

TRADE PROFILE

Refrigeration and Air Conditioning Mechanic



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RED SEAL

TRADE PROFILE

REFRIGERATION AND AIR

CONDITIONING MECHANIC



STRUCTURE OF THE OCCUPATIONAL STANDARD

To facilitate understanding of the occupation, this standard contains the following sections:

Description of the Refrigeration and Air Conditioning Mechanic trade: an overview of the trade's duties, work environment, job requirements, similar occupations and career progression

Task Matrix: a chart which outlines graphically the major work activities, tasks and sub-tasks of this standard

Major Work Activity (MWA): the largest division within the standard that is comprised of a distinct set of trade activities

Task: distinct actions that describe the activities within a major work activity

Sub-task: distinct actions that describe the activities within a task

A complete version of the occupational standard, which provides additional detail for the trade activities, skills and knowledge can be found at www.red-seal.ca.

DESCRIPTION OF THE REFRIGERATION AND AIR CONDITIONING MECHANIC TRADE

“Refrigeration and Air Conditioning Mechanic” is this trade’s official Red Seal occupational title approved by the CCDA. This standard covers tasks performed by refrigeration and air conditioning mechanics whose occupational title has been identified by some provinces and territories of Canada under the following names:

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
Refrigeration and Air Conditioning Mechanic	■	■	■	■			■	■	■		■	■	■
Refrigeration and Air Conditioning Systems Mechanic						■							
Refrigeration Mechanic					■					■			
Refrigeration System					■								
Refrigeration System - Class 1					■								

Refrigeration and air conditioning mechanics install, maintain, service, and decommission residential, commercial, industrial and institutional heating, ventilation, air conditioning and refrigeration units and systems. They also connect to and service air delivery systems, install and service hydronic and secondary refrigerant systems and associated controls. Their duties include laying out reference points for installation, assembling and installing components, installing wiring and cabling, to connect components and equipment to an electric power supply and calibrating related controls. They also measure, cut, bend, thread and connect pipe to functional components and utilities.

Refrigeration and air conditioning mechanics maintain and service systems by inspecting and testing components, brazing or soldering parts to repair defective joints, adjusting and replacing worn or defective components and reassembling repaired components and systems. As part of service and commissioning, refrigeration and air conditioning mechanics start up, test, charge, adjust, calibrate, balance, measure, verify maintain and document systems.

In addition to their regular duties, some mechanics may also prepare work estimates and design systems for clients.

Refrigeration and air conditioning mechanics work with a range of tools and equipment including hand, power, charging, diagnostic and measuring, hoisting and rigging, and recovery and recycling tools and equipment.

They may be employed by heating, ventilation, air conditioning and refrigeration contractors and manufacturers, property owners, retail establishments, and institutional and public sector employers. They also may be self-employed. Refrigeration and air conditioning mechanics may work on systems and units in office buildings, restaurants, food and beverage processing plants, ice arenas, supermarkets, hospitals, the marine and mining sectors as well as bio-medical, scientific and research and development fields. They may also work on refrigerated trucks, automotive air conditioning systems, box cars and appliances.

In some jurisdictions, refrigeration and air conditioning mechanics may be required to work on fuel-fired equipment and therefore may require additional licencing.

Refrigeration and air conditioning mechanics work in various locations such as rooftops, mechanical rooms and computer rooms. The work may be performed indoors or outdoors year round and may require extensive travelling. Much of the work is performed independently.

Inherent risks in this trade include working at heights and in confined spaces, and working with compressed gases, flammable and toxic materials, and utilities such as electrical and hazardous chemicals. Hazardous work environments and weather conditions are also factors. Refrigeration and air conditioning mechanics must be aware of the physical demands and potential for personal injury when performing tasks.

Key attributes for people entering this trade are strong client service, writing, oral communication and problem solving skills, an eye for detail, and the ability to be independent and self-directed. Coordination and manual dexterity are also important, as are mechanical and mathematical abilities. Good physical condition and the strength to lift heavy components are also valuable.

