



## SERVICE GUIDE

# A-dec<sup>®</sup> Service Guide Volume II

Featuring A-dec 500<sup>®</sup> and Clinical Products



A-DEC<sup>®</sup> SERVICE GUIDE VOLUME II  
A-DEC 500<sup>®</sup> AND CLINICAL PRODUCTS

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# CONTENTS

## CHAPTER 1: INTRODUCTION

<b>Inside This Guide .....</b>	<b>2</b>
Document Conventions .....	2
<b>Getting Support.....</b>	<b>3</b>
Customer Service .....	3
<b>Other Sources of Information.....</b>	<b>4</b>
Genuine A-dec Parts Catalog.....	4
A-dec Dental Furniture Technical Packet .....	4
A-dec Illustrated Parts Breakdown.....	4
Electronic Documentation.....	4
OrderNet .....	4
<b>Serial and Model Numbers.....</b>	<b>5</b>
A-dec 500 .....	5
Reading Serial Number Labels .....	6
<b>Service Tools .....</b>	<b>7</b>
Recommended Tools.....	7

## CHAPTER 2: DENTAL CHAIR

<b>Product Overview .....</b>	<b>10</b>
A-dec 511 Chair .....	10
A-dec 511 Chair Specifications.....	11
<b>Flow Diagram .....</b>	<b>14</b>
Chair Flow Diagram .....	14
<b>Service/Usage Information .....</b>	<b>16</b>
Chair Covers .....	16
Factory Default Routine.....	17
Chair Circuit Board Components.....	18
The Hydraulic System .....	21
Potentiometer .....	25
Chair Stop Plate .....	26
<b>Adjustments .....</b>	<b>27</b>
Swivel Brake .....	27
Tension Adjustment.....	27
Headrest .....	28



<b>Illustrated Parts Breakdown .....</b>	<b>29</b>
Part Identification .....	29
Baseplate and Motor Pump Assembly .....	30
Hydraulic Hose and Solenoid Assembly.....	32
Lift Cylinder and Link Arm .....	34
Lower Assembly .....	36
Upper Structure/Swivel Assembly .....	38
Back and Tilt Cylinder Assembly .....	40
Upper (Springs and Cam Assembly) .....	42
Upper (Seat Assembly).....	44
Headrest Assembly .....	46

### CHAPTER 3: PROGRAMMING

<b>Status Icon.....</b>	<b>50</b>
<b>Chair Positions .....</b>	<b>51</b>
Position Buttons.....	52
<b>Cuspidor Functions .....</b>	<b>54</b>
Cup Fill .....	54
Bowl Rinse .....	54
Customize Cup Fill and Bowl Rinse .....	54
<b>Dental Light .....</b>	<b>55</b>
Dental Light Auto Feature.....	55
<b>Electric Handpiece Settings (Deluxe Touchpad Only).....</b>	<b>56</b>
Standard Mode .....	56
Endodontics Mode .....	58
<b>Other System Choices .....</b>	<b>60</b>
Intraoral Light Source .....	60
<b>Touchpad Circuit Board Components .....</b>	<b>62</b>
Standard Touchpad .....	62
Deluxe Touchpad.....	64

### CHAPTER 4: DELIVERY SYSTEMS

<b>Product Overview .....</b>	<b>68</b>
-------------------------------	-----------

#### CHAIR-MOUNTED DELIVERY SYSTEMS..... 69

<b>Product Overview (532/533).....</b>	<b>70</b>
A-dec 500 Delivery System Components.....	70
Covers.....	72
Whip Assembly .....	73
Continental Tray Holder (533 only) .....	74
<b>Flow Diagram (532/533) .....</b>	<b>76</b>
<b>Adjustments (532/533).....</b>	<b>78</b>
Front Mount .....	78
Front-to-Back Leveling .....	80
Side-to-Side Leveling .....	80

<b>Illustrated Parts Breakdown .....</b>	<b>81</b>
Part Identification .....	81
Traditional Chair Mounted Delivery System (Model 532)...	82
Continental Chair Mounted Delivery System (Model 533)..	84
Delivery System — Upper Exploded (532 and 533) .....	86
Delivery System — Lower Exploded (532 and 533) .....	88
Traditional Holder Assembly (532) .....	90
Continental Whip Assembly (533) .....	92
Continental Tray Holder.....	94

#### SIDE-MOUNTED DELIVERY SYSTEMS..... 97

<b>Product Overview (542).....</b>	<b>98</b>
Components.....	98
<b>Flow Diagrams (542) .....</b>	<b>100</b>
<b>Leveling/Adjustments (542).....</b>	<b>102</b>
Flexarm Counterbalance.....	102

<b>Illustrated Parts Breakdown (542)</b> .....	<b>103</b>
Part Identification .....	103
Side Delivery System .....	104
Side Delivery System Upper Structure.....	106
Side Delivery System Covers and Brake .....	108
Control Head .....	110
Traditional Holder Assembly .....	112

## **CHAIR/SIDE SYSTEMS COMMON FEATURES..... 115**

<b>Product Overview</b>	
<b>(Chair/Side Delivery Common Features)</b> .....	<b>116</b>
Internal Control Components .....	116
<b>Adjustments</b> .....	<b>118</b>
Covers .....	118
Rotational Tension Adjustment .....	119

## **12 O'CLOCK DELIVERY SYSTEMS 121**

<b>Product Overview (12 O'Clock)</b> .....	<b>122</b>
A-dec 541 12 O'Clock Duo	
Delivery System .....	122
A-dec 541 Internal Components .....	123
Flex-Holder .....	124
Wiring Service/Usage Information .....	125
Control Center Covers (541) .....	125
Doctor's Holder .....	126
<b>Flow Diagrams</b> .....	<b>128</b>
Plumbing .....	129

<b>Adjustments/Maintenance</b> .....	<b>130</b>
Level the Arm Assembly and Worksurface .....	130
Worksurface Height .....	132
Instrumentation Arm Positioning .....	133

<b>Illustrated Parts Breakdown</b>	
<b>(541 and 545)</b> .....	<b>135</b>
Part Identification .....	135
Duo Delivery System (Model 541) .....	136
Worksurface Module .....	138
Mounting Platform Installation.....	140
Control Center.....	142
Doctor's Arm Assembly .....	144
Doctor's Turret, 2" Holder Assembly .....	146
Vacuum and Upper Structure Assembly.....	148
Assistant's Holder—Electric .....	150
Assistant's Holder—Standard .....	152

## **A-DEC 500 DELIVERY SYSTEMS**

### **COMMON FEATURES..... 153**

<b>Product Overview</b>	
<b>(All Delivery)</b> .....	<b>154</b>
A-dec Tubing .....	154
Data Communication System .....	159
Circuit Board Components.....	160
Brake Handle .....	162
Accessory Holder.....	162
Master On/Off Toggle.....	163
Flush Toggle .....	164
Traditional Tray Holder.....	165
Foot Control .....	166
Self-Contained Water Bottle .....	167
Standard Syringe .....	168

Warm Water Syringe.....	169
Tooth Dryer .....	171
<b>Adjustments (Common Features) .....</b>	<b>172</b>
Control Block .....	172
Tray Holder .....	175
Intraoral Light Source Voltage .....	176
<b>Flow Diagrams .....</b>	<b>177</b>
Foot Control .....	177
<b>Service/Usage Information .....</b>	<b>178</b>
Remove the Control Block.....	178
<b>Illustrated Parts Breakdown (Cross System) .....</b>	<b>179</b>
Part Identification .....	179
Control Block Assembly .....	180
Water Coolant Relay Assembly .....	182
Dual Solenoid Manifold Assembly (Dlx Touchpad Only) ...	184
Master On/Off Toggle .....	186
Flush Toggle .....	188
A-dec Foot Control .....	190
Foot Control Accessory Button and Wet/Dry Toggle Valve	192
Foot Control Signal Relay Main Body Valve .....	194
Oil Collector .....	196
Brake Handle Assembly .....	198
Traditional Tray Holder .....	200
Holder (532,533 and 542) .....	202
Holder (541 and 545).....	206
Self-Contained Water Bottle .....	208
Self-Contained Water Bottle Housing (Cabinet-Mounted)	210
Self-Contained Water Bottle Housing (Chair-Mounted) ...	212
Traditional and Continental Syringes .....	214
Warm Water Traditional and Continental Syringes .....	216

Autoclavable HVE Standard and 11/15 mm .....	218
Autoclavable HVE with Large Bore 15mm (541 and 545)	219
Autoclavable Saliva Ejector .....	220

## **ASSISTANT'S INSTRUMENTATION .....** **223**

<b>Product Overview (551).....</b>	<b>224</b>
Components.....	224
Holders .....	226
Assistant's Touchpad.....	228
Solids Collector .....	230
Tip-Up Feature .....	231
<b>Flow Diagrams (551) .....</b>	<b>232</b>
Standard Holder .....	232
Electric Holder .....	233
<b>Adjustments (551).....</b>	<b>234</b>
Left or Right Conversion .....	234
<b>Product Overview (545).....</b>	<b>235</b>
Components.....	235
Holders .....	236
Solids Collector .....	238
<b>Flow Diagram (545) .....</b>	<b>239</b>
Plumbing Diagram.....	239
Plumbing Diagram.....	240
<b>Leveling (545).....</b>	<b>241</b>
Arm Assembly.....	241
Worksurface.....	243
<b>Adjustments (545).....</b>	<b>244</b>
Worksurface Height .....	244
Instrumentation Arm Positioning .....	245

**CHAPTER 5: CUSPIDOR AND SUPPORT CENTER**

<b>CUSPIDOR.....</b>	<b>248</b>
<b>Product Overview.....</b>	<b>248</b>
<b>Flow Diagram .....</b>	<b>250</b>
Cuspidor and Support Center .....	250
<b>Service/Usage Information .....</b>	<b>252</b>
Cuspidor Circuit Board Components .....	252
<b>Adjustments/Maintenance .....</b>	<b>254</b>
Cup Fill Functions .....	254
Bowl Rinse Functions.....	254
Cup Fill and Bowl Rinse Timing.....	255
<b>Illustrated Parts Breakdown.....</b>	<b>257</b>
Part Identification .....	257
Cuspidor Upper Assembly .....	259
Cuspidor Lower Assembly .....	262
Cuspidor Fill/Rinse Manifold .....	264
<b>AMALGAM SEPARATOR HOUSING .....</b>	<b>265</b>
Components .....	265

**CHAPTER 6: FLOOR BOX**

<b>Product Overview.....</b>	<b>270</b>
Air and Water Manual Shutoff Valves .....	270
Gauge and Pre-Regulator .....	270
<b>Service/Maintenance .....</b>	<b>271</b>
Filter Element .....	271

<b>Illustrated Parts Breakdown .....</b>	<b>273</b>
Part Identification Symbols.....	273
Floor Box .....	274
Air and Water Filter Regulators .....	276
Air and Water Filter Regulators Body Assembly .....	277
Moisture Separator.....	278

**CHAPTER 7: SUPPORT SIDE FEATURES**

<b>Product Overview .....</b>	<b>280</b>
Components.....	280
Limit Switch Operation.....	281
<b>Flow Diagram .....</b>	<b>282</b>
Support Side Limit Switch Electrical Diagram .....	282
<b>Adjustments/Maintenance .....</b>	<b>283</b>
Leveling .....	283
<b>Illustrated Parts Breakdown .....</b>	<b>287</b>
Part Identification .....	287
Support Link .....	288
Limit Switch Components.....	289
Lower Support Arm .....	290

**CHAPTER 8: MONITOR MOUNTS**

<b>Product Overview .....</b>	<b>292</b>
Monitor Mount Specifications .....	292
Components.....	293

<b>Adjustments .....</b>	<b>300</b>
Friction Adjustment .....	300
Tray Holder Tension Adjustment (Support Side Monitor Mount, 561) .....	301
Panning Friction Adjustment (500 Track Mount Monitor) .....	302
<b>Illustrated Parts Breakdown.....</b>	<b>303</b>
Part Identification .....	303
Front Mount Monitor Mount (531) .....	304
Support Side Monitor Mount (561) .....	307
Support Side Monitor (561) Tray Holder .....	310
A-dec 500 Track Monitor Mount .....	312
A-dec 500 Track Monitor Mount Components.....	315
A-dec 500 Track Monitor Mount Trolley Assembly (Before February 2007) .....	318
A-dec 500 Track Monitor Mount Trolley Assembly (After February 2007) .....	320

## CHAPTER 9: DENTAL LIGHTS

<b>Product Overview.....</b>	<b>324</b>
Dental Light Specifications .....	324
On/Off Functions .....	325
Intensity Switches .....	325
<b>Service/Usage Information .....</b>	<b>326</b>
Identifying Switch Connections .....	326
Circuit Breakers .....	330
Power Cable .....	331
Transformers .....	332
Circuit Board Components .....	334
<b>Adjustments/Maintenance .....</b>	<b>339</b>
Focus .....	339

Light Head Rotation .....	340
Flexarm.....	343
Light Shield Cleaning .....	344
Lamp Replacement .....	345

<b>Illustrated Parts Breakdown .....</b>	<b>347</b>
Part Identification Symbols .....	347
Light Head .....	348
571 Dental Light .....	350
6300 Track Dental Light .....	352
Trolley Assembly .....	354
6300 Ceiling Mount Dental Light (Upper).....	356
6300 Ceiling Mount Dental Light (Lower).....	358
6300 Preference Mount Dental Light.....	360
6300 Wall Mount Dental Light .....	363

## CHAPTER 10: CLINICAL PRODUCTS

### EA-50LT AND EA-51LT ELECTRIC MICROMOTOR. 368

<b>Flow Diagram .....</b>	<b>368</b>
<b>Maintenance .....</b>	<b>370</b>
EA-50LT and EA-51LT O-ring Replacement .....	370
EA-50LT and EA-51LT Bushing Replacement.....	371
EA-50LT Bulb Replacement .....	372
EA-51LT Bulb Replacement .....	373

### A-DEC INTRAORAL CAMERA

<b>(OCTOBER 2003- JANUARY 2007) .....</b>	<b>374</b>
<b>Flow Diagram .....</b>	<b>374</b>

<b>SOPRO INTRAORAL CAMERA (717 &amp; 595).....</b>	<b>376</b>
Flow Diagram .....	376
<b>SP NEWTRON SCALER .....</b>	<b>378</b>
Flow Diagram .....	378
SP Newtron Scaler with Deluxe Touchpad .....	378
SP Newtron Scaler with Standard or No Touchpad .....	380
<b>MINILED CURING LIGHT .....</b>	<b>382</b>
Flow Diagram .....	382
<b>CHAPTER 11: ICV</b>	
<b>Product Overview.....</b>	<b>386</b>
Vacuum Requirements .....	387
ICV Tubing and Cables .....	388
ICV Display Panel .....	389
Flow Chart .....	390
<b>Flow Diagram .....</b>	<b>391</b>
<b>Service/Usage Information .....</b>	<b>392</b>
ICV Control Circuit Board .....	392
ICV Display Circuit Board .....	393
<b>Adjustments/Maintenance .....</b>	<b>394</b>
Cycle Time Test .....	394
Cycle Time Adjustment .....	394

<b>Illustrated Parts Breakdown .....</b>	<b>395</b>
Part Identification Symbols .....	395
ICV Components .....	396
ICV Display Panel .....	398
ICV Dual Panel .....	400

## CHAPTER 12: TROUBLESHOOTING

<b>Introduction .....</b>	<b>404</b>
<b>Dental Chair .....</b>	<b>405</b>
<b>Delivery Systems .....</b>	<b>413</b>
<b>Data Communication System.....</b>	<b>424</b>
<b>Cuspidor.....</b>	<b>428</b>
<b>Floor Box.....</b>	<b>435</b>
<b>Dental Light.....</b>	<b>436</b>
<b>Clinical Products.....</b>	<b>438</b>
Warm Water Syringes .....	438
Tooth Dryer .....	440
A-dec Intraoral Camera .....	441
Sopro Intraoral Cameras (717 and 595).....	442
SP Newtron.....	444
MiniLED .....	446
EA-50/51LT Electric Micromotor .....	447
<b>ICV.....</b>	<b>448</b>





# INTRODUCTION

Welcome to the *A-dec 500 Service Guide*. This guide provides a complete review of:

- A-dec 511 chair
- A-dec 500 delivery systems
- Programming
- Cuspidor
- Floor box
- Support side features
- Monitor mounts
- Dental lights
- Clinical products

This guide is intended for newly trained and seasoned service technicians responsible for installing and maintaining A-dec products. The technician should understand the operation of dental equipment, how to use flow diagrams and how to perform basic maintenance on dental or medical equipment.



## INSIDE THIS GUIDE

Inside this guide you will find the tools, maintenance, adjustments and troubleshooting information for servicing A-dec 500 products.

This guide contains:

- Adjustments and maintenance information
- Flow diagrams for routing tubing and wiring
- Step-by-step instructions for troubleshooting
- Part number information on serviceable/saleable parts, and non-saleable parts
- Exploded illustrated parts breakdown of assemblies, showing sequence of assembly

## Document Conventions

A number of items and instructions appear throughout this document. The information contained within these pages uses special formatting, note styles and symbols to help identify important instructions or component status.

### Formatting Conventions

The formatting conventions are designed to make information quick and easy to find and understand.

- *Italic* type indicates document names and to indicate emphasis.
- **Bold** type indicates new terms or glossary terms, and is used for section headings



**WARNING** Warnings indicate potential loss of life or limb.



**CAUTION** Cautions indicate potential equipment damage.



**NOTE** Notes indicate additional information.

## Part Identification Symbols

The conventions for the serviceable components tables are designed to identify all parts and kits, including ones that are not for sale. Symbols with reference notes are used.

Symbol	Definition
†	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)
No symbol	Part is for sale

## GETTING SUPPORT

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### Customer Service

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

#### U.S. and Canada

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2601 Crestview Drive  
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(For United Kingdom and Australia see those regions)

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Australia  
Tel: (02) 8332 4000  
1.800.225.010  
[www.a-dec.com.au](http://www.a-dec.com.au)

#### Web Contact

OrderNet/Partner Resources websites: [www.a-dec.biz](http://www.a-dec.biz)

## OTHER SOURCES OF INFORMATION

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There are a number of other related documents in the A-dec documentation set. These documents cover a wide range of reference information.

### Genuine A-dec Parts Catalog

The *Genuine A-dec 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 addendum.

### A-dec Dental Furniture Technical Packet

The *A-dec Dental Furniture Technical Packet*, P/N 86.0142.00, contains information specifically related to dental furniture. The content is intended to assist you in specifying plumbing, utilities, framing and construction requirements for installation of dental furniture.

### 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 500.

### Electronic Documentation

Electronic versions (PDF files) of our documentation (installation instructions, service guides, technical information) can be viewed or downloaded from the *Partner Resources* section of the A-dec website ([www.a-dec.biz](http://www.a-dec.biz)). 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 or use to configure product and prepare proposals. Order acknowledgments are emailed as soon as you place your order.

## 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.

### A-dec 500

A-dec 500 serial and model number information can be found on serial/model number labels.

Item	Description
1	Light, underside of the flexarm
2	Delivery system, underside of the delivery system
3	Chair, chair upper structure frame, under the toeboard
4	Cuspidor, inside support center
5	Assistant's instrumentation, underside of the assistant's arm
6	Power supply, inside motor pump area

*Track light* - on back of circuit breaker cover; *wall-mounted* - on top of circuit breaker cover or at the very base of the post on the transformer side; *Preference-mounted* - on the transformer cover underneath the x-ray cap or at the end of the post by the transformer; *ceiling-mounted* - on top of circuit breaker cover.

**Figure 1** Serial/Model Number Locations on A-dec 500



## Reading Serial Number Labels

Use the tables shown and Figure 4 to reference how to identify serial/model number information. The **REF:** number is the model number. The **S/N:** is the serial number.

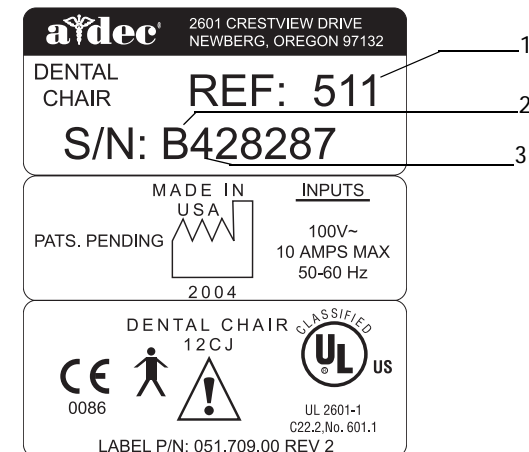
The first letter of the serial number is the month the product was manufactured (see Table 1). The first digit following the letter is the year the product was manufactured.

**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

Item	Description
1	Model number of the product
2	Month code (see Table 1)
3	Year the product was manufactured

**Figure 2** Serial Number Label (511 chair)

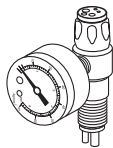

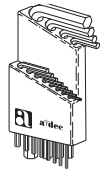

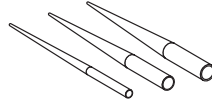




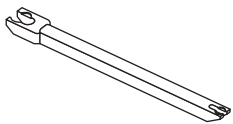
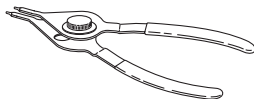
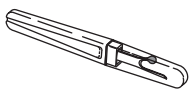
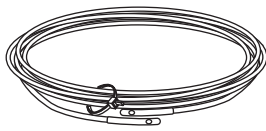

## SERVICE TOOLS

### Recommended Tools

Table 2 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 to stop 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

Tool	Task	Part Illustration	Part Number
Panel mount gauge	Checking air/water pressure  Can also be used as an inline pressure gauge for testing purposes		026.118.00
Silicone lubricant	Lubrication of internal moving parts such as O-rings, oral evacuator valves, and bushings		98.0090.01
Sleeve tool	Aid in securing 1/4" tubing sleeves and 1/8" uni-clamps		98.0072.00
Snap ring tool	Installation and removal of internal and external snap rings (fits all snap rings used in A-dec equipment)		009.007.00
Tubing stripper	Separation of the extruded air and water lines in vinyl tubing		009.035.00
Umbilical stringer	Route 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	Quick tests 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 information related to servicing, maintenance, and adjustments. Detail on how to service the chair and troubleshoot specific problems is presented. For information on service parts, see the *Genuine A-dec Service Parts Catalog* or contact A-dec customer service.

### CHAIR CONTENTS

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- Product Overview, page 10
- Flow Diagram, page 14
- Service/Usage Information, page 16
- Adjustments, page 27
- Illustrated Parts Breakdown, page 29



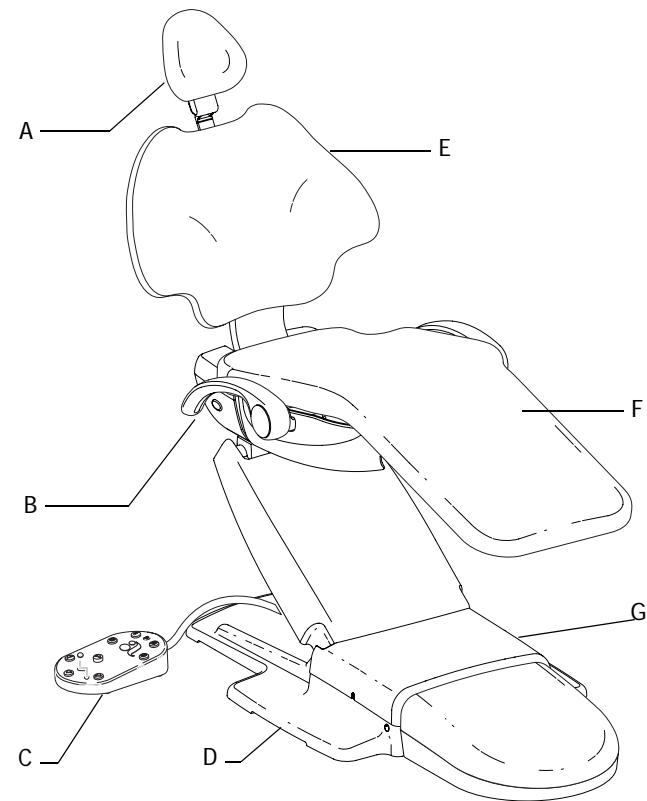


## PRODUCT OVERVIEW

### A-dec 511 Chair

The A-dec 511 chair provides a range of movements to position the patient for dental treatment. The dental chair consists of a stable base, an ergonomically synchronized seat and back support, adjustable head support, and collapsible arm support. A footswitch and/or touchpad(s) control the chair movement. A hydraulic system and four programmable positions deliver entry, treatment, and exit positioning. The deluxe touchpad option provides two operators with four more programmable positions for a total of eight.

**Figure 1** A-dec 511 Chair Features



(A) Headrest; (B) Armrest; (C) Foot Switch; (D) Baseplate; (E) Back; (F) Seat; (G) Hydraulic Motor Pump Assembly

## A-dec 511 Chair Specifications

### Load Capacity

Patient Load: 300 lb. (135 kg) maximum

Accessory Load: 250 lb. (113 kg) maximum

Specifications are subject to change without notice.

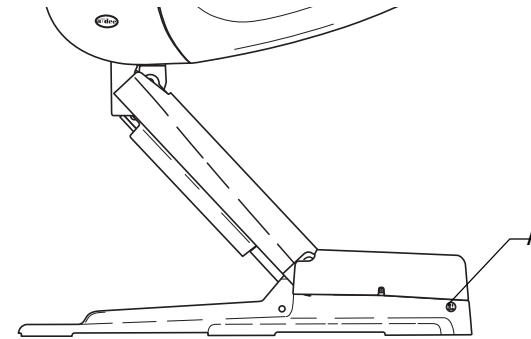


**NOTE** Ensure the chair is bolted to the floor after installation.

### Power On/Off Button

The power On/Off button is located on the base of the chair, and is the main disconnect that completely shuts down the electrical systems. When the button is pressed in, power is on. When the button is out, power is off.

**Figure 2** On/Off Button



(A) On/Off Button

### Limp-Along Feature

If there is a problem or malfunction, the limp-along feature allows the operator to move the chair in the up direction for one second intervals by pushing the manual control buttons on the touchpad or footswitch.

## Chair Power Supply

The 300-watt power supply comes standard with the A-dec 511 chair. It is located in the motor pump area of the chair. The total available auxiliary load is a maximum of 4 Amps.

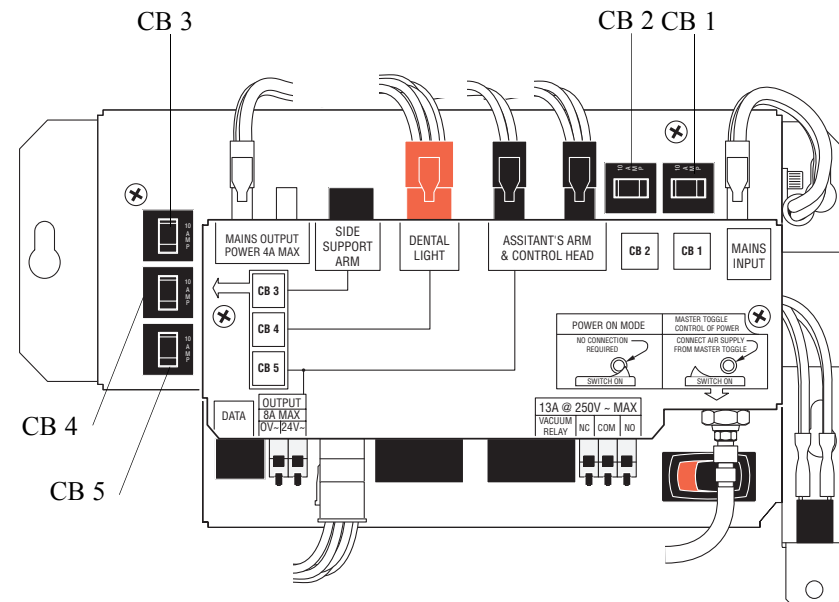


**NOTE** The electric switch connects the power supply to pilot air.

**Table 3** Power Supply Circuit Breaker Function

Circuit Breaker	Function
CB 1	Mains
CB 2	Mains
CB 3	Support side arm (side support arm)
CB 4	Assistant's arm, control head (delivery system) and chair circuit board.
CB 5	Dental light

**Figure 3** Chair Power Supply Circuit Breaker Identification





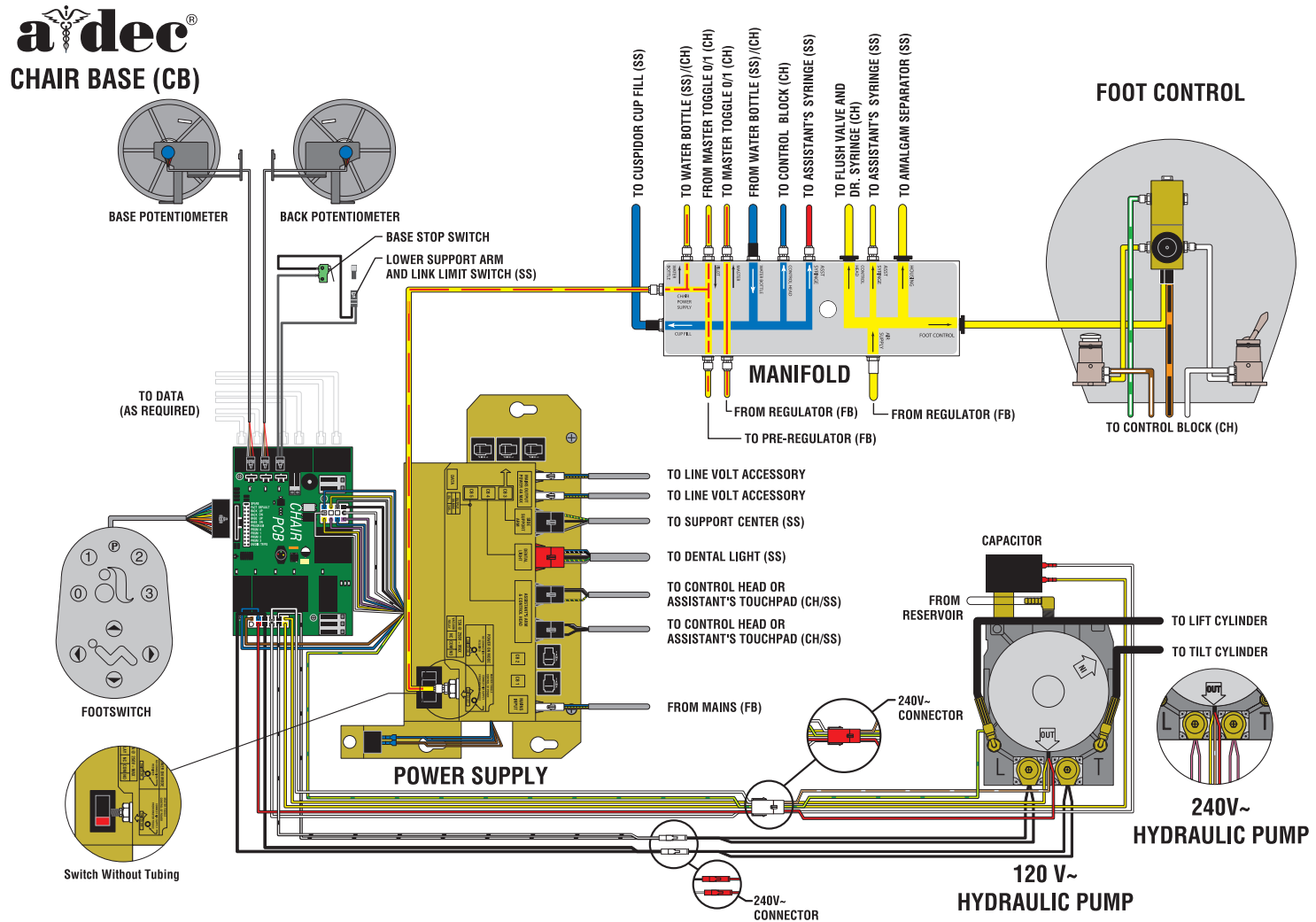
## FLOW DIAGRAM

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### Chair Flow Diagram

This flow diagram details both electrical and plumbing information for servicing and troubleshooting the A-dec 511 chair. The flow diagram is located on the inside of the motor pump cover. This diagram includes the air electric switch, motor pump connections, and potentiometers.

Figure 4 Chair Flow Diagram



## SERVICE/USAGE INFORMATION

### Chair Covers

The A-dec 511 chair motor pump, lift arm and stop plate covers are removed in the following order:

#### 1. Motor Pump Cover

- To remove: Remove screw from each side and lift up.
- To replace: Replace cover, and attach with two screws.

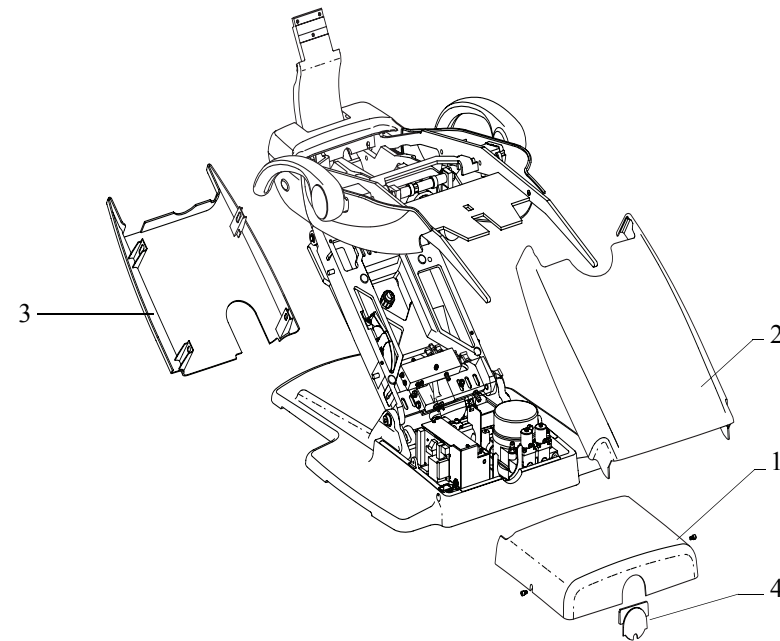
#### 2. Lift Arm Cover

- To remove: Pull one side of the cover until it releases from the lift arm.
- To replace: Align one side of the cover with the lift arm and snap into place. Ensure both sides are firmly attached.

#### 3. Stop Plate

- To remove: Pull one side of the cover until it releases from the lift arm.
- To replace: Slide one side of the cover over the post on the lift arm and attach.

Figure 5 A-dec 511 Chair Covers



Item	Part Number	Description
1	62.0080.00	Motor pump cover
2	62.0081.00	Lift arm cover
3	62.0084.00	Stop plate cover
4	62.0101.00	Motor pump cover plug

## Factory Default Routine

When a new circuit board is installed in the chair, the circuit board needs to run the factory default routine to learn the range of motion of the chair.

The routine:

- sets the base and back upper limits
- calculates new presets based on actual range of motion of the chair
- verifies that the potentiometers work

To start the factory default routine, place the “spare” jumper in the factory default position on the P3 test points of the chair circuit board.

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 Position 0
6. Beeps three times



---

**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.

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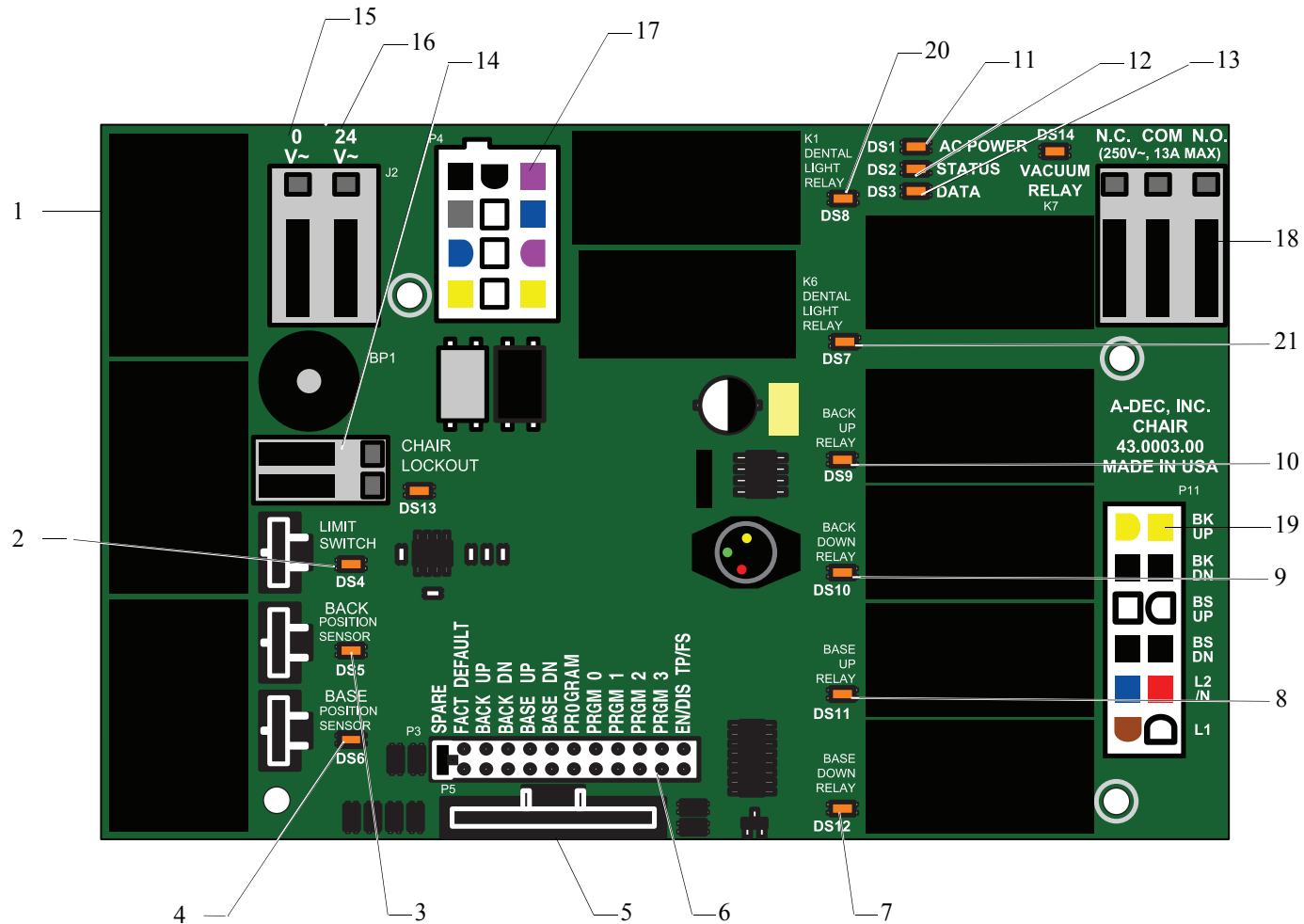


## Chair Circuit Board Components

Part No: 90.1072.00

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

Figure 6 A-dec 511 Chair Circuit Board Components



## LED Identification

Figure 4 describes the LEDs on the chair circuit board.

**Table 4 LED Identification**

LED	Status	Description
DS1 - AC power LED	Off	No 24 VAC power, tripped circuit breaker, power supply turned off, no line voltage
	Green, steady	24VAC 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: <ul style="list-style-type: none"> <li>• Not connected or bad connection</li> <li>• Moving in wrong direction</li> <li>• Limited range of motion, or</li> <li>• Cable is not on wheel</li> </ul>
	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

## The Hydraulic System

The hydraulic system deactivates automatically at the upper and lower extremes of travel. The system is leak-free during transportation, storage, and operation. The hydraulic system consists of:

- Hydraulic fluid reservoir
- Hydraulic cylinders
- Motor-driven hydraulic pump with solenoids

### Hydraulic Fluid Reservoir

The hydraulic fluid reservoir is located in the lift arm of the chair under the stop plate cover. You can see the fluid level in the reservoir through the sides of the reservoir. A top fill cap allows you to add fluid. The hydraulic system holds 40 ounces (2.5 pints [1.18 l]) of hydraulic fluid.

To fill the reservoir:

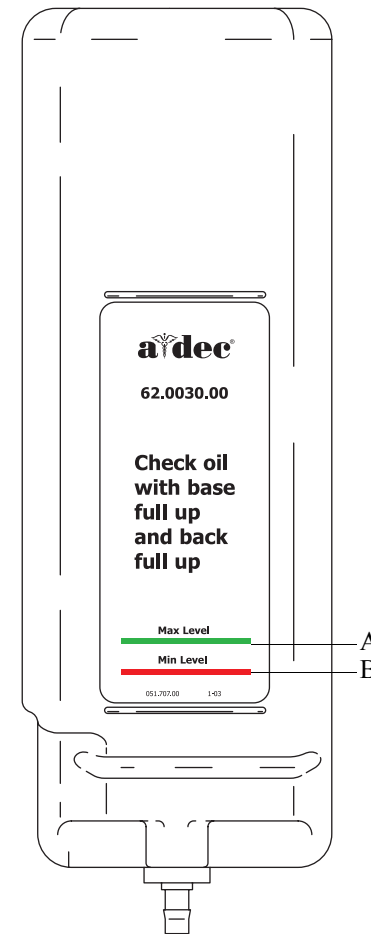
1. Place the chair in the full base and back up position.
2. Fill to the green Max line (see Figure 7).



**CAUTION** Do not over fill.

3. Cycle the chair after the reservoir is filled.

**Figure 7** Hydraulic Fluid Reservoir



(A) Max Level; (B) Min Level

## Hydraulic Cylinders

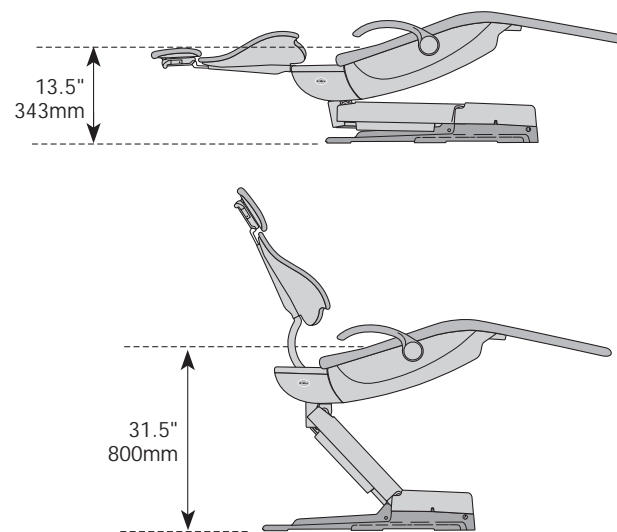
The hydraulic cylinders operate during the **Base Up** and **Back Up** functions. Springs and gravity retract the piston during **Base Down** and **Back Down** functions.

The chair seat travels vertically from a low point of 13.5" (343 mm) to a high point of 31.5" (800 mm) above the floor (see Figure 8).

## Motor-driven Hydraulic Pump

The hydraulic pump takes hydraulic fluid from the reservoir and pressurizes it to extend the chair lift and tilt hydraulic cylinders for back and base up functions. The bi-directional pump rotates one direction for **Base Up** and the opposite direction for **Back Up**. The solenoids mounted to the pump assembly gate hydraulic fluid from the two cylinders. Depending on the chair **Down** function, the controller selects which solenoid-actuated manifold valves are open or closed. The 100-120 VAC pump and 220-240 VAC pump are equipped with an automatic reset 110°C (230°F) thermal limiter. There are no serviceable parts on the hydraulic pump other than the solenoids.

**Figure 8** Hydraulic Cylinder Operation



**NOTE** You can not adjust the speed of the chair.

## Capacitor

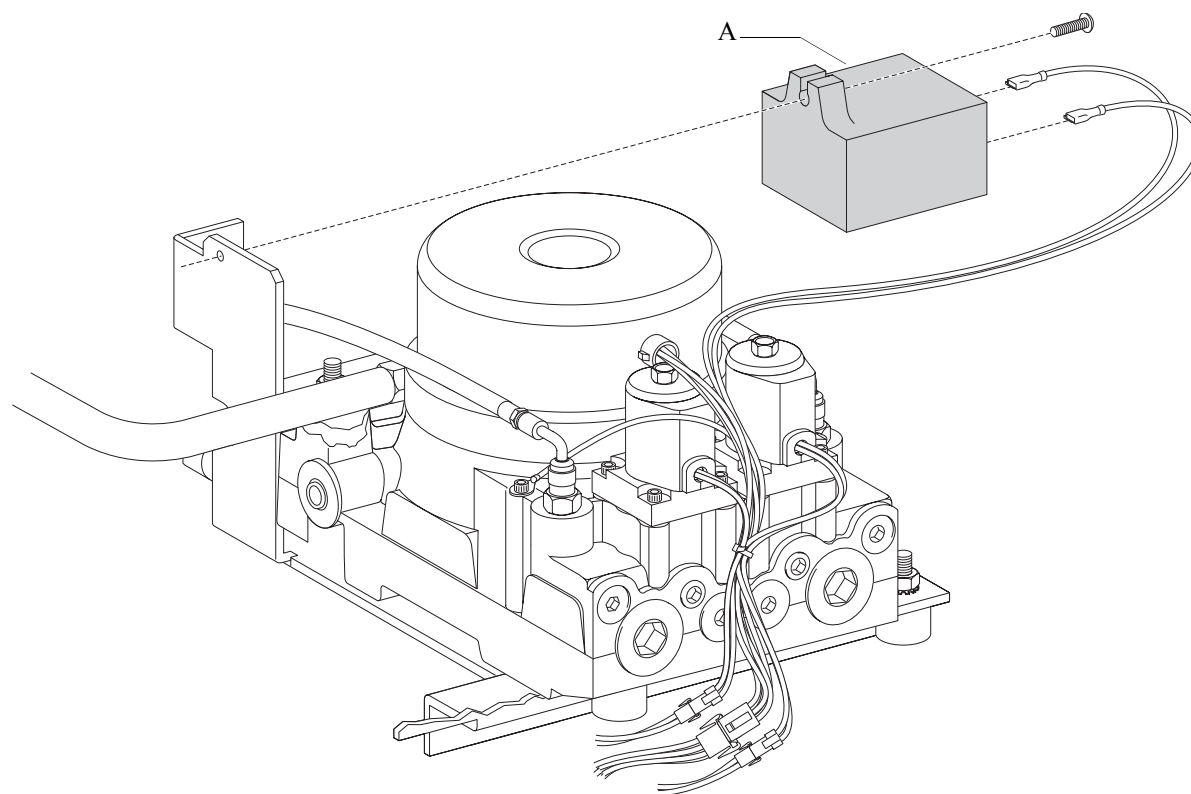
Part No: 041.642.00, 100 VAC

Part No: 041.643.00, 110 - 120 VAC

Part No: 041.644.00, 220 - 240 VAC

The capacitor is energized during chair **Base Up** or **Back Up** functions.

**Figure 9** A-dec 511 Chair Capacitor



(A) Capacitor

## Solenoids

Part No: 90.1070.00, 110 - 120 VAC

Part No: 90.1071.00, 220 - 240 VAC

### How to Test Solenoids

A solenoid is energized during **Base Down** and **Back Down** functions. To check for a failed solenoid, test the solenoids using a volt/ohm meter or magnetic pull test:

#### ■ Magnetic pull

1. Hold a paper clip loosely in your hand.
2. Activate the solenoid by pressing **Base Down** or **Back Down** on the footswitch or touchpad.
3. If there is a pull on the paper clip, the solenoid is being energized.

#### ■ Coil resistance

1. Disconnect the solenoid power at the 2-position connector.
2. Place on Ohm meter probe on each of the solenoid connector terminals.  
 100 - 120 VAC = 177 Ohms  $\pm$  18 Ohms  
 220 - 240 VAC = 845 Ohms  $\pm$  85 Ohms



**NOTE** If the solenoid is hot, then the resistance reads higher.

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



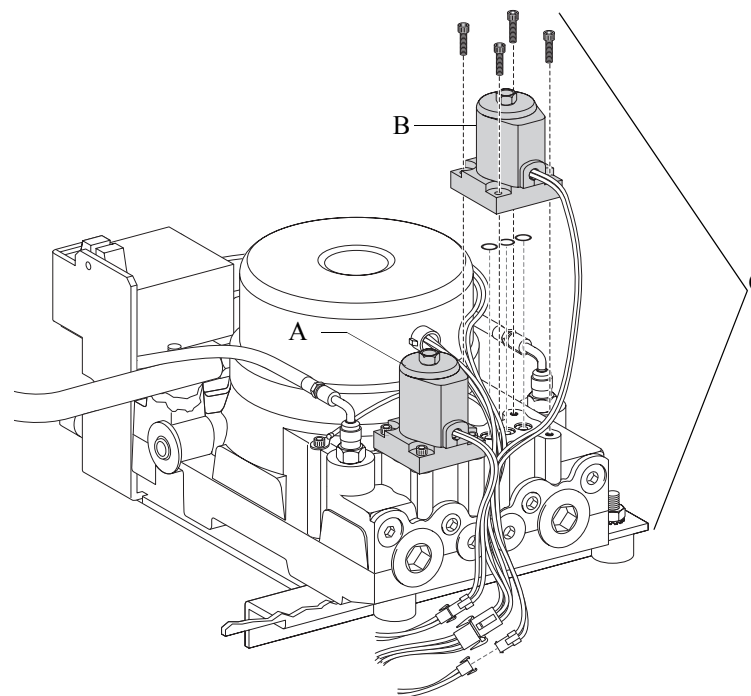
**ELECTRICAL WARNING** The solenoid coils are powered by line voltage (100, 120, or 240 VAC). Failure to unplug the chair may result in serious injury from electrical shock.



**WARNING** You must depressurize the base or back system prior to removing the solenoid.

1. Depressurize base or back system,
2. Remove the failed solenoid coil
3. Replace with the operating solenoid coil.
4. Lower the chair base and back.

Figure 10 A-dec 511 Chair Solenoids

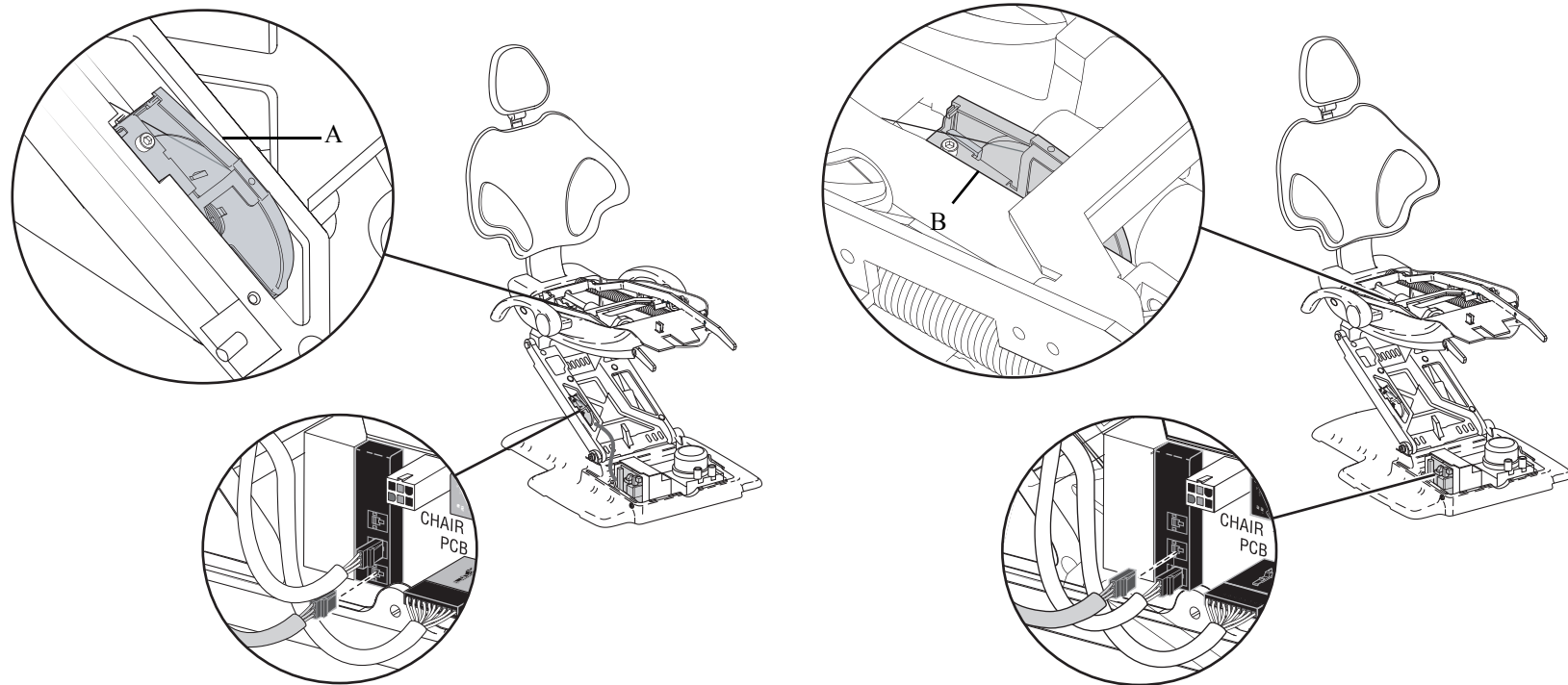


(A) Base Down Solenoid; (B) Back Down Solenoid; (C) Motor Pump Assembly

## Potentiometer

The potentiometer and cable assembly is a simple, accurate unit, which eliminates position float. “Float” is a slight change or variation in the pre-programmed positions. The chair uses the same potentiometer assembly for both lift and tilt requirements. If a potentiometer should fail, the limp-along feature allows the operator to position the chair for one second intervals by pushing the manual control buttons on the touchpad or footswitch.

**Figure 11** Location of the Chair Base Up and Back Up Potentiometers



(A) Base Up Potentiometer; (B) Back Up Potentiometer



## Chair Stop Plate

The chair stop switch stops chair movement when you press the stop plate. Should anything inadvertently become lodged under the chair, press **Base Up** on the touchpad or footswitch to raise the chair so you can remove the object. As long as you apply pressure to the stop plate, the chair does not move down.

The stop plate has only one switch. The switch and all other parts snap into place for easy removal or replacement. No tools are required.



**WARNING** Be sure to power off the chair and disconnect it from its power source before replacing the stop switch.

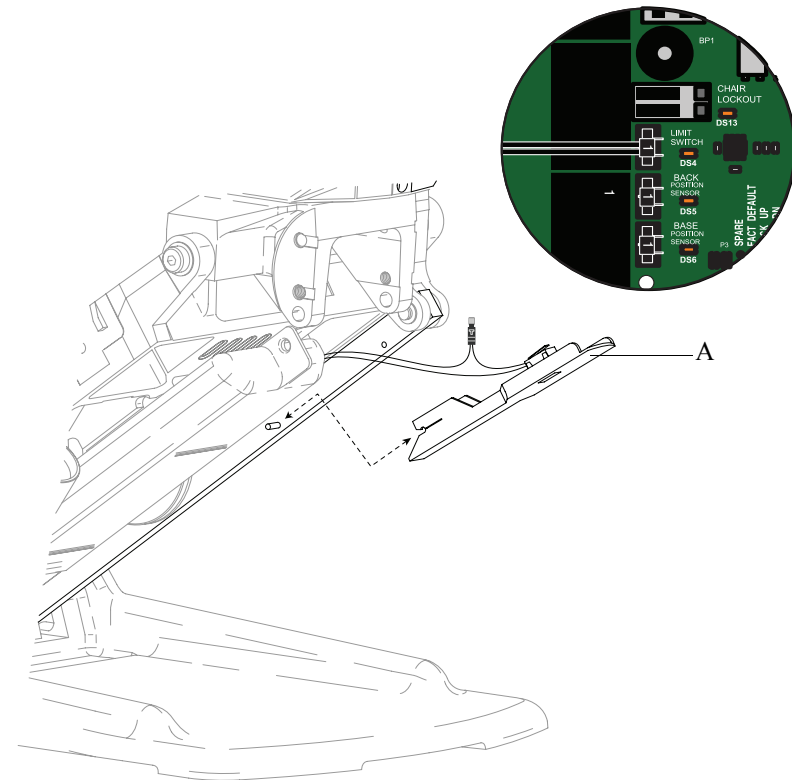


**CAUTION** Cable tie the wires to the lift arm to prevent kinking and pinching.

## Chair Bump-Up Feature

The chair stop plate and the assistant's arm trigger the chair to move upwards if it was moving down when the stop plate switch was activated.

Figure 12 A-dec 511 Chair Stop Plate



(A) Stop Switch Assembly

## ADJUSTMENTS

### Swivel Brake

The chair can rotate to any position within 30° either side of center. The chair swivel brake keeps the chair from moving. To engage the brake, push the brake lever firmly to the left. To release the swivel brake, push the brake lever to the right.

### Tension Adjustment

If the chair swivels left or right with the brake engaged or if it is difficult to move with the brake disengaged, adjust the swivel brake tension. To adjust the tension, use a 5/32 hex key and turn the tension adjustment screw;

- Clockwise to increase brake friction
- Counterclockwise to decrease brake friction.

If you cannot obtain proper adjustment through rotation of the hex key, replace the brass brake pad by removing the brake handle and using a hex key to disengage the pad. Remove the old pad and replace with new one. Replace the brake handle and handle retainer.



**NOTE** To disable the swivel feature, reinstall the shipping pin.

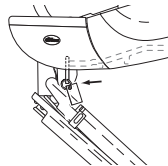


Figure 13 Chair Swivel

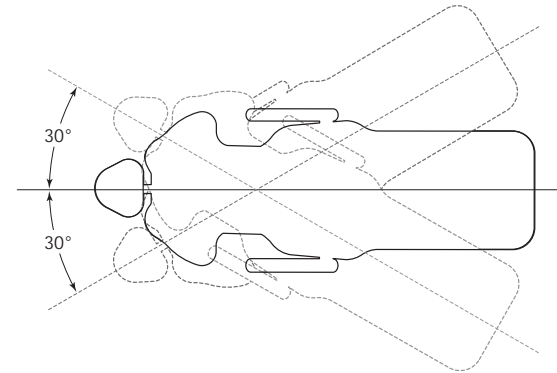
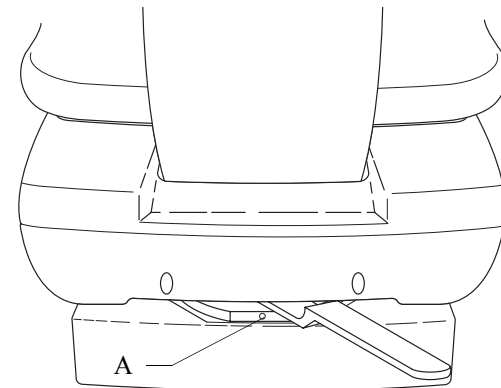


Figure 14 Swivel Brake Tension Adjustment



Engaged ← → Released

(A) Tension Adjustment Screw

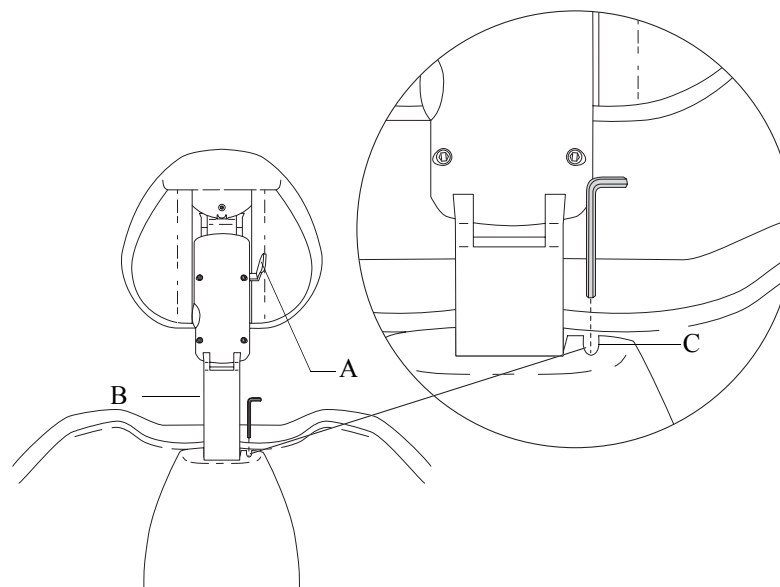
## Headrest

The headrest adjustment lever allows you to use one hand to adjust the headrest. When the lever is released, the headrest holds its position.

### Drift Adjustment

If the headrest drifts downward, or if it is difficult to move up or down, adjust the glide bar tension. To adjust the tension, use a 1/8 hex key and turn the tension adjustment screw clockwise to increase friction or counterclockwise to decrease friction.

Figure 15 Headrest Adjustments



(A) Headrest Adjustment Lever; (B) Glide Bar;  
(C) Glide Bar Tension Adjustment

## ILLUSTRATED PARTS BREAKDOWN

This section contains illustrated parts breakdowns specific to the A-dec 511 Chair.

### Part Identification

The conventions for the serviceable components tables are designed to identify all parts and kits, including ones that are not for sale. Symbols with reference notes are used.

Symbol	Definition
†	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)
No symbol	Part is for sale

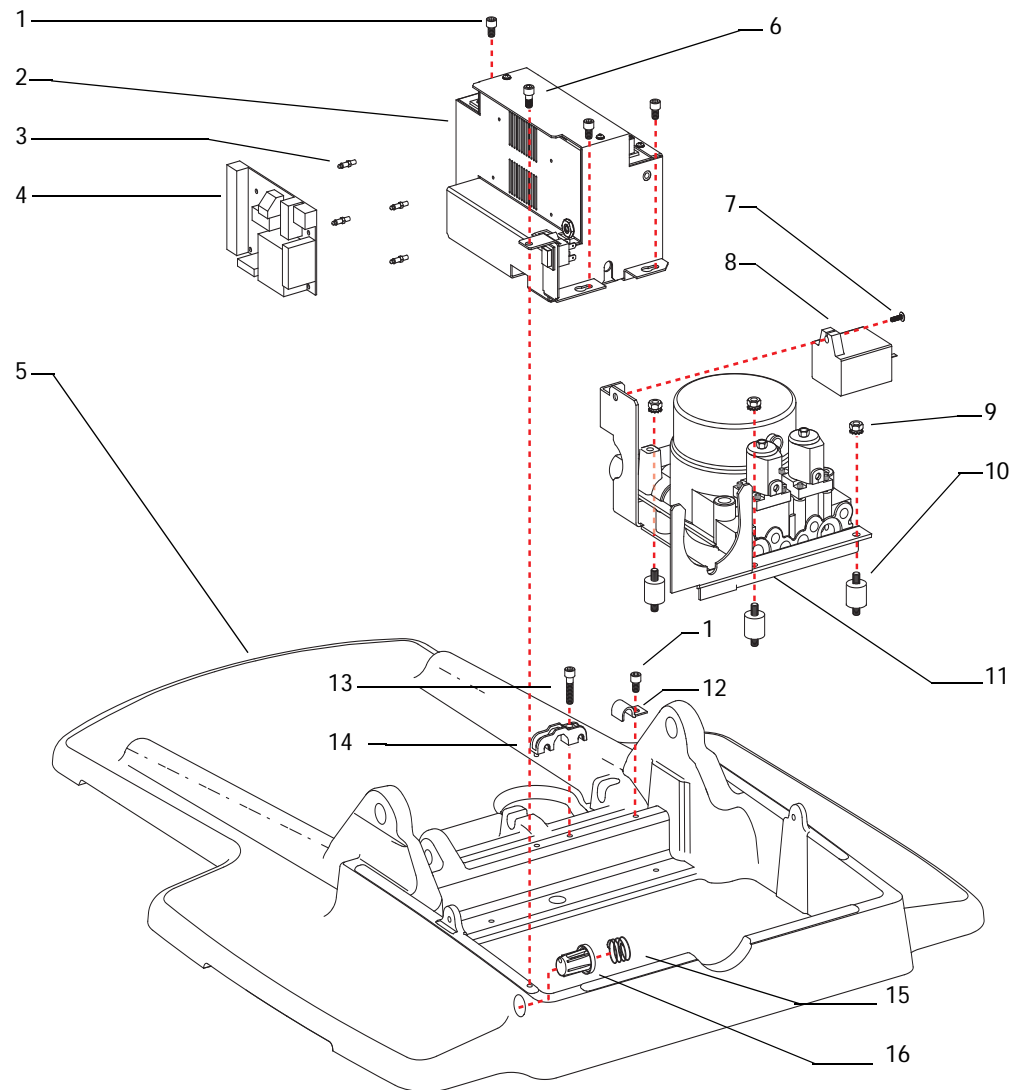
### CHAIR IPB CONTENTS

- Baseplate and Motor Pump Assembly, page 30
- Hydraulic Hose and Solenoid Assembly, page 32
- Lift Cylinder and Link Arm, page 34
- Lower Assembly, page 36
- Upper Structure/Swivel Assembly, page 38
- Back and Tilt Cylinder Assembly, page 40
- Upper (Springs and Cam Assembly ), page 42
- Upper (Seat Assembly), page 44
- Headrest Assembly, page 46

## Baseplate and Motor Pump Assembly

Item	Part Number	Description
1	002.010.00	Screw, socket head, patch, 1/4-20 x 3/8" stainless steel
2	90.1073.00	Power supply, 100V
	90.1074.00	Power supply, 120V
	90.1075.00	Power supply, 240V
3	90.1082.00	Stand-off, package of 5
4	90.1072.00	Chair PCB (includes item #3 stand-offs)
5	62.0029.00†	Baseplate
6	005.008.01	Screw, 1/4-20 x 1/2"
7	001.229.00	Screw, truss head, Phillips, 6-32 x 1/2", stainless steel
8	041.642.00	Capacitor, 100V
	041.643.00	Capacitor, 110-120V
	041.644.00	Capacitor, 220-240V
9	006.141.00	Nut, hex, KEPs 1/4-20
10	037.040.00	Isolator
11	90.1094.00	Hydraulic motor pump assembly, 100V
	90.1094.01	Hydraulic motor pump assembly, 120V
	90.1094.02	Hydraulic motor pump assembly, 240V
12	025.112.00	Clamp, half type
13	002.120.00	Screw, socket head, patch, 1/4-20 x 1" stainless steel
14	62.0131.00	Strain relief
15		Spring - Part of Main On/Off Switch Kit, P/N 90.1068.00
16		Button - Part of Main On/Off Switch Kit, P/N 90.1068.00

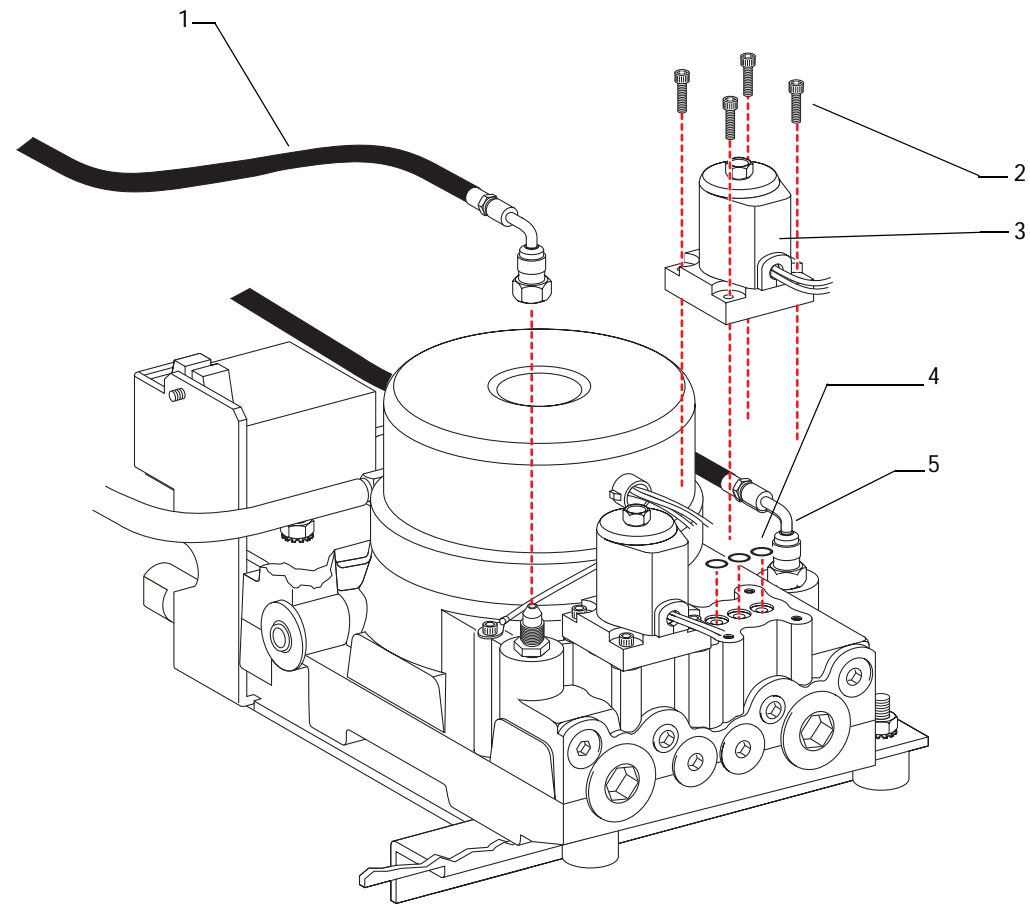
**Figure 16** Baseplate and Motor Pump Assembly



## Hydraulic Hose and Solenoid Assembly

Item	Part Number	Description
1	62.0046.00	Hydraulic hose, lift
2	001.250.00	Screw, socket head cap, 8-32 x 5/8", black
3	90.1070.00	Solenoid, 110-120V, kit
	90.1071.00	Solenoid, 220-240V, kit
4	035.055.00 <sup>†</sup>	O-ring, 5.8mm ID x 1.9 W, Buna
5	62.0047.00	Hydraulic hose, tilt

Figure 17 Solenoid Assembly

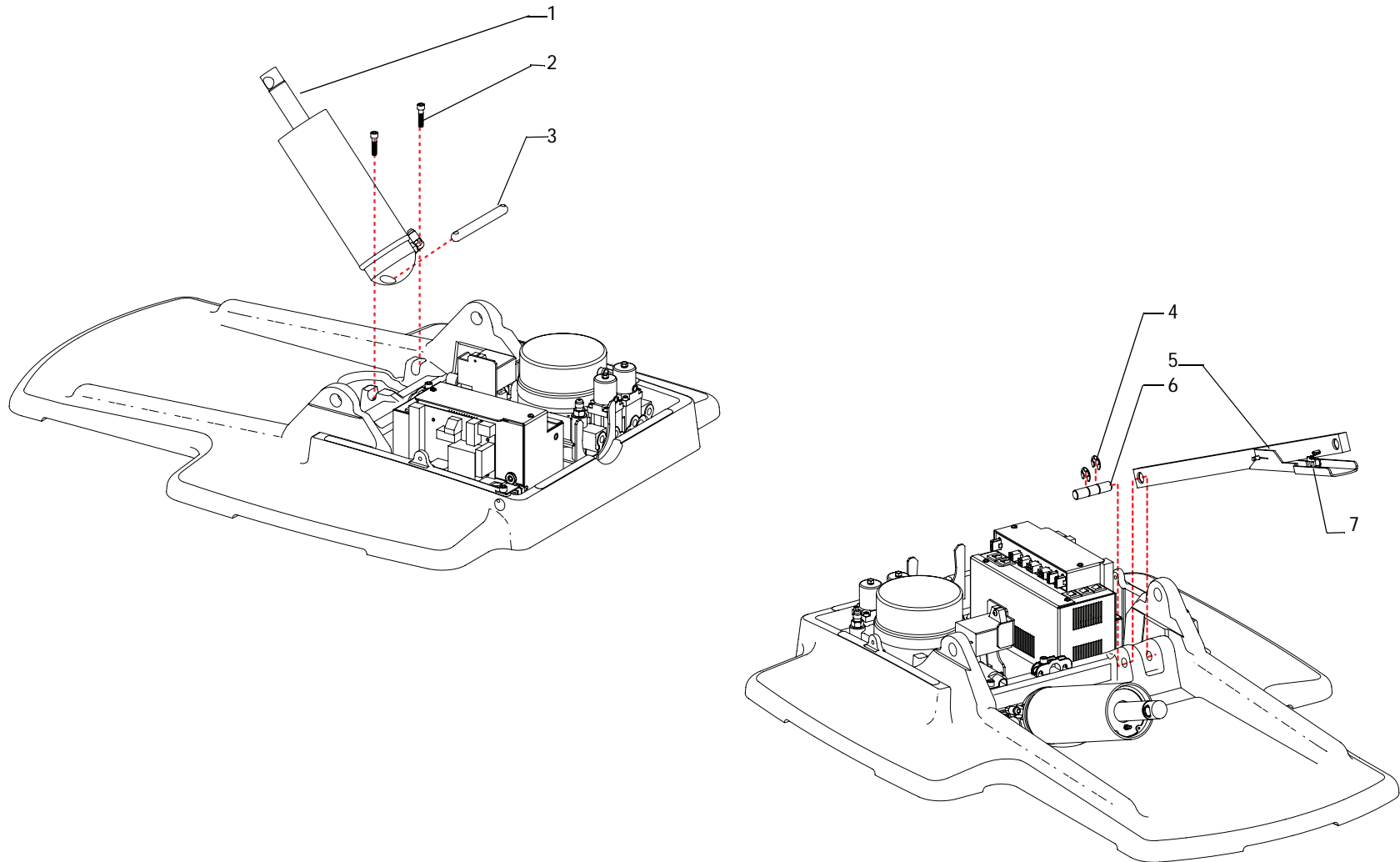




## Lift Cylinder and Link Arm

Item	Part Number	Description
1	90.1083.00	Lift cylinder assembly
2	002.120.00	Screw, socket head patch, 1/4-20 x 1" stainless steel
3	62.0135.00	Pin
4	010.031.01	Retaining e-ring, external 1/2" ID, stainless steel
5	62.0078.01	Link arm
6	62.0134.00	Pin, link arm
7	90.1095.00	Kit, Stop switch replacement

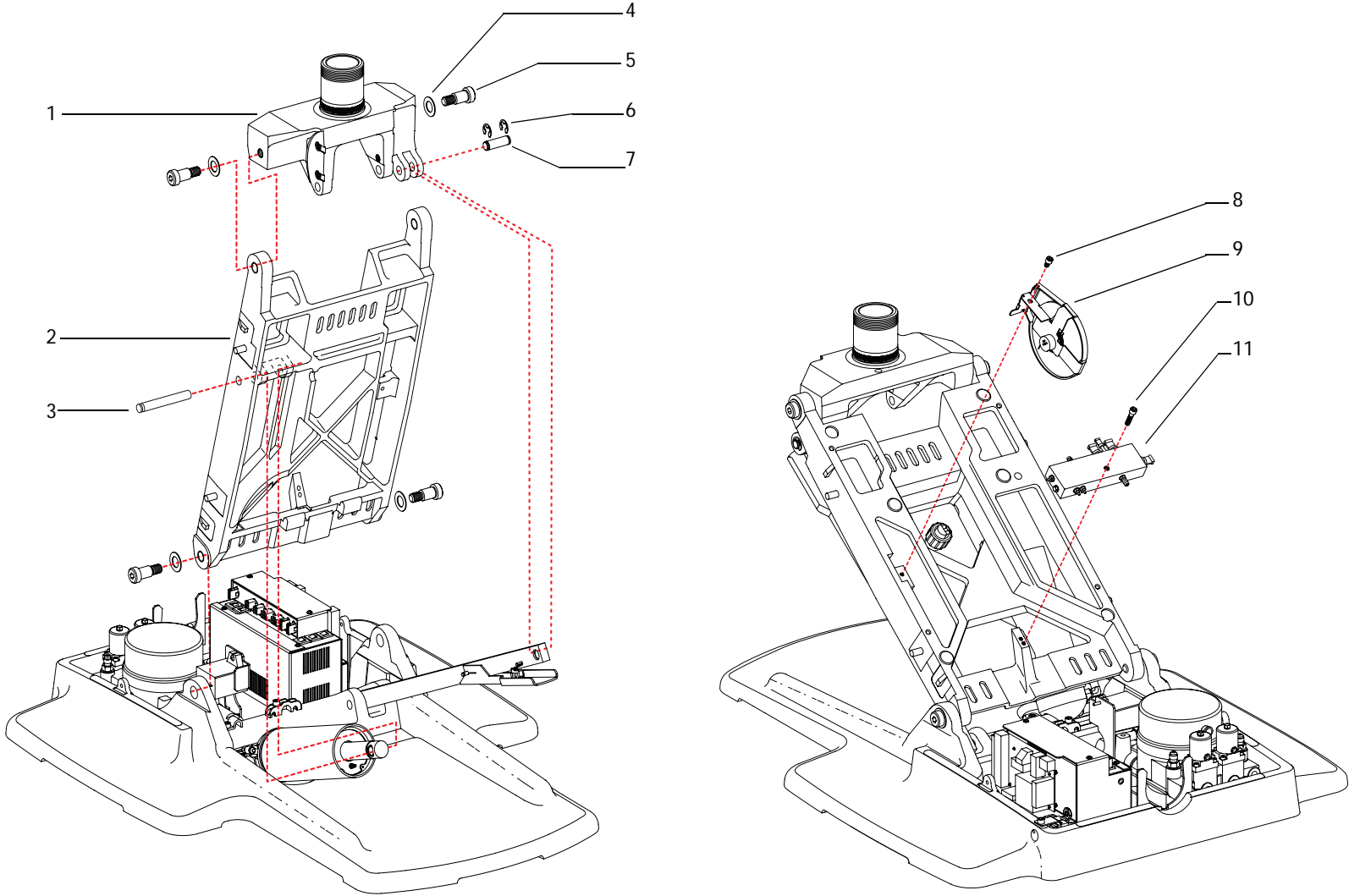
Figure 18 Lift Cylinder and Link Arm



## Lower Assembly

Item	Part Number	Description
1	62.0091.00 <sup>†</sup>	Swivel mount
2	62.0089.00 <sup>†</sup>	Liftarm
3	011.124.00 <sup>†</sup>	Pin, clevis
	90.1083.00	Kit, Lift cylinder (includes 1, 2 and 3)
4	004.148.00	Washer, flat nylatron
5	001.165.00	Screw, socket shoulder, 1/2-13 x 5/8 x 7/8
6	010.031.01	Retaining e-ring, external 1/2" ID stainless steel
7	62.0077.00	Pin, linkarm
8	002.010.00	Screw, socket head patch, 1/4-20 x 3/8" stainless steel
9	90.1069.00	Potentiometer
10	005.008.01	Screw, 1/4-20 x 1/2"
11	38.1804.00	Manifold assembly

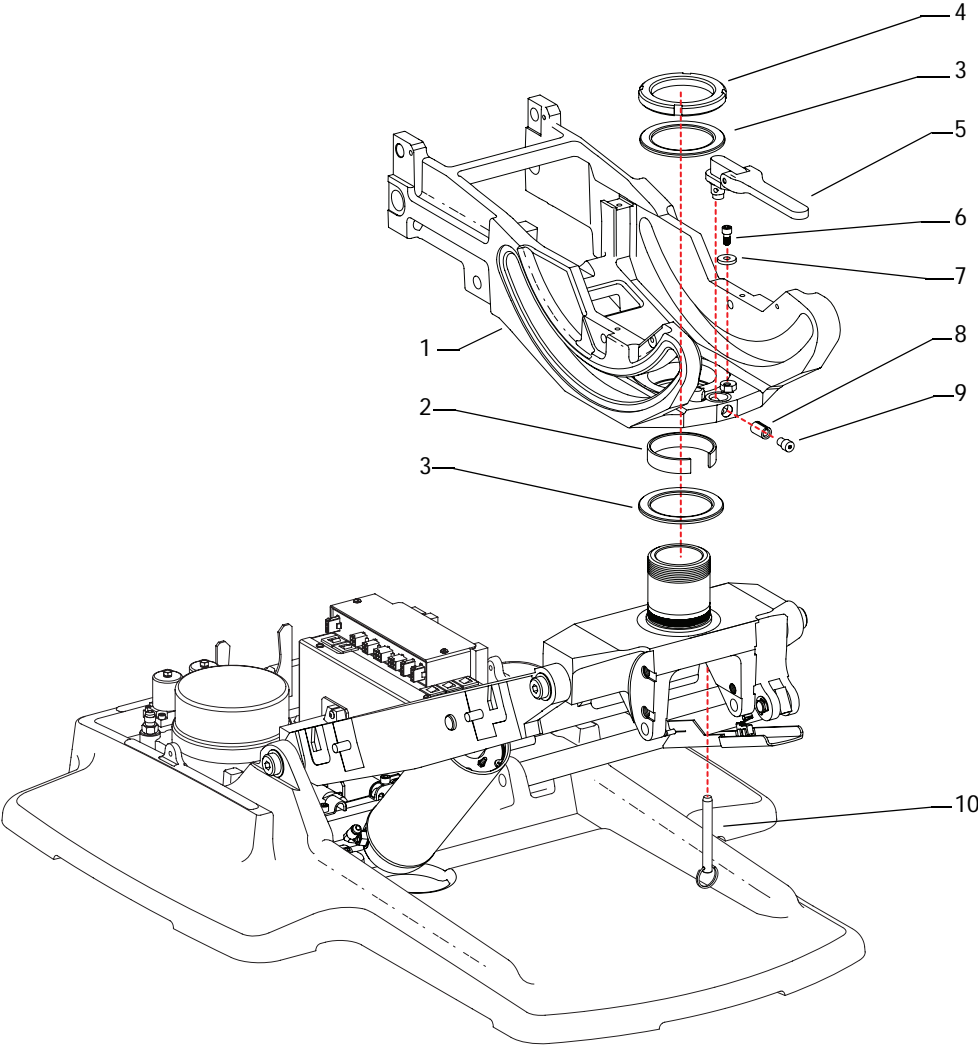
Figure 19 Lower Assembly



## Upper Structure/Swivel Assembly

Item	Part Number	Description
1	62.0050.00 <sup>†</sup>	Upper structure
2	62.0237.00	Wear ring, 2-3/4 OD x 5/8"
3	016.133.00	Thrust bearing
4	61.2051.00	Locknut, spanner
5	62.0218.00	Brake handle assembly
6	005.008.01	Screw, 1/4-20 x 1/2" socket head
7	004.170.00	Washer, flat, nylon
8	62.0042.00	Adjuster, brake
9	62.0043.00	Plunger, brake
10	011.097.00	Ship pin

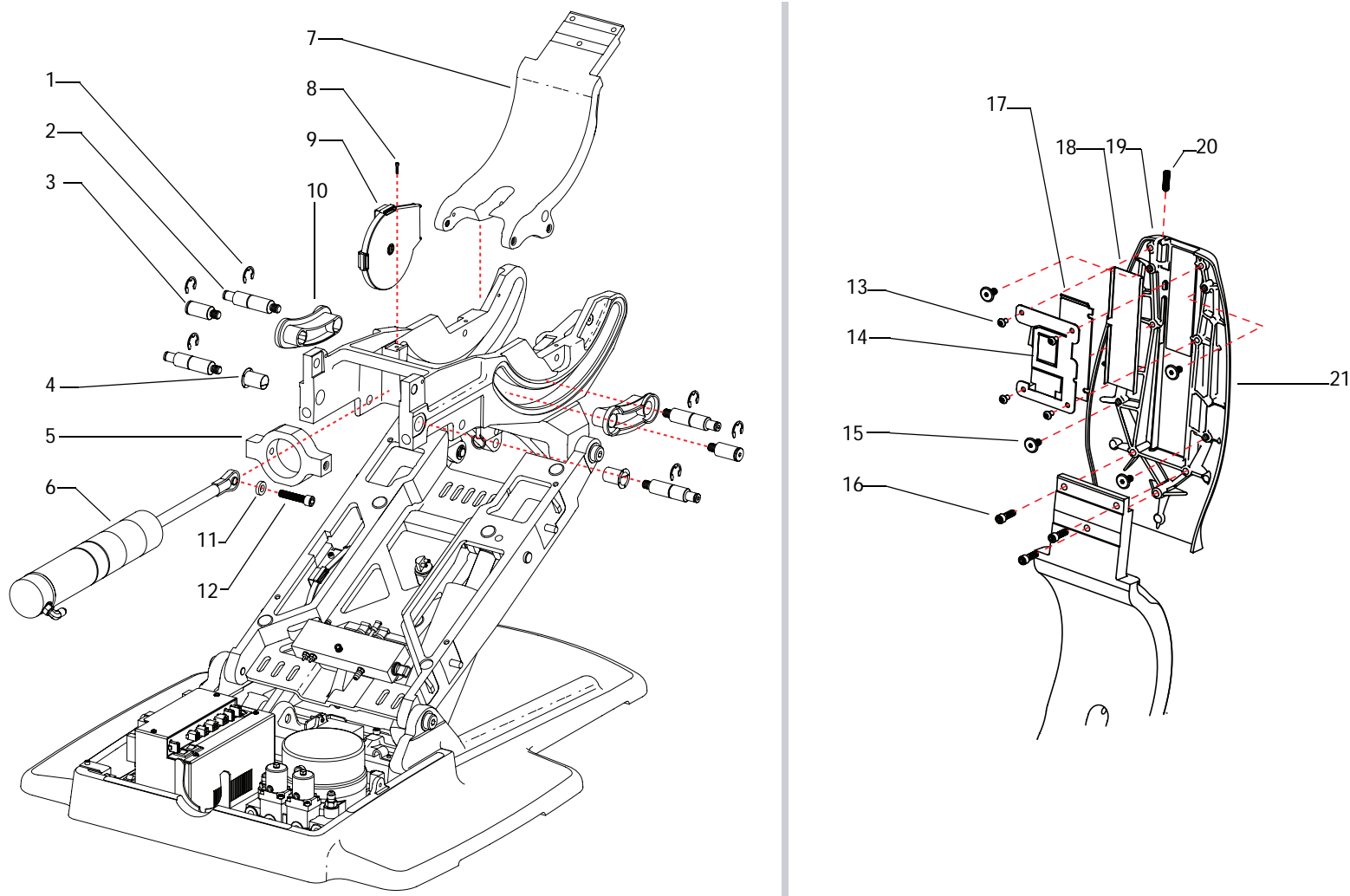
Figure 20 Upper Structure/Swivel Assembly



## Back and Tilt Cylinder Assembly

Item	Part Number	Description
1	010.031.01	Retaining e-ring, 1/2" ID stainless steel
2	62.0201.00	Bolt, spring support
3	62.0202.00	Bolt, slider, shoulder
4	016.145.00	Bearing, flanged, .75 ID x .8125 OD
5	62.0200.00	Tvunion
6	90.1085.00	Tilt cylinder assembly
7	62.0199.00	Trolley, chair back
8	002.010.00	Screw, socket head patch, 1/4-20 x 3/8" stainless steel
9	90.1069.00	Potentiometer
10	62.0061.00	Back track slider
11	62.0189.00	Spacer
12	005.036.00	Screw, 3/8-16 x 1-3/4, 2N, patch
13	005.138.01	Screw, button head socket, 10-32 x 5/16 patch
14	99.0719.00	Bracket
15	001.244.00	Screw, JCB, socket, 1/4-20 x 15mm, stainless steel
16	001.245.00	Screw, socket head, cap, 1/4-20 x 3/4"
17	62.0103.00	Wear pad, upper headrest brake
18	62.0102.00	Wear pad, lower headrest brake
19	006.148.00	Coupling
20	007.158.00	Set screw, cone point, 1/4-20 x 1" stainless steel
21	90.1099.00	Support, back

Figure 21 Back and Tilt Cylinder Assembly

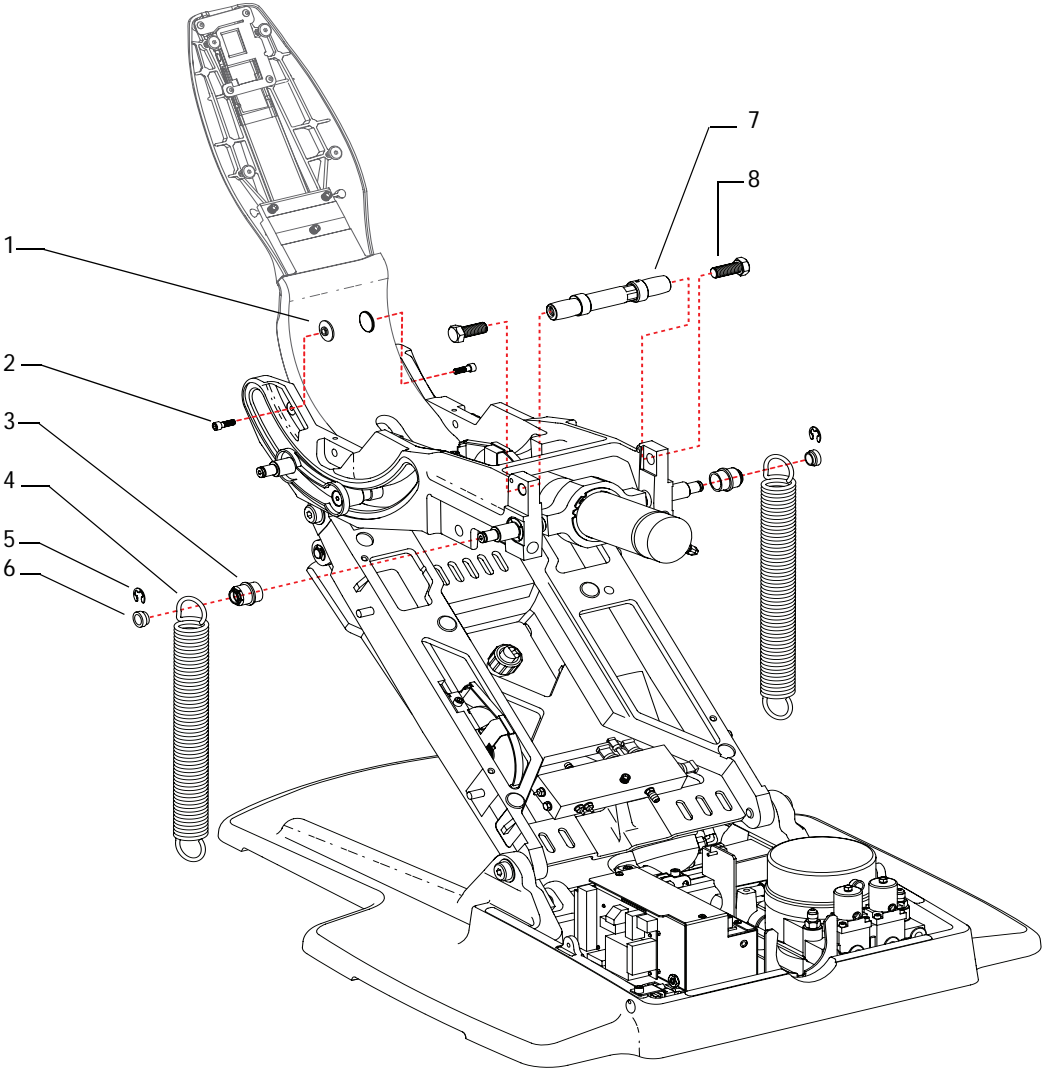




## Upper (Springs and Cam Assembly )

Item	Part Number	Description
1	62.0070.00	Guide, lateral
2	001.245.00	Screw, socket head, cap, 1/4-20 x 3/4"
3	62.0067.00	Roller, cam
4	013.114.00	Spring
5	010.031.01	Retaining e-ring, external 1/2" ID, stainless steel
6	62.0185.00	Spring, support
7	77.0206.00	Cam
8	001.163.00	Screw, hex head

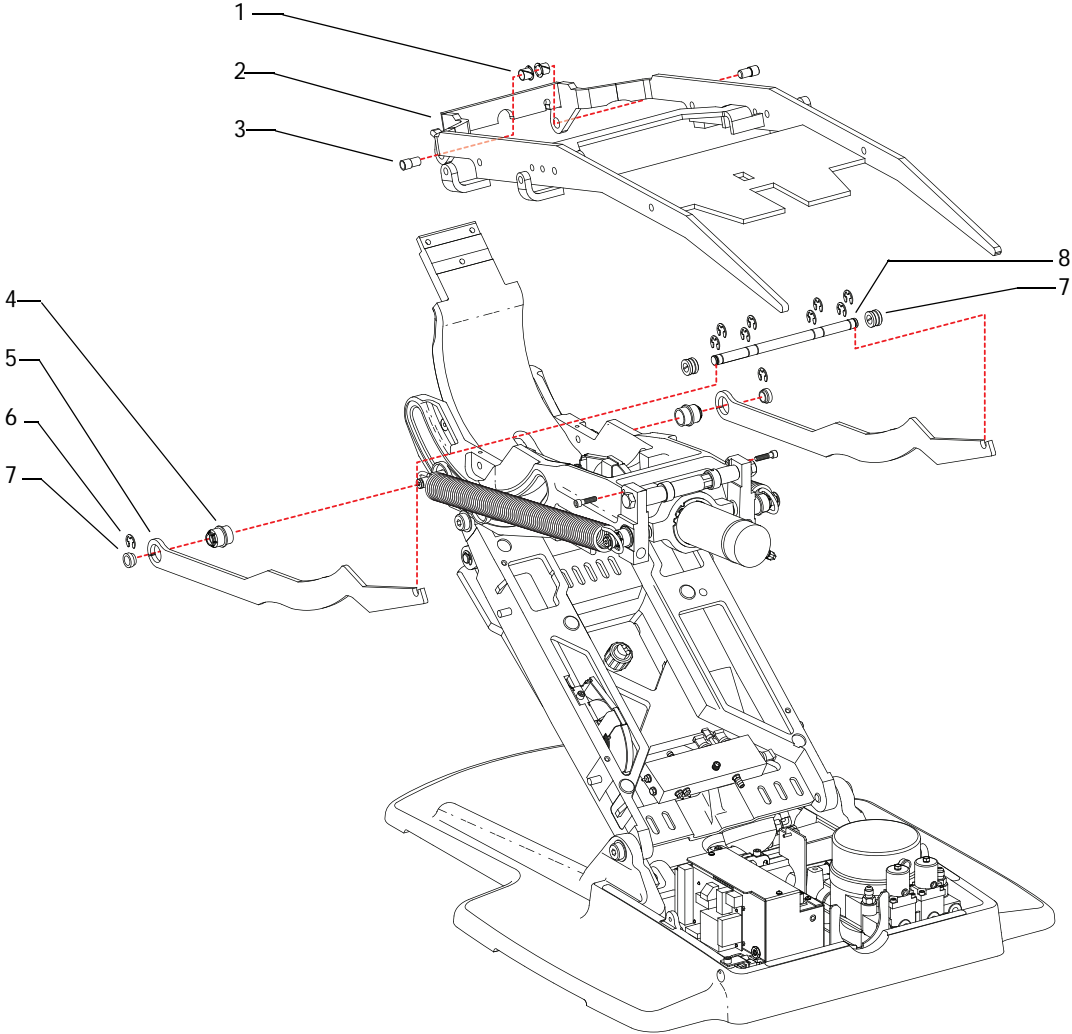
Figure 22 Upper (Springs and Cam Assembly)



## Upper (Seat Assembly)

Item	Part Number	Description
1	016.065.00	Bearing, flanged, .500 ID x .562 OD
2	90.1103.00	Seat frame (includes items 1 and 3)
3	62.0196.00	Stud, mounting, shoulder, 7/16-4
4	62.0067.00	Roller, cam
5	62.0062.00	Cam seat lift
6	010.031.01	Retaining e-ring, external, 1/2" ID, stainless steel
7	62.0185.00	Spring support
8	62.0069.00	Bar

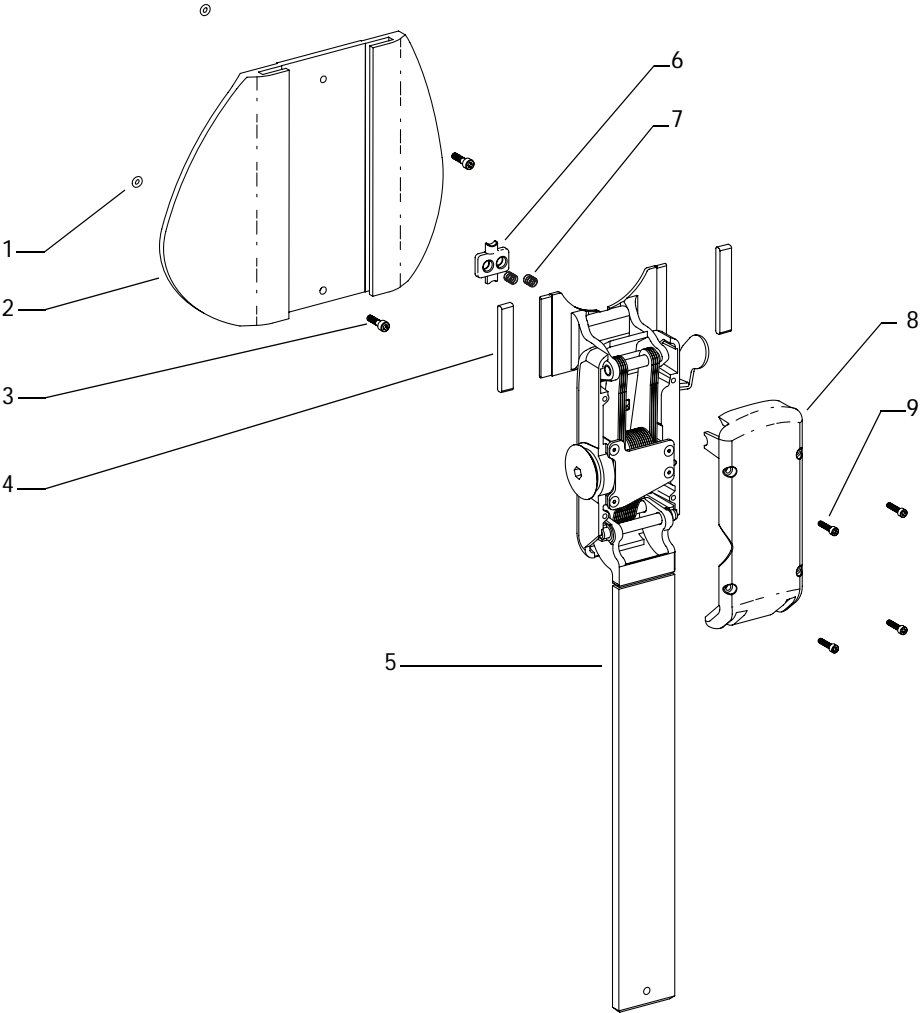
Figure 23 Upper (Seat Assembly)



## Headrest Assembly

Item	Part Number	Description
1	035.048.01	O-ring, E, .115 ID x .07 W, package of 10
2	90.1092.00	Cover, headrest cushion
3	001.042.01	Screw, socket head, 6-32 x 1/2", stainless steel, patch
4	62.0021.00	Bearing, slider, headrest cushion
5	90.1091.00	Headrest assembly (includes items 3, 4, 6, 7 and 8)
6	62.0094.00	Bearing, slider, brake, headrest
7	013.005.00	Spring
8	62.0141.00	Cap, headrest
9	001.021.00	Screw, socket head, 4-40 x 1/2", stainless steel

Figure 24 Headrest Assembly







## PROGRAMMING

The A-dec 500 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, air/water coolant, electric handpiece, scaler, multiple users and auxiliary equipment

This section provides programming information for all of the A-dec 500 modules as well as information related to servicing, maintenance, and adjustments. For information on service parts, see the *Genuine A-dec Service Parts Catalog* or contact A-dec customer service.

### PROGRAMMING CONTENTS

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- Status Icon, page 50
- Chair Positions, page 51
- Cuspidor Functions, page 54
- Dental Light, page 55
- Electric Handpiece Settings (Deluxe Touchpad Only), page 56
- Other System Choices, page 60
- Touchpad Circuit Board Components, page 62



## STATUS ICON

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

- Solid blue—normal operation and power is on.
- Blinking—chair stop plate or cuspidor limit switch is active. The icon returns to solid blue once you remove any obstructions.
- Double blink pattern—jumper is on the factory default position on the chair circuit board. The icon returns to solid blue once you remove the jumper.

Figure 25 Deluxe Touchpad







(A) Status Icon

## CHAIR POSITIONS

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The chair direction arrows on the touchpad allow you to manually move the chair base up/down and back up/down. Table 5 lists and describes the direction arrows:

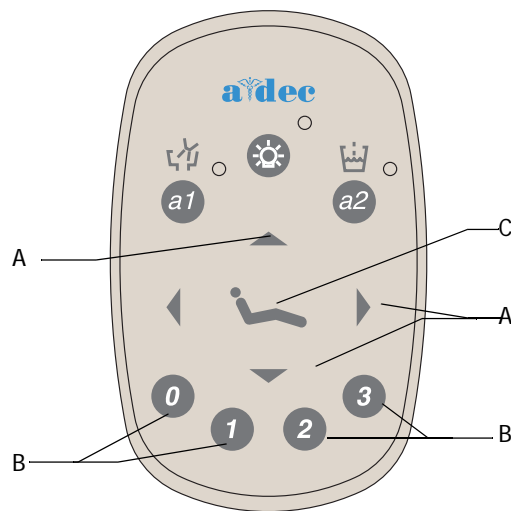
**Table 5** Chair Direction

Icon	Action
	Back down
	Base down
	Back up
	Base up

## Position Buttons

Chair position buttons are factory preset to automatically move the chair (see Figure 26).

**Figure 26** Chair Position Touchpad Buttons



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

Table 6 lists and describes the factory presets:

**Table 6** Chair Position Factory Presets

Button	Description
0	Entry/exit Position. Automatically positions chair and turns off dental light.
1	Position 1. Automatically positions the chair base and back and turns on the dental light.
2	Position 2. Automatically positions the chair base and back and turns on the dental light.
3	Position 3 (x-ray/rinse). Automatically positions the chair back to either x-ray or the previous position. Toggles between the two positions and turns on/off the dental light as appropriate.

## Customize Chair Positions 0-2

To customize the chair positions:

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

## Customize Chair Position 3

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

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



---

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

---

To reactivate the x-ray/rinse function:

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

## CUSPIDOR FUNCTIONS

---

### Cup Fill

The cup fill function controls water flow from the cuspidor into a cup (see Figure 27).

**Figure 27** Cup Fill Button



- Press the cup fill button for a timed operation. The factory preset is a 2.5 second fill.
- Press and hold the cup fill button for manual operation.

### Bowl Rinse

Bowl rinse provides rinse water for the cuspidor bowl (see Figure 28).

