

INTRODUCTION TO SERVICING THE A-dec Handpiece Control Blocks

August, 2017



Presented by Mark Micucci Product Engineer Replacement Parts Industries, Inc.



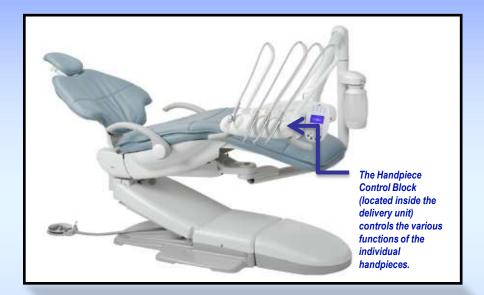
This presentation will provide an overview of the operation of the A-dec Handpiece Control Blocks for models:

- Century II
- Century Plus
- 300 & 500 Series

It will provide attendees with knowledge of how these blocks function and interact with the other components of the A-dec Dental Delivery System.

The presenter will also provide an introduction to the servicing of these Control Blocks, including:

- Exploded Views
- Troubleshooting Information
- Service Tips & Planned Maintenance
- Information about key parts and assemblies of the system





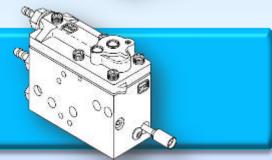
The History of the Handpiece Control Block

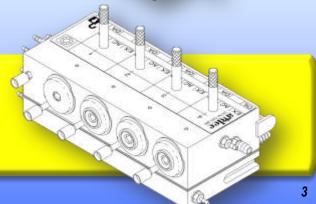
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Century II 1979 – 1993 (OEM Part #38.0223.00)

Century Plus 1992 – 2006 (OEM Part #38.0540.00)

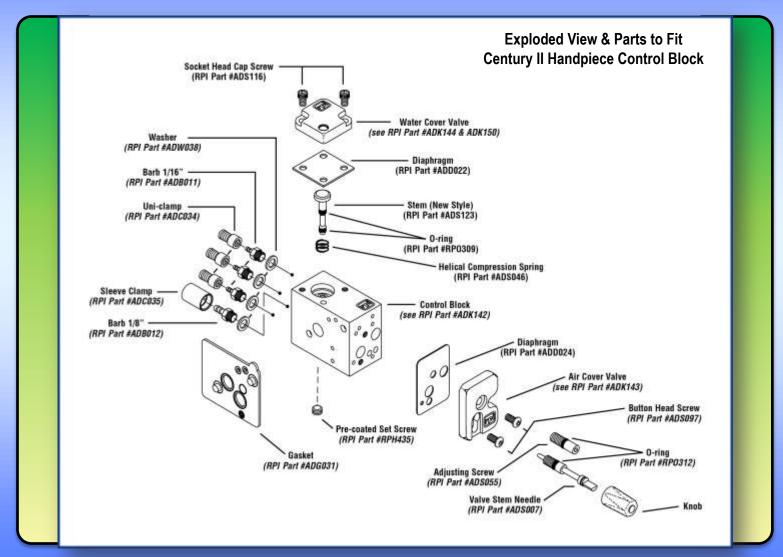
300 & 500 Series 2006 – Present (300 Series OEM Part #38-1831-00) (500 Series OEM Part #38.1776.00)







Century II Handpiece Control Block Exploded View & Parts to Fit





Century II Handpiece Control Block Functions & Interaction with Other Components



For your reference, shown here are wet and dry handpiece tubing hook-ups.

TUBING HOOK-UP PORT IDENTIFICATION REAR VIEW PORT IDENTIFICATION REAR VIEW FOR SLOW SPEED HANDPIECE FOR HIGH SPEED HANDPIECE WET BLOCK DRY BLOCK 1/16" Barbs Chip Air Chip Air 1/16" Barbs Water Hex Plug **Drive Air** Auto-**Drive Air** Auto-Hanger 1/8" Barb Hanger 1/8" Barb HANDPIECE TUBING CONNECTOR Service Tip: After installing END VIEW and before calibrating, verify proper hook-up of handpiece Exhaust **Drive Air** tubing. See "Handpiece Tubing

Water

Connection - End View" to the right.

Chip Air



Troubleshooting Century II Handpiece Control Block

Problem	What to check	Solutions
Handpiece drips water in holder	Valve Stem (New Style) O-rings	Lube O-rings, and if this does not solve the problem then replace Valve Stem (RPI Part #ADS123)
Water leaks from water cover on top of block	Diaphragm Water Cover Valve	Replace Diaphragm (RPI Part #ADD022) If Water Cover Valve is worn, replace it using Kit (RPI Part #ADK144)
Water stops when handpiece is in use	Valve Stem (New Style) O-rings	Lube O-rings, and if this does not solve the problem then replace Valve Stem (RPI Part #ADS123)
	Diaphragm	Replace Diaphragm (RPI Part #ADD022)



Troubleshooting Century II Handpiece Control Block (continued)

