

WESTERN MICHIGAN UNIVERSITY

TITLE: Refrigeration Repairperson (Licensed)

GRADE: ST-2.5

FUNCTIONS:

This position provides highly skilled craft labor, working with tools to install, repair, replace and perform preventive maintenance for all types of refrigeration equipment. The incumbent installs, repairs and maintains up to 400-500 ton capacity chillers, ice-making equipment, refrigerators, freezers, water cooling systems, window air conditioning units, DX-type free-standing air-conditioning units for computer rooms, kitchen equipment and refrigerated air dryers for environmental control systems. The incumbent checks temperatures and fluid levels, and reads chilled water and condenser water temperatures. This position checks p/h levels and conductivity of tower water for chillers and treats water to restore/ensure proper chemical balance. The incumbent maintains cooling towers, removing calcium deposits, algae, debris and other extraneous materials; inspecting and repairing the structural condition of towers; and cleaning and inspecting all related piping. This position monitors voltage readings for electrical centrifugal chiller systems; cleans and replaces coils; replaces compressors; and evacuates uncondensables from tubes and piping. The incumbent dismantles chiller and other equipment/refrigeration units during off-season months, in order to make any repairs indicated during the operating season and to perform off-season maintenance. This position pulls down and brushes all tubes, replaces all gaskets, replaces diaphragms, and cleans all parts. The incumbent reassembles units after completion of all cleaning and repairs.

The incumbent monitors the level of refrigerants in cooling/refrigeration systems, removes air from systems and charges systems with manufacturer's specified amount and type of refrigerant. This position maintains, repairs and replaces expansion and control valves, and adjusts valves, controls and pumps to control levels of fluid, pressure and temperature in systems. The incumbent assembles, installs, repairs, replaces and otherwise maintains motors, controls, switches, gauges, wiring harnesses, valves, pumps, compressors, condensers, cores and pipes. This position may cut, thread, and/or weld pipes to connect pipes to refrigeration units and water/power systems.

This position utilizes screwdrivers, pliers, wrenches, adjustable wrenches, wire cutters, hammers and other hand tools to adjust valves and gauges, tighten piping connections, and perform other maintenance and repair tasks. The incumbent uses pressure gauges to check levels of pressure in systems. The incumbent may employ welding equipment to install and/or repair piping. The incumbent employs voltmeters, ampmeters, circuit testers and phase meters to evaluate the operating condition of refrigeration equipment. The incumbent uses pipewrenches, socket wrenches, chainfalls,

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come-alongs and other tools and devices to pull heads off chillers and other refrigeration units for cleaning and maintenance. This position employs an auger machine with cable brush to clean chiller tubes, and removes calcium deposits and other debris from towers with a shovel. The incumbent treats chiller water with biocides, fungicides and non-acid based chemicals. This position injects chemicals into piping systems with the use of chemical pumps, and employs a vacuum pump to remove uncondensables. The incumbent removes scale from chiller walls with chemicals and brushes. This position works from floor/ground level to a height of four feet (48") with or without mechanical assistance, and works at heights up to 50 feet with the use of ladders, step ladders, scaffolding and mechanical devices. The incumbent may gain access to roof-top chillers by ascending ship's ladders or maintenance stairs, and may access internal building air-conditioning/refrigeration systems from cat walks, I-beams, scaffolds and/or ladders.

The incumbent provides information required to update building and systems drawings to accurately reflect current status and, as assigned, may assist in the technical training of an apprentice. This position determines inventory requirements for supplies, construction materials and replacement parts, and notifies supervisory personnel when (re)ordering is necessary. This position operates a motor vehicle to transport tools, supplies and materials to work sites. The incumbent organizes assigned work so as to minimize materials and man-hours required for proper completion of work, and instructs others in the operation of and preventive maintenance for all related tools and equipment.

This position maintains the work area, all tools, all equipment, all supplies and any assigned vehicle(s) in a neat, clean and orderly condition and performs all work in accordance with established safety practices. The incumbent must wear MIOSHA approved safety shoes at all times and must wear a hard hat, gloves and safety glasses when appropriate. The incumbent must wear a respirator when working with biocides, fungicides, corrosives and other water-treatment and cleaning chemicals, as well as when working with refrigerants, including freon gas. A face shield and MIOSHA approve leather gloves are required when using welding equipment. Other protective gear must be worn as required by MIOSHA rules. The incumbent must wear no loose-fitting clothing which might become entangled in equipment or machinery, posing a hazard to incumbent's safety. This position performs additional duties as requested by supervisory personnel.

