



Australian Government

MEM23154 Analyse and service HVACR systems

Release: 1

MEM23154 Analyse and service HVACR systems

Modification History

Release 1. Supersedes and is equivalent to MEM23154A Analyse and service HVACR systems.

Application

This unit of competency defines the skills and knowledge required to analyse and evaluate heating, ventilation, air conditioning and refrigeration (HVACR) control system requirements for a specific application.

This includes evaluation of existing automatic control systems, interpreting and producing control diagrams, commissioning, fault-finding and repairing existing HVACR control systems. However, this unit does not cover the design of a new HVACR system.

This unit applies to HVACR technicians in manufacturing, servicing and maintenance organisations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

MEM23004 Apply technical mathematics

MEM23006 Apply fluid and thermodynamics principles in engineering

Competency Field

Engineering science

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Prepare for analysis and service task	1.1 Obtain and implement work health and safety (WHS) and environmental requirements for the work area 1.2 Identify essential elements of the control system 1.3 Determine the function of electrical, pneumatic and electronic control and flow devices using control circuit diagrams and/or specifications or other specialised resources 1.4 Obtain sequence of control, specify settings and adjust control

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	devices from system's specifications 1.5 Consult appropriate personnel to ensure that work is coordinated effectively with others 1.6 Obtain equipment and resources needed for the task in accordance with organisational procedures and check for correct operation and safety
2. Analyse performance of control system	2.1 Identify HVACR system operating parameters and system features 2.2 Use appropriate equipment and HVACR energy management principles to evaluate the operating economy of the system 2.3 Produce control diagrams according to applicable standards and practices 2.4 Report analysis to appropriate personnel and establish action to be taken based on findings
3. Adjust and service control system	3.1 Confirm plant control compliance with desired conditions through measurements and recording of system performance 3.2 Select and use appropriate personal protective equipment (PPE) 3.3 Adjust system to required specification 3.4 Isolate, replace or repair components not performing to specification 3.5 Arrange appropriate tests and measurements on an electrically live system in accordance with WHS and regulatory requirements 3.6 Provide solutions to unplanned situations consistent with organisational procedures
4. Make recommendations to improve the performance of plant	4.1 Document analysis including details of all findings, calculations and assumptions 4.2 Prepare recommendations on control system modifications and discuss with appropriate personnel 4.3 Ensure work area is cleaned and made safe in accordance with organisational procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

WHS requirements include:	• relevant legislation • protective equipment • material safety management systems • hazardous substances and dangerous goods code • local safe operation procedures • awards provisions.
Environmental requirements include:	• relevant legislation, regulations and codes • correct handling and disposal of liquid and solid waste • elimination or minimisation of gas, fume, vapour and smoke emissions, including fugitive emissions • dust elimination, minimisation and control • minimisation of energy and water use • elimination or control of excessive noise • use and recycling of refrigerants.
Appropriate personnel include:	• supervisor, leading hand, foreman or manager • engineer • technician • trainer or mentor • team member • customer.
Resources include:	• reference manuals • scientific calculator • appropriate manuals • stationery • suitable computer software.
Organisational procedures include:	• use of tools and equipment • instructions, including job sheets, plans, drawings and designs • reporting and communication • operational procedures • industry standards.
Equipment includes:	• computer workstation and software (either stand alone or networked) • tools • test equipment

	• spare parts • cables and connectors • consumables • software licences • manufacturer specifications and manuals • diagnostics software • personal computer.
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Unit Mapping Information

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Links

Companion Volume Implementation Guides are available on VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>