

# VASA Wire & Gas 2013, Gold Coast Industry Expert Forum,



Saturday 8<sup>th</sup> June 2013

# National training standards:

➤ Streamlining  
AUR12 Training  
Package update:  
Air Conditioning  
Service and Repair



# Agenda

- ASA role in development of National training standards
- Streamlining: to the new NSSC standards
  - what does it mean, what does it look like?
    - Foundation Skills - ACSF inclusion & mapping to the job role
- Recover vehicle refrigerant – licencing update
- A/C inc HVAC: Service and Repair training standards
- Industry's role in the process - moving forward
- Vital engagement & validation with key industry stakeholders
- Questions?

# Training Packages - Old Versus New

## Traditional Training Package

- Volume one
  - Preliminary Information
  - Mapping Information
  - Training Package Overview
  - Qualifications Framework
  - Employability Skills
  - Assessment Guidelines
- Volume two
  - Qualifications
  - Skill Sets
  - Competency Standards

## Streamlined Training Package

- On training.gov.au
  - Qualifications
  - Units of Competency
  - Assessment Requirements
  - Credit Arrangements
  - Skill Sets
- **Not** on training.gov.au
  - Companion Volumes
  - Available on ICS's web sites

# Streamlined Training Package Design Model

- NSSC endorsed – Training Package components:
  - Qualifications: **Must meet current industry needs - job role**
  - Units of Competency
    - Reflect the job role and written in clear, concise format
    - Range of conditions: “May include” is now “**MUST** include”
  - Assessment Requirements
    - Performance evidence
    - Knowledge evidence
    - Assessment requirements
  - Skill Sets = **Specific job role, or meet a licencing requirements**

# Streamlined Training Package Design Model

- Quality Assured (non-endorsed) – Companion Volume components:
  - RTO Implementation Guide
  - Learning Strategies Guide
  - Knowledge Guide
  - Assessment Strategies Guide
  - Industry Guide
  - Careers Guide
- Industry guides
  - By specific industry sector : Auto Electrical
  - Relevant to that sector and written in industry terminology
  - Guidance to industry:- Air Conditioning licencing updates

# Streamlined Unit and Assessment Requirements

- AUR12 Release 1 unit as it is currently on Training.gov
  - [AURETU2002 Recover vehicle refrigerant](#)
- AUR12 Release 1 units written to the new NSSC standard
  - [AURETU002 Recover vehicle refrigerant](#)
- ACSF Australian Core Skills Framework
  - Learning
  - Reading
  - Writing
  - Oral Communications
  - Numeracy
  - [Foundation Skills Mapping to AURETU002](#)

# ARC Licencing alignment

- [AUR05 and new AUR12 Air Conditioning units](#)
- Update from Canberra re [ARC Refrigerant handling licence](#)
  - [AURETU2002 Recover vehicle refrigerant](#): Split into Auto & Non Auto
- [Service, Retrofit and Repair Skill Set](#)
  - [AURETU2003](#) Service air conditioning and HVAC systems
  - [AURETU3004](#) Diagnose and repair air conditioning and HVAC systems
  - [AURETU3005](#) Retrofit and modify air conditioning and HVAC systems
- Other Skill Sets inc:
  - [AURETU2001](#) Install air conditioning systems
  - [AURETU4007](#) Overhaul air conditioning system components

# Industry's role in the process

- Industry Guides – they are there to help industry :  
ASA need industry input on what to include
- Structured feedback for draft streamlined units –  
what you are thinking, how to align industry training  
needs to RTO delivery
- Future work – how to review proposed changes to  
NSSC training standards and provide feedback
- Workplace competency assessment records (CAR) –  
[the new model](#)

# ASA need's your industry intelligence

- Neil's contact details:-
- Email [nhunichen@autoskillsaustralia.com.au](mailto:nhunichen@autoskillsaustralia.com.au)
- Phone (03) 8610 2511
- Mobile 0427 160 104
- Or visit our web site and follow the industry sector link:- [auto electrical](#)

# Thank you



Australian Government  
Department of Industry  
Innovation, Science, Research  
and Tertiary Education

This presentation has been produced with the assistance of funding provided by the Department of Industry, Innovation, Science, Research, and Tertiary Education.



**Australian Government**

# **AURETU2002 Recover vehicle refrigerants**

**Release: 1**

## AURETU2002 Recover vehicle refrigerants

### Modification History

Release	Comment
Release 1	New unit of competency

### Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to recover vehicle refrigerants. It includes identifying refrigerants and removing them into a designated recovery cylinder for correct disposal.</p> <p>Licensing, regulatory requirements apply to this unit. Users are advised to check with the relevant regulatory authority.</p>
-----------------	---

### Application of the Unit

Application of the unit	<p>Work applies to the recovery of vehicle refrigerant from automotive air conditioning systems –including heating, ventilation, air conditioning and cooling (HVAC) systems – fitted in light and heavy vehicle, mining, construction, agricultural, motorcycle, outdoor power equipment and marine environments.</p> <p>Work is carried by a vehicle dismantler and automotive parts recycling contractor.</p>
-------------------------	--

### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
-----------------------------	--

## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
---	--

## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for refrigerant recovery	1.1. <b>Workplace instructions and documentation</b> relevant to the task are sourced and work requirements confirmed 1.2. <b>Workplace health and safety (WHS) and environmental requirements and critical precautions</b> are identified and applied 1.3. Vehicle air conditioning and HVAC system, including system components and service ports, are identified for decommissioning 1.4. <b>Recovery equipment</b> necessary for the work is assembled and checked for operation
2. Operate recovery equipment	2.1. <b>Refrigerant type is identified and documented</b> 2.2. Recovery equipment is connected to the vehicle 2.3. Recovery cylinder is weighed to determine available capacity, and tare weight is set and recorded 2.4. Recovery equipment is operated and monitored according to manufacturer instructions 2.5. Recovery equipment, including hoses and recovery cylinder, is shut down and disconnected according to manufacturer instructions at completion of the recovery process
3. Complete recovery operations	3.1. Tare weight indicating the quantity of refrigerant recovered is recorded according to regulatory requirements 3.2. Vehicle HVAC system is evacuated and decommissioned and the results are recorded according to workplace requirements 3.3. Recovery equipment and recovery cylinder are stored according to regulatory and workplace requirements 3.4. Tools are inspected, serviced and stored 3.5. Filters are inspected, and cleaned or replaced according to manufacturer instructions

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - follow verbal and written instructions
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- learning skills to identify sources of information, assistance and expert knowledge to expand own skills and knowledge of dangers associated with refrigerants
- literacy skills to:
  - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
- numeracy skills to:
  - weigh recovery cylinder, refrigerant and the calculation of weights
- planning and organising skills to plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
  - follow workplace documentation, such as codes of practice and operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use tools relating to the recovery of vehicle refrigerants from systems, including:
  - specialist tools
  - measuring equipment
- technology skills to operate diagnostic and automotive refrigerant recovery equipment

#### Required knowledge

- WHS regulations, requirements, equipment, material and personal safety requirements, including:
  - codes of practice
  - personal protection needs
- application and purpose of recovery equipment procedures
- recovery procedures, including:
  - types and location of service ports
  - recovery equipment and recovery cylinder operation
  - awareness of environmental requirements associated with refrigerant recovery
  - dangers associated with working with refrigerants and lubricants



## Evidence Guide

<b>EVIDENCE GUIDE</b>	
<p>The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.</p>	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> <li>• observe safety precautions and requirements, in particular the dangers associated with handling refrigerants</li> <li>• select recovery methods and decommissioning techniques appropriate to the circumstances</li> <li>• safely operate automotive refrigerant recovery, tools and equipment</li> <li>• recover and store refrigerants according to workplace licensing and equipment manufacturer requirements</li> <li>• record relevant details in relation to workplace and licensing requirements</li> <li>• understand environmental regulations and refrigerant waste disposal procedures.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> <li>• using standard workplace practices and procedures</li> <li>• following safety requirements</li> <li>• applying environmental constraints.</li> </ul> <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> <li>• regulatory requirements</li> <li>• Australian standards</li> <li>• industry codes of practice.</li> </ul> <p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> <li>• automotive vehicle, plant and equipment or a simulated automotive air conditioning system</li> <li>• refrigerant</li> <li>• waste or recovery cylinder</li> <li>• hose and vehicle couplings</li> <li>• refrigerant scales</li> </ul>

<b>EVIDENCE GUIDE</b>	
<p>The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.</p>	
<b>Overview of assessment</b>	
	<ul style="list-style-type: none"> <li>• recovery equipment, including vacuum pump</li> <li>• refrigerant identifier</li> <li>• appropriate hand tools</li> <li>• licensing requirements and Australian standards.</li> </ul>
<b>Method of assessment</b>	<p>Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.</p> <p>Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.</p> <p>Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.</p>

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<p><b><i>Workplace instructions and documentation</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• verbal instructions</li> <li>• written instructions</li> <li>• safe work procedures relating to the operation of air conditioning systems</li> <li>• decommissioning vehicle air conditioner procedures</li> <li>• operation of recovery equipment</li> <li>• regulatory compliance documentation</li> <li>• refrigerant recovery sheets</li> <li>• workplace auditing records</li> <li>• Australian standards.</li> </ul>
<p><b><i>Workplace health and safety and environmental requirements</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• personal protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• safe handling of material</li> <li>• use of fire-fighting equipment</li> <li>• workplace safety policies and procedures</li> <li>• workplace first aid equipment</li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<p><b><i>Critical precautions</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• dangers associated with working with refrigerants and lubricants, including:               <ul style="list-style-type: none"> <li>• frostbite</li> <li>• carcinogenic properties</li> </ul> </li> <li>• care taken with some flammable refrigerants.</li> </ul>
<p><b><i>Recovery equipment</i></b> must include:</p>	<ul style="list-style-type: none"> <li>• general hand tools</li> <li>• refrigerant hose and coupler</li> <li>• refrigerant recovery unit</li> <li>• refrigerant scales</li> <li>• designated recovery cylinder</li> <li>• refrigerant identifier.</li> </ul>
<p><b><i>Refrigerant type</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• chlorofluorocarbon (CFC)</li> <li>• hydrofluorocarbon (HCFC)</li> <li>• refrigerant oils – lubricants, mineral and synthetic.</li> </ul>
<p><b><i>Identified and documented</i></b> must include:</p>	<ul style="list-style-type: none"> <li>• quantity of refrigerant recovered</li> <li>• cylinder gross weight</li> <li>• records kept on ARctick Form A3.</li> </ul>

## Unit Sector(s)

<b>Competency field</b>	Electrical
<b>Unit sector</b>	Technical – Air Conditioning and HVAC

## Custom Content Section

Not applicable.

## Vehicle Air Conditioning Service, Retrofit, and Repair Skill Set

<b>Target Group:</b>	
This is a skill set covering the requirements for servicing, retrofitting and modification, diagnosis and repairs to vehicle air conditioning and HVAC systems in the automotive retail, service and repair industry.	
A total of <b>3 unit of competency</b> must be completed.	
<b>Units</b>	
AURETU2003	Service air conditioning and HVAC systems
AURETU3004	Diagnose and repair air conditioning and HVAC systems
AURETU3005	Retrofit and modify air conditioning and HVAC systems
<b>Pathway</b>	
The skill set may be undertaken in addition to, or as part of:	
<ul style="list-style-type: none"> <li>• AUR20412 Certificate II in Automotive Electrical Technology</li> <li>• AUR21412 Certificate II in Automotive Cooling System Technology</li> <li>• AUR30312 Certificate III in Automotive Electrical Technology</li> <li>• AUR30412 Certificate III in Agricultural Mechanical Technology</li> <li>• AUR30612 Certificate III in Light Vehicle Mechanical Technology</li> <li>• AUR31112 Certificate III in Heavy Commercial Vehicle Mechanical Technology</li> <li>• AUR31212 Certificate III in Mobile Plant Technology</li> <li>• AUR31712 Certificate III in Forklift Technology</li> </ul>	
The skill set targets automotive mechanical and electrical technicians who require the skills and knowledge to service, retrofit, modify, diagnose and repair automotive air conditioning and HVAC systems in an automotive workplace.	
<b>Licensing/Regulatory Information</b>	
This skill set involves licensing, legislative, regulatory or certification requirements. Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.	
<b>Suggested words for Statement of Attainment</b>	
These competencies from AUR12 Automotive Industry Retail, Service and Repair Training Package meet the needs of automotive mechanical and electrical technicians required to service, retrofit, modify, diagnose and repair automotive air conditioning and HVAC systems. The units are drawn from Nationally endorsed Training Packages, and provide the skills and knowledge required by persons to service, retrofit, modify, diagnose and repair automotive air conditioning and HVAC systems.	

## Vehicle Air Conditioning Installation Skill Set

<b>Target Group:</b>	
This is a skill set covering the requirements for carrying out installation vehicle air conditioning systems in the automotive retail, service and repair industry.	
A total of <b>1 unit of competency</b> must be completed.	
<b>Units</b>	
AURETU2001	Install air conditioning systems
<b>Pathway</b>	
<p>The skill set may be undertaken in addition to, or as part of:</p> <ul style="list-style-type: none"> <li>• AUR20412 Certificate II in Automotive Electrical Technology</li> <li>• AUR21412 Certificate II in Automotive Cooling System Technology</li> <li>• AUR30312 Certificate III in Automotive Electrical Technology</li> <li>• AUR30412 Certificate III in Agricultural Mechanical Technology</li> <li>• AUR30612 Certificate III in Light Vehicle Mechanical Technology</li> <li>• AUR31112 Certificate III in Heavy Commercial Vehicle Mechanical Technology</li> <li>• AUR31212 Certificate III in Mobile Plant Technology</li> <li>• AUR31712 Certificate III in Forklift Technology</li> </ul> <p>The skill set targets automotive mechanical and electrical technicians who require the skills and knowledge to install automotive air conditioning systems in an automotive workplace.</p>	
<b>Licensing/Regulatory Information</b>	
<p>This skill set involves licensing, legislative, regulatory or certification requirements. Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.</p>	
<b>Suggested words for Statement of Attainment</b>	
<p>This competency from AUR12 Automotive Industry Retail, Service and Repair Training Package meet the needs of automotive mechanical and electrical technicians required to install automotive air conditioning systems. The unit is drawn from Nationally endorsed Training Package, and provide the skills and knowledge required by persons to install automotive air conditioning systems.</p>	

## Vehicle Air Conditioning Overhaul Skill Set

<b>Target Group:</b> This is a skill set covering the requirements for carrying out overhaul of vehicle air conditioning system components in the automotive retail, service and repair industry.	
A total of <b>1 unit of competency</b> must be completed.	
<b>Units</b>	
AURETU4007	Overhaul air conditioning system components
<b>Pathway</b>	
<p>The skill set may be undertaken in addition to, or as part of:</p> <ul style="list-style-type: none"><li>• AUR20412 Certificate II in Automotive Electrical Technology</li><li>• AUR21412 Certificate II in Automotive Cooling System Technology</li><li>• AUR30312 Certificate III in Automotive Electrical Technology</li><li>• AUR30412 Certificate III in Agricultural Mechanical Technology</li><li>• AUR30612 Certificate III in Light Vehicle Mechanical Technology</li><li>• AUR31112 Certificate III in Heavy Commercial Vehicle Mechanical Technology</li><li>• AUR31212 Certificate III in Mobile Plant Technology</li><li>• AUR31712 Certificate III in Forklift Technology</li></ul> <p>The skill set targets automotive mechanical and electrical technicians who require the skills and knowledge to overhaul automotive air conditioning system components in an automotive workplace.</p>	
<b>Licensing/Regulatory Information</b>	
This skill set involves licensing, legislative, regulatory or certification requirements. Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.	
<b>Suggested words for Statement of Attainment</b>	
This competency from AUR12 Automotive Industry Retail, Service and Repair Training Package meet the needs of automotive mechanical and electrical technicians required to overhaul automotive air conditioning system components. The unit is drawn from a Nationally endorsed Training Package, and provides the skills and knowledge required by persons overhauling automotive air conditioning system components.	