**Figure 28** Bowl Rinse Button



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



---

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

---

### Customize Cup Fill and Bowl Rinse

To program the cup fill and bowl rinse timing:

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



---

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

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## DENTAL LIGHT

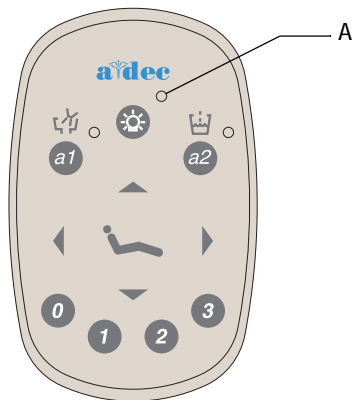
The dental light button on the touchpad functions as a three-way switch. You can turn the dental light on or off from either the touchpad or the dental light (see Figure 29).

**Figure 29 Dental Light Button**



Press the dental light button to turn on the dental light. Press the button again to toggle between two intensity settings. The dental light toggles between composite-medium intensity or composite-high intensity settings. When the dental light is in composite mode, the indicator light next to the button blinks (see Figure 30). Hold the button 1 second to turn the dental light off.

**Figure 30 Dental Light Composite Mode**



(A) Dental Light Composite Mode Blinking Indicator

## Dental Light Auto Feature

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



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

To activate/deactivate:

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

## ELECTRIC HANDPIECE SETTINGS (DELUXE TOUCHPAD ONLY)

### Standard Mode

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

The electric handpiece allows you to choose a precise pre-set speed or to “feather” up to that speed. Figure 7 lists the factory presets for electric handpieces:

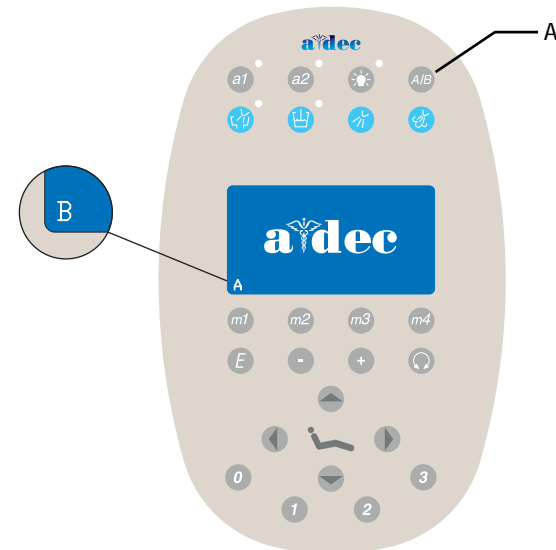
**Table 7** Electric Motor, Air and Water Coolant Presets (Standard Mode)

Memory Button	Preset Speed	Air Coolant	Water Coolant
M1	2,000 RPM	On	On
M2	10,000 RPM	On	On
M3	20,000 RPM	On	On
M4	40,000 RPM	On	On

### Program the A-dec Touchpad in Standard Mode

The A-dec Deluxe touchpad allows you to program four memory buttons with your specific RPM setting. The total range is 300-40,000 RPM. Each button can retain one setting per handpiece per operator A/B, so that a total of 16 customized settings per handpiece is possible (8 in standard mode plus 8 in endodontic mode). To specify a setting for an operator, toggle the A/B operator button before changing a setting. The display screen indicates the operator status (see Figure 31).

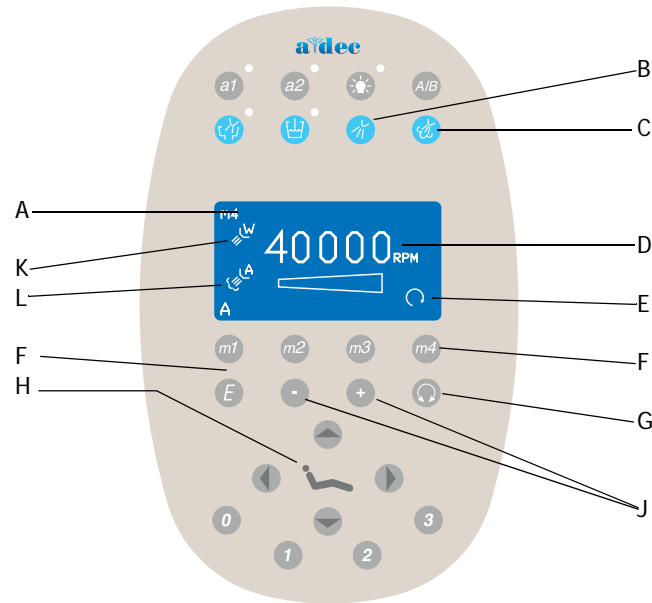
**Figure 31** Operator Status



(A) A/B Operator Toggle Button

To change your handpiece setting:

1. Press the minus (-) and plus (+) buttons to adjust the RPM. The RPM values appear in the display screen (see Figure 32).
2. If desired, use the toggle buttons on the touchpad to change air and water settings.
3. To place the setting into memory (optional), press the Program button, then press the memory button you want to set. Three beeps confirm the setting.

**Figure 32** Program Handpiece Standard Mode Settings

(A) Memory Setting Indicator; (B) Water Coolant Button; (C) Air Coolant Button; (D) Speed Limit Setting; (E) Forward/Reverse Indicator; (F) Memory Button; (G) Forward/Reverse Toggle Button; (H) Program Button; (J) Use - and + Buttons to Adjust Speed; (K) Water Coolant Indicator; (L) Air Coolant Indicator



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

## Forward/Reverse Button

The forward/reverse toggle button changes the handpiece direction. The system defaults to the forward position when you return the handpiece to the holder or turn off the system (see Figure 33). In reverse mode, the screen indicator flashes continuously.

**Figure 33** Forward/Reverse Button

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



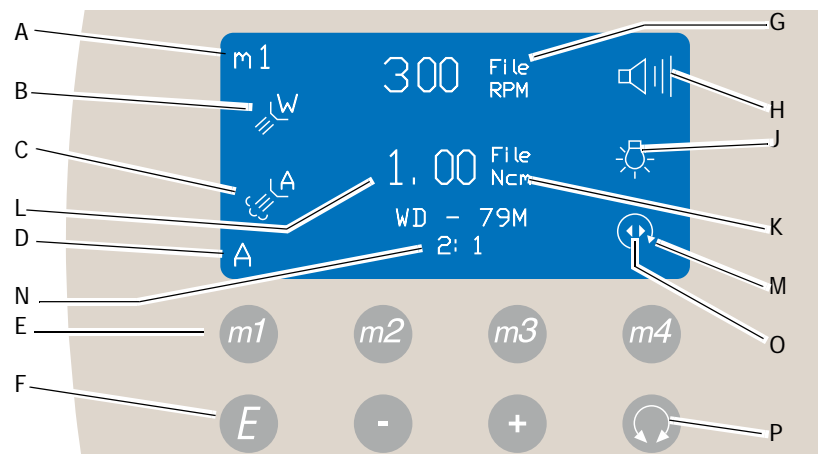
## Endodontics Mode

In addition to handpiece speed adjustments, the endodontics mode allows you to change a number of settings based on the specific file and desired handpiece behavior. Icons in the touchpad window reflect the settings (see Figure 34).



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

**Figure 34** Endodontics Mode Touchpad Screen



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








## Program the A-dec Touchpad in Endodontics Mode

To change a setting:

1. Withdraw the handpiece from the holder.
2. If the touchpad window is not in endodontics mode, press the endodontics mode toggle button (see Figure 34). The endodontics screen appears.
3. Use the + or - button to activate the endodontics change mode. A white reverse video box appears.
4. Use the chair positioning buttons to move from setting to setting in the touchpad window.
5. Use the + and - buttons to change the setting as desired.
6. To place the speed limit, torque limit and ratio into memory (optional), press the Program button, then the memory button you want to set. Three beeps confirm the setting.






Figure 8 lists and defines the touchpad window icons for Endodontics mode:

**Table 8 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.
<b>NOTE</b> 1 Ncm=102 gcm		
	Ratio	Sets the handpiece ratio. For more information, consult your handpiece manufacturer.
	Air Coolant	On/Off—when active, supplies air coolant to the handpiece.
	Water Coolant	On/Off—when active, supplies water coolant to the handpiece.
	Light Source	On/off—when active handpiece light source is on in endodontics mode.



**NOTE** The A-dec/W&H WD-79M endodontics attachment has a special feature due to its ball-bearing design. Its life-long efficiency factor is stable and known, therefore the A-dec endodontics system is able to control and display file torque very accurately. All other handpieces have unknown life-long efficiency factors and therefore stated torque values are approximate.

Icon	Setting	Description
	Torque Mode	Adjusting this setting for one handpiece changes it for all handpiece settings. This icon appears with the forward/reverse indicator.
	Auto off	Auto-off—the motor stops when the file speed reaches the torque limit.
	Auto reverse	Auto-reverse—the motor stops and reverses direction when the file reaches the torque limit.
	Auto forward	Auto-forward—when the file reaches the torque limit, the motor stops, reverses 3 turns, then changes back to forward again.
	Beeper	On/Off—when active, warning beep sounds when you approach torque limit and double beeps when the file auto-reverses. Adjusting this setting for one handpiece changes it for all handpiece positions.

## OTHER SYSTEM CHOICES

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### Intraoral Light Source

- Auto-Off Delay – The amount of time the handpiece remains lit when idle. The default is five seconds. Stepping on the foot control refreshes the delay and the lamp relights. The light stays on as long as you depress the foot control.
- When active, the handpiece light automatically turns on when you lift the handpiece from the holder. Default is On.
- On in Endo – When active, light is operable on while in Endo mode. Default is off.

To change intraoral light source settings:

1. Press and hold the A/B and the Program button to enter set up screen
2. Select Handpieces under System Setup
3. Select Intraoral LT Source under Handpiece Setup
4. Select handpiece
5. Make adjustment under Lt Source Setup

Voltage – Depending on your brightness preference and the bulb manufacturer's usage guidelines, this represents the voltage setting adjustment for each handpiece light source (see Intraoral Light Source Voltage).



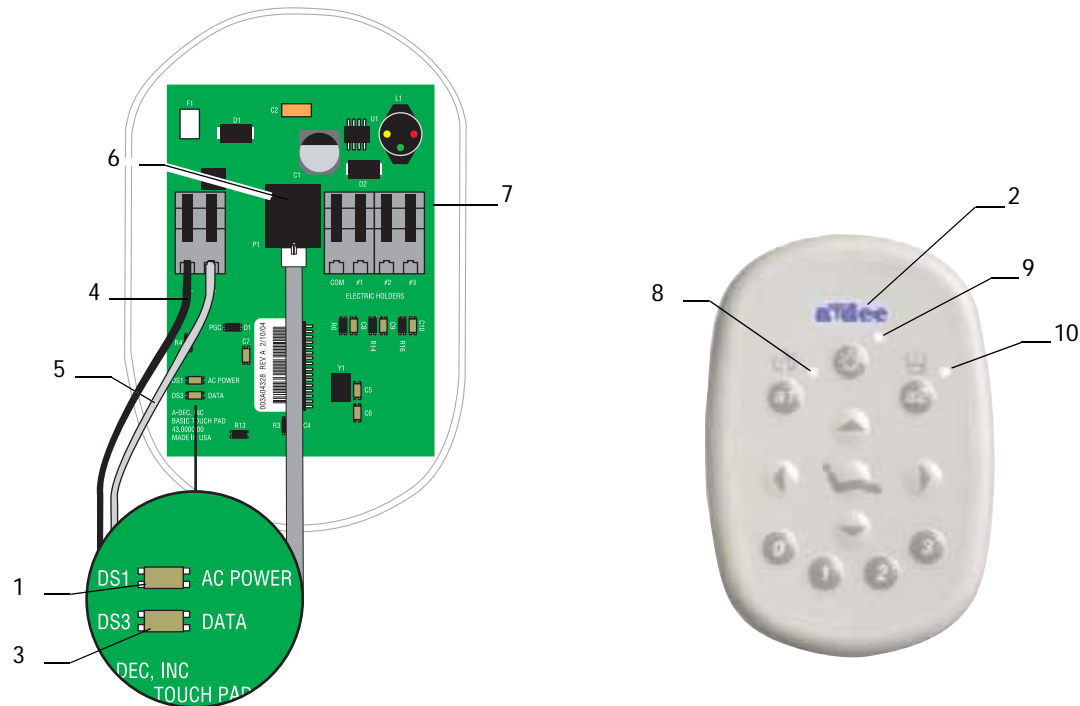
## TOUCHPAD CIRCUIT BOARD COMPONENTS

### Standard Touchpad

The standard touchpad has two LEDs for communicating status (AC Power 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	DS1 - AC power LED
2	DS2 - Status LEDs
3	DS3 - Data LED
4	J1 - 0 VAC terminal strip
5	J1 - 24VAC terminal strip
6	P1 - Data line port (DCS)
7	J2 - Electric holder terminal strip
8	DS7 - Auxiliary 1 and bowl rinse LED
9	DS8 - Dental light LED
10	DS9 - Auxiliary 2 and cup fill LED

**Figure 35** Standard Touchpad Circuit Board Components



## Deluxe Touchpad

**Figure 36** Deluxe Touchpad Circuit Board Components

Item	Description
1	DS1 - AC power LED
2	DS2 - Status LEDs
3	DS3 - Data LED
4	J1 - 0 VAC terminal strip
5	J1 - 24VAC terminal strip
6	P1 - Data line port (DCS)
7	P2 - LCD display connector
8	P3 - LCD back light power connector
9	DS6 - Auxiliary 1 LED
10	DS7 - Auxiliary 2 LED
11	DS8 - Bowl rinse LED
12	DS9 - Cup fill LED
13	DS10 - Dental light LED
14	LCD display







# 4

## DELIVERY SYSTEMS

A-dec 500 delivery systems provide a variety of delivery options for the doctor and the assistant. The delivery system regulates the air and water used to operate the handpieces, syringes and accessories. Delivery system options include:

- Front-mounted delivery
  - Traditional (model 532) and Continenetal (model 533)
- Side mounted (model 542)
- 12 O'clock
  - Duo Delivery (model 541)
  - Assistant's Instrumentation (model 545)



## PRODUCT OVERVIEW

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The doctor's side of the A-dec 500 system includes both the Traditional (model 532) and Continental® (model 533) delivery systems, the front-mount monitor (model 531), and self-contained water system.

The A-dec 532 and 533 delivery systems have been designed to mount only to the A-dec 511 chair and communicate with the entire A-dec 500 product line through the Data Communications System (DCS).

The A-dec 542 Side Delivery System is designed to mount to a wall or to a Preference Collection® or Preference Slimline cabinet. An optional tray holder can be installed. When installed, the tray holder positions over the control head.

The A-dec 500 12 O'clock system features two models. The A-dec Model 541 and Model 545 are floor-mounted delivery systems that install with a variety of Preference Collection and Preference Slimline cabinets.

This section of the *A-dec Service Guide, Vol. II* contains the electrical and plumbing flow diagrams for the delivery systems, along with illustrations of exploded parts, troubleshooting and adjustments for all of the doctor's side modules.

For information on service parts, see the *Genuine A-dec Service Parts Catalog*, or contact A-dec customer service.



# CHAIR-MOUNTED DELIVERY SYSTEMS

The A-dec 500 chair-mounted system features two models, the A-dec Traditional (model 532) and Continental (model 533). Both models are chair-mounted delivery systems that install on the A-dec 511 chair. The A-dec 500 standard configuration for both Model 532 and 533 has:

- Balanced flexarm with air brake
- Four handpiece control block positions
- Control head with room to house integrated accessories
- Autoclavable saliva ejector
- Autoclavable syringe (option of warm water syringe)
- 2-liter self-contained water system with quick-disconnect water bottle
- Standard multi-function touchpad (optional) or deluxe multi-function touchpad (optional)



## CHAIR-MOUNTED SYSTEM CONTENTS

- Product Overview, page 70
- Flow Diagrams, page 76
- Leveling/Adjustments, page 78
- Illustrated Parts Breakdown, page 81

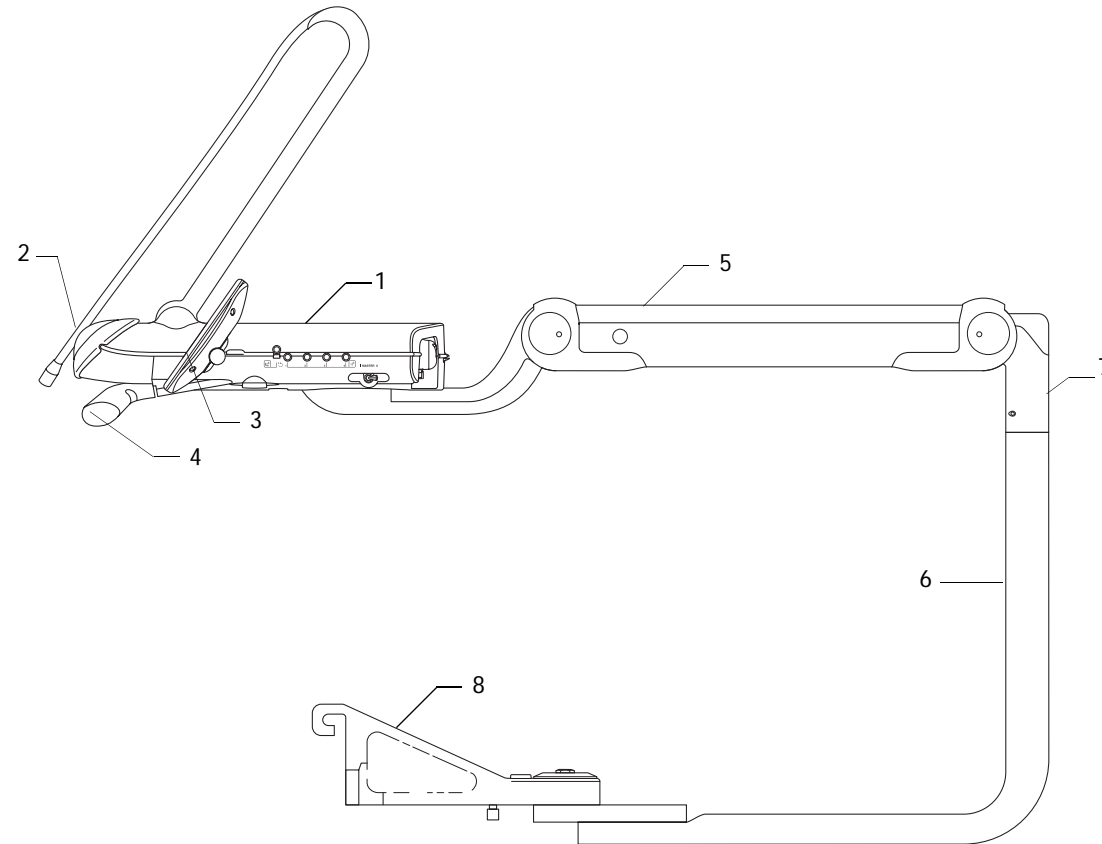
## PRODUCT OVERVIEW (532/533)

### A-dec 500 Delivery System Components

The A-dec 500 delivery systems and front-mount monitor both mount to the A-dec 511 chair. This mounting structure provides left/right capabilities for both the delivery system and the monitor.

Item	Description
1	Delivery system cover
2	Delivery system front cover (533 only)
3	Touchpad
4	Brake handle
5	Flexarm
6	Front-mount arm
7	Flexarm hub
8	Front-mount casting

**Figure 37** Delivery system and front-mount arm components



## Covers

The delivery system covers are designed for easy access to control components.

### Delivery System Cover

To open the delivery system cover, lift up on the center tab on the back of the delivery system cover and then, lift up the tabs on both sides of the delivery system cover. To remove the cover, pinch the hinge brackets at the cover base.

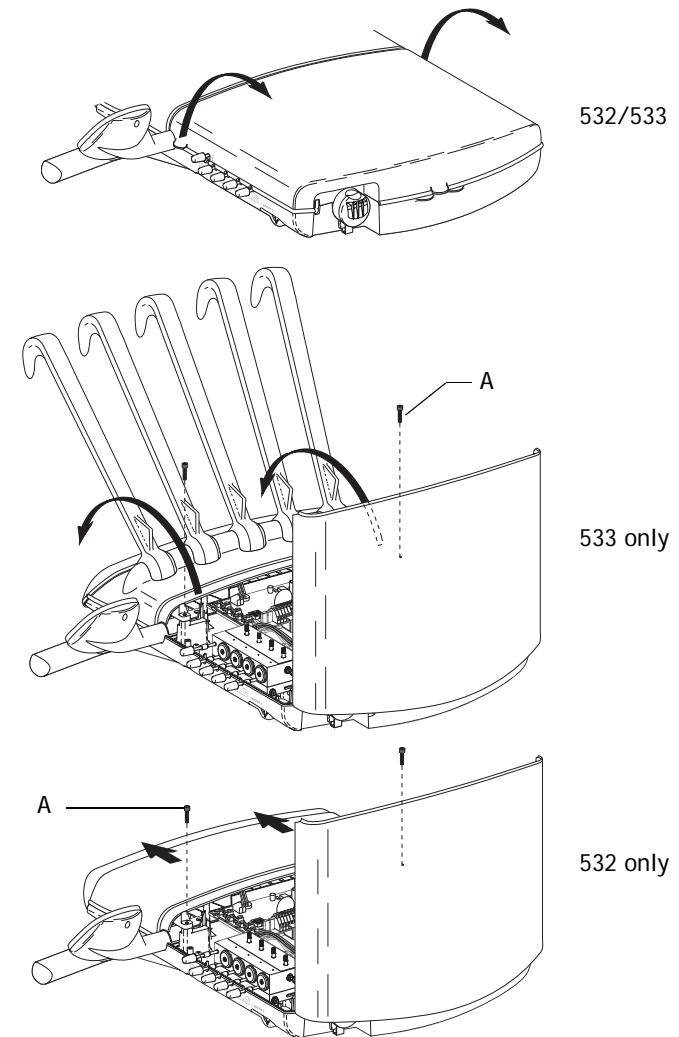
### Delivery System Front Cover – Continental

To open the delivery system cover, move the whips forward and remove the two screws holding the front cover in place. Open the front cover carefully, until the lanyard is taut.



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

**Figure 38** Open the Delivery System Cover and Front Covers



(A) Screw

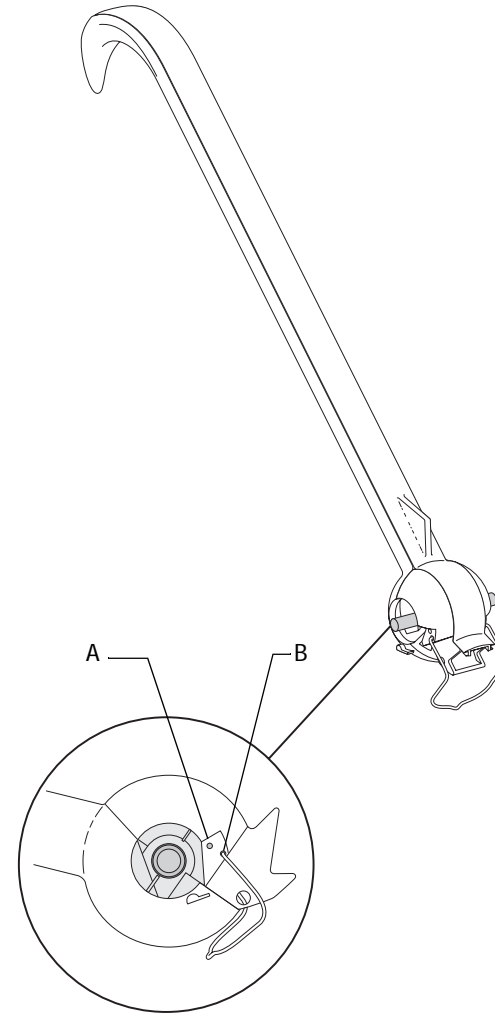
## Whip Assembly

### Part No: 77.0291.01

Adjust the whip return tension by placing the bail in two different locations, A or B (see Figure 39).

You can remove the whip cover for easy handpiece tubing replacement. To reinstall the whip cover, fully extend the whip and attach the back starting at the ball end and work toward the handpiece end.

Figure 39 Whip Assembly with Adjustable Bail Position



Attach Spring At (A) for Greater Tension or (B) for Lesser Tension



## Continental Tray Holder (533 only)

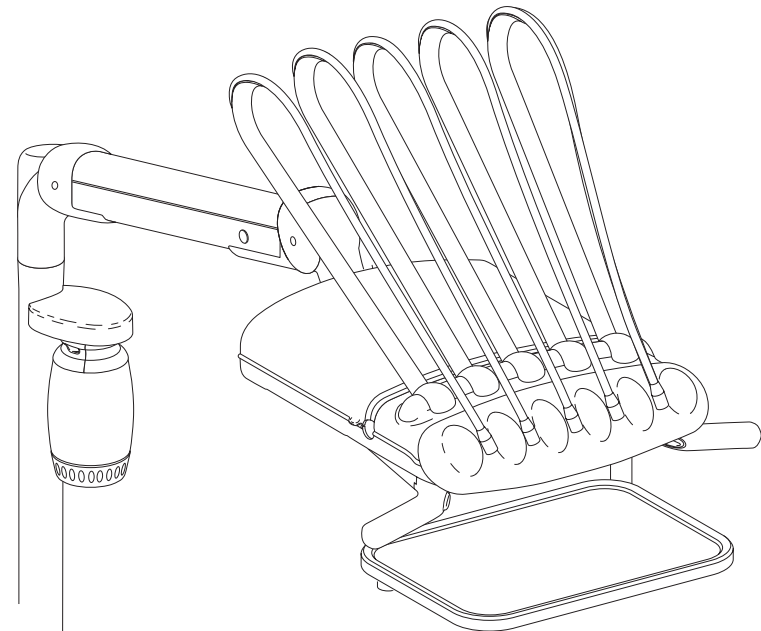
Part No: 77.0294.01

Continental tray holders can be mounted on the left or right side below the delivery system.



**NOTE** Standard delivery systems use the Traditional tray holders. For information on Traditional tray holders refer to the All Delivery section, page 154.

Figure 40 Continental Tray Holder Components



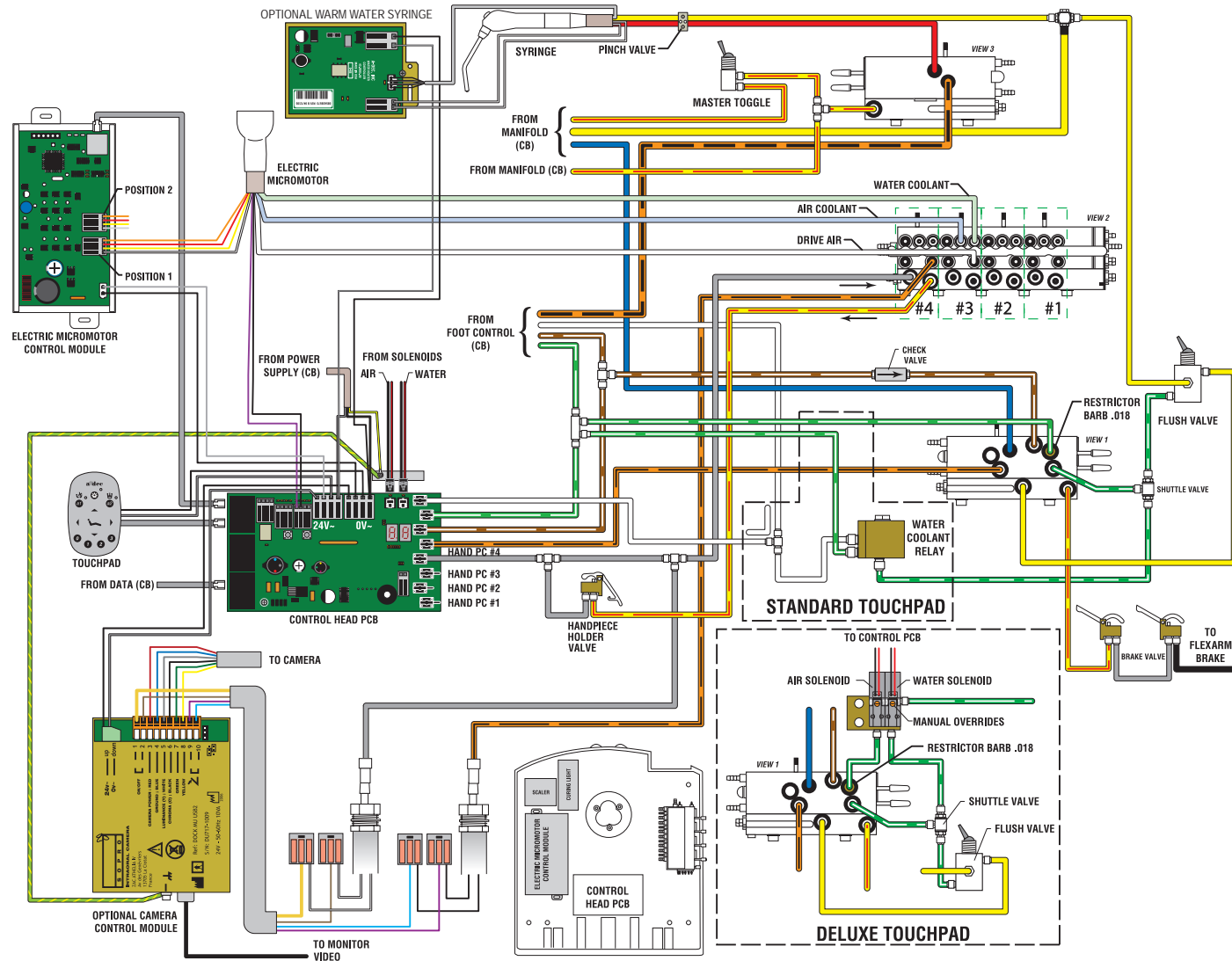


## FLOW DIAGRAM (532/533)

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This flow diagram details both electrical and plumbing information for servicing and troubleshooting A-dec 532 and 533 delivery systems. It is located on the inside cover of the delivery system. This diagram includes the plumbing and wiring for the standard touchpad, deluxe touchpad, camera, and electric micromotor.

Figure 41 A-dec 532 and 533 Flow Diagram



## ADJUSTMENTS ( 5 3 2 / 5 3 3 )

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### Front Mount

#### Level Adjustment

1. Position all front-mount modules, (e.g., delivery system, flexarm, tray holder assemblies) to align with the centerline of the chair.
2. Use the bubble level (if applicable) to determine when the correct front mount adjustments have been made.
3. Loosen the stabilizing screws and flanged nuts.
4. Adjust the leveling cam for side-to-side leveling.
5. Use one of the leveling bolts to adjust the front-to-back leveling. Assure both bolts are touching the casting when the delivery system is level front-to-back.
6. Tighten the leveling cam securely.
7. Tighten the stabilizing screws until the screws make contact with the casting when all of the front mount leveling adjustments have been made. Do not overtighten.



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**NOTE** You may need to lower the back to improve access.

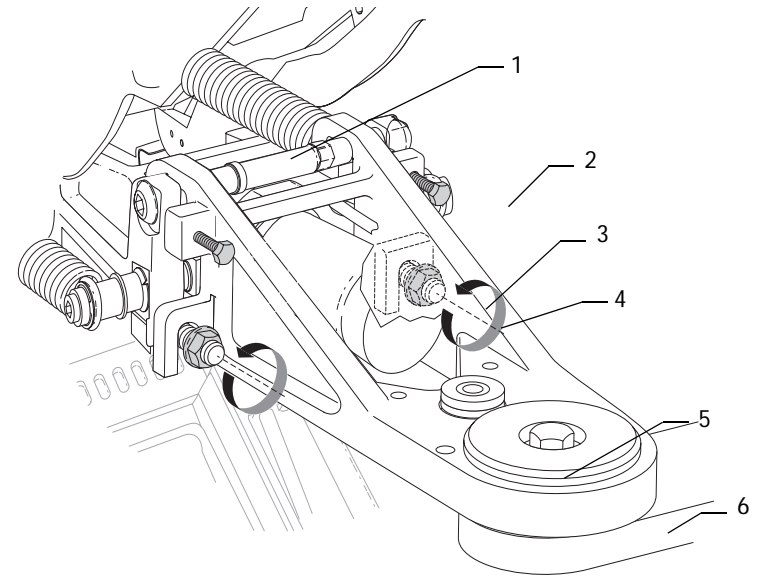
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8. Securely tighten the flanged nuts.

## Tension Adjustment

If the front-mount arm drifts, adjust the front-mount tension. To adjust the front mount tension, tighten or loosen the rotation bolt connecting the front-mount arm to the front-mount casting. Turning the rotation bolt right increases the tension on the arm and left decreases the tension.

**Figure 42** Leveling and Adjusting the Front Mount Arm



Item	Description
1	Leveling cam
2	Stabilizing screw, 1/4-20" x 2-1/4"
3	Flanged nuts
4	Leveling bolts
5	Bubble level
6	Rotation bolt

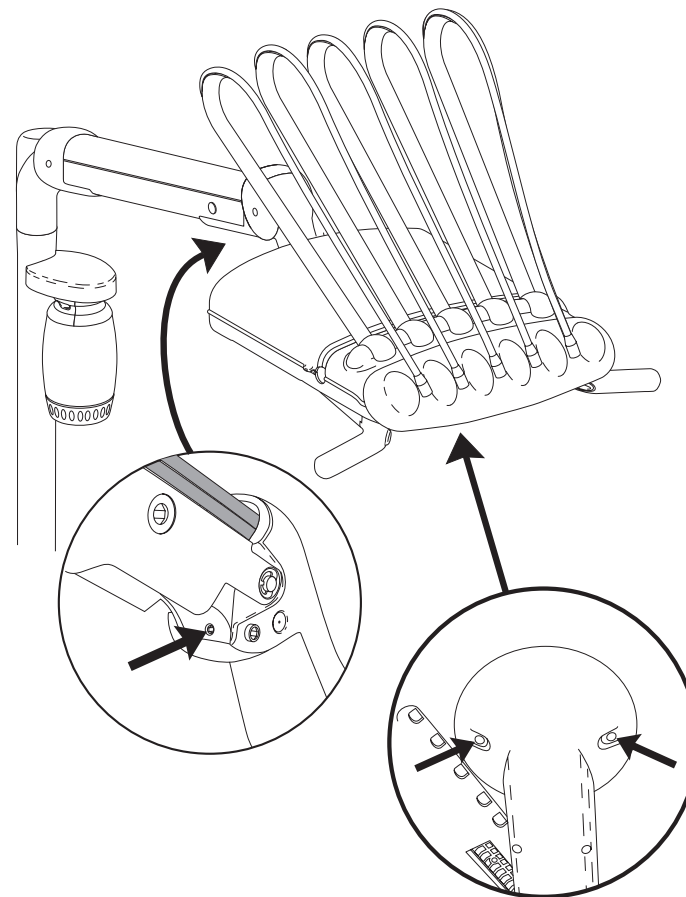
## Front-to-Back Leveling

1. Remove the flexarm front knuckle covers.
2. Position the delivery system in line with the flexarm.
3. Tighten or loosen the adjustment screw on the underside of the front knuckle until the delivery system is level front-to-back.
4. Replace the covers.

## Side-to-Side Leveling

Alternately tighten and loosen the two leveling screws on the underside of the delivery system until it is level side-to-side. Tighten both screws when level.

Figure 43 Level the Delivery System in Two Locations



## ILLUSTRATED PARTS BREAKDOWN

This section contains illustrated parts breakdowns specific to the Traditional (Model 532) and Continental (Model 533) chair mounted delivery systems.

### Part Identification

The conventions for the serviceable components tables are designed to identify all parts and kits, including ones that are not for sale. Symbols with reference notes are used.

Symbol	Definition
†	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)
No symbol	Part is for sale

### CHAIR MOUNTED DELIVERY IPB CONTENTS

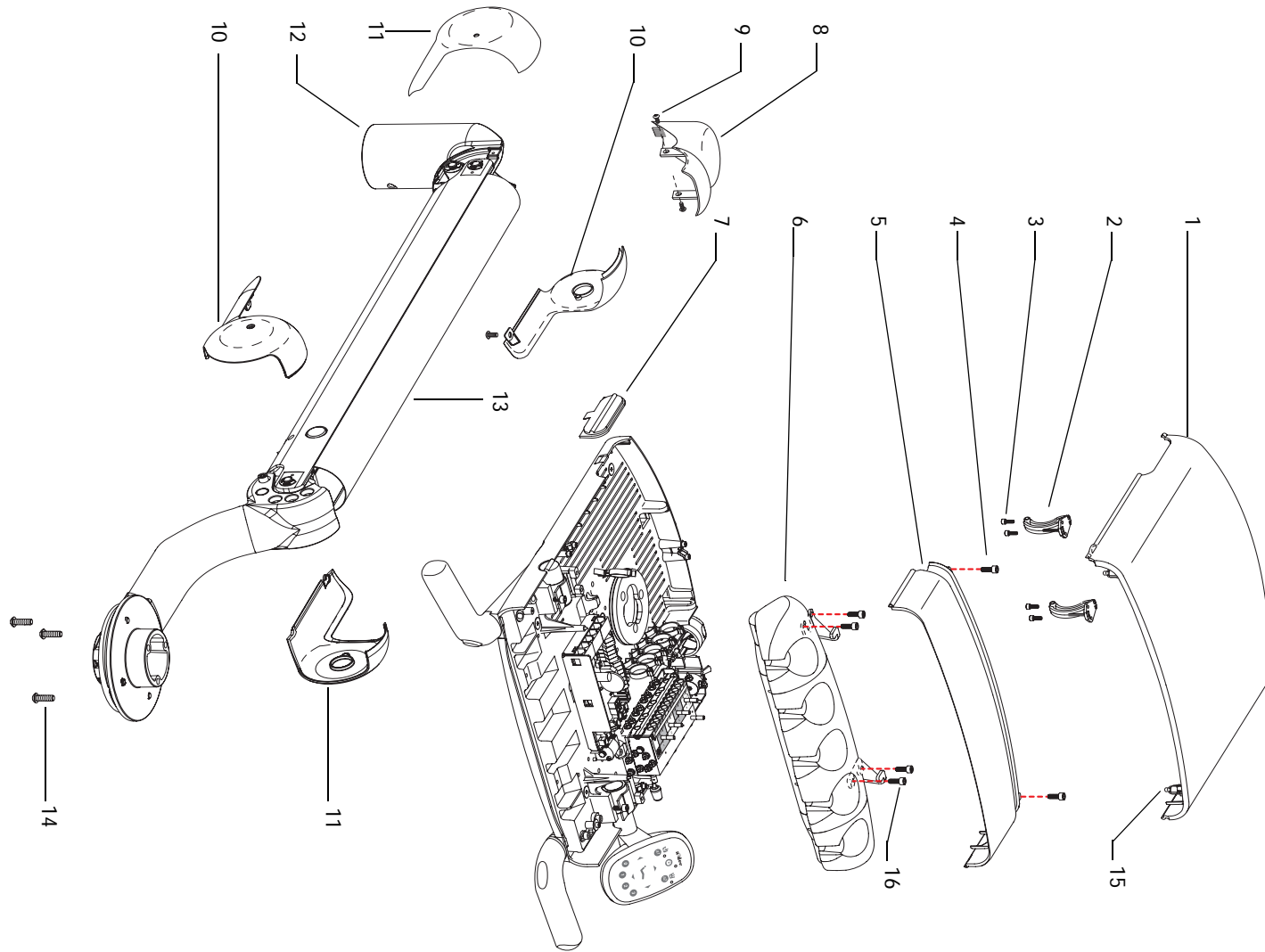
- Traditional Chair Mounted Delivery System (Model 532), page 82
- Continental Chair Mounted Delivery System (Model 533), page 84
- Delivery System – Upper Exploded (532 and 533), page 86
- Traditional Holder Assembly (532), page 90
- Continental Whip Assembly (533), page 92
- Continental Tray Holder, page 94



## Traditional Chair Mounted Delivery System (Model 532)

Item	Part Number	Description
1	77.0056.01	Cover, top, control head
2	77.0240.00	Hinge link
3	001.033.00	Screw, socket head, 6-32 x 3/8", stainless steel
4	002.135.00	Screw, socket head, 10-32 x 1/2", stainless steel
5	77.0079.00	Cover, transition, Traditional
6		Traditional holders assembly
7	77.0147.00	Bracket, ancillary
8	77.0143.00	Top cover
9	001.167.00	Screw, button head, socket, 6-32 x 3/8", stainless steel
10	77.0144.00†	Housing, flexarm (included in item 12)
11	77.0142.00	Cover, side, knuckle, RH
12	77.0289.00	Flexarm assembly
13	77.0144.00†	Housing, flexarm (included in item 12)
14	005.026.00	Screw, button head socket, 1/4-20 x 3/4"
15	042.222.00	Ball stud
16	005.026.00	Screw, 1/4-20 x 3/4", patch button head

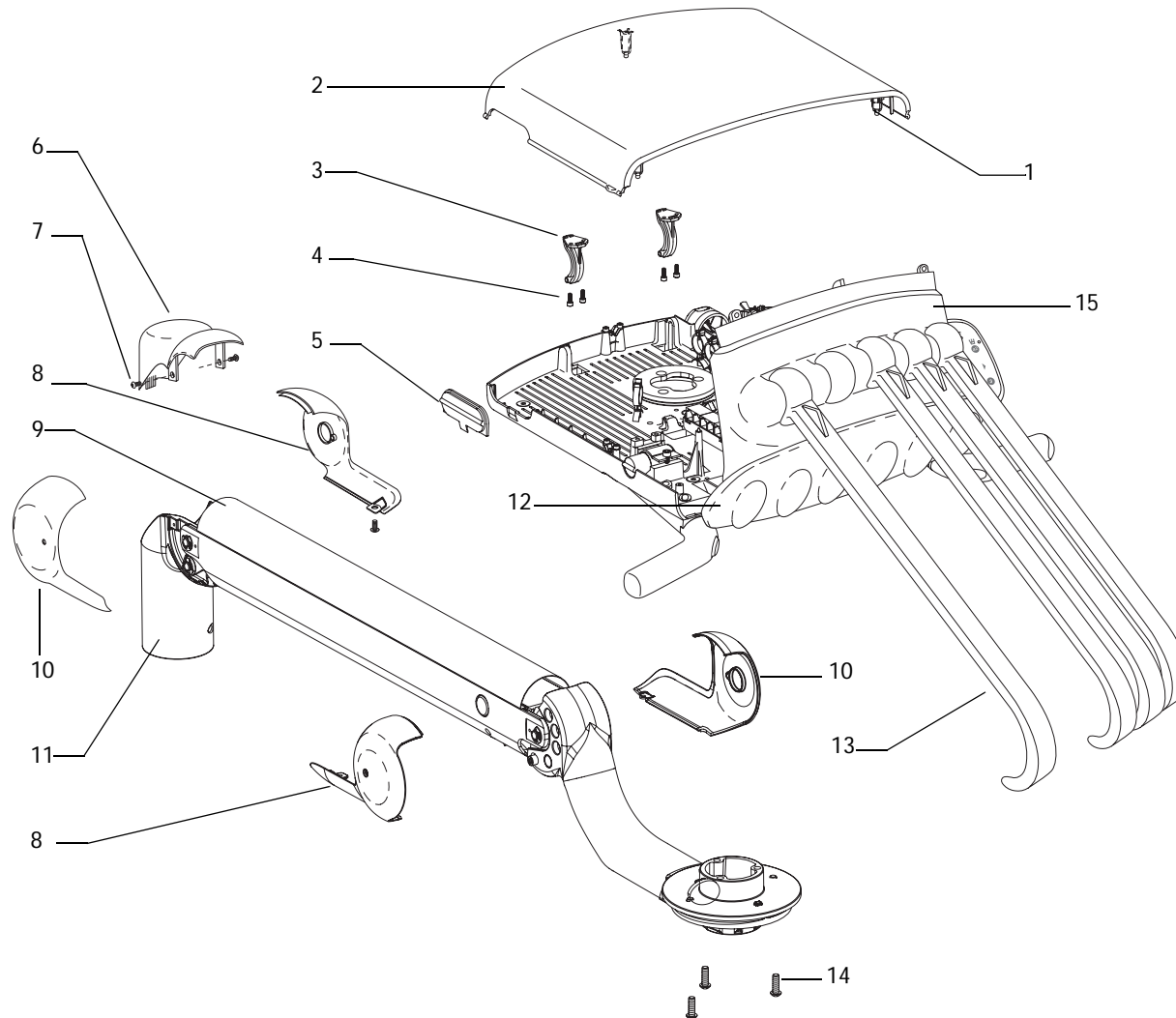
Figure 44 Traditional Chair Mounted Delivery System (Model 532)



## Continental Chair Mounted Delivery System (Model 533)

Item	Part Number	Description
1	042.222.00	Ball stud
2	77.0056.01	Cover, top, control head
3	77.0240.00	Hinge link
4	001.033.00	Screw, socket head, 6-32 x 3/8", stainless steel
5	77.0147.00	Bracket, ancillary
6	77.0143.00	Top cover
7	001.167.00	Screw, button head, socket, 6-32 x 3/8", stainless steel
8	77.0141.00	Cover, side, knuckle, LH
9	77.0144.00†	Housing, flexarm (included in item 11)
10	77.0142.00	Cover, side, knuckle, RH
11	77.0289.00	Flexarm assembly
12	77.0070.00	Pad, instrument, Continental
13	77.0291.01	Whip assembly
14	005.026.00	Screw, button head socket, 1/4-20 x 3/4"
15	77.0065.00	Cover, top, Continental

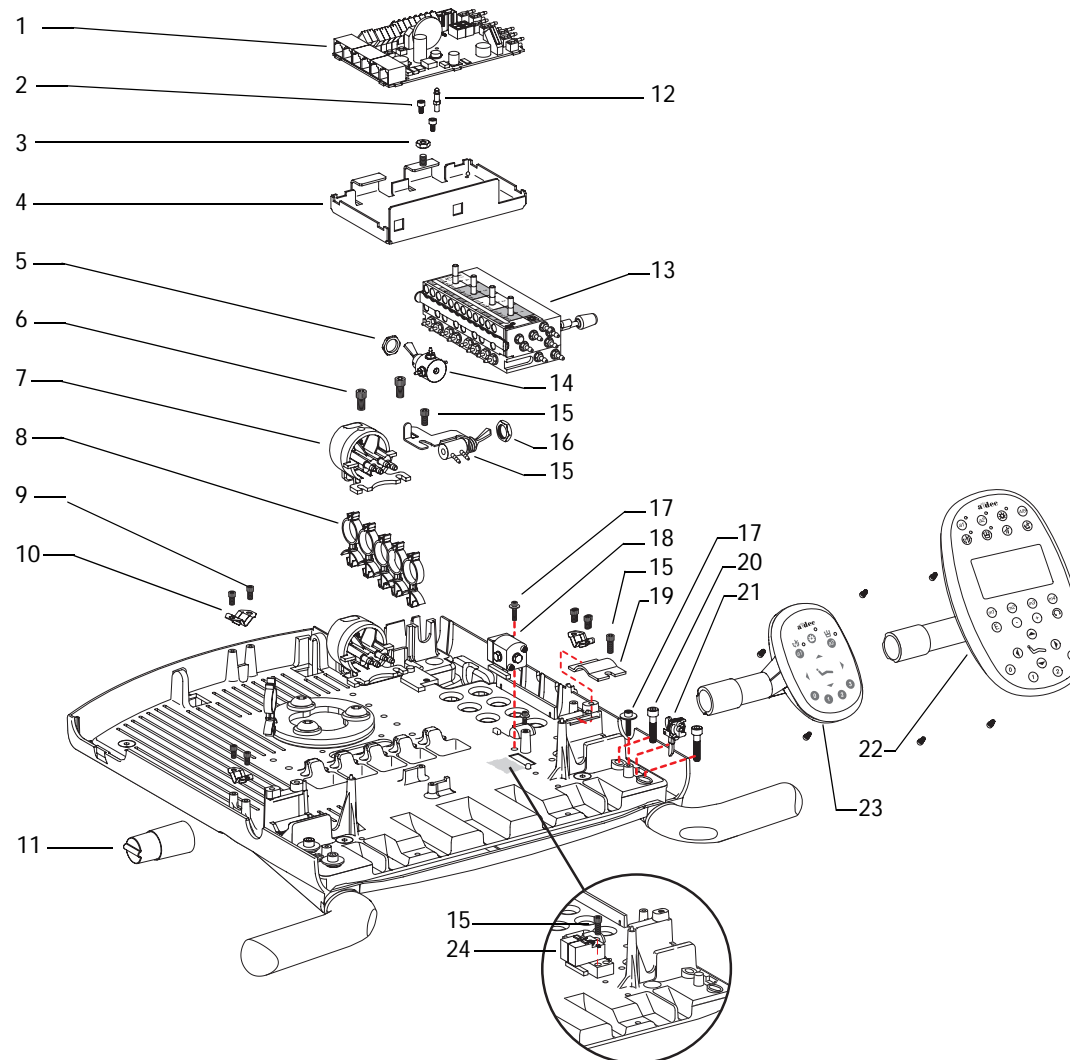
**Figure 45** Continental Chair Mounted Delivery System (Model 533)



## Delivery System — Upper Exploded (532 and 533)

Item	Part Number	Description
1	90.1076.00	Circuit board assembly kit
2	001.034.00	Screw, socket head, 6-32 x 1/4"
3	006.002.00	Grounding nut
4	77.0384.00	Tray
5	006.009.00	Hex nut, 15/32-32 x 9/16" x 3/32"
6	002.130.00	Screw, 10-32 x 3/8", socket head
7	90.1110.00	Oil collector assembly
8	025.115.00	Standoff, lock clip, .75 ID x .5 HT
9	001.034.00	Screw, 6-32 x 1/4", socket head
10	042.634.00	Ball spring
11	77.0150.00	Hoe plug, touchpad
12	90.1082.00	Circuit board stand-off, package of 5 (available in circuit board kit P/N 90.1076.00)
13	38.1776.00	Control block assembly
14	33.0168.00	Valve assembly, 4-way
15	002.135.00	Screw, 10-32 x 1/2", socket head, stainless steel
16	33.0048.05	Valve, toggle, 3-way
17	005.161.00	Screw, 6-32 x 5/8", socket head, stainless steel - with washer
18	38.1810.00	Relay assembly, water coolant, air actuated (standard touchpad or not touchpad only)
19	77.0152.00	Clamp, touchpad holder
20	002.112.00	Screw, 10-32 x 7/8", socket head
21	99.0667.00	Valve assembly, handle
22	90.1133.00	Kit, standard to deluxe touchpad
23	77.0297.00	Kit, standard touchpad
24	43.0057.00	Manifold assembly, solenoid, dual (deluxe touchpad only)

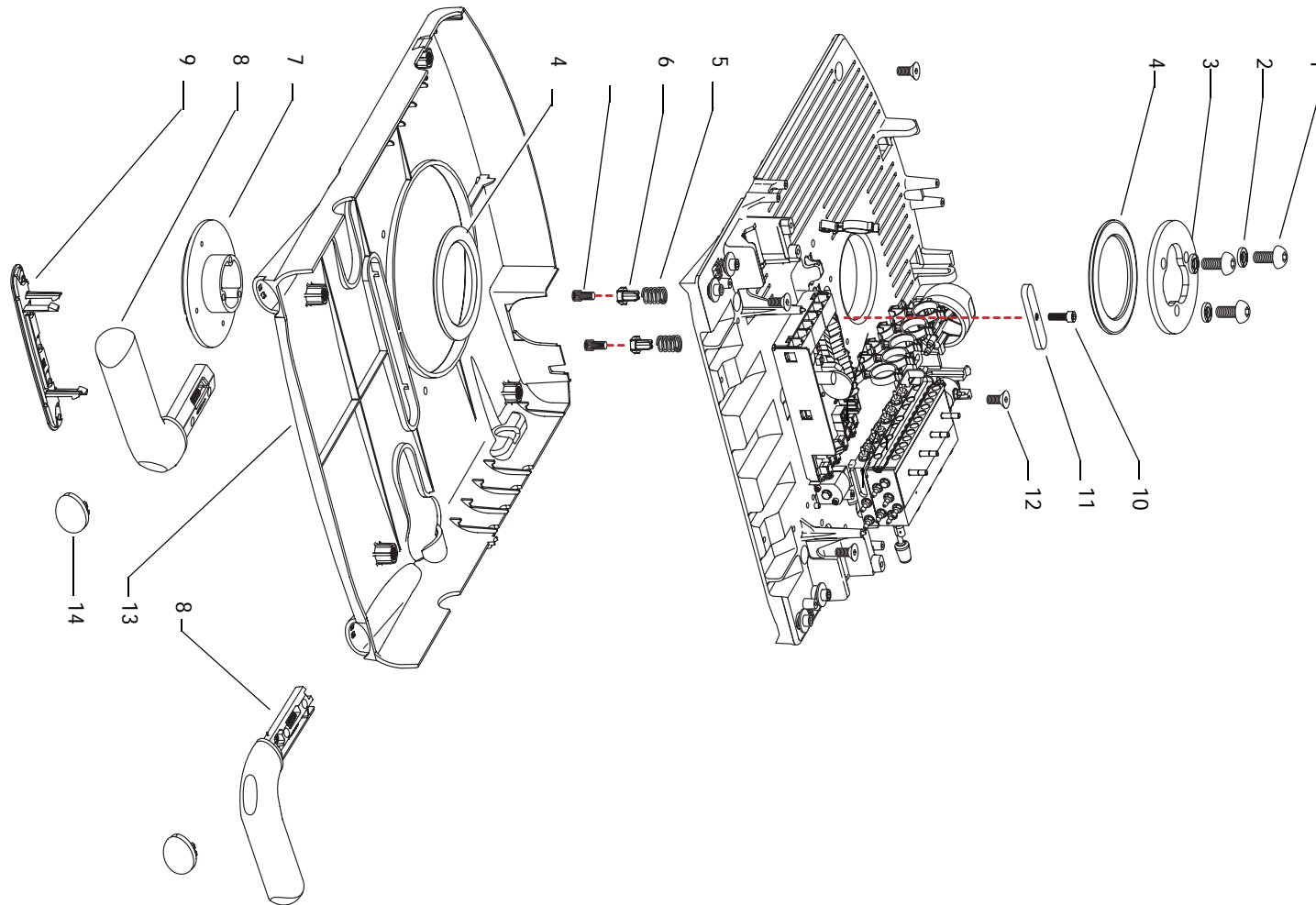
**Figure 46** Delivery System - Upper Exploded (532 and 533)



## Delivery System — Lower Exploded (532 and 533)

Item	Part Number	Description
1	002.117.00	Screw, 6/16-18 x 3/4" button head socket
2	004.009.00	Washer, split lock, steel plated, .312 ID
3	77.0265.00	Plate hub mount
4	016.133.00	Bearing, thrust, 63mm
5	013.085.00	Spring, compression, .460 OD x .625
6	77.0247.00	Brake pad, control head
7	77.0160.00	Hub, pivot, control head
8	77.0104.01	Brake handle assembly
9	77.0075.00	Plate, guide, tubing, control head
10	001.088.00	Screw, socket head, 10-32 x 5/8", stainless steel
11	77.0266.00	Bar, friction adjust, control head
12	002.085.00	Screw, flat head socket, 1/4-20 x 1/2"
13	77.0057.01	Cover, lower, control head
14	77.0424.00	Plug, hole, brake handle

**Figure 47** Delivery System - Lower Exploded (532 and 533)

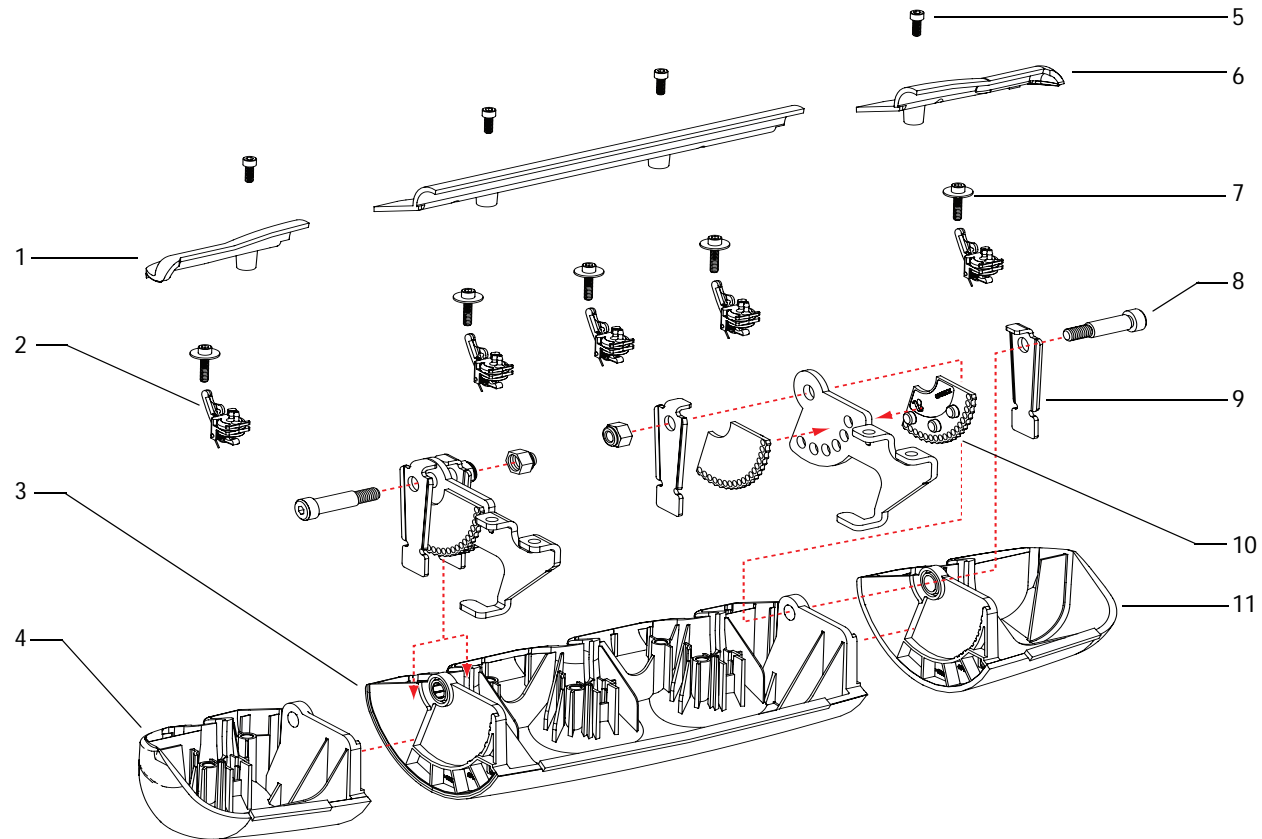




## Traditional Holder Assembly (532)

Item	Part Number	Description
1	77.0077.00	Cover, right, lower nose, Traditional
2	99.0654.00	Actuator valve
3	77.0072.00	Cover, nose, Traditional
4	77.0074.00	Holder, right, Traditional
5	001.033.00	Screw, socket head, 6-32 x 3/8"
6	77.0162.00	Cover, left, lower nose, Traditional
7	005.161.00	Screw, socket head, 6-32 x 5/8" with stainless steel washer
8	005.164.00	Screw, socket head, 1/4-20 x 5/16" x 3/4L
9	77.0237.00	Bracket, spring holder, Traditional
10	77.0078.00	Wheel, indexing, Traditional
11	77.0073.00	Holder, left, Traditional

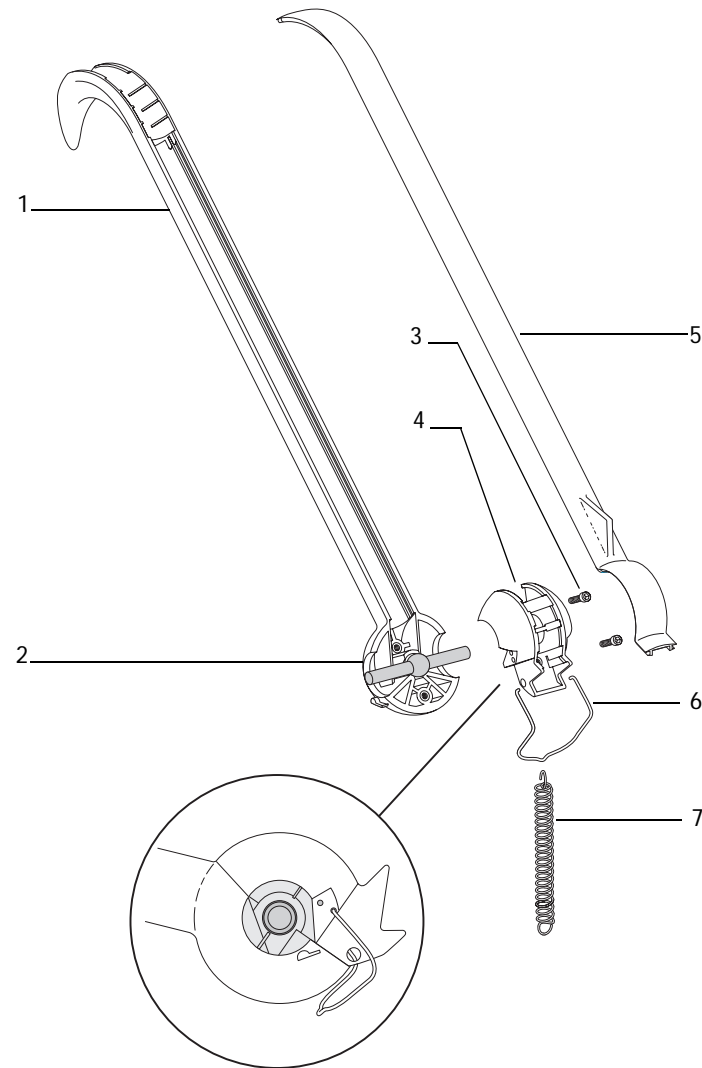
Figure 48 532 Traditional Holder Assembly



## Continental Whip Assembly (533)

Item	Part Number	Description
1	77.0062.01	Whip overmold assembly
2	77.0187.00†	Shaft (included in item 1)
3	001.033.00	Screw, socket head, 6-32 x 3/8"
4	77.0064.00†	Pivot ball (included in item 1)
5	77.0063.00	Whip cover
6	77.0155.00	Bail, loop
7	013.123.00	Spring

Figure 49 Continental Whip Assembly (533)



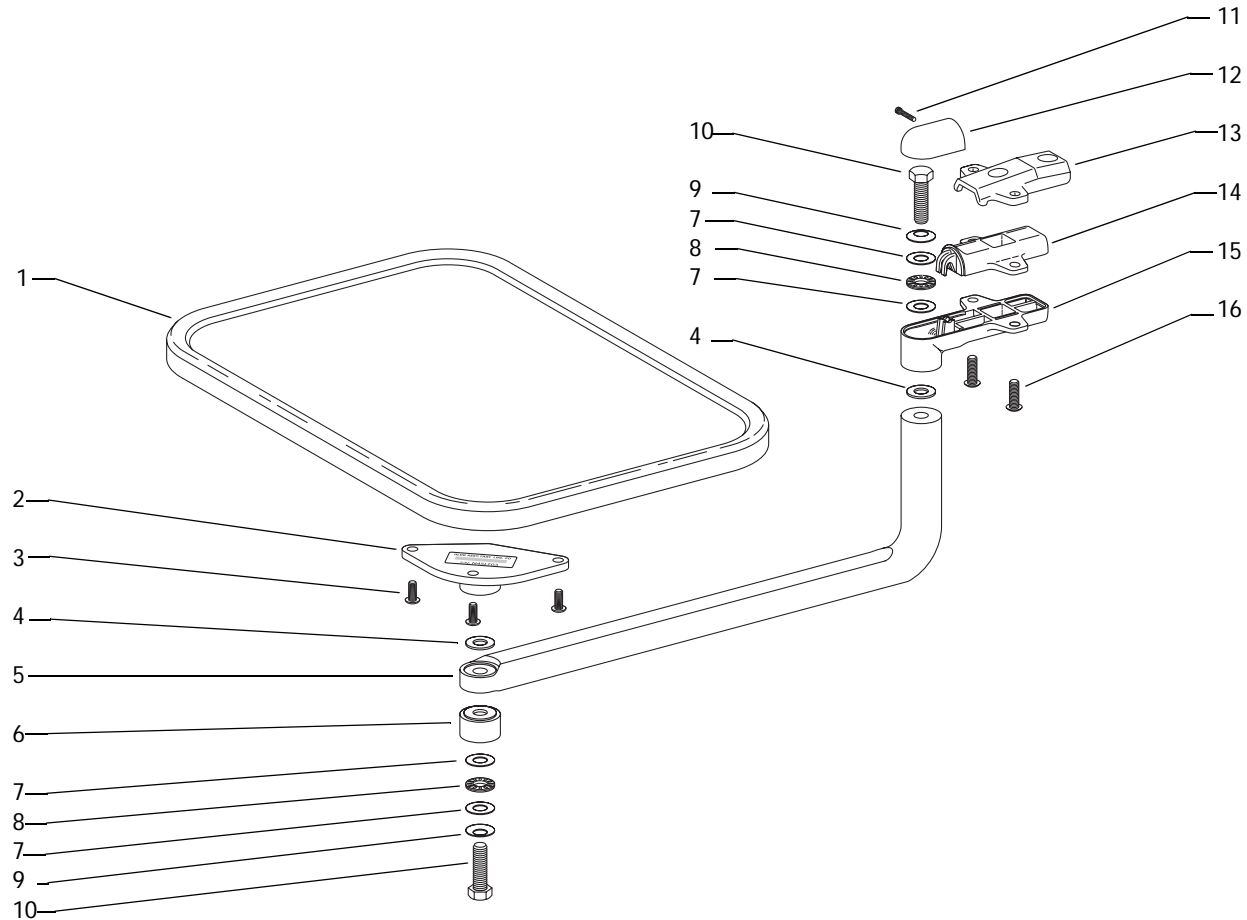
## Continental Tray Holder

Part No: Standard Tray Holder P/N 77.0294.01

Large Tray Holder P/N 77.0295.01

Item	Part Number	Description
1	75.0017.00	Tray holder
2	77.0190.00	Bracket
3	005.012.03	Screw, button head socket, 10-32 x 3/8" stainless steel
4	004.242.00	Washer, flat polyethylene, .387 ID
5	77.0189.00	Arm
6	77.0198.00	Screw cover
7	004.172.00	Washer, thrust, .375 ID
8	016.102.00	Bearing, thrust, .375 ID
9	004.019.00	Washer, spring
10	002.023.01	Screw, hex head, 3/8-16 x 1-1/4"
11	002.024.00	Screw, socket head, 4-40 x 3/4"
12	77.0192.00	Elbow Cover
13	77.0332.00	Base level
14	77.0196.00	Bottom base
15	77.0194.00	Top base
16	005.026.00	Screw, 1/4-20 x 3/4" patch button head

Figure 50 Continental Tray Holder







## SIDE-MOUNTED DELIVERY SYSTEMS

The A-dec 500 side-mounted system features the A-dec 542 delivery system. The side-mounted delivery system can be used with a variety of Preference and Slimline cabinets as well as a wall mount option. The A-dec 500 standard configuration for Model 542 has:

- Balanced flexarm with air brake
- Four handpiece control block positions
- Control head with room to house integrated accessories
- Autoclavable saliva ejector
- Autoclavable syringe (option of warm water syringe)
- 2-liter self-contained water system with quick-disconnect water bottle
- Standard multi-function touchpad (optional) or deluxe multi-function touchpad (optional)



### SIDE-MOUNTED SYSTEM CONTENTS

- Product Overview, page 97
- Flow Diagrams, page 101
- Leveling/Adjustments, page 102
- Illustrated Parts Breakdown, page 103

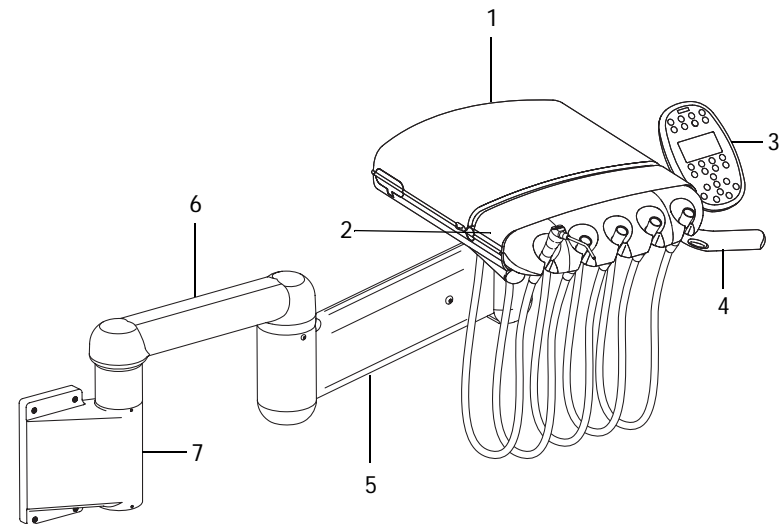


## PRODUCT OVERVIEW (542)

### Components

Item	Description
1	Delivery system cover
2	Delivery system front cover
3	Touchpad (optional)
4	Brake handle
5	Flexarm
6	Rigid arm
7	Mounting bracket

Figure 51 Delivery System and Mount Components - 542



An optional tray holder (not shown) can be installed. When installed, the tray holder positions over the control head.

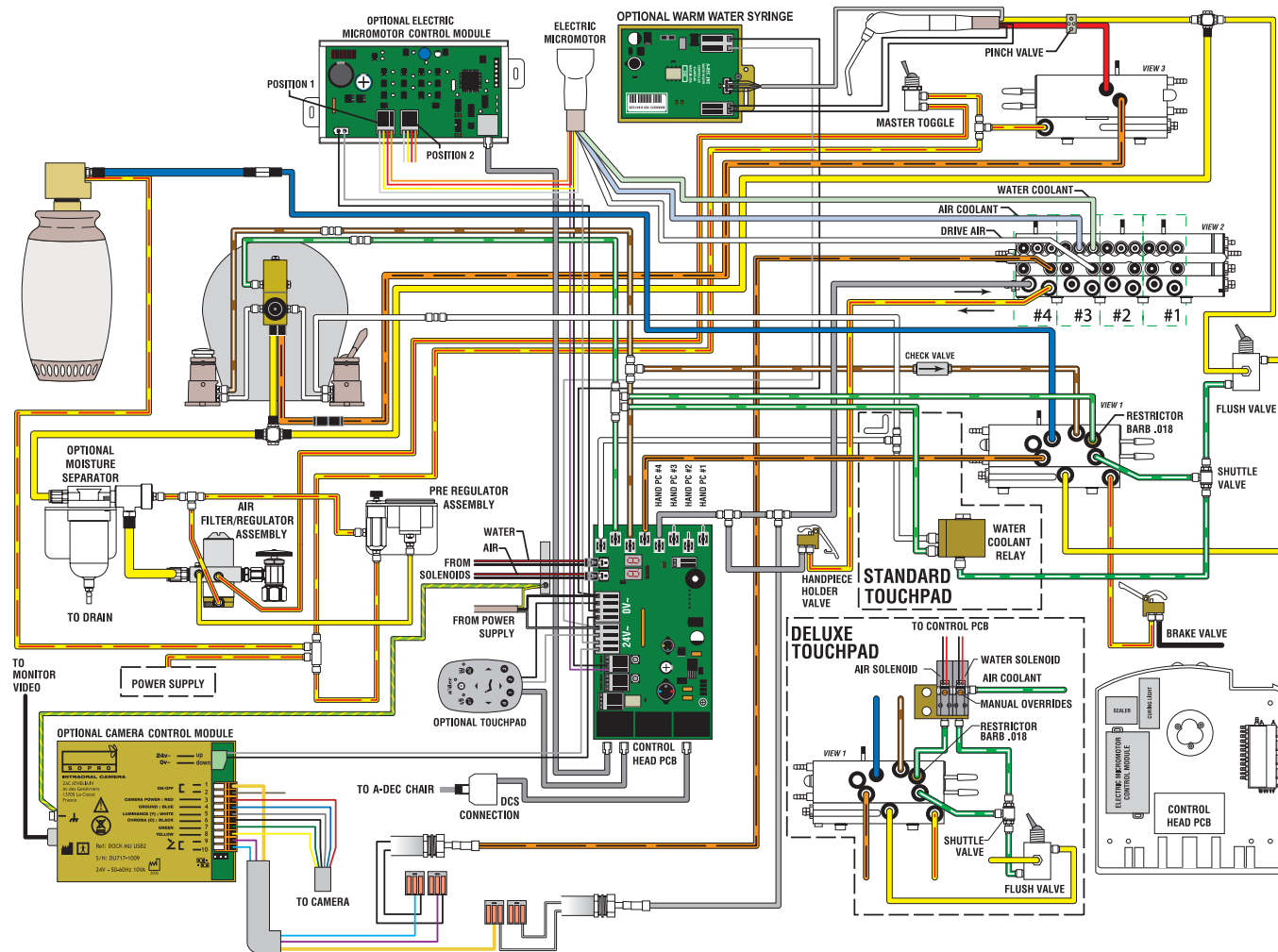


## FLOW DIAGRAMS (542)

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This section contains both plumbing and electrical flow diagrams for the 542 side delivery system. They can be referenced for troubleshooting or servicing. Refer also to the cover flow diagram which can be found on the inside cover of the delivery system control head.

Figure 52 542 Plumbing and Wiring Flow Diagram



## LEVELING/ADJUSTMENTS (542)

### Flexarm Counterbalance

Adjust the flexarm counterbalance if the control head on the A-dec 542 Side Delivery System drifts up against the cabinet or drops when the master switch is turned off.

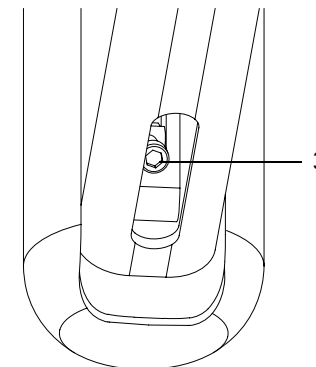
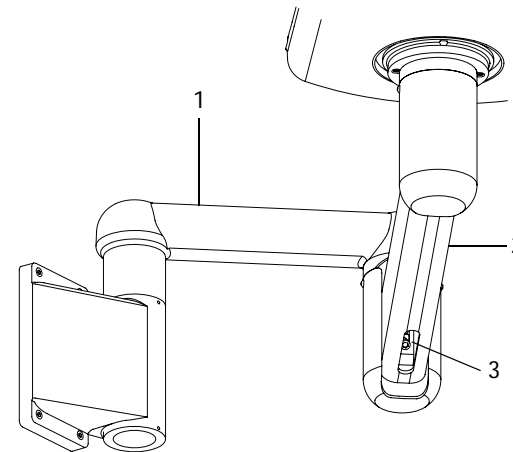


**NOTE** If the delivery system is not mounted under a cabinet, adjust the counterbalance to the midpoint of the operating position. Load the tray holder with a typical load before adjusting the flex arm counterbalance.

1. Load the control head for normal use attaching handpieces and placing a loaded tray on the tray holder.
2. Move the control head to the lowest position.
3. Turn the master On/Off toggle off. If the control head drifts up against the cabinet, the counterbalance needs adjustment.
4. Insert a hex key into the adjustment screw.
  - Turn the hex key to the right to increase the upward drift.
  - Turn the hex key to the left to reduce the upward drift.

Item	Description
1	Rigid arm
2	Flexarm
3	Adjustment screw

Figure 53 Flexarm Counterbalance



## ILLUSTRATED PARTS BREAKDOWN (542)

This section contains illustrated parts breakdowns specific to the side delivery system (Model 542).

### Part Identification

The conventions for the serviceable components tables are designed to identify all parts and kits, including ones that are not for sale. Symbols with reference notes are used.

Symbol	Definition
†	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)
No symbol	Part is for sale

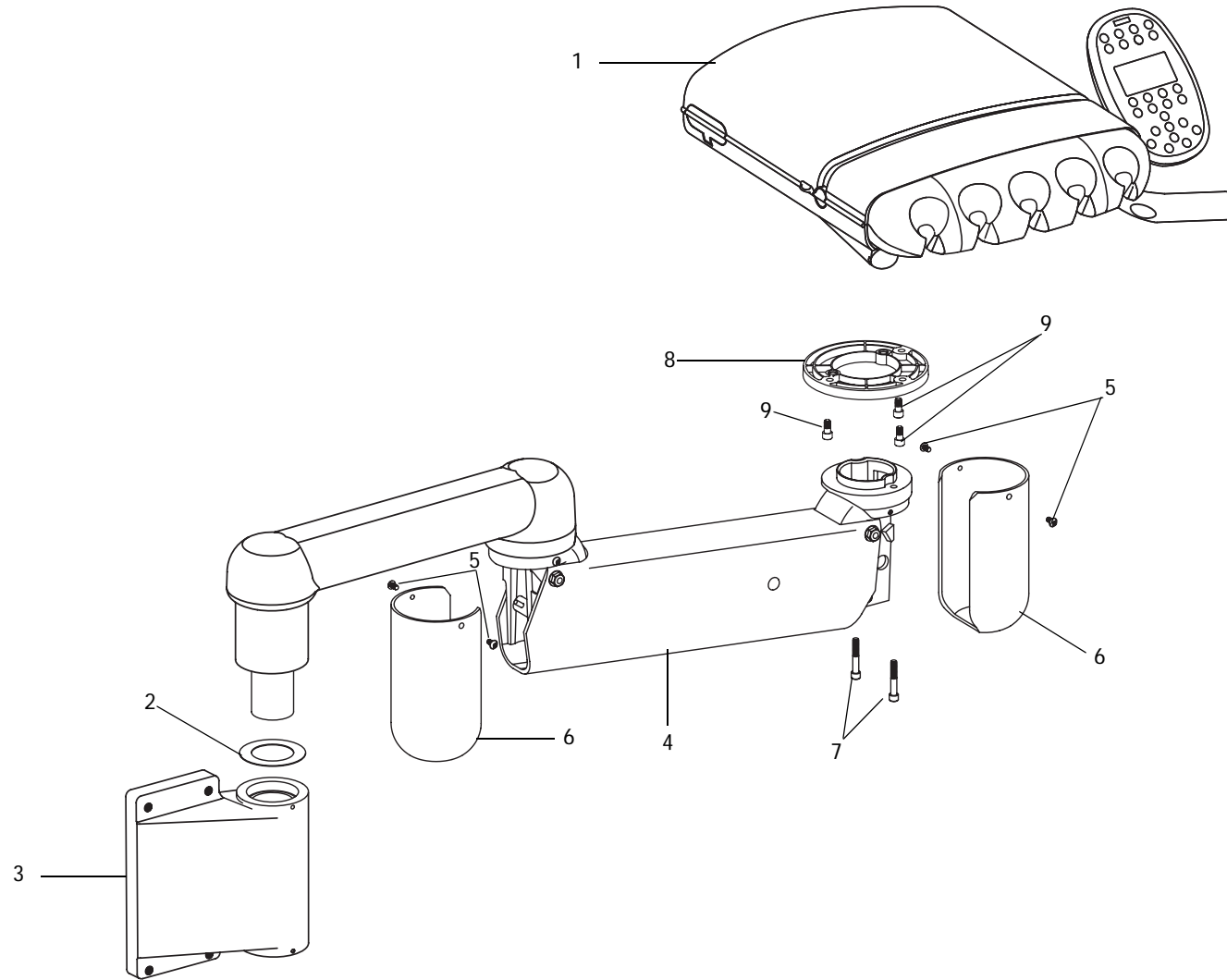
### SIDE DELIVERY SYSTEM IPB CONTENTS

- Side Delivery System, page 104
- Side Delivery System Upper Structure, page 106
- Side Delivery System Covers and Brake, page 108
- Control Head, page 110
- Traditional Holder Assembly, page 112

## Side Delivery System

Item	Part Number	Description
1		A-dec 500 control head assembly
2	004.210.00	Washer, flat, Nylatron, 1.760 ID
3	77.0582.00	Mounting adaptor with bearing
4	77.0580.00	542 flexarm with 13" rigid arm (includes items 2, 5, 6, 7)
	77.0581.00	542 flexarm with 22" rigid arm (includes items 2, 5, 6, 7)
5	005.012.03	Screw, button head socket, 10-32 x 3/8, stainless steel
6	77.0464.00	Cover, flexarm knuckle
7	005.008.01	Cap screw, 1/4-20 x 1-1/2, socket head, stainless steel
8	77.0465.00	Adaptor, control head
9	005.008.01	Screw, 1/4-20x1/2, socket head

Figure 54 Side Delivery System

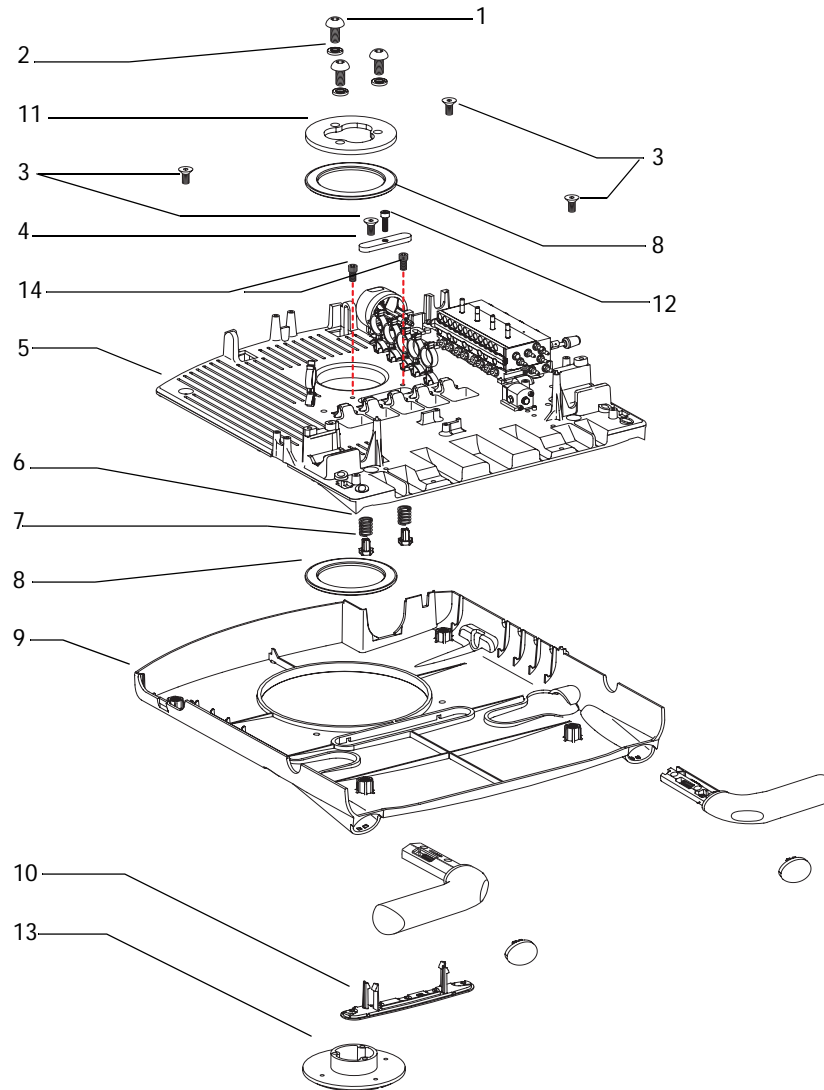




## Side Delivery System Upper Structure

Item	Part Number	Description
1	002.117.00	Screw, button head socket, 5/16 - 18 x 3/4
2	004.009.00	Washer, split lock, steel plated, .312 ID
3	002.085.00	Screw, flat head socket, 1/4-20 x 1/2
4	77.0266.00	Bar, friction adjust, control head
5	77.0146.01	Baseplate, control head
6	013.085.00	Spring, compression, .460 OD x .625
7	77.0247.00	Brake pad, control head
8	016.133.00	Bearing, thrust, 63 mm
9	77.0057.01	Cover, lower, control head
10	77.0075.00	Plate, guide, tubing , control head
11	77.0265.00	Plate hub mount, control head
12	001.088.00	Screw, socket head, 10-32 x 5/8, stainless steel
13	77.0160.00	Hub, pivot, control head
14	002.130.00	Screw, socket head, 10-32 x 3/8

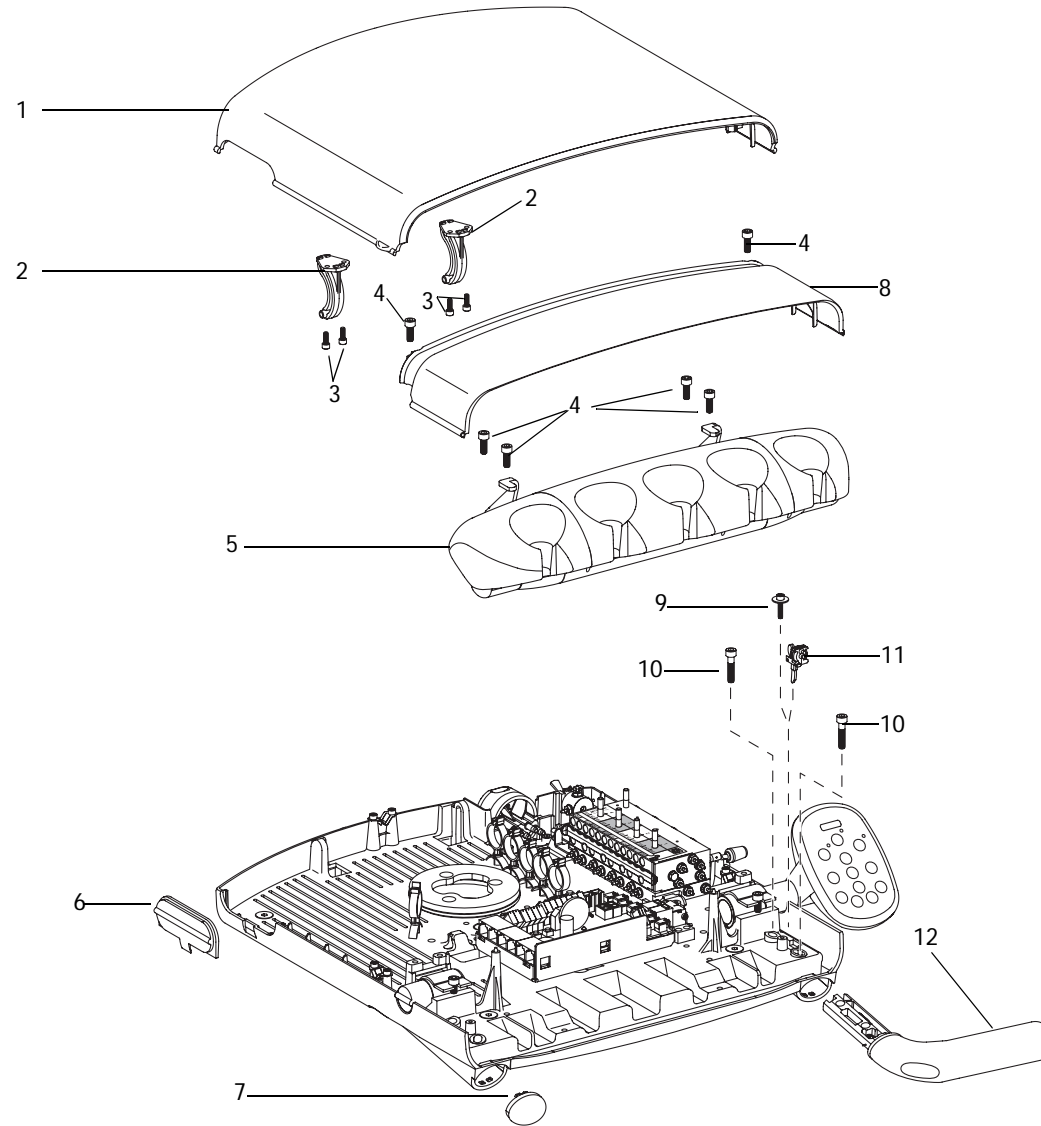
**Figure 55** Side Delivery System Upper Structure



## Side Delivery System Covers and Brake

Item	Part Number	Description
1	77.0056.01	Cover, top, control head
2	77.0240.00	Hinge link
3	001.033.00	Screw, socket head, 6-32 x 3/8, stainless steel
4	002.135.00	Screw, socket head, 10-32 x 1/2, stainless steel
5		Traditional holder assembly
6	77.0147.00	Bracket, ancillary
7	77.0424.00	Plug, hole, brake handle
8	77.0079.00	Cover, transition, traditional
9	005.161.00	Screw, socket head
10	002.112.00	Screw, socket head, 10-32 x 7/8
11	99.0667.00	Valve assembly, control handle
12	77.0104.01	Brake handle assembly, control head (over the counter part)

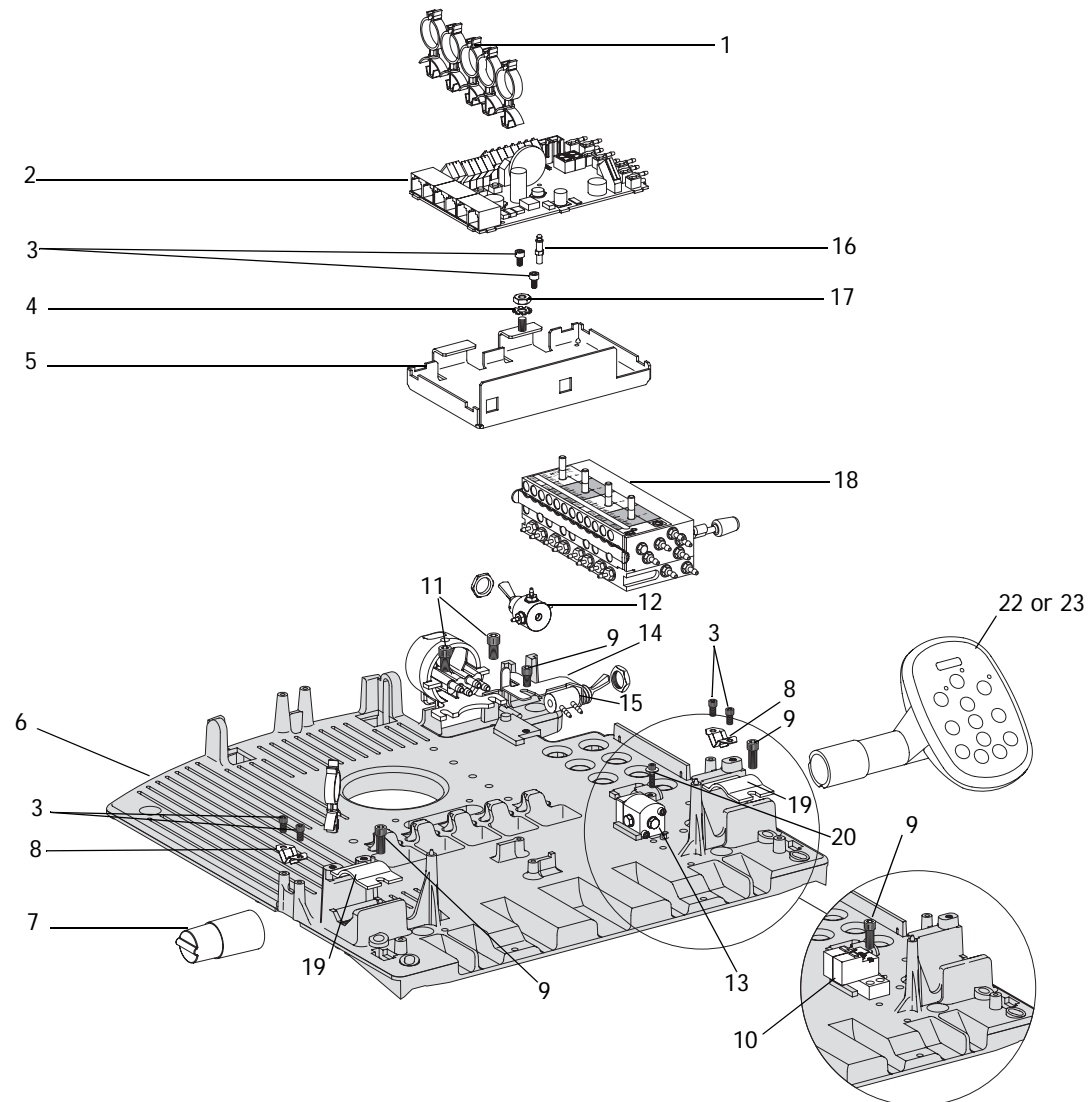
**Figure 56** Side Delivery System Covers and Brakes



## Control Head

Item	Part Number	Description
1	025.115.00	Standoff, lock clip, .75 ID x .5 HT
2	90.1076.00	Circuit board assembly
3	001.034.00	Screw, socket head, 6-32 x 1/4
4		Grounding washer
5	77.0384.00	Tray, printed circuit board mount, control head
6	77.0146.01	Baseplate, control head
7	77.0150.00	Hole plug, touchpad, control head
8	042.221.00	Ball spring
9	002.135.00	Screw, socket head, 10-32 x 1/2 stainless steel
10	43.0057.00	Manifold assembly, solenoid, dual (Deluxe touchpad only)
11	002.130.00	Screw, 10-32 x 3/8, socket head
12	33.0168.00	Valve assembly, 4-way
13	38.1810.00	Relay assembly, water coolant, air actuated, non adjustable (Standard or no touchpad only)
14		Bracket, master toggle assembly
15	33.0048.05	Valve, toggle, 3-way, Gray
16	90.1082.00	Standoff, printed circuit board, plastic, 3/8 H, 6-32 O, package of 5
17		Grounding nut
18	38.1776.00	Control block assembly
19	77.0152.00	Clamp, touchpad holder
20	005.161.00	Screw, socket head, 6-32 x 5/8, with washer, stainless steel
21	001.240.00	Screw, socket head, 6-32 x 3/4, stainless steel
22	77.0297.00	Touchpad module, standard touchpad
23	90.1133.00	Touchpad module, deluxe touchpad
	90.1076.00	Kit, PCA control head, intraoral light source (includes items 2, 16)

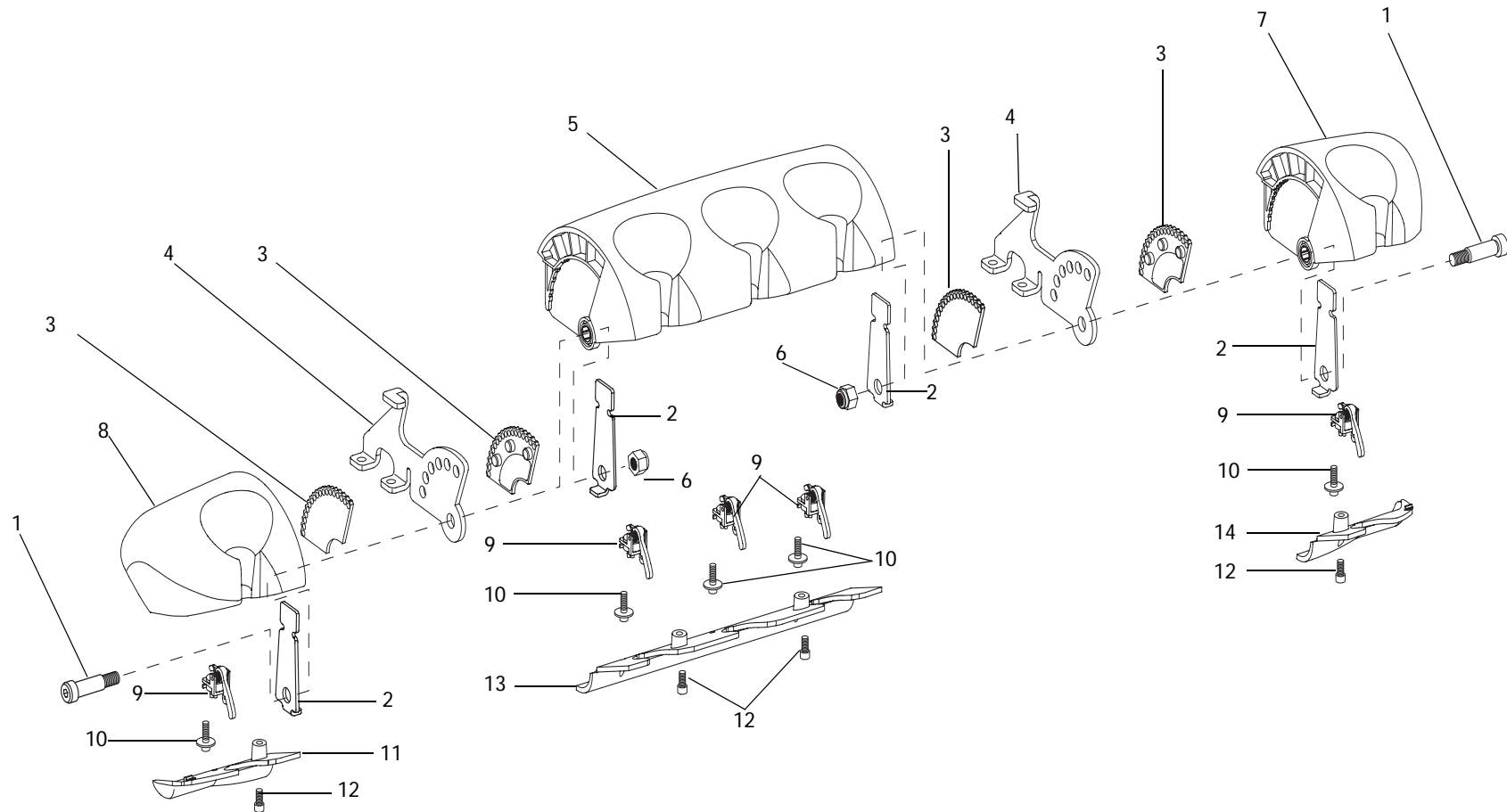
Figure 57 Control Head



## Traditional Holder Assembly

Item	Part Number	Description
1	005.164.00	Screw, socket shoulder, 1/4-20 x 5/16 x 3/4 L
2	77.0237.00	Bracket, spring holder, Traditional
3	77.0078.00	Wheel, indexing, Traditional
4	77.0164.00	Bracket, support, Traditional
5	77.0072.00	Cover, nose, Traditional
6	006.052.00	Nut, lock, 1/4-20 x 7/16 x 5/16
7	77.0074.00	Holder, right, Traditional
8	77.0073.00	Holder, left, Traditional
9	99.0654.00	Actuator valve assembly
10	005.161.00	Screw, socket head, 6-32 x 5/8 with washer, stainless steel
11	77.0162.00	Cover, left, lower nose, Traditional
12	001.033.00	Screw, socket head, 6-32 x 3/8, stainless steel
13	77.0076.00	Cover, lower nose, Traditional
14	77.0077.00	Cover, right, lower nose, Traditional

Figure 58 Traditional Holder Assembly









## CHAIR/SIDE SYSTEMS COMMON FEATURES

The A-dec 500 side-mounted and chair-mounted systems have common a common control head, with the same design and internal components. For information on features common to all A-dec 500 delivery systems, see page 105.



### CHAIR/SIDE COMMON FEATURES SYSTEM CONTENTS

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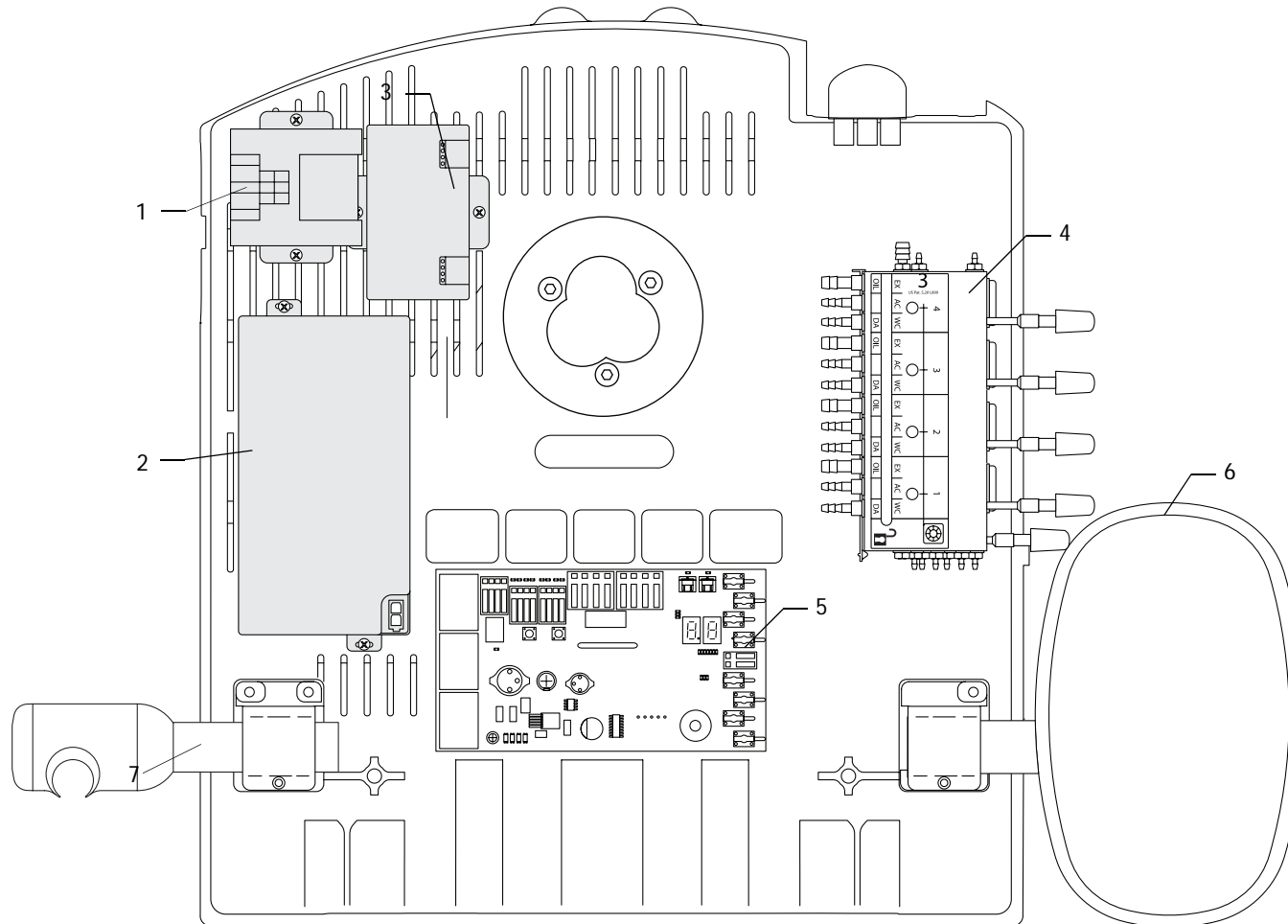
- Product Overview, page 116
- Adjustments/Maintenance, page 118

## PRODUCT OVERVIEW (CHAIR/SIDE DELIVERY COMMON FEATURES)

### Internal Control Components

The A-dec 532/533/542 delivery systems feature a structural platform in the base of the control head. This metal mounting grid allows easy attachment of component parts and extra control modules required by accessories.

