Kodak

# Magnus VLF

## Punch Vacuum Cup Test Procedure

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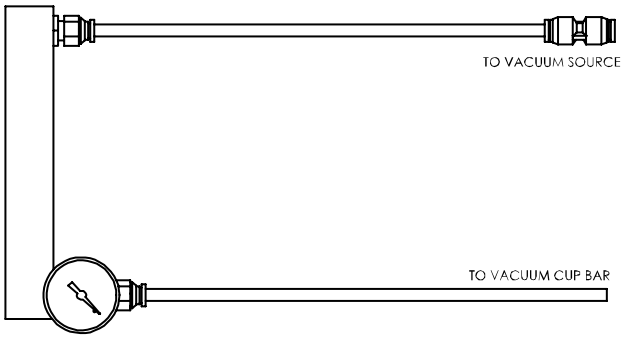
## 1. OVERVIEW

The purpose of this procedure is to check for vacuum leaks in the Punch system's vacuum cup assemblies when diagnosing poor vacuum cup plate grab performance. The registration bar assembly (500-3205A) consists of four vacuum cup manifold assemblies (500-03511A). Each vacuum cup assembly contains nine vacuum cups with an orifice of 0.007 in.

## 2. PARTS/TOOLS NEEDED

- TOOL, VAC LEAK DETECTION,MPU,MTA - 690-01101A.

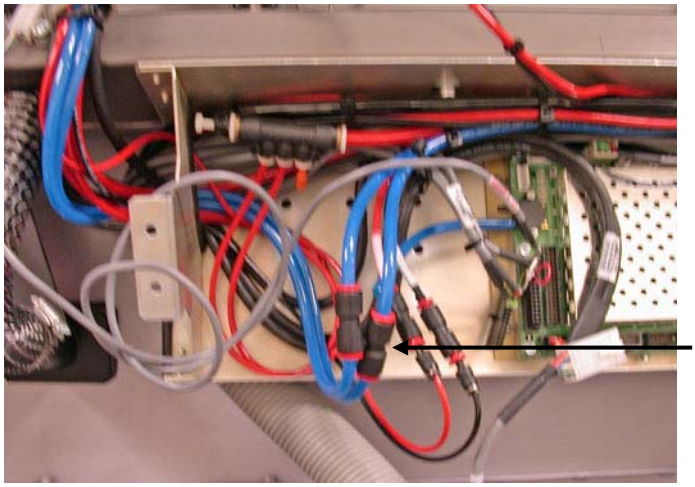
  This tool consists of a 1-10 SCFH air flow meter and a vacuum gauge. It measures the vacuum level and the air flow in the line.




- Replacement vacuum cups – 500-04869A-A.
- A discarded aluminum plate or something similar to block the vacuum cups.

## 3. TEST PROCEDURE

1. Open the Magnus VLF device's rear hood to access the punch assembly. Type `>>door unlock`
2. Remove the punch assembly's electronic tray cover to access the blue vacuum tubes for the registration bar assembly. There should be four blue tubes coming from the vacuum generator—one for each vacuum cup manifold assembly (two on the right and two on the left).
3. Disconnect one of the quick disconnect fittings at the end of the registration bar. Connect the vacuum gauge side of the testing tool to the vacuum cup side of the vacuum cup manifold assembly being tested. Connect the other side of the tool to the vacuum source side (the line that goes to vacuum generator).




4. Turn on the vacuum generator. Type:
   `>>punch cups vac on`
5. Take a reading of the leakage flow and vacuum level with the cups uncovered and record these readings.
6. Cover all nine cups of that assembly with pieces of discarded aluminum plate and record the leakage flow and vacuum level readings as before.
7. Repeat the readings for all four vacuum cup manifold assemblies. The values should be as shown in Table 1.

Table 1

| | **Vacuum level (in Hg)** | **Flow (SCFH)** |
|---|---|---|
| All cups uncovered | 7.5 to 8.5 | 5.8 to 7.5 |
| Cups covered with plate in same bank | 7.5 to 8.5 | < 0.7 |
| All cups covered except 1 cup | 7.5 to 8.5 | ~0.7 to 1.0 |

**Note:** If the readings of one of the vacuum cup assemblies is significantly different from the other three, then test the individual cups of that assembly.

8. Uncover one cup at a time and record the readings. If the readings from one cup is much higher than the others, then the orifice is either missing or bigger than it should be. If the reading from one cup is much lower than the others, then there is likely an obstruction in that orifice or tube.

## 4. TROUBLESHOOTING

Use the troubleshooting tree below if the readings are not as shown in Table 1.

