

Rear Vacuum Generator

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I wasn't going to change this system out yet but the lose of air pressure was getting to me and I am heading out to a week of auto racing and this would get very annoying,

The existing system uses a venture vacuum generator to provide vacuum for the cruise control located in the rear down by the side of the engine and another system located above the generator in the front to operate the control valves and flappers in the dash HVAC. By passing air thru a venture, at an orifice located in the correct position, vacuum will be generated, the air comes from the air tanks that are used to store air for the air brake assist system. It is not uncommon to have a vacuum leak and that will cause the regulator in the venture generator to ask for more air to keep a certain vacuum in the system. When this happens, if the engine driven air pump is not operating, air will be lost and the pressure will gradually decline. There is a pre-regulator before the venture generator that will shut off the air supply at about 60 PSI. If the air pump is operating, it will cycle on and off depending how bad the leak is.

While driving down the road, my air system would be constantly cycling between the upper and lower cut-in/cut-out points of the air system (105/125), if operating the cruise control, the cycle would be about 2-3 minutes, with cruise off, 5-7 minutes. I found a vacuum leak in the front system and repaired that with new hoses. I suspected I had a leak in the rear because after I fixed the front, only the rear system would continue to cycle until the rear tank was down to 60 PSI, and that would take about 2-3 hours after shut down.

I changed all the hoses in the rear and tested it—no help—I then discovered that the rear vacuum generator was defective. It would leak vacuum thru the sensing port out the exhaust port, and I had noticed that in the last weeks it was indeed getting worse. The cruise control was also getting erratic.

Time to re-engineer and change the system, I had gotten 3 Volvo electric vacuum pumps months ago in anticipation of this fix but was not going to do it until later this summer but—

First I removed the pre-regulator, vacuum canister, and venture generator, the connecting hose to the pump regulator, blocked off the port at the pump regulator, this is the source of the air so was easy to do and didn't disturb the operation of the pump regulator.

Bracket and vacuum devices:



Removed from this area:



Pressure regulator and venture device:



I mounted the vacuum canister on the rear wall (front wall of the engine room) where it is easily accessible and mounted the Volvo vacuum pump next to it:



Another view:



I have "ignition hot" at the DC panel that can be seen just above the cruise control actuator and tied the pump into this buss. I have a vacuum switch that will switch the pump off when it reaches 23 in.hg, it switches back on at 20 in.hg.

Success! The air tanks have been sitting all night and are still at 125 PSI this morning. I shut it down right after air pump cutoff last night. We will see if the cruise control now works better and is more stable.

Hope this was informative!