



Series 8920, 9200, 9300, 9400 Service Center Guide



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PRODUCT OVERVIEW

ProHeat 2X™ is the new revolutionary new cleaning system featuring:

- Dual DirtLifter® PowerBrushes.
- New SmartClean™ solution mixing.
- Heated cleaning at the floor and through the attachment hose.



Gets the deep down dirt and leaves your carpets beautifully groomed



Heats hot tap water up to 25 degrees hotter for maximum cleaning. Now heats through the attachment hose too!

FEATURES

- 10 Rows** Dual DirtLifter® PowerBrushes
- Built-in Heater
- Scotchgard™ protector
- NEW** Custom Clean™
- NEW** Edge Sweep™ Brushes
- Surround Suction
- Easy Carry Handle
- Easy to Clean Nozzle
- Tough Stain Tool
- trial sizes included



Scotchgard is a trademark of 3M.



Edge to edge cleaning and suction power

Quick reference troubleshooting chart

<u><i>Problem</i></u>	<u><i>Possible cause / Check for...</i></u>
• Low/No spray to floor and upholstery hose	• Tank is warped and/or not sealing properly • pinched/clogged line • defective bridge rectifier • defective pump • faulty auto load receiver • defective component allowing air into system • pump not mounted so it can move freely • clogged heater • defective circuit board
• Spray through hose but not to the floor	• clogged spray tips • defective solenoid valve in the base (if solenoid is defective, the heater is to be replaced as well) • defective trigger microswitch in upper handle
• Pump motor does not run	• defective rectifier • defective motor
• Unit does not spray solution, only water	• defective auto load receiver or solution tank • defective manifold assembly
• Good spray for a couple of seconds then dies off	• kinked tube • tanks not completely inserted into receiver
• Bubbles coming into the water tank from auto load assembly	• bad weld on auto load receiver
• Large bubbles in upholstery hose	• defective pump
• Both brushes not spinning	• left side belt broken • defective micro switch • defective brush motor • defective circuit board
• Front brush not spinning	• right side belt broken
• Brush is noisy (rattles)	• bushings have spun in dowel
• Low suction	• clogged filter or clogged air path • stuck float

UL RECOMMENDED HIGH VOLTAGE TEST

In keeping with UL standards, a high voltage test should be performed on a vacuum or deep cleaner any time the unit is in for repair, particularly when the motor or other electrical components have been replaced. High voltage testing is done for the safety of the customer. By applying an over-voltage between "live" parts and various metal portions of the machine that are exposed to wear, you proof-test the entire machine against grounds or shorts that could cause inconvenience, fires, or personal injury. High voltage testing is also a quality control measure. The possible future failure in the insulation of any portion of the unit, whether due to workmanship, components, or materials, will be detected by this procedure prior to return of the unit back to the customer.

The normal test parameters are 1000 volts for one minute. There must be no indication of dielectric breakdown at the uppermost values. After the unit is completely assembled, the high voltage test required is the power cord to terminals in plug with the product switch on "on" position. This test can be accomplished with any commercially available test equipment offered for this purpose. The following testers are recommended:

Associated Research - Model 4025 or 4050 AJ
Slaughter - Model Series 2306 or 2307
Beckman Ind. (Rosemont) Model P-9A

GROUND CONTINUITY TEST

This test is performed to determine that grounding continuity exists between the grounding blade of the lower supply cord plug and the motor. This test should be performed any time electrical connections are disturbed. Any suitable indicating device - ohmmeter, battery/buzzer combination or the like may be used to determine compliance. Contact points are the ground terminal and the plug to the shaft of the vacuum motor and the heater body.

USING A SERVICING PLATFORM

Begin by placing the unit on a servicing platform. Servicing Platform should fit securely under the unit and raise its wheels off the workbench surface.

PRELIMINARY DIAGNOSTIC CHECKS

Check to make sure the unit is properly assembled.

Check seals on the Clean Water/Recovery Tank, Formula tank, Rear Cover, and Nozzle. If necessary, re-seat or replace seals.

Check valve action on Clean Water/Recovery Tank and Formula tank by depressing them with your finger. The valve should move up and down. Replace if necessary.

Check position and condition of all gaskets and seals. Re-seat or replace if necessary.

Rotate front brush to determine if rear brush also spins. Both should rotate smoothly and quietly.

FUNCTIONAL SYSTEMS CHECKS

****If any of these functions do not work, refer to the quick reference troubleshooting guide on page 4 for a list of possible causes and things to look for. Then follow the related troubleshooting steps in the rest of this guide.**

Place the filled solution and water tanks onto the unit.