## Vehicle Air Conditioning Install and Overhaul Skill Set

<p><b>Target Group:</b> This is a skill set covering the requirements for installation and overhaul of vehicle air conditioning system components in the automotive retail, service and repair industry.</p>	
<p>A total of <b>2 units of competency</b> must be completed.</p>	
<p><b>Units</b></p>	
AURETU2001	Install air conditioning systems
AURETU4007	Overhaul air conditioning system components
<p><b>Pathway</b></p>	
<p>The skill set may be undertaken in addition to, or as part of:</p> <ul style="list-style-type: none"> <li>• AUR20412 Certificate II in Automotive Electrical Technology</li> <li>• AUR21412 Certificate II in Automotive Cooling System Technology</li> <li>• AUR30312 Certificate III in Automotive Electrical Technology</li> <li>• AUR30412 Certificate III in Agricultural Mechanical Technology</li> <li>• AUR30612 Certificate III in Light Vehicle Mechanical Technology</li> <li>• AUR31112 Certificate III in Heavy Commercial Vehicle Mechanical Technology</li> <li>• AUR31212 Certificate III in Mobile Plant Technology</li> <li>• AUR31712 Certificate III in Forklift Technology</li> </ul> <p>The skill set targets automotive mechanical and electrical technicians who require the skills and knowledge to install and overhaul automotive air conditioning system components in an automotive workplace.</p>	
<p><b>Licensing/Regulatory Information</b></p>	
<p>This skill set also involves licencing, legislative, regulatory or certification requirements. Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.</p>	
<p><b>Suggested words for Statement of Attainment</b></p>	
<p>These competencies from AUR12 Automotive Industry Retail, Service and Repair Training Package meet the needs of automotive mechanical and electrical technicians required to install and overhaul automotive air conditioning system components. These units are drawn from the Nationally endorsed Training Packages, and provide the skills and knowledge required by persons installing and overhauling automotive air conditioning system components.</p>	



**AUR05 Units of Competence**

These units are embedded in the **AUR20705**  
 Cert II in Auto Mech (Air Conditioning)

Nominal Hours

**AUR12 Units of Competence and Skill Sets to meet ARC Licence requirements**

These units are embedded in the **AUR20212**  
 Cert II in Auto Air Conditioning Technology

Nominal  
 Hours

	Nominal Hours			Nominal Hours
		<b>AURETU2002</b>	<b>Recover vehicle refrigerants</b>	Single unit skill set 10
<b>AURT222670A</b> Service air conditioning systems	20	<b>AURETU2003</b>	<b>Service air conditioning and HVAC systems</b>	Service, Retrofit and Repair Licence Skill Set 25
<b>AURT322666A</b> Repair / retrofit air conditioning systems	30	<b>AURETU3004</b>	<b>Diagnose and repair air conditioning and HVAC systems</b>	35
		<b>AURETU3005</b>	<b>Refrofit and modify air conditioning and HVAC systems</b>	30
<b>AURT222631A</b> Install air conditioning systems	30	<b>AURETU2001</b>	<b>Install air conditioning systems</b>	Single unit skill set 30
<b>AURT322645A</b> Overhaul air conditioning system components	30	<b>AURETU4007</b>	<b>Overhaul air conditioning system components</b>	Single unit skill set 30
	<b>Total 80 hours</b>			

90 hours total

**Note:** Install and Overhaul units are not as vital to main stream Service and Repair workshops as modern vehicles have integerated HVAC systems fitted also only a Compressor would require overhaul procedures but on most occasions removal and replacement would be the perfered option



Australian Government

Department of Sustainability, Environment,  
Water, Population and Communities

ARC AUSTRALIAN  
REFRIGERATION  
COUNCIL

Phone: 1300 884 483

Fax: 03 9890 3399

E-mail: [enquire@arctick.org](mailto:enquire@arctick.org)

Locked Bag 3033 Box Hill, Victoria 3128

# Refrigerant handling licence information leaflet

This leaflet provides the information you will need to complete the application form for a Refrigeration Handling Licence.

The table in this leaflet lists the available licences and the qualifications needed to obtain them.

If you believe that you already have the relevant training and experience, but don't hold the required qualification, you may not need to do any further training.

Recognition of Prior Learning (RPL) and Recognition of Current Competency (RCC) is a process for recognising that you have gained skills, knowledge and experience from other courses, academic education, work experience and training on the job.

To use RPL or RCC to obtain a licence, you need to obtain the required qualification from a registered training organisation (RTO). In order to do so you must enrol in the relevant course and, having enrolled in the course you may complete it by applying for partial or full RPL/RCC, completing a program of training, or a combination of both.

A list of some of the participating RTOs can be found at:  
[www.arctick.org/arctick/training.php](http://www.arctick.org/arctick/training.php)



For more information visit [www.arctick.org](http://www.arctick.org)

CODE	Licence Name	Entitlement of Licence	The documentary evidence requirement for each licence
RAC01	Refrigerant handling licence – qualified persons (Full refrigeration and air conditioning licence: 2 years)	To handle a refrigerant for any work in the refrigeration and air conditioning industry, other than the automotive industry.	<p>Successful completion of an Apprenticeship as a Refrigeration Mechanic e.g. Proficiency Certificate; or</p> <p>Trade Recognition Certificate: Refrigeration Mechanic; or</p> <p>Trade Certificate with a Trade Outcome of Refrigeration Mechanic and evidence of industry experience; or</p> <p>MEM30205 Certificate III in Engineering Mechanical Trade (Refrigeration and Air conditioning); or</p> <p>UEE32211 Certificate III in Refrigeration and Air conditioning; or</p> <p>UEE42711 Certificate IV in Air conditioning and Refrigeration Servicing; or</p> <p>UEE42811 Certificate IV in Air conditioning Systems Energy Management and Control; or</p> <p>UEE42911 Certificate IV in Refrigeration and Air conditioning Systems; or</p> <p>UEE50311 Diploma of Electrical and Refrigeration and Air conditioning; or</p> <p>UEE51211 Diploma of Air conditioning and Refrigeration Engineering; or</p> <p>UEE62511 Advanced Diploma of Air conditioning and Refrigeration Engineering; or</p> <p>MEM30298 Certificate III in Engineering – Mechanical – Refrigeration and Air conditioning; or</p> <p>UEE31307 Certificate III in Refrigeration and Air conditioning; or</p> <p>UEE31306 Certificate III in Refrigeration and Air conditioning; or</p> <p>UTE30999 Certificate III in Electrotechnology Refrigeration and Air conditioning.</p>
AAC02	Refrigerant handling licence – qualified persons (Automotive air conditioning licence: 2 years)	To handle a refrigerant for any work on air conditioning equipment fitted to the cabin of a motor vehicle.	<p><b>AUR20212 Certificate II in Automotive Air conditioning Technology</b></p> <p>Individuals who attain AUR20212 Certificate II in Automotive Air conditioning Technology will be considered eligible to obtain an Automotive Air conditioning Licence (excluding Install air conditioning systems and Overhaul air conditioning system components). (Refer to the AUR12 Packaging Rules)</p> <p>Note: Should an individual require an automotive licence enabling them to Install and/or Overhaul Air Conditioning systems components they must undertake the following units:</p> <ul style="list-style-type: none"> <li>• AURETU2001 Install air conditioning systems</li> <li>• AURETU4001 Overhaul air conditioning system components</li> </ul> <p>The following eight (8) qualifications must include The Automotive Air – conditioning Service, Retrofit, and Repair Skill Set. This may be in addition to or as a part of the qualification:</p> <ul style="list-style-type: none"> <li>• AUR21412 Certificate II in Automotive Cooling System Technology</li> <li>• AUR20412 Certificate II in Automotive Electrical Technology</li> <li>• AUR30312 Certificate III in Automotive Electrical Technology</li> <li>• AUR31712 Certificate III in Forklift Technology</li> <li>• AUR30612 Certificate III in Light Vehicle Mechanical Technology</li> <li>• AUR30412 Certificate III in Agricultural Technology</li> <li>• AUR31112 Certificate III in Heavy Commercial Vehicle Mechanical Technology</li> <li>• AUR31212 Certificate III in Mobile Plant Technology</li> </ul> <p>AUR20705 Certificate II in Automotive – Mechanical – Air conditioning; or</p> <p>If evidence of having completed AURT422645A is not supplied, the licence will be issued restricting the holder to work other than Overhaul Air conditioning System Components.</p> <p>AUR20799 Certificate II in Automotive – Mechanical – Air conditioning; or</p> <p>Assessed to Certificate II standard by Automotive Training Solutions; or</p> <p>Assessed to Certificate II standard by Motor Traders Association WA</p>

CODE	Licence Name	Entitlement of Licence	The documentary evidence requirement for each licence
RSS03	Refrigerant handling licence – qualified persons (Restricted heat pump – split systems – installation and decommissioning licence: 2 years)	To handle a refrigerant for the installation and decommissioning of any of the following: <ul style="list-style-type: none"> <li>• a single-head split system air conditioner of less than 18kW;</li> <li>• a 2-part hot water heat pump of less than 18kW;</li> <li>• a 2-part swimming pool heat pump of less than 18kW.</li> </ul>	MEM20105 Certificate II in Engineering ; or UEE20111 Certificate II in Split Air conditioning and Heat Pump System; or UEE40511 Certificate IV in Electrical – Air conditioning Split System; or UEE40510 Certificate IV in Electrical – Air conditioning System; or UEE20107 Certificate II in Air conditioning Split System; or UEE20106 Certificate II in Air conditioning Split System; or 40488SA Certificate II in Split System Air conditioning.
RDR04	Refrigerant handling licence – qualified persons (Restricted domestic refrigeration and air conditioning appliances licence: 2 years)	To handle a refrigerant for either or both of the following: <ul style="list-style-type: none"> <li>• any work on domestic refrigeration or air conditioning equipment; <ul style="list-style-type: none"> <li>– domestic refrigeration or air conditioning equipment means refrigeration or air conditioning equipment that: <ol style="list-style-type: none"> <li>(a) is designed primarily for household use; and</li> <li>(b) is designed not to be permanently connected to the power supply of the premises where it is installed; and</li> <li>(c) does not require the installation of pipework to enable the movement of refrigerant.</li> </ol> </li> </ul> </li> </ul> <p>Note: This definition does not cover split system air conditioners.</p> <ul style="list-style-type: none"> <li>• any work on commercial stand alone refrigeration equipment. <ul style="list-style-type: none"> <li>– commercial stand-alone refrigeration equipment means refrigeration equipment that: <ol style="list-style-type: none"> <li>(a) is designed primarily for commercial use; and</li> <li>(b) is designed not to be permanently connected to the power supply of the premises where it is installed; and</li> <li>(c) does not require the installation of pipework to enable the movement of refrigerant.</li> </ol> </li> </ul> </li> </ul>	MEM20105 Certificate II in Engineering; or UEE32111 Certificate III in Appliance Servicing; or UEE21810 Certificate II in Appliance Servicing-Refrigerants; or UEE30510 Certificate III in Appliance Servicing; or UEE30507 Certificate III in Appliance Servicing; or UEE21807 Certificate II in Appliance Servicing-Refrigerants; or UTE20599 Certificate II in Electrotechnology Servicing (Appliances - Refrigeration); or UTE20504 Certificate II in Electrotechnology Servicing (Appliances - Refrigeration).
TL000	Refrigeration and air conditioning trainee licence	To handle a refrigerant while undertaking training and/or assessment in a classroom setting and at your work place under supervision. The supervisor must be the holder of a licence that entitles them to engage in work for which the licensee is being trained. This licence is valid for the period of training, which can be up to one year.	Proof of enrolment in the applicable course listed; and Work Supervisor Declaration of the application for Refrigerant Handling Licence completed by the proposed supervisor.
CL100	Refrigeration and air conditioning trainee licence (classroom)	To handle refrigerant in a classroom setting only. The licensee can not handle refrigerant outside the classroom setting. This licence is valid for a period of training which can be up to 1 year.	Proof of enrolment in the applicable course listed on this leaflet; and/or Trainer Declaration of the application for Refrigerant Handling Licence completed by the proposed trainer.
ATL05	Restricted refrigeration and air conditioning licence (aviation: 1 year)	To handle a refrigerant for any work undertaken on air conditioning equipment on aircraft.	Letter from employer indicating the applicant is able to competently do this work.
MTL06	Restricted refrigeration and air conditioning licence (marine: 1 year)	To handle a refrigerant for any work on refrigeration or Air conditioning vessels at sea. Note: This does not apply to AMSA certified: Watchkeeper, Marine Engineer 1 & 2 when working on an AMSA vessel.	Letter from employer indicating the applicant is able to competently do this work.
TRT07	Restricted refrigeration and air conditioning licence (transport: 1 year)	To handle a refrigerant for any work on mobile refrigeration systems other than air conditioning systems in the cabin of a motor vehicle.	Letter from employer indicating the applicant is able to competently do this work.
RHTL09	Restricted refrigeration and air conditioning licence (handler: 1 year)	To handle a refrigerant while decanting cylinders.	Letter from employer indicating the applicant is able to competently do this work.
RRR10	Restricted refrigeration and air conditioning licence (recovery: 2 years)	To recover and handle refrigerant while decommissioning stationary and automotive refrigeration and air conditioning (RAC) equipment.	Successful completion of a knowledge assessment and practical component, as demonstrated to an approved assessor. To read more – <a href="http://www.arctick.org/RRRL">www.arctick.org/RRRL</a>

Please note: Certificates must include a certified statement of results (for RAC01, AAC02, RSS03 and RDR04).

