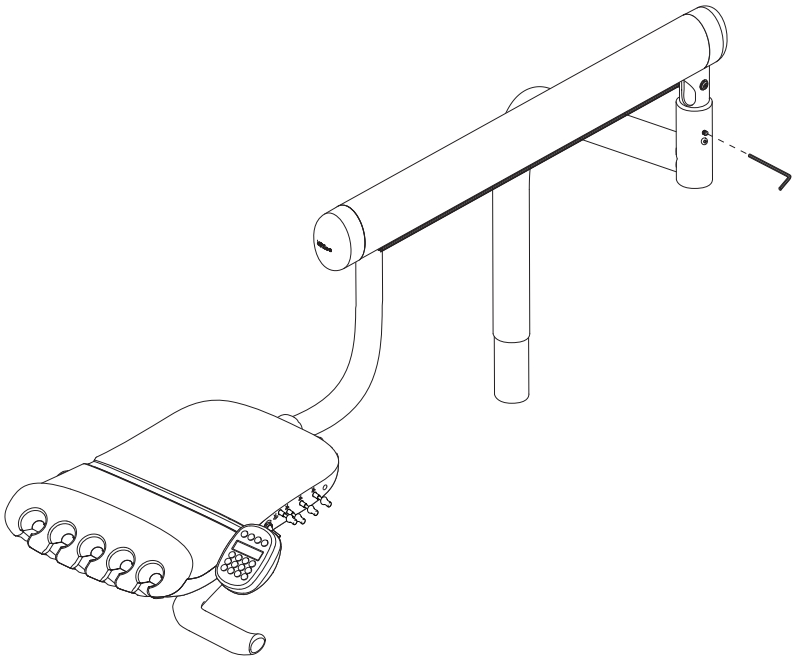
Flexarm Adjustments

Rotation Adjustment

If the control head drifts right or left, first check to see that the rigid arm is level. If it is level, use a 1/8" hex key to adjust the tension of the flexarm rotation (see Figure 64):

1. Load the control head for normal use.
2. Adjust the setscrew to the right to tighten.
3. Adjust the setscrew to the left to loosen.

Figure 64. Adjust Flexarm Rotation Tension

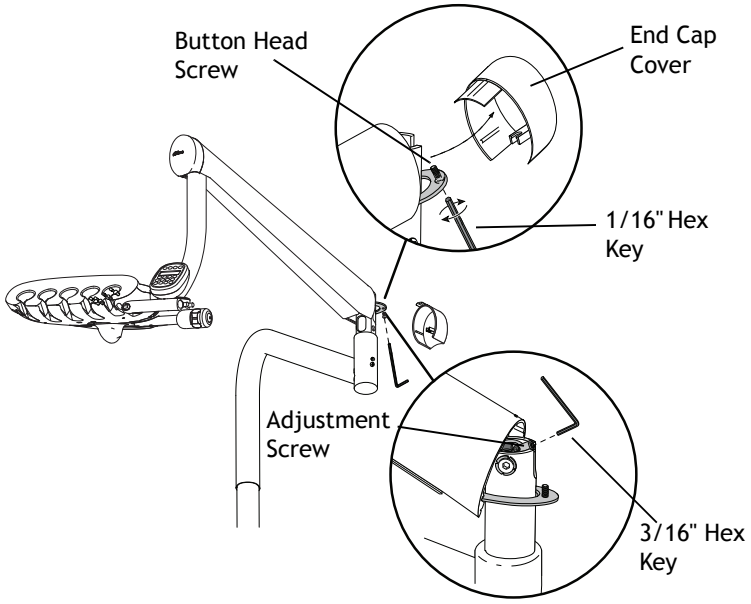


Spring-Assisted Flexarm

The control head may drift up or down. To adjust the spring-assisted flexarm:

1. To disengage the brake, turn off the system.
2. Load the control head for normal use, attaching handpieces and placing a tray on the tray holder.
3. Using a 1/8" hex key, loosen the button head screw to remove the flexarm end cap farthest from the control head (see Figure 65).
4. Raise the control head to the highest point for adjusting.
5. Use a 3/16" hex key to adjust the screw for the flexarm spring until the control head maintains position. If the control head drifts up, turn the adjustment screw left to loosen. If the control head drifts down, turn right to tighten.

Figure 65. Spring-Assisted Flexarm Adjustment



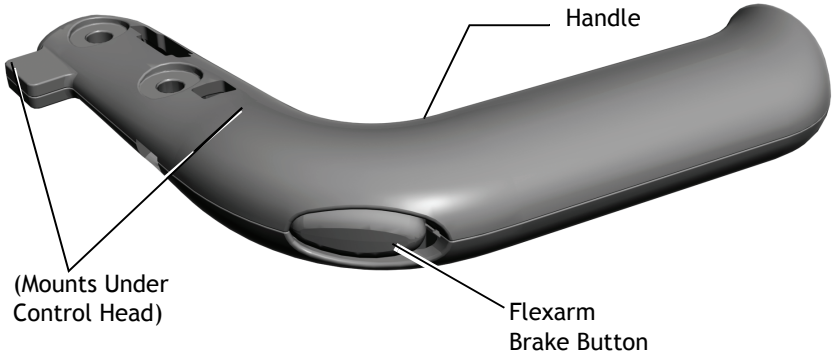
Brake Handle and Accessory Holder

Brake Handle

Part Number: 77.0104.01

The flexarm brake allows for varying amounts of weight (8 lb. maximum) to be placed on the control head while maintaining the position. The thumb-actuated brake restricts vertical movement but allows for side-to-side horizontal positioning of the control head.

Figure 66. Brake Handle

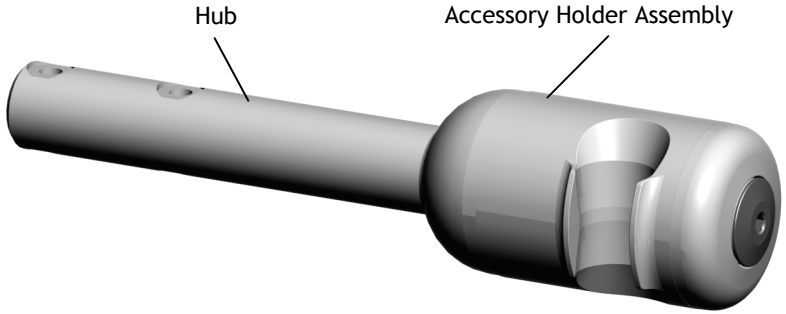


Accessory Holder

Part Number: 99.0681.00

The accessory holder is a location for additional accessories, such as a curing light. It can be mounted on the right or left side of the control head in the unused tray holder mount position.

Figure 67. Accessory Holder



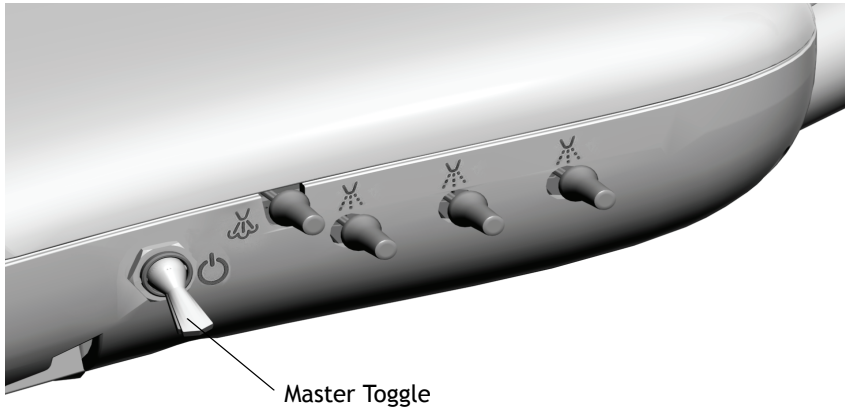
Toggles

Master Toggle

Part Number: 33.0173.00

The Master Toggle activates the air and water for the delivery system and other modules mounted to the chair. In some installations, the Master Toggle also activates power to all associated systems, including the chair. The Master Toggle is located on the right side of the control head (see Figure 68). To activate the system, flip the toggle up. Flip the toggle down to turn the system off. To disconnect the mains power, use the Mains On/Off button on the power supply.

Figure 68. Master Toggle



Alternate Master Toggle Locations

If you have a configuration without an A-dec 300 delivery system, the Master Toggle can be located on the cuspidor, support center, or remote floor box.

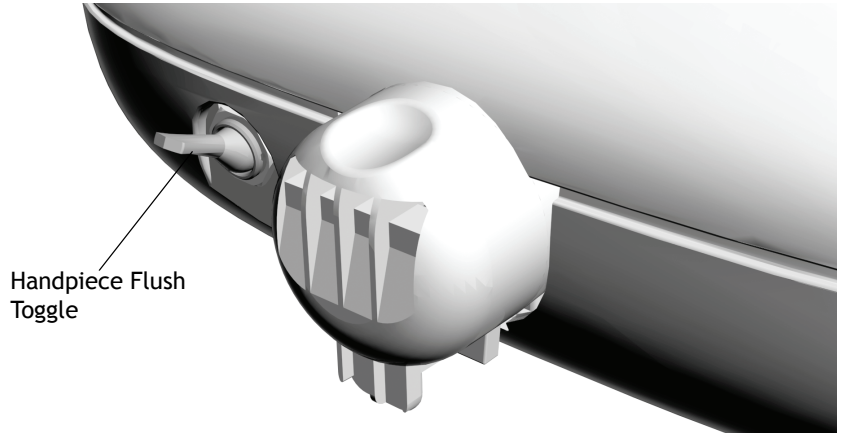
Flush Toggle

Part Number: 33.0168.00

The flush toggle uses holdback air to operate the handpiece flush function. When the momentary valve is on, the holdback air is exhausted and air signal is sent toward the water cartridge.

- If the handpiece is in the holder (holdback active), the flush is not activated.
- If the handpiece is out of the holder (holdback exhausted), the flush operates.

Figure 69. Flush Toggle



A-dec 300 Foot Control

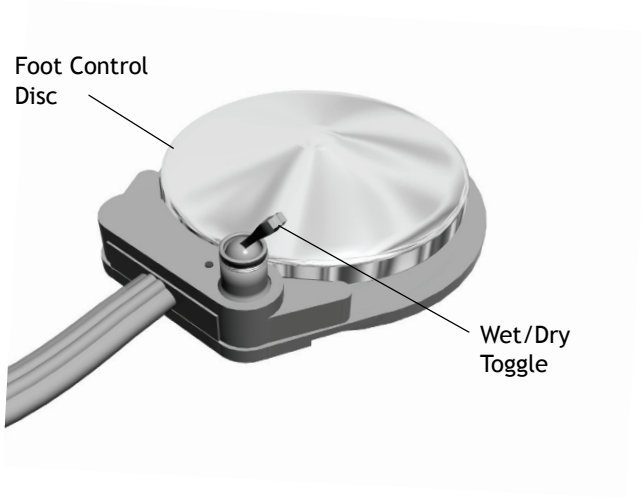
Part Number: 38.1821.00

The A-dec 300 foot control is a foot-operated regulator. Handpieces are operated by applying pressure on the foot control. As pressure is applied to the foot control, the black piston exhaust vent seals against the poppet, then pushes the poppet away from the inlet seat. When the poppet is unsealed, regulated air flows through the valve and out to the delivery system as drive air.

Regulated air is also sent through the relay block and to the delivery system as air coolant signal. When pressure is released from the foot control, the poppet reseals the inlet and pressure is exhausted from the outlet side of the valve and up through the piston.

- To turn the water coolant on, flip the wet/dry toggle toward the blue dot on the foot control.
- To turn the water coolant off, flip the toggle away from the blue dot.

Figure 70. Foot Control

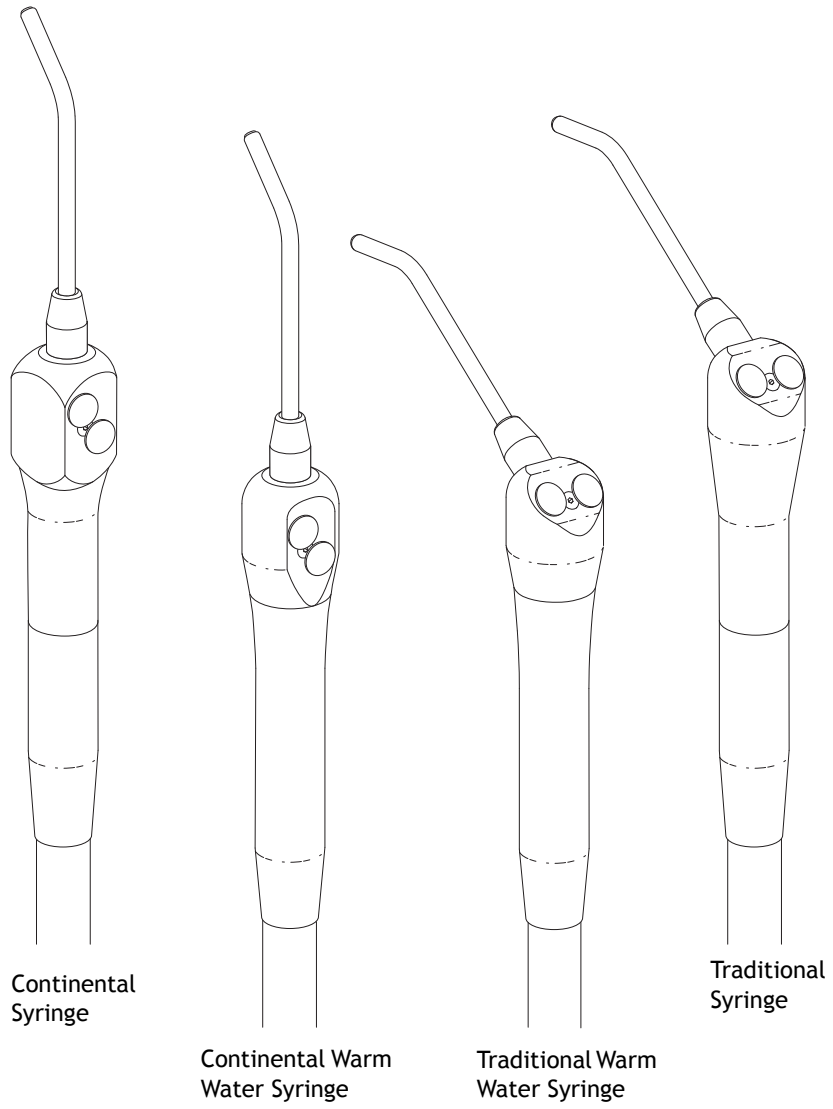


Standard Syringe

Autoclavable syringes have serviceable air and water button valves. The tip retaining nuts have replaceable O-rings. See Warm Water Syringe, page 83 for illustrated parts breakdown for the warm water syringes. See the *Illustrated Parts Breakdown*, p/n 85.0851.00 for other syringe parts.

WARNING Turn off and bleed the system of air and water before servicing the syringe. The use of disposable syringe tips in A-dec syringe tip nuts is not recommended.

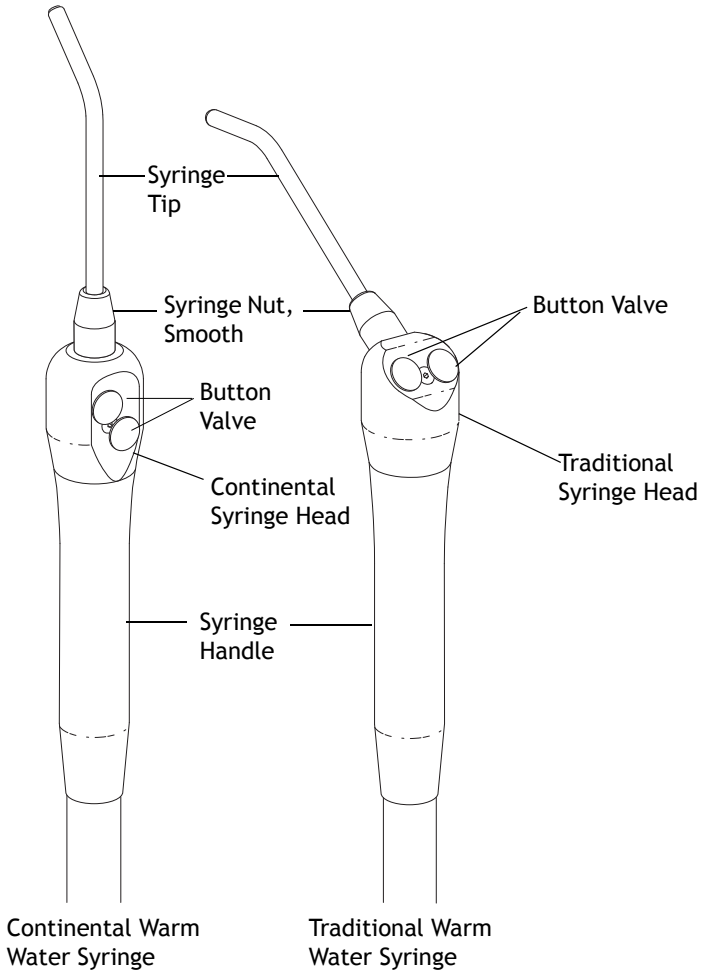
Figure 71. Autoclavable Syringes



Warm Water Syringe

The Continental and Traditional warm water syringe share many of the same components. The syringe head is the only component specific to each model of syringe (see Figure 72).

Figure 72. Warm Water Syringes



Warm Water Syringe Specifications

There are five positions ranging from minimum to maximum for temperature variations (see Table 14) .

Table 14. Warm Water Syringe Temperature Selections

Jumper Selection	Estimated Temperature at Patient's Cheek
5 (maximum)	100.4°F (38°C)
4	96.8°F (36°C)
3	93.2°F (34°C)
2	89°F (32°C)
1 (minimum)	86.0°F (30°C)
No jumper	82.4°F (28°C)

NOTE If two jumpers are installed, the micro controller averages the two selections together. If three or more are installed, only the lowest two jumpers are averaged.

Syringe Temperature Selection Input

The warm water syringe temperature selection input allows the technician to select the estimated patient cheek temperature between a minimum temperature of 82.4°F (28°C) and a maximum temperature of 100.4°F (38°C).

Figure 73. Warm Water Syringe Circuit Board

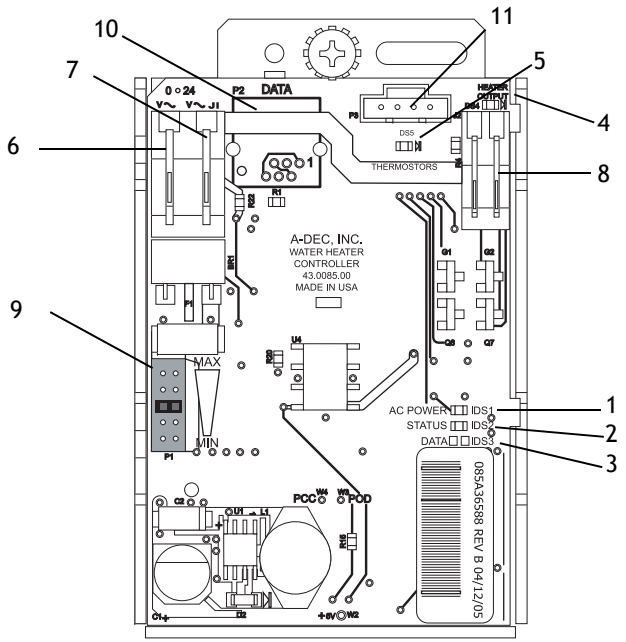


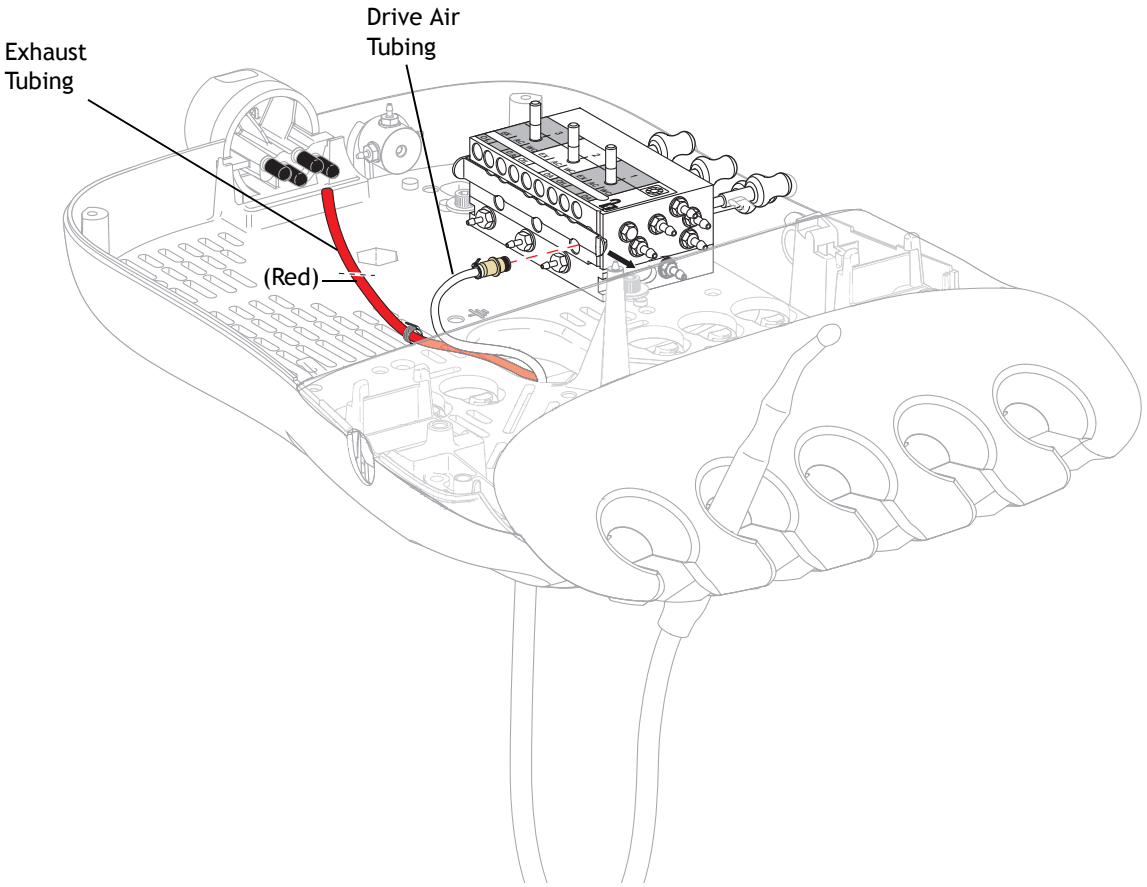
Table 15. Warm Water Syringe Circuit Board Table

Item	Description
1	DS1—AC power LED
2	DS2—Status LED
3	DS3—Data LED - NOT USED (reserved for future use)
4	DS4—Heater output LED
5	DS5—Thermistors (temperature sensors) LED
6	J1—0 VAC terminal strip
7	J1—24VAC terminal strip
8	J2—Heater output terminal strip
9	P1—Temperature selection header
10	P2—Data port (DCS) - NOT USED - (reserved for future use)
11	P3—Thermistors (temperature sensors) connector

Tooth Dryer

The A-dec warm air tooth dryer needs a dedicated four-hole handpiece tubing and a minimum of 60 psi compressed air to operate properly. The tooth dryer is only plumbed to the drive air on the control block. Remove the barb from the exhaust tubing (red) and cut the tubing at an angle to reduce noise. Anchor, but do not pinch, the exhaust tubing to the structural platform using a cable tie. Because there are no moving parts in the tooth dryer, the only maintenance required is cleaning.

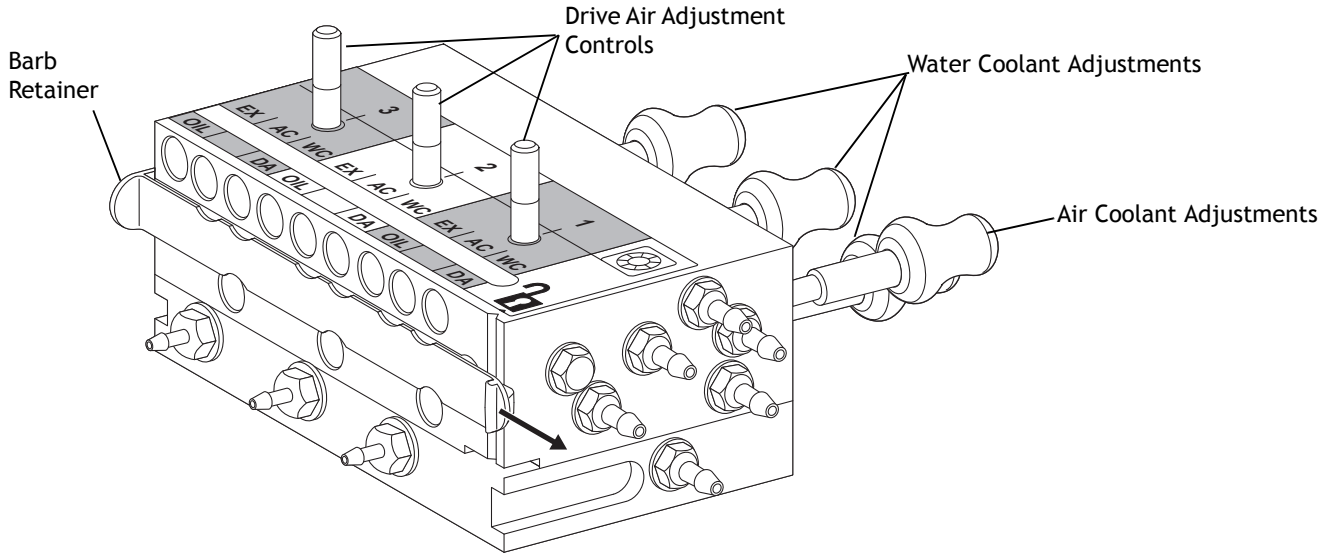
Figure 74. Connecting the Tooth Dryer to the Control Block Drive Air



Control Block

A-dec 300 delivery systems use the control block assembly for adjusting handpiece air and water coolant flow. See page 87 and page 88 for adjustment procedures.

Figure 75. Control Block



TIP To remove the barb retainer, be sure to slide it off. The retainer does not require prying.

Handpiece Control Adjustments

A-dec 300 delivery systems supply and regulate air and water to operate dental handpieces, syringes and ancillary devices. Adjustments can be made to the delivery system water flow, air flow, and drive air pressure.

Adjust Water Coolant Flow

The A-dec 300 system includes water coolant flow controller for each handpiece.

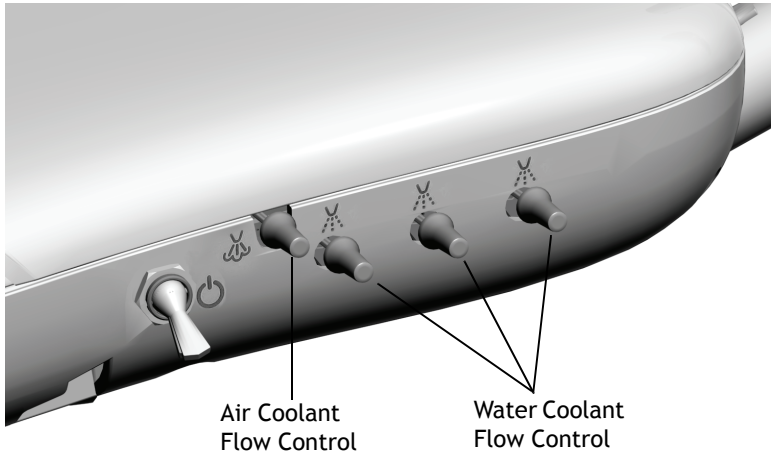
1. Clamp the drive air and air coolant on the handpiece tubing near the block.
2. Lift a handpiece from the holder.
3. Flip the wet/dry toggle toward the blue dot on the foot control.
4. Press the foot control to activate the handpiece.
5. Use the adjustment keys on the side of the control head to adjust the water coolant flow (normally 1 drop per 2 seconds domestically and 1 drop per 1 second internationally):
   - Turn the control to the right to decrease flow.
   - Turn the control to the left to increase flow.
6. Unclamp the drive air and air coolant on the handpiece tubing.

Adjust Air Coolant Flow

The air coolant flow control adjusts the air coolant flow to all handpieces.

1. Lift a handpiece from the holder.
2. Verify the wet/dry toggle points toward the blue dot on the foot control.
3. Press the foot control to activate the handpiece.
4. Adjust the air coolant flow until the spray is a fine mist.
   - Turn the control to the right to decrease flow.
   - Turn the control to the left to increase flow.

Figure 76. Handpiece Adjustment Keys



CAUTION Do not continue turning the air coolant adjustment key left after the air coolant stops increasing. The stem may come out completely.

CAUTION Water coolant flow controls are not designed to completely stop water flow. To permanently have no water flow at that position, install a dry cartridge. To temporarily have no water flow at that position, flip the wet /dry toggle on the foot control away from the blue dot.

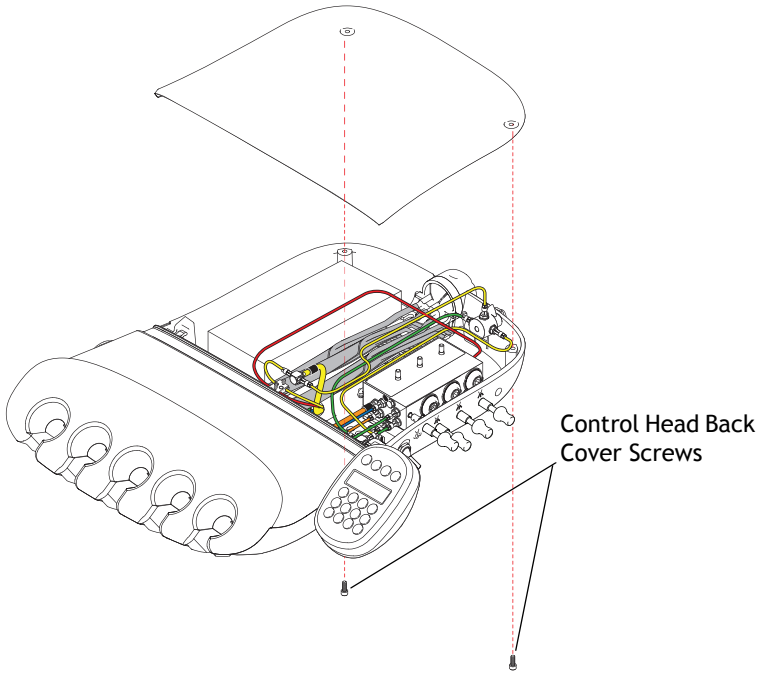
Drive Air Pressure

The optional deluxe touchpad allows you to check drive air pressure on the screen.

NOTE A handpiece pressure gauge can be attached to the handpiece tubing for exact drive air measurement, or if you do not have a deluxe touchpad. One bar equals 14.5 psi.

To use the touchpad, press and hold the plus (+) and minus (–) buttons at the same time. The drive air pressure will display on the screen. To make adjustments, use a 7/64" hex key to remove the control head back cover (see Figure 77) and complete the steps.

Figure 77. Remove Control Head Back Cover

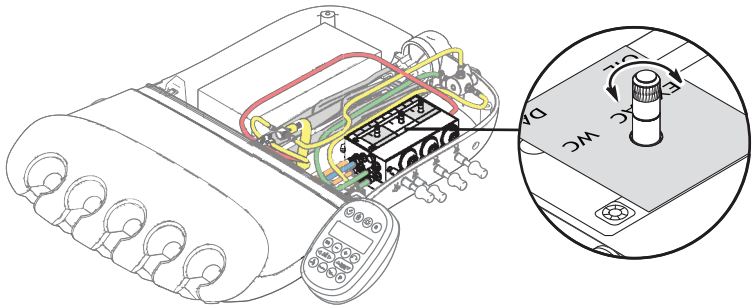


To adjust drive air pressure, complete these steps for each handpiece:

1. Lift the handpiece from the holder.
2. Locate the drive air pressure controls inside the control head (see Figure 78).
3. Press the foot control.
4. With the handpiece running, watch the deluxe touchpad readout or handpiece pressure gauge and adjust the handpiece 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 drive air pressure specification. Refer to your handpiece documentation for the drive air pressure specifications.

Figure 78. Adjusting Drive Air Pressure



Control Head Switch Board and Wire Assembly

Electrical switches, located in the control head, activate the optional Quad Voltage Intraoral Light Source (QVIOLS) and/or deluxe touchpad when a handpiece is removed.

The electrical switch assemblies for the active handpiece holder positions contain four switches. The wires from the switch assemblies should always be connected to the terminals (J2 and J3) of the QVIOLS (see Figure 79 and Figure 80). If a QVIOLS is not present, see page 90.

NOTE Only one switch connected to the QVIOLS can be activated at any time. If more than one switch is activated, the Status LED and DS2 on the QVIOLS will blink continuously and the fiber optic is Off. See page page 92 for QVIOLS board details.

Figure 79. Terminals on the QVIOLS

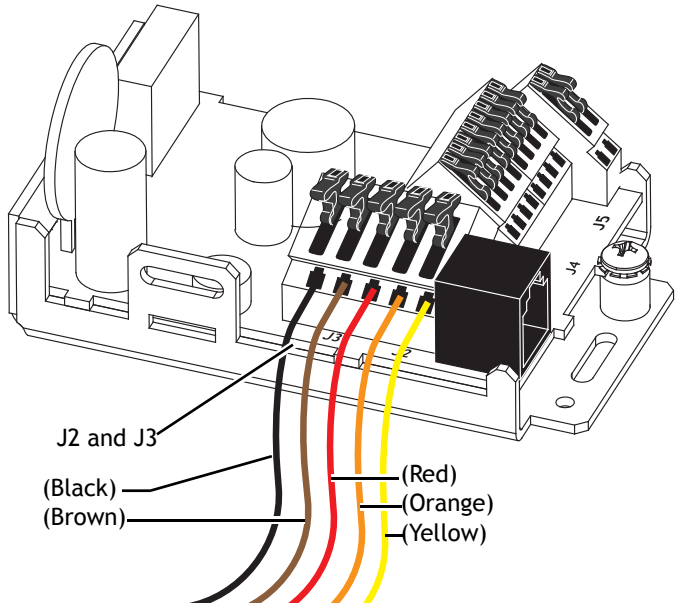
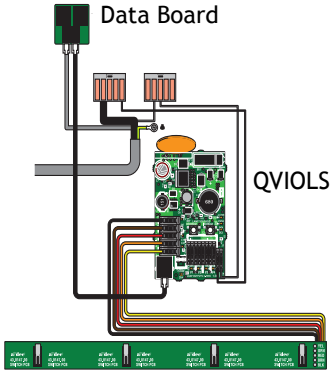
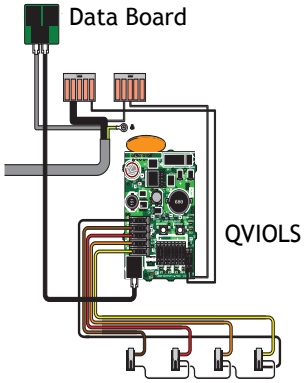


Figure 80. Switch Wiring into QVIOLS



Traditional Control Head Assembly

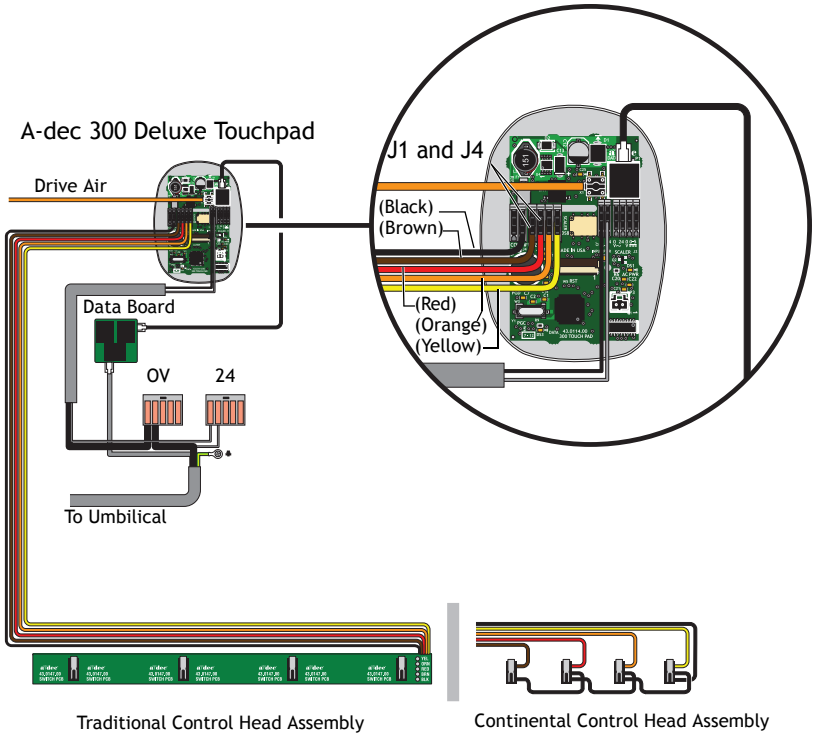


Continental Control Head Assembly

Switch Wire Color	Terminal Label
Black	Common (COM)
Brown	#1
Red	#2
Orange	#3
Yellow	#4

If a QVIOLS is not present, the wires are connected to the terminals J1 and J4, of the deluxe touchpad (see Figure 81).

Figure 81. Switch Wiring into Deluxe Touchpad



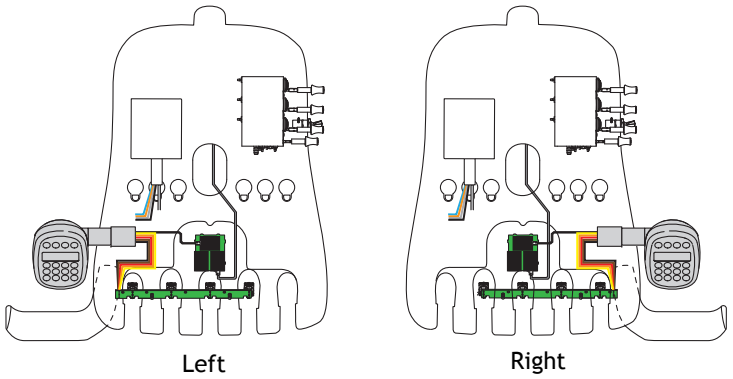
Switch Wire Color	Terminal Label
Black	Common (COM)
Brown	#1
Red	#2
Orange	#3
Yellow	#4

If neither the QVIOLS nor the deluxe touchpad is present, the switch assembly wires can be left unconnected within the control head.

NOTE Only one turbine, scaler, or electric handpiece can be removed from their respective holder at a time. If more than one handpiece configured as turbine, scaler, or electric is removed at one time, a message appears on the deluxe touchpad screen.

The control head switch assembly can be wired for a left- or right-handed user (see Figure 82).

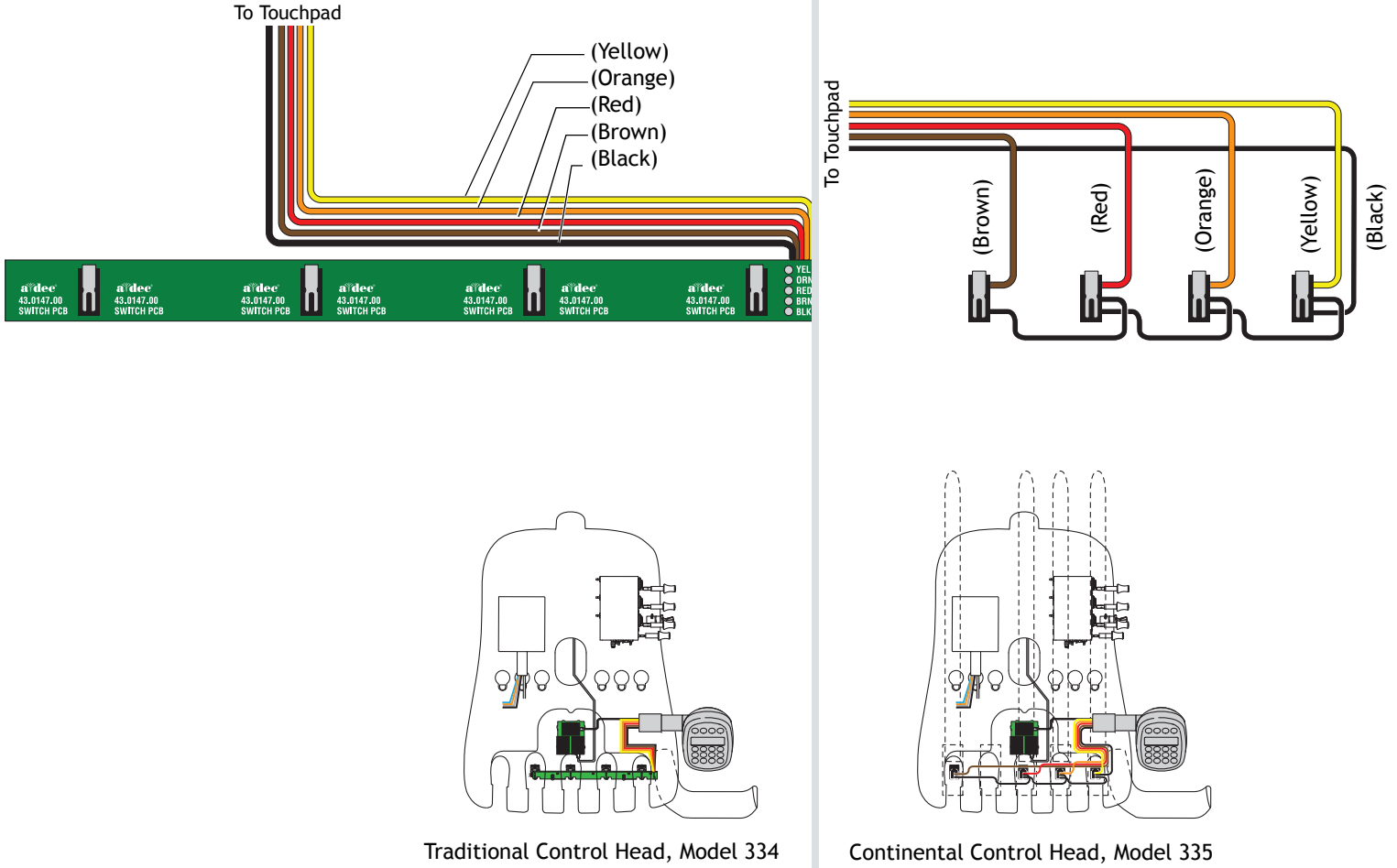
Figure 82. Left- and Right-Handed Deluxe Touchpad Configurations



On a right-handed configured delivery system, the switches skip position 0 and are mounted on 1,2, 3, and 4. On a left-handed configured delivery system, the switches are mounted on the handpiece positions 0,1,2,3 with 4 being blank.

The style of the control head switch assembly is dependent upon the style of control head. For traditional control heads, the holder activation switch circuit board is used. For Continental control heads, the holder activation switch wire assembly is used (see Figure 83).

Figure 83. Control Head with Switch Assemblies



Traditional Control Head, Model 334

Continental Control Head, Model 335

Quad Voltage Intraoral Light Source (QVIOLS)

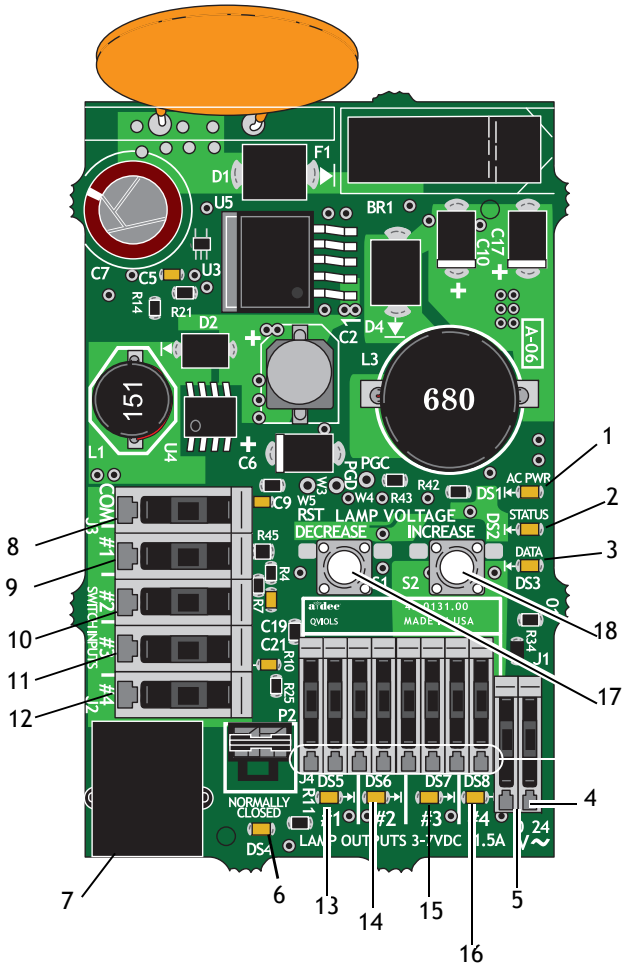
Part Number: 90.1168.00

The quad voltage intraoral light source (QVIOLS) provides four independent fiber optic voltage outputs. Each output is adjustable from 3VDC to 7VDC at 1.5 Amps. Only one output can be on at a time. Activating an input on the QVIOLS turns on its respective output.

Item	Description
1	DS1 AC Power LED
2	DS2 Status LED
3	DS3 Data LED
4	J1 - 24VAC Input
5	J1 - 0VAC Input
6	P2 - DS4 - normally closed jumper
7	P1 Data Port
8	J3 Switch input Common
9	J3 Switch Input #1
10	J2 Switch Input #2
11	J2 Switch Input #3
12	J2 Switch Input #4
13	J4 Light Source Output #1
14	J4 Light Source Output #2
15	J5 Light Source Output #3
16	J5 Light Source Output #4
17	S1 Decrease Lamp Output
18	S2 Increase Lamp Output

NOTE On the A-dec 300 product, a jumper should always be located within P2, and DS4 should be On.

Figure 84. QVIOLS Circuit Board



Intraoral Light Source Adjustments

The intraoral light source (IOLS) voltage adjustment on the A-dec 300 doctor's delivery system is located on the QVIOLS circuit board. Each output voltage is preset to 3.2VDC at the lamp terminals when the lamp is on.

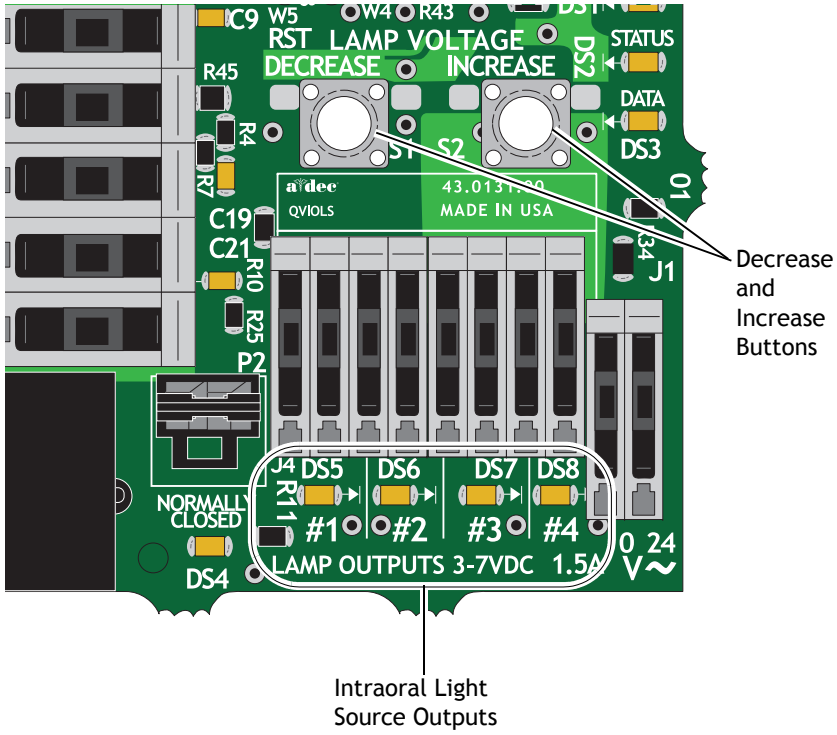
WARNING The Length and Voltage Table, page 94, is only valid for devices rated for 3.5VDC and 0.75 Amp 26AWG wires. For devices drawing a different amount of current, requiring a different voltage, or with a different wire gauge, please contact A-dec Customer Service. (See "Get Support" on page 2.)

1. Use a 7/64" hex key to remove the control head back cover (see Figure 77 on page 88).
2. Set the voltmeter to DC voltage and place its probes on the IOLS output terminals for the handpiece you are testing.
3. Lift the handpiece from its holder.

NOTE When the intraoral light source output is On, its respective LED is On. for example, LED DS6 is On when handpiece #2's intraoral light source is activated.

4. Use the buttons behind the terminal to adjust the voltage according to the Intraoral Light Source Length and Voltage, page 94.

Figure 85. Intraoral Light Source Voltage



Intraoral Light Source Length and Voltage

Table 16. Length and Voltage Table

Length and Voltage					
Wire length in A-dec tubing		Voltage at terminal strip A-dec/W&H, Bien Air or other bulbs rated at 3.5V	Wire length in A-dec tubing		Voltage at terminal strip A-dec/W&H, Bien Air or other bulbs rated at 3.5V
(in)	(cm)	VDC +/- .02	(in)	(cm)	VDC +/- .02
48	122	3.40	108	274	3.69
54	137	3.43	114	290	3.72
60	152	3.46	120	305	3.75
66	168	3.49	126	320	3.78
72	183	3.52	132	335	3.81
78	198	3.55	138	351	3.84
84	213	3.58	144	366	3.87
90	229	3.61	150	381	3.90
96	244	3.64	156	396	3.93
102	259	3.67			

NOTE Table 16 pertains to fiber-optics powered with 26AWG wires, 750mA loads, and a desired bulb voltage of 3.2VDC. For fiber-optics powered with 26AWG wires and other ratings, use the equation:

T = (Z x 0.006 x Y) + X where:

T: Terminal strip voltage(VDC)
X: Desired voltage at lamp (VDC)
Y: Rated lamp/load current (in Amps)
Z: Length of 26AWG wire (inches) from terminal trip to lamp

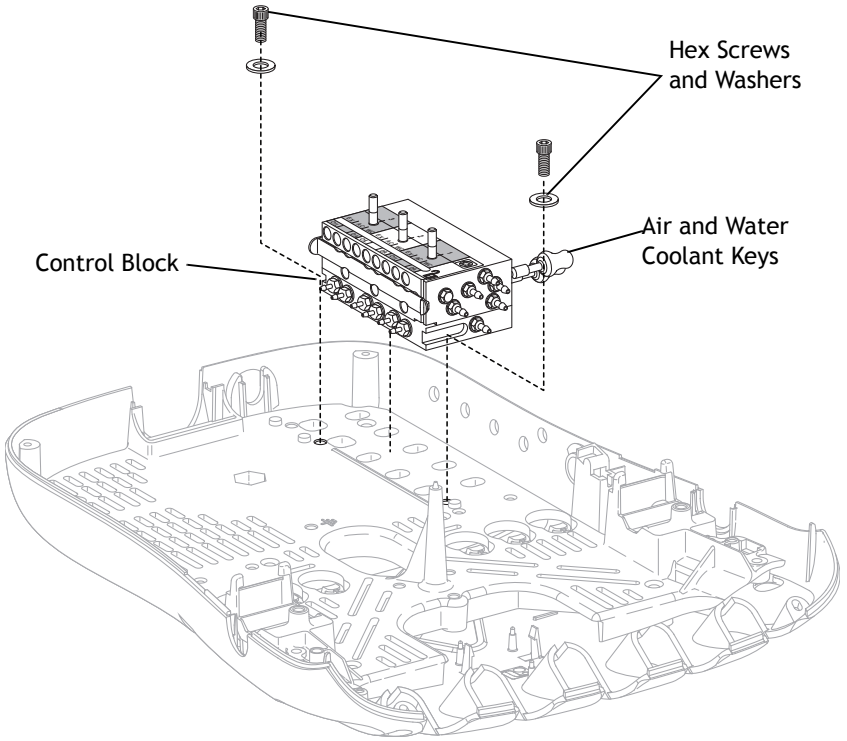
Service/Usage Information

The control block might need to be removed to service the control head. For example, you many need to remove the control block to change a diaphragm, to change a cartridge, or to service o-rings.

Remove the Control Block

1. Remove the back cover.
2. Remove the air and water coolant keys.
3. Loosen and remove the two hex screws and washers that secure the control block to the control center frame.
4. Remove the two screws at the back lower corners.
5. Lift the control block up from the base of the control center.

Figure 86. Remove Control Block on Delivery Systems



Illustrated Parts Breakdown — Delivery Systems

This section contains illustrated parts breakdowns specific to the Traditional (model 334) and Continental (model 335) chair mounted delivery systems.

Part Identification

In this section, you will find serviceable components tables that correspond to the illustrations. The tables identify all parts and kits, including those that are not for sale. Parts that are not for sale are indicated with the symbol shown below:

† — Indicates that the individual part is not available for sale. These parts are typically part of a kit and/or larger assembly that is for sale.