Problem	What to check	Solutions
Air leaks from drive air adjusting screw or unable to maintain proper drive air pressure	O-ring on Adjusting Screw	Lube O-ring, and if this does not solve the problem then replace Adjusting Screw (RPI Part #ADS055)
Air leaks from the air cover valve	Air Cover Valve	If air cover valve is loose, tighten button head screws, and if that does not solve the problem then replace the Air Cover Valve if worn (RPI Part #ADK143)
	Diaphragm	Replace Diaphragm (RPI Part #ADD024)
Handpiece will not run or the drive or chip air are very weak	Drive Air Adjusting Screw Diaphragm Air Cover Valve	Adjust the Drive Air Adjusting Screw, replace Diaphragm (RPI Part #ADD024), replace Air Cover Valve if worn – see kit (RPI Part #ADK143)

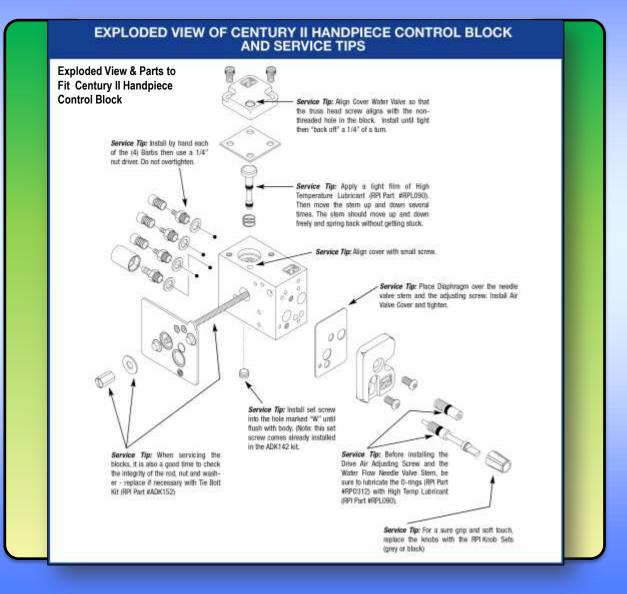


Troubleshooting Century II Handpiece Control Block (continued)

Problem	What to check	Solutions
Unable to adjust the water coolant to a fine mist	Needle Valve Stem and Valve Stem	Lube O-rings, and if this does not solve the problem then replace Needle Valve Stem (RPI Part #ADS007) or Valve Stem (RPI Part #ADS123)
Water leaks from Needle Valve Stem or unable to	O-rings on the Needle Valve Stem	Lube O-rings, and if this does not solve the problem then replace Needle Valve Stem (RPI Part #ADS007)
adjust water flow	Valve Stem (New Style) O-rings	Lube O-rings, and if this does not solve the problem then replace Valve Stem (RPI Part #ADS123)
Air and water are	Loose Tie Bolts	Tighten the Tie Bolts
leaking from the sides of the handpiece block and the handpices may not be running well	Gasket	Replace the Gaskets if needed (RPI Part #ADG031)

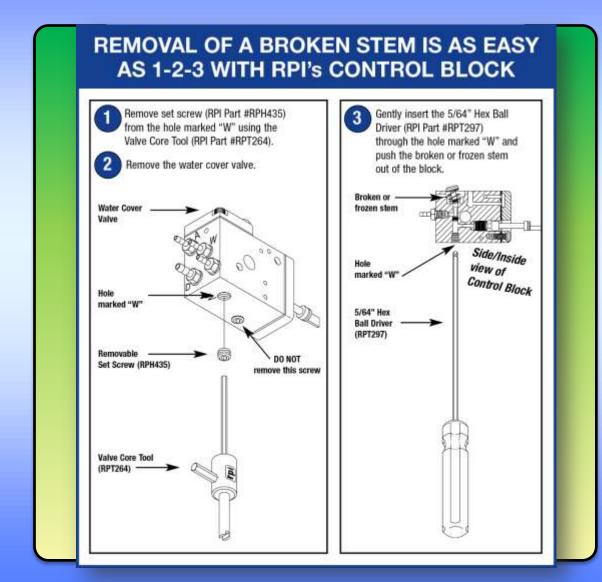


Century II Control Block Service Tips





Century II Control Block Removal of a Broken Stem





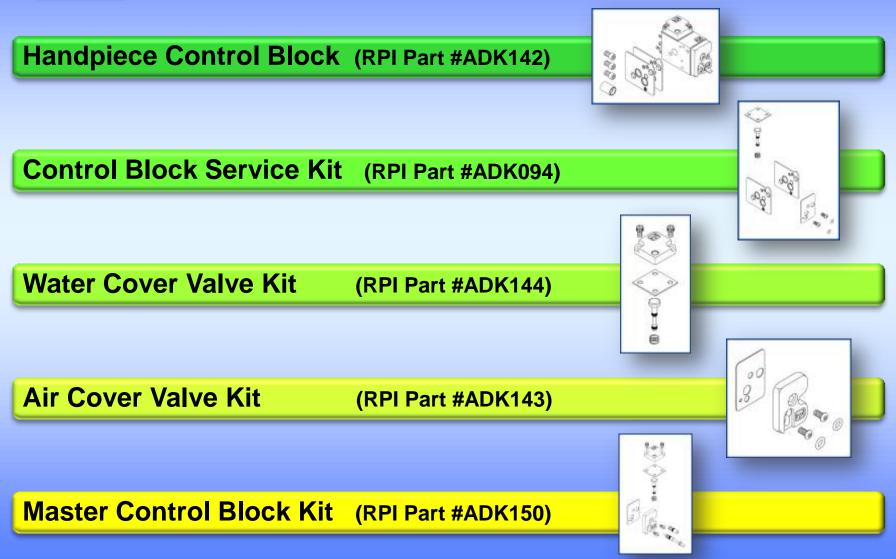
Century II Control Block Calibration Guide





