

Provincial Scope Document

REFRIGERATION (Post-Secondary) 2019

Contest Length: 6-1/2 hrs.

Check in time: 8:00 am

Contest Start: 8:30 am

Purpose of the Challenge:

Assess contestant's problem-solving skills relating to the installation, operation, & repair of HVAC/R electrical and mechanical systems.

Skills & Knowledge to be tested:

- Perform refrigeration tubing and component installation tasks □ Perform system pressure testing, evacuation, charging & start-up □ Prepare an as-built electrical schematic from existing installation.
- Wire an HVAC/R control circuit as per schematic diagram complying with all Provincial and Federal codes and regulations and prove circuit operation.
- Be knowledgeable of and apply health and safety regulations.

The goal of the contest is to encourage students to learn more about refrigeration and air-conditioning.

Pre-requisites:

- Thorough knowledge of the refrigeration cycle
- The ability to use refrigeration tools and specialized equipment
- The ability to use tools required for working with copper tubing
- Knowledge of and compliance with current industry codes and safety regulations
- The ability to use precision electrical test equipment
- A good operating knowledge of mechanical, electrical and electronic controls used in refrigeration and air-conditioning systems.
- A good working knowledge of the K2 Electronic Temperature Control
- A good working knowledge of refrigeration schematic diagrams

Equipment / Tools / Supplies / Clothing

- Contestants must wear the appropriate clothing and standard safety gear (Gloves, CSA approved safety boots and safety goggles). Contestants must provide their own personal safety equipment.
- Contestants must provide the basic hand tools listed below.
- All consumables will be provided by the organization.
- Any additional safety equipment, testing equipment or special tools will be supplied

List of tools to be supplied by the contestant:

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| 1 – Four Port Refrigeration Gauge Manifold & Hoses | 1 – Slip joint pliers |
| 1 – Set of common screwdrivers | 1 – Combination wire stripper/crimper |
| 1 – Set of Phillips screwdrivers | 1 – Refrigeration service valve wrench |
| 1 – Set of Robertson screwdrivers | 1 – Mirror |
| 1 – Set of nut drivers | 1 – Thermometer |
| 1 – 6in, 8in and 10in adjustable wrench | – Pencils, pens, notepad |
| 1 – Electrical side cutters | – Pressure / temperature chart. |
| 1 – Needle nose pliers | |
| 1- Scale | |
| 1- Vacuum pump | |
| 1- Electronic vacuum gauge | |
| 1- Solenoid magnet | |

This is a minimum requirements list of tools for each contestant; additional tools can be added.

Safety Requirements:

Safety awareness/requirements will be maintained at the minimum industry standards at all times. A contestant will not be allowed to compete without the safety equipment noted on this scope document.

Evaluation will be based on the following:

- Testing will be performed on refrigeration and air-conditioning equipment. Judging will determine proficiency by knowledge, skills and speed of task. Special consideration will be paid to health and safety rules.
- **Marking Scheme:** Practical 100%

Technical Committee:

Larry Nohr Chair nohrl@camosun.bc.ca