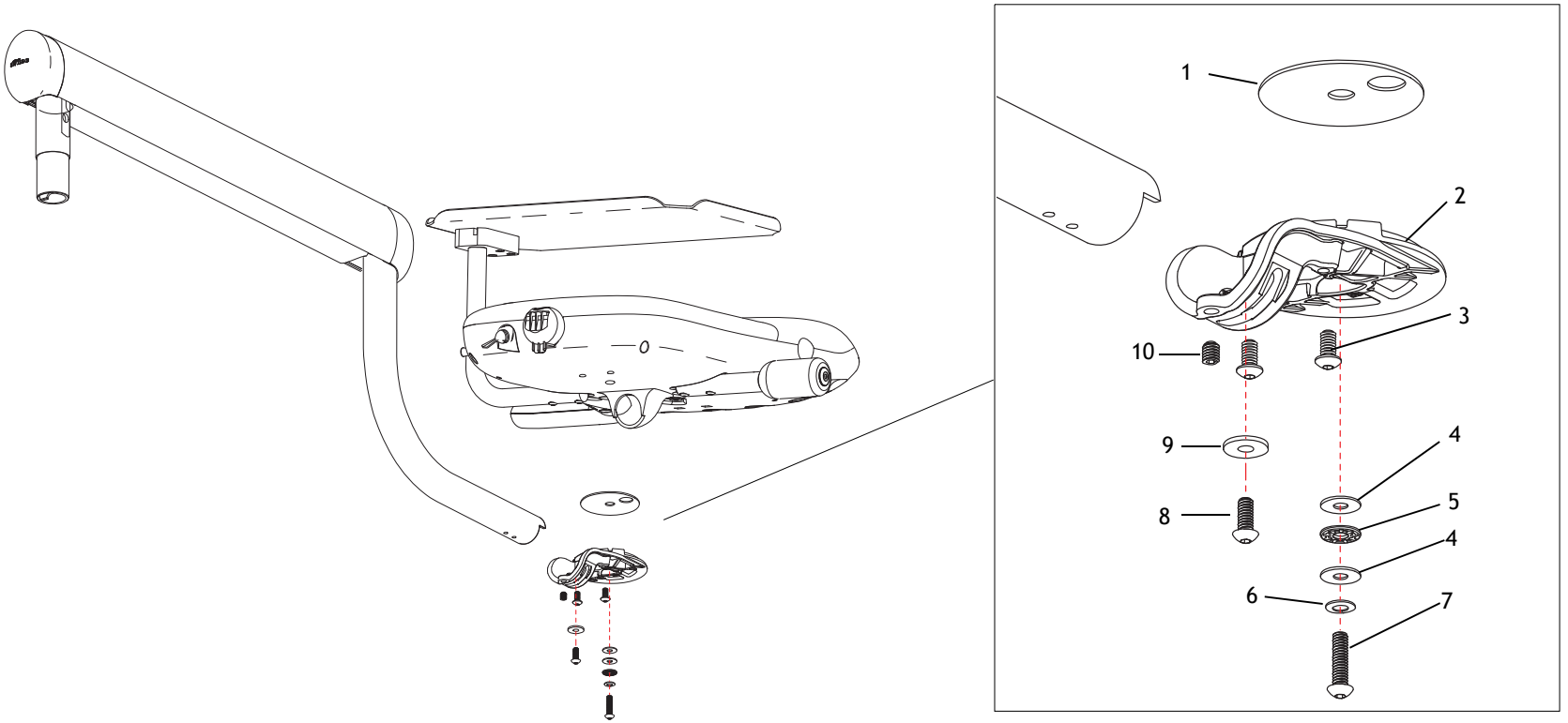
Contents

Control Head Flexarm

Item	Part Number	Description	Item	Part Number	Description
1	77.0126.00	Washer, rigid link	6	004.162.00	Washer, spring, stainless steel, .25 ID
2	77.0959.01†	Pivot, control head	7	005.109.00	Button head socket screw, 1/4-20 x 1"
3	001.130.01	Button head screw, 1/4-20 x 1/2"	8	005.002.02	Button head socket screw, 1/4-20 x 5/8"
4	016.053.00	Washer, thrust, .250 ID	9	004.170.00	Washer, nylon, flat .260 ID
5	016.054.00	Bearing, thrust needle, .250 ID	10	007.012.00	Socket set screw, 5/16-18 x 3/8", flat

† Indicates that the individual part is not available for sale

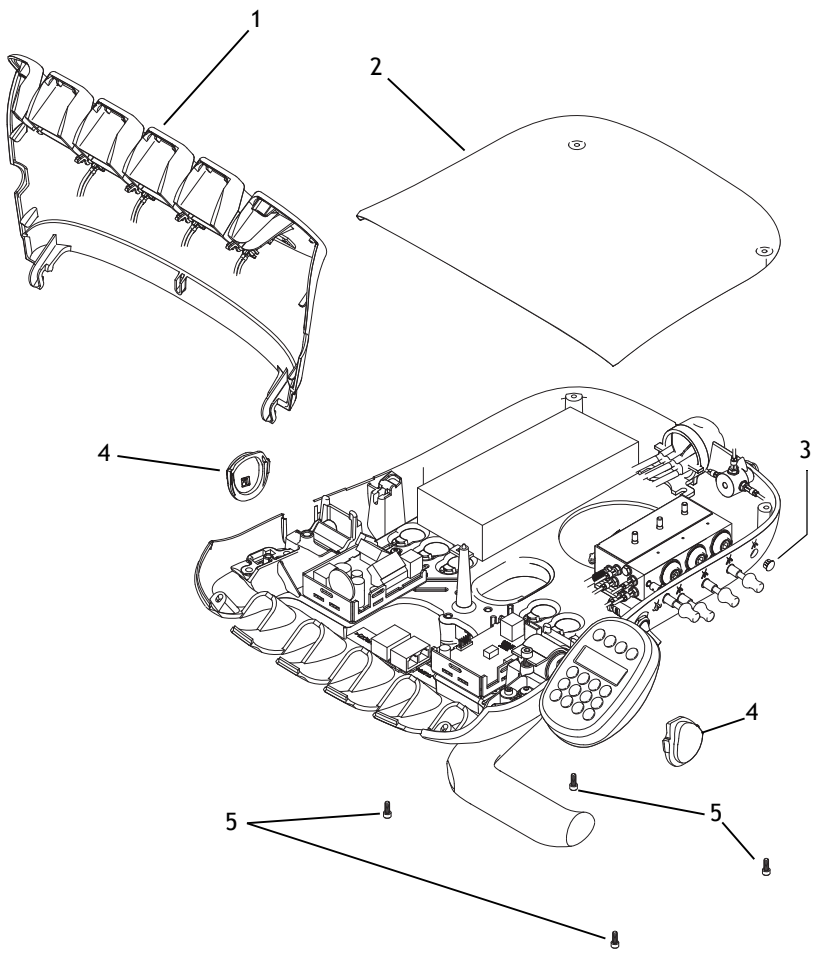
Figure 87. Control Head Flexarm



Traditional Delivery System Control Head (Model 334)

Item	Part Number	Description
1	77.0796.00	Cover, top, front
2	77.0795.00	Cover, top, rear
3	018.121.00	Hole Plug
4	77.0845.00	Hole plug
5	001.033.00	Screw, socket head, 6 - 32 x 3/8", stainless steel

Figure 88. Traditional Delivery System Control Head

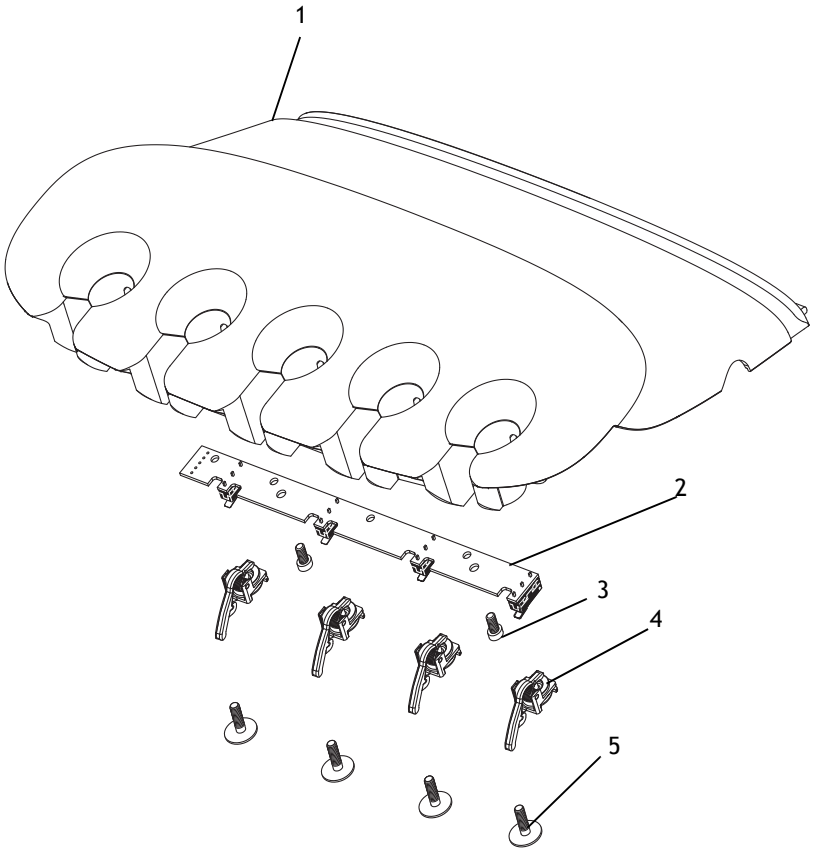


Traditional Control Head Cover (Model 334)

Item	Part Number	Description
1	77.0796.00	Traditional front cover
2	43.0147.00†	Electric switch assembly (replace with 90.1174.00)
3	001.033.00	Screw, socket Head, 6-32 x 3/8" stainless steel
4	99.0654.03	Valve assembly, actuator with tubing
5	005.161.00	Screw, socket head, 6-32 x 5/8" with washer, stainless steel

† Indicates that the individual part is not available for sale

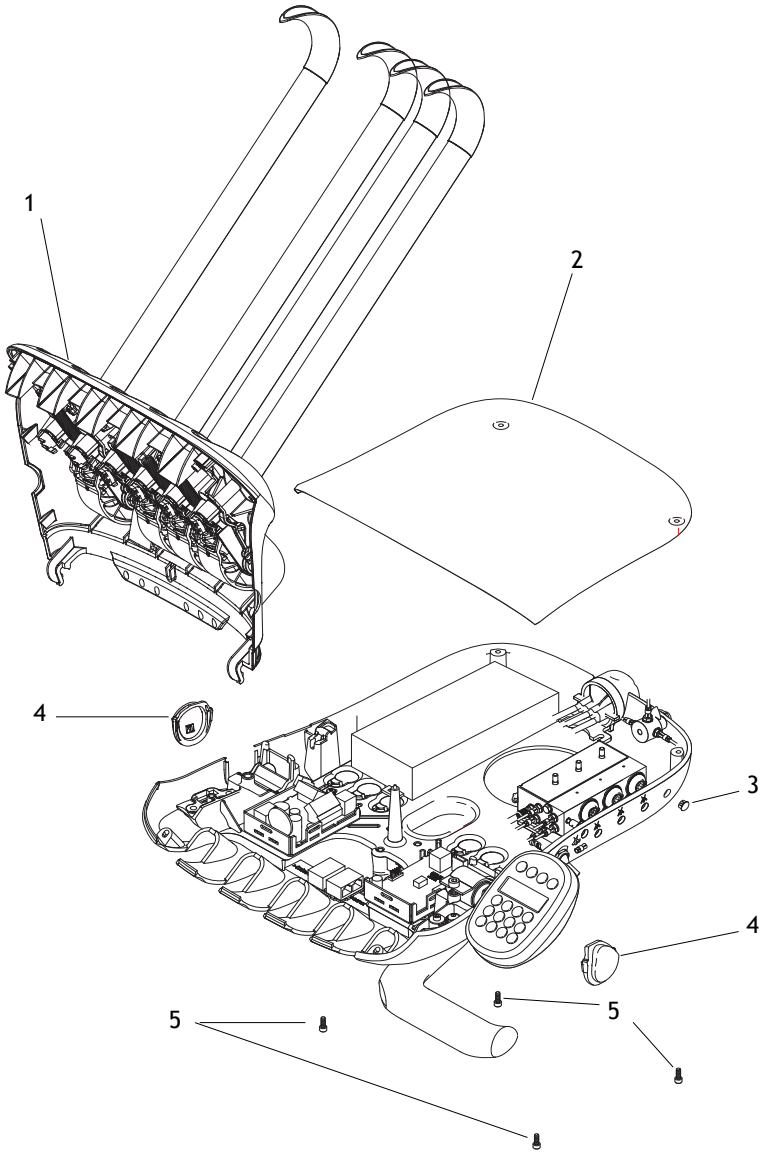
Figure 89. Traditional Delivery System Control Head Cover



Continental Delivery System Covers (Model 335)

Item	Part Number	Description
1	77.0797.00	Continental cover, front
2	77.0795.00	Continental cover, rear
3	018.121.00	Hole plug
4	77.0845.00	Touchpad hole plug
5	001.033.00	Screw, socket head, 6 - 32 x 3/8", stainless steel

Figure 90. Continental Delivery System Covers

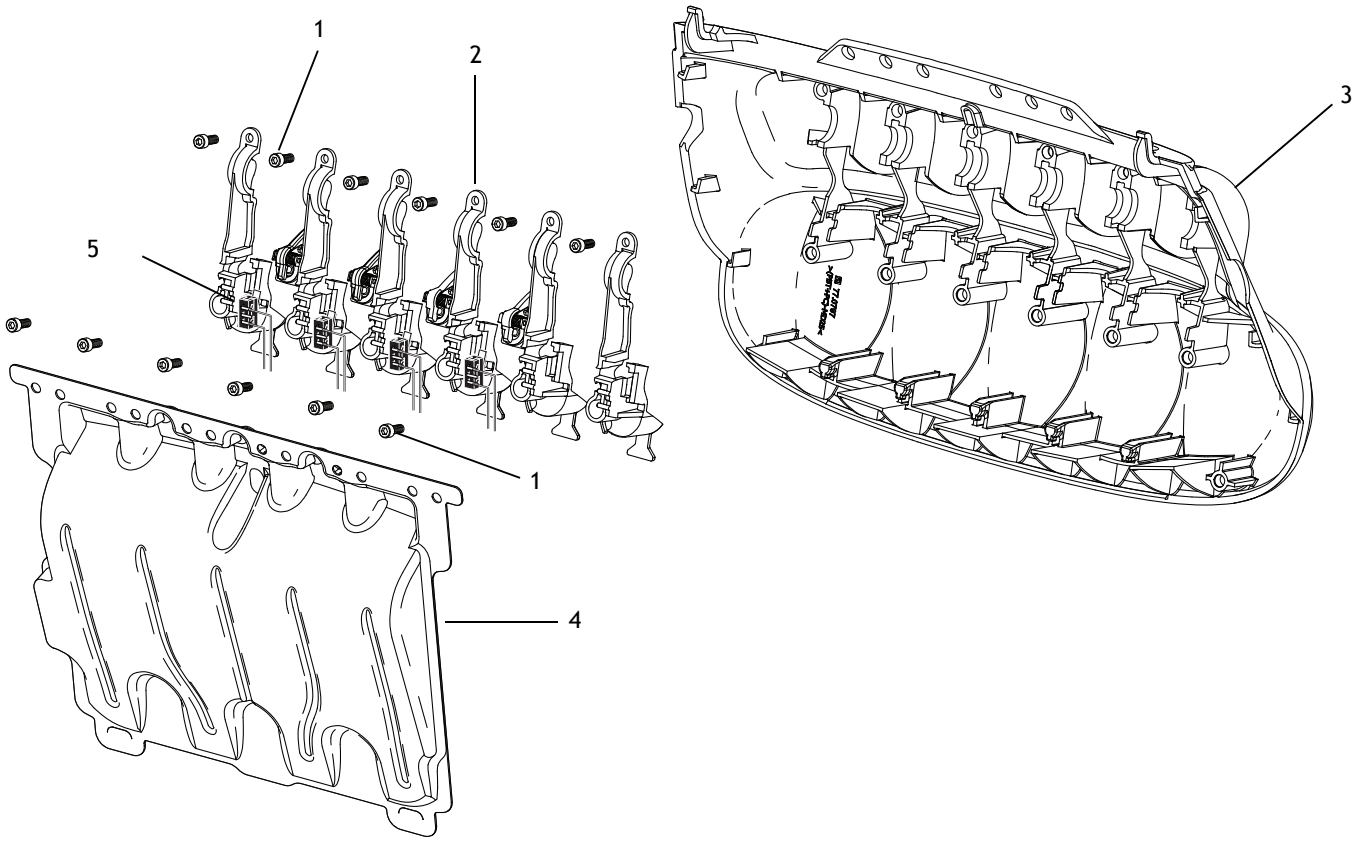


Continental Control Head (Model 335)

Item	Part Number	Description	Item	Part Number	Description
1	001.033.00	Screw, socket head, 6-32 x 3/8" stainless steel	4	77.1001.00	Drip shield
2	77.0770.00	Whip retainer	5	43.0124.00†*	Switch assembly
3	77.0797.00	Continental cover, front			

† Indicates that the individual part is not available for sale
* Replace with p/n 90.1175.00

Figure 91. Continental Delivery System Control Head (Model 335))

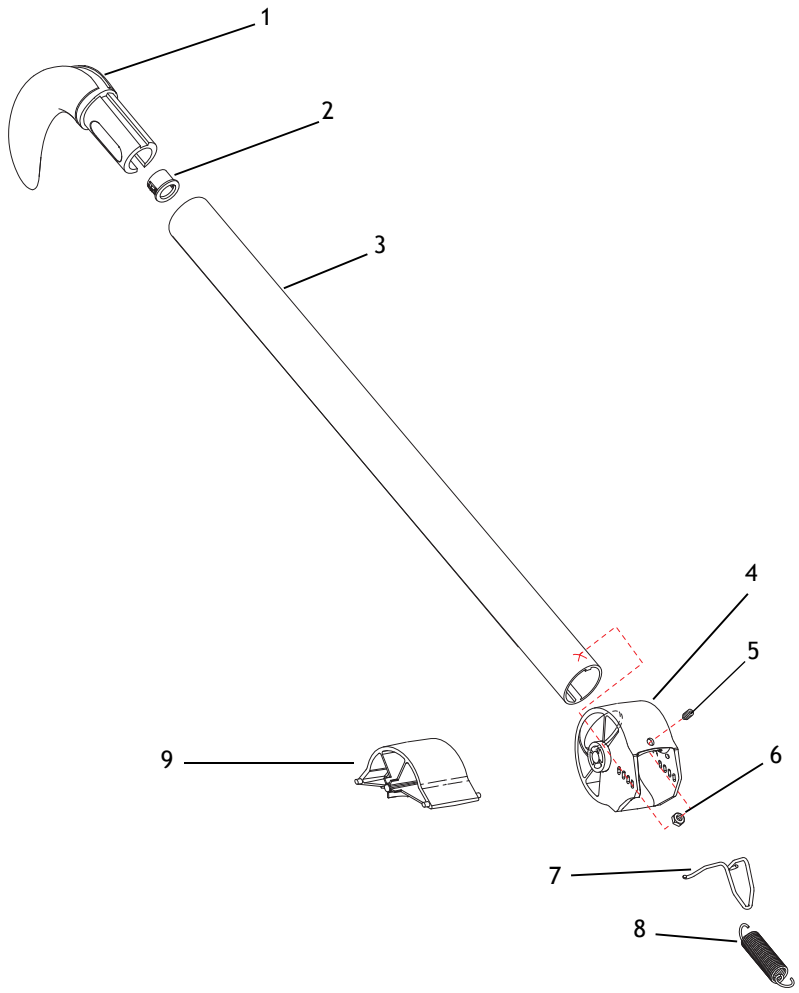


Continental Whip Assembly (Model 335)

Item	Part Number	Description
1	77.0769.00	Whip hook
2	041.663.00	Bushing, cable, 7/16" ID
3	77.0768.00†*	Whip arm
4	77.0774.00†*	Whip base
5	007.021.00	Set screw, 6 - 32 x 5/16"
6	006.164.00†*	Hex nut, 6 - 32 x 5 16" x 7/64 stainless steel
7	77.0767.00	Spring bail
8	77.0775.00	Spring
9	77.0776.00	Whip base blank

† Indicates that the individual part is not available for sale
* Replace with p/n 90.1205.00

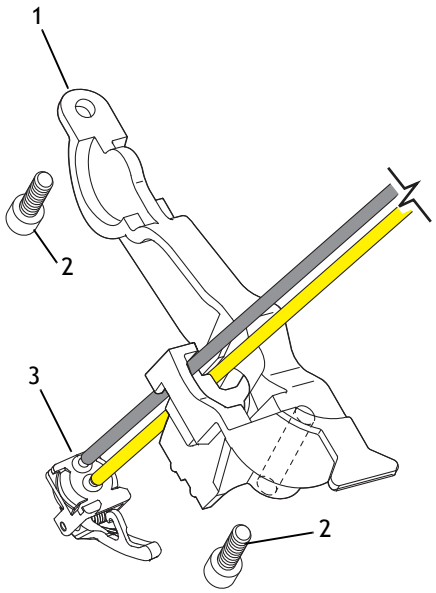
Figure 92. Continental Whip Assembly



Continental Valve Assembly

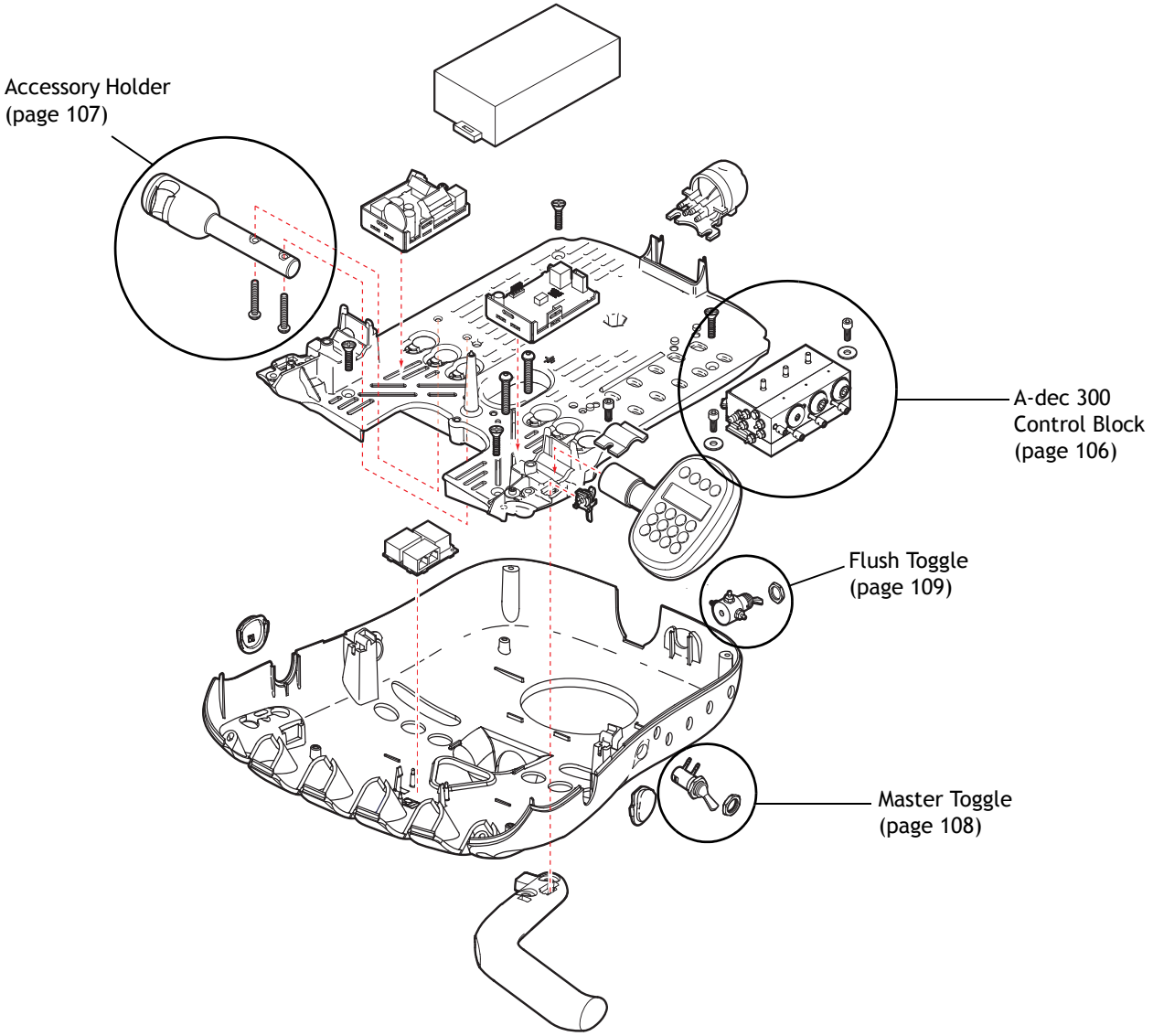
Item	Part Number	Description
1	77.0770.00	Continental whip retainer
2	001.033.00	Screw
3	99.0654.03	Valve, white with tubing

Figure 93. Valve Assembly



Traditional and Continental Assembly Base

Figure 94. Traditional and Continental Assembly



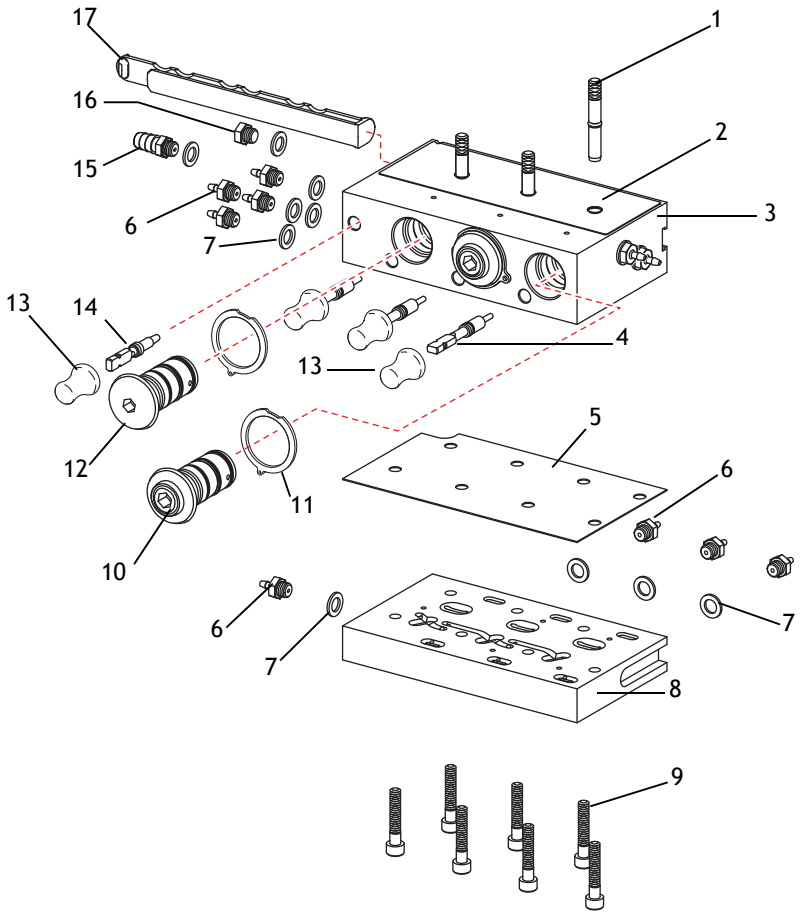
A-dec 300 Control Block Assembly

Part Number: 38.1831.00

Item	Part Number	Description
1	38.1785.01	Stem, drive air with o-ring
2	051.710.01†	Label, control block
3	38.1817.00†*	Control Block
4	38.1824.00	Stem, water flow adjustment with o-ring
5	38.1833.01	Diaphragm, 3 position control block, package of 5
6	023.004.02	Barb, 1/8" x 10-32, package of 10
7	004.005.02	Washer, flat nylon, .187 ID, package of 10
8	38.1818.00†*	Control block cap
9	001.240.00	Screw, socket head, 6-32 x 3/4" stainless steel
10	38.1780.00	Water cartridge assembly
11	38.1799.01	Retaining ring, package of 5 (part of 38.1780.00 and 38.1783.00)
12	38.1783.00	Dry block water cartridge
13	38.1823.00	Flow adjustment key
14	38.1825.00	Stem, air coolant adjustment with o-ring
15	023.805.01	Barb, 5/16" x 10-32, package of 10
16	021.016.04	Hex plug, 10-32, package of 10
17	38.1800.01†*	Barb, retainer, 3 position

† Indicates that the individual part is not available for sale
* Replace with p/n 38.1831.00

Figure 95. Control Block Assembly



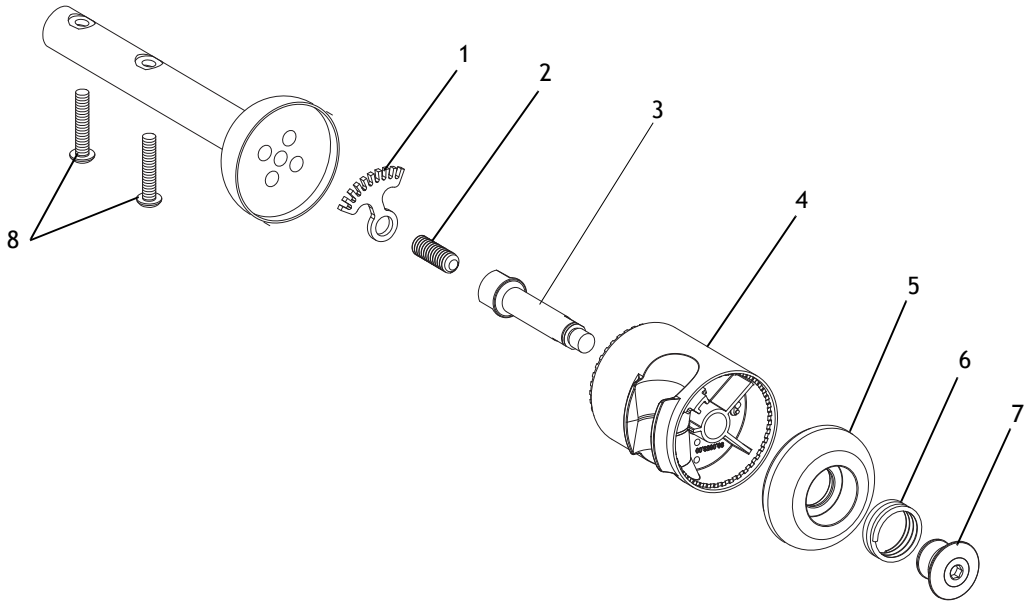
Accessory Holder Assembly

Part Number: 77.0919.00

Item	Part Number	Description	Item	Part Number	Description
1	99.0686.00	Rotation stopper, auxiliary holder	5	99,0648.02†	End cap kit, holder, assistant's
2	007.023.00	Set screw, 1/4 - 20 x 3/4"	6	013.011.00	Spring, comp, 760 OD x .47
3	99.0660.00	Axle*	7	99.0659.00†**	Nut, end cap, holder assembly
4	99.0653.03 99.0650.03 99.0652.03	Holder, SE syringe, assistant's arm, kit Holder, 11 mm, HVE, STD, white 2 Holder, 15mm, HVE, assistant's arm, kit, white 2	8	005.124.00	Screw, 10 - 32 x 1, button head socket

† Indicates that the individual part is not available for sale
* Replace with 99.0653.02
** Replace with 90.1216.00

Figure 96. Accessory Holder



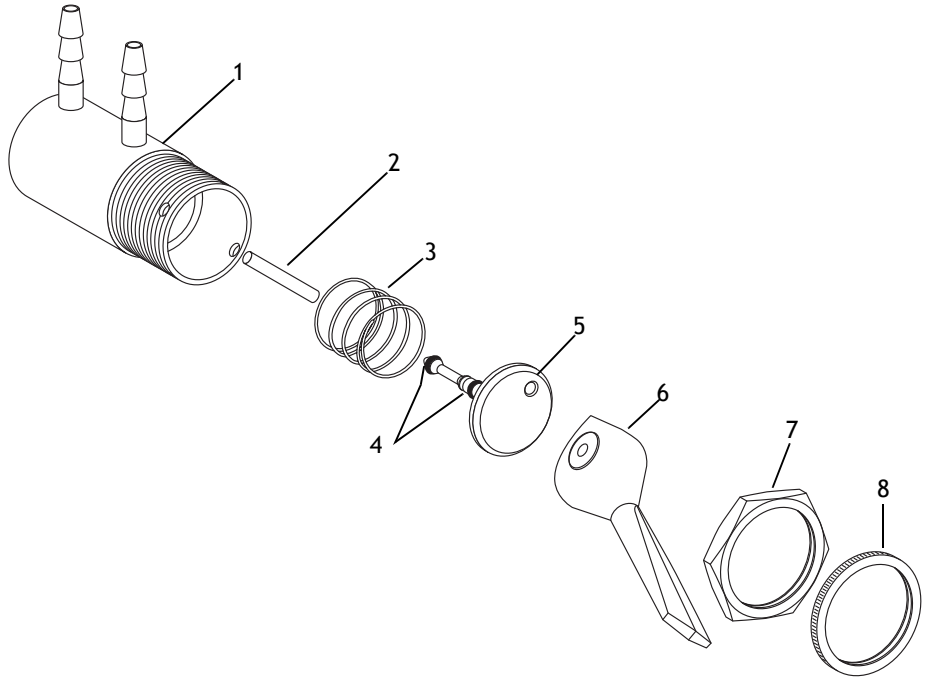
Master Toggle

Part Number: 33.0173.00

Item	Part Number	Description
1	33.0050.00	Round toggle valve body
2	011.038.01	Straight pin, .062 diameter x .430, package of 5
3	22.0040.00	Compression spring, .300 OD x .40
4	030.001.02	O-ring, package of 10
5	29.0840.00	Valve stem with O-rings, 3-way
6	22.0462.03†	Plastic toggle valve lever (replace with 33.0173.00)
7	006.009.00	Hex nut, 15/32-32" x 9/16 x 3/32"
8	006.069.00	Knurl nut, 15/32-32"

† Indicates that the individual part is not available for sale

Figure 97. Master Toggle



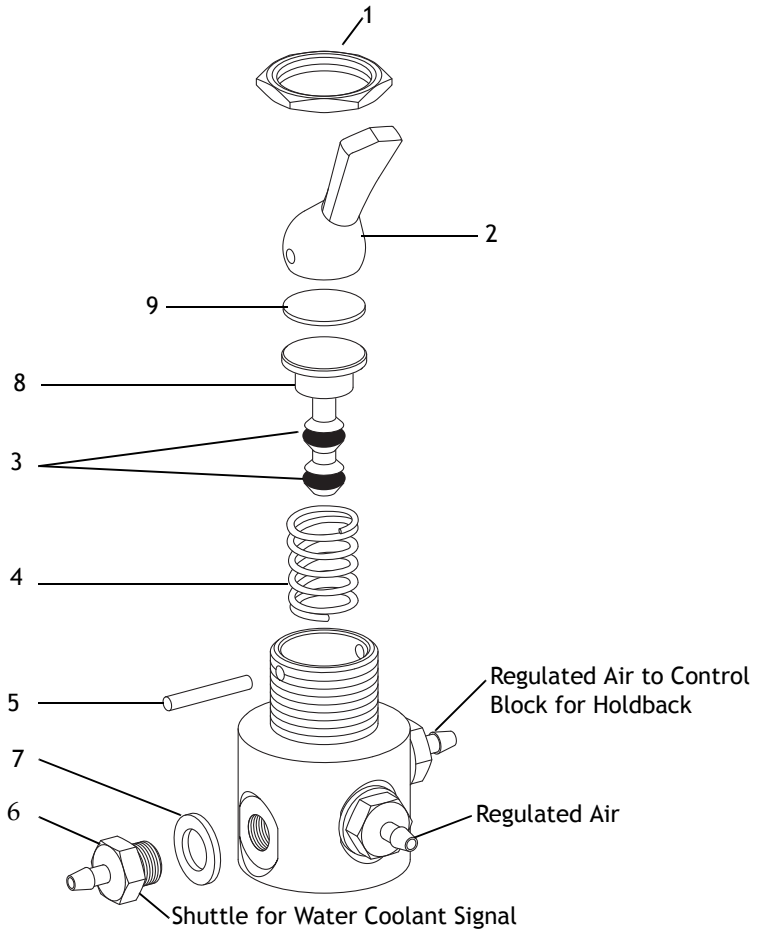
Flush Toggle

Part Number: 33.0168.01

Item	Part Number	Description
1	006.009.00	Hex nut 15/32-32" X 9/16 X 3/32"
2	33.0036.03†	Momentary toggle lever *
3	030.003.02	O-ring, .056 ID x .060 W, package of 10
4	013.076.00	Spring, compression, .360 OD x .35 FL
5	011.038.01	Straight pin, .062 diameter x .430, package of 5
6	023.004.03	Barb, 1/8" x 10-32, package of 10
7	004.005.02	Washer, flat, nylon, .187 ID, package of 10
8	33.0170.00†	Stem, valve, 4 way*
9	80.5025.00†	Spacer, momentary toggle*

† Indicates that the individual part is not available for sale
* Replace with p/n 33.0168.01

Figure 98. Flush Toggle



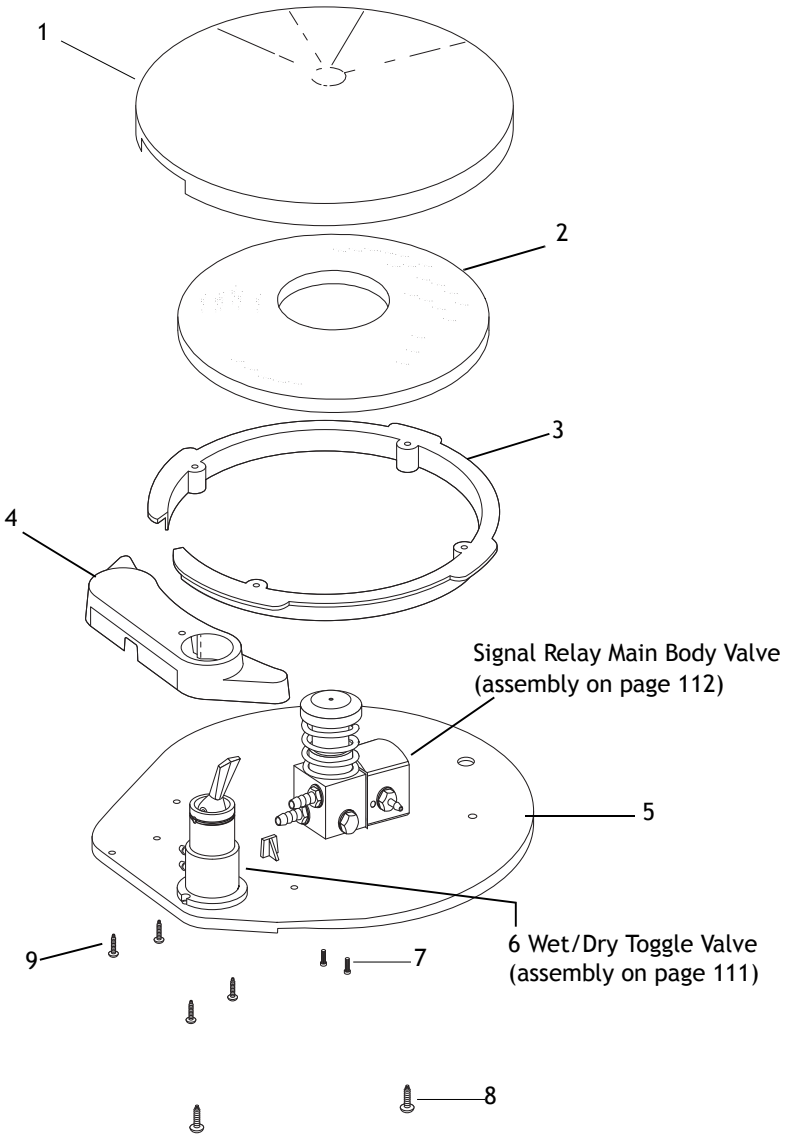
A-dec Foot Control

Part Number: 38.1821.00

Item	Part Number	Description
1	22.0110.00*	Foot control cover, chrome
2	38.0076.00	Foam liner, adhesive back
3	38.0325.00†**	Black retaining ring, 5" OD
4	38.1822.00	Housing access, 5/16"
5	38.0059.03	Base assembly, foot control
6	38.1832.00	Wet/dry toggle valve assembly
7	003.022.00	Phillips pan head screw, #6 x 1/2", zinc
8	003.078.00	Screw, socket head, 4 - 40 x 1/4", zinc
9	003.088.00	Phillips pan head screw, #4 x 1/2", zinc

† Indicates that the individual part is not available for sale
* 22.0110.00 includes item 2.
** 38.0237.00 includes items 3 and 7.

Figure 99. A-dec Foot Control



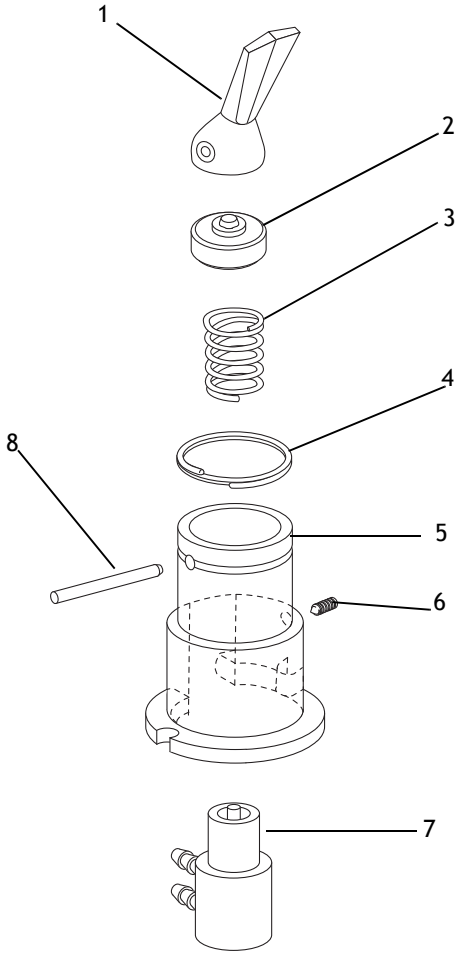
Foot Control Wet/Dry Toggle Valve

Part Number: 38.1832.00

Item	Part Number	Description
1	38.0074.00†*	Toggle, lever
2	38.0066.00	Cap, spring, wet/dry valve assembly
3	22.0040.00	Spring, helical compression, .300 OD x .40
4	010.056.00	Retainer, spring, .600 diameter
5	38.0072.04	Holder, valve
6	007.021.00	Set screw, socket cup point, 6-32 x 3/16"
7	33.0138.00	3-way micro valve assembly
8	011.016.00	Pin, dowel, .125 diameter x .625

† Indicates that the individual part is not available for sale
* Replace with 38.1832.00

Figure 100. Wet/Dry Toggle Valve

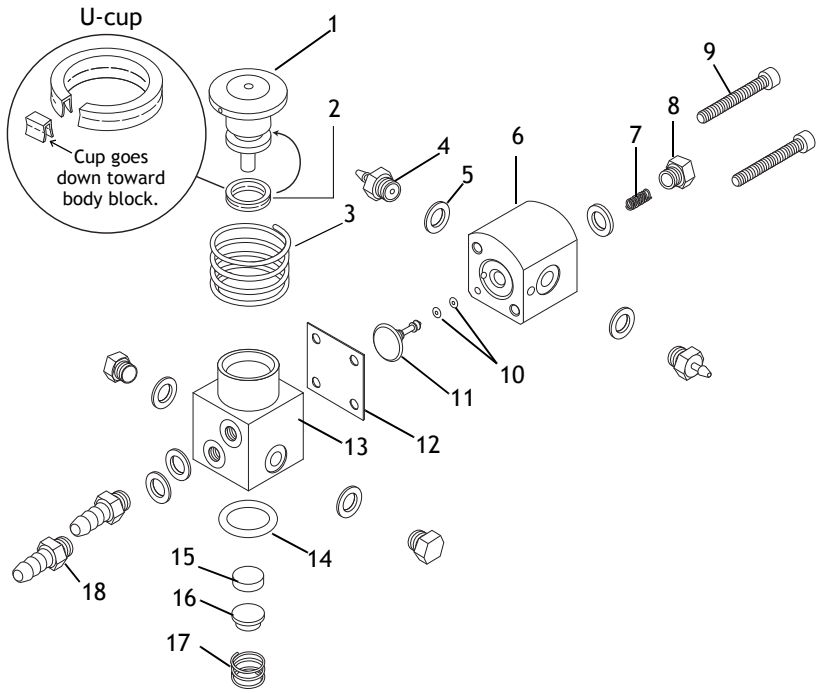


Foot Control Signal Relay Main Body Valve

Part Number: 38.0056.00

Item	Part Number	Description
1	38.0760.00	Piston, foot control III assembly
2	039.018.00	U-Cup
3	013.011.00	Spring, helical compression, .760 OD x .47 FL
4	023.004.01	Barb, 1/8" x 10-32, package of 10
5	004.005.02	Washer, flat nylon .187 ID, package of 10
6	38.0056.00	Body relay
7	10.0440.00	Spring, compression, .093 OD x .25
8	021.016.04	Hex plug, 10-32, package of 10
9	002.102.00	Screw, socket head 4-40 x 7/8", Zinc
10	030.001.02	O-ring, .029 ID x .040 wide, package of 10
11	22.0777.00	Valve stem
12	38.0054.02	Diaphragm, 3/4" square x .013 thick, package of 10
13	38.0759.00	Body
14	030.012.02	O-ring assembly, .029 ID x .070 wide
15	22.0060.00	Poppet, foot control, plastic
16	22.0050.00	Cap spring, foot control
17	22.0580.00	Spring compression, .312 od x .25

Figure 101. Foot Control Signal Relay Main Body Valve



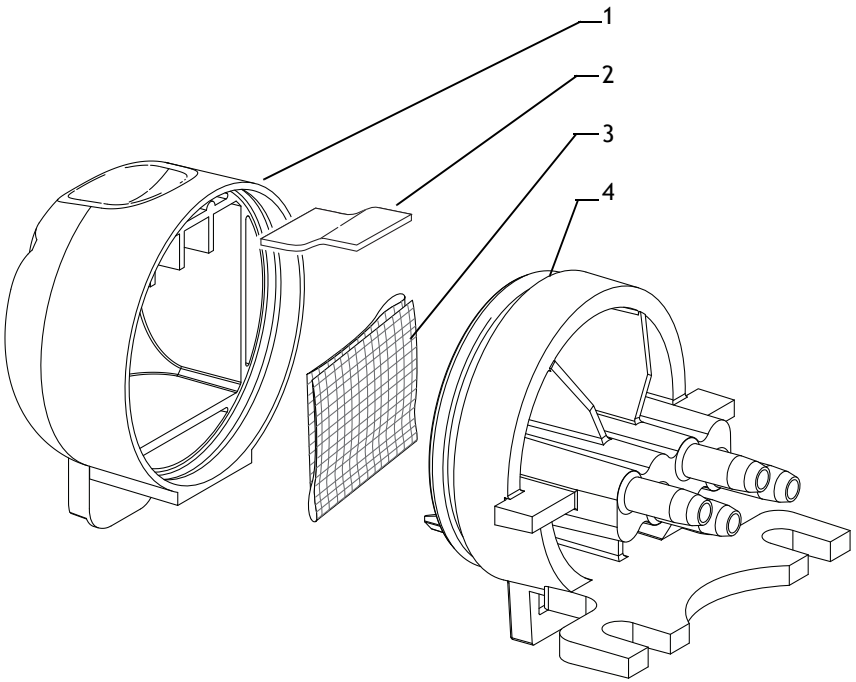
Oil Collector

Part Number: 77.0059.01

Item	Part Number	Description
1	77.0336.01	Oil collector, top
2	90.1106.00	Muffler, foam, package of 5
3	026.143.00	Gauze, 2" x 2"
4	77.0337.01†	Oil collector, bottom*

† Indicates that the individual part is not available for sale
* Replace with 77.0059.01

Figure 102. Oil Collector Assembly

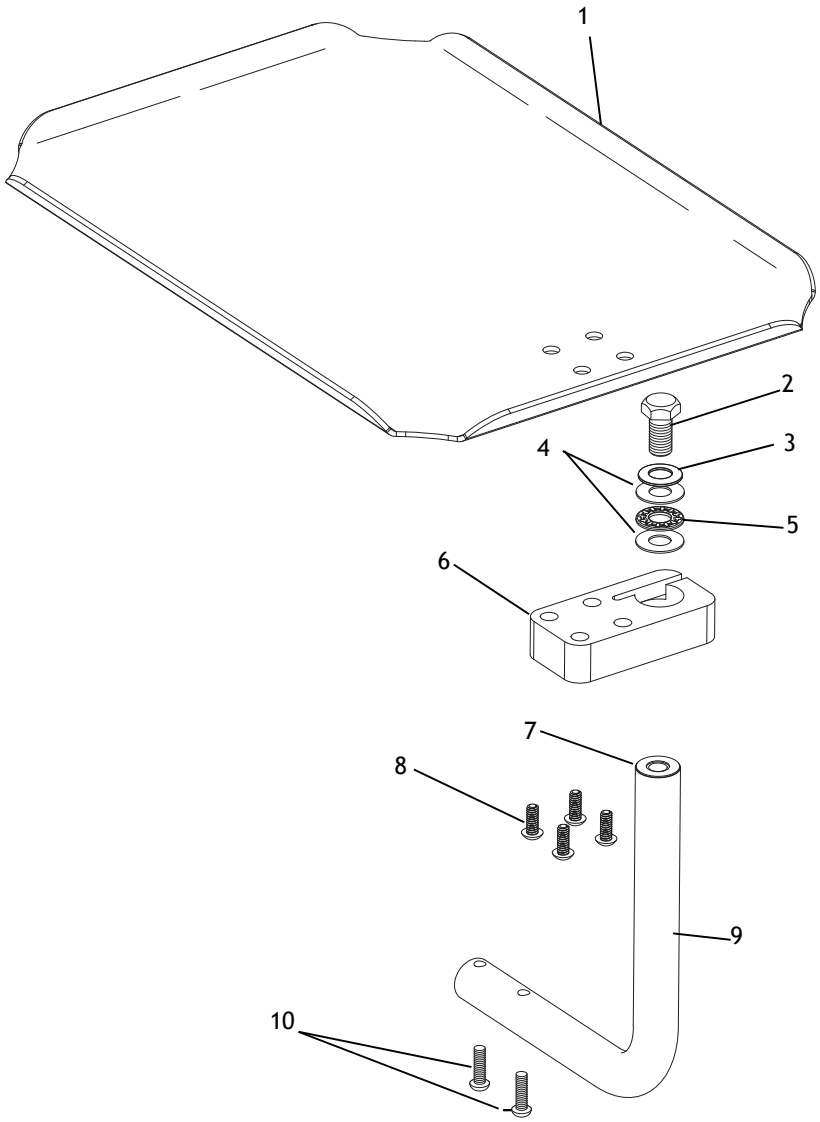


Traditional Tray Holder Assembly

Part Number: 77.0933.00 (Standard) 77.0932.00 (Large)

Item	Part Number	Description
1	77.0900.00	Tray holder (Standard shown)
	77.1000.00	Tray holder (Large, not shown)
2	005.135.00	Screw, hex 3/8 - 16 x 3/4"
3	004.019.00	Washer, spring
4	004.172.00	Washer, thrust
5	016.102.00	Bearing trust
6	77.0997.00	Tray holder, bracket mount
7	39.1048.00	Washer
8	005.110.00	Screw, 10 - 32 x 1/2"
9	77.0835.00	Arm, Traditional
10	005.124.00	Screw, button socket, 10 - 32 x 1"

Figure 103. Traditional Tray Holder (Standard))

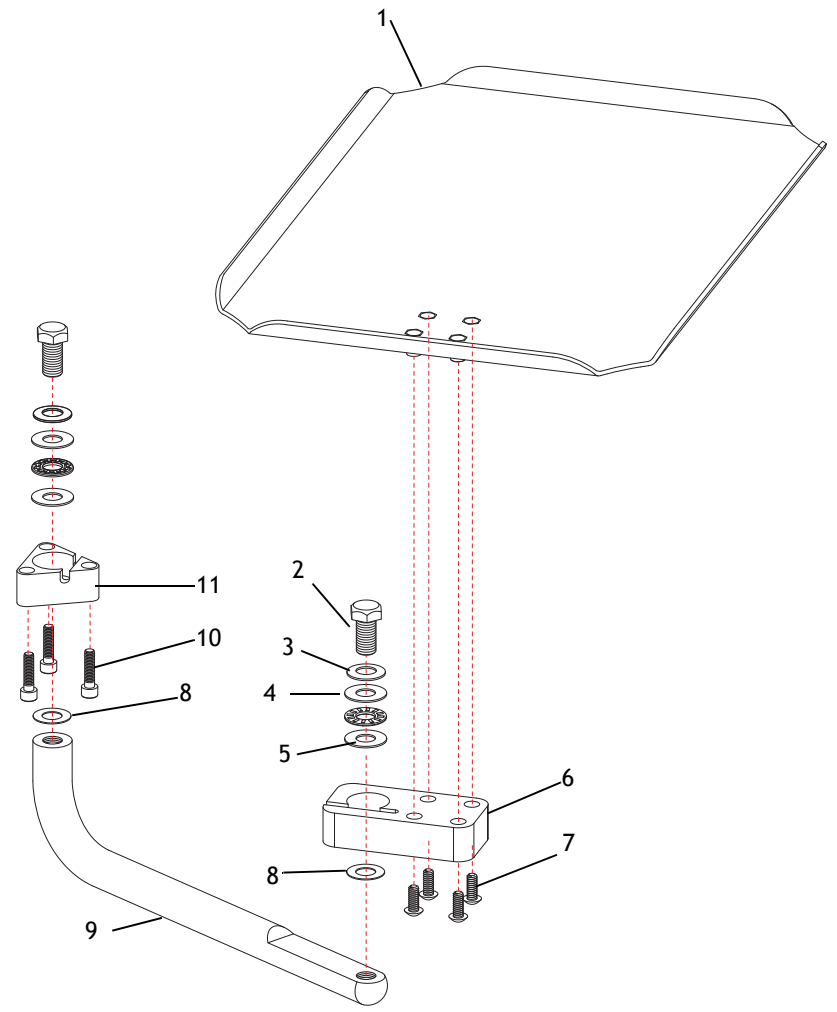


Continental Tray Holder Assembly

Part Number: 77.0942.00 (Standard), 77.0943.00 (Large)

Item	Part Number	Description
1	77.0900.00 77.1000.00	Tray holder (Standard) Tray holder (Large, not shown)
2	005.135.00	Screw, hex head, 3/8 - 16 x 3/4"
3	004.019.00	Washer, spring
4	004.172.00	Washer, thrust .374 ID
5	016.102.00	Bearing, thrust, .375 ID
6	77.0997.00	Tray holder
7	005.110.00	Screw, button head socket, 10 - 32 x 1/2"
8	39.1048.00	Washer, nylatron, .380 ID x .02
9	77.0999.00	Arm, Continental
10	002.073.00	Screw, socket head, 10 - 32 x 3/4"
11	39.1036.01	Mount, tray holder

Figure 104. Continental Tray Holder (Standard)

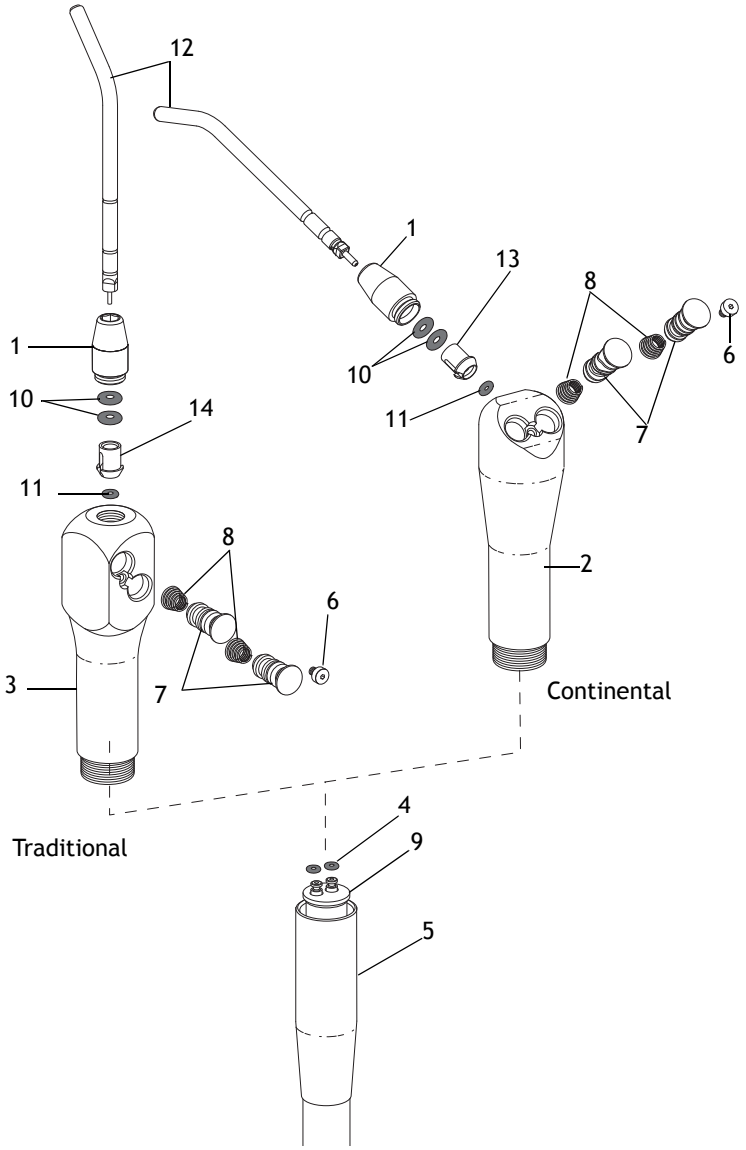


Traditional and Continental Syringes

Part Number:
23.1295.00 (Traditional) 23.1297.00 (Continental)

Item	Part Number	Description
1	23.1112.00	Nut assembly, syringe, smooth
2	23.1190.00	Syringe head, Traditional
3	23.1097.00	Syringe head, Continental
4	030.002.02	O-ring, package of 10
5	23.1015.00	Syringe handle
6	23.1193.01	Screw, 2-56, package of 5
7	23.1232.01	Valve, assembly button, autoclavable, package of 2
8	013.064.01	Spring, compression, conical, package of 10
9	23.1110.00	Terminal, 2 barb assembly, No-Quick Disconnect
10	035.048.01	O-ring, E, .114 ID x .07 W, package of 10
11	034.003.01	O-ring, E, .056 ID x .060 W, package of 10
12	23.0872.01	Syringe tip, package of 5
13	23.1101.01	Spacer, syringe nut with o-ring

Figure 105. Traditional and Continental Syringes



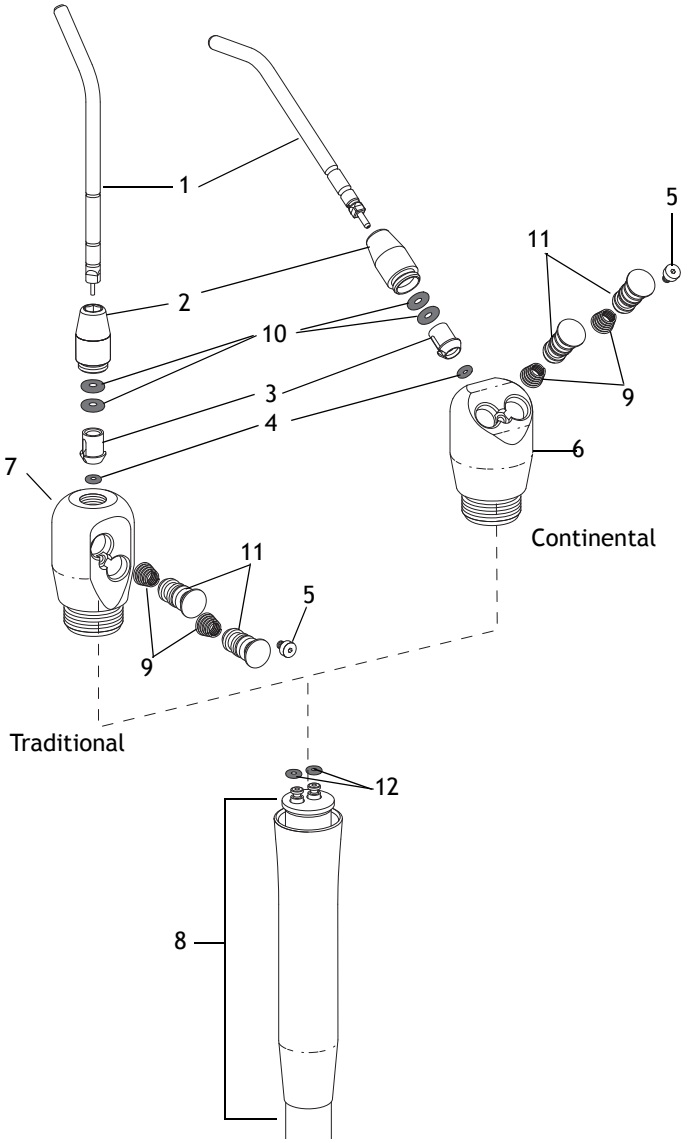
Warm Water Traditional and Continental Syringes

Part Number:
23.1290.00 (Traditional) 23.1291.00 (Continental)

Item	Part Number	Description
1	23.0872.01	Syringe tip, package of 5
2	23.1111.01	Syringe nut, smooth, with O-ring
3	23.1101.01	Spacer, syringe nut, with O-ring
4	034.003.01	O-ring, EP, .056 ID x .060W, package of 10
5	23.1193.01	Screw, 2-56, syringe, package of 5
6	23.1278.00	Warm water Traditional syringe head kit
7	23.1277.00	Warm water Continental syringe head kit
8	23.1276.01†*	Tubing assembly with syringe handle quick disconnect
9	013.064.01	Spring, compression, conical, package of 10
10	035.048.01	O-ring, .114 ID x .070 W, package of 10
11	23.1232.01	Valve, assembly button, autoclavable, package of 2
12	030.002.02	O-ring, package of 10

† Indicates that the individual part is not available for sale
* Replace with p/n 23.1284.00

Figure 106. Warm Water Traditional and Continental Syringe



5

CUSPIDOR AND SUPPORT CENTER

This section provides information related to service, maintenance, and adjustments of the cuspidor and support center. For information on service parts, see the *Genuine A-dec Service Parts Catalog* or contact A-dec Customer Service. (See "Get Support" on page 2.)