Set SmartClean™ knob to normal.

Plug in unit and turn it on.

Listen for unusual motor noise such as grinding, racing, louder than normal, etc. If so, remove and replace the vacuum motor.

Depress main handle trigger and check for spray at unit bottom.

Depress upholstery hose trigger and check for spray at hose.

Make sure both brushes spin.

Check suction at vacuum duct.

TROUBLESHOOTING LOW/NO SPRAY SYMPTOMS

With the SmartClean™ dial set to rinse insert the formula tank into the unit in place of the water tank in the front auto load receiver. Do not put the tank in the rear auto load receiver. The rear auto load receiver may remain empty as long as the unit is set to rinse. Putting the smaller formula tank in the front receiver leaves more room to see the receiver is making proper contact with the cap and insert. Turn the unit on and see if it sprays. If it does the tank is warped and needs to be replaced.

Place the filled solution and water tanks onto the unit.

Look for bubbles coming into the water tank. If bubbles are coming into the tank from the auto load receiver, the receiver may have a bad welded seam. Replace the auto load receiver.

Plug unit in and turn it on.

Turn the SmartClean™ setting to rinse. The rinse setting is a positive off and will eliminate the formula tank from the spray system so that the pump will only draw from the water tank. If the unit will spray when set to rinse but not when set to normal there may be something wrong with the formula tank, auto load receiver, or seal.

Turn unit off.

Remove the recovery tank top, place recovery tank bottom back on unit, turn unit back on, and check for spray. The recovery tank becomes negatively pressurized when the unit is running. Removing the top eliminates that pressure and makes it easier for the pump to work. The pump is likely faulty if the unit will not spray with the top on but will spray after it is removed.

****If the unit is equipped with solenoid valves that operate the SmartClean™ system you may want to check their operation and assembly before removing the access cover.**

Refer to the section on "TAKING THE UNIT APART" beginning on page 11 before proceeding.

Check operation of the solenoid valves. Pulling the trigger should energize the solenoid that is located in the base of the unit next to the heater (110 volts should be sent to each solenoid valve after it is energized). Some units will also have two solenoids as part of the SmartClean™ system. Switching the SmartClean™ dial to high traffic should energize both of those solenoids.

Check all internal components to ensure proper assembly.

TROUBLESHOOTING LOW/NO SPRAY SYMPTOMS (continued)

Check lines for evidence of pinching or restricted flow. Straighten, un-pinch, or replace lines as necessary.

Set air duct back in place and re-attach both tubes to it.

Turn unit on.

Check the pump motor to make sure it is running.

If the pump motor is not running, check the current coming into it. If it is not receiving approximately 12 volts DC the bridge rectifier may be faulty. Check for a loose connection and replace the rectifier if necessary.

Check to see if the pump is primed. Water and solution should be pulled through the SmartClean™ valve assembly and into the pump shortly after the unit is turned on. Placing your hand over the air duct opening may help the pump to prime.

The pump is designed to "float" when properly mounted in the base. You should be able to wiggle the pump even though the mounting screws are in all the way. If the pump is being pulled to one side by a tube or wire it may not function properly. Wiggle the pump from side to side to make sure it is free then check spray.

Check for bubbles in the flow system. Bubbles indicate an air leak coming in through a component. If you see bubbles, you should replace the component that appears to be leaking. Generally, the faulty component is the one that is upstream from the bubbles.

Begin to disconnect tubes from components to determine where the flow is stopping. Start by disconnecting the tube from the "in" port on the heater. If solution is being pumped out of that tube, replace it and then disconnect the tube from the heaters "out" port and check for spray. Continue to replace and remove tubes checking components until you have located the cause of the low spray.

TROUBLESHOOTING LOW SUCTION SYMPTOMS

Check all gaskets and seals and make sure tanks are seated down all the way.

Check for clogged filters on the recovery tank or a stuck float.

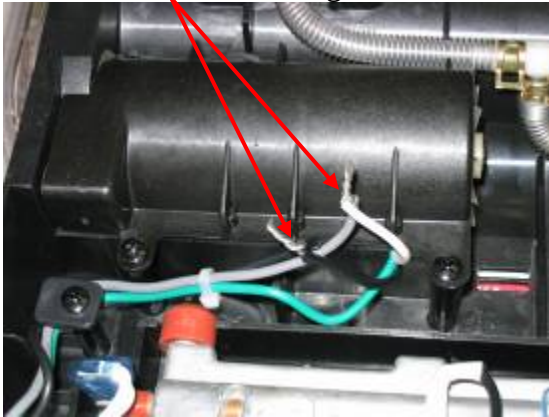
Check air path from bottom of base.