<b>AURETU002</b>	<b>Recover vehicle refrigerants</b>
<b>Application</b>	<p>This unit describes the performance outcomes required to recover specific refrigerants into designated recovery cylinders according to safety and environmental procedures and critical precautions.</p> <p>It applies to individuals working as vehicle dismantlers, automotive parts recycling contractors and vehicle body repairers, required to recover vehicle refrigerants from automotive air conditioning systems. These systems include heating, ventilation, air conditioning and cooling (HVAC) systems fitted to agricultural machinery, construction, heavy commercial vehicle, light vehicle, and mobile plant machinery.</p> <p>Licensing, legislative, regulatory or certification requirements apply to this unit.</p>
<b>Competency Field</b>	Electrical
<b>Unit Sector</b>	Technical - Air Conditioning and HVAC
<b>Elements</b>	<b>Performance Criteria</b>
<i>Elements describe the essential outcomes</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section</i>
1 Prepare for refrigerant recovery	<p>1.1 <b>Workplace instructions</b> relevant to the task are sourced and work requirements confirmed</p> <p>1.2 <b>Work health and safety (WHS) and environmental requirements and critical precautions</b> are identified and applied</p> <p>1.3 Vehicle air conditioning system, including system components and service ports, are identified for decommissioning</p> <p>1.4 Recovery equipment is checked to ensure that it is ready for use and operating correctly</p>
2 Operate recovery equipment	<p>2.1 <b>Recovery equipment</b> is connected to the vehicle</p> <p>2.2 Recovery cylinder is weighed to determine available capacity, and tare weight of cylinder is recorded</p> <p>2.3 <b>Refrigerant</b> is recovered from vehicle air conditioning system, using recovery equipment according to equipment manufacturer instructions</p> <p>2.4 Any problems occurring are responded to appropriately and escalated with relevant personnel where necessary</p>
3 Complete recovery operations	<p>3.1 Vehicle is decommissioned, and quantity of recovered refrigerant is recorded according to workplace and regulatory requirements</p> <p>3.2 Recovery equipment, hoses and recovery cylinder are shut down and disconnected, and cylinders capped, according to manufacturer instructions</p> <p>3.3 Refrigerant is stored according to workplace procedures and environmental requirements</p> <p>3.4 Recovery equipment, tools and cylinder are checked for serviceability and stored according to workplace procedures, manufacturer instructions and regulatory requirements</p>
<b>Foundation Skills</b>	
<i>This section describes those required skills (such as language, literacy, numeracy and employment skills) that are essential to performance.</i>	
<b>Skills</b>	<b>Description</b>
Reading skills to:	<ul style="list-style-type: none"> <li>understand work instructions, workplace environmental and WHS requirements, and equipment manufacturer procedures necessary to recover vehicle refrigerants.</li> </ul>
Writing skills to:	<ul style="list-style-type: none"> <li>legibly enter correct information into regulatory reports and workplace reporting documentation.</li> </ul>
Oral Communication skills to:	<ul style="list-style-type: none"> <li>refer tool and recovery equipment faults to appropriate person</li> <li>refer refrigerant recovery problems to appropriate personnel</li> </ul>

<b>AURETU002</b>	<b>Recover vehicle refrigerants</b>
	<ul style="list-style-type: none"> <li>• speak clearly and directly when presenting problems or issues in the recovery process.</li> </ul>
Numeracy skills to:	<ul style="list-style-type: none"> <li>• match refrigerant types and identification numbers to work instructions and regulatory requirements</li> <li>• understand weighting measurements, including Tare and Gross weights; and readings on digital and analogue pressure gauges</li> <li>• complete documents and charts with numerical data.</li> </ul>
Initiative skills to:	<ul style="list-style-type: none"> <li>• respond to changing work requirements or contexts when confronted with a variety of vehicle air conditioning systems and the recovery or refrigerant.</li> </ul>
Planning and Organising skills to:	<ul style="list-style-type: none"> <li>• plan the sequence of work tasks to ensure an efficient job outcome.</li> </ul>
<p><b>Range of Conditions</b>  <i>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. <b>Bold italicised</b> wording, if used in the performance criteria, is detailed below.</i></p>	
<b>Workplace instructions</b> must include	<ul style="list-style-type: none"> <li>• enterprise-specific safe work procedures relating to refrigerant recovery</li> <li>• operation of recovery equipment</li> <li>• refrigerant trading authorisation conditions</li> <li>• refrigerant handling licence conditions.</li> </ul>
<b>Work health and safety (WHS) and environmental requirements</b> must include	<ul style="list-style-type: none"> <li>• personal protective clothing and equipment</li> <li>• safe handling of material</li> <li>• identification and application of fire-fighting equipment</li> <li>• workplace safety procedures</li> <li>• workplace first aid equipment</li> <li>• hazard control, including control of hazardous materials and toxic substances</li> <li>• minimal loss of refrigerant to environment.</li> </ul>
<b>Critical precautions</b> must include	<ul style="list-style-type: none"> <li>• hazards associated with working with refrigerants and lubricants, including: <ul style="list-style-type: none"> <li>○ frostbite</li> <li>○ carcinogenic properties</li> </ul> </li> <li>• procedures to follow when working with flammable refrigerants.</li> </ul>
<b>Refrigerant</b> must include	<ul style="list-style-type: none"> <li>• chlorofluorocarbon (CFC)</li> <li>• hydrocarbon (HC)</li> <li>• hydrofluorocarbon (HCFC)</li> <li>• refrigerant oils – lubricants, mineral and synthetic.</li> </ul>
<b>Recovery equipment</b> must include	<ul style="list-style-type: none"> <li>• general hand tools</li> <li>• refrigerant hose and coupler</li> <li>• refrigerant recovery unit</li> <li>• refrigerant scales</li> <li>• designated recovery cylinder.</li> </ul>
<b>Unit Mapping Information</b>	
<b>Links</b>	<p><b>Implementation Guide</b></p> <p><a href="http://www.asacompanionvolumes.com.au/aur-implementation-guide">http://www.asacompanionvolumes.com.au/aur-implementation-guide</a></p>

**Assessment Requirements**

<b>Assessment requirements for AURETU002 Recover vehicle refrigerants</b>	
<b>Performance Evidence</b>	<p>Before competency can be determined, individuals must have competently recovered vehicle refrigerants on a minimum of two different vehicles.</p> <p>Individuals must demonstrate they can:</p> <ul style="list-style-type: none"> <li>• observe safety precautions and work requirements, in particular the dangers associated with handling refrigerants</li> <li>• use recovery methods and decommissioning techniques appropriate to the vehicles and work conditions</li> <li>• safely operate automotive refrigerant recovery, tools and equipment</li> <li>• store refrigerants according to workplace and regulatory requirements</li> <li>• record relevant details in relation to workplace and regulatory requirements.</li> </ul>
<b>Knowledge Evidence</b>	<p>Individuals must be able to demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• recovery procedures that include: <ul style="list-style-type: none"> <li>○ types and location of service ports</li> <li>○ recovery equipment and recovery cylinder operation</li> </ul> </li> <li>• legislative and environmental requirements: <ul style="list-style-type: none"> <li>○ WHS requirements: <ul style="list-style-type: none"> <li>- personal protective equipment (PPE)</li> <li>- application and purpose of recovery equipment procedures</li> </ul> </li> <li>○ parts of the current code of practice relating to refrigerant recovery</li> <li>○ environmental requirements associated with refrigerant recovery and refrigerant waste disposal</li> <li>○ dangers associated with working with refrigerants and lubricants.</li> </ul> </li> </ul>
<b>Assessment Conditions</b>	<p>Assessment must satisfy the Companion Volume Assessment Strategies Guide of this Training Package.</p> <p>Assessors must satisfy SNR/AQTF assessor requirements and:</p> <ul style="list-style-type: none"> <li>• hold an Australian Refrigerant Council (ARC) Refrigerant Handling licence</li> </ul> <p>Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.</p> <p>Where assessment of competency includes third party evidence, individuals must provide evidence that links them to the vehicles that they have worked on, e.g. repair orders.</p> <p>Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.</p> <p>The following resources must be made available:</p> <ul style="list-style-type: none"> <li>• automotive vehicle, plant and equipment or a simulated automotive air conditioning system</li> <li>• automotive-type refrigerants</li> <li>• recovery equipment including <ul style="list-style-type: none"> <li>○ waste or recovery cylinder</li> <li>○ hose and vehicle couplings</li> <li>○ refrigerant scales</li> <li>○ appropriate hand tools</li> </ul> </li> <li>• safety and personal protective equipment relevant to the task or workplace</li> <li>• licensing requirements and Australian standards.</li> </ul>

Assessment requirements for AURETU002 Recover vehicle refrigerants	
Links	<b>Implementation Guide</b> <a href="http://www.asacompanionvolumes.com.au/aur-implementation-guide">http://www.asacompanionvolumes.com.au/aur-implementation-guide</a> <b>Assessment Strategies Guide</b> <a href="http://www.asacompanionvolumes.com.au/aur-assessment-strategies-guide">http://www.asacompanionvolumes.com.au/aur-assessment-strategies-guide</a>

DRAFT

AURETU003	Service air conditioning and HVAC systems
<b>Application</b>	<p>This unit describes the performance outcomes required to service air conditioning systems including heating, ventilation, air conditioning and cooling (HVAC) systems that are fitted to a range of vehicles and equipment for passenger convenience and comfort.</p> <p>It applies to those working in an automotive service and repair workplace and required to service automotive air conditioners, including HVAC systems as fitted to agricultural machinery, heavy commercial vehicle, light vehicle, and mobile plant machinery.</p> <p>Licensing, legislative, regulatory or certification requirements apply to this unit.</p>
<b>Competency Field</b>	Electrical
<b>Unit Sector</b>	Technical - Air Conditioning and HVAC
<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b>
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1 Prepare to service an air conditioning and HVAC system	1.1 Workplace instructions are used to determine job requirements 1.2 <b>Work health and safety (WHS)</b> , environmental requirements and <b>critical precautions</b> are identified and applied 1.3 <b>Service procedures and information</b> are sourced and interpreted 1.4 Australian Refrigeration Council (ARC) code of practice is sourced and complied with 1.5 <b>Servicing options</b> are considered and those most appropriate to the circumstances are selected 1.6 Servicing <b>tools and equipment</b> are selected and checked according to workplace procedures
2 Functionally test air conditioning and HVAC system and components and identify faults	2.1 Manufacturer and component supplier specifications are accessed and interpreted 2.2 Performance test of <b>Air conditioning and HVAC system</b> is carried out to isolate faults according to workplace, WHS procedures and relevant industry codes of practice 2.3 <b>Faults</b> are identified from test results and causes of faults are determined 2.4 Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3 Service air conditioning and HVAC system	3.1 Air conditioning and HVAC system and components are serviced according to manufacturer and component supplier specifications, WHS and workplace procedures and relevant industry codes of practice 3.2 Air conditioning service is carried out without causing damage to vehicle systems or components 3.3 Regulations regarding topping up of refrigerant are understood and complied to
4 Retest air conditioning and HVAC system	4.1 <b>Post-service testing</b> is carried out to ensure performance and operation is to manufacturers specifications and test results are documented
5 Finalise work processes	5.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Faulty equipment is identified, tagged and isolated according to workplace procedures 5.5 Appropriate <b>decal sticker</b> is placed in engine compartment 5.6 Workplace documentation is processed according to workplace procedures

<b>FOUNDATION SKILLS</b>	
This section describes those language, literacy, numeracy and employment skills that are essential to performance.	
<b>Skills</b>	<b>Description</b>
Learning skills to:	<ul style="list-style-type: none"> <li>• apply learning when servicing a range of air conditioning and HVAC systems</li> <li>• identify various sources of information, assistance and expert knowledge to expand own skills, knowledge and understanding.</li> </ul>
Reading skills to:	<ul style="list-style-type: none"> <li>• interpret and comply to work instructions, WHS requirements and workplace requirements required to complete the job task</li> <li>• interpret servicing techniques from manufacturer and workplace instructions and job requirements.</li> </ul>
Writing skills to:	<ul style="list-style-type: none"> <li>• legibly enter information into service reports, job task sheets and work orders</li> <li>• provide information relating to the servicing of air conditioning and HVAC systems to other personnel</li> <li>• legibly enter correct information into regulatory reports and workplace reporting documentation.</li> </ul>
Oral Communication skills to:	<ul style="list-style-type: none"> <li>• speak clearly and directly when presenting problems or issues in the work process.</li> <li>• refer tool and equipment faults to appropriate personal</li> <li>• refer servicing problems to appropriate personal</li> <li>• speak clearly and directly when presenting service problems and issues.</li> </ul>
Numeracy skills to:	<ul style="list-style-type: none"> <li>• match refrigerant types and identification numbers to work instructions and regulatory requirements</li> <li>• understand weighting measurements, including Tare and Gross weights; and readings on digital and analogue pressure gauges</li> <li>• complete documents and charts with numerical data</li> <li>• match materials and component part numbers to work instructions and vehicle and component parts lists</li> <li>• understand measurements of temperature and pressure related to air conditioner and HVAC system performance.</li> </ul>
Digital Literacy skills to:	<ul style="list-style-type: none"> <li>• adapt to the use and application of a range of diagnostic tools and equipment that operate with PC, tablet touch screen technologies.</li> </ul>
Initiative skills to:	<ul style="list-style-type: none"> <li>• respond to changing work requirements or contexts when confronted with a variety of vehicle air conditioning systems problems</li> <li>• recognise a workplace problem or potential problem and take action.</li> </ul>
Planning and Organising skills to:	<ul style="list-style-type: none"> <li>• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.</li> </ul>
Self-management skills to:	<ul style="list-style-type: none"> <li>• select and use appropriate equipment, materials, processes and procedures</li> <li>• recognise limitations and seek timely advice.</li> </ul>
Problem Solving skills to:	<ul style="list-style-type: none"> <li>• refer problems outside area of responsibility to appropriate person and suggest possible causes</li> <li>• seek information and assistance as required to solve problems.</li> </ul>
Teamwork skills to:	<ul style="list-style-type: none"> <li>• apply knowledge of own role to complete activities efficiently to support team activities.</li> </ul>
Technology skills to:	<ul style="list-style-type: none"> <li>• use workplace technology and tools relating to servicing air conditioning and HVAC systems.</li> </ul>