Item	Description
1	Scaler control module
2	Electric micromotor control module
3	Curing light control module
4	Control block
5	Delivery system circuit board
6	Touchpad
7	Accessory holder

**Figure 59** Internal Control Components Mounted on the Structural Platform

## ADJUSTMENTS

### Covers

The delivery system covers are designed for easy access to control components.

#### ■ Remove Delivery System Cover

To remove the delivery system cover:

1. Lift up on the tabs at the back (center) and on both sides of the delivery system cover and open the cover (see Figure 60).
2. Pinch the hinge brackets at the cover base to remove the cover.

Item	Description
1	Tab
2	Delivery system cover
3	Screw
4	Delivery system front cover

#### ■ Remove Delivery System Front Cover

To remove the delivery system front cover:

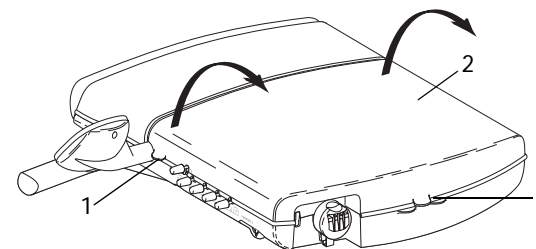
1. Remove the two screws holding the delivery system front cover in place (see Figure 60).
2. Slide the front cover forward and lift up.



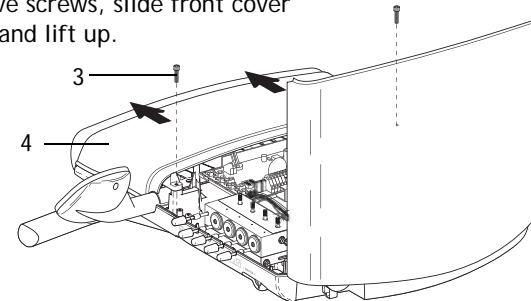
**CAUTION** Remove handpieces from the delivery system before opening the delivery system front cover.

**Figure 60** Steps For Removing The Covers From 532 and 542 Traditional Delivery System

- 1) Lift on tabs and open cover.



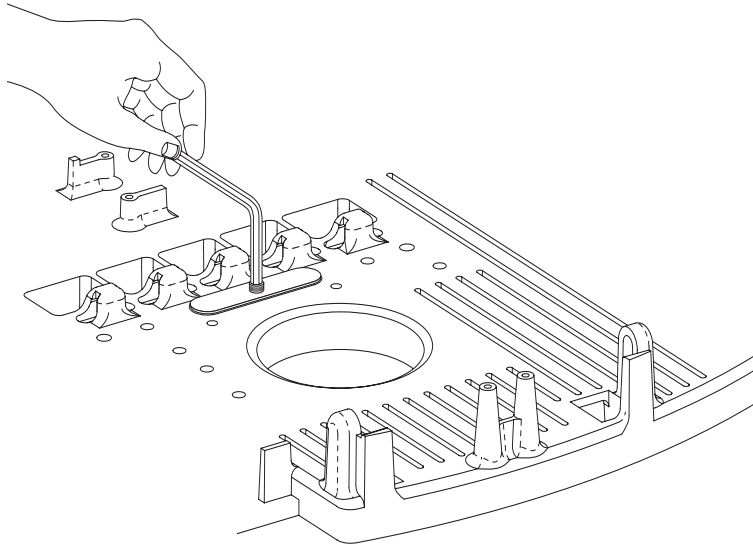
- 2) Remove screws, slide front cover forward and lift up.



## Rotational Tension Adjustment

Tighten or loosen the friction adjustment screw located in the center of the delivery system structural platform to adjust the rotational tension.

**Figure 61** Adjusting the Delivery System Rotation Tension







## 12 O'CLOCK DELIVERY SYSTEMS

The A-dec 500 12 O'clock system features two models, the A-dec 541 Duo Delivery and the A-dec 545 Assistant's Instrumentation. Both models are floor-mounted delivery systems that install with a variety of Preference Collection® and Preference Slimline cabinets. The A-dec 500 standard configuration for both Model 541 and 545 has:

- Height-adjustable round worksurface
- Multi-position assistant's instrument holder
- Autoclavable saliva ejector
- Autoclavable syringe (option of warm water syringe)
- Autoclavable HVE (choice of single/dual)
- 2-liter self-contained water system with quick-disconnect water bottle
- Solids collector
- No touchpad (optional), standard multi-function touchpad (optional) or deluxe multi-function touchpad (optional)

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

- Four handpiece control block positions
- Control center with room to house integrated ancillary equipment
- Multi-voltage intraoral light source
- Wet/dry foot control with chip blower/accessory button
- Height-adjustable, multi-position doctor's instrument holder

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



### 12 O'CLOCK SYSTEM CONTENTS

- **Product Overview, page 122**
- **Flow Diagrams, page 128**
- **Service/Usage Information, page 125**
- **Adjustments/Maintenance, page 130**
- **Illustrated Parts Breakdown, page 135**

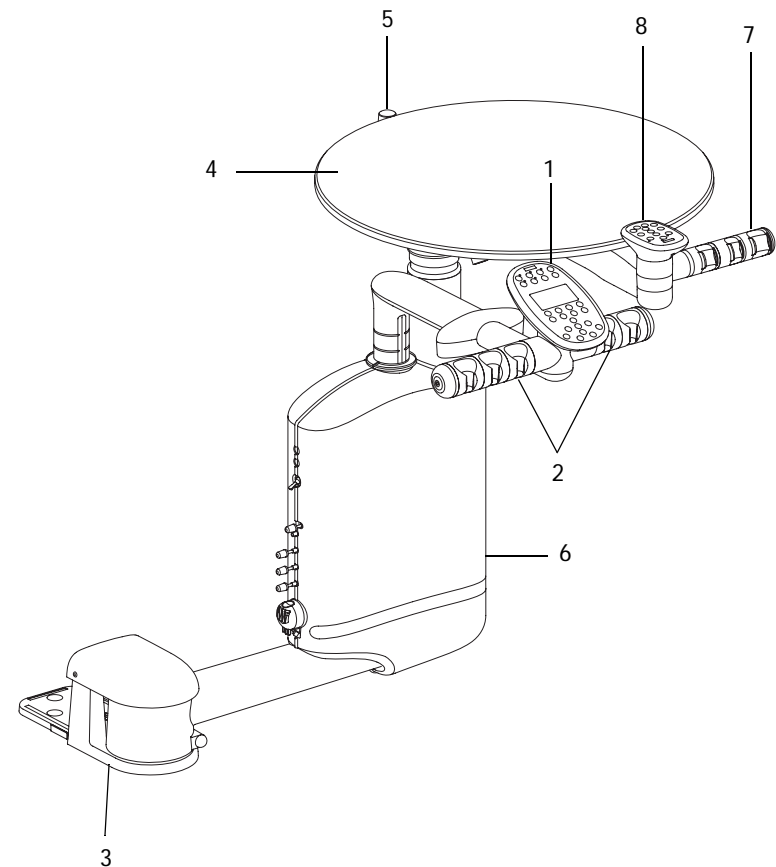


## PRODUCT OVERVIEW (12 O'CLOCK)

### A-dec 541 12 O'Clock Duo Delivery System

Item	Description
1	Doctor's touchpad (Deluxe touchpad)
2	Doctors instrumentation
3	Hub mount
4	Round worksurface
5	Tray holder mount
6	Control center
7	Assistant's holder (standard)
—	Assistant's holder (electric)
8	Assistant's touchpad

Figure 62 Delivery System Components - 541



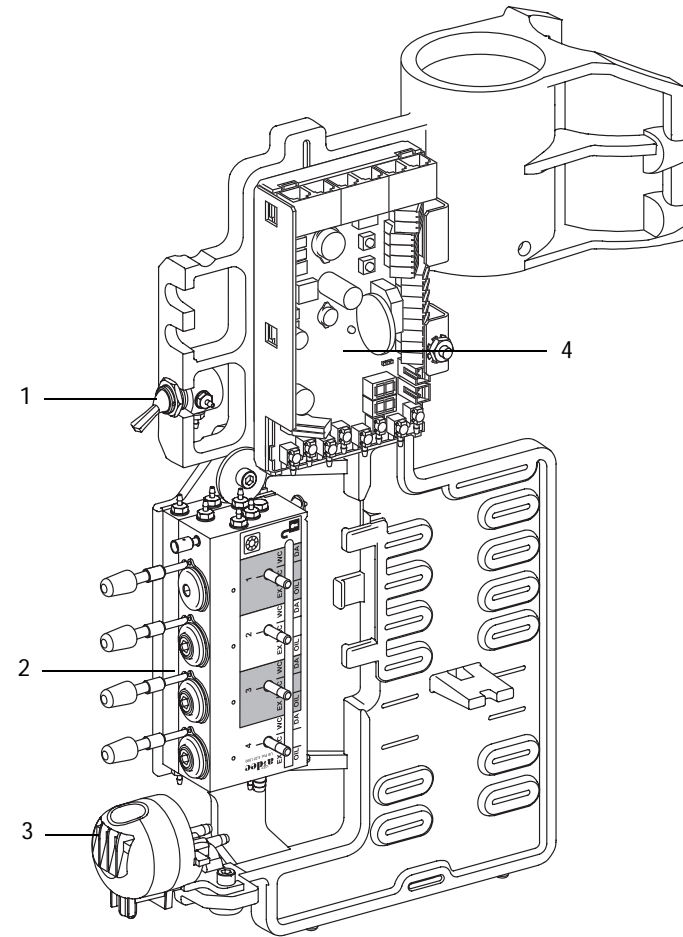
## A-dec 541 Internal Components

Item	Description
1	Flush toggle
2	Control block
3	Oil collector
4	Control center circuit board



**NOTE** For information on the master On/Off toggle, refer to "Master On/Off Toggle" on page 186.

Figure 63 Internal Components - 541



## Flex-Holder

Part No: 99.0705.00 (Syringe/Saliva Ejector)

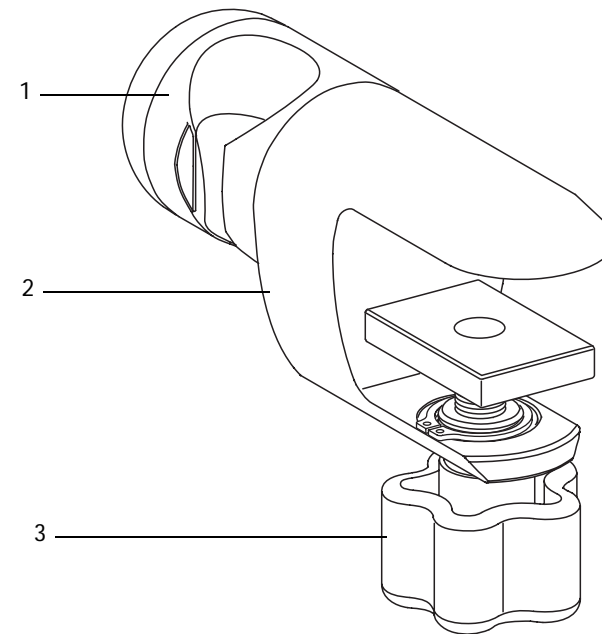
Part No: 99.0706.00 (Standard HVE)

Part No: 99.0707.00 (15 mm HVE)

The flex-holder can mount to a variety of worksurfaces. The mounting location versatility allows you to locate an additional holder where you need it.

Item	Description
1	Holder assembly
2	Clamp
3	Knob

Figure 64 Flex-Holder



## Control Center Covers (541)

Item	Description
1	Doctor's cover assembly
2	Doctor's cover assembly
3	Opening for cover removal

Some of the adjustments to the 541 duo delivery require the removal of the covers.

### ■ Remove Covers

1. Locate the hole directly under the control center.
2. Pull the covers apart.

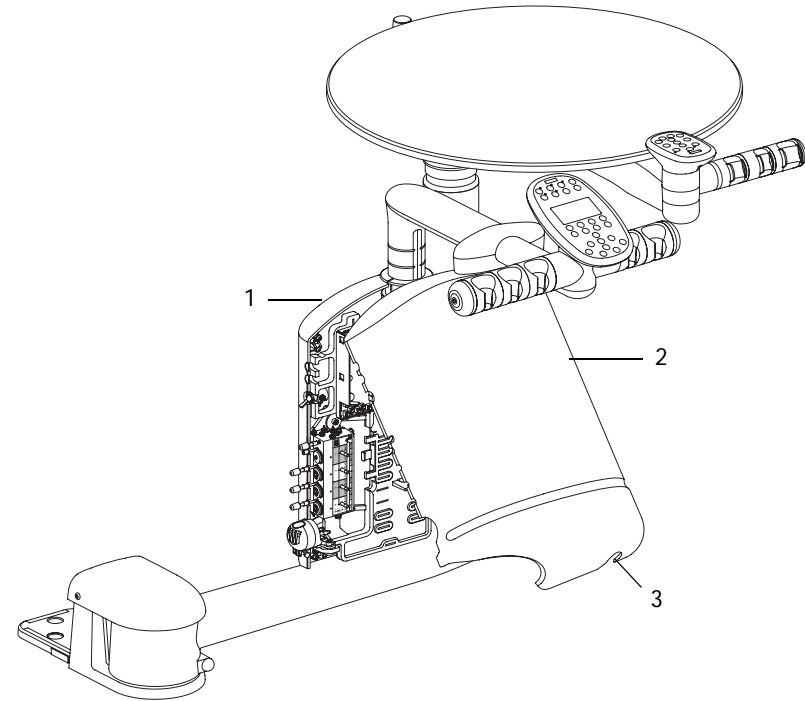
### ■ Replace Covers

1. Position a cover over the control center.
2. Snap in place.
3. Position the other cover and snap the two covers together.



**NOTE** Make sure the umbilical tubing is contained inside the covers and not pinched.

Figure 65 Control Center Cover Removal



## Doctor's Holder

The doctor's holder is a configurable design. The holder configurations available from A-dec are:

- Two on the left side of the rotation hub and three on the right, syringe at left-most position
- Three on the left side of the rotation hub and two on the right, syringe at right-most position

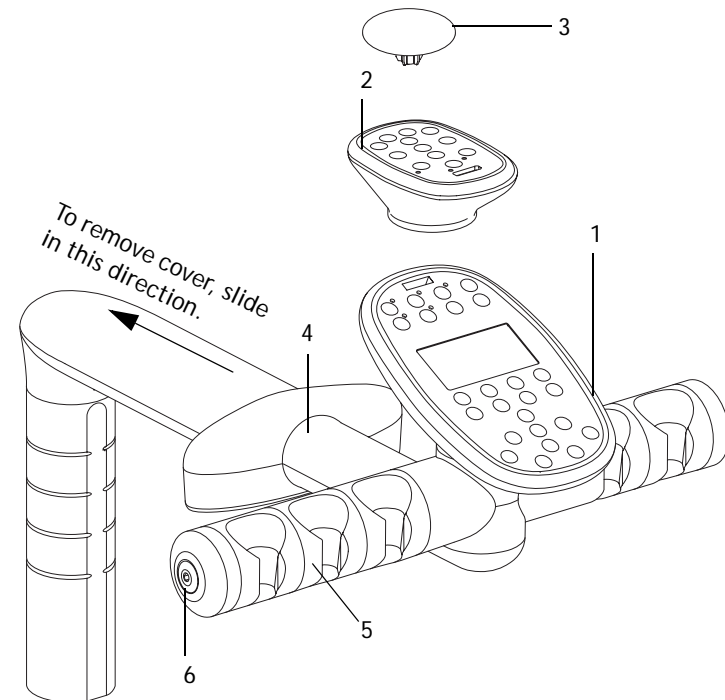
The holders use a pneumatic A-dec 500 microvalve for handpiece activation. The microvalve located in the syringe position is unplumbed and can be used as a replacement valve. A maximum of four valves connect to the holdback air system on the control block. These valves can be locked out or activated as needed.

The top cover of the 541 arm assembly is easily removed by sliding it backwards and lifting off.



**CAUTION** Do not pinch any wires or tubings when reinstalling the cover.

**Figure 66** Doctor's Holder Assembly



Item	Description
1	Deluxe touchpad option
2	Standard touchpad option
3	No touchpad option
4	541 arm assembly
5	541 holder assembly
6	End cap



## FLOW DIAGRAMS

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This section contains both plumbing and electrical flow diagrams for the 541 12 o'clock delivery system. They can be referenced for troubleshooting or servicing. Refer also to the cover flow diagram which can be found on the inside cover of the delivery system control center.

85.0816.00 Rev B 2007-04





## ADJUSTMENTS/MAINTENANCE

### Level the Arm Assembly and Worksurface

#### ■ Level the Arm Assembly Front To Back

1. Position the arm perpendicular to the cabinet (see Figure 68).



**NOTE** Make sure the arm assembly is in line with the worksurface and perpendicular to the cabinet before leveling.

2. Place the level on the hub, parallel to the arm.
3. Loosen and tighten the mounting screws as necessary.



**TIP** The support arm balances on a pivot. To raise or lower the long side of the arm, adjust the screw nearest the cabinet (see Figure 70). Once the arm is level, tighten the second screw to hold the arm in place.

#### ■ Level the Arm Assembly Side To Side

1. Position the arm parallel to the cabinet (see Figure 69).
2. Place level on the hub, parallel to the arm.
3. Loosen and tighten the mounting screws as necessary (see Figure 70).

Figure 68 Leveling - Arm Assembly Leveling Front to Back

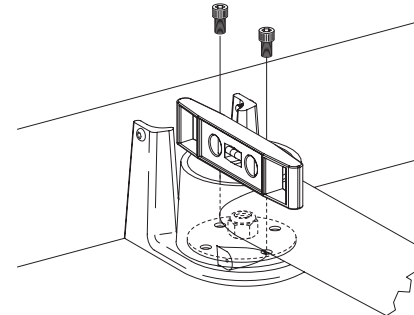


Figure 69 Adjustment - Arm Assembly Leveling Side to Side

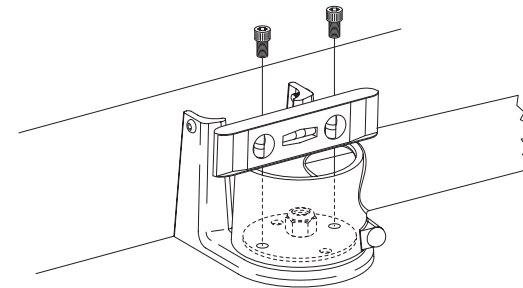
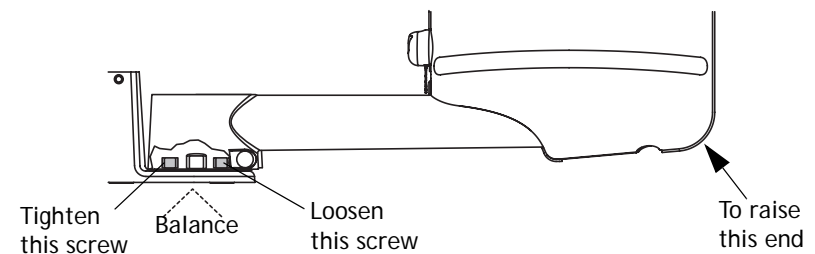


Figure 70 Level the Hub



### ■ Level Round Worksurface

To level the round worksurface, adjust the two set screws in the worksurface support housing (see Figure 71) until the surface is level.



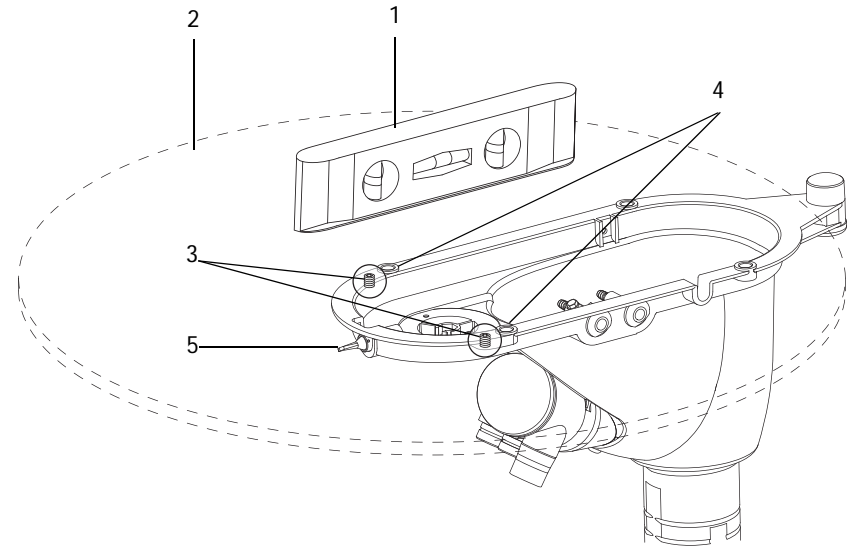
**NOTE** Ensure that the arm assembly is level before leveling the worksurface.

1. Place the worksurface arm in a typical working position and center a level on the round worksurface over the support housing (see Figure 71).
2. Loosen the worksurface screws on the side nearest the master on/off toggle.
3. Adjust the two setscrews in the worksurface support housing until the surface is level. Use a 1/8" hex key (see Figure 71).
4. Tighten the worksurface screws until the worksurface is secure.



**NOTE** Do not overtighten the worksurface screws, or the level may change.

**Figure 71** Level Work Surface



Item	Description
1	Level
2	Worksurface
3	Setscrews
4	Worksurface screws
5	Master on/off toggle

## Worksurface Height

### Worksurface and Instrumentation Arm Height

The A-dec 12 O'clock system has an arm you can adjust for efficient operation and comfort. To adjust the height of the worksurface or the instrumentation arm:

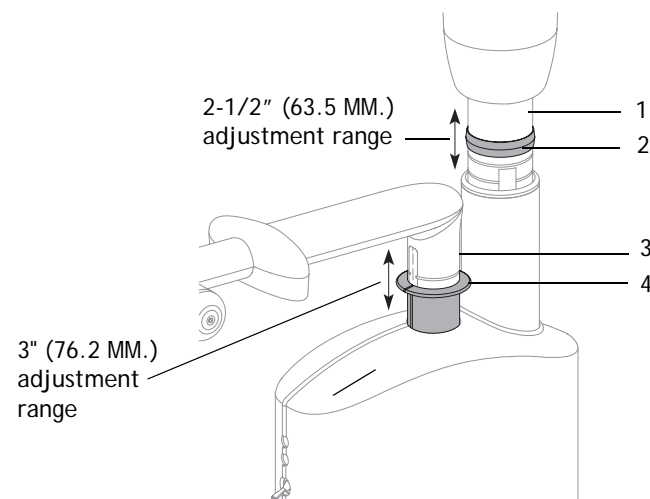
1. Lift the upper part of the vertical post.
2. Slide the height adjustment ring to the desired position.
3. Lower the vertical post onto the ring.



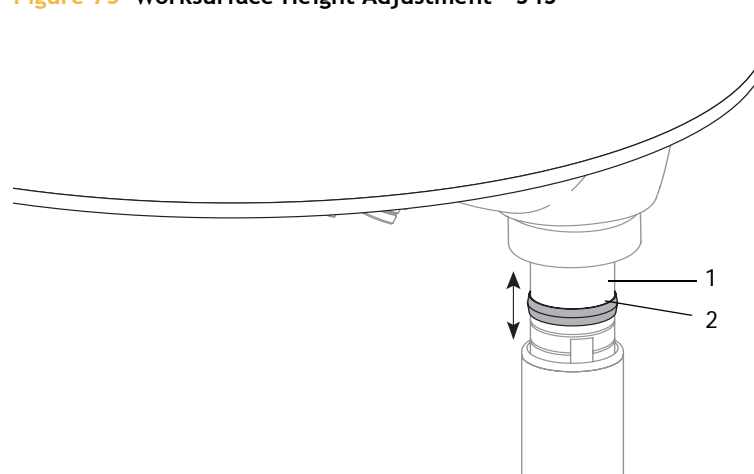
**NOTE** The height adjustment range for the worksurface is 2-1/2" (63.5 mm) and for the doctor's instrumentation arm is 3" (76.2 mm).

Item	Description
1	Vertical post of the worksurface
2	Height adjustment ring for worksurface
3	Vertical post of the arm
4	Height adjustment ring for arm

**Figure 72** Worksurface and Doctor's Instruments Height Adjustment - 541



**Figure 73** Worksurface Height Adjustment - 545



## Instrumentation Arm Positioning

The A-dec 500 instrumentation holders offer horizontal and vertical positioning. Each holder rotates for independent angle adjustment.

### Position Holders

You can customize the position of each holder on the holder assembly arm:

1. Pull holder slightly away from the adjacent holder.
2. Twist to the desired position and release (see Figure 75).



**NOTE** Doctor's and assistant's holders adjust in the same manner.

Figure 74 Instrumentation Arm Positioning

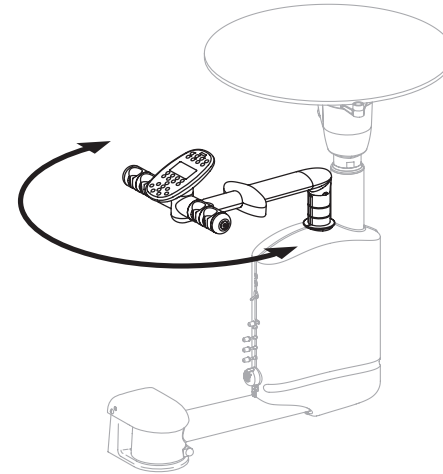
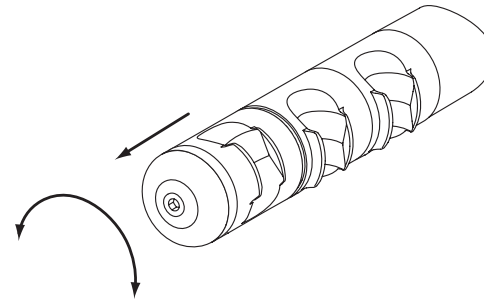


Figure 75 Instrument Holder Positioning



Holder positions rotate independently



## ILLUSTRATED PARTS BREAKDOWN (541 AND 545)

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This section contains illustrated parts breakdowns specific to the 12 O'clock delivery systems (Models 541 and 545).

### Part Identification

The conventions for the serviceable components tables are designed to identify all parts and kits, including ones that are not for sale. Symbols with reference notes are used.

Symbol	Definition
†	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)
No symbol	Part is for sale

### 12 O'CLOCK DELIVERY SYSTEMS IPB CONTENTS

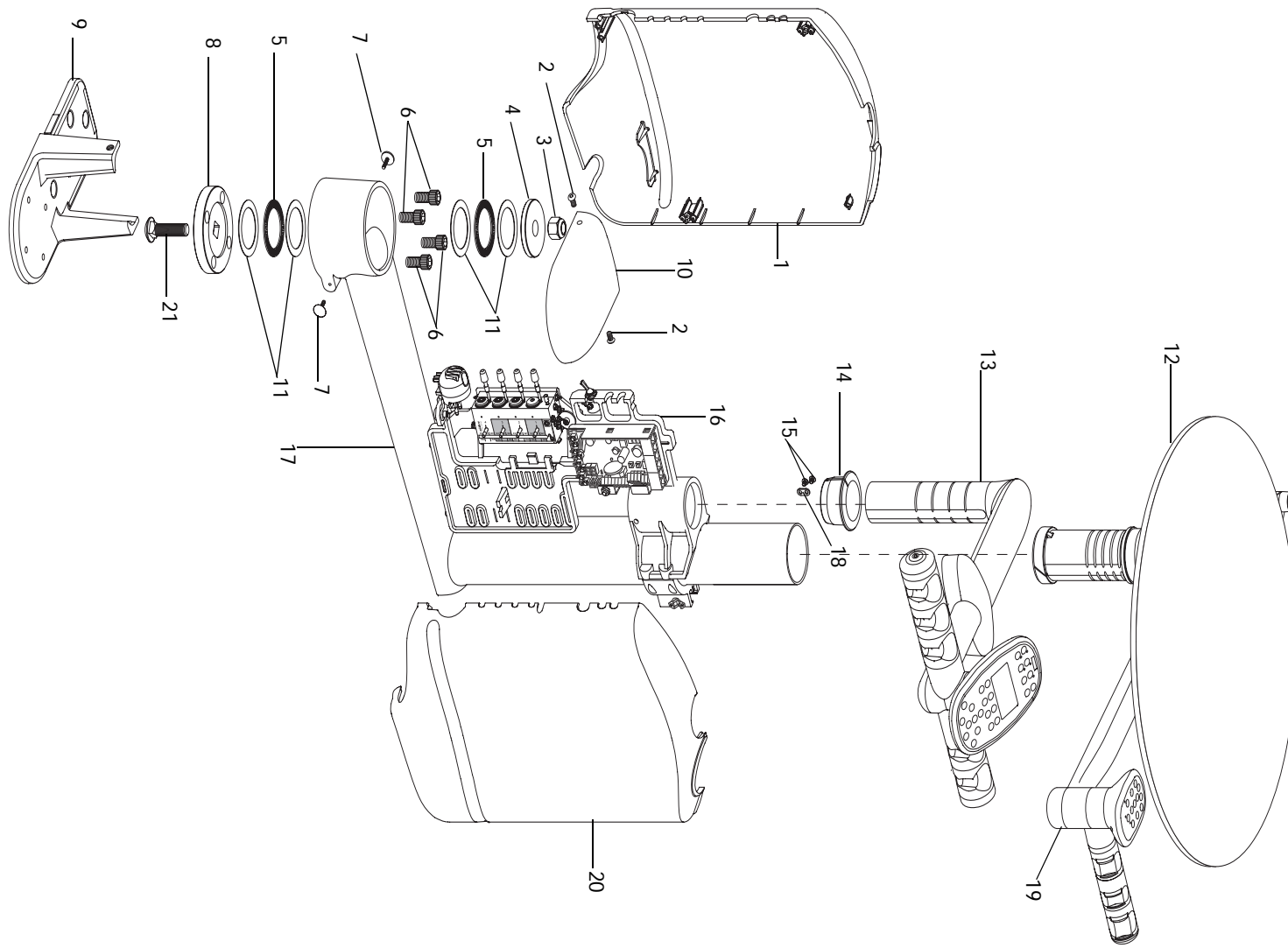
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- Duo Delivery System (Model 541), page 136
- Worksurface Module, page 138
- Mounting Platform Installation, page 140
- Control Center, page 142
- Doctor's Arm Assembly, page 144
- Doctor's Turret, 2" Holder Assembly, page 146
- Vacuum and Upper Structure Assembly, page 148
- Assistant's Holder—Electric, page 150
- Assistant's Holder—Standard, page 152

## Duo Delivery System (Model 541)

Item	Part Number	Description
1	77.0579.00	Right doctor's cover assembly
2	005.002.00	Screw, button socket head 1/4-20 x 5/8
3	006.157.00	Nut, 5/8-11 lock nut, Nylon ins, Zinc
4	77.0407.00	Bearing cap, 12 O'clock arm hub
5	016.044.00	Bearing, thrust, needle 2.0 ID
6	001.225.00	Screw, socket head, 3/8-16 x 3/4, Black
7	017.028.00	Bumper
8	77.0405.00	Gimbal, mount plate
9	77.0482.00	Floor mount, 12 O'clock arm
10	77.0455.00	Cover, hub, 12 O'clock arm
11	016.108.00	Bearing, thrust, race 2.0 ID PLN
12		Worksurface module
13		Doctor's arm
14	77.0428.00	Height adjustment ring, doctor's unit
15	002.094.02	Screw, button head socket, 10-32 x 1/4, stainless steel
16	77.0523.00†	Doctor's control center
17	77.0577.00	12 O'clock support arm/post assembly
18	77.0478.00	Stop washer
19		Assistant's arm
20	77.0578.00	Left doctor's cover assembly
21	005.030.00	Carriage Bolt, 5/8-11 x 2 1/4, ZC

**Figure 76** Duo Delivery System (Model 541)

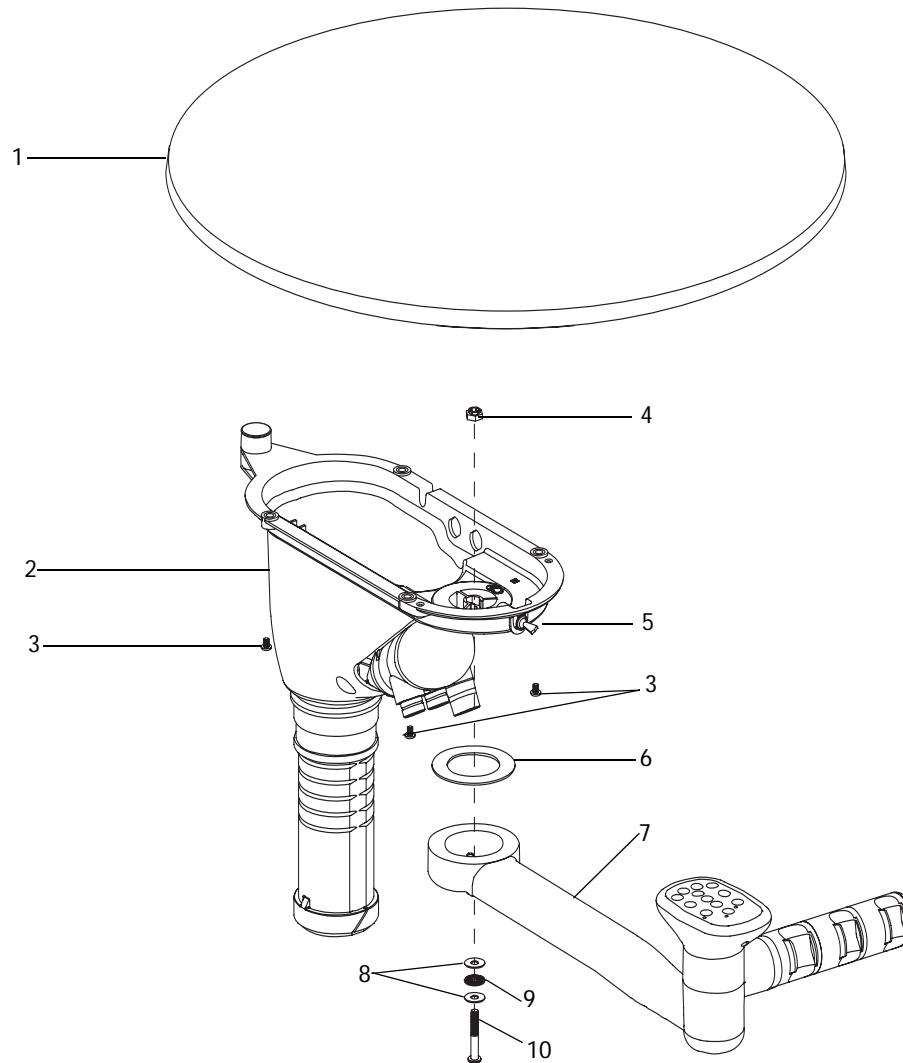




## Worksurface Module

Item	Part Number	Description
1		Worksurface
2		Vacuum and upper structure assembly
3	002.094.02	Screw, button head socket, 10-32 x 1/4, stainless steel
4	006.147.00	Nut, lock, 1/4-20
5	33.0048.05	Valve, toggle, 3-way, up left, round, master On/Off
6	77.0408.00	Bearing, assistant's arm assembly
7		Assistant's arm assembly
8	016.053.00	Washer, assistant's arm assembly
9	016.054.00	Thrust needle, bearing, assistant's arm assembly
10	001.112.03	Screw, assistant's arm assembly, 1/4-20 x 1-1/2

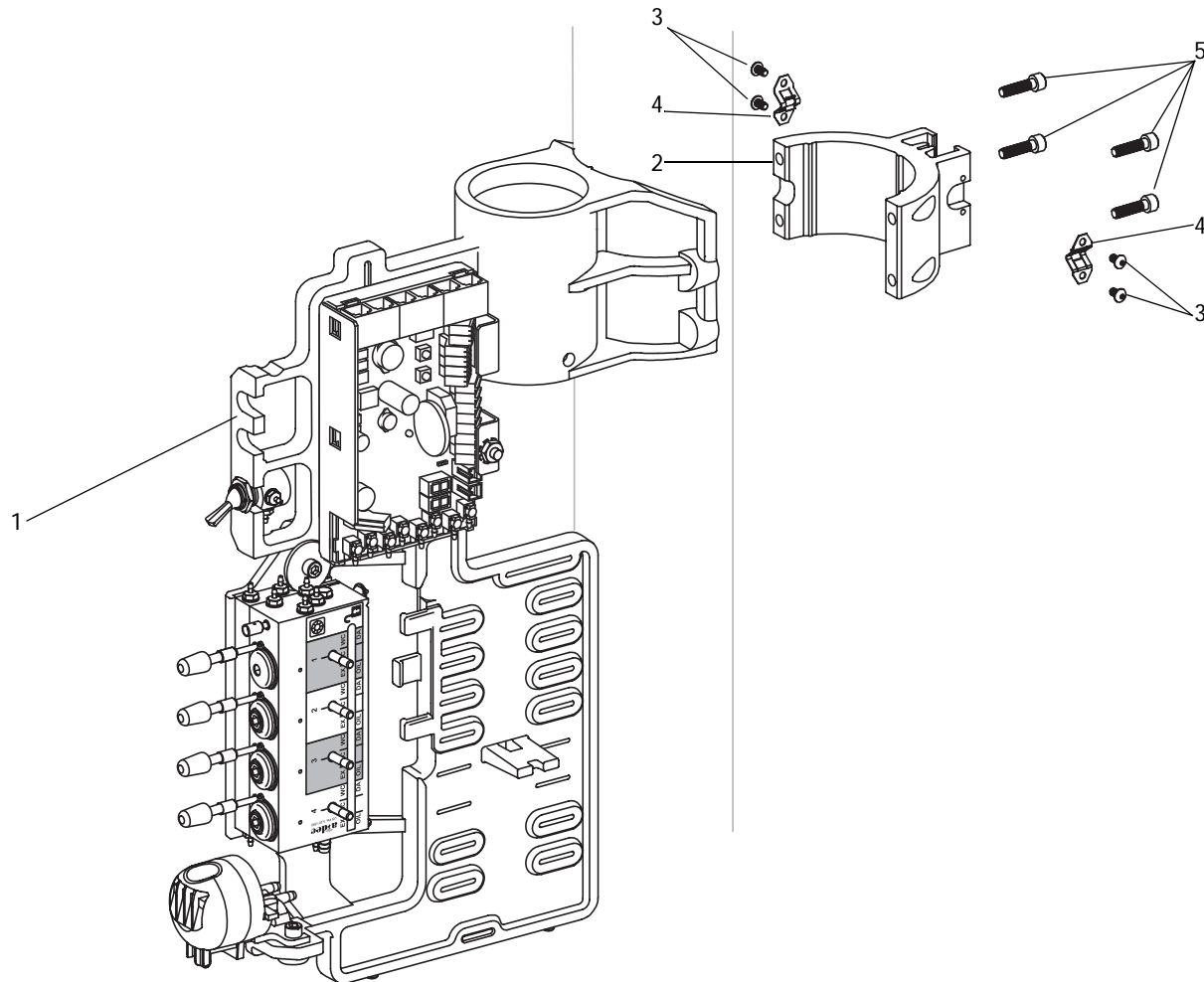
Figure 77 Worksurface Module



## Mounting Platform Installation

Item	Part Number	Description
1		Control Center
2	77.0431.00	Clamp, extrusion, machined
3	002.140.00	Screw, button head socket, patch, 6-32, Stainless Steel
4	042.221.00	Spring, ball stud
5	002.073.00	Screw, socket head, 10-32 x 3/4

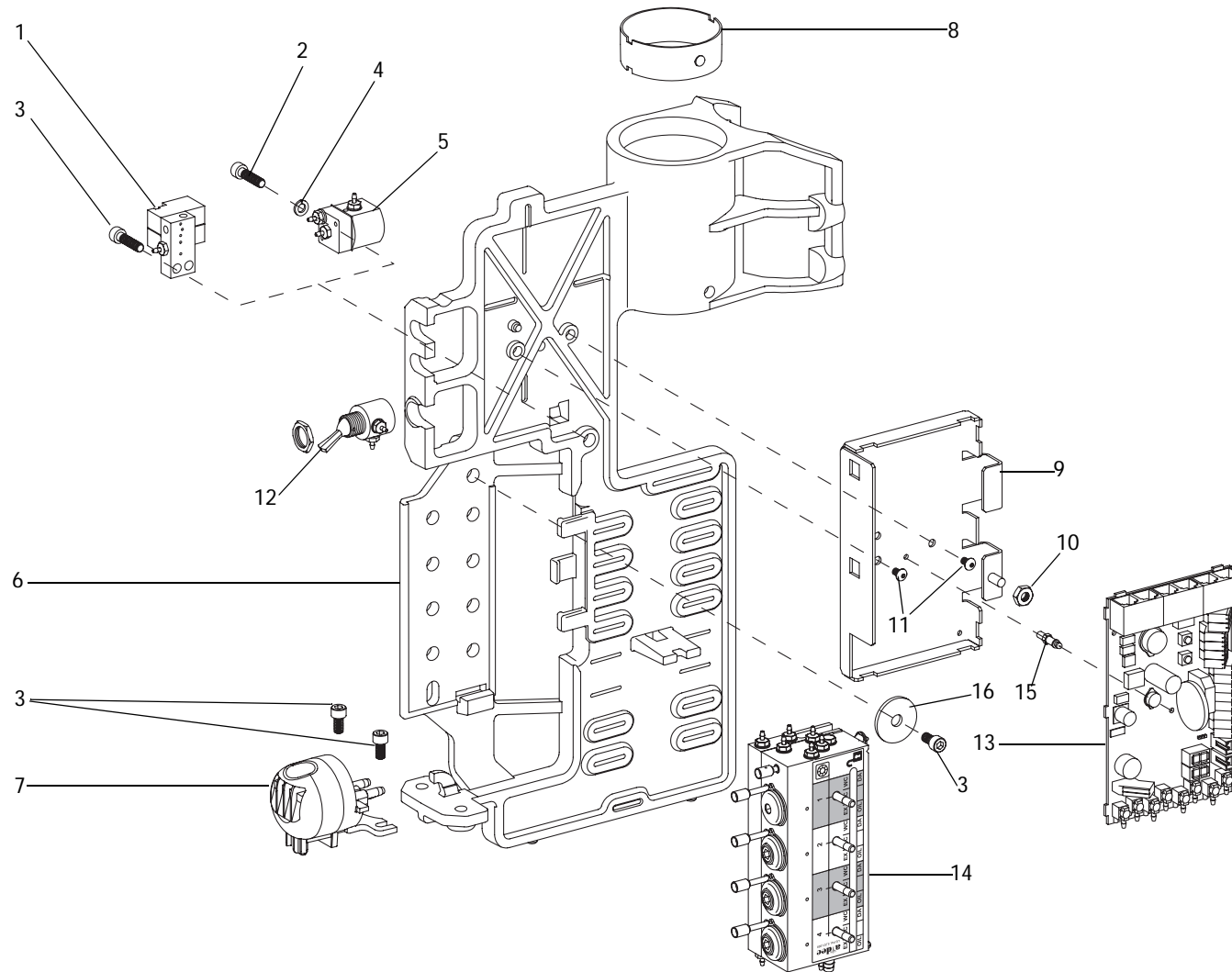
**Figure 78** Mounting Platform Installation



## Control Center

Item	Part Number	Description
1	43.0057.00	Manifold assembly, solenoid, dual (Deluxe touchpad only)
2	002.073.00	Screw, socket head, 10-32 x 3/4
3	002.130.00	Screw, socket head, 10-32 x 3/8
4	004.113.00	Washer, split lock, steel PL #10
5	38.1810.00	Relay assembly, water coolant, air actuated, non-adjustable (standard or no touchpad only)
6	77.0493.00	Frame, unit, 12 O'clock
7	90.1110.00	A-dec 500 oil collector assembly kit
8	77.0429.00†	Lower bushing, doctor's unit — (replace with 77.0493.00)
9	77.0384.00	Tray, printed circuit board mount, control head
10	006.002.00	Grounding nut
11	001.034.00	Screw, allen head socket, patch, 6-32, stainless steel
12	33.0168.00	Valve assembly, 4-way
13	90.1076.00	Circuit board
14	38.1776.00	Control block assembly
15	90.1082.00	Standoff, printed circuit board, plastic, 3/8 H, 6-32 O, package of 5
16	004.156.00	Washer, flat 1.00 OD x.261 ID
—	90.1076.00	Kit, printed circuit board control head, intraoral light source (includes items 14, 16)

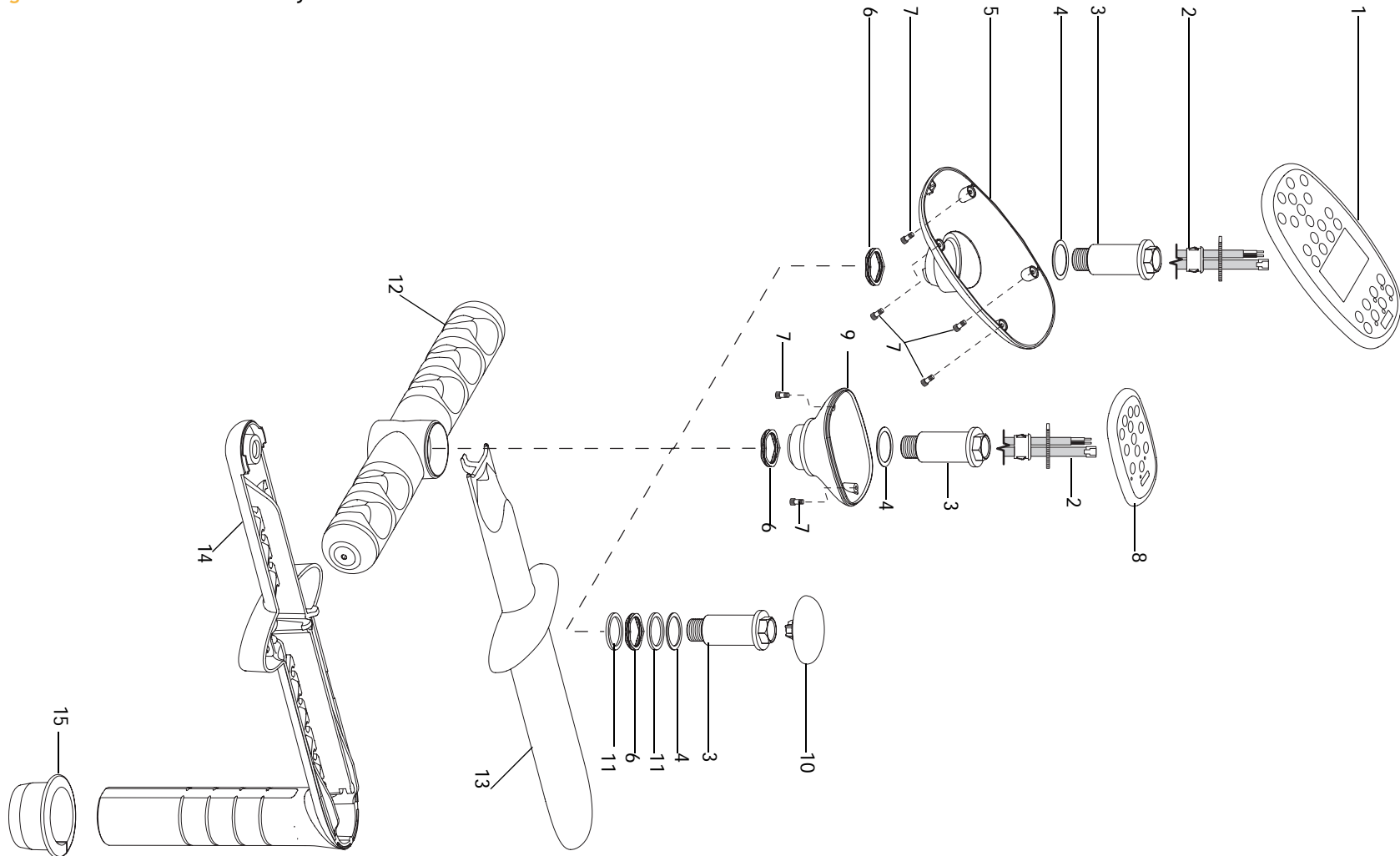
Figure 79 Control Center



## Doctor's Arm Assembly

Item	Part Number	Description
1	90.1135.00	Touchpad module, deluxe
2	041.663.00	Cable bushing, 7/16 ID
3	99.0700.00	Bolt, holder turret, 1 piece
4	004.060.00	Washer, .875 x 1.125 x .020 thick
5	77.0421.00	Base, touchpad, deluxe, 12 O'clock
6	004.237.00	Washer, wave, spring, 1.125 OD
7	003.078.00	Screw, socket head, 4-40 x 1/4
8	90.1078.00	Touchpad kit, standard touchpad
9	77.0335.00	Base, touchpad, standard
10	77.0413.00	Cap, touchpad replacement, assistant's side
11	77.0124.00	Spacer
12		Turret, 2-holder assembly
13	77.0452.00	Cover, arm, 12 O'clock
14	77.0402.01	Arm, doctor's holder, 12 O'clock
15	77.0428.00	Height adjustment ring, doctor's unit

**Figure 80** Doctor's Arm Assembly

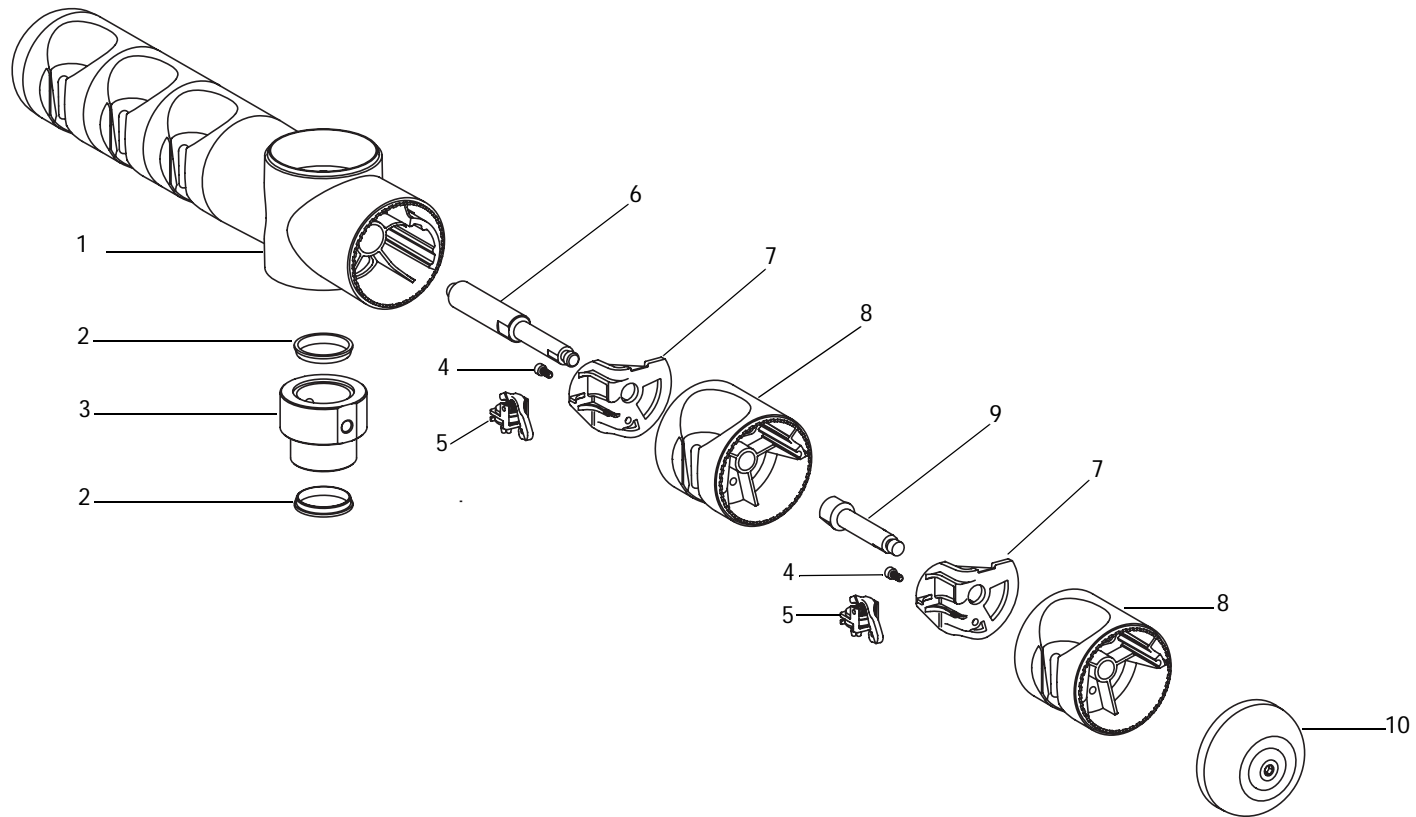




## Doctor's Turret, 2" Holder Assembly

Item	Part Number	Description
1	99.0690.00	Turret, 2" holder assembly
2	99.0698.00	Bearing, inner hub, assistant's arm
3	99.0693.00†	Hub, inner turret, 2" holder assembly — (replace with 99.0713.00)
4	003.078.00	Screw, socket head, 4-40 x 1/4, zinc
5	99.0696.00	Actuator valve assembly, 12 O'clock holder
6	99.0701.00	Turret axle, assistant's arm
7	99.0694.00†	Clip, microvalve, 2" holder — (replace with 99.0711.00)
8	99.0691.00†	Holder, SE/syringe, 2" diameter — (replace with 99.0711.00)
9	99.0660.00†	Axle, holder assembly, assistant's arm — (replace with 99.0711.00)
10	99.0710.00	End cap, 12 O'clock operator
	99.0711.00	Holder assembly, with valve, 12 O'clock operator (includes items 4, 5, 6, 7, 8, 9)
	99.0713.00	Turret assembly, 12 O'clock operator (includes items 2, 3)

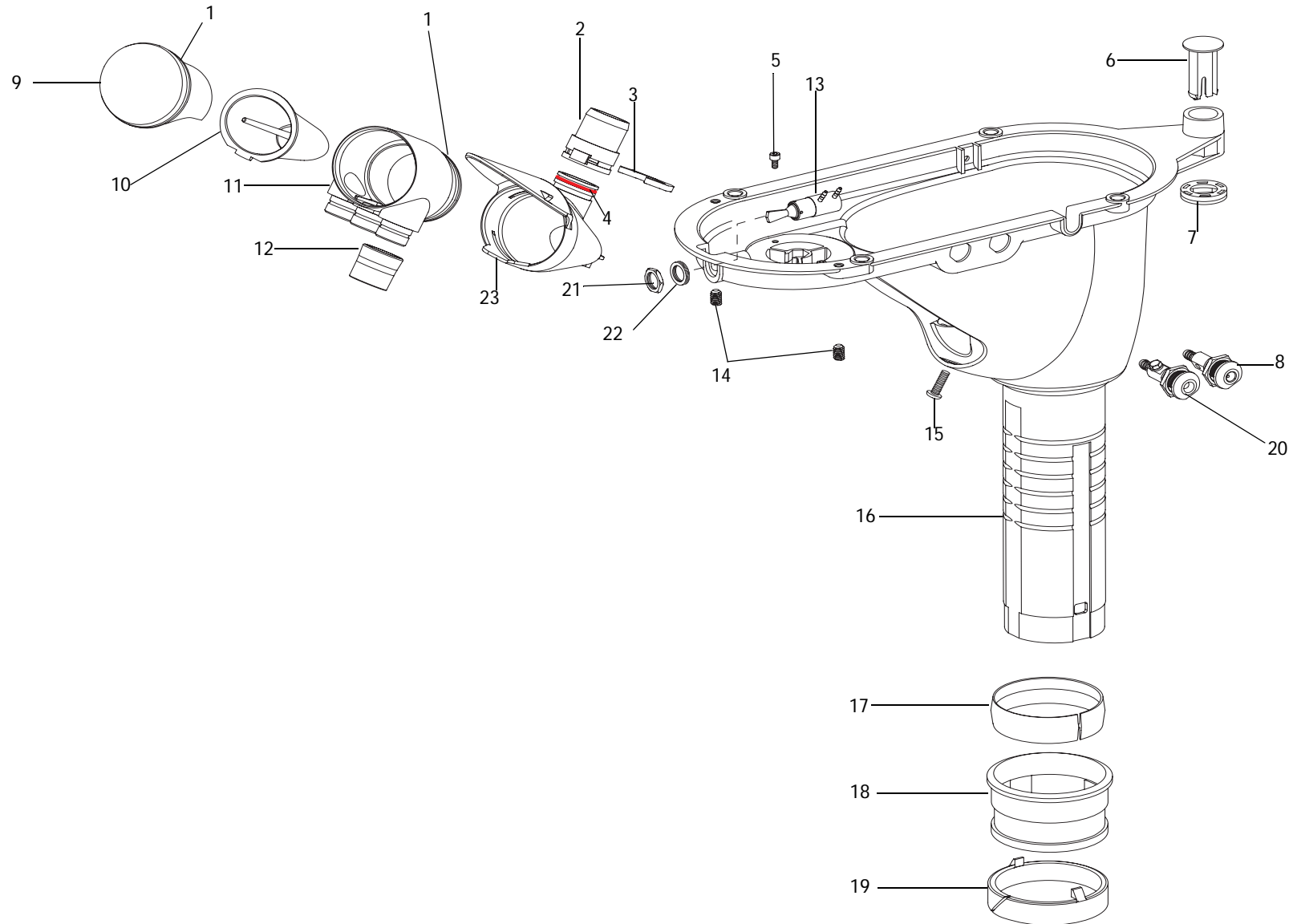
Figure 81 Doctor's Turret, 2" Holder Assembly



## Vacuum and Upper Structure Assembly

Item	Part Number	Description
1	030.035.02	O-ring, 2.239 ID x .070 W, package of 10
2	022.094.01	Connector, vacuum, female, 25 mm tubing, with clip
3	022.090.00	Retainer clip, connector vacuum
4	035.053.01	O-ring, silicone, vacuum, 20 mm x 2 mm, package of 10
5	002.094.02	Screw, button head, 6-32 x 1/4
6	77.0542.00	Plug, assistant's support
7	77.0541.00	Bumper, assistant's support
8	026.181.00	QD assembly, self-contained water 5/16, female (optional)
9	77.0254.01	Cap, vacuum tower, with deflector and O-ring
10	11.1284.01	Screen, ellipse, solids trap, package of 10
11	77.0453.00	Connector, tri-vacuum tower, assistant's arm with O-ring
12	11.1280.01	Cap, 15 mm QD
13	33.0048.05	Valve, toggle, 3-way, up left, round, master On/Off
14	007.042.00	Setscrew, socket cup point, 1/4-20 x 3/8
15	005.123.01	Screw, button head socket, 10-32 x 5/8
16	77.0419.01	Assistant's worksurface support
17	77.0415.00	Height adjustment ring
18	77.0417.00	Bushing height adjust-upper
19	77.0416.00	Bushing height adjust-lower
20	026.182.00	QD assembly, female, air, 5/16 (optional)
21	006.009.01	Hex nut, 15/32-32" x 9/16 x 3/32", package of 10
22	006.069.00	Knurl nut, 15/32-32"
23	77.0436.00	Vacuum canister base

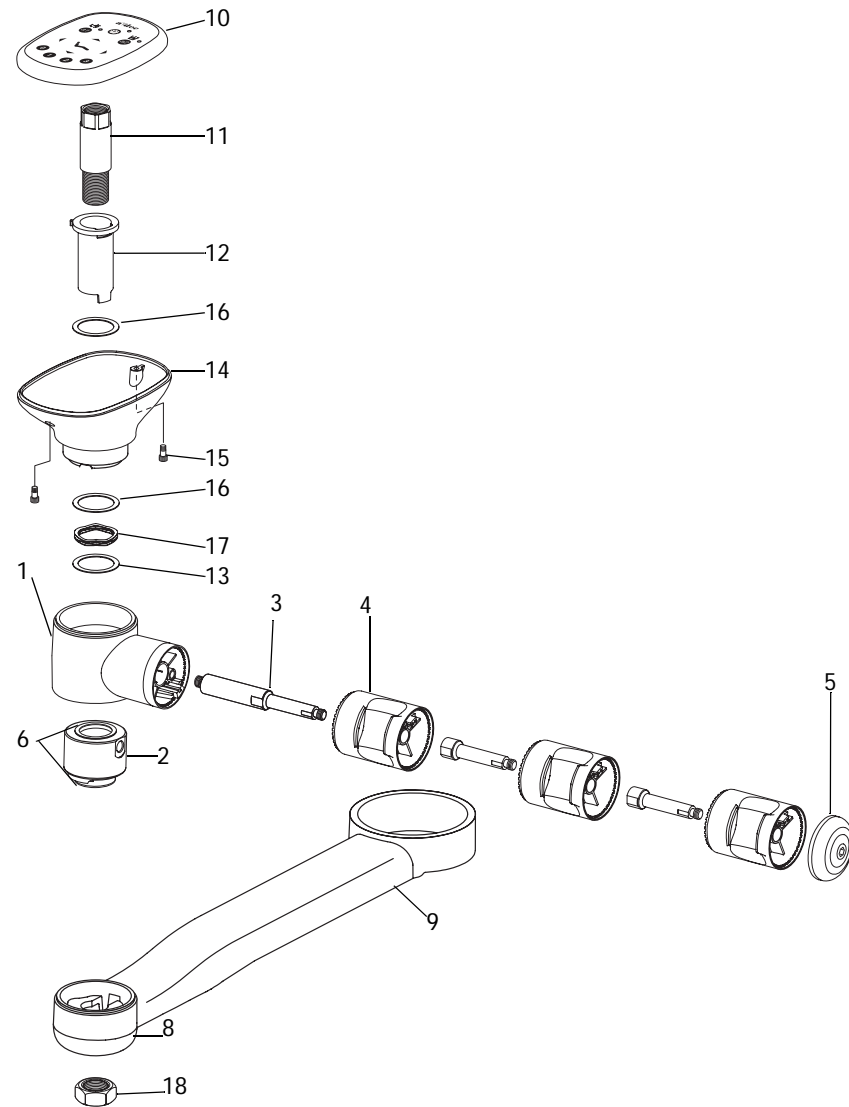
**Figure 82** Vacuum and Upper Structure Assembly



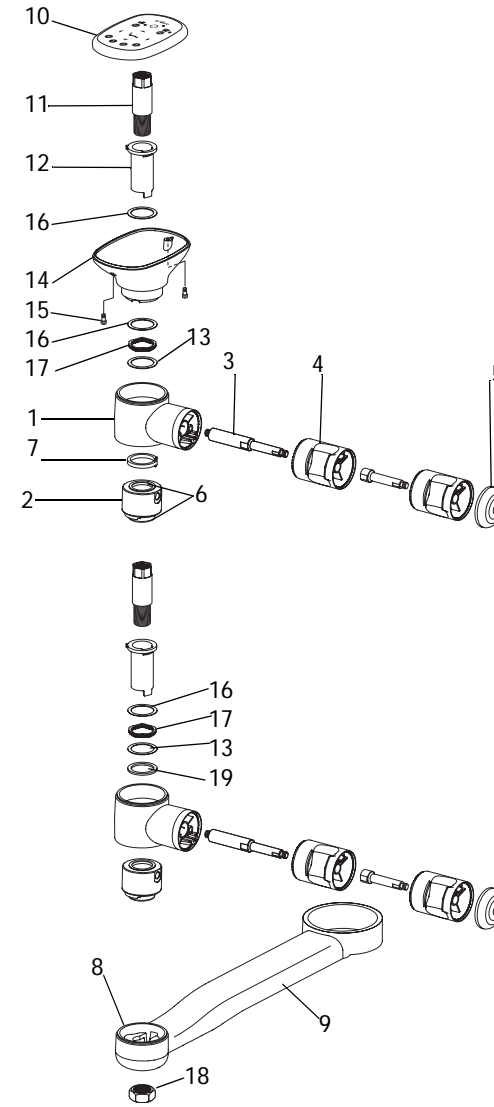
## Assistant's Holder—Electric

	Part Number	Description
1	99.0649.00	Turret, holder, assistant's arm
2	99.0699.00	Inner hub, assistant's arm
3	99.0701.00	Turret axle, assistant's arm
4	99.0673.01	Holder, SE electric holder kit
	99.0674.01	Holder, HVE electric holder kit
	99.0675.01	Holder, 15 mm HVE electric holder kit
5	99.0648.01	End cap, holder assembly, assistant's arm
6	99.0698.00	Bearing, inner hub, assistant's arm
7	77.0385.00	Stop (only with dual holders), turret rotation
8	77.0125.01†	Head mount, assistant's arm
9	77.0485.00	Assistant's Arm
10	77.0283.00	Cap assembly, touchpad, standard
11	77.0123.00	Bolt, holder, turret, 1 piece
12	99.0651.00	Spline, holder assembly, assistant's arm
13	004.060.00	Washer, .875 x 1.125 x .20 thick
14	77.0335.00	Base, touchpad, assistant's arm
15	003.078.00	Screw, 4-40 x 1/4, socket head
16	004.173.00	Washer, .875 x 1.125 x .020
17	004.237.00	Washer, wave, spring, 1.125 outer diameter
18	006.121.00	Nut, hex jam, 5/8-18 Grade 5
19	77.0124.00	Spacer, .875 x 1.125 x .75

**Figure 83** Assistant's Holder—Electric, Single



**Figure 84** Assistant's Holder—Electric, Dual

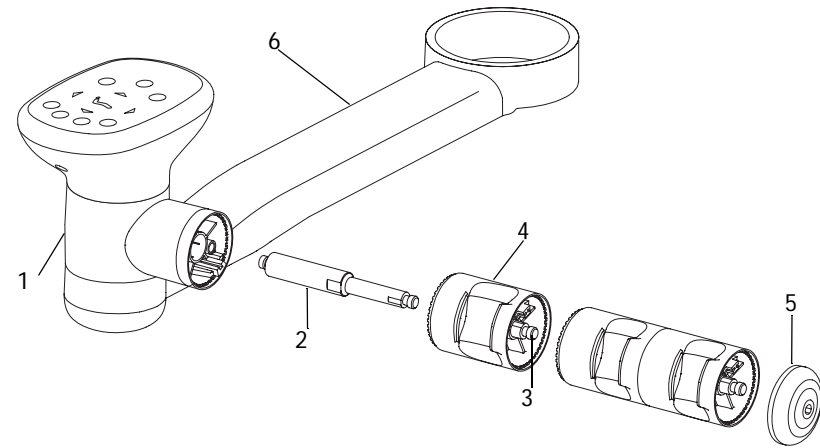


## Assistant's Holder—Standard

The touchpad does not need to be removed when disassembling the standard holder.

Item	Part Number	Description
1	99.0649.00	Turret, holder, assistant's arm
2	99.0701.00	Turret axle, assistant's arm
3	99.0660.00†	Axle, holder assembly, assistant's arm — (replace with 99.0711.00)
4	99.0653.01	Holder, SE, syringe kit
	99.0650.01	Holder, 11 mm, HVE standard kit
	99.0652.00	Holder HVE, 15 mm kit, assistant's arm
5	99.0648.01	End cap, holder assembly, assistant's arm
6	77.0485.00	Assistant's Arm

Figure 85 Assistant's Holder—Standard





# A-DEC 500 DELIVERY SYSTEMS COMMON FEATURES

A-dec 500 delivery systems have features in common, including:

- Tubing
- Quick-connect fittings
- Data communication system
- Control components
- Master On/Off toggle
- System accessories



## DELIVERY SYSTEM COMMON FEATURES CONTENTS

- Product Overview, page 154
- Flow Diagrams, page 177
- Service/Usage Information, page 178
- Adjustments/Maintenance, page 172
- Illustrated Parts Breakdown, page 179



## PRODUCT OVERVIEW (ALL DELIVERY)

### A-dec Tubing

A-dec products use four sizes of tubing: 1/8" OD, 1/4" OD, 3/8" OD and 5/16" OD. A-dec 500 products use the 5/16" OD for all high flow air and water applications. Figure 10 lists functions, descriptions and part numbers. Identify tubing functions by reading the tubing color and tracer markings.

Starting with A-dec 500, 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 9** Silicone Handpiece Tubing Cross Reference Table

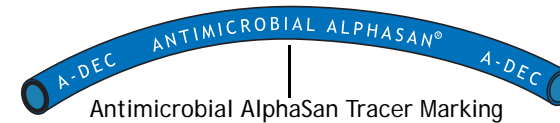
Color	Function
Clear	Drive air
Red	Exhaust
Blue	Air coolant
Green	Water coolant

### Antimicrobial AlphaSan Tubing

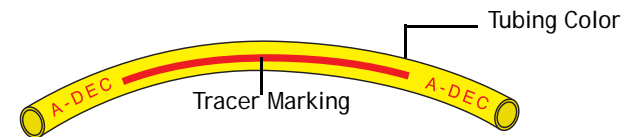
In 2005 A-dec began blending a new type of tubing called antimicrobial AlphaSan for use in our products.

Identify antimicrobial AlphaSan tubing by the tracer on the tubing - "Antimicrobial AlphaSan®." Antimicrobial AlphaSan tubing is used for water lines in A-dec delivery units.

**Figure 86** Antimicrobial AlphaSan Tubing Tracer

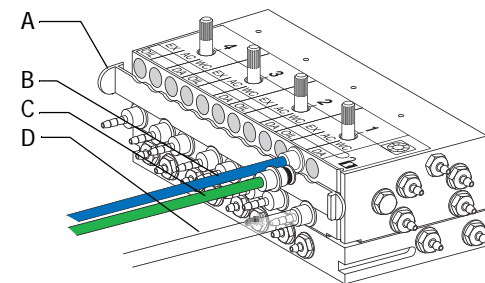


**Figure 87** Tracer component










**NOTE** Tubing with the antimicrobial AlphaSan® stamp contains antimicrobial properties. Not all tubing used in A-dec products is antimicrobial AlphaSan tubing.




**Figure 88** Handpiece Tubing Connections




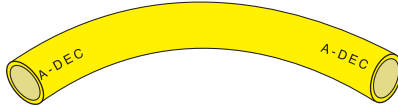
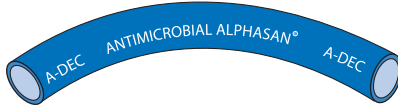


(A) Barb Retainer; (B) Air Coolant Tubing; (C) Water Coolant Tubing;  
(D) Drive Air Tubing

**Table 10 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 cup fill and vacuum actuator - 1/8" OD, green/white long dash		036.006.03
Water coolant signal	Water coolant signal air from foot control; signal air for cuspidor bowl rinse - 1/8" OD, green/white short dash		036.018.03
Unregulated air	Unregulated air to flexarm brake - 1/8" OD, black		036.020.03
Water coolant signal air	Signal air (clear) from foot control valve to wet/dry toggle - 1/8" OD, clear		024.015.04
Water supply, cold water (regulated)	Oral cavity water - 1/8" OD, blue		036.004.03
Oral cavity water	Syringe water, with/without water heater - 1/8" OD, red		036.005.03

Tubing Function	Description	Tubing Color/Tracer	Part Number
Unregulated air, master air	Continuous, filtered, unregulated air - 1/8" OD from the air filter regulator to the master On/Off toggle, yellow/red stripe		036.013.03
Pilot air	Filtered unregulated air controlled by master On/Off toggle - 1/8" OD, yellow/red dash		036.009.04
Regulated air	Continuous, filtered, regulated air - 1/8" OD, yellow		036.003.03

Tubing Function	Description	Tubing Color/Tracer	Part Number
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		036.0115.01
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 500 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 89 Make a Square Cut

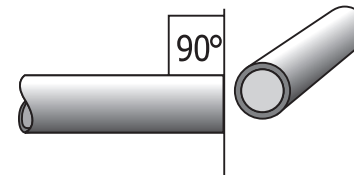


Figure 90 Push Tubing Into the Fitting

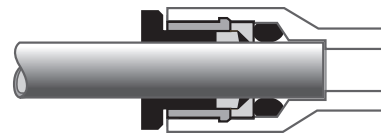


Figure 91 Remove Tubing From the Fitting Connector



## Data Communication System

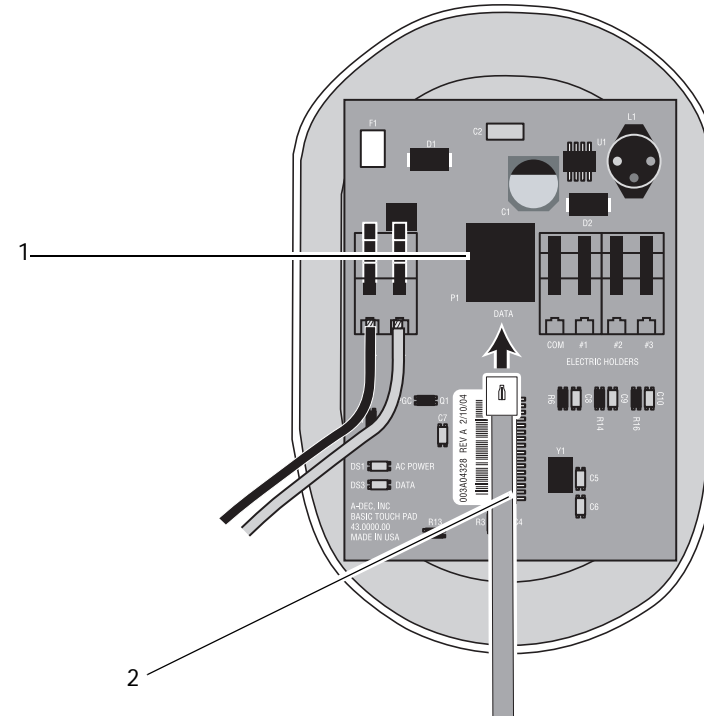
### Data Communication System Features

A-dec 500 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 line connector 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.

Item	Description
1	Data line connectors
2	DCS lines

Figure 92 DCS Line and Connector



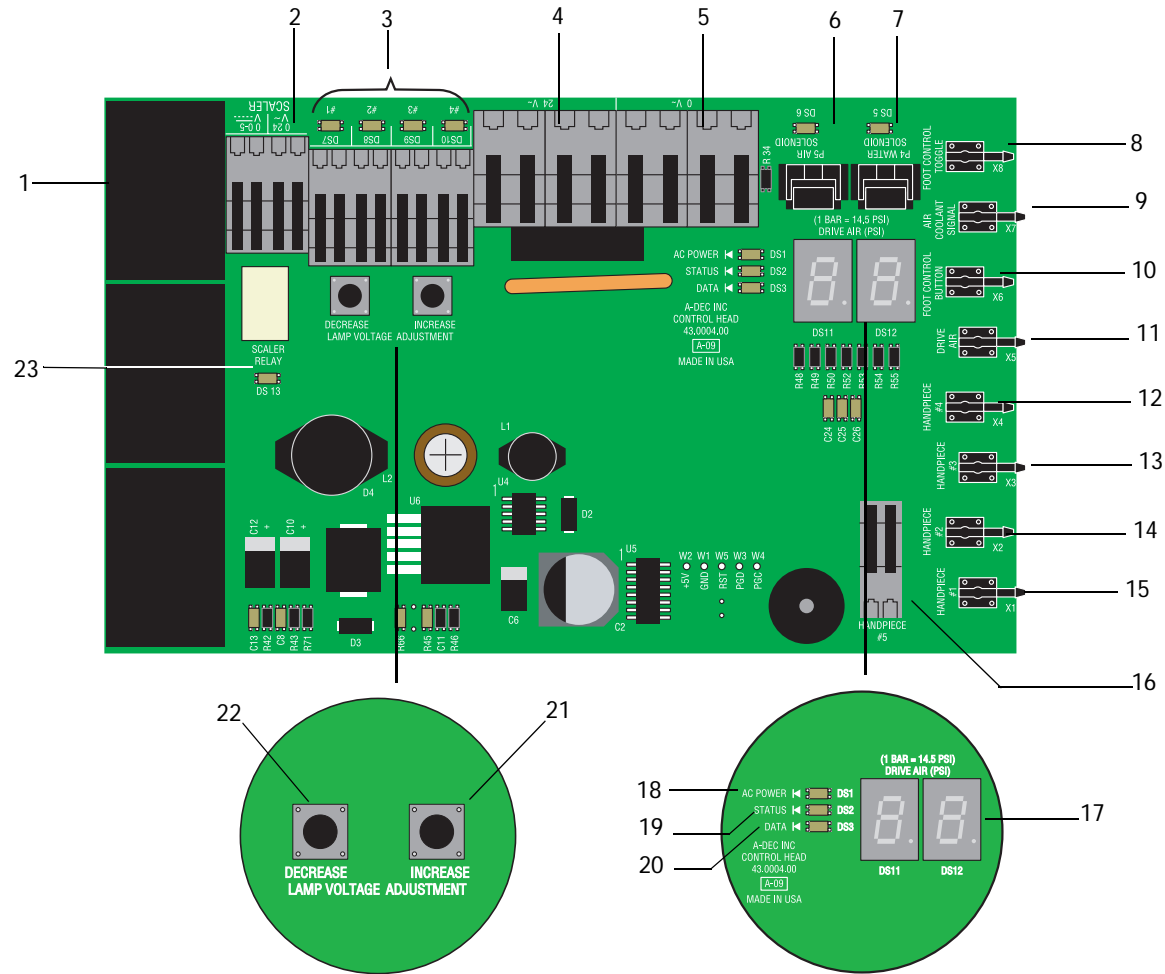
## Circuit Board Components

### Part No: 90.1076.00

The delivery system circuit board has a wide range of functionality with a built-in intraoral light source, drive air pressure digital readout, and status LEDs. Transducers translate air signals to electronic signals, communicating with the touchpad and other components when a handpiece is ready for use.

Item	Description
1	P1, P2, P3 - Data line ports (DCS)
2	J6 - Scaler power terminal strip
3	J4, J5 - Intraoral light source strip and LEDs DS7, DS8, DS9, DS10
4	J2 - 24 VAC terminal strip
5	J2 - 0 VAC terminal strip
6	DS6 - Air coolant solenoid LED and connector
7	DS5 - Water coolant solenoid LED and connector
8	X8 - Water coolant signal transducer (foot control toggle)
9	X7 - Air coolant signal transducer
10	X6 - Accessory button (foot control) signal transducer
11	X5 - Drive air signal transducer
12	X4 - Handpiece 4, holdback transducer
13	X3 - Handpiece 3, holdback transducer
14	X2 - Handpiece 2, holdback transducer
15	X1 - Handpiece 1, holdback transducer
16	J3 - Handpiece 5, terminal strip
17	DS11, DS12 - Drive air LED display
18	DS1 - AC Power LED
19	DS2 - Status LED
20	DS3 - Data LED
21	S2 - Increase intraoral light source voltage adjustment
22	S1 - Decrease intraoral light source voltage adjustment
23	DS13 - Scaler relay LED

**Figure 93** Components of the Delivery System Circuit Board



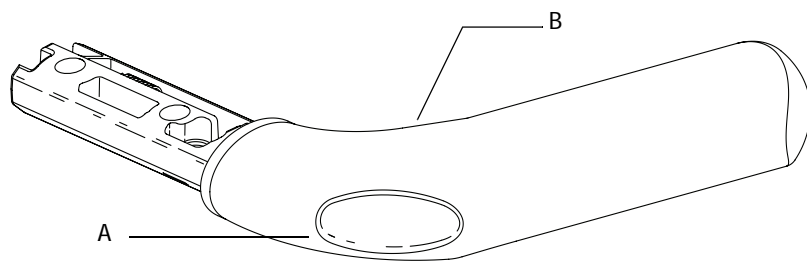


## Brake Handle

**Part No: 77.0104.01**

The brake handle activates a replaceable microvalve, releasing pressure on the brake inside the flexarm.

**Figure 94 Brake Handle Components**



(A) Brake Button; (B) Brake Handle

## Accessory Holder

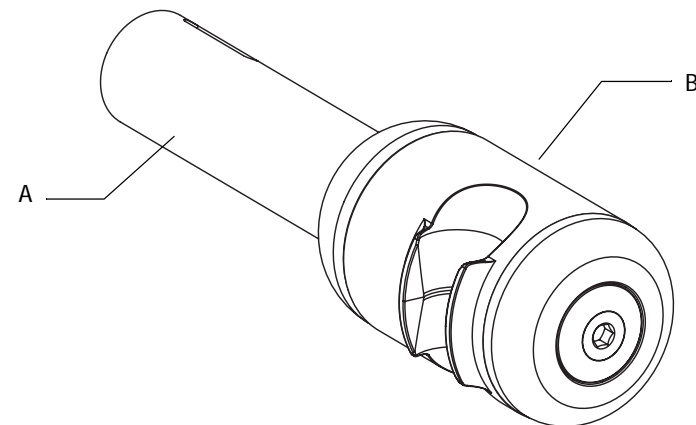
**Part No: 99.0681.00 Standard**

**Part No: 99.0684.00 Auto-electric**

The accessory holder is either an active or non-active position on the delivery system. It can be mounted on either side of the delivery system, opposite the touchpad.

Auto-electric holders have a power source at the terminal for handpiece position 5 on the delivery system circuit board.

**Figure 95 Accessory Holder Components**



(A) Hub; (B) Syringe/Saliva Ejector Holder Assembly

## Master On/Off Toggle

Part No: 33.0048.05 (541 and 545)

Part No: 33.0153.00 (532/533/542)

The master On/Off toggle is located on the worksurface support of the 541 delivery system and on the side of the 532, 533 and 542 delivery systems. The toggle operates with unregulated air and supplies air to the control block for holdback air. When the master toggle is off, the delivery system does not have power.

Item	Description
1	Master On/Off toggle

Figure 96 Master On/Off Toggle – 541

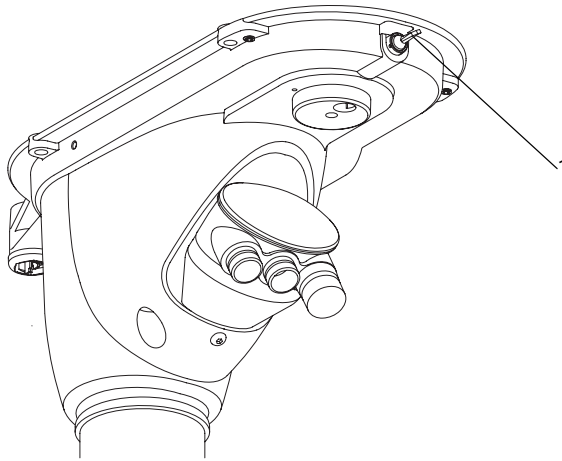
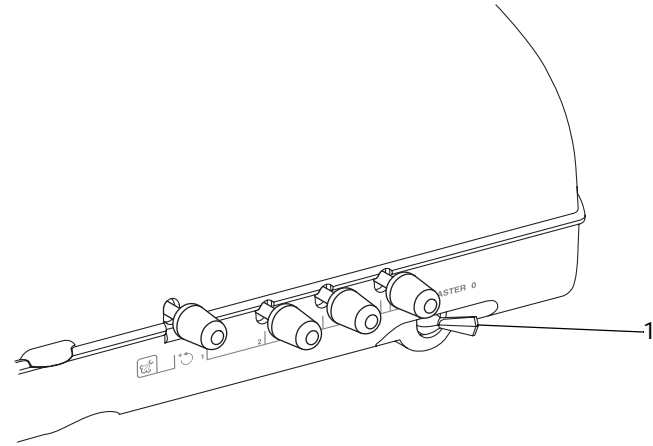


Figure 97 Master On/Off Toggle – 532/533/542



## Flush Toggle

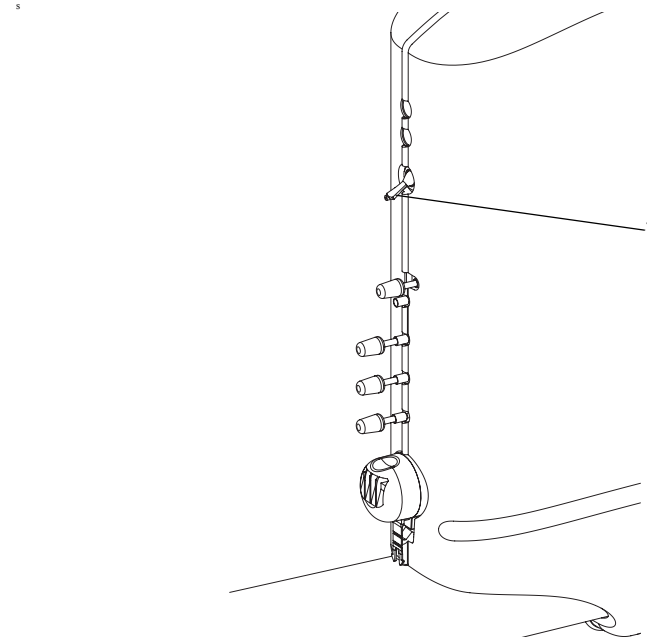
**Part No: P/N 33.0168.00**

The flush toggle is located on side of the 541 12 O'clock duo delivery system and on the back of the 532, 533 and 542 delivery systems. 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.

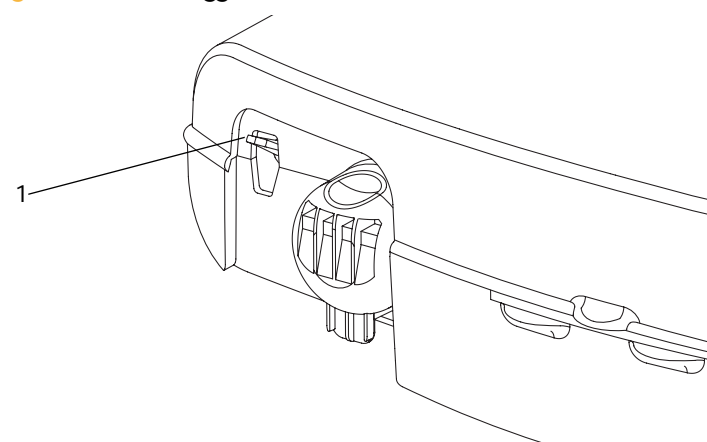
- If the handpiece is in the holder (holdback active), the flush is not activated.
- If the handpiece is out of the holder (holdback exhausted), the flush operates.

Item	Description
1	Handpiece flush toggle

**Figure 98 Flush Toggle — 541**



**Figure 99 Flush Toggle — 532/533/542**

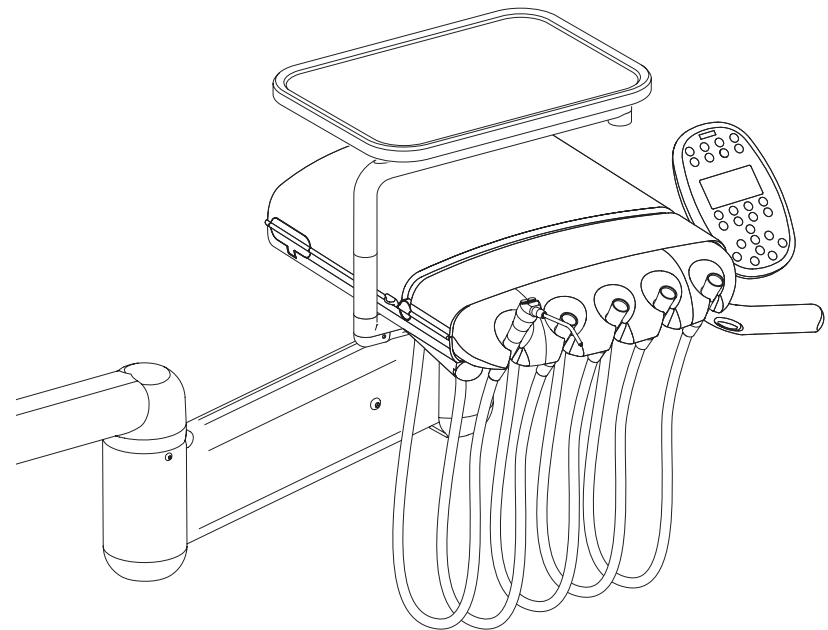


## Traditional Tray Holder

**Part No: 77.0294.00/77.0295.00**

The traditional tray holder can be mounted on the left or right side below the delivery system.

**Figure 100** Traditional Tray Holder Components



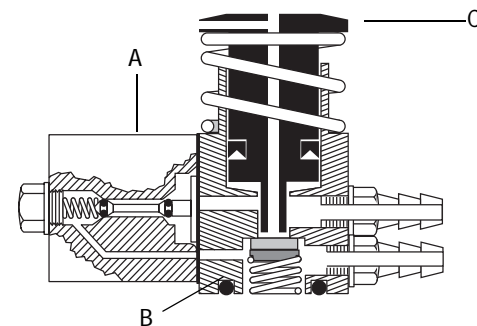
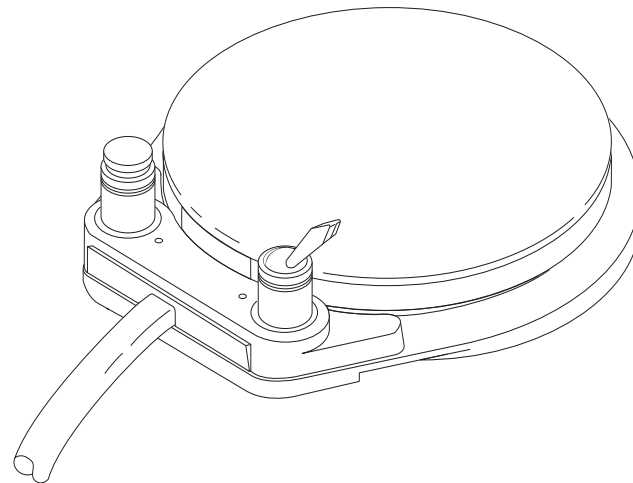
## Foot Control

**Part No: 38.1805.01 (541/545)**  
**38.1805.00 (532/533/542)**

The A-dec 500 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 unseated, 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.

**Figure 101** A-dec Foot Control



(A) Signal Relay Valve; (B) Diaphragm; (C) Piston

## Self-Contained Water Bottle

Part No: 14.0468.00

The A-dec self-contained water system is a closed system, which isolates treatment water from the municipal water supply. The A-dec 500 water bottle is designed to prevent cross-contamination during refilling. The pickup tube is located inside the bottle assembly and is not exposed to outside contaminants. Air pressure forces water from the water bottle into the pick-up tube. Water is distributed to the delivery system, syringe, handpieces and assistant's syringe.



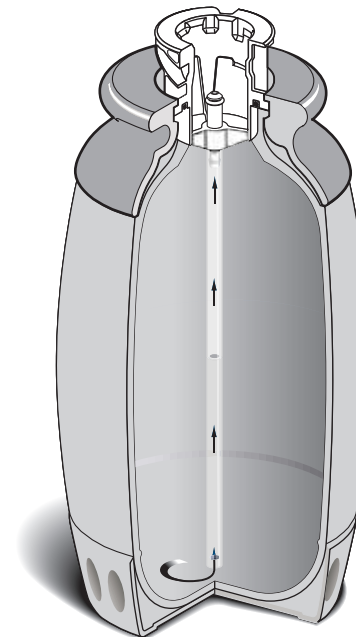
**WARNING** Use only A-dec water bottles. Do not use other brands, or damaged bottles. They can pose a serious safety hazard if broken while pressurized. The A-dec plastic water bottles cannot withstand heat sterilization. Attempting to do so damages the bottle and the sterilizer.



**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 102 Self-Contained Water Bottle



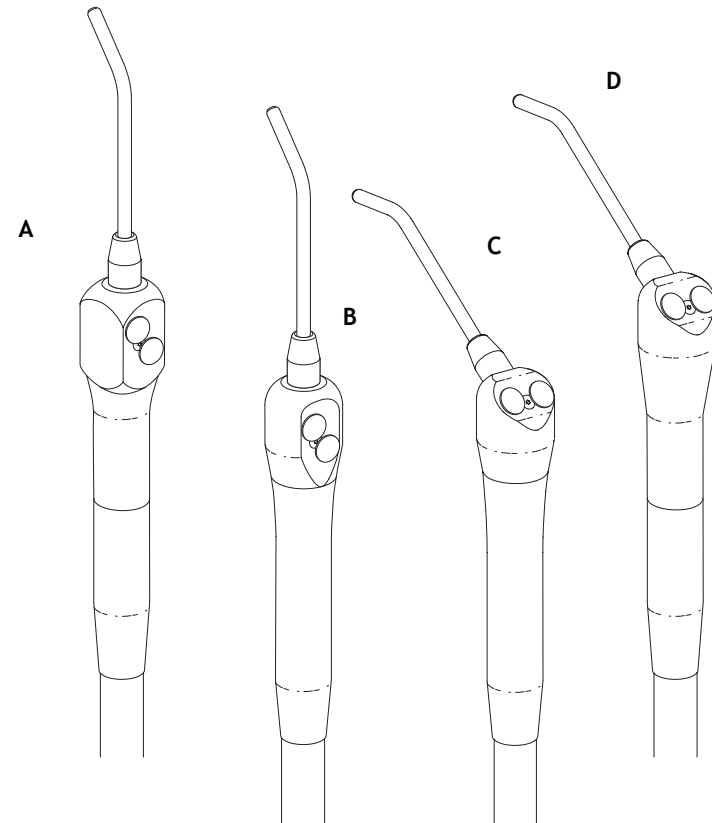
## Standard Syringe

Continental and Traditional autoclavable syringes have serviceable air and water button valves. The tip retaining nuts have replaceable O-rings. See “Warm Water Syringe” on page 169 for illustrated parts breakdown for the warm water syringes. See the *Illustrated Parts Breakdown*, P/N 85.0851.00 for other Continental and Traditional 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 103 Autoclavable Syringes



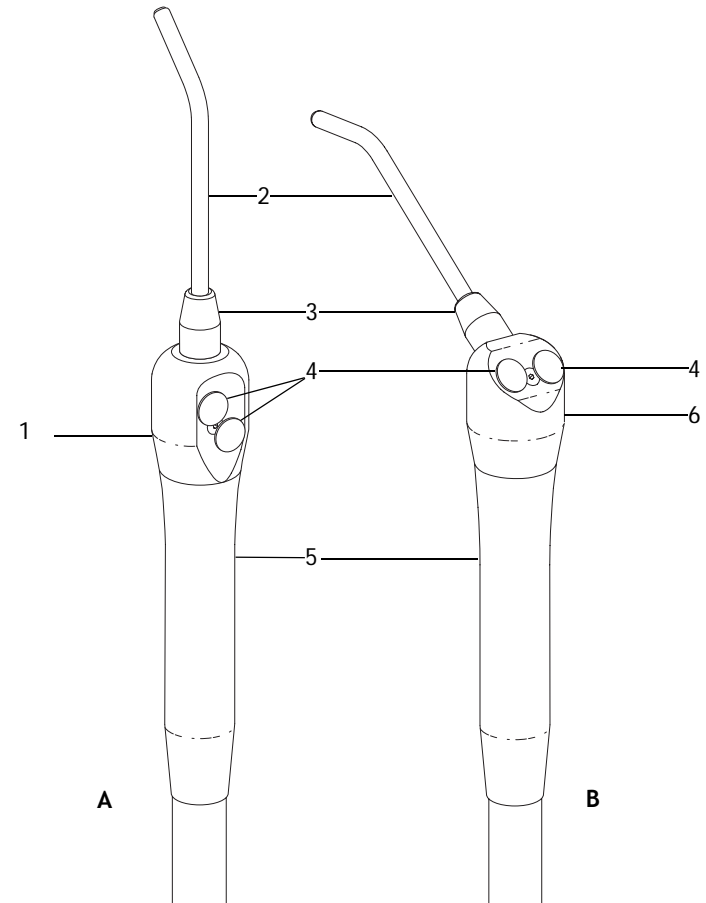
(A) Continental Syringe; (B) Continental Warm Water Syringe; (C) Traditional Warm Water Syringe; (D) Traditional Syringe

## 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.

Item	Description
1	Continental syringe head
2	Syringe tip
3	Syringe nut, smooth
4	Button valve
5	Syringe handle
6	Traditional syringe head

Figure 104 Warm Water Syringe



(A) Continental Warm Water Syringe; (B) Traditional Warm Water Syringe



## 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).

## Warm Water Syringe Specifications

There are five positions ranging from minimum to maximum for temperature variations. These temperatures are shown in the table (see Table 11).

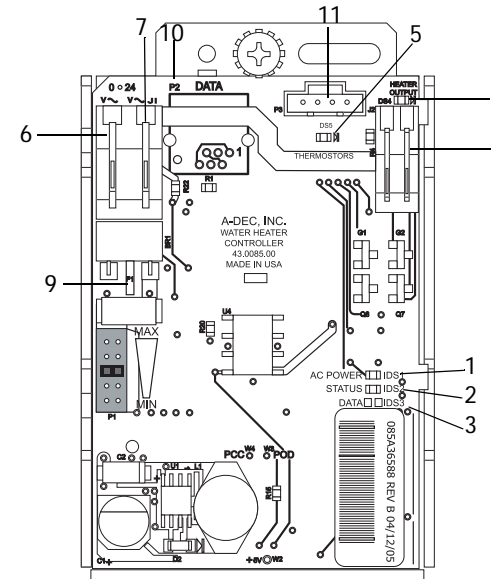
**Table 11** Warm Water Syringe Temperature Selections

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 recognized.

**Figure 105** Warm Water Syringe Circuit Board



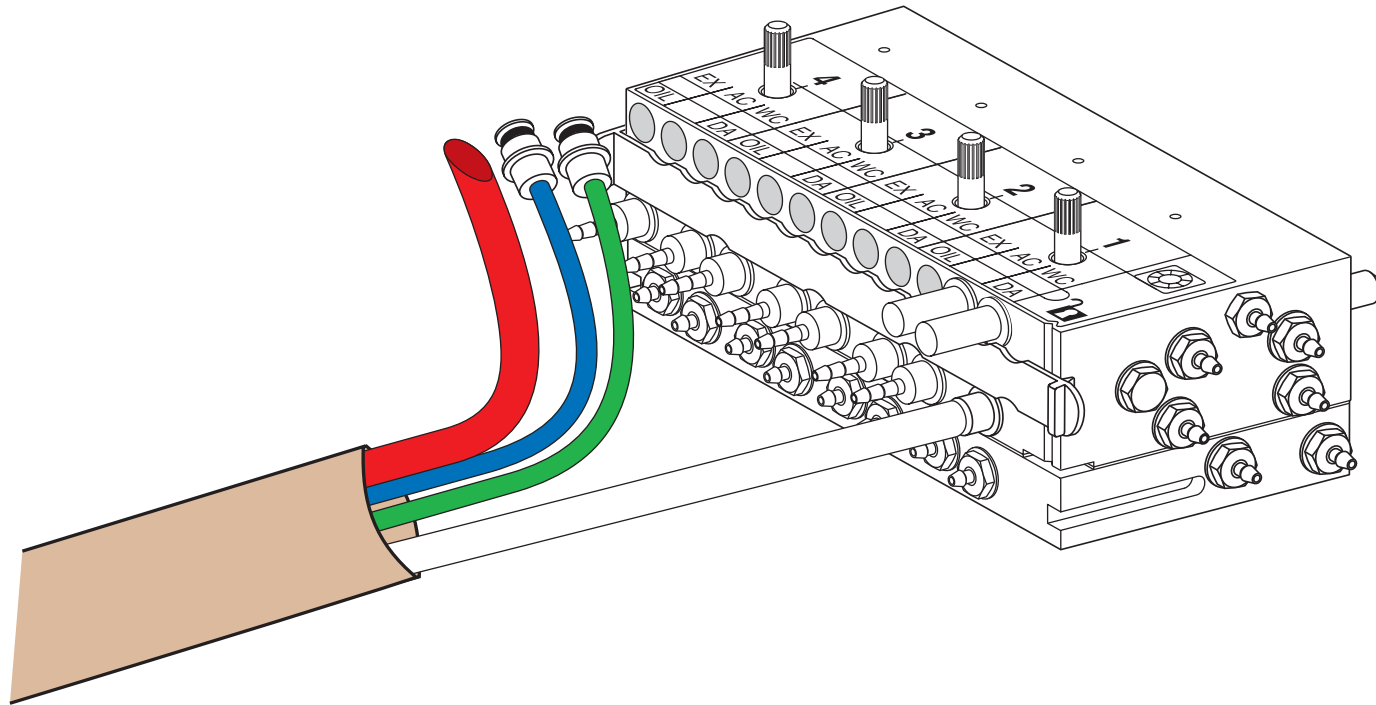
**Table 12** Warm Water Syringe Circuit Board

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—24 VAC terminal strip
8	J2—Heater output terminal strip
9	P1—Temperature selection header
10	P2—Data line 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. There are no moving parts in the tooth dryer, only cleaning is needed.

**Figure 106** Connecting the Tooth Dryer to the Control Block Drive Air



## ADJUSTMENTS (COMMON FEATURES)

### Control Block

Part No: 38.1776.00

All A-dec 500 delivery systems use the same control block assembly for adjusting handpiece air and water coolant flow. The adjustment controls for air and water coolant are located on the side of the delivery system.