NOTE For information on the solids collector, see Solids Collector, page 151.

Contents

Figure 107. Cuspidor and 361 Support Center

Product Overview

The 361 support center and cuspidor can mount on either side of the chair. There are two versions of the 361 support center: 361 for the A-dec 311 chair and 361 for the 2" post attachment (non-A-dec 311 chair). The cuspidor circuit board is located inside the support center. You can program both the cupfill and the bowl rinse functions. The cuspidor is preset with an automatic timed cupfill of 2.5 seconds and bowl rinse of 30 seconds.

Air Vacuum System (AVS)

The Air Vacuum System (AVS) generates a vacuum using air supply at 70 PSI minimum when a central vacuum system is not available. It also separates moisture and air flows through the system and discharges them through a drain and air outlet.

There must be a cuspidor on the system to have an AVS because the switch that turns on the cuspidor is mounted to the cuspidor. (See page 123 for a flow diagram.)

Power and Data Connections for Cuspidor-Mounted Assistant's Instrumentation

The power and data connections for the 353 cuspidor-mounted assistant's instrumentation are routed as follows:

- To see the power and data connections, remove the cuspidor bowl.
- If the system includes an AVS, a 1/8" hex key is used to remove the two screws connecting the toggle assembly to the bottom of the cuspidor bowl support.
- If the assistant's instrumentation includes a touchpad, the data line and power cable are routed up through the cuspidor holder.
- The assistant's instrumentation is placed under the cuspidor holder and angled away from the chair so that the post fits into the hole in the bottom of the cuspidor bowl support (see Figure 109).
- The instrumentation is attached to the bottom of the cuspidor holder (see Figure 108).
- The AVS toggle assembly is attached to the bottom of the assistant's instrumentation.

Figure 108. Data Line and Power Cable Routing, Bottom View

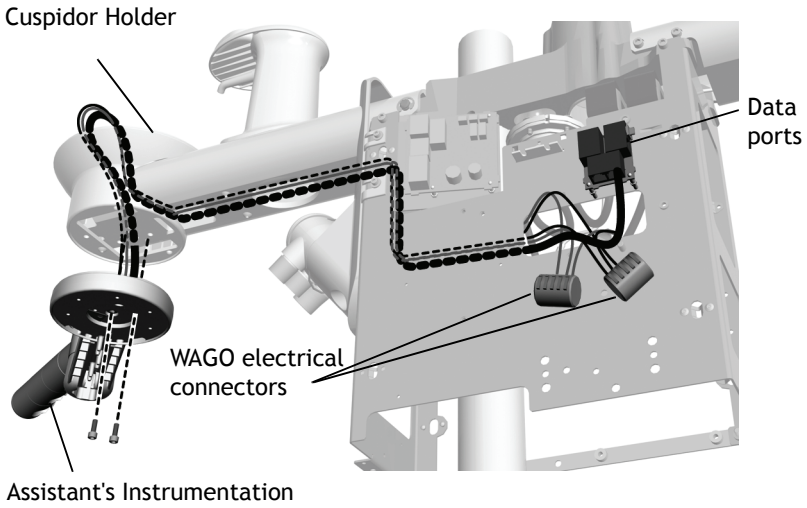
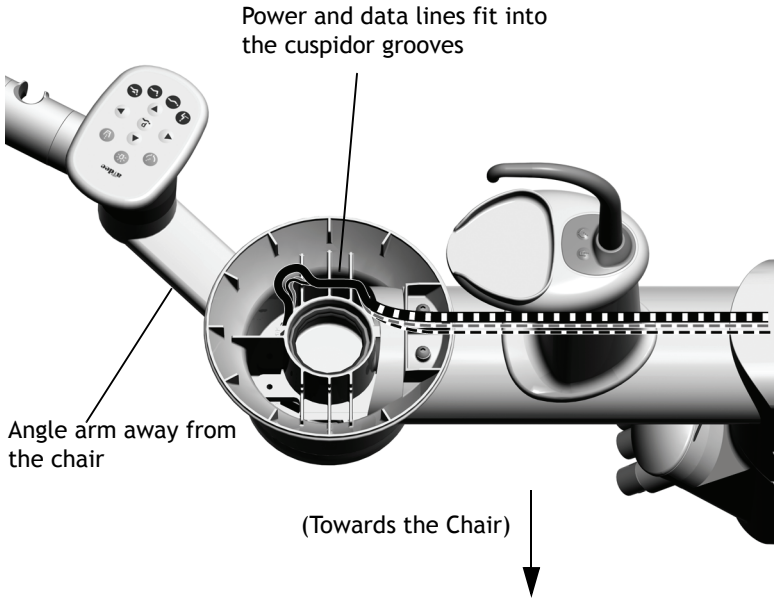


Figure 109. Data Line and Power Cable Routing, Top View

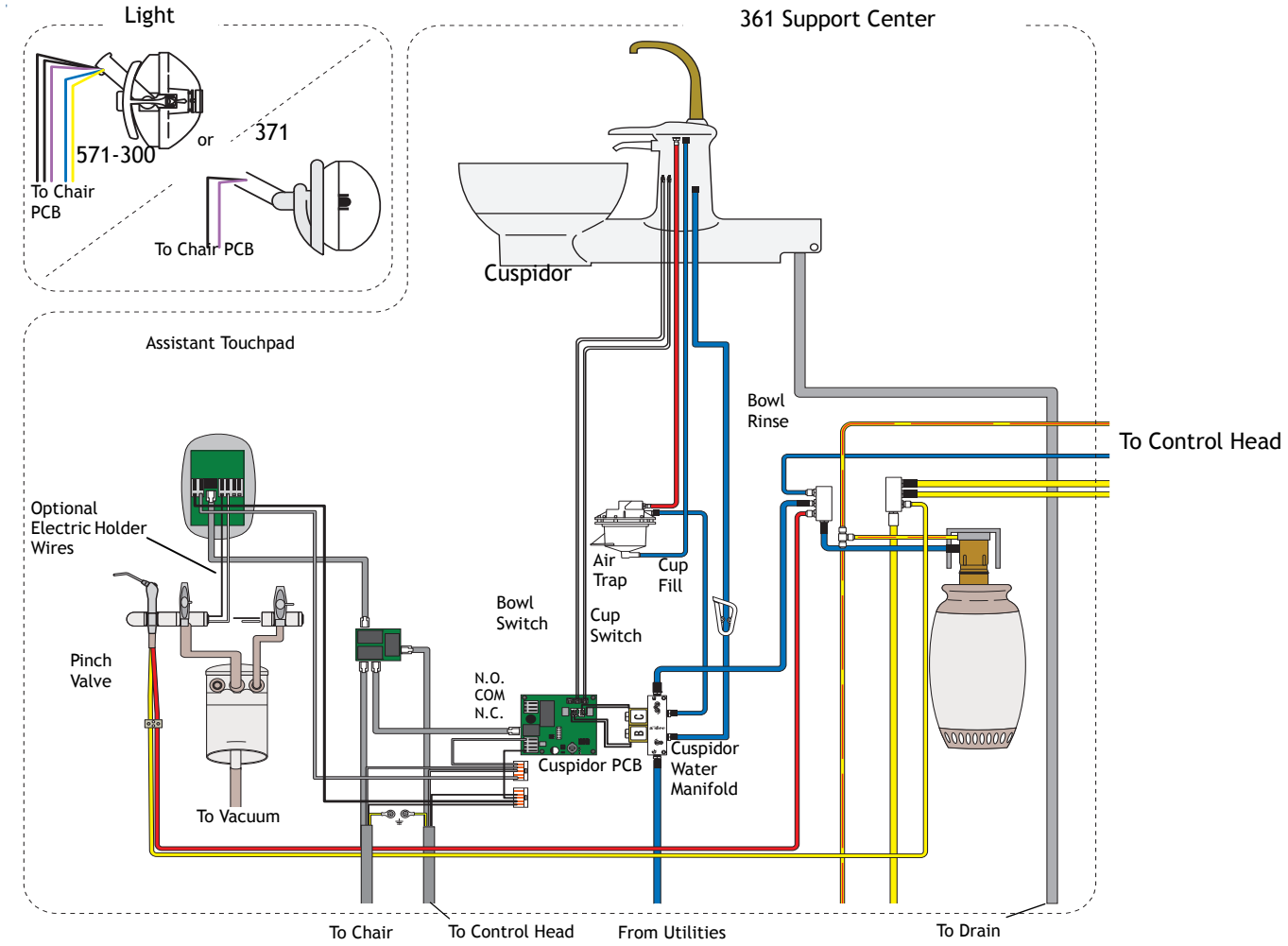


Flow Diagrams

361 Cuspidor and Support Center

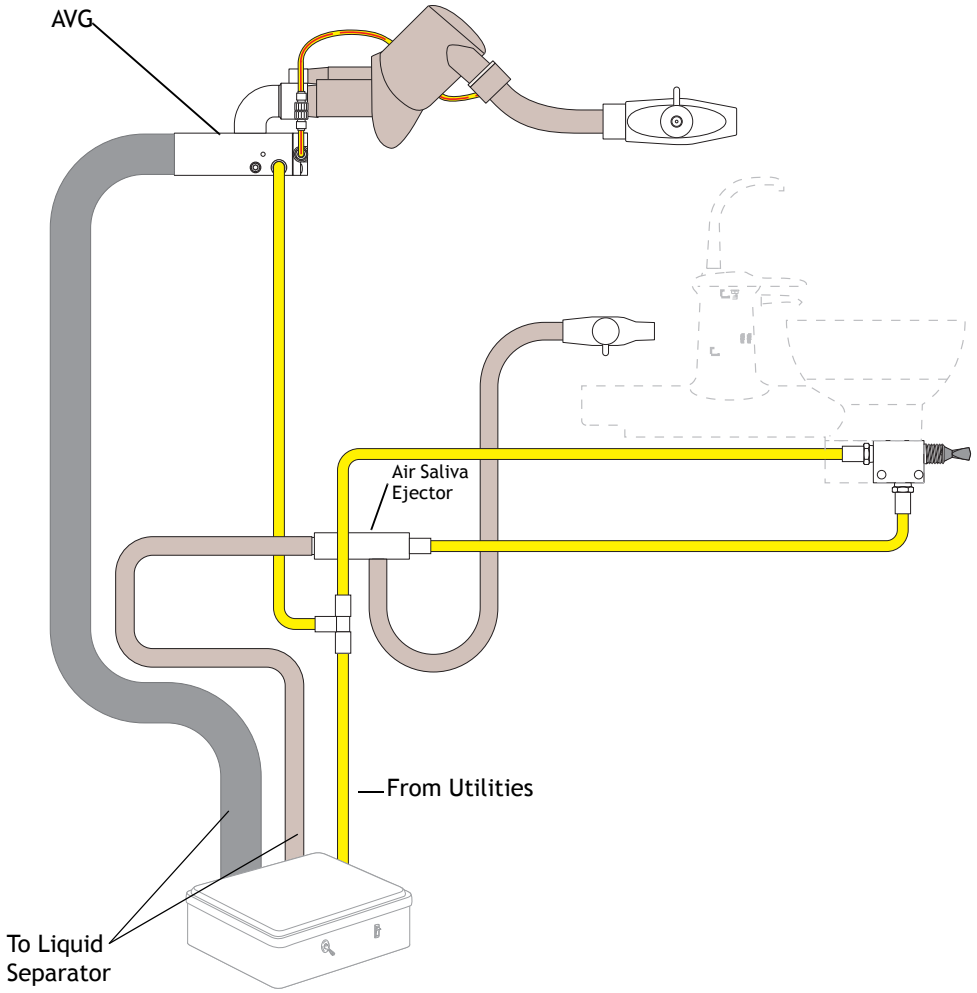
This flow diagram describes the plumbing and electrical connections of the cuspidor and support center.

Figure 110. Cuspidor and Support Center Flow Diagram



Cuspidor with Air Saliva Ejector, Air Vacuum Generator (AVG)

Figure 111. Cuspidor with Air Saliva Ejector, AVG Flow Diagram



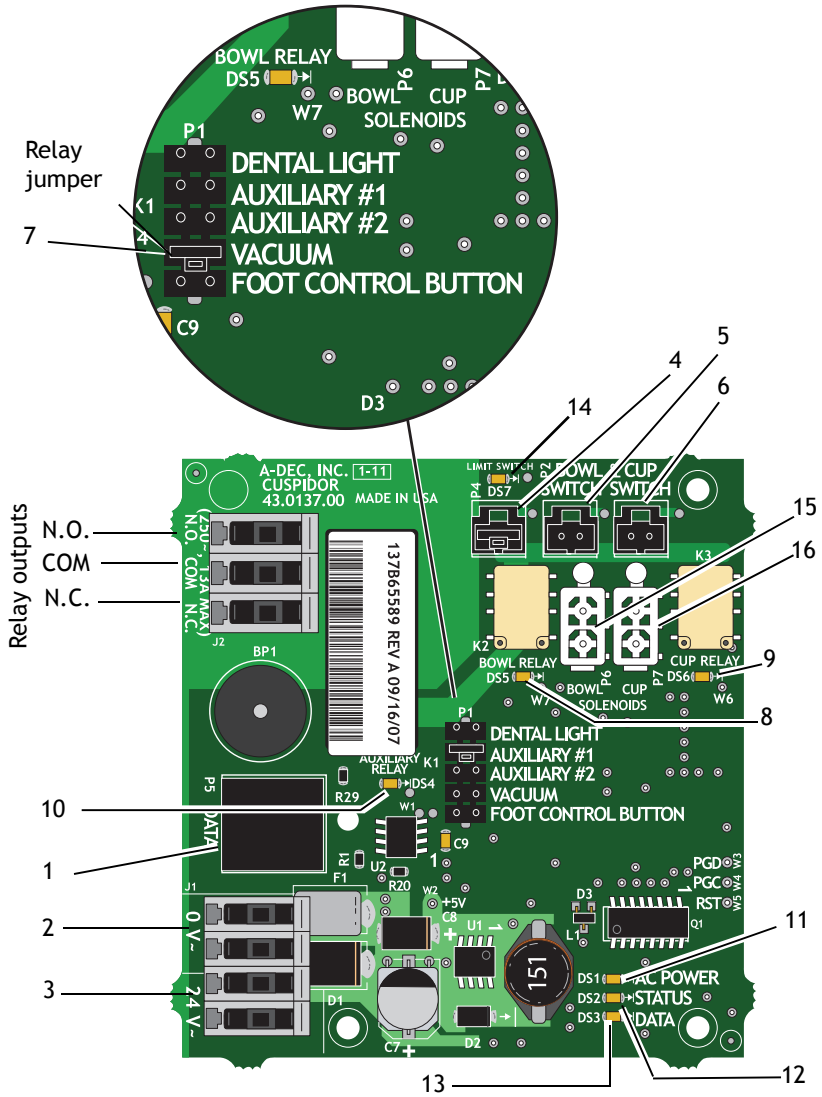
Service/Usage Information

Cuspidor Circuit Board Components

Part Number:90.1079.00

The cuspidor circuit board controls the bowl rinse and cupfill functions. The LEDs on the circuit board indicate the status of the cuspidor and can be used for troubleshooting. The circuit board is also equipped with a built-in A-dec relay. The built-in relay functions exactly like the A-dec relay module.

Item	Description
1	P5 - DCS terminal
2	J1 - Ø VAC terminal strip
3	J1 - 24 VAC terminal strip
4	P4 - Cuspidor limit switch connector
5	P2 - Bowl rinse switch connector
6	P3 - Cupfill switch connector
7	P1 A-dec relay selection header
8	DS5 - Bowl rinse relay LED
9	DS6 - Cupfill relay LED
10	DS4 - Auxiliary relay LED
11	DS1 - AC POWER LED
12	DS2 - STATUS LED
13	DS3 - DATA LED
14	DS7 - Limit switch LED
15	P6 - Bowl rinse solenoid connector
16	P7 - Cupfill solenoid connector



NOTE The limit switch connector, P4, should always have a jumper located within it on the 300 product.

Adjustments/Maintenance

Cupfill Button

The cupfill function allows water to flow from the cupfill spout into a cup. A quick press of the cupfill button activates a timed operation. A long press activates a manual operation.

NOTE The cupfill will only run a maximum of one minute in the manual operation mode.

Bowl Rinse Button

The bowl rinse function provides rinse water for the cuspidor bowl. A quick press of the bowl rinse button activates a timed operation. A long press activates the manual operation.

If the button is pressed twice in less than two seconds, the continuous operation will be activated. To stop the continuous bowl rinse operation, press the bowl rinse button once. There is no maximum time limit for this function.

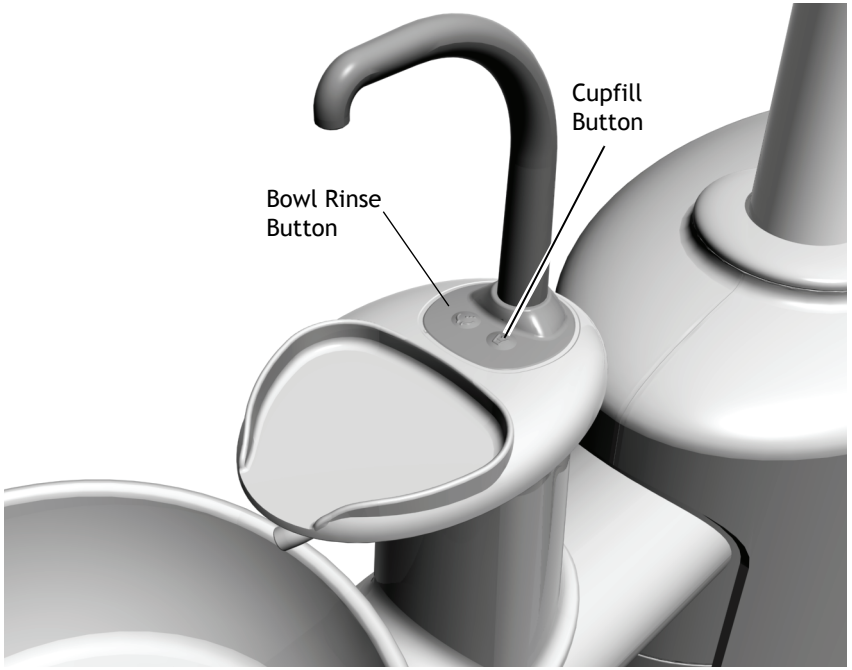
Program the Cuspidor

1. Press the Program button on the touchpad. One beep indicates programming mode is ready.

NOTE If you don't have a touchpad, press and hold both manual cupfill and bowl rinse buttons located near the spout (see Figure 112). One beep indicates the programming mode is ready.

2. Press and hold the Cupfill or Bowl Rinse button for the desired amount of time.
3. Release the button. Three beeps indicate the programmed time has changed.

Figure 112. Cuspidor Local Buttons



Self-Contained Water System

A-dec's self-contained water system supplies water to handpieces, syringes, and cuspidor cupfill. The system includes a 2-liter, quick-disconnect water bottle that mounts to the support center and offers a way to ensure the quality of treatment water. For instructions on water usage in the A-dec 300 systems, refer to the *A-dec Self-Contained Water System Instructions for Use* (p/n 86.0609.00).

WARNING Use only A-dec water bottles. Do not use other brands, or damaged bottles. They can pose a serious safety hazard if broken while pressurized.

WARNING The A-dec plastic water bottles cannot withstand heat sterilization. Attempting to do so damages the bottle and the sterilizer.

CAUTION Use caution when using the self-contained water system with any dental units equipped with components that might fail when the water supply is interrupted. Some types of scalers and water heaters are examples of components that can be permanently damaged if operated without a continuous water source. A-dec does not recommend using saline solutions, mouth rinses, or any chemical solutions, not specified by A-dec, in the A-dec self-contained water system. These may damage the water system components and cause the failure of the dental unit.

Figure 113. Self-Contained Water Bottle

Illustrated Parts Breakdown — Cuspidor/Support Center

This section contains illustrated parts breakdowns specific to the cuspidor and support center.

Part Identification

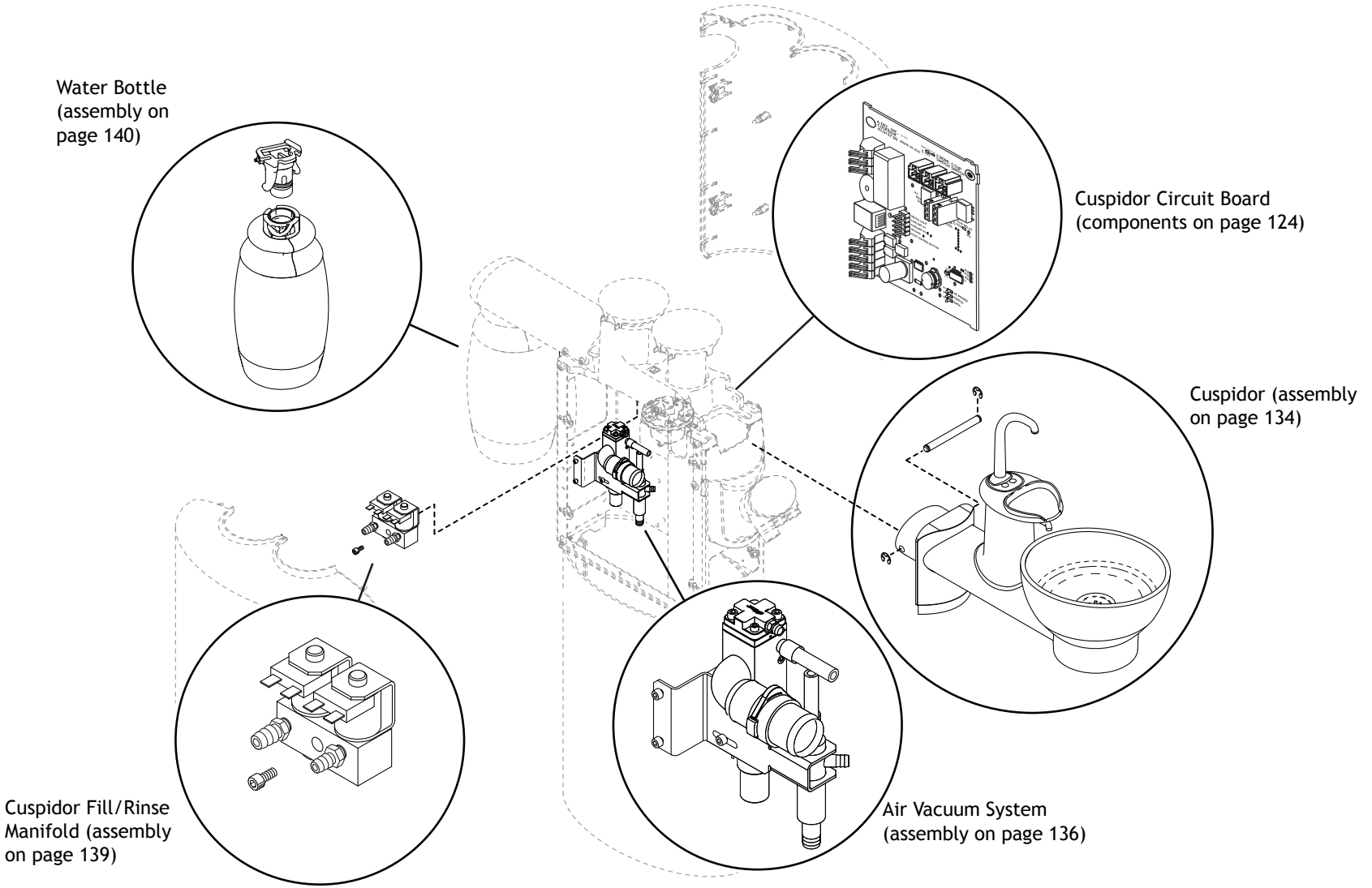
In this section, you will find serviceable components tables that correspond to the illustrations. The tables identify all parts and kits, including those that are not for sale. Parts that are not for sale are indicated with the symbol shown below:

† — Indicates that the individual part is not available for sale. These parts are typically part of a kit and/or larger assembly that is for sale.

Contents

Support Center Components

Figure 114. Support Center Components Overview



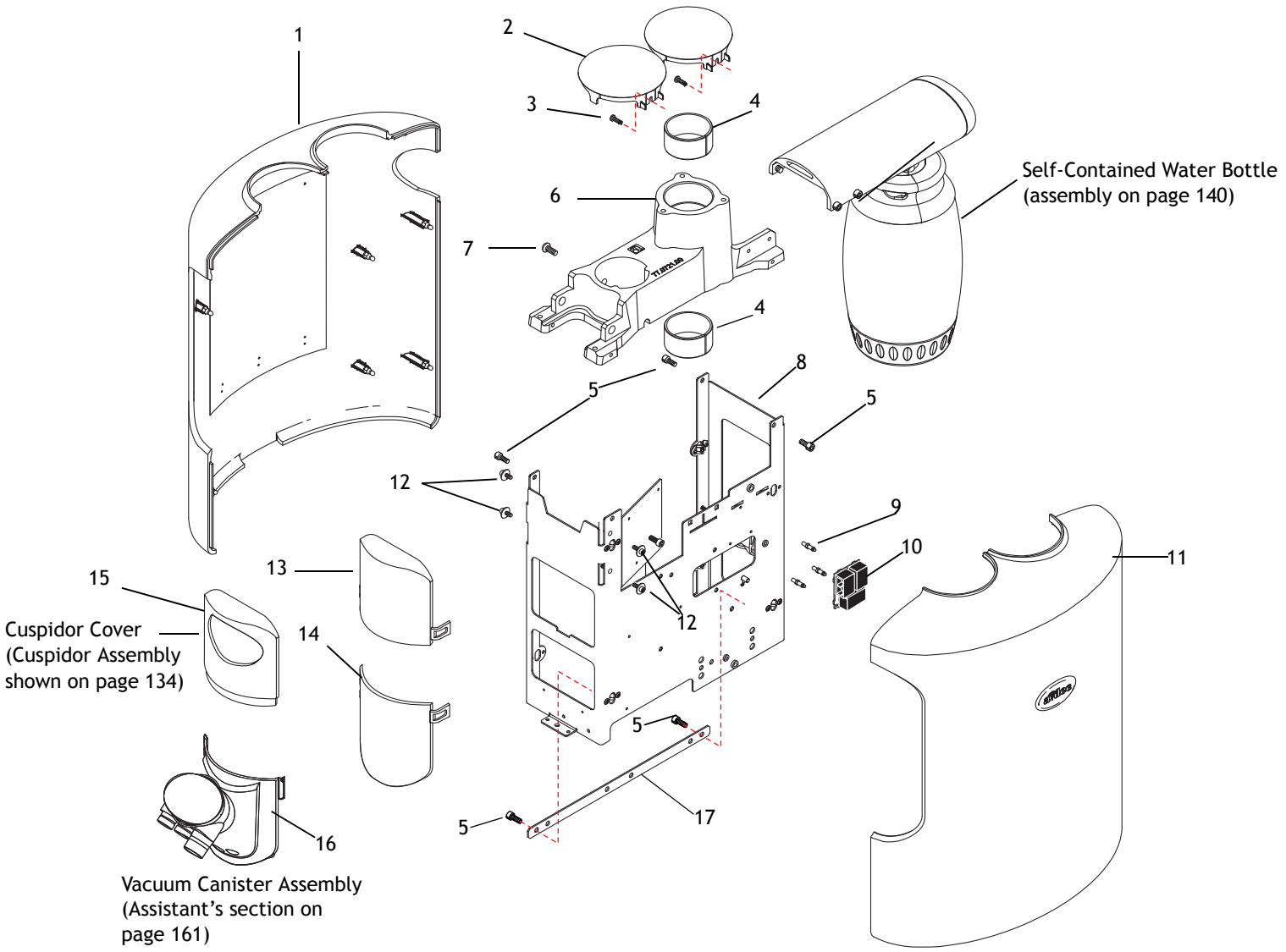
361 Support System Assembly

This assembly includes the 2" post mount (item number 17 in the illustration). The 2" post assembly is available for non-A-dec 300 chairs.

Item	Part Number	Description
1	90.1211.00	Cover, left, support center with studs
2	90.1215.00	Post box plug kit with screws
3	001.259.00	Screw, pan head, 6-19 x 1/2", zinc
4	016.158.00†	Bearing, sleeve, DU, 1.873 ID
5	002.135.00	Screw, socket head, 10-32 x 1/2", stainless steel
6	77.0825.00†	Mount block, support center
7	002.142.00	Screw, button head socket,1/2 - 13 UNC x 1 ZNC
8	77.0725.00†	Chassis, support center
9	90.1082.00	PCB, standoff, package of 5
10	90.1167.00	PCA, Can adapter kit
11	77.0719.00	Cover, right, support center
12	005.161.00	Screw, socket head, 10- 32 x 1/4" stainless steel (hold the blank covers), package of 4
13	77.0883.00	Blank cover
14	77.0724.00	Blank, cover vacuum canister
15	77.0882.00	Cover, cuspidor
16	77.0748.00	Cover, vacuum canister
17	77.0426.00	Rail, frame, support center

† Indicates that the individual part is not available for sale

Figure 115. Support System Assembly

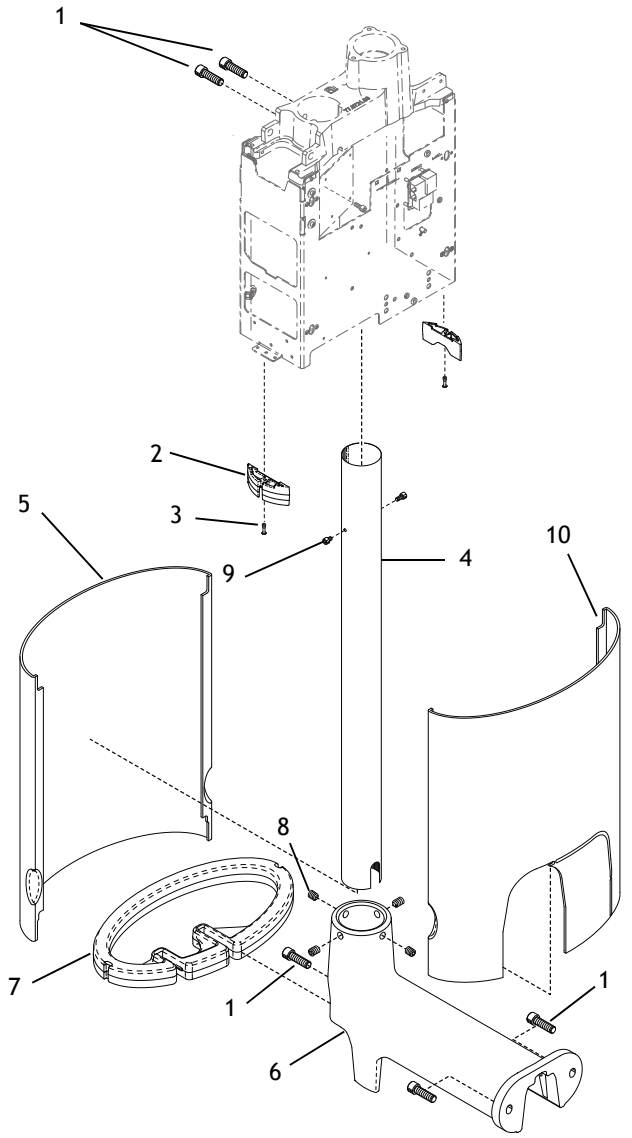


Support System Base Unit

Item	Part Number	Description
1	002.042.00	Screw, socket head, 3/8-16 x 3/4"
2	62.0363.00†	Post mount, block, upper cover
3	012.029.00†	Rivet pop, 1/8" dia
4	77.0729.00†	Post, support center, 2" OD x 27" long
5	62.0355.00	Post mount, lower cover, front
6	62.0291.00	2" post mount
7	62.0357.00	Post mount, stiffener cover
8	007.055.00	Set screw, socket cup pt, 3/8" -16 x 1/2"
9	002.123.00	Screw, socket head, 10 - 32 x 1/4", stainless steel
10	62.0356.00	Post mount, lower cover, rear

† Indicates that the individual part is not available for sale

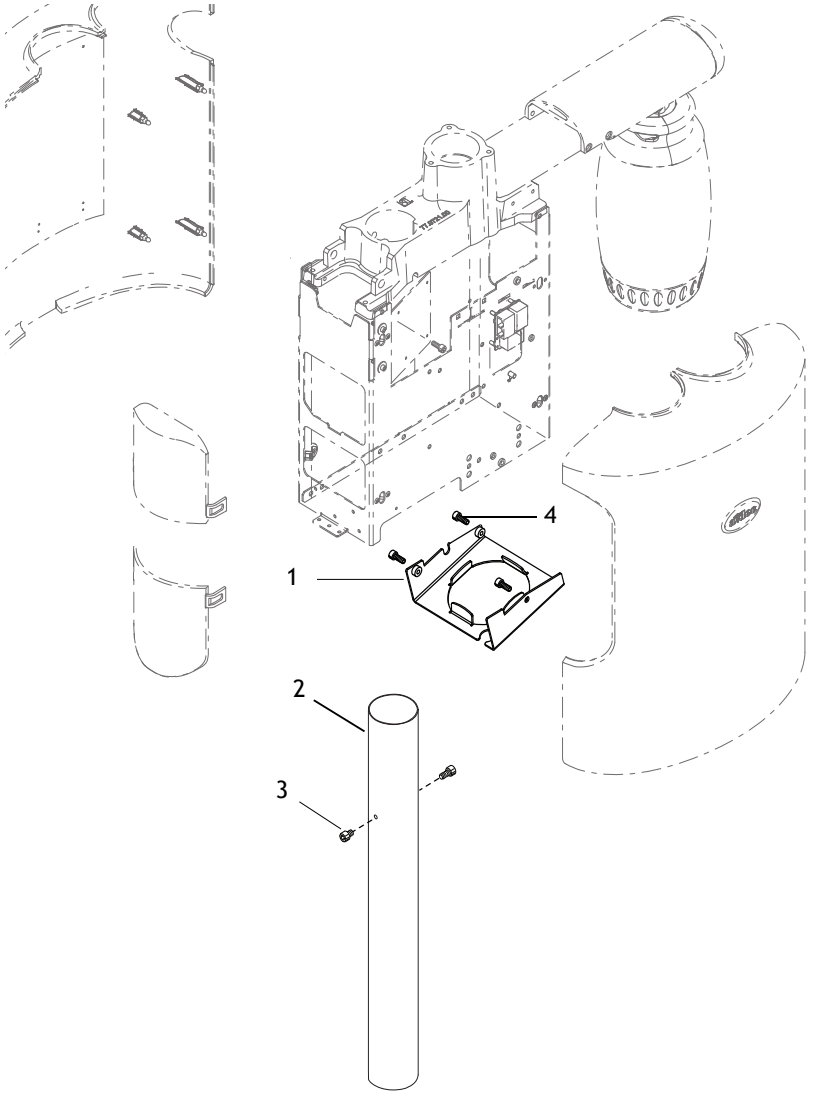
Figure 116. Support System Base Unit



2" Post Support (Chair Mounted)

Item	Part Number	Description
1	77.0874.00	Bracket, umbilical 2.5"
2	77.0728.00	Post, 2" OD x 17" long
3	002.123.00	Screw, socket head, 10 - 32 x 1/4", stainless steel
4	002.135.00	Screw, socket head, 10-32 x 1/2", stainless steel

Figure 117. 2" Support Post

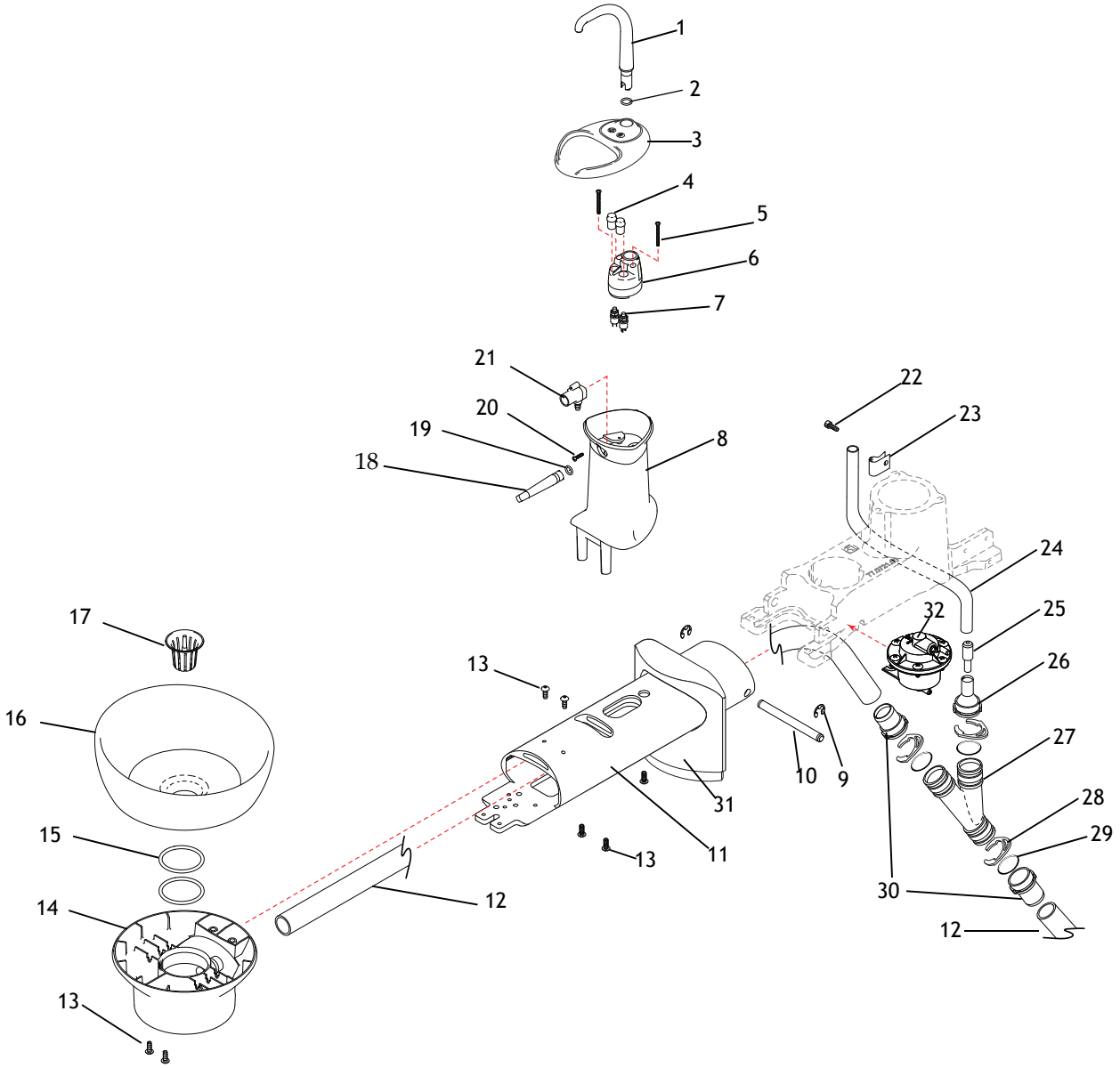


Cuspidor Assembly

Item	Part Number	Description	Item	Part Number	Description
1	77.1034.00	Spout assembly, cupfill with o-ring	17	75.0035.02	Screen, cuspidor
2	030.012.02	O-ring, 364 ID x 070 wide, package of 10	18	77.1033.01	Spout, bowl rinse with o-rings
3	90.1213.00	Cup holder	19	030.011.02	O-ring, AS 568-011, .301 I.D. x .070 W
4	77.1005.00	Button, cuspidor fill/rinse	20	003.119.00	Screw, 4 - 21x1-1/4", zinc
5	003.120.00	Screw, 4- 20 x 1/14", zinc	21	77.0734.00†	Socket, bowl rinse
6	77.0097.01	Support, cuspidor spout with barbs	22	002.135.00	Screw, socket head, 10-32 x 1/2", stainless steel
7	041.059.00	Switch Assembly, NO, MOM, 20", 20MTE	23	025.028.00	Cable Clamp, 7/16"
8	77.0820.00	Tower, spout support, cuspidor	24	024.180.00	Tubing, 3/8", vinyl, surf
9	010.040.01	Retaining ring,	25	77.1030.00	Barb, cuspidor drain vent
10	77.0912.00	Pin, cuspidor mount	26	022.091.01	Connection, vacuum, tubing (kit contains item 28)
11	77.0819.00	Support arm, cuspidor	27	022.100.01	Connection, vacuum, Y, male (kit contains item29)
12	024.210.00†	20 mm hose	28	022.090.00	Clip, retainer
13	005.110.00	Screw, 10 - 32 x 1/2", button socket	29	035.053.01	O-ring
14	77.0735.00	Support, cuspidor bowl	30	022.092.01	Connection, vacuum, tubing, 20 mm, female
15	030.224.00	O-ring, AS 568-224, 1.734 I.D. x .139 W	31	77.0882.00	Cover, cuspidor
16	77.0730.01	Bowl, cuspidor with o-rings	32	13.0403.00	Air trap assembly

† Indicates that the individual part is not available for sale

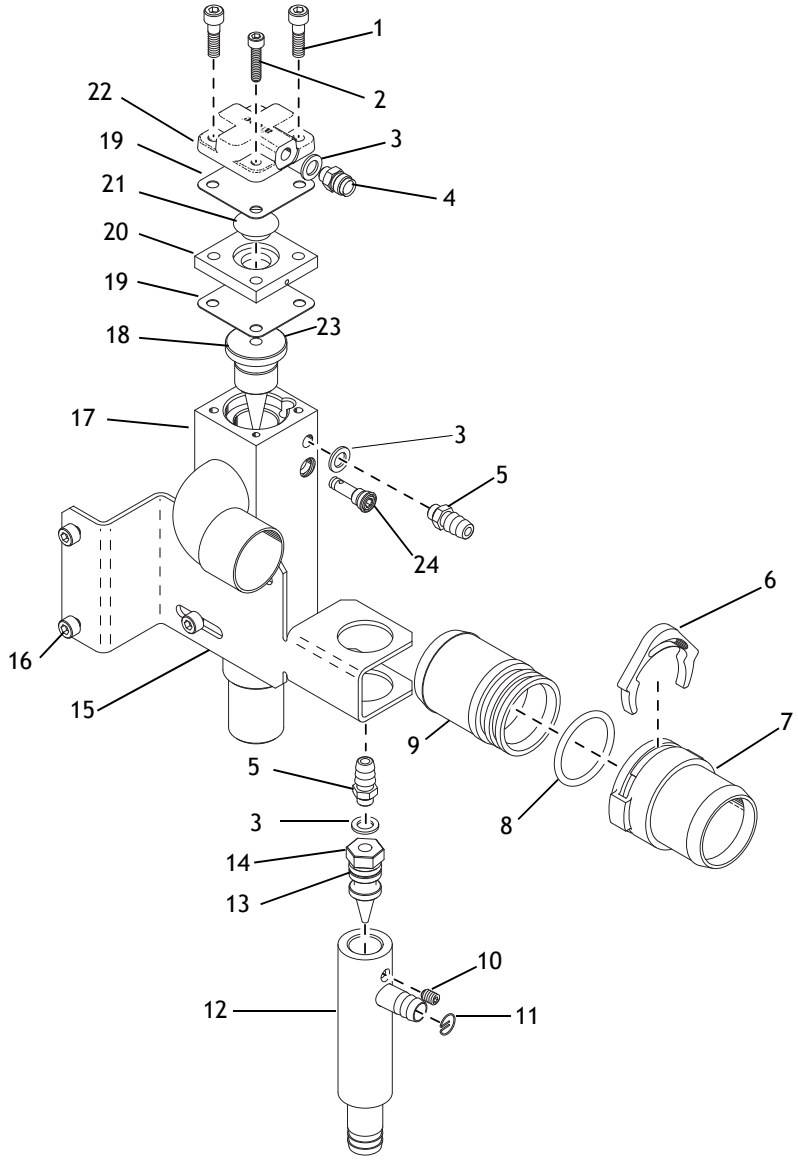
Figure 118. Cuspidor Assembly



Cuspidor Air Vacuum System

Item	Part Number	Description
1	001.042.00	Socket head screw, 6-32 X 1/2", stainless steel
2	001.021.00	Socket head screw, 4-40 X 1/2", stainless steel
3	004.005.00	Washer, flat nylon
4	023.089.00	OD, 1/8" female, 10-32
5	023.805.00	Barb, 5/16" x 10-32
6	022.090.00	Clip, retainer, conn vac
7	022.094.00	Conn. Vac, .25 mm
8	035.053.00	O-ring, vacuum, .20 mm x 2 mm
9	022.095.00	Conn Vac, male, 25 mm tubing
10	007.002.00	Set screw, socket cup, 6-32 x 3/16"
11	11.1111.00	Screen spring clip
12	11.1105.01	ASE assembly, 5/16"
13	030.010.00	O-ring, 101.239 ID x .070W
14	11.1108.00	Air saliva evacuator
15	77.0843.00	Mounting bracket
16	001.034.00	Socket head screw, 6-32 x 1/4"
17	11.1101.01	Body assembly
18	11.1085.00	Air vacuum generator
19	22.0440.00	Diaphragm
20	41.0515.00	Spacer
21	41.0516.00	Piston, stepped
22	11.1086.00	Valve cover
23	030.012.00	O-ring, 012.364 ID x 070 W
24	38.0517.00	Air bleed cartridge with O-ring

Figure 119. Air Vacuum System Assembly



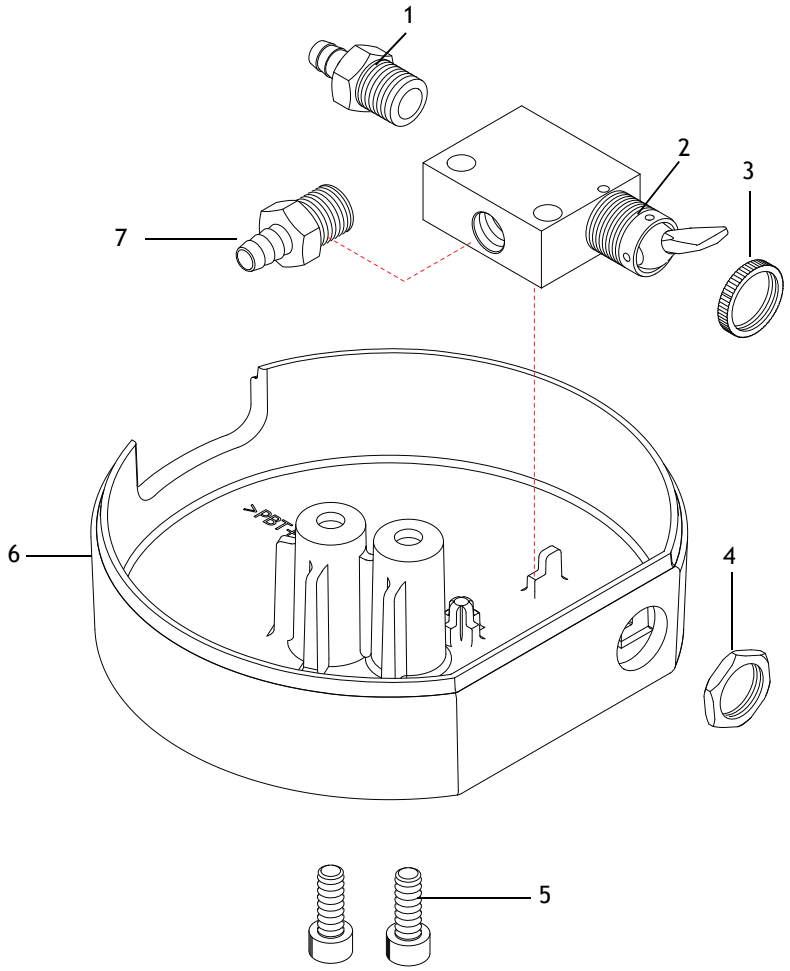
Switch Housing for Air Vacuum System

(Cuspidor Mounted)

Item	Part Number	Description
1	023.804.00	Barb, 5/16 x 1/8"
2	80.0402.13	Valve, toggle, maxi, Surf 4 (includes item #3)
3	006.009.00	Hex nut, 15/32-32" x 9/16 x 3/32"
4	006.069.00	Nut, knurl
5	004.135.00	Screw, socket head, 10-32 x 1/2", stainless steel
6	77.0938.00	Cover, housing
7	023.805.00	Barb, 5/6" x 10-32

Items 1, 2, 3, 4, and 7 are part of the 10.076.000 AVG assembly.

