



Australian Government

**Assessment Requirements for UEERA0051
Install, commission, service and maintain
air conditioning systems**

Release: 1

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Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements
- commissioning a ducted air conditioning system
- installing a ducted split air conditioning system
- installing a non-ducted split air conditioning system
- locating and rectifying mechanical faults and electrical faults on air conditioning systems
- maintaining air conditioning systems
- recording values and reporting completion of work
- selecting, installing and terminate low voltage (LV) and extra-low voltage (ELV) cables for refrigeration or air conditioning installations.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- air distribution, including:
 - air control damper types and applications
 - common fan types and applications
 - duct fitting types and applications
 - noise and vibration control methods
 - purpose of zoning, including advantages and disadvantages
 - relevant legislation, industry standards, codes of practice and regulations
 - rigid and flexible duct types and applications
 - supply and return air diffuser/grille types and applications
- basic ducted split system selection for a residential application, including:
 - application of industry recognised check figures watts per square metre (W/m²) and

- manufacturers data
- basic ductwork dimensioning employing a duct calculator
- drawing a basic ductwork layout map
- manufacturers design specifications and effects of operating the air conditioning system outside these conditions, including high/low ambient temperature and high relative humidity
- cable selection based on the existing cable, current-carrying capacity requirements, including:
 - *AS/NZS 3008 Electrical installations – Selection of cables – Cables for alternating voltages up to and including 0.6/1 kV* used to select conductor size based on the maximum current requirement for a given installation condition, including any applicable derating factors
 - types of cables and applications
- cable selection based on voltage-drop requirements, including:
 - *AS/NZS 3000* requirements for maximum voltage-drop in an installation
 - calculation of the expected voltage-drop in a given circuit
 - relevant tables in *AS/NZS 3008 Electrical installations – Selection of cables – Cables for alternating voltages up to and including 0.6/1 kV* for unit values of voltage-drop
 - selecting cables to satisfy voltage drop requirements in addition to current-carrying capacity requirements
- commissioning air conditioning systems requirements and procedures, including:
 - basic air balancing techniques
 - techniques to determine operating values for a reverse cycle high wall split air conditioning system
- common items identified on a preventative maintenance schedule, including the following air conditioning system types:
 - high wall splits
 - package units
 - split ducted
- defrost (de-ice) operation, including activation and termination conditions
- equipment installation requirements and procedures, including:
 - location considerations for outdoor and indoor units, including exposure, prevailing winds and noise regulations
 - maintaining structural integrity, including weight being applied and cutting of trusses/beams
 - maintenance of fire rating integrity
 - reading and interpreting manufacturer instructions
 - relevant legislation, industry standards, codes of practice and regulations
 - requirements for condensate removal and/or drainage
- fault finding and rectification of air conditioning systems requirements and procedures, including:
 - typical controller fault codes and use of manufacturer's data
 - symptoms and rectification of typical abnormal system conditions:

- defrost initiation or termination failure
 - earthing short, including load circuit has connected with casing and/or frame
 - high side sub-cooling too low/too high
 - incorrect phase rotation and scroll compressors
 - inefficient compressor, including reduced pumping capacity
 - inverter failure, including manufacturers recommended testing procedure
 - low side superheat too low/too high
 - non-condensables
 - open circuit
 - refrigerant overcharge and undercharge
 - restricted filter drier
 - shunted short, including load is internally shorted causing lower resistance
- package units, including construction, applications and installation
 - reading and interpreting single phase wiring and pipe work schematics for a typical cooling only room air conditioner
 - reading and interpreting single phase wiring and pipe work schematics for a typical reverse cycle high wall split air conditioner
 - reading and interpreting three phase wiring and pipe work schematics for a typical reverse cycle package unit
 - relevant standards, codes and requirements applicable to the installation of cables
 - techniques for installing cables and wiring systems encompassing:
 - application of wiring accessories
 - cable and conductor terminations
 - drawing-in, placing and fixing of cables
 - inspecting and testing installed and terminated cables to ensure they comply with continuity and insulation resistance and are safe to connect to the supply
 - maintaining fire rating integrity
 - typical cable routes through buildings, structures and premises
 - ventilation, including:
 - fresh air requirements in accordance with relevant industry standards
 - common methods, including natural, supply and exhaust
 - relevant legislation, industry standards, codes of practice and regulations.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so;

where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>