Figure 107 Control Block — 541

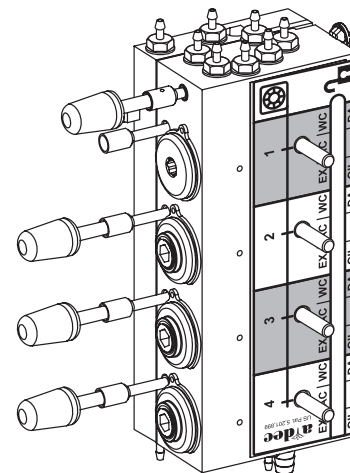
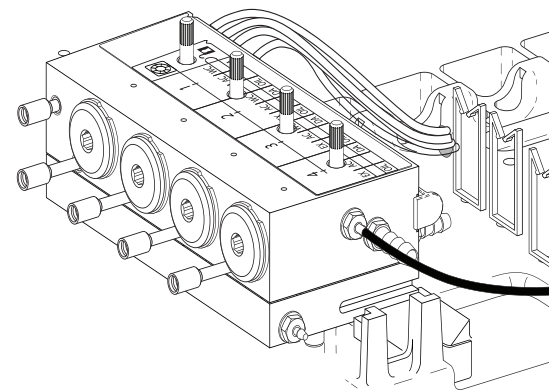


Figure 108 Control Block — 532/533/542



## Air Coolant

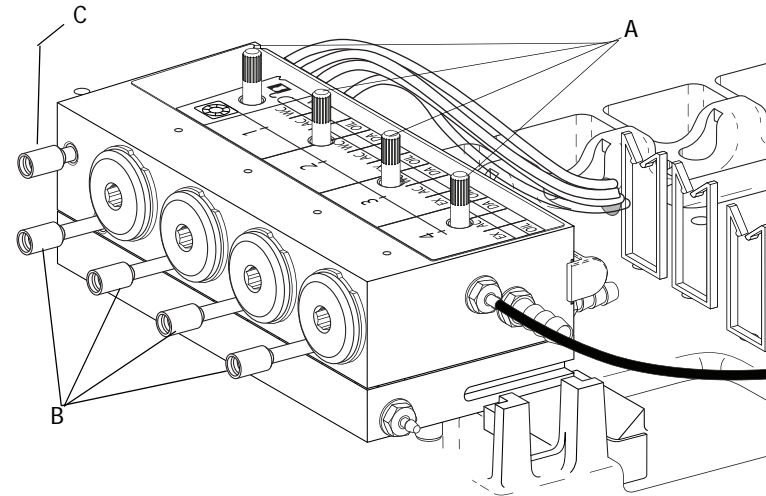
Adjusting the air coolant for one handpiece sets it for all of the positions.

1. Flip the wet/dry toggle on the foot control to the ON position.
2. Install a bur into a handpiece and activate the position.
3. Fully depress the foot control.
4. Adjust the handpiece air coolant adjustment key to create a cooling mist at the bur.

## Water Coolant

1. Flip the wet/dry toggle on the foot control to the ON position.
2. Install a bur into the handpiece and activate the position.
3. Fully depress the foot control.
4. Turn the water coolant adjustment key to adjust the flow to fit the operator's needs.
5. Repeat steps two through four for each wet handpiece.

**Figure 109** Location of the Air and Water Coolant Adjustments



(A) Drive Air Adjustment Stem; (B) Water Coolant Adjustment Stem;  
(C) Air Coolant Adjustment Stem

## Drive Air

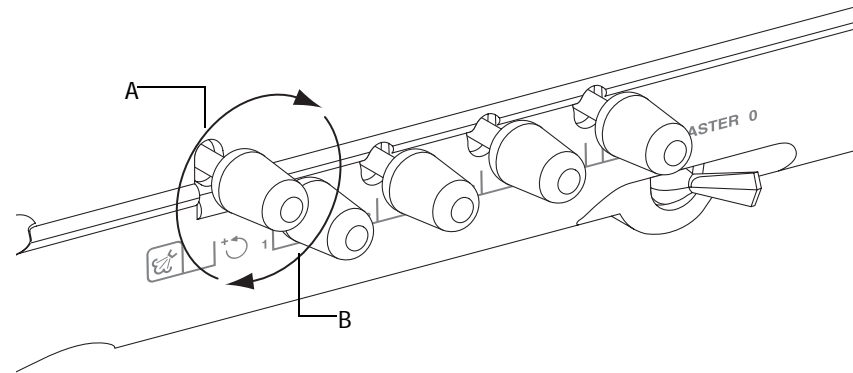
1. Use a handpiece pressure gauge to adjust the drive air for each handpiece tubing.
2. Install a bur into the handpiece and activate the position.
3. Fully depress the foot control.
4. Adjust the drive air flow (controls are on the top of the control block).

Air turbine handpieces should be set to 40 psi. EA-50LT electric micromotors (controller) should be set to a minimum of 60 psi.



**NOTE** The digital gauge inside the delivery system reads drive air pressure only at the control block. For accurate handpiece pressure settings, use a pressure gauge at the end of the handpiece tubing.

Figure 110 Adjusting Flow



(A) Increase Flow; (B) Decrease Flow

## Tray Holder

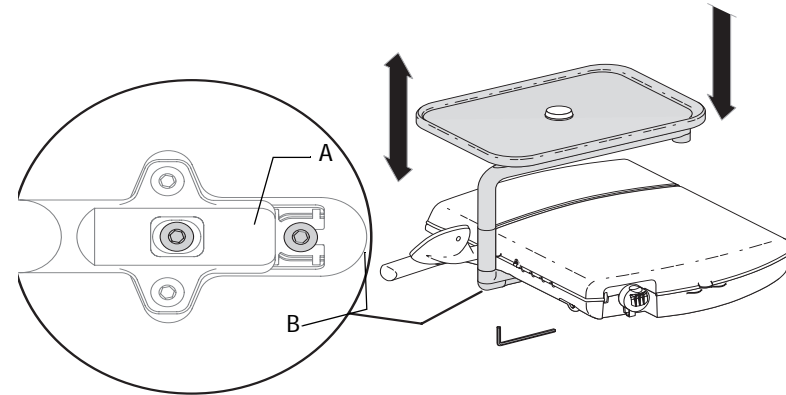
### Adjust Tray Holder Tension

- To tighten the rotational tension of the tray holder, turn the hex bolt under the tray to the right.
- To loosen the rotational tension, turn it to the left.
- To adjust the rotational tension of the tray arm, tighten or loosen the hex bolt at the delivery system end of the arm.

### Level Delivery System Tray

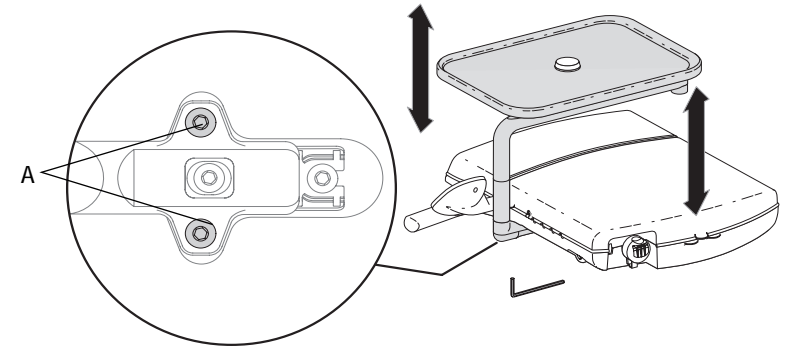
1. Use the adjustment screw to level side-to-side (see Figure 111).
2. Use the adjustment screws to level front-to-back (see Figure 112).

Figure 111 Side-To-Side Tray Level



(A) Leveling Screw; (B) Mounting Screw-DO NOT ADJUST

Figure 112 Front-To-Back Tray Level



(A) Leveling Screw

# Intraoral Light Source Voltage

The intraoral light source voltage adjustment on the A-dec 500 doctor's delivery system is located on the delivery system circuit board. The voltage is preset to 3.2 volts at the lamp terminals when the lamp is on.

Figure 113 Intraoral Light Source Voltage

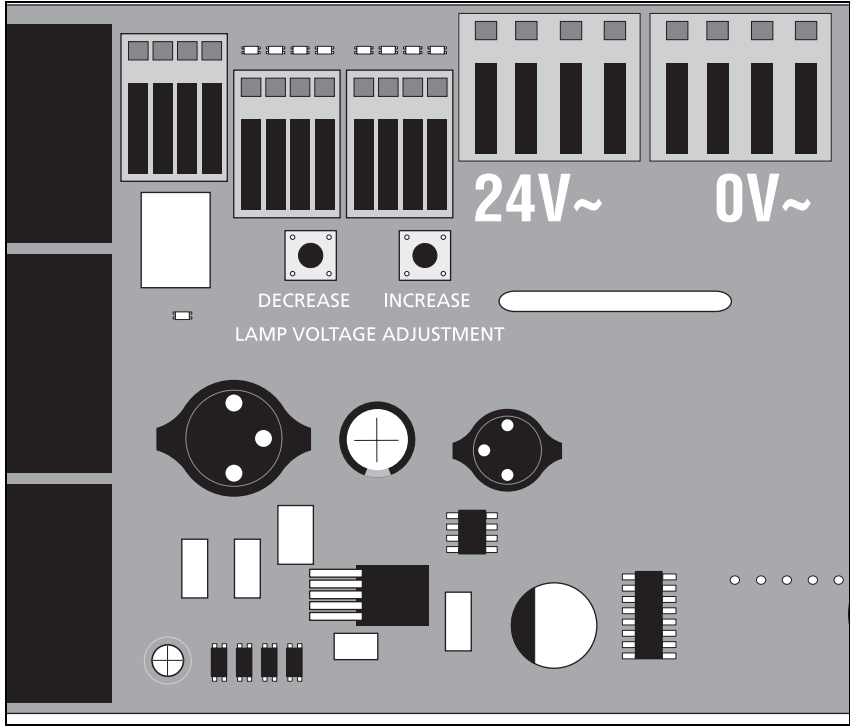
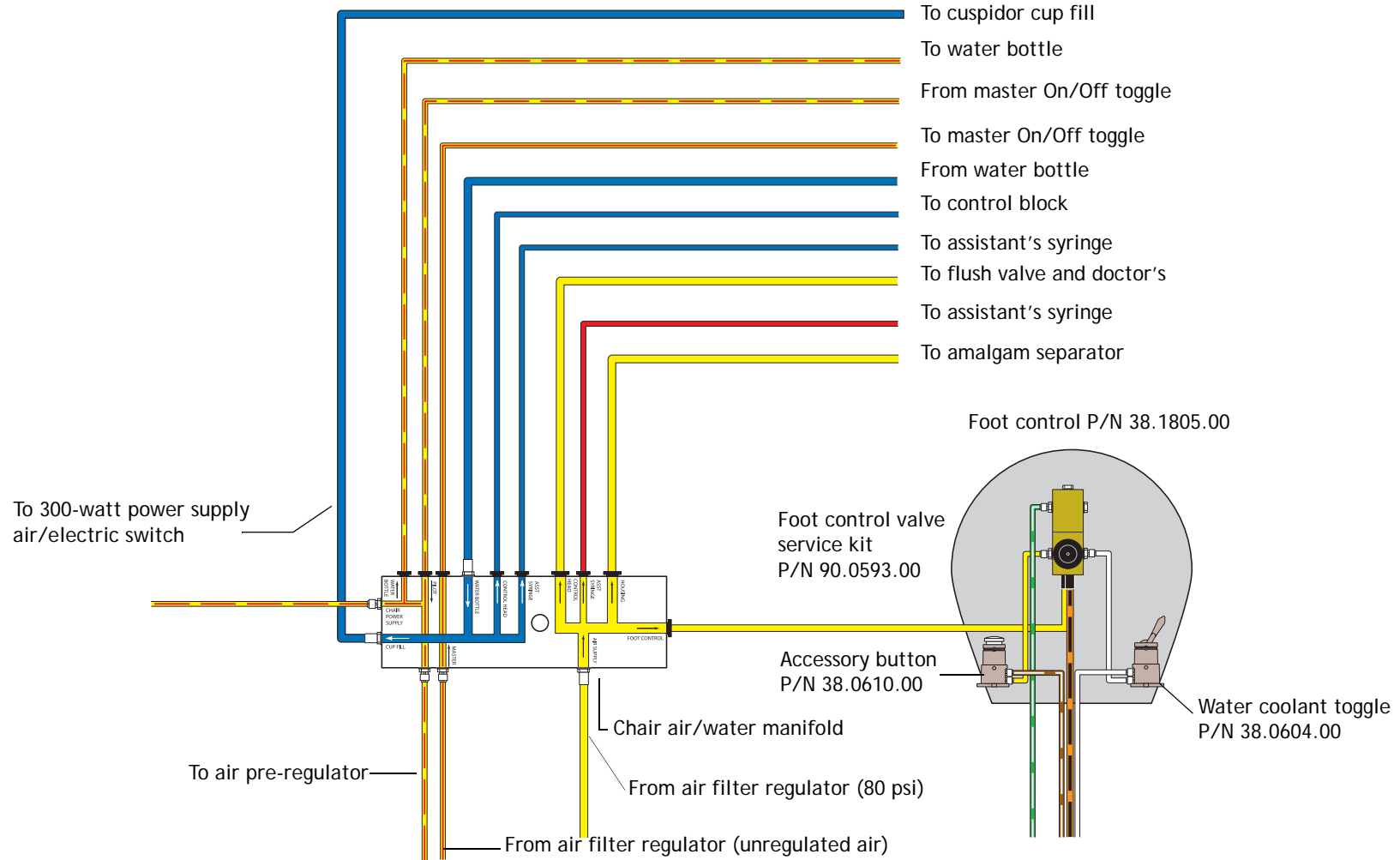


Table 13 Wire Length/Voltage

Length and Voltage Table		
Wire length in A-dec tubing		Voltage at terminal strip
(in)	(cm)	A-dec/W&H, Bien Air or other bulbs rated at 3.5V VDC +/- .02
48	122	3.51
54	137	3.54
60	152	3.56
66	168	3.59
72	183	3.62
78	198	3.65
84	213	3.67
90	229	3.69
96	244	3.71
102	259	3.74
108	274	3.76
114	290	3.79
120	305	3.82
126	320	3.85
132	335	3.87
138	351	3.90
144	366	3.93
150	381	3.96
156	396	3.99

## FLOW DIAGRAMS

### Foot Control





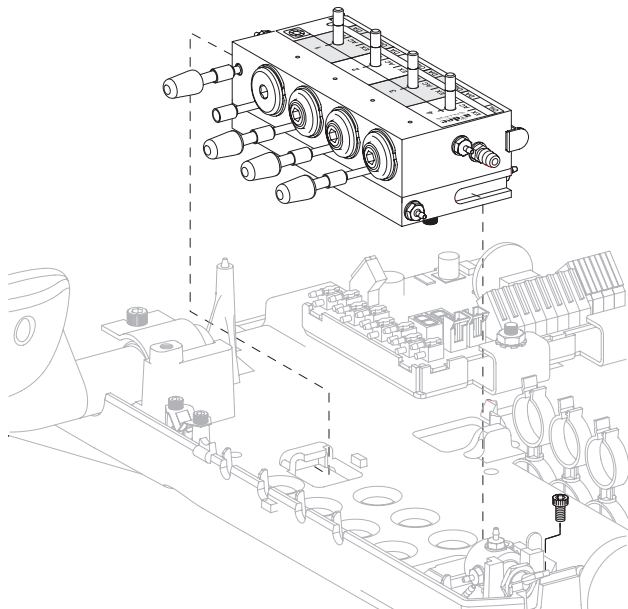
## SERVICE/USAGE INFORMATION

### Remove the Control Block

#### ■ 532/533/542 Delivery Systems

1. Loosen the hex screw holding the master on/off toggle mounting bracket to the delivery system platform.
2. Slide the bracket toward the back of the delivery system.
3. Lift the control block from the back, unhooking the front of the block.

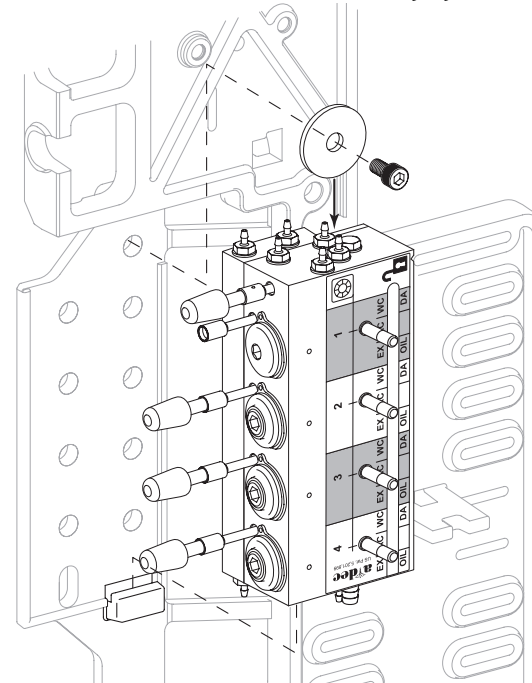
**Figure 114** Remove Control Block on 532/533/542 Delivery Systems



#### ■ 541 Delivery System

1. Loosen and remove the hex screw and washer that secures the control block to the control center frame.
2. Slide the control block up so that the frame tab is no longer connected in the control block mounting slot.

**Figure 115** Remove Control Block on 541 Delivery System



## ILLUSTRATED PARTS BREAKDOWN (CROSS SYSTEM)

This section contains illustrated parts breakdowns for parts that are common to all A-dec 500 Delivery Systems (Model numbers 532, 533, 542, 541 and 545).

### Part Identification

The conventions for the serviceable components tables are designed to identify all parts and kits, including ones that are not for sale. Symbols with reference notes are used.

Symbol	Definition
†	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)
No symbol	Part is for sale

### CROSS-SYSTEM IPB CONTENTS

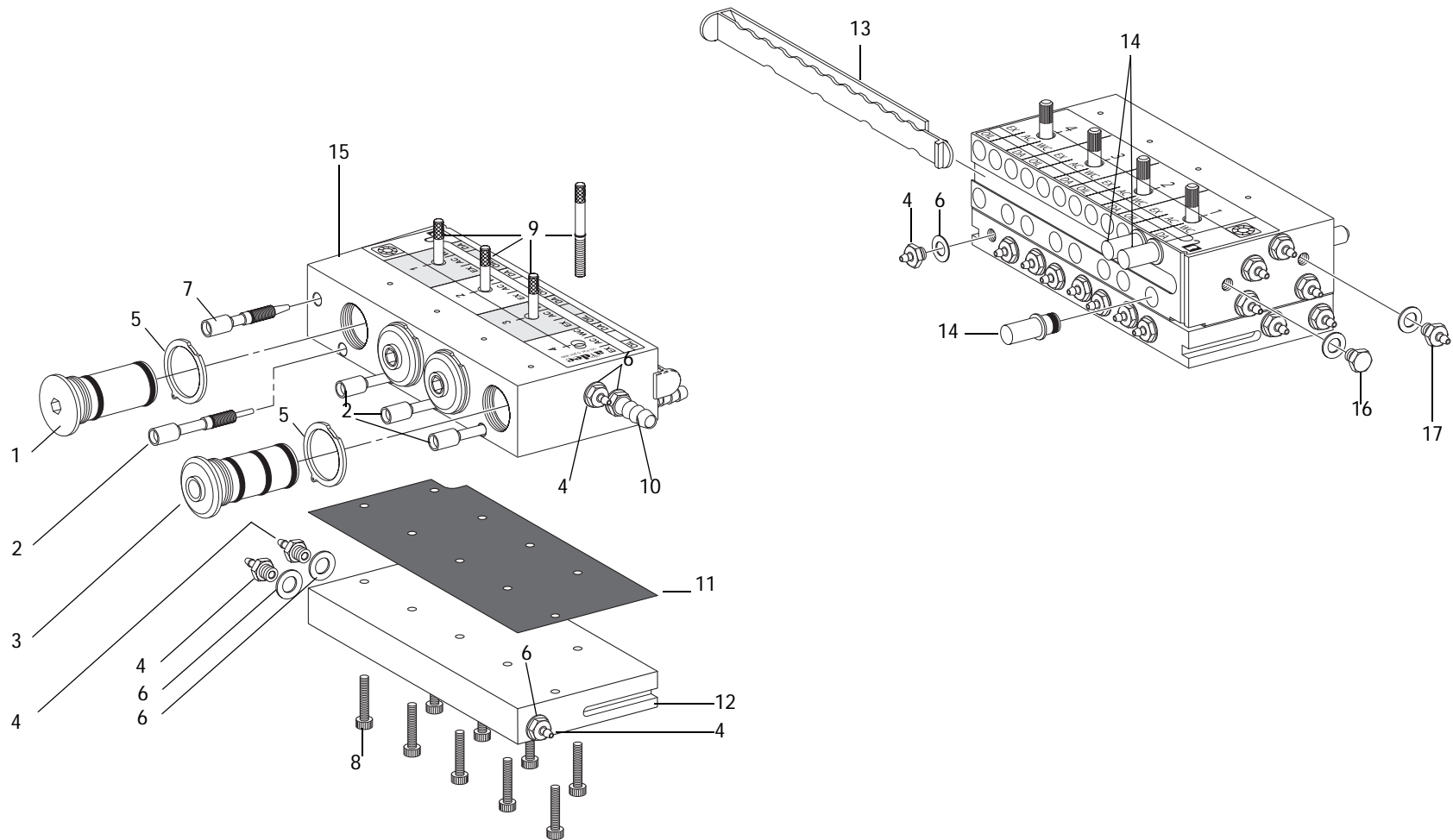
- Control Block Assembly, page 180
- Water Coolant Relay Assembly, page 182
- Dual Solenoid Manifold Assembly (Deluxe Touchpad Only), page 184
- Master On/Off Toggle, page 186
- Flush Toggle, page 188
- A-dec Foot Control, page 190
- Foot Control Accessory Button and Wet/Dry Toggle Valve, page 192
- Foot Control Signal Relay Main Body Valve, page 194
- Oil Collector, page 196
- Brake Handle Assembly, page 198
- Traditional Tray Holder, page 200
- Holder (532,533 and 542), page 202
- Holder (541 and 545), page 206
- Self-Contained Water Bottle, page 208
- Self-Contained Water Bottle Housing (Cabinet-Mounted), page 210
- Self-Contained Water Bottle Housing (Chair-Mounted), page 212
- Traditional and Continental Syringes, page 214
- Warm Water Traditional and Continental Syringes, page 216
- Autoclavable HVE Standard and 11/15 mm, page 218
- Autoclavable HVE with Large Bore 15mm (541 and 545), page 219
- Autoclavable Saliva Ejector, page 220

## Control Block Assembly

Part No: 38.1776.00)

Item	Part Number	Description
1	38.1783.00	Water cartridge assembly, dry
2	38.0516.00	Water flow adjustment stem with O-ring
3	38.1780.00	Water cartridge assembly
4	023.004.03	Barb, 1/8 x 10-32, package of 10
5	38.1779.01	Retaining ring, package of 5 (part of the water cartridge assemblies - item 1 and 3)
6	004.005.02	Washer, flat nylon, .187 ID, package of 10
7	38.0526.00	Air coolant stem with O-ring
8	001.240.00	Screw, socket head, 6-32 x 3/4, stainless steel
9	38.1785.01	Drive air stem with O-ring
10	023.805.01	Barb, 5/16 x 10-32, package of 10
11	38.1787.01	Control block diaphragm, package of 5
12	38.1778.00	Control block cap
13	38.1800.00	Barb retainer, control block
14	026.160.01	QD plug with O-ring, package of 5
15	38.1777.00	Control block
16	021.016.00	Plug, hex head, 10-32
17	023.811.00	Barb, .018 restrictor, 1/8 x 10-12

Figure 116 Control Block Assembly

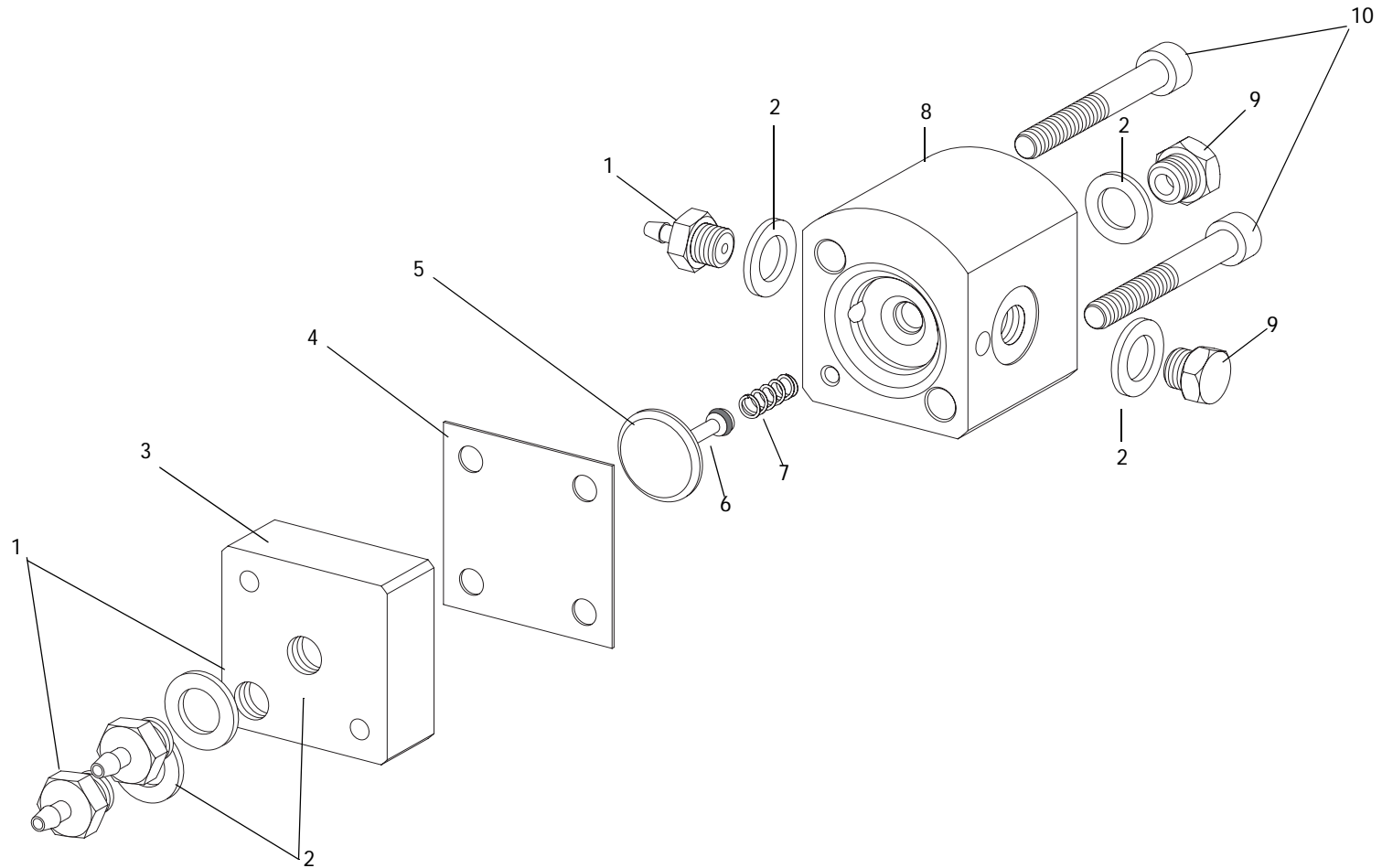


## Water Coolant Relay Assembly

Part No: 38.1810.00

Item	Part Number	Description
1	023.004.03	Barb, 1/8 x 10-32, package of 10
2	004.005.02	Washer, flat nylatron, .187 ID, package of 10
3	38.1809.00†	Cap, relay — (replace with 38.1810.00)
4	38.0054.02	Diaphragm, 3/4 square, .013 thick, package of 10
5	22.0778.00	Stem, valve signal
6	30.0010.02	O-ring, package of 10
7	10.0440.00	Spring, compression, .093 OD x .250
8	38.0056.00	Body, valve, signal relay
9	021.016.04	Plug, hex head, 10-32, package of 10
10	002.102.00	Screw, socket head, 4-40 x 7/8

Figure 117 Water Coolant Relay Assembly

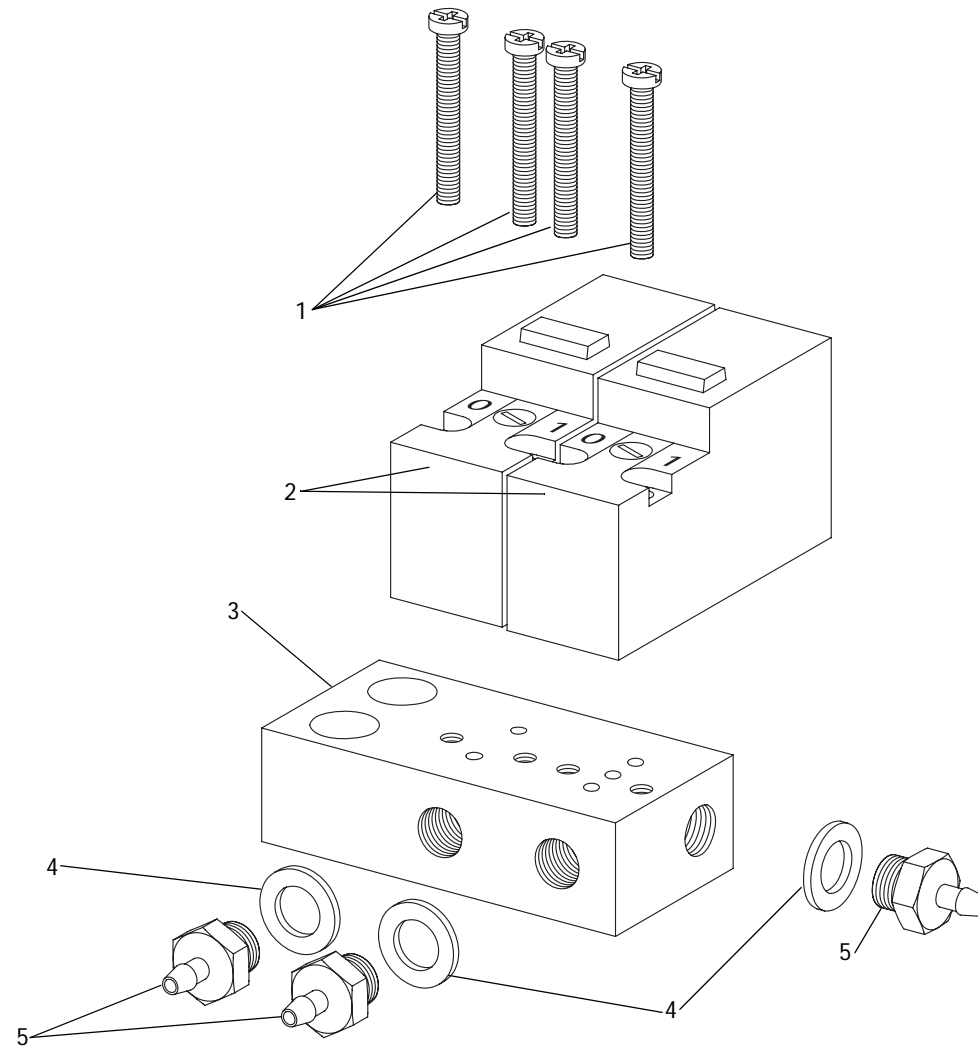


## Dual Solenoid Manifold Assembly (Deluxe Touchpad Only)

Part No: 43.0057.00

Item	Part Number	Description
1		Screw, part of item 2
2	041.659.01	Valve assembly, solenoid, 5VDC
3	38.1789.00†	Manifold, solenoid, dual (replace with 43.0057.00)
4	004.005.02	Washer, flat, nylon, .187 ID, package of 10
5	023.004.03	Barb, 1/8 x 10-32, package of 10

Figure 118 Dual Solenoid Manifold Assembly





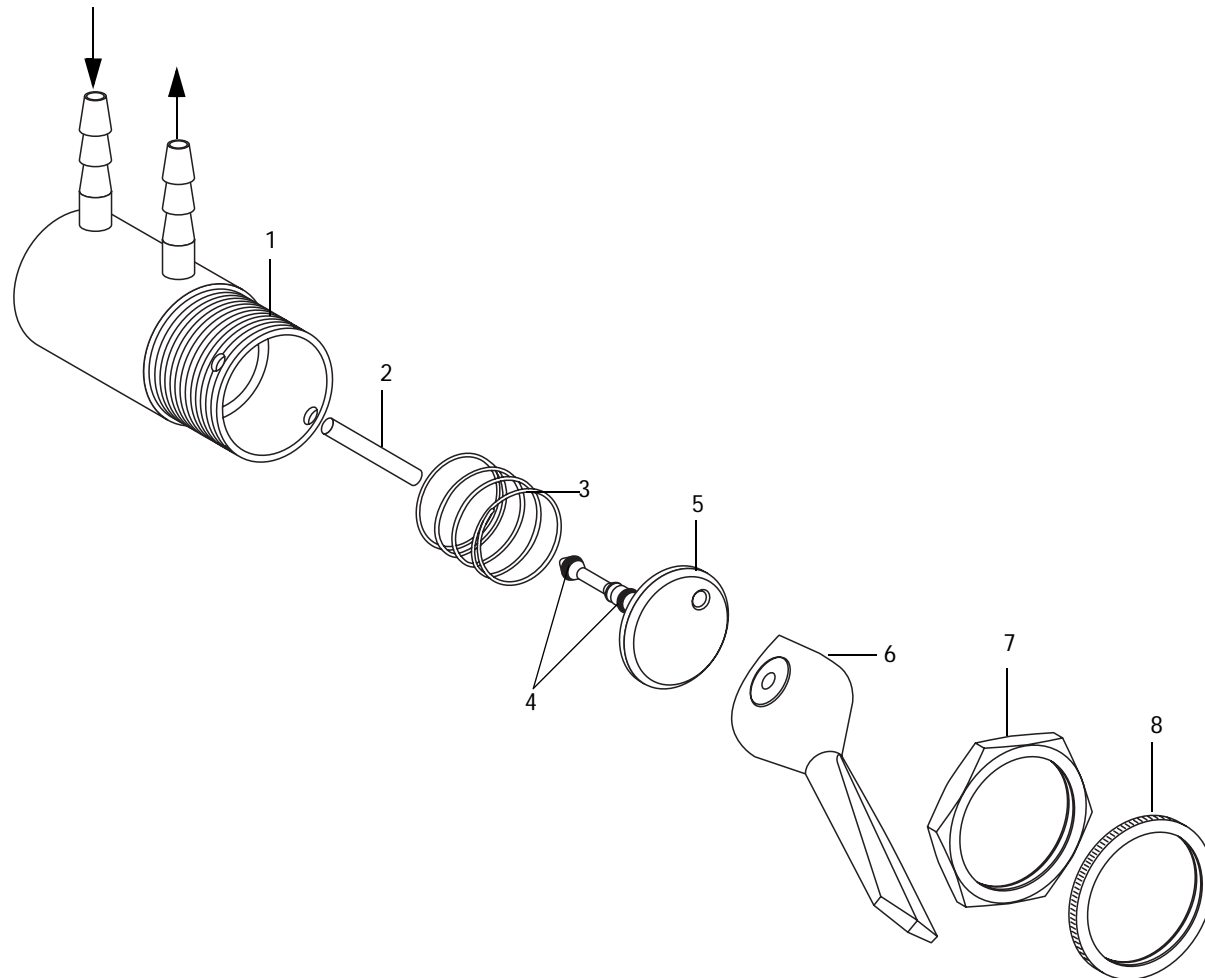
## Master On/Off Toggle

Part No: 33.0048.05

Part No: 33.0153.00 (542)

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	22.0462.02	Plastic toggle valve lever
7	006.009.00	Hex nut, 15/32-32" x 9/16 x 3/32"
8	006.069.00	Knurl nut, 15/32-32"

Figure 119 Master On/Off Toggle

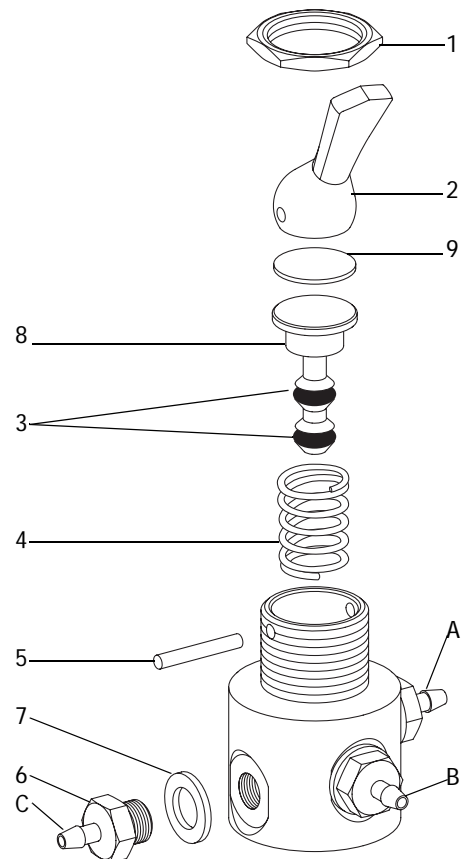


## Flush Toggle

Part No: 33.0168.00

Item	Part Number	Description
1	006.009.00	Hex nut 15/32-32" X 9/16 X 3/32"
2	33.0036.02	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

Figure 120 Flush Toggle



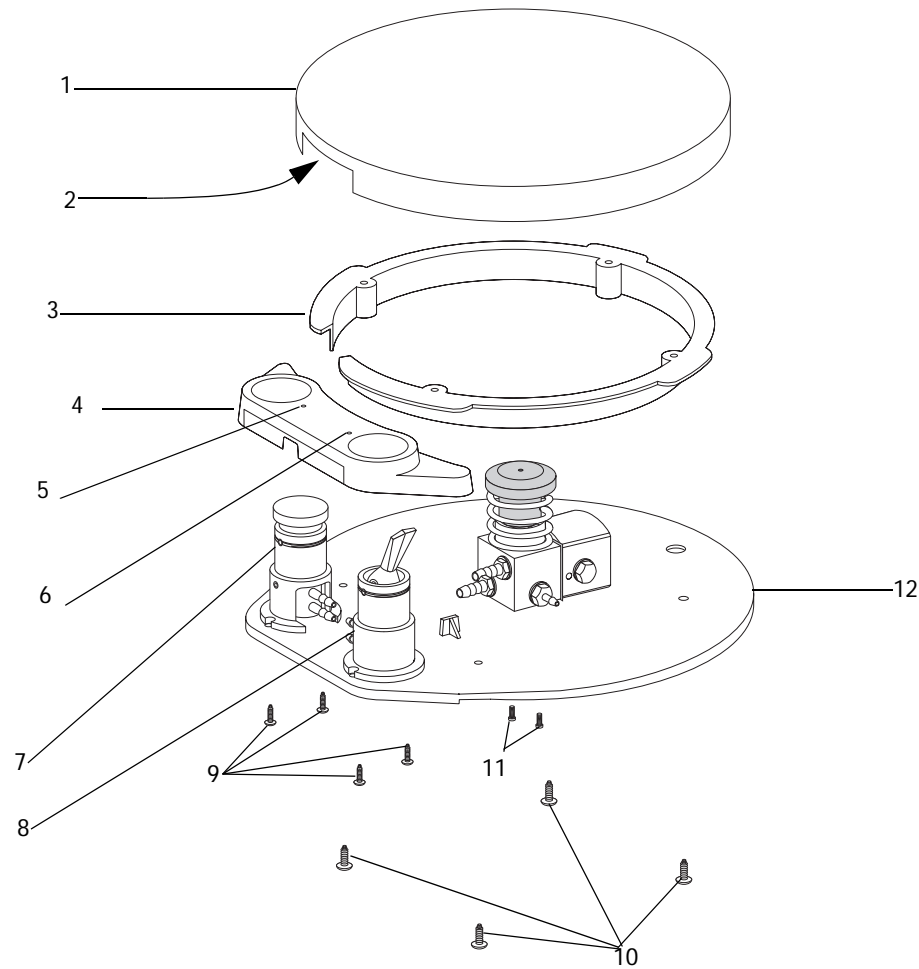
(A) Regulated Air to Control Block for Holdback; (B) Regulated Air; (C) To the Shuttle for Water Coolant Signal

## A-dec Foot Control

Part No: 38.1805.01

Item	Part Number	Description
1	22.0110.00	Foot control cover, chrome (includes item 2)
2	38.0076.00	Foam liner, adhesive back
3	38.0237.00	Black retaining ring, 5" OD
4	38.1802.00	2-Hole housing access, 5/16"
5	40.0689.00	Yellow plastic indicator
6	40.0691.00	Blue plastic indicator
7	38.0612.00	Foot control accessory valve
8	38.0604.00	Wet/dry toggle valve
9	003.031.00	Phillips pan head screw, #4 x 1/2", zinc
10	003.022.00	Phillips pan head screw, #6 x 1/2", zinc
11	003.078.00	Screw, socket head, 4-40 1/4", zinc
12	38.0059.02	Base assembly, foot control

Figure 121 A-dec Foot Control

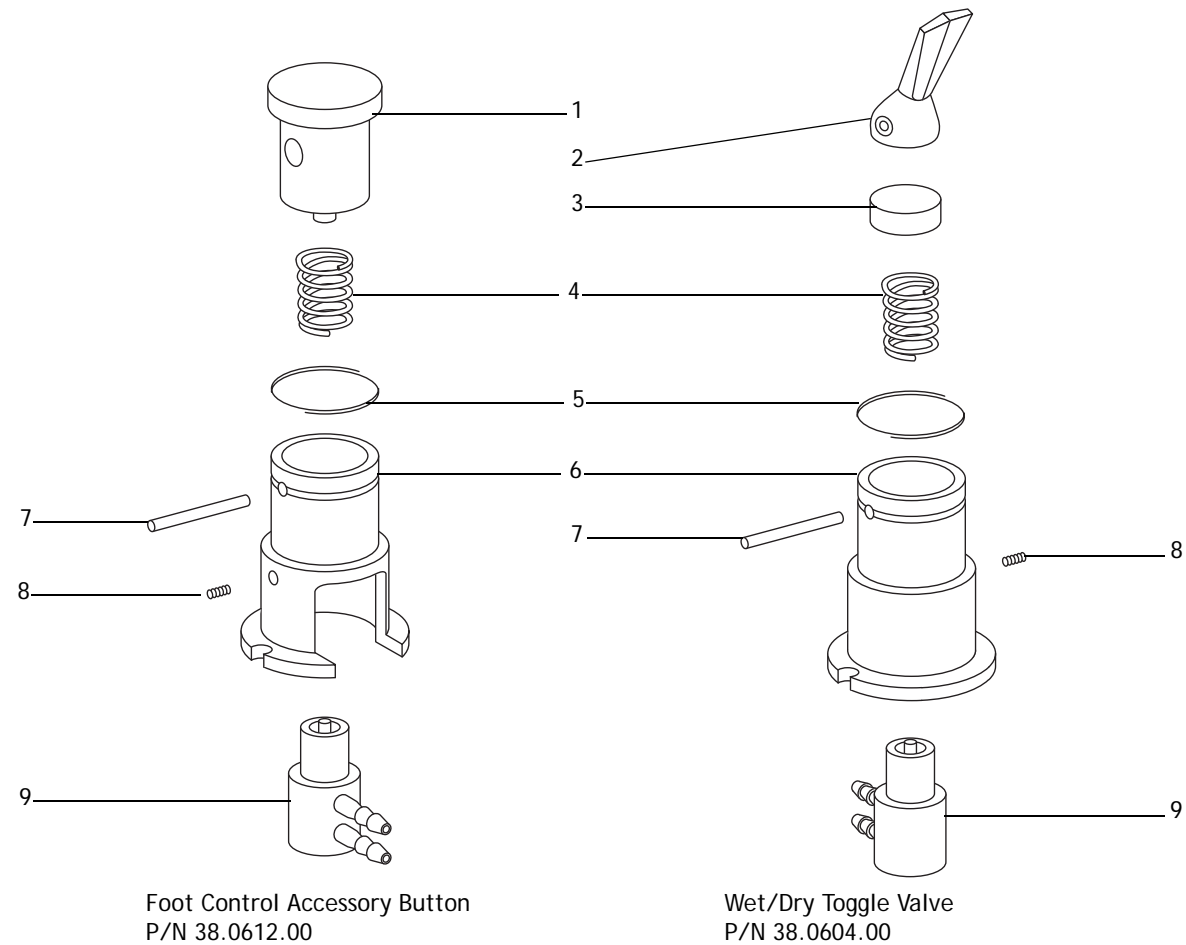


## Foot Control Accessory Button and Wet/Dry Toggle Valve

Part No: 38.0612.00 and 38.0604.00

Item	Part Number	Description
1	38.0070.00	Actuator button
2	38.0075.03	Foot control toggle valve lever, with pin
3	38.0066.00	Cap spring, wet/dry valve assembly
4	22.0040.00	Spring, helical compression, .300 OD x .40
5	010.056.00	Retainer spring, .600 diameter
6	38.0072.03	Holder valve
7	011.016.00	Pin, dowel, .125 diameter x .625
8	007.002.00	Setscrew, socket cup point, 6-32 x 3/16
9	33.0138.00	3-way micro valve assembly

Figure 122 Foot Control Accessory Button and Wet/Dry Toggle Valve

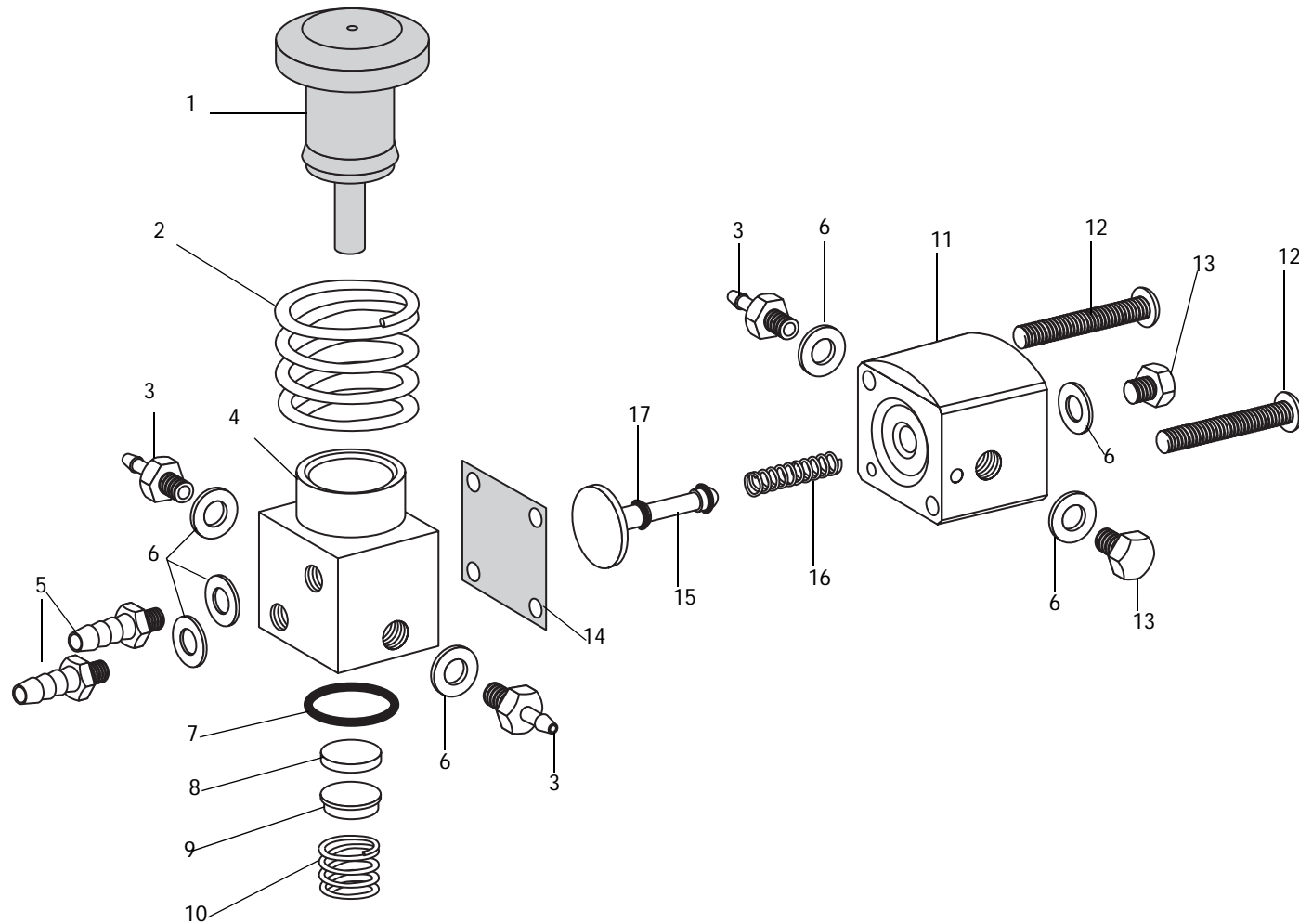




## Foot Control Signal Relay Main Body Valve

Item	Part Number	Description
1	38.0760.00	Piston, foot control III assembly
2	013.011.00	Spring, helical compression, .760 OD x .47 FL
3	023.004.03	Barb, 1/8 x 10-32, package of 10
4	38.0759.00	Body relay
5	023.805.01	Barb, 5/16 x 10-32, package of 10
6	004.005.02	Washer, flat, nylon, .187 ID, package of 10
7	030.012.02	O-ring, .364 ID x .070 wide, package of 10
8	22.0060.00	Poppet, plastic, foot control
9	22.0050.00	Cap spring, foot control
10	22.0580.00	Spring, compression, .312 OD x .25
11	38.0056.00	Signal relay body valve
12	002.102.00	Screw, socket head 4-40 x 7/8", Zinc
13	021.016.04	Hex plug, 10-32, package of 10
14	38.0054.02	Diaphragm, 3/4" square x .013 thick, package of 10
15	22.0778.00	Valve stem with O-rings
16	10.0440.00	Spring, compression, .312 OD x .25
17	030.001.02	O-ring, package of 10

**Figure 123** Foot Control Signal Relay Main Body Valve

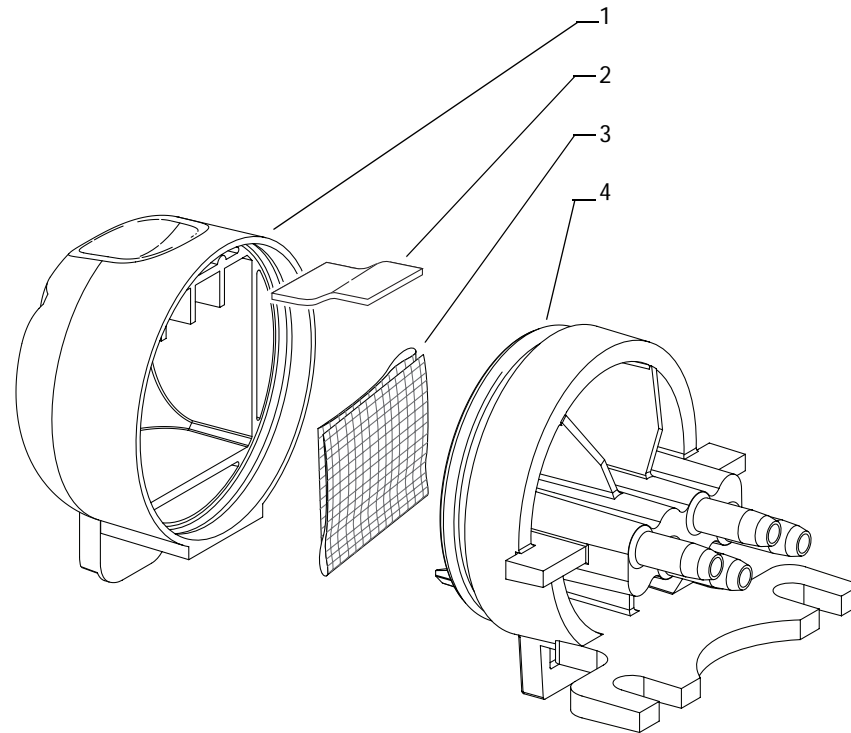


## Oil Collector

Part No: 90.1110.00 Oil Collector Assembly)

Item	Part Number	Description
1	77.0336.00	Oil collector, top
2	77.0503.00	Muffler, foam (part of 90.1106.00 oil collector muffler kit)
3	026.143.00	Gauze, 2" x 2"
4	77.0337.00	Oil collector, bottom

Figure 124 Oil Collector

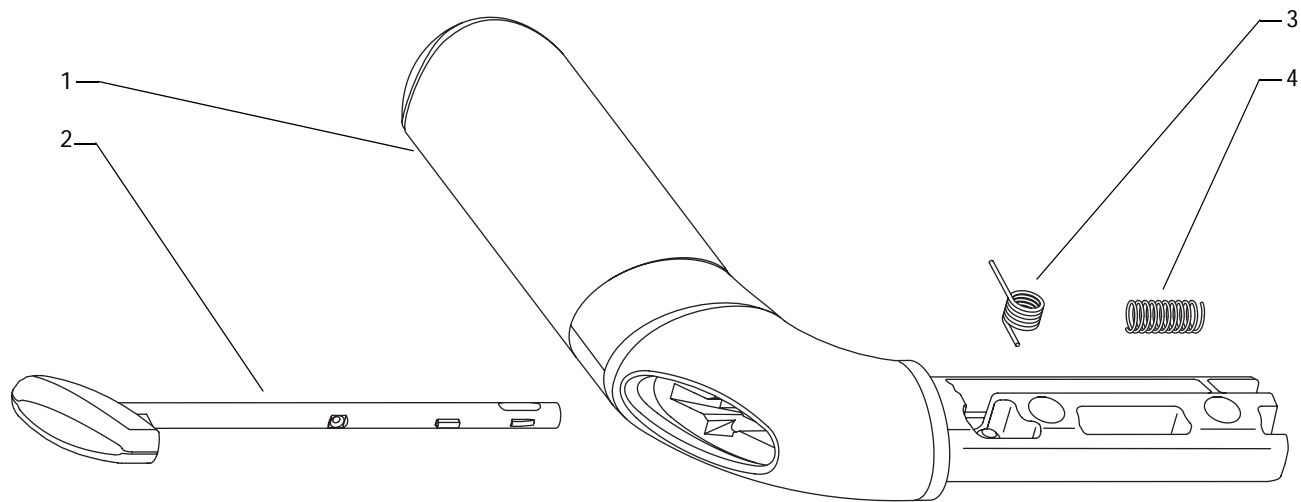


## Brake Handle Assembly

Part No: 77.0104.01

Item	Part Number	Description
1	77.0104.00	Handle (part of 77.0104.01 handle assembly)
2	77.0163.00	Brake button (part of 77.0104.01 handle assembly)
3	013.121.00	Spring, torsion, stainless steel, .210 L, .030 W diameter (part of 77.0104.01 handle assembly)
4	013.120.00	Spring, compression, .240 OD x .560 (part of 77.0104.01 handle assembly)

Figure 125 Brake Handle Assembly



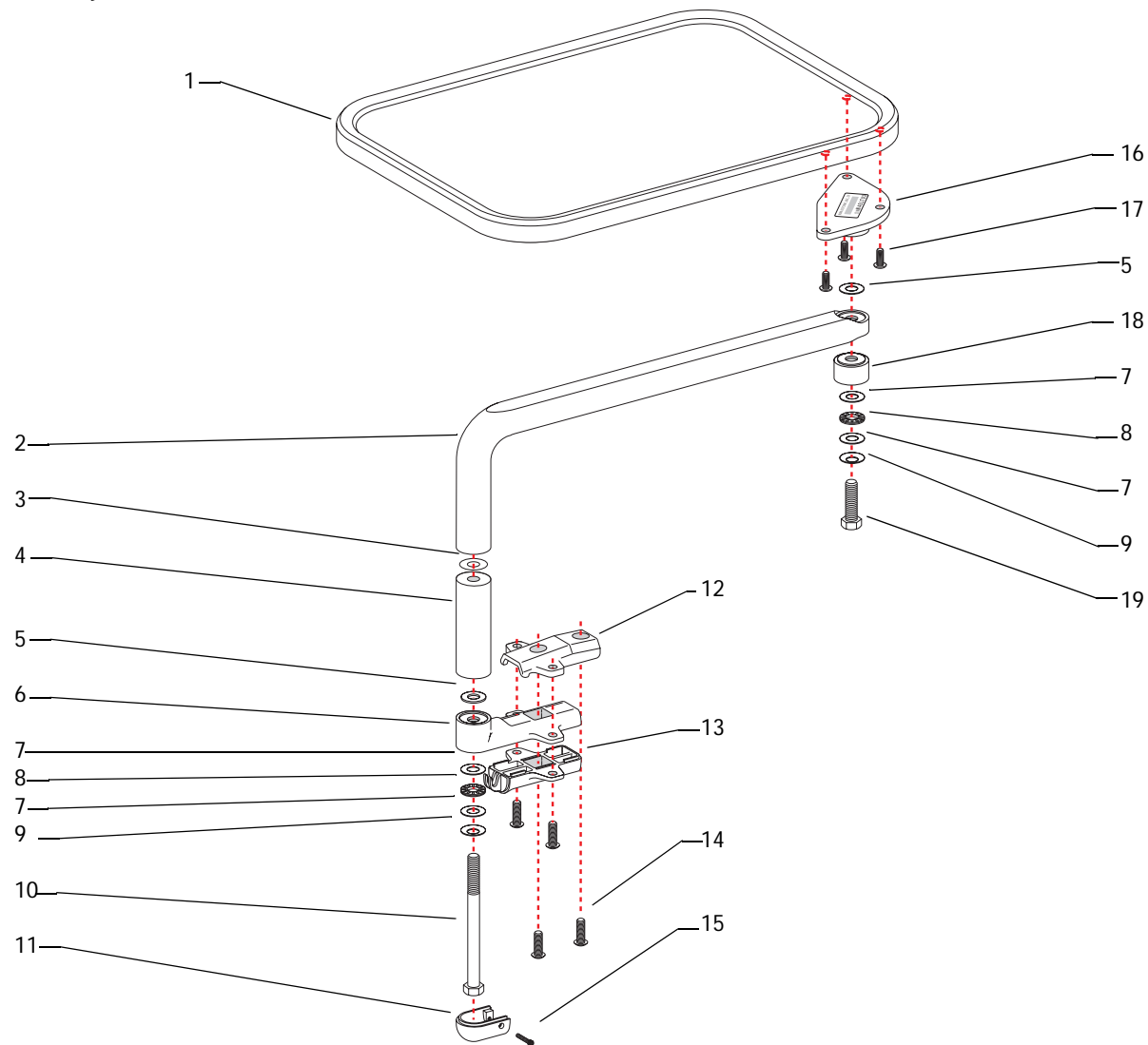
## Traditional Tray Holder

Part No: Standard Tray Holder P/N 77.0294.00

Large Tray Holder P/N 77.0295.00

Item	Part Number	Description
1	75.0017.00	Tray holder, standard, Melamine, 10.3" x 14.3"
2	77.0189.00	Arm
3	004.021.00	Washer, flat fiber
4	77.0197.00	Arm extender
5	004.242.00	Washer, flat polyethylene, .387 ID
6	77.0194.00	Top base
7	004.172.00	Thrust washer
8	016.102.00	Thrust bearing
9	004.019.00	Spring washer
10	005.157.00	Hex head screw
11	77.0192.00	Elbow cover
12	77.0332.00	Base level
13	77.0196.00	Bottom base
14	005.026.00	Screw, 1/4-20 x 3/4"
15	002.024.00	Screw, socket head, 4-40 x 3/4"
16	77.0190.00	Bracket
17	005.012.03	Screw, button head socket, 10-32 x 3/8"
18	77.0198.00	Screw cover
19	002.023.01	Screw, hex head, 3/8-16 x 1-1/4"

Figure 126 Traditional Tray Holder





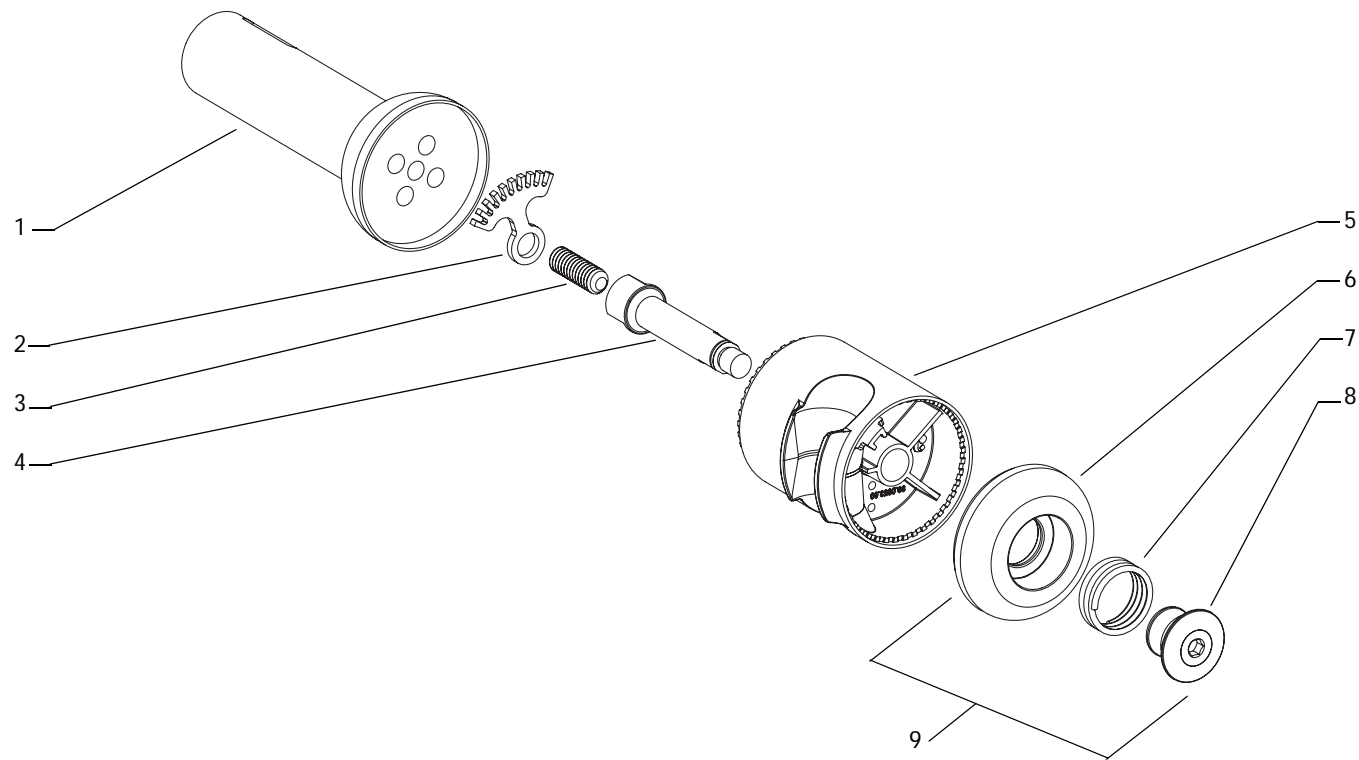
## Holder (532,533 and 542)

### Standard Accessory Holder

Part No: 99.0681.00

Item	Part Number	Description
1	99.0683.00	Mount hub
2	99.0686.00	Rotation stopper
3	007.023.00	Setscrew, 1/4-20 x 3/4" socket cup point
4	99.0660.00†	Axle (part of item 5)
5	99.0653.01	Holder kit, syringe/saliva ejector
6	99.0648.01	End cap assembly
7	013.011.00	Spring, compression, .760 OD x .47 FL
8	99.0659.00	Nut, end cap, holder
9	99.0648.01	End cap assembly

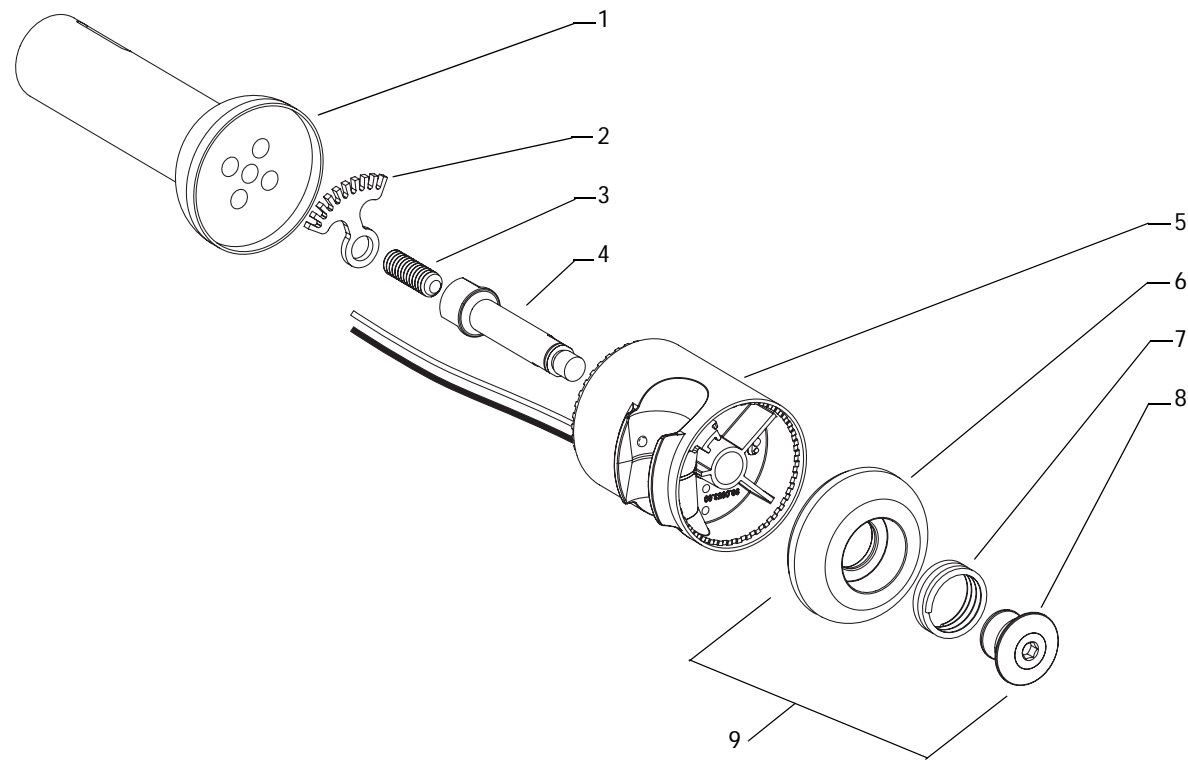
Figure 127 Standard Accessory Holder



**Auto-Electric Accessory Holder****Part No: 99.0684.00**

Item	Part Number	Description
1	99.0683.00	Mount hub
2	99.0686.00	Rotation stopper
3	007.023.00	Setscrew, 1/4-20 x 3/4" socket cup point
4	99.0660.00†	Axle
5	99.0673.01	Holder kit, auto-electric International, saliva ejector
6	99.0648.00	End cap (part of item 9)
7	013.011.00	Spring, compression, .760 OD x .47 FL (part of item 9)
8	99.0659.00	Nut, end cap, holder (part of item 9)
9	99.0648.01	End cap assembly

Figure 128 Auto-Electric Accessory Holder

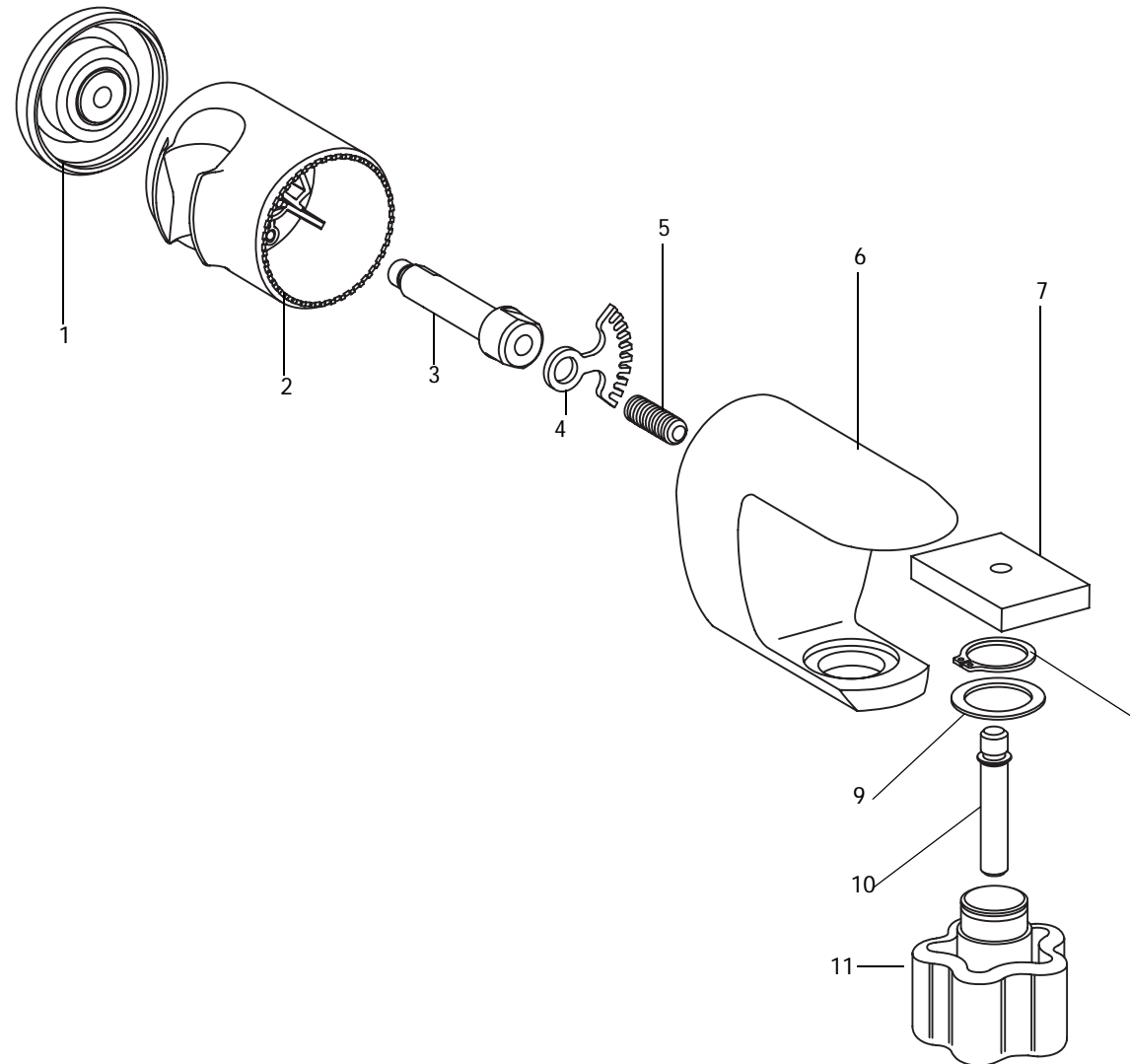


## Holder (541 and 545)

### Flex-Holder

Item	Part Number	Description
1	99.0648.01	End cap, holder assembly, assistant arm, over the counter
2	99.0650.01	Holder, domestic, HVE, standard kit
	99.0652.01	Holder, 11 mm/15 mm, HVE, assistant's arm kit
	99.0653.01	Holder, SE/syringe, kit
3	99.0660.00	Axle, holder assembly, assistant's arm
4	99.0686.00	Rotation stopper, auxiliary holder
5	007.023.00	Setscrew, socket cup point, 1/4-20 x 3/4
6	77.0441.00†	Clamp, holder (replace with 99.0717.00)
7	77.0444.00†	Clamp jaw, holder (replace with 99.0718.00)
8	010.075.00	Retaining ring, ext. 62 ID
9	004.201.00	Washer, flat, stainless steel, .631 I.O.
10	77.0443.00†	Stud, holder, clamp (replace with 99.0718.00)
11	77.0442.00	Knob, holder, clamp

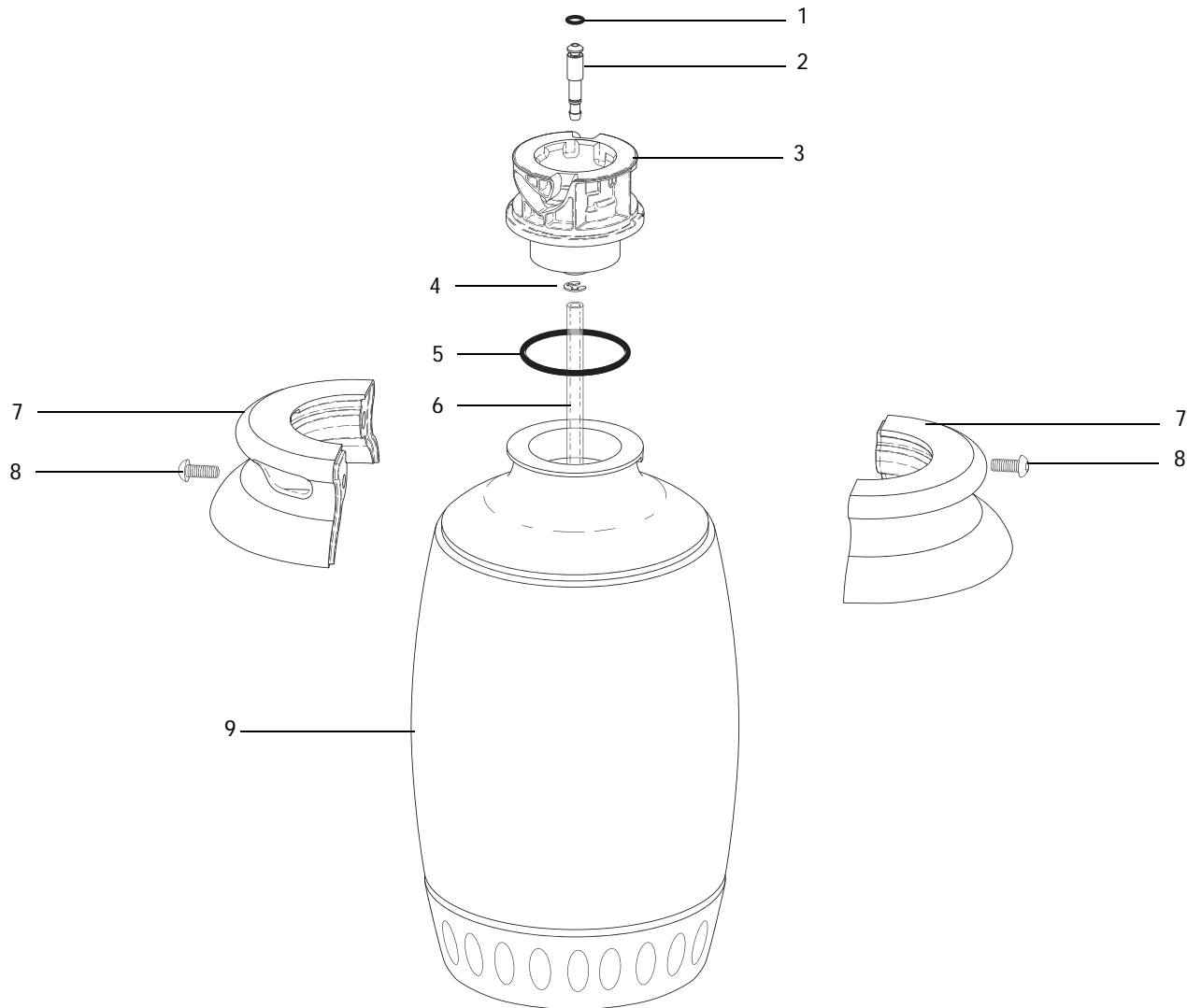
Figure 129 Flex-Holder



## Self-Contained Water Bottle

Item	Part Number	Description
1	035.048.01	O-ring, .114 ID x .070, package of 10
2	14.0457.00†	Connector, water (replace with 14.0468.00)
3	14.0453.00†	Receptacle (replace with 14.0468.00)
4	010.002.00	Retaining ring, external tooth, .187" ID
5	031.130.01	O-ring, N, 1.612 ID x .103 W, package of 10
6	14.0467.00	Tube, supply, 8" long
7	14.0458.00	Clamp, water bottle
8	005.110.00	Screw, button head socket, 10-32 x 1/2
9	14.0466.00	Water bottle with base

Figure 130 Self-Contained Water Bottle





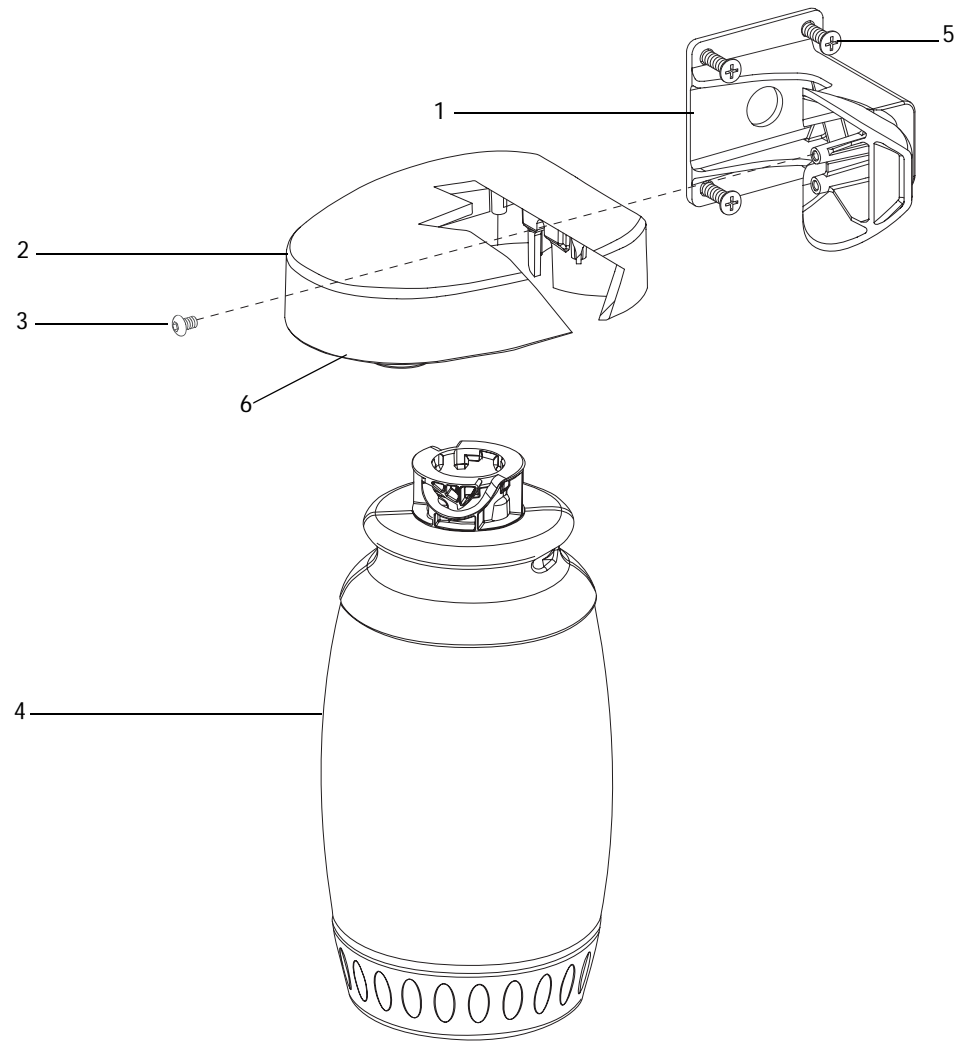
## Self-Contained Water Bottle Housing (Cabinet-Mounted)

Item	Part Number	Description
1	77.0420.01	Casting bracket
2	14.0455.02	Housing, bottle
3	001.253.00	Screw, button head socket, 10-32 x 3/8, stainless steel
4	14.0468.00	Bottle assembly, water
5	003.071.00	Screw
6	90.1101.00	Receptacle assembly

These available Self-Contained Water Bottle kits are suited for use in various mounting locations:

Part Number	Description	Items Included
14.0464.00	Kit, water bottle (532, 533)	Includes: items 2-4 and 6
14.0464.01	Kit, water bottle, Slimline	Includes: items 4 & 6
14.0464.02	Kit, water bottle (561)	Includes: items 4 & 6
14.0471.00	Kit, water bottle, remote mount	Includes: items 1-6

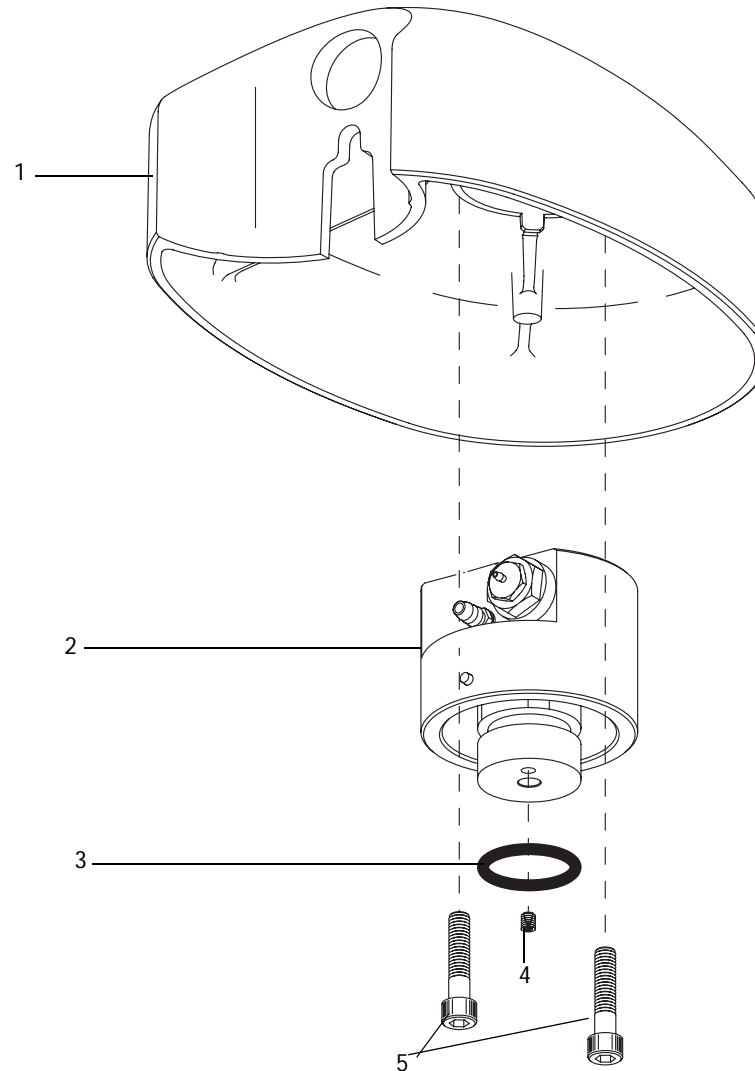
**Figure 131** Self-Contained Water Bottle Housing (Cabinet Mounted)



## Self-Contained Water Bottle Housing (Chair-Mounted)

Item	Part Number	Description
1	14.0455.02	Casting, housing, water bottle
2	90.1101.00	Receptacle assembly
3	034.213.00	O-ring, E, .921 ID x .139 W
4	023.809.00	Setscrew, restrictor, 10-32
5	002.112.00	Screw, 10-32 x 7/8, socket head screw

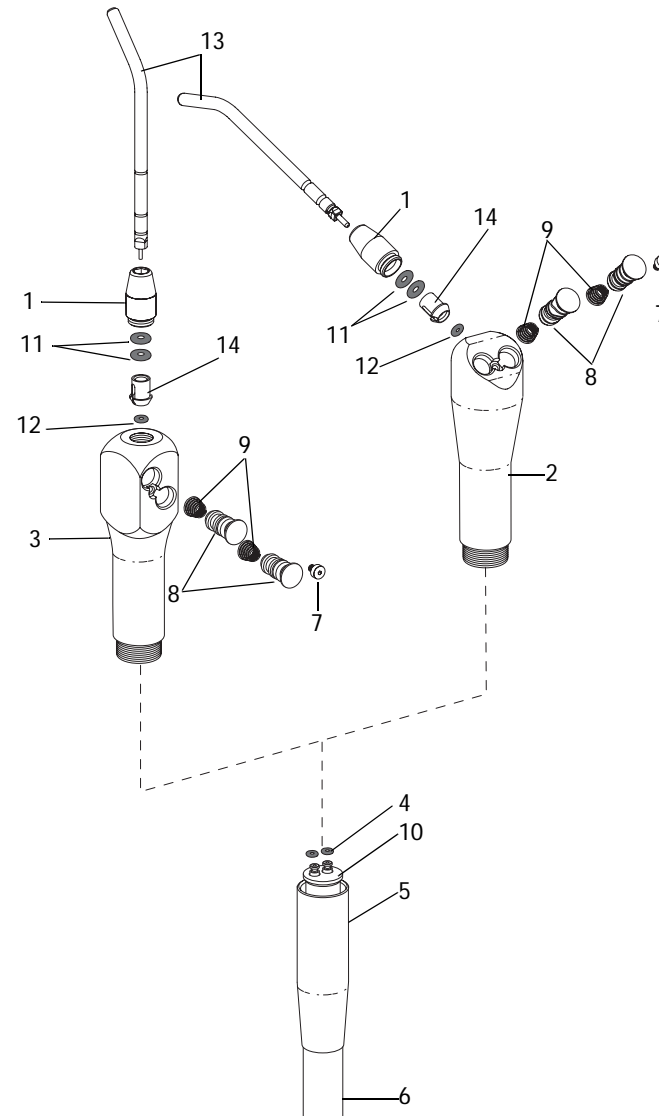
**Figure 132** Self-Contained Water Bottle Housing (Chair Mounted)



## Traditional and Continental Syringes

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	024.194.00	Tubing assembly, 7'
7	23.1193.01	Screw, 2-56, package of 5
8	23.1232.01	Valve, assembly button, autoclavable, package of 2
9	013.064.01	Spring, compression, conical, package of 10
10	23.1110.00	Terminal, 2 barb assembly, No-Quick Disconnect
11	035.048.01	O-ring, E, .114 ID x .07 W, package of 10
12	034.003.01	O-ring, E, .056 ID x .060 W, package of 10
13	23.0872.01	Syringe tip, package of 5
14	23.1101.00	Spacer, syringe nut

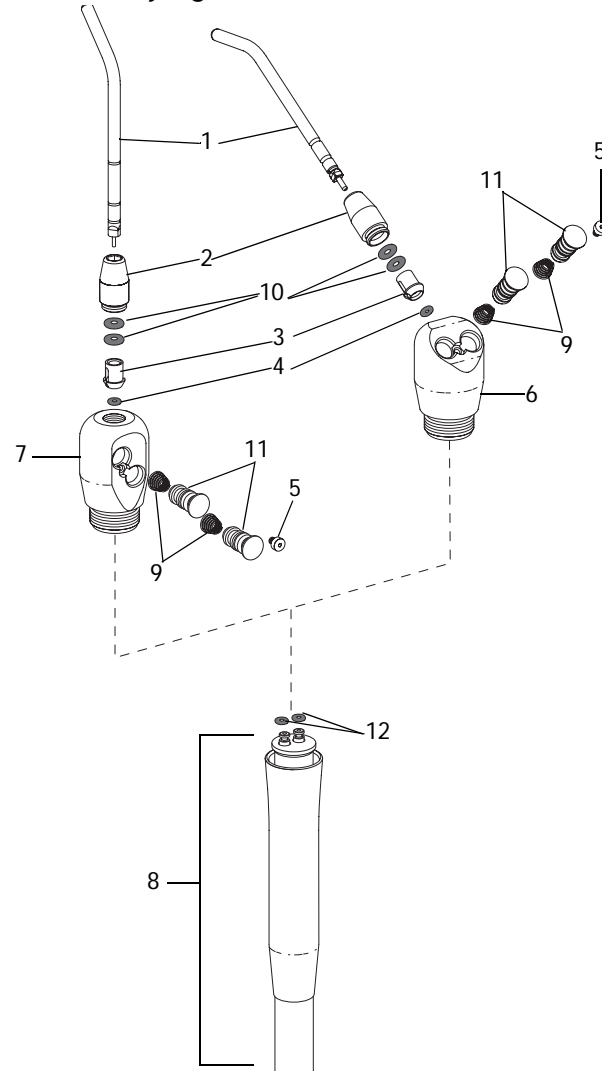
Figure 133 Traditional and Continental Syringes



## Warm Water Traditional and Continental Syringes

Item	Part Number	Description
1	23.0872.01	Syringe tip, package of 5
2	23.1111.00	Syringe nut, smooth
3	23.1101.00	Spacer, syringe nut
4	034.003.00	O-ring, EP, .056 ID x .060W, package of 10
5	23.1193.00	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 (Traditional & Continental) quick disconnect
8	23.1279.01	Tubing assembly with syringe handle (Assistant's Model 551) quick disconnect
8	23.1282.01	Tubing assembly with syringe handle (Assistant's Model 545) 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

**Figure 134** Warm Water Traditional and Continental Syringe





## Autoclavable HVE Standard and 11/15 mm

Figure 135 Autoclavable HVE Assembly

### Common Components

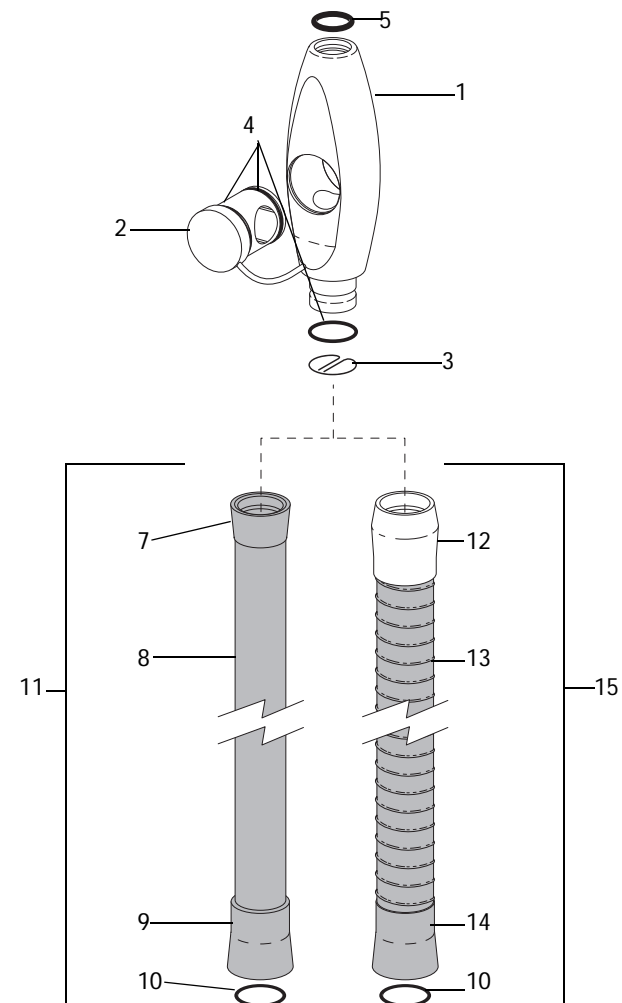
Item	Part Number	Description
1	11.1071.00	Body, autoclavable HVE
2	11.1074.00	Rotor assembly with O-rings
3	11.0998.01	Screen, spring clip, QD, HVE, package of 5
4	034.014.01	O-ring, E, .489 ID x .070 W, package of 10
5	034.013.01	O-ring, E, .426 ID x .070 W, package of 10
10	034.018.00	O-ring, .739 ID x .070 W

### Standard - P/N 11.1296.00

Item	Part Number	Description
10	034.018.00	O-ring, .739 ID x .070 W
7	11.1027.00	Tailpiece, QD, short
8	024.144.00	Tubing, 1/2 ID (63")
9	11.1300.00	Tailpiece, standard HVE
11	12.1237.00	Standard HVE tubing assembly

### 11mm and 15mm - P/N 11.1305.00

Item	Part Number	Description
10	034.018.00	O-ring, .739 ID x .070 W
12	11.1272.00	Tailpiece, QD, HVE
13	024.190.00	Tubing, 16 mm ID, vac (63")
14	11.1301.00	Tailpiece, HVE, 15 mm
15	12.1239.00	11 mm HVE tubing assembly

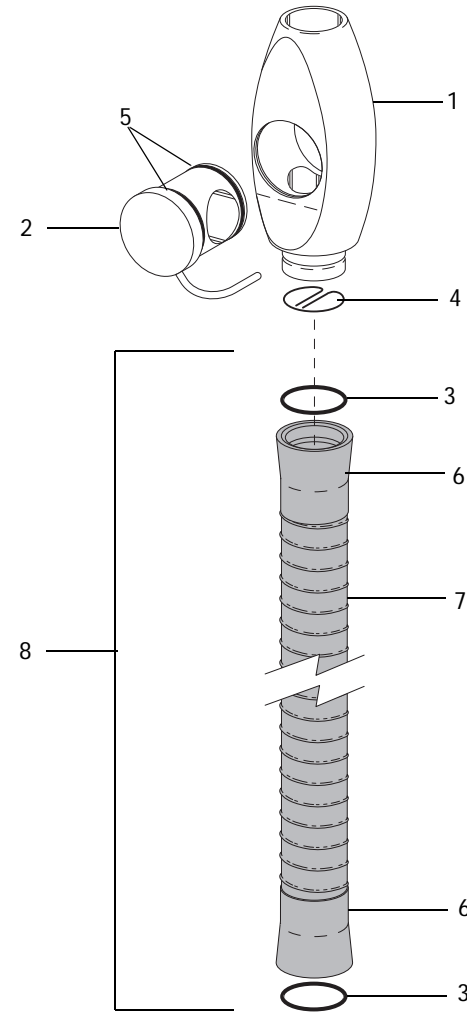


## Autoclavable HVE with Large Bore 15mm (541 and 545)

Part No: P/N 11.1297.00

Figure 136 Autoclavable HVE Assembly

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	12.1109.00	Screen, spring clip, QD, 15mm
5	034.019.01	O-rings, E, .801 ID x .070 W, package of 10
6	11.1301.00	Tailpiece, HVE, 15 mm
7	024.190.00	Tubing, 16 mm, handpiece, vacuum
8	12.1238.00	Tubing



## 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

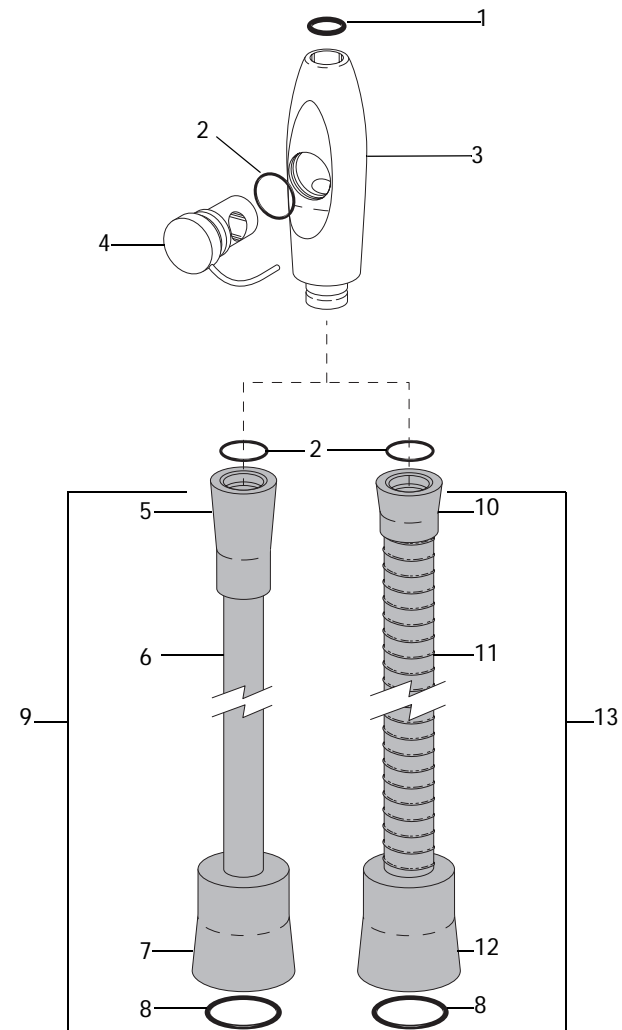
### Standard - P/N 12.1235.00

Item	Part Number	Description
5	12.1229.00	Tailpiece
6	024.142.00	Tubing (63")
7	11.1303.00	Tailpiece
9	11.1306.00	Tubing assembly

### 10mm - P/N 12.1236.00

Item	Part Number	Description
10	11.1283.00	Tailpiece
11	024.197.00	Tubing (63")
12	11.1302.00	Tailpiece
13	11.1307.00	Tubing assembly

Figure 137 Autoclavable Saliva Ejector









# ASSISTANT'S INSTRUMENTATION

The A-dec 551 assistant's instrumentation is equipped with either a short or long assistant's arm for easy positioning of instrumentation. Both arms are equipped with a touchpad and a holder assembly with independent positioning features. The solids collector, located at the base of the arm, is also a part of the assistant's instrumentation.

The A-dec 545 assistant's instrumentation is floor-mounted and installs with a variety of Preference Collection and Preference Slimline cabinets. The standard configuration for 545 has a height-adjustable round worksurface, multi-position assistant's instrument holder, autoclavable saliva ejector, autoclavable syringe (option of warm water syringe), autoclavable HVE (choice of single/dual), 2-liter self-contained water system with quick-disconnect water bottle, solids collector, standard multi-function touchpad (optional) and no touchpad (optional).

## ASSISTANT'S INSTRUMENTATION CONTENTS

- **Product Overview (551), page 224**
- **Flow Diagrams (551), page 232**
- **Adjustments (551), page 234**
- **Product Overview (545), page 235**
- **Flow Diagram (545), page 239**
- **Leveling (545), page 241**
- **Adjustments (545), page 244**



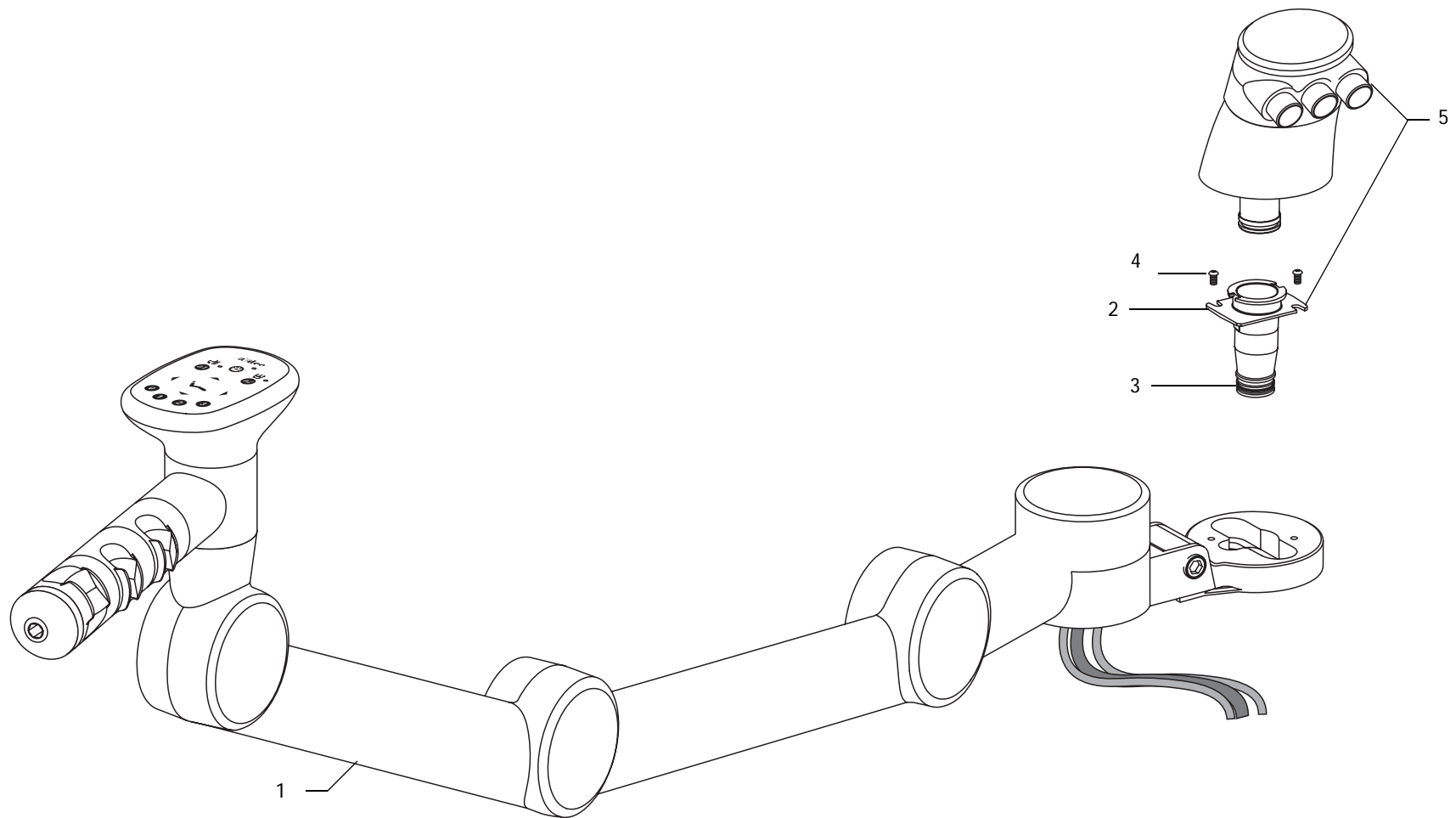
## PRODUCT OVERVIEW (551)

---

### Components

Item	Description
1	Long arm with single 3 position, standard holder
	Long arm with single 4 position, standard holder
	Long arm with dual 2 position, standard holder
	Short arm with single 3 position, standard holder
	Short arm with single 4 position, standard holder
	Short arm with dual 2 position, standard holder
2	Vacuum pipe kit
3	O-ring, red, package of 10
4	Screw, buttonhead socket, 10-32 x 1/4"
5	Vacuum connector kit

**Figure 138** 551 Assistant's Long Arm Assembly with a Single 3 Position Holder Assembly





## Holdings

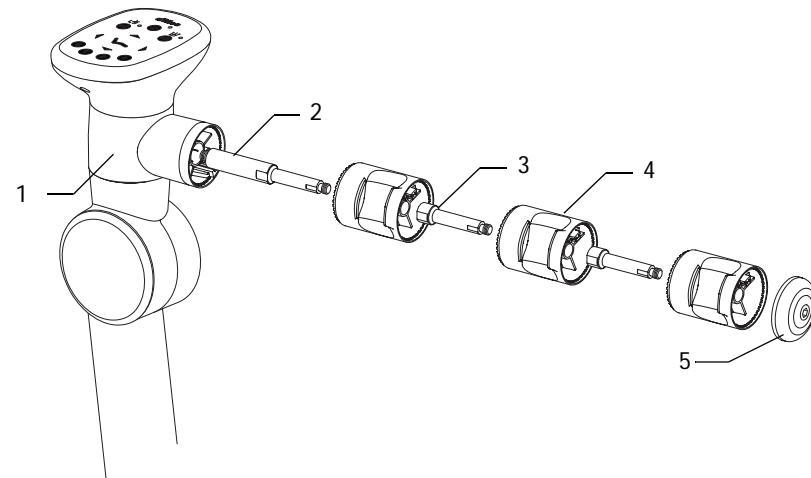
There are two types of assistant's holders, standard and electric.