Figure 120. Switch Housing Assembly

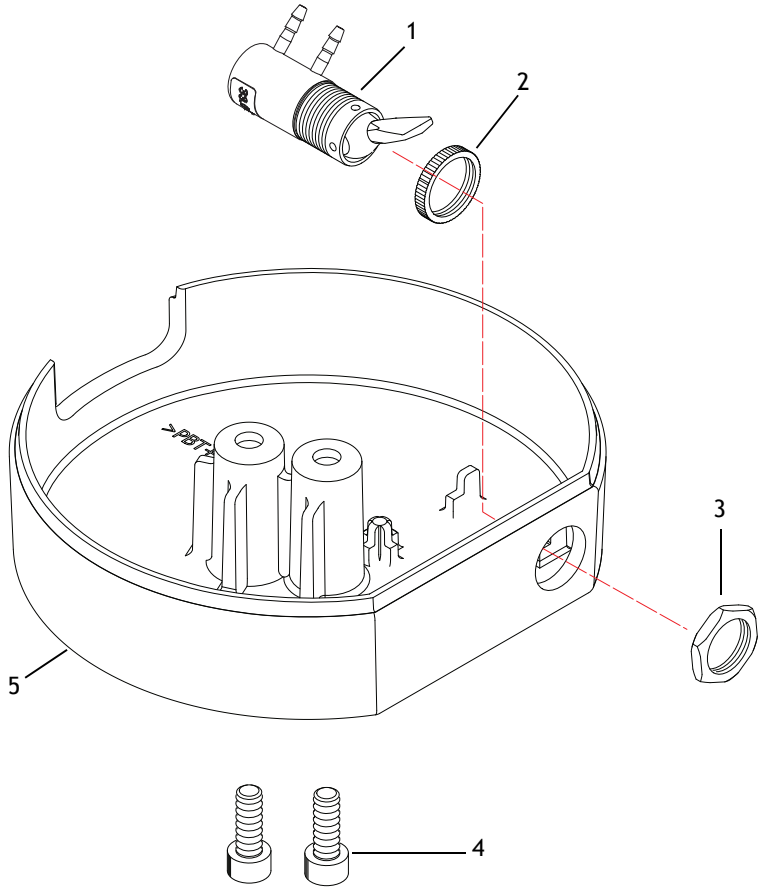


Master Toggle Switch - No Delivery System

(Cuspidor Mounted)

Item	Part Number	Description
1	33.0173.00	Master toggle valve assembly
2	006.009.00	Hex nut, 15/32-32" x 9/16 x 3/32"
3	006.069.00	Nut, knurl
4	004.135.00	Screw, socket head, 10-32 x 1/2", stainless steel
5	77.0938.00	Cover, housing

Figure 121. Master Toggle Switch Housing Assembly



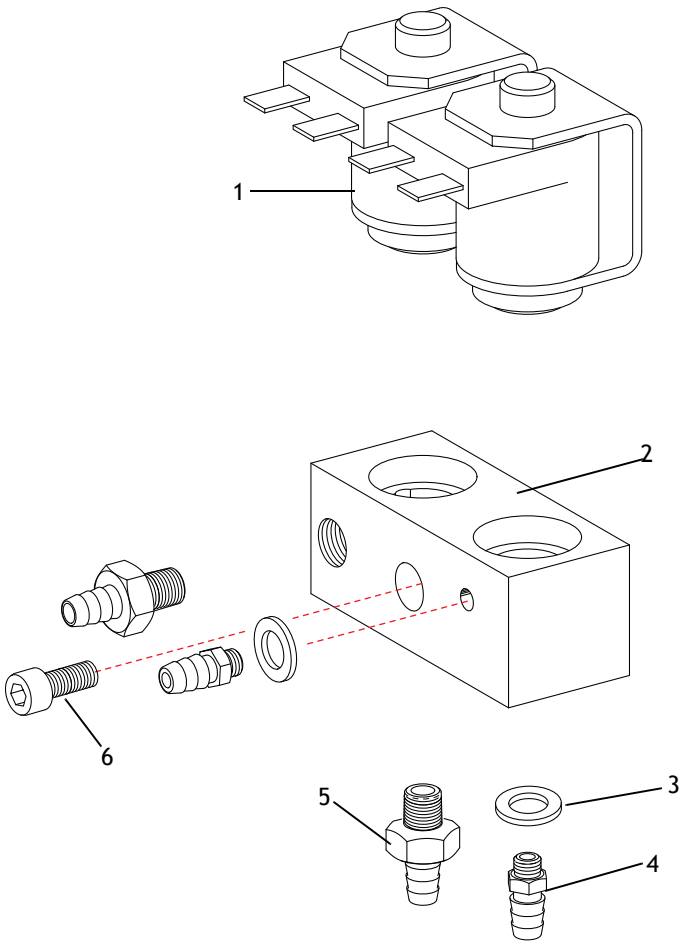
Cuspidor Fill/Rinse Manifold Assembly

Part No: 38.1803.00

The cuspidor fill/rinse manifold assembly mounts inside the support center.

Item	Part Number	Description
1	041.660.00	Solenoid, 24 VAC, Cuspidor
2	77.0816.00	Manifold, Cupfill/Bowl Rinse
3	004.005.00	Washer, Flat Nylon
4	023.805.00	Barb, 5/16" x 10-32
5	023.804.00	Barb, 5/16" x 1/8 NPT
6	002.135.00	Mounting screw

Figure 122. Fill/Rinse Assembly

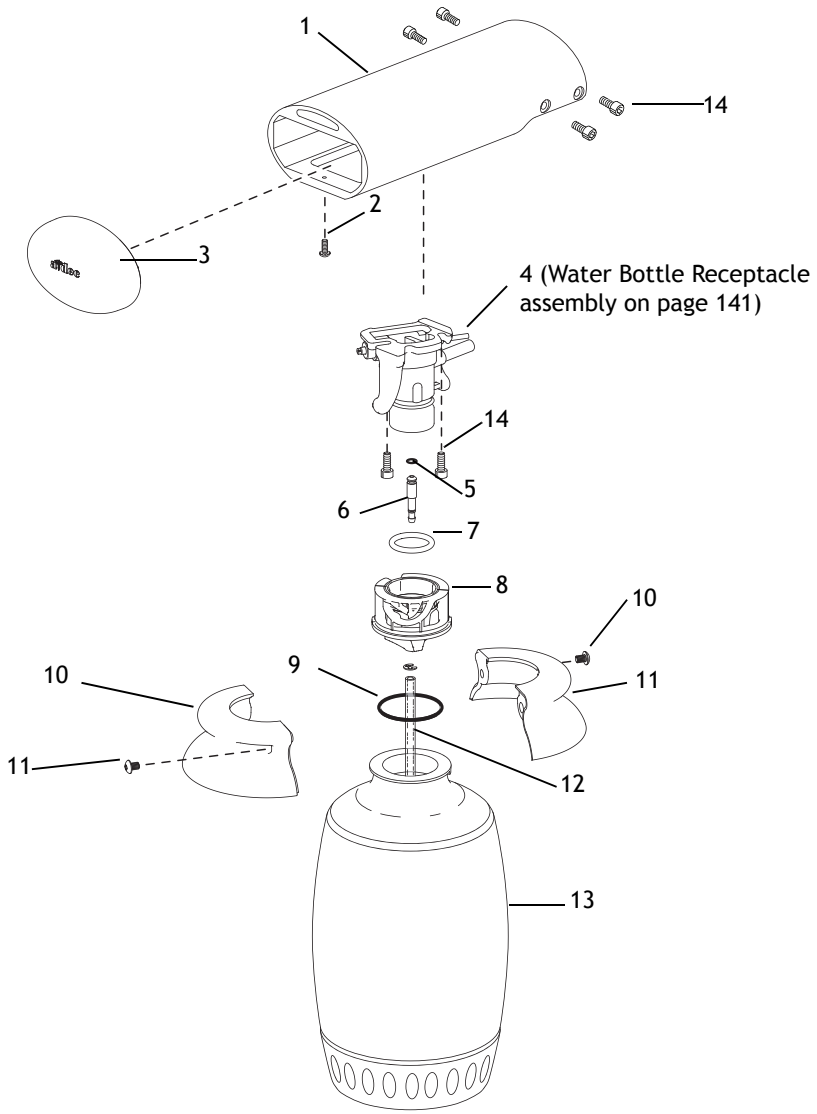


Self-Contained Water Bottle Assembly

Item	Part Number	Description
1	77.0720.00	Support, water bottle
2	001.097.00	Screw, pan, 6-32x3/8"
3	77.0723.00	End cap
4	14.0475.00	Receptacle assembly
5	035.048.01	O-ring, .114 ID x .070, package of 10
6	14.0457.00†	Connector, water (replace with 14.0468.00)
7	010.002.00	Retaining ring, external tooth, .187" ID
8	14.0453.00†	Receptacle (replace with 14.0468.00)
9	031.130.01	O-ring, N, 1.612 ID x .103 W, package of 10
10	14.0458.01	Clamp, water bottle, white
11	005.110.00	Screw, button head socket, 10-32 x 1/2
12	14.0467.00	Tube, supply, 8" long
13	14.0466.01	Water bottle with base, white
14	002.135.00	Screw, socket head, 10-32 x 1/2, stainless steel

† Indicates that the individual part is not available for sale

Figure 123. Self-Contained Water Bottle Assembly

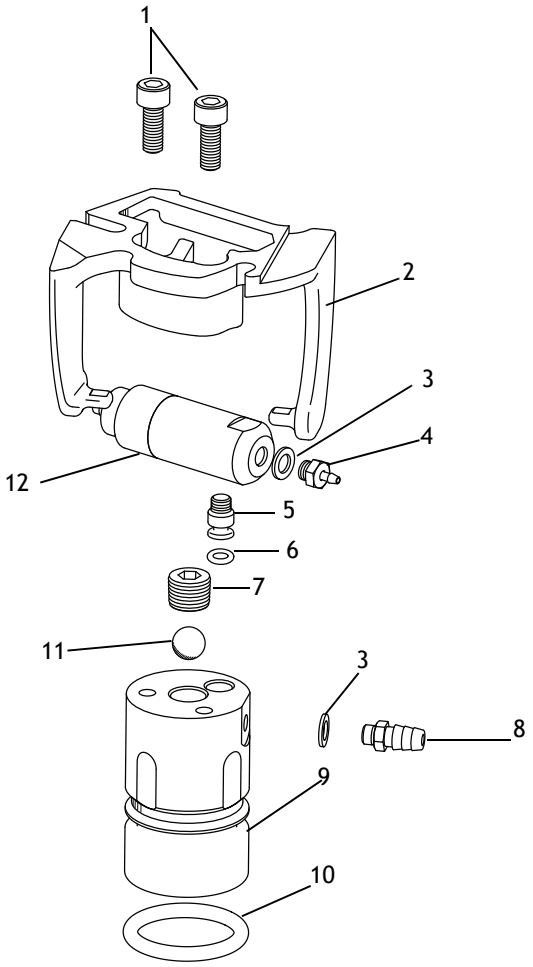


Water Bottle Receptacle Assembly

Part Number:14.0475.00

Item	Part Number	Description
1	002.135.00	Screw, socket head, 10 - 32 x 1/2", stainless steel
2	14.0481.00	Base, cast receptacle, water bottle
3	004.005.00	Washer, flat nylon, 197" diameter
4	023.004.00	Barb, 1/8" x 10-32
5	023.818.00	Fitting, 10 - 32 x 1/2", stainless steel
6	030.006.00	O-ring
7	021.020.00	Plug, socket head, 1/8"
8	023.805.00	Barb, 5/16" x 10-32
9	14.0478.00	Connector, bottle, air-water
10	034.213.00	O-ring, .921 ID x .139 wide
11	015.025.00	Ball, 5/16" diameter
12	24.0388.02	Regulator Assembly, 40 PSI, without barbs

Figure 124. Water Bottle Receptacle



6

ASSISTANT'S INSTRUMENTATION

This section provides detailed information related to servicing, maintaining, and adjusting the A-dec assistant's instrumentation. For information on service parts, see the *Genuine A-dec Service Parts Catalog* or contact A-dec Customer Service. (See "Get Support" on page 2.)

Contents

Figure 125. Assistant's Instrumentation

Telescoping Arm Mount
(Model 352)

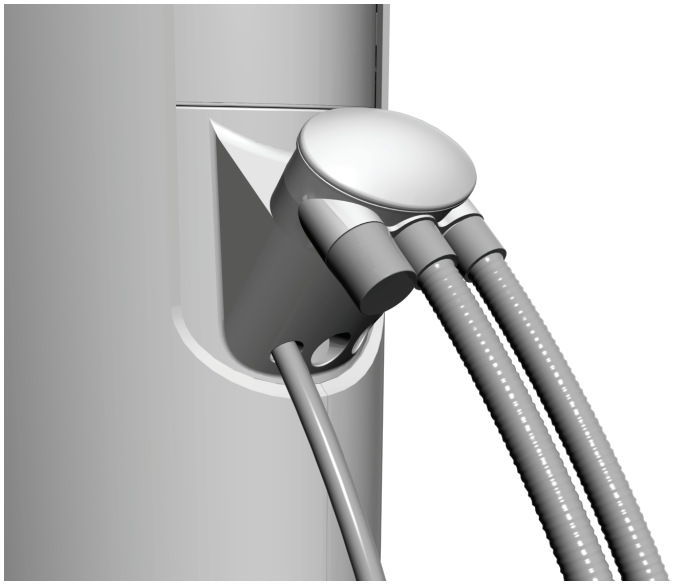
Cuspidor Mount
(Model 353)

Product Overview

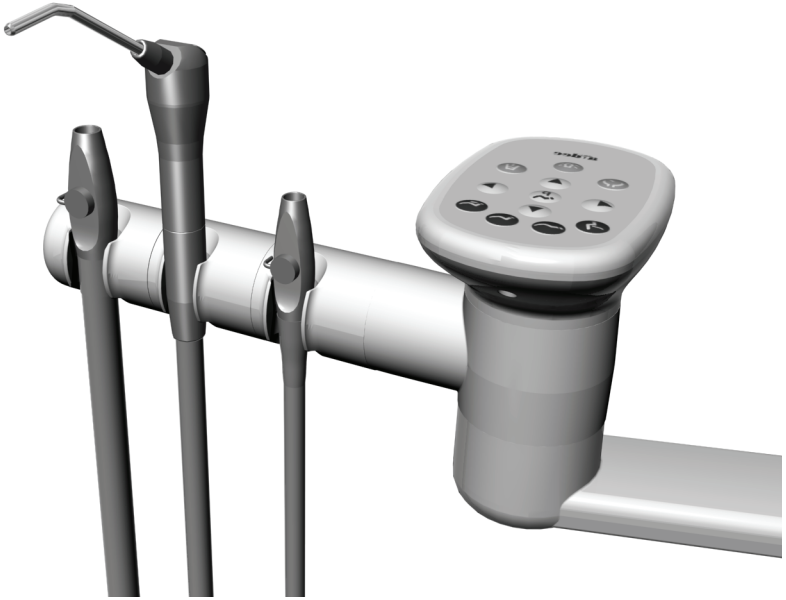
The A-dec 300 assistant's instrumentation is equipped with an autoclavable syringe, high volume evacuator (HVE), and saliva ejector. Some configurations may include an optional dual HVE or instrumentation that supports a chair-side or single-operatory vacuum system. Integrated into the support center is the solids collector, which connects with the HVE and saliva ejector to separate solids from the evacuated material.

The assistant's instrumentation for A-dec 300 may be a 353 cuspidor mounted system or a 352 telescoping arm mounted system. The assistant's vacuum instruments disconnect from the tubing for easy cleaning, and they are fully autoclavable.

Figure 126. A-dec 300 Assistant's Instrumentation



353 Cuspidor Mounted



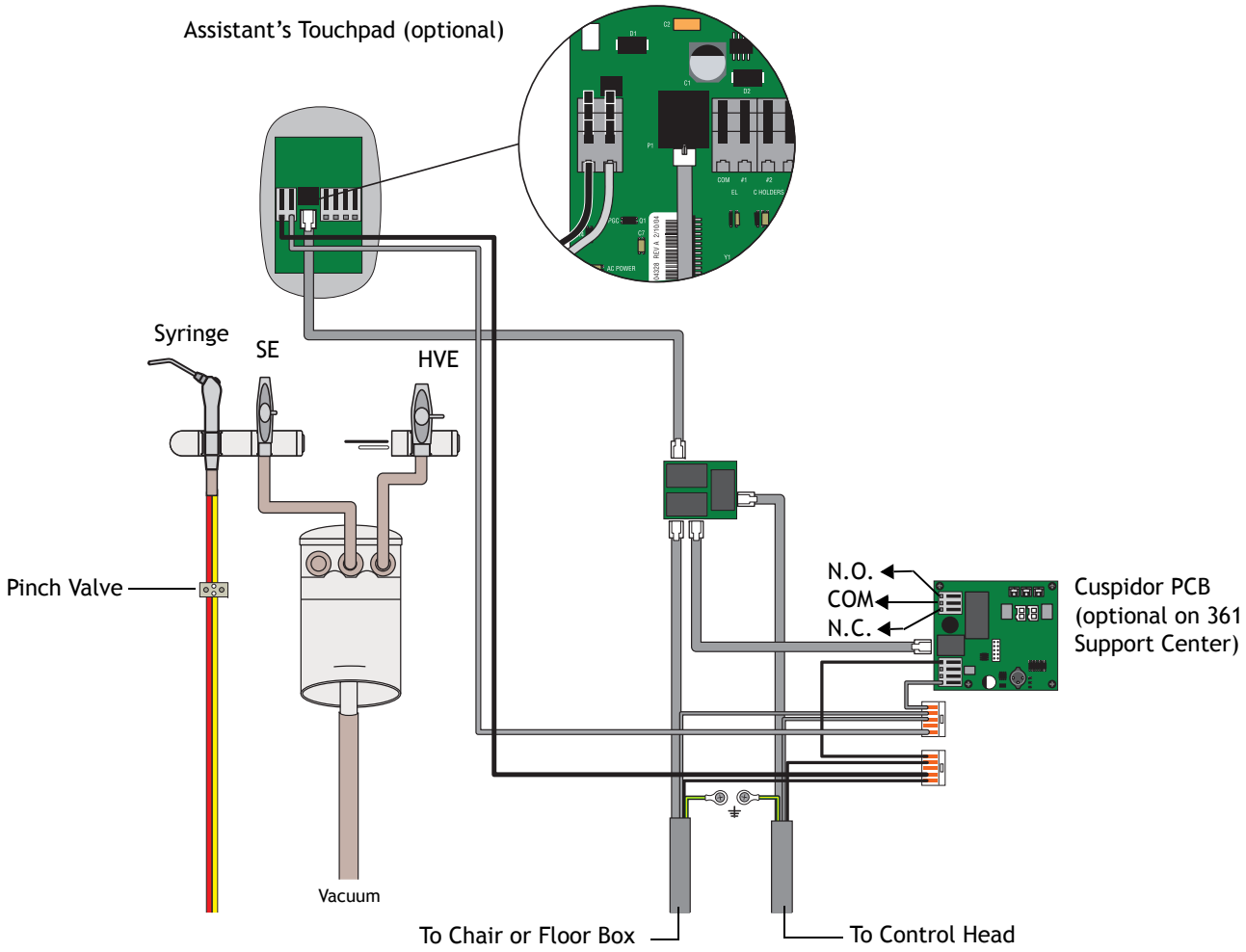
352 Telescoping Mounted

Flow Diagrams

Standard Holder Flow Diagram

This flow diagram describes the plumbing and electrical connections of the 300 assistant's standard holder assembly and solids collector.

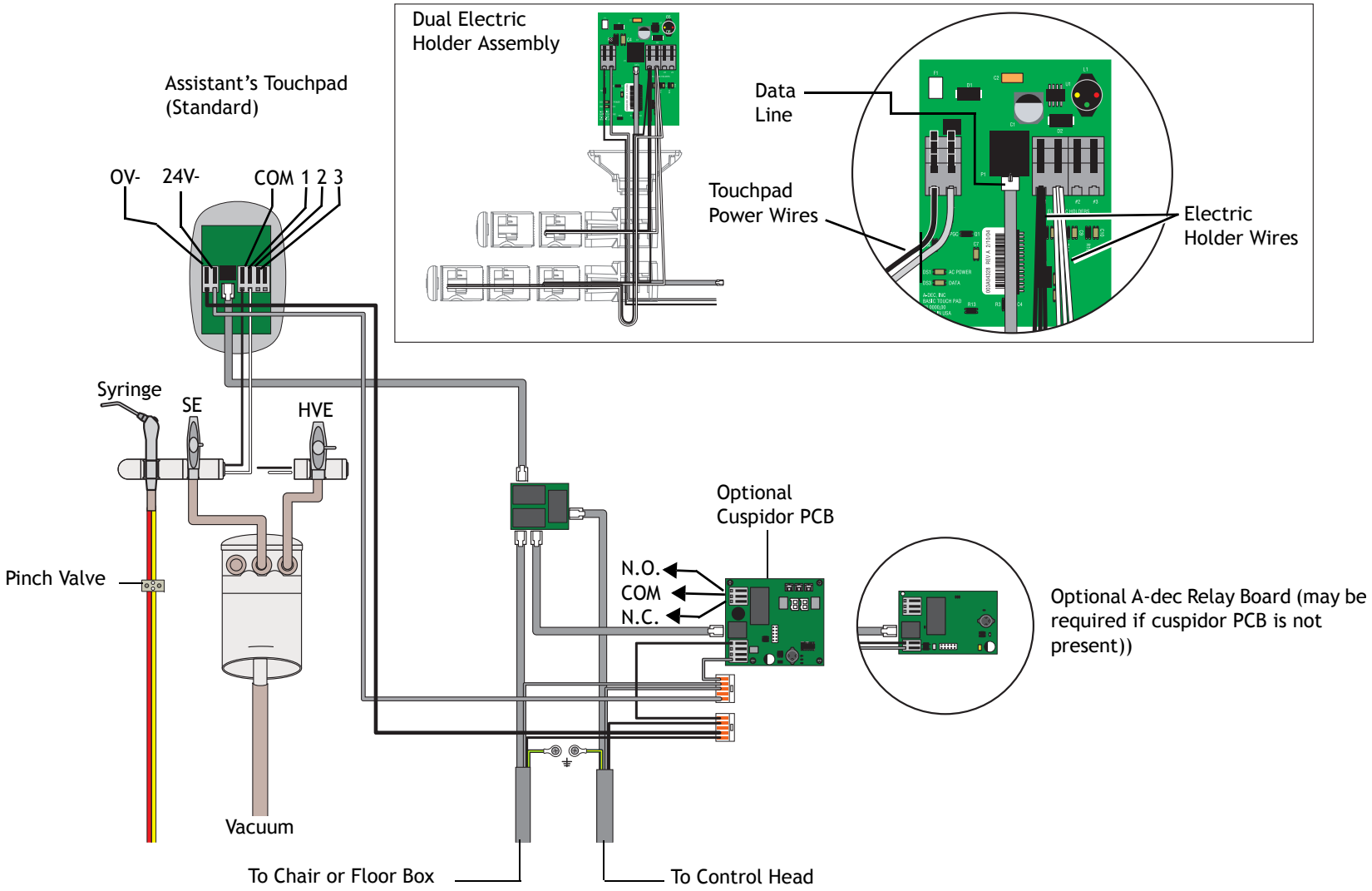
Figure 127. Standard Holder Flow Diagram



Auto-Electric Holder Flow Diagram

This flow diagram describes the plumbing and electrical connections of the assistant's auto-electric holder assembly and solids collector.

Figure 128. Auto-Electric Holder Flow Diagram



Adjustments/Maintenance

Holders

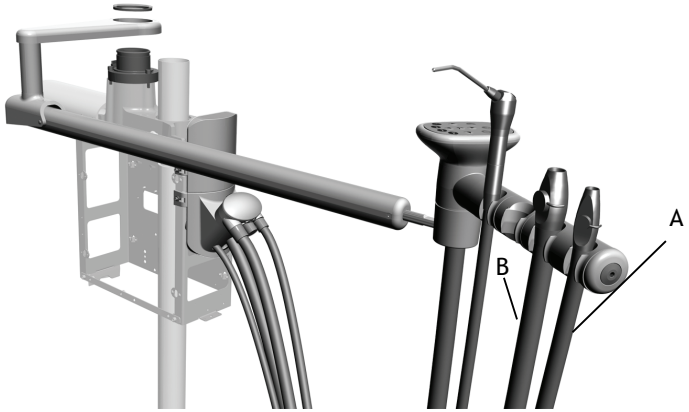
Standard and Auto-Electric Holders

The touchpad does not need to be removed when disassembling the standard holder. Each handpiece in the holder assembly automatically activates when you lift it from its holder.

The electric holders provide vacuum On/Off switching for users whose vacuum system requires this functionality. The vacuum pump activates automatically when you lift the high volume evacuator (HVE) or saliva ejector from the holder. The vacuum turns off when you place the HVE or saliva ejector back into the holder.

CAUTION When reassembling the electric holder, rotate all holders, holder assemblies, and the touchpad to ensure there is enough service loop in the wires to prevent them from breaking.

Figure 129. Auto-Electric Holders



A) Ribbed Saliva Ejector Tubing; (B) Ribbed HVE tubing

Figure 130. Single Auto-Electric Holder Assembly

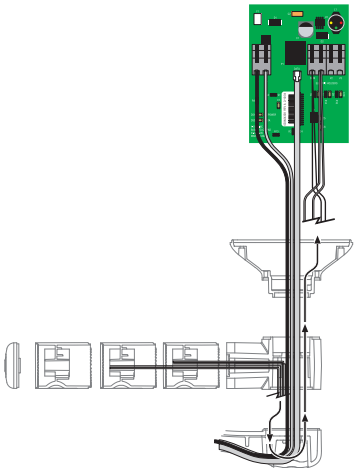
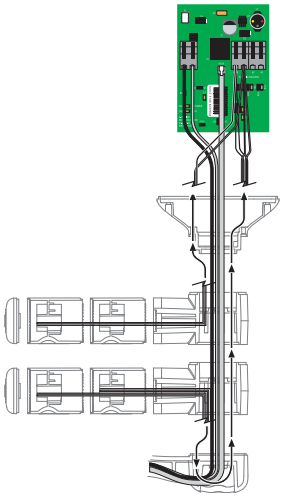


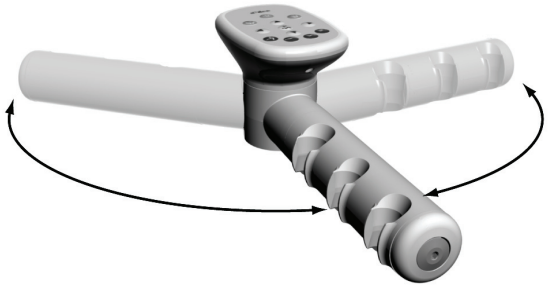
Figure 131. Dual HVE Auto-Electric Holder Assembly



Positioning Assistant's Holder

The A-dec 300 assistant's instrumentation is delivered from either a telescoping arm or cuspidor mount arm. Both are equipped with individual holders that pivot and rotate to improve positioning. Options include an integrated touchpad and dual holder assemblies. The holder assembly pivots for positioning to suit most procedures.

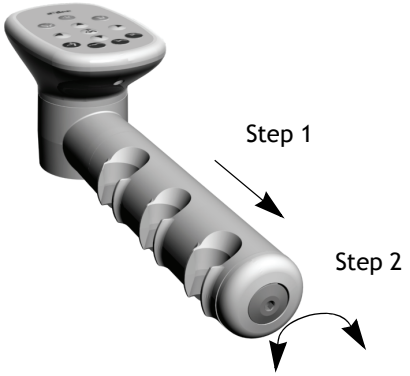
Figure 132. Pivoting Instrument Holders



The independently adjustable holders rotate to allow customized positioning for each instrument on the assembly. To rotate holder:

1. Pull holder slightly away from the adjacent one.
2. Rotate to the desired position and release.

Figure 133. Rotating Instrument Holders

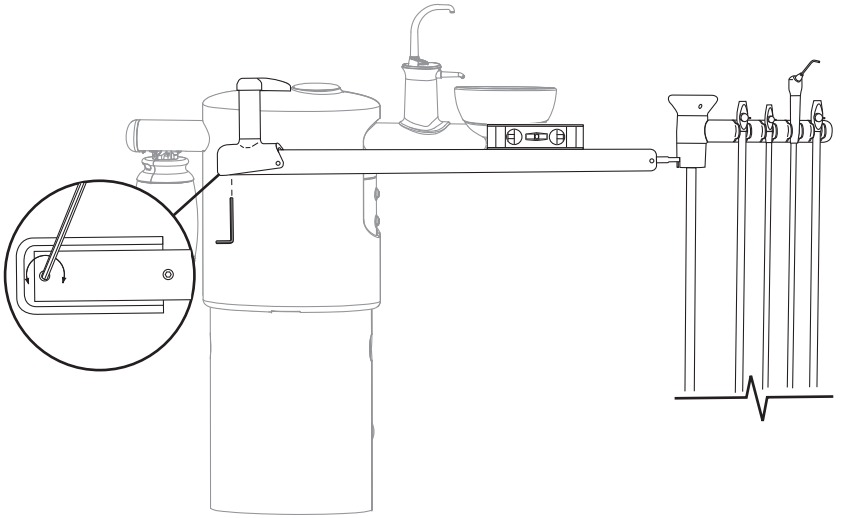


Leveling Telescoping Arm

Complete the following steps to level the telescoping arm for the assistant's instrumentation arm:

1. Locate the adjustment setscrew underneath the telescoping arm (see Figure 134).
2. Insert a 1/8" hex key and level the arm:
   - Turn the hex key right to tilt the arm up.
   - Turn the hex key left to tilt the arm down.

Figure 134. Level Telescoping Arm



Assistant's Touchpad Connections

The assistant's instrumentation uses a standard touchpad that serves as a single touch surface for controlling the chair, dental light, and cuspidor. The touchpad can rotate 340° for access and visibility.

Figure 135. Assistant's Touchpad with Standard Holder Connections

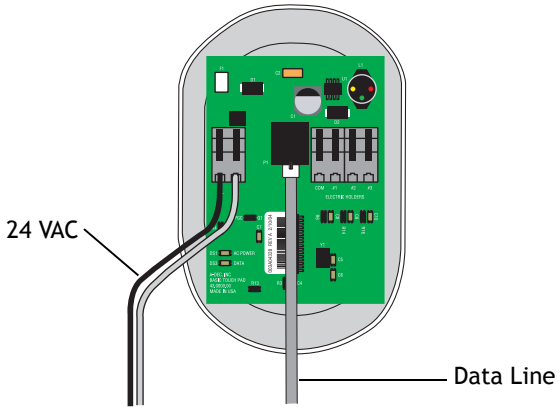
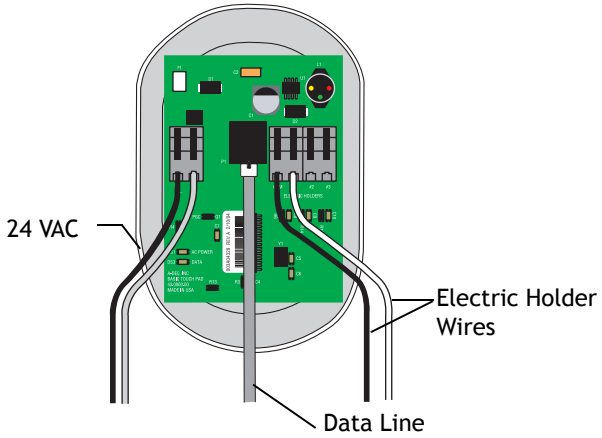


Figure 136. Assistant's Touchpad with Electric Holder Connections

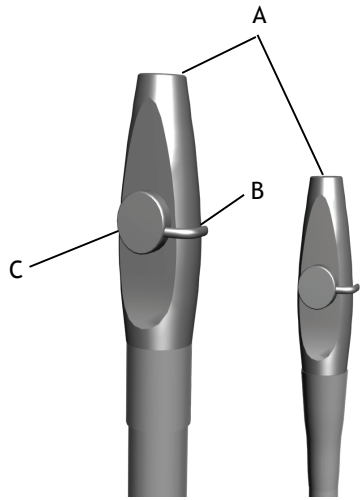


Vacuum Instrumentation

There are several configurations for the vacuum systems (the HVE and saliva ejector). The table below describes the configuration and activation information.

Configuration	HVE Activation	Saliva Ejector Activation
Central Vacuum	Lift valve lever	Lift valve lever
Single-Operatory Vacuum; Auto-Electric Holders	Lift instrument from holder, then lift valve lever	Lift instrument from holder, then lift valve lever
Air Vacuum System with AVG	Lift valve lever	Flip cuspidor toggle up, then lift valve lever

Figure 137. HVE and Saliva Ejector Operation

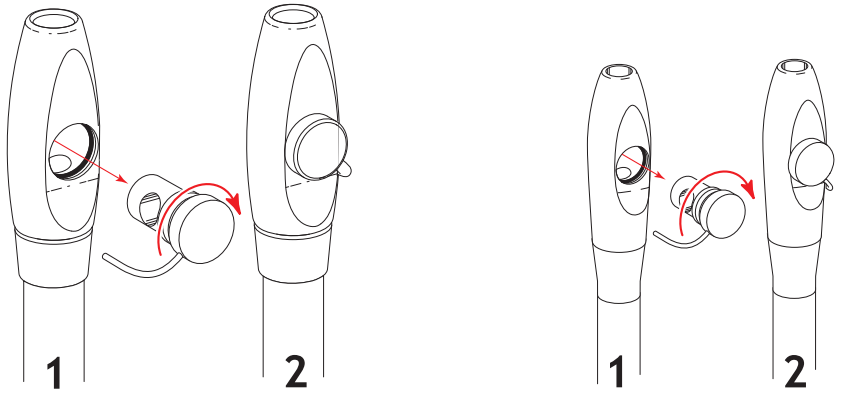


(A) Opening (for tip); (B) Valve Lever; (C) Valve

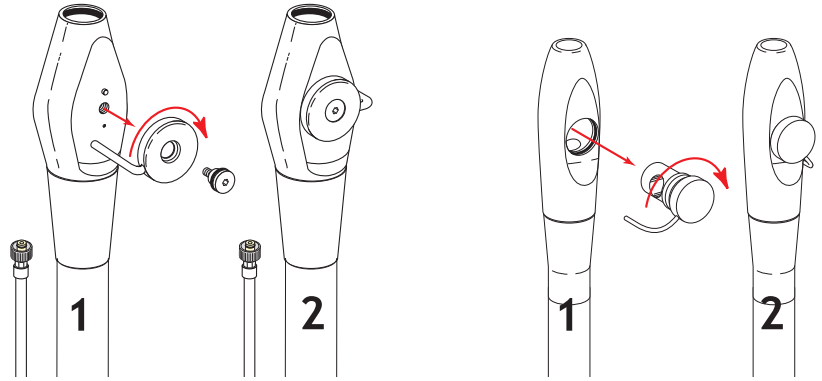
Left/Right Conversion for HVE or Saliva Ejector

The standard HVE and saliva ejector can be easily converted for right-handed or left-handed operation. To convert the HVE or saliva ejector to one side or the other, push the valve out of the HVE body by pressing on the small diameter side. Rotate the valve 180 degrees, then push it back into place.

Figure 138. Left/Right Conversion



HVE and saliva ejector left/right conversion



AVG instruments left/right conversion

Solids Collector

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

CAUTION Use appropriate gloves when handling contaminated parts.

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 the cuspidor. Doing so could plug the drain.

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

CAUTION Ensure that the solids collector cap is inserted properly. Failure to do so will not allow for proper suction.

Figure 139. Replace Solids Collector Screen

Illustrated Parts Breakdown—Assistant Instrumentation

This section contains illustrated parts breakdowns specific to the assistant’s instrumentation.

Part Identification

In this section, you will find serviceable components tables that correspond to the illustrations. The tables identify all parts and kits, including those that are not for sale. Parts that are not for sale are indicated with the symbol shown below:

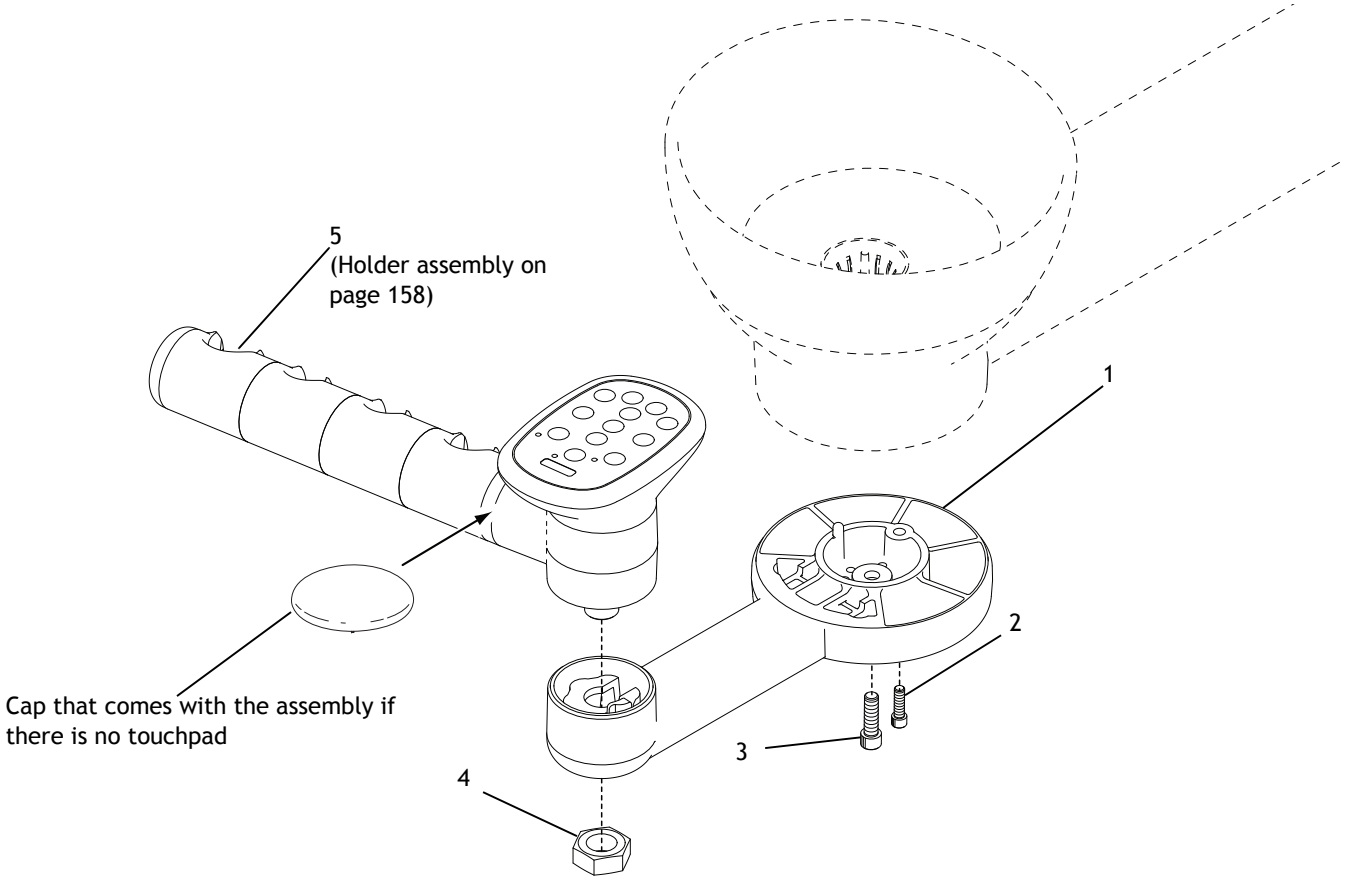
† — Indicates that the individual part is not available for sale. These parts are typically part of a kit and/or larger assembly that is for sale.

Contents

353 Assistant's Cuspidor Mounted Assembly

Item	Part Number	Description
1	77.0958.00	Casting arm, assistant holder
2	001.088.00	Screw, socket head, 10-32 x 5/8", stainless steel
3	002.120.00	Screw, socket head, 1/4 - 20 x 1", stainless steel
4	006.121.00	Nut, hex jam, 5/8 - 18 grade 5
5		Holder assembly

Figure 140. 353 Assistant's Cuspidor Mounted Assembly

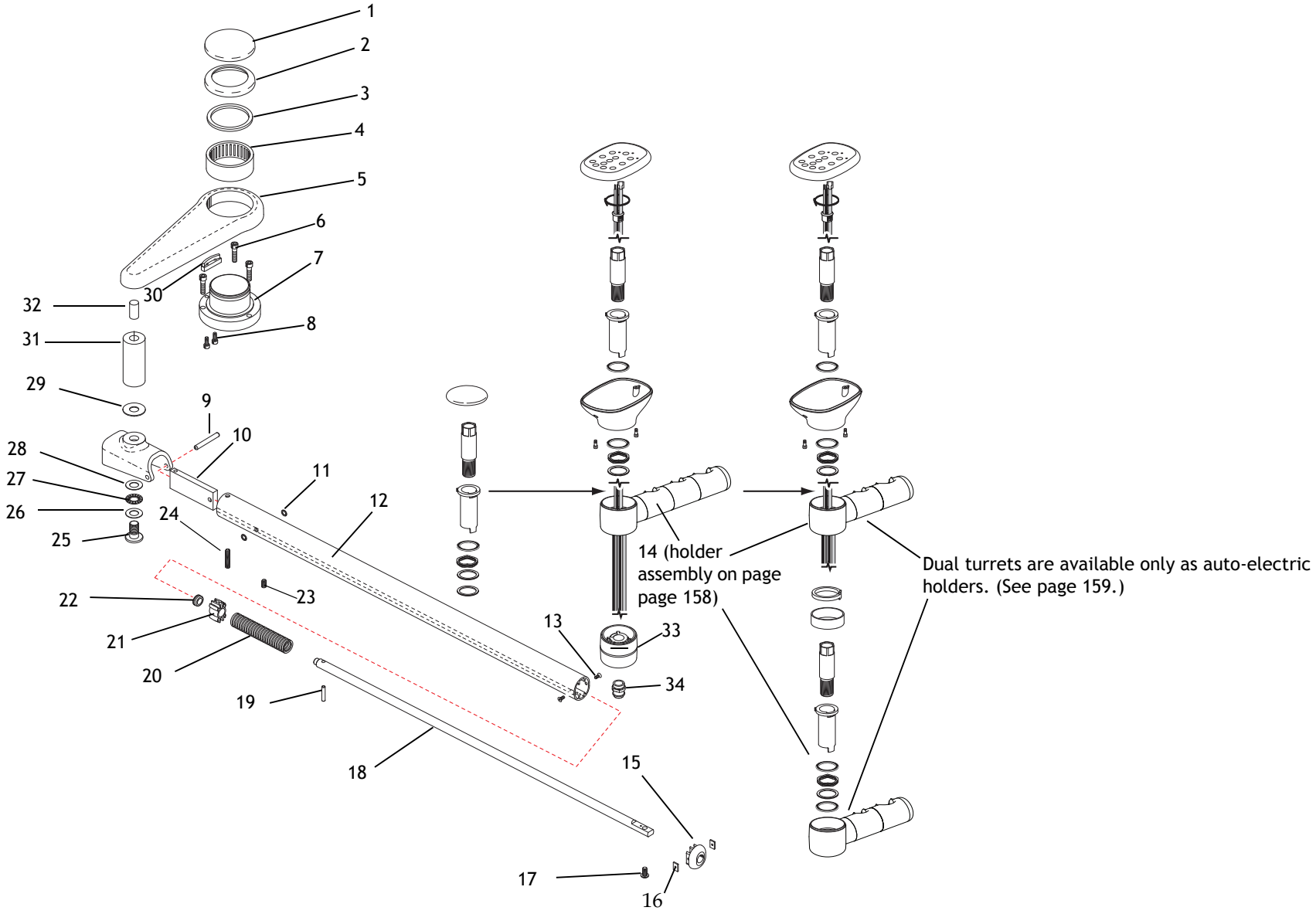


352 Assistant's Telescoping Mounted Components

Item	Part Number	Description	Item	Part Number	Description
1	77.0878.00	Cover, assistant’s arm (without delivery system)	18	12.0946.00	Rod
2	77.0877.00	Trim ring, assistant's arm, 2" post (without delivery system)	19	011.099.00	PIN dowel, 1987 diameter X 1.00LG
3	010.059.01	Retaining ring with bag	20	024.152.01	Tubing, Convolute, Surf 4, 5/8 ID - 4" long
4	016.105.00	Bearing, roller	21	75.0018.00	Slide
5	75.0015.01†	Assistant’s mounting arm*	22	018.005.00	Grommet, 1/4 ID X .38 groove
6	002.120.00	Screw, socket head, 1/4 - 20 X 1"	23	007.025.00	Set Screw, 1/4 - 20 X 1/2"
7	77.0828.00†	Assistant's arm mounting hub	24	007.049.00	Set screw, 1/4- 20X1/2"
8	002.135.00	Screws, socket head, 10-32 x 1/2"	25	35.0153.00	Socket shoulder screws, 1/2 - 20 X 5/16 X .95
9	12.0948.00	Pivot pin	26	004.136.00	Thrust bearing washer, quantity of 2
10	12.0947.00	Support pin	27	016.033.00	Thrust bearing g needle
11	004.055.00	Flat nylon washer	28	12.0950.01	Bracket
12	12.0945.01	Housing	29	12.0955.00	Flat delrin washer
13	001.198.00	Screw 6-32X3/8"	30	77.0829.00†	Arm extension
14		Holder Assembly	31	75.0127.00	Stop
15	006.040.00	Retainer nut	32	007.161.00†	Screw, 1/2 - 20 X 1"
16	75.0019.01	End cap	33	77.0956.01	Turret adaptor
17	001.130.01	Screw, 1/4-20X1/2	34	023.822.00	Barb

† Indicates that the individual part is not available for sale
* Replace with p/n 12.0949.00

Figure 141. 352 Assistant's Telescoping Mounted Assembly



Assistant's Holder Assemblies

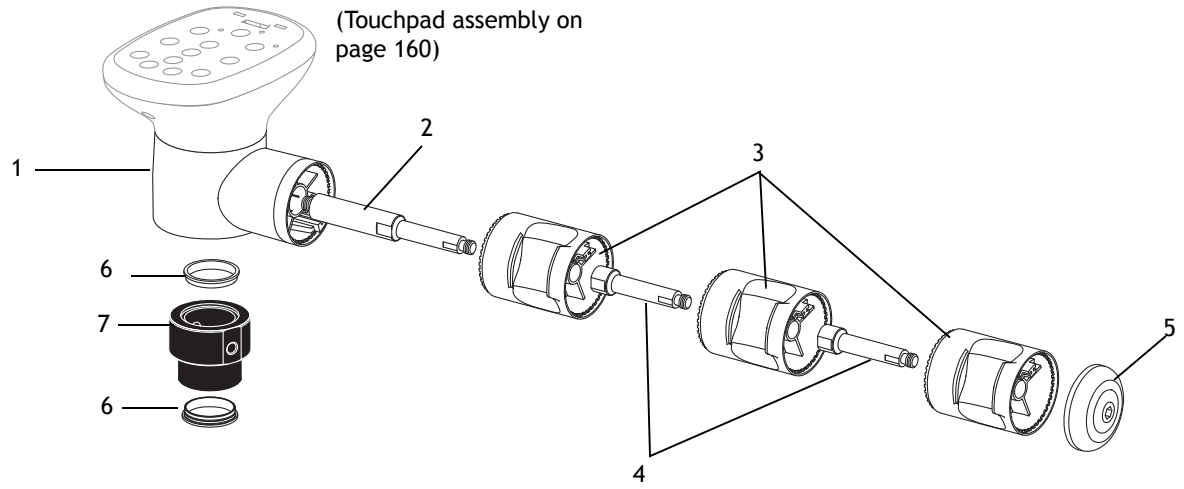
There are two types of assistant's holders, standard and electric. The touchpad does not need to be removed if disassembling a standard holder.

Standard Assistant's Holder Assembly

Item	Part Numbers	Description
1	99.0649.01†	Turret
2	99.0701.00	Turret axle, assistant's arm
3	99.0653.03 99.0650.03 99.0652.03	Holder, SE/Syringe kit, White 2, 9 mm Holder, standard HVE kit, White 2, 11 mm Holder, assistant's HVE kit, White 2, 15 mm
4	99.0660.00†	Axle
5	99.3684.00	End cap assembly kit
6	99.0698.00	Bearing
7	99.0699.00	Inner hub assistant's arm

† Indicates that the individual part is not available for sale

Figure 142. Standard Assistant's Holder Components

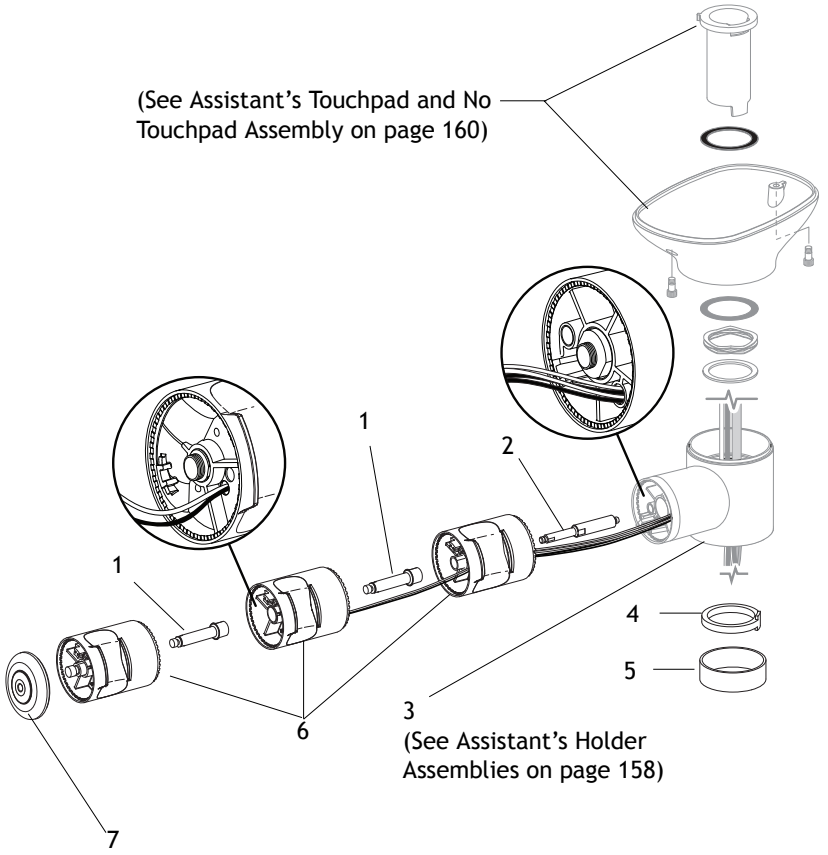


Auto-Electric Holder Assembly

Item	Part Number	Description
1	99.0660.00†	Axle
2	99.0701.00	Turret, axle, assistant's arm
3		Holder assembly
4	77.0285.00*	Stop, turret rotation, assistant's arm
5	99.0687.00*	Sleeve, wire, assistant's arm
6	99.0673.03 99.0674.03 99.0675.03	Auto-electric holder, SE/syringe, White 2, 9 mm Auto-electric holder, HVE, White 2, 11 mm Auto-electric holder, HVE, White 2, 15 mm
7	90.1216.00	End cap assembly kit

† Indicates that the individual part is not available for sale
* Telescoping arm only

Figure 143. Auto-Electric Assistant's Holder Components

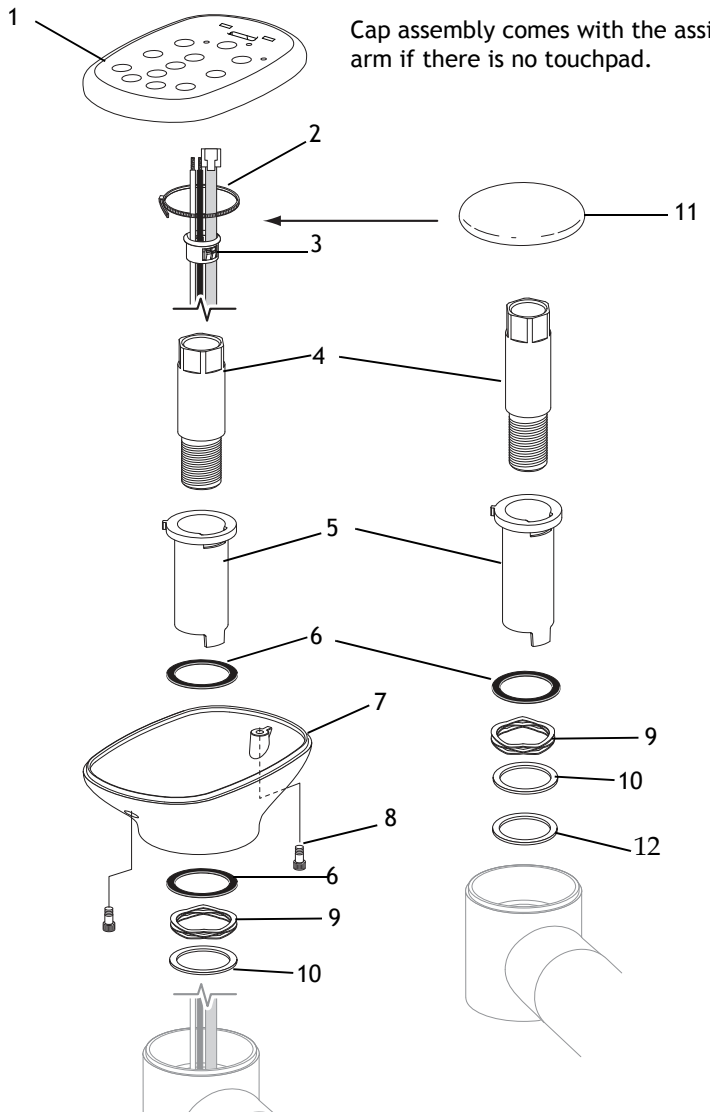


Assistant's Touchpad and No-Touchpad Assembly

With or Without Auto-Electric Holders

Item	Part Number	Description
1	90.1186.00	Standard touchpad with circuit board
2	025.002.01	Cable tie
3	041.663.00	Cable bushing
4	77.0123.00	Bolt
5	99.0651.00	Spline
6	004.173.00	Washer, Nylatron
7	77.0335.01	Touchpad base
8	003.078.00	Screw, socket head, 4-40 x 1/4"
9	004.237.00	Washer, wave
10	004.060.00	Washer
11	77.0413.01	Cap
12	77.1024.00	Spacer, .875ID x 1"

Figure 144. Assistant's Touchpad and No Touchpad Components

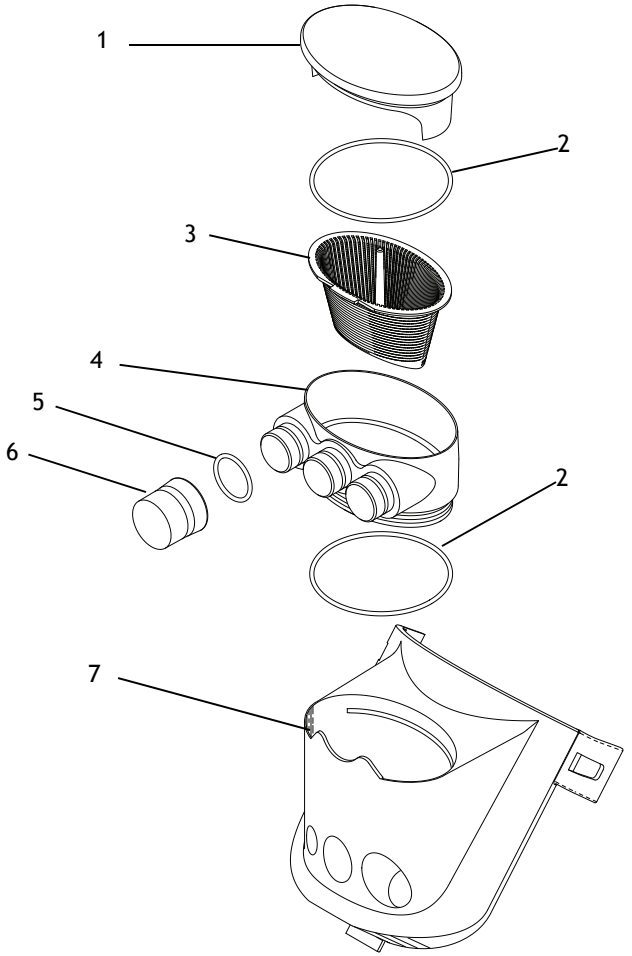


Vacuum Canister Assembly

Item	Part Number	Description
1	77.0254.03	Cap with deflector
2	030.035.02	Vacuum cap kit with o-ring, package of 10
3	11.1284.01	Solids Trap Screen
4	77.0453.01	Connector
5	034.018.02	O-ring, red, package of 10
6	11.1304.01†*	Cap, 15 mm
7	77.0748.00	Vacuum canister, base

† Indicates that the individual part is not available for sale
*Replace with p/n 11.1280.02.