QUALIFICATIONS:

The incumbent must be able to read and comprehend written instructions and safety regulations regarding the performance of job duties, and must have sufficient writing and mathematical skills to prepare estimates and supply requisitions. Must have the ability to familiarize themselves with electronic communication devices for work orders and other communication. The incumbent must be able to interpret complex blueprints, diagrams, written specifications and operating instructions. Completion of a registered apprenticeship program, or an established, certified training program recognized by the University, or written verification of a minimum of five (5) years experience at the journeyman level in the trade is required. The incumbent must possess, or obtain within 90 days

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of the date of hire a Michigan Mechanical Contractors License classification 4,7 or 8 (only one needed) and an EPA 608 universal federal license. Possession of a valid Michigan driver's license is required for operation of any assigned vehicle used to transport tools, supplies, materials, and equipment between work sites.

In order to perform the essential functions of the job, the incumbent must be able to wear a tool belt weighing 20 lbs at all times while performing all functions. The incumbent must be able to ascend a six-foot (6') step ladder at least 20 times per day to repair, install and/or maintain equipment concealed in ceilings, walls, and self-contained equipment frames, as well as wall-mounted units. The incumbent must be able to enter and maneuver in restricted spaces in order to access equipment components and piping. The incumbent may be required to ascend ship's ladders and/or maintenance stairs to heights up to sixty feet (60') up to 30 times per day in order to access cooling towers and other equipment mounted on roof tops. The incumbent must be able to work at heights ranging from six feet to one-hundred-and-twenty-feet (6' to 120') for two hours at time for the entire length of shift. The incumbent must be able to move a drum-cart carrying a 425 lb load distances up to 150 feet as often as fifteen times per day in order to access refrigeration units and equipment to be maintained. The incumbent must be able to transport refrigerant reclamation equipment, and associated tanks, gauges, filters, drivers and other components and devices up and down ladders to roof-tops and to lower mechanical rooms.

The incumbent must be able to move, manipulate and maneuver tools, coils, tanks, gauges and filters. The incumbent must be able to work for two hours at a time at shoulder level or any intermediate level up to and including directly overhead. The incumbent must be able to tighten/loosen and make fine adjustments in valves, controls and gauges. The incumbent must be able to use screwdrivers, pliers, wire cutters, wrenches, and other tools of the trade to install, remove, dismantle, adjust, reassemble and re-install coils, piping, control gauges, tubes and other cooling elements and components. The incumbent must be able to work at ground/floor level and/or in confined spaces up to two hours at a time for the entire length of shift in order to access chiller and other refrigeration equipment components. When working in vaults and tunnels, the incumbent uses confined space air quality monitoring meters to monitor for the presence of toxic gases

In order to obtain a valid Michigan driver's license, the incumbent must possess 20/40 vision with or without corrective lenses. The incumbent must possess 20/20 vision with or without corrective lenses and be able to properly place and align coils, tubes, pipes and other components. The incumbent must be able to accurately read temperature, pressure and fluid level gauges.

The incumbent must be able to tolerate exposure to extreme temperatures ranging from -25⁰ F to 130⁰ F, depending on seasonal weather conditions and location of interior/exterior work assignments. The incumbent must be able to tolerate noise levels up to 95 decibels when working in mechanical rooms and other areas and must be able to tolerate exposure to dirt, dust, pollen and other airborne debris. The incumbent must be able to work in proximity with 440 volt power sources up to eight hours per day. The incumbent must be able to tolerate exposure to dampness, freon and other gases, biocides,

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fungicides, corrosives and other water treatment chemicals. Additionally, the incumbent must be able to tolerate exposure to microwaves, fans, blowers, motors, and other mechanical equipment in building mechanical rooms, tunnels, confined spaces, and other locations, and to live steam in mechanical rooms. A physical examination administered by the employer's designated physician is required to determine the incumbent's ability to perform the essential functions of the job and/or identify the need for reasonable job accommodation.