### Standard Holder

The touchpad does not need to be removed when disassembling the standard holder.

Item	Description
1	Turret
2	Turret insert
3	Axle (included with both items 4)
4	Holder, SE/syringe kit HVE standard kit
5	End cap assembly

**Figure 139** Standard Assistant's Holder Components



## Electric Holder

Each handpiece in the holder assembly automatically activates when you lift it from its holder.

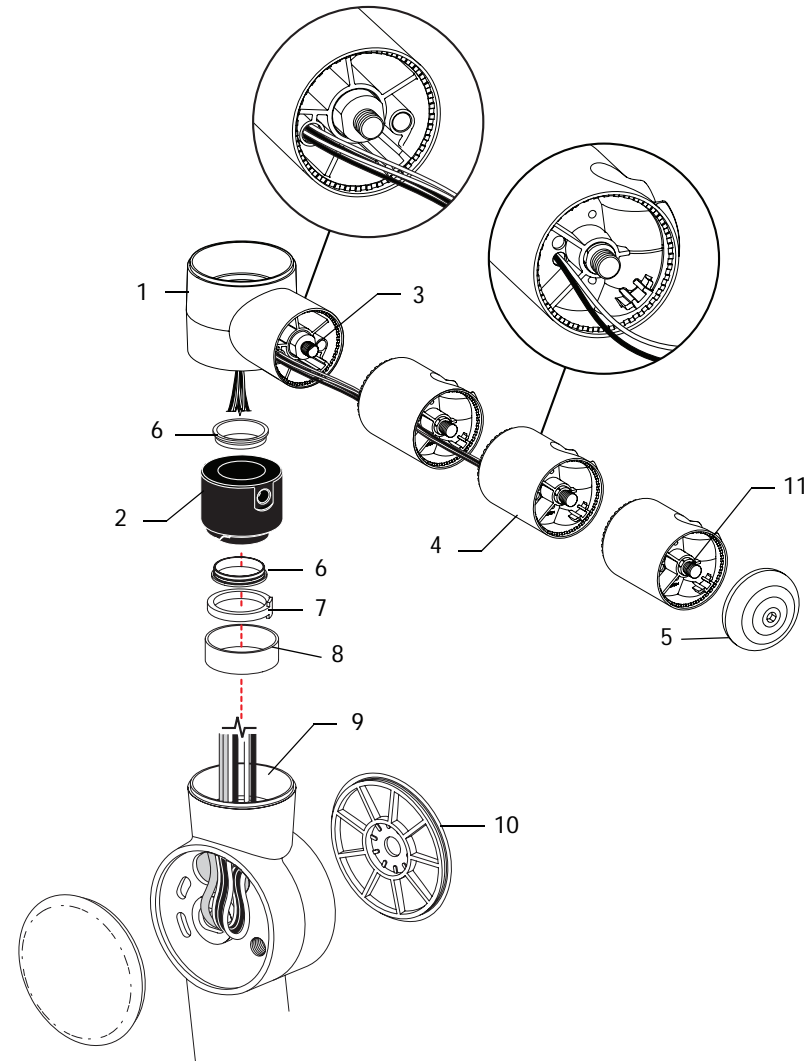
The electric holders provide vacuum On/Off switching for users whose vacuum system requires this functionality. The vacuum pump activates automatically when you lift the high volume evacuator (HVE) or saliva ejector (SE) from the holder. The vacuum turns off when you place the HVE or SE back into the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

Item	Description
1	Turret
2	Inner hub
3	Turret insert
4	Holder, SE electric holder kit Holder, HVE electric holder kit, 11mm, 15mm
5	End cap assembly
6	Bearing
7	Stop
8	Spacer
9	Head mount
10	Knuckle cover
11	Axle

Figure 140 Electric Assistant's Holder Components

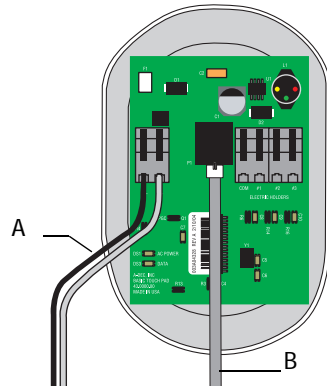


## Assistant's Touchpad

The assistant's instrumentation uses a standard touchpad that serves as a single touch surface for controlling the chair, dental light, and cuspidor or A-dec relay module(s). The touchpad can rotate 340° for access and visibility.

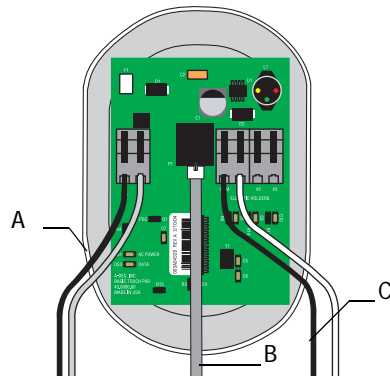
Item	Description
1	Standard touchpad with circuit board
2	Touchpad base
3	Cable tie, package of 10
4	Cable bushing
5	Bolt
6	Spline
7	Washer, Nylatron
8	Screw, socket head, 4-40 x 1/4"
9	Washer, wave
10	Washer

**Figure 141** Assistant's Touchpad with Standard Holder Connections



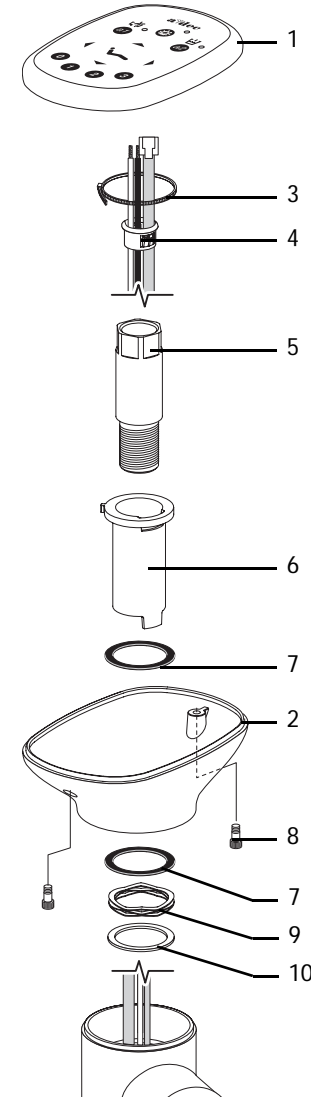
(A) 24 VAC; (B) Data Line

**Figure 142** Assistant's Touchpad with Electric Holder Connections



(A) 24 VAC; (B) Data Line; (C) Electric Holder

**Figure 143** Electric Assistant's Touchpad Components



## Solids Collector

The solids collector screen prevents solids from entering the central vacuum system when the high volume evacuator (HVE) or saliva ejector (SE) are used. A regularly maintained solids collector is necessary for optimal performance of the vacuum system. If the vacuum system performance is less than optimal, verify that the screen has been replaced.



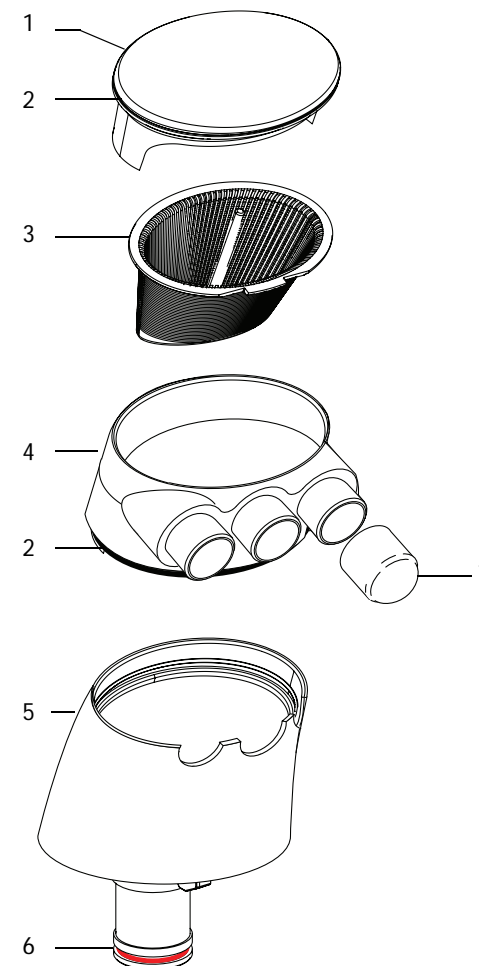
**CAUTION** Use appropriate gloves when handling contaminated parts.

### ■ Solids Collector Removal

1. Lift off the screen, and cap, then twist off the triple vacuum connector.
2. Turn the vacuum tower base to face the back of the chair and lift up.

Item	Description
1	Vacuum tower cap
2	O-ring, package 10
3	Screen, package 10
4	Connector, triple vacuum
5	Vacuum tower base with funnel
6	O-ring, red, package 10
7	Cap

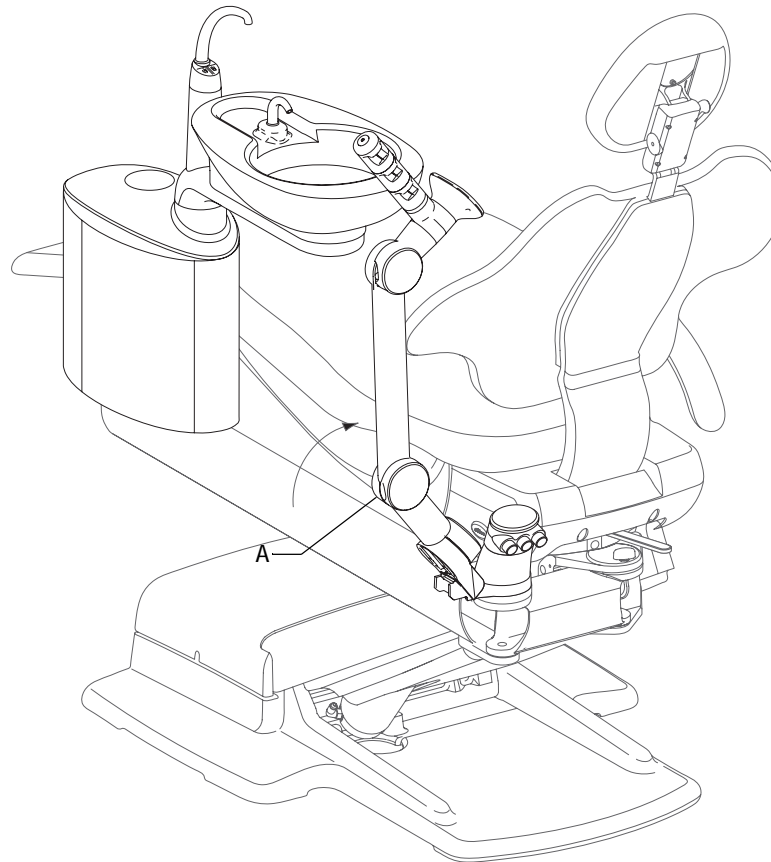
**Figure 144** Solids Collector Components



## Tip-Up Feature

The pivot joint, located close to the support link, allows the entire arm to tip up, when it contacts an object.

**Figure 145** 551 Assistant's Arm Tip-Up Feature



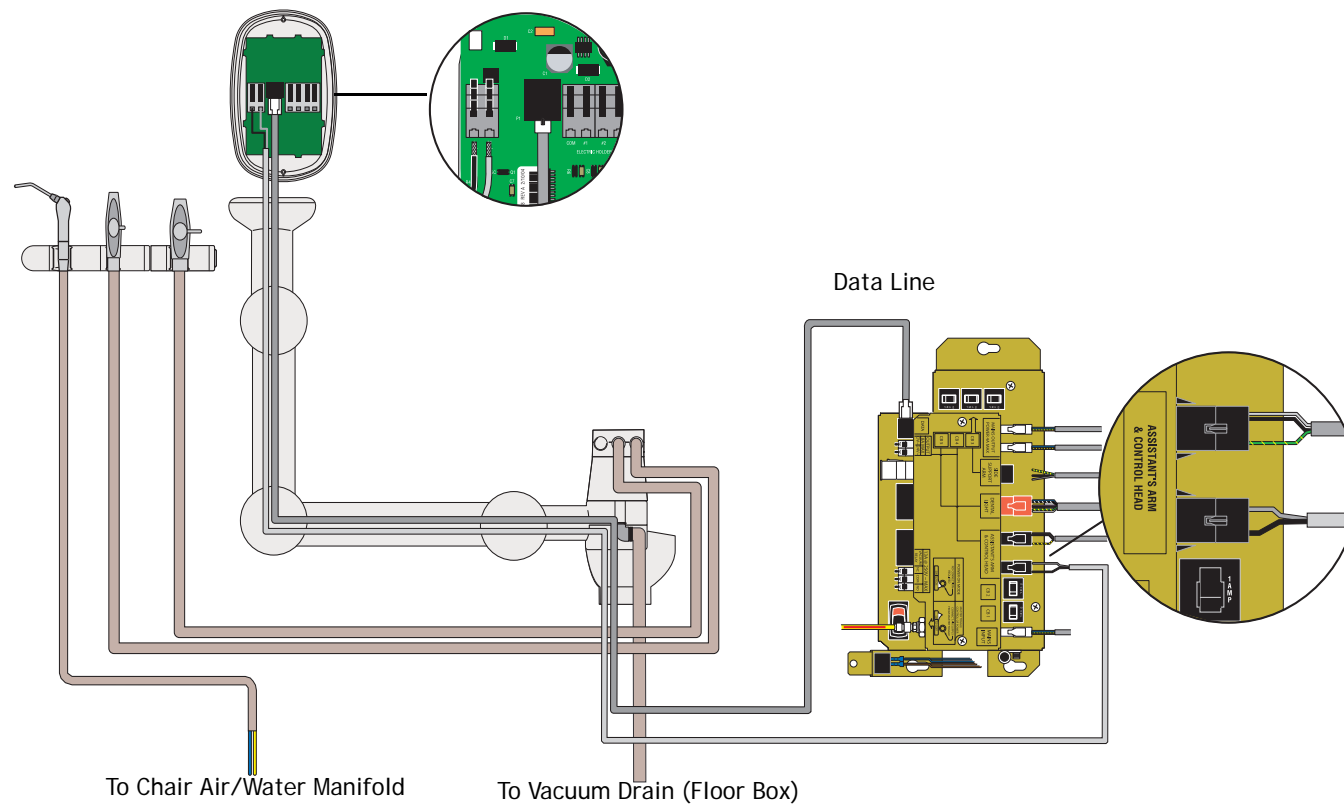
(A) Pivot Joint

## FLOW DIAGRAMS (551)

### Standard Holder

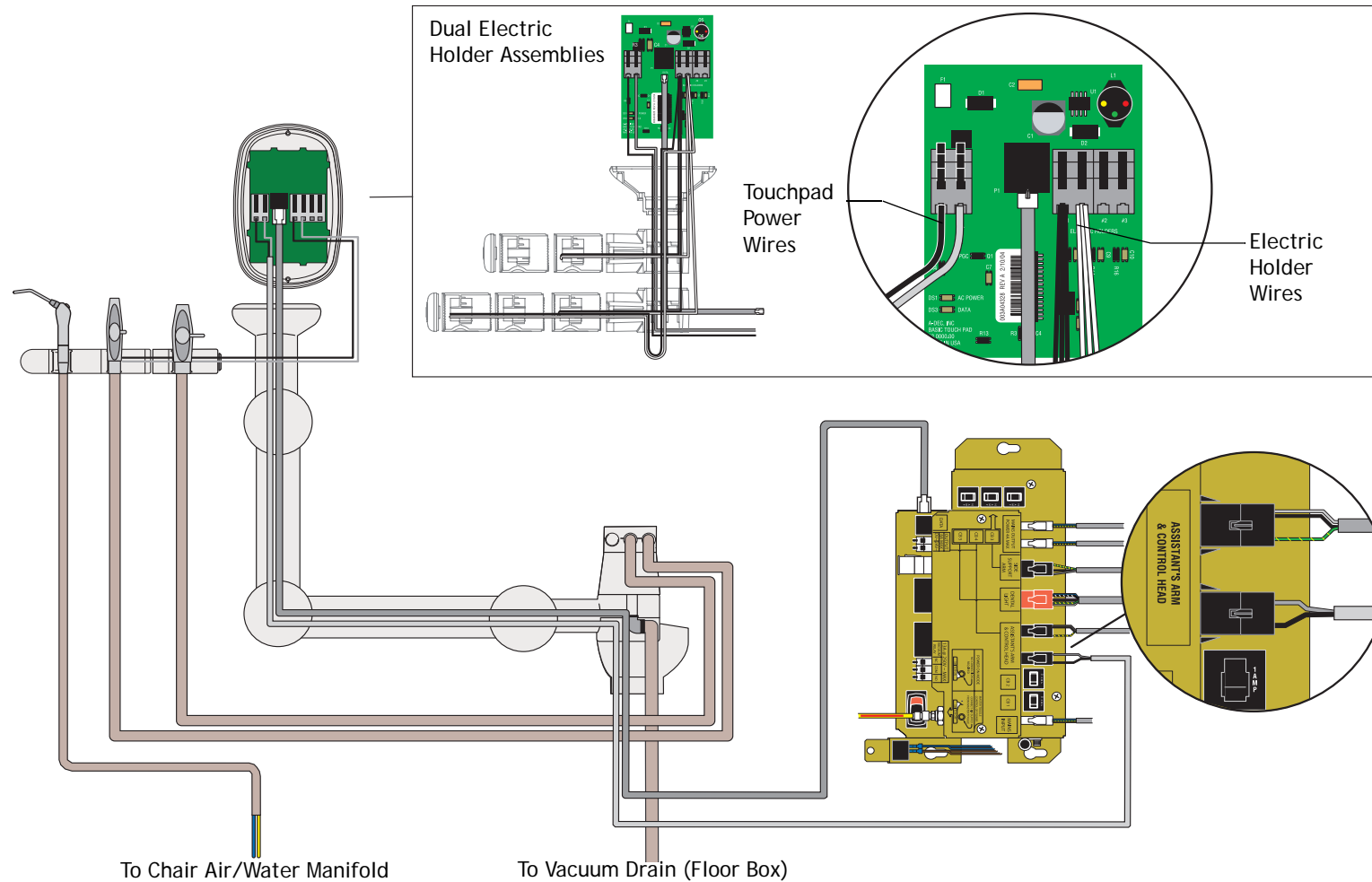
This flow diagram describes the plumbing and electrical connections of the 551 assistant's standard holder assembly and solids collector.

**Figure 146** 551 Assistant's Standard Holder Flow Diagram



## Electric Holder

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





## ADJUSTMENTS (551)

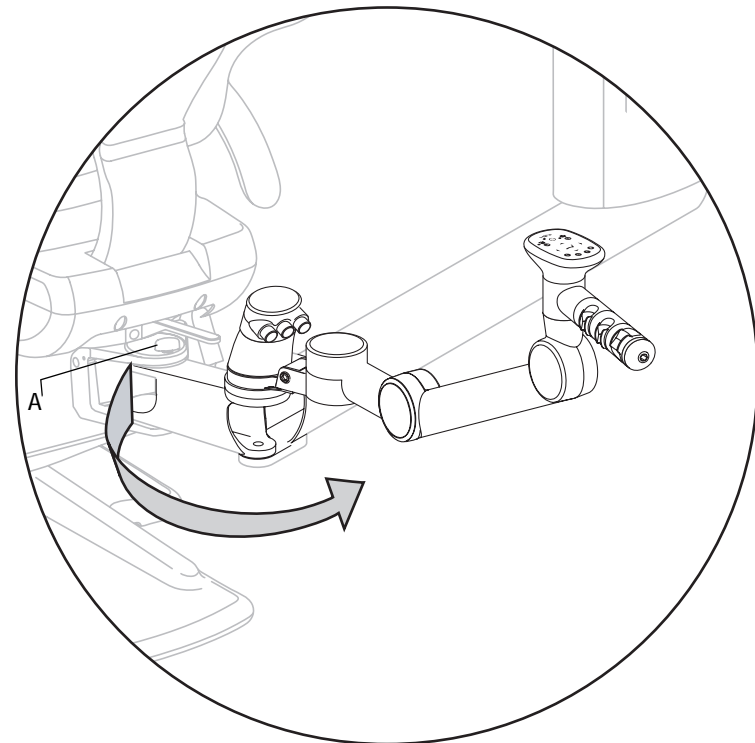
### Left or Right Conversion

The assistant's instrumentation can be easily positioned to the opposite side of the chair.

To reposition the assistant's instrumentation:

1. Loosen the support link locking knob located under the swivel brake handle.
2. Unsnap the support link cover, and reposition the arm to the opposite side. If the support side system includes a support center, tip up the assistant's arm so the support center can swing past it when repositioning the assistant's arm.
3. Reattach the support link cover, and tighten the support link locking knob.

Figure 147 Reposition the Assistant's Arm



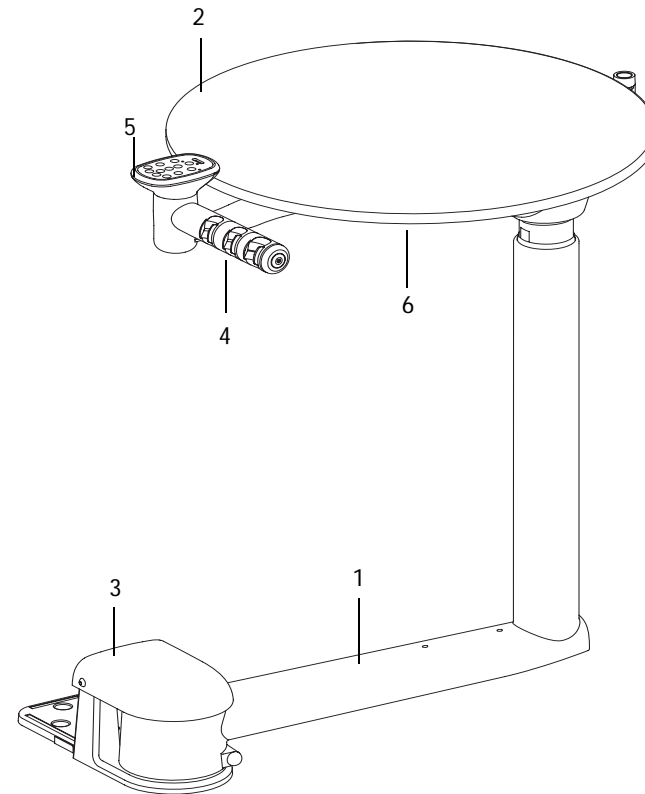
(A) Locking Knob

## PRODUCT OVERVIEW (545)

### Components

Item	Description
1	Arm assembly
2	Round worksurface
3	Hub mount
4	Assistant's holder (standard)
	Assistant's holder (electric)
5	Assistant's touchpad
6	Master On/Off toggle (under worksurface)

Figure 148 545 Assistant's Instrumentation



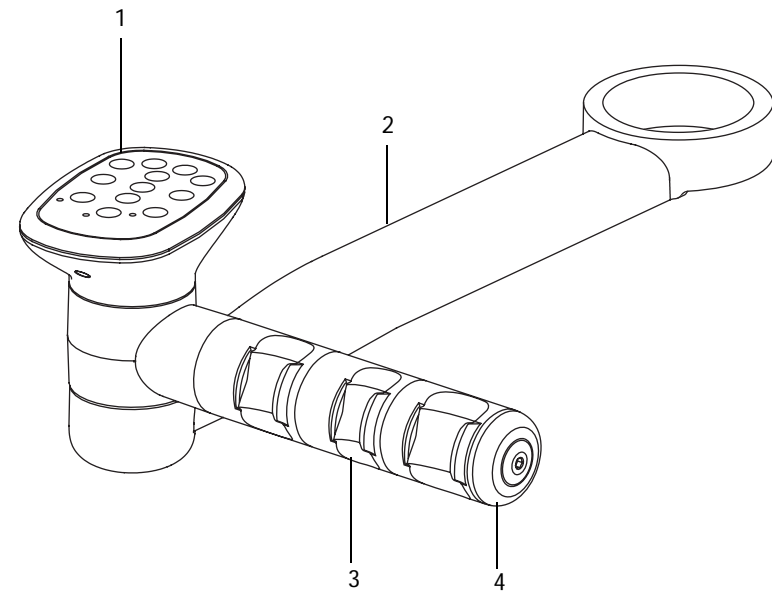
## Holders

There are two types of holders, standard (non-active) and electric.

### Standard Holder

Item	Description
1	Standard touchpad
2	Assistant's arm assembly
3	Assistant's holder assembly
4	End cap

Figure 149 Standard Holder Assembly



## Electric Holder

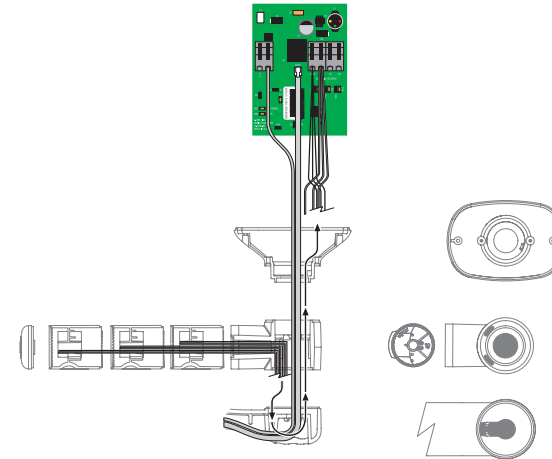
Each handpiece in the holder assembly automatically activates when you lift it from its holder.

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

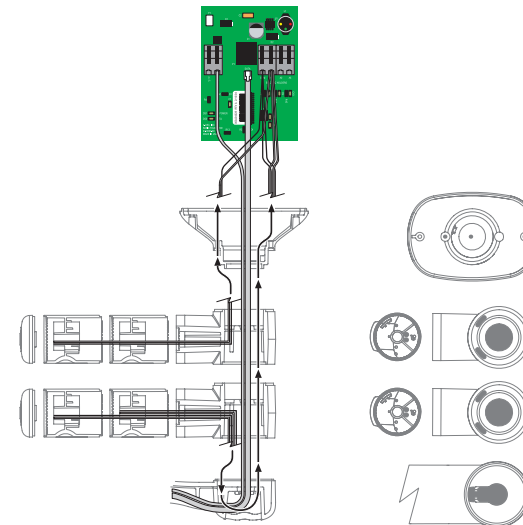


**CAUTION** When reassembling the electric holder, rotate all holders, holder assemblies and the touchpad to ensure there is enough service loop in the wires to prevent them from breaking.

**Figure 150** Single Electric Holder Assembly



**Figure 151** Dual Electric Holder Assembly



## Solids Collector

The solids collector screen prevents solids from entering the central vacuum system when the High Volume Evacuator (HVE) or Saliva Ejector (SE) is used. A regularly maintained solids collector is necessary for optimal performance of the vacuum system. If the vacuum system performance is less than optimal, verify that the screen has been replaced.



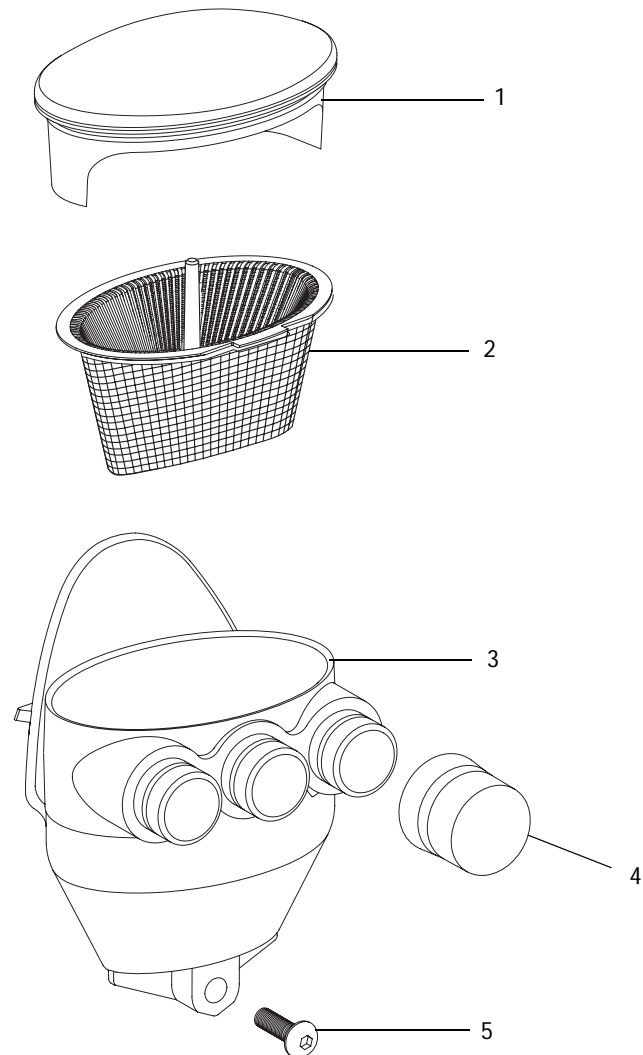
**CAUTION** Use appropriate gloves when handling contaminated parts.

### ■ Remove Solids Collector and Replace 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 local regulations
5. Insert new screen in the collector and replace the cap.

Item	Description
1	Solids collector cap
2	Solids collector screen
3	Vacuum canister base
4	Connector cap
5	Screw

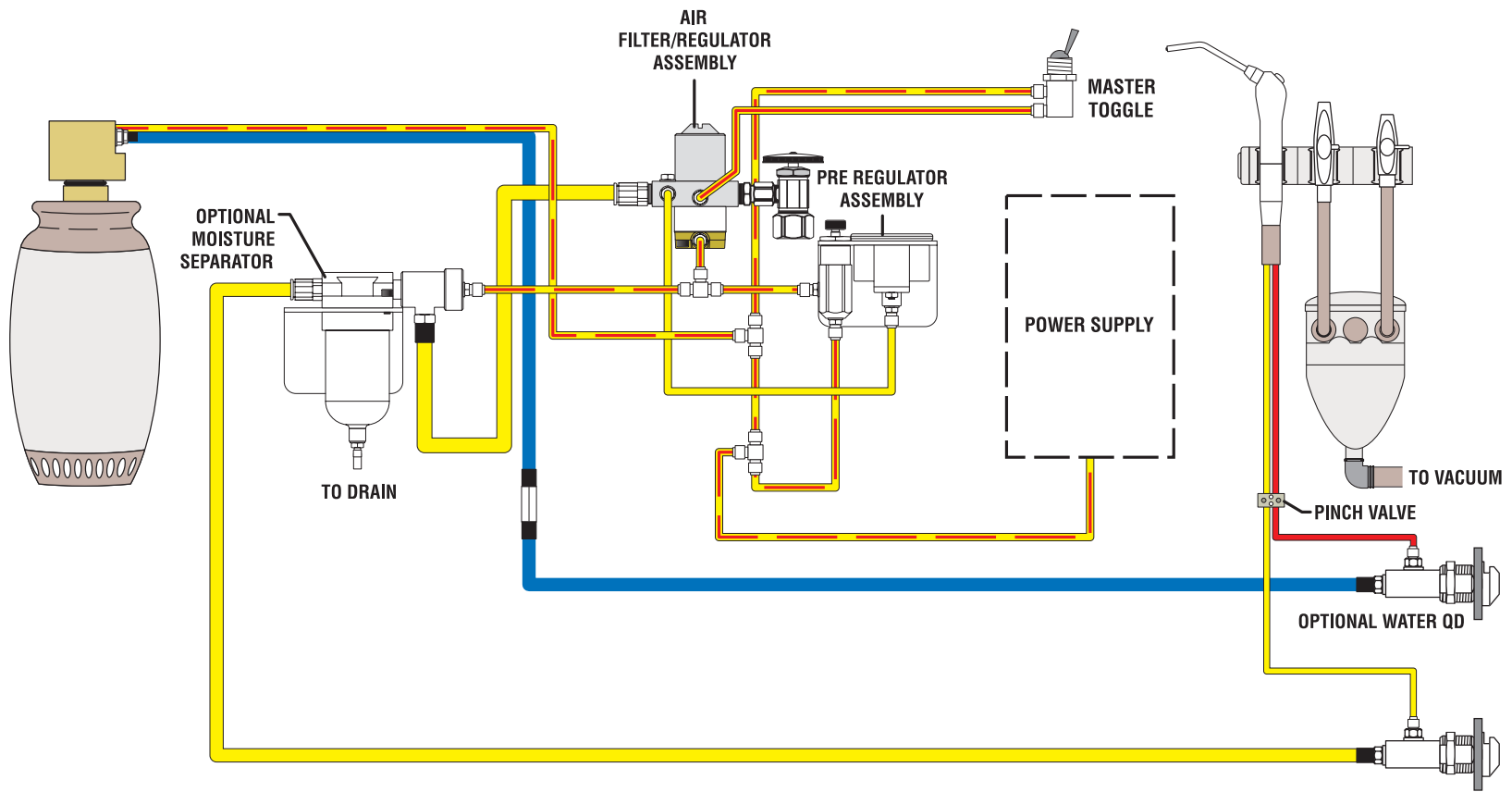
Figure 152 Solids Collector



## FLOW DIAGRAM (545)

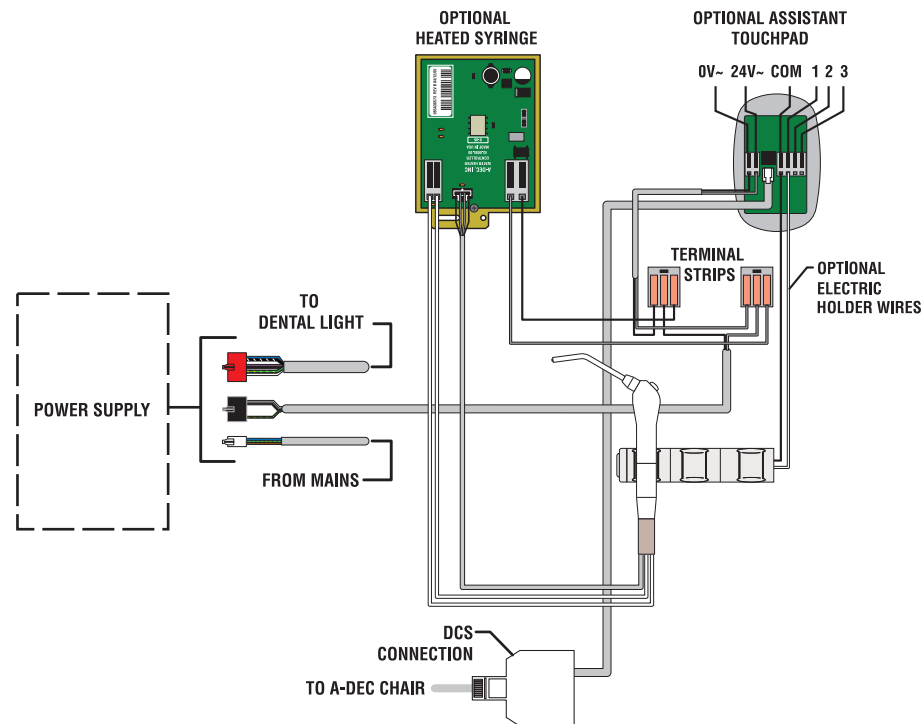
### Plumbing Diagram

Figure 153 545 Plumbing Flow Diagram



## Plumbing Diagram

Figure 154 545 Wiring Flow Diagram



## LEVELING (545)

### Arm Assembly

#### Front To Back

1. Position the arm perpendicular to the cabinet (see Figure 155).



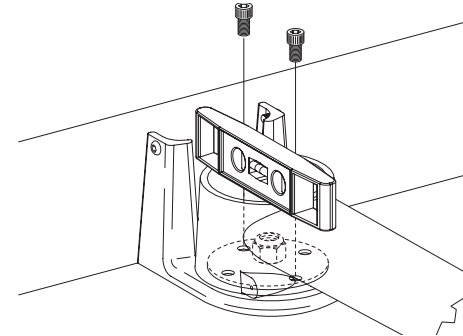
**NOTE** Make sure the arm assembly is in line with the worksurface and perpendicular to the cabinet before leveling

2. Place the level on the hub, parallel to the arm.
3. Loosen and tighten the mounting screws as necessary.



**TIP** The support arm balances on a pivot. To raise or lower the long side of the arm, adjust the screw nearest the cabinet (see Figure 157). Once the arm is level, tighten the second screw to hold the arm in place.

Figure 155 Leveling - Arm Assembly Leveling Front to Back

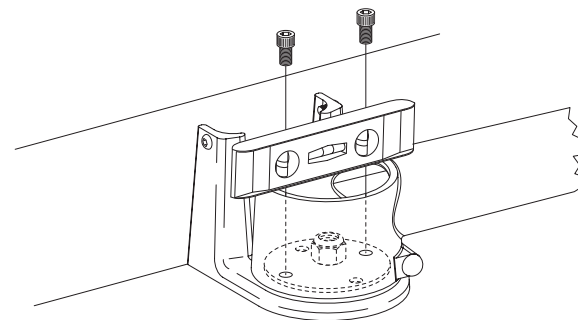




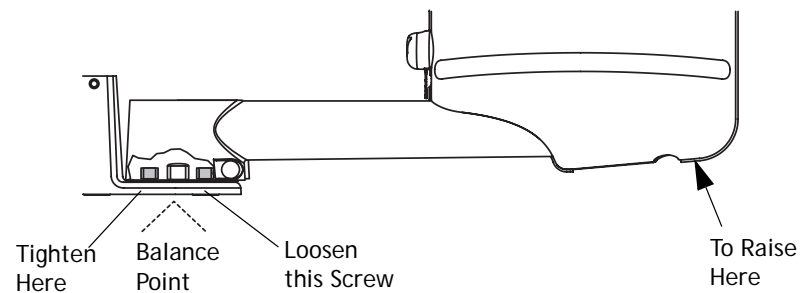
## Side To Side

1. Position the arm parallel to the cabinet (see Figure 156).
2. Place level on the hub, parallel to the arm.
3. Loosen and tighten the mounting screws as necessary (see Figure 157).

**Figure 156** Adjustment - Arm Assembly Leveling Side to Side



**Figure 157** Level the Hub



## Worksurface

### Level Round Worksurface

To level the round worksurface, adjust the two set screws in the worksurface support housing (see Figure 158) until the surface is level.



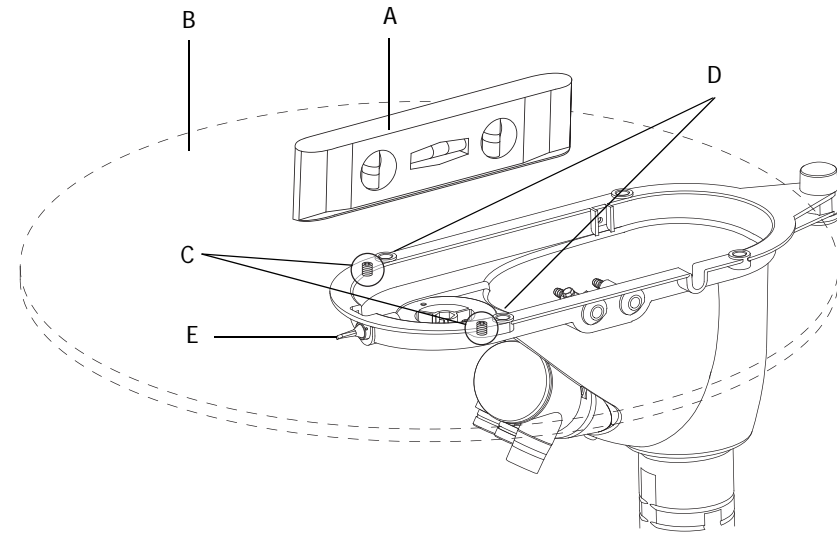
**NOTE** Ensure that the arm assembly is level before leveling the worksurface.

1. Place the worksurface arm in a typical working position and center a level on the round worksurface over the support housing (see Figure 158).
2. Loosen the worksurface screws on the side nearest the master on/off toggle.
3. Adjust the two setscrews in the worksurface support housing until the surface is level. Use a 1/8" hex key (see Figure 158).
4. Tighten the worksurface screws until the worksurface is secure.



**NOTE** Do not overtighten the worksurface screws, or the level may change.

Figure 158 Level Work Surface



(A) Level; (B) Worksurface; (C) Setscrew; (D) Worksurface Screws;  
(E) Master On/Off Toggle

## ADJUSTMENTS (545)

### Worksurface Height

#### Worksurface and Instrumentation Arm Height

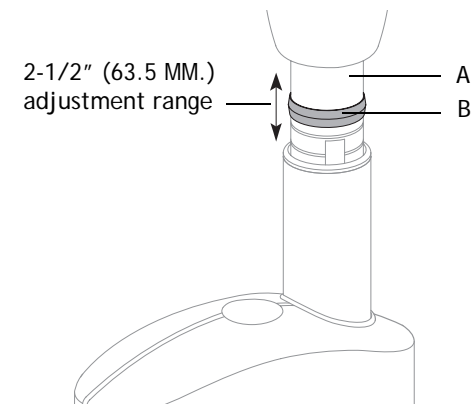
The A-dec 12 O'clock system has an arm you can adjust for efficient operation and comfort. To adjust the height of the worksurface or the instrumentation arm:

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



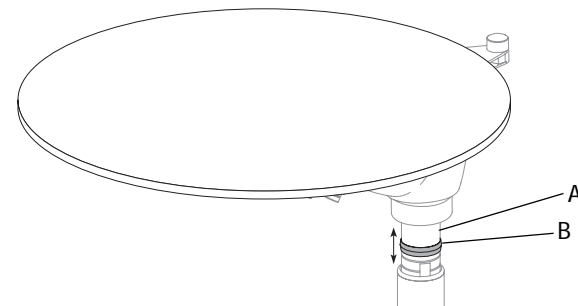
**NOTE** The height adjustment range for the worksurface is 2-1/2" (63.5 mm) and for the doctor's instrumentation arm is 3" (76.2 mm).

**Figure 159** Worksurface and Doctor's Instruments Height Adjustment - 545



(A) Vertical Post of the Worksurface; (B) Height Adjustment Ring for Worksurface

**Figure 160** Worksurface Height Adjustment - 545



(A) Vertical Post of the Worksurface; (B) Height Adjustment Ring for Worksurface

## Instrumentation Arm Positioning

The A-dec 500 instrumentation holders offer horizontal and vertical positioning. Each holder rotates for independent angle adjustment (see Figure 161).

### Assistant's Arm

#### ■ To Adjust the Assistant's Arm Tension

1. Tighten or loosen the screw located under the assistant's arm.
2. Check your adjustment (see Figure 162).

#### ■ Position Individual Holders

You can customize the position of each holder on the holder assembly arm:

1. Pull holder slightly away from the adjacent holder.
2. Twist to the desired position and release (see Figure 163).

Figure 161 Instrumentation Arm Positioning

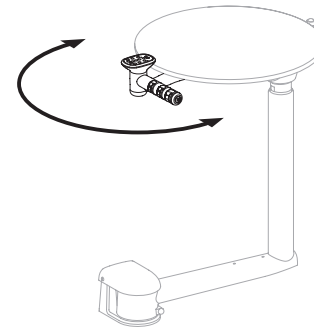


Figure 162 Assistant's Arm Adjustment

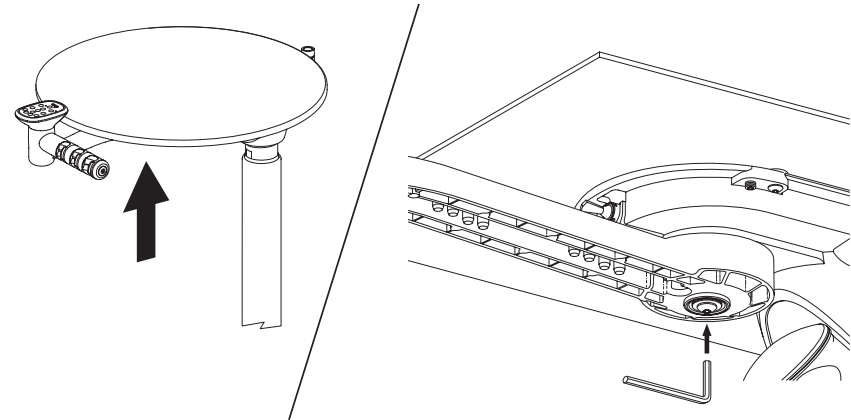
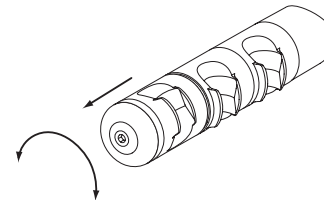


Figure 163 Instrument Holder Positioning



Holder positions rotate independently



# 5

## CUSPIDOR AND SUPPORT CENTER

The support center, cuspidor and amalgam separator housing install on the lower support arm. The support side-mounted water bottle and the cuspidor circuit board are inside the support center. This section provides information related to servicing, maintenance and adjustments for the cuspidor.

### CONTENTS

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- Product Overview, page 248
- Flow Diagram, page 250
- Service/Usage Information, page 252
- Adjustments/Maintenance, page 254
- Illustrated Parts Breakdown, page 257
- Amalgam Separator Housing, page 265

Figure 164 561 Cuspidor and Support Center



# CUSPIDOR

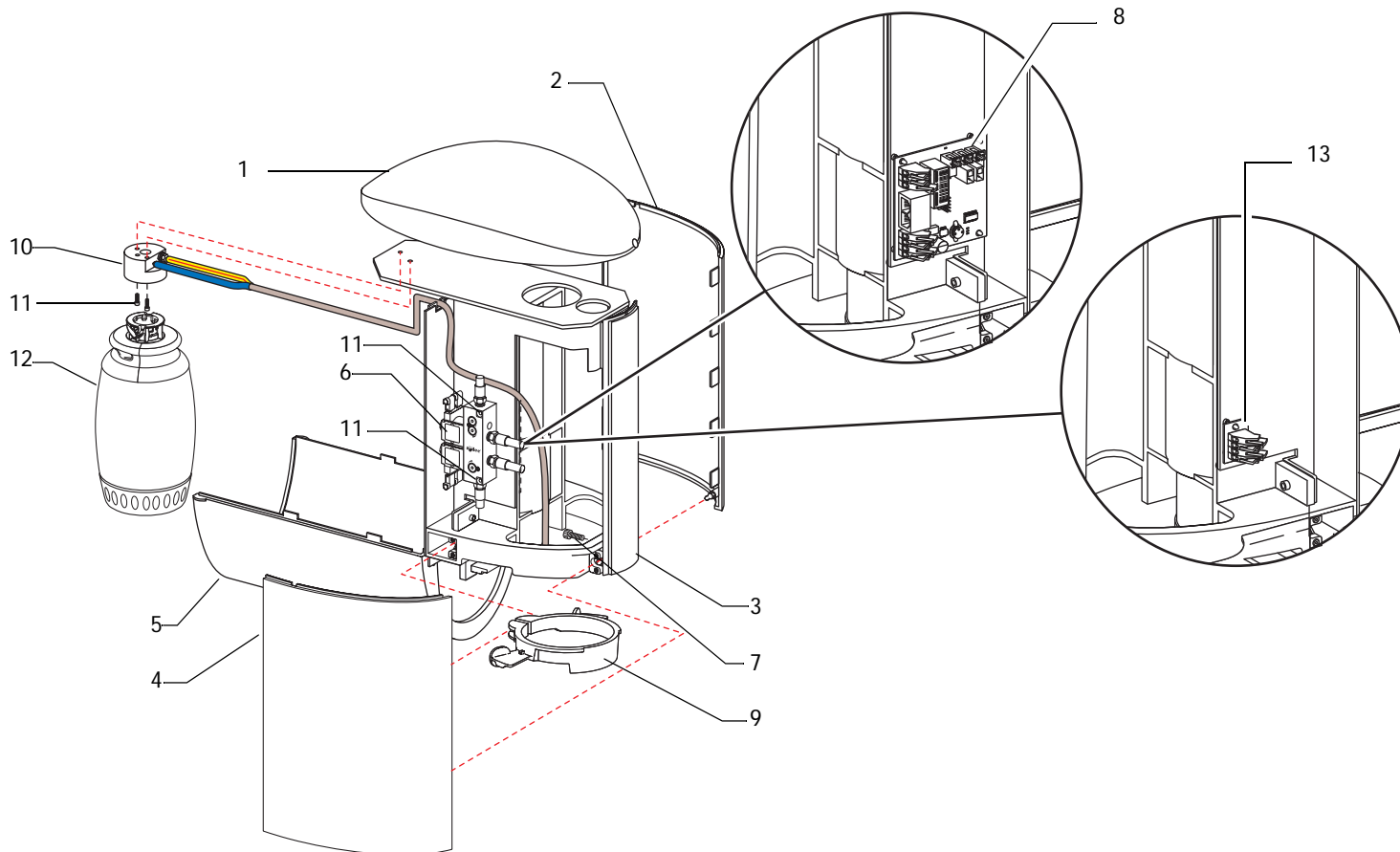
## PRODUCT OVERVIEW

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The support center houses the cuspidor fill/rinse manifold, cuspidor circuit board, and support side water bottle. The cuspidor is preset with an automatic timed cup fill and bowl rinse. You can program both the cup fill and the bowl rinse functions.

Item	Part Number	Description
1	77.0034.00	Cover, top
2	77.0036.01	Cover, right
3	77.0037.00	Cover, nose
4	77.0035.01	Cover, left
5	14.0472.00	Cover, housing, water bottle
6	38.1803.00	Cuspidor manifold
7	001.089.00	Screw
8	90.1079.00	Cuspidor circuit board kit
9	77.0232.00	Rotational stop
10	14.0475.00	Bottle receptacle assembly
11	002.112.00	Screw
12	14.0468.00	Self-contained water bottle assembly
13	43.0045.00	PCA, terminal strip, 4 position (without cuspidor only)

Figure 165 Identification of the Support Center Components





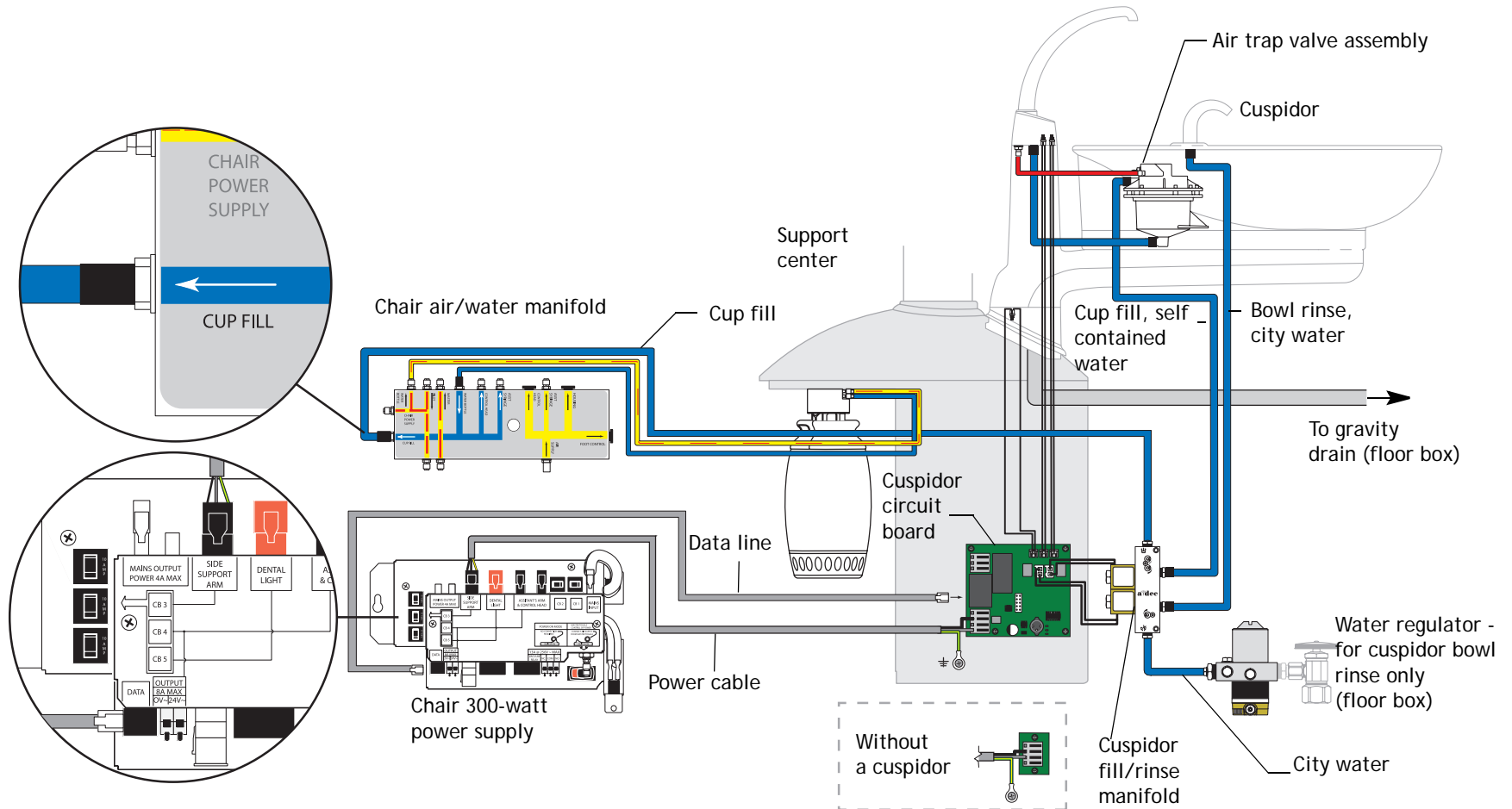
## FLOW DIAGRAM

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### Cuspidor and Support Center

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

Figure 166 Cuspidor and Support Center Flow Diagram



## SERVICE/USAGE INFORMATION

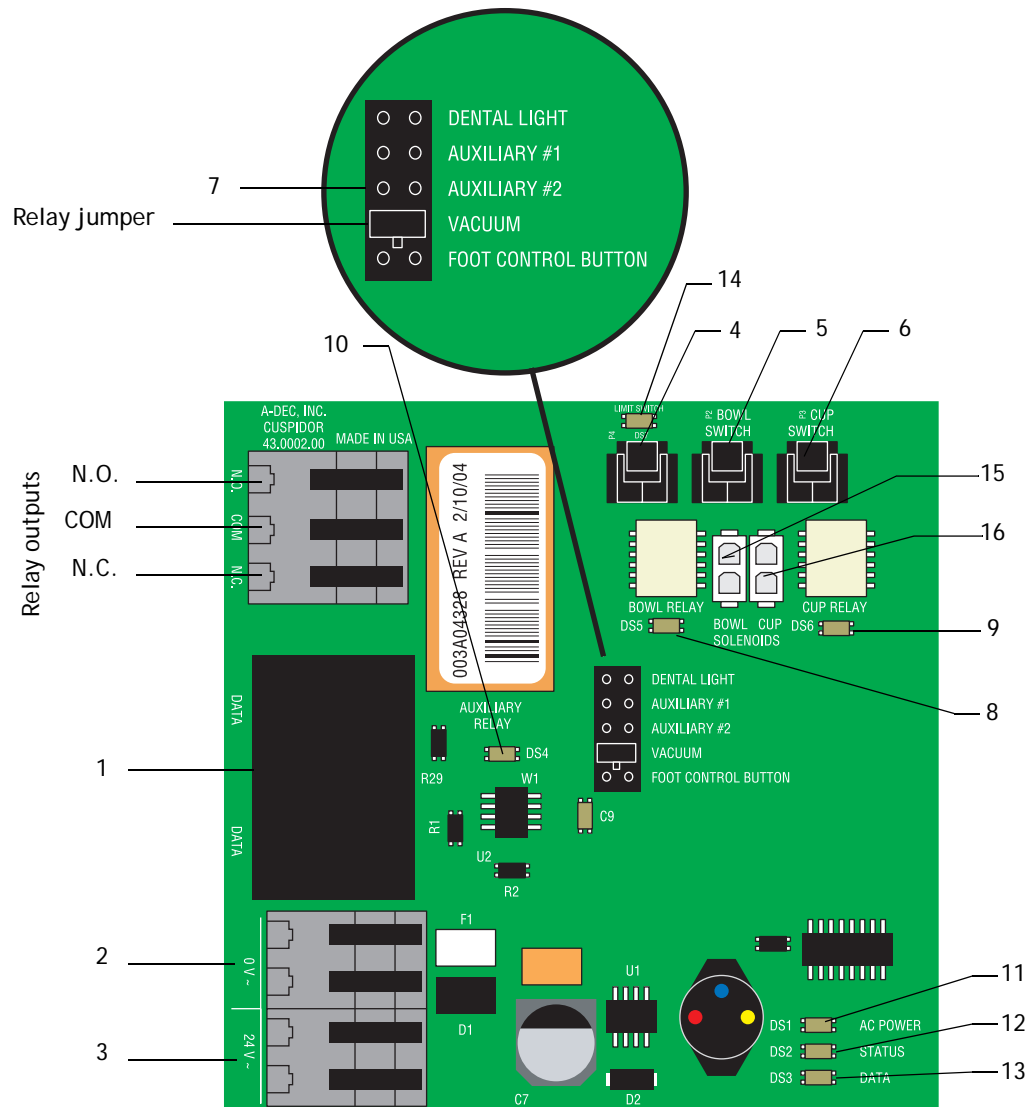
### Cuspidor Circuit Board Components

**Part No: 90.1079.00**

The cuspidor circuit board controls the bowl rinse and cup fill solenoids. 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 terminals
2	J1 - 0 VAC terminal strip
3	J1 - 24VAC terminal strip
4	P4 - Cuspidor limit switch connector
5	P2 - Bowl rinse switch connector
6	P3 - Cup fill switch connector
7	P1 A-dec relay selection header
8	DS5 - Bowl rinse relay LED
9	DS6 - Cup fill 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 - Cup fill solenoid connector

Figure 167 Cuspidor Circuit Board Components



## ADJUSTMENTS/MAINTENANCE

### Cup Fill Functions

The cup fill function allows water to flow from the cuspidor cup fill spout into a cup.

- A quick press of the cup fill button activates a timed operation.
- A long press activates a manual operation.



**NOTE** The cup fill will only run a maximum of two minutes in the manual operation mode.

### Bowl Rinse Functions

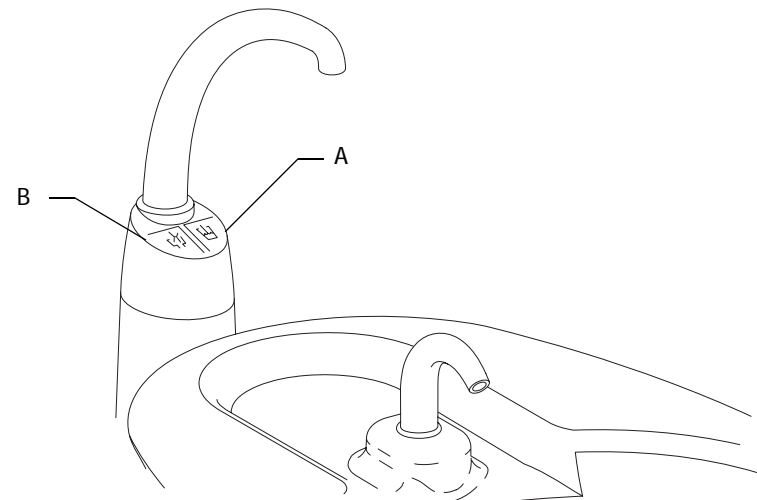
The bowl rinse function provides rinse water for the cuspidor bowl.

- A quick press of the bowl rinse button activates a timed operation.
- A long press activates the manual operation.
- Two presses in less than two seconds, activates the continuous operation. Press the bowl rinse button once to stop the continuous operation.



**NOTE** There is no maximum time limit for this function.

Figure 168 Cuspidor Buttons for Cup Fill and Bowl Rinse



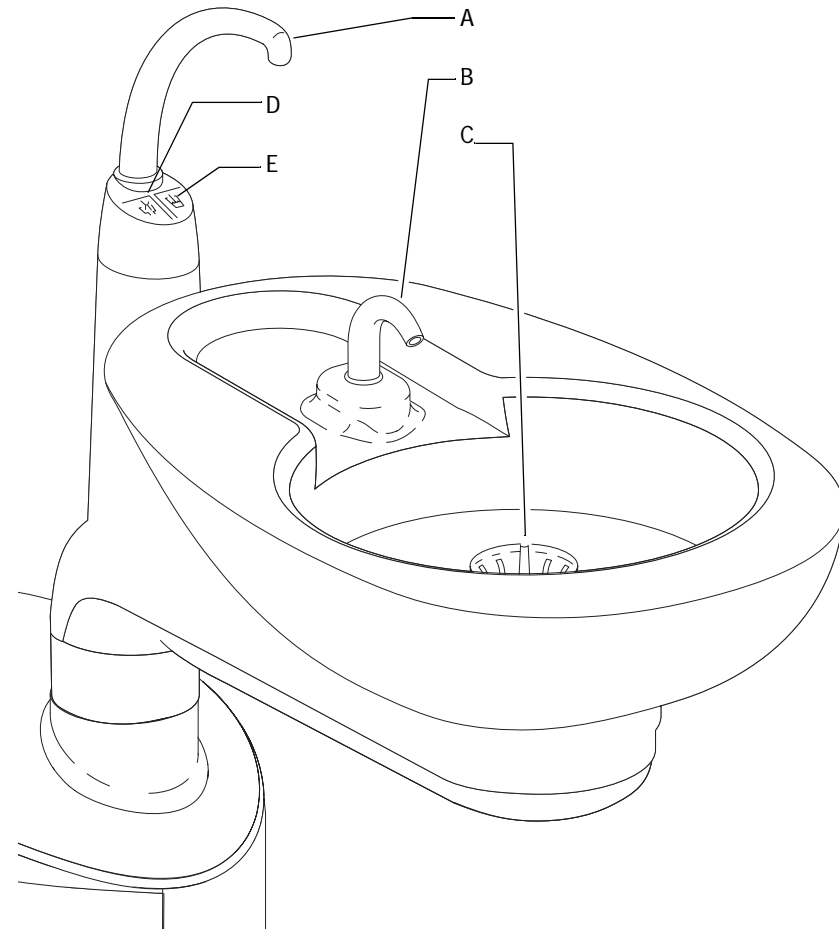
(A) Cup Fill; (B) Bowl Rinse

## Cup Fill and Bowl Rinse Timing

Cup fill and bowl rinse functions can be reprogrammed using a touchpad or the footswitch program button and the appropriate button on the cuspidor. The table describes how to program the cup fill and bowl rinse functions of the cuspidor.

Step	Action
1	Press the <b>Program</b> button (one beep).
2	Press and hold <b>Cup Fill</b> or <b>Bowl Rinse</b> button for desired time.
3	Release button (three beeps).

Figure 169 Cuspidor Programming Features



(A) Cup Fill Spout; (B) Bowl Rinse Spout; (C) Bowl Screen; (D) Bowl Rinse Button; (E) Cup Fill Button



## ILLUSTRATED PARTS BREAKDOWN

---

This section contains illustrated parts breakdowns specific to the cuspidor.

### Part Identification

The conventions for the serviceable components tables are designed to identify all parts and kits, including ones that are not for sale. Symbols with reference notes are used.

Symbol	Definition
†	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)
No symbol	Part is for sale

### CUSPIDOR IPB CONTENTS

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- Cuspidor Upper Assembly , page 259
- Cuspidor Lower Assembly, page 262
- Cuspidor Fill/Rinse Manifold, page 264
- Cuspidor Circuit Board Components, page 252
- Cup Fill Functions, page 254
- Bowl Rinse Functions, page 254





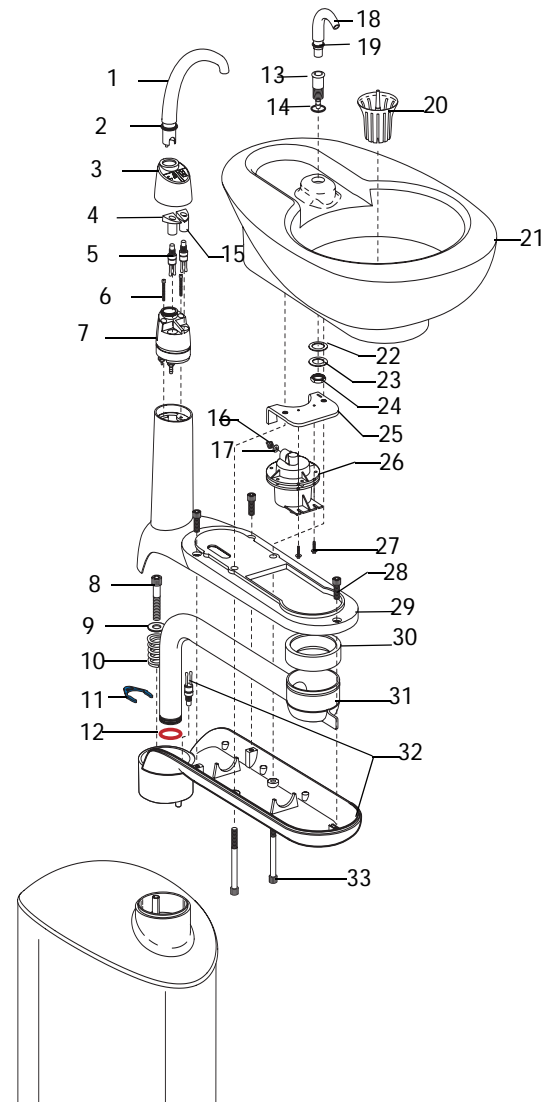
## Cuspidor Upper Assembly

Item	Part Number	Description
1	77.0043.01	Spout, cup fill, cuspidor, with O-ring
2	030.012.02	O-ring, AS568-012, package of 10
3	77.0044.00	Gasket, spout, cup, cuspidor, Surf 6
4	77.0099.00	Button, cuspidor, fill/rinse, left
5	43.0010.00	Switch assembly, normally open, momentary, 20", 2-MTE
6	005.088.00	Screw, socket head, 6-32 x 1 1/4
7	77.0097.01	Support, cuspidor spout with barbs
8	002.082.03	Screw, socket head stainless steel, 1/4-20 x 1-1/2
9	004.141.00	Washer, flat, stainless, FL, .261 ID
10	013.061.01	Spring, compression, .75 OD x 1.00 FL
11	022.090.00	Clip, retainer, connector, vacuum
12	035.053.01	O-ring, silicone, vacuum, 20mm x 2mm, package of 10
13	77.0105.00	Socket, bowl rinse spout, Surf 4
14	030.014.02	O-ring, AS568-014, package of 10
15	77.0100.00	Button, cuspidor, fill/rinse, right
16	023.811.00	Barb, .018 restrictor, 1/8 x 10-32
17	004.005.02	Washer, flat, nylon.187 ID package of 10
18	77.0042.01	Spout, bowl rinse, cuspidor, with O-ring
19	030.011.02	O-ring, AS568-011, package of 10
20	75.0035.01	Screen, cuspidor bowl, package of 5
21	77.0038.00	Bowl, cuspidor, ceramic
22	004.035.00	Washer, flat, nylatron, .511 ID
23	004.132.00	Washer, flat, stainless steel, .500 ID
24	006.009.00	Nut, hex, 15/32-32 x 9/16 x 3/32
25	77.0236.00	Bracket, hold down, cuspidor

*A-dec Service Guide, Vol. III* Illustrated Parts Breakdown ■ Cuspidor Upper Assembly

Item	Part Number	Description
26	13.0403.00	Valve assembly, air trap, cuspidor
27	005.161.00	Screw, socket head, 6-32 x 5/8 with washer, stainless steel
28	001.088.00	Screw, socket head, 10-32 x 5/8 stainless steel
29	77.0108.00	Top housing, cuspidor, back mount, Surf
30	12.0991.00	Drain seal, cuspidor
31	77.0040.00	Tube, drain, cuspidor, back mount
32	77.0620.00†	Bottom housing, cuspidor with switch, Surf
33	005.106.00	Screw, 10-32 x 2 1/2, socket head

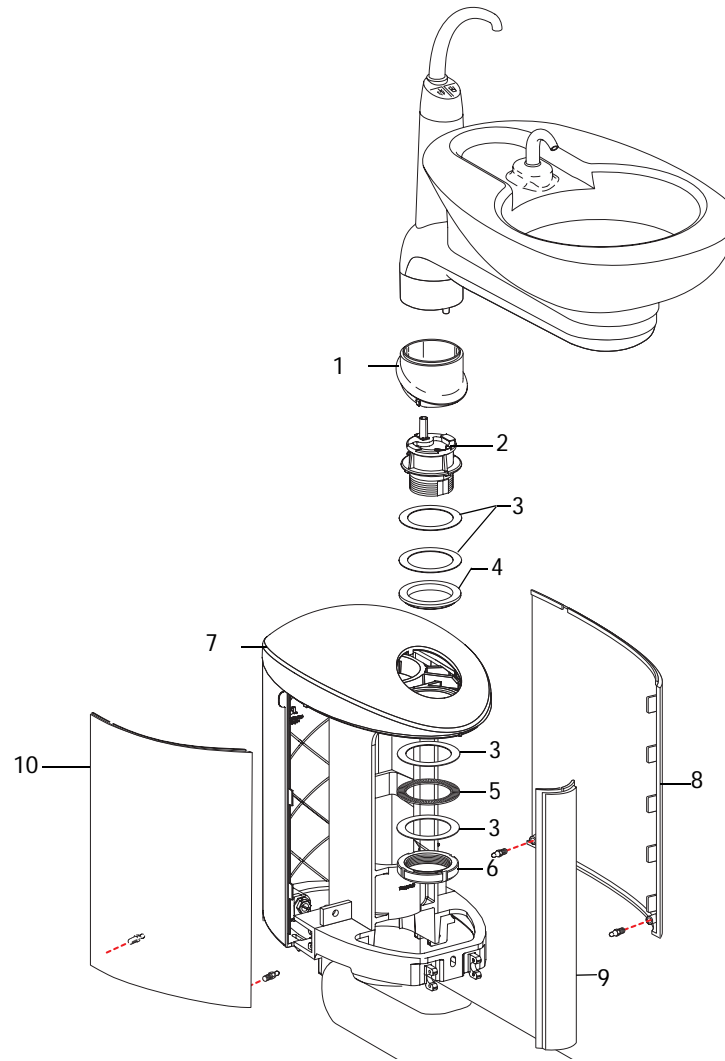
Figure 170 Cuspidor Upper Assembly



## Cuspidor Lower Assembly

Item	Part Number	Description
1	77.0098.00	Trim ring, cuspidor
2	77.0330.00	Hub, pivot, cuspidor
3	016.108.00	Bearing, thrust, race 2.0 ID. plain
4	12.0911.00	Bushing, cuspidor, pivot
5	016.044.00	Bearing, thrust, needle 2.0 ID
6	61.0954.00	Nut, lock, 1-31/32-18, plated
7	77.0034.00	Cover, top, cuspidor, housing, Surf
8	77.0036.00	Cover, right, cuspidor housing, Surf
9	77.0037.00	Cover, nose, cuspidor housing, Surf
10	77.0035.00	Cover, left, cuspidor housing, Surf

## Cuspidor Lower Assembly



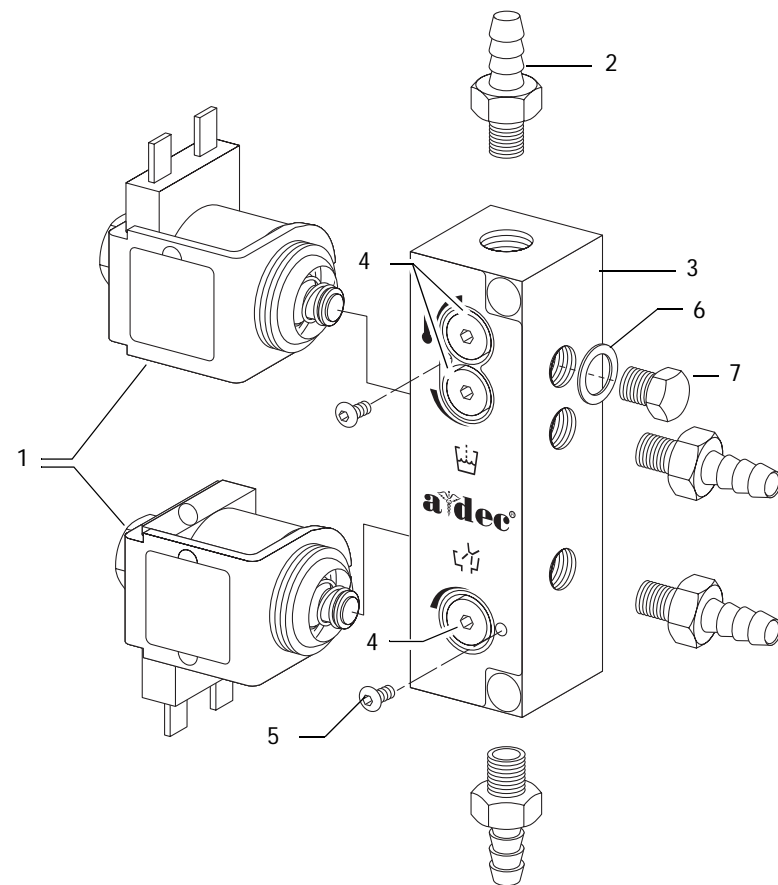
## Cuspidor Fill/Rinse Manifold

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
2	023.804.00	Barb, 5/16"
3	38.1794.00†	Block, fill/rinse/mix
4	75.0222.00	Stem, flow adjustment
5	002.105.00	Screw, button head socket
6	004.005.02	Washer, package 10
7	021.016.04	Plug, hex head, package 10

Figure 171 Identification of the Fill/Rinse Components



# AMALGAM SEPARATOR HOUSING

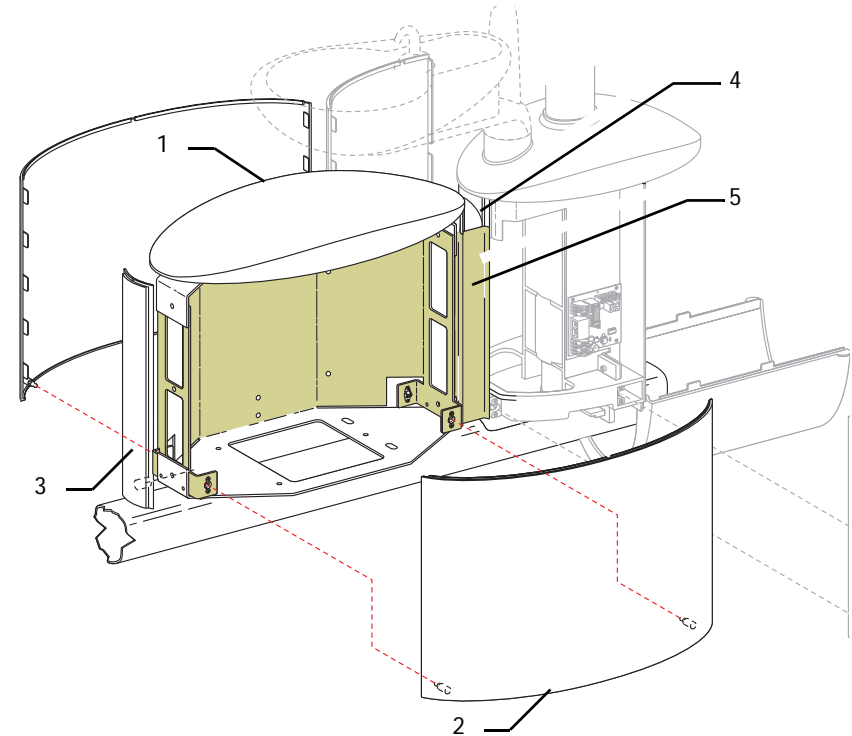
## COMPONENTS

The A-dec 500 amalgam separator housing attaches to the support center. Use the support center nose cover on the amalgam separator housing after installation.

Several brands of amalgam separators mount inside the A-dec 500 amalgam separator housing. Follow the manufacturer's instructions for the specific separator being installed.

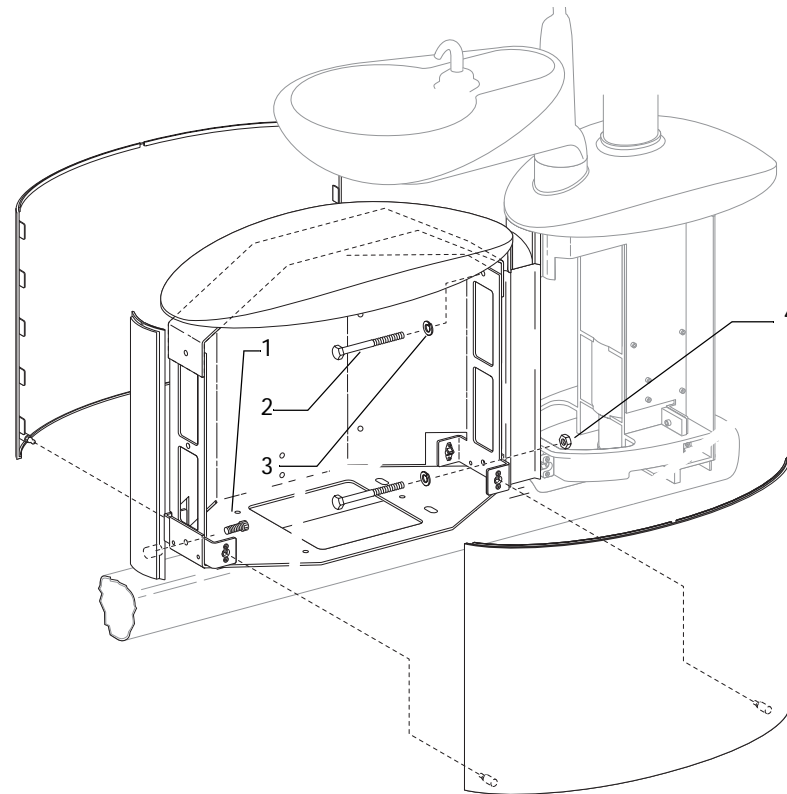
Item	Part Number	Description
1	77.0011.00	Cover, top
2	77.0009.00	Cover, side (both sides)
3	77.0037.00	Cover, nose
4	77.092.00	Cover, pod support
5	77.0221.00	Pod support

**Figure 172** Identification of the Amalgam Separator Housing Components





**Figure 173** Identification of the Amalgam Separator Housing Mounting Hardware



Item	Part Number	Description
1	001.089.00	Socket head screw 1/4-20 x 5/8
2	005.166.00	Screw, hex head, 1/4-20 x 3 1/2" stainless steel
3	004.016.00	Washer, split lock, .250 ID
4	006.052.00	Lock nut



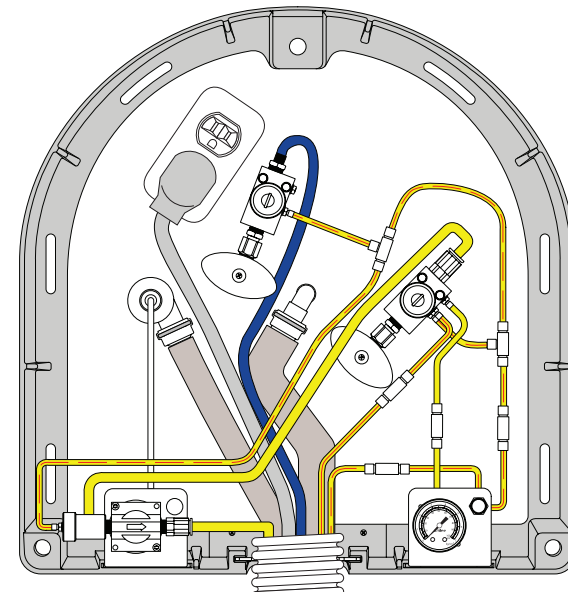
# 6

## FLOOR BOX

This section provides information related to servicing, maintenance and adjustments. For information on service parts, see the *Genuine A-dec Service Parts Catalog* or contact A-dec customer service.

### SYSTEMS CONTENTS

- Product Overview, page 270
- Service/Maintenance, page 271
- Illustrated Parts Breakdown, page 273



## PRODUCT OVERVIEW

The floor box contains the air and water manual shutoff valves, filters, air and water regulators, pressure pre-regulator, vacuum and gravity drains.

### Air and Water Manual Shutoff Valves

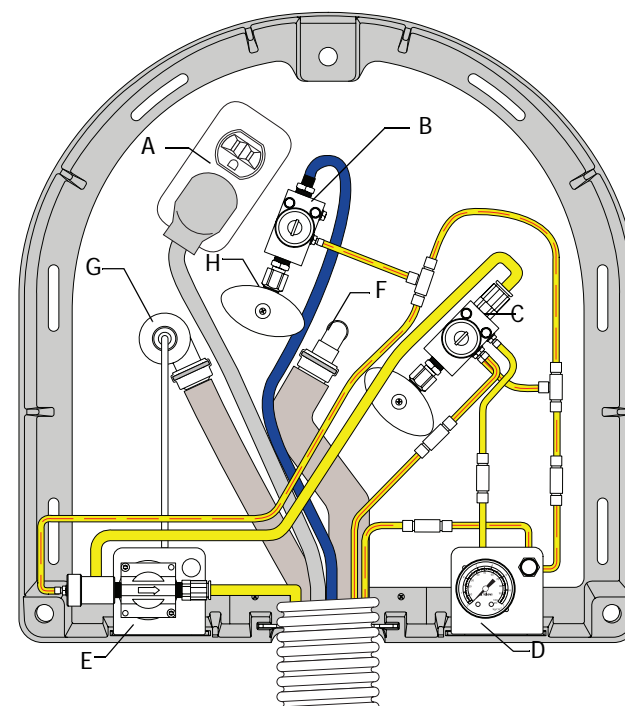
Shutoff valves supply the air and water to the unit. To prevent leaks, these valves should remain fully open (turned counterclockwise) except while the unit is being serviced (see Figure 174).

### 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 174).

Item	Part Number
A	Duplex (Customer provided)
B	24.0474.00
C/D	24.0475.00
E	41.1477.00
F	023.816.00
	035.053.00
	022.090.00
	022.094.00
G	023.812.00
	035.053.00
	022.090.00
	022.092.00

Figure 174 Identification of the Floor Box Utilities



(A) Electrical Duplex Outlet; (B) Water Filter Regulator (cuspidor only); (C) Air Filter Regulator; (D) Gauge and Pre-regulator Assembly; (E) Moisture Separator (optional); (F) Vacuum Drain; (G) Cuspidor Drain; (H) Manual Shutoff Valves

## SERVICE/MAINTENANCE

### Filter Element

A clogged filter reduces the amount of air and water pressure available to the unit. To replace:

1. Move the master On/Off 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 regulator assembly with a flat blade screwdriver.
5. Replace the filter if it is visibly clogged or discolored.
6. Install the new filter with the beveled edge toward the manifold.

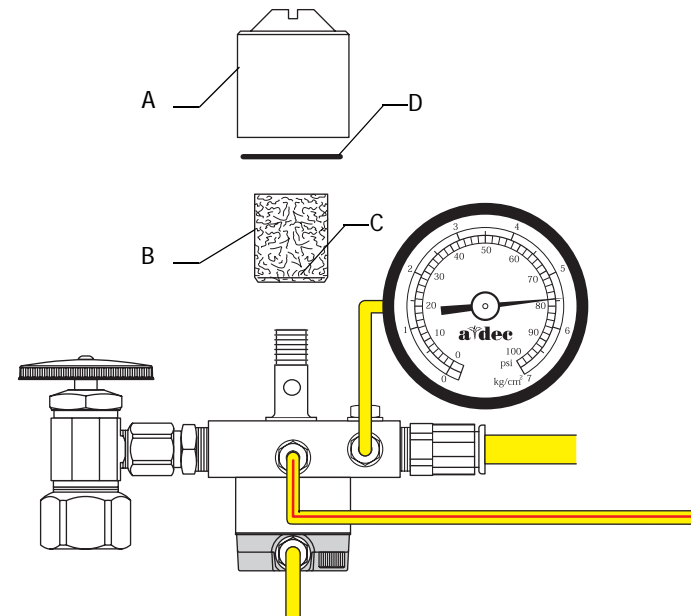


**CAUTION** Be sure to install the new filter with the beveled side toward the manifold. The unit may not work properly if installed incorrectly.



**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 gauge indication.

Figure 175 Replacing the Filter



(A) Filter Housing; (B) New Filter; (C) Beveled Edge; (D) O-ring



## ILLUSTRATED PARTS BREAKDOWN

---

This section contains illustrated parts breakdowns specific to the floor box.

### Part Identification Symbols

The conventions for the serviceable components tables are designed to identify all parts and kits, including ones that are not for sale. Symbols with reference notes are used.

Symbol	Definition
†	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)
No symbol	Part is for sale

### FLOOR BOX IPB CONTENTS

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- Floor Box, page 274
- Air and Water Filter Regulators, page 276
- Air and Water Filter Regulators Body Assembly, page 277
- Moisture Separator, page 278



## Floor Box

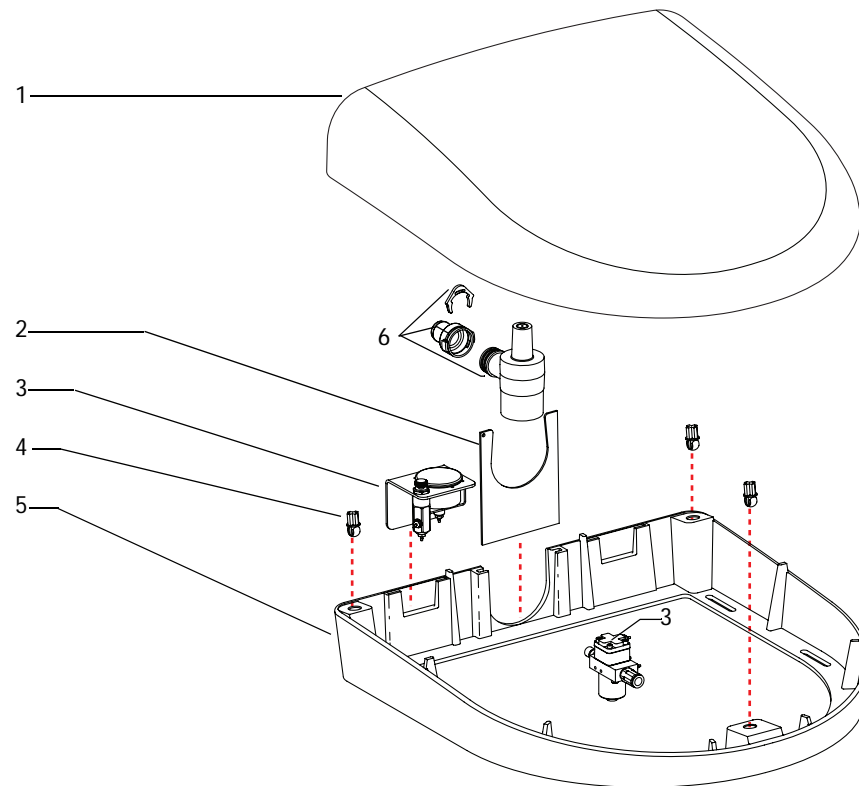
**Part No: 41.1478.00** Utilities Module, 3' Umbilical

**Part No: 41.1478.01** Utilities Module, 3' Umbilical, No Sheath

**Part No: 41.1506.00** Floorbox Assembly, A-dec 511 Without Utilities

Item	Part Number	Description
1	41.1464.01	Cover, floor box
2	41.1476.00	Umbilical clip
3	24.0475.00	Air filter regulator with pre-regulator
4	025.088.00	Ball snap, male
5	41.1467.00	Base, floor box
	41.1506.00	Floor box assembly, without utilities - includes items 1 & 5 only
6	023.812.00	Tee assembly

Figure 176 Floor Box

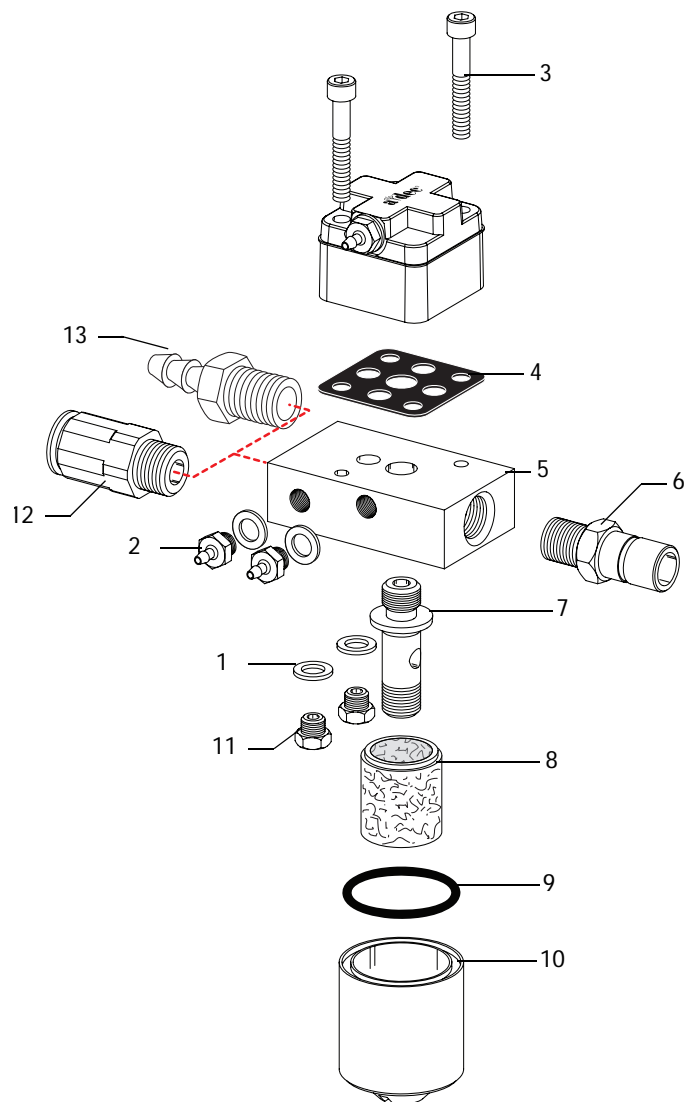


## Air and Water Filter Regulators

The air and water filter regulators combine air-actuated shut-off valves with filter assemblies. When the master On/Off toggle is in the Off position, the filter regulators automatically shut off air and water to the system. This safety feature prevents water damage in the event of a water leak while the unit is unattended. The filters prevent solids from entering the unit.

Item	Part Number	Description
1	004.005.02	Washer, flat, nylon, .187 ID, package of 10
2	023.004.03	Barb, 1/8" x 10-32", package of 10
3	001.026.00	Screw, 6-32" x 7/8", socket head
4	24.0137.01	Gasket, 9-hole, package of 10
5	24.0162.00	Manifold, filter/regulator
6	021.042.00	Adapter, 1/8" MPT to 3/8"
7	24.0232.00	Stud, filter regulator/manifold
8	24.0234.01	Filter element, filter/regulator, package of 6
9	030.019.03	O-ring, package of 10
10	24.0229.00	Housing, filter
11	021.016.04	Plug, hex 10-32", package of 10
12	022.088.00	Fitting, push in, 5/16" x 1/8" (air regulator only)
13	023.804.00	Barb, 5/16" x 1/8" (water regulator only)
	24.0475.00	Air filter regulator assembly with pre-regulator
	24.0474.00	Water filter regulator assembly, black

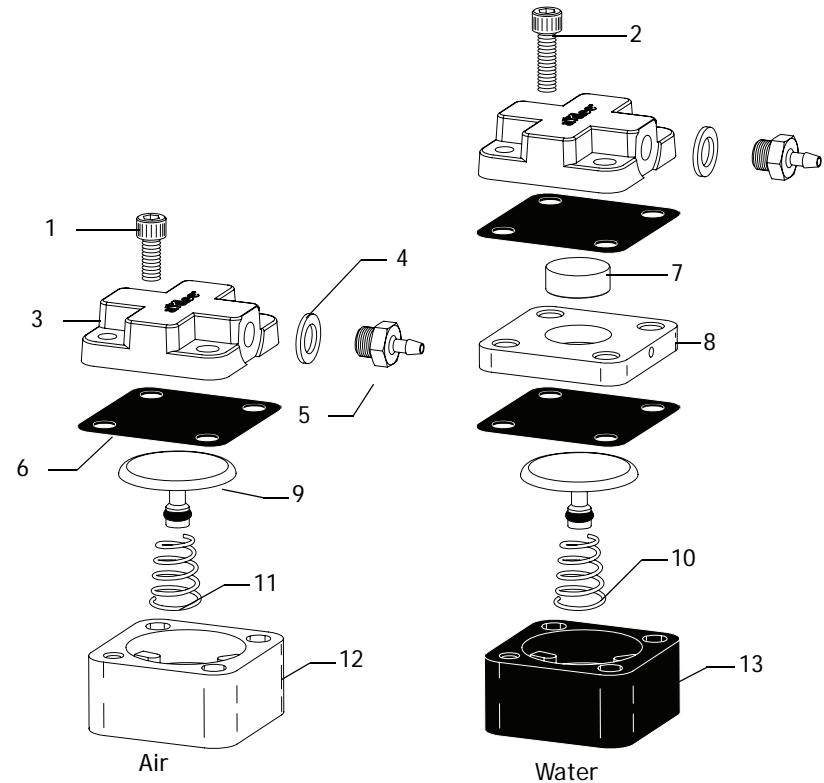
Figure 177 Air and Water Filter Regulator Components



## Air and Water Filter Regulators Body Assembly

Figure 178 Air and Water Filter Regulators Body Assembly Components

Item	Part Number	Description
1	001.024.00	Screw, socket head, 4-40" x 3/8" SST
2	001.021.00	Screw, socket head, 4-40" x 1/2" SST
3	24.0368.00	Valve cover
4	004.005.02	Washer, flat, nylon .187 ID, package of 10
5	023.004.03	Barb, 1/8" x 10-32, package of 10
6	22.0440.02	Diaphragm, package of 10
7	24.0142.00	Plunger
8	24.0140.00	Spacer, water regulator
9	24.0132.00	Piston with O-ring, Delrin
10	013.032.00	Spring, compression .260/.350 OD (water)
11	22.0460.00	Spring, conical (air)
12	24.0135.00	Body, regulator, white (air) .295/.255 OD
13	24.0355.00	Body, regulator, black (water)
	24.0366.00	Air filter regulator body assembly
	24.0367.00	Water filter regulator body assembly



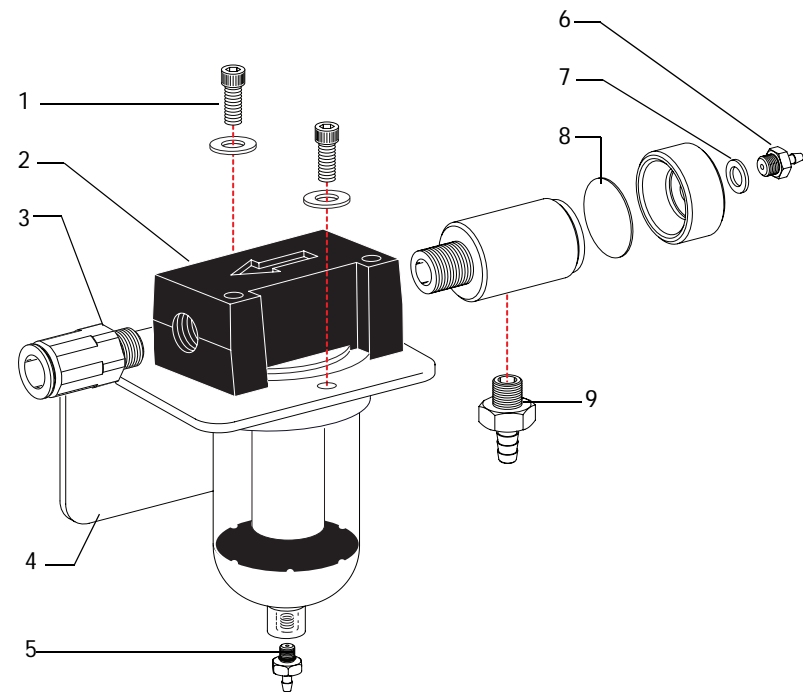
## Moisture Separator

**Part No: 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 179** Moisture Separator Components



# 7

## SUPPORT SIDE FEATURES

This section of the service guide contains service information for the A-dec 500 Support Side System. This section provides information related to servicing, maintenance, and adjustments. For information on service parts, see the *Genuine A-dec Service Parts Catalog* or contact A-dec customer service.

### SYSTEMS CONTENTS

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- Product Overview, page 280
- Limit Switch Flow Diagram, page 282
- Adjustments/Maintenance, page 283
- Illustrated Parts Breakdown, page 287

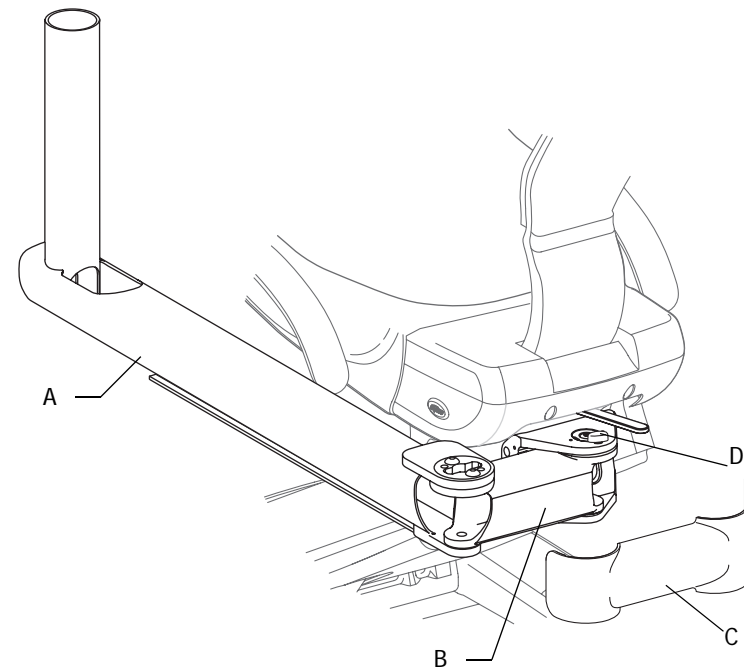


## PRODUCT OVERVIEW

### Components

The A-dec 500 support side system includes the support link and the lower support arm. The support link is the hub for all modules that mount off the back of the chair. The A-dec 561 cuspidor, monitor mount, A-dec 571 dental light and the amalgam separator housing require both a support link and a lower support arm. The 551 assistant's instrumentation requires only a support link.

**Figure 180** Identifying the Support Link and Lower Support Arm



- (A) Lower Support Arm; (B) Support Link; (C) Support Link Cover;  
(D) Locking Knob

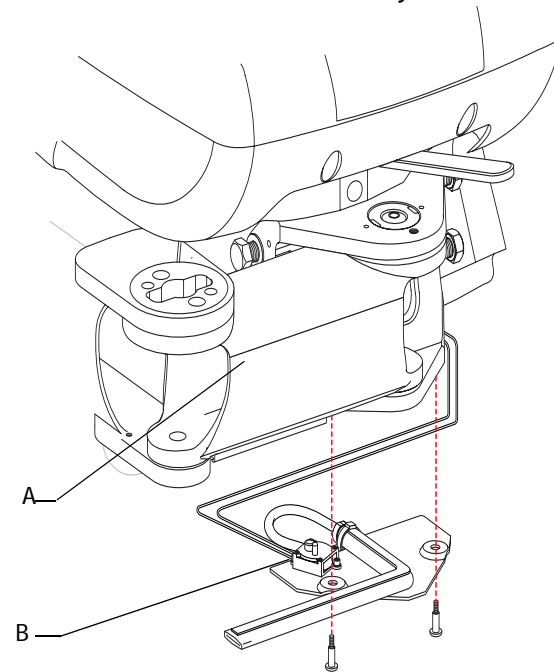
## Limit Switch Operation

When pressed, the support side limit switch stops chair movement immediately. Be sure to power off the chair and disconnect it from its power source before replacing the limit switch.

### Bump-Up Feature

The chair moves up approximately 1" if the chair is moving down when the switch is activated.

**Figure 181** Remove the Limit Switch Assembly

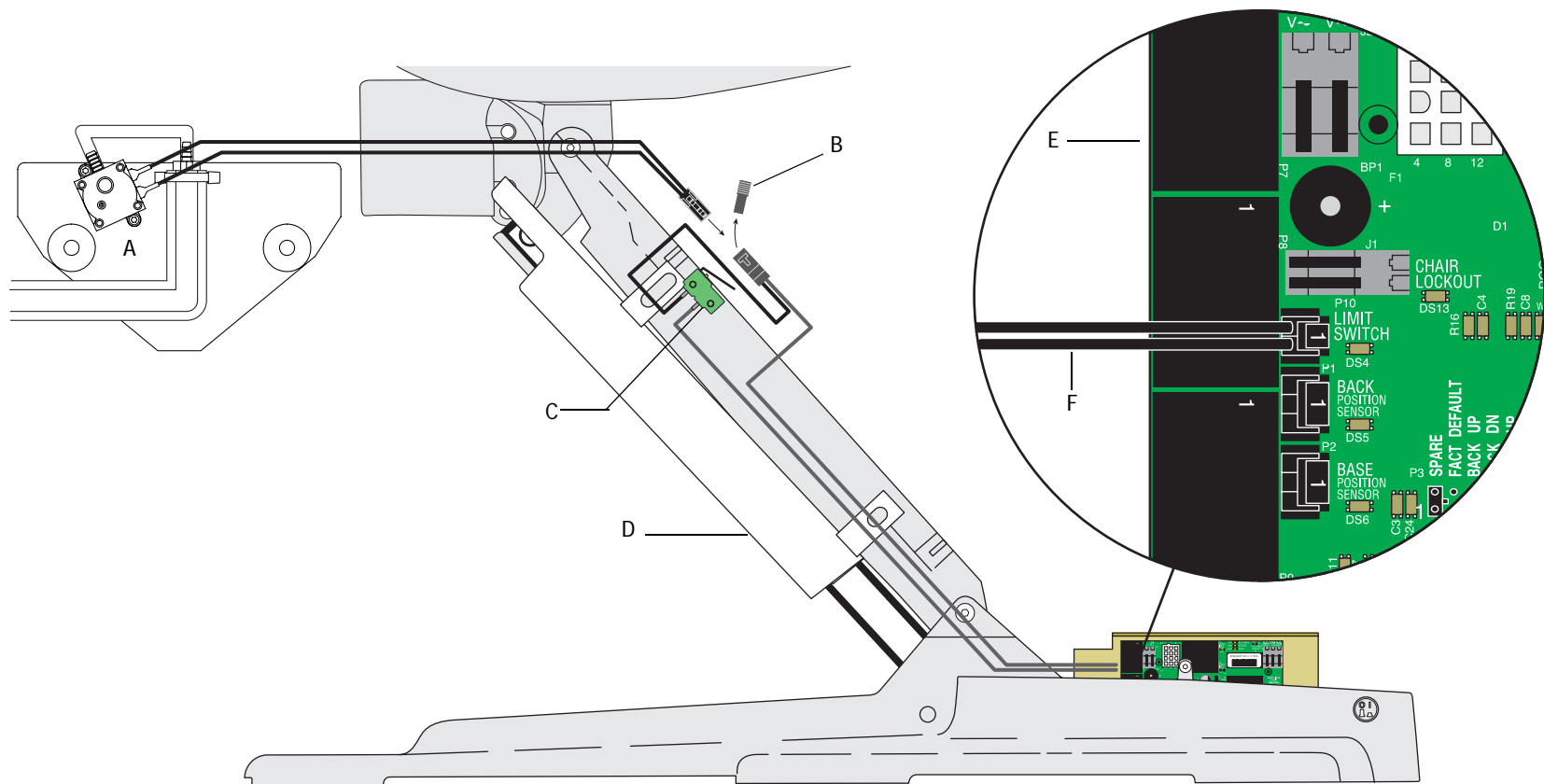


(A) Support Link; (B) Limit Switch Assembly



## FLOW DIAGRAM

### Support Side Limit Switch Electrical Diagram



(A) Limit Switch Assembly; (B) Jumper; (C) Chair Limit Switch; (D) Chair Stop Plate; (E) Chair Circuit Board; (F) Chair Base Limit Switch Wires

## ADJUSTMENTS/MAINTENANCE

### Leveling

The support link mounts with four bolts to the back of the chair. Two dowel pins mount a leveling bar to the back of the chair. The leveling bar levels the support link and lower support arm. See Figure 185 on page 288 for location of leveling bar.