Figure 145. Vacuum Canister Assembly



Autoclavable HVE Standard and 11/15 mm

Common Components

Item	Part Number	Description
1	11.1071.00	Body, autoclavable HVE
2	11.1074.00	Rotor assembly with O-rings
3	11.0998.01	Screen, spring clip, QD, HVE, package of 5
4	034.014.01	O-ring, E, .489 ID x .070 W, package of 10
5	034.013.01	O-ring, E, .426 ID x .070 W, package of 10
9	034.018.02	O-ring, .739 ID x .070 W, package of 10

Standard - Part Number 11.1296.01

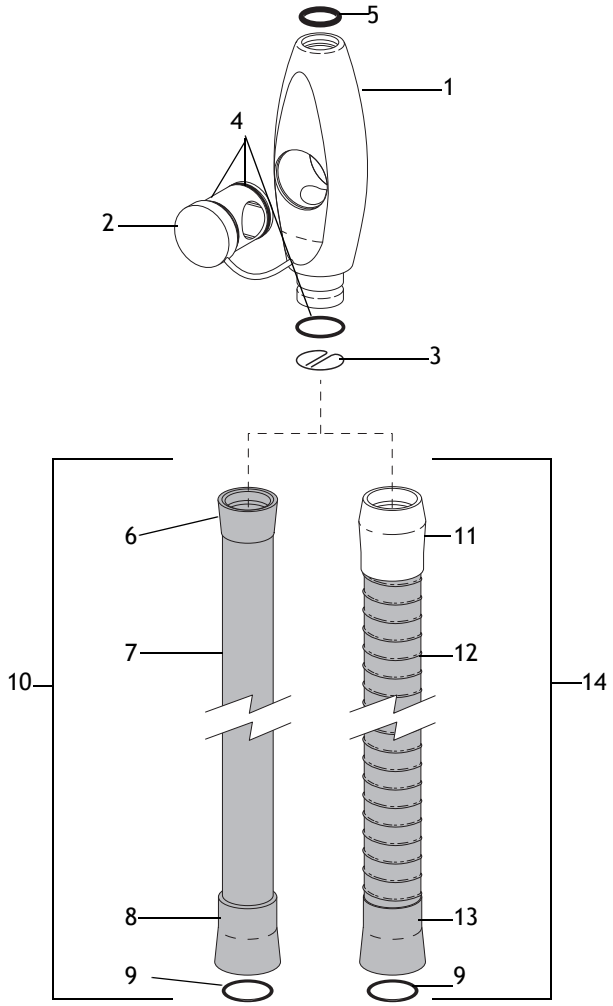
Item	Part Number	Description
6	11.1027.01	Tailpiece, QD, short
7	024.221.00†	Tubing, 1/2 ID (63")
8	11.1300.02	Tailpiece, standard HVE
10	11.1292.01	Standard HVE tubing assembly

11mm and 15mm - Part Number 11.1305.01

Item	Part Number	Description
11	11.1272.00†	Tailpiece, QD, HVE
12	024.222.00	Tubing, 16 mm ID, vac (63")
13	11.1301.03	Tailpiece, HVE, 15 mm
14	12.1239.03	11 mm HVE tubing assembly

† Indicates that the individual part is not available for sale

Figure 146. Autoclavable HVE Assembly



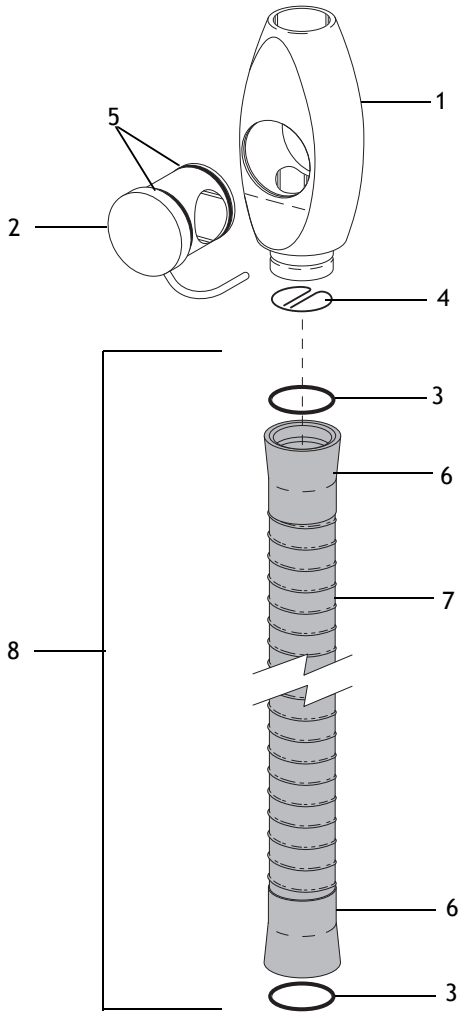
Autoclavable HVE with Large Bore 15mm (541 and 545)

Part Number:11.1315.00

Item	Part Number	Description
1	12.1114.00	Body, autoclavable HVE, 15 mm
2	12.1116.00	Rotor assembly with O-rings
3	034.018.02	O-ring, E, .739 ID x. 070 W, package of 10
4	12.1109.01	Screen, spring clip, QD, 15mm, package of 5
5	034.019.01	O-rings, E, .801 ID x .070 W, package of 10
6	11.1301.03	Tailpiece, HVE, 15 mm
7	024.222.00†*	Tubing, 16 mm, handpiece, vacuum
8	12.1238.01	Tubing

† Indicates that the individual part is not available for sale
* Replace with p/n 11.1315.00

Figure 147. Autoclavable HVE Assembly



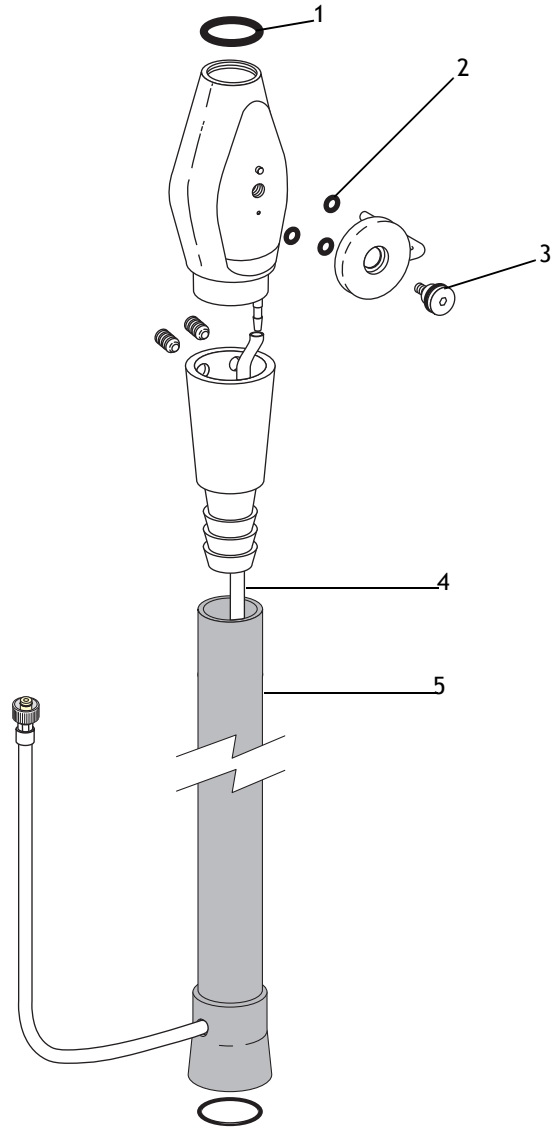
300 AVS Autoclavable HVE

Part Number:11.1312.00

Item	Part Number	Description
1	030.013.02	O-ring, package of 10
2	030.002.02	O-ring, package of 10
3	035.049.01	O-ring, package of 10
4	036.003.03	Yellow tubing, 1/8" OD
5	024.220.00†*	AVS tubing, 1/2" ID, gray 3

† Indicates that the individual part is not available for sale
*Replace with p/n 11.1312.00

Figure 148. 300 AVS Autoclavable HVE Assembly



Autoclavable Saliva Ejector

Common Components

Item	Part Number	Description
1	034.107.01	O-ring E, .206 ID x .103 W, package of 10
2	034.012.01	O-ring E, .364 ID x .070 W, package of 10
3	12.1089.00	Body, with valve
4	12.1093.00	Rotor assembly, with O-rings
8	034.018.02	O-ring, package of 10

Standard - Part Number 12.1235.01

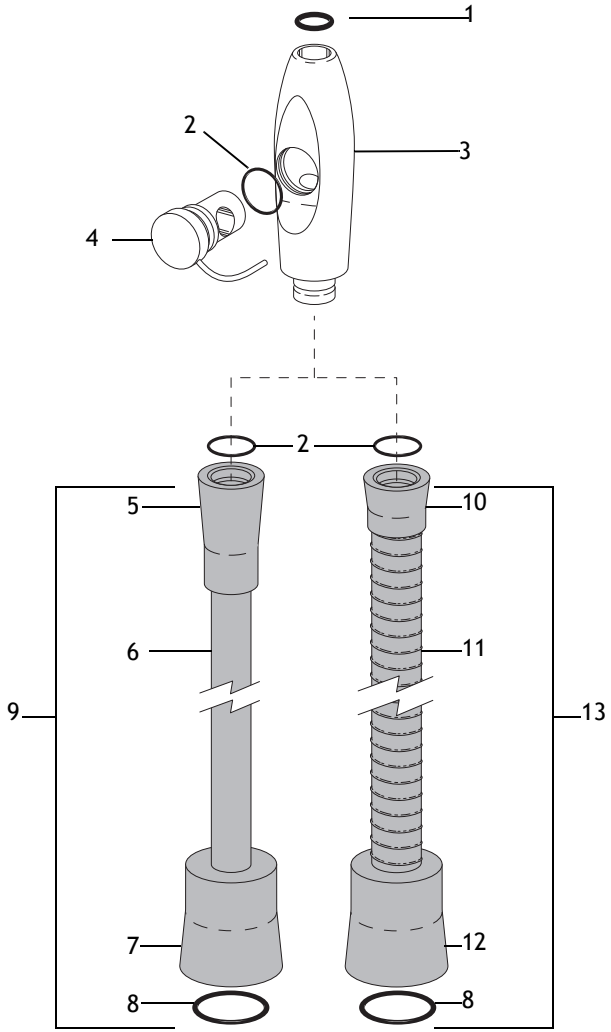
Item	Part Number	Description
5	12.1229.01	Tailpiece
6	024.218.03†	Tubing (63")
7	11.1303.03	Tailpiece
9	11.1306.01	Tubing assembly

10mm - Part Number 12.1236.01

Item	Part Number	Description
10	11.1283.03	Tailpiece
11	024.219.00	Tubing (63")
12	11.1302.03	Tailpiece
13	11.1307.01	Tubing assembly

† Indicates that the individual part is not available for sale

Figure 149. Autoclavable Saliva Ejector



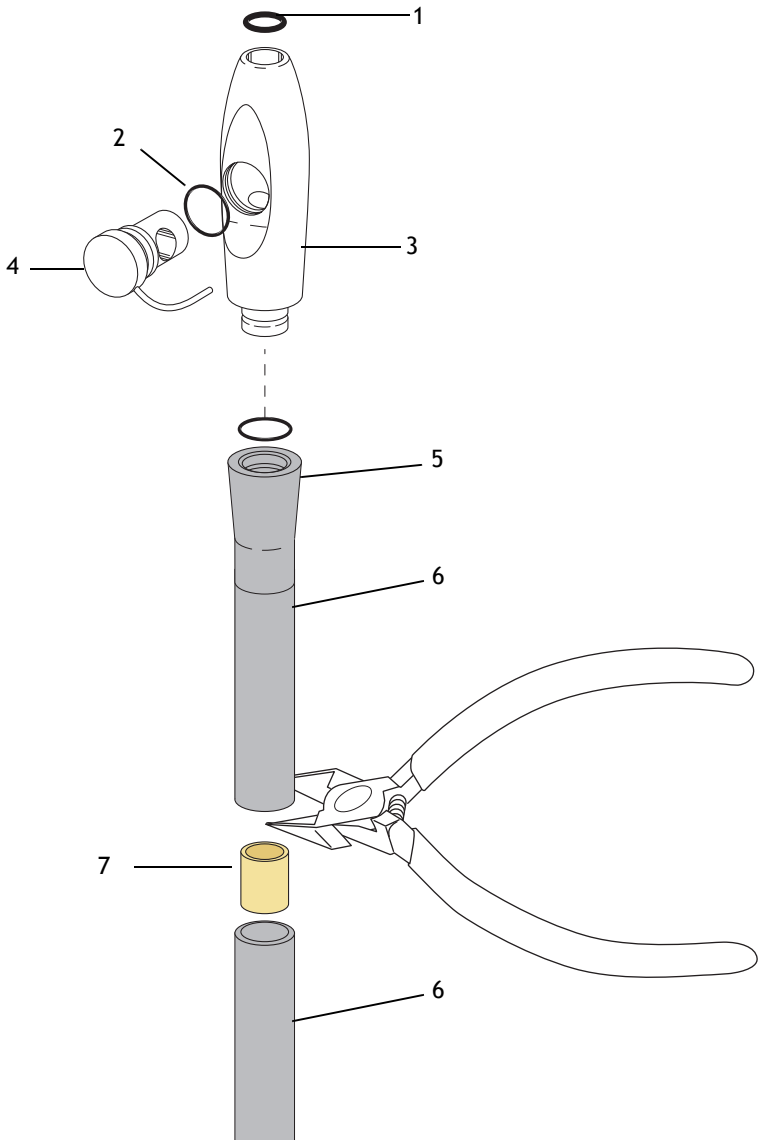
300 AVS Autoclavable Saliva Ejector

Part Number:12.1246.00

Item	Part Number	Description
1	034.107.01	O-ring E, .206 ID x .103 W, package of 10
2	034.012.01	O-ring E, .364 ID x .070 W, package of 10
3	12.1089.00	Body, with valve
4	12.1093.00	Rotor assembly, with O-rings
5	12.1087.00	Tailpiece, QD ACLV SE
6	024.218.00	Tubing, 63"*
7	023.112.00	Brass Tube, 1"

* This tubing is cut so that 16" of tubing is connected to the brass tube.

Figure 150. Autoclavable Saliva Ejector



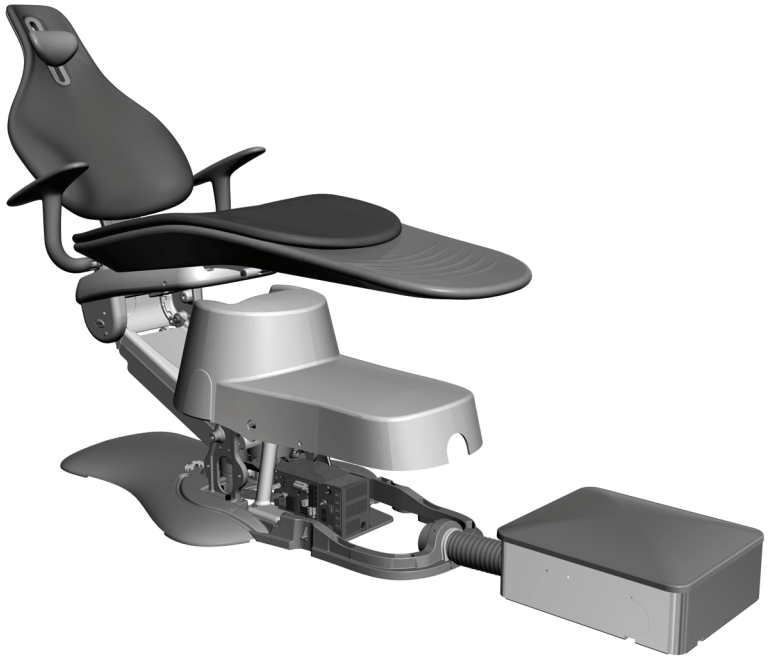
7

UTILITY AREAS

This section provides information related to service, maintenance, and adjustment of the utility areas. For information on service parts, see the *Genuine A-dec Service Parts Catalog* or contact A-dec Customer Service. (See "Get Support" on page 2.)

Contents

Figure 151. Utilities on A-dec 311 Dental Chair and Remote Floor Box



Product Overview

The utilities area contains the air and water manual shutoff valves, filters, air and water regulators, pre-regulator, vacuum and gravity drains. Utilities for A-dec 300 systems are located either in the utility area of the A-dec 300 chair, or in a remote floor box. The location is determined by chair configuration and facilities.

For A-dec 300 chairs, remove the utility cover to access utilities (see Figure 151 on page 167). To access the utility area, pull the utility cover out at the cover posts and lift the cover off.

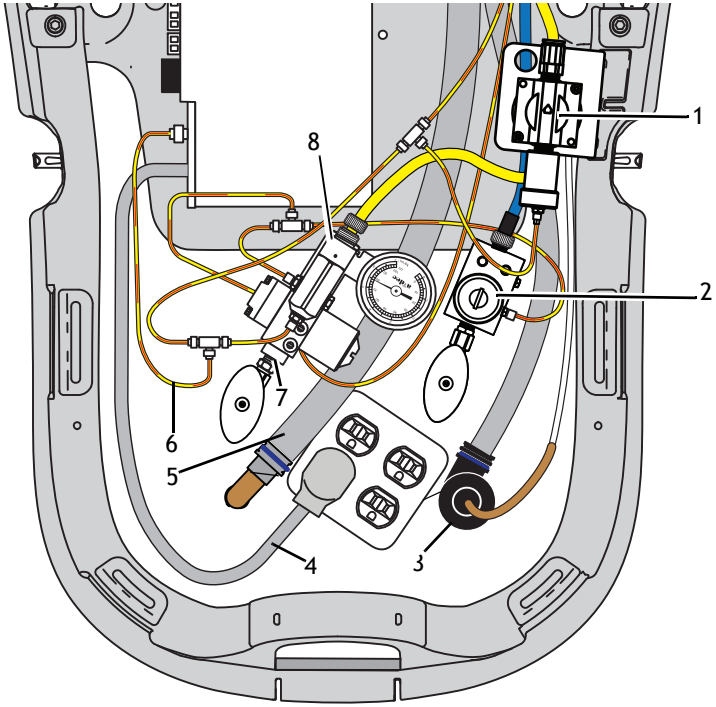
Air and Water Manual Shutoff Valves

Shutoff valves supply the air and water to the unit. To prevent leaks, these valves should remain fully open except while the unit is being serviced (see Figure 152).

Gauge and Pre-Regulator

The pre-regulator controls the air and water pressure in the unit. The gauge displays the unit air pressure (see Figure 152).

Figure 152. Utilities For A-dec 311 Dental Chair



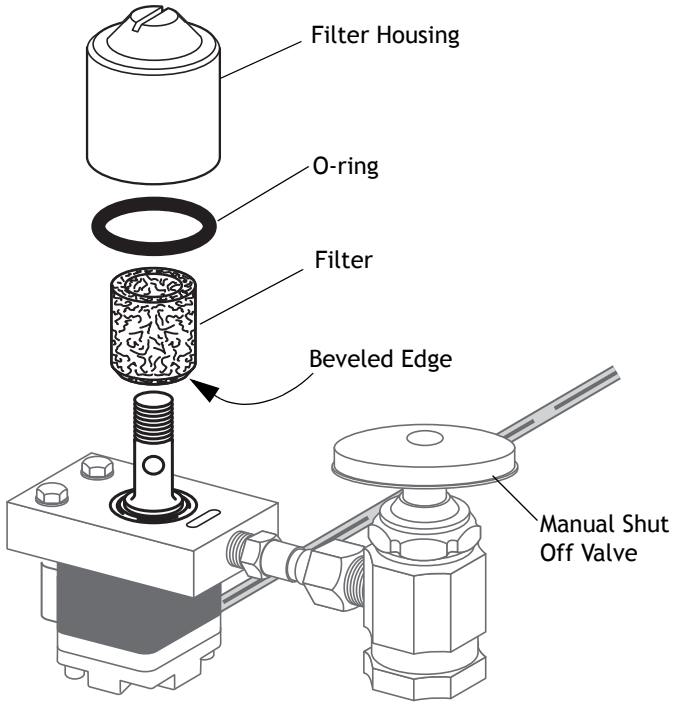
Item	Description	Item	Description
1	Moisture Separator (optional)	5	Vacuum Line
2	Water Filter/Regulator (cuspidor only)	6	Pilot Air Tubing to Power Supply
3	Cuspidor Line	7	Air Filter/Regulator
4	Power Cable	8	Pre-regulator

Service/Maintenance

Air and Water Filter Replacement

Air and water pass through separate filters before entering the regulators. Replace a filter when it becomes clogged and causes restricted flow. Figure 153 shows the air and water filter components.

Figure 153. Air and Water the Filter Components



To replace the Filter:

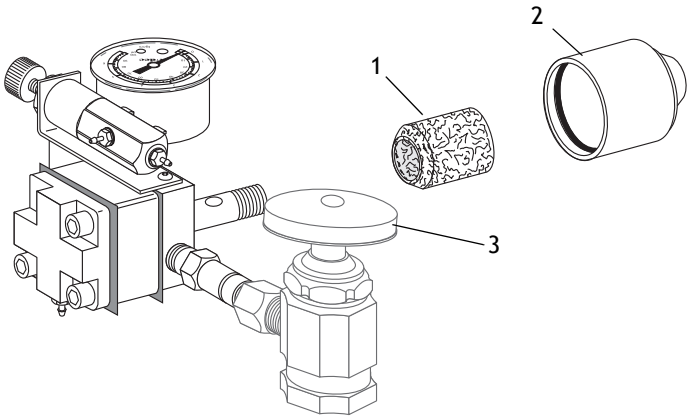
1. Move the master toggle to Off.
2. Close the manual shutoff valves.
3. Bleed the system of air and water pressure by operating the syringe buttons until air and water no longer flow.
4. Remove the filter housing from the air and/or water filter/regulator assembly with a flat blade screwdriver.
5. Replace the filter if it is visibly clogged or discolored.

CAUTION Be sure to install the new filter with the beveled side toward the manifold. The unit may not work properly if installed incorrectly.

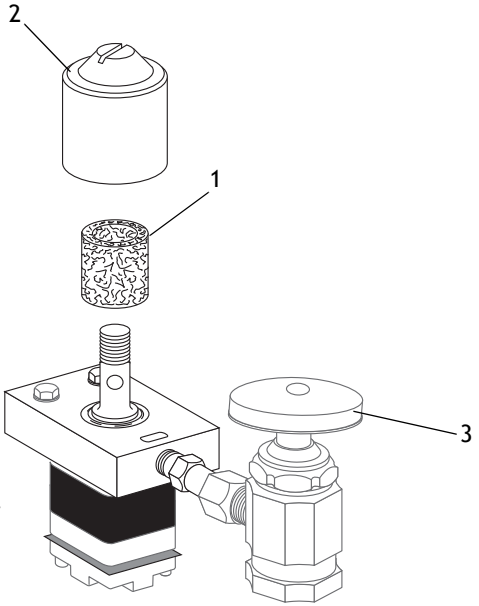
NOTE Turn the pre-regulator knob clockwise to increase air or water pressure. Turn the pre-regulator knob counterclockwise to decrease air or water pressure. Read the pressure gauge while adjusting. Water pressure will increase/decrease by half of the gauge indication.

Item	Part Number	Description
1	24.0234.01	Filter
2	24.0229.00	Filter housing
3	26.062.00	Manual shutoff

Figure 154. Replacing Filters



Air Filter/Regulator



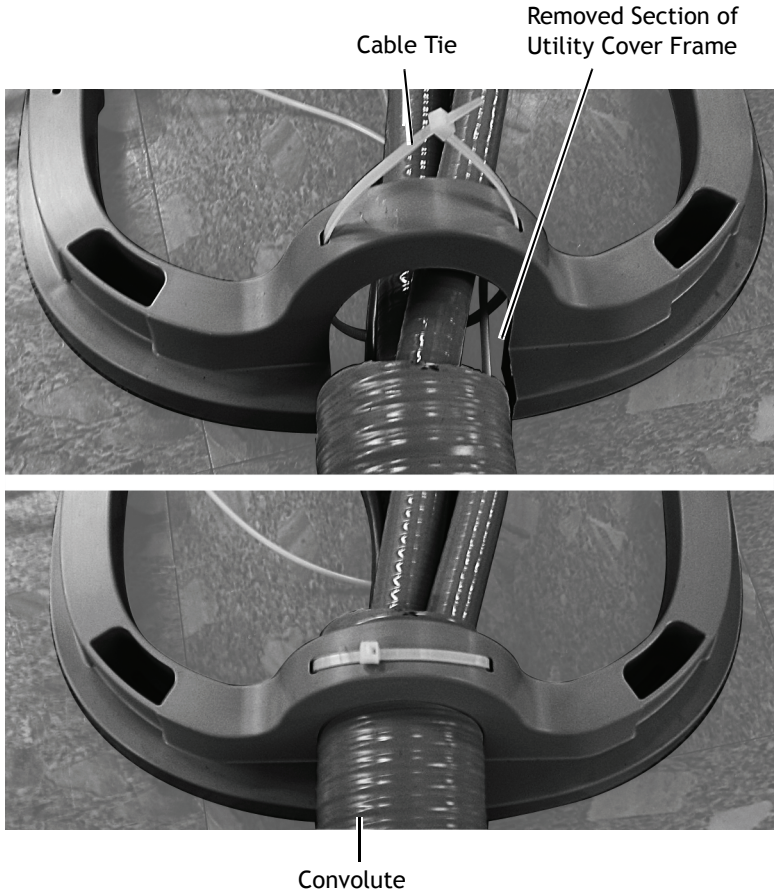
Water Filter/
Regulator

Remote Floor Box Wiring and Tubing Routing Overview

This section describes the wiring and tubing routing for the remote floor box.

- When installed, the front section of the utility cover frame was removed using diagonal cutters so the convolute would fit into the utility area.
- A cable tie threads down through a hole in the top of the arch in the front of the utility cover frame and up through the hole on the other side of the arch to secure the convolute.
- The convolute routs through the cable tie and arch, a couple inches past the arch and into the utilities area.
- The cable tie secures the convolute to the arch.
- The chair extension cord routes through the convolute.
- The support center tubing group routes through the convolute.

Figure 155. Wires and Tubing From A-dec 311 Chair to Remote Floor Box



Power and Data on an A-dec 311 System Overview

- The Mains On/Off button on the lower right of the power supply turns on/off the system.
- Two 24 VAC terminal strips distribute 24 VAC power. Each has an independent circuit breaker.
- J1 (O VAC) and J2 (24 VAC) distribute power to a chair/remote mounted assistant's, delivery, or floor box. Circuit breaker CB3 provides fault condition protection of the connection.
- J3 distributes O VAC and 24 VAC power to a support center. Circuit breaker CB4 provides fault condition protection of this connection.
- The air electric switch should be connected to the master toggle's pilot air. If there is no master toggle in the system, the bypass switch should be activated (see Figure 156).

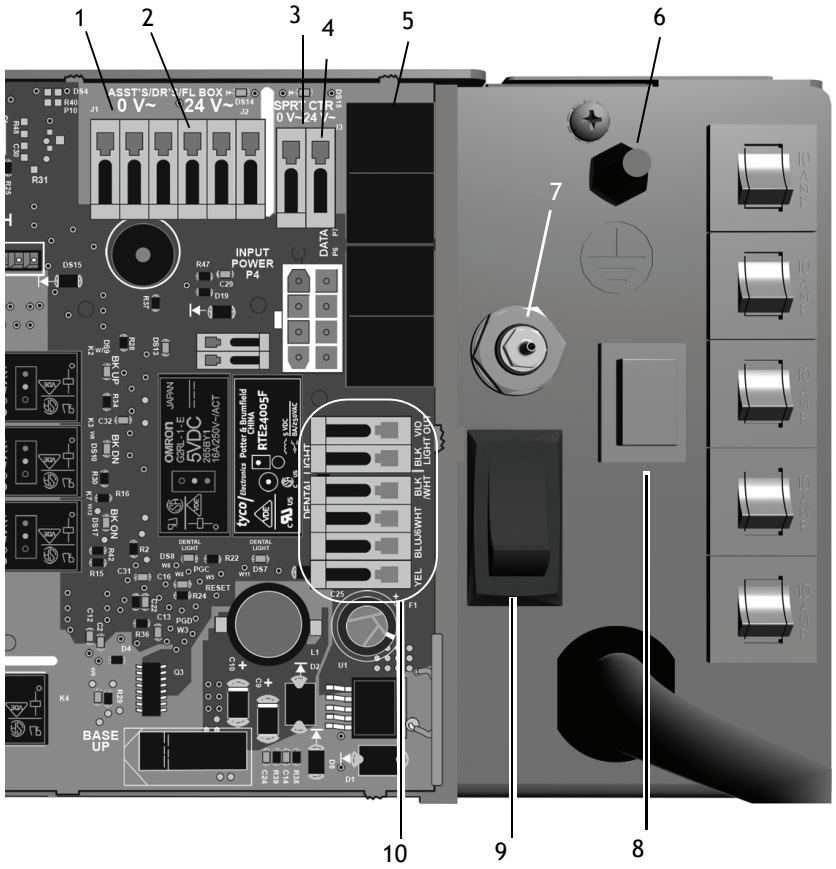
NOTE The top of the 311 power supply has a diagram of the electrical connections for the chair circuit board.

- J5 and J6 provide input and output for the dental light.

Item	Description	Item	Description
1	Assistant's, Doctor's, and Floorbox 0 VAC	6	Ground Wire Connection
2	Assistant's, Doctors, and Floorbox 24 VAC	7	Air Electric Switch Connection
3	Support Center O VAC	8	Mains On/Off Button
4	Support Center 24 VAC	9	Air Electric Bypass Switch
5	Data Ports (4)	10	J1 and J6, Dental Light

Figure 156. Support Center Electrical Connections

A-dec 300 Chair Circuit Board



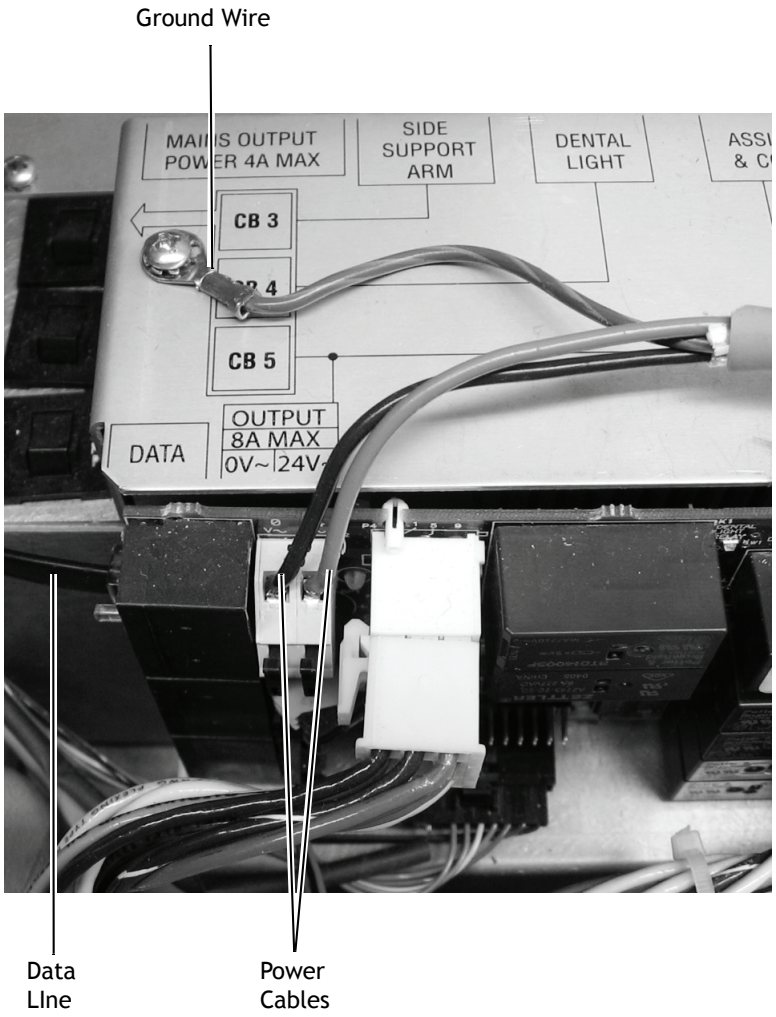
Power on A-dec 511 Dental Chair From 361 Support Center Overview

- Power and data lines route through the bottom of the support center, underneath the mount, and down the lift arm to where the power supply is located.
- The power cables connect to the chair circuit board terminal strip J2. The black wire connects to the 0 VAC and the gray wire to the 24 VAC.

NOTE This connection is protected through circuit breaker CB5 on the 511 power supply.

- The ground wire connects to the power supply cover screw, located on top of the power supply.
- The data line connects into a data port on the chair circuit board.
- If a master toggle is present on an A-dec 300 delivery or post box, the pilot air of the master toggle is connected to the A-dec 500 power supply's air-electric switch to enable and disable the system. If there is no master toggle in the system, the bypass switch on the A-dec 500 power supply should be activated.

Figure 157. Wiring on A-dec 511 Dental Chair to From 361 Support Center



Power and Data on an A-dec Cascade, Decade, or Performer Dental Chair Overview

The following describes the power and data for a chair circuit board with data ports.

NOTE A-dec 300 touchpads can operate the auto dental light and chair movements when using this chair circuit board. For older chair boards, a kit (p/n 90.1022.02) can be ordered to upgrade to the new style with data ports (see Figure 158).

- The tubing group and wires route from the bottom of the support center through the convolute.
- The convolute pushes up several inches through the bracket in the bottom of the support center frame so that it is securely attached.
- In the floor box, the ground wire connects to the top of the power supply.
- The power cables connect to the terminal strip of the power supply. The black wire connects to 0 VAC and the gray wire to 24 VAC. Circuit breaker CB2 protects this connection.
- The master toggle/pilot air connects to the power supply's air electric switch.

Figure 158. Chair Circuit Board Data Ports

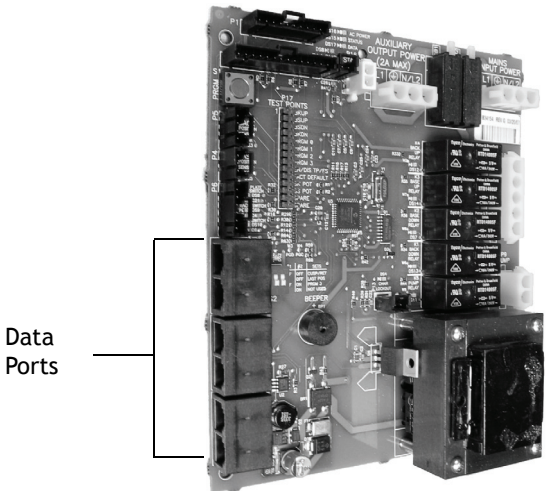
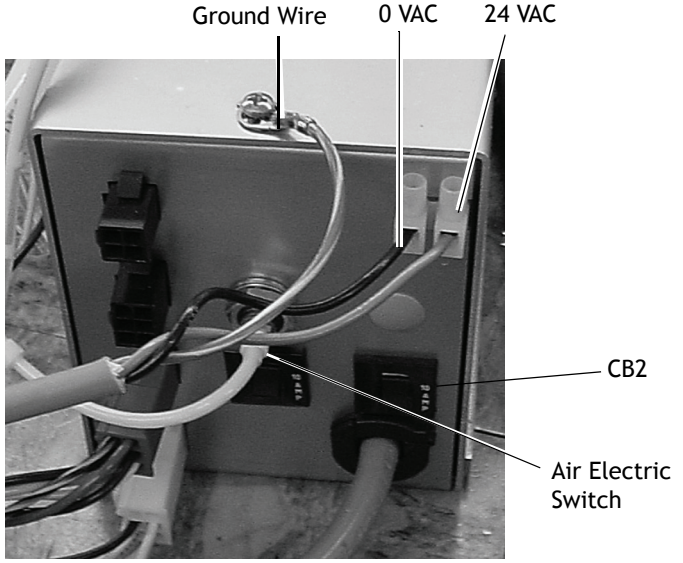


Figure 159. Power Supply for A-dec Cascade, Decade, or Performer Chair



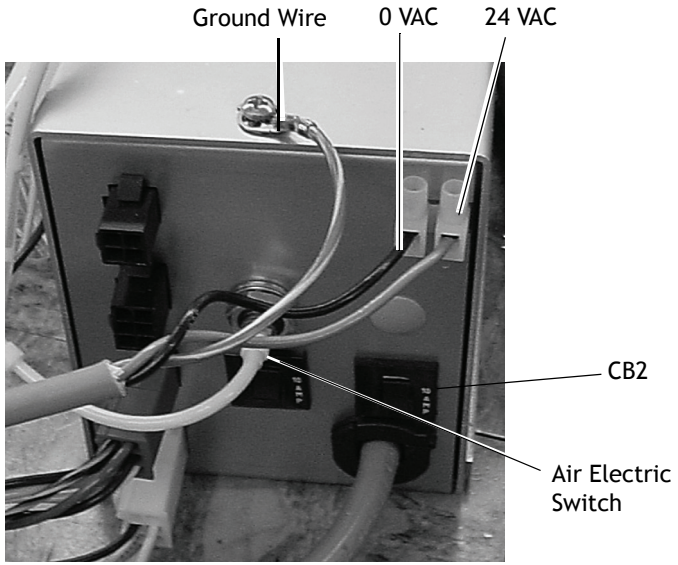
Wiring on an A-dec Priority Dental Chair From a 361 Support Center Overview

- The tubing group, wires, and data line route from the support center through the convolute.
- The convolute pushes up several inches through the bracket in the bottom of the support center frame, where it is securely attached.
- In the floor box, the data line connects to the dental light or A-dec relay board if present.
- The ground wire connects to the top of the power supply.
- The power cables connect to the power supply. The black wire connects to 0 VAC and the gray wire to 24 VAC.

NOTE This connection is protected through circuit breaker CB2 on the power supply.

- The master toggle/pilot air connects to the power supply's air electric switch.

Figure 160. Power Supply for An A-dec Priority Dental Chair



Illustrated Parts Breakdown — Utilities

This section contains illustrated parts breakdowns specific to the utilities area.

Part Identification

In this section, you will find serviceable components tables that correspond to the illustrations. The tables identify all parts and kits, including those that are not for sale. Parts that are not for sale are indicated with the symbol shown below:

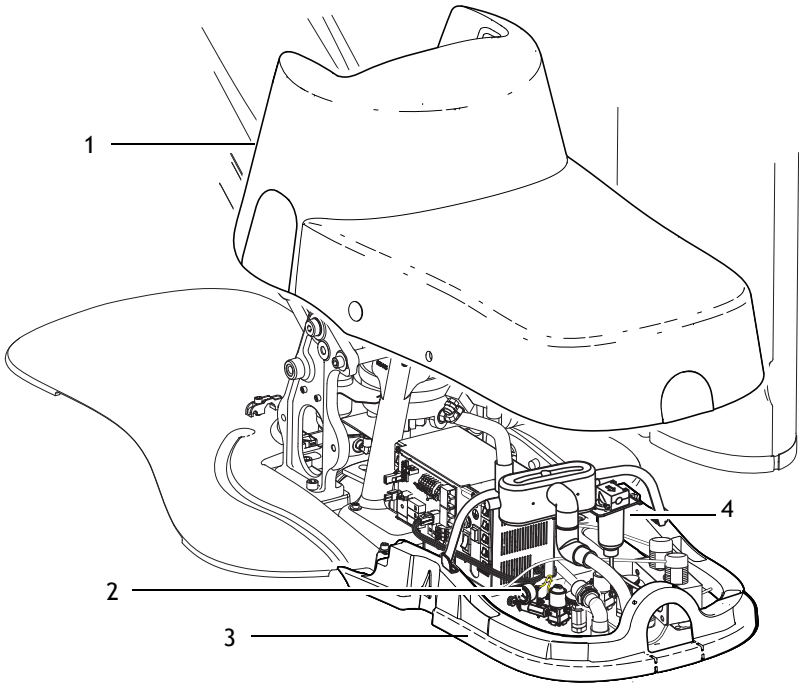
† — Indicates that the individual part is not available for sale. These parts are typically part of a kit and/or larger assembly that is for sale.

Contents

Utilities Area of the A-dec 311 Chair

Item	Part Number	Description
1	62.0296.00	Cover, floor box
2	24.0475.00	Air filter/regulator with pre-regulator
3	62.0300.00	Base, floor box
4	41.1477.00	Moisture separator (optional)

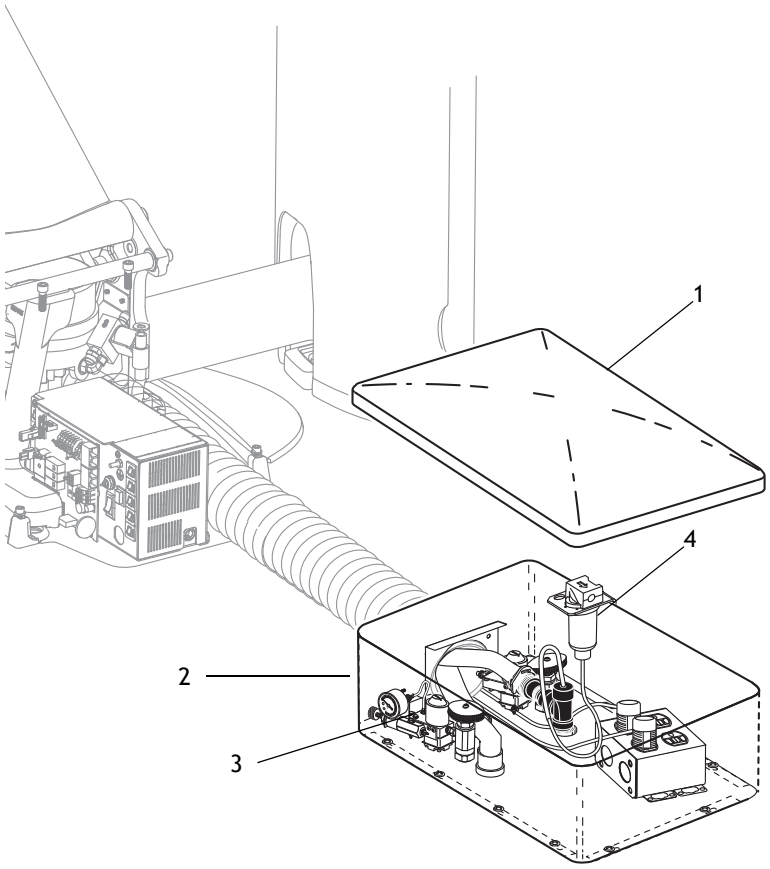
Figure 161. Utilities Area



Remote Floor Box (Optional)

Item	Part Number	Description
1	41.0413.01	Cover
2	41.1507.00	Box
3	24.0475.00	Air filter/regulator with pre-regulator
4	41.1477.00	Moisture separator

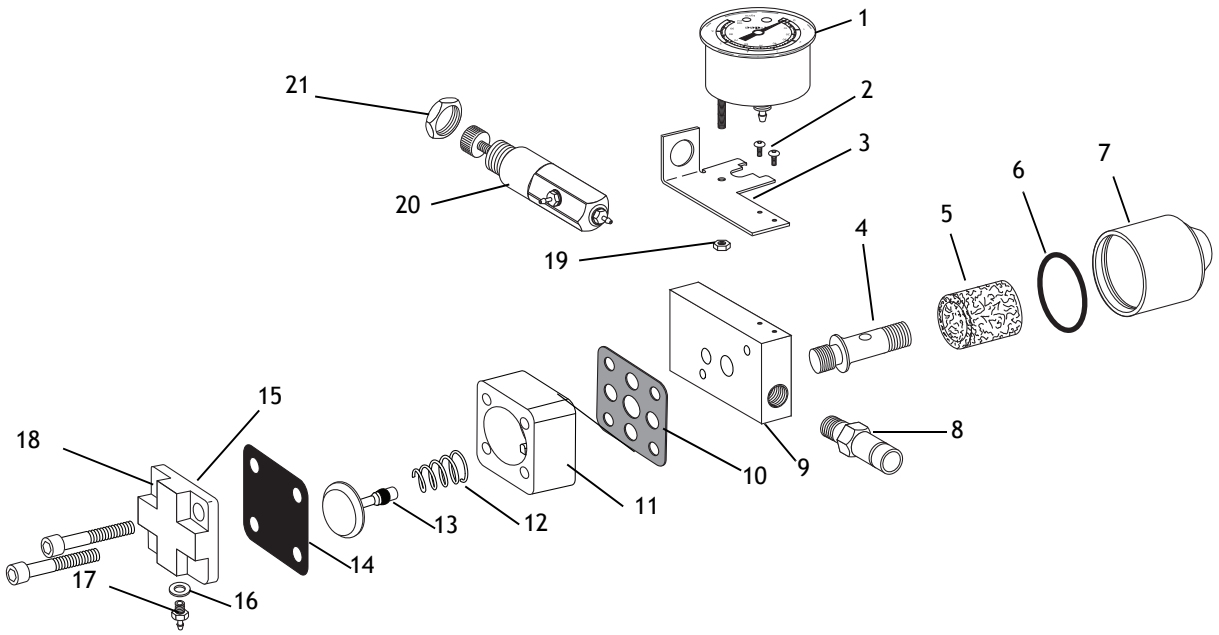
Figure 162. Remote Floor Box



Air Filter/Regulator Assembly

Item	Part Number	Description	Item	Part Number	Description
1	026.154.00	Gauge	11	24.0135.00	Regulator, body, white
2	001.024.00	Screw	12	22.0460.00	Spring
3	24.0365.00	Bracket	13	24.0132.00	Piston with O-ring
4	24.0232.00	Stud, filter/regulator manifold	14	22.0440.02	Diaphragm, package of 10
5	24.0234.01	Filter, package of 6	15	24.0368.00	Valve cover
6	030.019.03	O-ring, package of 10	16	004.005.02	Washer, flat nylon, 187 ID
7	24.0229.00	Filter housing	17	023.004.01	Barb, 1/8 x 10-32
8	021.042.00	Adaptor	18	001.026.00	Screw, socket head, 6-32 x 7/8"
9	24.0162.00	Manifold, filter/regulator	19	006.015.00	Nut, hex, 6-32 x 5/16 x 9/64"
10	24.0137.01	Gasket, 9-hole	20	24.0366.00	Regulator, air assembly
			21	006.009.00	Nut, hex, 15/32 - 32 x 9/16 x 3/32"

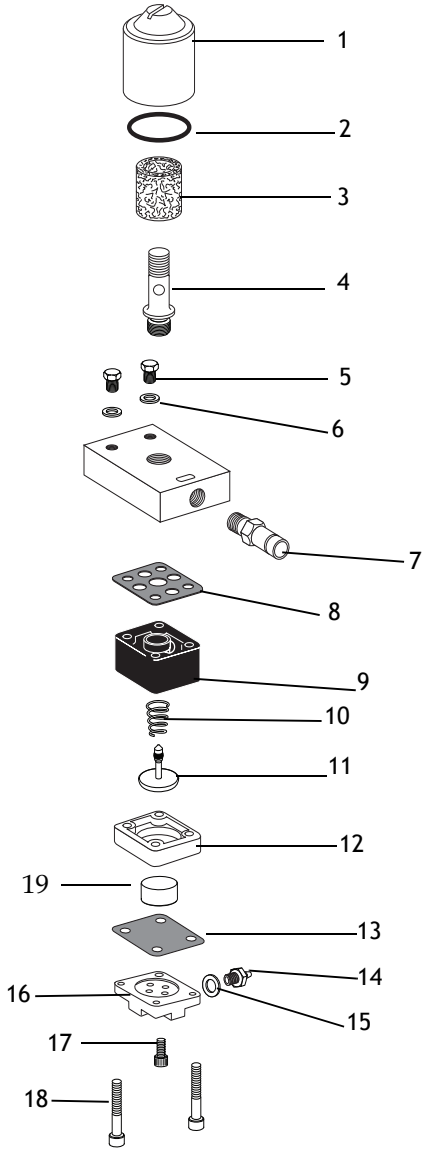
Figure 163. Air and Water Filter/Regulators Body Assembly Components



Water Filter/Regulator Body Assembly

Item	Part Number	Description
1	24.0229.00	Housing, filter
2	030.019.03	O-ring, package of 3
3	24.0234.02	Filter kit, package of 2
4	24.0232.00	Stud, filter/regulator manifold
5	021.016.04	Plug, hex head, 10 - 32
6	004.005.02	Washer
7	021.042.00	Adapter, 1/8" MPT to 3/8"
8	24.0137.01	9-hole gasket
9	24.0355.00	Body, black
10	013.032.00	Spring
11	24.0132.00	Piston with o-ring
12	24.0140.00	Spacer, water regulator
13	22.0440.02	Diaphragm, package of 10
14	023.004.01	Barb, 1/8" x 10-32
15	004.005.01	Washer, flat nylon 187 ID
16	24.0368.00	Valve cover
17	001.021.00	Screw, socket head, 4-40 x 1/2", stainless steel
18	001.024.00	Screw, socket head, 4-40 x 3/8", stainless steel
19	24.0142.00	Plunger

Figure 164. Air and Water Filter/Regulators Body Assembly Components



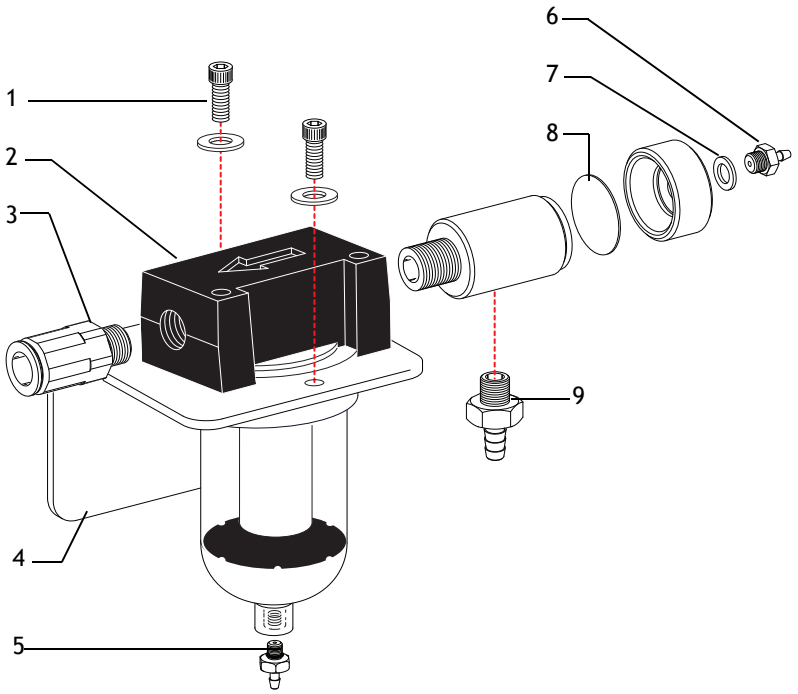
Moisture Separator

Part Number: 41.1477.00

The moisture separator is used to separate moisture from the compressed air.

