

**MEDICAL VACUUM
MAINTENANCE**

Effective date: 02/80
Revision date : 04/10
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Policy:

Ensure medical vacuum systems are installed, operated, maintained and inspected according to prevailing standards.

Prevailing Codes and Standards:

TJC EC 02.05.01 (9) and 02.05.09, NFPA 99

PM Cross Reference:

Task 3, Craft 20, Equip # MED VAC ... motor lub
Task 8, Craft 20, Equip # MED VAC ... vacuum pump
Task 3, Craft 4, Equip # MED VAC ... motor starter

Location:

Hospital penthouse, K-Wing penthouse, Medical School B
10th, Women's & Children's Clinic/Ambulatory Care, Cancer
Center

Procedure:

I. MEDICAL VACUUM SYSTEMS

- A. Hospital and K Wing vacuum is provided by two Quincy rotary screw vacuum pumps (primary system) and four separate single Becker rotary vane vacuum pumps that function as the backup and one duplex water ring that functions as the back up to the backup. All operate independently but progressively as demand increases. There is an interconnection between the hospital and K Wing.
- B. Medical School vacuum is provided by two Quincy rotary screw vacuum pumps (primary system) and one single duplex water ring vacuum pump which serves as backup. Compressors operate independently, but progressively as demand increases.
- C. Women's & Children's Clinic/Ambulatory Care Clinic (WCC/ACC) and Cancer Center each have stand-alone duplex vacuum systems.

II. INSPECTIONS

- A. Daily Inspections
 - 1. Hospital and K-Wing medical vacuum systems will be inspected each shift.
 - 2. Medical School medical vacuum will be checked daily.
 - 3. WCC/ACC and Cancer Center medical vacuum will be checked daily, Monday through Friday.
 - 4. Record the inspection in the maintenance log.

- B. Preventive Maintenance Inspections
 - 1. Preventive maintenance to be performed on a scheduled basis.
 - 2. Maintenance Supervisor will ensure P/M inspections are performed as scheduled.
 - 3. Inspection records must reflect the current equipment status.
- C. Safety Inspections
 - 1. Annual inspections to be performed according to the High Risk Equipment Inspection Policy.
 - 2. Documentation:
 - a. Inspection records must reflect current equipment status.
 - b. Discrepancies found during inspections must be recorded in equipment records.

III. **MAINTENANCE** - Modifications and repairs must be made by a licensed plumber, extreme caution should be taken to avoid contamination, and repairs should be made on a priority basis.

- A. Routine Maintenance
 - 1. Schedule an outage according to the Utilities Interruption Policy for any maintenance leaving the system without backup.
 - 2. The medical vacuum system will not be removed from service in routine maintenance status.
- B. Priority Maintenance
 - 1. The medical vacuum system cannot be taken out of service until the following have been accomplished:
 - a. Schedule an outage according to the Utilities Interruption Policy.
 - b. Coordinate the outage with Engineering Section.
 - c. Coordinate with maintenance section responsible for performing preventive maintenance on the equipment.
 - 2. Do not take the system out of service until all supplies, equipment and personnel are available to complete the action.
 - 3. Restore the system to normal as soon as possible.
- C. Maintenance Documentation
 - 1. Document maintenance records immediately after work is accomplished.
 - 2. Discrepancies found and corrective action must be recorded in equipment historical files.
 - 3. Written documentation must be maintained in the shop.

IV. **EMERGENCY PROCEDURES**

- A. Hospital and K Wing primary medical vacuum provided by

two Quincy rotary screw vacuum pumps. Primary vacuum is supported by one duplex water ring pump set at 18" HG and four Becker vane vacuum pumps set at 17" HG located on 11th floor K Wing. System is interconnected from 11K to 12H. Should primary source fail, 11K duplex and Becker pumps start automatically to restore vacuum system.

- B. The Medical School medical vacuum is comprised of two Quincy screw compressors and one duplex water ring pump which operates independently from the other. This duplex system is used as backup. Should the Quincy pumps fail, the duplex system should automatically assume the load.
- C. Contact supervisor on all emergency conditions. If unable to make contact, inform the next higher level supervisor.
- D. Loss or low medical vacuum 11K/B Bldg.
 - 1. Go to Hospital 11K/10B medical vacuum equipment room.
 - a. Verify Quincy vacuum pumps running/not running. If not running, press start switch on front of equipment panel
 - b. When pumps start, monitor operation for 15 minutes to ensure the system is working properly.
 - c. Monitor pump operation hourly.
 - d. Document action in the maintenance log.
 - e. Go to 2 if pumps fail to start after pressing the reset switch.
 - 2. Duplex/Becker pumps fail to operate in automatic
 - a. Place equipment operate switches to hand/manual mode position
 - b. If pumps fail to start, press the reset switch on the panel.
 - c. When pumps start, return H/O/A switches back to automatic position. Monitor operation for 30 minutes to ensure the system is working properly.
 - d. Monitor pump operation hourly
 - e. Contact shift supervisor for assistance
 - f. Document action in maintenance log.
 - g. Go to 3 if both pumps fail to start after pressing reset switch.
 - 3. Pumps Fail To operate In Hand/Manual
 - a. Check Motor Control Center and perform the following:
 - (1) Locate the switches for the medical vacuum pumps.
 - (2) Ensure switches are in the "ON" position.

- (3) Turn switches to "ON" if they are not tagged with a warning sign and perform step 2 "Pumps Fail To Operate In Automatic" again.
- b. If operation is not successful, contact supervisor immediately and request assistance.
- c. Document action taken in maintenance log.

V. **Emergency Procedures - Cancer Center and Women & Children's Clinic and Ambulatory Care Clinic**

- A. The Cancer Center and WCC/ACC vacuums are provided by duplex Medaes rotary vane vacuum pumps. The two pumps at each location are set up in an alternating lead/lag configuration. The control system automatically alternates the lead position between the two pumps. The lag pump will operate should the lead pump be unable to maintain adequate vacuum.
- B. Loss or poor vacuum at Cancer Center or WCC/ACC
 1. In the Cancer Center, go to the floor room B503.
 2. In WCC/ACC, go to Power Plant (west of Spartans) room P2.
 - a. Verify vacuum pumps are running/not running. If not running, switch to pump to OFF position then try to restart.
 - b. If pumps start, monitor vacuum for 15 minutes to ensure system is working properly.
 - c. Monitor pump operation hourly.
 - d. Document action in maintenance log.
 - e. Go to 3 if pump fails to start.
 3. Pump fails to start
 - a. Place switch in the OFF position.
 - b. Press reset switch and try to start, if successful, revert to B.2.b. If pump does not start, turn switch to OFF position, check panel fuses, internal circuit breakers, and main power fuses and reset as necessary.
 - c. Put switch in ON position, if pump starts, revert to B.2.b. If pump fails to start, contact supervisor immediately and request assistance.
 - d. Document action in maintenance log.