TROUBLESHOOTING - BRUSH MOTOR WILL NOT TURN

Refer to **TAKING THE UNIT APART** on Page 11 if you need to access the brush motor

Remove the base cover and recline the unit. Check the voltage going to the brush motor by disconnecting the leads and reading the line voltage. Line voltage should be 100-150+ volts DC. If this voltage is present, the brush motor is defective.

Check Line Voltage



If the voltage is 0 at the brush motor, check voltage at the brush switch. Using the grey/white wire as reference, the voltage when probing the top terminal on the switch should be 100-150+ DC volts. If this voltage is present, the switch is bad.

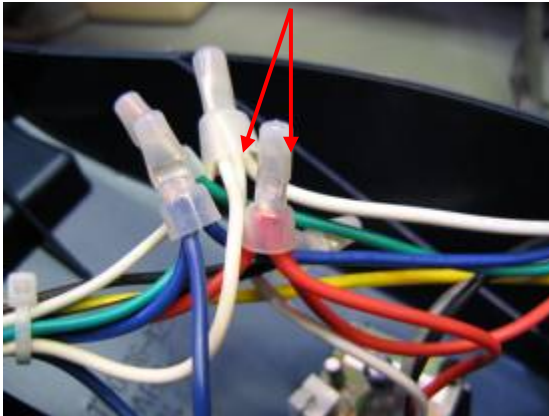
Check Voltage at top terminal



TROUBLESHOOTING - BRUSH MOTOR WILL NOT TURN (continued)

If 0 voltage is read at the brush switch check the circuit board located in the upper handle. Check that connections are secure. If 110/120 volts AC goes into the board (red & white wires) and a reading other than 100 – 150+ volts DC goes out, then the circuit board is defective and requires replacement. There is a breaker on the circuit board. Cycle the unit on and off to see if breaker resets.

Check for 120 volts AC



Circuit Board



TAKING THE UNIT APART

WARNING: To reduce the chance of electrical shock, unplug before servicing.

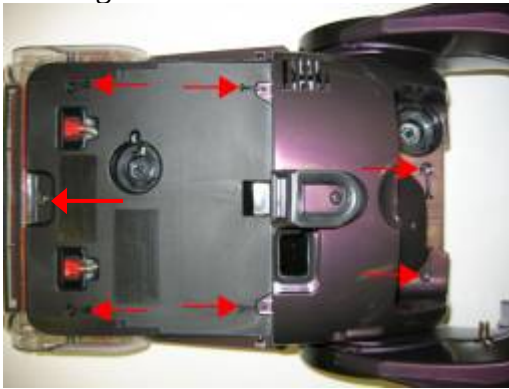
Do not disassemble the unit until you have performed the troubleshooting steps and diagnostic checks in pages 5-7. Proper troubleshooting techniques and diagnosis of the problem may save a lot of time and frustration.

Place the unit on a service platform as described on page 5.

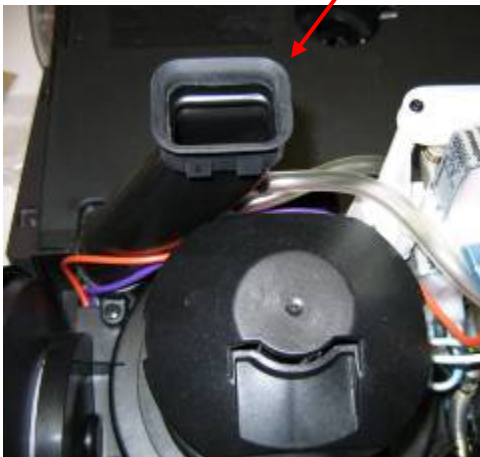
Recline the handle fully.

Remove the solution and clean water tanks.

Remove four screws from the rear cover, two screws from the access cover and the screw securing the front nozzle.



You must also remove the air duct before you can remove the access cover.