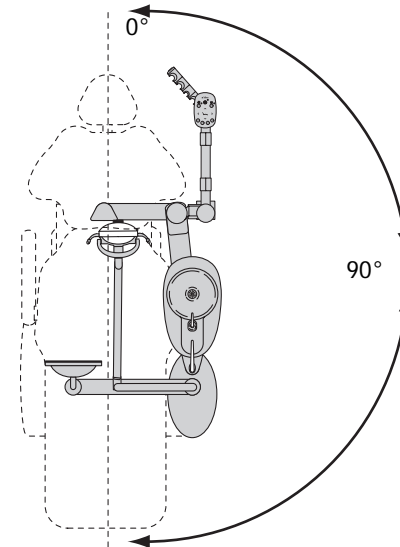
#### Proper Equipment Positioning for Leveling

To rotate the support side modules up to 90° right or left of the chair, loosen the locking knob on the support link. See Figure 185 on page 288 for location of locking knob.

Level the support link and lower support arm by adjusting the leveling bar in the support link assembly. Note where the support system will be positioned before leveling:

- If the support system is used both in a left and right positions, level the equipment with the modules positioned 90° to the back of the chair.
- If the support system is used in a stationary position, level the equipment with the modules in a normal operating position.

Figure 182 Positioning Support Side Modules for Leveling



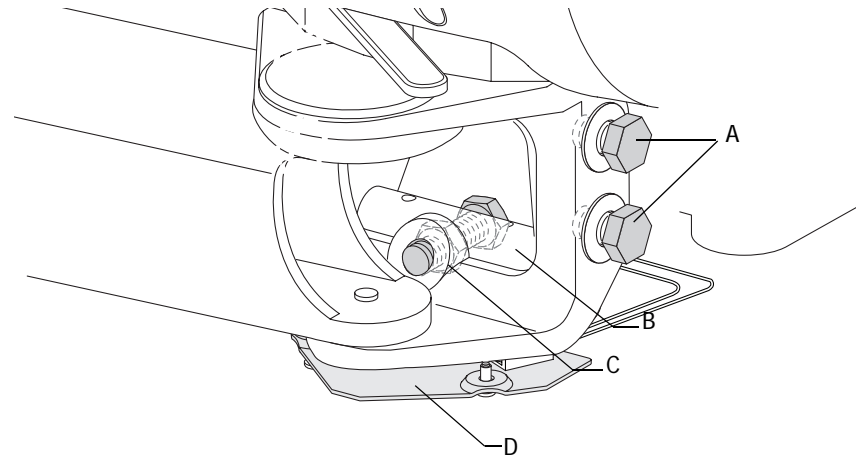
## Support Link and Lower Support Arm Leveling



**NOTE** The limit switch assembly may have to be removed. Be sure to power off the chair and disconnect it from its power source before replacing the limit switch.

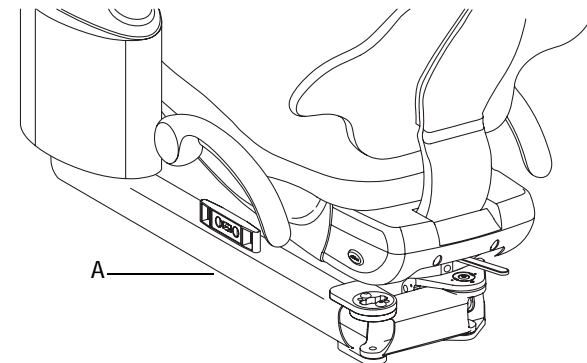
1. Loosen the two stand off screws securing the actuator plate. Allow the plate to hang free.
2. Loosen the four mounting bolts on the support link.
3. Loosen the locking nut.
4. Place a level parallel on the lower support arm, and adjust the leveling bar until the lower support arm is level.
5. Tighten the locking nut against the leveling bar (see Figure 183).
6. Tighten the four mounting bolts (see Figure 183) as tight as possible (65 ft.-lb. of torque).
7. Reattach the actuator plate using the two stand off screws.

**Figure 183** Tighten the Locking Nut Against the Leveling Bar



(A) Mounting Bolts (each side); (B) Leveling Bar; (C) Locking Nut;  
(D) Actuator Plate

**Figure 184** Place Level Parallel on the Lower Support Arm



(A) Lower Support Arm





## ILLUSTRATED PARTS BREAKDOWN

---

This section contains illustrated parts breakdowns specific to the support side.

### Part Identification

The conventions for the serviceable components tables are designed to identify all parts and kits, including ones that are not for sale. Symbols with reference notes are used.

Symbol	Definition
†	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)
No symbol	Part is for sale

## SUPPORT SIDE FEATURES IPB CONTENTS

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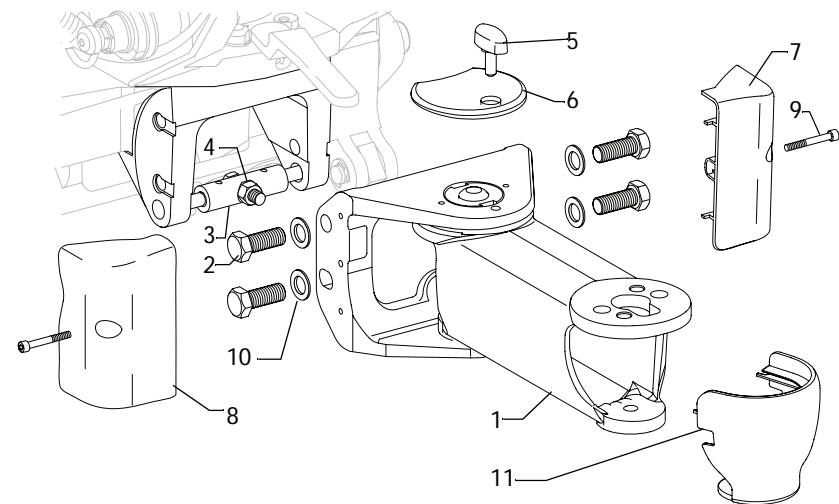
- Support Link, page 288
- Limit Switch Components, page 289
- Lower Support Arm, page 290

## Support Link

Part No: 77.0278.00

Item	Part Number	Description
1	77.0278.00	Support link
2	001.094.00	Bolt, mounting 1/2-13 x 1 3/4"
3	77.0239.00	Leveling bar
4	006.148.00	Nut, locking, hex 1/2-13 x 3/4"
5	77.0373.00	Locking knob
6	77.0374.00	Small bearing cap cover
7	77.0376.00	Support link cover, right
8	77.0377.00	Support link cover, left
9	002.051.00	Screw, socket head, 10-32 x 1-1/2
10	004.240.00	Washer, 1/2"
11	77.0022.00	Cover, umbilical (not needed if there is a lower support arm attached - for assistant's only)

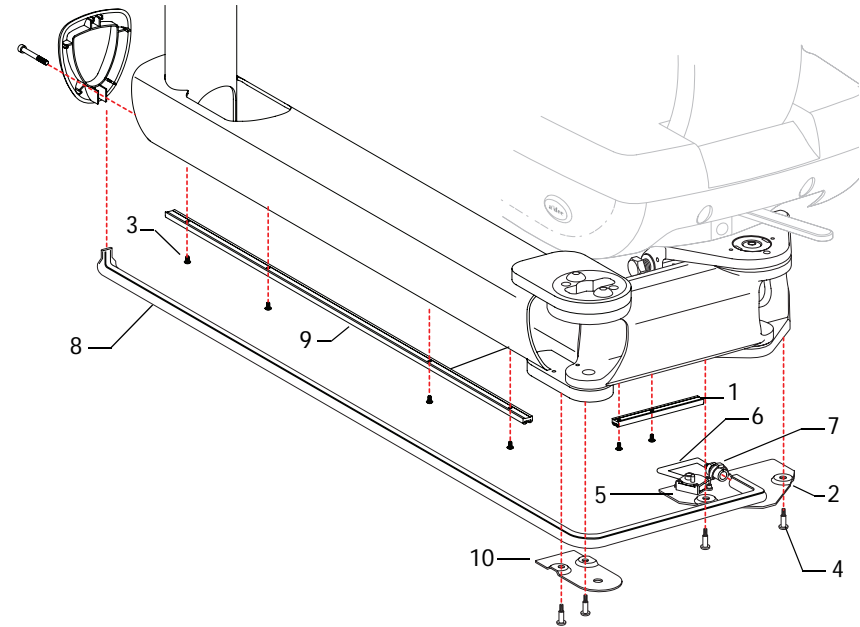
Figure 185 Support Link Components



## Limit Switch Components

Item	Part Number	Description
1	77.0354.00	Bracket, limit switch, link arm (short)
2	77.0357.00	Actuator plate
3	002.140.00	Screws, patch button head, 6-32
4	77.0361.00	Stand-off screw
5	43.0087.00	Limit switch kit includes (2) 001.219.00 socket head screws, and 023.123.00† limit switch actuator barb
6	024.141.00	Tubing, 1/4" OD, D-Surf, 4"
7	025.002.01	Cable tie, package of 10
8	77.0360.00	Limit switch tubing (long) - 41.50" (shown)
	77.0359.00	Limit switch tubing (short) - 12.25" (not shown) For assistant's instrumentation only
9	77.0355.00	Bracket, limit switch. support arm (long)
10	77.0358.00	Plate, actuator link

Figure 186 Support Side Limit Switch Components



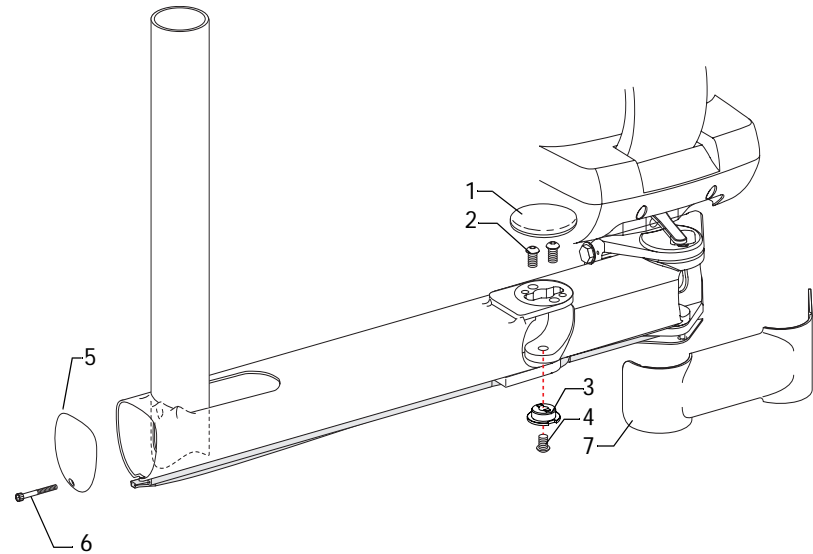


## Lower Support Arm

Part No: 77.0286.00

Item	Part Number	Description
1	77.0211.00	Bearing cap, large
2	002.142.00	Screw, button head, socket 1/2-13 x 1"
3	77.0029.00	Bearing cap, small
4	005.160.00	Screw, button head, socket 1/2-13 x 3/4"
5	77.0096.00	Cover, lower support arm end
6	002.051.00	Screw, 10-32 x 1 1/2"
7	90.1096.00	Cover, link arm

Figure 187 Lower Support Arm Components



# 8

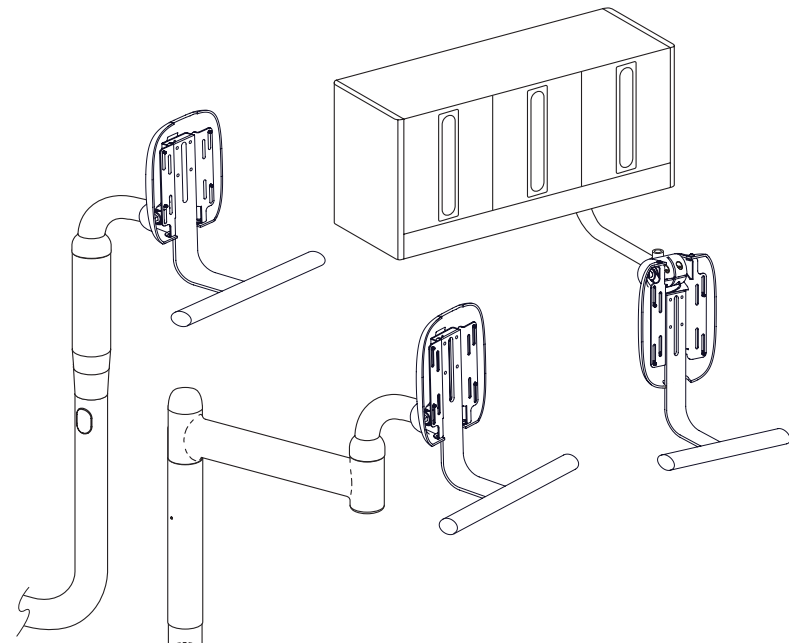
## MONITOR MOUNTS

This section provides information related to service, maintenance, and adjustments of A-dec monitor mounts. Detail on how to service the A-dec 531, 561 and Track monitor mounts is presented. For information on service parts, see the *Genuine A-dec Service Parts Catalog* or contact A-dec customer service.

### SYSTEMS CONTENTS

- Product Overview, page 292
- Adjustments, page 300
- Illustrated Parts Breakdown, page 303

Figure 188 A-dec Monitor Mounts



## PRODUCT OVERVIEW

---

### Monitor Mount Specifications

#### ■ Digital Monitor Requirements

- Medical-grade monitor
- 15" diagonal active display
- 1024 x 768 resolution
- Digital inputs
- VESA mounting-compliant
- SVGA

#### ■ Analog Monitor Requirements

- Color palette adjustments
- 13" HDTV flat panel for analog integration
- NTSC or PAL format
- Video inputs
- Composite video display capability
- RCA connection port

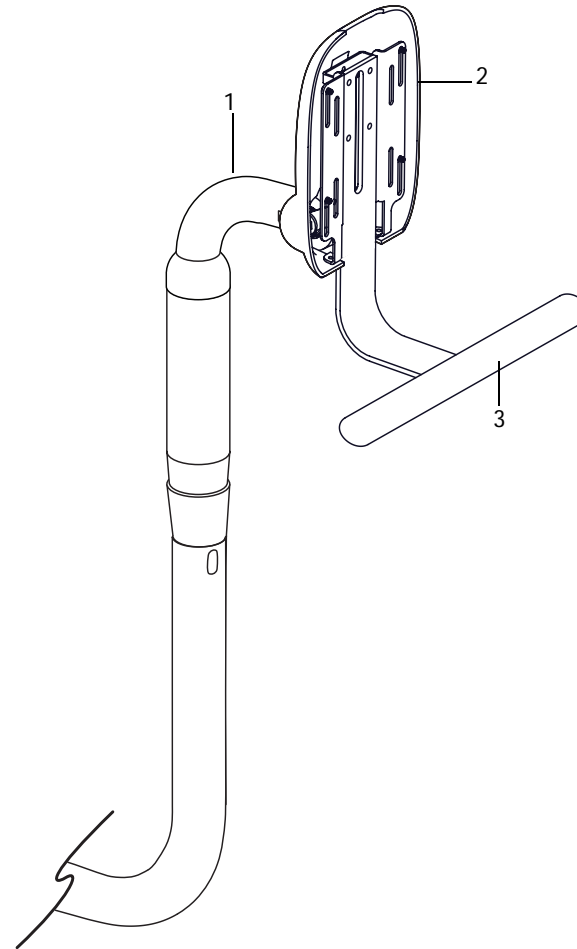
## Components

### Front Mount Monitor Mount (531)

The 531 front monitor mount uses the delivery mounting location and positions the flat-screen monitor on either side of the chair. It offers an exceptional range of motion to better position the monitor.

Item	Description
1	Mount arm
2	Monitor cover
3	Handle/bracket assembly

Figure 189 Front Mount Monitor (531)

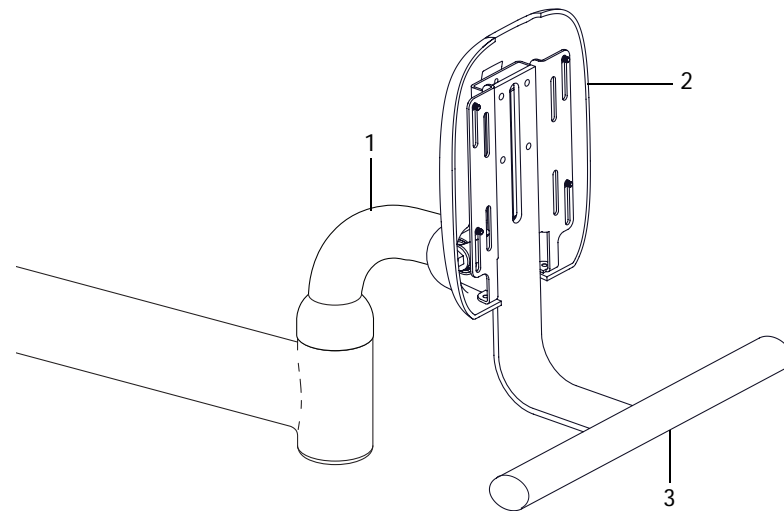


### Support Side Monitor Mount (561)

The 561 support-side monitor mount delivers a flat-screen monitor from the side of the chair and brings it close to the patient. This option allows for enhanced patient entertainment and consultations during procedures.

Item	Description
1	Mount arm
2	Monitor cover
3	Handle/bracket assembly

Figure 190 Support Side Monitor Mount (561)

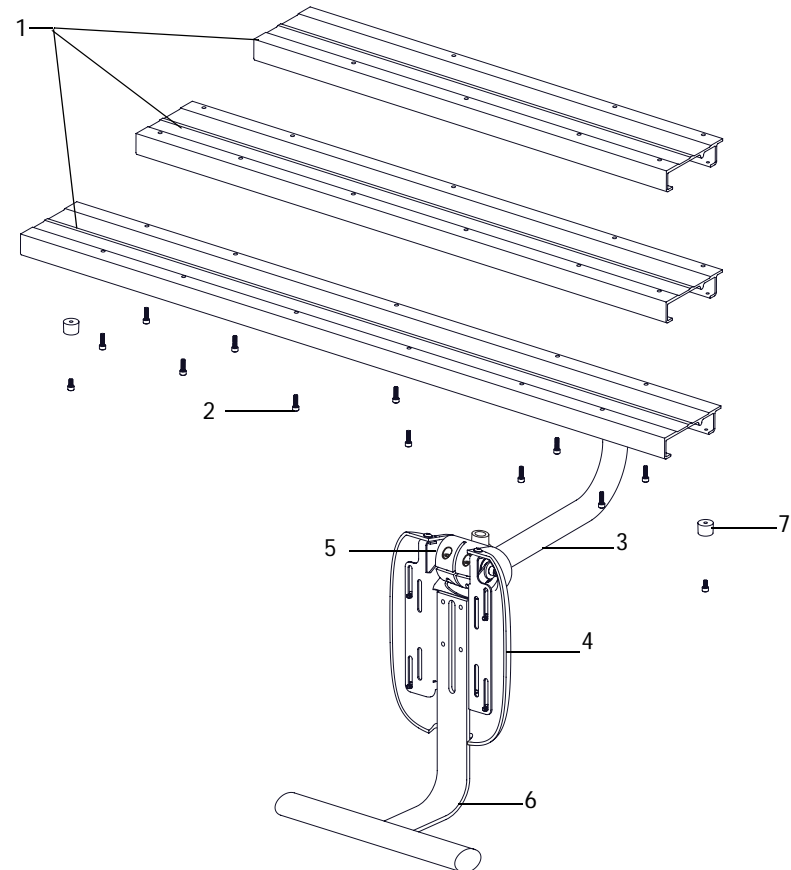


## Monitor Track Mount (500 Track)

The monitor track mount attaches to the underside of the upper storage cabinet. The movement allows the monitor to glide easily in multiple positions.

Item	Description
1	Track (factory installed on 5562, 5662, 5731, 5580 and Slimline uppers)
2	Mounting screws (factory installed on 5562, 5662, 5731, 5580 and Slimline uppers)
3	Mount arm
4	Monitor cover
5	Clutch assembly
6	Handle/bracket assembly
7	Track bumper

Figure 191 Monitor Track Mount

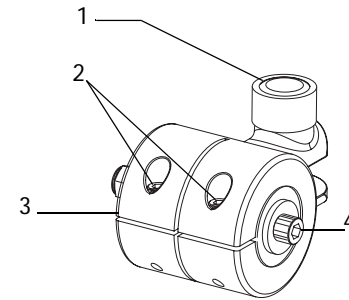


## Clutch Assembly

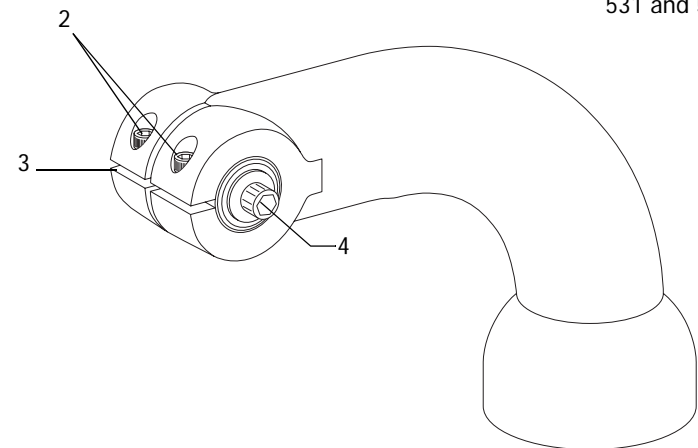
The clutch assembly provides tilt and drift movement to the monitor. Use the adjustment screws to adjust the tilt and drift.

Item	Description
1	Bumper
2	Adjustment screws
3	Hub
4	Clutch assembly

Figure 192 Clutch Assembly



A-dec 500 Track

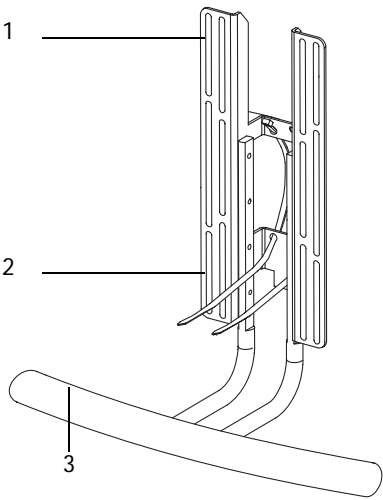


531 and 561

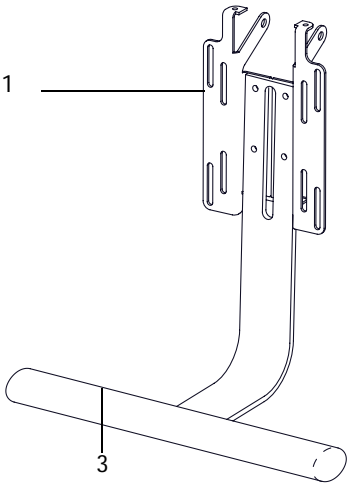
Handle/Bracket Assembly (531/561/A-dec 500 Track)

Item	Description
1	Mounting bracket
2	Cable ties
3	Handle assembly

Figure 193 Handle/Bracket Assembly



Before February 2007



After February 2007



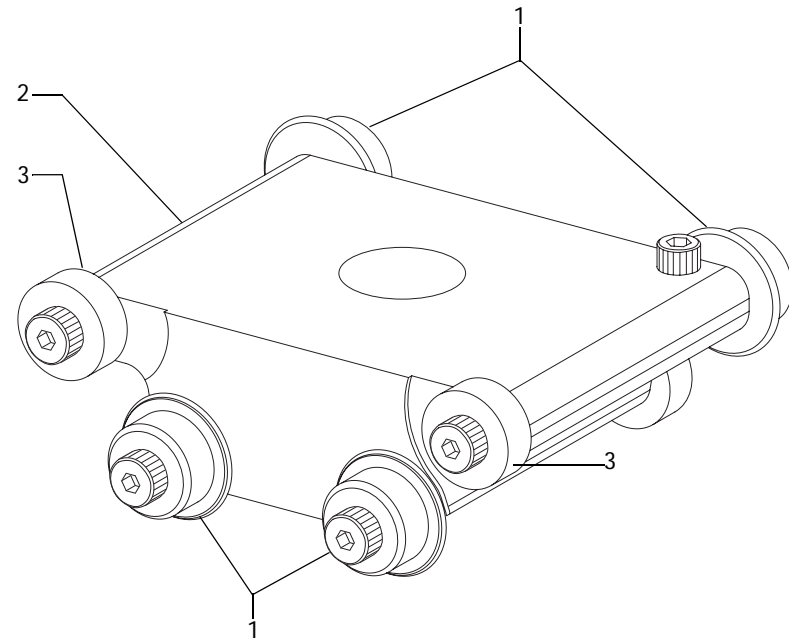
## Trolley Assembly (A-dec 500 Track)

### Before February 2007

The trolley assembly allows the monitor support arm to roll along the track.

Item	Description
1	Caster
2	Carrier
3	Ball bearing

Figure 194 Trolley Assembly Before February 2007



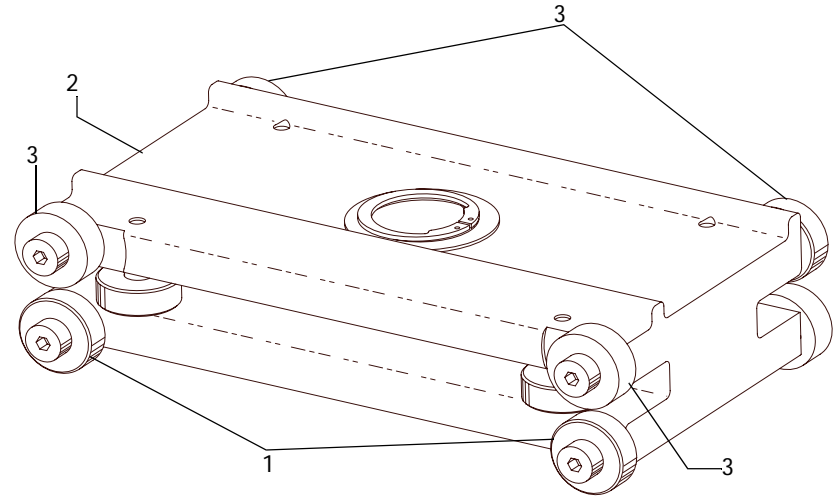
## Trolley Assembly (A-dec 500 Track)

### After February 2007

The trolley assembly allows the monitor support arm to roll along the track.

Item	Description
1	Caster
2	Carrier
3	Ball bearing

Figure 195 Trolley Assembly After February 2007



## ADJUSTMENTS

### Friction Adjustment

There are two main adjustments made to the monitor:  
tilt and drift friction (see Figure 196).

#### Tilt Friction

Adjust the tilt friction by tightening or loosening the tilt friction adjustment screw located on the top of the monitor mount. Tilt is the angling of the monitor backwards.

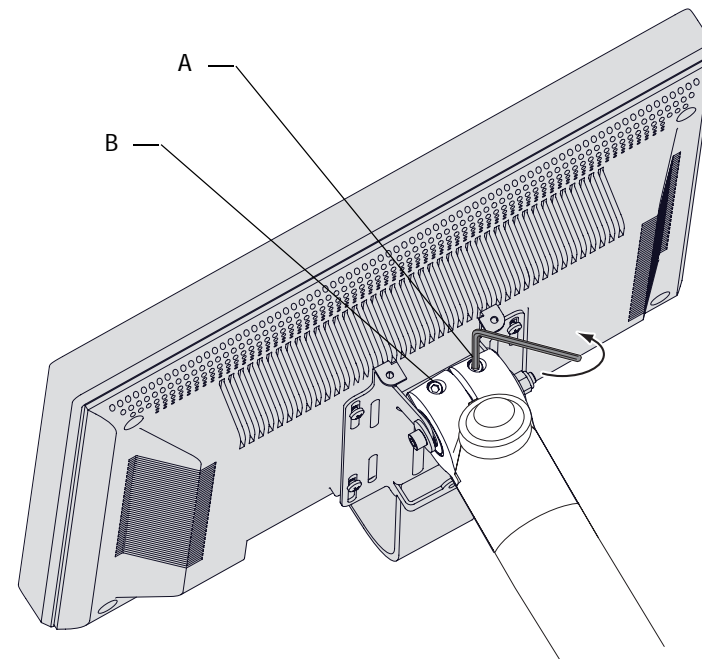
#### Drift Friction

Adjust the drift friction by tightening or loosening the drift friction adjustment screw located on the top of the monitor mount. Drift is the monitor falling forward.



**NOTE** For any adjustment to work properly, center bolt must be tightened.

Figure 196 Monitor Adjustments



(A) Tilt Friction Adjustment Screw; (B) Drift Friction Adjustment Screw

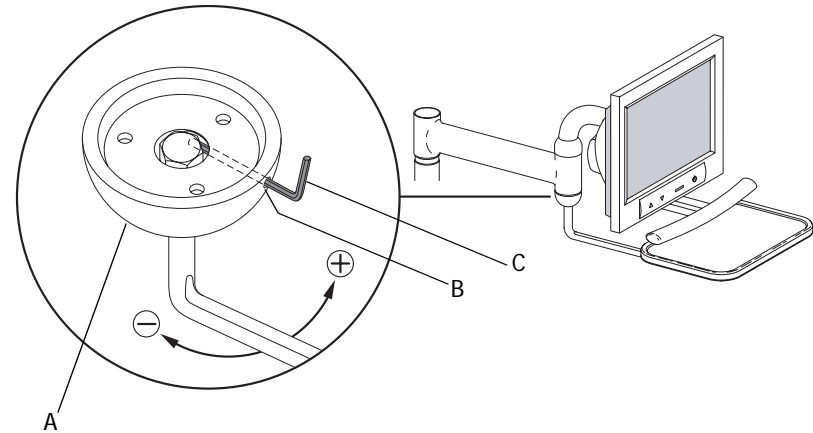
## Tray Holder Tension Adjustment (Support Side Monitor Mount, 561)

The tension adjustment screw for the tray holder is located in the hub of the tray holder arm.

■ **To adjust:**

1. Locate the small hole in the tray holder hub (see Figure 197).
2. Insert a 5/32" hex key through the hole.
3. Rotate the tray support arm to adjust the tension, (right to increase tension — left to decrease tension).

Figure 197 Monitor Tray Adjustment



A) Tray Holder Hub; (B) Hole; (C) 5/32" Hex Key

## Panning Friction Adjustment (500 Track Mount Monitor)

Tighten or loosen the panning friction adjustment screw on the monitor mount. Use a 3/16" hex key and tighten down until the monitor no longer freely rotates.

Item	Description
1	Panning friction screw

Figure 198 Adjust Panning



## ILLUSTRATED PARTS BREAKDOWN

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

### Part Identification

The conventions for the serviceable components tables are designed to identify all parts and kits, including ones that are not for sale. Symbols with reference notes are used.

Symbol	Definition
†	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)
No symbol	Part is for sale

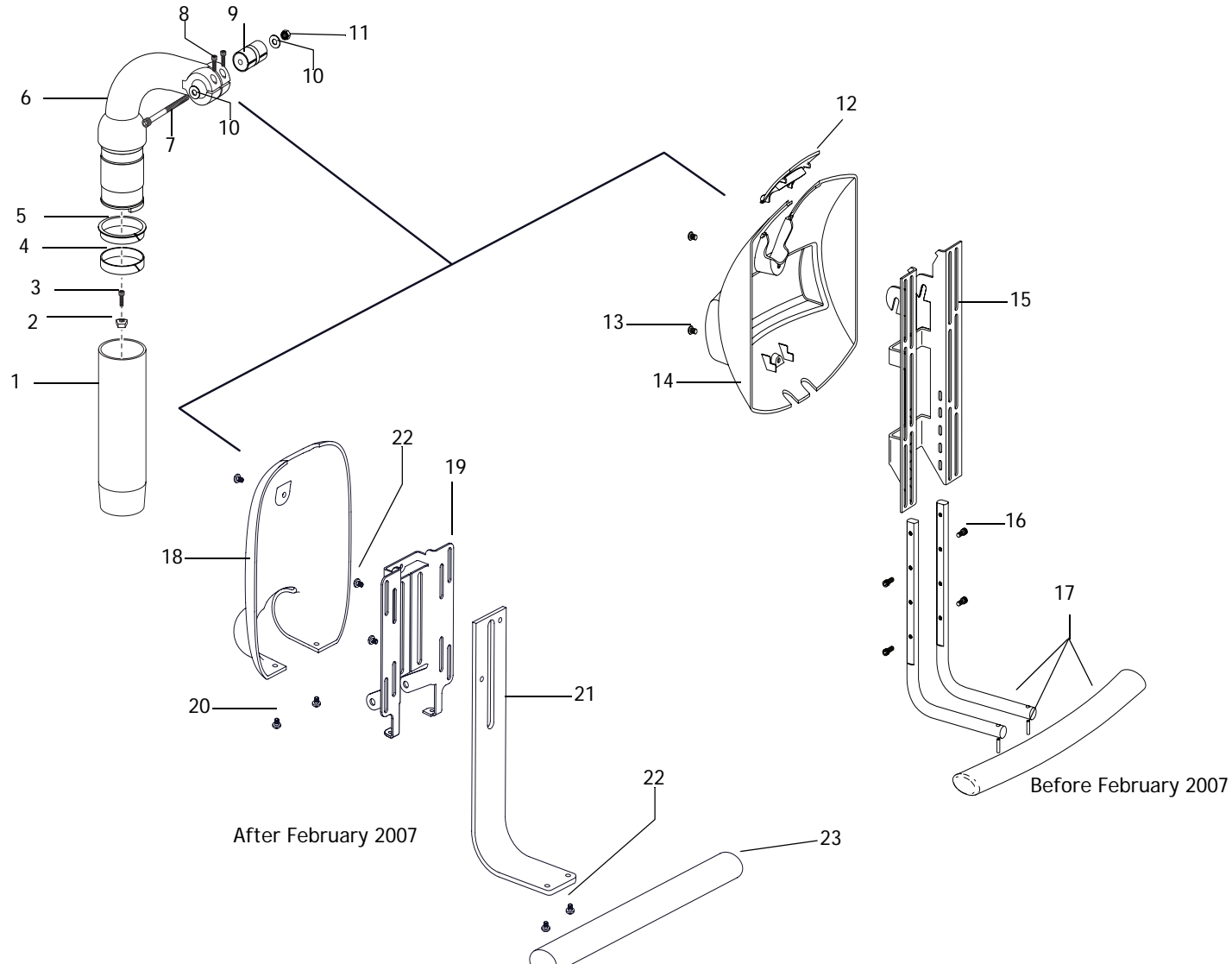
### MONITOR MOUNT IPB CONTENTS

- Front Mount Monitor Mount (531), page 304
- Support Side Monitor Mount (561), page 307
- Support Side Monitor (561) Tray Holder, page 310
- A-dec 500 Track Monitor Mount, page 312
- A-dec 500 Track Monitor Mount Components, page 315
- A-dec 500 Track Monitor Mount Trolley Assembly (Before February 2007), page 318
- A-dec 500 Track Monitor Mount Trolley Assembly (After February 2007), page 320

## Front Mount Monitor Mount (531)

Item	Part Number	Description
1	77.0259.00	Extension bar, adapter
2	77.0300.00	Rotation limiter
3	001.088.00	Screw, rotation stop, 10-32 x 5/8" stainless steel
4	77.0103.00	Lower bearing, Surf 4
5	77.0102.00	Upper bearing, Surf 4
6	77.0114.01	Support arm, monitor mount
7	002.119.00	Screw, socket head, 1/4-20 x 2-3/4" stainless steel
8	001.088.00	Screw, socket head, 10-32 x 5/8" stainless steel
9	77.0497.00	Clutch assembly kit (includes 7, 10 and 11)
10	004.141.00	Flat washer, .261 ID
11	006.052.00	Locking nut, 1/4-20 x 7/16" x 5/16"
12	77.0213.00	Small cover, surf 4
13	002.094.02	Screw, button head, 10-32 x 1/4" stainless steel
14	77.0026.00	Monitor mount cover (before February 2007)
15	77.0112.00	Mounting bracket (before February 2007)
16	002.130.00	Screw, socket head, 10-32 x 3/8"
17	77.0498.00	Handle bracket kit (before February 2007)
18	77.0631.00	Monitor mount cover (after February 2007)
19	77.0653.00	Mounting bracket, no power supply (after February 2007)
20	005.012.03	Screw, socket head, 10-32 x 3/8" stainless steel
21	77.0629.00	Handle arm (after February 2007)
22	005.143.00	Screw, 1/4 20 x 3/8", button head
23	77.0630.00	Handle, straight (after February 2007)

**Figure 199** Front Mount Monitor Mount (531) Components





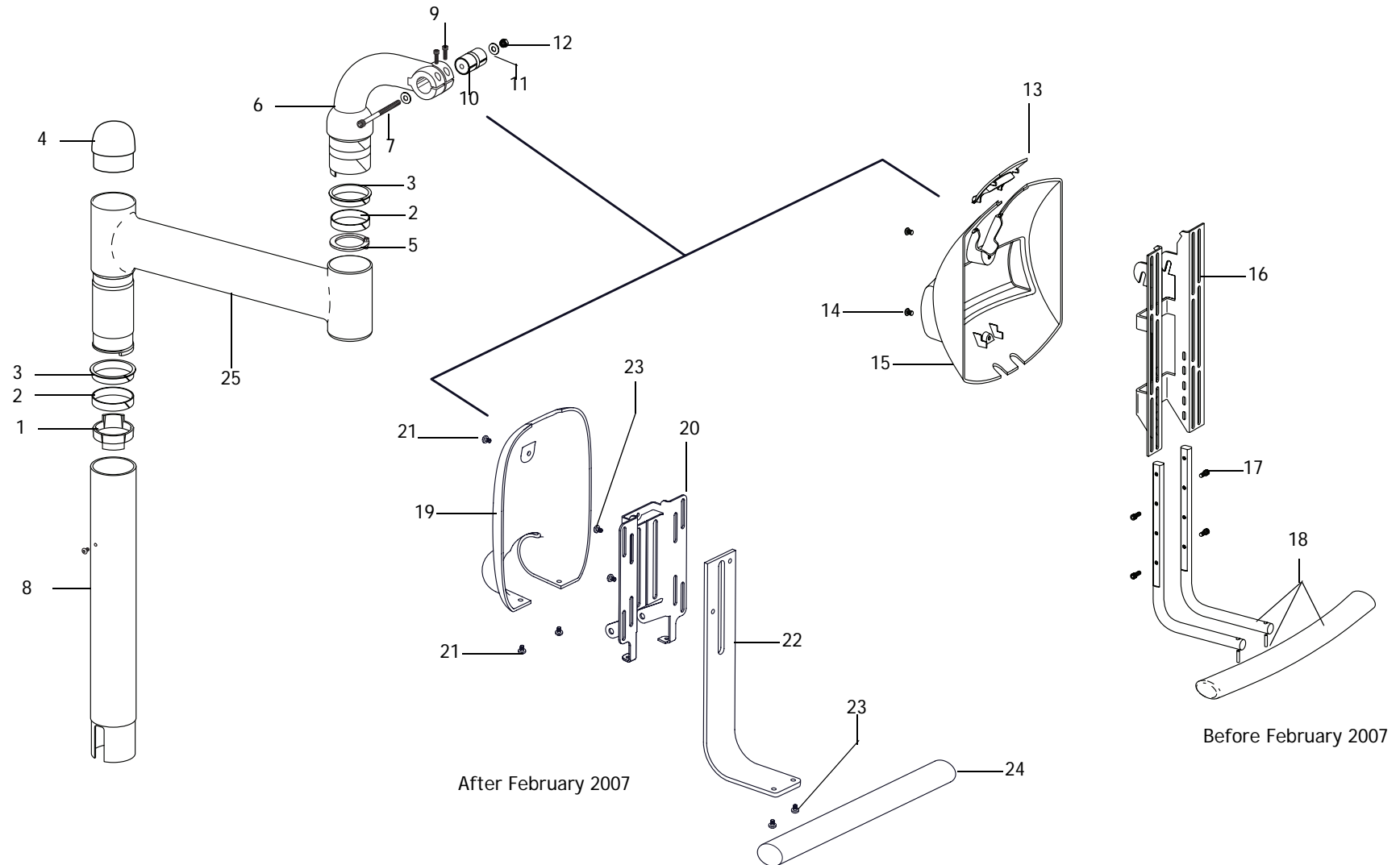


## Support Side Monitor Mount (561)

Item	Part Number	Description
1	77.0201.00	Rotation stop
2	77.0103.00	Bearing, lower
3	77.0102.00	Bearing, upper
4	28.1501.00	Cap
5	002.130.00 77.0652.00	Screw, 10-32 x 3/8" Rotation stop
6	77.0114.01	Support arm
7	002.119.00	Screw, socket head, 1/4-20 x 2-3/4" stainless steel
8	77.0199.00	Monitor post
9	001.088.00	Screw, adjustment 10-32 x 5/8"
10	77.0497.00	Clutch assembly kit (includes 7, 11 and 12)
11	004.141.00	Flat washer .261 ID
12	006.052.00	Locking nut, 1/4-20 x 7/16" x 5/16"
13	77.0213.00	Small cover, surf 4 (before February 2007)
14	002.094.00	Screw 10-32 x 1/4", stainless steel
15	77.0026.00	Monitor mount cover (before February 2007)
16	77.0112.00	Mounting bracket
17	002.130.00	Screw, socket head, 10-32 x 3/8"
18	77.0498.00	Handle bracket kit (before February 2007)
19	77.0631.00	Monitor mount cover (after February 2007)
20	77.0653.00	Mounting bracket, no power supply (after February 2007)

Item	Part Number	Description
21	005.012.03	Screw, button head, 10-32 x 3/8" stainless steel
22	77.0629.00	Handle arm (after February 2007)
23	005.143.00	Screws 1/4 20 x 3/8"
24	77.0630.00	Handle, straight (after February 2007)
25	77.0117.01	Rigid arm

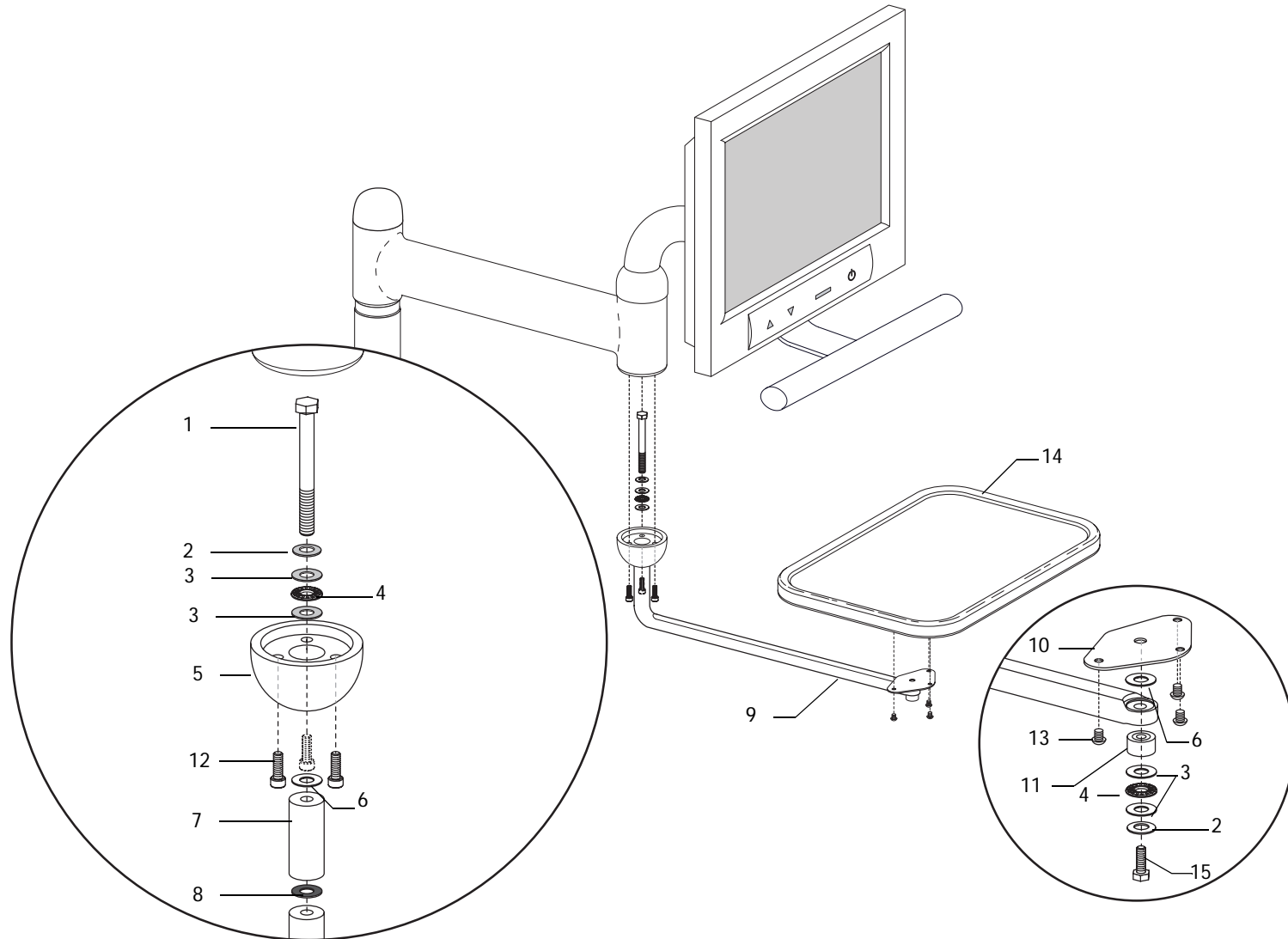
**Figure 200** Support Side Monitor Mount (561) Components



## Support Side Monitor (561) Tray Holder

Item	Part Number	Description
1	005.157.00	Screw, 3/8-16 x 4"
2	004.019.00	Washer, spring .384 ID
3	004.172.00	Washer, thrust .375 ID
4	016.102.00	Thrust bearing, .375 ID
5	77.0365.00†	Hub
6	004.242.00	Washer, flat .385 ID
7	77.0197.00	Extender arm
8	004.021.00	Washer, flat, fiber .375 ID
9	77.0189.00	Arm, tray holder
10	77.0190.00	Bracket
11	77.0198.00	Cover
12	002.112.00	Screw, 10-32 x 7/8"
13	005.012.03	Screw, 10-32 x 3/8"
14	77.0071.00	Tray holder, large
15	002.023.01	Screw hex head, 3/8 - 1 x 1/4 Hex HD screw
	75.0017.00	Standard tray holder (includes 1-15)

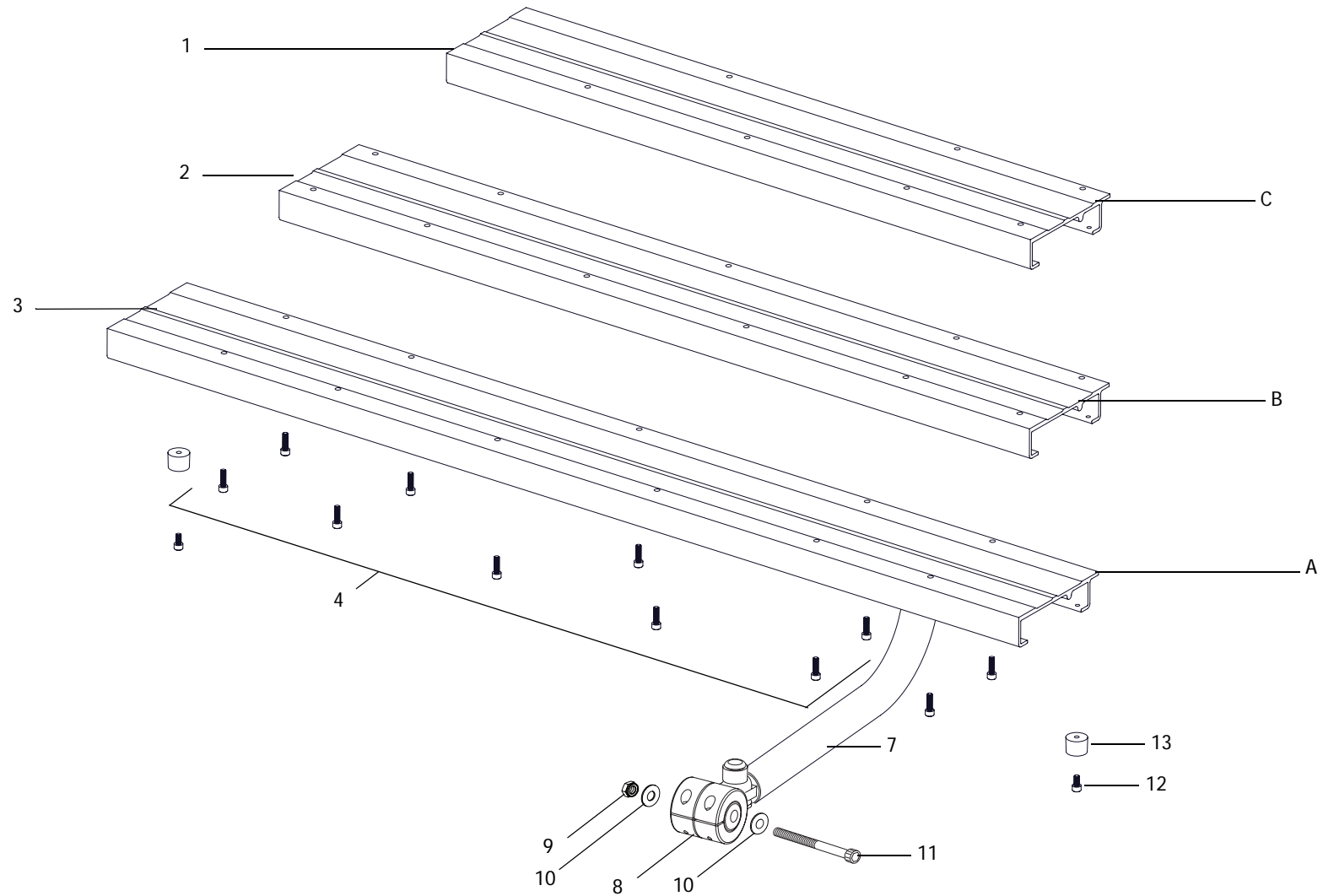
**Figure 201** Support Side Monitor mount Tray Holder Components(561)



## A-dec 500 Track Monitor Mount

Item	Part Number	Description
1	77.0438.02	Track, monitor mount, 25" (635 mm) (replace with 77.0546.00)
2	77.0438.01	Track, monitor mount, 32-1/2" (825.5 mm) (replace with 77.0545.00)
3	77.0438.00	Track, monitor mount, 40" (1016 mm) (replace with 77.0544.00)
4	001.088.00	Screw, socket head, 10-32 x 5/8", stainless steel
7		Monitor support arm assembly (see Figure 203 on page 317)
8	56.1006.00	Monitor mounting assembly (see Figure 203 on page 317)
9	006.052.00	Locking nut, 1/4-20 x 7/16" x 5/16"
10	004.141.00	Washer, flat .261 ID
11	002.119.00	Screw, socket head 1/4-20 x 2-3/4"
12	003.011.01	Screw, pan head 10 x 1-1/4", package of 5
13	042.644.00	Bumper
A	77.0544.00	Monitor mount track assembly 40" (1016 mm) (includes items 3-8)
B	77.0545.00	Monitor mount track assembly, 32-1/2" (825.5 mm) (includes items 2, 4, 5, 6, 7 and 8)
C	77.0546.00	Monitor mount track assembly, 25" (635 mm) (includes items 1, 4, 5, 6, 7 and 8)

**Figure 202** A-dec 500 Monitor Track Mount





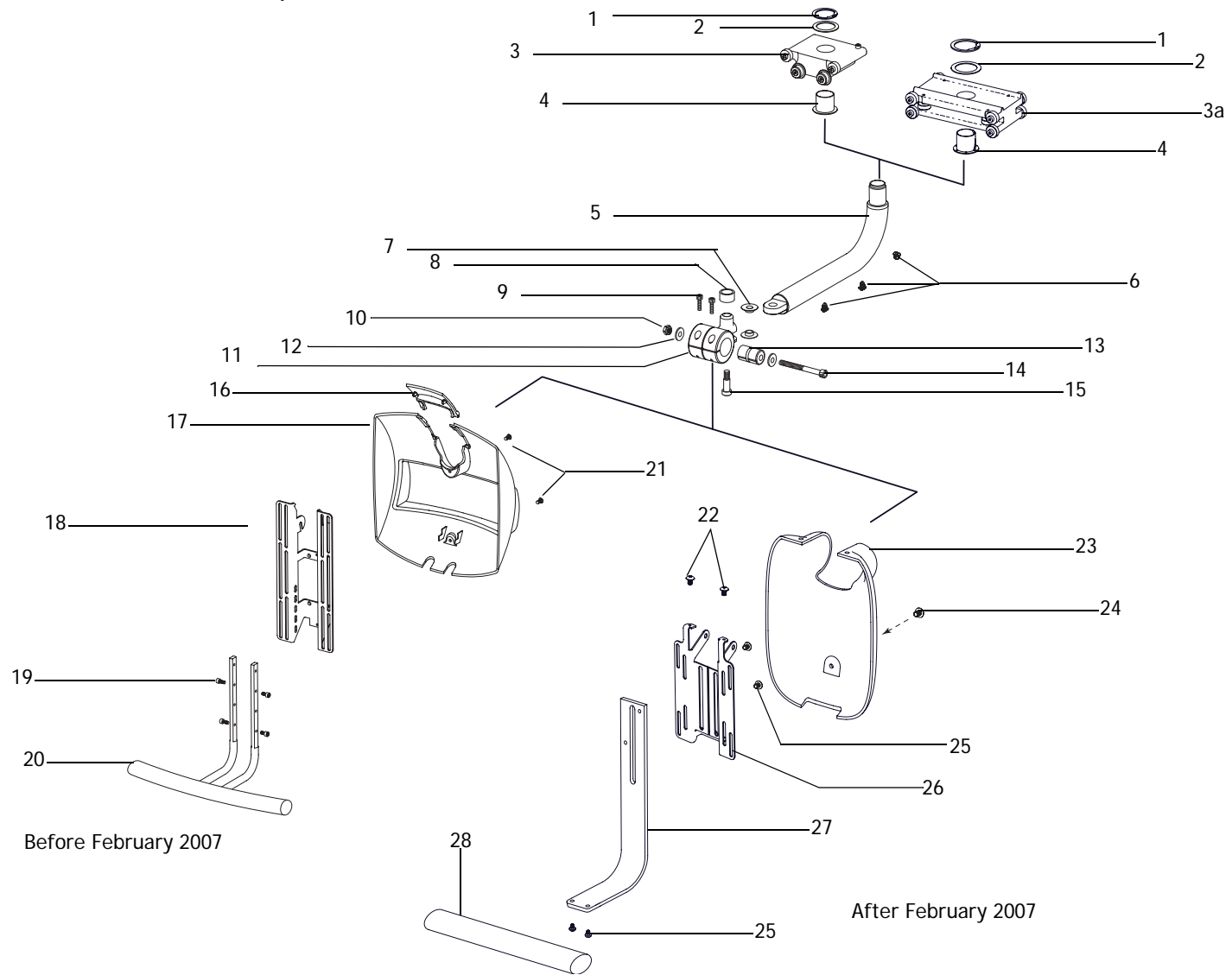


## A-dec 500 Track Monitor Mount Components

Item	Part Number	Description
1	010.012.00	Retaining ring, external
2	004.207.00	Washer, flat, 1.00 x 1.362 x .03, stainless steel
3		Trolley assembly (see Figure 204 on page 319)
3a		New trolley assembly (see Figure 204 on page 319)
4	77.0458.00	Bushing, flanged, 1.00 OD x 1.00 LG
5	56.1005.00*	Monitor support arm assembly (includes items 1,2,4,6 and 7)
6	025.081.00	Holder, flat tie
7	77.0459.00	Bushing, flanged
8	024.092.00	Tubing, clear, 7/8" OD
9	001.088.00	Adjustment screw, 10-32 x 5/8"
10	006.052.00	Lock nut, 1/4-20 x 7/16" x 5/16"
11	56.1006.00*	Monitor mounting hub assembly (includes items 8, 9 and 15)
12	004.141.00	Washer, flat .261 ID
13	77.0497.00	Clutch assembly kit (includes 19, 20 and 22)
14	002.119.00	Screw, socket head 1/4-20 x 2-3/4"
15	001.145.01	Screw, socket shoulder, 5/16-18 x 3/8 x 3/4
16	77.0213.00	Small cover, surf 4 (before February 2007)
17	77.0026.00	Monitor mount cover (before February 2007)
18	77.0112.00	Mounting bracket (before February 2007)
19	002.130.00	Screw, socket head, 10-32 x 3/8"
20	77.0498.00	Handle basket kit (before February 2007)
21	002.094.02	Screw, button head socket, 10-32 x 1/4", stainless steel
22	005.012.03	Screw, socket head 10-32 x 3/8"

Item	Part Number	Description
23	77.0631.00	Monitor mount cover (after February 2007)
25	005.143.00	Screw 1/4 20 x 3/8" (after February 2007)
26	77.0653.00	Bracket, no power supply (after February 2007)
27	77.0629.00	New handle arm (after February 2007)
28	77.0630.00	Handle arm, straight (after February 2007)

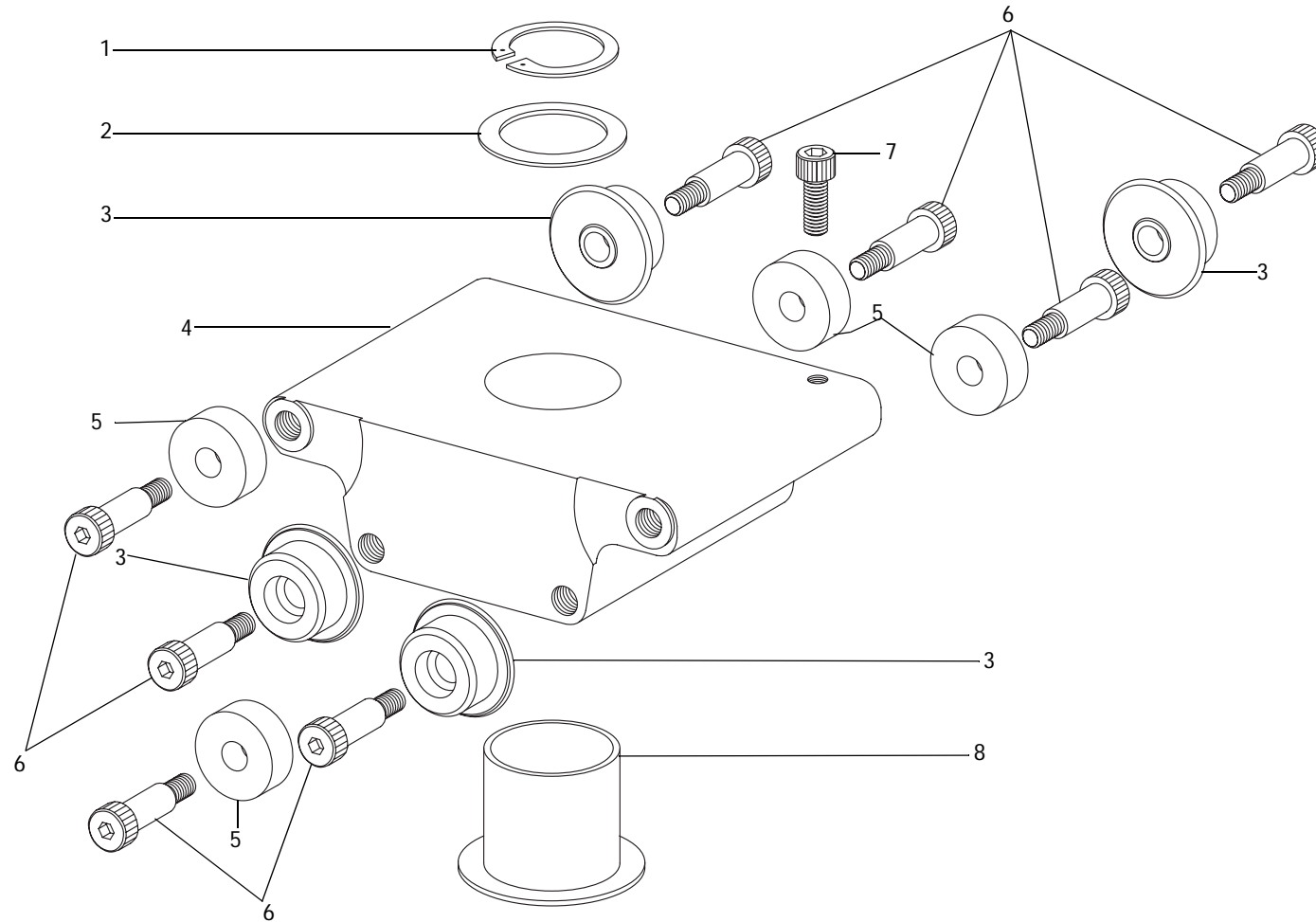
**Figure 203** A-dec 500 Track Monitor Mount Components



## A-dec 500 Track Monitor Mount Trolley Assembly (Before February 2007)

Item	Part Number	Description
1	010.012.00	Retaining ring, external
2	004.207.00	Washer, flat, 1.00 x 1.362 x .03, stainless steel
3	77.0457.00	Caster, monitor trolley
4	77.0437.00	Carrier, monitor trolley
5	016.061.00	Ball bearing, 1/4 ID x 3/4 OD
6	001.138.00	Screw, socket shoulder, 10-24 x 1/4" x 5/8"
7	002.135.00	Screw, socket head 10-32 x 1/2", stainless steel
8	77.0458.00	Bushing, flanged, 1.00 OD x 1.00 LG

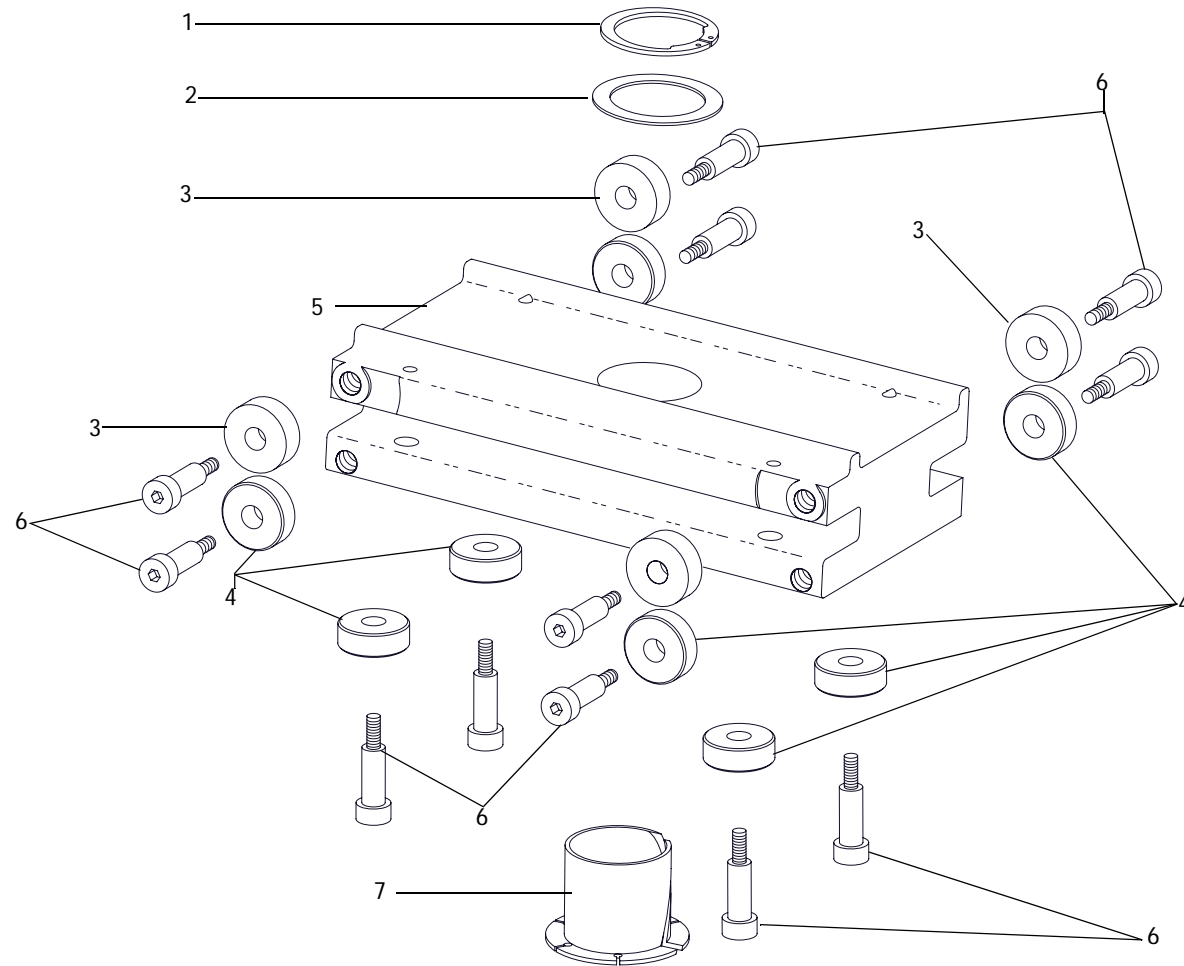
**Figure 204** Trolley Assembly (Before February 2007)



## A-dec 500 Track Monitor Mount Trolley Assembly (After February 2007)

Item	Part Number	Description
1	010.012.00	Retaining ring, external
2	004.207.00	Washer, flat, 1.00 x 1.362 x .03, stainless steel
3	016.061.00	Ball bearing, 1/4 ID x 3/4 OD
4	56.1081.00	Caster, monitor trolley
5	56.1082.00	Carrier, trolley
6	001.138.00	Screw, socket shoulder, 10-24 x 1/4" x 5/8"
7	77.0458.00	Bushing, flanged, 1.00 OD x 1.00 LG

Figure 205 Trolley Assembly (After February 2007)







## DENTAL LIGHTS

This section provides information related to service, maintenance, and adjustments of A-dec dental lights. Detail on how to service the A-dec 500 and 6300 dental lights is presented. For information on service parts, see the *Genuine A-dec Service Parts Catalog* or contact A-dec customer service.

### SYSTEMS CONTENTS

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- Product Overview, page 324
- Service/Usage Information, page 326
- Adjustments/Maintenance, page 339
- Illustrated Parts Breakdown, page 347

Figure 206 A-dec Dental Light



## PRODUCT OVERVIEW

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The A-dec dental lights provide color-corrected, low UV light and three intensity settings. The lights are controlled from the light head, or from the touchpad on an A-dec 500 delivery system or assistant's instrumentations. Specifications are subject to change without notice.

### Dental Light Specifications

These lights provide color-corrected, low UV light, and three intensity settings. The lights are controlled from the light head, or from the touchpad on an A-dec 500 delivery system, or assistant's instrumentation.

#### ■ Electrical

100 VAC, 110-120 VAC, or 220-240VAC (Post-, Ceiling-, Wall-, Preference- and Track-mounted Lights)

Operating wattage: 96 watts

Heat output: 325 BTU/hour

#### ■ Lamp

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

Lamp rating: 24V/150 watts

Color temperature: 5000 Kelvin

Light pattern: 3.3" x 6.3" at 27.6" (85 mm x 160 mm at 700 mm)

#### ■ Nominal Light Intensity

Composite: 8,000 lux (743 fc)

Medium: 20,000 lux (1858 fc)

High: 24,000 lux (2230 fc)

## On/Off Functions

The dental light has additional features when used with an A-dec 500 system.

### On/Off Switch

Press and hold the **Dental Light** button on the touchpad to turn off the dental light On/Off. Change the position of the switch on the dental light to turn on/off the light at the light head.

### Auto On/Off Function

The dental light turns On, when the A-dec 500 chair reaches programmed positions 1, 2 or 3. The dental light turns Off, when **Position 0** is pressed. When **Position 3** is used as a last position/return function, the light turns Off when **Position 3** is pressed the first time. It turns On after the button is pressed a second time when it reaches the last position.

The Auto On/Off feature is disabled by pressing and holding the **Program** button and the **Dental Light** button simultaneously for three seconds. One beep confirms that the auto On/Off feature is disabled. To enable the Auto On/Off feature, repeat. Three beeps confirms that Auto On/Off is enabled.

### Three-Way Switch

The dental light button on the touchpad works as a three-way switch with the On/Off switch on the dental light, allowing the light to turn On or Off from the touchpad or the On/Off switch.

## Intensity Switches

There are three intensity settings for the A-dec 571 and 6300 dental lights. Move the intensity switch to select the high, medium or composite setting.

Press **Dental Light** on the A-dec 500 touchpad to toggle between intensity settings. The dental light can toggle between composite and high intensity settings or composite and medium intensity settings, depending on the location of the dental light intensity switch. The indicator light next to the touchpad dental light button flashes when in the composite setting mode.

## SERVICE/USAGE INFORMATION

### Identifying Switch Connections

#### Intensity Switch

The three-position intensity switch is used to select light intensity at one of three settings: 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 and meter 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 for the On/Off switch is P/N 90.1039.00.

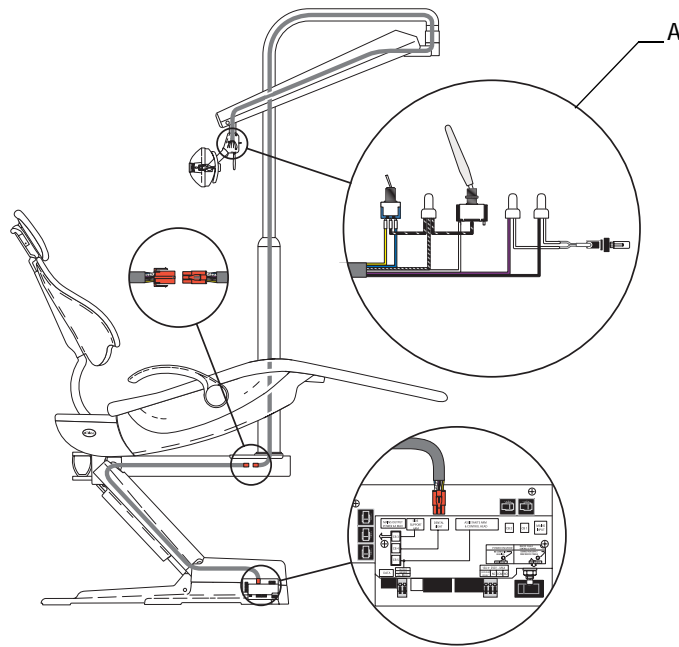
Position	Voltage	Wire
Open	5 VDC	White
Closed	0 VAC	White



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

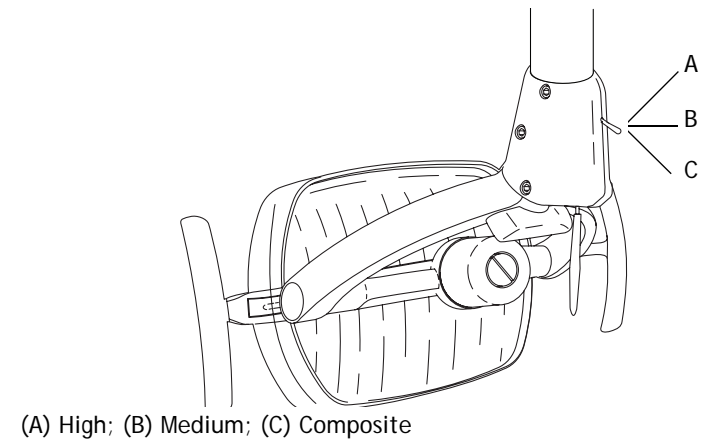
## A-dec 571 Light

Figure 207 A-dec 571 Light Switch Connections



(A) Switch and Lamp Connections

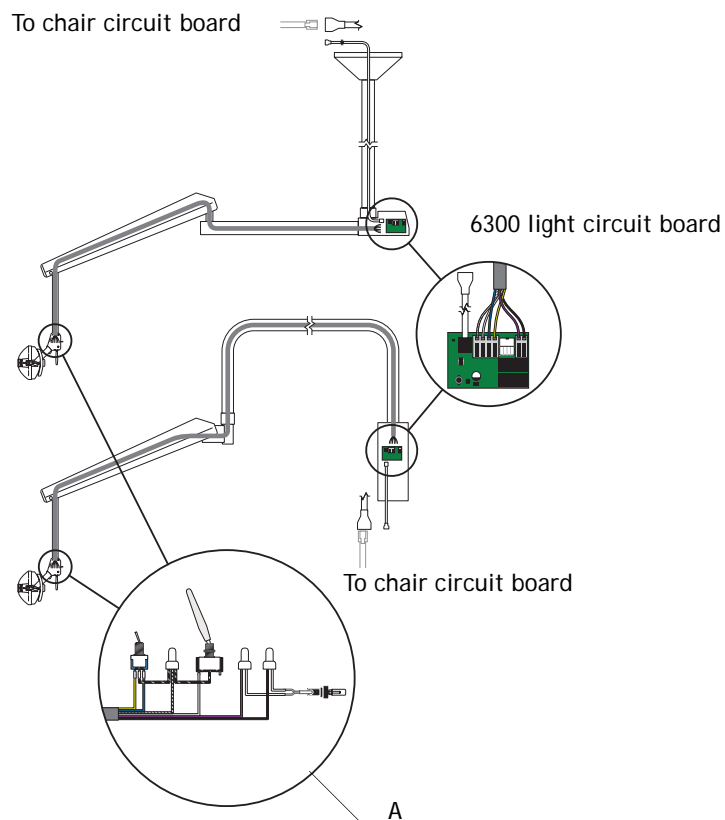
Figure 208 Light Intensity Setting



(A) High; (B) Medium; (C) Composite

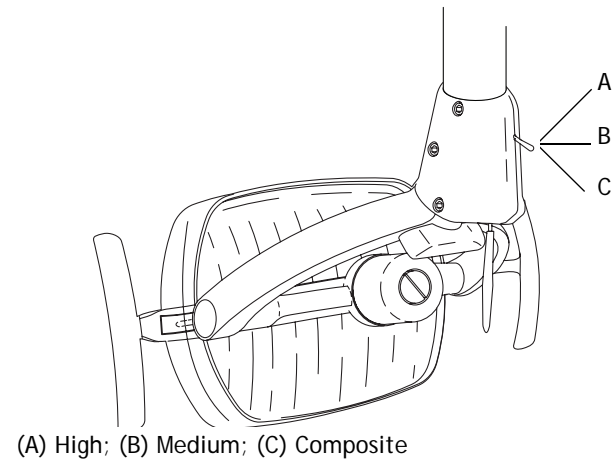
## Ceiling-, Wall - and Preference-Mount Lights

**Figure 209** A-dec 6300 Ceiling and Wall-mounted Light Switch Connections and Data Line



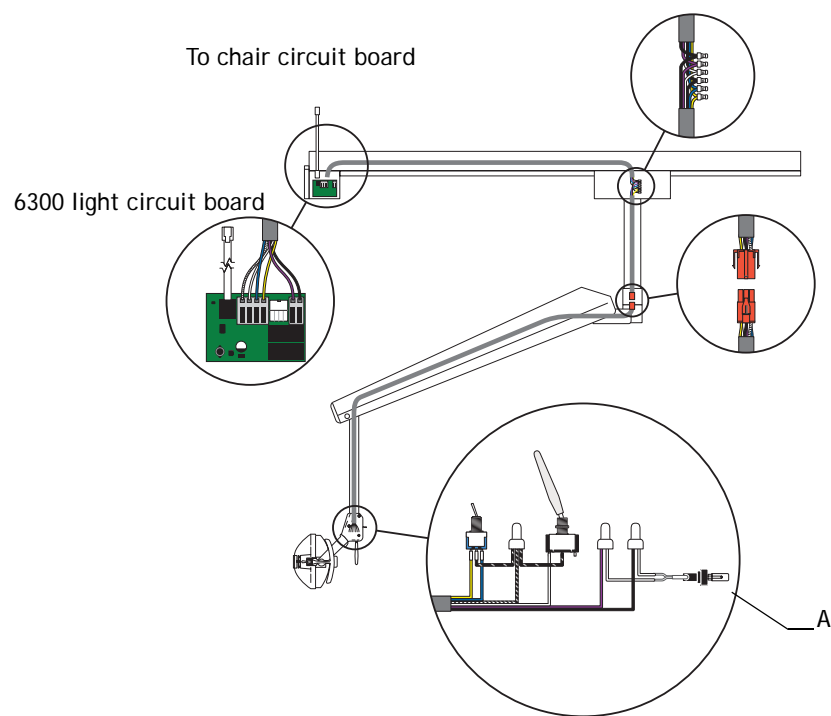
(A) Switch and Lamp Connections

**Figure 210** Light Intensity Setting



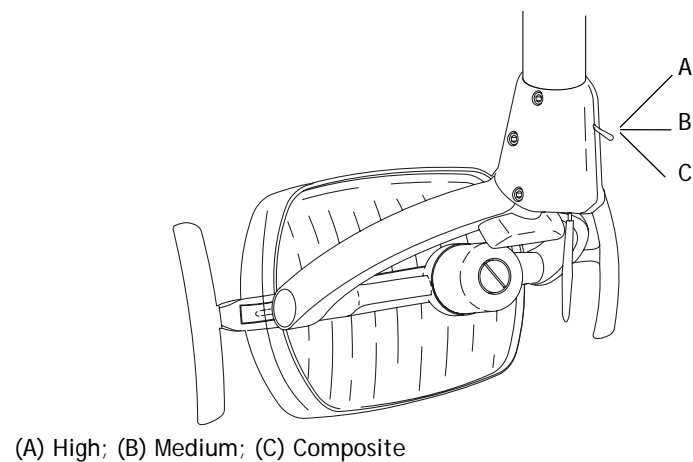
## Track Light

**Figure 211** A-dec 6300 Track Light Switch Connections and Data Line



(A) Switch and Lamp Connections

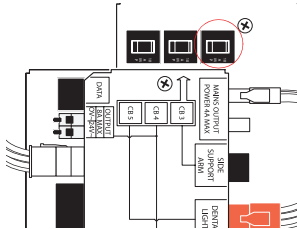
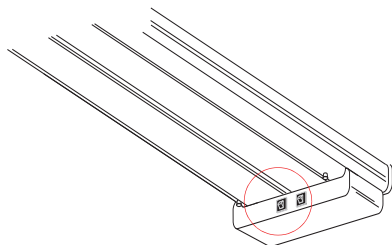
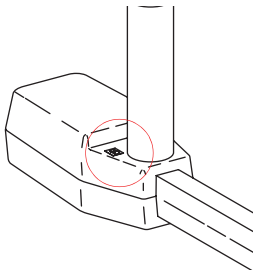
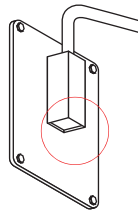
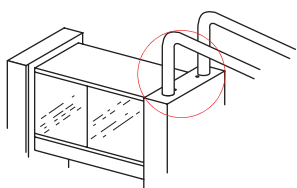
**Figure 212** Light Intensity Setting





## 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 the circuit breaker by flipping the switch.

Light Name	Circuit Breaker Location	Light Name	Circuit Breaker Location
<b>A-dec 571</b>  <b>NOTE</b> The circuit breaker for the A-dec 571 light is located on the chair power supply inside the chair motor pump area.		<b>Track</b>	
<b>Ceiling-mounted</b>		<b>Wall-mounted</b>	
<b>Preference-mounted</b>			

## Power Cable

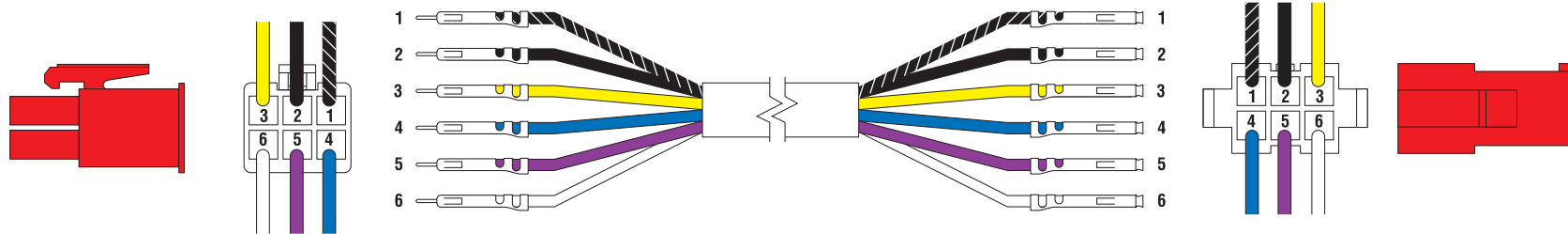
Part No: 28.1584.00

Pin	Voltage	Wire
1	0 VDC (circuit ground)	Black/White
2	0 VAC	Black
3	5 VDC = high or medium 0 VDC = composite	Yellow (composite)
4	5 VDC = medium or composite 0 VDC = high out	Blue (high)
5	17/16/12.1 VAC	Violet
6	5 VDC = On/Off toggle = open 0 VDC = On/Off toggle = closed	White (On/Off)



**NOTE** If Pin 3 and Pin 4 are 5 VDC, then the output voltage on Pin 5 is medium intensity.

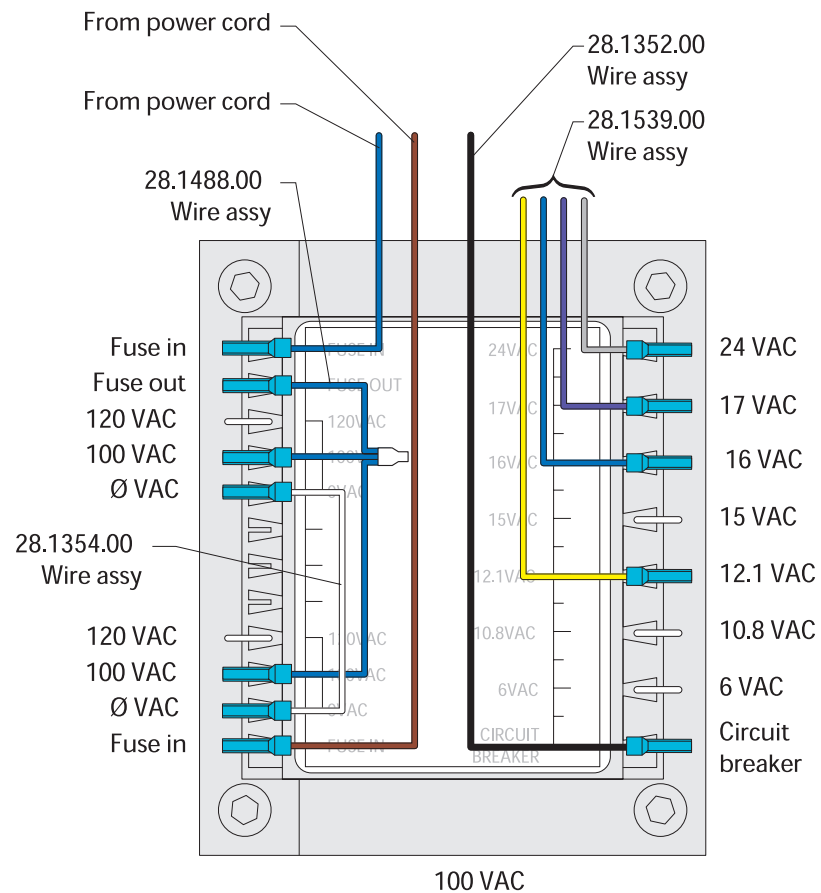
Figure 213 Power Cable



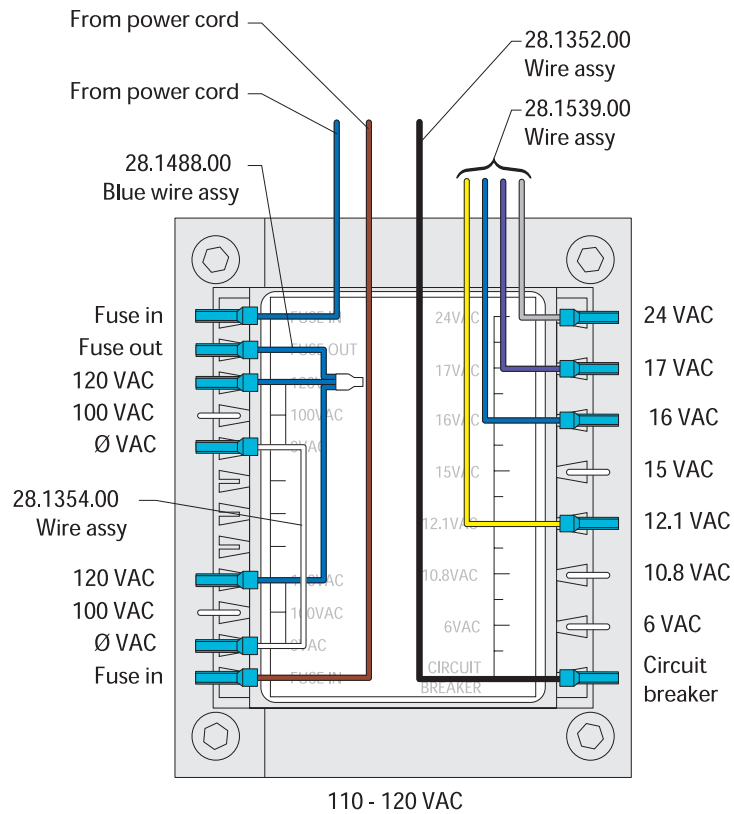
## Transformers

All voltages of transformers are the same part number but wired differently for each voltage.

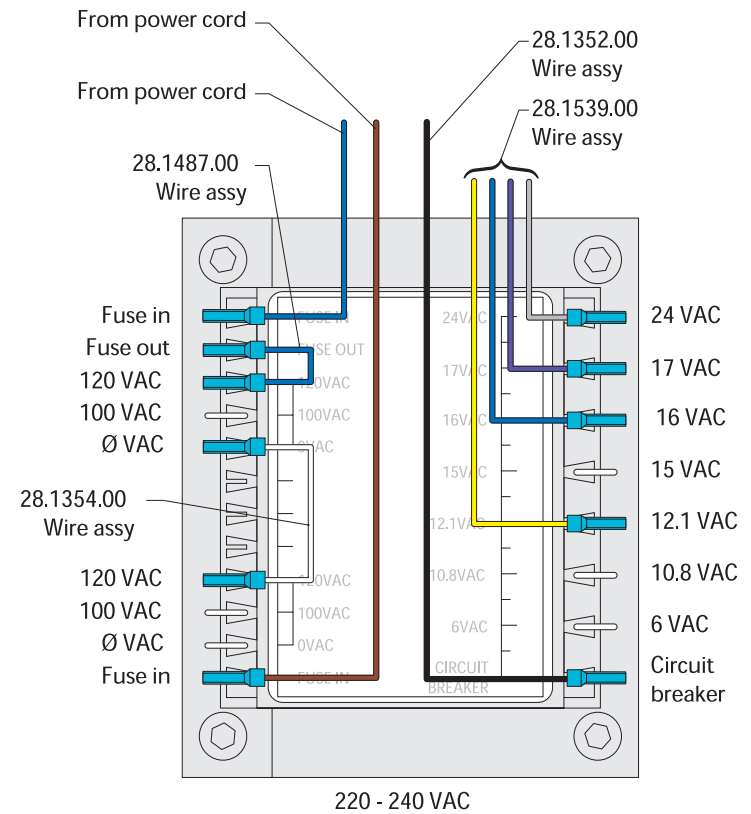
**Figure 214** 100 VAC Transformer (P/N 28.1588.00)



**Figure 215** 110-120 VAC Transformer (P/N 28.1588.00)



**Figure 216** 220-240 VAC Transformer (P/N 28.1588.00)



## Circuit Board Components

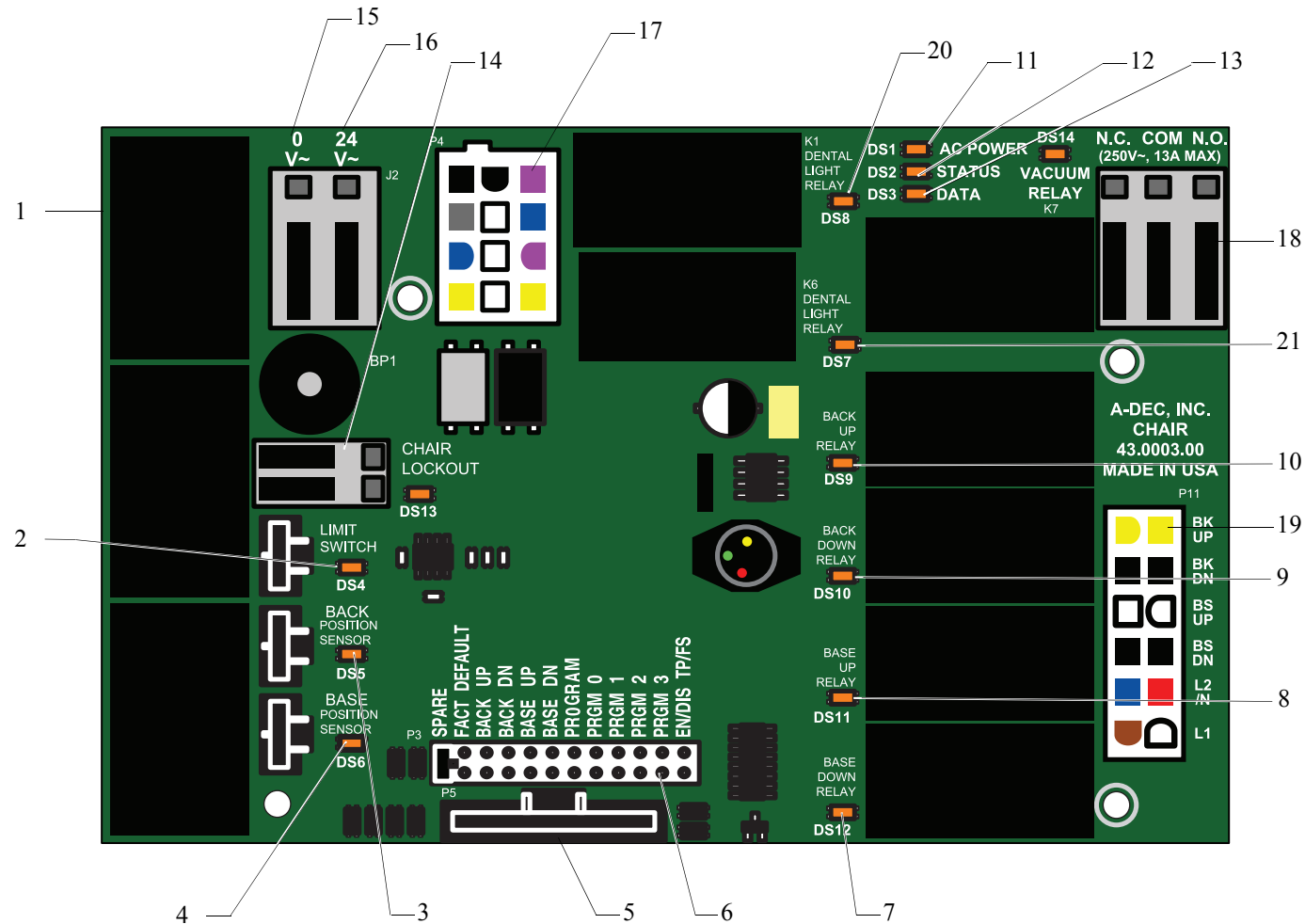
### A-dec 511 Chair Circuit Board for A-dec 571 Lights

Part No: 90.1072.00

Item	Description
1	P7, P8, P9 - Data line ports
2	DS4 - Stop switch LED (limit switch) and P10 connector
3	DS5 - Back potentiometer LED and P1 connector
4	DS6 - Base potentiometer LED and P2 connector
5	P5 - Footswitch connector
6	P3 - Test points
7	DS12 - Base down LED and relay K5
8	DS11 - Base up LED and relay K4
9	DS10 - Back down LED and relay K3
10	DS9 - Back up LED and relay K2
11	DS1 - AC power LED
12	DS2 - Status LED
13	DS3 - Data LED
14	DS13 - Chair lockout LED and terminal strip J1
15	J2 - 0 VAC terminal strip (output)
16	J2 - 24 VAC terminal strip (output)
17	P4 - Input power and dental light connector
18	J3 - Vacuum relay K7 output terminal strip
19	P11 - Pump motor and solenoid connector
20	DS8 - Dental light LED relay and K1
21	DS7 - Dental light LED relay and K6

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

Figure 217 A-dec 511 Chair Circuit Board Components



## LED Identification

LED	Status	Description
DS1 - AC power LED	Off	No 24 VAC power, tripped circuit breaker, power supply turned off, no line voltage
	<b>Green</b> , steady	24 VAC at the terminal strip
DS2 - Status LED	Off	System is not functioning, no power or circuit board has failed
	<b>Green</b> , steady	Normal operation
DS3 - Data LED	Off	No DCS communication, not connected to the DCS, or DCS has failed
	<b>Green</b> , steady	Detects active DCS
	<b>Green</b> , blinking	Valid DCS message
DS4 - Chair limit switch	Off	Closed, (normal)
	<b>Red</b>	Open, (activated)
DS13 - Chair lockout	Off	Open, (normal)
	<b>Red</b>	Closed, (activated)
DS5 + DS6 - Chair potentiometers	Off	Potentiometer: <ul style="list-style-type: none"> <li>• Not connected or bad connection</li> <li>• Moving in wrong direction</li> <li>• Limited range of motion, or</li> <li>• Cable is not on wheel.</li> </ul>
	<b>Yellow</b> , steady	Normal operation
	<b>Yellow</b> , 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

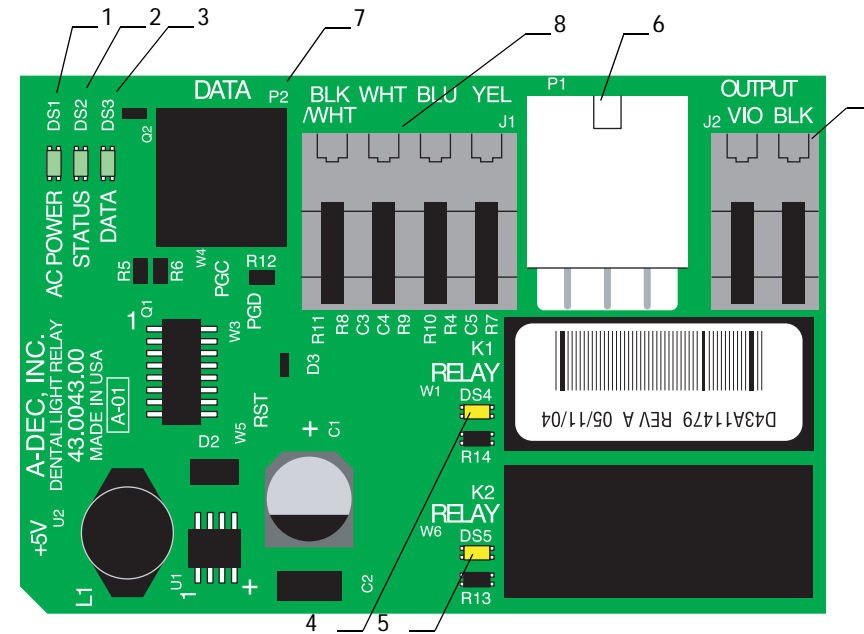
## 6300 Dental Light Relay Circuit Board

Part No: 28.1577.00

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 line port
8	J1 - Toggle switch inputs
9	J2 - Dental light output power

Function	K1 (DS4)	K2 (DS5)	Output
Off	Off	Off	0 VAC
High intensity	On	Off	17 VAC
Composite intensity	Off	On	12 VAC
Medium Intensity	On	On	16 VAC

Figure 218 6300 Dental Light Relay Circuit Board





## LED Identification

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

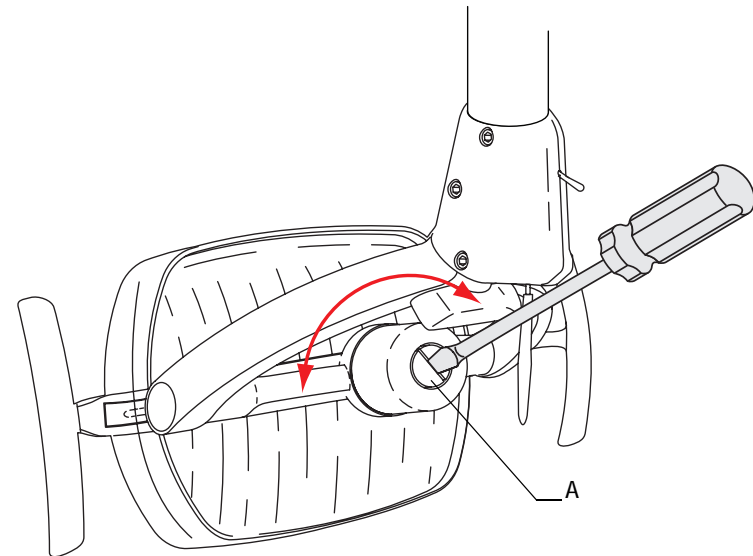
## ADJUSTMENTS/MAINTENANCE

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 219 Focus Adjustment



(A) Adjustment Screw

## Light Head Rotation

The light head needs adjusting if it is difficult to position, moves too easily, or tends to drift 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 counterclockwise.

Figure 220 Left/Right Rotation

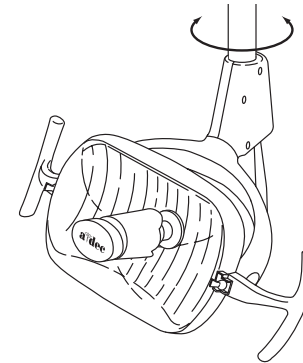
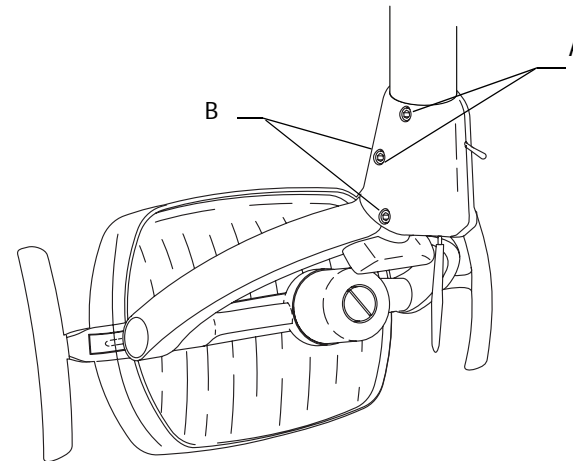


Figure 221 Rotation Adjustment



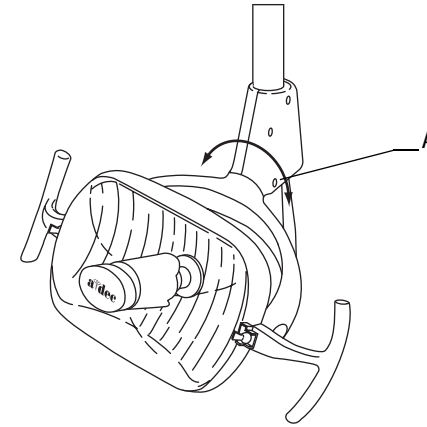
(A) Left/Right Rotation Tension Screw; (B) Diagonal Rotation Tension Screw

### 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 222 Diagonal Axis Rotation



(A) Diagonal Adjustment

## 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 223 Up/Down Rotation

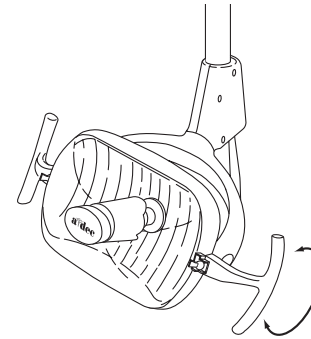
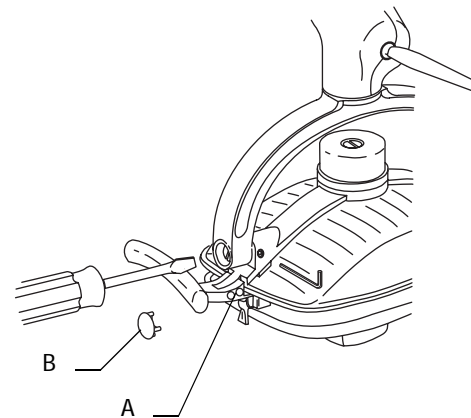


Figure 224 Up/Down Rotation Adjustment



(A) Setscrew; (B) Light Yoke Plug

## Flexarm

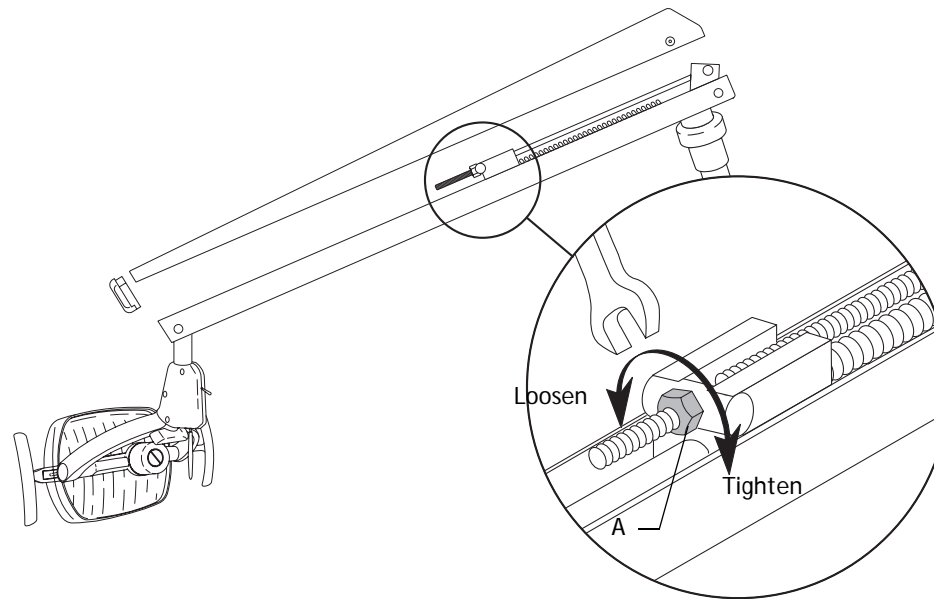
Remove the screw and cover from the flexarm. Turn the tension adjustment nut inside the flexarm using a 1/2" open end wrench. Tighten the nut by turning it clockwise, if the flexarm moves too easily, or tends to drift down by itself. Loosen the nut by turning it counterclockwise, if the arm drifts up.