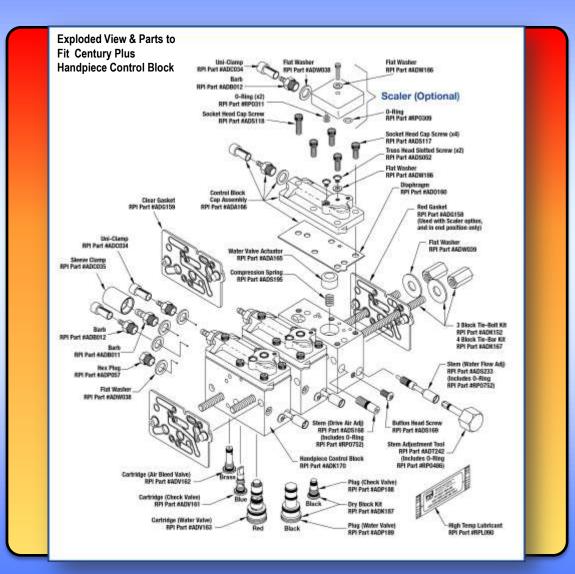
Century II Control Block Handpiece Control Block Kits

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Century Plus Handpiece Control Block Exploded View and Parts to Fit



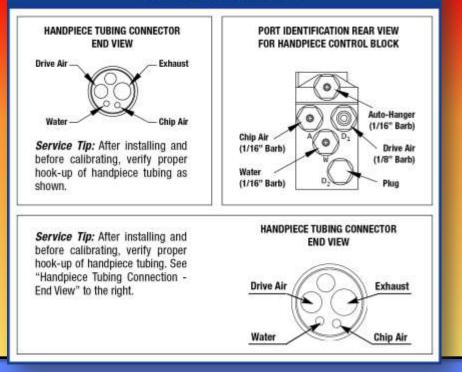


Century Plus Handpiece Control Block Functions & Interaction with Other Components



For your reference, shown here are Handpiece tubing hook-ups.

TUBING HOOK-UP





Troubleshooting Century Plus Handpiece Control Block

Problem	What to check	Solutions
Handpiece drips water in holder or drips a lot then stops after use	Water Valve Cartridge Check Valve Cartridge Air Bleed Valve Cartridge	Replace one Cartridge at a time, and check if problem is solved before replacing the next Cartridge in the following order: - Water Valve Cartridge (RPI Part #ADV163) - Check Valve Cartridge (RPI Part #ADV161) - Air Bleed Valve Cartridge (RPI Part #ADV162)
Water leaks from Control Black Cap or the vent hole on top of the Block	Diaphragm Water Valve Cartridge	Replace Diaphragm (RPI Part #ADD160) Replace Water Valve Cartridge (RPI Part #ADV163)
Water stops when handpiece is in use	Diaphragm Water Valve Cartridge Check Valve Cartridge	Replace Diaphragm (RPI Part #ADD160) Replace Water Valve Cartridge (RPI Part #ADV163) Replace Check Valve Cartridge (RPI Part #ADV161)
Water leaks from Water Flow Adjustment Stem	O-ring on Water Flow Adjustment Stem	Lube O-ring, and if this does not solve the problem then replace Water Flow Adjustment Stem (RPI Part #ADS233) 15



Troubleshooting Century Plus Handpiece Control Block (continued)

Problem	What to check	Solutions
Air leaks from drive air adjusting screw or unable to maintain proper drive air pressure	O-ring on Drive Air Adjustment Stem	Lube O-ring, and if this does not solve the problem then replace Drive Air Adjustment Stem (RPI Part #ADS168)
Air leaks from the Control Block Cap on top of the Block	Loose Control Block Cap	Tighten Socket Head Cap Screws Replace Control Block Cap Assembly (RPI Part #ADA166)
	Diaphragm	Replace Diaphragm (RPI Part #ADD160)
Handpiece will not run or the drive air is very	O-ring on Drive Air Adjustment, Foot Control	Lube O-ring, and if this does not solve the problem then replace Drive Air Adjustment Stem (RPI Part #ADS168)
weak		Check and repair Foot Control as needed 16

