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Super-LOTIS Camera Pump-Down Procedure

Procedure

The Vacuum pump and accessories are stored on a cart in the warm room. The pumping system consists of an Alcatel Drytel 31 pump, stainless steel vacuum hose, MKS 943 cold cathode pressure controller, cold cathode gauge and an up to air valve. There is also a power supply cable used to open the camera vacuum valve.

1. Turn telescope power on, and move the scope to El 90, Az 180 (zenith). Turn telescope power and CCD camera power off.
2. Put the vacuum pump cart in the dome so the vacuum hose can reach the CCD camera.
3. Move the black shroud out of the way to access the bottom of the CCD camera.
4. Use an extension cord and a power strip to plug the vacuum pump and the gauge controller (MKS 943 cold cathode pressure) into a UPS power outlet.

On the bottom of the camera are two connections: the vacuum connection (labeled “VAC”) is a smooth 1/4“ diameter tube and the vacuum valve control (labeled “VAC Valve”) is a phono-style power plug.

1. Install the compression connection on the end of the vacuum hose to the VAC inlet on the CCD camera and tighten the knurled nut. Use the length of rope to provide the hose strain relief.
2. Turn on the vacuum pump. There is a single power switch on the front, all operations are automatic. When the pump is up to speed, the green light will turn on.
3. After the pump is up to speed, turn on the gauge controller (black power switch on MKS 943) and then flip the small silver switch to “HV On”. The digital readout will show the vacuum in a few seconds.
4. Skip this step if the pump is working properly. If the vacuum is not already at or below the 10E-3 range, then you may have a leak, probably at the camera connection. Turn off the HV on the gauge controller, turn off the gauge controller power, turn off the vacuum pump, wait for the turbo pump to spin down then open the up to air valve to make sure the vacuum hose is up to atmospheric pressure. Inspect and replace the small o-ring in the quick connect fitting at the camera end if necessary. Close the up to air valve, install the vacuum fitting on the camera, secure the vacuum hose and go back two steps to turn on the vacuum pump.
5. If the vacuum is dropping into the 10E-4 range, then turn off the gauge controller (HV off).
6. Plug the power cable into the VAC Valve on the camera, and use the screw threads to tighten it snugly. Plug the power supply into the power strip. THIS OPENS THE INTERNAL VACUUM VALVE IN THE CAMERA, AND EXPOSES IT TO VACUUM.
7. Wait 20 seconds or so, and turn on the gauge controller (HV On). It should be reading low 10E-3 and dropping.
8. Let the system pump for at least 1 hour.

After 1 hour or more:

1. Unplug the VAC Valve cable from the power strip. This closes the internal vacuum valve in the

CCD camera. Unplug it from the back of the camera.
2. Turn the HV Off and turn the gauge controller off. Turn the pump off.
3. Wait for the turbo pump to spin down. Unplug the two power cables from the power strip.
4. Disconnect the vacuum line from the back of the camera.
5. Replace the blank off plug in the quick connect fitting on the end of the vacuum hose.
6. Place the pump and accessories back in the warm room.
7. Replace the shroud around the CCD camera.
8. Turn the mount power on, and the camera power back to Remote. Stow the telescope. Turn the mount power to Remote. Turn off lights and close doors.

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