<b>RANGE OF CONDITIONS</b>	
<p>This section specifies 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. Bold italicised wording, if used in the performance criteria, is detailed below.</p>	
<b>Work health and safety requirements</b> must include	<ul style="list-style-type: none"> <li>• material safety data sheets (MSDS)</li> <li>• personal protective clothing and equipment</li> <li>• safe handling of materials</li> <li>• identification and application of fire-fighting equipment</li> <li>• workplace safety procedures</li> <li>• workplace first aid equipment</li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Critical precautions</b> must include	<ul style="list-style-type: none"> <li>• those relating to dangers associated with working with refrigerants and lubricants, including:                             <ul style="list-style-type: none"> <li>○ frostbite (refrigerant boiling point -36.7°C)</li> <li>○ carcinogenic oil</li> </ul> </li> <li>• care taken with some flammable refrigerants.</li> </ul>
<b>Service procedures and information</b> must include	<ul style="list-style-type: none"> <li>• safe work procedures relating to servicing air conditioning and HVAC systems</li> <li>• ARC code of practice</li> <li>• workplace specifications and procedures</li> <li>• vehicle manufacturers service requirements and repair procedures.</li> </ul>
<b>Servicing options</b> must include	<ul style="list-style-type: none"> <li>• fluid levels:                             <ul style="list-style-type: none"> <li>○ refrigerant</li> <li>○ lubricating oils</li> </ul> </li> <li>• filter serviceability:                             <ul style="list-style-type: none"> <li>○ receiver dryer</li> <li>○ cabin filter</li> </ul> </li> <li>• O-rings and seals</li> <li>• adjustments and operational testing</li> <li>• visual inspections and documentation.</li> </ul>
<b>Tools and equipment</b> must include	<p>the following specialist tools that are mandatory under the ARC code of practice:</p> <ul style="list-style-type: none"> <li>○ manifold and gauge set</li> <li>○ recovery unit</li> <li>○ vacuum pump</li> <li>○ electronic leak detector</li> <li>○ electronic scales</li> <li>• the following recommended tools and equipment include:                             <ul style="list-style-type: none"> <li>○ hand tools</li> <li>○ nitrogen cylinder and regulator</li> <li>○ digital vacuum gauge (vacrometer)</li> <li>○ oil injector</li> <li>○ infra-red thermometer (pyrometer)</li> <li>○ electronic temperature probe</li> <li>○ valve core removing or replacement tool</li> <li>○ psychrometer (humidity detector)</li> <li>○ various refrigerant hoses and couplers</li> <li>○ digital multimeter</li> <li>○ diagnostic scan tool.</li> </ul> </li> </ul>
<b>Air conditioning and HVAC systems</b> must include	<ul style="list-style-type: none"> <li>• single zone and multi-zone, including:                             <ul style="list-style-type: none"> <li>○ climate control</li> <li>○ electric compressors</li> </ul> </li> </ul>

<b>AURETU003</b>	<b>Service air conditioning and HVAC systems</b>
	<ul style="list-style-type: none"> <li>• either one of following refrigerant filled systems:             <ul style="list-style-type: none"> <li>○ R12</li> <li>○ R134a</li> <li>○ R1234yf</li> </ul> </li> <li>• that are equipped with:             <ul style="list-style-type: none"> <li>○ high and low pressure switches</li> <li>○ pressure relief valves</li> <li>○ temperature sensors</li> <li>○ sunlight sensors</li> <li>○ carbon dioxide sensors</li> <li>○ zone temperature sensors.</li> </ul> </li> </ul>
<b>Inappropriate testing procedures</b> must include	<ul style="list-style-type: none"> <li>• intrusive testing (which must not be performed as it is not a recommended test and repair method), which includes:             <ul style="list-style-type: none"> <li>○ back probing terminals and connectors and fuse holders with inappropriate test probes</li> <li>○ probing terminal and connectors with inappropriate test probes</li> <li>○ pushing sharp probes and objects into wiring insulation.</li> </ul> </li> </ul>
<b>Faults</b> must include	<ul style="list-style-type: none"> <li>• system containing atmospheric air with moisture</li> <li>• electrical sensor malfunction</li> <li>• dislodged temperature sensor or transfer valve</li> <li>• faulty pressure relief valve</li> <li>• vacuum leak</li> <li>• air flow restriction or blockage</li> <li>• receiver drier blockage</li> <li>• evaporator fan not working</li> <li>• electrical fault</li> <li>• electrical system fault.</li> </ul>
<b>Post-service testing</b> must include	<ul style="list-style-type: none"> <li>• validating the effectiveness of the service action, including the following checks:             <ul style="list-style-type: none"> <li>○ ambient temperature</li> <li>○ centre vent temperature</li> <li>○ condenser and suction line temperature</li> <li>○ manifold gauge pressure readings</li> <li>○ refrigerant leaks</li> </ul> </li> <li>• confirming that reported fault has now been rectified</li> <li>• confirming that no other faults are present as a result of the service action.</li> </ul>
<b>Decal sticker</b> information must include	<ul style="list-style-type: none"> <li>• name of the service organisation</li> <li>• quantity of refrigerant added</li> <li>• refrigerant and oil type</li> <li>• service date</li> <li>• technician's licence number</li> <li>• vehicle odometer reading.</li> </ul>
<b>Unit Mapping Information</b>	
<b>Links</b>	<b>Implementation Guide</b> <a href="http://www.asacompanionvolumes.com.au/aur-implementation-guide">http://www.asacompanionvolumes.com.au/aur-implementation-guide</a>

## Assessment Requirements

<b>Assessment requirements for AURETU003 Service air conditioning and HVAC systems</b>	
<p><b>Performance Evidence</b></p>	<p>Before competency can be determined, individuals must have competently serviced an air conditioning and HVAC systems on a minimum of two vehicles. Individuals must demonstrate they can:</p> <ul style="list-style-type: none"> <li>• observe safety procedures and requirements, in particular the dangers associated with handling refrigerants</li> <li>• select methods and techniques appropriate to servicing an air conditioning system</li> <li>• conduct inspection, servicing and operational testing according to industry codes of practice and workplace, manufacturer and component supplier specifications</li> <li>• conduct a performance test of the air conditioning systems and do not 'top up' refrigerant to the air conditioning system until this is test is performed</li> <li>• accurately interpret air conditioning system performance test results</li> <li>• complete workplace and equipment documents to ARC code of practice requirements.</li> </ul>
<p><b>Knowledge Evidence</b></p>	<p>Individuals must be able to demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• WHS regulations, requirements, equipment, material and personal safety requirements, including:             <ul style="list-style-type: none"> <li>○ legislation and regulatory requirements</li> <li>○ ARC code of practice</li> </ul> </li> <li>• principal types of vehicle air conditioning and HVAC systems, including:             <ul style="list-style-type: none"> <li>○ piston, scroll and rotary vane compressors</li> <li>○ electric compressors</li> <li>○ variable displacement compressors</li> <li>○ clutchless compressors</li> </ul> </li> <li>• application, purpose and operation of air conditioning and HVAC systems, including:             <ul style="list-style-type: none"> <li>○ climate control</li> <li>○ multi-zone systems</li> </ul> </li> <li>• techniques for reading and interpreting technical information, graphic symbols and diagrams</li> <li>• diagnostic and testing procedures, including:             <ul style="list-style-type: none"> <li>○ use of manifold gauges and surface probe thermocouples for complete system analysis</li> <li>○ diagnostic procedures for air conditioning and HVAC systems, including:                 <ul style="list-style-type: none"> <li>○ accessing and interpreting diagnostic trouble codes</li> <li>○ diagnostic flow charts</li> </ul> </li> <li>○ analysis of system operation using gauges, temperature probes, electrical test equipment, scan tools and other industry-relevant test equipment</li> <li>○ visual, aural and functional assessments, including:                 <ul style="list-style-type: none"> <li>○ component damage and wear</li> <li>○ component corrosion</li> <li>○ vacuum and leaks</li> </ul> </li> </ul> </li> <li>• repair procedures, including:             <ul style="list-style-type: none"> <li>○ component removal and replacement procedures</li> </ul> </li> </ul>

<b>Assessment requirements for AURETU003 Service air conditioning and HVAC systems</b>	
	<ul style="list-style-type: none"> <li>○ component and associated system adjustment procedures</li> </ul>
<b>Assessment Conditions</b>	<p>Assessment must satisfy the Companion Volume Assessment Strategies Guide of this Training Package.</p> <p>Assessors must satisfy SNR/AQTF assessor requirements and:</p> <ul style="list-style-type: none"> <li>● hold an Australian Refrigerant Council (ARC) Refrigerant Handling licence</li> </ul> <p>Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.</p> <p>Where assessment of competency includes third party evidence, individuals must provide evidence that links them to the vehicles that they have worked on, e.g. repair orders.</p> <p>Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.</p> <p>The following resources must be made available:</p> <ul style="list-style-type: none"> <li>● workplace location or simulated workplace</li> <li>● vehicles with air conditioning and HVAC systems relevant to the qualification being sought</li> <li>● material relevant to servicing air conditioning systems</li> <li>● equipment appropriate for the testing of vehicle air conditioning and HVAC systems relevant to the qualification being sought, including:                             <ul style="list-style-type: none"> <li>○ manifold and gauge set</li> <li>○ recovery unit</li> <li>○ vacuum pump</li> <li>○ electronic leak detector</li> <li>○ nitrogen cylinder and regulator</li> <li>○ digital vacuum gauge (vacrometer)</li> <li>○ digital multimeter</li> <li>○ electronic scales</li> <li>○ oil injector</li> <li>○ infra-red thermometer (pyrometer)</li> <li>○ electronic temperature probe</li> <li>○ valve core removing or replacement tool</li> <li>○ psychrometer (humidity detector)</li> <li>○ various refrigerant hoses and couplers</li> <li>○ diagnostic scan tool</li> <li>○ specifications and work instructions</li> <li>○ service procedures for above equipment appropriate for the service and adjustment of vehicle air conditioning and HVAC systems.</li> </ul> </li> </ul>
<b>Links</b>	<p><b>Implementation Guide</b>  <a href="http://www.asacompanionvolumes.com.au/aur-implementation-guide">http://www.asacompanionvolumes.com.au/aur-implementation-guide</a></p> <p><b>Assessment Strategies Guide</b>  <a href="http://www.asacompanionvolumes.com.au/aur-assessment-strategies-guide">http://www.asacompanionvolumes.com.au/aur-assessment-strategies-guide</a></p>

<b>AURETU004</b>	<b>Diagnose and repair air conditioning and HVAC systems</b>
<b>Application</b>	<p>This unit describes the performance outcomes required to diagnose and repair air conditioning systems including heating, ventilation, air conditioning and cooling (HVAC) systems that are fitted to a range of vehicles and equipment for passenger convenience and comfort.</p> <p>It applies to those working in an automotive service and repair workplace and required to diagnose and repair automotive air conditioners, including HVAC systems fitted to agricultural machinery, heavy commercial vehicle, light vehicle, and mobile plant machinery.</p> <p>Licensing, legislative, regulatory or certification requirements apply to this unit.</p>
<b>Competency Field</b>	Electrical
<b>Unit Sector</b>	Technical - Air Conditioning and HVAC
<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b>
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1 Prepare to diagnose and repair air conditioning and HVAC system	<p>1.1 Workplace instructions are used to determine job requirements</p> <p>1.2 <b>Work health and safety (WHS)</b>, environmental requirements and <b>critical precautions</b> are identified and applied</p> <p>1.3 <b>Repair procedures and information</b> are sourced and interpreted</p> <p>1.4 Australian Refrigeration Council (ARC) code of practice is sourced and complied with</p> <p>1.5 <b>Diagnosis options</b> are considered and those most appropriate to the circumstances are selected</p> <p>1.6 Diagnose and repair <b>tools and equipment</b> are selected and checked according to workplace procedures</p>
2 Diagnose air conditioning and HVAC system	<p>2.1 Manufacturer and component supplier information and specifications are accessed and interpreted</p> <p>2.2 Performance test <b>Air conditioning and HVAC systems</b> is carried out according to industry and WHS regulations and relevant industry codes of practice to diagnose and isolate faults</p> <p>2.3 <b>Faults</b> are identified from test results and potential fault causes are determined</p> <p>2.4 Diagnosis findings are reported and repair action is considered according to workplace procedures</p>
3 Repair air conditioning and HVAC system	<p>3.1 Air conditioning and HVAC system and components are repaired according to manufacturer and component supplier specifications, WHS and workplace procedures and relevant industry codes of practice</p> <p>3.2 Repairs and component replacements and adjustments are carried out without causing damage, according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.3 Air conditioning repairs are carried out without causing damage to vehicle systems or components</p> <p>3.4 Air conditioning and HVAC system is recharged with the appropriate refrigerant gas according to workplace procedures</p>
4 Retest air conditioning and HVAC system	4.1 <b>Post-repair testing</b> is carried out to ensure performance and operation is to manufacturers specifications and test results are documented
5 Finalise work processes	<p>5.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>5.2 Work area is cleaned, waste and non-recyclable materials are disposed of and recyclable material is collected</p> <p>5.3 Tools and equipment are checked and stored according to workplace procedures</p>

