

## **PART II - PRIMARY SYSTEMS INFORMATION**

### **4. Medical Gas System**

#### **1. Operation**

##### **b. Start-up and Shut-down Procedures:**

(1) Dental Low Vacuum System: The start-up sequence for the dental low vacuum system is as follows. First, verify that there are no obstructions downstream of the vacuum pump exhaust outlet that could cause back pressure on the pump. Place the "on-off" switch located in the corridor in "on" position and then place the "hand-off-auto" switch located on the Control and Alternator Panel located in the mechanical room in the "hand" position and check the rotation of the pump. Observe the rotation of the motor fan. If the rotation matches the directional arrow on the pump, the pump is operating correctly. If the rotation does not match the directional arrow, the pump is wired backwards and an electrician should be called to correct the wiring. When the pump is rotating correctly, open the isolation valves connecting the pump to the vacuum system piping and the separation tank. Open the water valve to turn the water on to the wet separator tank. Open the isolation valves to the blowers. Place the "hand-off-auto" switch in the "auto" position at the control panel. An automatic alternator shall select and start the lead vacuum pump. When the system is energized the "lead" vacuum pump starts and operates continuously. A vacuum switch senses vacuum demand. As the vacuum load increases and the lead vacuum pump cannot handle the load the lag vacuum pump shall start and operate along with the lead vacuum pump to satisfy the system demand. When the vacuum switch pressure increases to a point where one vacuum pump can handle the load the lag pump shall stop and the lead pump shall continue to operate. Normal operation of the system will be to use the switch located at the control panel in the corridor to start and stop the system during normal operating hours. To stop the system place this switch to the "off" position. The "Hand-Off-Auto" switch should be left in left in "Auto" position. When the unit requires servicing then the shut-down procedure for the dental vacuum shall consist of placing the "Hand-Off-Auto" on the control panel to the "off" position and closing the isolation valves to the dental vacuum system piping.

(2) Dental Compressed Air: The start-up procedure for the dental air compressor shall be as follows.

- (a) Make sure that all safety warnings, labels and instructions have been read and understood.
- (b) Confirm that the electric power source and ground have been firmly connected.
- (c) Be sure that all pressure connections are tight.
- (d) Check to be certain that all safety relief valves, etc., are correctly installed.
- (e) Check that all fuses, circuit breakers, etc., are the proper size.

- (f) Make sure the inlet filter is properly installed.
- (g) Confirm that the drain valve is closed.
- (h) Visually check the rotation of the compressor pump. If the rotation is incorrect, have an electrician correct the motor wiring.
- (i) Be sure that the electric source breaker is on.
- (j) Open the tank discharge valve completely.
- (k) Place the “On-Off” switch located in the corridor adjacent to the mechanical room to the “On” position and place the “hand-off-auto” switch located on the control panel at the air compressor to the “auto” position. Verify that the compressor is operating without excessive vibration or with unusual noises or leaks.
- (l) Close the discharge valve completely while the compressor is running.
- (m) Check the discharge pressure, making sure the air pressure rises to the designated pressure setting by checking the discharge pressure gauge and the unit is cycling when desired pressure is reached.
- (n) Open the isolation valves to the dental compressed air piping system.
- (o) Turn the refrigerated air dryers on at the switch on the dryer face. Verify that they are energized and operating properly. Proper operation will be designated by a green LED light and the refrigerant suction pressure gauge operating in the “green range.”

Normal shut-down of the system shall be to place the “On-Off” switch located in the corridor to the “Off” position. When the unit requires servicing then the shut-down procedure for the dental air compressor shall consist of placing the “Hand-Off-Auto” on the control panel to the “off” position and de-energizing the refrigerated air dryers, and closing the isolation valves to the dental compressed air system piping.