



2012 15th ANNUAL SKILLS MANITOBA COMPETITION CONTEST SCOPE

CONTEST NAME: Refrigeration and Air Conditioning

CONTEST NO: 38

LEVEL: Post-Secondary

CONTEST LOCATION: Red River College - Notre Dame Campus

CONTEST START TIME AND DURATION: 6 hours maximum, starting at 9 AM immediately after opening ceremonies

PURPOSE OF CHALLENGE: To assess the contestant's problem-solving skills relating to the installation, operation, maintenance and repair of Refrigeration systems.

SKILLS AND KNOWLEDGE TO BE TESTED:

1. Apply basic electrical control systems concepts in the wiring of a Refrigeration Hermetic Compressor that uses a Potential Relay, Start Capacitor, Run Capacitor and Overload. Contestant will be required to prepare an electrical schematic diagram prior to wiring the components. After wiring, the contestant will test the compressor for proper relay operation.
2. Apply basic refrigeration test equipment procedures in connecting a Vacuum Pump, Hi-Vacuum Manifold and Vacuum Hoses to a system that has been proved to pass a standing pressure test. The contestant will be responsible for proving a minimum of a "500 Micron" Vacuum using an electronic Vacuum Gauge by making any necessary repairs to system tubing, fittings or any other necessary mechanical connections.
3. Apply basic refrigerant recovery procedures by removing refrigerant from a system by the use of pressure differential techniques for liquid transfer to a recovery cylinder and the use of a Refrigerant Recovery machine to complete a minimum of a 15" Vacuum.

Tracking of tank weights, refrigerant quantities and a MOPIA compliant paper trail will be required.

4. The Apply basic programming concepts by loading a list of application parameters into a Johnson MR4PMUHV-1 System Controller contestant will then simulate system operation for a typical run cycle as well as a system defrost which will sequence the electrical loads which consist of the Liquid Line Solenoid, Evaporator Fans, Defrost Heaters, and Alarm relays.

Prerequisites:

- Thorough knowledge of the refrigeration cycle.
- The ability to use refrigeration tools and specialized equipment.
- Knowledge of and compliance with current industry codes and safety regulations.
- The ability to use precision electrical test equipment.
- A good operating knowledge of typical controls used in refrigeration and air-conditioning systems.

EQUIPMENT, TOOLS, MATERIALS TO BE PROVIDED BY COMMITTEE:

- All hand tools, testing equipment, and specialized equipment and consumables will be provided by the organization.

Any additional safety equipment that may be required

EQUIPMENT, TOOLS, MATERIALS TO BE SUPPLIED BY COMPETITOR:

- Contestants must provide their own personal safety equipment.
- Contestants must wear the appropriate clothing and standard safety gear. (Gloves, CSA approved Hardhat, safety boots and safety goggles as required for the function they are performing).

NATIONAL COMPETITION ELIGIBILITY:

- A mark of **70% or higher** must be scored by the gold medalist in order to attend the National Skills Competition

WORKSITE SAFETY RULES / REQUIREMENTS:

- As per Red River College shop/lab policies.

FOR MORE INFORMATION PLEASE CONTACT:

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