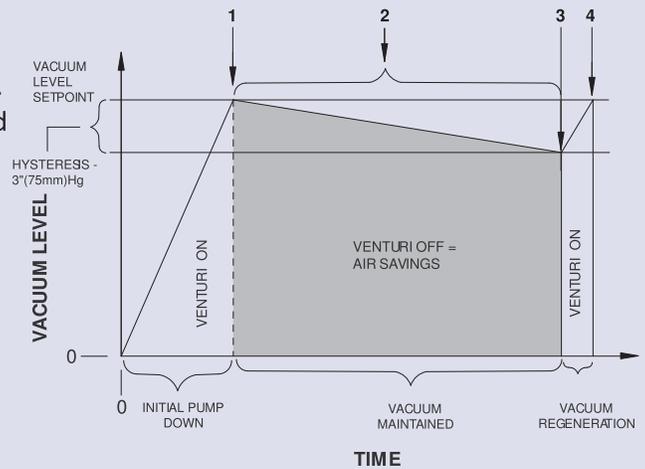


### Principles of Operation

The pneumatic vacuum switch is the brain within the Air Saver system. It constantly monitors and controls the vacuum level as required based on customer specifications. Minimizing leaks in plumbing lines and connections extends the “venturi off” cycle and maximizes air savings. Below is a brief overview of the air saver cycle.

Determine the maximum vacuum level desired, then adjust the switch to the vacuum level setpoint.

1. Once the vacuum level set-point is reached, the switch turns the pump off, stopping the flow of air to the venturi – air savings.
2. The integral check valve maintains the vacuum level.
3. Should there be a leak and the vacuum level decreases, the pneumatic switch automatically re-energizes the venturi to bring the system back to the pre-set vacuum level set-point (Hysteresis is 3”Hg [102mbar]).
4. The switch de-energizes the venturi pump, and the air saving cycle restarts.



*Although compressed air savings will vary by application and system design, typically Vaccon Air Saver pumps will achieve a 90% energy cost savings.*

### Operating and Installation Instructions:

1. Connect the vacuum line between the vacuum port and the vessel or vacuum cup (see chart below for line size recommendations, and the pump schematic on page 2 for the port locations).
2. Connect filtered and regulated compressed air source, set at 80 PSI to the air supply port (-60 models operate at 60 PSI).

Note: The switch is set below 0”Hg and therefore the pump will not turn on when the main air supply is supplied to the pump.

3. Rotate the adjustment knob clockwise to increase the set point. Creep up on the set point by making an adjustment and then allowing the pump to reach the set point and shut off. Rotate the adjustment knob more and allow the pump to reach the set point. Continue until the desired set point vacuum level is obtained.

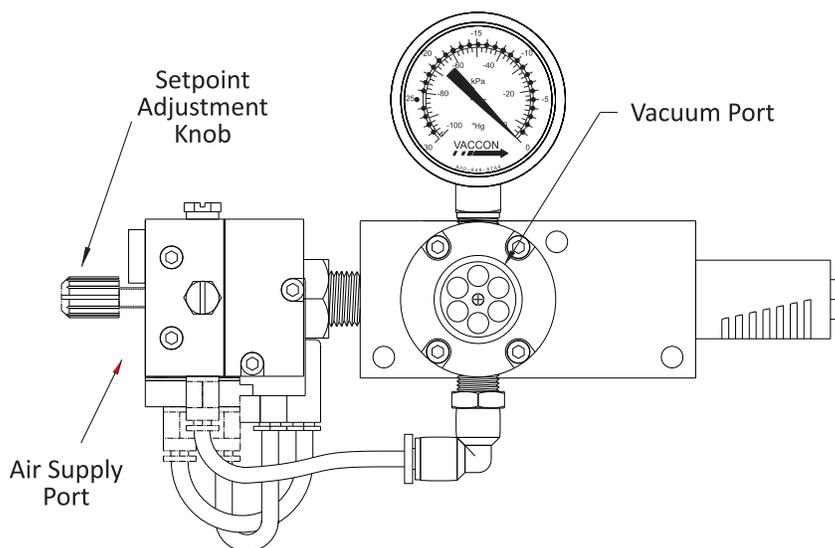


VP Air Saver Pump Model	Supply Port Threads	Air Supply Tubing	Vacuum Port Threads	Vacuum Line Tubing
VP20-(60,90) Series	1/8 NPT	1/4"	1/2 NPT	1/2"
VP20-(100,150) Series	1/8 NPT	3/8"	1/2 NPT	1/2"
VP80-200 Series	1/8 NPT	3/8"	1/2 NPT	1/2"
VP80-250 Series	3/8 NPT	1/2"	1/2 NPT	1/2"
VP90-300/350 Series	3/8 NPT	1/2"	1/2 NPT	1/2"

# Operating / Installation Instructions: VP Series Venturi Vacuum Pumps with Air Saver Technology

## Air Saver Pump Operation Notes:

- The set point is the vacuum level the pump will achieve before the pump shuts off. The set point may be changed using the adjustment knob on the switch. For each clockwise revolution of the knob the vacuum set point will increase 10"Hg
- The hysteresis is the difference in vacuum level between the set point and when the pump is re-energized after the system drops in vacuum due to a leak. It is fixed at 3"Hg [102 mbar].
- The leak rate is dependent on the system. Vacuum leakage occurs at fitting connections, and at the sealing surfaces where a vacuum cup or fixture contacts the part being held or lifted.
- All switches are shipped with the set point set below 0"Hg.



**Figure 1: Air Saver Pump Schematic**

## Air Saver Pump Troubleshooting Guide:

Symptom	Causes	Solutions
Pump will not reach desired vacuum level	Pump flow capacity is too small and taking too long to read vacuum	Choose a pump or vacuum cartridge with a higher flow capacity
	There is a leak in the system and the pump does not have adequate flow to overcome the leak and increase vacuum level	Seal the leak
Pump will not shut off	The setpoint on the switch is set above the maximum vacuum level that the pump can achieve	Change the setpoint to a lower vacuum level
Switch short cycles	Vacuum line is too small causing unequal pressures in the vacuum line and vessel. See table of minimum tubing sizes on page 1.	Increase vacuum line size - be sure to consider fitting passage ways also
Pump will not turn on	Compressed air source is not connected or turned on	Check compressed air source and turn on
	Switch is not adjusted above the vacuum level of the system	Adjust the vacuum switch to a higher setpoint by rotating adjustment knob clockwise