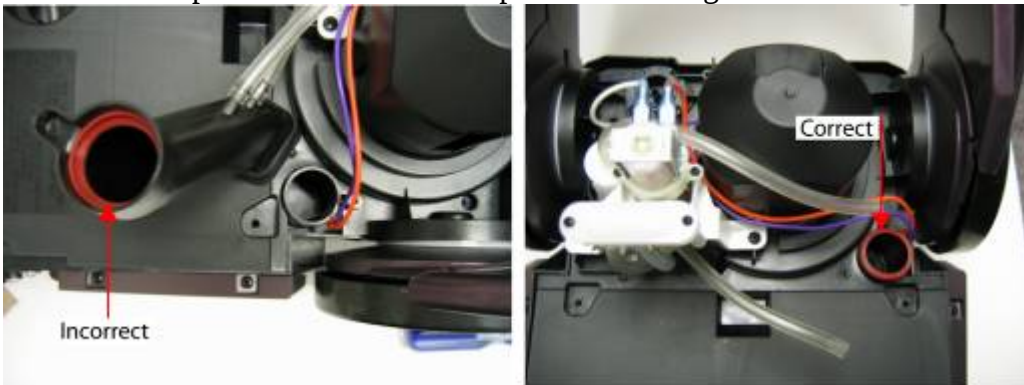


TAKING THE UNIT APART (continued)

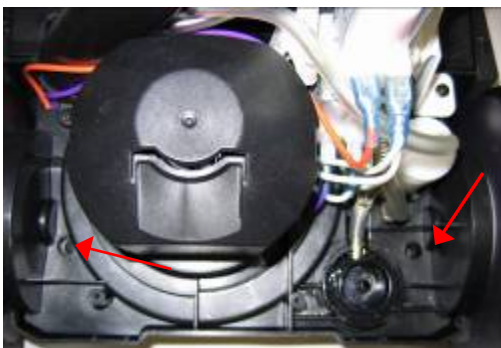
Make sure to take note of how all tubes and wires are routed to, from and around components as you disassemble the unit.



The red gasket may be stuck in the air duct after the duct is picked up. Remove it from the duct and replace it as shown in the picture on the right.



