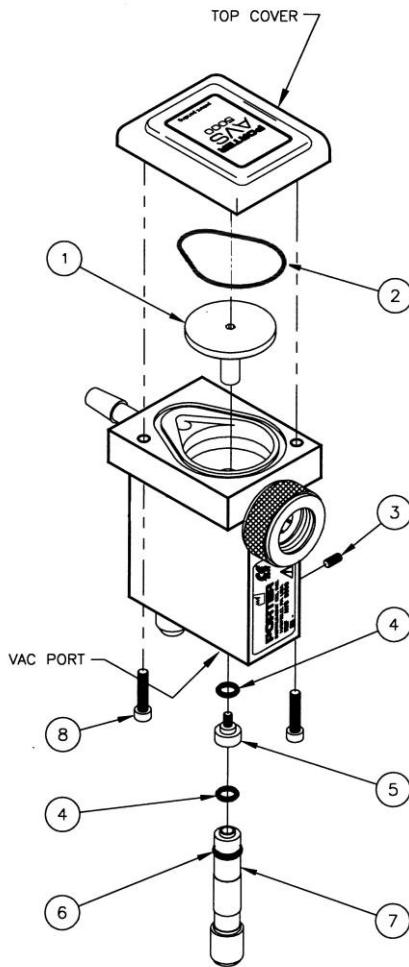


AVS Field Evaluation & Repair

This repair should only be completed by an authorized field service representative. If the repair cannot be completed successfully, return the unit to Porter Instrument for complete evaluation and repair.



1. **Evaluate basic performance** – Set flowmeter to flow 8 L/min of 100% Oxygen to fully open AVS vacuum interlock. Does the AVS establish a vacuum as indicated by the ball float being within the green bar area of the acrylic sight glass? The vacuum control knob may be used to adjust for highest flow. If unable to establish a vacuum flow, further evaluate and repair per this procedure.
2. **Evaluate adjustment performance** – see **FM-809** section on “**Field Performance Check of Adjustment of Vacuum Flow Using the AVS.**” If the indicated vacuum flow at 3.5 L/min flowmeter flow is significantly lower or out of the green bar area compared to the vacuum flow at 8 L/min flowmeter flow, also further evaluate and repair per this procedure.
3. Remove the AVS from the flowmeter and bag tee system by loosening the knurled seal nuts.
4. Rotate (or gently shake) AVS assembly back and forth to hear if piston moves freely. (IMPORTANT: Make sure you do not cover any ports with your fingers while rotating, as it will impede piston motion and its sound.) **If piston moves freely, there is no need to disassemble the unit.** If unit still does not establish vacuum, return unit to Porter for further evaluation and repair.
5. If piston does not move freely, disassemble unit by following steps 3 through 8. **Keep internal parts clean and free of debris. The AVS works with very small clearances.**
6. Loosen set screw (Item 3) using a 1/16” hex key.
7. Remove vacuum stem assembly (Item 7). It should have two o’rings, one captured and one lightly positioned on top.
8. Remove top cover, using a 7/64” hex key, (2 screws, Item 8). NOTE: Function tested label must be lifted to access one screw. Also, o-ring (Item 2) fits into irregularly shaped groove of AVS body.

Table 1: AVS-KIT

Item	Part No.	Description	Qty
1	B-3815-000	Piston	1
2	PA-1695-000	Formed O’ring	1
3	PB-108-064	Set Screw	1
4	PB-102-179	009 O’ring	2
5	A-3554-000	Retainer, Stem	1
6	PB-102-103NE	010 O’ring	1
7	A-3551-000	Vacuum Port Stem	1
8	PB-113-035	Socket Hd Screw	2

9. To remove piston assembly:
 - a) Insert a 7/64" hex key into the vacuum port (labeled VAC on the body) and engage the stem retainer (Item 5).
 - b) Insert another 7/64" hex key into the top of the piston (Item 1).
 - c) Hold one hex key and rotate the second hex key counter-clockwise until piston disengages from the stem retainer.
10. Visually inspect piston cavity, piston and stem retainer with o'ring (Item 4) for any contamination. Also, inspect top o'ring on vacuum stem for contamination (Item 4). If contamination is found, remove both o'rings (Item 4) and ultrasonically clean along with stem retainer (Item 5). **Be careful to correctly replace the stem retainer o'ring (see Extra Gas Usage discussion).**
11. Do not remove lower o'ring (Item 6) from vacuum stem. Remove any dirt from this o'ring using a lint free cloth only.
12. To clean piston and piston cavity, wipe thoroughly using alcohol and a lint-free cloth. **Do not "ding" the edge of the piston or raise a burr as the fit of the piston into the cavity is very precise.**
13. After allowing to thoroughly dry, reassemble unit and test for vacuum operation. Connect to Porter dental meter and check operation to instructions in User's Manual FM-809.

Note: Prevent Extra Gas Usage

A very small amount of fresh gas from the dental flowmeter may go through the AVS and directly to the central vacuum source without going into the bag. If not controlled by seals and clearances, gas can be wasted. The stem retainer o'ring (Item 4) is the seal that minimizes any fresh gas bypass and it must be clean and properly in place. The office should monitor gas usage and if excessive gas is being used, have units serviced or return unit to Porter for further evaluation and repair.

Detailed Test for Fresh Gas Bypass – Field Evaluation Method

1. Remove AVS from system.
2. Attach bag tee directly to flowmeter.
3. Flow 5 L/min of 100% Oxygen into the bag. Record time to fill bag. (Make sure bag is completely deflated before recording the fill time.)
4. Assemble AVS back into system.
5. Have all hoses attached and central vacuum ON.
6. Flow 5 L/min of 100% Oxygen into bag again and record the time to fill. (Make sure bag is completely deflated before recording the fill time.)
7. Compare times—they should be within two seconds. A longer time to fill with AVS in place indicates the fresh gas bypass seal may not be effective.
8. If a problem exists, repair per this procedure taking notice of the stem retainer o'ring or return unit to Porter for further evaluation and repair.