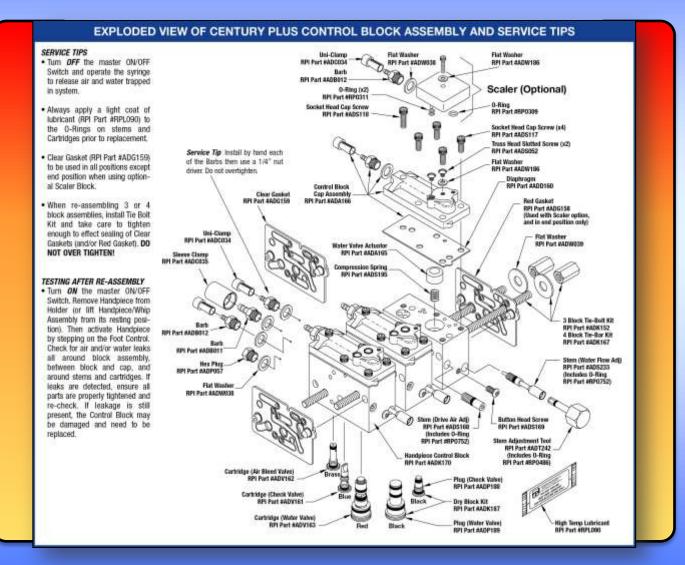


Troubleshooting Century Plus Handpiece Control Block (continued)

Problem	What to check	Solutions
Unable to adjust the Water Coolant to a fine mist	Water Flow Adjustment and Handpiece Control Block	Lube O-ring, and if this does not solve the problem then replace Water Flow Adjustment Stem (RPI Part #ADS233), and Handpiece Control Block (RPI Part #ADK170)
Two handpieces run at the same time – one in the hanger, and the other out of	Loose Control Block Cap, Cap Barb on Control Block Cap, or Tubing from the Hanger Valve to the Cap	Tighten the five Socket Head Cap Screws; tighten Cap Barb and cut back Hanger Tubing and re-attach
the hanger	Diaphragm	Replace Diaphragm (RPI Part #ADD160)
	Control Block Cap	Replace Control Block Cap Assembly (RPI Part #ADA166)
Air and water is leak- ing from the sides of the handpiece block, and the hand-pieces may not be running we	Loose Tie Bolts Red or Clear Gasket	Tighten Tie Bolts. If that does not solve the problem then replace Red Gasket (RPI Part #ADG158) and/or Clear Gasket (RPI Part #ADG159) 17



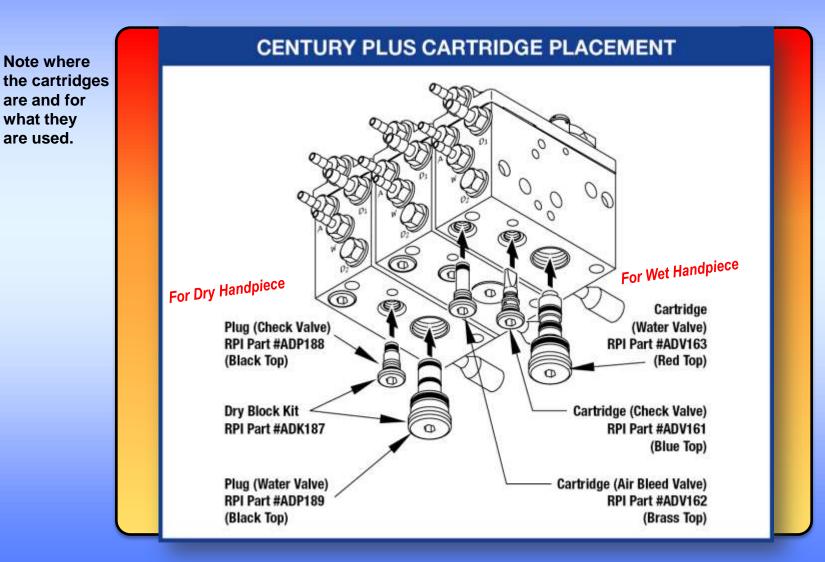
Century Plus Control Block Exploded View & Service Tips



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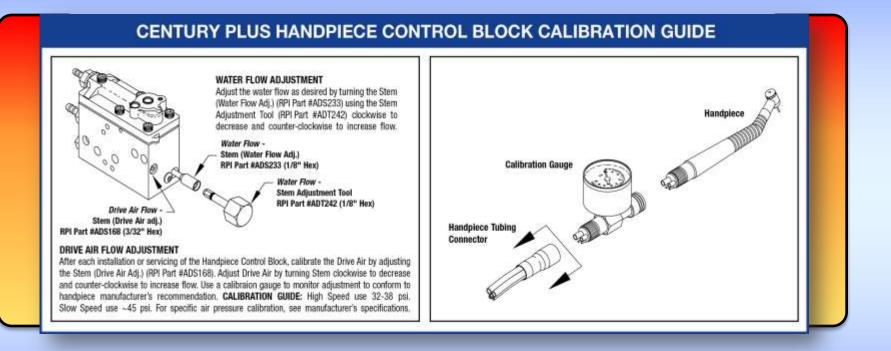
Century Plus Control Block Cartridge Placement







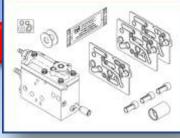
Century Plus Control Block Calibration Guide





Century Plus Control Block Handpiece Control Block Kits

Handpiece Control Block (RPI Part #ADK170)