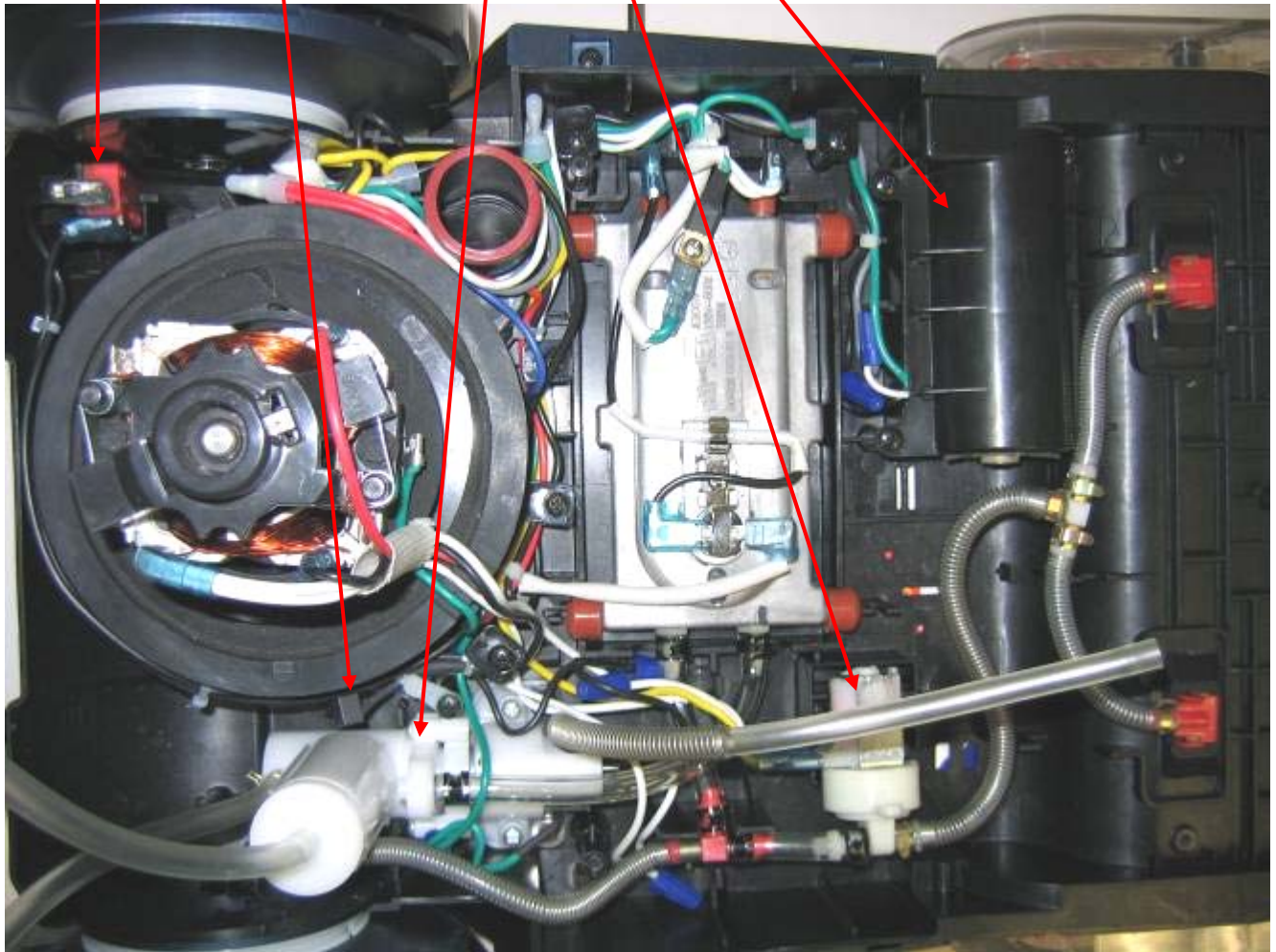
Remove (2) screws at rear of unit



TAKING THE UNIT APART (continued)

Removing the access cover will give you access to nearly all parts that may require service.

Brush Switch Bridge Rectifier Pump Solenoid Brush Motor



REPLACING THE PUMP

Make sure to take note of how all tubes and wires are routed to, from and around the pump.

Disconnect all three pump wires connections.

Disconnect "pump to heater" tube.

Remove the two pump mounting screws located furthest to the front.

The screw on the machines right is a 1/2" long silver washer head screw.

The screw on the machines left is a 1/2" long black pan head screw.



Lift the pump out of the base and replace.

Leave the black cooling duct attached to the cooling tube.

PUMP TUBING INFORMATION

Pump primer tube is 8" long and does not have clamps.

Connects from the top of the pump to the air duct.

Pump inlet tube is 7" long and is clamped on both ends.

Connects the pump inlet to the SmartClean™ valve assembly.

Pump cooling tube is 8 1/2" long and may have a kink-preventing spring on it.

Connects from the cooling duct to the air duct.

Pump to heater tube is 5 3/4" long and is clamped on both ends.

Connects the pump to the heater inlet.

REPLACING THE SOLENOID VALVE IN THE BASE

Make sure to take note of how all tubes and wires are routed to, from and around the solenoid.

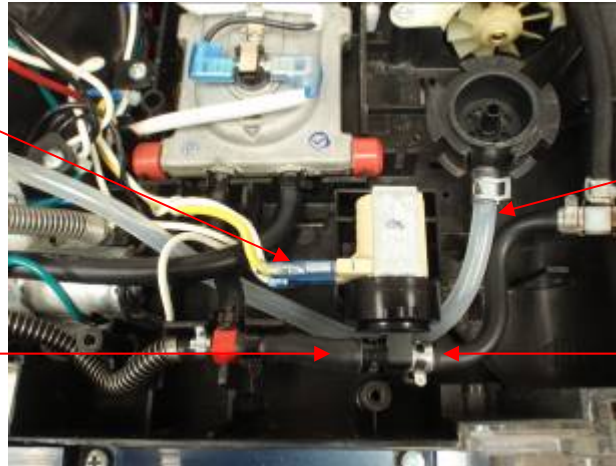
Disconnect the two solenoid wire connections.

Disconnect the two solenoid tube connections.

REPLACING THE SOLENOID VALVE IN THE BASE (continued)

Yellow wire on top terminal
White wire on bottom terminal

Inlet to solenoid



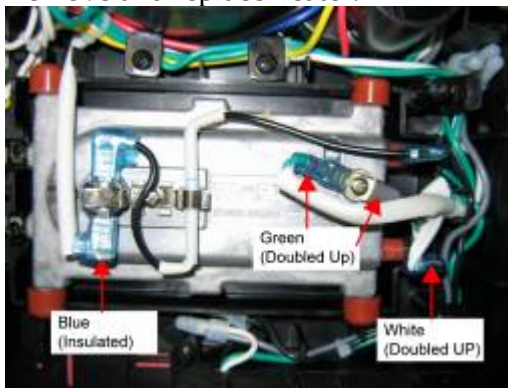
Clean water receiver was left in place to show the correct travel path of the solution hose

Outlet from solenoid

NOTE: The solenoid must be seated completely into its cradle. If not a bulge will result in the access cover over the solenoid. This will cause a no spray issue when the tank is applied to the unit.