Item	Part Number	Description
1	001.033.00	Screw, socket head, 6-32" x 3/8"
2	41.1477.00	Moisture separator, auto
3	022.088.00	Fitting, push in, 5/16" x 1/8"
4	24.0472.00	Bracket, gauge/moisture separator
5	023.066.00	Barb, 1/8" x .206-36
6	023.004.03	Barb, 1/8" x 10-32, package of 10
7	004.005.02	Washer, flat nylon, .187 ID, package of 10
8	41.1469.01	Diaphragm, .75" DX x .013" THK, package of 5
9	023.804.00	Barb, 5/16" x 1/8"

Figure 165. Moisture Separator Components



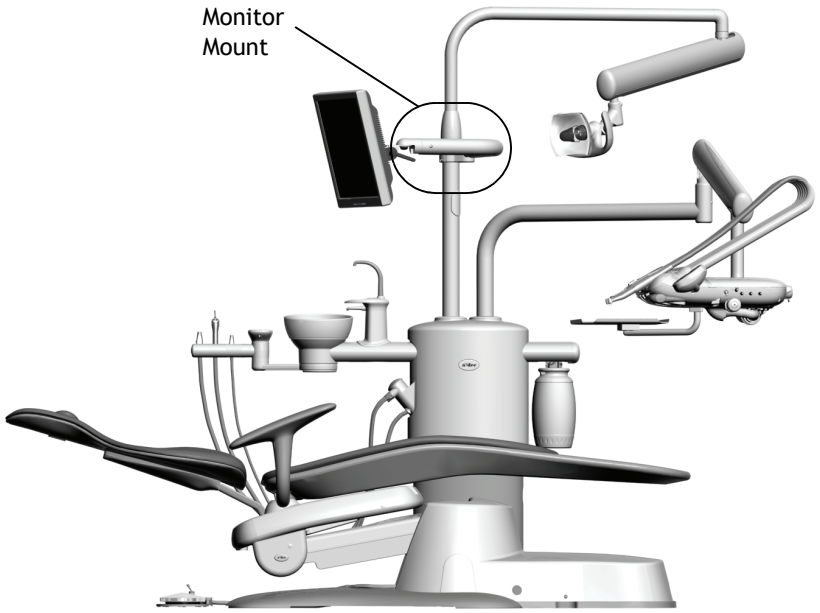
8

MONITOR MOUNT

This section provides information related to service, maintenance, and adjustments of the monitor mount. For information on service parts, see the *Genuine A-dec Service Parts Catalog* or contact A-dec Customer Service. (See "Get Support" on page 2.)

Contents

Figure 166. Monitor Mount



Product Overview

Monitor Mount Specifications

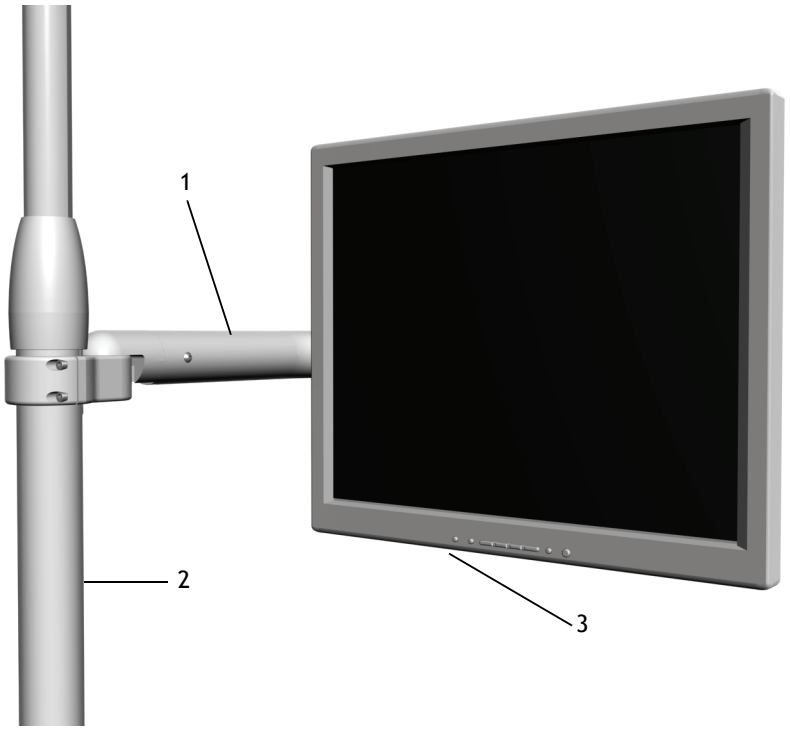
- 20" maximum diagonal display
- 20 lb. maximum weight limit
- 75 mm and 100 mm VESA mounting compliant

Components

The monitor mounts to the light mounting location.

NOTE A line voltage power cord is provided with the monitor mount.

Figure 167. Front Mount Monitor



Item	Description
1	Monitor Mount
2	Intermediate Post (for use with Dental Light or Monitor Mount)
3	Monitor (not included)

Adjustments

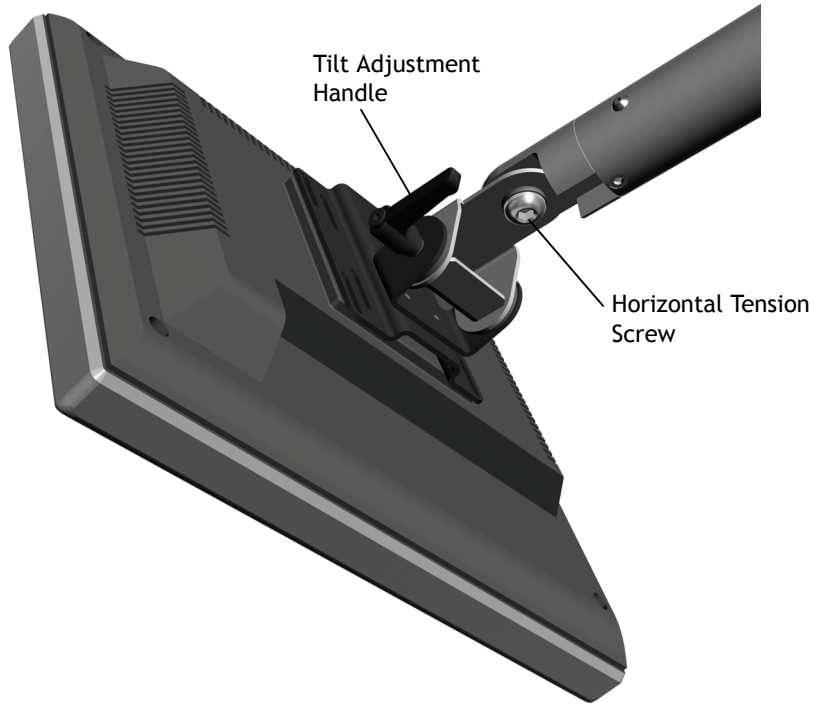
Tilt Adjustment

The monitor mount includes a tilt adjustment handle. While holding the monitor, turn the handle to the left and position the monitor. Turn the handle to the right to lock the tilt in position (see Figure 168).

Horizontal Pivot

Adjust the horizontal pivot behind the monitor using a 5/16" hex key.

Figure 168. Monitor Adjustments



Illustrated Parts Breakdown — Monitor Mount

This section contains illustrated parts breakdowns specific to the monitor mount.

Part Identification

In this section, you will find serviceable components tables that correspond to the illustrations. The tables identify all parts and kits, including those that are not for sale. Parts that are not for sale are indicated with the symbol shown below:

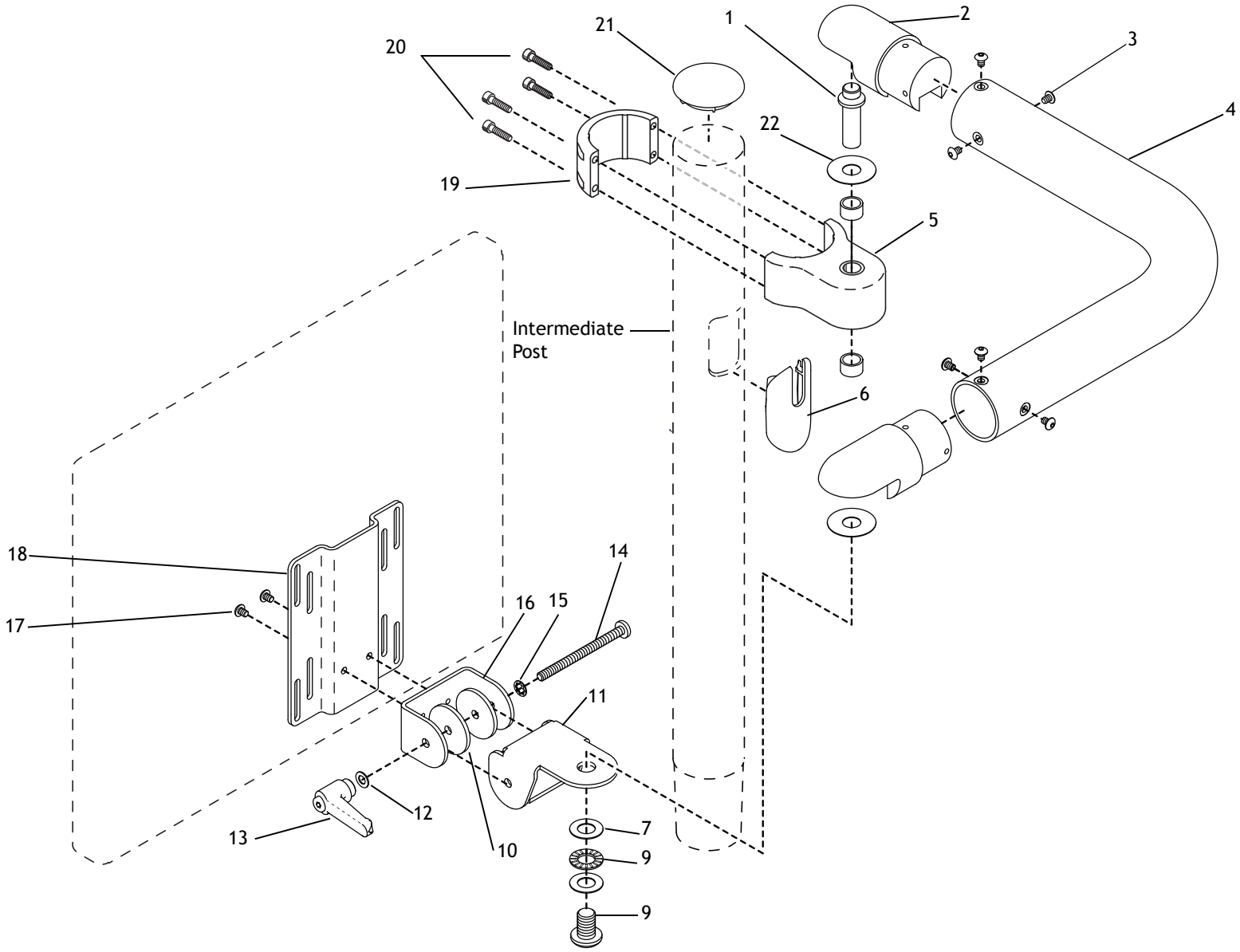
† — Indicates that the individual part is not available for sale. These parts are typically part of a kit and/or larger assembly that is for sale.

Monitor Mount Components

Item	Part Number	Description	Item	Part Number	Description
1	77.0965.00†*	Monitor Arm Pivot	12	004.032.00	Brass Washer
2	77.0967.00†*	Monitor tube support	13	025.106.00	Handle
3	002.094.02	Screw, button head socket, 10-32 x 1/4" stainless steel	14	001.234.00	Phillips Head Screw, 3.25 large
4	77.0966.00	Monitor tube support	15	004.138.00	Internal Tooth Washer Lock
5	77.0961.00	Mount monitor	16	77.0969.00	Monitor Mounting Pivot Bracket
6	75.2251.00	Internal Post plug	17	002.094.02	Screw, button head socket, 10-32X1/4"
7	004.136.00	Washer, thrust bearing, .500 ID	18	77.0970.00	Vesa Bracket
8	016.033.00	Bearing, thrust needle, .500 ID	19	77.0962.00	Monitor Mount Cap
9	005.160.00	Screw, button head socket, 1/2-13 x 3/4" Screw 10-32 X 3/4, Socket Head	20	002.073.00	Socket Head Screw, 10-32X3/4"
10	40.0084.00	Brake Disk	21	77.0842.00	Cap, 2" post (If a dental light is installed, this part is not used.)
11	77.0968.00	VESA Mounting Bracket	22	004.034.00	Flat Nylatron Washer

† Indicates that the individual part is not available for sale
* Replace with p/n 90.1214.00

Figure 169. 300 Monitor Mount Components



9

A-DEC DENTAL LIGHTS

This section provides information related to service, maintenance, and adjustments of A-dec 371 and 571-300 Dental Lights. For information on service parts, see the *Genuine A-dec Service Parts Catalog* or contact A-dec Customer Service. (See "Get Support" on page 2.)

Contents

Figure 170. A-dec Dental Lights

A-dec 371 Dental Light

A-dec 571-300 Dental Light

A-dec 371 and 571-300 Dental Lights Overview

The A-dec 371 Dental Light provides balanced lighting with two intensity settings. The 571-300 Dental Light provides three intensities at the light head and two at the touchpad. The 571-300 can be controlled by switches near the light head. The dental lights are controlled from the touchpad or assistant's instrumentation.

Dental Light Specifications

Electrical (Transformer Output)

- 371 Dental Light: 12.1/17 VAC
- 571-300 Dental Light: 12.1/16/17 VAC

Operating wattage: 95 watts

Bulb

Bulb: Quartz Xenon Halogen, single-end prongs, extended life

Rating: 17V/95 watts

Color temperature: 5000 Kelvin

Heat output: 325 BTU/hour

Light Pattern:

- 371 Dental Light Only: 3.9" x 6.7" at 27.6" (100 mm x 170 mm at 700 mm)
- 571-300 Dental Light Only: 3.3" x 6.3" at 27.6" (85 mm x 160 mm at 700 mm)

Nominal Light Intensity — 371 Dental Light Only

Composite: 8,000 lux (743 fc)

High: 24,000 lux (2230 fc)

Nominal Light Intensity — 571-300 Dental Light Only

Composite: 8,000 lux (743 fc)

Medium: 20,000 lux (1858 fc)

High: 24,000 lux (2230 fc)

On/Off Button

The dental light can be operated from the assistant-side or doctor-side touchpad. To turn the light on, off, or change intensity, press the dental light button on the touchpad.

Auto On/Off Feature

The dental light includes an auto On/Off feature. Press any button that moves the chair into an operating position. The dental light turns on when the chair reaches that position. Press the Entry/Exit or X-ray/Rinse buttons and the dental light automatically turns off.

To activate/deactivate the auto On/Off feature, press and hold the program and dental light buttons simultaneously for three seconds. One beep confirms the auto On/Off is off. Three beeps confirm the auto On/Off is on.

NOTE For the A-dec 371 Dental Light, Medium and Composite intensity settings are available for setup if preferred over High and Composite. Contact A-dec Customer Service for instructions. (See "Get Support" on page 2.)

Service/Usage Information

A-dec 371 Dental Light Connections

There are two light intensity settings: high or composite. The dental light is controlled by a deluxe or standard/assistant's touchpad. To turn the dental light on, press the Dental Light button. It will always turn on into high mode.

To toggle between high and composite intensity, press the Dental Light button. To turn off the dental light, hold the Dental Light button.

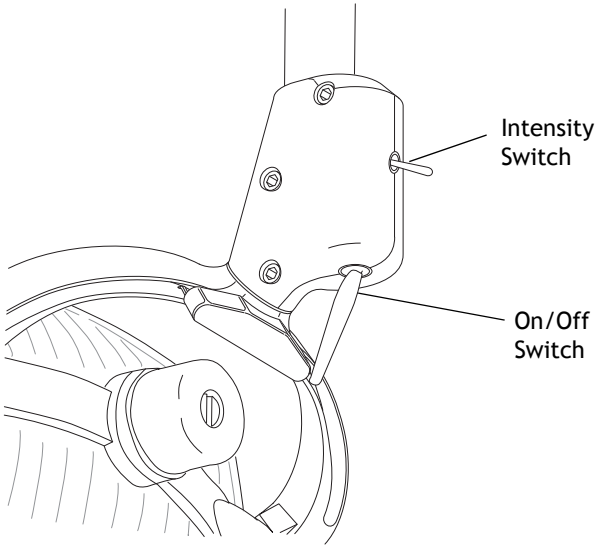
TIP Any DCS enabled touchpad with a Dental Light button will activate the dental light function if connected into the light's DCS system.

Figure 171. A-dec 371 Light Connections

A-dec 571-300 Dental Light Connections

Press the Dental Light button on the A-dec 300 touchpad to toggle between intensity settings, composite and high or composite and medium intensity settings, depending on the location of the dental light intensity switch. The indicator light next to the standard touchpad dental light button flashes when in the composite setting mode.

Figure 172. Power On/Off and Intensity Switches



Intensity Switch

There are three intensity settings for the A-dec 571-300 Dental Light. Move the intensity switch to select high, medium, or composite. (The replacement kit for the intensity switch is p/n 43.0054.00.)

Position	Voltage	Wire
Medium	5 VDC	Blue and Yellow
High	0 VAC	Blue
Composite	0 VDC	Yellow

NOTE All DC voltage measurements are taken with the black multimeter lead on the black/white wire.

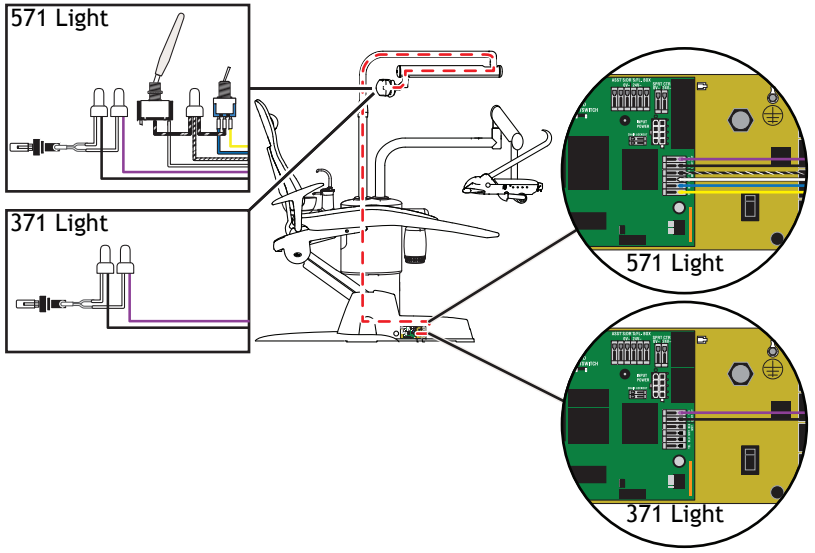
On/Off Switch

The On/Off switch is used to manually turn on or off the dental light from the light head. The replacement kit is p/n 90.1039.00.

Position	Voltage	Wire
Open	5 VDC	White
Closed	0 VAC	White

NOTE All DC voltage measurements are taken with the black multimeter lead on the black/white wire.

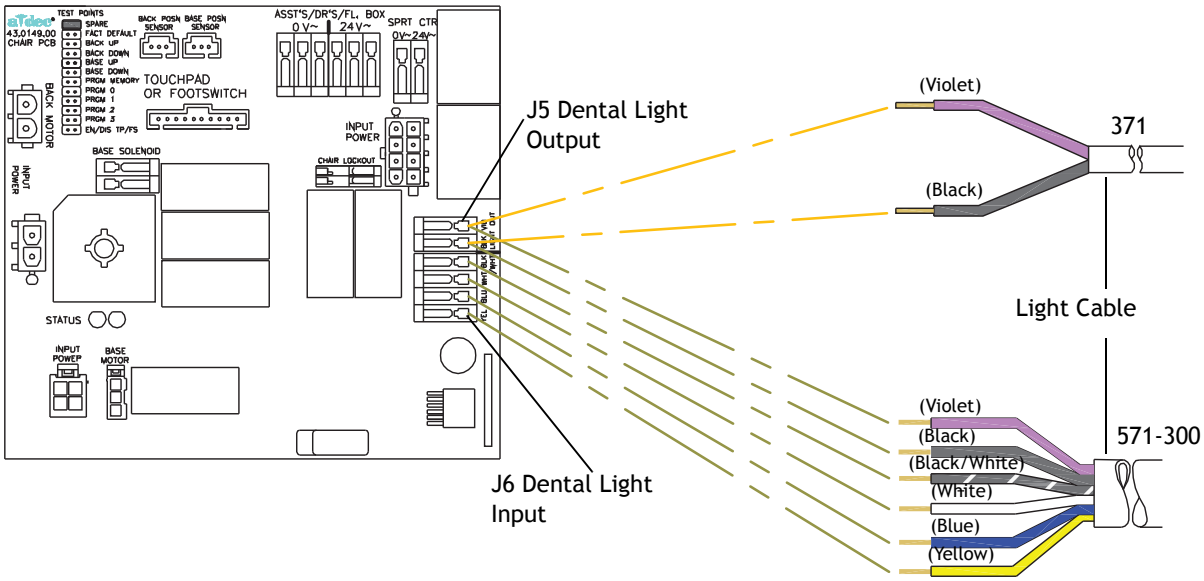
Figure 173. A-dec 571-300 Light Switch Connections



A-dec 371 and 571-300 Dental Light Wire Connections on an A-dec 311 Dental Chair

Terminal 371 Dental Light	Voltage	Terminal Label	Wire
J5	17/12.1 VAC	VIO	Violet
J5	0 VAC	BLK	Black
571-300 Dental Light			
J5	17/16/12.1 VAC	VIO	Violet
J5	0 VAC	BLK	Black
J6	0 VDC (circuit ground)	BLK/WHT	Black/White
J6	5 VDC = On/Off toggle = open 0 VDC = On/Off toggle = closed	WHT	White (On/Off)
J6	5 VDC = medium or composite 0 VDC = high out	BLU	Blue (high)
J6	5 VDC = high or medium 0 VDC = composite	YEL	Yellow (composite)

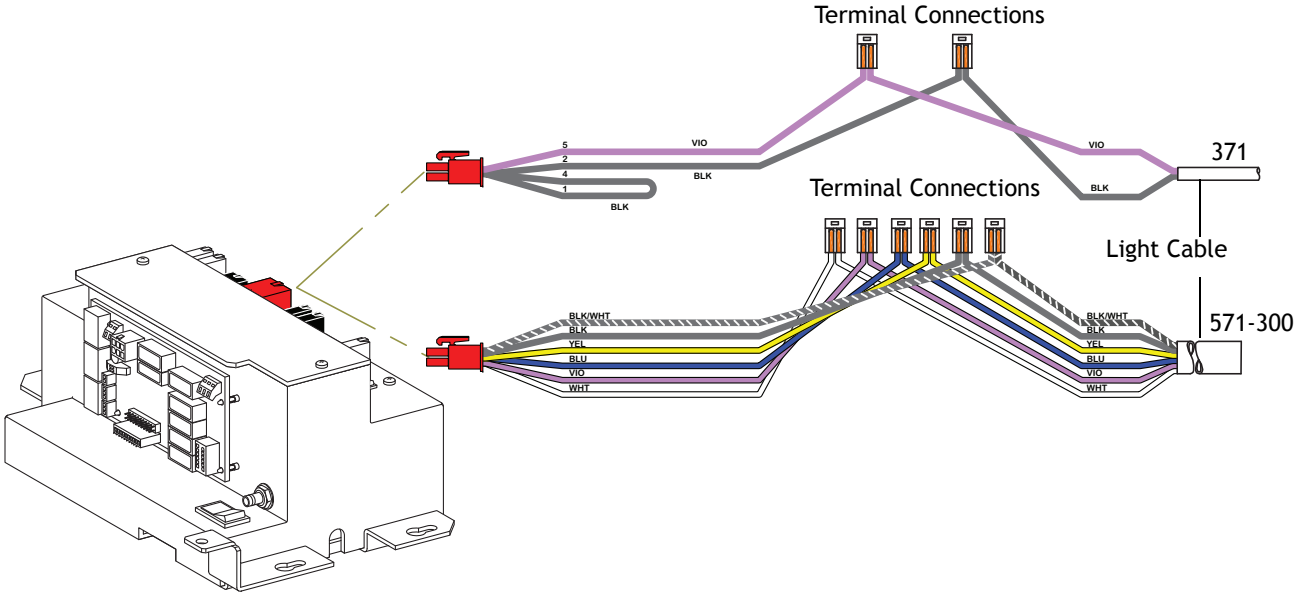
Figure 174. A-dec 371 and 571-300 Dental Light Wire Connections on an A-dec 311 Chair Circuit Board



A-dec 371 and 571-300 Dental Light Wire Connections on an A-dec 511 Dental Chair

PIN 371 Dental Light	Voltage	Terminal Label	Wire
5	17/12.1 VAC	VIO	Violet
2	0 VAC	BLK	Black
571-300 Dental Light			
1	0 VDC (circuit ground)	BLK/WHT	Black/White
2	0 VAC	BLK	Black
3	5 VDC = high or medium 0 VDC = composite	YEL	Yellow (composite)
4	5 VDC = medium or composite 0 VDC = high out	BlU	Blue
5	17/16/12.1 VAC	VIO	Violet
6	5 VDC = On/Off toggle = open 0 VDC = On/Off toggle = closed	WHT	White (On/Off)

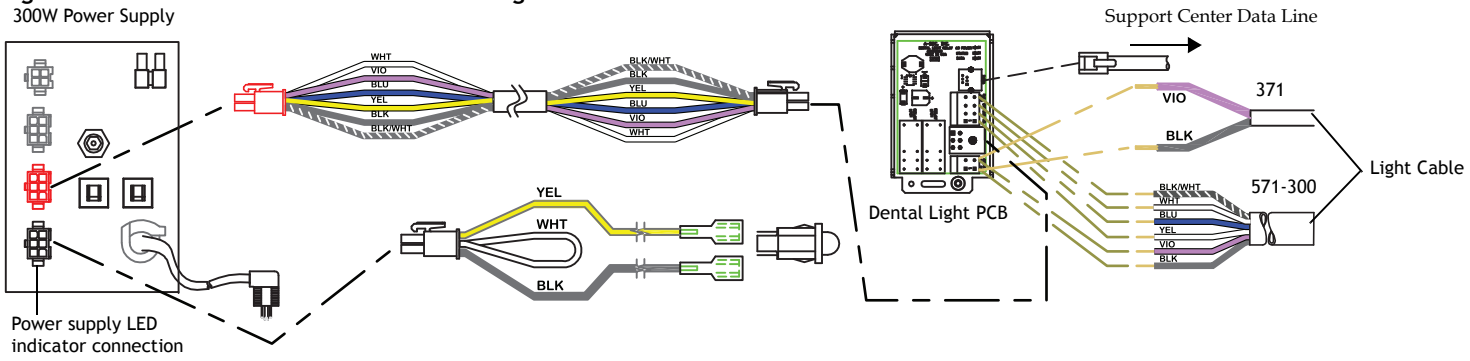
Figure 175. A-dec 371 and 571-300 Dental Light Wire Connections



A-dec 371 and 571-300 Dental Light Wire Connections on Cascade, Decade, Performer, and Priority Dental Chairs

Terminal 371 Dental Light	Voltage	Terminal Label	Wire
J2	17/12.1 VAC	VIO	Violet
J2	0 VAC	BLK	Black
571-300 Dental LIght			
J1	0 VDC (circuit ground)	BLK/WHT	Black/White
J1	5 VDC = On/Off toggle = open 0 VDC = On/Off toggle = closed	WHT	White (On/Off)
J1	5 VDC = medium or composite 0 VDC = high out	BlU	Blue
J1	5 VDC = high or medium 0 VDC = composite	YEL	Yellow (composite)
J2	17/16/12.1 VAC	VIO	Violet
J2	0 VAC	BLK	Black

Figure 176. A-dec 371 and 571-300 Dental Light Wire Connections

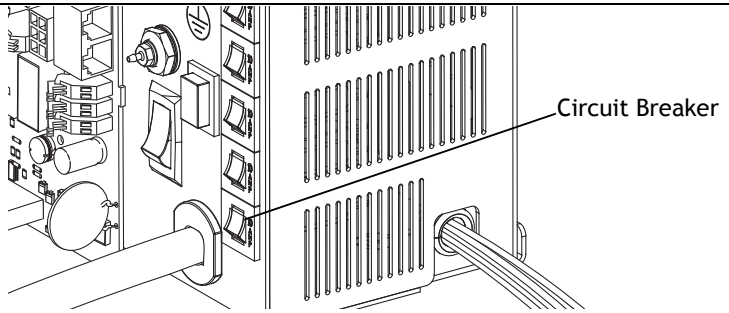
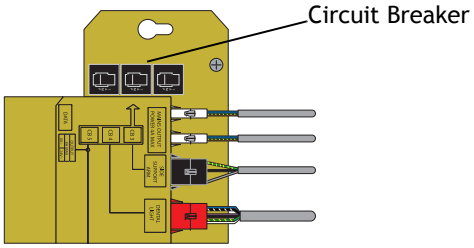
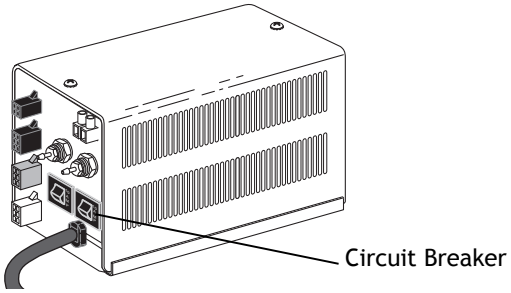


NOTE The LED indicator must be connected to the power supply for the Dental Light circuit board to function correctly.

Circuit Breakers

A circuit breaker will interrupt the flow of electricity under abnormal conditions. If the circuit breaker should trip, inspect the wiring to ensure there are no shorts, and reset by pushing the circuit breaker. The circuit breaker for the dental light is located on the power supply, whose location varies by chair (see Table 17).

Table 17. Circuit Breaker Location

A-dec 311	Chair motor pump area	
A-dec 511	Chair motor pump area	
Cascade, Decade, Performer, Priority, and non-A-dec chairs	Utility floor box	

Circuit Board Components for A-dec 371 and 571-300 Dental Lights on a 311 Chair

For an illustration of the chair circuit board and the board's components, see "A-dec 311 Dental Chair Circuit Board Components" on page 18 through page 21. Refer to the tables below for dental light functions on the Dental Chair circuit board.

Table 18. A-dec 371 Dental Light Output Settings

Function	K1 (DS8)	K6 (DS7)	Output
Off	Off	Off	0 VAC
High intensity	On	Off	17 VAC
Composite intensity	Off	On	12 VAC

Table 19. A-dec 571-300 Dental Light Output Settings

Function	K1 (DS8)	K6 (DS7)	Output
Off	Off	Off	0 VAC
High intensity	On	Off	17 VAC
Composite intensity	Off	On	12 VAC
Medium Intensity	On	On	16 VAC

Circuit Board Components for A-dec 371 and 571-300 Dental Lights on a 511 Dental Chair

Item	Description	Item	Description
1	P7, P8, P9 - Data ports	11	DS1 - AC power LED
2	DS4 - Stop switch LED (limit switch) and P10 connector	12	DS2 - Status LED
3	DS5 - Back potentiometer LED and P1 connector	13	DS3 - Data LED
4	DS6 - Base potentiometer LED and P2 connector	14	DS13 - Chair lockout LED and terminal strip J1
5	P5 - Footswitch connector	15	J2 - Ø VAC terminal strip (output)
6	P3 - Testpoints header	16	J2 - 24 VAC terminal strip (output)
7	DS12 - Base down LED and relay K5	17	P4 - Input power and dental light connector
8	DS11 - Base up LED and relay K4	18	J3 - Vacuum relay K7 output terminal strip
9	DS10 - Back down LED and relay K3	19	P11 - Pump motor and solenoid connector
10	DS9 - Back up LED and relay K2	20	DS8 - Dental light LED relay and K1
		21	DS7 - Dental light LED relay and K6

Table 20. A-dec 371 Dental Light Output Settings

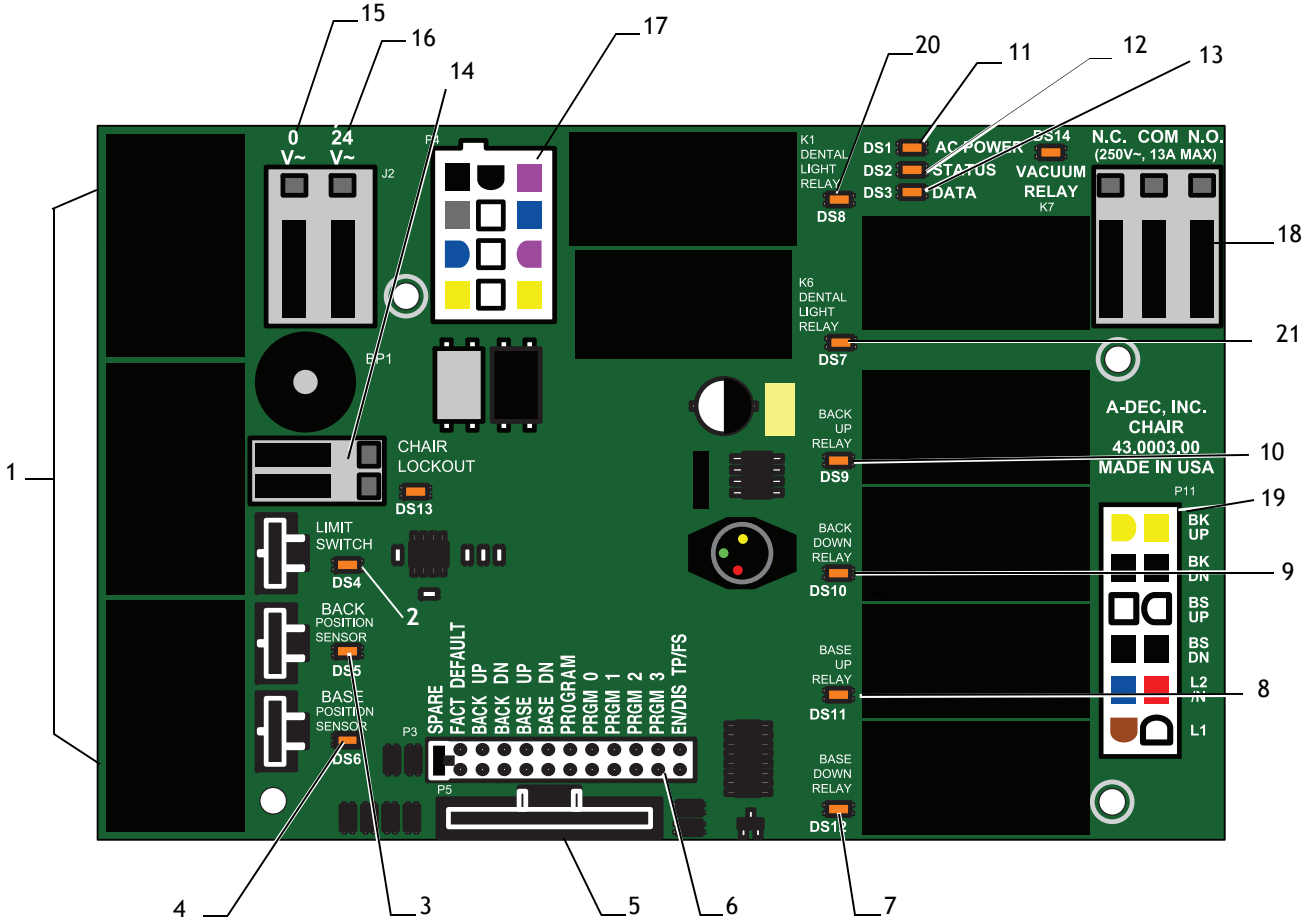
Function	K1 (DS8)	K6 (DS7)	Output
Off	Off	Off	0 VAC
High intensity	On	Off	17 VAC
Composite intensity	Off	On	12 VAC

Table 21. A-dec 571-300 Dental Light Output Settings

Function	K1 (DS8)	K6 (DS7)	Output
Off	Off	Off	0 VAC
High intensity	On	Off	17 VAC
Composite intensity	Off	On	12 VAC
Medium Intensity	On	On	16 VAC

See page 199 through page 200 to reference circuit board components and the LED identification table.

Figure 177. A-dec 511 Chair Circuit Board Components



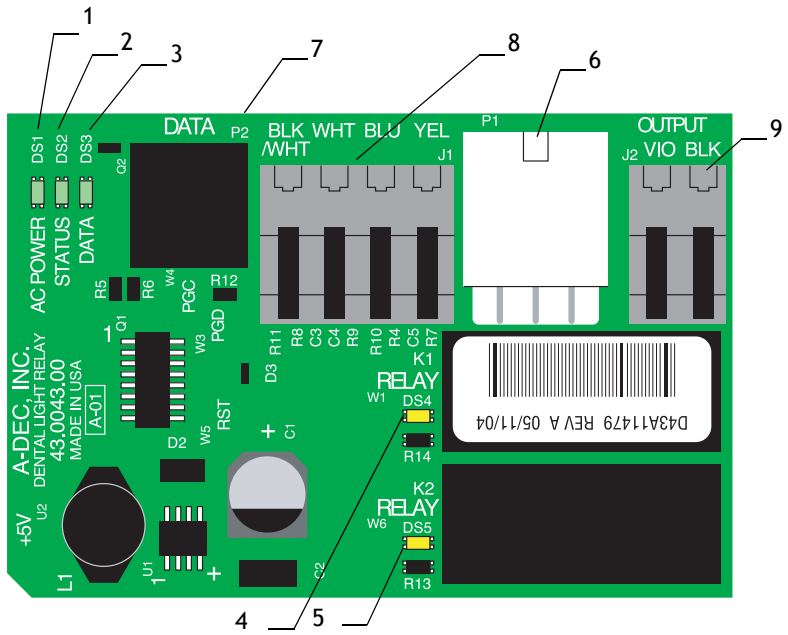
LED Identification for A-dec 511 Chair Board

LED	Status	Description
DS1 - AC power LED	Off	No 24 VAC power, tripped circuit breaker, power supply turned off, no line voltage
	Green, steady	24 VAC at the terminal strip
DS2 - Status LED	Off	System is not functioning, no power or circuit board has failed
	Green, steady	Normal operation
DS3 - Data LED	Off	No DCS communication, not connected to the DCS, or DCS has failed
	Green, steady	Detects active DCS
	Green, blinking	Valid DCS message
DS4 - Chair limit switch	Off	Closed, (normal)
	Red	Open, (activated)
DS13 - Chair lockout	Off	Open, (normal)
	Red	Closed, (activated)
DS5 + DS6 - Chair potentiometers	Off	Potentiometer: Not connected or bad connection Moving in wrong direction Limited range of motion, or Cable is not on wheel.
	Yellow, steady	Normal operation
	Yellow, fast blink	Upper end of travel
DS9, DS10, DS11, DS12 - Chair relay LEDs	Off	Relay is off
	On	Relay is on
DS7, DS8 - Dental light relay LEDs	Off	Relay is off
	On	Relay is on
DS14 - Vacuum relay LED	Off	Relay is off
	On	Relay is on

A-dec 371 and 571-300 Dental Light Relay Circuit Board

Item	Description
1	DS1 - AC power LED
2	DS2 - Status LED
3	DS3 - Data LED
4	DS4 - Dental light relay
5	DS5 - Dental light relay
6	P1 - Input power
7	P2 - Data port
8	J1 - Toggle switch inputs
9	J2 - Dental light output power

Figure 178. Dental Light Relay Circuit Board



See page 202 to reference the LED identification table.

Table 22. A-dec 371 Dental Light Output Settings

Function	K1 (DS4)	K2 (DS5)	Output
Off	Off	Off	0 VAC
High intensity	On	Off	17 VAC
Composite intensity	Off	On	12 VAC

Table 23. A-dec 571-300 Dental Light Output Settings

Function	K1 (DS4)	K2 (D57)	Output
Off	Off	Off	0 VAC
High intensity	On	Off	17 VAC
Composite intensity	Off	On	12 VAC
Medium Intensity	On	On	16 VAC

LED Identification for the Cascade, Decade, Performer, Competitor

LED	Status	Description
DS1 - AC power LED	Off	No 24 VAC power, tripped circuit breaker, power supply turned off, no line voltage
	Green, steady	24 VAC at the terminal strip
DS2 - Status LED	Off	System is not functioning, no power or circuit board has failed
	Green, steady	Normal operation
DS3 - Data LED	Off	No DCS communication, not connected to the DCS, or DCS has failed
	Green, steady	Detects active DCS
	Green, blinking	Valid DCS message
DS4, DS5 - Dental light relay LEDs	**DS4, DS5**	
	Off, Off	Dental light off
	On, Off	High intensity
	Off, On	Composite intensity
	On, On	Medium intensity

Adjustments/Maintenance — A-dec 371 Dental Light

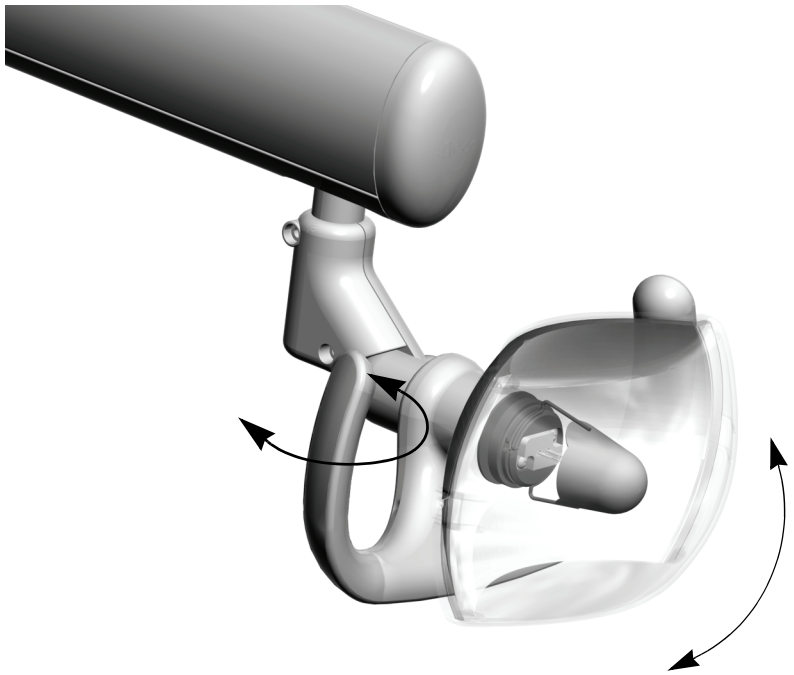
Focus Setting

The A-dec 371 dental light is factory set for proper illumination at between 12 - 27 " (300 - 700 mm) from the oral cavity. The setting cannot be adjusted.

Dental Light Positioning

The dental light should be easy to rotate and pivot. If the light is difficult to position, moves too easily, or tends to slip out of position, you can adjust the horizontal and vertical tension (see Figure 179 and Figure 181 on page 204).

Figure 179. Dental Head Rotation



Light Head Rotation

1. For horizontal rotation, use a 5/32" hex key to turn the adjustment screw at the top of the light housing (see Figure 180).
2. If the light head moves too easily, or tends to drift out of position, increase the tension by turning the screw right.
3. If the light is difficult to move, loosen the tension by turning the screw left.
4. Use the same procedure to adjust vertical rotation using a 3/16" hex key (see Figure 181).

Figure 180. Horizontal Rotation Adjustment

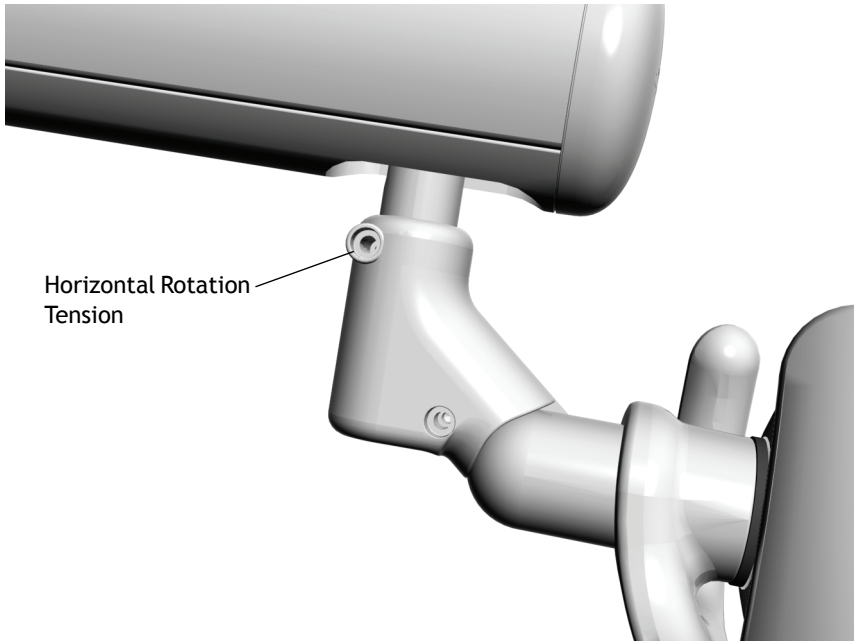
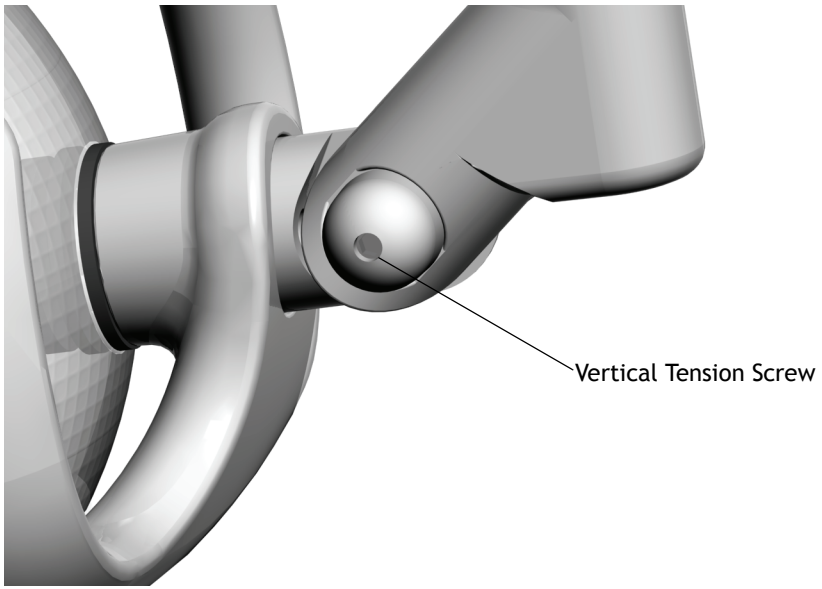


Figure 181. Vertical Rotation Adjustments



Adjust 371 Dental Light Flexarm Counterbalance

If the 371 Dental Light drifts up or down, complete the following steps to adjust the flexarm counterbalance.

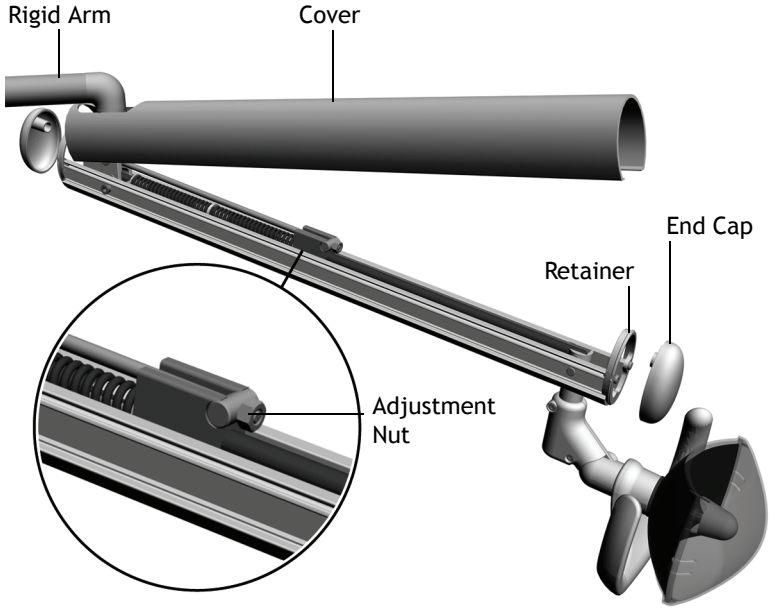
1. Remove the flexarm end caps.
2. Lift and separate the cover from the arm.

TIP To get a better grip on the cover, use a Phillips head screw driver to remove the retainer on the end of the rigid arm towards the light and slide the cover toward the light.

---

3. Slide the cover up and rest it on the rigid arm.
4. Use a 1/2" combination wrench to adjust the nut on the end of the spring.
5. If the dental light drifts up, turn the nut to the left. If the dental light drifts down, turn the nut to the right.
6. Slide the cover back onto the flexarm (but do not reattach it yet), and check for drift.
7. Repeat steps 3-5 until drift is eliminated.

Figure 182. Dental Light Flexarm Counterbalance Adjustments



Shield Cleaning

1. Turn Off the dental light.

WARNING To avoid personal injury, be sure that the light has cooled before cleaning it.

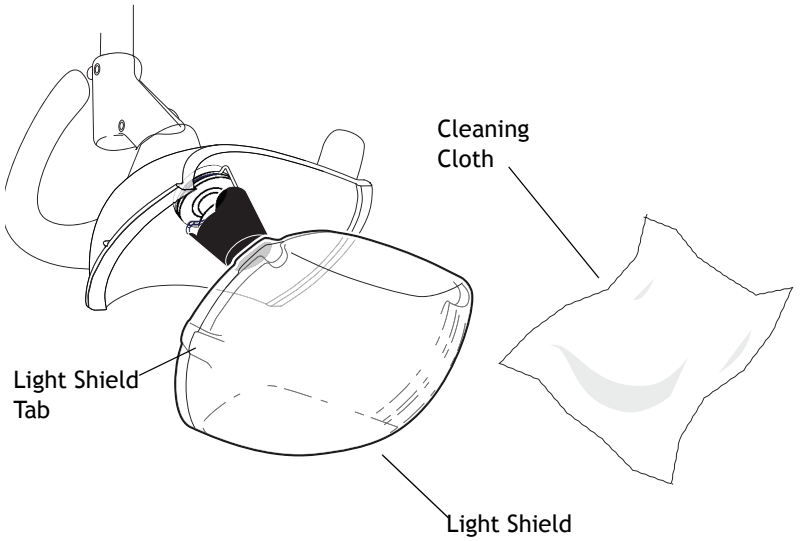
2. Gently pull the light shield tab out on one side while gripping the top portion of the shield to remove, then set it aside.
3. Use a 100% cotton gauze pad or a soft, dry, lint-free cloth to clean the light shield and reflector.

If necessary, soak the pad or cloth with water or with a diluted solution of mild dish washing liquid before cleaning. Make certain no residue remains on the surface.

Do not use abrasives or chlorine (such as household bleach) on the surface of the reflector. These can damage or discolor the reflector surface, impairing the effectiveness.

CAUTION Do not rub heavily, clean the light shield when it is hot, or soak the shield assembly in cleaning solution. Doing so may damage the shield assembly components. Clean the light shield only as instructed.

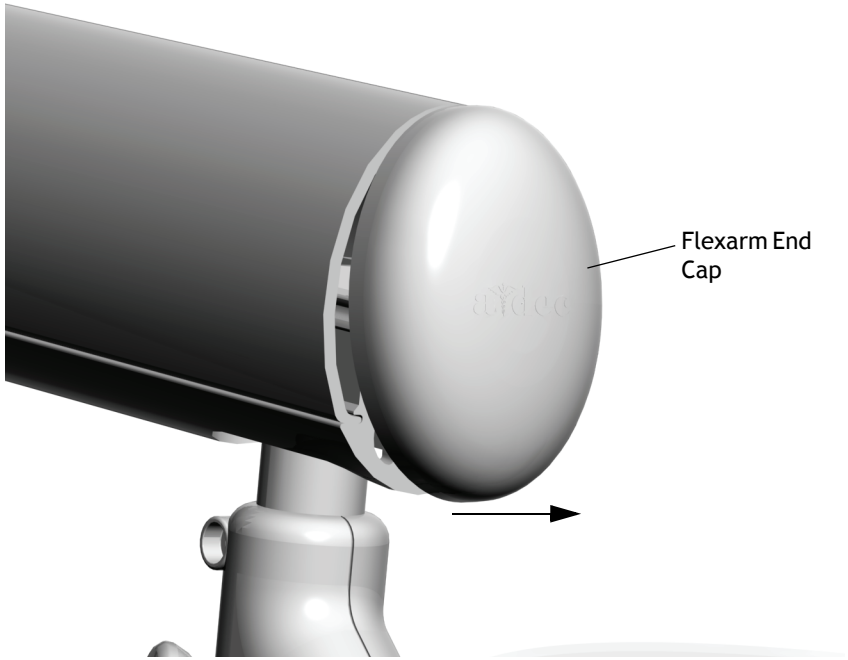
Figure 183. Remove Light Shield For Cleaning



Bulb Replacement

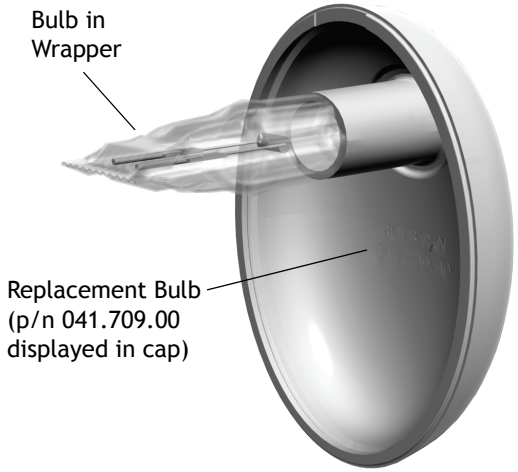
A spare bulb is attached to the inside of the light flexarm end cap. To remove the end cap, pull from the bottom first, then straight out, being careful not to damage the bulb (see Figure 184).

Figure 184. Remove Flexarm End Cap



The spare bulb part number is etched on the inside of the end cap (see Figure 185). Use this number when ordering replacement bulbs.

Figure 185. End Cap With Spare Bulb



.

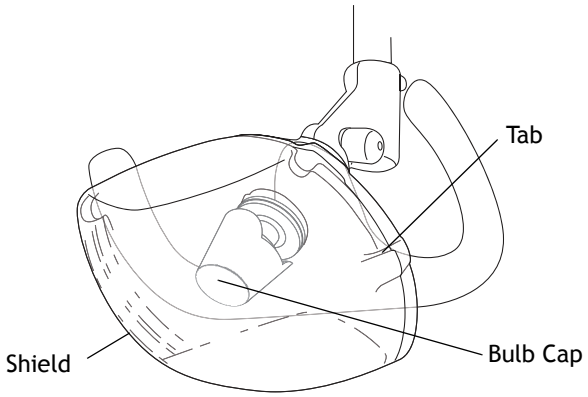
CAUTION Do not remove the outer wrapper when removing the bulb from the end cap. Finger oils can affect light performance and severely limit bulb life. If you should inadvertently touch the bulb, gently clean it with cotton dampened with isopropyl or ethyl alcohol.