Control Block Service Kit (RPI Part #ADK164)

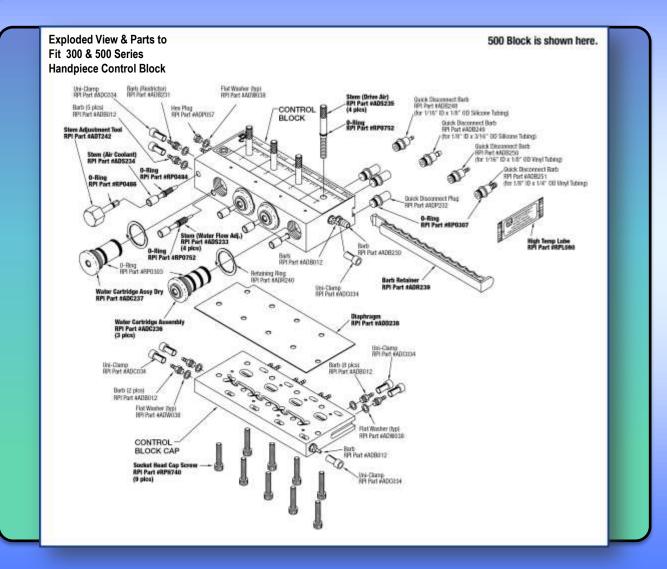
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Control Block Kit (Major) (RPI Part #ADK190)



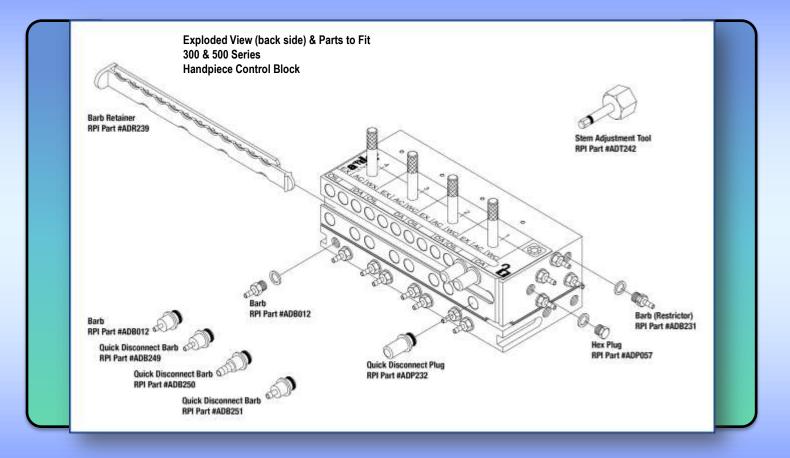


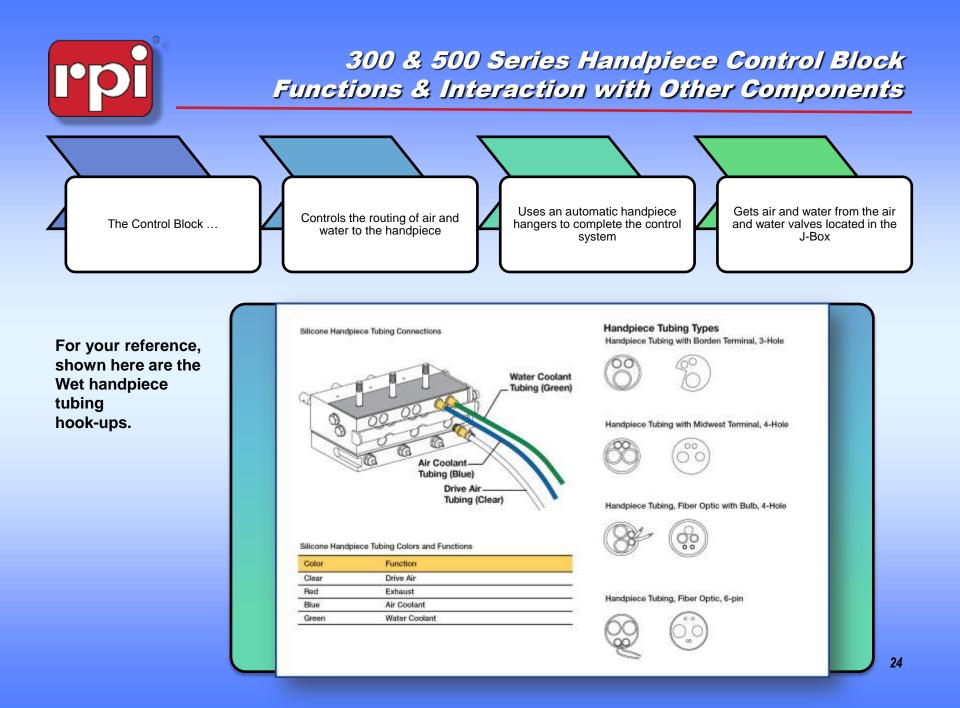
300 & 500 Series Handpiece Control Block Exploded View & Parts to Fit





