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Innovating the HP Way

Procedure for maintaining Diffusion pump

Applies to 5989B Mass Spec

PROCEDURE FOR 5989B DIFFUSION PUMP MAINTENANCE AND PUMPING SPEED MEASUREMENT -

DIFFUSION PUMP MAINTENANCE -

The fluid in the diffusion pumps seldom needs replacing. However, you should check the fluid level and color every six months. In severe duty applications (ammonia CI operation or more than 25% LC/MS operation), the diffusion pump fluid should be checked at least once every 3 months.

MATERIALS NEEDED:

Beaker, graduated (measuring), 250 ml or larger.

Fluid, diffusion pump:

6040-0818	63ml(Analyzer diffusion pump)
6040-0819	128 ml (Source diffusion pump)
6040-0299	100 ml
6040-0370	1 Liter

Gloves, chemical-resistant

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O-rings,
0905-1145 (4 required)

For fill/drain caps

Screw driver
8710-1029

Flat blade, small

Pozidriv screw driver
8710-0899

#1 Pozidriv

- 1) Shut down and vent the MS Engine. **UNPLUG THE POWER CORD.** Follow the procedure to vent for vacuum system maintenance, if not familiar with this procedure then refer to hardware manual or search CaseBase for 5989B vent procedure.

Caution: The timing in the vent procedure is very important. It assures the diffusion pump fluid is at the proper viscosity.

- 2) Remove the column from the GC interface and carefully move the MS Engine away from the gas chromatograph.
- 3) Open the cabinet door. Loosen or remove the 6 screws (5 captive and 1 Pozidriv) that hold the safety cover

Warning: Many components inside the cabinet door could still be dangerously hot.

- 4) Remove the screws, in front and back, that hold the right side cover in place.
- 5) Remove the right side panel by first pulling sharply on the top of the panel and then lifting the panel.
- 6) Hold the beaker under the fluid fitting on one of the pumps.

7) Remove the drain cap and allow the fluid to drain out. Measure the volume of fluid recovered.

Warning: Wear gloves and do not allow the fluid to contact your skin. If it does, wash it off immediately. Treat used fluid as hazardous.

DIFFUSION PUMP OIL VOLUMES

**PUMP
RECOVERABLE VOLUME**

TOTAL VOLUME

**Source (front)
112 ml**

125 ml

**Analyzer (rear)
54 ml**

60 ml

Note: The fluid recovered should be clear or light amber in color. It should not be cloudy or contain any particles.

Discolored diffusion pump fluid could indicate several potential problems:

- Too long between diffusion pump fluid checks/changes.
- Excessive diffusion pump temperature (potential cooling water problems)
- Air leak
- Excessive foreline pressure
- Ammonia CI operation
- Frequent vacuum system problems (air leaks, etc.)
- Mechanical pump fluid back-streamed into diffusion pumps

8) Replace the drain cap O-rings. Then, reinstall the drain cap and remove the fill cap from the top of the fluid fitting.

9) If the fluid volume and color are correct, pour the fluid back into the pump through the fluid fill opening. If the fluid color is good but the volume is low, add new fluid to increase the volume to the recoverable volume. Then pour it into the pump. If the fluid was discolored, dispose of it and pour the recoverable volume of new fluid into the pump. Heating the fluid to 70 degrees C makes it easier to pour.

10) Replace the O-ring in the cap. Then, reinstall the fill cap.

11) Repeat steps 6 through 10 for the other diffusion pump.

12) Reinstall the right side panel and the safety cover.

13) Move the MS Engine back next to the GC and reinstall the capillary column in the GC interface.

14) Start up and pump down the MS Engine. Use the procedure To pump down an MS Engine that is off. (if you are not familiar with this procedure, then refer to hardware manual or search case base for 5989B pump down procedures).