

## Trouble-shooting Low Vacuum readings

Pull the vacuum lines off the cylinder head and block the hose ends off with your thumbs (fingers). Check the reading on the gauge; it should be maximum vacuum (25 +/- inches Hg or 85 +/- kilopascal)

If you do have maximum vacuum indicated with the ends of the hoses blocked, then the reason for low vacuum is in the valve blocks, O-rings on the hockey pucks, or the cylinder head itself. Basically there is a leak somewhere in the cylinder head assembly.

Check the following on the cylinder head assembly

- 1) Make sure there is no debris on the surface between the valve block and the hockey puck (see 4 below)
- 2) Check that the surfaces of the valve blocks and hockey pucks are not scored or scratched. They must be perfectly flat to make a good seal when they are engaged
- 3) Make sure the O-rings are "soft" and not flattened on their sides and are properly in place. When were they last replaced?
- 4) Is there sufficient spring pressure to hold the valve blocks/hockey pucks against the ends of the cylinder itself? If not, replace the springs.
- 5) Have you cleaned the cylinder head lately?  
[http://www.blackmoreco.com/pdf/Cyl\\_head\\_cleaning.pdf](http://www.blackmoreco.com/pdf/Cyl_head_cleaning.pdf)

If you **do not** get maximum vacuum by blocking off the ends of the vacuum hoses going to the cylinder head then there is a problem (leak) with the vacuum pump or the hoses or a connection going to the vacuum pump.

- 1) Make sure the filters are clean.
- 2) Have you ever flushed the pump out with Brake Kleen (used to clean brake parts on your auto)? [http://www.blackmoreco.com/tech\\_vacuum.html#flushing](http://www.blackmoreco.com/tech_vacuum.html#flushing)
- 3) Make sure the jar on the vacuum side of the pump is screwed on tightly
- 4) Check all hoses and fittings that they are tight and there are no leaks
- 5) You can also inspect the vacuum chamber of the pump. Remove the 5 bolts holding the pump housing to the motor and take the housing off the end of the pump. Remove and inspect the 4 carbon vanes, make sure their surfaces are smooth and clean. Let Blackmore know what their dimensions are (should be approximately square) and we can compare them to what the size of new vanes is to see if they need replacement

If the low vacuum problem you are having has to do with sucking the seed out of the seed inventory tray, then you need to replace the filter inside the seed recovery jar  
[http://www.blackmoreco.com/pdf/seed\\_recov\\_jar.pdf](http://www.blackmoreco.com/pdf/seed_recov_jar.pdf)

As far as parts for the vacuum pumps are concerned, there aren't really any parts to be replaced other than the vanes and filters.

Similarly with the cylinder heads, the only parts typically replaced are the O-ring