<b>AURETU004</b>	<b>Diagnose and repair air conditioning and HVAC systems</b>
	<p>5.4 Faulty equipment is identified, tagged and isolated according to workplace procedures</p> <p>5.5 Appropriate <b>decal sticker</b> is placed in engine compartment</p> <p>5.6 Workplace documentation is processed according to workplace procedures</p>
<b>FOUNDATION SKILLS</b>	
This section describes those language, literacy, numeracy and employment skills that are essential to performance.	
<b>Skills</b>	<b>Description</b>
Learning skills to:	<ul style="list-style-type: none"> <li>• apply learning when diagnosing and repairing a range of air conditioning and HVAC systems</li> <li>• identify various sources of information, assistance and expert knowledge to expand own skills, knowledge and understanding.</li> </ul>
Reading skills to:	<ul style="list-style-type: none"> <li>• interpret and comply to work instructions, WHS requirements and workplace requirements required to complete the job task</li> <li>• interpret diagnose and repair techniques from manufacturer and workplace instructions and job requirements.</li> </ul>
Writing skills to:	<ul style="list-style-type: none"> <li>• legibly enter information into service reports, job task sheets and work orders</li> <li>• provide information relating to the diagnosis and repairs of air conditioning and HVAC systems to other personnel</li> <li>• legibly enter correct information into regulatory reports and workplace reporting documentation.</li> </ul>
Oral Communication skills to:	<ul style="list-style-type: none"> <li>• speak clearly and directly when presenting problems or issues in the work process.</li> <li>• refer tool and equipment faults to appropriate personal</li> <li>• refer diagnosis and repair problems to appropriate personal</li> <li>• speak clearly and directly when presenting repair problems and issues.</li> </ul>
Numeracy skills to:	<ul style="list-style-type: none"> <li>• match refrigerant types and identification numbers to work instructions and regulatory requirements</li> <li>• understand weighting measurements, including Tare and Gross weights; and readings on digital and analogue pressure gauges</li> <li>• complete documents and charts with numerical data</li> <li>• match materials and component part numbers to work instructions and vehicle and component parts lists</li> <li>• understand measurements of temperature and pressure related to air conditioner and HVAC system performance.</li> </ul>
Digital Literacy skills to:	<ul style="list-style-type: none"> <li>• adapt to the use and application of a range of diagnostic tools and equipment that operate with PC, tablet touch screen technologies.</li> </ul>
Initiative skills to:	<ul style="list-style-type: none"> <li>• respond to changing work requirements or contexts when confronted with a variety of vehicle air conditioning systems problems</li> <li>• recognise a workplace problem or potential problem and take action.</li> </ul>
Planning and Organising skills to:	<ul style="list-style-type: none"> <li>• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.</li> </ul>
Self-management skills to:	<ul style="list-style-type: none"> <li>• select and use appropriate equipment, materials, processes and procedures</li> <li>• recognise limitations and seek timely advice.</li> </ul>
Problem Solving skills to:	<ul style="list-style-type: none"> <li>• refer problems outside area of responsibility to appropriate person and suggest possible causes</li> <li>• seek information and assistance as required to solve problems.</li> </ul>
Teamwork skills to:	<ul style="list-style-type: none"> <li>• apply knowledge of own role to complete activities efficiently to support team activities.</li> </ul>
Technology skills to:	<ul style="list-style-type: none"> <li>• use workplace technology and tools relating to servicing air conditioning and HVAC systems.</li> </ul>

<b>RANGE OF CONDITIONS</b>	
This section specifies 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. Bold italicised wording, if used in the performance criteria, is detailed below.	
<b>Work health and safety requirements</b> must include	<ul style="list-style-type: none"> <li>• material safety data sheets (MSDS)</li> <li>• personal protective clothing and equipment</li> <li>• safe handling of materials</li> <li>• identification and application of fire-fighting equipment</li> <li>• workplace safety procedures</li> <li>• workplace first aid equipment</li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Critical precautions</b> must include	<ul style="list-style-type: none"> <li>• those relating to dangers associated with working with refrigerants and lubricants, including: <ul style="list-style-type: none"> <li>○ frostbite (refrigerant boiling point -36.7°C)</li> <li>○ carcinogenic oil</li> </ul> </li> <li>• care taken with some flammable refrigerants.</li> </ul>
<b>Repair procedures and information</b> must include	<ul style="list-style-type: none"> <li>• safe work procedures relating to repairing air conditioning and HVAC systems</li> <li>• ARC code of practice</li> <li>• workplace specifications and procedures</li> <li>• vehicle manufacturers diagnostic requirements and repair procedures.</li> </ul>
<b>Diagnosis options</b> must include	<ul style="list-style-type: none"> <li>• isolation of faults</li> <li>• component inspection and evaluation</li> <li>• fluid levels: <ul style="list-style-type: none"> <li>○ refrigerant</li> <li>○ lubricating oils</li> </ul> </li> <li>• filter serviceability: <ul style="list-style-type: none"> <li>○ receiver dryer</li> <li>○ cabin filter</li> </ul> </li> <li>• O-rings and seals</li> <li>• adjustments and operational testing</li> <li>• visual inspections and documentation.</li> </ul>
<b>Tools and equipment</b> must include	<p>the following specialist tools that are mandatory under the ARC code of practice:</p> <ul style="list-style-type: none"> <li>○ manifold and gauge set</li> <li>○ recovery unit</li> <li>○ vacuum pump</li> <li>○ electronic leak detector</li> <li>○ electronic scales</li> <li>• the following tools and equipment recommended include: <ul style="list-style-type: none"> <li>○ hand tools</li> <li>○ nitrogen cylinder and regulator</li> <li>○ digital vacuum gauge (vacrometer)</li> <li>○ oil injector</li> <li>○ infra-red thermometer (pyrometer)</li> <li>○ electronic temperature probe</li> <li>○ valve core removing or replacement tool</li> <li>○ psychrometer (humidity detector)</li> <li>○ various refrigerant hoses and couplers</li> <li>○ digital multimeter</li> <li>○ diagnostic scan tool.</li> </ul> </li> </ul>

<b>AURETU004</b>	<b>Diagnose and repair air conditioning and HVAC systems</b>
<b>Air conditioning and HVAC systems</b> must include	<ul style="list-style-type: none"> <li>• single zone and multi-zone, including:                             <ul style="list-style-type: none"> <li>○ climate control</li> <li>○ electric compressors</li> </ul> </li> <li>• either one of following refrigerant filled systems:                             <ul style="list-style-type: none"> <li>○ R12</li> <li>○ R134a</li> <li>○ R1234yf</li> </ul> </li> <li>• that are equipped with:                             <ul style="list-style-type: none"> <li>○ high and low pressure switches</li> <li>○ pressure relief valves</li> <li>○ temperature sensors</li> <li>○ sunlight sensors</li> <li>○ carbon dioxide sensors</li> <li>○ zone temperature sensors.</li> </ul> </li> </ul>
<b>Faults</b> must include	<ul style="list-style-type: none"> <li>• system containing atmospheric air with moisture</li> <li>• electrical sensor malfunction</li> <li>• dislodged temperature sensor or transfer valve</li> <li>• faulty pressure relief valve</li> <li>• vacuum leak</li> <li>• air flow restriction or blockage</li> <li>• receiver drier blockage</li> <li>• evaporator fan not working</li> <li>• electrical fault</li> <li>• electrical system fault.</li> </ul>
<b>Post-service testing</b> must include	<ul style="list-style-type: none"> <li>• validating the effectiveness of the service action, including the following checks:                             <ul style="list-style-type: none"> <li>○ ambient temperature</li> <li>○ centre vent temperature</li> <li>○ condenser and suction line temperature</li> <li>○ manifold gauge pressure readings</li> <li>○ refrigerant leaks</li> </ul> </li> <li>• confirming that reported fault has now been rectified</li> <li>• confirming that no other faults are present as a result of the service action.</li> </ul>
<b>Decal sticker</b> information must include	<ul style="list-style-type: none"> <li>• name of the service organisation</li> <li>• quantity of refrigerant added</li> <li>• refrigerant and oil type</li> <li>• service date</li> <li>• technician's licence number</li> <li>• vehicle odometer reading.</li> </ul>
<b>Unit Mapping Information</b>	
<b>Links</b>	<b>Implementation Guide</b> <a href="http://www.asacompanionvolumes.com.au/aur-implementation-guide">http://www.asacompanionvolumes.com.au/aur-implementation-guide</a>

### Assessment Requirements

<b>Assessment requirements for AURETU004 Diagnose and repair air conditioning and HVAC systems</b>	
<b>Performance Evidence</b>	<p>Before competency can be determined, individuals must have competently diagnosed and repaired an air conditioning and HVAC systems on a minimum of two vehicles. Individuals must demonstrate they can:</p> <ul style="list-style-type: none"> <li>• observe safety procedures and requirements, in particular the dangers associated with handling refrigerants</li> </ul>

<b>Assessment requirements for AURETU004 Diagnose and repair air conditioning and HVAC systems</b>	
	<ul style="list-style-type: none"> <li>• select methods and techniques appropriate to diagnosing and repairing an air conditioning system</li> <li>• diagnose and repair a range of vehicle air conditioning and HVAC systems, including:                             <ul style="list-style-type: none"> <li>○ climate control</li> <li>○ single and multi-zone</li> <li>○ belt driven and electric powered compressors</li> </ul> </li> <li>• apply safe operation of automotive refrigerant tools and equipment</li> <li>• record relevant details in relation to workplace and licensing requirements of the ARC code of practice</li> <li>• demonstrate understanding of the environmental regulations and refrigerant waste disposal procedures</li> <li>• conduct diagnosis and repair procedures according to workplace, manufacturer and component supplier requirements</li> <li>• conduct a performance test of the air conditioning systems</li> <li>• accurately interpret air conditioning system performance test results</li> <li>• complete workplace and equipment documents to ARC code of practice requirements.</li> </ul>
<p><b>Knowledge Evidence</b></p>	<p>Individuals must be able to demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• WHS regulations, requirements, equipment, material and personal safety requirements, including:                             <ul style="list-style-type: none"> <li>○ legislation and regulatory requirements</li> <li>○ ARC code of practice</li> </ul> </li> <li>• principal types of vehicle air conditioning and HVAC systems, including:                             <ul style="list-style-type: none"> <li>○ piston, scroll and rotary vane compressors</li> <li>○ electric compressors</li> <li>○ variable displacement compressors</li> <li>○ clutchless compressors</li> </ul> </li> <li>• application, purpose and operation of air conditioning and HVAC systems, including:                             <ul style="list-style-type: none"> <li>○ climate control</li> <li>○ multi-zone systems</li> </ul> </li> <li>• techniques for reading and interpreting technical information, including:                             <ul style="list-style-type: none"> <li>○ refrigerant saturation temperatures in relation to ambient temperatures and changing levels of humidity</li> <li>○ graphic symbols and diagrams</li> </ul> </li> <li>• diagnostic and testing procedures, including:                             <ul style="list-style-type: none"> <li>○ use of manifold gauges and surface probe thermocouples for complete system analysis</li> <li>○ diagnostic procedures for air conditioning and HVAC systems, including:                                     <ul style="list-style-type: none"> <li>○ accessing and interpreting diagnostic trouble codes (DTC)</li> <li>○ diagnostic flow charts</li> </ul> </li> <li>○ analysis of system operation using gauges, temperature probes, electrical test equipment, scan tools, oscilloscopes and other industry-relevant test equipment</li> <li>○ visual, aural and functional assessments, including:                                     <ul style="list-style-type: none"> <li>○ component damage and wear</li> <li>○ component corrosion</li> <li>○ vacuum and leaks</li> </ul> </li> <li>○ repair procedures, including:                                     <ul style="list-style-type: none"> <li>○ component removal and replacement procedures</li> </ul> </li> </ul> </li> </ul>

<b>Assessment requirements for AURETU004 Diagnose and repair air conditioning and HVAC systems</b>	
	<ul style="list-style-type: none"> <li>○ component and associated system adjustment procedures</li> </ul>
<b>Assessment Conditions</b>	<p>Assessment must satisfy the Companion Volume Assessment Strategies Guide of this Training Package.</p> <p>Assessors must satisfy SNR/AQTF assessor requirements and:</p> <ul style="list-style-type: none"> <li>• hold an Australian Refrigerant Council (ARC) Refrigerant Handling licence</li> </ul> <p>Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.</p> <p>Where assessment of competency includes third party evidence, individuals must provide evidence that links them to the vehicles that they have worked on, e.g. repair orders.</p> <p>Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.</p> <p>The following resources must be made available:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• vehicles with air conditioning and HVAC faults relevant to the qualification being sought</li> <li>• equipment appropriate for the diagnosing and repairing a range of vehicle air conditioning and HVAC systems relevant to the qualification being sought, including: <ul style="list-style-type: none"> <li>○ manifold and gauge set</li> <li>○ recovery unit</li> <li>○ vacuum pump</li> <li>○ electronic leak detector</li> <li>○ nitrogen cylinder and regulator</li> <li>○ digital vacuum gauge (vacrometer)</li> <li>○ digital multimeter</li> <li>○ electronic scales</li> <li>○ oil injector</li> <li>○ infra-red thermometer (pyrometer)</li> <li>○ electronic temperature probe</li> <li>○ valve core removing/replacement tool</li> <li>○ psychrometer (humidity detector)</li> <li>○ various refrigerant hoses and couplers</li> <li>○ diagnostic scan tool</li> <li>○ specifications and workplace instructions</li> <li>○ service procedures for above equipment appropriate for the diagnosis, repair, replacement and adjustment of vehicle air conditioning and HVAC systems..</li> </ul> </li> </ul>
<b>Links</b>	<p><b>Implementation Guide</b>  <a href="http://www.asacompanionvolumes.com.au/aur-implementation-guide">http://www.asacompanionvolumes.com.au/aur-implementation-guide</a></p> <p><b>Assessment Strategies Guide</b>  <a href="http://www.asacompanionvolumes.com.au/aur-assessment-strategies-guide">http://www.asacompanionvolumes.com.au/aur-assessment-strategies-guide</a></p>

<b>AURETU005</b>	<b>Retrofit and modify air conditioning and HVAC systems</b>
<b>Application</b>	<p>This unit describes the performance outcomes required to retrofit and modify automotive air conditioning systems including heating, ventilation, air conditioning and cooling (HVAC) systems that are fitted to a range of vehicles and equipment for passenger convenience and comfort.</p> <p>It applies to those working in an automotive service and repair workplace and required to retrofit and modify automotive air conditioners, including HVAC systems fitted to agricultural machinery, heavy commercial vehicle, light vehicle, and mobile plant machinery.</p> <p>Licensing, legislative, regulatory or certification requirements apply to this unit.</p>
<b>Competency Field</b>	Electrical
<b>Unit Sector</b>	Technical - Air Conditioning and HVAC
<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b>
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1 Prepare to retrofit air conditioning and HVAC system	<p>1.1 Nature and <b>scope of work</b> requirements are identified and confirmed</p> <p>1.2 Workplace instructions are used to determine job requirements</p> <p>1.3 <b>Work health and safety (WHS)</b>, environmental requirements and <b>critical precautions</b> are identified and applied</p> <p>1.4 <b>Retrofit procedures and information</b> are sourced and interpreted</p> <p>1.5 Australian Refrigeration Council (ARC) code of practice is sourced and complied with</p> <p>1.6 <b>Retrofit options</b> are considered and those most appropriate to the circumstances are selected</p> <p>1.7 Retrofit <b>tools and equipment</b> are selected and checked according to workplace procedures</p>
2 De-gas the air conditioning and HVAC system	<p>2.1 Manufacturer and component supplier information and specifications are accessed and interpreted</p> <p>2.2 System is de-gassed using approved recovery unit and appropriate refrigerant recovery cylinder for individual refrigerant type</p> <p>2.3 Oil recovered is measured for replacement purposes</p> <p>2.4 System is evacuated according to manufacturer and component supplier specifications, WHS and workplace procedures and relevant industry codes of practice</p>
3 Retrofit air conditioning and HVAC system	<p>3.1 Correct information is accessed and interpreted from manufacturer and component supplier specifications</p> <p>3.2 Air conditioning retrofit modification procedures are determined</p> <p>3.3 Retrofit modifications of the system and components is carried out according to manufacturer and component supplier specifications</p> <p>3.4 Air conditioning retrofit modifications are carried out without causing damage to vehicle systems or components and without additional pressures or loss to the system integrity</p> <p>3.5 System is pressure tested for leaks prior to being re-gassed using approved methods and equipment</p> <p>3.6 Air conditioning and HVAC system is recharged with the appropriate refrigerant gas according to workplace procedures</p>
4 Retest air conditioning and HVAC systems	<p>4.1 <b>Post-modification testing</b> is carried out to ensure performance and operation is to manufacturers specifications and test results are documented</p>
5 Finalise work processes	<p>5.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>5.2 Work area is cleaned, waste and non-recyclable materials are disposed of</p>

