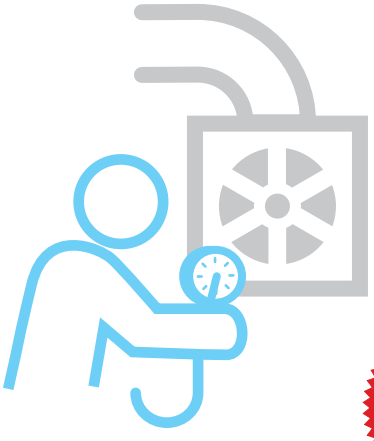
Human Resources and Skills Development Canada
Ressources humaines et Développement des compétences Canada

Now and Tomorrow
Excellence in Everything We Do

Essential Skills and Apprenticeship

Essential Skills for Success as a Refrigeration and Air Conditioning Mechanic



Refrigeration and air conditioning mechanics use Essential Skills to complete trade-related tasks. Use this fact sheet to:

- learn how Essential Skills are used on the job;
- find out the skills you need to succeed in your trade; and
- help prepare yourself for your career.

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Reading

- Read work orders to ensure that the correct equipment is installed.
- Read manufacturers' bulletins to learn about new equipment, modifications and solutions for repetitive equipment problems.
- Review equipment manuals to check for any unusual installation requirements.
- Review equipment specifications to ensure that customers' needs are being met and to determine the efficency of different manufacturers' equipment.
- Interpret a range of codes relating to building, heating, ventilation, air conditioning, and refrigeration to comply with regulations.
- Read detailed diagnostic procedures in equipment manuals to determine the root causes of unit malfunctions.

Document Use

- Find the names and addresses of customers in work orders.
- Review equipment lists to find part numbers.
- Recognize hazard signs for flammable and combustible materials, high voltage electricity and compressed gases posted at work sites
- Read instructional labels on equipment or parts to ensure correct installation or operation.
- Use tables such as refrigeration pressure and temperature charts to help make calculations which determine how much refrigerant to use.
- Analyze temperature readings of equipment sensors to diagnose equipment problems.

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- Interpret blueprints to determine sites for equipment installation, routing for ducting and pipes, locations of control boxes, venting, mechanical room, volume or air boxes.
- Interpret electrical schematics to install or repair equipment controls for systems involving one or more pieces of equipment.

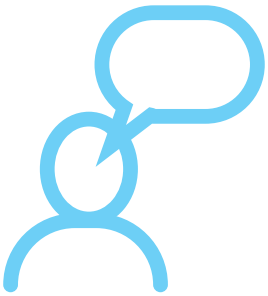
Numeracy

- Calculate the cost of parts when preparing orders for suppliers.
- Measure lengths of ducting and piping using a tape measure to fit for installation.
- Compare pressure readings and start up readings to determine if a refrigeration system is leaking refrigerant.
- Estimate the length of ducting or piping required.
- Prepare invoices for customers including taxes.
- Calculate areas and volumes of ducting and piping assemblies to meet operating specifications.
- Calculate averages across readings on the energy consumption to compare different systems.
- Estimate volume, temperature and average load size to identify the type of refrigeration system required for a mobile unit.
- Calculate the internal area of a closed piping system to determine the volume of refrigerant required.

Writing

- Complete work order forms to record the customer's name, work site location and problem as stated by the customer.
- Maintain logbooks and service notes to track information such as the number of filters changed, belt sizes and part numbers for the next technician working on that particular equipment.
- Complete start up sheets for new installations, detailing the make and model of equipment, the operating conditions and start up settings.
- Prepare technical service reports to record a problem.

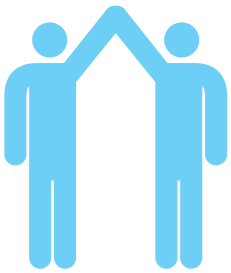
Oral Communication



- Talk to suppliers to order parts.
- Interact with drivers of refrigerated transportation units to obtain information that would help diagnose equipment problems.
- Talk to manufacturers' representatives to obtain technical information on equipment, such as specifications and installation instructions.
- Talk to customers to discuss the operation of their heating, ventilation or air conditioning equipment and maintenance programs.

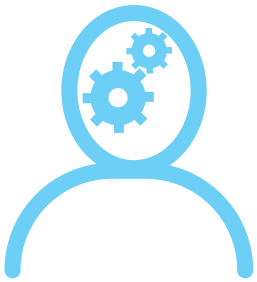
- Speak to engineers on large commercial work sites to discuss equipment issues.
- Communicate with other tradespeople to ensure that work can meet scheduling and code requirements and to promote a safe working environment.

Working with Others



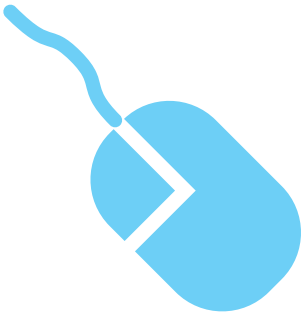
- Typically work independently when providing service and repair for refrigerated transportation units, long term service contracts, and residential service and repair.
- Coordinate work with other tradespeople and safety inspectors on larger jobs or commercial sites.

Thinking



- Determine which equipment or part to use for a particular job based on the specifications and codes.
- Decide what parts need to be replaced and which require general maintenance.
- Schedule service work to minimize disruption of service to the client.
- Determine which diagnostic procedures to use and eliminate possible causes for the malfunction.
- Troubleshoot equipment that has multiple problems.
- Decide whether to refuse a job that is potentially dangerous.
- Prioritize tasks and reschedule work as required.

Computer Use



- Use word processing to prepare technical reports.
- Use a database to input customer contract information.
- Use email to communicate with clients.
- Use a computer to gather diagnostic data for troubleshooting.

Continuous Learning

- Keep up-to-date with new types of equipment and technology.
- Keep up-to-date with codes and regulations.
- Attend safety training.
- Update certifications as required.
- Learn on the job by reading manuals, bulletins, manufacturers' literature and trade journals.
- Learn through self study, workshops and seminars.

For more information on Essential Skills and related resources, visit **hrsdc.gc.ca/essentialskills**

For more information on the Interprovincial Standards Red Seal Program, visit **www.red-seal.ca**

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