300 & 500 Series Handpiece Control Block Exploded View and Parts to Fit (back side)







Troubleshooting 300 & 500 Series Handpiece Control Block

Problem	What to check	Solutions
Air leaks from Air Coolant Stem or	Check O-ring on Air Coolant Stem	Replace the O-ring or the Air Coolant Stem (RPI Part #RPO484)
unable to adjust the Water Coolant Stem to a fine mist	Check Air Coolant Stem	Replace the Air Coolant Stem (RPI Part #ADS234)
Air leaks from the Air Drive Stem or	Check the O-ring on the Air Drive Stem	Replace the O-ring on the Air Drive Stem (RPI Part #RPO752)
unable to dial in or maintain the proper air drive pressure	Check the Air Drive Stem	Replace the Air Drive Stem (RPI Part #ADS235)



Troubleshooting 300 & 500 Series Handpiece Control Block (continued)

Problem	What to check	Solutions
Handpiece leaking	Handpiece Holder Valve	If leaking repair or replace Handpiece Holder Valve
water in holder	Handpiece Coupler	Check or replace Coupler O-rings
	Water Coolant Cartridge	Check external O-rings, if OK replace Cartridge (RPI Part #ADC236)
Water leaks from Water Flow Stem	Check O-ring on the Water Flow Stem	Replace O-ring (RPI Part #RPO484) or Water Flow Stem (RPI Part #ADS233)
or unable to adjust the Water Flow Stem to one drop of water every 2 seconds	Check the Water Flow Stem	Replace Water Flow Stem (RPI Part #ADS233)
Water leaks from vent holes on top of block	Water Coolant Cartridge	Check external O-rings, if OK replace Cartridge (RPI Part #ADC236) 26



Troubleshooting 300 & 500 Series Handpiece Control Block (continued)

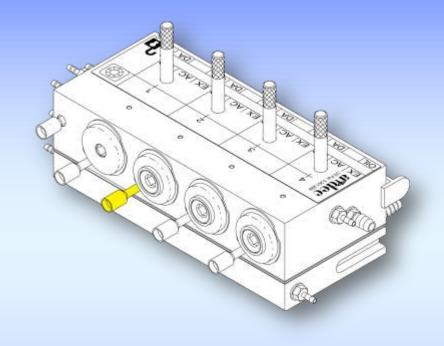
Problem	What to check	Solutions
Water stops when handpiece is in use	Control Block Diaphragm	Split Block; check, clean or replace Diaphragm (RPI Part #ADD238)
Intermittent water coolant to	Check the O-rings in the handpiece Coupler	Check or replace Coupler O-rings
handpieces or sputter water from either syringe or	Check O-ring on Air Coolant Stem	Replace the O-ring (RPI Part # RPO484) or the Air Coolant Stem (RPI Part #ADS234)
handpieces	Check the Air Coolant Stem	Replace Air Coolant Stem (RPI Part #ADS234)
	Check the O-ring on the Water Bottle Pickup Tube	Check or replace the O-ring on the Water Bottle Barb
	Length of Water Bottle Pickup Tube	If too long, shorten the Tube
	Pickup Tube	If damaged or bent, replace the Tube 27



300 & 500 Series Handpiece Control Block Service Tip: Water Coolant Adjustment

Water Coolant Adjustment

- 1) Close all control valves: Drive Air, Air Coolant, and Water Coolant.
- Remove the handpiece from the handpiece holder.
- While pressing down on the Foot Control, use the corresponding stem (Water Control).
- Turn the Stem (Water Control) to open the flow control till you have one drop of water every 2 seconds.

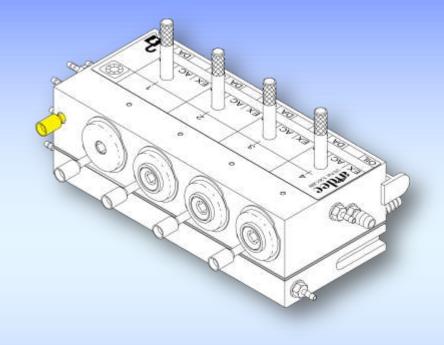




300 & 500 Series Handpiece Control Block Service Tip: Air Coolant Adjustment

Air Coolant Adjustment

- 1) Close all control valves: Drive Air, Air Coolant, and Water Coolant.
- 2) Remove the handpiece from the handpiece holder.
- While pressing down on the Foot Control, use the Air Coolant Control.
- 4) Turn the Air Coolant Control Stem to open the flow until you have a fine mist.

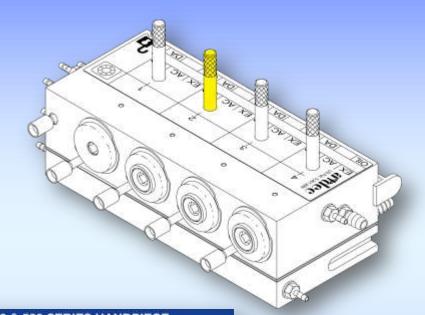




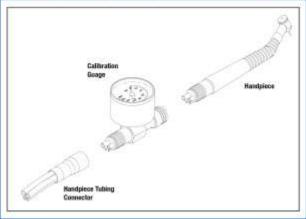
300 & 500 Series Handpiece Control Block Service Tip: Drive Air Adjustment

Drive Air Adjustment

- 1) Install a PSI Test gauge between the hose and the handpiece to be adjusted.
- Remove the handpiece from the handpiece holder
- While pressing down on the Foot Control, use the Drive Air Stem with the selected handpiece position.
- Turn the Drive Air Stem to adjust the Drive Air adjustment until you have the proper PSI rating for the handpiece.