REPLACING THE HEATER

Disconnect the inlet and outlet tubes from the heater.
Disconnect the blue thermally insulated wire (top).
Disconnect the two green (doubled up) insulated wires (top).
Disconnect the two white (doubled up) wires from the side (front).
Disconnect the two green (doubled up) black shrink wrapped wires from the top side.
Remove and replace heater.



REPLACING THE VACUUM MOTOR

Remove all wires.

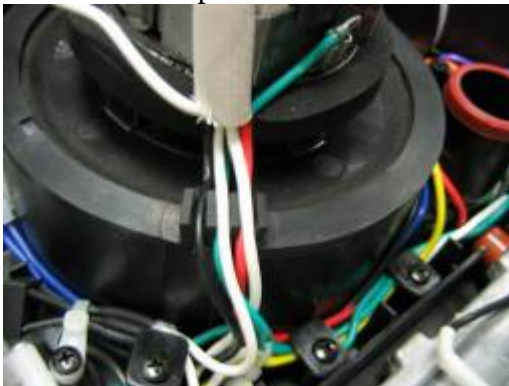


Lift up firmly to unseat the seal and remove motor. Motor **is not** held in place with screws.

Make sure the seal is correctly installed on the new motor:
Seal should not be covering the vent holes.



Seal should be positioned so the wire holders are on the correct side of the motor.



REPLACING THE BRUSH MOTOR

Disconnect the wires from the motor.

The black and white wires are connected with wire nuts.

The green wire has a removable terminal.

Remove the left end cap.



Remove the e-clip, washer, and gear from the motor spindle.



Remove the three screws from the top of the brush motor housing.



Lift the brush motor and cover assembly out of the base and replace.

REPLACING THE BRUSH MOTOR (continued)

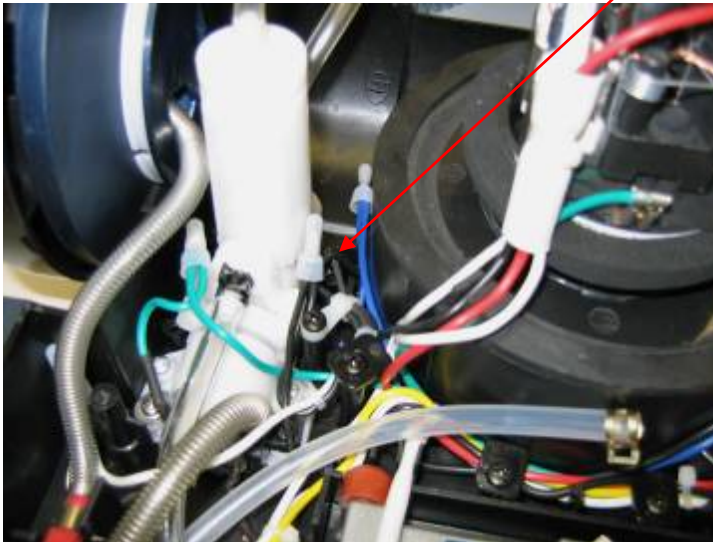
Route wires into notch when reassembling.



REPLACING THE BRIDGE RECTIFIER

The rectifier converts 110 volt line voltage to the approximately 12 volts DC that the pump motor operates on. There can be two symptoms caused by a bad rectifier. First, when the rectifier goes bad, the pump will not run. Also, occasionally when the rectifier goes bad it will imbalance the commutator on the vacuum motor causing it to spark excessively and become noisy. If the pump motor does not run, check the current coming into the motor. If there is no current present, check to ensure all wire connections are secure and replace the bridge rectifier if necessary.

The bridge rectifier is located between the pump and the motor



REPLACING THE BRIDGE RECTIFIER (continued)

A quick check for distortion on the bridge rectifier can show if it is defective.