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

Follow these steps to replace the bulb:

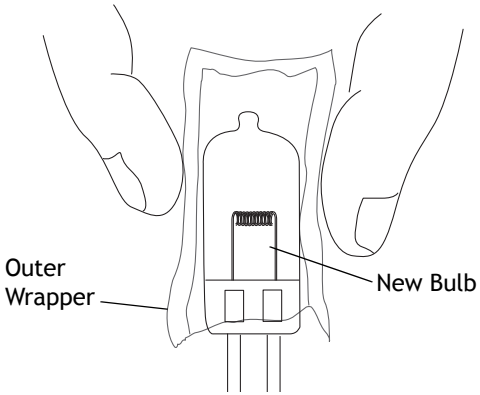
1. Turn OFF the light and allow the light to cool.
2. Gently pull the light shield tab out on one side while gripping the top portion of the shield to remove, then set it aside (see Figure 186).

Figure 186. Remove Light Shield



3. Remove the bulb cap assembly by rotating the cap assembly counter clockwise, then set aside.
4. Using a gauze pad or cloth to protect your fingers, carefully pull the old bulb from its socket. Discard the bulb.
5. Holding the new bulb in its outer wrapper with the pins away from you, carefully insert the bulb pins into the socket (see Figure 187). The bulb base is fragile and can break under excess pressure.

Figure 187. Insert New Bulb



6. Remove and discard the outer wrapper, then reinstall the bulb cap assembly and light shield.
7. Verify the operation of the light by turning it on and operating it at each intensity setting.

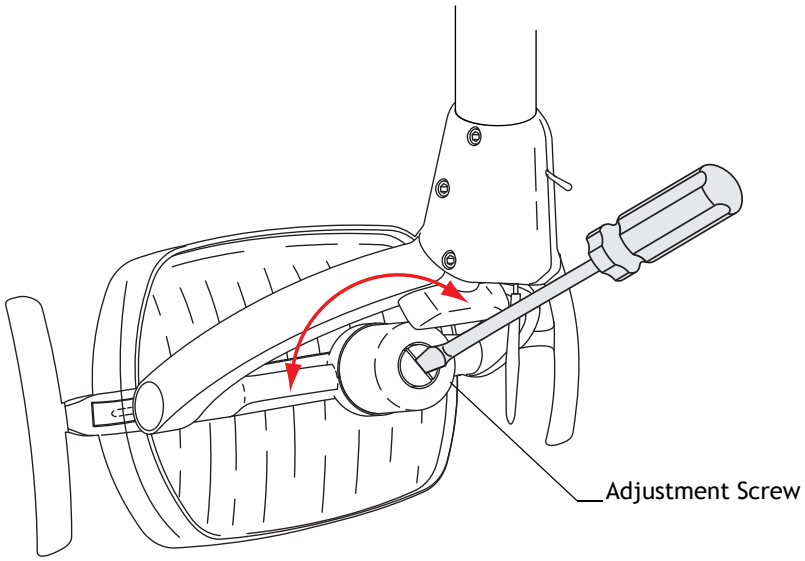
Adjustment/Maintenance — A-dec 571-300 Dental Light

The light is preset for proper illumination at 27.6 inches (700 mm) from the black nose piece to the oral cavity. The light has a focal adjustment range between 18" and 31" (460 mm and 790 mm).

Focus

1. Place a white towel over the chair headrest to represent the oral cavity.
2. Turn the light on.
3. Position the light head at the distance normally used when working in the oral cavity (select a distance representative of most procedures).
4. Use a large screwdriver to turn the focus adjusting screw until the light, within the borders of the light pattern, is most uniform.

Figure 188. Focus Adjustment



Light Head Rotation

The light head needs adjusting if it is difficult to position, moves too easily, or tends to drifts out of position.

Left/Right Rotation

Turn the adjustment screws beginning with the screw at the top of the switch housing.

- Light head moves too easily, or tends to drift out of position. Increase the friction by turning the screws clockwise.
- Light is difficult to move. Loosen the friction by turning the screws counter clockwise.

Figure 189. Left/Right Rotation

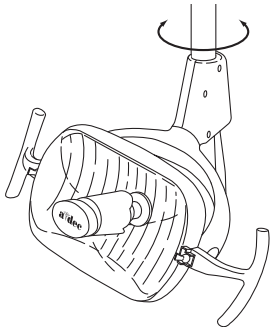
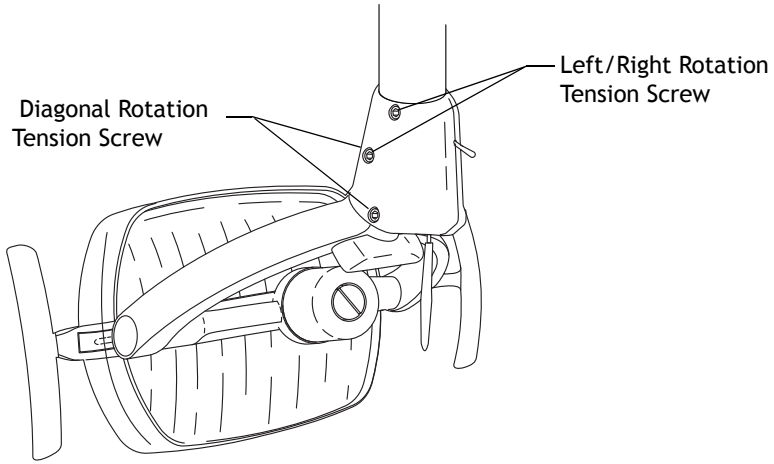


Figure 190. Rotation Adjustment

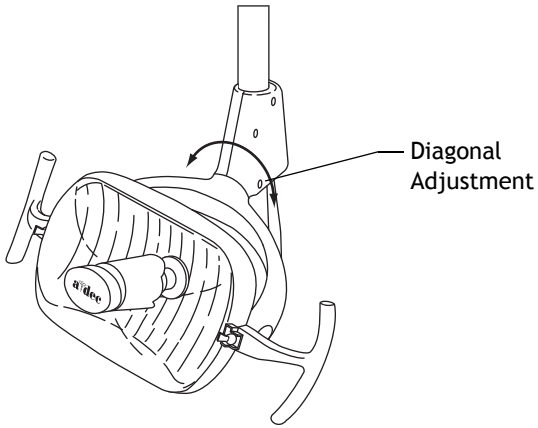


Diagonal Rotation (Third Axis)

Turn the adjustment screws, beginning with the screw at the bottom of the switch housing.

- Light head moves too easily, or tends to drift out of position, increase the friction by turning the screws clockwise.
- Light head is difficult to move. Loosen the friction by turning the screw counterclockwise.
- Tighten the adjustment screw until they are tight to eliminate all movement in the diagonal axis.

Figure 191. Diagonal Axis Rotation



Up/Down Rotation (Vertical)

This adjustment only needs to be made to one side of the light head.

1. Loosen the setscrew.
2. Remove the light yoke plug.
3. Use a large flat-blade screwdriver to turn the adjustment screw under the light yoke plug.
   - Light head moves too easily, or tends to drift out of position. Increase the friction by turning the screw clockwise.
   - Light head is difficult to move. Loosen the friction by turning the screw counterclockwise.
   - Retighten the setscrew, and reinstall the light yoke plug.

Figure 192. Up/Down Rotation

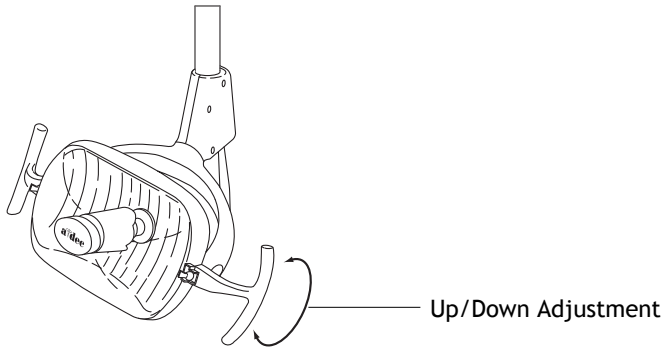
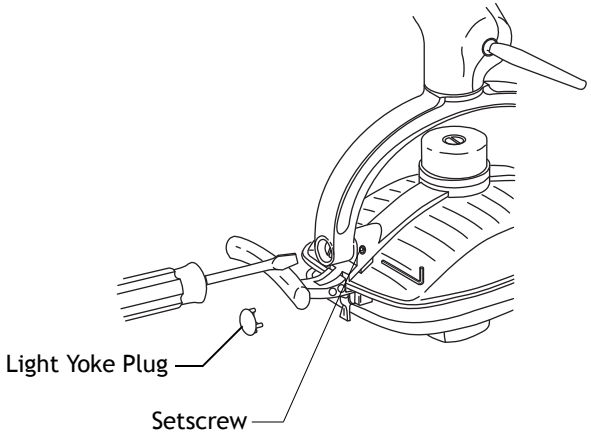


Figure 193. Up/Down Rotation Adjustment

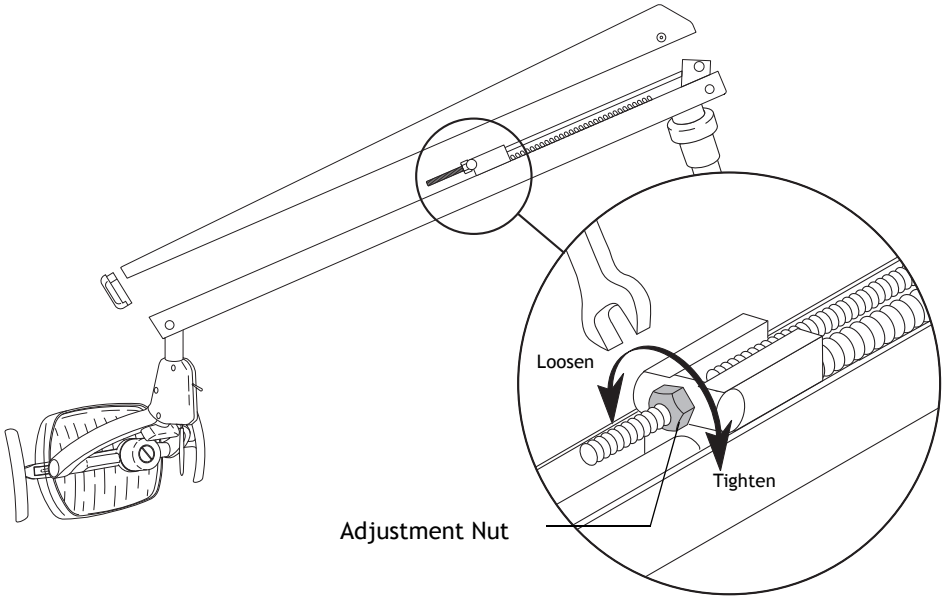


Flexarm

Remove the screw and cover from the flexarm. Turn the tension adjustment nut inside the flexarm using a 1/2" open end wrench. Tighten the nut by turning it clockwise, if the flexarm moves too easily, or tends to drift down by itself. Loosen the nut by turning it counterclockwise, if the arm drifts up.

NOTE The weight of the flex arm cover affects the flex arm counter-balance. Set cover on flex arm to test tension adjustment. An optional travel stop limit kit (p/n 90.1044.00) can be installed to limit the upward and downward motion of the flexarm.

Figure 194. Flexarm Adjustments



Light Shield Cleaning

1. Turn Off the dental light.

WARNING To avoid personal injury, be sure that the light has cooled before cleaning it.

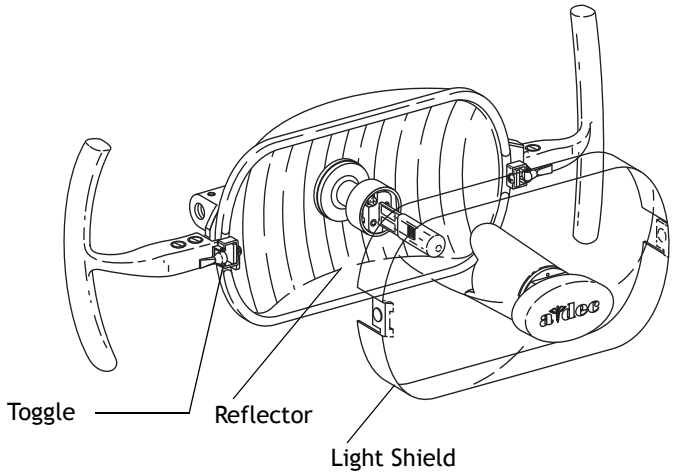
2. Release the toggles on either side of the light to remove the light shield.
3. Use a 100% cotton gauze pad or a soft, dry, lint-free cloth to clean the light shield and reflector.

If necessary, soak the pad or cloth with distilled water before cleaning. Make certain no residue remains on the surface.

Do not use abrasives or chlorine (such as household bleach) on the surface of the reflector. These can damage or discolor the reflector surface, impairing the effectiveness.

CAUTION Do not rub heavily, clean the light shield when it is hot, or soak the shield assembly in cleaning solution. Doing so may damage the shield assembly components. Clean the light shield only as instructed.

Figure 195. Light Shield Cleaning



Bulb Replacement

Pull the spare bulb holder from the light head. Remove the bulb from the holder, but do not remove the outer wrapper. Finger oils can affect light performance and severely limit bulb life. If bulb is inadvertently touched, gently clean it with cotton dampened with isopropyl or ethyl alcohol.

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

1. Turn Off the light, and allow the light to cool.
2. Release the toggles on the light shield and set the shield aside.
3. Use a gauze pad or cloth to protect fingers. Carefully pull the old bulb from its socket and discard.
4. Hold the new bulb in its outer wrapper with the pins facing away, and carefully insert it in the socket. The bulb base is fragile and can break under excess pressure.

CAUTION Be careful not to move the bulb side-to-side when inserting it into the socket.

5. Remove and discard the outer wrapper, reinstall the light shield, and secure with the toggles.
6. Verify the operation of the light by turning it on and operating it at each intensity setting.

CAUTION Do not use non-A-dec sanctioned bulbs.

Figure 196. Remove Bulb from Holder

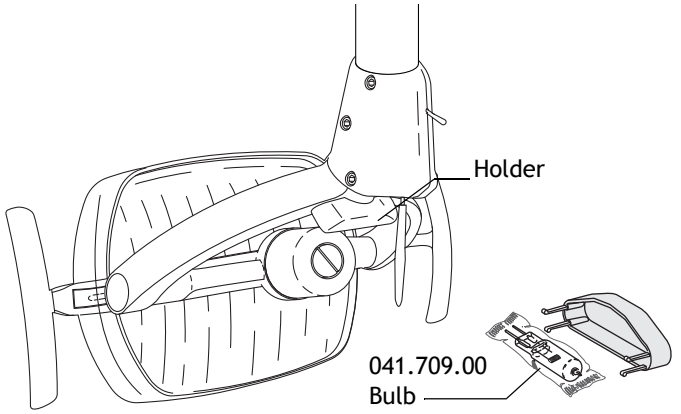
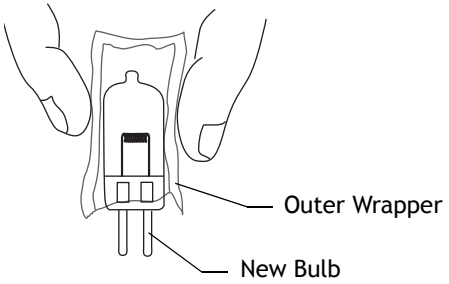


Figure 197. Insert Bulb



Illustrated Parts Breakdown — A-dec Dental Lights

This section contains illustrated parts breakdowns specific to the A-dec 371 and 571-300 Dental Lights.

Part Identification

In this section, you will find serviceable components tables that correspond to the illustrations. The tables identify all parts and kits, including those that are not for sale. Parts that are not for sale are indicated with the symbol shown below:

† — Indicates that the individual part is not available for sale. These parts are typically part of a kit and/or larger assembly that is for sale.

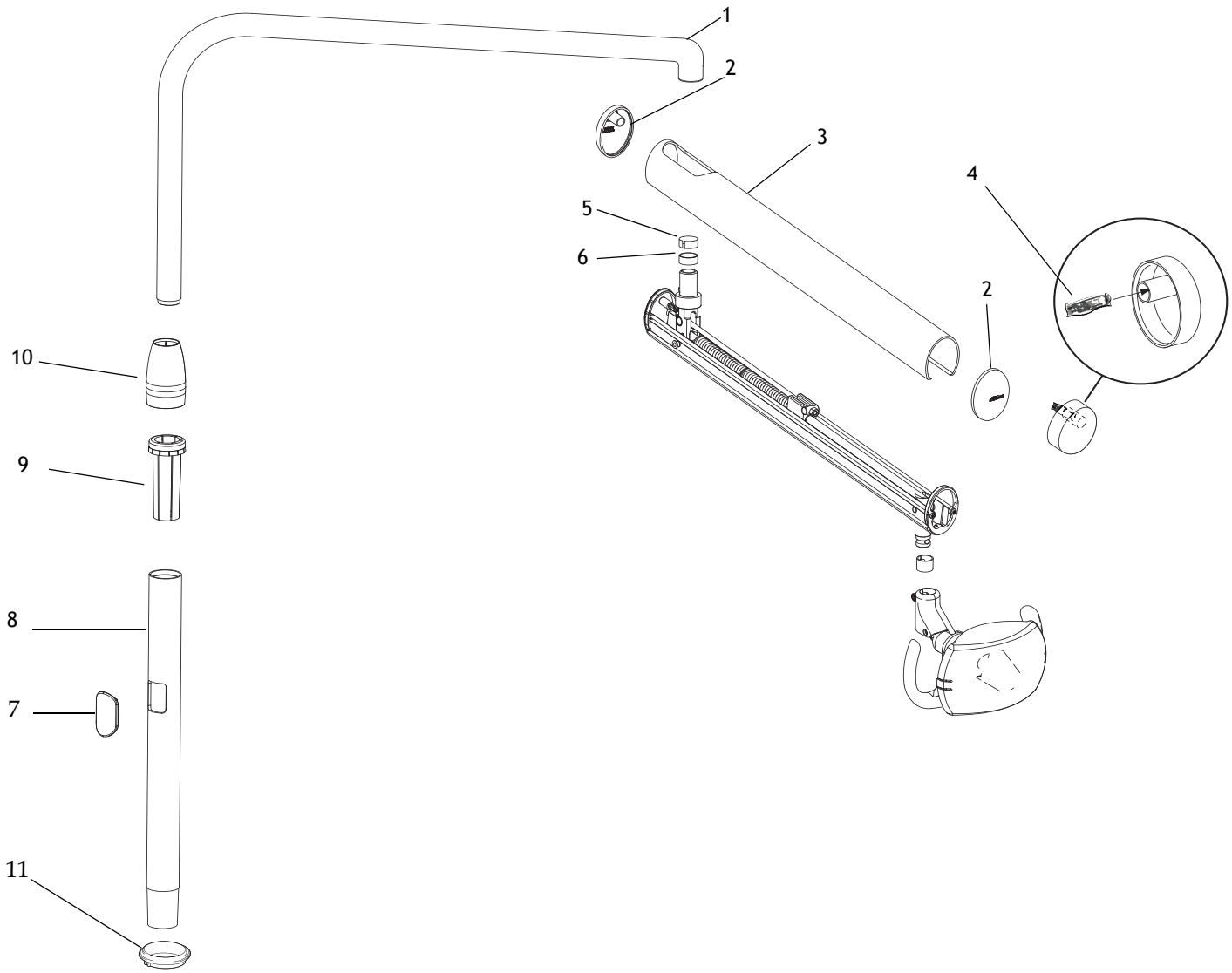
Contents

A-dec 371 Dental Light Assembly

Item	Part Number	Description
1	28.1623.00 †	Light post. upper
2	75.2018.00	Cap, light arm
3	28.1626.00 †	Cover, flex arm
4	041.709.00	Bulb, 17 volt Halogen
5	016.149.00	Sleeve, 1.059x1.138 x.5
6	016.097.00	Sleeve, 1.059x1.138X.5 oil
7	75.0150.00	Internal post plug,
8	28.1624.00	Intermediate light post
9	12.0974.00	Bushing, post, 1-1/2 ID x 2.0 OD x 5.2 LG
10	77.0824.00	Trim Ring
11	77.0876.00	Trim ring, post box, 2"

† Indicates that the individual part is not available for sale

Figure 198. A-dec 371 Dental Light Assembly

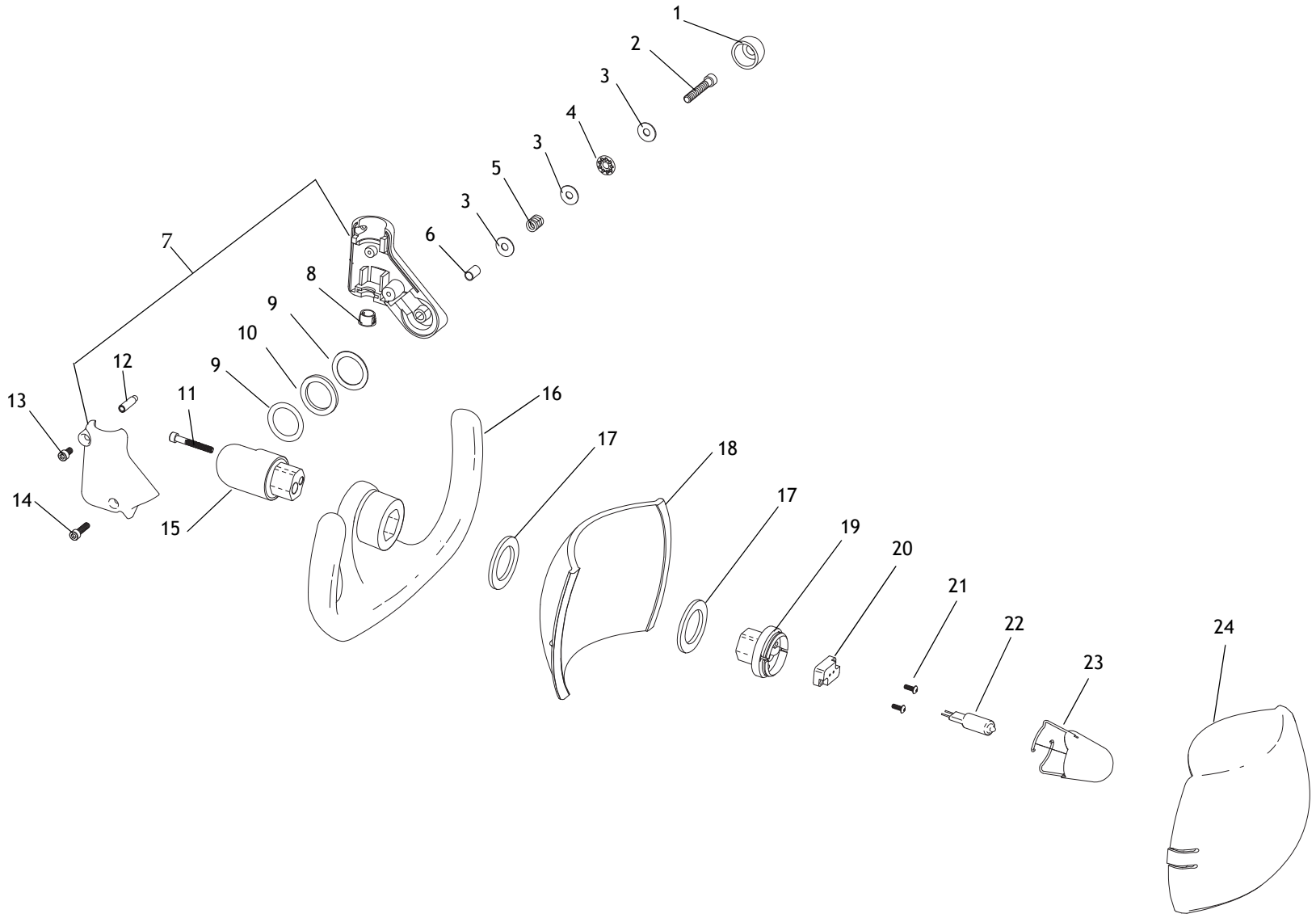


A-dec 371 Dental Light Head Assembly

Item	Part Number	Description
1	28.1320.01	Cap
2	005.148.00	Screw, socket head, 1/4-28 x 1 1/2", stainless steel
3	016.053.00	Washer, trust
4	016.054.00	Bearing trust
5	013.129.00	Spring compression
6	016.067.00	Bearing sleeve
7	28.1173.01 †	Switch housing
8	018.002.06	Plug hole, 1/2"
9	004.207.00	Washer, flat, stainless steel
10	28.1175.00	Washer, trust
11	002.036.00	Screw, socket head 10-32 x 1 3/8"
12	28.1002.00	Pin, switch housing
13	002.130.00	Screw, socket head, 10 - 32 x 3/8"
14	002.073.00	Screw, socket head, 10 - 32 x 3/4
15	28.1641.00 †	Light yoke, rear
16	28.1633.00 †	Molded handle
17	28.1628.00 †	Gasket, reflector light
18	28.1609.00 †	Reflector
19	28.1630.00 †	Light socket holder
20	28.1632.00	Bulb socket
21	001.167.00	Screw, button head socket, 6 - 32 x 3/8"
22	041.709.00	Bulb, halogen 17 volt
23	28.1635.00	Bulb cap assembly
24	28.1634.00	Shield, reflector

† Indicates that the individual part is not available for sale

Figure 199. A-dec 371 Dental Light Head Assembly

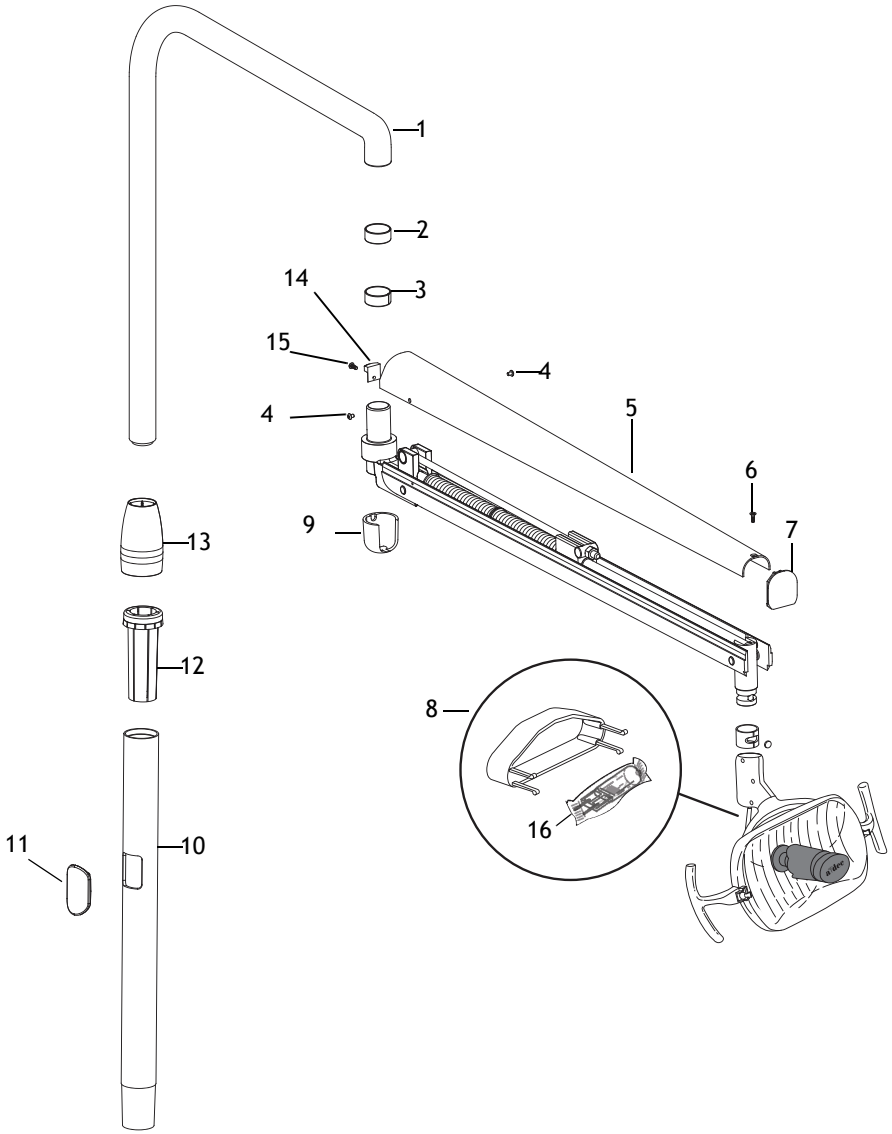


A-dec 571-300 Dental Light Assembly

Item	Part Number	Description
1	28.1623.00 †	Light post
2	016.149.00	Sleeve, 1.059 x 1.138x.5
3	016.097.00	Sleeve, oil, 1.059 x 1.138x.5
4	002.103.00	Screw, socket head 6-32 x 3/16"
5	28.1059.01	Flex arm cover
6	003.099.00	Screw, flat head 6-19 x 1/2"
7	75.0008.01	Cap, light arm
8	28.1004.00	LIght bulb holder assembly
9	28.1531.01	Knuckle cover
10	28.1624.00	Light post, intermediate
11	75.0150.00	Post plug, internal
12	12.0974.00	Bushing, post, 1-1/2 ID x 2.0 OD x 5.2.LG
13	77.0824.00	Trim ring
14	28.1500.00	Retainer, light arm
15	001.167.00	Screw, button head 6-32 x 3/8"
16	041.709.00	Bulb

† Indicates that the individual part is not available for sale

Figure 200. A-dec 571-300 Dental Light Assembly

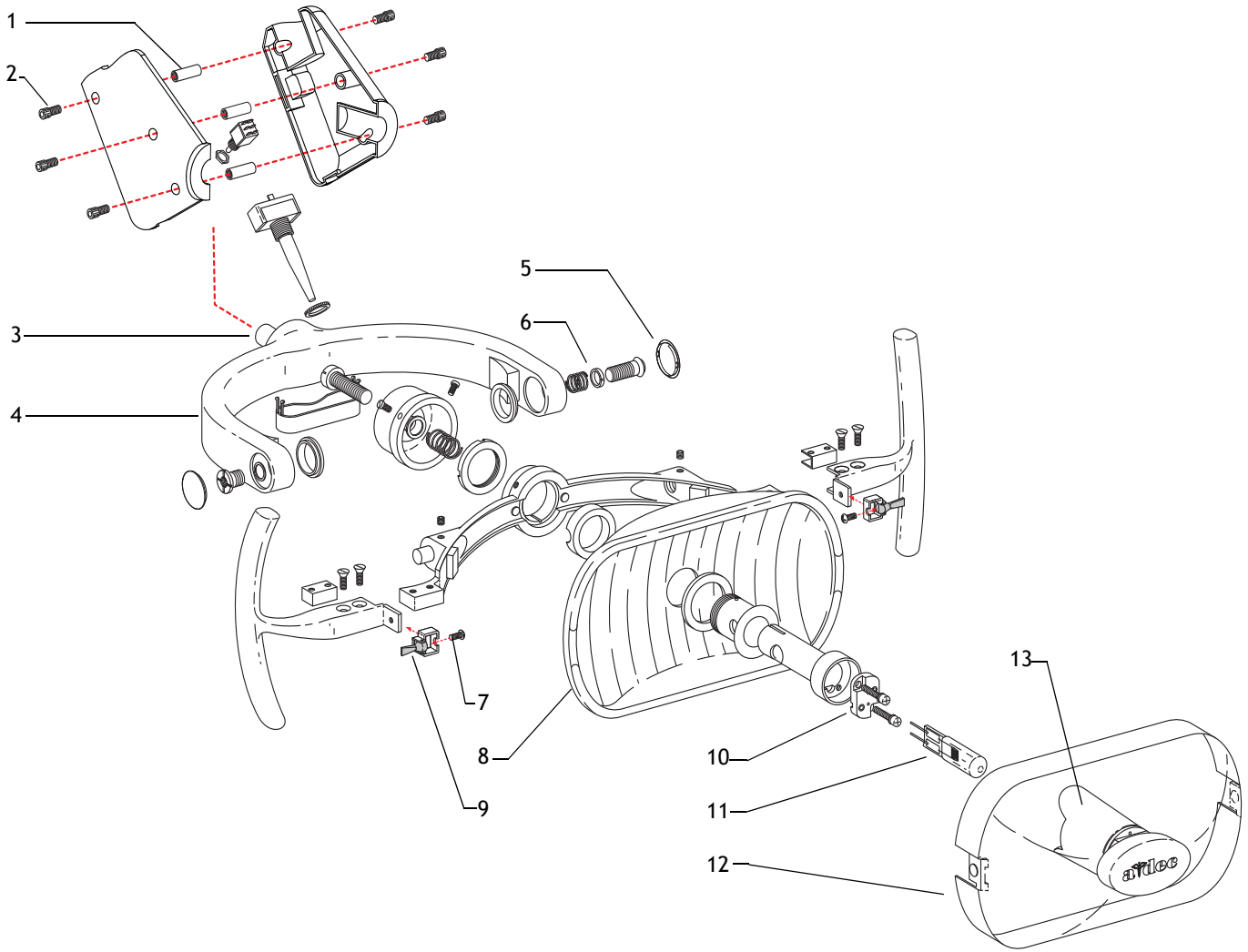


A-dec 571-300 Dental Light Head Assembly

Part Number28.1007.00

Item	Part Number	Description
1	28.1467.00	Stand-off
2	002.135.01	Screw, socket head 10-32 x 1/2" stainless steel
3	28.1001.00	Bushing, pivot, light yoke
4	28.1009.01	Light yoke
5	28.1536.01	Plug, light yoke
6	28.1008.00	Spacer, light yoke
7	002.140.00	Screw, button head socket patch, 6-32 stainless steel
8	28.1429.01	Dental light
9	28.1012.01	Toggle bracket assembly, white 2, package of 2
10	90.0463.01	Bulb socket kit
11	041.709.00	Bulb, 17 volt Halogen
12	28.0503.02	Lens, dental light (includes nosepiece)
13	28.0555.00	Bulb shield with M3 x 8 screws

Figure 201. A-dec 571-300 Dental Light Head Assembly



10

TROUBLESHOOTING

Introduction

This section contains tips for troubleshooting common problems.

- **Diagnose and Repair Problems**: Define the problem as precisely as possible. Ask yourself: What happens when the problem occurs? Is it a problem with the dental unit air or water, or is it electrical? Is it user-related?
- **Gather Information**: Define the details of the problem and air, water, or the electrical system involved. Ask yourself: When did the problem occur? Did anything change? Is the problem reproducible? Does the problem happen intermittently or constantly?
- **Isolate the Problem**: Narrow down the issue into smaller pieces to help to isolate a possible solution. For example, disconnecting the data lines and footswitch from the chair circuit board permits you to use the circuit board testpoints to verify that the chair circuit board functions properly on its own.

Contents

Dental Chair

This table contains tips and troubleshooting information to assist in diagnosing chair problems. These tables are not intended to cover every situation, but do include the most common problems that you may encounter.

Refer to the information on page 20 that explains the LEDs on the chair circuit board. You will need this information as you complete these procedures..

Table 24. Dental Chair Troubleshooting

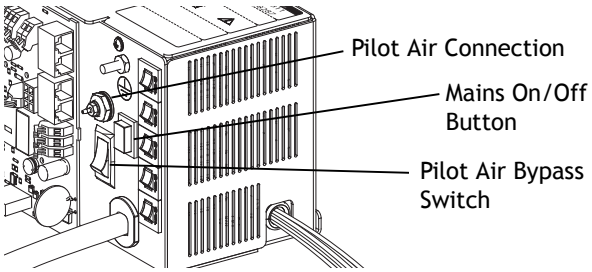
Problem	Possible Cause	Action
No power to chair or unit. Office still has power.	The chair is unplugged.	1. Verify power is available at the outlet. 2. Plug chair in to power source.
	The Mains On/Off button is in Off position.	Press the Mains On/Off button. 
	No pilot air to power supply or bypass switch not activated.	1. Check air regulator pressure gauge for 80 psi. 2. Verify pilot air is connected to the power supply and air manual shutoff valve is fully open. 3. Verify master toggle is in the On position and that the bypass switch is activated.

Table 24. Dental Chair Troubleshooting (continued)

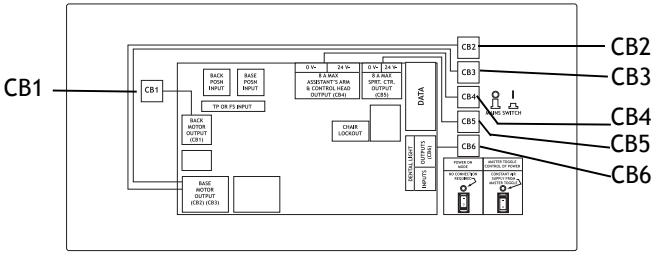
Problem	Possible Cause	Action
No power to chair or unit. Office still has power. 	Power supply circuit breakers CB1, CB2, CB3, CB4, CB5, or CB6 have tripped.	**1.** Check circuit breaker and reset. If there is still no power, move onto the next Possible Cause. **2.** If the circuit breaker trips again: **(1)** Disconnect all power cables, including the chair input power connectors P4, P9, and P12 from the chair board. **(2)** Reset the circuit breaker. **(3)** Reconnect the power cables one at a time observing which one causes the circuit breaker to trip. **(4)** Identify the wiring problem circuit, and repair or replace as needed.  Refer to page 20 for power supply circuit identifications and descriptions. DS14 and DS15 on the chair circuit board indicate that 24 VAC power is present for distributed power. The AC Power LED, DS1, on the chair board indicates 24 VAC is present for the chair board and back motor. If DS1, DS14, or DS15 are Off, verify that the respective circuit breaker is not tripped and reset if it is tripped.
	Power supply has failed	If a power supply circuit breaker continues to trip with all cables (P4, P9, and P12) disconnected from the chair board, replace the power supply.

Table 24. Dental Chair Troubleshooting (continued)

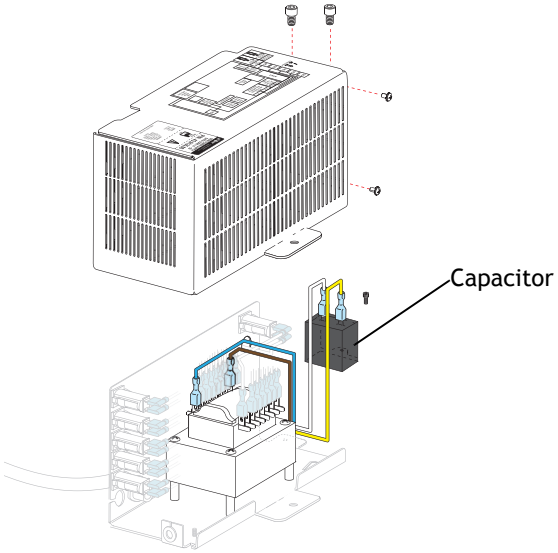
Problem	Possible Cause	Action
No base up function. The motor relay clicks. Base LED (DS11) turns on. The chair back functions work.	Disconnected capacitor.	**1.** Verify the base up relay clicks and the LED (DS11) on the chair circuit board is illuminated. **2.** Turn power off if connected. **3.** Check capacitor connections. **4.** Reconnect cables.  **WARNING** The hydraulic system must be depressurized before removing the solenoid. To depressurize the hydraulic system, remove the failed solenoid coil and replace with the operating solenoid coil. Lower the chair base and back. **NOTE** When replacing a solenoid, wipe up any oil, and replace existing O-rings on the solenoid base.
	Chair base thermal limiter has been tripped.	The chair base motor should be limited to a 5 percent duty cycle. If the duty cycle is exceeded for a period of time, a thermal limiter will trip. The thermal limiter is located inside the base pump motor and will auto-reset after a few minutes.

Table 24. Dental Chair Troubleshooting (continued)

Problem	Possible Cause	Action
	Chair base motor is disconnected.	Verify the motor is connected into the base motor connection (P11 on the circuit board). When base up is activated, the base motor relay should click and DS11 should be on. Verify that P12 is connected to the chair board (mains power from the power supply).
	Failed capacitor.	Replace the capacitor with one of correct voltage.
No base down. Relay clicks and DS12 LED illuminates. 	Failed base down solenoid coil.	**1.** Check for magnetic pull while operating base down function. (See page 26 for information.) **2.** Check for correct resistance value at solenoid connector: 38 Ohms (Ω) ± 4 Ohms (Ω) **3.** Replace solenoid. (See page 27 for instructions.)  **WARNING** The hydraulic system must be depressurized before removing the solenoid. To depressurize the hydraulic system, remove the failed solenoid coil and replace with the operating solenoid coil. Lower the chair base and back.  **NOTE** When replacing a solenoid, wipe up any oil, and replace existing O-rings on the solenoid base.
Base or back moves up for only one second, no preset buttons work (limp-along feature). DS5 (back) not illuminated DS6 (base) not illuminated	The position sensor for that movement is disconnected.	**1.** Check position sensor connections to the chair circuit board. **2.** Reconnect if disconnected. **3.** Verify that the position sensor is connected correctly: Back position sensor into P1, base into P2.
	Failed position sensor.	**1.** Verify that the board's green LED is on. If not, make sure the board is connected. **2.** Replace the position sensor as a complete assembly.
No chair movement from a touchpad. The touchpad status A-dec logo icon and chair circuit board status LED (DS2) are illuminated. The footswitch operates the chair.	Touchpad DCS is interrupted.	• Connect a known good data line between the touchpad and the chair circuit board. • If the chair circuit board data LED comes on and the chair operates normally with the touchpad, check each data line in the system with the known good line until the bad DCS line is found. • If the chair circuit board data LED stays off, call customer service. (See "Get Support" on page 2  **NOTE** The data and power to the control head mounted touchpad are routed via the control head. Power is supplied using black/gray wires.

Table 24. Dental Chair Troubleshooting (continued)

Problem	Possible Cause	Action
No chair movement from the touchpad, status icon is not illuminated.	Faulty touchpad.	If the LED, DS1 on the touchpad is On, and DS2 (blue status LED) is Off, cycle power to the board. If DS1 remains On and DS2 remains Off, disconnect P3 (on the deluxe touchpad only). If DS1 remains On and DS2 is Off, replace the touchpad. If at any time the DS2 is On, do not replace the touchpad.
	Faulty touchpad power cable or wires.	If the LED, DS1 on the touchpad is Off, verify wires to the touchpad are connected to the WAGOs in the delivery system. Verify 24 VAC at the WAGOs. If 24 VAC is not present at the WAGOs in the delivery system, verify wiring to and from the post box and chair board. Verify that the circuit breaker is not tripped.
Base up or Base down does not travel the full distance.	Position sensor connections (P1 and P2) on the chair circuit board are switched.	Verify that the position sensors are connected to correct chair circuit board locations: P1 — Back position sensor P2 — Base position sensor
	The chair stops are not established.	1. Place the jumper in the factory default position on the Testpoint header, P3. The chair automatically establishes the soft stops for the chair base and back. When the factory default routine completes, the chair beeps three times to indicate completion. 2. Place the jumper back into the spare position on the Testpoint header, P3, and verify the chair operates normally.
	Optional height limit has been set.	1. If factory default does not establish full positioning extents of base up or base down, the optional height limits may have been set. 2. Move the jumper in the Testpoint header, P3,on the chair board to EN/DIS TP/FS. 3. Hold the base up or base down button to remove the height limit for 3 seconds. 4. One beep confirms the height limit has been removed. **NOTE** If three beeps sound, the optional height limit has been set. To remove the height limit, repeat steps 2 through 3.
Back does not move but base moves as normal.	Chair blue status indicator is blinking. The chair back's duty cycle limit has been exceeded.	The duty cycle limit has been exceeded for the back. After one minute, the chair back will operate again.
	Chair back motor is disconnected.	Verify that the motor is connected into the BACK MOTOR connection (P8 on the circuit board). **NOTE** When Back Up is activated, DS9 and DS17 should be On. When Back Down is activated, DS10 and DS17 should be On.

Table 24. Dental Chair Troubleshooting (continued)

Problem	Possible Cause	Action
Back up and base down movements do not move. Back down and base up movements move as normal.	Jumper not installed on cuspidor circuit board limit switch jumper.	Place and leave a jumper into the cuspidor circuit board limit switch connector, P4. There is no cuspidor limit switch on the A-dec 311 product.
No chair movements.	Power may not be present on the circuit board.	1. Verify that power is present on the chair circuit board. If DS1 is Off, follow instructions for verifying power connections. 2. If DS1 is On, use the Testpoint header, P3, to activate chair movements. 3. If using the Testpoint header, P3, does not activate chair movements, verify that the chair lockout is not activated (DS13 should be Off). 4. Verify the foot disc is not in use. 5. If DS13 is On, verify the wiring and plumbing to any local air electric switch connected to J4. Verify the plumbing to the deluxe touchpad transducer (X1) if a deluxe touchpad is on the system.
Unable to change or use chair presets.	Position sensor connections (P1 and P2) on the chair circuit board are switched.	Connect position sensor to correct board locations: P1 — Back position sensor P2 — Base position sensor
	Position sensor for that movement is disconnected.	1. Check position sensor connections to the chair circuit board. 2. Reconnect if disconnected.
	Failed position sensor.	1. Check for LED on position sensor circuit board, which should be On if connected. 2. If the LED on the position sensor is Off, and it is connected to the chair board that is On, replace the position sensor as a complete assembly.
No or limited chair functions from footswitch.	Footswitch connector/ wiring is damaged.	Verify chair operates from a touchpad or the Testpoint header, P3. Replace the footswitch connector and/or wiring assembly.
	Footswitch membrane is damaged.	Check footswitch connectors and membrane, replace as necessary.

Table 24. Dental Chair Troubleshooting (continued)

Problem	Possible Cause	Action
The chair makes a growling noise when base up is pressed. 	Hydraulic hose from reservoir to pump is pinched.	**1.** Inspect all hydraulic hoses, ensure they are not being pinched in any position. **2.** If the supply tube between the pump and the reservoir is kinked, order and install kit.
	Chair is low on hydraulic fluid.	Add hydraulic fluid. See "Hydraulic Fluid Replenishment" on page 23 for the procedure.  **CAUTION** Use only A-dec hydraulic fluid, p/n 61.0197.00.
	Motor pump has an obstruction or is damaged.	If chair continues to growl, replace the motor assembly.
A button on a touchpad does not work. Function works from other location(s).	Faulty touchpad.	**1.** Verify the function works from other locations (footswitch, chair Testpoint header, P3, and cuspidor buttons). **2.** Verify the touchpad circuit board is snapped into the plastic cover correctly. **3.** If the function still does not work, replace the touchpad.
The automatic positions do not work, the A-dec logo is flashing, double blinks.	The jumper is in the factory default position on the chair circuit board Testpoint header, P3.	Move the jumper from the factory default position to the "spare" position on the Testpoint header, P3.
Double-articulating headrest does not lock or is difficult to unlock.	The headrest needs adjustment or needs replacing.	Adjust the headrest. If the headrest still does not work correctly, replace it as an assembly. No field service to locking components.
A double-articulating headrest may be difficult to move or may drift downward	Glidebar needs tension adjustment.	To adjust the tension, use a 1/8" hex key and turn the tension adjustment screw to the right increase friction to the left to decrease friction.
Circuit breaker 1 or 2 opens. 	Electrical short in a module.	**1.** Disconnect the identified modules from the power supply. **2.** Reset the circuit breaker. **3.** Reconnect modules one at a time until circuit breaker trips. Refer to troubleshooting for that module.

Delivery Systems

This table contains tips and troubleshooting information to assist you in diagnosing the most common delivery system problems that you may encounter.

Table 25: Delivery Systems Troubleshooting

Problem	Possible Cause	Action
No water to all handpieces and the syringe.	Empty water bottle.	Refill bottle with treatment water.
	Kinked air or water tubing.	Check the water and air tubings for kinks or obstructions.
	Restrictor setscrew plugged in the water bottle receptacle.	Remove the restrictor setscrew and use air to blow out debris. If the restrictor setscrew cannot be cleared, replace it.
	Failed self-contained water system regulator.	To test for failure: 1. Remove the restrictor setscrew from the water bottle receptacle and install a 1/8" barb and washer. 2. Using 1/8" tubing, connect an air pressure gauge to the barb. The pressure gauge should indicate between 35-40 psi. If not, replace the water bottle receptacle.
No water coolant to all the handpieces.	Empty water bottle.	Fill the water bottle with treatment water.
	The wet/dry toggle on the foot control is in the dry position.	Standard or no touchpad: 1. Pick up a wet handpiece. 2. Move the wet/dry toggle to the wet (blue dot) position.
	Water coolant air signal shuttle valve faulty.	Check for air leaking from the flush toggle valve when the foot control is stepped on. If a leak is present, replace the shuttle valve.

Table 25: Delivery Systems Troubleshooting (continued)

Problem	Possible Cause	Action
	No water coolant air signal from the foot control wet/dry toggle (standard or no touchpad).	Check the clear tubing from the foot control for kinks or obstructions: 1. Disconnect the green short-dash (water coolant air signal) tubing from the in-line barb in the chair lift arm. 2. With the wet/dry toggle in the wet position (toward blue dot), step on the foot control. There should be ~80 psi (5.52 bar) of air at the tubing end. 3. If no air is present, check: • Wet/dry toggle • Plugged barbs • Adequate air supply
	Water coolant flow controls require adjustment.	See Adjust Water Flow Coolant in Delivery System section.
No water coolant to one handpiece.	Water coolant adjustment stem closed or requires adjustment.	See Handpiece Control Adjustments in Delivery System section.
	Water coolant not activated.	Standard or no touchpad: 1. Activate handpiece. 2. Flip the foot control wet/dry toggle toward the blue dot. 3. Verify the handpiece has water coolant.
	Plugged handpiece tubing, terminal or coupler.	1. Remove handpiece and coupler from tubing. 2. Operate foot control with water coolant On. 3. Check to see if water is coming out of the handpiece tubing. 4. If no water, check for water coolant at the handpiece position on the control block.
	Failed water coolant cartridge.	Exchange the failed cartridge with known good cartridge and test the handpiece position.
	Dry cartridge is in the handpiece water cartridge position of the control block.	Replace the dry cartridge with a water cartridge.
Sputtering water from syringe and handpieces.	Faulty or dirty O-ring on barb of water bottle pickup tube.	Replace the O-ring. Apply a thin application of silicone grease to the new O-ring.

Table 25: Delivery Systems Troubleshooting (continued)

Problem	Possible Cause	Action
	Damaged pick-up tube.	Replace pick-up tube.
Intermittent water coolant to handpieces.	Faulty O-rings on handpiece coupler.	Replace the O-rings on the handpiece coupler.
	Water coolant pressure too low, or air coolant pressure too high.	Adjust water and air coolant as required. See Handpiece Control Adjustments, page 87.
	Water bottle pickup tube too long.	Shorten the pickup tube with a diagonal cut at the end.
Water leaks from vent hole in control block when a wet handpiece is in use.	Faulty water coolant cartridge.	1. Replace water coolant cartridge with known good cartridge. 2. If water continues to leak from vent hole, inspect the control block for debris or scratches. 3. Replace if necessary.
A wet handpiece drips water while in its holder.	Faulty water coolant cartridge.	1. Replace water coolant cartridge with known good cartridge. 2. If water continues to leak from handpiece, inspect the control block for debris or scratches. 3. Replace if necessary.
	Faulty handpiece or coupler.	1. Remove handpiece and coupler. 2. Retest water coolant flow.
	Faulty control block diaphragm.	Replace the diaphragm.
Water leaks from the water coolant stem.	Damaged O-rings on water coolant stem.	Replace the stem or the O-rings on the stem.
Water continues to flow after foot control is released.	Restricted water coolant tube in the handpiece or coupler.	1. Remove handpiece and coupler. 2. Retest water coolant flow.
	Pinched tubing in the foot control.	Check that the green tube with the short dash is not pinched between the foot control and the control head.
	Water coolant flow set too high.	See Handpiece Control Adjustments, page 87.
	The foot control relay valve sticks.	Install a foot control field service kit in the foot control.

Table 25: Delivery Systems Troubleshooting (continued)

Problem	Possible Cause	Action
Any handpiece drips when lifted from holder. Foot control is not activated.	Faulty flush toggle valve.	1. Check for 80 psi air to flush valve. 2. Replace the flush toggle valve.
	Faulty control block diaphragm.	Replace the control block diaphragm.
Cannot flush one or more handpiece tubings.	A dry cartridge is in place for this handpiece.	Change the dry cartridge to a water cartridge.
	Handpiece or coupler plugged.	Remove handpiece and coupler and test flush.
Excessive water coolant at all wet handpieces. Water coolant flow adjustments do not affect flow.	Flush water hold back has failed.	Check for 80 psi air out of the flush valve to the control block. Check for pinched yellow tube between the flush valve and the control block. If no pinched tubing, replace the flush valve.
System does not recognize fiber optic, electric, scaler, or turbine handpiece (Deluxe touchpad).	Handpiece not configured.	Configure handpiece. Configure handpiece as “other” if type of handpiece not listed in the configuration selections.
	Holder valve is inactive (locked open) and is not activating electrical switch in control head.	Activate the holder valve by unhooking the valve arm. 
	No data communication between QVIOLS and Deluxe touchpad.	Verify that DS3 (DATA) is On on both boards. The switch assembly should be connected to QVIOLS if present. Verify a data line connects the QVIOLS to the Deluxe touchpad, or both are connected to the data port module.
	Switches are not activated when a handpiece is removed. Holder valve is not engaging switch.	Verify mounting of switch assembly.
	Switch levers are activated when handpiece is in the holder. The system does not recognize the new handpiece and DS3 (DATA) is On on both boards. System is wired correctly.	Verify the amount of resistance for each control head switch. Control head switch resistance should be 40 Ohms(Ω) when its respective handpiece is in the holder.

