



Australian Government

UEERA0084 Service and repair self-contained flammable refrigerants air conditioning and refrigeration systems

Release: 1

UEERA0084 Service and repair self-contained flammable refrigerants air conditioning and refrigeration systems

Modification History

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

Application

This unit involves the skills and knowledge required to service and repair self-contained air conditioning and refrigeration systems using Class A2, A2L and A3 flammable refrigerants.

It includes servicing and repairing self-contained air conditioning and refrigeration equipment using flammable refrigerant. It also includes working safely; applying refrigeration principles that apply to flammable refrigerant; following service manuals; testing, locating and rectifying faults and defective components; and completing necessary service documentation.

Some flammable refrigerants, for example, fluorocarbons like R32, are controlled under the national Ozone Protection and Synthetic Greenhouse Gas Management Regulations 1995. Therefore, to undertake this unit, the learner must have a relevant Trainee Refrigerant Handling Licence if it includes work on refrigeration and air conditioning equipment that carries the risk of a fluorocarbon refrigerant being emitted.

The skills and knowledge described in this unit require a national Refrigerant Handling Licence if it includes work on refrigeration and air conditioning equipment that carries the risk of a fluorocarbon refrigerant being emitted while decanting the refrigerant or manufacturing, installing, commissioning, servicing, maintaining or decommissioning refrigeration and air conditioning equipment.

The skills and knowledge described in this unit require a licence or permit to practice in the workplace where work is carried out on electrical installations which are designed to operate at voltages greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c.).

Competency development activities in this unit are subject to regulations directly related to licensing. Where a licence or permit to practice is not held, skills and knowledge described in this unit require a relevant contract of training, such as an Australian Apprenticeship.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to refrigeration, air conditioning or electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

Permits may also be required for some work environments, such as confined spaces, working aloft, near live electrical apparatus and site rehabilitation.

Pre-requisite Unit

UEERA0053 Install, commission, service and maintain medium temperature systems

UEERA0007 Apply safety awareness and legal requirements for flammable refrigerants
or

UEERA0089 Service refrigeration appliances

UEERA0007 Apply safety awareness and legal requirements for flammable refrigerants

Competency Field

Refrigeration and air-conditioning

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to service and repair flammable refrigerants refrigeration and air conditioning systems

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** WHS/OHS hazards, risk control methods, relevant standards, codes and legislation are obtained and applied
- 1.2** Hazards not previously identified are reported and advice on risk control measures sought from supervisor
- 1.3** Details of the work are obtained from documentation and/or from supervisor to determine the scope of work to be completed
- 1.4** Advice is sought from supervisor, as required, to ensure work is coordinated effectively with others
- 1.5** Materials required for the work are identified and obtained in accordance with workplace procedures
- 1.6** Tools, equipment and testing devices required for the work are obtained and checked for correct operation and

- safety in accordance with workplace procedures
- 2 Repair and service flammable refrigerants refrigeration and air conditioning systems**
- 2.1** Measuring system operating parameters are conducted in accordance with WHS/OHS requirements and workplace safety procedures
- 2.2** Checks are conducted to ensure system/component parts are isolated, as required, in accordance with workplace procedures and WHS/OHS requirements
- 2.3** Refrigerant is removed from system safely in accordance with relevant legislation, standards and code requirements, manufacturer instructions and workplace procedures
- 2.4** Pressure testing is conducted and precautions taken to prevent damage to components in accordance with workplace procedures and WHS/OHS requirements
- 2.5** Pressure testing is conducted at a pressure compatible with flammable refrigerants in accordance with industry standards and WHS/OHS requirements
- 2.6** System leaks are located and rectified using testing methods appropriate to the system in accordance with industry standards and workplace procedures
- 2.7** System is evacuated for an operational flammable refrigerant system in accordance with relevant industry standards and workplace procedures
- 2.8** System is charged safely with flammable refrigerants and compatible lubricants in accordance with relevant legislation, standards and code requirements, manufacturer instructions and workplace procedures
- 2.9** Actual and specified range of operating conditions are determined from measured and calculated values as they apply to flammable refrigerants vapour compression systems in accordance with workplace procedures and industry standards
- 2.10** Methods for dealing unplanned situations are discussed, as required, with relevant person/s for approval and documented in accordance with workplace procedures
- 2.11** Operating conditions are determined without damage to apparatus, circuits, the surrounding environment and/ or

services using sustainable energy practices

3 Complete and report servicing and repairing flammable refrigerants refrigeration and air conditioning systems

- 3.1** Worksite is cleaned and made safe in accordance with workplace procedures
- 3.2** Contaminated refrigerant and lubricant are dealt with in accordance with legislative/regulatory and industry standards and requirements
- 3.3** Operation conditions are documented and include identification of any parameter that is not within the specified range for the system
- 3.4** Work supervisor is notified of work completion in accordance with workplace procedures

Foundation Skills

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

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Servicing and repairing self-contained A2, A2L and A3 flammable refrigerant air conditioning and refrigeration systems must include at least the following:

- determining operating conditions using measurement and basic calculation methods, including suction and discharge pressures; ambient, evaporator and condensing temperatures; and evaporator and condenser temperature differences
- recovering refrigerant, replacing components, testing pressure, evacuating, charging and leak testing a flammable refrigerant system in a safe and environmentally responsible manner
- one self-contained flammable refrigerant air conditioning or refrigeration system

Unit Mapping Information

This unit replaces and is equivalent to UEENEEJ175A Service and repair self contained hydrocarbon air conditioning and refrigeration systems.

Links

Companion Volume implementation guides are found in VETNet - -

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

Assessment Requirements for UEERA0084 Service and repair self-contained flammable refrigerants air conditioning and refrigeration systems

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, including using risk control measures
- charging the system with the appropriate type and quantity of flammable refrigerants
- completing documentation
- completing work and reporting on servicing and repairing flammable refrigerants refrigeration and air conditioning systems
- conducting pressure testing at the appropriate pressure level and without damaging components
- dealing with unplanned events
- evacuating the system to the required standard and using appropriate vacuum measuring instruments
- locating and rectifying leaks
- obtaining and recording measurements
- preparing to service and repair flammable refrigerants refrigeration and air conditioning systems
- removing and storing refrigerant correctly
- selecting appropriate materials and equipment
- servicing and repairing flammable refrigerants refrigeration and air conditioning systems.

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:

- charging requirements and procedures
- compressor lubricant types, applications and safe handling
- evacuation requirements and procedures
- flammable refrigerant (A2, A2L and A3) types, applications, dangers, safe handling, storage

and transport

- flammable refrigerant refrigeration and air conditioning systems, components and operating conditions
- leak detection requirements and procedures
- pressure testing requirements and procedures
- refrigerant removal/recovery and flushing requirements and procedures
- relevant job safety assessments or risk mitigation processes
- relevant legislation, industry standards and codes of practice, including hazards associated with flammable refrigerants
- relevant manufacturer specifications
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures
- system access tools and procedures
- tube joining tools and procedures.

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 suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated suitable 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 simulations
- relevant and appropriate materials, tools, facilities, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

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