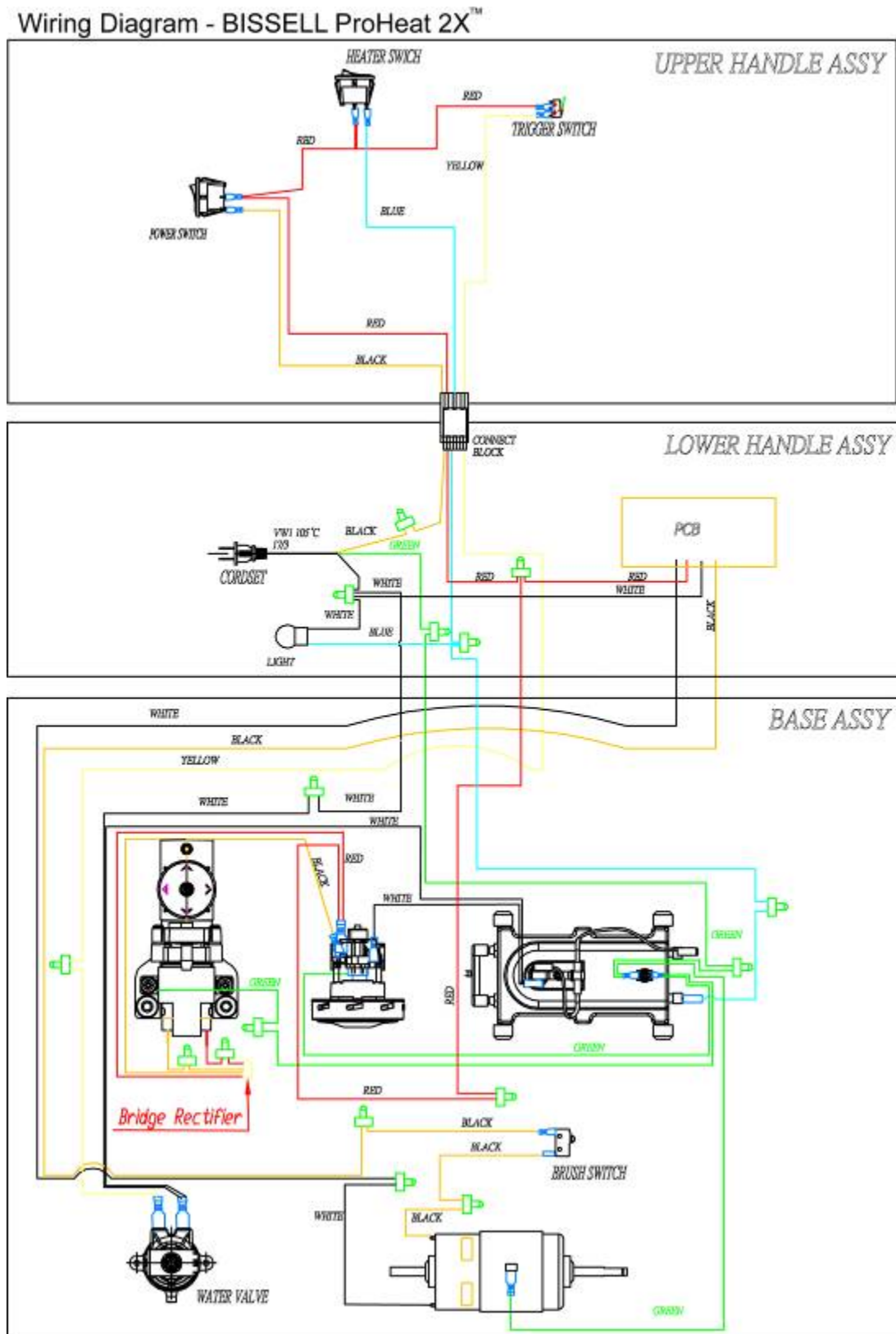


REPLACING THE BRUSH MOTOR MICRO SWITCH

There is one screw holding the micro switch in position

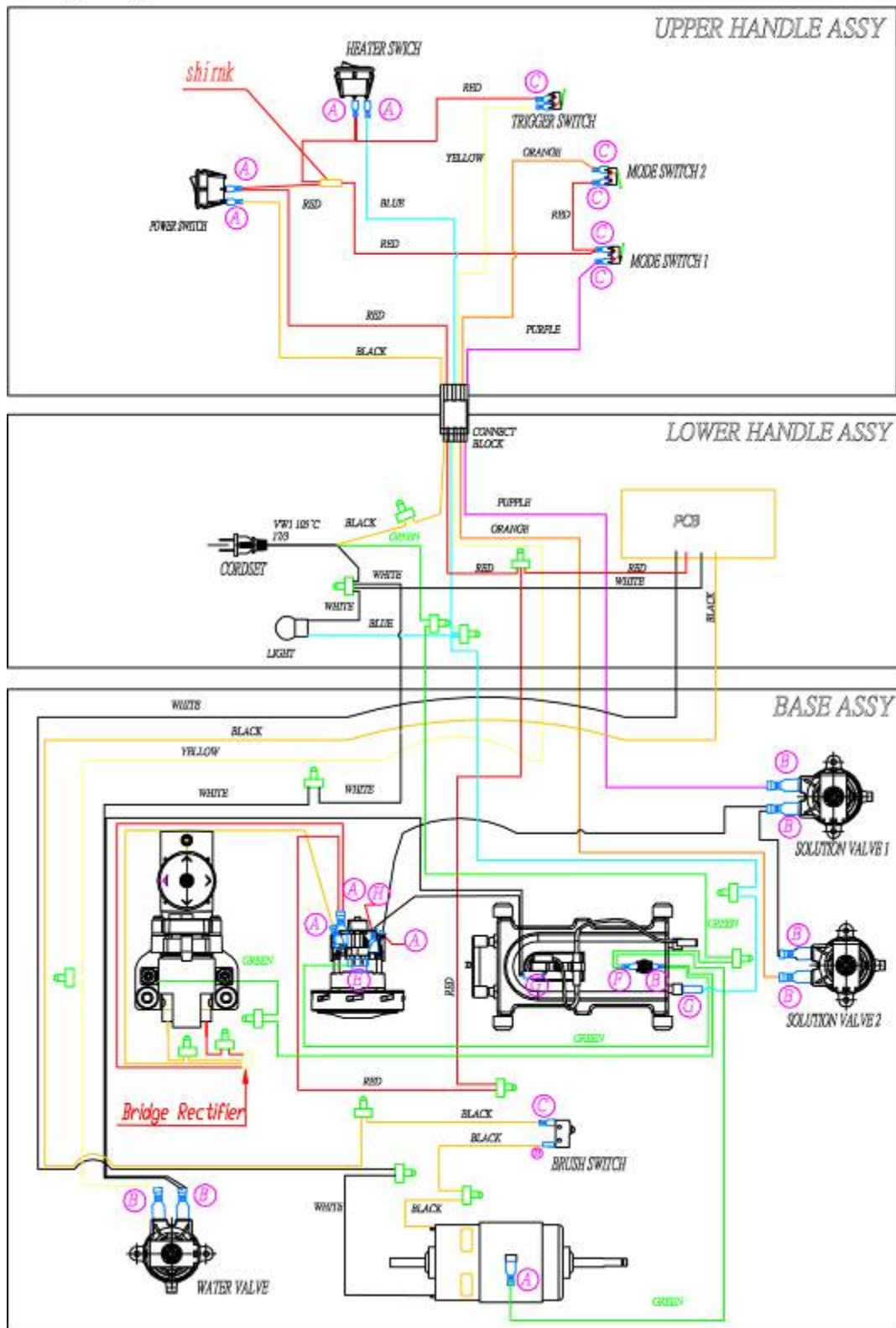