Table 25: Delivery Systems Troubleshooting (continued)

Problem	Possible Cause	Action
Buttons on the touchpad do not work. The status icon LED is on.	Faulty data line from touchpad to the data board or from the data board to other boards.	Replace data line with known good data line.
Touchpad does not operate chair, cuspidor or light functions.	Faulty data line from data port circuit board in the control head to the data port board in post box.	Replace data line with known good data line.
Touchpad status icon does not light when the master toggle is On.	No power to chair.	Verify the chair is plugged in, the power button is On and the pilot tubing is connected to the power supply air-electric switch.
	No power to touchpad.	Verify that DS1 is illuminated on the touchpad system circuit board. If DS1 is not illuminated, check for 24 VAC across WAGO connections in the control head. Check for an open circuit breaker on the 300W power supply.
Low air pressure to syringe or handpieces when in use.	Plugged filter on air filter regulator.	Replace the filter.
Handpiece holder valve leaking air.	Faulty holder valve.	Verify the holder valve is not plumbed backward. Replace holder valve.
Handpiece holder valve not exhausting.	Holder valve locked.	Verify the holder valve is active (unlocked).
	Faulty holder valve.	Replace holder valve.
Fiber-optics does not work but touchpad screen changes when handpiece is removed.	Bulb has failed.	Replace the bulb.
	Not configured to come on.	Check the Deluxe touchpad intraoral light source setup options for that handpiece.
	Connected to incorrect handpiece output on QVIOLS.	Verify that the intraoral light source is connected to the correct output, and verify that the respective output LED is On on the QVIOLS.
Bulb is too dim or bright	Incorrect fiber-optic voltage set.	Adjust fiber-optic to correct voltage, current, and wire length per manufacturer specification.

Circuit Board Troubleshooting and LED Diagnostics

Circuit Board Replacement

If you suspect that a circuit board may need replacing, do not replace the board in a system before you use the circuit board replacement flow chart (see Figure 202). The flow chart is intended to be used with the circuit boards listed below (Table 26).

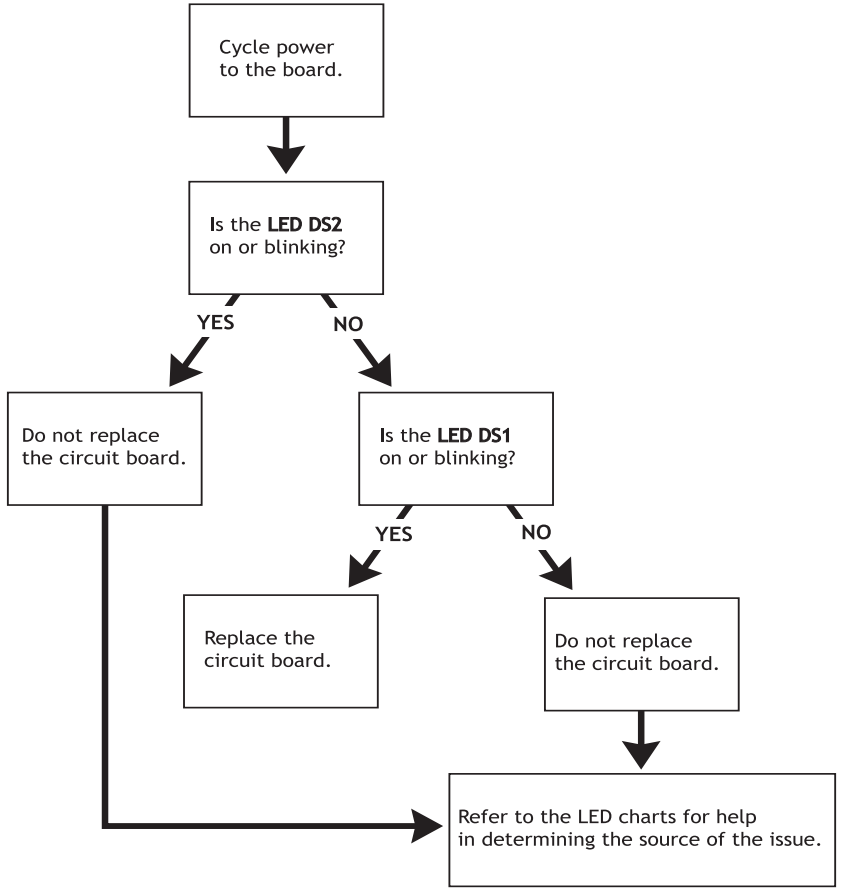
Table 26. Circuit Boards

Circuit Board/Part Number	Before Following the Flow Chart...
311 Chair (43.0149.00) 511 Chair (43.0003.00)	Disconnect P1 and P2 (Back and Base Position Sensors) and P5 (Touchpad or Footswitch)
300 Deluxe Touchpad (43.0114.00)) 500Deluxe Touchpad (43.0107.00)	Disconnect P3 (LCD Backlight)
Standard Touchpad (43.0000.00)	N/A
QVIOLS (43.0131.00)	N/A
Cuspidor (43.0137.00)	N/A
A-dec Relay Module (43.0001.00)	N/A
Cascade/Decade/Performer (61.3773.00)	Verify the part number; disconnect P1 and P2 (Touchpad or Footswitch) and P4 and P5 (Back and Base Position Sensors)
Control Head (43.0004.00)	N/A
Dental Light Relay (43.0043.00)	N/A
Warm Water Syringe(43.0085.00)	N/A
ICV Control (43.0084.XX)	Disconnect P4 and P5 (Operatory A and Operatory B)
ICC Dryer Control Board (43.0105.00)	Disconnect P8 (Temperature)

Circuit Board Troubleshooting

CAUTION The circuit board is static sensitive. ESD precautions are required. The circuit board should be installed by an electrician or qualified service personnel

Figure 202. Circuit Board Replacement Flow Chart



See page 240 to reference the Circuit Board LED Chart.

Circuit Board Components Reference Pages

For circuit board components...	See page...	For circuit board components...	See page...
311 chair circuit board	page 18	Cuspidor	page 124
Standard and Deluxe touchpads	page 62	Dental light relay board	page 201
QVIOLS	page 92		

Touchpad Diagnostics

The touchpad screen, touchpad LEDs, and LEDs on the circuit boards verify the DCS status. The LEDs use color and blinking to indicate the module status. The table lists tips and troubleshooting information to assist in diagnosing the most common problems.

Table 27: Touchpad Screen Icons and LEDs

LED	Assistant's Touchpad and Standard Touchpad	300 Deluxe Touchpad
Status (A-dec logo)	**Off** = system is not functioning or powered On (device is disconnected, no power, or dead touchpad board)	
	Blue steady = normal condition (ready for use)	
	Blue double blink = jumper is in the factory default position on the chair circuit board	
	Blue slow blink = chair, cuspidor, or lower support arm stop switch activated for units (511, Cascade, Decade, Performer chair)	
Dental light	**Off** = dental light is Off **Yellow steady** = Dental Light On (high or medium) **Yellow slow blink** = Dental Light On (composite)	N/A
Bowl Rinse or Auxiliary #1	**Off** = auxiliary #1 is Off or bowl rinse is Off	N/A
	Yellow - auxiliary #1 is On or bowl rinse is On	N/A
Cupfill or Auxiliary #2	**Off** = Cupfill is Off or auxiliary #2 is Off	N/A
	Yellow - Cupfill is On or Auxiliary #2 is On	N/A
AC Power LED (DS1)	**Off** = No 24VAC power. The circuit breaker could be tripped; power supply could be turned off; there could be no voltage. **Green steady** = 24VAC at terminal strip	
Data LED (DS3)	**Off** = No data communication. **Green steady** = Active communication is detected. **Green blinking** = Valid data message.	

Off = Function is turned Off, device is disconnected, no power or failed circuit board; **Blue steady** = Normal operation; **Yellow** = advisory

Circuit Board LED Chart

Table 28: Printed Circuit Board LED

LED	A-dec Relay Board	Dental Light Relay board	Cuspidor Board	QVIOLS	300 Chair Board
AC power	Off = no 24 VAC power, open circuit breaker, power supply turned off, no line voltage				
	Green steady = 24 VAC power at terminal strip				
Status	Off = system is not functioning, no power or circuit board has failed Green steady = normal condition			Off = System is not functioning, no power or circuit board has failed Green steady = normal condition Green Continuous Blinking = Two or more handpieces are activated Green Single Blink = Switch Input #4 configured for handpiece switch input (normal) Green Triple Blink = Switch Input #4 configured for drive air input	Off = system is not functioning, no power or circuit board has failed Blue steady = normal condition Blue single blink = Duty cycle limit of Chair Back exceeded Blue Double blink = Jumper is in the factory default position
Data (DCS)	Off = no data communication, not connected to the data port, data lines not functioning				
	Green steady = detects active data bus				
	Green blinking = valid data bus message				
A-dec relay module	Off = Relay is Off Yellow = Relay is On	N/A	Off = relay is Off Yellow = relay is On	N/A	N/A
Bowl rinse/cup fill relays	N/A	N/A	Off = relay is Off Yellow = relay is On	N/A	N/A
Cuspidor stop limit switch	N/A	N/A	Off = closed (normal) Red = open (activated)	N/A	N/A

Table 28: Printed Circuit Board LED (continued)

LED	A-dec Relay Board	Dental Light Relay board	Cuspidor Board	QVIOLS	300 Chair Board
IOLS output	N/A	N/A	N/A	Off = IOLS voltage is Off	N/A
				Yellow = IOLS voltage is On	
Normally Closed Switch Activation	N/A	N/A	N/A	Off = Normally Open Mode Yellow = Normally Closed Mode (normal operation for A-dec 300)	N/A
Chair lockout	N/A	N/A	N/A	N/A	Off = closed (normal)
					Red = open (activated)
Dental light	N/A	**DS4** Off & **DS5** Off = dental light off	N/A	N/A	**DS8** Off & **DS7** Off = dental light off
		DS4 On & **DS5** Off = dental light in high intensity mode			**DS8** On & **DS7** Off = dental light in high intensity mode
		DS4 Off & **DS5** On = dental light in composite intensity mode			**DS8** Off & **DS7** On = dental light in composite mode
		DS4 On & **DS5** On = dental light in medium intensity mode			**DS8** On & **DS7** On = dental light in medium mode (not including the A-dec 371light).
Chair position sensors	N/A	N/A	N/A	N/A	Off = sensor not connected, bad connection, moving in wrong direction, limited range of motion.
					Yellow steady = normal operation
					Yellow fast blink = Upper end of travel
Back and base relays	N/A	N/A	N/A	N/A	Off = relay is off
					Yellow = relay is on

General Status: Green Steady = Normal Operation; Red = Action Required; Yellow = Advisory

Deluxe Touchpad Help Messages

Help messages appear on the deluxe touchpad screen. This table lists the messages, a brief description of the message, and possible resolutions. Technician messages can be turned on or off. See "Touchpad Setup Flowchart," page 48, for information on the flow of technician touchpad screens. See "Technician Touchpad Setup Options," page 56, for touchpad procedures.

Table 29: Touchpad Help Messages

Message	Description	Possible Resolution
Electric Handpiece number exceeds controller's output channels. Run setup.	A system has a motor controller that supports only one electric handpiece but has two handpieces configured as Electric.	Run Handpiece Setup for each configurable position. • For systems with a single electric motor controller, limit electric handpiece setup to one. • For systems requiring two electric handpieces, a dual-motor controller is required.
Motor controller can't support motor. Run Setup and pick compatible motor.	The motor type that is configured is not compatible with the motor controller being used.	• Run the touchpad's Handpiece Setup for each electric handpiece and verify that the motor type is configured correctly. • For an EA30 Electric Handpiece with an EA3.1 or EA3.1E Motor Controller, the EA30 must be set up as an EA40 Electric Handpiece.
Endo not supported on this motor. Press any button.	The motor type configured for the electric handpiece does not support endodontics functionality. This message appears if the "e" button is pressed while a non-endodontics electric handpiece is in use.	• No action is required if the "e" button is pressed on a system that does not have an endodontics electric handpiece. • For systems that have an endodontics electric handpiece, run Handpiece Setup for each electric handpiece and verify that the motor type is configured correctly.
No data communication with electric handpiece motor controller.	The touchpad is unable to communicate through DCS with the electric handpiece motor controller.	• For systems *without* a motor controller, run the touchpad's Handpiece Setup for each handpiece and verify no handpieces are configured as an Electric type. Any handpieces configured as Electric will need to be changed to their appropriate type. • For systems *with* a motor controller, verify the motor controller is connected to the DCS (data) system and is powered On. Verify data connections between the motor controller and the touchpad. - If either the motor controller's data LED (C) is Off and/or the touchpad data LED (DS3) is Off, connect a working data line from the touchpad to the motor controller. - If the LEDs are now On, check each data line within the system and replace any data lines.

Table 29: Touchpad Help Messages (continued)

Message	Description	Possible Resolution
This touchpad is not calibrated. **Call for service.** **Press any button.**	The touchpad's drive air pressure transducer is not calibrated. The system will operate as normal but some electric handpiece, scaler, and turbine functions may not operate correctly.	Replace the deluxe touchpad circuit board (kit, p/n 90.1185.00).
This button is disabled.	A touchpad button that has been disabled was pressed. The touchpad will operate as normal without using the disabled button.	To enable a disabled button: **1.** On the chair circuit board, place the jumper in the EN/DIS TP/FS position (Testpoint header, P3). **2.** Push the button to enable. Three beeps confirm the button has been enabled. (Note that one beep indicates a button has been disabled.) **3.** Repeat steps 1 and 2 for all buttons that are disabled. **4.** When finished, place the jumper in the SPARE position (Testpoint header, P3).
Too many handpieces in use **Control head** **Assistant**	Only one handpiece configured as Scaler, Turbine, or Electric can be removed at a time.	• If two handpieces configured as Scaler, Turbine, or Electric are removed at the same time, no action is required. • Verify that only one handpiece configured as a Scaler, Turbine, or Electric is removed at a time. Run the touchpad's Handpiece Setup for any handpieces that need to be reconfigured. • Verify all handpiece locations configured for Scaler, Turbine, or Electric have handpieces in their holders, and their respective holder switch is activated. • Verify that the control head switch assemblies are wired correctly into the QVIOLS (Quad Voltage Intraoral Light Source) or the deluxe touchpad if no QVIOLS is present. • Verify the amount of resistance for each control head electric handpiece switch. The switch's resistance should be 40 Ohms(Ω) or greater when its respective handpiece is in the holder. • Verify that control head holder positions without handpieces have a holder valve that is inactive (locked). • Verify that the assistant's instrumentation with auto-electric switches are properly wired, configured, and activated when not in use.

Table 29: Touchpad Help Messages (continued)

Message	Description	Possible Resolution
Chair will not move while foot control is in use.	A chair movement button (manual or preset) has been activated while the foot control is in use. The chair will not move when a handpiece is withdrawn and the foot control is pressed at the same time.	• No action is required if the chair movement button (manual or preset) was inadvertently activated while the foot control is in use. • On the chair circuit board, verify that the DS13 is Off when the foot control is not pressed. - If DS13 is On when foot control is not pressed, verify any local air electric switch connected to the CHAIR LOCKOUT terminal strip (J4) on the chair board is not activated. - A closed logic signal into CHIAR LOCKOUT terminal strip (J4) will activate the chair lockout feature, turning on DS13. Verify that wiring and plumbing of any local connection to J4 on the chair board are correct. • Verify plumbing to deluxe touchpad circuit board Drive Air Transducer (X1).
Chair in Factory Default mode.	The jumper on the chair circuit board's Testpoint header, P3, is in the Factory Default (FACT DEFAULT) position.	After the factory default has been completed successfully (verified by hearing three beeps at the end of the routine) the jumper should be placed back into the SPARE position on the chair circuit board's Testpoint header, P3.
Chair in Enable/Disable mode.	The jumper on the chair circuit board's Testpoint header, P3, is in the Enable/Disable (EN/DIS TP/FS) position.	After enabling or disabling either the optional height limit of the chair or a button on a touchpad or footswitch, no action is required. When not in use, the Testpoint header, P3, jumper should be placed into the SPARE position on the chair circuit board.
Too many buttons pressed.	• Three or more buttons are activated on a touchpad or footswitch. • Two buttons of opposite functions are pressed at the same time (such as pressing Base UP and Base Down at the same time).	• Verify that only two buttons on any touchpad are being pressed at the same time. Verify the footswitch or any other touchpad buttons are not inadvertently activated. • Verify that two touchpad or footswitch buttons that are opposite functions are not pressed at the same time. • If this message appears and only one button is pressed: - Disconnect all other touchpads and footswitches from the system. - Verify the deluxe touchpad's circuit board mounting to the overlay/bezel to ensure that there is no inadvertent activation of other deluxe touchpad buttons. If the problem remains, replace touchpad and overlay (kit, p/n 90.1185.00). - Reconnect other touchpads and footswitches one at time to identify the source of activation.

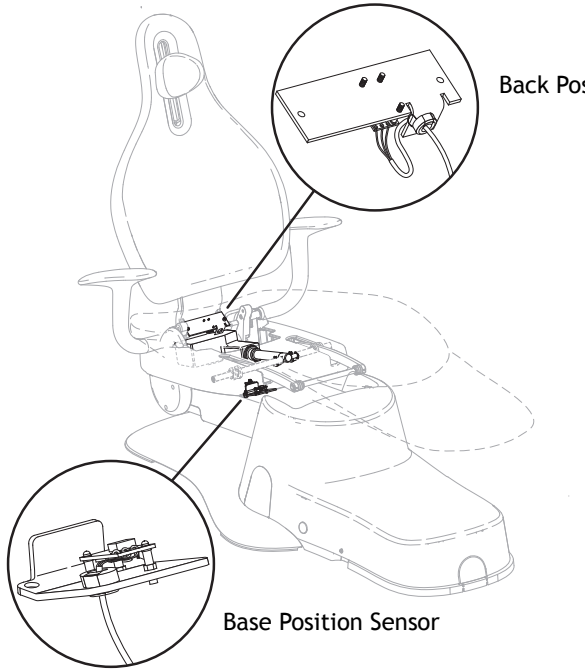
Table 29: Touchpad Help Messages (continued)

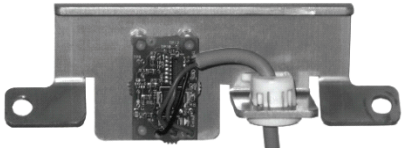
Message	Description	Possible Resolution
Chair back position sensor OR motor not moving. 	The system has detected that the back motor is not moving when activated or the back position sensor is not functioning correctly.	• Disconnect the back position sensor, (BACK POSN SENSOR), P1, from the chair circuit board. • On the chair circuit board, place the jumper on the Testpoint header, P3, into the BACK UP position. If the back does not move when the jumper is placed in the BACK UP position, place the Testpoint header, P3, jumper into the BACK DOWN position. - If the back does not move regardless of the jumper being placed in BACK UP or BACK DOWN , verify that the back motor wiring connection to BACK MOTOR connector, P8, is correct. Reset the back motor circuit breaker, CB1, if tripped. - If the circuit breaker trips again, disconnect the back motor connector P8, input power connector, P9, and base solenoid wires from J7 on the chair circuit board. Reset the circuit breaker. - If the circuit breaker trips again, replace the power supply. If the circuit breaker does not trip, reconnect the disconnected connections to P8, P9, and J7 one at a time until the source of what is causing the trip is found. Check the wiring of the device and replace the assembly if no incorrect wiring is found. - If the back moves with the jumper placed in either BACK UP or BACK DOWN: - Reconnect the back position sensor (BACK POSN SENSOR, P1). - At the chair circuit board, verify that the back and base position sensor connectors (BACK and BASE POSN SENSOR P1 and P2) are not swapped with each other. - Verify the mounting of the position sensor, which should be mounted using three standoffs. See Chair Position Sensor Locations, page 246 for correct mounting illustrations. - If P1 and P2 are not swapped, replace the back position sensor (kit, p/n 90.1183.00).

Table 29: Touchpad Help Messages (continued)

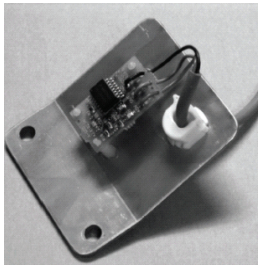
Message	Description	Possible Resolution

Chair Position Sensor Locations





Back Position Sensor



Base Position Sensor

NOTE It is important that the position sensors and their brackets are orientated correctly, and the bracket is connected securely and properly to the chair.

Chair back position sensor moving backward.	The system has detected that the back position sensor is moving backward.	• Verify the mounting of the position sensor, which should be mounted using three standoffs. See Chair Position Sensor Locations, page 246, for correct mounting illustrations. • Verify the chair circuit board's back and base position sensor connectors P1 and P2 are not swapped with each other. • If mounting and connections are correct, replace the back position sensor (kit, p/n 90.1183.00).

Table 29: Touchpad Help Messages (continued)

Message	Description	Possible Resolution
Chair back position sensor disconnected.	The system has detected that the back position sensor, P1, is unplugged from the chair circuit board.	• Reconnect the chair circuit board's back position sensor, (BACK POSN SENSOR, P1). • Verify the mounting of the position sensor, which should be mounted using three standoffs. See Chair Position Sensor Locations, page 246, for correct mounting illustrations. • Cycle Power to the system. • Disconnect and reconnect the back position sensor (BACK POSN SENSOR, P1). • If mounting and connections are correct, replace the back position sensor (Kit, p/n 90.1183.00).
Chair back position sensor above range.	The system has detected that the back position sensor's value is greater than the expected maximum value.	• Verify the mounting of the position sensor, which should be mounted using three standoffs. See Chair Position Sensor Locations, page 246, for correct mounting illustrations. • At the chair circuit board, verify that the back and base position sensor connectors, P1 and P2), are not swapped with each other. • On the chair circuit board, run factory default by placing the jumper in the Testpoint header, P3, FACT DEFAULT position. When the factory default routine is completed successfully, three beeps sound. One beep sounds if the factory default routine does not complete successfully. • If the factory default routine does not complete successfully, replace the position sensor (Kit, p/n 90.1183.00).
Chair back position sensor below range.	The system has detected that the back position sensor's value is lower than the expected minimum value.	• Verify the mounting of the position sensor, which should be mounted using three standoffs. See Chair Position Sensor Locations, page 246, for correct mounting illustrations. • At the chair circuit board, verify that the back and base position sensor connectors, P1 and P2, are not swapped with each other. • On the chair circuit board, run factory default by placing the jumper in the Testpoint header, P3, FACT DEFAULT position. When the factory default routine is completed successfully, three beeps sound. One beep sounds if the factory default routine does not complete successfully. • If the factory default routine does not complete successfully, replace the position sensor (Kit, p/n 90.1183.00).

Table 29: Touchpad Help Messages (continued)

Message	Description	Possible Resolution
Chair back at upper limit.	The chair back has reached its upper limit.	• No action is required if this message appears when the back up is activated when the chair is at its back upper limit. • If the message appears and the chair back is not at the upper limit: - Verify the mounting of the position sensor, which should be mounted using three standoffs. See Chair Position Sensor Locations, page 246, for correct mounting illustrations. - At the chair circuit board, verify that the back and base position sensor connectors, P1 and P2, are not swapped with each other. - On the chair circuit board, run the factory default by placing the jumper in the Testpoint header, P3, FACT DEFAULT position. When the factory default routine is completed successfully, three beeps sound. One beep sounds if the factory default routine does not complete successfully. - If the factory default routine does not complete successfully, replace the position sensor (Kit, p/n 90.1183.00).
Chair back at lower limit.	The chair back has reached its lower limit	The chair back software limit should not be reached during normal operation. • Verify the mounting of the position sensor, which should be mounted using three standoffs. See Chair Position Sensor Locations, page 246, for correct mounting illustrations. - At the chair circuit board, verify that the back and base position sensor connectors, P1 and P2, are not swapped with each other. - On the chair circuit board, run the factory default by placing the jumper in the Testpoint header, P3, FACT DEFAULT position. When the factory default routine is completed successfully, three beeps sound. One beep sounds if the factory default routine does not complete successfully. - If the factory default routine does not complete successfully, replace the position sensor (kit, p/n 90.1183.00).

Table 29: Touchpad Help Messages (continued)

Message	Description	Possible Resolution
Chair base position sensor OR motor not moving. 	The system has detected that the base motor is not moving when activated or the base position sensor is not functioning correctly.	• The base motor has an internal thermal limiter that will limit the duty cycle of the chair. If the chair base has experienced a high duty cycle, wait a few minutes for the thermal limiter to reset. • Verify the mounting of the position sensor, which should be mounted using three standoffs. See Chair Position Sensor Locations, page 246, for correct mounting illustrations. • Disconnect the base position sensor, P2, from the chair circuit board. • On the chair circuit board, place the jumper on the Testpoint header, P3, into the BASE UP position. If the base does not move up: - Check the base motor wiring connections. Verify that the base motor is connected properly to the chair circuit board connector, P11, BASE MOTOR. Verify that the base motor input power, P12, INPUT POWER is properly connected to the chair circuit board. - Verify that the base motor capacitor is properly connected. If the base does move, place the Testpoint header, P3, jumper into the BASE DOWN position. • If the base does not move down: - On the chair circuit board, verify that the AC POWER LED, DS1, is On. - If the LED is Off, verify circuit breaker CB2 is not tripped. - Verify that the wiring to the INPUT POWER connector, P9, on the chair circuit board. • If the base does not move down when the jumper is placed in the BASE DOWN position and DS1 is On, check the base solenoid wiring. Verify that the base solenoid is connected properly to the base solenoid terminal, J7, BASE SOLENOID. • If the connections to the Base Solenoid are correct, test the solenoid to verify it is operating correctly. If the base does move with the jumper placed in either BASE UP and BASE DOWN: • Reconnect the base position sensor, P2. • At the chair circuit board, verify that the back and base position sensor connectors, P1 and P2, are not swapped with each other. • Verify the mounting of the position sensor. • If mounting and connections are correct, replace the base position sensor (kit, p/n 90.1183.00).

Table 29: Touchpad Help Messages (continued)

Message	Description	Possible Resolution
Chair base position sensor moving backward.	The system has detected that the base position sensor is moving backward.	• Verify the mounting of the position sensor, which should be mounted using three standoffs. See Chair Position Sensor Locations, page 246, for correct mounting illustrations. • At the chair circuit board, verify that the back and base position sensor connectors, P1 and P2, are not swapped with each other. • If mounting and connections are correct, replace the base position sensor (kit, p/n 90.1183.00).
Chair base position sensor disconnected.	The system has detected that the base position sensor, P2, is unplugged from the chair circuit board.	• At the chair circuit board, reconnect the base position sensor, P2. • Verify the mounting of the position sensor, which should be mounted using three standoffs. See Chair Position Sensor Locations, page 246, for correct mounting illustrations. • Cycle Power to the system. • Disconnect and reconnect the base position sensor (BASE POSN SENSOR P2). • If mounting and connections are correct, replace the base position sensor (kit, p/n 90.1183.00).
Chair base position sensor above range.	The system has detected that the base position sensor's value is greater than the expected maximum value.	• Verify the mounting of the position sensor, which should be mounted using three standoffs. See Chair Position Sensor Locations, page 246, for correct mounting illustrations. • At the chair circuit board, verify that the back and base position sensor connectors, P1 and P2, are not swapped with each other. • On the chair circuit board, run the factory default by placing the jumper in the Testpoint header, P3, FACT DEFAULT position. When the factory default routine is completed successfully, three beeps sound. One beep sounds if the factory default routine does not complete successfully. • If the factory default routine does not complete successfully, replace the position sensor (kit, p/n 90.1183.00).
Chair base position sensor below range.	The system has detected that the base position sensor's value is lower than the expected maximum value.	• Verify the mounting of the position sensor, which should be mounted using three standoffs. See Chair Position Sensor Locations, page 246, for correct mounting illustrations. • At the chair circuit board, verify that the back and base position sensor connectors, P1 and P2, are not swapped with each other. • On the chair circuit board, run the factory default by placing the jumper in the Testpoint header, P3, FACT DEFAULT position. When the factory default routine is completed successfully, three beeps sound. One beep sounds if the factory default routine does not complete successfully. • If the factory default routine does not complete successfully, replace the position sensor (kit, p/n 90.1183.00).

Table 29: Touchpad Help Messages (continued)

Message	Description	Possible Resolution
Chair base at upper limit.	The chair base has reached its upper limit.	• No action is required if this message appears when the base up is activated when chair is at its base upper limit. • If the message appears and the chair base is not at the upper limit: - Verify the mounting of the position sensor, which should be mounted using three standoffs. See Chair Position Sensor Locations, page 246, for correct mounting illustrations. - At the chair circuit board, verify that the back and base position sensor connectors, P1 and P2, are not swapped with each other. - On the chair circuit board, run the factory default by placing the jumper in the Testpoint header, P3, FACT DEFAULT position. When the factory default routine is completed successfully, three beeps sound. One beep sounds if the factory default routine does not complete successfully. - If the factory default routine does not complete successfully, replace the position sensor (Kit, p/n 90.1183.00). - If the factory default routine completes successfully and the chair still does not reach its base upper limit, verify that the optional height limit has not been set: - On the chair circuit board, move the jumper on Testpoint header, P3, to the EN/DIS TP/FS position. - Press and hold the base up button on any touchpad if you want to set or remove the upper limit. - After 3 seconds, one beep sounds if the optional height limit has been removed. Three beeps indicate that the optional upper limit has been set. Repeat the above steps to remove the optional height limit. - When the optional height limit is removed, re-run factory default.

Table 29: Touchpad Help Messages (continued)

Message	Description	Possible Resolution
Chair base at lower limit.	The chair base has reached its lower limit.	• No action is required if the chair base down optional height limit has been set, and the base down is at that set limit. In this case, the message appears as informational to let the user know the chair is at its lower limit. If the chair base down optional height limit has not been set, or you are unsure whether it has been set, and the chair is not moving to its full base down: - Verify the mounting of the position sensor, which should be mounted using three standoffs. See Chair Position Sensor Locations, page 246, for correct mounting illustrations. - At the chair circuit board, verify that the back and base position sensor connectors (BACK and BASE POSN SENSOR P1 and P2) are not swapped with each other. - On the chair circuit board, run factory default by placing the jumper in the Testpoint header, P3, FACT DEFAULT position. When the factory default routine completes, three beeps sound. One beep sounds if the factory default routine did not successfully complete. - If the factory default routine does not complete successfully, replace the position sensor (kit, p/n 90.1183.00). - If the factory default routine completes successfully and the chair still does not reach its base lower limit, verify that the optional height limit has not been set: - On the chair circuit board, move the jumper on Testpoint header, P3, to the EN/DIS TP/FS position. - Press and hold the base down button on any touchpad if you want to set or remove the lower limit. - After 3 seconds, one beep sounds if the optional height limit has been removed. Three beeps indicate that the optional lower limit has been set. Repeat the above steps to remove the optional height limit. - When the optional height limit is removed, re-run factory default.
Chair back and base position sensor cables are interchanged.	The system has determined that the back and base position sensor cables are swapped.	• On the chair circuit board, swap the back and base position sensor connectors (BACK and BASE POSN SENSOR P1 and P2). Verify the back position sensor is connected into P1 and the base position sensor is connected into P2. • On the chair circuit board, run factory default by placing the jumper on the Testpoint header, P3, into the FACT DEFAULT position. When the factory default routine completes successfully, three beeps sound. One beep sounds if the factory default routine does not complete successfully.

Table 29: Touchpad Help Messages (continued)

Message	Description	Possible Resolution
Chair is already at that position.	This message is displayed if the user activates a preset when the chair's back and base are already at the preset's location.	• No action is required if chair is at the preset location that was programmed or the preset button was inadvertently activated. • If chair is not at the preset location, verify that the position sensors are working correctly. - Run the chair back through the full range of motion. - Verify that the back LED, DS5, is On during the entire range of base travel. If the LED turns off during travel from the lower limit to the upper limit, replace the back position sensor. - Verify that the base LED, DS6, is On during the entire range of base travel. The LED will fast blink at the upper limit and momentarily turn Off when at the lower limit of travel. If the LED turns Off during travel from the lower limit to the upper limit, replace the base position sensor. **NOTE** The LED will fast blink at the upper limit and may momentarily turn off when at the lower limit of travel. This is standard operation.
Function halted by additional button press.	This message is displayed if a button is pressed that is halting movement to a preset location.	• No action is required if button is inadvertently activated during preset movement. • If no button was inadvertently activated during preset movement, verify the touchpad and footswitch connections: - Disconnect all touchpad and footswitch connections. - Reconnect one touchpad and/or footswitch at a time until the source of the problem is identified. - Verify that the touchpad is securely snapped into the housing.
No data communication with A-dec chair circuit board.	A chair movement button was pressed and the touchpad is not connected to a DCS (data) enabled chair circuit board.	• No action is required if a button is pressed on a system that does not have a DCS (data) enabled chair circuit board, or is not connected to a DCS (data) enabled chair circuit board. • If a DCS (data) enabled chair circuit board is connected, verify that the deluxe touchpad is connected to the chair circuit board with a DCS line or a series of lines and connectors. - Verify that both the deluxe touchpad circuit board's and chair circuit board's data LEDs DS3, are On. - If the data LED, DS3, is Off on either circuit board, connect a known good data line directly from the deluxe touchpad to the chair circuit board. - If the data LEDs now are On, check each data line within the system. - Replace any malfunctioning data lines.

Table 29: Touchpad Help Messages (continued)

Message	Description	Possible Resolution
Chair cannot move due to time limit. Release button and try again. 	This message appears if the base or back is continuously run (On) for over 30 seconds in the base up, back down, or back up directions. This message also appears if the base down is continuously run (On) for over 45 seconds in the base down direction.	• Verify that the chair is connected properly to the rated Mains Voltage (rated correctly for the power supply and motor). • Verify the chair system is on a dedicated circuit breaker (rated for the proper current). • If this message appears after the base down travel is complete, verify that the solenoid is properly adjusted.  **NOTE** The base down solenoid, connected to J7 on the chair circuit board, can be adjusted to set the base down speed. When the solenoid is adjusted so that the base down movement is longer than 45 seconds, this message may appear.
Chair back reached time limit. Please wait.	The chair's back duty cycle is limited by the chair system. If the chair's back duty cycle limit is exceeded, the chair back function is disabled for one minute.	Wait one minute for the chair back duty cycle limit timeout to complete.
No data communication with Dental light circuit board	The dental light button on a touchpad was pressed, but the touchpad is not connected with the DCS (data) system to a circuit board that supports dental light functions. The following boards support dental light functions: • 311 Chair circuit board • 511 Chair circuit board • Cuspidor circuit board (built-in A-dec relay module) • A-dec relay module • Dental light relay circuit board	• No action is required if button is pressed on system that does not have a circuit board with dental light functionality (311 Chair circuit board, 511 Chair circuit board, dental light relay board) or that does not have dental light functionality configured (cuspidor circuit board or A-dec relay module). • If the system includes a board with dental light functionality and/or is configured for dental light functionality, verify that the touchpad is connected to the board with a DCS (data) line or a series of lines and connectors. • Verify that both the touchpad's circuit board and other supporting circuit board's data LEDs, DS3, are On. - If the data LED, DS3, is Off on either circuit board, connect a known good data line directly from the touchpad to the board. - If the data LEDs are now On, check each data line within the system. - Replace any malfunctioning data lines.

Table 29: Touchpad Help Messages (continued)

Message	Description	Possible Resolution
No data communication with Cuspidor circuit board	A cuspidor button (bowl rinse or cupfill) was pressed but the touchpad is not connected to a DCS (data) enabled cuspidor circuit board or A-dec relay module.	**NOTE** If there is no cuspidor circuit board, the bowl rinse button can be used to activate Auxiliary 1 on an A-dec relay module and the cupfill button can be used to activate Auxiliary 2 on an A-dec relay module. • No action is required if button is pressed on a system that does not have a DCS (data) enabled cuspidor circuit board or A-dec relay module. • If a DCS (data) enabled cuspidor circuit board or A-dec relay module is present, verify that the touchpad is connected to the cuspidor circuit board or A-dec relay module with a DCS line or a series of lines and connectors. • Verify that both the touchpad's circuit board and cuspidor's circuit board or A-dec relay module's data LEDs, DS3, are On. - If the data LED, DS3, is Off on either circuit board, connect a new data line directly from the deluxe touchpad to the cuspidor or A-dec relay board. - If the data LEDs are On, check each data line within the system. - Replace any malfunctioning data lines.
Chair disabled by Chair Stop Switch	This message appears if an A-dec 300 delivery system (models 334 or 335) with a deluxe touchpad is set up on an A-dec 511 chair and the 511 chair's limit switch is activated.	• Move the chair in a direction so that the limit switch is no longer activated. • Verify the limit switch wiring if the message appears and the limit switch is not activated. **NOTE** On the 511 chair circuit board, DS4, LIMIT SWITCH, will be On when the limit switch is activated and Off when not activated.
Chair disabled by Cuspidor Stop Function	On the cuspidor circuit board, the jumper is missing from the Limit Switch Connector, P4.	Install a jumper in the cuspidor Limit Switch connector, P4, on the cuspidor circuit board.

Table 29: Touchpad Help Messages (continued)

Message	Description	Possible Resolution
A-dec Relay Module not configured for this function	A button was pressed for a function that the A-dec relay module controls, but is not configured for.	• If the dental light button is pressed when this message appears: - No action is required if the system configuration doesn't support this function and a button was inadvertently pressed. - If the system has a dental light wired to a 311 chair board, 511 chair board, or dental light relay board and uses an A-dec relay module for a non-dental light purpose, verify data (DS3) is On for all circuit boards. - If the data LED, DS3, is Off on any board, connect a known good data line directly from the deluxe touchpad to the chair circuit board or dental light relay board. - If the data LED is now is On, check each data line within the system. - Replace any bad data lines. - If the user chooses to use the A-dec relay module to activate the dental light: - Place the jumper on the A-dec relay module in Testpoint header, P1, Dental Light position. • If either the cupfill/Auxiliary 1 or bowl rinse/Auxiliary 2 button is pressed when this message appears: - No action is required if the system configuration doesn't support this function and a button is inadvertently pressed. - If the user chooses to use the A-dec relay module to activate Auxiliary 1 or Auxiliary 2, place the jumper on the A-dec relay module's Testpoint header, P1, into the position for the intended purpose, Auxiliary 1 or Auxiliary 2. - If this message appears and it was preferred to activate the cupfill or bowl rinse function on the cuspidor, and an A-dec relay module is in the system and used for a function other than Auxiliary 1 and Auxiliary 2, verify data (DS3) is On for the deluxe touchpad and cuspidor circuit boards. - If the data LED, DS3, is Off on either board, connect a known good data line directly from the deluxe touchpad to the cuspidor circuit board. - If the data LED is now is On, check each data line within the system. - Replace any bad data lines.

Table 29: Touchpad Help Messages (continued)

Message	Description	Possible Resolution
Too many handpieces. Hang up unused hdpcs.	In various Setup mode options, only one handpiece can be removed at a time.	• No action is required if two handpieces are inadvertently removed at the same time. • Verify that all handpiece locations have handpieces within their holders and their respective holder switch is activated. • Verify that control head switch assemblies are wired correctly into the Quad Voltage Intraoral Light Source (QVIOLS) or deluxe touchpad (if no QVIOLS is present). • Verify that resistance of each Control Head Switch. Control Head Switch resistance should be > 40 Ω when its respective handpiece is in holder. • Verify that control head holder positions without handpieces have holder valve inactive (locked). • Verify that Assistant's instrumentation with auto-electric switches are properly wired, configured, and activated when not in use.
Ehpc Controller is Offline.	This help message is displayed in the Setup routine when the deluxe touchpad is unable to communicate through DCS with the Electric Handpiece Motor Controller.	• For systems without a Motor Controller, run Handpiece Setup on the deluxe touchpad for each handpiece and verify that no handpieces are configured as an Electric type. Any handpieces configured as Electric will need to be changed to their appropriate type. • For systems with a Motor Controller, verify the Motor Controller is connected to the DCS (data) system and is powered on. Verify data connections between the Motor Controller and deluxe touchpad. • If either the Motor Controller's data LED (C) is Off and/or the deluxe touchpad's data LED (DS3) is Off, connect a known (good) data line from the deluxe touchpad to the Motor Controller. • If the LEDs are now on solid, check each data line within the system. • Replace any bad data line.

Table 29: Touchpad Help Messages (continued)

Message	Description	Possible Resolution
There is no IOLS for this hdpc. Please rtn hdpc.	This help message is displayed in the Setup routine when a handpiece can't be configured for Intraoral Light Source.	For systems with a QVIOLS: • Verify that the control head electrical switches are wired to the QVIOLS. Only handpieces with control head electrical switch wired to the QVIOLS can be configured with the Intraoral Light Source. • Verify that the QVIOLS is connected into the data system of the deluxe touchpad. Verify that the data LEDs, DS3, are On for the touchpad's and QVIOILS circuit boards. If either data LED is Off, connect a known, good line between the deluxe touchpad and QVIOLS. • If the LEDs are now On solid, check each data line within the system and replace any bad data lines. For systems without a QVIOLS, Handpieces can't be configured for Intraoral Light Source. Handpieces connected to a standard touchpad or wired directly to a deluxe touchpad can't be configured for Intraoral Light Source.
Power loss during use. Settings may have changed. Press a button to continue. 	An electric handpiece or scaler is out of its holder at the time that power is turned on to the system.	• This message may display while a handpiece is being used, after a temporary loss of power to the system. Verify that applicable handpiece settings are correct. Settings may have changed. • This message may display when a system's power is turned On. - Verify that electric handpieces and scalers are properly located in their holders when the system power is turned On. - Verify the control head's electrical switch wiring to the QVIOLS or deluxe touchpad (if no QVIOLS is present). - Verify that the applicable handpiece's settings are correct. Settings may have changed.

Cuspidor

This table contains tips and troubleshooting information to assist in diagnosing cuspidor problems. This table is not intended to cover every situation, but includes the most common problems that you may encounter.

Table 30: Cuspidor Troubleshooting

Problem	Possible Cause	Action
DS1 - AC Power LED	Off	No 24 VAC power, tripped circuit breaker, power supply turned Off, no line voltage.
	Green, steady	24 VAC at terminal strip.
Cupfill drips	The water bottle is under pressure. This is a known issue. If the water bottle is under pressure for a period of time, there is air saturation into the water that causes the cupfill to eventually drip.	Turn off the master toggle when the chair is not in use, or turn it off at the end of each day.
Water drips from the cupfill spout	The cupfill solenoid has failed.	1. Using the master toggle, turn the unit Off. 2. Use a syringe to bleed off the air (dental unit water pressure). 3. Remove the cupfill solenoid and replace.
Water drips from the bowl rinse spout	The bowl rinse solenoid has failed.	1. Turn off the city water in the floor box. 2. Bleed the air pressure using the bowl rinse button. 3. Replace the bowl rinse water solenoid.

Table 30: Cuspidor Troubleshooting (continued)

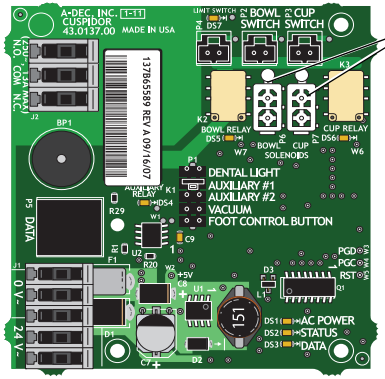
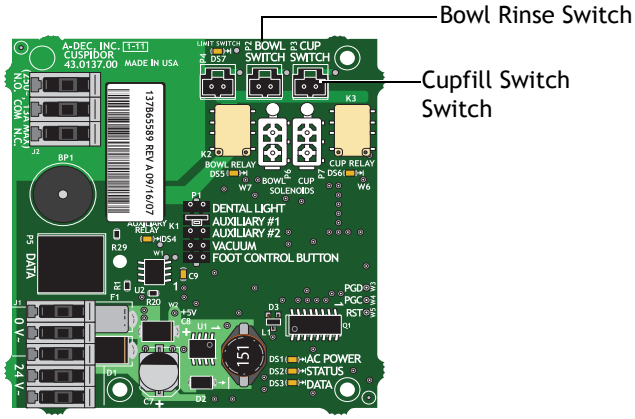
Problem	Possible Cause	Action
Cupfill and bowl rinse functions are switched.	The cuspidor water solenoid connectors are reversed on the cuspidor circuit board.	Switch water solenoid connections at P6 and P7. **Cuspidor Circuit Board Solenoid Location** 
Cupfill and bowl rinse functions are switched at the tower buttons only (touchpads operate normally).	The cuspidor tower switch connectors are reversed on the cuspidor circuit board.	Switch tower switch connections at P2 and P3. **Cuspidor Circuit Board Bowl and Cupfill Switch Locations** 

Table 30: Cuspidor Troubleshooting (continued)

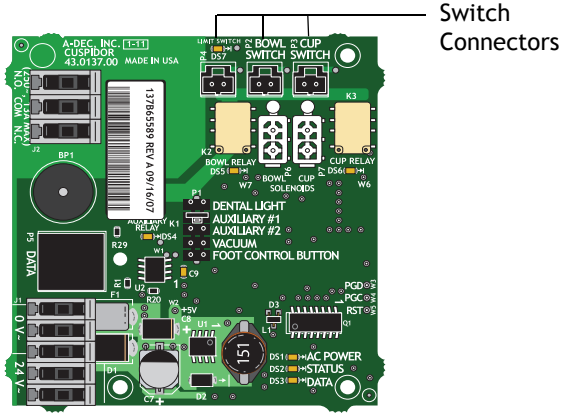
Problem	Possible Cause	Action
Water runs constantly from either the cupfill or bowl rinse spout. The red LED (DS7) is illuminated on the cuspidor circuit board when a button is activated.	The cuspidor stop switch jumper is reversed with one of the cuspidor tower switch connectors.	1. Place and leave a jumper in the limit switch connector, P4. 2. Connect one of the remaining switch connectors to P3 on the cuspidor circuit board, and the other switch connector to P2. 3. Verify that a cupfill cycle runs when requested from the cuspidor tower cupfill button. 4. If the bowl rinse runs, swap the two switch connections (P2 and P3) at the cuspidor circuit board. **Cuspidor Circuit Board Switch Connector Location** 
Cupfill spout sputters air/water.	The self-contained water bottle is empty or nearly empty.	0-rings may be damaged. Replace the 0-rings on the water bottle and refill the bottle.
The cupfill spout sputters excessively.	The cuspidor air trap valve is faulty.	Remove and replace the air trap valve.
Cuspidor works but the red LED (DS7) on the cuspidor circuit board is illuminated.	The cuspidor stop switch is activated.	Place and leave a jumper in the limit switch connector, P4.

Table 30: Cuspidor Troubleshooting (continued)

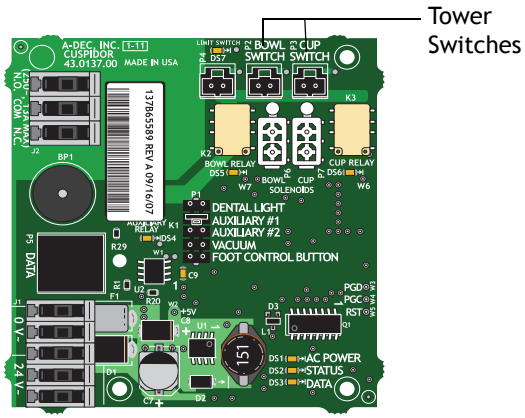
Problem	Possible Cause	Action
Bowl rinse button on the cuspidor tower does not work. The function does work from the touchpad.	Cuspidor tower bowl rinse button assembly is faulty or is disconnected from the cuspidor circuit board P2 connector.	Visually inspect the cuspidor circuit board. Ensure that the cuspidor tower switches are connected. • P2 - Bowl rinse switch • P3 - Cupfill switch If the switches are connected, check the continuity of the bowl rinse switch with an Ohm meter. With the bowl rinse switch held down (closed), it should measure less than ten Ohms. If it measures “open” across the closed switch, remove and replace the bowl rinse switch assembly (p/n 43.0010.00). **NOTE** Switching switch assemblies at P2 and P3 allows verification that the switch assembly is defective. **Cuspidor Circuit Board Tower Switches** 

Table 30: Cuspidor Troubleshooting (continued)

Problem	Possible Cause	Action
Cupfill button on the cuspidor tower does not work.The function does work from the touchpad.	Cuspidor tower cupfill button assembly is faulty or is disconnected from the cuspidor circuit board P3 connector.	Visually inspect the cuspidor circuit board, ensure that the cuspidor tower switches are connected: • P2 - Bowl Rinse Switch • P3 - Cupfill Switch If the switches are connected, check the continuity of the cupfill switch with an Ohm meter. With the cupfill switch held down (closed), it should measure less than ten Ohms. If it measures “open” across the closed switch, remove and replace the cupfill switch assembly (p/n 43.0010.00). **NOTE** Switching switch assemblies at P2 and P3 allows verification that the switch assembly is defective.
	The self-contained water system 40 psi regulator has failed.	If a reading of 35 – 40 psi could not be obtained at the air bleed setscrew port, the 40 psi regulator is faulty and must be replaced as follows: 1. Turn the dental unit OFF using the master toggle on the delivery system. 2. Remove the water bottle cap assembly from the post or side support. 3. Remove and replace the water bottle receptacle. 4. Reinstall the water bottle cap assembly and water bottle. 5. Turn the dental unit ON and test the cupfill function for adequate water pressure.
	The self-contained water system air bleed set screw is partially clogged with debris.	1. Use the master toggle, to turn the dental unit off, and remove the water bottle. 2. Remove the air bleed setscrew from the water bottle cap assembly and clean it of debris, or replace it. 3. Reinstall the setscrew in the water bottle cap assembly and reinstall the water bottle. 4. Turn the dental unit ON and test the cupfill function.

Table 30: Cuspidor Troubleshooting (continued)

Problem	Possible Cause	Action
Inadequate bowl rinse water flow.	The water filter element is partially plugged.	Check for plugged water regulator filter element. 1. Close the city water manual shut-off valve in the floor box and bleed the cuspidor bowl rinse water pressure, using the bowl rinse function. 2. Turn the dental unit off using the master toggle on the delivery system and remove the water regulator filter element cap. Remove and discard the filter element. 3. Install a new filter element on the water regulator and reinstall the filter cap. 4. Open the city water manual shut-off valve. Turn the dental unit on using the master toggle, and test the bowl rinse function for adequate water flow.
	There is a kinked hose.	Check for a restriction downstream from the filter. Locate and eliminate any kinks in the blue 5/16" bowl rinse water tube.
Bowl rinse function does not work from the cuspidor tower and/or the touchpad bowl rinse button. The cupfill function does work. DS5 is On when the bowl rinse is activated.	The bowl rinse solenoid or wiring has failed.	Verify the solenoid wiring into P6. Remove and replace the bowl rinse water solenoid and cable assembly.
Cupfill function does not work from the cuspidor tower and/or from any touchpad cupfill button. The bowl rinse function does work. DS6 is On when the cupfill is activated.	The cupfill water solenoid or solenoid wiring has failed.	Verify the solenoid wiring into P6. Remove and replace the cupfill water solenoid and cable assembly.

Utility Area

This table contains tips and troubleshooting information to assist in diagnosing floor box problems. This table is not intended to cover every situation, but includes the most common problems that you may encounter.

Table 31. Utility Area Troubleshooting

Problem	Possible Cause	Action
Unit air pressure drops when unit is in use.	Plugged filter element in air filter/regulator.	1. Flip the master toggle to the On position and remove the floor box cover. 2. Locate and observe the air pressure gauge in the floor box while pressing the syringe air button. If the air pressure drops more than 15 psi, the air filter is clogged. Replace filter.

Dental Lights

This table contains tips and troubleshooting information to assist in diagnosing dental light problems. This table is not intended to cover every situation, but includes the most common problems that you may encounter. .

Problem	Possible Cause	Action
Light does not work (light connected to 311 chair circuit board). 	The bulb has failed.	Check for voltage at the bulb socket, if voltage is present, replace the bulb.
		Check the color of the bulb, replace if discolored.
	The dental light circuit breaker, CB6, has been tripped or the power supply has failed.	• Check the circuit breaker and reset it. If the circuit breaker trips again, disconnect P4, J5, and J6 on the 311 chair board. If the circuit breaker trips again, replace the power supply. • If the circuit breaker does not trip, reconnect P4. If the circuit breaker now trips, replace the 311 chair circuit board. • If the circuit breaker does not trip, reconnect the connections to J6 (if any). If the circuit breaker now trips, replace the switch wiring to the 571-300 dental light. • If the circuit breaker does not trip, reconnect the connections to J5. If the circuit breaker trips, replace the dental light.
		For 571-300 or 371 Dental Lights on a 511 chair: • If CB5 on the 300W power supply is tripped, disconnect the dental light connector at the power supply and reset the circuit breaker. If CB5 trips again, replace the power supply. Connect the dental light to the power supply, if CB5 trips, replace the dental wiring harness or the adapter cable wiring. For 571-300 or 371 Dental Lights NOT on a 511 or 311 chair: • If the dental light circuit breaker on the 300 W power supply is tripped: - Disconnect the dental light connector at the power supply and reset the circuit breaker. - If the circuit breaker trips again, replace the power supply. (Connect the dental light to the power supply.) If the circuit breaker trips, either the dental light wiring harness, switch wiring, dental light circuit board, or dental light circuit board power cable has failed. Connect one at a time to determine the location of the failure. For Model 6300 Dental Lights: • The dental light circuit breaker is near the power transformer. If the breaker is tripped, disconnect the dental light wiring harness from the transformer and reset the breaker. If the breaker trips again, replace the circuit breaker. If the breaker does not trip, the dental wiring harness or a switch is faulty.
	The bulb socket is faulty.	Replace the socket.

Problem	Possible Cause	Action
Light works from the touchpad(s) but not from the dental light switches (571-300 only).	Loose connection in the dental light wiring harness.	Verify that the wiring is connected properly. Check the connections at the dental light switches and terminals H5 and H6 on the circuit board.
Light works from the dental light switches (for 571-300) but not from a touchpad (371 or 571-300).	Faulty data line from the touchpad to the circuit board.	Temporarily substitute a known good data line from the touchpad to the circuit board, if the light works from the touchpad, determine and replace any bad bypassed data lines.
Light head is loose or difficult to position.	Rotation tension screws are too loose or tight.	Adjust the appropriate axis tension.
Flexarm drifts.	Tension adjustment nut inside the flexarm is too loose or tight.	Adjust the flexarm counterbalance.
Light intensity is dim, inconsistent, or the color is distorted. 	Reflector or light shield may be damaged.	Inspect the dental light shield and reflector for damage or contamination. Replace or clean as necessary. **CAUTION** Abrasives, disinfectants or chlorine damage the shield and reflector. Refer to the Instructions for Use for cleaning instructions.
	For the 571-300 Dental Light, the intensity switch is in the medium or composite position.	Check the intensity switch position. **NOTE** Turning the light on when the intensity switch is in the composite position results in medium intensity.
	The mains voltage is low.	Verify the mains voltage is within specifications: 100/110-120/220-240 VAC
Unsatisfactory light pattern.	Light is out of focus, reflector or light shield may be damaged.	1. Focus the light. 2. Check the light shield for severe abrasions, and replace if necessary. 3. Clean the reflector and light shield.

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