



Australian Government

UEERA0064 Recover, pressure test, evacuate, charge and leak test refrigerants - split 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.

Application

This unit involves the skills and knowledge required to undertake the recovery of refrigerants, perform pressure and leak testing, evacuations and refrigerant charging in split air conditioning and heat pump systems.

It includes working safely; applying relevant regulations, industry standards and codes of practice in recovering refrigerants; performing pressure and leak tests; evacuating and charging with refrigerant split systems; and completing all required documentation.

To undertake this unit, the learner must have a Trainee Refrigerant Handling Licence as 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 as 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 may, in some jurisdictions, also require a licence or permit to practice in the workplace subject to regulations for undertaking refrigeration and air conditioning work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

Competency Field

Refrigeration and air-conditioning

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

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

1 Prepare to recover refrigerant, pressure and leak test, evacuate and charge split systems

1.1 WHS/OHS hazards, risk control methods, relevant standards, codes and legislation are obtained and applied in accordance with workplace procedures

1.2 Safety hazards not previously identified are assessed, reported and advice on risk control measures sought from supervisor

1.3 Nature of the work is obtained from documentation or supervisor to determine the scope of work to be undertaken

1.4 Work activity is appropriately sequenced in accordance with job schedule

1.5 Relevant person/s is consulted to ensure work is coordinated effectively with others involved on the worksite

1.6 Refrigerant, lubricants and cleaning materials for work are obtained in accordance with workplace procedures and checked against job/task requirements

1.7 Tools, equipment and testing devices needed to carry out the work are obtained and checked for correct operation and safety

1.8 Preparatory work is inspected and checked to ensure no damage has occurred and complies with workplace procedures and job/task requirements

2 Recover refrigerant, pressure and leak test evacuate and charge split systems

2.1 Checks are carried out to ensure the system and/or component parts are isolated in accordance with workplace procedures

2.2 Machines, plant and circuits are isolated in accordance with workplace procedures

2.3 Refrigerants are safely removed from split system and placed into labelled containers in accordance with regulatory requirements, industry standards and codes of

practice, and any electrical work is referred to a licensed electrician in accordance with workplace procedures.

- 2.4 Precautions are taken to prevent damage to components while pressure testing the system
- 2.5 Pressure testing is conducted using dry nitrogen at a pressure relative to the refrigerant to be used
- 2.6 Leaks are located and rectified using testing methods appropriate to system under test in accordance with industry standards
- 2.7 Split system is evacuated to required level and system is cleaned of all moisture and other containments in accordance with industry standards and codes of practice
- 2.8 A drop test is performed to test evacuation using an electronic vacuum gauge in accordance with industry standards and codes of practice
- 2.9 Component lubricants are checked and maintained in accordance with manufacturer specifications
- 2.10 Split systems are charged with refrigerant in accordance with manufacturer specifications, industry standards and codes of practice
- 2.11 Problematic situations are resolved in accordance with workplace procedures and reported to supervisor
- 2.12 Split systems are pressure and leak tested, evacuated and charged without waste of materials or damage to apparatus, the surrounding environment or services in accordance with relevant workplace sustainable energy practices

3 Report on refrigerant recovery, pressure and leak test, evacuation and charge work

- 3.1 Worksite is cleaned and made safe in accordance with workplace procedures
- 3.2 Contaminated refrigerant is dealt with in accordance with workplace procedures and legislative/regulatory requirements
- 3.3 Completion of work is documented and appropriate person/supervisor notified 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.

testing and charging split air conditioning systems must include at least the following:

- determining, using measurement and basic calculations methods, the operating conditions of vapour compression split system, including suction and discharge pressures
- ambient, evaporator and condensing temperatures
- evaporator and condenser temperature differences recovering Class A1 and A2L refrigerant from an existing split system, including split single head air conditioning and/or hot water heat pump systems pressure and leak testing a newly installed system
- evacuating newly installed systems in preparation for charging with refrigerant
- charging newly installed systems with Class A1 and A2L refrigerant

Unit Mapping Information

This unit replaces and is equivalent to UEENEEJ172A Recover, pressure test, evacuate, charge and leak test refrigerants - split 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 UEERA0064 Recover, pressure test, evacuate, charge and leak test refrigerants - split systems

Modification History

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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:
 - identifying hazards
 - risk control measures
 - using personal protective equipment (PPE)
- applying safe working practices and relevant legislation, industry standards, codes of practice and regulations
- completing required documentation, including reporting refrigerant recovery, pressure and leak tests, evacuations, charging refrigerant work and system operating conditions determining basic operating conditions, including:
 - ambient, evaporation and condensing temperatures
 - evaporator and condenser temperature differences
 - suction and discharge pressures
- recovering, pressure testing, evacuating, charging and leak testing refrigerant in newly installed split systems to requirements using appropriate equipment, tools and measurement devices
- starting up system and performing function checks
- selecting, obtaining and checking relevant equipment, materials, tools and testing devices required to carry out the work, including:
 - A1, A2 and A2L class refrigerants, lubricants and charging equipment
 - oxygen-free dry nitrogen cylinder and regulator
 - pressure and temperature measurement devices
 - pressure testing and refrigerant leak testing equipment and tools
 - refrigeration evacuation equipment and measuring equipment suitable for A1, A2 and A2L class refrigerants
 - refrigerant recovery/reclaim equipment suitable for A1, A2 and A2L class refrigerants
 - refrigeration hand and power tools
 - refrigeration service tools

- single head split air conditioning systems
- using lubricants and cleaning materials safely in accordance with safety data sheets (SDS)/material safety data sheets (MSDS).

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:

- equipment and procedures for working with refrigerants, including:
 - charging refrigerant into a newly installed split system detecting refrigerant leaks (electronic, bubbles and halide for R22)
 - contaminant detection and removal
 - evacuating newly installed split systems
 - pressure testing systems newly installed split systems using dry nitrogen
 - reclaiming/recovering refrigerants using recovery units and recovery cylinders
- heat and heat transfer
- leak detectors types, applications, operation and procedures
- manifold gauges types, applications, operation and procedures
- pressure temperature relationships and charts
- pressure, units and measurement
- refrigerant conditions, including saturation, superheat and sub-cooling
- relative humidity, unit and measurement
- relevant industry standards, codes of practice and regulations, including WHS/OHS legislated requirements
- relevant manufacturer specifications
- relevant risk mitigation processes, including risk control measures
- safe working practices, safe handling and SDS/MSDS
- sensible and latent heat
- split heat pump Class A1, A2 and A2L refrigerant types, properties and applications
- split heat pump refrigerant oil types, properties and applications
- sustainable energy principles and practices, including:
 - environment protection requirements
 - sustainable energy practices
 - sustainable resources
- system access fittings types, applications, operation and procedures
- temperature, units and measurement
- vapour compression cycle, basic operation and major system components.

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 PPE currently used in industry
- applicable documentation, including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

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