<b>AURETU005</b>	<b>Retrofit and modify air conditioning and HVAC systems</b>
	<p>and recyclable material is collected</p> <p>5.3 Tools and equipment are checked and stored according to workplace procedures</p> <p>5.4 Faulty equipment is identified, tagged and isolated according to workplace procedures</p> <p>5.5 Appropriate <b>decal sticker</b> is placed in engine compartment</p> <p>5.6 Workplace documentation is processed according to workplace procedures</p>
<b>FOUNDATION SKILLS</b>	
This section describes those language, literacy, numeracy and employment skills that are essential to performance.	
<b>Skills</b>	<b>Description</b>
Learning skills to:	<ul style="list-style-type: none"> <li>• apply learning when retrofitting and modifying a range of air conditioning and HVAC systems</li> <li>• identify various sources of information, assistance and expert knowledge to expand own skills, knowledge and understanding.</li> </ul>
Reading skills to:	<ul style="list-style-type: none"> <li>• interpret and comply to work instructions, WHS requirements and workplace requirements required to complete the job task</li> <li>• interpret retrofit and modification techniques from manufacturer and workplace instructions and job requirements.</li> </ul>
Writing skills to:	<ul style="list-style-type: none"> <li>• legibly enter information into service reports, job task sheets and work orders</li> <li>• provide information relating to the retrofit and modification of air conditioning and HVAC systems to other personnel</li> <li>• legibly enter correct information into regulatory reports and workplace reporting documentation.</li> </ul>
Oral Communication skills to:	<ul style="list-style-type: none"> <li>• speak clearly and directly when presenting problems or issues in the work process.</li> <li>• refer tool and equipment faults to appropriate personal</li> <li>• refer retrofit and modification problems to appropriate personal</li> <li>• speak clearly and directly when presenting modification problems and issues.</li> </ul>
Numeracy skills to:	<ul style="list-style-type: none"> <li>• match refrigerant types and identification numbers to work instructions and regulatory requirements</li> <li>• understand weighting measurements, including Tare and Gross weights; and readings on digital and analogue pressure gauges</li> <li>• complete documents and charts with numerical data</li> <li>• match materials and component part numbers to work instructions and vehicle and component parts lists</li> <li>• understand measurements of temperature and pressure related to air conditioner and HVAC system performance.</li> </ul>
Digital Literacy skills to:	<ul style="list-style-type: none"> <li>• adapt to the use and application of a range of diagnostic tools and equipment that operate with PC, tablet touch screen technologies.</li> </ul>
Initiative skills to:	<ul style="list-style-type: none"> <li>• respond to changing work requirements or contexts when confronted with a variety of vehicle air conditioning systems problems</li> <li>• recognise a workplace problem or potential problem and take action.</li> </ul>
Planning and Organising skills to:	<ul style="list-style-type: none"> <li>• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.</li> </ul>
Self-management skills to:	<ul style="list-style-type: none"> <li>• select and use appropriate equipment, materials, processes and procedures</li> <li>• recognise limitations and seek timely advice.</li> </ul>
Problem Solving skills to:	<ul style="list-style-type: none"> <li>• refer problems outside area of responsibility to appropriate person and suggest possible causes</li> <li>• seek information and assistance as required to solve problems.</li> </ul>
Teamwork skills to:	<ul style="list-style-type: none"> <li>• apply knowledge of own role to complete activities efficiently to support</li> </ul>

<b>AURETU005</b>	<b>Retrofit and modify air conditioning and HVAC systems</b>
	team activities.
Technology skills to:	<ul style="list-style-type: none"> <li>• use workplace technology and tools relating to servicing air conditioning and HVAC systems.</li> </ul>
<b>RANGE OF CONDITIONS</b>	
This section specifies 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. Bold italicised wording, if used in the performance criteria, is detailed below.	
<b>Scope of work</b> must include	<ul style="list-style-type: none"> <li>• type of system fitted</li> <li>• refrigerant type</li> <li>• oil type</li> <li>• system variables, including: <ul style="list-style-type: none"> <li>○ refrigerant leak detecting</li> <li>○ refrigerant recovery and charging</li> <li>○ system evacuation</li> <li>○ mechanical removal and replacement of components</li> <li>○ system and component testing</li> <li>○ performance testing.</li> </ul> </li> </ul>
<b>Work health and safety requirements</b> must include	<ul style="list-style-type: none"> <li>• material safety data sheets (MSDS)</li> <li>• personal protective clothing and equipment</li> <li>• safe handling of materials</li> <li>• identification and application of fire-fighting equipment</li> <li>• workplace safety procedures</li> <li>• workplace first aid equipment</li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Critical precautions</b> must include	<ul style="list-style-type: none"> <li>• those relating to dangers associated with working with refrigerants and lubricants, including: <ul style="list-style-type: none"> <li>○ frostbite (refrigerant boiling point -36.7°C)</li> <li>○ carcinogenic oil</li> </ul> </li> <li>• care taken with some flammable refrigerants.</li> </ul>
<b>Retrofit procedures and information</b> must include	<ul style="list-style-type: none"> <li>• safe work procedures relating to retrofit and modification of air conditioning and HVAC systems</li> <li>• ARC code of practice</li> <li>• workplace specifications and procedures</li> <li>• vehicle manufacturers retrofit requirements and modification procedures.</li> </ul>
<b>Retrofit options</b> must include:	<ul style="list-style-type: none"> <li>• change of refrigerant gas from R12 to R134a: <ul style="list-style-type: none"> <li>○ receiver dryer filter replacement</li> <li>○ change of system fittings for gauge fitment</li> </ul> </li> <li>• change of refrigerant gas from R134a to R1234yf: <ul style="list-style-type: none"> <li>○ change of system fittings for gauge fitment.</li> </ul> </li> <li>• fluid levels: <ul style="list-style-type: none"> <li>○ refrigerant</li> <li>○ lubricating oils</li> </ul> </li> <li>• filter serviceability: <ul style="list-style-type: none"> <li>○ receiver dryer</li> <li>○ cabin filter</li> </ul> </li> <li>• O-rings and seals</li> <li>• adjustments and operational testing</li> <li>• visual inspections and documentation.</li> </ul>
<b>Tools and equipment</b> must include	<p>the following specialist tools that are mandatory under the ARC code of practice:</p> <ul style="list-style-type: none"> <li>○ manifold and gauge set</li> </ul>

AURETU005	<b>Retrofit and modify air conditioning and HVAC systems</b>
	<ul style="list-style-type: none"> <li>○ recovery unit</li> <li>○ vacuum pump</li> <li>○ electronic leak detector</li> <li>○ electronic scales</li> <li>● the following recommended tools and equipment include:             <ul style="list-style-type: none"> <li>○ hand tools</li> <li>○ nitrogen cylinder and regulator</li> <li>○ digital vacuum gauge (vacrometer)</li> <li>○ oil injector</li> <li>○ infra-red thermometer (pyrometer)</li> <li>○ electronic temperature probe</li> <li>○ valve core removing or replacement tool</li> <li>○ psychrometer (humidity detector)</li> <li>○ various refrigerant hoses and couplers</li> <li>○ digital multimeter</li> </ul> </li> <li>● diagnostic scan tool.</li> </ul>
<b>Post-service testing</b> must include	<ul style="list-style-type: none"> <li>● validating the effectiveness of the service action, including the following checks:             <ul style="list-style-type: none"> <li>○ ambient temperature</li> <li>○ centre vent temperature</li> <li>○ condenser and suction line temperature</li> <li>○ manifold gauge pressure readings</li> <li>○ refrigerant leaks</li> </ul> </li> <li>● confirming that reported fault has now been rectified</li> <li>● confirming that no other faults are present as a result of the service action.</li> </ul>
<b>Decal sticker</b> information must include	<ul style="list-style-type: none"> <li>● name of the service organisation</li> <li>● quantity of refrigerant added</li> <li>● refrigerant and oil type</li> <li>● service date</li> <li>● technician's licence number</li> <li>● vehicle odometer reading.</li> </ul>
<b>Unit Mapping Information</b>	
<b>Links</b>	<b>Implementation Guide</b> <a href="http://www.asacompanionvolumes.com.au/aur-implementation-guide">http://www.asacompanionvolumes.com.au/aur-implementation-guide</a>

**Assessment Requirements**

<b>Assessment requirements for AURETU005 Retrofit and modify air conditioning and HVAC systems</b>	
<b>Performance Evidence</b>	<p>Before competency can be determined, individuals must have competently retrofitted and modified an air conditioning and HVAC systems on a minimum of two different vehicles. Individuals must demonstrate they can:</p> <ul style="list-style-type: none"> <li>● observe safety procedures and requirements, in particular the dangers associated with handling refrigerants</li> <li>● select methods and techniques appropriate to the retrofit and modification of an air conditioning system</li> <li>● conduct performance testing to establish viability of retrofit and modification</li> <li>● apply full retrofit and modify sequence that complies to scope of work</li> <li>● conduct refrigerant recovery and evacuation of refrigerant operations according to industry codes of practice and regulations and recharge the system with the appropriate refrigerant and oil type</li> <li>● conduct a performance test of the air conditioning systems</li> </ul>

<b>Assessment requirements for AURETU005 Retrofit and modify air conditioning and HVAC systems</b>	
	<ul style="list-style-type: none"> <li>• accurately interpret air conditioning system performance test results</li> <li>• complete workplace and equipment documents to ARC code of practice requirements.</li> </ul>
<b>Knowledge Evidence</b>	<p>Individuals must be able to demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• WHS regulations, requirements, equipment, material and personal safety requirements, including: <ul style="list-style-type: none"> <li>○ legislation and regulatory requirements</li> <li>○ ARC code of practice</li> </ul> </li> <li>• principal types of vehicle air conditioning and HVAC systems, including: <ul style="list-style-type: none"> <li>○ piston, scroll and rotary vane compressors</li> <li>○ electric compressors</li> <li>○ variable displacement compressors</li> <li>○ clutchless compressors</li> </ul> </li> <li>• application, purpose and operation of air conditioning and HVAC systems, including: <ul style="list-style-type: none"> <li>○ climate control</li> <li>○ multi-zone systems</li> </ul> </li> <li>• techniques for reading and interpreting technical information, including: <ul style="list-style-type: none"> <li>○ refrigerant saturation temperatures in relation to ambient temperatures and changing levels of humidity</li> <li>○ graphic symbols and diagrams</li> </ul> </li> <li>• diagnostic and testing procedures, including: <ul style="list-style-type: none"> <li>○ use of manifold gauges and surface probe thermocouples for complete system analysis</li> <li>○ diagnostic procedures for air conditioning and HVAC systems, including: <ul style="list-style-type: none"> <li>○ accessing and interpreting diagnostic trouble codes (DTC)</li> <li>○ diagnostic flow charts</li> </ul> </li> <li>○ analysis of system operation using gauges, temperature probes, electrical test equipment, scan tools, oscilloscopes and other industry-relevant test equipment</li> <li>○ visual, aural and functional assessments, including: <ul style="list-style-type: none"> <li>○ component damage and wear</li> <li>○ component corrosion</li> <li>○ vacuum and leaks</li> </ul> </li> <li>○ repair procedures, including: <ul style="list-style-type: none"> <li>○ component removal and replacement procedures</li> <li>○ component and associated system adjustment procedures</li> </ul> </li> </ul> </li> </ul>
<b>Assessment Conditions</b>	<p>Assessment must satisfy the Companion Volume Assessment Strategies Guide of this Training Package.</p> <p>Assessors must satisfy SNR/AQTF assessor requirements and:</p> <ul style="list-style-type: none"> <li>• hold an Australian Refrigerant Council (ARC) Refrigerant Handling licence</li> </ul> <p>Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.</p> <p>Where assessment of competency includes third party evidence, individuals must provide evidence that links them to the vehicles that they have worked on, e.g. repair orders.</p>

<b>Assessment requirements for AURETU005 Retrofit and modify air conditioning and HVAC systems</b>	
	<p>Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.</p> <p>The following resources must be made available:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• light and heavy vehicles with air conditioning and HVAC systems relevant to the qualification being sought</li> <li>• material relevant to perform a retrofit and modification of air conditioning systems</li> <li>• equipment appropriate for the retrofit or modification of light and heavy vehicle air conditioning and HVAC systems relevant to the qualification being sought, including: <ul style="list-style-type: none"> <li>○ manifold and gauge set</li> <li>○ recovery unit</li> <li>○ vacuum pump</li> <li>○ electronic leak detector</li> <li>○ nitrogen cylinder and regulator</li> <li>○ digital vacuum gauge (vacrometer)</li> <li>○ digital multimeter</li> <li>○ electronic scales</li> <li>○ oil injector</li> <li>○ infra-red thermometer (pyrometer)</li> <li>○ electronic temperature probe</li> <li>○ valve core removing/replacement tool</li> <li>○ psychrometer (humidity detector)</li> <li>○ various refrigerant hoses and couplers</li> <li>○ diagnostic scan tool</li> <li>○ specifications and work instructions</li> <li>○ service procedures for above equipment appropriate for the retrofit and modification of vehicle air conditioning and HVAC systems.</li> </ul> </li> </ul>
<b>Links</b>	<p><b>Implementation Guide</b>  <a href="http://www.asacompanionvolumes.com.au/aur-implementation-guide">http://www.asacompanionvolumes.com.au/aur-implementation-guide</a></p> <p><b>Assessment Strategies Guide</b>  <a href="http://www.asacompanionvolumes.com.au/aur-assessment-strategies-guide">http://www.asacompanionvolumes.com.au/aur-assessment-strategies-guide</a></p>