WIRING DIAGRAM - BISSELL ProHeat 2X™



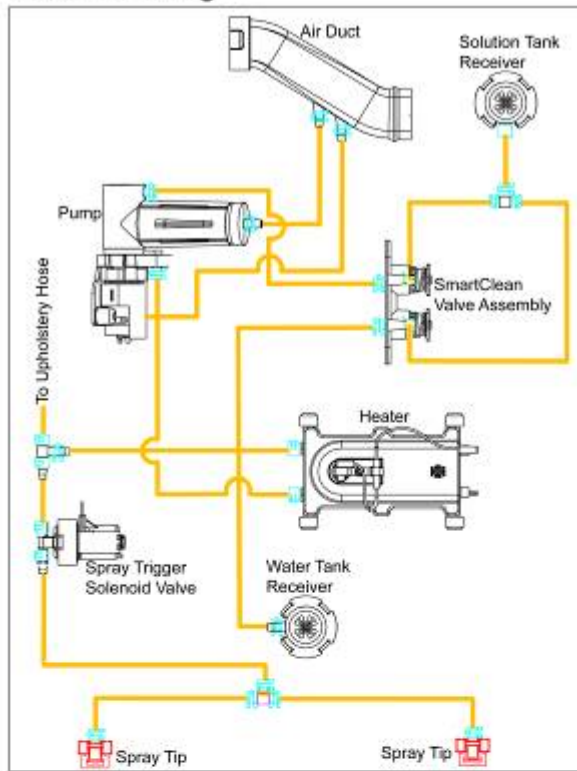
WIRING DIAGRAM - BISSELL ProHeat 2X™ Select

Wiring Diagram - BISSELL ProHeat 2X™ Select



PLUMBING DIAGRAM

9200 Plumbing



9400 Plumbing