300 & 500 SERIES HANDPIECE CONTROL BLOCK CALIBRATION GUIDE

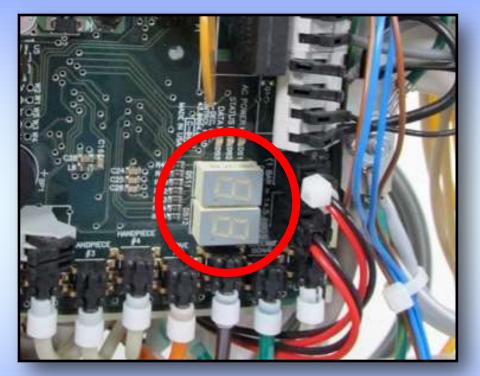




300 & 500 Series Handpiece Control Block Service Tip: Checking the Drive Air Adjustment

Checking the Drive Air Adjustment when using the Digital readout on the Control PC Board.

- 1) Remove the handpiece from the handpiece holder.
- While pressing down on the Foot Control, note the LED readout on the Control PC Board.
- The LED reading will be higher than actual PSI reading, due to the difference in the handpiece and tubing lengths and material.
- 5) The LED reading can be used to confirm the handpiece or Control Block operation.



The location of the LED reading can be found on the board. It is circled in red in the photo above.



Century Plus Control Block Handpiece Control Block Kits

Control Block Kit (Major) (RPI Part #ADK241) Control Block Kit (Minor) (RPI Part #ADK257)



Century II, Century Plus, 300 & 500 Series Tubing Functions and Descriptions

TUBING FUNCTION	DESCRIPTION	OD SIZE AND COLOR
Chip Blower/Accessory Button	Chip blower air	1/8" OD; Brown/White long dash
Air Coolant Signal	Air coolant signal air from foot control; Signal air for cuspidor cupfill and vacuum actuator	1/8" OD; Green/White long dash
Water Coolant Signal	Signal air/water coolant from foot control; Signal air for cuspidor bowl rinse	1/8" OD; Green/White Short dash
Unregulated Air	Unregulated air to flex arm brake	1/8" OD; Black
Water Coolant Signal Air	Signal air from foot control valve to we/dry toggle and in control head	1/8" OD; Clear
Water Supply	Cold Water Regulated; Oral cavity water	1/8" OD; Blue
Oral Cavity Water	Syringe water with/without water heater	1/8" OD; Red
Unregulated Air, Master Air	Continuous, filtered, unregulated air ; 1/8" OD from air filter regulator to master toggle(1)	1/8" OD; Yellow/Red stripe(1)
Pilot Air	Filtered unregulated air controlled by master toggle	1/8" OD; Yellow/Red dash
Regulated Air	Continuous, filtered, regulated air(1); Supplies regulated air to t he air QD and AVS(2)	1/8" OD; Yellow (1); 1/4" OD; Yellow (2)
Regulated Air (40 psi)	Regulated Air at 40 psi to pressurize the water bottle	1/8" OD; Yellow/Green dash
Miscellaneous	Miscellaneous line for use with A-dec authorized accessories	1/8" OD; White
Hydraulic Fluid	Low pressure hydraulic system supply for chair(1); Handpiece drive air(2)	3/8" OD; Clear (1); 1/4" OD; Clear (2);
Drive Air	Drive air from foot control to delivery system(1); Drive air from control block to touch pad(2)	5/16" OD; Orange/Black dash(1); 1/8" D; Orange/Black dash(2)
Regulated Air	Supplied regulated air to flush toggle and syringe(1); Regulated Air(2)	5/16" OD; Yellow(1); 3/8" OD; Yellow (2)
Water Supply	Water bottle and city water	15/16" OD; Blue
Water Supply	Unregulated water	1/8" OD; Blue/White dash 33



RPI Handouts With This Presentation Including Service Tips, Exploded Views, and More

LOOK INSIDE THE RPI FOLDER FROM TODAY'S PRESENTATION – HERE'S WHAT YOU WILL FIND!

RPI EXPLODED VIEWS & MORE

- "Service Call Diagnostic Checklist" (Checklist)
- "Parts to fit Utility Module and Filter Regulators" (Exploded View)
- "New Parts and Upgrades to fit A-dec Utility Module and Regulators" (Key Information about RPI's "clear" Valve Body and upgrades to the Valve Body Repair Kits)
- "Clear Housing Now Available to fit A-dec Utility Module & Regulators" (Key Information about RPI's "clear" Filter Housing)
- Service Tips regarding "Clear Filter Housing" and "Preventing Dangerous "Suck Back" in Dental Delivery Units (Article from RPI's Newsletter dated 04/2007)
- "Parts to fit A-dec Foot Control Assembly" (Exploded View)

RPI NEW PARTS FLYERS

• RPI Yellow Flyer: "4 New Kits and More Parts to fit A-dec Dental Delivery Units:

> Page 1: Models 300 & 500 - Exploded Views of Control Blocks (Major and Minor), and Water Coolant Relay featuring the Kits.