<b>AURETU001</b>	<b>Install air conditioning systems</b>
<b>Application</b>	<p>This unit describes the performance outcomes required to install air conditioning systems that are fitted to a range of (typically older - restoration) vehicles and equipment for passenger convenience and comfort.</p> <p>It applies to those working in an automotive service and repair workplace and required to install automotive air conditioners to agricultural machinery, heavy commercial vehicle, light vehicle, and mobile plant machinery.</p> <p>Licensing, legislative, regulatory or certification requirements apply to this unit.</p>
<b>Competency Field</b>	Electrical
<b>Unit Sector</b>	Technical - Air Conditioning and HVAC
<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b>
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1 Prepare to install air conditioning systems	<p>1.1 Nature and <b>scope of work</b> requirements are identified and confirmed</p> <p>1.2 Workplace instructions are used to determine job requirements</p> <p>1.3 <b>Work health and safety (WHS)</b>, environmental requirements and <b>critical precautions</b> are identified and applied</p> <p>1.4 <b>Installation procedures and information</b> are sourced and interpreted</p> <p>1.5 Australian Refrigeration Council (ARC) code of practice is sourced and complied with</p> <p>1.6 <b>Installation options</b> are considered and those most appropriate to the circumstances are selected</p> <p>1.7 Installation <b>tools and equipment</b> are selected and checked according to workplace procedures</p>
2 Install air conditioning systems	<p>2.1 Installation of the system and components is carried out according to manufacturer and component supplier specifications</p> <p>2.2 Air conditioning installation is carried out without causing damage to vehicle systems or components</p> <p>2.3 Installation is checked prior to pressure testing and charging</p>
3 Charge air conditioning system with refrigerant and lubricating oil	<p>3.1 System is pressure tested for leaks prior to being charged using approved methods and equipment</p> <p>3.2 Air conditioning system is recharged with the appropriate refrigerant gas and lubricating oil according to workplace procedures and relevant industry code of practice</p>
4 Test air conditioning system	<p>4.1 <b>Post-installation testing</b> is carried out to ensure performance and operation is to manufacturers specifications and test results are documented</p>
5 Finalise work processes	<p>5.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>5.2 Work area is cleaned, waste and non-recyclable materials are disposed of and recyclable material is collected</p> <p>5.3 Tools and equipment are checked and stored according to workplace procedures</p> <p>5.4 Faulty equipment is identified, tagged and isolated according to workplace procedures</p> <p>5.5 Appropriate <b>decal sticker</b> is placed in engine compartment</p> <p>5.6 Workplace documentation is processed according to workplace procedures</p>

<b>FOUNDATION SKILLS</b>	
This section describes those language, literacy, numeracy and employment skills that are essential to performance.	
<b>Skills</b>	<b>Description</b>
Learning skills to:	<ul style="list-style-type: none"> <li>• apply learning when installing a range of air conditioning systems</li> <li>• identify various sources of information, assistance and expert knowledge to expand own skills, knowledge and understanding.</li> </ul>
Reading skills to:	<ul style="list-style-type: none"> <li>• interpret and comply to work instructions, WHS requirements and workplace requirements required to complete the job task</li> <li>• interpret installation techniques from manufacturer and workplace instructions and job requirements.</li> </ul>
Writing skills to:	<ul style="list-style-type: none"> <li>• legibly enter information into service reports, job task sheets and work orders</li> <li>• provide information relating to the installation of air conditioning systems to other personnel</li> <li>• legibly enter correct information into regulatory reports and workplace reporting documentation.</li> </ul>
Oral Communication skills to:	<ul style="list-style-type: none"> <li>• speak clearly and directly when presenting problems or issues in the work process.</li> <li>• refer tool and equipment faults to appropriate personal</li> <li>• refer installation problems to appropriate personal</li> <li>• speak clearly and directly when presenting installation problems and issues.</li> </ul>
Numeracy skills to:	<ul style="list-style-type: none"> <li>• match refrigerant types and identification numbers to work instructions and regulatory requirements</li> <li>• understand weighting measurements, including Tare and Gross weights; and readings on digital and analogue pressure gauges</li> <li>• complete documents and charts with numerical data</li> <li>• match materials and component part numbers to work instructions and vehicle and component parts lists</li> <li>• understand measurements of temperature and pressure related to air conditioner system performance.</li> </ul>
Digital Literacy skills to:	<ul style="list-style-type: none"> <li>• adapt to the use and application of a range of diagnostic tools and equipment that operate with PC, tablet touch screen technologies.</li> </ul>
Initiative skills to:	<ul style="list-style-type: none"> <li>• respond to changing work requirements or contexts when confronted with a variety of vehicle air conditioning systems problems</li> <li>• recognise a workplace problem or potential problem and take action.</li> </ul>
Planning and Organising skills to:	<ul style="list-style-type: none"> <li>• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.</li> </ul>
Self-management skills to:	<ul style="list-style-type: none"> <li>• select and use appropriate equipment, materials, processes and procedures</li> <li>• recognise limitations and seek timely advice.</li> </ul>
Problem Solving skills to:	<ul style="list-style-type: none"> <li>• refer problems outside area of responsibility to appropriate person and suggest possible causes</li> <li>• seek information and assistance as required to solve problems.</li> </ul>
Teamwork skills to:	<ul style="list-style-type: none"> <li>• apply knowledge of own role to complete activities efficiently to support team activities.</li> </ul>
Technology skills to:	<ul style="list-style-type: none"> <li>• use workplace technology and tools relating to installation and testing air conditioning systems.</li> </ul>
<b>RANGE OF CONDITIONS</b>	
This section specifies 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. Bold italicised wording, if used in the performance criteria, is detailed below.	
<b><i>Scope of work</i></b> must include	<ul style="list-style-type: none"> <li>• type of system to be installed</li> <li>• refrigerant type</li> </ul>

AURETU001	Install air conditioning systems
	<ul style="list-style-type: none"> <li>• oil type</li> <li>• system variables, including:               <ul style="list-style-type: none"> <li>○ leak detecting</li> <li>○ system evacuation</li> <li>○ refrigerant charging</li> <li>○ system and component testing</li> <li>○ performance testing.</li> </ul> </li> </ul>
<b>Work health and safety requirements</b> must include	<ul style="list-style-type: none"> <li>• material safety data sheets (MSDS)</li> <li>• personal protective clothing and equipment</li> <li>• safe handling of materials</li> <li>• identification and application of fire-fighting equipment</li> <li>• workplace safety procedures</li> <li>• workplace first aid equipment</li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<b>Critical precautions</b> must include	<ul style="list-style-type: none"> <li>• those relating to dangers associated with working with refrigerants and lubricants, including:               <ul style="list-style-type: none"> <li>○ frostbite (refrigerant boiling point -36.7°C)</li> <li>○ carcinogenic oil</li> </ul> </li> <li>• care taken with some flammable refrigerants.</li> </ul>
<b>Installation procedures and information</b> must include	<ul style="list-style-type: none"> <li>• safe work procedures relating to installation of air conditioning systems</li> <li>• ARC code of practice</li> <li>• workplace specifications and procedures</li> <li>• vehicle manufacturers installation instructions and procedures.</li> </ul>
<b>Installation options</b> must include:	<ul style="list-style-type: none"> <li>• refrigerant type:               <ul style="list-style-type: none"> <li>○ R134a</li> <li>○ R1234yf</li> </ul> </li> <li>• fluid levels:               <ul style="list-style-type: none"> <li>○ refrigerant</li> <li>○ lubricating oils</li> </ul> </li> <li>• filter serviceability:               <ul style="list-style-type: none"> <li>○ receiver dryer</li> <li>○ cabin filter</li> </ul> </li> <li>• O-rings and seals</li> <li>• adjustments and operational testing</li> <li>• visual inspections and documentation.</li> </ul>
<b>Tools and equipment</b> must include	<p>the following specialist tools that are mandatory under the ARC code of practice:</p> <ul style="list-style-type: none"> <li>○ manifold and gauge set</li> <li>○ recovery unit</li> <li>○ vacuum pump</li> <li>○ electronic leak detector</li> <li>○ electronic scales</li> </ul> <ul style="list-style-type: none"> <li>• the following recommended tools and equipment include:               <ul style="list-style-type: none"> <li>○ hand tools</li> <li>○ nitrogen cylinder and regulator</li> <li>○ digital vacuum gauge (vacrometer)</li> <li>○ oil injector</li> <li>○ infra-red thermometer (pyrometer)</li> <li>○ electronic temperature probe</li> <li>○ valve core removing or replacement tool</li> <li>○ psychrometer (humidity detector)</li> </ul> </li> </ul>

<b>AURETU001</b>	<b>Install air conditioning systems</b>
	<ul style="list-style-type: none"> <li>○ various refrigerant hoses and couplers</li> <li>○ digital multimeter</li> <li>○ diagnostic scan tool.</li> </ul>
<b>Post-installation testing</b> must include	<ul style="list-style-type: none"> <li>● validating the effectiveness of the installation, including the following checks: <ul style="list-style-type: none"> <li>○ ambient temperature</li> <li>○ centre vent temperature</li> <li>○ condenser and suction line temperature</li> <li>○ manifold gauge pressure readings</li> <li>○ refrigerant leaks</li> </ul> </li> <li>● confirming that reported fault has now been rectified</li> <li>● confirming that no other faults are present as a result of the service action.</li> </ul>
<b>Decal sticker</b> information must include	<ul style="list-style-type: none"> <li>● name of the service organisation</li> <li>● quantity of refrigerant added</li> <li>● refrigerant and oil type</li> <li>● service date</li> <li>● technician's licence number</li> <li>● vehicle odometer reading.</li> </ul>
<b>Unit Mapping Information</b>	
<b>Links</b>	<b>Implementation Guide</b> <a href="http://www.asacompanionvolumes.com.au/aur-implementation-guide">http://www.asacompanionvolumes.com.au/aur-implementation-guide</a>

### Assessment Requirements

<b>Assessment requirements for AURETU001 Install air conditioning systems</b>	
<b>Performance Evidence</b>	<p>Before competency can be determined, individuals must have competently installed an air conditioning system to a minimum of two different vehicles. Individuals must demonstrate they can:</p> <ul style="list-style-type: none"> <li>● observe safety procedures and requirements, in particular the dangers associated with handling refrigerants</li> <li>● select methods and techniques appropriate to the installation of an air conditioning system</li> <li>● apply full installation sequence that complies to scope of work</li> <li>● conduct installation according to industry codes of practice and regulations and charge the system with the appropriate refrigerant and oil type</li> <li>● conduct a performance test of the air conditioning systems</li> <li>● accurately interpret air conditioning system performance test results</li> <li>● complete workplace and equipment documents to ARC code of practice requirements.</li> </ul>
<b>Knowledge Evidence</b>	<p>Individuals must be able to demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>● WHS regulations, requirements, equipment, material and personal safety requirements, including: <ul style="list-style-type: none"> <li>○ legislation and regulatory requirements</li> <li>○ ARC code of practice</li> </ul> </li> <li>● principal types of vehicle air conditioning systems, including: <ul style="list-style-type: none"> <li>○ piston, scroll and rotary vane compressors</li> <li>○ electric compressors</li> <li>○ variable displacement compressors</li> <li>○ clutchless compressors</li> </ul> </li> <li>● application, purpose and operation of air conditioning systems, including: <ul style="list-style-type: none"> <li>○ climate control</li> </ul> </li> </ul>

<b>Assessment requirements for AURETU001 Install air conditioning systems</b>	
	<ul style="list-style-type: none"> <li>○ multi-zone systems</li> <li>● techniques for reading and interpreting technical information, including: <ul style="list-style-type: none"> <li>○ refrigerant saturation temperatures in relation to ambient temperatures and changing levels of humidity</li> <li>○ graphic symbols and diagrams</li> </ul> </li> <li>● diagnostic and testing procedures, including: <ul style="list-style-type: none"> <li>○ use of manifold gauges and surface probe thermocouples for complete system analysis</li> <li>○ diagnostic procedures for air conditioning systems, including: <ul style="list-style-type: none"> <li>○ accessing and interpreting diagnostic trouble codes (DTC)</li> <li>○ diagnostic flow charts</li> </ul> </li> <li>○ analysis of system operation using gauges, temperature probes, electrical test equipment, scan tools, oscilloscopes and other industry-relevant test equipment</li> <li>○ visual, aural and functional assessments, including: <ul style="list-style-type: none"> <li>○ component damage and wear</li> <li>○ component corrosion</li> <li>○ vacuum and leaks</li> </ul> </li> <li>○ repair procedures, including: <ul style="list-style-type: none"> <li>○ component removal and replacement procedures</li> <li>○ component and associated system adjustment procedures</li> </ul> </li> </ul> </li> </ul>
<b>Assessment Conditions</b>	<p>Assessment must satisfy the Companion Volume Assessment Strategies Guide of this Training Package.</p> <p>Assessors must satisfy SNR/AQTF assessor requirements and:</p> <ul style="list-style-type: none"> <li>● hold an Australian Refrigerant Council (ARC) Refrigerant Handling licence</li> </ul> <p>Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.</p> <p>Where assessment of competency includes third party evidence, individuals must provide evidence that links them to the vehicles that they have worked on, e.g. repair orders.</p> <p>Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.</p> <p>The following resources must be made available:</p> <ul style="list-style-type: none"> <li>● workplace location or simulated workplace</li> <li>● light and heavy vehicles with air conditioning systems relevant to the qualification being sought</li> <li>● material relevant to perform a retrofit and modification of air conditioning systems</li> <li>● equipment appropriate for the installation of air conditioning systems relevant to the qualification being sought, including: <ul style="list-style-type: none"> <li>○ manifold and gauge set</li> <li>○ recovery unit</li> <li>○ vacuum pump</li> <li>○ electronic leak detector</li> <li>○ nitrogen cylinder and regulator</li> <li>○ digital vacuum gauge (vacrometer)</li> </ul> </li> </ul>

<b>Assessment requirements for AURETU001 Install air conditioning systems</b>	
	<ul style="list-style-type: none"> <li>○ digital multimeter</li> <li>○ electronic scales</li> <li>○ oil injector</li> <li>○ infra-red thermometer (pyrometer)</li> <li>○ electronic temperature probe</li> <li>○ valve core removing/replacement tool</li> <li>○ psychrometer (humidity detector)</li> <li>○ various refrigerant hoses and couplers</li> <li>○ diagnostic scan tool</li> <li>○ specifications and work instructions</li> <li>○ service procedures for above equipment appropriate for the installation of vehicle air conditioning systems.</li> </ul>
<b>Links</b>	<p><b>Implementation Guide</b>  <a href="http://www.asacompanionvolumes.com.au/aur-implementation-guide">http://www.asacompanionvolumes.com.au/aur-implementation-guide</a></p> <p><b>Assessment Strategies Guide</b>  <a href="http://www.asacompanionvolumes.com.au/aur-assessment-strategies-guide">http://www.asacompanionvolumes.com.au/aur-assessment-strategies-guide</a></p>