This standard recognizes similarities and overlaps with the work of steamfitters/pipefitters, plumbers, gasfitters, sheet metal workers, industrial mechanics (millwrights), electricians, instrumentation and control technicians, riggers and stationary engineers.

With experience, refrigeration and air conditioning mechanics may act as mentors and trainers of apprentices in the trade. They may also become specialized in one area of the trade, advance to supervisory positions or become instructors.

REFRIGERATION AND AIR CONDITIONING MECHANIC TASK MATRIX

A – Performs common occupational skills

Task A-1 Performs safety-related functions	A-1.01 Maintains safe work environment	A-1.02 Performs lock-out, tag-out and isolation procedures	A-1.03 Uses personal protective equipment (PPE) and safety equipment
Task A-2 Uses tools and equipment	A-2.01 Uses hand tools	A-2.02 Uses portable and stationary power tools	A-2.03 Uses brazing and soldering equipment
	A-2.04 Uses recovery and recycling tools and equipment	A-2.05 Uses evacuation tools and equipment	A-2.06 Uses charging tools and equipment
	A-2.07 Uses diagnostic and measuring tools and equipment	A-2.08 Uses access equipment	A-2.09 Uses rigging, hoisting and lifting equipment
	A-2.10 Uses digital technology		
Task A-3 Organizes work	A-3.01 Interprets drawings and specifications	A-3.02 Uses documentation and reference material	A-3.03 Plans job tasks and procedures
Task A-4 Uses communication and mentoring techniques	A-4.01 Uses communication techniques	A-4.02 Uses mentoring techniques	

B – Performs routine trade activities

Task B-5 Performs work site preparation	B-5.01 Prepares work site	B-5.02 Handles materials and supplies	
Task B-6 Performs trade activities	B-6.01 Performs brazing and soldering	B-6.02 Performs leak and pressure tests on system	B-6.03 Evacuates systems
	B-6.04 Uses refrigerants, gases and oils	B-6.05 Performs field wiring of systems	B-6.06 Applies sealants and adhesives

C – Plans installation

Task C-7 Plans installation of HVAC/R systems	C-7.01 Verifies HVAC/R system parameters and requirements	C-7.02 Selects HVAC/R equipment, components and accessories	C-7.03 Determines placement of HVAC/R equipment, components and accessories
	C-7.04 Performs HVAC/R material take-off		
Task C-8 Plans installation of control systems	C-8.01 Verifies control system parameters and requirements	C-8.02 Selects control system components and accessories	C-8.03 Determines placement of control system components and accessories
	C-8.04 Performs control system material take-off		

D – Performs installation

Task D-9 Installs HVAC/R systems	D-9.01 Confirms system layout	D-9.02 Assembles HVAC/R equipment, components and accessories	D-9.03 Places HVAC/R equipment, components and accessories
	D-9.04 Installs fasteners, brackets and hangers	D-9.05 Installs HVAC/R piping and tubing	D-9.06 Applies HVAC/R holding charge
Task D-10 Installs control systems	D-10.01 Places control system components	D-10.02 Connects control systems	

E – Performs commissioning

Task E-11 Commissions HVAC/R systems	E-11.01 Performs pre-start-up checks for HVAC/R systems	E-11.02 Performs start-up of HVAC/R systems	E-11.03 Completes HVAC/R system charge
	E-11.04 Sets up primary and secondary HVAC/R system components		
Task E-12 Commissions control systems	E-12.01 Performs start-up checks for control systems	E-12.02 Verifies/sets operating parameters	

F – Performs maintenance and service

Task F-13 Maintains HVAC/R systems	F-13.01 Inspects HVAC/R systems	F-13.02 Performs predictive and scheduled maintenance on HVAC/R systems	F-13.03 Tests HVAC/R system components and accessories
Task F-14 Services HVAC/R systems	F-14.01 Troubleshoots HVAC/R systems	F-14.02 Repairs HVAC/R systems	
Task F-15 Maintains and services control systems	F-15.01 Performs maintenance and inspection on control systems	F-15.02 Troubleshoots control systems	F-15.03 Calibrates operating and safety controls
	F-15.04 Repairs control systems		