**NOTE** The weight of the flex arm cover affects the flex arm counter-balance. Set cover on flex arm to test tension adjustment.

**NOTE** 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 225 Flexarm Adjustments



(A) Adjustment Nut

## 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.

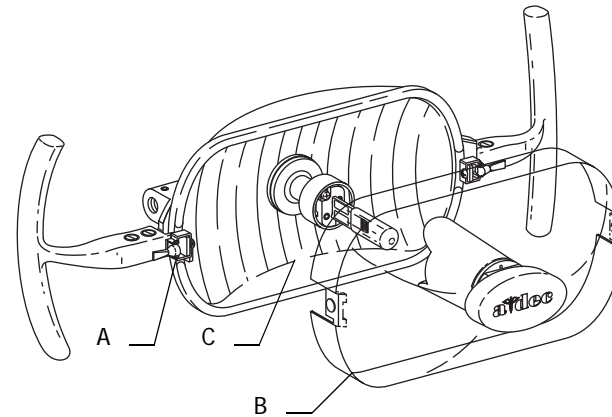
If necessary, soak the pad or cloth with water or with a diluted solution of mild dish washing liquid before cleaning. Make certain no residue remains on the surface.

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 226 Light Shield Cleaning



(A) Toggle; (B) Light Shield; (C) Reflector

## Lamp Replacement

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



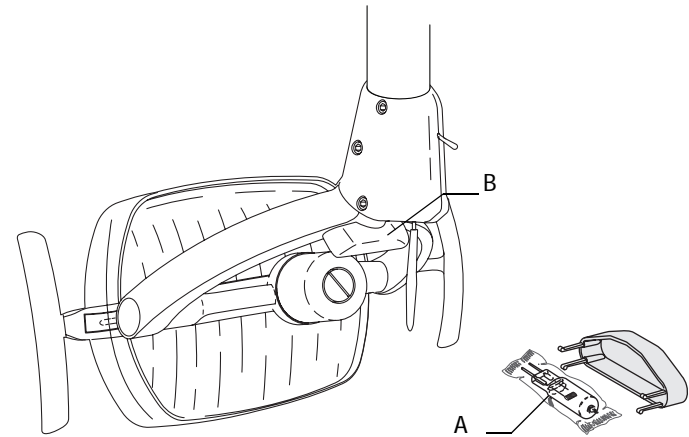
**WARNING** To avoid burning fingers, allow the lamp to cool before removing. Never operate the light with the light shield removed. The clear shield minimizes UV light output. The light shield is also protection in the unlikely event that the lamp shatters.

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 lamp from its socket and discard.
4. Hold the new lamp in its outer wrapper with the pins facing away, and carefully insert it in the socket. The lamp base is fragile and can break under excess pressure.
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.



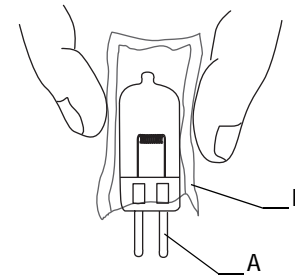
**CAUTION** Use of halogen lamp other than A-dec P/N 041.179.01 (OSRAM HLX 64640, 150W 24V) may result in damage to the lamp socket.

Figure 227 Remove Lamp from Holder



(A) Lamp; (B) Holder

Figure 228 Insert Lamp



(A) New Lamp; (B) Outer Wrapper





## ILLUSTRATED PARTS BREAKDOWN

This section contains illustrated parts breakdowns specific to the dental light.

### Part Identification Symbols

The conventions for the serviceable components tables are designed to identify all parts and kits, including ones that are not for sale. Symbols with reference notes are used.

Symbol	Definition
†	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)
No symbol	Part is for sale

### DENTAL LIGHT IPB CONTENTS

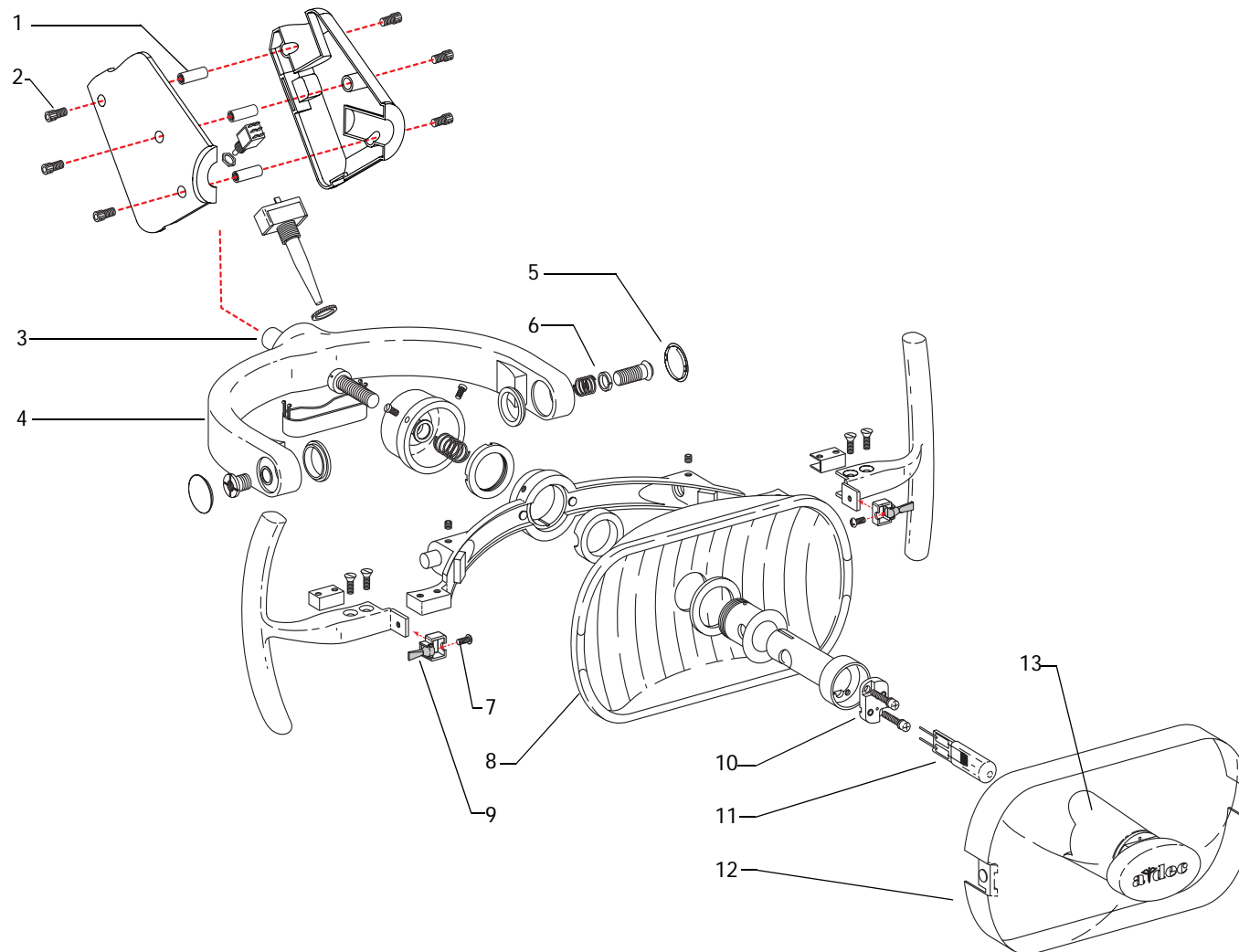
- Light Head, page 348
- 571 Dental Light, page 350
- 6300 Track Dental Light, page 352
- Trolley Assembly , page 354
- 6300 Ceiling Mount Dental Light (Upper ), page 356
- 6300 Ceiling Mount Dental Light (Lower ), page 358
- 6300 Preference Mount Dental Light, page 360
- 6300 Wall Mount Dental Light, page 363

## Light Head

Part No: 28.1007.00

Item	Part Number	Description
1	28.1467.00	Stand-off
2	002.135.00	Screw, socket head 10-32 x 1/2" stainless steel
3	28.1001.00	Bushing, pivot, light yoke
4	28.1009.00	Light yoke
5	28.1536.00	Plug, light yoke
6	28.1008.00	Spacer, light yoke
7	002.140.00	Screw, button head socket patch, 6-32 stainless steel
8	28.1429.00	Dental light
9	28.1012.00	Toggle bracket assembly, package of 2
10	90.0463.01	Lamp socket kit
11	041.179.01	Lamp
12	28.0503.02	Lens, dental light (includes nosepiece)
13	28.0555.00	Lamp shield with M3 x 8 screws

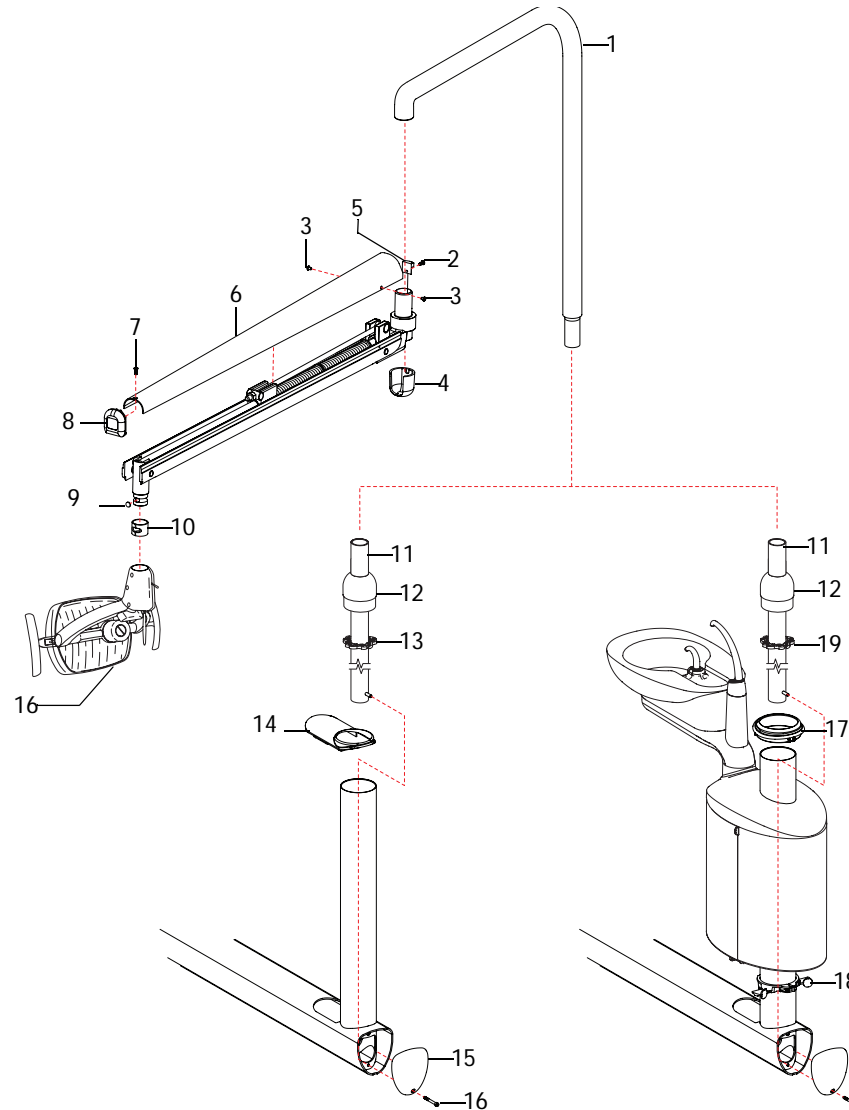
**Figure 229** Light Head Assembly



## 571 Dental Light

Item	Part Number	Description
1	28.0486.00	Light post
2	001.167.00	Screw, button head 6-32 x 3/8
3	002.103.00	Screw, button head socket 6-32 x 3/16
4	28.1531.00	Knuckle cover
5	28.1500.00	Retainer, light arm
6	28.1059.00	Flex arm cover
7	003.099.00	Screw, flat head 6-19 x 1/2"
8	75.0008.00	Cap, light arm
9	28.0679.01	Pivot stop, package of 5
10	28.1003.00	Swivel bushing
11	28.1535.00	Light post, lower
12	28.1509.00	Support, light post
13	28.1574.00	Support, light post, internal
14	77.0091.00	Cover, horizontal arm
15	77.0096.00	Cover, end, lower support arm
16	002.124.00	Screw, socket head 10-32 x 1 3/4"
17	77.0095.00	Trim ring
18	77.0232.00	Spacer

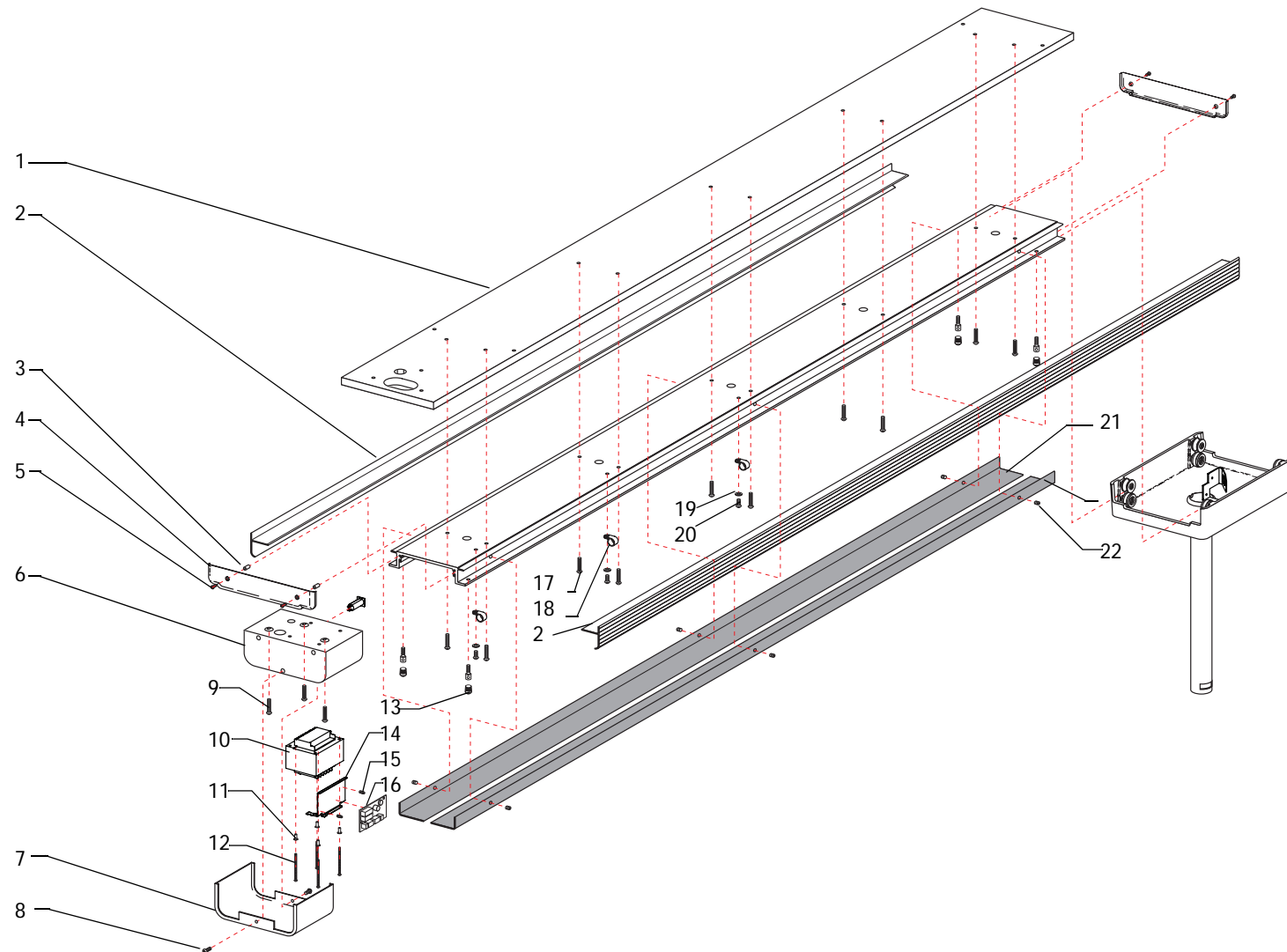
Figure 230 571 Dental Light



## 6300 Track Dental Light

Item	Part Number	Description
1	28.1571.00 <sup>†</sup>	Pallet assembly, ceiling track mount
2	28.1083.00	Trim cover, outside
3	28.0793.00	Spacer, .198 ID x .437 OD x .4" long
4	28.1077.00	Endcap
5	003.047.00	Screw, pan head Phillips, metal, #10 x 3/4"
6	28.1570.00 <sup>†</sup>	Housing, transformer
7	28.1568.00	Cover, transformer
8	002.103.00	Screw, button head socket, 6-32 x 3/16" stainless steel
9	005.002.02	Screw, button head 1/4-20 x 5/8"
10	28.1588.00	Transformer
11	004.232.00	Washer, shoulder
12	005.156.00	Screw, pan head Phillips, 8-32 x 2-3/4" stainless steel
13	028.008.00	Plug/cap, 1/2" OD x 1/4" ID
14	43.0080.00	Bracket, circuit board lights (includes 28.1577.00)
15	041.691.00	Stand-off
16	28.1577.00	Dental light circuit board
17	005.109.02	Screw, button head 1/4-20 x 1"
18	025.024.00	Cable clamp
19	004.012.00	Washer, flat, steel plated, .156 ID
20	003.014.00	Screw, pan head, Phillips #6
21	28.1084.00	Trim cover, inside track
22	007.003.00	Setscrew, socket cup point 10-32 x 3/16"
23	28.0758.00	Circuit breaker, 10 Amp

Figure 231 Track Assembly

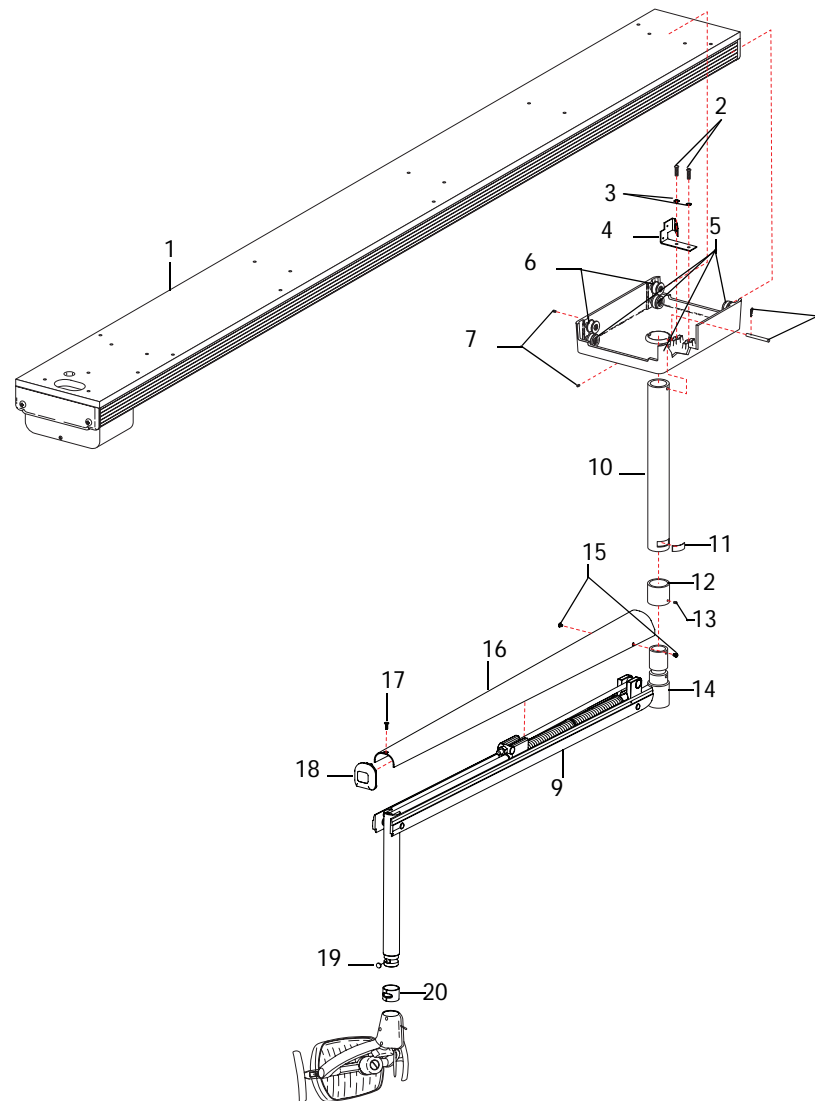




## Trolley Assembly

Item	Part Number	Description
1	28.1079.00	Track Assembly
2	001.004.00	Screw, pan head 10-32 x 3/8"
3	004.040.00	Lock washer
4	28.0667.00	Bracket, electric connector
5	28.0790.00	Crowned wheel assembly
6	28.0789.00	Grooved wheel assembly
7	007.042.00	Setscrew, 1/4-20 x 3/8"
8	99.0733.00	Cross pin kit
9	28.1596.00	Flex arm assembly
10	28.1085.00	15" post
	28.1085.01	21" post
	28.1085.02	27" post
	28.1085.03	33" post
	28.1085.04	39" post
11	28.0566.00	Locking tab
12	28.1092.00	Retaining collar
13	007.002.00	Setscrew, 6-32 x 3/16"
14	28.1572.00 <sup>†</sup>	Mounting hub (must order 28.1596.00 flex arm assembly)
15	002.103.00	Socket head screw 6-32 x 3/16
16	28.1059.00	Flex arm cover
17	003.099.00	Screw, flat head 6-19 x 1/2"
18	75.0008.00	Cap, light arm
19	28.0679.01	Pivot Stop, package of 5
20	28.1003.00	Swivel bushing

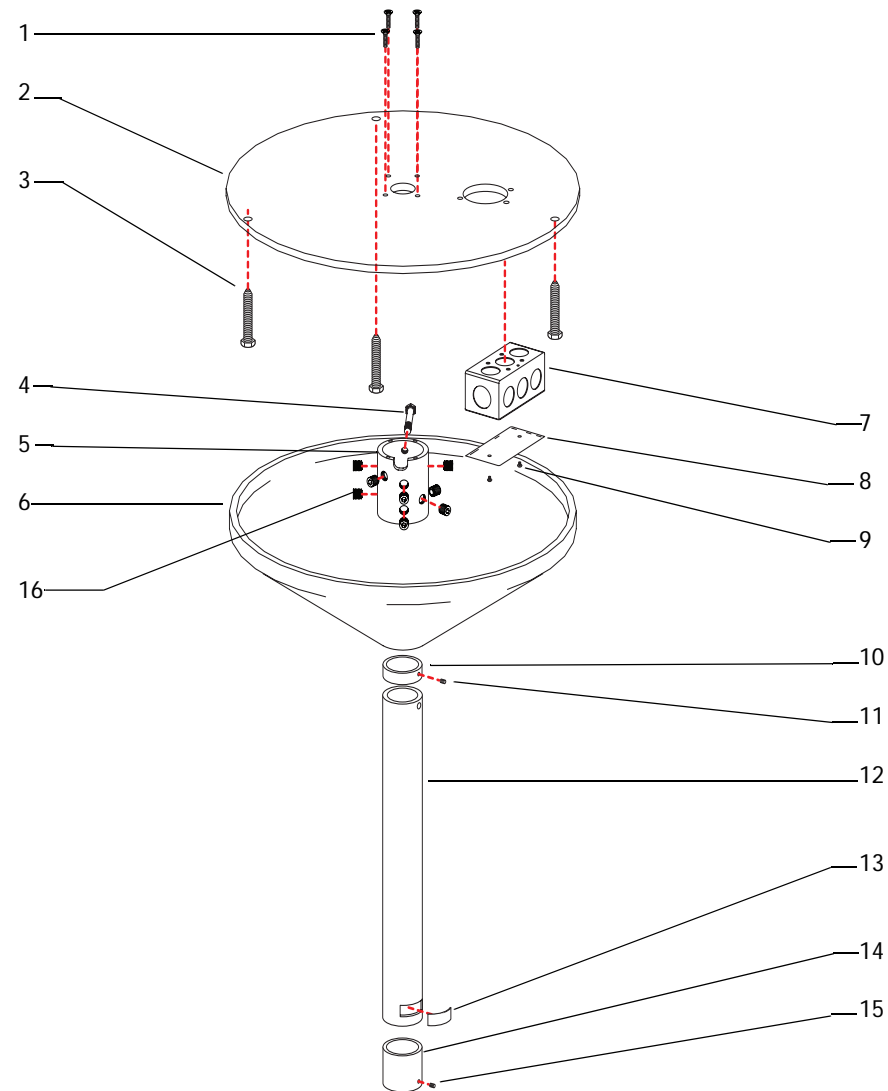
Figure 232 Trolley Assembly



## 6300 Ceiling Mount Dental Light (Upper )

Item	Part Number	Description
1	002.085.00	Screw, flat head socket 1/4 - 20 x 1/2"
2	28.0573.00	Mounting plate, ceiling
3	003.065.00	Screw hex head 1/4 x 3"
4	001.128.00	Screw, hex head screw 1/4 - 20 x 2 3/4"
5	28.0572.00	Ceiling mount collar
6	28.0571.03	Cover, ceiling mount dental light
7	041.333.00	Junction box 4" x 2-1/8 x 1-1/2
8	041.332.00	Junction box cover
9	002.094.02	Screw, button head socket, 10-32 x 1/4" stainless steel
10	28.0569.02	Stop ring
11	007.071.00	Setscrew, socket, 6-32 x 1/4"
12	28.1052.00	Ceiling mount light post 17"
	28.1052.01	Ceiling mount light post 23"
	28.1052.02	Ceiling mount light post 29"
	28.1052.03	Ceiling mount light post 35"
	28.1052.04	Ceiling mount light post 41"
	28.1052.05	Ceiling mount light post 47"
	28.1052.06	Ceiling mount light post 53"
	28.1052.07	Ceiling mount light post 59"
	28.1052.08	Ceiling mount light post 65"
13	28.0566.00	Locking tab
14	28.1092.00	Collar
15	007.002.00	Setscrew, socket cup point, 6-32 x 3/16"
16	007.005.00	Setscrew, 3/8-16 x 5/16"

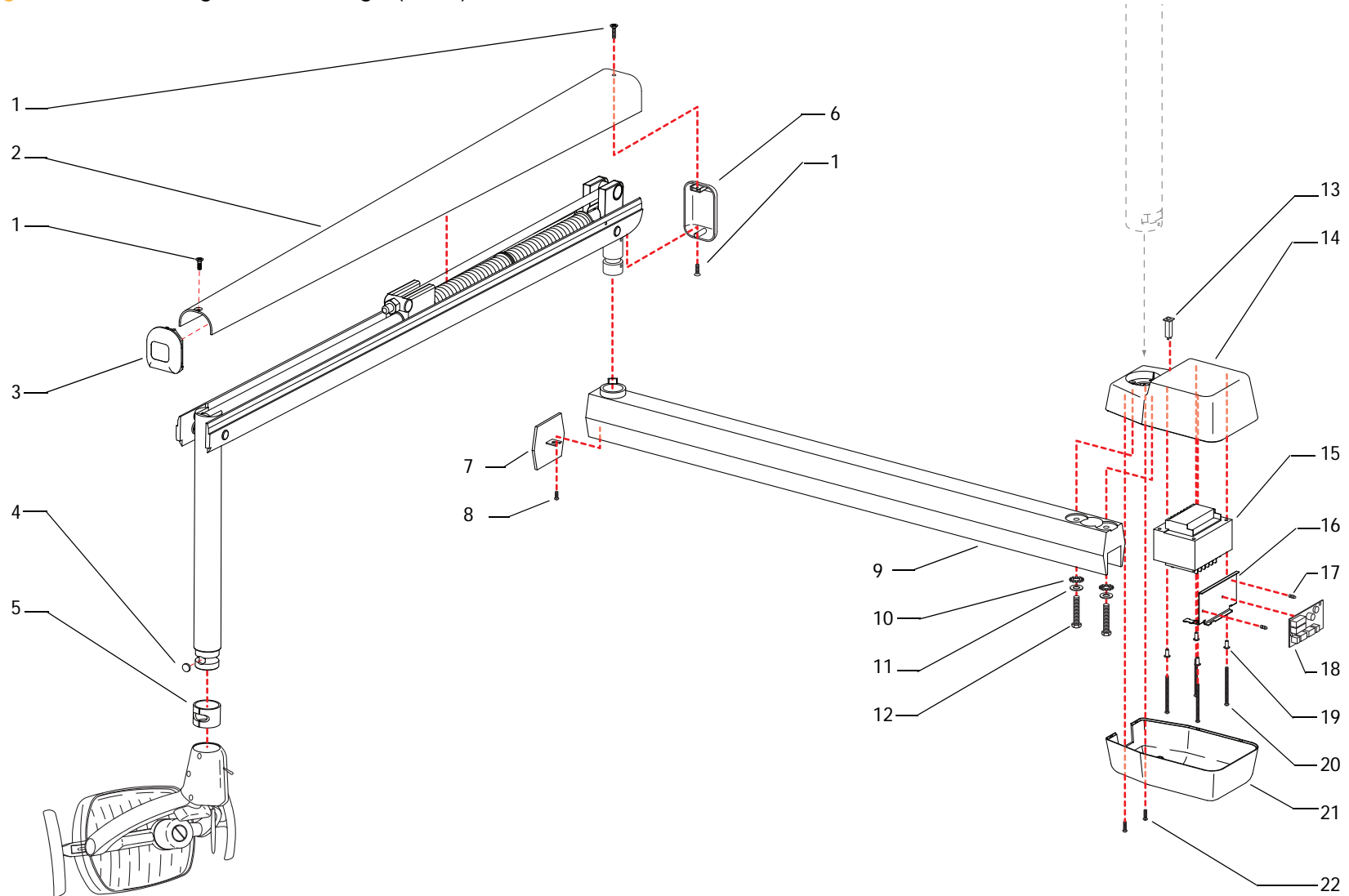
**Figure 233** 6300 Ceiling Mount Dental Light (Upper)



## 6300 Ceiling Mount Dental Light (Lower )

Item	Part Number	Description
1	003.099.00	Screw, flat head Phillips 6-19 x 1/2"
2	28.1027.00	Cover, light arm
3	75.0008.00	Cap, light arm, front
4	28.0679.01	Pivot stop, package of 5
5	28.1003.00	Bushing, swivel, light switch
6	75.0009.00	Cap, light arm, post end
7	28.1045.00	End cap fixed arm
8	001.073.00	Screw, pan head SEMs Phillips, 6-32 x 1/4"
9	28.0647.02	Rigid arm, dental light
10	004.058.00	Washer, lock, internal/external tooth, 1/4"
11	004.141.00	Washer, flat, steel, .261 ID
12	005.083.00	Screw, hex head, grade 8, 1/4-20 x 2-1/2"
13	28.0758.00	Circuit breaker, 10 Amp
14	28.1552.00 <sup>†</sup>	Housing, base, transformer, cast
15	28.1588.00	Transformer
16	43.0080.00	Bracket, circuit board lights (includes 28.1577.00)
17	041.691.00	Stand-off, circuit board, plastic, 1/4" high, .10"
18	28.1577.00	Dental light circuit board
19	004.232.00	Washer, shoulder, insulating, #8
20	005.156.00	Screw, 8-32 x 2-3/4", pan head Phillips, stainless steel
21	28.1553.00	Housing, cover, transformer, cast
22	005.106.00	Screw, 10-32 x 2-1/2" socket head

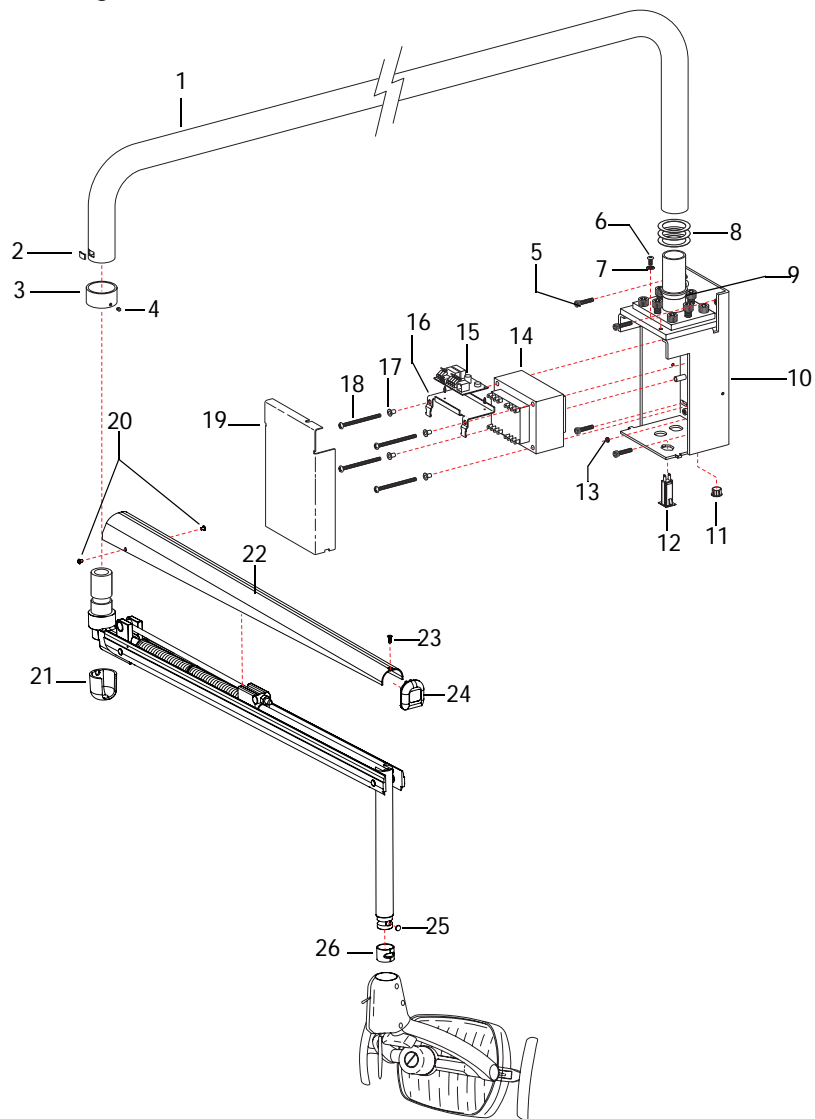
Figure 234 6300 Ceiling Mount Dental Light (Lower)



## 6300 Preference Mount Dental Light

Item	Part Number	Description
1	28.1055.00	Pivot arm, light, wall
2	28.0566.00	Locking tab
3	28.1092.00	Collar, retaining track
4	007.002.01	Setscrew, 6-32 x 3/16, package of 10
5	002.120.00	Socket head screw, 1/4 - 20 x 1"
6	005.012.03	Button head screw 10-32 x 3/8"
7	004.076.00	Washer, flat .155 ID
8	004.071.00	Washer, flat 1.50 ID
9	002.068.00	Screw, socket head 3/8 - 16 x 1"
10	28.1564.00	Mounting bracket
11	018.042.00	Bushing, snap, 5/8" Dia.
12	28.0758.00	Circuit breaker, 10 Amp
13	006.002.00	Nut, hex 10-32 x 3/8 x 1/8"
14	28.1588.00	Transformer
15	28.1577.00	Circuit board dental light relay
16	43.0080.00	Bracket, circuit board lights
17	004.232.00	Washer, shoulder
18	005.156.00	Screw, pan head 8-32 x 2-3/4"
19	28.1566.00	Transformer cover
20	002.103.00	Screw, socket head 6-32 x 3/16"
21	28.1531.00	Knuckle cover
22	28.1059.00	Flex arm cover
23	003.099.00	Screw, flat head 6-19 x 1/2"
24	75.0008.00	Cap, light arm
25	28.0679.01	Pivot Stop, package of 5
26	28.1003.00	Swivel bushing

Figure 235 6300 Preference Mount Dental Light





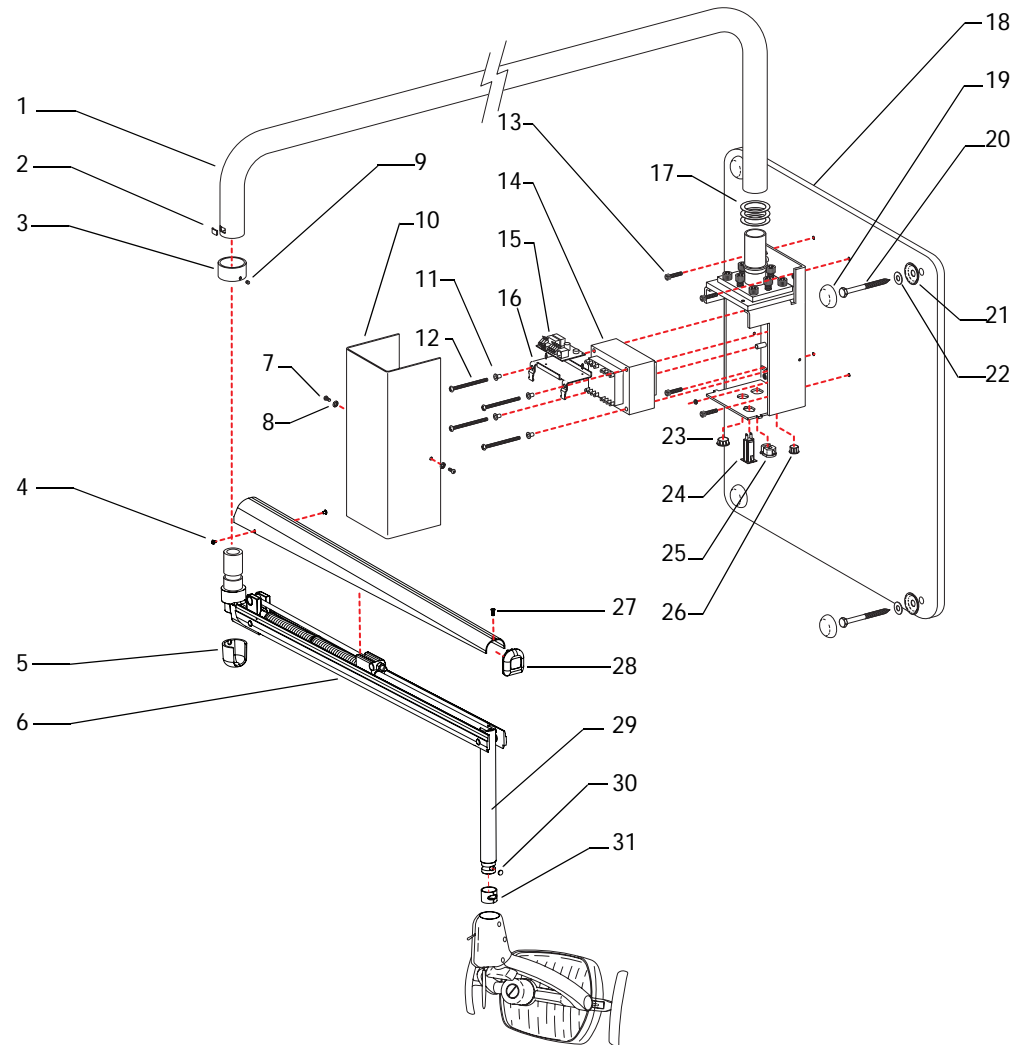


## 6300 Wall Mount Dental Light

Item	Part Number	Description
1	28.1055.00	Pivot arm, light, wall, Preference II
2	28.0566.00	Locking tab
3	28.1092.00	Collar
4	002.103.00	Screw, buttonhead socket, 6-32 x 3/16"
5	28.1531.00	Cover, knuckle
6	28.1598.00	Flexarm assembly, wall, Preference, OTC
7	39.0698.02	Screw, 10-32 x 3/8"
8	004.076.00	Lockwasher, external tooth, #10
9	007.002.00	Setscrew, socket cup point, 6-32 x 3/16"
10	28.1565.00	Cover, transformer
11	004.232.00	Washer, shoulder, insulating, #8
12	005.156.00	Screw, 8-32 x 2-3/4" pan head Phillips, stainless steel
13	005.057.00	Bolt 1/4-20 x 30mm
14	28.1588.00	Transformer, 6300 light, OTC
15	28.1577.00	Dental light circuit board
16	041.691.00	Stand-off, circuit board, plastic, 1/4" high, .10"
17	004.071.00	Washer, flat, nylatron, 1.5 ID
18	28.0877.00	Backboard, dental light, wall
19	028.022.00	Cap, bolt head
20	003.065.00	Screw, hex head, lag, 1/4" x 3" zinc
21	004.131.00	Washer, flange, lag bolt cap, .25 ID
22	004.141.00	Washer, flat, steel, .261 ID
23	018.069.00 <sup>†</sup>	Plug, hole, 7/8" diameter
24	28.0758.00	Circuit breaker, 10 Amp
25	018.047.00	Bushing, strain relief, .325 - .36" diameter, .125

Item	Part Number	Description
26	018.042.00	Bushing, snap, 5/8" diameter, black
27	003.099.00	Screw, flat head Phillips, 6-19 x 1/2"
28	75.0008.00	Cap, light arm, front
29	28.1064.00	Knuckle, 12", dental light end
30	28.0679.01	Slug, pivot stop, dental light, package of 5
31	28.1003.00	Bushing, swivel, light switch

Figure 236 Wall Mount Assembly







## CLINICAL PRODUCTS

The A-dec 500 delivery system was designed as a platform for integrating accessory devices like the electric micromotor, intraoral camera, scaler and curing light. Each accessory has a place on the delivery system structural platform and communicates with the data communication system. A-dec and the accessory manufacturers jointly engineered these products for reliability, serviceability and ease of installation.

### CLINICAL PRODUCTS CONTENTS

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- EA-50LT and EA-51LT Electric Micromotor, page 368
- A-dec Intraoral Camera, page 374
- Sopro Intraoral Camera (717 & 595), page 376
- SP Newtron Scaler, page 378
- MiniLED Curing Light, page 382

# EA-50LT AND EA-51LT ELECTRIC MICROMOTOR

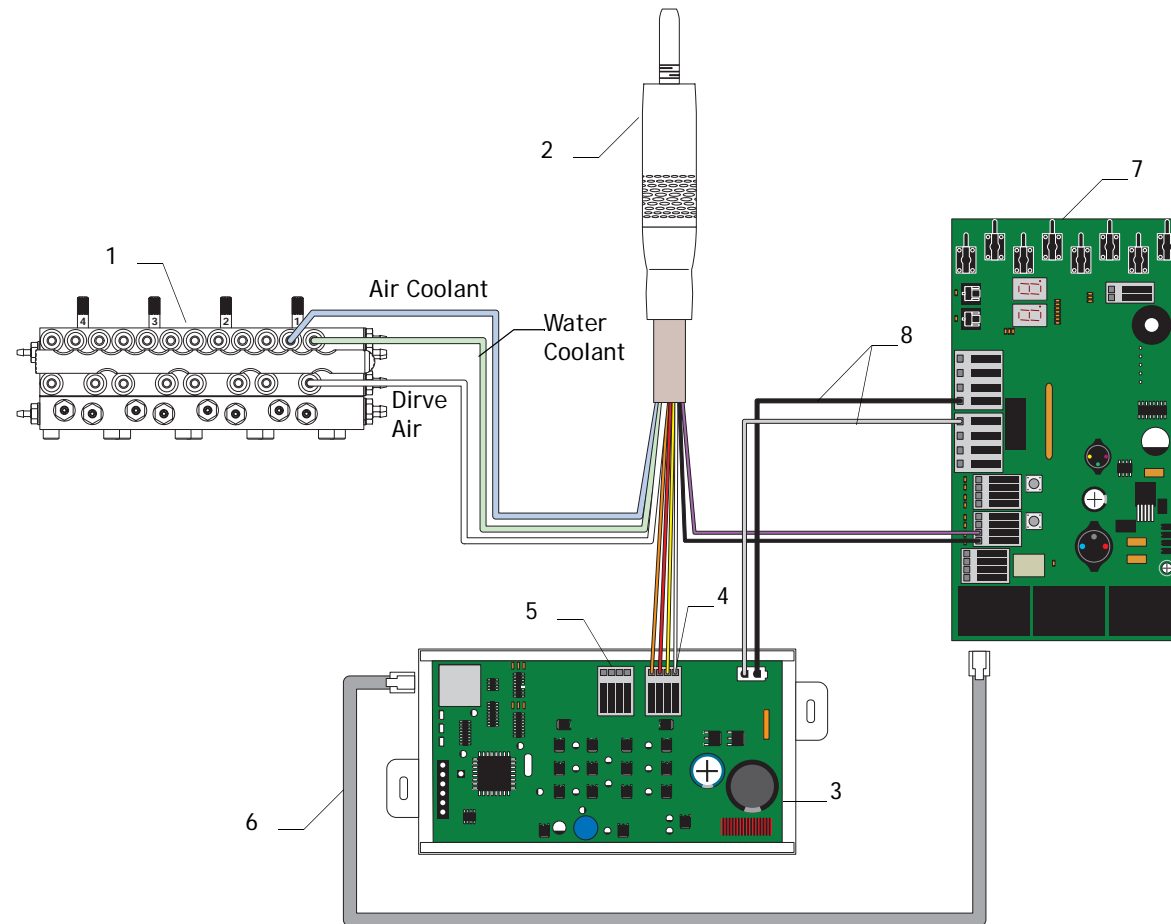
## FLOW DIAGRAM

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The electric micromotor was designed to integrate only with the A-dec 500 delivery system, equipped with a deluxe touchpad. The micromotor control module can operate two micromotors. To program the deluxe touchpad, follow the steps in the programming section. To program a micromotor, indicate if the motor is attached to terminal one or terminal two on the control module.

Item	Description
1	Control block
2	Electric micromotor
3	Micromotor control module
4	Terminal 1
5	Terminal 2
6	Data line
7	Delivery system circuit board
8	Micromotor controller power cable

**Figure 237** Electric Micromotor Plumbing and Wiring Flow Diagram





## MAINTENANCE

### EA-50LT and EA-51LT O-ring Replacement

Part No: 54.0200.00

#### Micromotor Tubing Terminal O-ring Replacement

1. Squeeze the O-ring firmly between thumb and forefinger to form a loop (see Figure 238).
2. Slide the O-ring up and off the tubing terminal.
3. Slide on the new O-ring.

#### Micromotor O-ring Replacement

1. Squeeze an O-ring firmly between thumb and forefinger to form a loop (see Figure 239).
2. Slide the O-ring up and off the micromotor.
3. Slide on a new O-ring and position it in the groove.
4. Change all O-rings at the same time.

Figure 238 Steps to Remove and Replace the O-ring on the Tubing Terminal

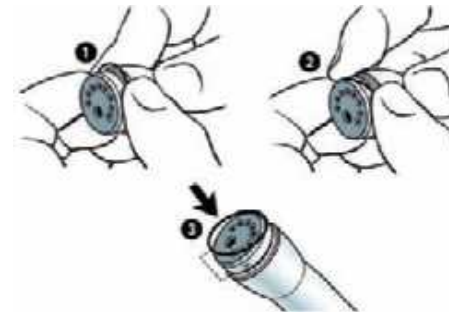
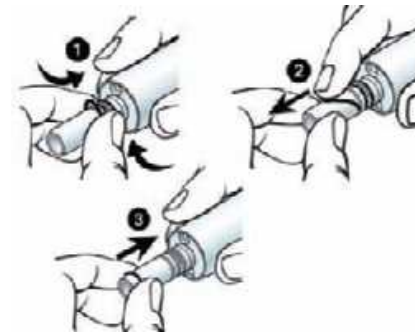


Figure 239 Steps to Replace the O-rings on the Micromotor



## EA-50LT and EA-51LT Bushing Replacement

Part No: 54.0198.00

### Micromotor Tubing Insert Bushing Replacement

1. Unscrew and remove the threaded bushing (see Figure 240).
2. Screw the new threaded bushing into the tubing terminal. Don't over tighten.

Figure 240 Steps to Remove and Replace the Bushing



## EA-50LT Bulb Replacement

### Remove Bulb



**CAUTION** Remove the micromotor from the handpiece tubing to change and dispose of the defective bulb.

1. Remove the micromotor sheath by sliding off in the direction indicated (see Figure 241).
2. Remove the locking ring.
3. Position the tweezers between the bulb and the bulb holder.
4. Slide out the bulb.

### Replace Bulb

1. Hold the new bulb firmly in the tweezers with the flat side facing the micromotor and the dot facing out (see Figure 242).
2. Insert the bulb into the bulb holder, and push into place with the tweezer's handle.
3. Replace the locking ring and micromotor sheath.

Figure 241 Steps to Remove the Bulb from the EA-50LT

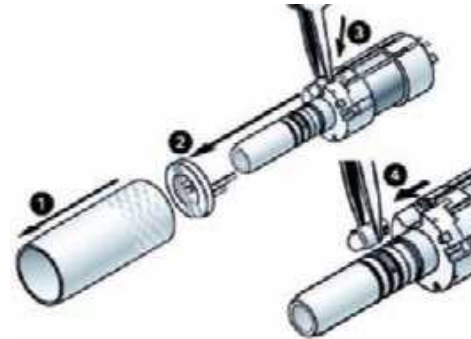
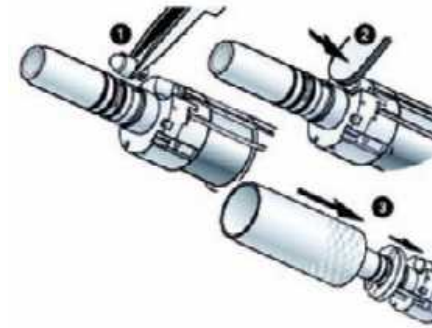


Figure 242 Steps to Replace the Bulb in the EA-50LT



## EA-51LT Bulb Replacement

### Remove Bulb



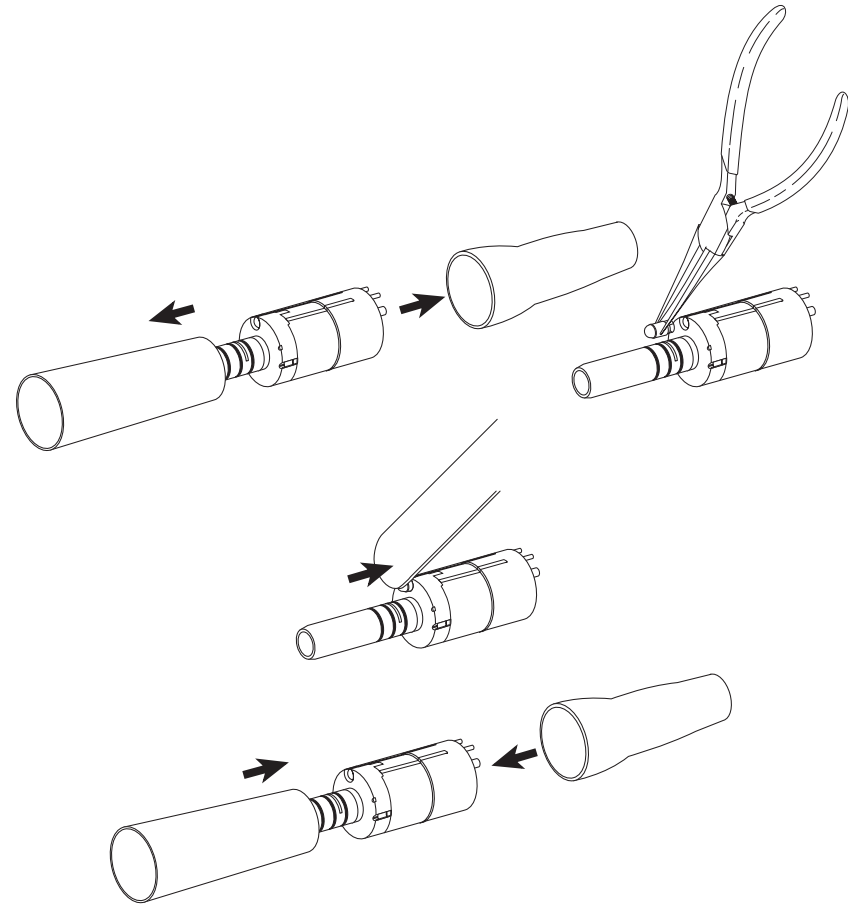
**CAUTION** Remove the motor from the handpiece tubing to change the bulb.

1. Remove the motor sheath by sliding off in the direction indicated (see Figure 243).
2. Position the pliers between the bulb and the bulb holder.
3. Slide out the bulb carefully.

### Replace Bulb

1. Hold the new bulb firmly in the pliers with the flat side facing the motor and the dot facing out.
2. Insert the bulb into the bulb holder and push into place with the pliers handle.
3. Replace the motor sheath.

Figure 243 Steps to Remove and Replace the Bulb from the EA-51LT



## A-DEC INTRAORAL CAMERA (OCTOBER 2003 - JANUARY 2007)

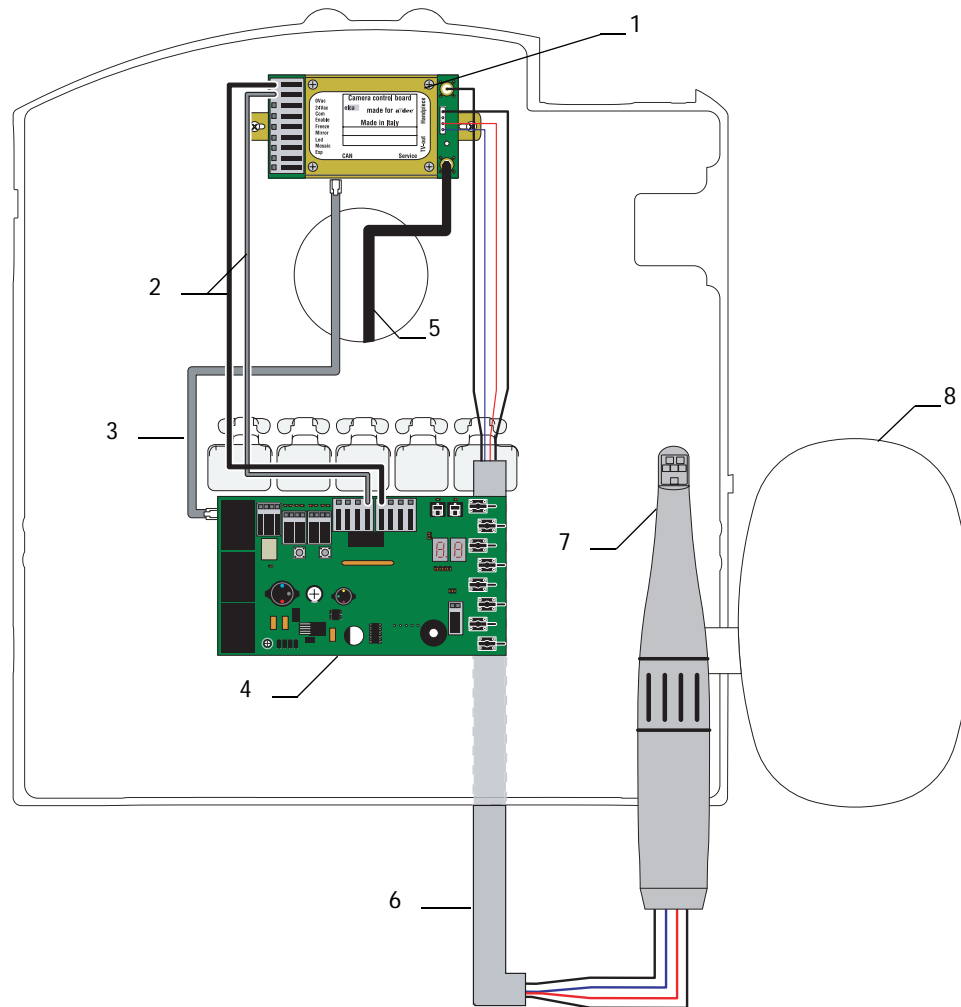
### FLOW DIAGRAM

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The A-dec intraoral camera integrates with the A-dec 500 delivery system. The camera must be located in handpiece Position 1 when used with a standard touchpad. The camera can be used in any of the handpiece positions with a deluxe touchpad. Position 5 can also be used, if an auto-electric accessory holder is installed. The camera must be located in a dry handpiece position.

Item	Description
1	Camera control module
2	Power cables
3	Data line
4	Delivery system circuit board
5	Video cable to monitor
6	Handpiece tubing
7	Camera handpiece
8	Touchpad

Figure 244 Intraoral Camera Plumbing and Wiring Flow Diagram



# SOPRO INTRAORAL CAMERA (717 & 595)

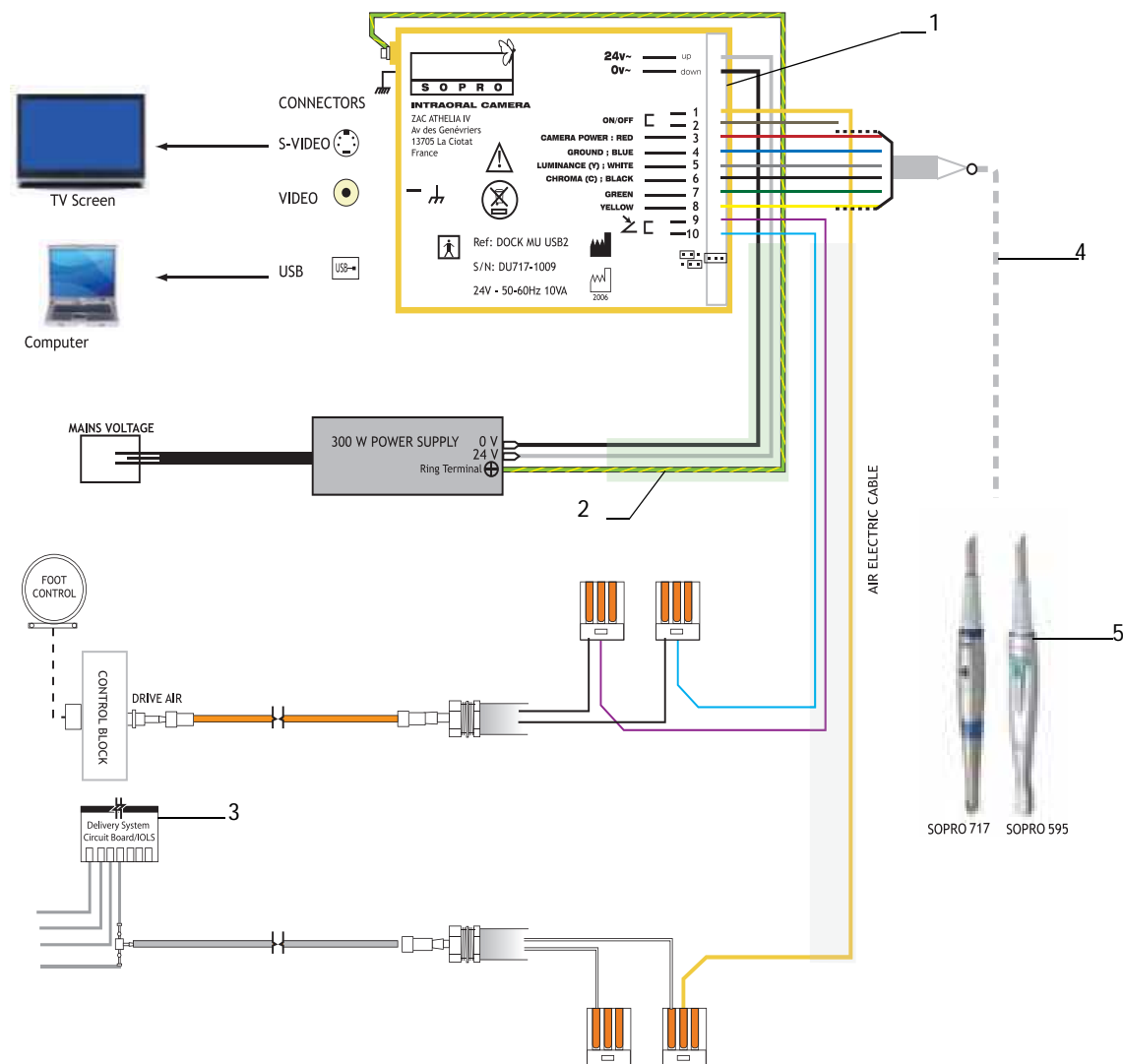
## FLOW DIAGRAM

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The Sopro intraoral camera integrates with the A-dec 500 delivery system. The camera must be located in a dry, active handpiece position. The camera can be used with a standard, deluxe or no touchpad.

Item	Description
1	Camera docking station
2	Power wires
3	Delivery system circuit board
4	Handpiece tubing
5	Camera handpiece

Figure 245 Sopro Intraoral Camera (717 & 595) Flow Diagram





# SP NEWTRON SCALER

## FLOW DIAGRAM

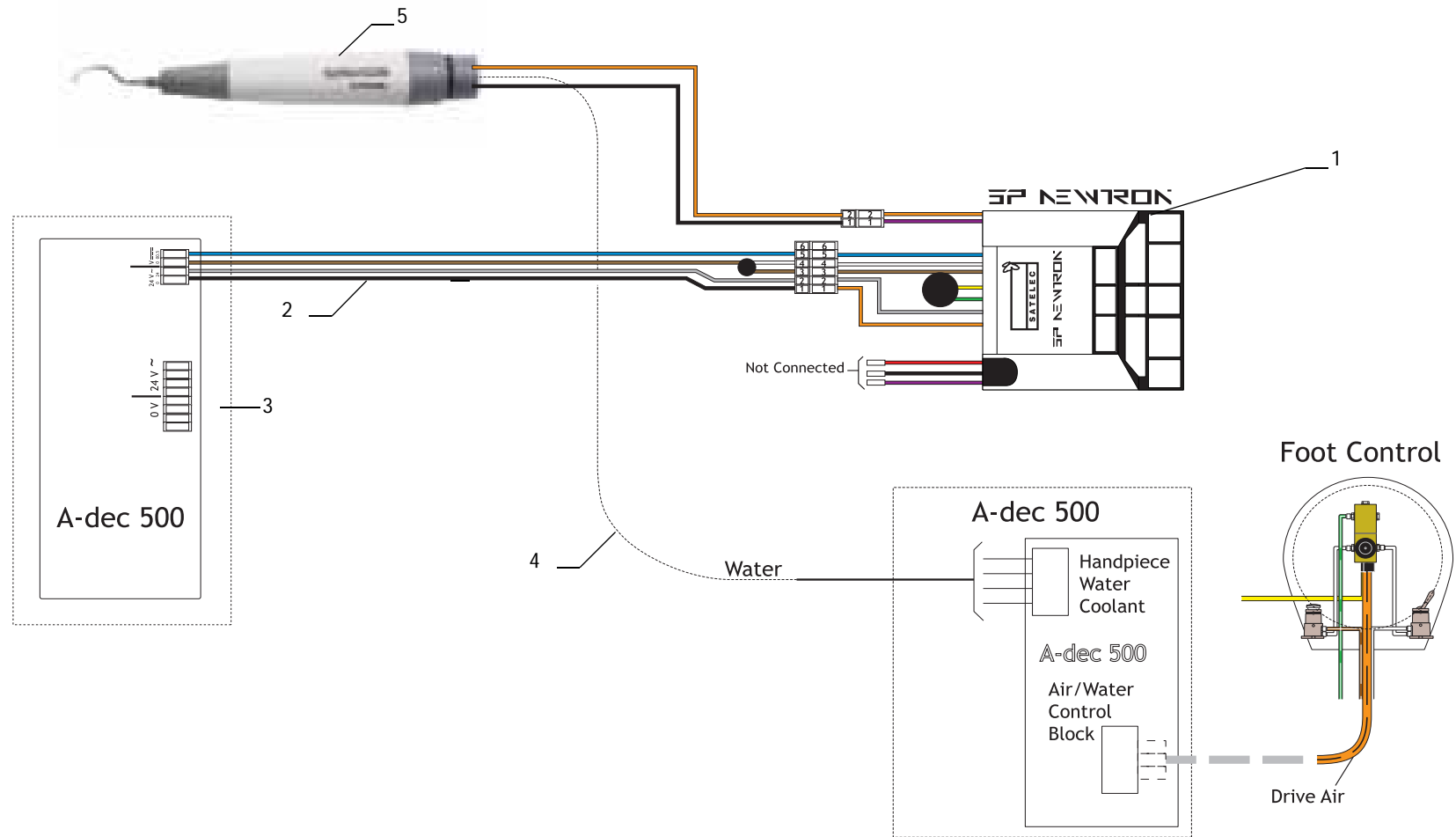
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### SP Newtron Scaler with Deluxe Touchpad

The SP Newtron scaler integrates with the A-dec 500 delivery system. The scaler must be located in a wet handpiece position.

Item	Description
1	Scaler control module
2	Power cables
3	Delivery system circuit board
4	Water tubing
5	Scaler handpiece

Figure 246 SP Newtron Scaler with Deluxe Touchpad Flow Diagram

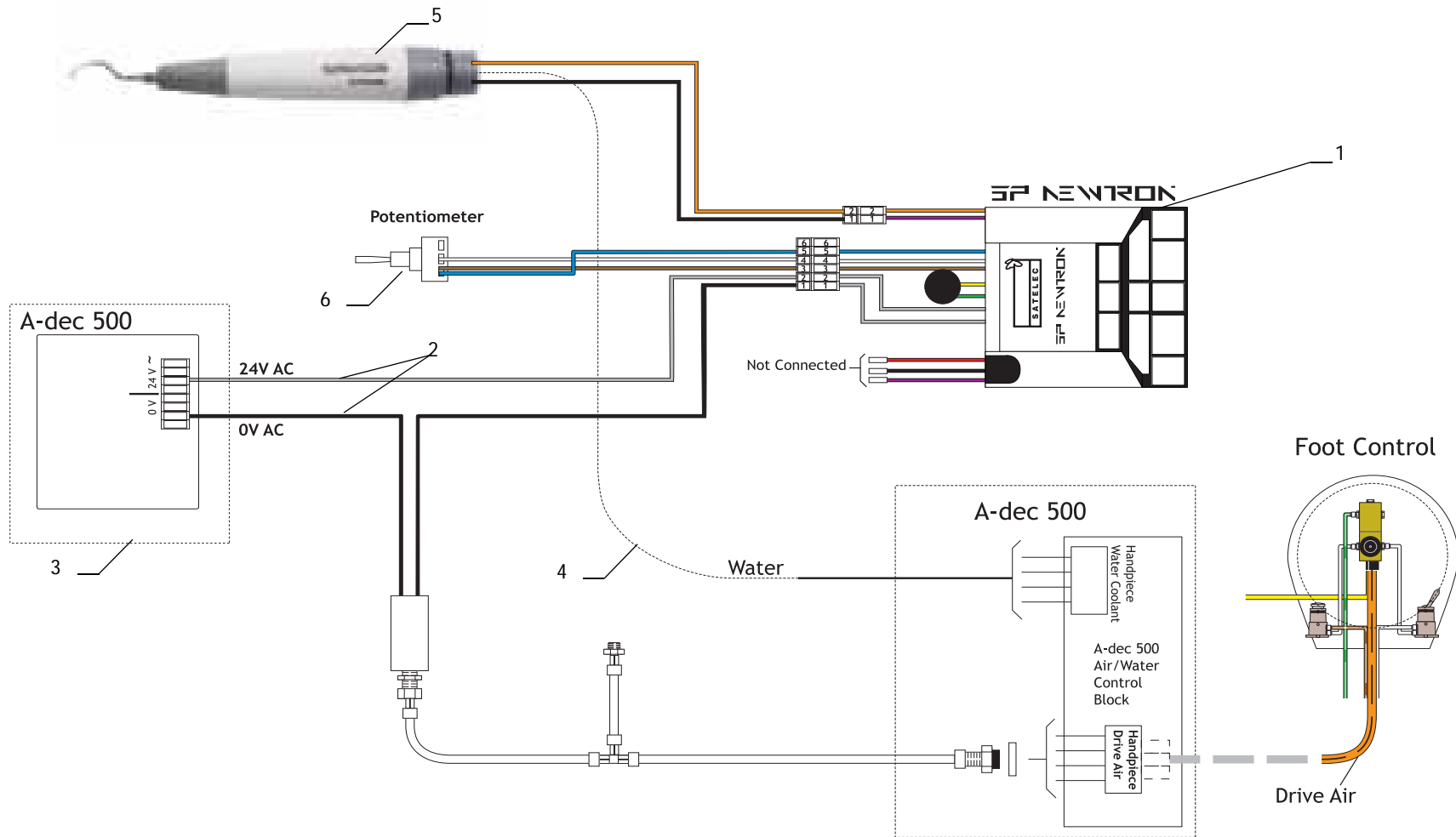


## SP Newtron Scaler with Standard or No Touchpad

The SP Newtron scaler integrates with the A-dec 500 delivery system. The scaler must be located in a wet handpiece position.

Item	Description
1	Scaler control module
2	Power cables
3	Delivery system circuit board
4	Water tubing
5	Scaler handpiece
6	Potentiometer

Figure 247 SP Newtron Scaler with Standard or No Touchpad Flow Diagram



# MINILED CURING LIGHT

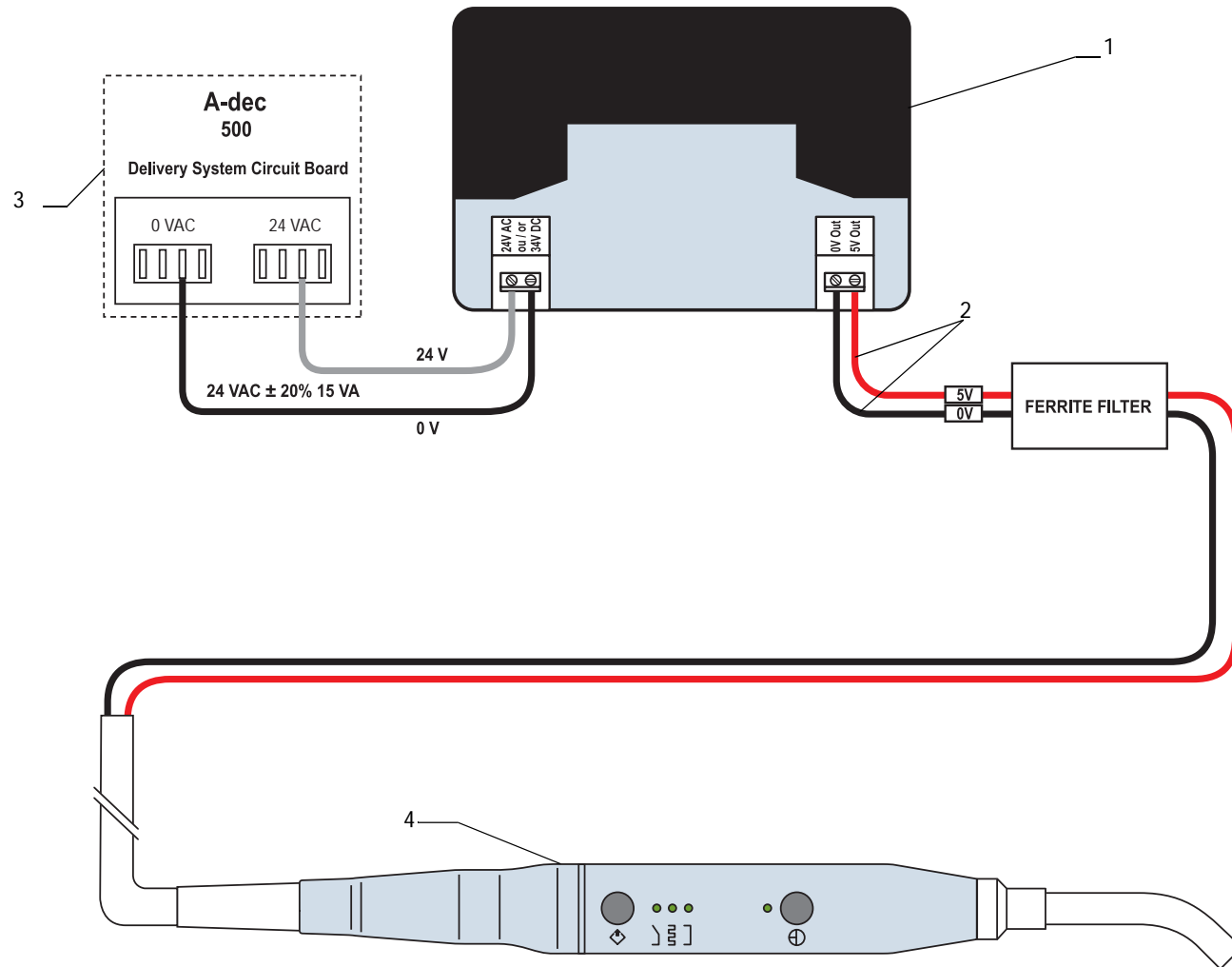
## FLOW DIAGRAM

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The MiniLED curing light integrates with the A-dec 500 delivery system.

Item	Description
1	Curing light control module
2	Power cables
3	Delivery system circuit board
4	Curing light handpiece

Figure 248 MiniLED Curing Light Flow Diagram





## ICV

This section provides information related to servicing, maintenance and adjustments. For information on service parts, see the *Genuine A-dec Service Parts Catalog* or contact A-dec customer service.

### SYSTEMS CONTENTS

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- Product Overview, page 386
- Flow Diagram, page 391
- Adjustments/Maintenance, page 394
- Illustrated Parts Breakdown, page 395





## PRODUCT OVERVIEW

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ICV helps to keep the vacuum lines clear of debris, clean and fresh smelling. ICV uses the dental office's vacuum lines. A timer in the system automatically shuts off the flow of the cleaner after one dose (a dose is predetermined from the manufacturer of the cleaner) enters the vacuum system. Bleach and water are not recommended due to the reaction of bleach on the HVE and saliva ejector valve body and o-rings. Contact the vacuum pump manufacturer for recommended cleaning solutions.

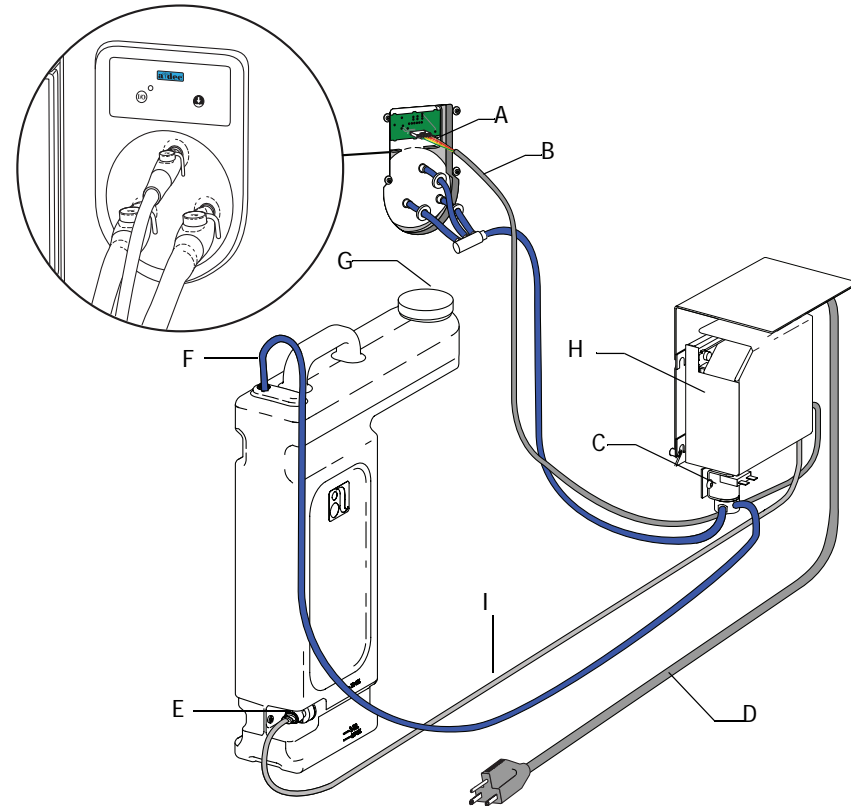
## Vacuum Requirements

- Wet Vacuum Pump 10+/- 2" of Hg at 9 SCFM  
(34 +/- 7 kpa at 255 sl/min)
- Dry/Semi-dry 4.5+/- 1" of Hg at 12 SCFM  
(16 +/- 3.5 kpa at 340 sl/min)



**NOTE** Standard cubic foot per minute (SCFM).  
Standard liter per minute (sl/min).

Figure 249 ICV Components

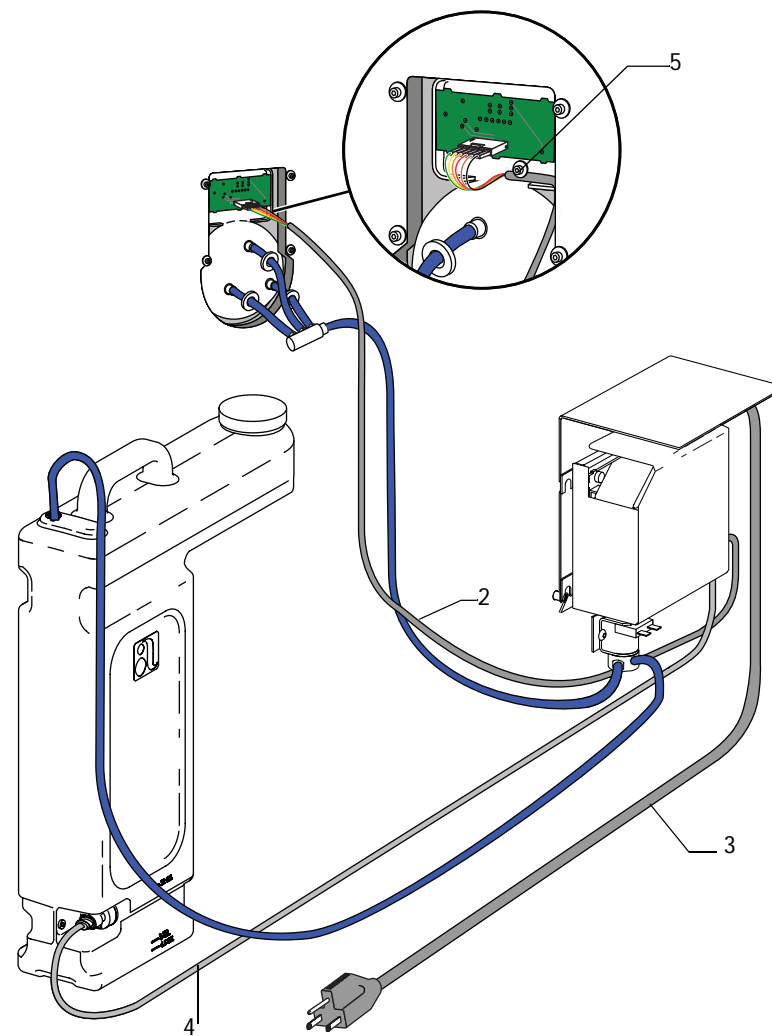


(A) Six Pin Connector; (B) Display Board Cable; (C) Solenoid; (D) Power Cord;  
(E) Tank Connector; (F) Water Tubing From Control Module;  
(G) Fill Spout/Cap; (H) Controller Valve; (I) Water Level Sensor Cable

## ICV Tubing and Cables

Item	Part Number	Description
1	036.116.00	Tubing, blue, 5/16  <b>NOTE</b> Tubing is the same throughout. Cut to length.
2	43.0111.00	Cable assembly, display circuit board 120"
3	43.0108.00	Power cord assembly, 120V
	43.0108.01	Power cord assembly, 220V
4	43.0110.00	Float switch cable assembly
5	001.209.00 and 004.012.00	Used for strain relief

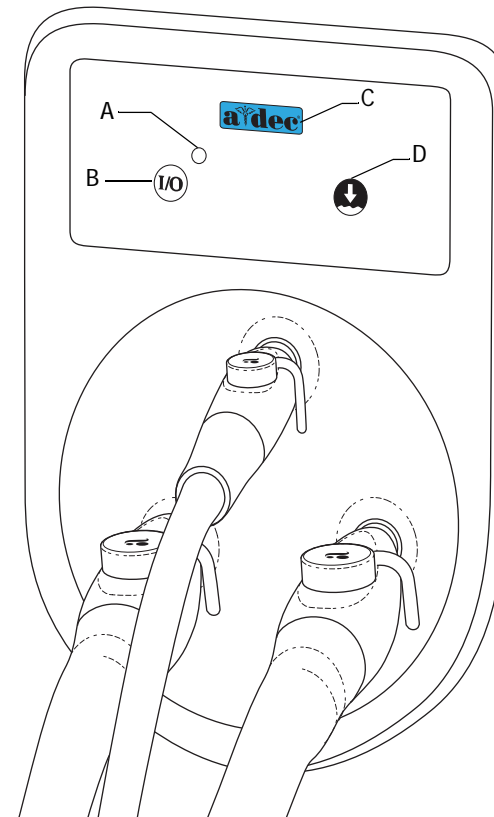
Figure 250 ICV Tubings and Cables



## ICV Display Panel

The ICV display panel shows the cycle status and fluid level at any given time. The vacuum pump must be on for ICV operation.

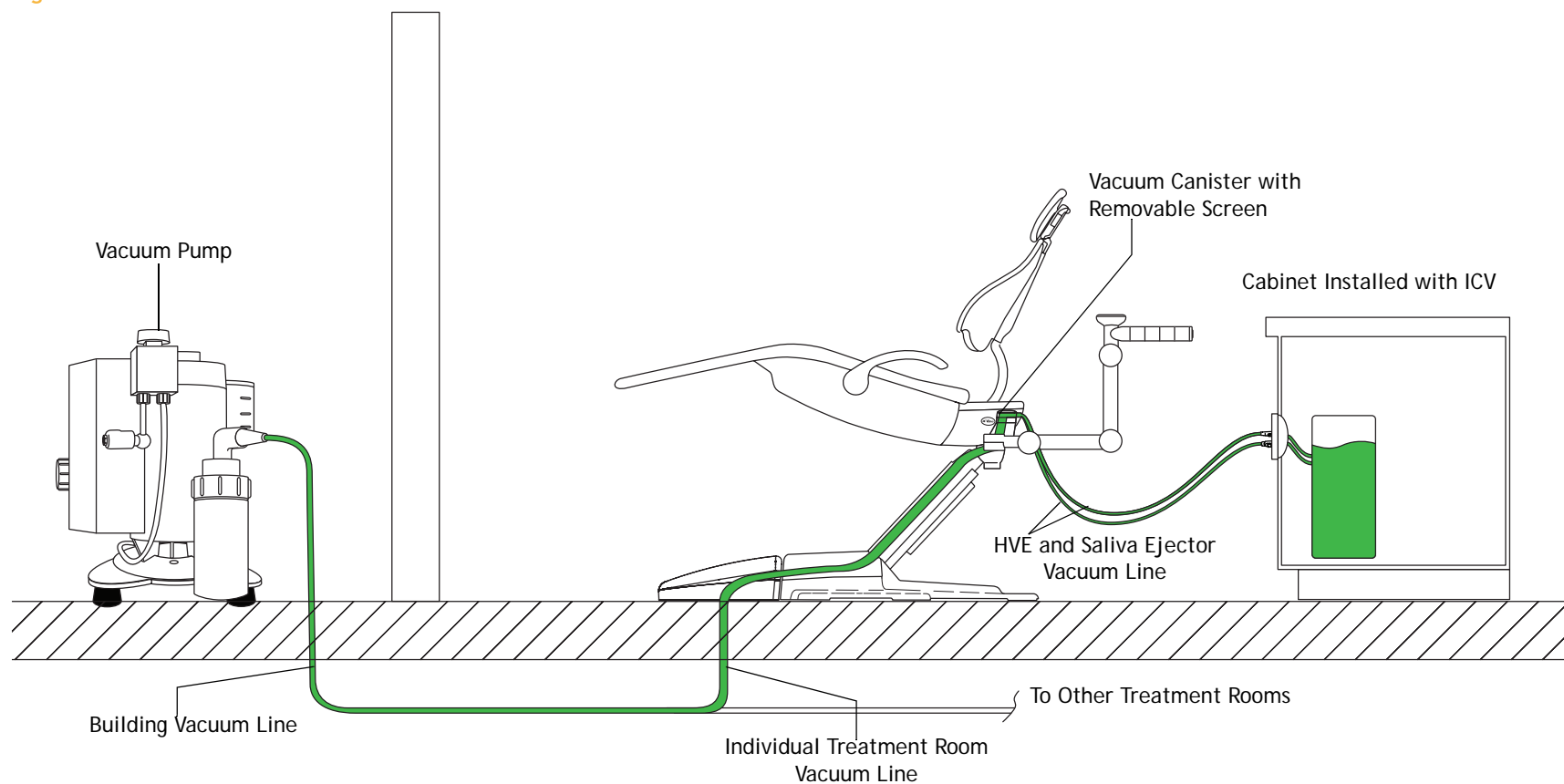
Figure 251 ICV Display Panel



(A) Cycle Indicator; (B) Start/Stop Button; (C) Power Indicator;  
(D) Low Fluid Indicator

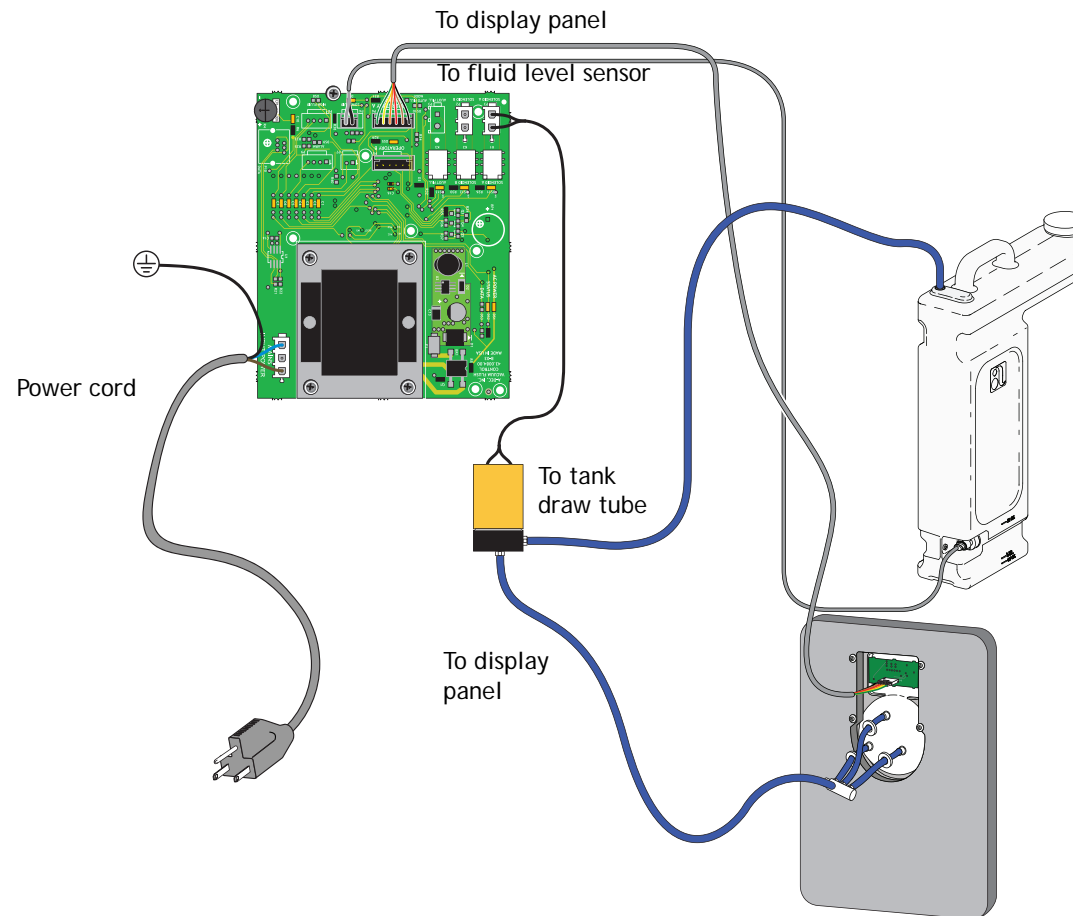
## Flow Chart

Figure 252 ICV Flow Chart



## FLOW DIAGRAM

Figure 253 Flow Diagram



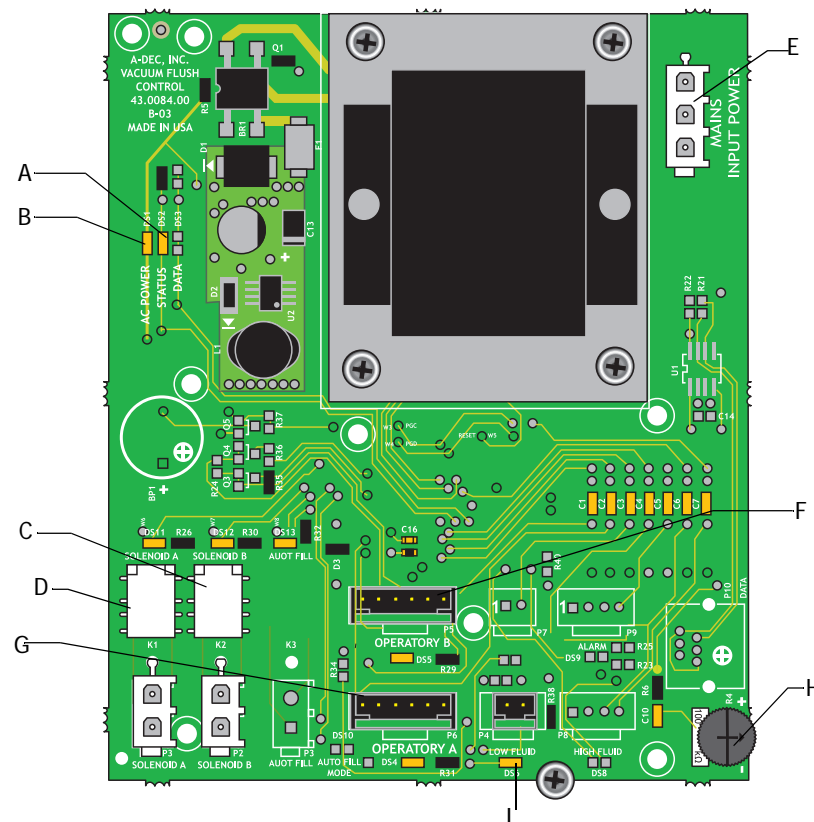
## SERVICE/USAGE INFORMATION

### ICV Control Circuit Board

**Table 14** ICV Control Circuit Board

LED	ICV Control Circuit Board
AC Power LED - DS1	Off = No mains voltage, open circuit breaker, P11 not plugged in <b>Green Steady</b> = Mains voltage present
Status LED - DS2	Off = System is not functioning, no power to circuit board, or circuit board has failed <b>Green Steady</b> = Normal condition
Operator A - DS4	Off = Operator A is not running <b>Yellow Steady</b> = Operator A is running
Operator B - DS5	Off = Operator B is not running <b>Yellow Steady</b> = Operator B is running
Low Fluid - DS6	Off = The fluid switch is closed (reservoir has sufficient fluid) <b>Red Steady</b> = The low fluid switch is unplugged or open. (reservoir low on fluid)
Solenoid A - DS11	Off = Operator A solenoid is off <b>Yellow Steady</b> = Operator A solenoid is on
Solenoid B - DS12	Off = Operator B solenoid is off <b>Yellow Steady</b> = Operator B solenoid is on

**Figure 254** ICV Control Circuit Board



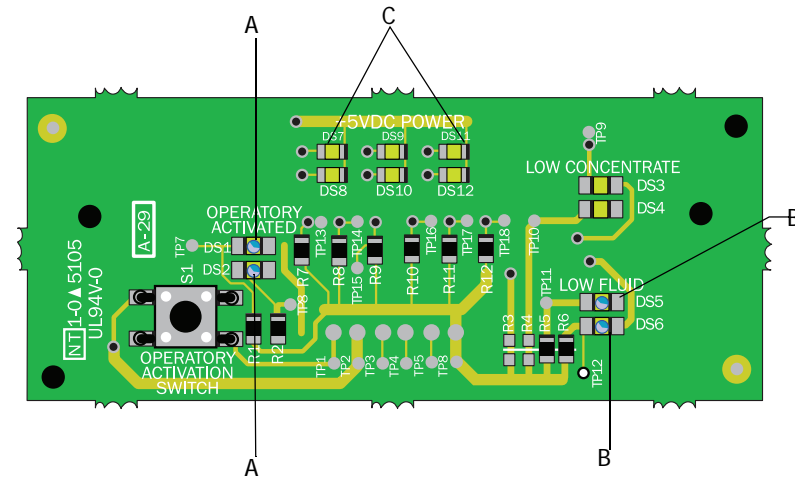
- (A) Status - DS2; (B) AC Power - DS1; (C) Solenoid B - DS12;  
 (D) Solenoid A - DS11; (E) Mains Input Power; (F) Operator B - DS5;  
 (G) Operator A - DS4; (H) Timing Wheel; (I) Low Fluid - DS6

## ICV Display Circuit Board

**Table 15** ICV Display Circuit Board

LED	ICV Display Circuit Board
Cycle - DS1 and DS2	Off = Solenoid is closed <b>Yellow Steady</b> = Solenoid is open
Low fluid - DS5 and DS6	Off = The low fluid switch is closed; reservoir has sufficient fluid <b>Red Steady</b> = The low fluid switch is unplugged or open (reservoir low on fluid)
Power - DS7 - DS12	Off = ICV control board is off, P1 disconnected from display board, respective control connector (P4 or P5) is disconnected <b>Blue Steady</b> = Power is present to display circuit board

**Figure 255** ICV Display Circuit Board



(A) Cycle - DS1 and DS2; (B) Low Fluid - DS5 and DS6; (C) Power - DS7 - DS12



## ADJUSTMENTS/MAINTENANCE

### Cycle Time Test

1. Check the front panel. The A-dec blue logo should be illuminated. The amber low fluid indicator light should be on if the tank is empty, low or disconnected.
2. Test and adjust the cycle time:
  1. Disconnect the tubing and sensor from the tank; remove the tank and fill with three liters of water (three tick marks on the tank).
  2. Reinstall the tank and plug in the tubing and sensor. The low fluid indicator light should turn off.
  3. Place one or more vacuum tubings on the ICV connectors and open the valves.



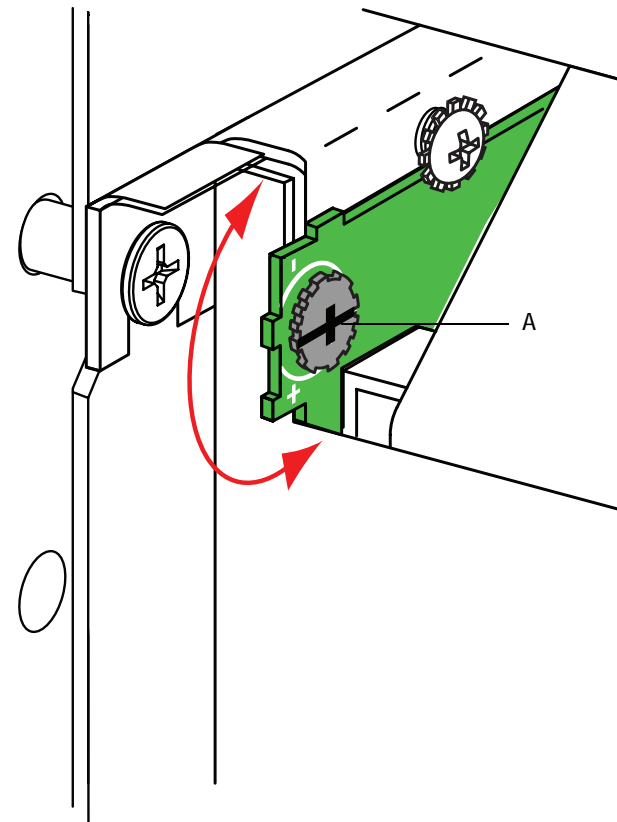
**CAUTION** Once activated, the normal operation of the ICV requires a minimum of one tubing attached with the valve open.

Press the Start/Stop button and time the length of the cycle.

### Cycle Time Adjustment

The time is adjustable from 20 to 150 seconds. Recalibrate the cycle time by adjusting the timing wheel on the control module (see Figure 256). Adjust the time so that one dose of fluid is removed from the tank per cycle. A dose is predetermined from the manufacturer of the cleaner. Retime if necessary.

Figure 256 Adjust Timing



(A) Timing Wheel

## ILLUSTRATED PARTS BREAKDOWN

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This section contains illustrated parts breakdowns specific to ICV.

### Part Identification Symbols

The conventions for the serviceable components tables are designed to identify all parts and kits, including ones that are not for sale. Symbols with reference notes are used.

