



USDOL Job Corps Alert – February 2015

COOLING SEASON PREPARATIONS

This notice is to provide guidance to all Job Corps centers on facilities' operations and maintenance, and preventive maintenance for the coming season. These recommendations should improve center operations, and result in cost savings.

For centers that have heating and cooling seasons, before the cooling season begins, center maintenance personnel must prepare Heating, Ventilating and Air Conditioning (HVAC) equipment for the seasonal changeover. During the cooling season, the goal is to maintain the temperature below 78 °F in campus buildings while occupied, and maintain the building temperature below 85 °F while the buildings are unoccupied.

It is difficult to present a simple description of the seasonal temperature changeover policy because of the variety of buildings and related HVAC systems. When determining the exact changeover date for a building, facilities management should consider prevailing weather patterns, the building's HVAC system, system controls, and building usage. Since the spring temperatures can be extremely variable, even the best HVAC system can be put to the test under these conditions. Unfortunately, a building's internal temperatures may vary by as much as 15 degrees. Determining the best time for seasonal changeover is a judgment call. There will be times when facilities are uncomfortable. Building occupants must be patient during the seasonal changeover until the weather is consistently warmer and cooling every day.

Unless the center uses heat pumps exclusively, air conditioning equipment has been idle for a long period of time, and now it is the time to prepare for warmer weather.

Regardless of the type of systems at the center, a seasonal changeover must be a part of the center's Preventive Maintenance (PM) program (Policy and Requirements Handbook Section 5.11.). A properly conducted seasonal changeover prolongs the life of the equipment, reduces energy consumption, and increases the operational availability of the equipment. Even if air conditioning equipment is operated year-round, summer heating loads are significantly higher, and the center must inspect and upgrade equipment.

The spring changeover is also the time to begin planning PM activities on boilers, furnaces and the associated vents, stacks, and chimneys.

BASIC AIR CONDITIONING SYSTEMS GUIDANCE

For most basic air conditioning systems, elements of a good spring HVAC changeover include the following elements. Manufacturer recommendations must always be followed, and may require outside contractors with specialized skills and equipment to complete related tasks.

1. Clean Outdoor Condenser Coils and Indoor Evaporator Coils

Dirt and debris on the coils reduce efficiency, and stress the system's mechanical parts, reducing longevity of the system.

2. Check the Refrigerant Level

An improper amount of refrigerant makes a compressor work too hard, reducing the efficiency and longevity of the system.

3. Inspect the Drain Pans and Condensate Drains

Drains must be unobstructed and clean to ensure excess moisture is not trapped in the units or inside the building.

4. Check Outdoor Fan Motor and Blades, and Indoor Blower Assembly

The fan on the outdoor unit pulls air in through the coil fins. The indoor blower is the fan unit (motor, fan wheel and housing) on the air handler unit or furnace. Blowers may include a drive belt and bearings that should be inspected, lubricated and adjusted or replaced as needed.

5. Check Refrigerant Tubing

Replace missing or damaged insulation. Observe for ice on lines, which may indicate a low refrigerant charge.

6. Lubricate Moving Parts

Follow the manufacturer's recommendations for lubricating fan motors, compressors, and other parts.

7. Inspect All Electrical Controls, Wiring, and Connections

All electrical components and hookups should be checked for soundness, wear, and damage.

8. Inspect and Clean or Replace Air Filters

A dirty filter restricts airflow, which reduces occupant comfort, reduces system efficiency, and makes the system work harder, reducing longevity of the system.

9. Run a General System Test

Check operating functions such as the starting cycle and shut-off control, check for unusual noises or odors, and measure indoor/outdoor temperatures and system pressures, as needed. Program controls for appropriate cooling season set points (occupied and unoccupied).

10. Check Ductwork for Leaks and Other Problems

A duct inspection is not needed every year, and may not be included with a standard system checkup, but air leakage in ductwork is one of the main causes of inefficiency in forced-air A/C and heating systems. Be sure to have the ductwork assessed and sealed and/or insulated in problematic areas, as needed.

11. Maintain Outside Air Intake Vents; Open, Clean, and Clear Any Obstructions

A clean, open source of outside air is necessary to provide the required indoor air quality.

12. Monthly Maintenance During the Cooling Season

Check the air handling unit filter each month. Check the outdoor condensing unit and remove all leaves, grass clippings, and other debris from the sides and top of the cabinet. Cut back vegetation as needed to maintain a minimum of 2 feet of clearance on all sides of the unit. This ensures adequate airflow to the condenser coil.

LARGER CENTRAL SYSTEMS RECOMMENDATIONS

For larger central systems with chillers and cooling towers, there are several maintenance items to address. Chillers are large, expensive, and complicated. These units will require outside contractors with specialized skills and equipment. For chillers/cooling towers:

1. Perform a Seasonal Changeover Valve Lineup

The valve lineup for the seasonal changeover isolates the boiler and opens flow to the chiller. The HVAC system piping, boiler, and chiller are susceptible to thermal shock caused by abrupt water temperature changes. A two-pipe HVAC system must be allowed to rest for 1 or 2 days or until its water temperature moderates and seasonal changeovers can be made to prevent damage to the system. The center must have a written seasonal changeover valve lineup checklist, and it must be followed to make sure chilled water does not flow through equipment such as boilers and radiators, causing this equipment to sweat and corrode during the cooling season.

2. Pressure Wash the Cooling Tower and Flush

Clean distribution nozzles and screens, and adjust the bleed, float, and central valves for the desired water level.

3. Check the Exterior for Leaks and Corrosion

Gasket leaks and corrosion, if caught early, can be easily fixed. Clean, prime, and paint areas of corrosion, as necessary.

4. Run a General System Test

Check operating functions (e.g., starting cycle and shut-off control) check for unusual noises or odors, and measure indoor/outdoor temperatures and system pressures and temperatures. Compare readings to manufacturer's recommendations. Most chillers are equipped with self-diagnostic readouts. The temperatures and pressures and self-diagnostic readouts will determine what additional preventive maintenance is required, such as descaling condenser tubes.

5. Startup and Run

If all parameters with the chiller and cooling tower are normal, start the system, run and adjust flows and temperatures per manufacturer's recommendations, and the sequence of operations contained in the center's operations and maintenance procedures.

QUESTIONS

Should you have any technical questions about this alert, please contact Nakia Wayns, Engineering Support Contractor, at (703) 516-2225, or wayns.nakia@dol.gov