*System pressure:*

Check system pressure—it should be 84 psi. Type `>>system`

*Vacuum level too high:*

Possible blockage in the system.

1. Check if the cups' orifices are not blocked with glue or other obstructions in the vacuum tubes and fittings.
2. Check for kinked lines or smaller than specified lines or fittings.

*Vacuum level too low:*

There is a possible problem with the vacuum generator. Check the vacuum level at the generator output and the pressure in the line feeding the generator—it should be around system pressure.

*Flow too high:*

Possible vacuum leak.

1. Check all the measurement tool fittings.
2. Check the lines to the vacuum cup manifold for anything causing leaks (loose or wrong fittings, wrong size vacuum line, breaks in the line, etc). If there are no obvious signs on the system up to the registration bar, then remove it to check it on the inside.
3. Once removed, check the lines leading into the bar and the fittings.
4. Remove the up/down vacuum cup mounting bar and remove each individual vacuum cup manifold bar. There should be four M4x12 flathead mounting screws (52-4643) with pre-applied Loctite securing each bar. If different screws are used, this can cause significant leaks and must be replaced with the correct screws.
5. Check that all the 1/8 NPT plugs in the ends are tight and sealing.

6. Check that the vacuum cup mounts (black anodized aluminum fittings) are tight and sealing. It may be necessary to unscrew them and inspect if they have enough Teflon tape on the threads—insufficient tape can be the source of minor leaks. Take care not to lose the copper spacers under the cup mounts if you remove them.

*Flow too low:*

Possible blockage.

1. Check the lines and fittings for kinks or obstructions.
2. Check the orifices in the vacuum cups for blockage.
3. Check the vacuum generator for vacuum flow at the generator.

*Submerged test:*

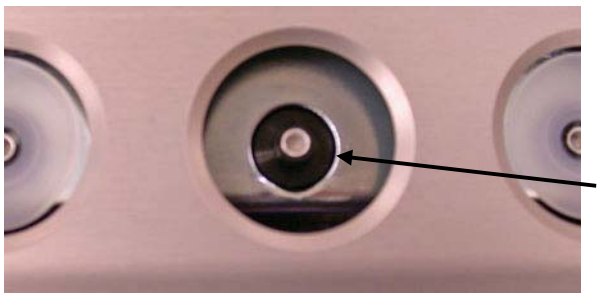
Finally, if no leaks can be found, perform a submerged test on the vacuum cup manifold assemblies to locate the air leakage. To do this, remove the individual assembly, pressurize the assembly with filtered air (not vacuum), and submerge the assembly up to the exit of the vacuum cup mounts in a container of water.

## 5. REPLACING A VACUUM CUP

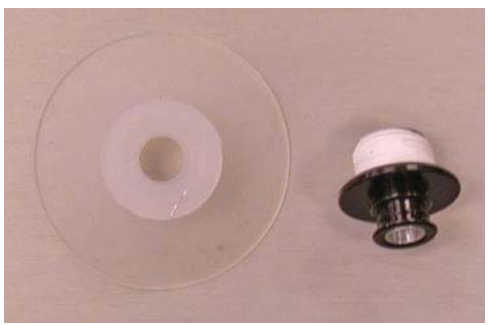
If the orifice is damaged, blocked, or missing on one of the vacuum cup manifold assemblies, then replace that cup and its associated fittings.

**Note:** You do not need to remove the manifold assembly from the device to replace a vacuum cup and associated fittings.

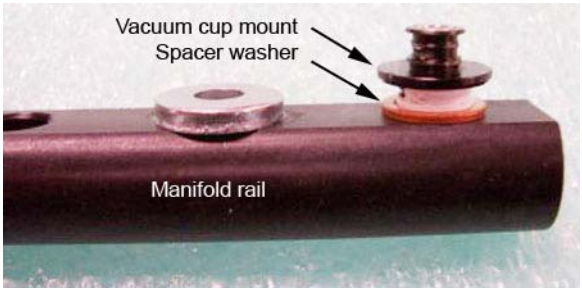
1. Remove the rubber cup by simply pulling it off the vacuum cup mount.




2. Unscrew the vacuum cup mount from the manifold rail using a pair of pliers.



3. Using small pliers covered with a cloth (or something similar) to prevent damaging the cup mounts, carefully screw the new vacuum cup mount into the manifold rail—make sure that there is Teflon tape on the threads of the cup mount and that there is a spacer washer between the cup mount and the rail. The new mount should also contain the screen on top and the brass orifice on the underside.








4. Attach a new vacuum cup to the vacuum cup mount.
5. Test the new vacuum cup with the vacuum leak detection tool as outlined in the Test Procedure section.