Symbol	Definition
†	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)
No symbol	Part is for sale

### ICV IPB CONTENTS

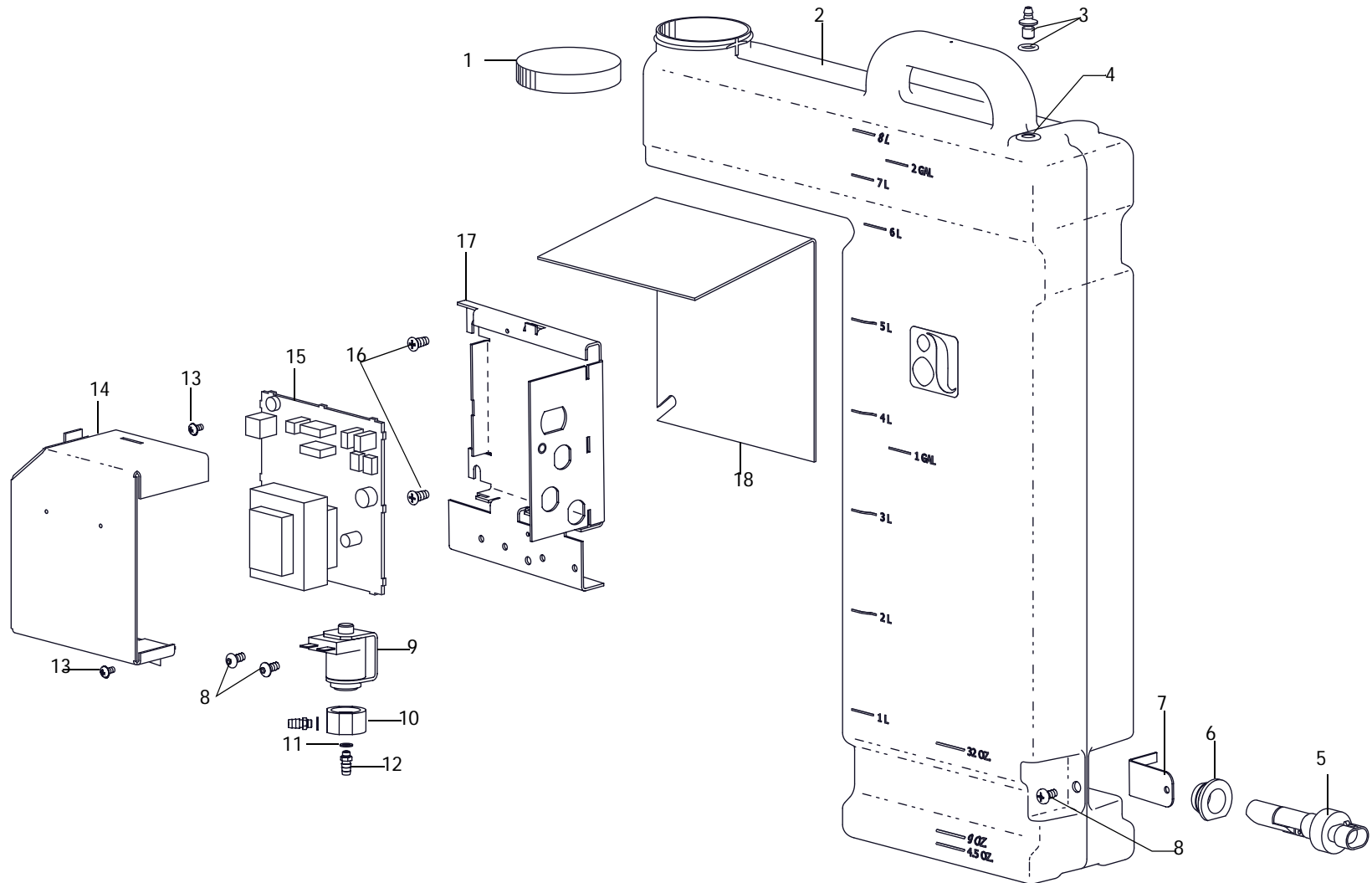
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- ICV Components, page 396
- ICV Display Panel, page 398
- ICV Dual Panel, page 400

## ICV Components

Item	Part Number	Description
1	77.0598.00	Cap
2	77.0675.00	Tank assembly
3	77.0594.00	Tank connector without o-ring
4	77.0595.00	Quick-disconnect, female
5	54.0047.00	Sensor, fluid level
6	54.0145.00	Fluid sensor seal
7	77.059700	Bracket, flush tank
8	003.072.00	Screw, 10-32 x 3/8
9	041.660.00	Solenoid with o-ring
10	77.0600.00	Control valve
11	004.005.02	Washer, flat, nylon .187 ID, package of 10
12	023.805.01	Barb, 5/16, 10-32, package of 10
13	001.073.00	Phillips 6-32 x 1/4
14	77.0604.00 <sup>†</sup>	Cover
15	90.1153.00	Control board kit, 110V
	90.1153.01	Control board kit, 220V
16	003.071.00	Screw, Phillips 5mm x 10.5mm
17	77.0605.00 <sup>†</sup>	Bracket, transformer board
18	77.0625.00	Shield
	77.0694.00	Extension kit, 10 <sup>†</sup>

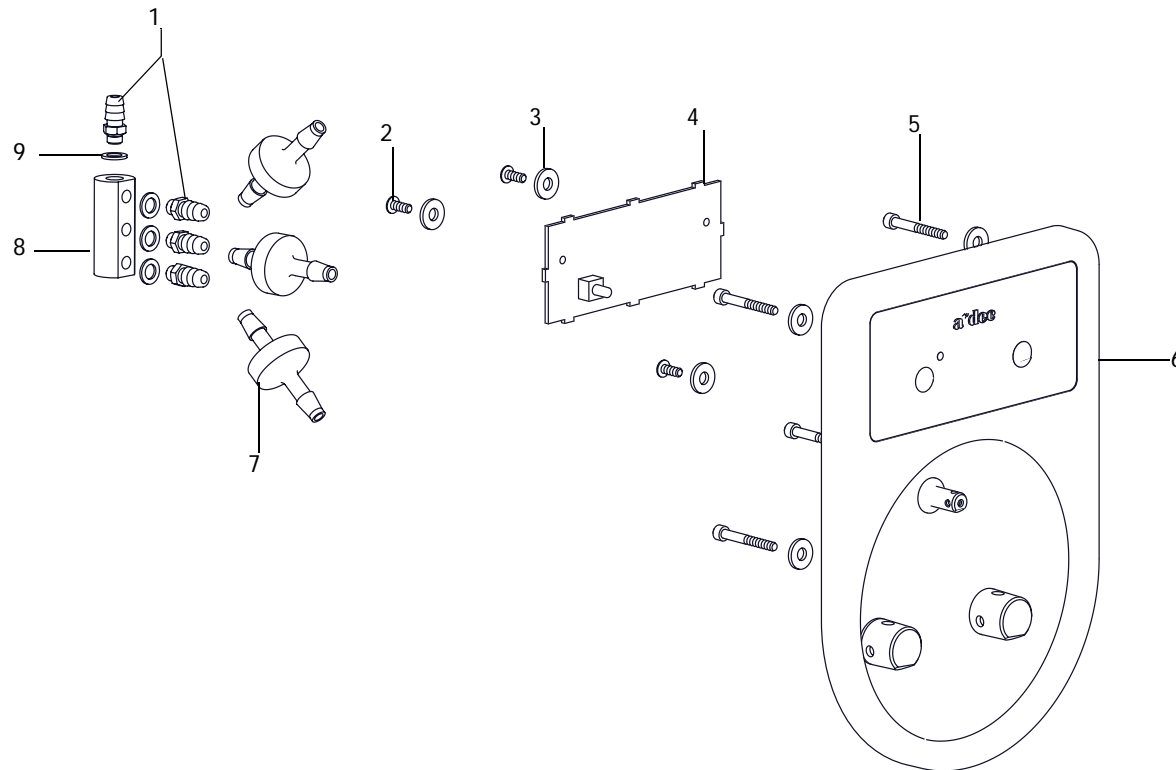
Figure 257 ICV Illustrated Parts Breakdown



## ICV Display Panel

Item	Part Number	Description
1	023.805.01	Barb, 15/16 x 10-32, package of 10
2	001.209.00	Phillips 4-40 x 3/16
3	004.012.00	Washer, flat stainless .156 ID
4	90.1155.00	Display board kit
5	002.102.00	Screw, socket head 4-40 x 7/8
6	77.0693.00	Front panel without board, 15 mm
	77.0692.00	Front panel without board, 11 mm
7	77.0602.00	Check valve, vacuum flush
8	77.0688.00	Adapter, 3 to 1, vacuum flush
9	004.005.02	Washer, flat, nylon .187 ID, package of 10

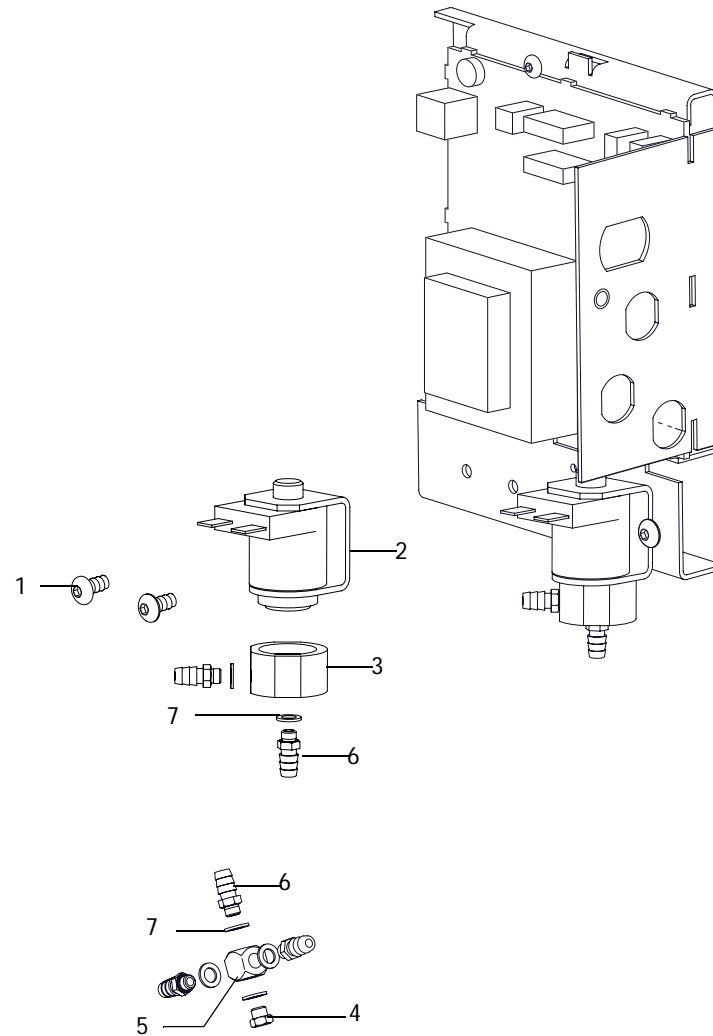
Figure 258 ICV Display Panel



## ICV Dual Panel

Item	Part Number	Description
1	003.072.00	Screw, 10-32 x 3/8
2	041.660.00	Solenoid with o-ring
3	77.0600.00	Control valve
4	021.016.04	Hex plug, 10-32, package of 10
5	021.0270.01	Female cross body, package of 5
6	023.805.01	Barb, 15/16 x 10-32, package of 10
7	004.005.02	Washer, flat, nylon .187 ID, package of 10

Figure 259 ICV Dual Panel









# TROUBLESHOOTING

## SYSTEMS CONTENTS

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- Introduction, page 404
- Dental Chair, page 405
- Delivery Systems, page 413
- Data Communication System, page 424
- Cuspidor, page 428
- Floor Box, page 435
- Dental Light, page 436
- Clinical Products, page 438
- ICV, page 448

## INTRODUCTION

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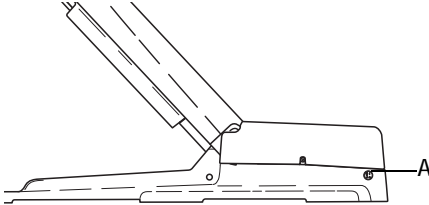
This section contains tips for troubleshooting common problems.

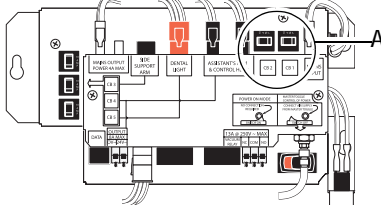
1. To effectively diagnose and repair problems: Define the problem as precisely as possible. What happens when the problem occurs. Is it a problem with the dental unit air, water or is it electrical? Is it user-related?
2. Gather information - Define the details of the problem and air, water or electrical system involved. When did the problem occur? Did anything change? Is the problem reproducible? Does it happen intermittently or all the time?
3. Try to remove variables by simplifying the issue into smaller pieces, until the piece is small enough that you can more easily find a solution. For example: disconnecting the data cables and footswitch from the chair circuit board permits you to use the circuit board test points to verify that the chair circuit board functions properly on its own.

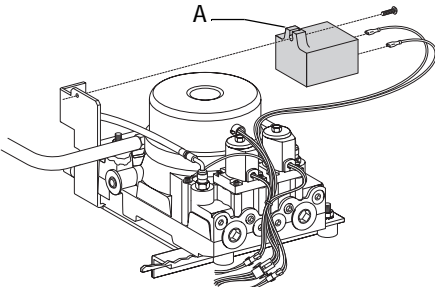
## DENTAL CHAIR

Table 16 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.

**Table 16 Chair Troubleshooting**

Problem	Possible Cause	Action
No power to chair or unit. Office still has power.	The chair is unplugged.	<ol style="list-style-type: none"> <li>1. Verify power is available at the outlet.</li> <li>2. Plug chair in to power source.</li> </ol>
	The power button is in Off position.	Press in power button (see Figure 260).
<p><b>Figure 260 Power Button</b></p>  <p>(A) Power Button</p>		
No pilot air to power supply.		<ol style="list-style-type: none"> <li>1. Check air regulator pressure gauge for 80 psi.</li> <li>2. Verify master On/Off toggle is in the On position.</li> <li>3. Verify pilot air is connected to the power supply and air manual shutoff valve is fully open.</li> </ol>

Problem	Possible Cause	Action
No power to chair or unit. Office still has power.	Power supply circuit breaker CB1 or CB2 has tripped or (see Figure 261).	<ol style="list-style-type: none"> <li>1. Check circuit breaker and reset.</li> <li>2. If the circuit breaker trips again,</li> <li>3. disconnect all power cables, including the chair circuit breaker connector P4, from the power supply.</li> <li>4. Reset the circuit breaker.</li> <li>5. Reconnect the power cables one at a time observing which one causes the circuit breaker to trip.</li> <li>6. Identify the wiring problem circuit, and repair or replace as needed.</li> </ol>
		<p><b>Figure 261 Power Supply</b></p>  <p>(A) CB1 and CB2</p>
	Power supply has failed	If circuit breaker trips with all output cables disconnected, replace the power supply.

Problem	Possible Cause	Action
No base and back up function. The motor relay clicks. Base and back up LEDs (DS9 or DS11) turn on. The chair base and back down functions work.	Disconnected capacitor.	<ol style="list-style-type: none"> <li>1. Verify the base up or back up relay clicks and the LED (DS9 or DS11) on the chair circuit board is illuminated.</li> <li>2. Check capacitor connections (see Figure 262).</li> <li>3. Turn power off if disconnected.</li> <li>4. Reconnect cables.</li> </ol> <p><b>WARNING</b> Discharge the capacitor with an insulated screwdriver across the connectors before disconnecting or connecting the cables.</p> <p><b>Figure 262 Capacitor</b></p>  <p>(A) Capacitor</p>
	Failed capacitor.	Replace the capacitor with one of correct voltage.
No base or back down. Relay clicks and DS12 LED illuminates.	Failed base down solenoid coil.	<ol style="list-style-type: none"> <li>1. Check for magnetic pull while operating base or back down function.</li> <li>2. Check for correct resistance value at solenoid connector: <ul style="list-style-type: none"> <li>100 - 120 VAC, 177 Ohms <math>\pm</math> 18 Ohms</li> <li>220 - 240 VAC, 845 Ohms <math>\pm</math> 85 Ohms</li> </ul> </li> <li>3. Replace solenoid.</li> </ol> <p><b>WARNING</b> Depressurize system before replacing the failed solenoid. To operate chair to full Base Down and Back Down, switch the good solenoid coil for the failed one and operate the function until full down position is reached.</p>
Back down is pressed, base moves or base down is pressed, back moves.	The base and back solenoid connectors are switched.	Connect the solenoids correctly.




Problem	Possible Cause	Action
Base or back moves up for only one second, no automatic buttons work (limp-along feature). DS5 - (back) not illuminated DS6 - (base) not illuminated	The potentiometer for that movement is disconnected.	<ol style="list-style-type: none"> <li>1. Check potentiometer connections to the chair circuit board.</li> <li>2. Reconnect if disconnected.</li> </ol>
	Failed potentiometer.	<ol style="list-style-type: none"> <li>1. Check for resistance. The resistance should be 10K ohms +/- 1500 ohms.</li> <li>2. Replace the potentiometer as a complete assembly.</li> </ol>
Base Down and programmed positions do not work, but the chair back functions. A-dec status icon is flashing. DS4 red LED on the chair circuit board is illuminated.	Limit switch for chair is activated.	Check for obstruction under chair and remove.
	Limit switch for chair has failed.	Disconnect the chair limit switch connector at the chair circuit board and insert a jumper. <ul style="list-style-type: none"> <li>• If the red LED (DS4) goes out and the chair base down and program positions work, replace limit switch assembly.</li> <li>• If the red LED (DS4) stays lit, replace the chair circuit board.</li> </ul>
	Support side arm limit switch is activated.	Check for obstruction under support side arm and remove.
	Support side arm limit switch has failed.	Disconnect the support side limit switch wiring from the chair limit switch connector and insert a jumper. <ul style="list-style-type: none"> <li>• If the red LED (DS4) goes out and the chair works, replace the side support limit switch.</li> <li>• If the red LED (DS4) stays lit, then replace the chair limit switch assembly.</li> </ul>

Problem	Possible Cause	Action
No chair movement from a touchpad. The touchpad status A-dec logo icon and chair circuit board status LED (DS2) are illuminated.	Touchpad DCS is interrupted.	<ol style="list-style-type: none"> <li>1. Verify the chair operates with the footswitch. If a footswitch is not installed, use the chair circuit board test points.</li> <li>2. Disconnect all data lines from the chair circuit board except the delivery circuit board data line. Check the chair circuit board data LED (DS3). <ul style="list-style-type: none"> <li>• If the data LED is off, temporally connect a known good data line between the touchpad and the chair circuit board.</li> <li>• If the chair circuit board data LED comes on and the chair operates normally, remove and replace the data line in the unit.</li> <li>• If the chair circuit board data LED stays off, remove and replace the touchpad.</li> </ul> </li> </ol> <p><b>NOTE</b> The data and power to the control head mounted touchpad are routed via the control head circuit board. Power is supplied using black/gray wires.</p>
No chair movement from the touchpad, status icon is not illuminated.	Faulty touchpad.	Verify AC power to chair and that chair can be operated from the footswitch or other touchpad. Verify 24 VAC to touchpad circuit board. If 24 VACs present, replace the touchpad.
	Faulty touchpad power cable.	Verify the AC power LED (DS1) is illuminated on the delivery system circuit board or chair circuit board. Verify the touchpad functions normally by using an external touchpad power cable. Replace the touchpad power cable, if needed.
Base or back does not move to full up position. The position sensor LED for that function on the chair circuit board is flashing.	Position sensor connection (P1 and P2) on the chair circuit board are switched.	Connect potentiometers to correct chair circuit board locations: P1 — Back potentiometer P2 — Base potentiometer
Base or back does not move to full up position. The position sensor LED for that function on the chair circuit board is flashing.	The chair soft stops are not established.	<ol style="list-style-type: none"> <li>1. Place the jumper in the factory default position in the P3 test header. The chair automatically establishes the soft stops for the chair base and back. When factory default completes, the chair beeps three times to indicate success.</li> <li>2. Place the jumper back in the spare position on the test header and verify the chair operates normally.</li> <li>3. Program the chair presets.</li> </ol>



Problem	Possible Cause	Action
Unable to change chair programmed positions.	Position sensor connections (P1 and P2) on the chair circuit board are switched.	Connect potentiometers to correct board locations: P1 — Back potentiometer P2 — Base potentiometer
	The potentiometer for that movement is disconnected.	<ol style="list-style-type: none"> <li>1. Check potentiometer connections to the chair circuit board.</li> <li>2. Reconnect if disconnected.</li> </ol>
	Failed potentiometer.	<ol style="list-style-type: none"> <li>1. Check for resistance. The resistance should be 10K ohms +/- 1500 ohms.</li> <li>2. Replace the potentiometer as a complete assembly.</li> </ol>
The three-tap feature used at installation no longer works.	The three tap feature is disabled.	<p>The three tap feature is disabled when a powered touchpad has been connected to the DCS, a footswitch is installed or the test points have been used to move the chair.</p> <p>To re-enable the three tap feature:</p> <ol style="list-style-type: none"> <li>1. Disconnect the DCS touchpad connections</li> <li>2. Disconnect the footswitch</li> <li>3. Cycle power to the chair</li> </ol>
No or limited chair functions from footswitch.	Footswitch connector/wiring is damaged.	Verify chair operates from a touchpad or the test points (P3). Replace the footswitch connector and/or wiring assembly.
	Footswitch membrane is damaged.	Check footswitch connectors and membrane, replace as necessary.

Problem	Possible Cause	Action
The chair makes a growling noise when Base Up or Back Up is pressed.	Chair is low on hydraulic fluid.	<ol style="list-style-type: none"> <li>1. Remove motor pump, lift arm and stop plate covers.</li> <li>2. Check fluid level with chair base and back up by viewing the reservoir from the back of the chair.</li> <li>3. Add fluid to maximum level.</li> </ol> <p><b>CAUTION</b> Use only A-dec hydraulic fluid, P/N 61.0197.00.</p>
	Hydraulic hose from reservoir to pump is pinched.	<ol style="list-style-type: none"> <li>1. Inspect all hydraulic hoses, ensure they are not being pinched in any position.</li> <li>2. If the supply tube between the pump and the reservoir is kinked, order and install kit P/N 90.1100.00.</li> </ol>
	Motor pump has an obstruction or is damaged.	If chair continues to growl, lower base and add up to 4 oz (.12 l) more fluid. If noise continues, replace motor assembly.
A button on a touchpad does not work. Function works from other location(s).	Faulty touchpad.	<ol style="list-style-type: none"> <li>1. Verify the touchpad circuit board is snapped into the plastic cover.</li> <li>2. Verify the function does work from other locations (footswitch, chair test points, light switches, cuspidor buttons).</li> <li>3. If the function still does not work, replace the touchpad.</li> </ol>
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 test points (P3).	Move the jumper from the factory default position to the "spare" position on the test points.
The chair will not move up from the full base down with the foot control under the stop plate.	The automatic chair lockout feature has been activated by air coolant from the foot control.	<ol style="list-style-type: none"> <li>1. Raise the control head cover and disconnect the delivery system data line.</li> <li>2. Use the assistant's touchpad or footswitch to raise the chair.</li> <li>3. Remove the foot control from under the chair lift arm.</li> </ol> <p><b>NOTE</b> Revision D and later chair circuit boards will bump up if the foot control and chair limit switch is activated at the same time.</p>
The chair glide bar slides down or is difficult to lift up.	The glide needs adjusting or the wear pads need replacing.	Adjust or replace the glide bar components as necessary.
Headrest does not lock or is difficult to unlock.	The headrest needs adjustment or needs replacing.	If the operating lever is too tight, adjust for slight play in movement. If the headrest still does not work correctly, replace it as an assembly. No field service to locking components.

Problem	Possible Cause	Action
Armrest(s) do not lock in up position or are difficult to operate.	Armrest is damaged.	Replace armrest assembly.
Circuit breaker 1 or 2 opens.	Electrical short in a module.	<ol style="list-style-type: none"> <li>1. Disconnect all modules from the power supply.</li> <li>2. Reset the circuit breaker.</li> <li>3. Reconnect modules one at a time until circuit breaker trips. Refer to troubleshooting for that module.</li> </ol>
Circuit breaker does not reset.	Faulty circuit breaker.	Replace the power supply.
Chair brake does not hold.	Brake needs adjusting or the pad needs replacing.	Adjust or replace brake components as necessary.
 <b>ELECTRICAL WARNING</b> The solenoid coils are powered by line voltage (100, 100 - 120, or 220 - 240 VAC). Failure to unplug the chair may result in serious injury from electrical shock.		
 <b>WARNING</b> 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.		
 <b>NOTE</b> When replacing a solenoid, wipe up any oil, and replace existing O-rings on the solenoid base.		

## DELIVERY SYSTEMS

Table 17 contains tips and troubleshooting information to assist you in diagnosing the most common delivery system problems that you may encounter.

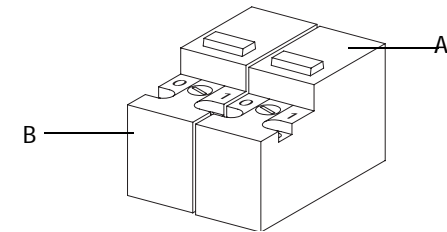
**Table 17 Delivery System Troubleshooting**

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: <ol style="list-style-type: none"> <li>1. Remove the restrictor setscrew from the water bottle receptacle and install a 1/8" barb and washer.</li> <li>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.</li> </ol>

Problem	Possible Cause	Action
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.	<p>Standard or no touchpad:</p> <ol style="list-style-type: none"> <li>1. Pick up a wet handpiece.</li> <li>2. Move the wet/dry toggle to the wet (blue dot) position.</li> </ol> <p>Deluxe touchpad:</p> <ol style="list-style-type: none"> <li>1. Pick up a wet handpiece.</li> <li>2. Verify that the water coolant icon appears on the touchpad screen.</li> <li>3. If not, flip the wet/dry toggle on the foot control or press the water coolant button on the touchpad.</li> </ol>
	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.
	No water coolant air signal from the foot control wet/dry toggle (standard or no touchpad).	<p>Check the clear tubing from the foot control for kinks or obstructions:</p> <ol style="list-style-type: none"> <li>1. Disconnect the clear tubing from the in-line barb in the chair lift arm.</li> <li>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.</li> <li>3. If no air is present, check: <ul style="list-style-type: none"> <li>• Wet/dry toggle</li> <li>• Plugged barbs</li> <li>• Adequate air supply</li> </ul> </li> </ol>
	Water coolant flow controls require adjustment.	See Adjust Water Flow Coolant in Delivery System section.

Problem	Possible Cause	Action
No water coolant to all the handpieces.	Water coolant solenoid does not activate. LED (DS5) is not on (deluxe touchpad).	<p>Verify the water solenoid (DS5) on the control head circuit board is on (deluxe touchpad)</p> <p>Deluxe touchpad:</p> <ol style="list-style-type: none"> <li>1. Activate handpiece.</li> <li>2. Flip the foot control wet/dry toggle or press the water coolant button.</li> <li>3. Verify the water coolant icon displays on the touchpad and there is water coolant to the handpiece.</li> <li>4. If no coolant, verify LED (DS5) is lit. <ul style="list-style-type: none"> <li>• If not lit, replace the control head circuit board.</li> <li>• If lit, use a small flat tipped screwdriver to manually override (open) the water solenoid.</li> </ul> </li> </ol>

Figure 263 Solenoid



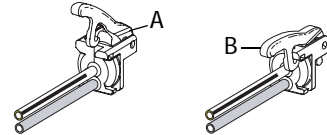
(A) Water Solenoid; (B) Air Solenoid

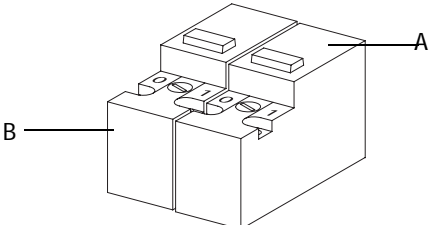
Problem	Possible Cause	Action
No water coolant to one handpiece.	Water coolant adjustment stem closed or requires adjustment.	See Handpiece Control Adjustments in Delivery System section.
	Water coolant not activated.	Standard or no touchpad: 1. Activate handpiece. 2. Flip the foot control wet/dry toggle toward the blue dot. 3. Verify the handpiece has water coolant. Deluxe touchpad: 1. Activate handpiece. 2. Flip the foot control wet/dry toggle or press the water coolant button. 3. Verify the water coolant icon displays on the touchpad and there is water coolant to the handpiece. 4. If no coolant, verify LED (DS5) is lit. 5. If not, replace the control head circuit board.
	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.
Sputtering water from syringe and handpieces.	Dry cartridge is in the handpiece water cartridge position of the control block.	Replace the dry cartridge with a water cartridge.
	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.
	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.

Problem	Possible Cause	Action
Intermittent water coolant to handpieces.	Water coolant pressure too low, or air coolant pressure too high.	Adjust water and air coolant as required. See Handpiece Control Adjustments in Delivery System section.
	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.	<ol style="list-style-type: none"> <li>1. Replace water coolant cartridge with known good cartridge.</li> <li>2. If water continues to leak from vent hole, inspect the control block for debris or scratches.</li> <li>3. Replace if necessary.</li> </ol>
A wet handpiece drips water while in its holder.	Faulty water coolant cartridge.	<ol style="list-style-type: none"> <li>1. Replace water coolant cartridge with known good cartridge.</li> <li>2. If water continues to leak from handpiece, inspect the control block for debris or scratches.</li> <li>3. Replace if necessary.</li> </ol>
	Faulty handpiece or coupler.	<ol style="list-style-type: none"> <li>1. Remove handpiece and coupler.</li> <li>2. Reset water coolant flow.</li> </ol>
	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.	<ol style="list-style-type: none"> <li>1. Remove handpiece and coupler.</li> <li>2. Retest water coolant flow.</li> </ol>
	Pinched tubing in the foot control.	Check that the green tube with the long dash is not pinched between the foot control and the control head.
	Water coolant flow set too high.	See Handpiece Control Adjustments in Delivery System section.
	The foot control relay valve sticks.	Install a foot control field service kit in the foot control.



Problem	Possible Cause	Action
Any handpiece drips when lifted from holder. Foot control is not activated.	Faulty flush toggle valve.	<ol style="list-style-type: none"> <li>1. Check for 80 psi air to flush valve.</li> <li>2. Replace O-rings on flush valve stem or replace the flush toggle valve.</li> </ol>
Water continues to flow after foot control is released only in air/water combined mode.	Faulty control block diaphragm.	Replace the control block diaphragm.
	Faulty relay stem in foot control relay.	Install a foot control field service kit in the foot control P/N 90.0593.00.
	Pinched tubing in the foot control.	Check that green long dash tubing is not kinked or pinched in the umbilical between the foot control and the control head.
	Water coolant flow set too high.	See Handpiece Control Adjustments in Delivery System section.
	The foot control relay valve sticks.	Install a foot control field service kit in the foot control.
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.	<ol style="list-style-type: none"> <li>1. Check for 80 psi air out of the flush valve to the control block.</li> <li>2. Check for pinched yellow tube between the flush valve and the control block.</li> <li>3. If no pinched tubing, replace the flush valve.</li> </ol>

Problem	Possible Cause	Action
DCS does not recognize new handpiece (deluxe touchpad only).	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).	Activate the holder valve by unhooking the valve arm (see Figure 264). <b>Figure 264 542 Holder Valve</b>  (A) Active; (B) Non-Active
	Holder valve does not exhaust holdback air when the handpiece is picked up.	Replace failed holder valve.
Unable to combine air and water coolant functions with the foot control wet/dry toggle, or by pressing the coolant button on the touchpad (deluxe touchpad).	Deluxe touchpad is not programmed for combined air/water coolant function.	<ol style="list-style-type: none"> <li>1. Press and hold the Program button and either the air or water coolant button simultaneously for three seconds.</li> <li>2. Three beeps signal the functions are now combined.</li> </ol>

Problem	Possible Cause	Action
Unable to combine air and water coolant functions with the foot control wet/dry toggle, or by pressing the coolant button on the touchpad (deluxe touchpad).	One of the coolant solenoids has failed or is disconnected from the delivery system circuit board.	<ol style="list-style-type: none"> <li>1. Activate a handpiece.</li> <li>2. Verify the coolant LEDs (DS5 and DS6) are illuminating on the delivery system circuit board. <ul style="list-style-type: none"> <li>• If not, verify that the solenoid is connected to the delivery system circuit board.</li> <li>• If connected, replace the solenoid and verify coolant operation.</li> </ul> </li> </ol> <p><b>NOTE</b> Use a small flat tipped screwdriver to manually override (open) the water solenoid if you do not have a spare solenoid.</p> <p><b>Figure 265 Solenoid</b></p>  <p>(A) Water Solenoid; (B) Air Solenoid</p>
Buttons on the touchpad do not work. The status icon LED is on.	Faulty data port on the control head circuit board for touchpads mounted on the control head, otherwise there is a faulty data port on the chair circuit board.	Move data line to different data port.
	Faulty data line from touchpad to control head circuit board chair circuit board.	Replace data line with known good data line.
	Faulty touchpad.	<ol style="list-style-type: none"> <li>1. Verify the touchpad circuit board is seated securely into the touchpad cover.</li> <li>2. If touchpad still does not function, replace with known good touchpad.</li> </ol>
Touchpad does not operate chair, cuspidor or light functions.	Faulty data line from delivery system circuit board to chair circuit board.	Replace delivery system data line.

Problem	Possible Cause	Action
Touchpad status icon does not light when the master on/off 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.	<ol style="list-style-type: none"><li>1. Verify that DS1 is illuminated on the delivery system circuit board.</li><li>2. If DS1 is not illuminated, check for 24 VAC across J1 and J2 on the circuit board.</li><li>3. Check for an open circuit breaker on the 300W power supply.</li></ol>

Problem	Possible Cause	Action
Deluxe touchpad screen is blank. The status LED icon is on.	Contrast needs adjustment.	<p>For deluxe touchpads manufactured prior to May 2006:</p> <ol style="list-style-type: none"> <li>1. Press and hold the + and Program buttons for three seconds. The contrast adjustment screen appears.</li> <li>2. Adjust the contrast with the + and - buttons.</li> <li>3. Press Program to exit and return to normal operating screen.</li> </ol> <p>Both A and B settings are changed with this adjustment.</p> <p>For deluxe touchpads manufactured after May 2006:</p> <ol style="list-style-type: none"> <li>1. Press the Program and A/B button simultaneously until the touchpad switches to the handpiece configuration routine.</li> <li>2. Press Back-up (select) to enter system set up.</li> <li>3. Press Base-down to move the cursor to touchpad, then press Select.</li> <li>4. Follow the instructions on the screen to adjust the screen contrast as needed.</li> <li>5. To exit the handpiece configuration routine, press and release Back-down (cancel) until the A-dec logo appears on the touchpad screen.</li> </ol> <p>Both A and B settings are changed with this adjustment.</p>
Low air pressure to syringe or handpieces when in use.	Plugged filter on air filter regulator.	Replace the filter.

Problem	Possible Cause	Action
Handpiece holder valve leaking air.	Faulty holder valve.	<b>1.</b> Verify the holder valve is not plumbed backward. <b>2.</b> Replace holder valve.
Handpiece holder valve not exhausting.	Holder valve locked.	Verify the holder valve is active (unlocked).
	Faulty holder valve.	Replace holder valve.

## DATA COMMUNICATION SYSTEM

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

Table 18 contains tips and troubleshooting information to assist in diagnosing DCS problems. This table is not intended to cover every situation, but includes the most common problems that you may encounter.

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

**Table 18 Touchpad Screen Icons and LEDs**

LED	Assistant's Touchpad and Standard Touchpad	Deluxe Touchpad
Status (A-dec logo)	Off = system is not functioning	
	<b>Blue steady</b> = normal condition (ready for use)	
	<b>Blue double blink</b> = jumper is in the factory default position on the chair circuit board	
	<b>Blue slow blink</b> = chair, cuspidor or lower support arm stop switch is activated	
Dental light	Off = dental light is off	
	<b>Yellow steady</b> = dental light is on in high or medium intensity	
	<b>Yellow slow blink</b> = dental light is on in composite intensity	
Auxiliary #1 or bowl rinse	Off = auxiliary #1 is off or bowl rinse is off	N/A (see bowl rinse)
	<b>Yellow</b> - auxiliary #1 is on or bowl rinse is on	N/A (see bowl rinse)
Auxiliary #2 or cup fill	Off = auxiliary #2 is off or cup fill is off	N/A (see cup fill)
	<b>Yellow</b> = auxiliary #2 is ON or cup fill is ON	N/A (see cup fill)

LED	Assistant's Touchpad and Standard Touchpad	Deluxe Touchpad
Bowl rinse	N/A (shared with auxiliary #1 above)	Off = bowl rinse is off Yellow = bowl rinse is on
Cup fill	N/A (shared with auxiliary #2 above)	Off = cup fill is off Yellow = cup fill is on
Auxiliary #1 or #2	N/A (shared with auxiliary #1 or #2 above)	Off = auxiliary device is off Yellow = auxiliary device is on

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



**Table 19 Printed Circuit Board LEDs**

LED	A-dec Relay Module	Dental Light	Cuspidor	Delivery System	Chair
AC power	Off = no 24 VAC power, open circuit breaker, power supply turned off, no line voltage <b>Green steady</b> = 24 VAC power at terminal strip				
Status	Off = system is not functioning, no power or circuit board has failed  <b>Green steady</b> = normal condition				Off = system is not functioning, no power or circuit board has failed  <b>Green steady</b> = normal condition  <b>Green double blink</b> = jumper is in the factory default position
Data (DCS)	Off = no data communication, not connected to the data line connector, data line is not functioning <b>Green steady</b> = active DCS is detected <b>Green blinking</b> = valid DCS message				
A-dec relay module	Off = Relay is off <b>Yellow</b> = Relay is on	N/A	Off = relay is off <b>Yellow</b> = relay is on	N/A	N/A
Bowl rinse/cup fill relays	N/A	N/A	Off = relay is off <b>Yellow</b> = relay is on	N/A	N/A
Cuspidor stop switch	N/A	N/A	Off = closed (normal) <b>Red</b> = open (activated)	N/A	N/A
IOLS output	N/A	N/A	N/A	Off = IOLS voltage is off <b>Yellow</b> = IOLS voltage is on	N/A
Scaler relay	N/A	N/A	N/A	Off = Scaler relay is off <b>Yellow</b> = Scaler relay is on	N/A
Air/water coolant solenoids	N/A	N/A	N/A	Off = solenoid is off <b>Yellow</b> = solenoid is on	N/A
Chair or lower support arm stop switch	N/A	N/A	N/A	N/A	Off = closed (normal) <b>Red</b> = open (activated)

LED	A-dec Relay Module	Dental Light	Cuspidor	Delivery System	Chair
Chair lockout	N/A	N/A	N/A	N/A	Off = closed (normal) <b>Red</b> = open (activated)
Vacuum relay	N/A	N/A	N/A	N/A	Off = vacuum relay is off <b>Yellow</b> = vacuum relay is on
Dental light	N/A	<b>DS4</b> Off & <b>DS5</b> Off = dental light off	N/A	N/A	<b>DS8</b> Off & <b>DS7</b> Off = dental light off
		<b>DS4</b> On & <b>DS5</b> Off = dental light in high intensity mode			<b>DS8</b> On & <b>DS7</b> Off = dental light in high intensity mode
		<b>DS4</b> Off & <b>DS5</b> On = dental light in composite intensity mode			<b>DS8</b> Off & <b>DS7</b> On = dental light in composite mode
		<b>DS4</b> On & <b>DS5</b> On = dental light in medium intensity mode			<b>DS8</b> On & <b>DS7</b> On = dental light in medium mode
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, or cable not on wheel <b>Yellow steady</b> = normal operation <b>Yellow fast blink</b> = Upper end of travel
Back and base relays	N/A	N/A	N/A	N/A	Off = relay is off <b>Yellow</b> = relay is on

## CUSPIDOR

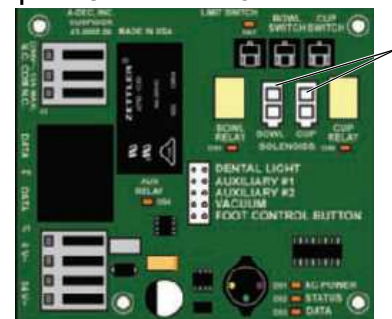
Table 20 contains tips and troubleshooting information to assist in diagnosing cuspidor problems. This table is not intended to cover every situation, but includes the most common problems that you may encounter.

**Table 20 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.
DS2 - Status LED	Off	System is not functioning, no power or circuit board has failed.
	Green, steady	Normal condition.
DS3 - Data LED	Off	No DCS communication, not connected to the data communication system, the DCS has failed.
	Green, steady	Active DCS detected.
	Green, blinking	Valid DCS message.
DS4 - Auxiliary relay LED	Off	Auxiliary relay is off.
	Yellow	Auxiliary relay is on.
DS5, DS6 - Bowl rinse/cup fill relays	Off	Relay is off.
	Yellow	Relay is on.
DS7 - Cuspidor limit switch LED	Off	Limit switch is not activated (closed).
	Red	Limit switch is activated (open).
Water drips from the cup fill spout	The cup fill solenoid has failed.	<ol style="list-style-type: none"> <li>1. Using the master On/Off toggle, turn the unit OFF.</li> <li>2. Use a syringe to bleed the dental unit water pressure.</li> <li>3. Remove the cup fill solenoid and replace.</li> </ol>
Water drips from the bowl rinse spout	The bowl rinse solenoid has failed.	<ol style="list-style-type: none"> <li>1. Flip the master on/off toggle to the OFF position.</li> <li>2. Use a syringe to bleed the dental unit water pressure.</li> <li>3. Replace the bowl rinse water solenoid.</li> </ol>

Problem	Possible Cause	Action
Cup fill 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.

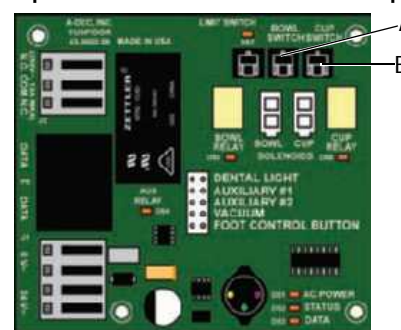
Figure 266 Cuspidor Circuit Board Solenoid Location



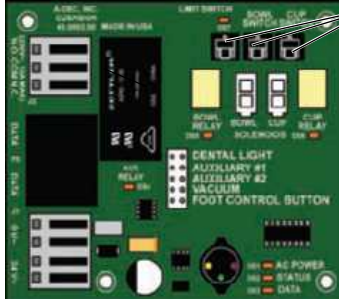
(A) Water Solenoid Connections

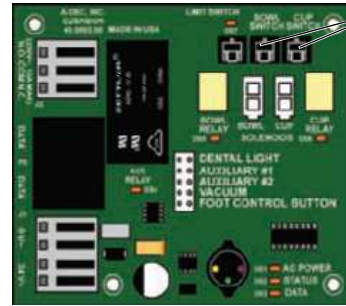
Cup fill and bowl rinse functions are switched at the tower buttons only (touchpads operate normally).	The cuspidor tower switch connectors are reversed on the cuspidor circuit board.	Switch tower switch connections at P2 and P3.
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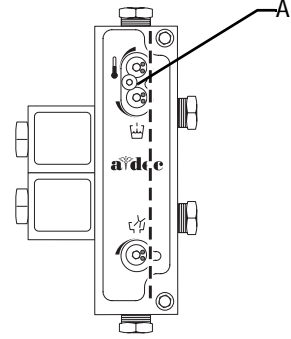
Figure 267 Cuspidor Circuit Board Bowl and Cup Switch Locations



(A) Bowl Rinse Switch; (B) Cup Fill Switch

Problem	Possible Cause	Action
Water runs constantly from either the cup fill or bowl rinse spout. The red LED (DS7) is illuminated on the cuspidor circuit board.	The cuspidor stop switch connector is reversed with one of the cuspidor tower switch connectors.	<p>The red LED (DS7) on the cuspidor circuit board is illuminated.</p> <ol style="list-style-type: none"> <li>1. Disconnect all three switch connectors from the cuspidor circuit board. One at a time, connect each of the switch connectors to the cuspidor circuit board until the red LED goes out.</li> <li>2. Connect one of the remaining switch connectors to P3 on the cuspidor circuit board, and the other switch connector to P2.</li> <li>3. Verify that a cup fill cycle runs when requested from the cuspidor tower cup fill button.</li> <li>4. If the bowl rinse runs, swap the two switch connections to the cuspidor circuit board.</li> </ol>
<p><b>Figure 268 Cuspidor Circuit Board Switch Connector Location</b></p>  <p>(A) Switch Connectors</p>		
Cup fill spout sputters air/water.	The self-contained water bottle is empty or nearly empty.	Refill the bottle.
The cup fill 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 or the wiring is faulty.	<ol style="list-style-type: none"> <li>1. Remove any obstacles from under the cuspidor bowl.</li> <li>2. Disconnect the cuspidor stop switch from P4 on the cuspidor circuit board; install the jumper from P1 on the cuspidor circuit board.</li> <li>3. If the red LED on the cuspidor circuit board goes out, the cuspidor stop switch or wiring is faulty and must be replaced.</li> </ol>

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.	<p>Visually inspect the cuspidor circuit board. Ensure that the cuspidor tower switches are connected.</p> <ul style="list-style-type: none"> <li>• P2 - Bowl rinse switch</li> <li>• P3 - Cup fill switch</li> </ul> <p>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).</p> <p><b>NOTE</b> Switching switch assemblies at P2 and P3 allows verification that the switch assembly is defective.</p> <p><b>Figure 269 Cuspidor Circuit Board Tower Switches</b></p>  <p>(A) Tower Switches</p>
Cup fill button on the cuspidor tower does not work. The function does work from the touchpad.	Cuspidor tower cup fill button assembly is faulty or is disconnected from the cuspidor circuit board P3 connector.	<p>Visually inspect the cuspidor circuit board, ensure that the cuspidor tower switches are connected:</p> <ul style="list-style-type: none"> <li>• P2 - Bowl Rinse Switch</li> <li>• P3 - Cup Fill Switch</li> </ul> <p>If the switches are connected, check the continuity of the cup fill switch with an Ohm meter. With the cup fill switch held down (closed), it should measure less than ten Ohms. If it measures "open" across the closed switch, remove and replace the cup fill switch assembly (P/N 43.0010.00).</p> <p><b>NOTE</b> Switching switch assemblies at P2 and P3 allows verification that the switch assembly is defective.</p>

Problem	Possible Cause	Action
Inadequate or excessive cup fill water flow	The cup fill water flow needs adjustment	<p>Open the cup fill flow controls for full water flow. Turn the flow controls to adjust the water flow.</p> <p><b>Figure 270 Cuspidor Fill/Rinse Manifold</b></p>  <p>(A) Flow Control</p>
	The self-contained water system 40 psi regulator has failed	<p>Test the 40 psi regulator:</p> <ol style="list-style-type: none"> <li>1. Turn the dental unit OFF using the master On/Off toggle.</li> <li>2. Remove the water bottle from the dental unit and set it aside.</li> <li>3. Remove the air bleed setscrew from the water bottle receptacle assembly and set it aside.</li> <li>4. Install an 1/8" barb with washer in the port where the air bleed setscrew was removed.</li> <li>5. Connect an air pressure gauge to the 1/8" barb using the 1/8" tubing.</li> <li>6. Turn the dental unit ON. The air pressure reading on the gauge should be 35 - 40 psi.</li> </ol> <p>If a reading of 35-40 psi could not be obtained at the air bleed setscrew port, the water bottle receptacle is faulty and must be replaced.</p>

Problem	Possible Cause	Action
Inadequate or excessive cup fill water flow (continued).	The self-contained water system 40 psi regulator has failed.	<p>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:</p> <ol style="list-style-type: none"> <li>1. Turn the dental unit OFF using the master On/Off toggle on the delivery system.</li> <li>2. Remove the water bottle cap assembly from the post or side support.</li> <li>3. Remove and replace the water bottle receptacle.</li> <li>4. Reinstall the water bottle cap assembly and water bottle.</li> <li>5. Turn the dental unit ON and test the cup fill function for adequate water pressure.</li> </ol>
	The self-contained water system air bleed set screw is partially clogged with debris.	<ol style="list-style-type: none"> <li>1. Use the master On/Off toggle, to turn the dental unit off, and remove the water bottle.</li> <li>2. Remove the air bleed setscrew from the water bottle cap assembly and clean it of debris, or replace it.</li> <li>3. Reinstall the setscrew in the water bottle cap assembly and replace the water bottle.</li> <li>4. Turn the dental unit ON and test the cup fill function.</li> </ol>
Inadequate bowl rinse water flow.	The bowl rinse water flow must be adjusted.	Adjust the bowl rinse flow clockwise to increase water flow, or counterclockwise to decrease flow, (one full turn from minimum to maximum).
	The water filter element is partially plugged.	<p>Check for plugged water regulator filter element.</p> <ol style="list-style-type: none"> <li>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.</li> <li>2. Turn the dental unit off using the master On/Off toggle on the delivery system and remove the water regulator filter element cap. Remove and discard the filter element.</li> <li>3. Install a new filter element on the water regulator and reinstall the filter cap.</li> <li>4. Open the city water manual shut-off valve. Turn the dental unit on using the master On/Off toggle, and test the bowl rinse function for adequate water flow.</li> </ol>
	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.



Problem	Possible Cause	Action
Bowl rinse function does not work from the cuspidor tower and/or the touchpad bowl rinse button. The cup fill function does work.	The bowl rinse relay on the cuspidor circuit board has failed.	At the cuspidor circuit board, swap the water solenoid connectors at P6 and P7. Press the cup fill button on any touchpad or the cup fill switch on the cuspidor tower, if the bowl rinse runs, remove and replace the cuspidor circuit board.
	The cuspidor data line is damaged.	Ensure that the cuspidor tower switches are connected: <ul style="list-style-type: none"> <li>• P2 - Bowl rinse switch</li> <li>• P3 - Cup fill switch</li> </ul> Disconnect the data line from the cuspidor and press the bowl rinse switch on the cuspidor tower. If the bowl rinse runs, remove and replace the cuspidor data line.
	The bowl rinse solenoid has failed.	Remove and replace the bowl rinse water solenoid.
Cup fill function does not work from the cuspidor tower and/or from any touchpad cup fill button. The bowl rinse function does work.	The cup fill relay on the cuspidor circuit board has failed.	Swap the water solenoid connectors at P6 and P7, at the cuspidor circuit board. Press Bowl Rinse on any touchpad or the bowl rinse switch on the cuspidor tower. If the cup fill runs, remove and replace the cuspidor circuit board.
	The cuspidor data line is damaged.	Ensure that the cuspidor tower switches are connected correctly: <ul style="list-style-type: none"> <li>• P2 - Bowl rinse switch</li> <li>• P3 - Cup fill switch</li> </ul> Disconnect the data line from the cuspidor and press the cup fill switch on the cuspidor tower. If the cup fill runs, remove and replace the cuspidor data line.
	The cup fill water solenoid has failed.	Remove and replace the cup fill water solenoid.

# FLOOR BOX

Table 21 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 21 Floor Box Troubleshooting**

Problem	Possible Cause	Action
Unit air pressure drops when unit is in use.	Plugged filter element in air filter/regulator.	<ol style="list-style-type: none"><li>1. Flip the master On/Off toggle to the On position and remove the floor box cover.</li><li>2. Locate and observe the air pressure gauge in the floor box while pressing the syringe air button.</li></ol> <p>If the air pressure drops more than 15 psi, the air filter is clogged. Replace filter.</p>

## DENTAL LIGHT

Table 22 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.

**Table 22 Dental Light Troubleshooting**

Problem	Possible Cause	Action
Light does not work.	The lamp has failed.	Check for voltage at the lamp socket, if voltage is present, replace the lamp.
		Check the color of the lamp, replace if discolored.
	The dental light circuit breaker has tripped or power supply has failed.	Check circuit breaker and reset. If the circuit breaker trips again, disconnect the wiring harness from the power supply then reset the circuit breaker. If the circuit breaker trips again, replace the power supply or circuit breaker. Otherwise, reconnect the harness wires one at a time observing which one causes the circuit breaker to trip - that identifies the problem circuit.
		For 571 Dental Lights: <ul style="list-style-type: none"> <li>If CB5 on the 300W power supply is tripped, disconnect the dental light and reset the circuit breaker. If CB5 trips again, replace the power supply. Connect the dental light to the power supply, if CB5 trips, the dental wiring harness or a switch is faulty.</li> </ul>
		For Model 6300 Dental Lights: <ul style="list-style-type: none"> <li>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.</li> </ul>
	The lamp socket is faulty.	Replace the socket.

Problem	Possible Cause	Action
Light works from the touchpad(s) but not from the dental light switches.	Loose connection in the dental light wiring harness.	For all dental lights, verify that the red connector in the wiring harness is connected properly.  Check the connections at the dental light switches and terminal J1 on the circuit board.
	Faulty data cable to the Model 6300 dental light circuit board.	Temporarily substitute a known good cable to the circuit board, if the light works from the touchpad, replace the bypassed cable.
Light works from the dental light switches but not from a touchpad.	Failed dental light switch on the touchpad.	Replace the touchpad.
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.
Track light trolley drifts.	Track is not level.	Use wedges to level the track light ceiling pallet (P/N 017.017.00).
Track trolley light bounces back when pushed to the end of the track.	Power cable is hanging up inside the track.	Check power cable in track for proper routing. If you cannot correct the routing of the cable, replace the cable assembly.
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.  <b>CAUTION</b> Abrasives, disinfectants or chlorine damage the shield and reflector. Refer to the Instructions for Use for cleaning instructions.
	The intensity switch is in the medium or composite position.	Check the intensity switch position.  <b>NOTE</b> 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.	<ol style="list-style-type: none"> <li>1. Focus the light.</li> <li>2. Check the light shield for severe abrasions, and replace if necessary.</li> <li>3. Clean the reflector and light shield.</li> </ol>
One or more intensity positions do not function.	Transformer is not supplying one or more voltages.	Check for loose connections at the transformer. Measure the transformer output voltages. Check the power cable for continuity.

## CLINICAL PRODUCTS

### Warm Water Syringes

Table 23 contains tips and troubleshooting information to assist you in diagnosing the most common warm water syringe problems that you may encounter.

**Table 23** Warm Water Syringe Troubleshooting

Problem	Possible Cause	Action
Water is cold or at room temperature (not heated).	No 24 VAC power to the warm water circuit board.	<ul style="list-style-type: none"> <li>If DS1 (AC power) is Off, check for 24 VAC at J1.</li> <li>If no 24 VAC at J1, then verify power to the system, check for tripped circuit breakers and adequate air pressure at power supply air-electric switches.</li> </ul>
	Warm water circuit breaker has failed	<ul style="list-style-type: none"> <li>If DS1 (AC power) is On and DS2 (Status) is Off, turn system off and back on.</li> <li>If DS2 (status) remains Off, then replace the circuit board.</li> </ul>
	Heater wire is disconnected or broken.	<ol style="list-style-type: none"> <li>Verify heater wires connected to J2.</li> <li>Check continuity of heater wires with Ohm meter. (3.7 Ohms @ 77°F (25°C).</li> <li>If heater wires are broken, replace the syringe tubing assembly.</li> </ol>
	Thermistor wires are disconnected or broken.	<ol style="list-style-type: none"> <li>Verify thermistor wires are connected to P3.</li> <li>Check continuity of thermistor wires with an Ohm meter. (3.7 Ohms @ 77°F (25°C))</li> <li>If thermistor wires are broken, replace the syringe tubing assembly.</li> </ol>
Water is warm, but not warm enough.	Jumper on the warm water circuit board is missing (P1).	<ol style="list-style-type: none"> <li>Verify there is a black jumper on the temperature header (P1).</li> <li>If no jumper, add a jumper to header P1.</li> </ol>
	Jumper setting on the temperature header (P1) is too low.	<ol style="list-style-type: none"> <li>Move the jumper on P1 one position toward "MAX" and test the syringe.</li> <li>Repeat until desired water temperature is reached.</li> </ol>

Problem	Possible Cause	Action
Water is too hot.	Jumper setting on the temperature header (P1) is too high.	<ol style="list-style-type: none"> <li>1. Move the jumper on P1 one position toward "MIN" and test the syringe.</li> <li>2. Repeat until desired water temperature is reached.</li> </ol> <p><b>NOTE</b> The micro controller averages the two selections together if two jumpers are installed. Only the lowest two jumpers are recognized if three or more are installed.</p>
	One or both thermistors are not in contact with the syringe heated tubing.	Replace the syringe tubing assembly.

Table 24 contains tips and troubleshooting information to assist you in diagnosing the most common warm water syringe problems that you may encounter.

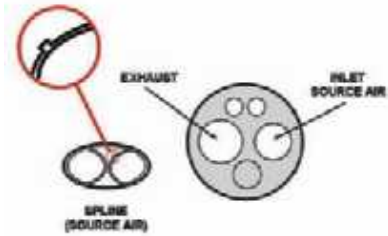
**Table 24** Warm Water Syringe Circuit Board LEDs

Problem	Possible Cause	Action
DS1 AC power	Off	No 24 VAC power.
	Green, steady	24 VAC at the terminal strip.
DS2 Status	Off	System is not functioning.
	Green, steady	Normal operation.
DS3 Not used	Off	Reserved for future use.
DS4 Heater output	Off	Heater output is off.
	Green steady or blinking	Heater output is On when LED is On.
DS5 Thermistors	Off	Thermistors are not connected to P3.
	Yellow, steady	Normal operation.
	Yellow, blinking	One or both thermistors at high temperature threshold. Water heater is disabled.

## Tooth Dryer

Table 25 contains tips and troubleshooting information are listed in the table to assist in diagnosing tooth dryer problems. This table is not intended to cover every situation, but includes the most common problems that may be encountered.

**Table 25** Tooth Dryer Troubleshooting

Problem	Possible Cause	Action
Tooth dryer is not producing warm air.	Drive air pressure set too low.	Measure the drive air pressure at the handpiece. Set it between 60 and 80 psi for correct tooth dryer function.
	Tooth dryer has internal contamination.	<ol style="list-style-type: none"> <li>1. Remove the tooth dryer from the handpiece tubing.</li> <li>2. Spray electronics degreaser into the exhaust port of the tooth dryer for five to ten seconds.</li> <li>3. Shake out the excess degreaser.</li> <li>4. Dry the tooth dryer by placing it back on its own dedicated handpiece tubing and operate the tooth dryer for ten to fifteen seconds.</li> </ol>
	Drive air is connected to the exhaust tube on the tooth dryer.	Ensure the splined tube of the dedicated handpiece tubing is connected to drive air Table 271.
<p><b>Figure 271</b> Tooth Dryer Tubing</p> 		
Tooth dryer tip fell off.	Teflon tip glue has failed during sterilization.	Glue tip back in place with an instant adhesive.

## A-dec Intraoral Camera

(October 2003- January 2007)

Table 26 contains tips and troubleshooting information are listed in the table to assist in diagnosing A-dec intraoral camera (October 2003 - January 2007) problems. This table is not intended to cover every situation, but includes the most common problems that may be encountered.

**Table 26 A-dec Intraoral Troubleshooting**

Problem	Possible Cause	Action
Camera LEDs turn on, then off.	Video input and output cable connectors on the back of the camera module are reversed.	Verify video input and output are on the correct connectors on the back of the camera module.
Camera is not functioning.	Monitor is not turned on.	Turn ON monitor.
	Monitor is not receiving power.	Replace power cord to monitor.
Camera is not functioning, the monitor is on. Camera is removed from tubing but color bars are displayed.	Camera is faulty.	Replace the camera.
	The monitor is not receiving a signal, or is malfunctioning.	Check the video connection, and make sure the monitor is set to the correct video mode.
		Connect a known good video cable to the monitor. If it works, install the new cable.
		Connect the monitor to another device (TV or PC). If the monitor functions, the problem is the result of another issue.
One or more LEDs do not illuminate when camera is in use.	The LED has burned out.	If two LEDs do not illuminate, replace the camera. You can use the camera with one LED burned out, but the image is darker.
Monitor image is blurry.	The transparent side of the disposable barrier is not sticking to the camera lens.	Adjust the disposable barrier so the transparent side is sticking to the camera lens.
Monitor image is indistinct or "rolls."	Monitor settings are incorrect.	Refer to the monitor owner's manual for factory default and settings instruction.
	Monitor and camera video standards do not match.	Replace the monitor with one whose video standard matches the standard marked on the camera (NTSC or PAL).
	Monitor uses outdated technology.	Install a newer model of monitor marked on the camera (NTSC or PAL).



## Sopro Intraoral Cameras (717 and 595)

Table 27 contains tips and troubleshooting information to assist in diagnosing Sopro 717 and 595 intraoral camera problems. The table is not intended to cover every situation, but includes the most common problems that you may encounter.

**Table 27** Sopro Intraoral Cameras (717 and 595) Troubleshooting

Problem	Possible Cause	Action
No video.	No power to DockMU module.	<ol style="list-style-type: none"> <li>1. Check for 24 VAC at input of DockMU module.</li> <li>2. If no volt or voltage less than 24 VAC correct power supply issue.</li> </ol>
	Problem with monitor or computer.	Verify proper operation of monitor or computer.
	Problem with video cable or USB cord.	<ol style="list-style-type: none"> <li>1. Substitute a known good video cable or USB cord</li> <li>2. If problem corrected, replace video cable or USB cord.</li> </ol>
	Defective DockMU module.	<ol style="list-style-type: none"> <li>1. Substitute another DockMU module.</li> <li>2. If problem corrected, replace DockMU module.</li> </ol>
Camera does not "go live."	Camera or cord connector damaged.	<ol style="list-style-type: none"> <li>1. Inspect camera and cord connector for twisting or damage.</li> <li>2. If damaged repair camera or replace cord.</li> </ol>
	Camera defective.	<ol style="list-style-type: none"> <li>1. Try another camera.</li> <li>2. If problem corrected, have camera repaired.</li> </ol>
	Air electric switch or wiring.	<ol style="list-style-type: none"> <li>1. Place a jumper between terminals 1 &amp; 2.</li> <li>2. If camera goes live check wiring and air electric switch for proper operation. Repair as needed.</li> </ol>
	Camera cord connections to DockMU.	Verify Camera cord wires are properly connected at DockMU module Repair as needed.
	DockMU module defective.	<ol style="list-style-type: none"> <li>1. Try another DockMU module.</li> <li>2. If problem corrected, replace DockMU module.</li> </ol>
	Camera cord.	<ol style="list-style-type: none"> <li>1. Substitute another camera cord.</li> <li>2. If problem corrected, replace camera cord.</li> </ol>
	Dust or black dot in image.	Camera has dust in lens. Have camera repaired.

Problem	Possible Cause	Action
Poor image quality.	Monitor.	<ol style="list-style-type: none"> <li>1. Verify monitor properly connected and adjusted.</li> <li>2. Correct monitor wiring and adjustment as needed.</li> </ol>
	Camera.	<ol style="list-style-type: none"> <li>1. Substitute another camera.</li> <li>2. If problem corrected, have camera repaired.</li> </ol>
Cannot freeze image (touchfreeze).	DockMU setting.	<ol style="list-style-type: none"> <li>1. DockMU jumper not set to touchfreeze.</li> <li>2. Set jumper to touchfreeze.</li> </ol>
	DockMU wiring.	<ol style="list-style-type: none"> <li>1. Check green and yellow wire connections at DockMU.</li> <li>2. Repair as needed.</li> </ol>
	Camera.	<ol style="list-style-type: none"> <li>1. Substitute another camera.</li> <li>2. If problem corrected, have camera repaired.</li> </ol>
Cannot freeze image (footpedal).	DockMU setting.	<ol style="list-style-type: none"> <li>1. DockMU jumper not set to footpedal.</li> <li>2. Set jumper to footpedal.</li> </ol>
	DockMU wiring.	<ol style="list-style-type: none"> <li>1. Check blue and violet wire connections at DockMU pins 9 &amp; 10.</li> <li>2. Repair as needed.</li> </ol>
	Air electric switch.	<ol style="list-style-type: none"> <li>1. Check air electric switch and associated wiring for proper operation.</li> <li>2. Repair as needed.</li> </ol>

## SP Newtron

Table 30 contains tips and troubleshooting information to assist in diagnosing SP Newtron scaler problems. The table is not intended to cover every situation, but includes the most common problems that you may encounter.

**Table 28 SP Newtron Scaler Troubleshooting**

Problem	Possible Cause	Action
No water.	Water turned off.	Check that water is turned on.
	Obstruction in tip or wrong tip.	<ol style="list-style-type: none"> <li>1. Remove tip from handpiece.</li> <li>2. Check for water. If water adequate replace tip. Make sure tip has a water port. Tips designed to be used without water may not have a water port.</li> </ol>
	Obstruction in handpiece.	<ol style="list-style-type: none"> <li>1. Remove handpiece from cord.</li> <li>2. Check for water. If no water, replace handpiece.</li> </ol>
	Obstruction in line.	<ol style="list-style-type: none"> <li>1. Remove handpiece and tip.</li> <li>2. If no water, disconnect handpiece tubing water connection.</li> <li>3. If water is present at connection point, replace handpiece tubing.</li> <li>4. If no water present at handpiece tubing connection, check unit water supply.</li> </ol>
Handpiece leaks water.	Tip without water port.	If tip type does not have a water port, turn off water or use tip with water port.
	Water leak at handpiece connector.	<ol style="list-style-type: none"> <li>1. Replace small handpiece o-ring.</li> <li>2. Inspect handpiece tubing for cracks around water port. If cracked, replace handpiece tubing.</li> <li>3. If handpiece still leaks, replace handpiece.</li> </ol>
No vibration or low vibration power.	Defective, worn, or broken tip.	Try new tip. If vibration is correct, replace tip.
	Defective handpiece.	Try another handpiece. If vibration ok replace handpiece.

Problem	Possible Cause	Action
	Broken wires in handpiece tubing.	<ol style="list-style-type: none"> <li>1. Disconnect handpiece tubing connector at SP Newtron module.</li> <li>2. Check for continuity between orange wire and center pin of handpiece connector.</li> <li>3. Check for continuity between black wire and left pin of handpiece connector.</li> <li>4. If either wire is open, replace handpiece tubing.</li> </ol>
	No power to module.	<ol style="list-style-type: none"> <li>1. Select scaler and depress foot pedal.</li> <li>2. Check for 24VAC at SP Newtron harness grey and black wires.</li> <li>3. If no volt or if voltage less than 24 VAC, correct power supply issue.</li> </ol>
	Power level low or missing (digital).	<ol style="list-style-type: none"> <li>1. Set digital display to 100% power level. Check voltage at blue and brown wires. Note the brown wire is the ground reference. Voltage should change from 0 to 5 volts as foot pedal is depressed (0 - 100%).</li> <li>2. Repair or correct wiring as needed.</li> </ol>
	Power level low or missing (potentiometer).	<ol style="list-style-type: none"> <li>1. Check white and brown wires resistance should change from 0 to 4.7k ohms as power level is adjusted from 1 to 10.</li> <li>2. Repair wiring or potentiometer.</li> </ol>
	Defective SP Newtron module.	<ol style="list-style-type: none"> <li>1. Substitute another SP Newtron module.</li> <li>2. If vibration is correct, replace module.</li> </ol>

## MiniLED

Table 29 contains tips and troubleshooting information to assist in diagnosing MiniLED curing light problems. The table is not intended to cover every situation, but includes the most common problems that you may encounter.

**Table 29** MiniLED Curing Light Troubleshooting

Problem	Possible Cause	Action
No power to handpiece (Green HP LED is off).	No power to MiniLED module.	Check for 24 VAC at input of MiniLED module. If no volt or if voltage is less than 24 VAC, correct power supply issue.
	No power output at MiniLED module.	1. Check for 5 VDC at MiniLED module output. 2. If no voltage or voltage is low, replace MiniLED module.
	Broken wires in MiniLED cord.	1. Disconnect MiniLED cord wires at MiniLED module. 2. Check for continuity between Red wire and center circle of HP connector. 3. Check for continuity between black wire and outer ring of HP connector. 4. If either wire is open, replace MiniLED cord.
	Defective MiniLED handpiece.	Replace or repair MiniLED handpiece.
Low (Blue) curing light output.	Low power to MiniLED module.	1. Check for 24 VAC at input of MiniLED module. 2. If no volt or if voltage less than 24 VAC, correct power supply issue.
	Low power output at MiniLED module.	1. Check for 5 VDC at MiniLED module output. 2. If no voltage or voltage is low, replace MiniLED module.
	Defective MiniLED handpiece.	Replace or repair MiniLED handpiece.
Cannot start cure cycle or change modes.	Defective MiniLED handpiece.	Replace or repair MiniLED handpiece.
Light guide loose in handpiece.	Defective MiniLED handpiece.	Replace or repair MiniLED handpiece.

## EA-50/51LT Electric Micromotor

Table 30 contains tips and troubleshooting information to assist in diagnosing electric micromotor problems. The table is not intended to cover every situation, but includes the most common problems that you may encounter.

**Table 30 EA-50/51LT Electric Micromotor Troubleshooting**

Problem	Possible Cause	Action
Micromotor does not function.	Handpiece position is not programmed for electric handpiece on deluxe touchpad.	Program handpiece position for electric handpiece one if it is wired to terminal one on the micromotor controller. Program as electric handpiece two if it is wired to terminal two on the micromotor controller.
	Deluxe touchpad is programmed incorrectly.	Program handpiece position for electric handpiece one if it is wired to terminal one on the micromotor controller. Program as electric handpiece two if it is wired to terminal two on the micromotor controller.
	Micromotor is malfunctioning.	<ol style="list-style-type: none"> <li>1. Verify the "R" (ready) LED is lit and green indicating micromotor is supplied 24 VAC.</li> <li>2. Verify the "C" (communication) LED is lit and green indicating a good data cable.</li> <li>3. Replace the micromotor. If the replacement micromotor functions correctly, return problem motor to A-dec.</li> </ol>
	Faulty data line from micromotor controller to delivery system circuit board.	Verify the error LED on the micromotor controller is blinking red. Replace the data line.
Light is not working.	Bulb is burned out.	Replace bulb with dimple facing out.
Micromotor gets too warm to hold.	Water coolant is off.	Turn air and water coolant ON. If the problem continues, contact A-dec Customer Service.
	Drive air set too low.	Verify drive air is set at 60 psi.
Micromotor lacks cutting power with carbide burs.	Motor is in reverse.	Change setting on deluxe touchpad to "forward."
Micromotor lacks cutting power.	Drive air set too low.	Verify drive air is set at 60 psi.
Water leaking between micromotor and handpiece.	Defective O-rings.	Change all three O-rings.
Air or water leaking between micromotor and tubing.	Defective O-ring in tubing insert.	Change O-ring in tubing insert.

## ICV

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Table 31 contains tips and troubleshooting information to assist in diagnosing ICV problems. The table is not intended to cover every situation, but includes the most common problems that you may encounter.

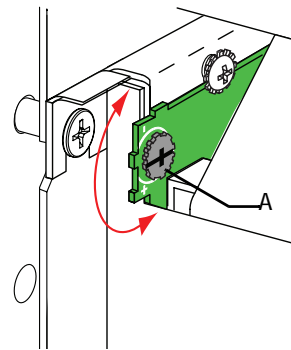
**Table 31 ICV Troubleshooting**

Problem	Possible Cause	Action
ICV is not starting and the panel power (status) indicator is OFF.	Panel wiring harness is not connected to the controller circuit board.	Verify that the panel wiring harness is properly connected to the controller and panel circuit board and that it is not damaged.
	No power to the controller circuit board.	<ol style="list-style-type: none"> <li>1. Verify DS1 (AC Power) on the controller circuit board is ON.</li> <li>2. If DS1 is OFF, verify mains power is available at P11.</li> <li>3. Verify that the mains circuit breaker is not tripped.</li> </ol>
	ICV controller circuit board failure.	Remove and replace the controller circuit board.

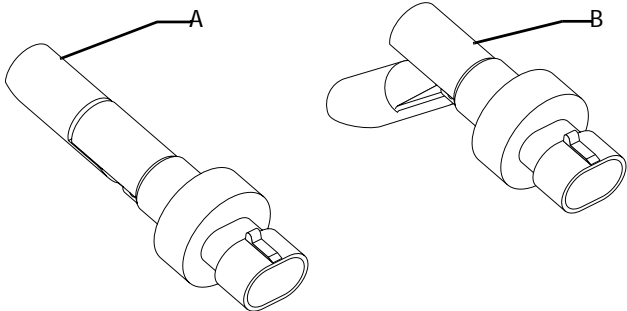
Problem	Possible Cause	Action
ICV is not starting and the panel power (status) indicator is ON.	Panel wiring harness is not properly connected to the controller circuit board.	<ol style="list-style-type: none"> <li>1. Verify that the panel wiring harness is properly connected to the controller and panel circuit board.</li> <li>2. Verify the continuity of the panel to controller wiring harnesses.</li> </ol>
	Temporary/permanent controller circuit board failure.	<ol style="list-style-type: none"> <li>1. Verify DS1 (AC power) on the controller circuit board is ON.</li> <li>2. Verify DS2 (status) on the controller circuit board is ON. <ul style="list-style-type: none"> <li>• If DS2 is OFF and DS1 is ON, cycle power to the circuit board by disconnecting mains power from P11 for five seconds. Reconnect the power.</li> <li>• If DS1 is ON and DS2 remains OFF, replace the controller circuit board.</li> <li>• If DS1 and DS2 are ON, disconnect the tank fluid level sensor at P6.</li> <li>• Verify DS6 is ON.</li> </ul> </li> <li>1. If DS6 remains OFF with the level sensor disconnected, cycle power to the circuit board by disconnecting mains power from P11 for five seconds. <ul style="list-style-type: none"> <li>• Reconnect power.</li> <li>• If DS6 remains OFF with the fluid level sensor disconnected, replace the controller circuit board.</li> </ul> </li> </ol>
	Panel wiring harness or panel circuit board failure.	<ol style="list-style-type: none"> <li>1. Disconnect the panel wiring harness from P4 (Operatory A) on the controller circuit board (P5 for Operatory B).</li> <li>2. Verify the continuity of the panel to controller wiring harnesses.</li> <li>3. Momentarily short pin 1 to pin 2 on P4 or P5. If a flush cycle starts, remove and replace the panel circuit board. If a flush cycle will not start, remove and replace the controller circuit board.</li> </ol> <p><b>TIP</b> Use a circuit board jumper (P/N 041.427.01) to momentarily short the pins.</p>
	For a dual panel configuration, trying to run both panels simultaneously.	Only one panel can run at a time. If a flush cycle is started at one panel, that panel must complete its timed cycle before the second panel starts.



Problem	Possible Cause	Action
Flush cycle is too long or too short	Flush cycle timing requires adjustment.	Turn the timing adjustment wheel towards the "-" to decrease the flush cycle run time; towards the "+" to increase.  <b>TIP</b> The cycle run time can be adjusted from 20 seconds to 150 seconds.

**Figure 272 Timing Adjustment Wheel****(A) Timing Adjustment Wheel**

The low fluid indicator on the panel is always ON.	Low fluid in the fluid reservoir.	Verify the reservoir is not low on fluid. On the side of the reservoir, verify the fluid level is above the 32 oz. mark.
	The reservoir fluid level sensor switch is disconnected or not properly connected to the controller circuit board.	Verify the reservoir fluid level sensor connections from the controller circuit board to the reservoir fluid level sensor.

Problem	Possible Cause	Action
	The reservoir fluid level sensor has failed or is installed upside down in the fluid reservoir.	<p>The reservoir fluid level sensor is a normally open switch. When the float on the switch is raised, the switch closes. Check the continuity of the switch. The switch should close when the float is raised; open when the float is allowed to drop.</p> <p><b>CAUTION</b> Do not remove the reservoir fluid level sensor from the tank until the reservoir has been emptied of fluid.</p> <p><b>TIP</b> Installing a circuit board jumper (P/N 041.427.01) at P6 on the controller circuit board should result in DS6 turning OFF. If DS6 does not turn OFF, remove and replace the controller circuit board.</p> <p><b>Figure 273 Fluid Level Sensor</b></p>  <p>(A) Closed Switch; (B) Open Switch</p>

Problem	Possible Cause	Action
The low fluid Indicator on the panel is always OFF.	Shorted connection to the reservoir fluid level sensor.	Verify the reservoir fluid level sensor connections from the controller circuit board to the reservoir fluid level sensor.
	The reservoir fluid level sensor has failed.	The reservoir fluid level sensor is a normally open switch. When the float on the switch is raised, the switch closes. Check the continuity of the switch. The switch should close when the float is raised; open when the float is allowed to drop.  <b>CAUTION</b> Do not remove the reservoir fluid level sensor from the reservoir until the reservoir has been emptied of fluid.
	Temporary/permanent controller circuit board failure.	<ol style="list-style-type: none"> <li>1. Disconnect reservoir fluid level sensor from P6 on the controller circuit board, verify DS6 is ON. <ul style="list-style-type: none"> <li>• If DS6 is ON, the reservoir fluid level sensor or wiring has failed.</li> <li>• If DS6 is OFF, reconnect the level sensor to P6 and cycle power to the circuit board by disconnecting mains power from P11 for 5 seconds. After reconnecting power verify DS2 is ON and that DS6 remains OFF.</li> <li>• Disconnect reservoir fluid level sensor from P6 on the controller PCB, verify DS6 is ON. If DS6 is OFF, replace the controller circuit board.</li> </ul> </li> </ol>
The ICV activates, but no fluid is used.	Fluid supply tubing to the panel has become disconnected or kinked.	Verify the tubing connections and that there are no kinks in the tubing.
	Solenoid is not properly connected to the controller circuit board.	Verify solenoids connections and wiring. Check the solenoid connections at P1 and P2 on the controller circuit board.
	Solenoid has failed.	Check the resistance of the solenoid coil for 20 Ohms +/- 2 Ohms
	Controller circuit board solenoid relay failure.	<ul style="list-style-type: none"> <li>• For single treatment room configurations; move the panel and solenoid connections on the controller circuit board to the available operatory position.</li> <li>• For dual treatment room configurations; temporarily swap the panel and solenoid connections on the controller circuit board.</li> </ul>

Table 32 contains tips and troubleshooting information to assist in diagnosing ICV problems. The table is not intended to cover every situation, but includes the most common problems that you may encounter.

**Table 32 Panel Icon and LEDs**

Icon/LED	ICV Panel A or B
Power (A-dec logo)	Off = ICV is not functioning. <b>Blue steady</b> = normal condition (ready for use).
Cycle indicator	Off = Flush cycle is not running. <b>Yellow steady</b> = Flush cycle is running.
Low fluid	Off = Fluid reservoir has sufficient fluid. <b>Yellow steady</b> = Fluid reservoir is low on fluid.

Table 33 contains tips and troubleshooting information to assist in diagnosing ICV problems. The table is not intended to cover every situation, but includes the most common problems that you may encounter.

**Table 33 Controller Circuit Board LEDs**

LED	Status	Description
DS1 AC power	OFF	No mains voltage, open circuit breaker, mains power P11 is disconnected.
	<b>Green Steady</b>	Mains voltage is present.
DS2 status	OFF	System is not functioning, no power to circuit board or the circuit board has failed.
	<b>Green Steady</b>	Normal condition.
DS4 panel A indicator	OFF	Panel A is not being used.
	<b>Yellow Steady</b>	Panel A is being used.
DS5 panel B indicator	OFF	Panel B is not being used.
	<b>Yellow Steady</b>	Panel B is being used.

LED	Status	Description
DS6 low fluid indicator	OFF	Fluid level sensing switch is closed; the tank has sufficient fluid.
	Red Steady	Fluid level sensing switch is open; the tank has insufficient fluid.
DS11 solenoid A indicator	OFF	Panel A solenoid is not energized.
	Yellow Steady	Panel A solenoid is energized.
DS12 solenoid B indicator	OFF	Panel B solenoid is not energized.
	Yellow Steady	Panel B solenoid is energized.



# INDEX

## Numerics

- 12 O’Clock system
    - Model 541 standard configuration, 121
    - Model 545 standard configuration, 69, 97, 121, 153
  - 12 O’clock system
    - 541 product overview, 122
    - illustrated parts breakdown, 30, 32, 34, 36, 38, 40, 42, 44, 46, 82, 84, 136, 274, 396, 398, 400
    - product overview, 122
  - 531 monitor mount
    - monitor mounts, 293
  - 541
    - control block assembly, 180
    - cover removal, 125
    - illustrated parts breakdown, 91, 141
    - internal components, 123
    - plumbing flow diagram, 129
  - 542
    - control block assembly, 180
  - 545
    - plumbing flow diagram, 239
  - 561 monitor mount
    - monitor mounts, 294
  - 571 dental light IPB
    - dental light, 350
  - 6300 ceiling mount light IPB
    - dental light, 356, 358
  - 6300 Preference mount light IPB
    - dental light, 360
  - 6300 track dental light IPB
    - dental light, 352
- ## a
- A-dec 571 light intensity setting
    - dental light, 327
  - A-dec 571 switch connections
    - dental light, 327
  - A-dec Illustrated Parts Breakdown, 4
  - A-dec intraoral camera
    - clinical products, 374

## Adjustments

- 542 flexarm counterbalance, 102
- chair, 27
- cuspidor, 254
- dental light, 339
- ICV, 394
- instrumentation arm height, 132, 244
- monitor mounts, 300
- worksurface height, 132, 244
- Air and water filter regulator body assembly IPB
  - floor box, 277
- Air and water filter regulators
  - floor box, 276
- Air and water filter regulators IPB
  - floor box, 276
- Amalgam separator housing
  - components, 265
  - illustrated parts breakdown, 265
  - overview, 265
- Antimicrobial AlphaSan tubing, 154
- Arm assembly
  - leveling front-to-back, 130
  - leveling side-to-side, 130
- Assistant's holders
  - electric, 237
  - illustrated parts breakdown, 152
- Assistant's instrumentation, standard configuration of, 69, 97, 121, 153
- Assistant's touchpad
  - electric holder, illustrated parts breakdown, 150
- Assistant's touchpad, illustrated parts breakdown, 152
- Auto on/off function
  - dental lights, 325
- Autoclavable HVE,
  - large bore, 219
  - no tip, 218
- Autoclavable saliva ejector, 220

## **b**

- Back cylinder assembly
  - chair, 40
- Back down
  - chair, 22
- Back up
  - chair, 22
- Base down
  - chair, 22
- Base up
  - chair, 22
- Baseplate
  - chair, 30
- Bowl rinse functions
  - cuspidor, 254
- Bump-up feature
  - chair, 26

## **c**

- Cam assembly
  - chair, 42
- Capacitor
  - chair, 23
- Ceiling mount light intensity setting
  - dental light, 328
- Ceiling mounted light switch connections
  - dental lights, 328
- Chair
  - adjustments, 27
  - back cylinder assembly, 40
  - back down, 22
  - back up, 22
  - base down, 22
  - baseplate, 30
  - bump-up feature, 26
  - cam assembly, 42

capacitor, 23  
circuit board, 334  
circuit board components, 18  
headrest, 46  
Headrest adjustment, 28  
headrest assembly, 46  
hydraulic cylinder operation, 22  
hydraulic cylinders, 22  
hydraulic hose, 32  
hydraulic pump, 22  
hydraulic reservoir, 21  
hydraulics, 21  
illustrated parts breakdown, 29  
lift cylinder, 34  
link arm, 34  
lower assembly, 36  
motor, 22  
motor pump assembly, 30  
part identification symbols, 29  
potentiometer, 25  
potentiometer locations, 25  
seat assembly, 44  
solenoid assembly, 32  
solenoids, 24  
solenoids how to test, 24  
springs, 42  
stop plate, 26  
stop switch, 26  
swivel assembly, 38  
swivel brake, 27  
tension adjustment, 27  
test solenoids, 24  
tilt cylinder assembly, 40  
upper, 42, 44  
upper structure, 38

Chair circuit board components  
    dental light, 334  
Changing settings, Endodontics Mode, 58  
Circuit board  
    chair, 334  
Circuit board components  
    cuspidor, 252  
Circuit board jumper locations, warm water syringe, 170  
Circuit board, control  
    ICV, 392  
Circuit board, display  
    ICV, 393  
Circuit breaker locations  
    dental light, 330  
Clinical products, 378  
    A-dec intraoral camera, 374  
    EA-50LT bulb replacement, 372  
    EA-50LT flow diagram, 368  
    EA-51LT bulb replacement, 373  
    EA-51LT flow diagram, 368  
    intraoral camera, 374  
    intraoral camera flow diagram, 374  
    maintenance, 370  
    miniLED curing light flow diagram, 382  
    o-ring replacement, 370  
    overview, 367  
    Sopro 595 intraoral camera flow diagram, 376  
    Sopro 717 intraoral camera flow diagram, 376  
    SP Newtron scaler with deluxe touchpad flow diagram, 378  
    SP Newtron scaler with no touchpad flow diagram, 380  
    SP Newtron scaler with standard touchpad flow diagram, 380  
Clutch assembly, 296  
    monitor mounts, 296  
Components  
    amalgam separator housing, 265  
Connect/disconnect tubing, quick connect fitting, 158



## *A-dec Service Guide, Vol. II*

- Continental syringes, 214
- Continental warm water syringe, 216
- Control block
  - 541 delivery system dismount, 178
  - 542 delivery system dismount, 178
  - exploded assembly of, 180
  - overview 541, 172
  - overview 542, 172
  - service/usage information, 178
- Control center
  - 12 O'clock illustrated parts breakdown, 142
- Control circuit board components
  - ICV, 392
- Control head
  - 542 illustrated parts breakdown, 110
- Conventions
  - document, 2
  - formatting, 2
  - part identification symbols, 2
- Cover removal
  - side delivery system, 118
  - cover removal, 541, 125
- Covers
  - chair, 16
- Cup fill and bowl rinse timing
  - cuspidor, 255
- Cup fill functions
  - cuspidor, 254
- Cuspidor
  - adjustments and maintenance, 254
  - bowl rinse functions, 254
  - circuit board components, 252
  - cup fill and bowl rinse timing, 255
  - cup fill functions, 254
  - fill/rinse manifold, 264
  - flow diagram, 250
  - identification of features, 248
  - illustrated parts breakdown, 257
  - lower assembly IPB, 262
  - part identification symbols, 257

- product overview, 248
  - service/usage information, 252
  - systems, 247
  - upper assembly IPB, 259
- Customer service, 3
- Cycle time adjustment
  - ICV, 394
- Cycle time test
  - ICV, 394

## **d**

- Data communication system (DCS)
  - overview of, 159
- Delivery system
  - 542 illustrated parts breakdown of, 106
- Dental Chair, 9
  - covers, 16
  - factory default routine, 17
  - flow diagram, 14
  - limp-along feature, 11
  - load capacity, 11
  - power on/off button, 11
  - power supply, 12
  - product overview, 10
  - service/usage information, 16
  - specifications, 11
- Dental light
  - 571 dental light IPB, 350
  - 6300 ceiling mount light IPB, 356, 358
  - 6300 Preference mount light IPB, 360
  - 6300 track dental light IPB, 352
  - A-dec 571 light intensity setting, 327
  - adjustments and maintenance information, 339
  - ceiling mount light intensity setting, 328
  - chair circuit board components, 334
  - circuit breaker locations, 330
  - diagonal rotation of light head, 341
  - flexarm, 343
  - flexarm adjustments, 343
  - focus adjustment, 339



- illustrated parts breakdown, 347
- lamp replacement, 345
- left/right rotation of the light head, 340
- light components on the chair circuit board, 334
- light head IPB, 348
- light head rotation, 340
- light LED identification, 338
- light LED identification on the chair circuit board, 336
- light relay board, 337
- light shield cleaning, 344
- lower 6300 ceiling mount light IPB, 358
- part identification symbols, 347
- power cable, 331
- Preference mount light intensity setting, 328
- third axis of light head, 341
- track assembly IPB, 352
- track light intensity setting, 329
- transformers, 332
- trolley assembly IPB, 354
- up/down rotation of light head, 342
- upper 6300 ceiling mount light IPB, 356
- vertical rotation of light head, 342
- wall mount light intensity setting, 328
- wall mount light IPB, 363
- Dental lights, 323
  - A-dec 571 light switch connections, 327
  - auto on/off function, 325
  - ceiling mounted light switch connections, 328
  - intensity switches, 325
  - nominal light intensity, 324
  - on/off functions, 325
  - on/off switch, 325
  - Preference mounted light switch connections, 328
  - product overview, 324
  - service and usage information, 326
  - specifications, 324
  - switch connections, 326
  - three-way switch, 325
  - track light switch connections, 329
  - wall mounted light switch connections, 328
- Diagonal rotation of the light head
  - dental light, 341
- Dismounting control block, 178
- Display circuit board components
  - ICV, 393
- Display panel features
  - ICV, 389
- Display panel IPB
  - ICV, 398
- Doctor's arm assembly, illustrated parts breakdown, 86, 88, 144
- Doctor's holder
  - components of, 126
  - cover removal of, 126
- Documentation, electronic, 4
- Drift friction adjustment
  - monitor mounts, 300
- Dual panel IPB
  - ICV, 400
- Duo delivery system
  - product overview, 122
- e**
  - EA-50LT
    - maintenance, 370, 371
  - EA-50LT bulb replacement
    - clinical products, 372
  - EA-50LT flow diagram
    - clinical products, 368
  - EA-51
    - maintenance, 370, 371

- EA-51LT
  - maintenance, 370, 371
- EA-51LT bulb replacement
  - clinical products, 373
- EA51-LT Electric Micromotor
  - factory preset speeds, 56
- EA-51LT flow diagram
  - clinical products, 368
- Electric holder
  - illustrated parts breakdown, 150
- Electric holder, assistant's touchpad, 150
- Electric holders
  - dual assembly, 237
  - single assembly, 237
  - wiring diagram, 237
- Endodontics Mode, 58
  - handpiece settings in, 58
  - settings defined, 59

## **f**

- Factory default routine
  - chair, 17
- Factory preset speeds, 56
- Features
  - ICV, 387
- Fill/rinse manifold
  - cuspidor, 264
- Filter element replacement
  - floor box, 271
- Filter regulator body IPB
  - floor box, 277
- Filter regulator components IPB
  - floor box, 276
- Flexarm
  - dental light, 343

- Flexarm adjustments
  - dental light, 343
- Flexarm counterbalance, 102
- Flexholder
  - illustrated parts breakdown of, 206
- Floor box
  - air and water filter regulator body assembly IPB, 277
  - air and water filter regulators IPB, 276
  - filter element replacement, 271
  - filter regulator body IPB, 277
  - filter regulator components IPB, 276
  - illustrated parts breakdown, 273
  - moisture separator IPB, 278
  - part identification symbols, 273
  - product overview, 270
  - service and maintenance information, 271
  - systems, 269
  - utilities module with 3' umbilical IPB, 274
  - utilities module with 3' umbilical, no sheath IPB, 274
  - without utilities IPB, 274
- Flow Diagram
  - chair, 14
- Flow diagram
  - cuspidor, 250
  - foot control, 177
  - ICV, 391
  - side delivery wiring, 101
  - support center, 250
- Flow of fluid chart
  - ICV, 390
- Flush toggle, 164
- Focus adjustment
  - dental light, 339



- Foot control
  - accessory valve illustrated parts breakdown of, 192
  - flow diagram, 177
  - illustrated parts breakdown of, 190
  - signal relay main body valve illustrated parts breakdown of, 195
  - wet/dry toggle valve illustrated parts breakdown of, 192
- Front mount monitor mount
  - monitor mount, 293
- Front mount monitor mount features
  - monitor mounts, 293

## **h**

- Handle/bracket assembly features
  - monitor mounts, 297
- Handpiece holder
  - positioning of, 133
- Handpieces
  - flush toggle, 164
- Headrest
  - chair, 46
- Headrest adjustment
  - chair, 28
- Headrest assembly
  - chair, 46
- Holder
  - assistant's 12 O'clock illustrated parts breakdown, 152
  - doctor's, 133
  - doctor's turret assembly, illustrated parts breakdown, 94, 146, 196, 198, 200, 202, 204
  - traditional, 112
- HVE, autoclavable with large bore, 219
- Hydraulic cylinder operation
  - chair, 22
- Hydraulic cylinders
  - chair, 22

- Hydraulic fluid reservoir
  - chair, 21
- Hydraulic hose
  - chair, 32
- Hydraulic pump
  - chair, 22
- Hydraulic reservoir
  - chair, 21
- Hydraulic System
  - Test Solenoids, 24
- Hydraulic system
  - Chair, 21

## **i**

- ICV
  - adjustments and maintenance information, 394
  - circuit board, control, 392
  - circuit board, display, 393
  - control circuit board components, 392
  - cycle time adjustment, 394
  - cycle time test, 394
  - display circuit board components, 393
  - display panel features, 389
  - display panel IPB, 398
  - dual panel IPB, 400
  - features, 387
  - flow diagram, 391
  - flow of fluid chart, 390
  - illustrated parts breakdown, 395
  - main assembly components IPB, 396
  - part identification symbols, 395
  - product overview, 386
  - service and usage information, 392
  - systems, 385
  - tubing and cable identification, 388

Identification of features

- cuspidor, 248
- support center, 248

Identifying switch connections

- dental lights, 326

Illustrated parts breakdown

- amalgam separator housing, 265
- chair, 29
- cuspidor, 257
- dental light, 347
- floor box, 273
- ICV, 395

Illustrated parts breakdown

- cross-system features, 179

Inside this guide, 2

Intensity switches

- dental lights, 325

Intraoral camera

- clinical products, 374

Intraoral camera flow diagram

- clinical products, 374

Intraoral light source voltage, 176

**j**

Jumper locations, warm water syringe circuit board, 170

**l**

Lamp replacement

- dental light, 345

LED

- troubleshooting table for, 426

Left/right rotation of the light head

- dental light, 340

Leveling

- arm assembly, 72, 73, 74, 79, 80, 130, 162, 165, 173, 174, 226, 227, 229, 230, 234, 242

- hub, 72, 73, 74, 79, 80, 130, 162, 165, 173, 174, 226, 227, 229, 230, 234, 242

- tray, 175

- worksurface, 131

Lift cylinder

- chair, 34

Light components on the chair circuit board

- dental light, 334

Light head IPB

- dental light, 348

Light head rotation

- dental light, 340

Light LED identification

- dental light, 338

Light LED identification on the chair circuit board

- dental light, 336

Light relay board

- dental light, 337

Light shield cleaning

- dental light, 344

Link arm

- chair, 34

Lower 6300 ceiling mount light IPB

- dental light, 358

Lower assembly

- chair, 36

Lower assembly IPB

- cuspidor, 262
- support center, 262



## **m**

Main assembly components

ICV, 396

Maintenance

clinical products, 370

EA-50LT, 370, 371

EA-51LT, 370, 371

Manifold assembly, illustrated parts breakdown of, 185

Master on/off toggle, 163, 186

MiniLED curing light flow diagram

clinical products, 382

Model 541

standard configuration, 121

Model 545

standard configuration, 69, 97, 121, 153

Model numbers, 5

Moisture separator IPB

floor box, 278

Monitor mount

531 monitor mount, 293

support side monitor mount, 294

Monitor mounts

561 monitor mount, 294

adjustments, 300

clutch assembly features, 296

drift friction adjustment, 300

front mount monitor mount, 293

front mount monitor mount features, 293

handle/bracket assembly features, 297

monitor requirements, analog monitor, 292

monitor requirements, digital monitors, 292

monitor track mount, 295

panning friction, track mount, 302

product overview, 292

specifications, 292

support side monitor mount features, 294

support side tray holder adjustments, 301

systems, 291

tilt friction adjustment, 300

track monitor mount features, 295

track mounted monitor, 295

tray holder adjustment, 561, 301

trolley assembly after February 2007, 299

trolley assembly features, 298

trolley before February 2007, 298

Monitor requirements, analog monitor

monitor mounts, 292

Monitor requirements, digital monitors

monitor mounts, 292

Monitor track mount

clutch assembly, 296

monitor mounts, 295

trolley assembly, 298

Motor

chair, 22

Motor pump assembly

chair, 30

Mounting platform, illustrated parts breakdown, 91, 141

## **n**

Nominal light intensity

dental lights, 324

## **o**

On/off functions

dental lights, 325

On/off switch

dental lights, 325

OrderNet, 4

O-ring replacement

clinical products, 370

## Overview

- amalgam separator housing, 265
- clinical products, 367
- programming, 49

## **P**

- Panning friction, track mount
  - monitor mounts, 302
- Part identification symbols
  - chair, 29
  - cuspidor, 257
  - dental light, 347
  - floor box, 273
  - ICV, 395
- Parts catalog, 4
- Potentiometer
  - chair, 25
- Power cable
  - dental light, 331
- Preference mount light intensity setting
  - dental light, 328
- Preference mounted light switch connections
  - dental lights, 328
- Product Overview
  - dental chair, 10
- Product overview
  - 12 O'clock system, 122
  - cuspidor, 248
  - dental lights, 324
  - floor box, 270
  - ICV, 386
  - monitor mounts, 292
  - side delivery system, 98
  - support side, 248
  - 12 O'clock system, 122

## Programming

- handpiece settings, Endodontics Mode, 58
- handpiece settings in Standard Mode, 56
- Overview, 49
- touchpad in standard mode, 56

## **Q**

- Quick connect fittings
  - connect/disconnect tubing, 158

## **S**

- Saliva ejector, 220
- Scaler, 378
- Seat assembly
  - chair, 44
- Self-contained water bottle
  - overview of, 167
- Serial number, 5, 6
- Service and maintenance information
  - floor box, 271
- Service and usage information
  - dental lights, 326
  - ICV, 392
- Service/Usage Information
  - dental chair, 16
- Service/usage information
  - chair, 16
  - cuspidor, 252
- Serviceable Components, 3, 206
- Side delivery system
  - adjust tray holder, 175
  - cover removal, 118
  - covers and brake illustrated parts breakdown, 108
  - illustrated parts breakdown of, 104
  - plumbing flow diagram, 100, 233



- product overview, 98
- wiring flow diagram, 101
- Solenoid
  - chair, 24, 32
- Solids collector
  - removal, 238
  - replace screen, 238
- Sopro 595 intraoral camera flow diagram
  - clinical products, 376
- Sopro 717 intraoral camera flow diagram
  - clinical products, 376
- SP Newtron scaler
  - clinical products, 378
- SP Newtron scaler with deluxe touchpad flow diagram
  - clinical products, 378
- SP Newtron scaler with no touchpad flow diagram
  - clinical products, 380
- SP Newtron scaler with standard touchpad flow diagram
  - clinical products, 380
- Specifications
  - dental lights, 324
  - monitor mounts, 292
  - warm water syringe, 170
- Speeds, factory presets, 56
- Springs
  - chair, 42
- Standard Mode
  - handpiece settings, 56
- Standard mode, usage in, 56
- Stop plate
  - chair, 26
- Stop switch
  - chair, 26
- Support, 3

- Support center
  - flow diagram, 250
  - identification of features, 248
  - lower assembly IPB, 262
  - systems, 247
- Support side
  - product overview, 248
- Support side monitor mount
  - monitor mounts, 294
- Support side monitor mount features
  - monitor mounts, 294
- Support side tray holder adjustments
  - monitor mounts, 301
- Support, contact information, 3
- Swivel assembly
  - chair, 38
- Swivel brake
  - chair, 27
- syringe
  - autoclavable models, 168
  - continental, 214
  - continental illustrated parts breakdown of, 214
  - traditional, 214
  - traditional illustrated parts breakdown of, 214
  - troubleshooting, 405, 438
  - warm water circuit board, 170
  - warm water components, 169
  - warm water continental illustrated parts breakdown of, 216
  - warm water temperature selection, 170
  - warm water temperature selection input, 170
  - warm water traditional illustrated parts breakdown of, 216



Systems, 49, 67, 269, 279, 291, 385

    cuspidor, 247

    floor box, 269

    ICV, 385

    monitor mounts, 291

    support center, 247

## **t**

Technical packet, 4

Tension adjustment

    chair, 27

Test solenoids

    chair, 24

Third axis of light head

    dental light, 341

Three-way switch

    dental lights, 325

Tilt cylinder assembly

    chair, 40

Tilt friction adjustment

    monitor mounts, 300

Tools, recommended, 7

Touchpad

    programming of standard mode, 56

touchpad

    assistant's 12 O'clock illustrated parts breakdown, 152

Track assembly IPB

    dental light, 352

Track light intensity setting

    dental light, 329

Track light switch connections

    dental lights, 329

Track monitor mount features

    monitor mounts, 295

Track mounted monitor

    monitor mounts, 295

Traditional syringes, 214

Traditional warm water syringe, 216

Transformers

    dental light, 332

Tray holder

    adjust side delivery, 175

Tray holder adjustment, 561

    monitor mounts, 301

Tray level, 175

Trolley assembly after February 2007

    monitor mounts, 299

Trolley assembly before February 2007

    monitor mounts, 298

Trolley assembly features

    monitor mounts, 298

Trolley assembly IPB

    dental light, 354

Troubleshooting

    LED, 426

    syringes, 405, 438

Tubing

    overview of, 154

Tubing and cable identification

    ICV, 388

## **u**

Up/down rotation of light head

    dental light, 342

Upper

    chair, 42, 44

Upper 6300 ceiling mount light IPB

    dental light, 356



- Upper assembly IPB
  - cuspidor, 259
- Upper structure
  - chair, 38
- Usage in standard mode, 56
- Utilities module with 3' umbilical IPB
  - floor box, 274
- Utilities module with 3' umbilical, no sheath IPB
  - floor box, 274

## **V**

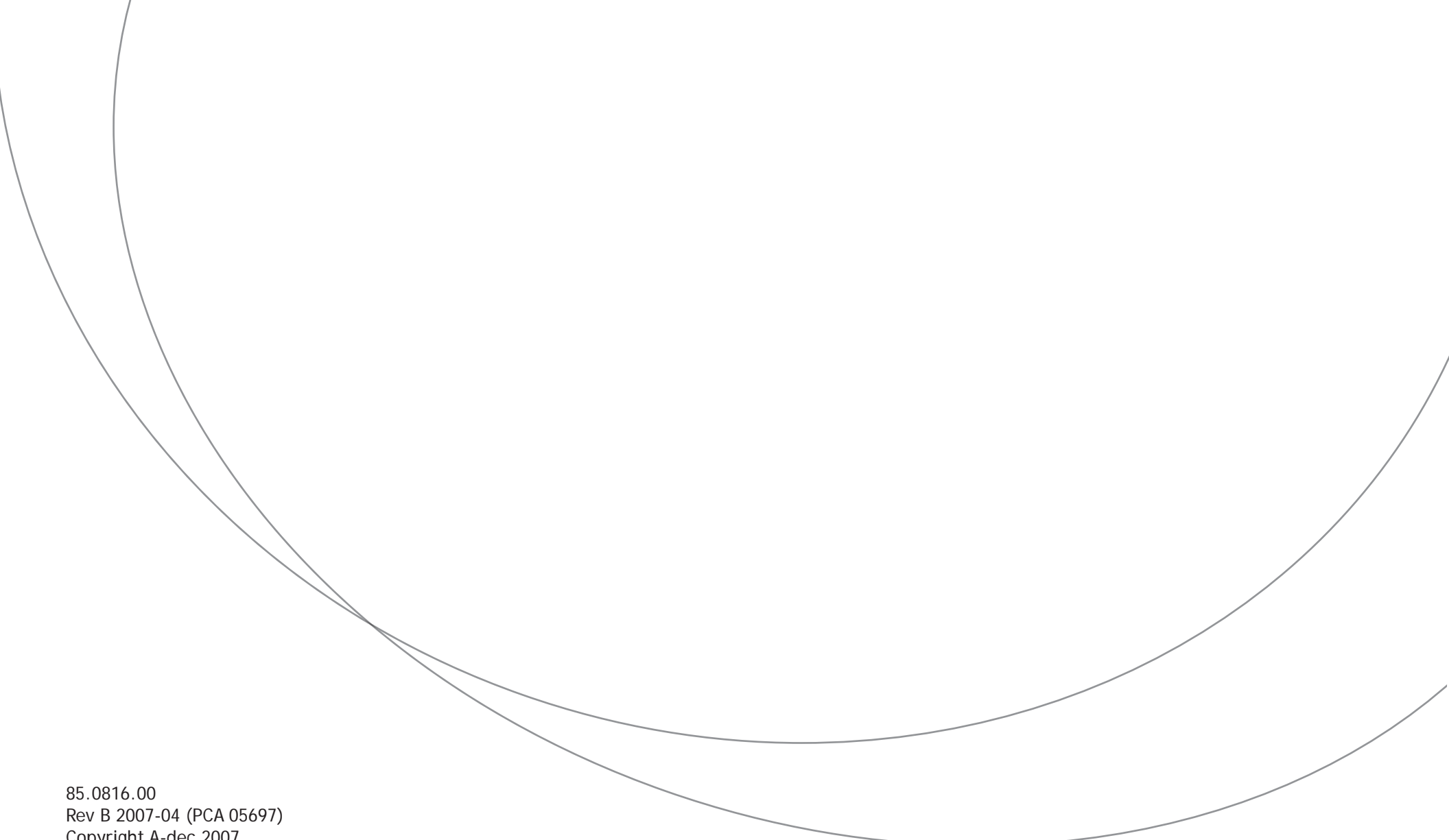
- Vacuum/upper structure assembly
  - illustrated parts breakdown, 148
- Vertical rotation of light head
  - dental light, 342
- Voltage, intraoral light source, 176

## **W**

- Wall mount light intensity setting
  - dental light, 328
- Wall mount light IPB
  - dental light, 363
- Wall mounted light connections
  - dental lights, 328
- Warm water syringe, 169, 216
  - circuit board descriptions, 170
  - circuit board jumper locations, 170
  - specifications, 170
  - temperature selection, 170

- Water bottle
  - self-contained assembly illustrated parts breakdown of, 210
  - self-contained illustrated parts breakdown of, 208
  - self-contained kit illustrated parts breakdown of, 212
  - self-contained, operation of, 167
- Wet/dry toggle valve, 192
- Worksurface
  - illustrated parts breakdown, 138
  - leveling, 131



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