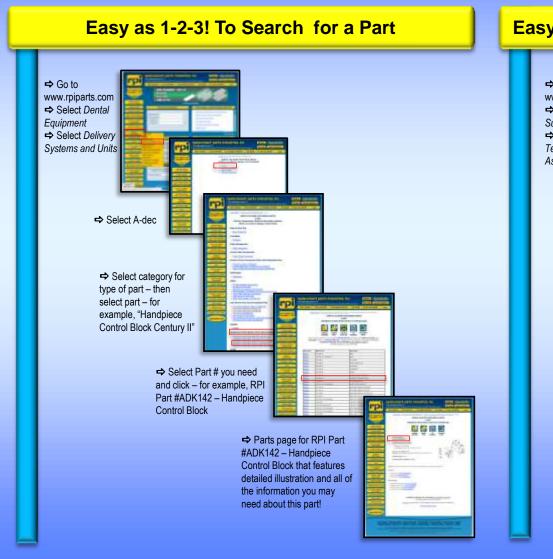
- Pages 2-3: Models 300 & 500 Control Blocks Kits Major and Minor Kits' details; plus the Water Coolant Relay Kit details.
- Pages 4-5: All Models Featuring Foot Control Service Kits to rebuild air and water controls with listing of parts, plus many other parts including Spring Cap, Toggle Level, Micro Valve, Dowell Pin, and more
- RPI Yellow Flyer: "New Parts to fit A-dec Century Plus Handpiece Control Block":

Page 1: Model Century Plus – Features Handpiece Control Block, Control Block Service Kit, Control Block Cap Assembly, Dry Block Kit, 3 Block Tie Bolt Kit, and more
Page 2: Model Century Plus - Control Block Kit (Major)

features listing of all parts included in Kit



EASY AS 1-2-3! How to Use the RPI Website





⇒ Select *eLibrary* for a complete listing of all Service Tips, Exploded Views, Installation Instructions, Troubleshooting Guides, and more!

⇔ Select *Create a Parts Listing* for a complete listing of all parts that fit a specific model, or all of the models for one OEM.

⇒ Select *Tech Help Video* for online videos that show how to service specific equipment ... including Service Tips!

⇒ Select *RPI Catalog* for a digital version of the RPI Catalog that you can download.

⇒ Select New Parts Index & Flyers to access any of the RPI New Parts "Yellow" flyers!

⇒ Select *RPI Newsletters* to access of the RPI newsletters dating back to the very first newsletter!



Also located on the RPI Website: Service Call Diagnostic Checklist

Your customers are the best source of	This Checklist has been provided by
nformation when troubleshooting equipment.	For Quality Service & Repair Call Dave Evans ABC Dental Repair 212-555-1234
Call your customer before you arrived on site and	SERVICE CALL
sk the questions presented here – in the RPI	-DIAGNOSTIC CHECKLIST
Service Call Diagnostic Checklist.	To help up before sesiet you, please take a moment to provide the information below about the unit that is not herctioning as
avie can biagnostic checkinst.	normal. We approciate your taking the time to do this before we arrive at your location. The vital information will give us an idea of exactly what the concerns are and how to beet address them at the time we service your equipment. Thank you.
his way you can get a good idea of what the	
roblem is, and be prepared with the right tools and	What is the equipment type, make, model name and serial number of the equipment that needs repair? Equipment Type
arts needed to service the equipment.	Model Name Saval Number
	2. Exactly what is not working? What are the symptoms?
You can access and download a PDF of the RPI	
Service Call Diagnostic Checklist from the RPI	
vebsite <u>www.rpiparts.com</u> ⇔Homepage ⇔Tech	3. What are the error codes showing (if any)?
Support ⇔Technical Assistance Center ⇔eLibrary	
Select A-dec from the OEM pull down menu	
Select any part or model from the Model pull	4. What was happening just before it stopped functioning as normal?
lown menu ⇔Select 'Service Call Diagnostic	
Checklist from under the Resource column.	
	What is the date that it stopped functioning as normal?
t's a great idea to leave a copy of the Checklist with	What is the name of the person who first noticed the problem?
your customers for the future, and ask them	7. Are there any other things that need to be looked at or addressed during the service call?
complete it before they contact you.	
Vhat's more, from the RPI website you can even	How quickly do you need The unit services?
ersonalize the Checklist to include the name of	Have you tried turning the unit off and back on again? YES NO
our company, and your telephone number. It's the	16. What is the maintenance bistory of the unit?
perfect 'leave-behind' for your customers!	
	CRP.211a Rev. 05-114



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 - Tech Talk and Service Tip Articles
 - At-a-glance Cross References and Quick Reference Guides
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