<b>AURETU007</b>	<b>Overhaul air conditioning system components</b>
<b>Application</b>	<p>This unit describes the performance outcomes required to overhaul air conditioning <b>and HVAC</b> systems components that are fitted to a range of vehicles and equipment for passenger convenience and comfort.</p> <p>It applies to those working in an automotive service and repair workplace and required to overhaul automotive air conditioners <b>and HVAC</b> system components that are fitted to agricultural machinery, heavy commercial vehicle, light vehicle, and mobile plant machinery.</p> <p>Licensing, legislative, regulatory or certification requirements apply to this unit.</p>
<b>Competency Field</b>	Electrical
<b>Unit Sector</b>	Technical - Air Conditioning and HVAC
<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b>
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1 Prepare to overhaul air conditioning <b>and HVAC</b> components	<p>1.1 Nature and <b><i>scope of the work</i></b> requirements are identified and confirmed</p> <p>1.2 Workplace instructions are used to determine job requirements</p> <p>1.3 <b><i>Work health and safety (WHS)</i></b>, environmental requirements and <b><i>critical precautions</i></b> are identified and applied</p> <p>1.4 Procedures and information are sourced and interpreted</p> <p>1.5 Australian Refrigeration Council (ARC) code of practice is sourced and complied with</p> <p>1.6 Overhaul options are analysed and those most appropriate to the circumstances are selected</p> <p>1.7 <b><i>Tools and equipment</i></b> are selected and checked according to workplace procedures</p>
1 Test air conditioning systems and analyse results	<p>1.1 Test requirements for air conditioning systems and components is sourced and support equipment is identified and prepared</p> <p>1.2 Test results are compared to manufacturer and component supplier specifications for repair or overhaul action according to workplace procedures</p> <p>1.3 Results are documented with evidence and supporting information for repair or overhaul action</p>
2 Overhaul air conditioning <b>and HVAC</b> system components	<p>2.1 Air conditioning system components are dismantled and inspected</p> <p>2.2 Worn, damaged, deteriorated or faulty components are identified and replaced or repaired</p> <p>2.3 Air conditioning system components are overhauled without causing damage to any component or system</p>
3 Test air conditioning systems components	<p>3.1 <b><i>Post-overhaul testing</i></b> is carried out to ensure performance and operation is to manufacturers specifications and test results are documented</p>
4 Finalize work processes	<p>4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2 Work area is cleaned, waste and non-recyclable materials are disposed of and recyclable material is collected</p> <p>4.3 Tools and equipment are checked and stored according to workplace procedures</p> <p>4.4 Faulty equipment is identified, tagged and isolated according to workplace procedures</p> <p>4.5 Workplace documentation is processed according to workplace procedures</p>

<b>FOUNDATION SKILLS</b>	
This section describes those language, literacy, numeracy and employment skills that are essential to performance.	
<b>Skills</b>	<b>Description</b>
Learning skills to:	<ul style="list-style-type: none"> <li>• apply learning when overhauling of air conditioning systems components</li> <li>• identify various sources of information, assistance and expert knowledge to expand own skills, knowledge and understanding.</li> </ul>
Reading skills to:	<ul style="list-style-type: none"> <li>• interpret and comply to work instructions, WHS requirements and workplace requirements required to complete the job task</li> <li>• interpret overhauling techniques from manufacturer and workplace instructions and job requirements.</li> </ul>
Writing skills to:	<ul style="list-style-type: none"> <li>• legibly enter information into service reports, job task sheets and work orders</li> <li>• provide information relating to the overhaul of air conditioning system components to other personnel</li> <li>• legibly enter correct information into regulatory reports and workplace reporting documentation.</li> </ul>
Oral Communication skills to:	<ul style="list-style-type: none"> <li>• speak clearly and directly when presenting problems or issues in the work process.</li> <li>• refer tool and equipment faults to appropriate personal</li> <li>• refer component overhaul problems to appropriate personal</li> <li>• speak clearly and directly when presenting modification problems and issues.</li> </ul>
Numeracy skills to:	<ul style="list-style-type: none"> <li>• match refrigerant types and identification numbers to work instructions and regulatory requirements</li> <li>• understand weighting measurements, including Tare and Gross weights; and readings on digital and analogue pressure gauges</li> <li>• complete documents and charts with numerical data</li> <li>• match materials and component part numbers to work instructions and vehicle and component parts lists</li> <li>• understand measurements of temperature and pressure related to air conditioner and HVAC system performance.</li> </ul>
Digital Literacy skills to:	<ul style="list-style-type: none"> <li>• adapt to the use and application of a range of diagnostic tools and equipment that operate with PC, tablet touch screen technologies.</li> </ul>
Initiative skills to:	<ul style="list-style-type: none"> <li>• respond to changing work requirements or contexts when confronted with a variety of vehicle air conditioning systems problems</li> <li>• recognise a workplace problem or potential problem and take action.</li> </ul>
Planning and Organising skills to:	<ul style="list-style-type: none"> <li>• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.</li> </ul>
Self-management skills to:	<ul style="list-style-type: none"> <li>• select and use appropriate equipment, materials, processes and procedures</li> <li>• recognise limitations and seek timely advice.</li> </ul>
Problem Solving skills to:	<ul style="list-style-type: none"> <li>• refer problems outside area of responsibility to appropriate person and suggest possible causes</li> <li>• seek information and assistance as required to solve problems.</li> </ul>
Teamwork skills to:	<ul style="list-style-type: none"> <li>• apply knowledge of own role to complete activities efficiently to support team activities.</li> </ul>
Technology skills to:	<ul style="list-style-type: none"> <li>• use workplace technology and tools relating to overhaul of air conditioning and HVAC systems.</li> </ul>

<b>RANGE OF CONDITIONS</b>	
<p>This section specifies 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. Bold italicised wording, if used in the performance criteria, is detailed below.</p>	
<p><b>Scope of work</b> must include</p>	<ul style="list-style-type: none"> <li>• type, age and general condition of the air conditioning system</li> <li>• refrigerant type</li> <li>• oil type</li> <li>• system variables, including:                             <ul style="list-style-type: none"> <li>○ refrigerant leak detecting</li> <li>○ refrigerant recovery and charging</li> <li>○ system evacuation</li> <li>○ mechanical removal and replacement of components</li> <li>○ system and component testing</li> <li>○ performance testing.</li> </ul> </li> </ul>
<p><b>Work health and safety requirements</b> must include</p>	<ul style="list-style-type: none"> <li>• material safety data sheets (MSDS)</li> <li>• personal protective clothing and equipment</li> <li>• safe handling of materials</li> <li>• identification and application of fire-fighting equipment</li> <li>• workplace safety procedures</li> <li>• workplace first aid equipment</li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>
<p><b>Critical precautions</b> must include</p>	<ul style="list-style-type: none"> <li>• those relating to dangers associated with working with refrigerants and lubricants, including:                             <ul style="list-style-type: none"> <li>○ frostbite (refrigerant boiling point -36.7°C)</li> <li>○ carcinogenic oil</li> </ul> </li> <li>• care taken with some flammable refrigerants.</li> </ul>
<p><b>Tools and equipment</b> must include</p>	<p>the following specialist tools that are mandatory under the ARC code of practice:</p> <ul style="list-style-type: none"> <li>○ manifold and gauge set</li> <li>○ recovery unit</li> <li>○ vacuum pump</li> <li>○ electronic leak detector</li> <li>○ electronic scales</li> <li>• the following recommended tools and equipment include:                             <ul style="list-style-type: none"> <li>○ hand tools</li> <li>○ nitrogen cylinder and regulator</li> <li>○ digital vacuum gauge (vacrometer)</li> <li>○ oil injector</li> <li>○ infra-red thermometer (pyrometer)</li> <li>○ electronic temperature probe</li> <li>○ valve core removing or replacement tool</li> <li>○ psychrometer (humidity detector)</li> <li>○ various refrigerant hoses and couplers</li> <li>○ digital multimeter</li> <li>○ diagnostic scan tool.</li> </ul> </li> </ul>
<p><b>Post-overhaul testing</b> must include</p>	<ul style="list-style-type: none"> <li>• validating the effectiveness of the overhaul and service action, including the following checks:                             <ul style="list-style-type: none"> <li>○ ambient temperature</li> <li>○ centre vent temperature</li> <li>○ condenser and suction line temperature</li> <li>○ manifold gauge pressure readings</li> <li>○ refrigerant leaks</li> </ul> </li> <li>• confirming that reported fault has now been rectified</li> </ul>

<b>AURETU007</b>	<b>Overhaul air conditioning system components</b>
	<ul style="list-style-type: none"> <li>confirming that no other faults are present as a result of the overhaul and service action.</li> </ul>
<b>Unit Mapping Information</b>	
<b>Links</b>	<b>Implementation Guide</b> <a href="http://www.asacompanionvolumes.com.au/aur-implementation-guide">http://www.asacompanionvolumes.com.au/aur-implementation-guide</a>

**Assessment Requirements**

<b>Assessment requirements for AURETU007 Overhaul air conditioning system components</b>	
<b>Performance Evidence</b>	<p>Before competency can be determined, individuals must have competently overhauled air conditioning and HVAC system components on a minimum of two occasions. Individuals must demonstrate they can:</p> <ul style="list-style-type: none"> <li>observe safety procedures and requirements, in particular the dangers associated with handling refrigerants</li> <li>select methods and techniques appropriate to the overhaul of an air conditioning and HVAC system components</li> <li>conduct performance testing to establish viability of overhaul procedures</li> <li>apply full overhaul sequence that complies to scope of work</li> <li>conduct refrigerant recovery and evacuation of refrigerant operations according to industry codes of practice and regulations and recharge the system with the appropriate refrigerant and oil type</li> <li>conduct a performance test of the air conditioning and HVAC system components</li> <li>accurately interpret air conditioning and HVAC system performance test results</li> <li>complete workplace and equipment documents to ARC code of practice requirements.</li> </ul>
<b>Knowledge Evidence</b>	<p>Individuals must be able to demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>WHS regulations, requirements, equipment, material and personal safety requirements, including: <ul style="list-style-type: none"> <li>legislation and regulatory requirements</li> <li>ARC code of practice</li> </ul> </li> <li>principal types of vehicle air conditioning and HVAC systems, including: <ul style="list-style-type: none"> <li>piston, scroll and rotary vane compressors</li> <li>electric compressors</li> <li>variable displacement compressors</li> <li>clutchless compressors</li> </ul> </li> <li>application, purpose and operation of air conditioning and HVAC systems, including: <ul style="list-style-type: none"> <li>climate control</li> <li>multi-zone systems</li> </ul> </li> <li>techniques for reading and interpreting technical information, including: <ul style="list-style-type: none"> <li>refrigerant saturation temperatures in relation to ambient temperatures and changing levels of humidity</li> <li>graphic symbols and diagrams</li> </ul> </li> <li>diagnostic and testing procedures, including: <ul style="list-style-type: none"> <li>use of manifold gauges and surface probe thermocouples for complete system analysis</li> <li>diagnostic procedures for air conditioning and HVAC systems, including: <ul style="list-style-type: none"> <li>accessing and interpreting diagnostic trouble codes (DTC)</li> </ul> </li> </ul> </li> </ul>

<b>Assessment requirements for AURETU007 Overhaul air conditioning system components</b>	
	<ul style="list-style-type: none"> <li>○ diagnostic flow charts</li> <li>○ analysis of system operation using gauges, temperature probes, electrical test equipment, scan tools, oscilloscopes and other industry-relevant test equipment</li> <li>○ visual, aural and functional assessments, including:                             <ul style="list-style-type: none"> <li>○ component damage and wear</li> <li>○ component corrosion</li> <li>○ vacuum and leaks</li> <li>○ repair procedures, including:                                     <ul style="list-style-type: none"> <li>○ component removal and replacement procedures</li> <li>○ component and associated system adjustment procedures</li> </ul> </li> </ul> </li> </ul>
<b>Assessment Conditions</b>	<p>Assessment must satisfy the Companion Volume Assessment Strategies Guide of this Training Package.</p> <p>Assessors must satisfy SNR/AQTF assessor requirements and:</p> <ul style="list-style-type: none"> <li>● hold an Australian Refrigerant Council (ARC) Refrigerant Handling licence</li> </ul> <p>Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.</p> <p>Where assessment of competency includes third party evidence, individuals must provide evidence that links them to the vehicles that they have worked on, e.g. repair orders.</p> <p>Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.</p> <p>The following resources must be made available:</p> <ul style="list-style-type: none"> <li>● workplace location or simulated workplace</li> <li>● light and heavy vehicles with air conditioning and HVAC systems relevant to the qualification being sought</li> <li>● material relevant to perform overhaul procedures on air conditioning and HVAC systems components</li> <li>● equipment appropriate for the overhaul of light and heavy vehicle air conditioning and HVAC systems relevant to the qualification being sought, including:                             <ul style="list-style-type: none"> <li>○ manifold and gauge set</li> <li>○ recovery unit</li> <li>○ vacuum pump</li> <li>○ electronic leak detector</li> <li>○ nitrogen cylinder and regulator</li> <li>○ digital vacuum gauge (vacrometer)</li> <li>○ digital multimeter</li> <li>○ electronic scales</li> <li>○ oil injector</li> <li>○ infra-red thermometer (pyrometer)</li> <li>○ electronic temperature probe</li> <li>○ valve core removing/replacement tool</li> <li>○ psychrometer (humidity detector)</li> <li>○ various refrigerant hoses and couplers</li> <li>○ diagnostic scan tool</li> <li>○ specifications and work instructions</li> </ul> </li> </ul>

<b>Assessment requirements for AURETU007 Overhaul air conditioning system components</b>	
	<ul style="list-style-type: none"> <li>• service procedures for above equipment appropriate for the overhaul of vehicle air conditioning and HVAC system components.</li> </ul>
<b>Links</b>	<p><b>Implementation Guide</b>  <a href="http://www.asacompanionvolumes.com.au/aur-implementation-guide">http://www.asacompanionvolumes.com.au/aur-implementation-guide</a></p> <p><b>Assessment Strategies Guide</b>  <a href="http://www.asacompanionvolumes.com.au/aur-assessment-strategies-guide">http://www.asacompanionvolumes.com.au/aur-assessment-strategies-guide</a></p>

DRAFT